

Nevada Department of Wildlife
Upland Game Bird Stamp Program

Fiscal Year 2016

June 2015



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Relevant Upland Game Bird Stamp Nevada Revised Statutes

NRS 502.292 Fee to hunt certain upland game birds: Requirements regarding documentation of payment; amount.

1. Except as otherwise provided in this section, it is unlawful for any person to hunt any upland game bird, except turkey and crow, unless at the time he is hunting he carries on his person such documentation as the Department provides as proof that he has paid to the Department, for the licensing period that includes the time he is hunting, the fee required pursuant to this section.

2. The provisions of this section do not apply to a person who is under the age of 12 years.

3. The documentation required pursuant to this section must be sold by the Department, and persons authorized by the Department to sell hunting licenses, for a fee of \$10.

4. The Department shall determine the form of the documentation.

(Added to NRS by [2003, 2540](#))

NRS 502.294 Fee to hunt certain upland game birds: Deposit of proceeds; accounting records; reimbursement of administrative costs. All money received pursuant to [NRS 502.292](#) must be deposited with the State Treasurer for credit to the Wildlife Obligated Reserve Account in the State General Fund. The Department shall maintain separate accounting records for the receipt and expenditure of that money. An amount not to exceed 10 percent of that money may be used to reimburse the Department for the cost of administering the program of documentation. This amount is in addition to compensation allowed persons authorized to issue and sell licenses.

(Added to NRS by [2003, 2540](#))

NRS 502.296 Fee to hunt certain upland game birds: Use of proceeds.

1. Before the Department may undertake any project using money received pursuant to [NRS 502.292](#), it must analyze the project and provide the Commission with recommendations as to the need for the project and its feasibility.

2. Money received pursuant to [NRS 502.292](#) must be used for projects approved by the Commission for the protection and propagation of upland game birds and for the acquisition, development and preservation of the habitats of upland game birds in this State.

(Added to NRS by [2003, 2540](#))

NRS 502.298 Fee to hunt certain upland game birds: Reports to Legislature regarding program.

The Department shall, not later than the fifth calendar day of each regular session of the Legislature, submit to it a report summarizing any projects undertaken and the receipt and expenditure of money and public benefits achieved by the program for the sale of documentation to hunt any upland game bird, except turkey and crow.

(Added to NRS by [2003, 2540](#))

Progress Report on Upland Game Bird Stamp Projects Funded in FY 2015

Columbian Sharp-tailed Grouse Restoration

Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*; hereafter CSTG) historically occupied the Intermountain West, including northern Nevada where they were considered abundant in Elko County. However, populations were extirpated from Nevada by the mid-20th century and now occupy less than 10% of their historic range. In a collaborative, multi-agency effort to re-establish a viable population of CSTG in northeastern Nevada, 140 birds have been translocated from southeastern Idaho to Elko County, Nevada during April of 2013-2015. Of these, 92 females and 31 males have been marked with VHF transmitters and have been monitored by ground and aerial telemetry. This project is intended to establish a self-sustaining population of CSTG within the Bull Run Basin area north of Tuscarora in northern Elko County (Figure 1).



Figure 1. Bull Run Basin release area looking northwest towards Blue Jacket Peak, Elko County, Nevada.

During the 2015 capture and translocation effort, we captured 49 CSTG consisting of 34 females and 15 males. Of the birds released, 29 females and 10 males were outfitted

not seen again, but they may have survived on their own at this age. Of the six failed broods, three females were killed while brood-rearing. Two broods had chicks that were 10–15 days old, while the third had chicks near 50 days post-hatch. During 2013–2014, the 10-day interval brood survival probability was 89.4% (95% CI, 79.9% - 94.5%) and the cumulative average survival probability for the 50-day brood rearing phase was 57.0% (95% CI, 32.6% - 75.5%).

Vya Rim (Horse Creek) – Mountain Quail Translocation

In an effort to further develop mountain quail populations in northwestern Nevada, 100 mountain quail were obtained from south-central Oregon and translocated to the Vya Rim in Hunt Unit 011 during November 2014. The birds were wild caught in a sub-range of the Cascades near Myrtle Creek, Oregon and held at the Oregon Department of Wildlife’s regional office in Roseburg. A subsample of birds (n=19) were tested for various diseases including *Mycoplasma gallisepticum*, *Salmonella pollorum*, and Avian Influenza (AI) as well as parasites such as coccidia and gapeworm by the Oregon Department of Agriculture, Animal Health Laboratory. Results for those diseases tested for were negative while coccidia levels were within normal ranges.



Mountain Quail

The intent of this release was to bolster existing populations with low numbers within and near the Horse Creek and Twelvemile Creek drainages along the Vya Rim in northern Washoe County. Although habitat conditions have been affected by drought, moisture receipts in November of 2014 prior to the release were substantial enough to

spur some plant growth. This release will be augmented with a second release of approximately 100 quail during the winter of 2015-16 if conditions permit, both from an access and habitat suitability standpoint.

Greater Sage-grouse Research and Monitoring

Virginia Mountains Sage-grouse Habitat Utilization and Distribution Project

This ongoing study is being conducted within a topographically-complex sagebrush-steppe ecosystem in the Virginia Mountains of northwestern Nevada, USA. The study area encompasses approximately 690.7 km² with elevations ranging from 1218–2683 m. The U. S. Department of Interior, Bureau of Land Management (BLM) administers the majority of land, 588 km² in the study area, with the remaining portion owned privately (95 km²). The Pyramid Lake Reservation borders the eastern portion of the Virginia Mountains and California borders the west. There are only two sage-grouse leks known to be active within the Virginia Mountains. One lek is located at Sheep Springs, near Fish Springs Ranch on the north slope of the Virginia Mountains. The other lek is located approximately 14 kilometers (km) to the southeast on Spanish Flat, near Tule Peak.

Lek Surveys – In 2014, three leks were confirmed active (three counts of ≥ 3 males). High counts for Spanish Flat and Sheep Springs leks were 21 and 16, respectively. West Cottonwood lek was discovered in 2011 by NDOW but was designated as inactive in 2012 and 2013. However, NDOW confirmed a high count of 17 males at West Cottonwood in 2014. High counts for males in 2013 at Spanish Flat and Sheep Springs were 34 and 20, respectively. These numbers are substantially lower than counts from previous years. For example, the high counts for males on active leks in 2012 were 72 (Spanish Flat) and 34 (Sheep Springs), which were similar to counts from previous years.

Space-Use – We monitored a total of 166 sage-grouse with VHF transmitters during 2008–2014. The total number of males and females tracked by radio telemetry were 13 and 153, respectively. Most sage-grouse were relocated in the Spanish Flat area. From 2009 to 2014, the core area of sage-grouse activity (50% UD) during spring (March – May) was 1,363 ha and 816 ha for summer (June – July), according to pooled telemetry locations. The population level home range (95% UD) encompassed 7,797 ha during spring and 4,878 ha during summer. In each year, the core area was located at Spanish Flat. Sage-grouse captured from both lek sites used this area before moving to wintering areas. The majority of individual home ranges throughout spring and summer

overlapped within the Spanish Flat area, indicating relatively less use of the Sheep Springs area.

Survival – Cumulative annual adult survival probability during 2009–2014 was 63.09% (95% CI, 54.82 – 70.30%). We recovered 30 marked sage-grouse mortalities during 2013 ($n = 19$) and 2014 ($n = 11$). Assumed cause of death included depredation by mammalian predators ($n = 9$), avian predators ($n = 3$), and unknown causes ($n = 18$). A majority of the unknown causes were transmitters identified as mortalities during fall through spring aerial telemetry monitoring, from which very little evidence remained to help identify the cause of mortality.

Nest Survival – Cumulative average nest survival probability for the 37-day egg-laying and incubation phase for study years 2009–2011 and 2013–2014 was 25.6% (95% CI, 16.9 – 35.3%). We did not use 2012 data in this survival estimation because we found very few nests in 2012 and nests were initially located during later stages of incubation due to field logistic constraints. Including these nests into the analysis may bias the estimation high because daily nest survival probabilities have been shown to increase as incubation progresses (Coates and Delehanty, 2010).

In six years, 107 sage-grouse nests were monitored (Figure 3) of which 49 were successful nests (first attempt = 41, second attempt = 8) and 58 were failed nests (first attempt = 54, second attempt = 4), of which we were able to determine that 42 were depredated (first attempt = 39, second attempt = 3). Four nests were partially depredated with ≥ 1 chick hatched. Signals were lost for several female sage-grouse during the study, perhaps because of radio failure or movement away from the region. The remaining radio-collared female sage-grouse did not attempt to nest, or nests were depredated prior to our detection during the laying period. Third nesting attempts were not observed.

Nest Habitat Selection – Preliminary findings suggest shrubs selected for nesting were larger in height, width, perpendicular width, and contained greater litter depth than shrubs measured at random locations. Females nested under various cover types. If multiple cover types were present at the nest site, the dominant species or structure occupying the greatest proportion of the nest was used as the main cover type. The most commonly used overhead nest cover was shrubs, but a rock outcrop ($n = 1$) and a juniper ($n = 1$) were also selected for nest cover. The most frequently used shrub species were big sagebrush (29%) and rabbitbrush (22%). Other vegetation included snowberry, bunchgrass, horsebrush, greasewood, bitterbrush, ephedra, serviceberry, dead sagebrush, three-tip sagebrush, black sagebrush, low sagebrush, winterfat, and choke cherry. Preliminary results below are reported as means (\pm Standard Error) of vegetation measurements for nest sites and random points.

Although all species of sagebrush were selected as the nesting shrub 35% of the time, the average sagebrush cover within 100 m of the nest was only $4.6 \pm 0.7\%$ (total shrub cover was $14.3 \pm 0.9\%$). Conversely, non-sagebrush shrub species were being selected for across all spatial scales of use. Additionally, in comparing nest locations with DR and IR locations, mean sagebrush cover within 100 m was $4.7 \pm 0.8\%$ and $3.6 \pm 0.6\%$ (respectively), which further suggests lack of selection for overall sagebrush cover. Our preliminary results suggest that sage-grouse are selecting for

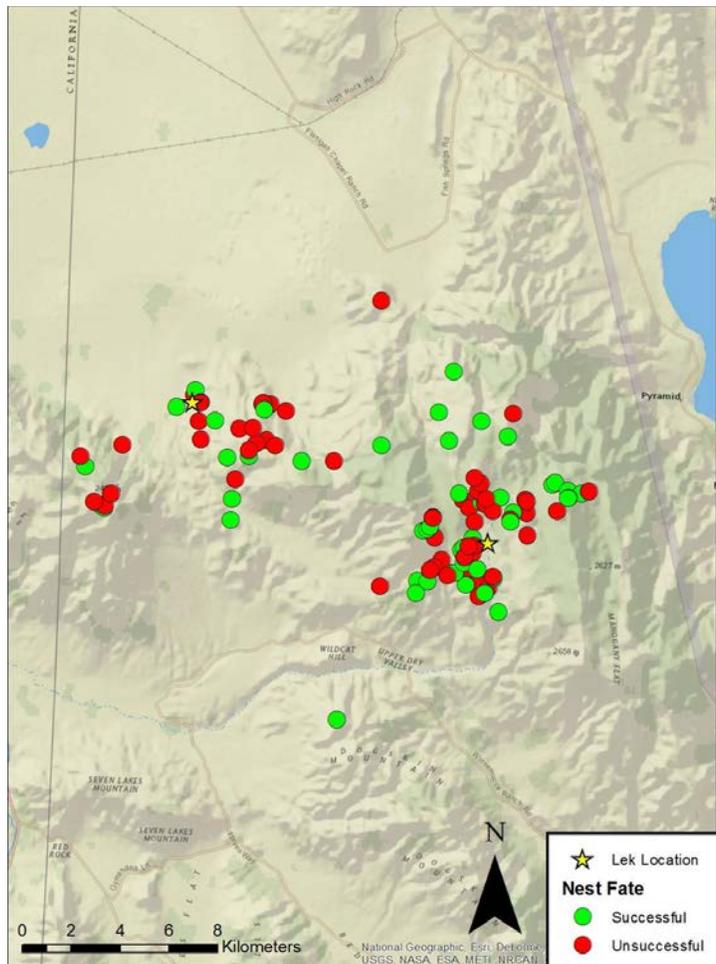


Figure 3. Sage-grouse nest site locations (successful and unsuccessful) within the Virginia Mountains.

predominantly big sagebrush for the nest shrub and greater non-sagebrush shrub cover at the 5 m, 10 m, 25 m, 50 m, and 100 m scales.

When comparing the available habitat at both spatial scales (DR and IR locations), we found evidence for avoidance of annual cheatgrass at the nest (used = $4.9 \pm 0.7\%$; DR = $7.6 \pm 1.1\%$; IR = $10.5 \pm 1.4\%$). We did not distinguish cheatgrass from other annual grasses; however, we assume cheatgrass to be a majority of the annual grass category based on field observations. This effect is reduced as the distance from the nest increases. We found a greater selection of perennial grass cover at nesting sites compared to IR points at the 10 and 25 m spatial scales, but not at the nest center, indicating perennial grasses may be important within the vicinity of nests.

Brood Survival – During 2009–2014, 55 broods were monitored. Twenty-eight females with broods were confirmed successful (≥ 1 chick survived to 50-days post-hatch) and 20 broods failed. Of the 20 unsuccessful females, 14 were confirmed as failed on or before the 25-day post-hatch interval. The remaining seven broods could not be relocated to determine survival at 50-day post-hatch; therefore, their fate is unknown.

The 10-day interval brood survival probability was 90.8% (95% CI = 85.8–94.1%) for 2009 through 2014. The cumulative average brood survival probability for 50-day brood rearing phase (probability of success through the brood rearing period) was 61.7% (95% CI = 46.5–73.8%) for 2009 through 2014.

Brood-Rearing Habitat Selection – Habitat use within 25 m of a brood-rearing sage-grouse shows evidence of greater selection for perennial forbs during the day ($11.3 \pm 0.8\%$) than at night ($9.4 \pm 0.8\%$). A general trend suggests that brood-rearing hens are selecting against cover at night (night = $11.2 \pm 1.5\%$, day = $16.6 \pm 1.7\%$, DR = $14.3 \pm 1.6\%$) and are roosting on sparsely vegetated areas such as bare ground and rock (night = $16.5 \pm 1.4\%$, day = 8.9 ± 0.9 , DR = $14.2 \pm 1.5\%$; Figure 17). Brood-rearing females also appeared to avoid annual grasses at used day compared to DR locations (day = $6.2 \pm 0.6\%$, DR = $7.0 \pm 0.6\%$); however, the difference was not significant. In general, conclusive differences were not found for selection of vegetative cover (excluding perennial forbs) for broods during the day when compared to DR points.

Desatoya Range Habitat Utilization and Effectiveness Monitoring

Summary – The U.S. Geological Survey (USGS) and Nevada Department of Wildlife (NDOW) initiated a before-after study design to investigate potential effects of habitat enhancement and restoration on sage-grouse population vital rates, habitat selection, movement patterns, as well as effects on predator community composition, in the

Desatoya Mountains in central Nevada. During 2013–2014, we radio- and GPS-marked 54 sage-grouse captured within the study area. In 2014, six of the ten leks were active, two were inactive, and two were not surveyed. We located 14 nests and monitored five broods. We conducted a total of 281 raptor, raven, and livestock surveys and detected 174 ravens during 103 surveys. Primary data collection efforts include gathering baseline data on space-use, habitat selection, and population vital rates.

Lek Surveys – In 2014, six of the ten known leks within the study area were active, two were inactive, and two were not counted. Maximum male counts were 47 (Peterson Station), 29 (New Pass), 18 (Smith Creek), 15 (Haypress), 15 (Rock Creek), and 10 (Buffalo Hills). We did not observe any displaying males on Edwards Creek or Cedar Creek leks. North and South Topia leks are both alpine leks and were not accessible due to snow cover. We did visit the Topia leks in May, but did not observe any displaying males. However, due to the late survey date, these leks may have been active earlier in the breeding season.

Space Use – During October of 2013, we deployed GPS units on four female sage-grouse. During spring and summer 2014, we captured and marked 23 females and one male with VHF ($n = 17$) or GPS ($n = 7$) transmitters. During the fall 2014 trapping season, we captured and marked 25 females and one male with VHF ($n = 19$) or GPS ($n = 6$) transmitters. We obtained 134 telemetry locations from 28 collared hens during the first season of monitoring. A total of 13,211 GPS locations were collected between October 2013–2014.

We calculated utilization distributions by season (same months as outlined in above paragraph) for GPS-marked grouse. The core area of sage-grouse activity (50% UD) during spring, summer, fall, and winter was 1363, 640, 2003, and 2414 ha, respectively, and the population level home range (95% UD) was 10935, 4360, 13970, and 12237 ha, respectively.

We observed two general patterns of sage-grouse movement from spring breeding areas to summer habitat; grouse moved to either lowland riparian and agricultural complexes or to alpine areas within the Desatoya Mountains. We observed grouse congregating in the valley near Smith Creek and the surrounding agricultural fields (e.g., alfalfa fields). Grouse utilized resources near the creek during the day and roosted in the surround hills at night and were regularly observed flying or walking back and forth at dawn and dusk. Some GPS marked individuals moved from the Smith Creek valley to higher elevations near Edwards Creek. Two GPS marked females captured at Rock Creek lek moved from the valley to the mountains after their broods failed. In the



Greater Sage-grouse

Desatoya Mountains, it appears that birds are using springs and other ephemeral water sources near Edwards Creek, Haypress, and Topia Creek.

During fall, sage-grouse activity was highly concentrated around Smith Creek, Edwards Creek, and Haypress, with some utilization along Smith Creek Valley towards the New Pass lek. However, during winter, sage-grouse began to congregate around lek sites and away from Smith Creek and high elevation areas. The lack of utilization in the mountains may be due to a small sample size ($n = 1242$ locations) from only two GPS-marked individuals during 2013. We believe there may be an undocumented lek between Smith Creek and New Pass leks, as a majority of sage-grouse marked this spring were approximately 8–10 km away from both of these leks. We also observed a group of about 15 males roosting in this area while trapping. The high concentration of females captured plus the group of males indicates a nearby lek, which will be investigated next season.

Sage-Grouse Survival – Average monthly adult survival probability was 98.9% (95% CI, 92.7 – 99.8%) and cumulative average adult survival probability during 2013–2014 was 87.7% (95% CI, 40.2 – 98.2%). We recovered five mortalities this season from VHF ($n = 1$) or GPS ($n = 4$) marked sage-grouse. Assumed causes of mortality include depredation by avian ($n = 1$), mammalian ($n = 2$), and unknown predators ($n = 2$). Two females were killed while nesting. On both occasions, feathers were found at the nest

site with eggs either cracked, depredated, or untouched. One VHF collar was recovered at the base of a pinyon pine with some feathers, indicating probable avian depredation.

Nest Survival – In 2014, we located 14 nests, of which four were successful and 10 failed. Cumulative average nest survival probability for the 37-day egg laying and incubation phase was 9.4% (95% CI, 1.1% - 29.5%). Daily nest survival was 93.8% (95% CI, 88.5% - 96.8%). Of the failed nests, three were discovered empty, suggesting eggs may have been removed by a predator; two hens were killed either on the nest or within a few meters of the nest; and the remaining five nests were depredated. The only two marked hens on the west side of Desatoyas near Rock Creek lek nested and were successful. Nest survival within the Desatoyas was extremely low; however, this may be due to small sample size ($n = 13$) and therefore this preliminary result should be interpreted with caution. Multiple years of data are required to obtain a reliable estimate for nest survival.

Nest Habitat Selection – Preliminary results indicate that average percent shrub cover and sagebrush height were similar at nest sites, DR, and IR locations at all spatial scales, but values were higher at the nest center for all survey types. However, percent canopy cover for all shrubs and all sagebrush was significantly greater at used and DR locations than at IR locations, suggesting sage-grouse are selecting nest sites with greater sagebrush cover than what is available within the study area at IR locations. In addition, there was very little non-sagebrush cover ($< 3\%$) at all nest and random points. Percent horizontal cover (0° and 45° angles) was greater at nests and DR points compared to IR locations, but only vertical cover (90° angle) at nests, not DR points, was greater than IR locations.

Brood Survival – All five broods monitored in 2014 failed. The 10-day interval brood survival probability was 96.3% (95% CI, 91.3% - 98.5%), and the cumulative average survival probability for the 50-day brood rearing period during was 15.1% (95% CI, 1.1% - 46.1%). Two broods failed before the 10-day check; two broods failed between the 30 and 40-day checks; the fifth brood was opportunistically trapped mid-season but failed between 30 and 40 days post-hatch.

Brood-rearing Habitat Selection – Preliminary results indicate that brood-rearing sage-grouse selected a greater percentage of horizontal shrub cover at used day locations than at night locations, but not when compared to DR points. In contrast, vertical cover was similar between day, night, and DR locations. Grouse appeared to roost in areas with lower vegetative cover at night and select greater cover during the day. Perennial forb cover appeared to be greater at day locations compared to night and DR points; however, results are not significant due to limited sample sizes ($n = 6$). Preliminary

results also suggest average percent shrub cover is greater at day brood locations (0 m) compared to both night and DR points, but this difference was not statistically significant. Similarly, we did not find any difference in shrub cover between survey types at the 10 and 25 m spatial scales.

Forward Looking Infrared Surveys

Surveys utilizing aerial infrared (AIR) imaging were conducted under contract with Owyhee Air Research located in Murphy, Idaho. The surveys were conducted during the week of April 6-10, 2015. A total of 71 leks were surveyed in northeastern Nevada and involved the following population management units (PMUs):

- Desert PMU – 17 leks surveyed (10 active);
- Island PMU – 6 leks surveyed (5 active);
- O'Neil Basin PMU – 23 leks surveyed (14 active);
- Tuscarora PMU – 14 leks surveyed (5 active)

In conjunction with these aerial surveys, we coordinated with USGS researchers and technicians to position two observers each at a random subset of leks (n=38) over the survey period to conduct a double blind observation simultaneous to the fly over to compare results (Figure 4). The objective here is to arrive at a reliable correction factor that can be factored into population estimate calculations while being incorporated into a stratified random sampling scheme.

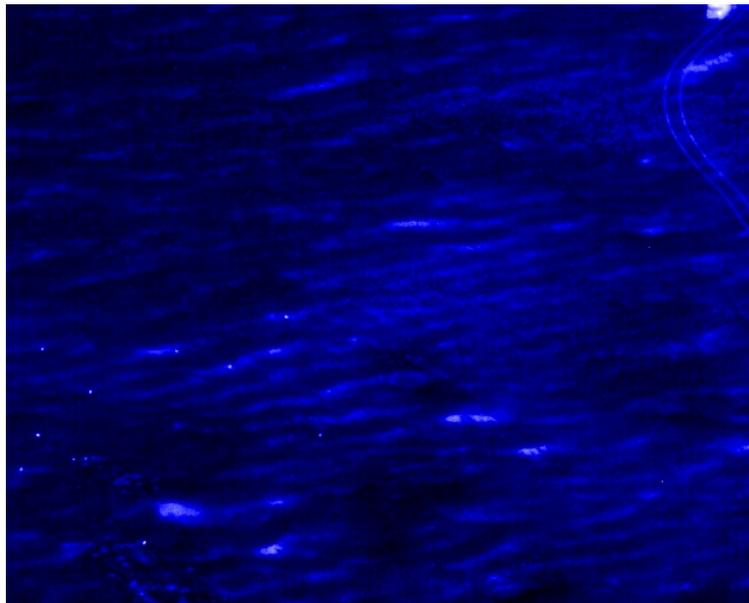


Figure 4. Aerial infrared image collected during sage-grouse lek survey. Note the observer's vehicle in the upper right hand corner and sage-grouse (white dots) in lower left corner.

Telemetry Flights (Fixed Wing – Owyhee Air Research)

In order to continue monitoring of radio-marked sage-grouse during the non-field season, we contracted with Owyhee Air Research and Black Mountain Air to conduct fixed wing surveys using radio-telemetry equipment. As of May 2015, just over 37 hours were spent documenting locations of VHF radio-marked sage-grouse as well as recording mortality signals from the units. The following areas were surveyed from September 2014 through May 2015:

- Vya/Massacre/Sheldon PMU complex (Washoe County);
- Virginia Mountains (Washoe County);
- Pine Nut Range (Lyon County);
- Pequop Mountains (Elko County)

Greater Sage-grouse Lek Survey Data Application

The goal of this project was to reduce paperwork and eliminate redundant steps to enter data into existing databases such as the Nevada Sage-grouse Lek Survey Database. The priority objective of this project was to develop an android based application, derived from the Nevada Department of Wildlife's existing Lek Count Form, for use in an electronic tablet.

We contracted with the University of Nevada, Reno – Robotics Lab to develop the data entry application. The first version of the data application was delivered in March of 2015 and field tested shortly thereafter. After field testing, suggestions were provided to improve the application and the ability to view the entered data on a server. Many of these things were addressed through an iterative process and are ongoing at this time.

Field biologists are currently using electronic tablets with the data application for sage-grouse lek counts. This has led to further suggestions that will improve the usefulness of the application. We view this first year of use as a pilot and expect to have a refined and improved version available for lek survey work in 2016.

Toiyabe Population Management Unit Habitat Enhancement Project

The Bootstraps Crew finished the 2014 work season with 1,866 acres of Pinyon-Juniper (P-J) removal in the Callaghan Hills area north of McGinness Hills, and 983 acres in Alex Canyon, north of Silver Creek, on the other side of the Toiyabe Mountains, for a total of 2,849 acres. This is an ongoing project covered by the existing Toiyabe Enhancement Environmental Assessment that will remove encroaching P-J from high value sage grouse habitat within the Toiyabe Population Management Unit (PMU).



Toiyabe Sage Grouse Population Management Unit Riparian Enhancement

No work has been completed thus far during FY15; however, two sites have been identified in high value sage grouse brood rearing habitat in the Toiyabe PMU, one on Skull Creek and the other on Cowboys Rest. Both areas are on the east slope of the Toiyabe Mountains. A site visit with a BLM archaeologist, NDOW and BLM wildlife biologists, as well as Bootstraps personnel is scheduled toward the end of May 2015. Once the areas are marked and cleared, a Bootstraps crew will start erecting exclosures using pipe rail fencing. Completion is scheduled by summer's end 2015.

Riparian Use Assessment in Priority Greater Sage-grouse Habitat

During the initial phases of this project, much of the effort has been placed on developing a study plan and locating areas (meadows) used by wild horses and livestock and areas without wild horses within priority (core) sage-grouse habitats. A draft plan has been developed and is in review. So far, meadow systems have been located on 30 allotments that are within Wild Horse and Burro Herd Management Areas (HMAs) in core greater sage-grouse habitat. This process yielded 368 meadows of which a set of selection criteria will be applied to reduce the sample size and then a set of meadows (n=30, or one per allotment) will be randomly selected for monitoring. The meadows will be monitored with remote camera stations to determine ungulate use (occurrence and duration). Vegetation measurements will also be collected at each site. The eventual product from this project will be a thesis related to management scenarios and factors affecting Proper Functioning Condition of riparian systems and the

response of lentic riparian forbs to horse and cattle use. This project was funded for \$9,110 and \$2,480 has been expended as of May 21, 2015.

Post-Fire Upland Habitat Restoration Project

In conjunction with fire prevention projects associated with the BLM's Healthy Lands and Mojave Desert initiatives, NDOW implemented a restoration project by augmenting native vegetation at guzzler locations affected by wildfire and located in NDOW's Southern Region. The project sites are located in Lincoln County's Kane Springs Valley, at the foot of the Delamar and Meadow mountains. NDOW's objective included the planting of various species of native vegetation at selected upland guzzler sites and restoring habitat structure and corridors at guzzlers within burned areas. This project utilized native cover plants, thus increasing wildlife's confidence in using guzzlers and nearby areas. The primary species that are benefitting are Gambel's quail, chukar, mourning dove, desert cottontail, and likely other wildlife species dependent on water.

Preceding implementation of the project, the BLM prepared a Determination of NEPA Adequacy (DNA) document that covered NDOW's restoration work at selected sites on BLM managed lands. During implementation of the project, which occurred during fall /winter of 2014 and the spring of 2015, NDOW planted over 500 perennial native plants at or adjacent to 8 small game water developments. Plantings were protected from herbivores with the installation of plant cages. Monitoring of the planting sites has shown a high survival rate of the new plantings due to subsequent manual watering and timely precipitation events. Weather permitting, additional plantings will occur at two additional guzzler sites during the rest of FY15.

Northern Nevada Small Game Water Development

Simple to moderate maintenance was completed on a total of 528 small game guzzlers so far in NDOW's Northern Region during FY15. This work was funded by the Upland Game Bird Stamp account, sportsmen's donations and NDOW's Water Development Grant. These guzzlers are found on 54 different hills, mountains, peaks, ranges and ridges within 9 different counties. All of these guzzlers were maintained with the use of a NDOW helicopter. The Upland Game Stamp funds were used to help cover the costs associated with using this helicopter.



Maintenance performed on the small game guzzlers included placement of the new signs discussed below, tightening, patching/repairing or rebuilding fences, adding fence supports, removing brush, cleaning out drinkers, cleaning out float valves, repairing and rebuilding gutters, apron repair and pop rivet replacements with screws on aprons and gutters. The table below lists the small game guzzlers visited thus far in NDOW's Northern Region during FY15.

Small Game Guzzlers Visited in Northern Region During FY 2015 Flights

Range/Mt./PK./Valley	Guzzler Numbers	Totals
Alpha Mt.	1	1
Antelope Range	2,3,4,5	4
Black Dyke	1 thru 3	3
Black Rock Range	1,2,3,7,8,9,10,11	8
Blue Mt.	1,2,3	3
Buckskin	1 and 2	2
Buffalo Hills	1 thru 6	6
Candelaria Hills	1 thru 7	7
Churchill Butte	1 thru 3	3
Clan Alpine	1 thru 14 (no 2)20,21,22,24(no 23)	17
Cocoon	1 thru 3	3
Desert Mountain	1 thru 28	28
Dry Mountain	1 thru 13	13
Dry Valley Rim	1 thru 14	14
Duck Flat	DuckJJC, DuckLO#1-#2, DuckNS#1, DuckOC#1-#2, DuckRP#1, DuckWO#1-#2	9
Eastgate Hills	1 thru 3	3
Eugene Mountains	1 thru 6	6
Excelsior	1 thru 8	8

Gabbs Valley	1 thru 13, santé fe sg	14
Garfield Hills	1 thru 4	4
Gillis Range	1 thru 12, RC	13
Granite Range	1 thru 10	10
Hays Canyon Range	1 thru 3	3
Humboldt Range	Florida canyon #2	1
Jackson Mts.	8,9,10,11,12	5
Lake Mountain	1 thru 9	9
Lava Beds	1 thru 17	17
Majuba Mt.	1 thru 6	6
McGee Mt.	1 thru 8	8
Nightingale	1 thru 23 (no #8)	22
Pah Rah's	1 thru 6	6
Petersen Mt.	1 thru 6	6
Pilot Mt.	1 thru 4	4
Pine Forest	1 thru 16	16
Pine Nut Mountains	1 thru 19	19
Rabbithole	1 thru 5	5
Rattlesnake Extension	1 thru 4	4
Rosebud	1 thru 10	10
Sand Springs	1 thru 27	27
Scott Mt.	1 thru 3	3
Selenites	1 thru 10	10
Seven Troughs Range	1 thru 13	13
Shawave	1 thru 20, Ol' Timer	21
Sheep Peaks	1 thru 7	7
Sheldon	1 thru 9,11,12,13	12
Singatse	1 thru 11	11
Slate Mt.	1 thru 4	4
Soldier Meadows	6 thru 22	17
Stillwater Range	1 thru 13	13
Trinity Range	Lovelock lower valley, old timer 2 old timer 3 1 thru 34 (no 31)	36
Truckee Range	1 thru 11	11
Virginia Range	1 thru 3	3
Wassuk	1 thru 6	6
West Humboldt Range	1 thru 15 (no 13)	14
	Total	528

During FY14, Senate Bill No. 134 (SB134) was passed which required new signs be placed on all NDOW guzzlers with contact information so the public can contact NDOW if they find a guzzler in a state of disrepair. A significant amount of time was spent by NDOW staff on the development, placement, and production of these signs. In addition to the contact information, the signs contain a guzzler name and/or number for

identification purposes, and a list of the many agencies and sportsmen's organizations who have generously devoted their time and money helping NDOW install and maintain the state's many guzzlers. Less visible, beige signs were placed in designated BLM Wilderness Areas and Wilderness Study Areas. Within NDOW's Northern Region, signs were placed on all 528 of the small game guzzlers.



Example of New Guzzler Signs Required By Nevada SB 134

Southern Nevada Small Game Water Development

The majority of FY15 funding for southern Nevada's small game water development program was allocated towards the inspection and maintenance of 343 existing upland water developments, reconstruction of 2 decrepit upland water developments (*hereafter*, guzzlers), decommissioning of 1 decrepit guzzler, and installation of the new signs required by SB 134 at each small game guzzler in NDOW's Southern Region. Guzzlers are cistern-based structures designed to capture precipitation in water-limited environments and guzzlers with relatively small volume target upland game bird

species, primarily Gambel's quail (*Callipepla gambelii*) and chukar partridge (*Alectoris chukar*). Guzzlers in the arid southwest are often utilized by a variety of other aquatic, avian, and terrestrial wildlife.

From 1 July 2014 to 30 June 2015, NDOW's water development staff conducted 277 inspections on existing guzzlers in Clark, Lincoln, Esmeralda, and Nye Counties and performed minor maintenance procedures on 117 of those units. Most of the maintenance activity included repair or replacement of exclusionary fencing, storage tanks, frames, collection aprons, and plumbing. Staff also installed informational signs at 177 guzzlers as mandated by Nevada SB 134, while also concurrently inspecting and maintaining each of those units. Large repairs requiring the reconstruction of the tank or apron were conducted at 2 guzzlers in the San Antonio Mountains. Tonopah #1 and Tonopah #3 were extensively re-worked to become functional units again. A non-functional unit, Tonopah #4, was decommissioned.



Tonopah 1 Guzzler prior to repair. The apron is not attached to the storage tank and several panels from the apron are missing from the apron frame.

Eastern Region WMA Weed Control

A total of \$3,750 was spent on herbicide treatments at the Bruneau River, Steptoe Valley, Wayne E. Kirch, Key Pittman and Franklin Lake WMAs. Canada thistle, Scotch thistle, hoary cress, perennial pepperweed, Russian knapweed and leafy spurge were treated on state-owned lands to clean up important upland game habitat. This effort

will reduce further weed encroachment at the sites and diminish the transportation of noxious weed seeds to other areas. In addition, some funds were utilized to purchase herbicides for South Fork State Park near Elko. NDOW has participated in weed abatement work in this area for the last several years.

Kirch WMA Wildlife Food Plots

Forty acres of the lower dove field was planted with Siberian wheat and Austrian winter peas in September. In May, 40 acres of the upper dove field were planted with a mixture of cereal grains and native sunflowers. Forty acres of the Old Place Unit will be planted early to mid-June, 2015. The moist-soil units within the Old Place Unit will be planted with a summer seed mix composed of millets and cereal grains. A total of \$4,500 was spent on seed.

Proposed FY16 Upland Game Bird Stamp Projects

Title of Project	Project Manager	Amount Requested from Upland Game Bird Stamp Account	Total Project Cost	Other Funding Sources Contributing to Project
Columbian Sharp-tailed Grouse Restoration Project	Shawn Espinosa	\$25,000	\$136,000	NDOW's Game Management Grant, Carson Valley Chukar Club (CVCC) and Nevada Bighorns Unlimited (NBU)
Mountain Quail and Ruffed Grouse Translocation	Shawn Espinosa	\$8,000	\$34,000	NDOW's Game Management Grant and CVCC
Bi-State Sage-grouse Monitoring within the Desert Creek and Mount Grant Population Management Units	Shawn Espinosa	\$22,500	\$90,000	NDOW's Sage-grouse Conservation Grant and CVCC
Conservation Principles for Greater Sage-grouse in the Great Basin (book and related handbook)	Shawn Espinosa	\$15,000	\$75,000	NDOW's Sage-grouse Conservation Grant and BLM
Greater Sage-grouse Monitoring	Shawn Espinosa	\$50,000	\$260,000	NDOW's Sage-grouse Conservation Grant, NBU and CVCC
Monitoring the Effects of Landscape-Level Treatments on Greater Sage-grouse within the Desatoya Mountains of Central Nevada	Shawn Espinosa	\$12,500	\$77,342	NDOW's Sage-grouse Conservation Grant and CVCC
Effects of Conventional Raven Control on Greater Sage-grouse Vital Rates within the Virginia Mountains of Northwestern Nevada	Shawn Espinosa	\$17,500	\$81,342	NDOW's Sage-grouse Conservation Grant
Estimating Greater Sage-grouse Vital Rates within Nevada's Most Novel Habitats	Shawn Espinosa	\$22,500	\$180,000	NDOW's Sage-grouse Conservation Grant and Ruby Pipeline mitigation funds
Post-Fire Upland Habitat Restoration Near Guzzlers	Anthony Miller	\$23,700	\$203,700	U.S. Bureau of Land Management
Black Mountain Telephone Line Removal	Kari Huebner	\$12,450	\$24,900	NDOW's Habitat Conservation Fee account
McGinness Hills Pinyon-Juniper Removal	Jeremy Lutz	\$17,500	\$442,400	NDOW's Habitat Conservation Fee account, the USFS, and the McGinness Hills mitigation account
Pinyon-Juniper Thinning with Bootstraps Crew	Steve Foree	\$25,000	\$100,000	NDOW's Habitat Conservation Fee account and the McGinness Hills mitigation account
Key Pittman WMA Wildlife Food Plots	Ron Mills	\$3,900	\$6,500	NDOW's Duck Stamp account
Kirch WMA Food Plots	Marcus Jones	\$2,700	\$4,500	NDOW's Duck Stamp account
Eastern Region WMAs Weed Control	Steve Foree	\$3,750	\$7,500	NDOW's Duck Stamp account
Total		\$262,000		

Upland Game Bird Stamp Account Budget Status

(as of 5-27-15)

Balance in the Account at Start of FY 2015	\$ 521,130
Estimated Revenue Accrued During FY 2015	\$ 292,376
Estimated Total FY 2015 Expenditures	\$ 365,015
Estimated Administrative Costs (10% of Revenue)	\$ 29,238
Estimated Balance at End of FY 2015 / Start of FY 2016	\$ 419,253
Estimated Revenue to be Accrued During FY 2016	\$ 263,479
Estimated Administrative Costs (10% of Revenue)	\$ 26,348
Proposed New Project FY 2016 Expenditures	\$ 262,000
Estimated Balance at End of FY 2016	\$ 394,384

Note: The budget information in this table is preliminary and subject to change.



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Columbian Sharp-tailed Grouse Restoration Project*

Date of Proposal: April 13, 2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Bird Stamp

NDOW Project Manager (PM): Shawn Espinosa

PM Phone Number and Email Address: (775) 688-1523; sespinosa@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$25,000

Total Cash to be Used from Other Funding Sources (please list by source):

Carson Valley Chukar Club: \$2,500

Nevada Bighorns Unlimited – Midas Chapter: \$2,500

Total In-Kind Donations by Source (please list by source): N/A

Total Project Cost to be Funded by All Sources: \$136,000

Project Proposal

I. Purpose of Project and Goals to be Achieved:

This project is part of an ongoing effort to restore Columbian Sharp-tailed Grouse in northeastern Nevada. Columbian Sharp-tailed Grouse (CSTG) distribution has declined greatly over the last 50-75 years. However, improvements in historic habitats has resulted from enhanced grazing strategies and as more resilient areas recover from wildfire. This project is intended to provide a population “anchor point” from which to establish additional populations to connect with extant populations in southern Idaho. Requested funding would provide match for the Nevada Department of Wildlife’s W-48 grant to conduct research and monitoring of the translocation and ultimate outcome of the project. This work would be contracted through the USGS – Western Ecological Resource Center and Idaho State University.

The goal of this project is to establish a self-sustaining population of CSTG in northeastern Nevada that exhibits long-term persistence. Approval and implementation of this proposal helps assist the Nevada Department of Wildlife’s Game Division fulfill objectives stated in the following:

- Nevada Upland Game Species Management Plan (2008);
- Upland Game Release Plan for FY2016-17;
- NDOW's W-48 Federal Assistance Grant (Pittman-Robertson).

The major objective of this project is to place ~250 CSTG within an identified project area (Bull Run/Independence Mountains) located in Elko County over a five year period with the hopes of establishing self-sustaining populations of CSTG that offers the potential for future connectivity with populations in southern Idaho. The short-term objective of this project is to capture 30-35 female and 15-20 male CSTG in Idaho and Utah in the spring of 2016 and translocate the birds to the identified release sites in the Independence and Bull Run Mountains. To date, a total of 91 grouse (63 females, 28 males) have been released into the Bull Run Basin. Current capture and translocation efforts are taking place in April of 2015.

II. Project Location (include a map if available):

Columbia Basin Release Site: Located between the Bull Run and Independence Mountains, this release site is characterized by rolling hills with considerable forb cover. A mixture of shrub-steppe and mountain-shrub communities are interspersed throughout the area. This release site is approximately 67 km² or 6700 hectares.

Bull Run Release Site: Located on the east side of the Bull Run Mountains at mid-elevation above the Owyhee River. A mixture of mountain shrub communities interspersed with riparian corridors dominated by willow, aspen and alder with moderately sized aspen stands in the mid to upper elevation of drainages exists in this area. This release site is approximately 53 km² or 5300 hectares.

III. Project Approach Including Tasks to be Accomplished:

Our translocations efforts would follow the tasks outlined below and the recommendations established within the *Guidelines for the Management of Columbian Sharp-tailed Grouse Population and Their Habitats* (Hoffman et al. 2015). The majority of these tasks would be implemented by a graduate student with Idaho State University and USGS staff, who also would be responsible for documenting project results. Assistance with capturing birds for translocation would be made available by Nevada Department of Wildlife personnel.

- Capture approximately 250 CSTG over a five-year period (in total) consisting of approximately 60% females and 40% males from areas located in Idaho and Utah;
 - Capture approximately 30-40 females and 10-20 males for releases in each year beginning in 2013 (year 1) through 2016 (year 4). Attempt to release an additional 15-20 females and 5-10 males in year 5 of the project;
 - Captured grouse should be transported in specially-built boxes with individual compartments designed to house the birds separately and constrain their movements. Line the bottom of each compartment with clay cat litter to reduce contact between feces and the bird's feet. The box should be designed so that it can be opened remotely from a distance allowing the birds to walk or fly away without being frightened.
- Outfit approximately 50% of translocated males released with radio transmitters and monitor movements throughout the winter and into the spring breeding period. Areas

selected by males during the spring breeding period would be considered as focal areas for release of females;

- Outfit approximately 50-75% of translocated females released in the spring with radio transmitters;
- Each translocated bird would have a leg band attached;
- Upon release, the box should be positioned in such a way so as to provide a clear path to escape cover without any obstacles such as fences. Scan the area for raptors prior to release;
- Females would be tracked 2-3 times per week during the nesting period;
- Determine nest initiation dates of each female grouse;
- Identify predators of nests using continuous digital video recording systems from a subset of nests;
- Calculate the kernel home-ranges of male and female grouse during the nesting season;
- Identify movement patterns during the nesting season;
- Within 48 hours of nest fate, measure multiple microhabitat characteristics at each nest site, including total shrub cover, sagebrush cover, perennial and annual grasses, perennial and annual forbs, vertical cover, and horizontal cover (measured at 5, 10, 25, 50, 100 m from nest site);
 - Place four perpendicular transects centered at the nest and record the percent shrub cover for each meter along the transect at scales of 5, 10, 25, 50, 100 m;
 - In addition place two 20 X 50 cm Daubenmire plots along each transect and one at the nest center where percent cover is estimated and all plants are measured and keyed as annual or perennial;
 - Use three methods (Jones cover board, Robel pole, and a cover ball photography) to estimate vertical and horizontal cover at each point of subplots and at the nest bowl;
- Measure the habitat characteristics (field and GIS) at random points that are spatially dependent and independent from the nest site;
- Conduct multi-scale habitat selection analysis using random and used points;
- Conduct surveys of badgers, ravens and raptors at nesting and random areas throughout the study site;
- Determine nest fate of each female grouse and estimate daily nest survival probabilities;
- Estimate the effects of habitat characteristics and predator abundance on nest survival rates;
- Estimate the effects of grouse age and body condition on nest survival rates;
- Track individual birds by ground or aircraft 2-3 time per week during the brooding period;
- Conduct habitat measurements (field and GIS) at a subsample of brood locations during day and night and dependent random locations for each 10-day interval;
- Calculate 10-day interval brood survival rate;
- Develop and compare brood survival models that include vegetation characteristics as covariates to identify the effects of vegetation factors;
- Use aircraft to identify wintering grounds by locating radio-marked grouse at least once per month;
- Determine monthly survival of radio-marked grouse to determine whether or not grouse experience elevated mortality rates during specific time periods;
- Determine whether or not there are differences between sexes for monthly and annual survival.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

If successful in accomplishing our long-term goal, this project will assist with expanding CSTG into the historic range of the species. Also, this project could eventually increase sportsmen opportunity and recreational bird watching in northeastern Nevada.

V. Project Schedule:

Spring 2016: Capture 30-40 CSTG females and 10-20 males from established leks in Idaho and/or Utah in the spring breeding season and translocate to Nevada. Conduct follow-up monitoring of approximately 25-30 radio marked females and 5-10 males throughout their life cycle.

VI. Relationship to NDOW Plans, Policies and Programs:

The following documents were used while developing this proposal:

- Nevada Upland Game Species Management Plan (2008);
- Upland Game Release Plan for FY2016-17;
- NDOW's W-48 Federal Assistance Grants (Pittman-Robertson);
- Data Summary of a Columbian Sharp-tailed Grouse Habitat Suitability Examination between Idaho and Nevada (Coates et al. 2011).
- Guidelines for the Management of Columbian Sharp-tailed Grouse Populations and Their Habitats (Hoffman et al., In Press).

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: This project is primarily taking place on private lands. However, a U.S. Forest Service Categorical Exclusion was obtained for this project to address an additional release site and the potential for the translocated birds to use Forest Service administered lands.

Project Costs and Funding

VIII. Cost Summary

A breakdown of the project's costs is found in the attached table.

IX. Is this Project Going to Continue After FY16? Yes X No

The project is likely to continue through FY17. This is subject to approval by the Idaho Department of Fish and Game.

X. If Yes, is this Going to be an Annual, Recurring Project? Yes No X

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year: We anticipate that the annual cost of the project will be approximately \$100,000 each year through FY17. This is contingent upon approval by the Idaho Department of Fish and Game.

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes X No

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For? Pittman-Robertson Sport Fish and Wildlife Restoration – NDOW's Game Management Grant

Project Cost Breakdown

<i>Project Components</i>	<i>Costs to be Paid by NDOW Special Reserve Account(s)*</i>	<i>Costs to be Paid by Other Sources*</i>
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	\$ 17,625.00	\$ 52,875.00
C. Total Personnel Costs	\$ 17,625.00	\$ 52,875.00
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	\$ -	\$ -
4. Equipment		
A. VHF Transmitters (30@\$225/unit)	\$ 1,687.00	\$ 5,063.00
B. Handheld GPS (2 @ \$250/ea.)	\$ 125.00	\$ 375.00
C. Total Equipment Costs	\$ 1,812.00	\$ 5,438.00
5. Materials		
A.		
B.		
C.		
D. Total Materials Costs	\$ -	\$ -
6. Miscellaneous		
A. Field Housing	\$ 250.00	\$ 750.00
B. Vehciles (2 @ \$10,500/ea. For 6 month field season)	\$ 5,250.00	\$ 15,750.00
C.		
D.		
F. Total Miscellaneous Costs	\$ 5,500.00	\$ 16,500.00
7. In-Kind Services		
A. Research Wildlife Biologist (Permanent, 0.2 FTE)		\$ 19,250.00
B. Travel		\$ 3,000.00
C. Additional Costs (training, camp supplies, workshops, presentations, printing fees, etc.		\$ 14,000.00
Total In-Kind Services	\$ -	\$ 36,250.00
Subtotals	\$ 24,937.00	\$ 111,063.00
Total Project Costs	\$	136,000.00



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Mountain Quail and Ruffed Grouse Translocation*

Date of Proposal: April 13, 2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Stamp

NDOW Project Manager (PM): Shawn Espinosa

PM Phone Number and Email Address: (775) 688-1523; sespinosa@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$8,000

Total Cash to be Used from Other Funding Sources (please list by source):

Carson Valley Chukar Club: \$2,000

Nevada Sage-grouse Federal Conservation Grant (W-64): \$24,000

Total In-Kind Donations by Source (please list by source): Has not been estimated

Total Project Cost to be Funded by All Sources: \$34,000

Project Proposal

I. Purpose of Project and Goals to be Achieved:

The overall goal of this project is to increase population redundancy and resiliency of mountain quail and ruffed grouse within suitable habitats across Nevada's landscape. Since 2008, the Nevada Department of Wildlife has released 672 mountain quail within Churchill, Humboldt, Washoe and White Pine County. In addition, 164 ruffed grouse have been captured and translocated to portions of Elko, Humboldt and Lander Counties. These translocations, and subsequent augmentations, are conducted to fulfill the objective of expanding mountain quail and ruffed grouse distribution within Nevada. These efforts have also led to increased sportsmen opportunity and have contributed to traditional non-consumptive uses as well.

The goal of this project is to maintain and expand healthy, self-sustaining populations of mountain quail and ruffed grouse throughout the range of appropriate key habitats that have been identified in Nevada. The 2008 Nevada Upland Game Species Management Plan identifies the following objectives for both mountain quail and ruffed grouse:

- Mountain quail - establish the species in at least 25% of identified suitable unoccupied habitat in Nevada by 2017;
- Ruffed grouse - increase the distribution of ruffed grouse by 20% in Nevada by 2017.

II. Project Location (include a map if available):

There are five release sites identified within the Upland Game Release Plan for FY2016-17 for mountain quail including four release sites in Lincoln County, one in Lander County (Fish Creek Range) and an augmentation site in Storey County (Virginia Range). The priority release site for 2016 is the Fish Creek Range within Hunt Unit 153; however, habitat conditions during the fall of 2016 will dictate whether or not a release is warranted given the extremely dry conditions experienced in north central Nevada during most of 2014 and 2015.

The Upland Game Release Plan for FY2016-17 also has three release sites identified for ruffed grouse. Two of the sites, one in the north Tuscarora Range (Elko County) and one in the Pine Forest Range (Humboldt County), are considered augmentations. The other site is considered an introduction area and is located within the central portion of the Toiyabe Range. The Toiyabe Range release would be the priority for FY16, followed by an augmentation in the Pine Forest Range if possible.

III. Project Approach Including Tasks to be Accomplished:

The capture and translocation of either species is highly dependent on habitat conditions, both at the capture site and the proposed release site. If adequate habitat conditions are not experienced, it is likely that these efforts will be re-scheduled.

Mountain Quail:

We propose to obtain approximately 100 mountain quail from Oregon through the use of a contract capture vendor. Capture attempts within Nevada could occur for translocation purposes if conditions are conducive to a successful effort. Mountain quail may be held over at the Mason Valley Wildlife Management Area during the winter and early spring for release in late March or early April or released immediately upon translocation to Nevada and the approved release site if habitat conditions are optimal in terms of forage and cover availability. A proportion (20-30%) of the mountain quail may be marked with VHF telemetry units to help determine survival rates and habitat usage. Fixed wing telemetry surveys will be conducted monthly for the life of the units to determine mortality rates and distribution from the release site.

Ruffed Grouse:

We propose to capture 20-30 ruffed grouse to either augment a recent prior release in the Pine Forest Range of Humboldt County, or translocate birds to San Juan Creek in the Toiyabe Range south of Austin. The capture of birds would take place in state depending on bird availability and habitat conditions. A subset of these birds (n=5 to 8) may be radio-marked with VHF telemetry units to help determine habitat usage and survival rates. Fixed wing telemetry surveys will be conducted monthly for the life of the units.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

Expanding the distribution of mountain quail and ruffed grouse populations addresses concerns of population decline and loss of redundancy (numbers of populations) across the range of the

species. This provides assurances that populations will persist over the long-term and enable resiliency in case of stochastic events.

V. Project Schedule:

Capture work would be conducted by a contracted capture vender (Relocator LLC) near Roseburg, Oregon. Birds are expected to be captured during November and December of 2015, held in Roseburg at the Oregon Department of Fish and Wildlife office and then transported by NDOW personnel to either Mason Valley Wildlife Management Area to a holding facility or to the release sight if conditions are deemed appropriate (adequate forbs, moderate weather conditions).

Ruffed grouse capture efforts would commence in late summer or early fall of 2015 if habitat conditions are deemed appropriate. This type of effort normally takes approximately 10-14 days to complete. However, this is highly dependent on habitat conditions and productivity of ruffed grouse populations from potential source stock areas.

VI. Relationship to NDOW Plans, Policies and Programs:

The following documents were used while developing this proposal:

- Nevada Upland Game Species Management Plan (2008);
- Upland Game Release Plan for FY2014-15;
- NDOW's W-48 and W-64 Federal Assistance Grants (Pittman-Robertson);

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status:

A BLM Categorical Exclusion was obtained for the mountain quail release within the Fish Creek Range.

Project Costs and Funding

VIII. Cost Summary

A breakdown of the project's costs is found in the attached table.

IX. Is this Project Going to Continue After FY16? Yes X No _____

X. If Yes, is this Going to be an Annual, Recurring Project? Yes X No _____

Until objectives are fulfilled.

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year: We estimate that the cumulative annual expenditure on this project will be approximately \$25,000 to \$35,000.

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes X No _____

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For? Federal funds would be made available through the Pittman-Robertson Sport Fish and Wildlife Restoration Program; more specifically, the Nevada Game Management Grant (W-48).

Project Cost Breakdown

<i>Project Components</i>	<i>Costs to be Paid by NDOW Special Reserve Account(s)*</i>	<i>Costs to be Paid by Other Sources*</i>
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		\$ 24,000.00
B. Other Personnel		
C. Total Personnel Costs	\$ -	\$ 24,000.00
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	\$ -	\$ -
4. Equipment		
A. VHF radio transmitters (10 @ \$200/ea.)		\$ 2,000.00
B.		
C. Total Equipment Costs	\$ -	\$ 2,000.00
5. Materials		
A. Capture materials (ruffed grouse)	\$ 2,000.00	
B.		
C.		
D. Total Materials Costs	\$ 2,000.00	\$ -
6. Miscellaneous		
A. Capture Vendor (Relocator LLC)	\$ 6,000.00	
B.		
C.		
D.		
F. Total Miscellaneous Costs	\$ 6,000.00	\$ -
7. In-Kind Services		
A.		
B.		
C. Total In-Kind Services	\$ -	\$ -
Subtotals	\$ 8,000.00	\$ 26,000.00
Total Project Costs	\$	34,000.00



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Bi-State Sage-grouse Monitoring within the Desert Creek and Mount Grant Population Management Units*

Date of Proposal: April 13, 2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Bird Stamp

NDOW Project Manager (PM): Shawn Espinosa

PM Phone Number and Email Address: (775) 688-1523; sespinosa@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$22,500

Total Cash to be Used from Other Funding Sources (please list by source):

Nevada Sage-grouse Conservation Grant (W-64) – Federal Match (75%)

The following is a possibility and subject to review and approval:

Carson Valley Chukar Club: \$2,500

Total In-Kind Donations by Source (please list by source): N/A

Total Project Cost to be Funded by All Sources: \$90,000

Project Proposal

I. Purpose of Project and Goals to be Achieved:

Since 2000, a substantial amount of information has been collected on Greater sage-grouse within the Bi-State Distinct Population Segment; however, the majority of research and intensive monitoring work has taken place within the California portion of this population. The Nevada Department of Wildlife is proposing to conduct radio-marking and follow-up work to more clearly understand habitat use and demographic parameters within the Desert Creek and Mount Grant Population Management Units in Nevada. In addition, vegetative measurements will also be collected at used and random sites during various life stages. This information will also help to further refine the resource selection function model for the Bi-State DPS. We propose to conduct this monitoring over a three year period from 2016 through 2018. The information collected will also help assess the effects of various habitat improvement projects, as identified within the Bi-State Action Plan, that are set to take place within this portion of the Bi-State DPS over the next ten years. This project is intended to better understand habitat utilization, identify key habitats and determine

movement patterns of sage grouse as well as determine vital rates within the Desert Creek and Mount Grant Population Management Units. The greatest threats to these populations of sage-grouse are pinyon and juniper encroachment, suburban development, wildfire and the degradation of small meadows and spring complexes over time that serve as late brood rearing habitat. Initial objectives include the following:

- 1) Capture at least 10 female sage-grouse and place GPS/Satellite transmitters to determine seasonal movement patterns and determine home range;
- 2) Capture approximately 20 females sage-grouse and place VHF radio transmitters to augment the GPS/Satellite marked sample; and
- 3) Maintain approximately 20-30 VHF radio-marked females for two subsequent years after year 1 of the study through year 3.

This work will assist with determining the following:

- a) adult survival rates (monthly and annual);
- b) identification of nest sites and nest success;
- c) examination of nest-site vegetative characteristics and if differences exist between successful and unsuccessful nest sites;
- d) determination of nest survival rates;
- e) brood rearing habitat selection
- f) vital rate associations with habitat co-variates;
- g) overall distribution and seasonal movement patterns

II. Project Location (include a map if available):

This work will take place within the Bi-State Sage-grouse Distinct Population Segment within the Desert Creek and Mount Grant Population Management Units (PMUs). Capture sites will focus on the lower Desert Creek area and Sweetwater Flat within the Desert Creek PMU and Ninemile Flat and Mount Grant proper within the Mount Grant PMU.

III. Project Approach Including Tasks to be Accomplished:

Bi-State Habitat Utilization and Effectiveness Monitoring

Sage grouse movement, survivorship, and reproduction will be monitored following release. Portable receivers (Communication Specialist Inc., Orange, CA; Advanced Telemetry Systems Inc., Isanti, MN) are used along with 3-element Yagi antennas to monitor radio-marked grouse. Relocation error is minimized by circling around each grouse 30 – 50 m. Using the approximated distance and a compass bearing, the location coordinates (Universal Transverse Mercator) are obtained using GPS. Throughout the nesting and brood-rearing period, researchers attempted to locate female grouse ≥ 2 times per week.

Relocation coordinates are transferred into a GIS (ArcMap 9.2, ESRI Products, Redlands, CA) for space-use analysis. Kernel density (50, 90, and 95%) is calculated for all radio locations and for each grouse separately (95%). The purpose of using all locations is to estimate area used at the population level. Kernel density is also calculated for brood-rearing females. Kernel calculations are carried out in multiple steps. First, relocation points are weighted to account for biases associated with non-equivalent relocation intervals. Second, robust estimates of smoothing parameters (h) are generated using Animal Space Use 1.3 (Horne and Garton 2009). Last, those parameters are used in

Hawth's Tools (ArcMap 9.2) to calculate fixed kernel densities. Kernel density maps are generated based on the estimated densities for 2009 and 2010.

If a grouse is found at the same location during the nesting period, researchers visually determined if a grouse is nesting. Nests are monitored ≥ 3 times per week until fate is determined. Successful nests are classified as ≥ 1 chick hatched. Nests are also scored as depredated, partially depredated, or abandoned.

Following nest fate, understory cover is recorded at the nest bowl using a coverboard (Jones 1968), Robel pole (Robel 1970), and digital photography method. Vegetation composition cover is measured at multiple subplots (20 X 50 cm) located ≤ 25 m of each nests using Daubenmire method (Daubenmire 1959). Canopy cover is measured along two 25-m transects, one 50-m transect, and one 100-m transect extending from the nest bowl every 90° . The orientation of the quadrants is randomized. Shrub species are recorded and measured. Width (cm) and heights (cm) of a random sample of individual shrubs along the line are recorded. These shrub widths are measured within 5, 10, and 25 m from the nest for all four transect lines, within 50 m for two transect lines, and 100 m for one transect line. The purpose of the different transect lengths is to identify the scale of use for shrub cover within 100 m radius of a nest site.

To identify vegetation factors selected by grouse, defined as the disproportionate use to availability, measurements of vegetation characteristics are compared at nests to those at random points. Thus, the same habitat measurements are conducted at random points to represent available habitat. Evidence for multi-scale selection generating two random points for each nest is evaluated. One point is within 200 m of the nest (dependent) and the other is within the study area (independent). The preliminary results are reported as means (\pm SE) of vegetation characteristics for random points and nests. However, multiple *a priori* generalized mixed effects models with a binomial error distribution at multiple spatial scales will be compared for strength of evidence. Researchers will use an information-theoretic approach, including Δ AIC, Akaike's weights, evidence ratios, likelihood-based R^2 , and likelihood ratio tests to evaluate models. Model averaged parameter estimates will be used to develop resource selection functions.

Following the completion of a successful nest, female grouse with broods are monitored closely by obtaining >2 locations per week. Spotlights are used every 10 days following nest hatch during night hours to count the number of chicks in the brood. Broods are considered unsuccessful if no chicks are found during spotlight surveys. To confirm unsuccessful broods (prevent false negative), females are rechecked within 48 hours. A similar habitat measurement protocol is conducted at brood sites as that at nest sites. However, transects maximum extent is 25 m for broods sites. Canopy cover is measured along three 25 m transects, which extended from the brood location every 120° with random orientation. The width (cm) of each shrub species is measured along the three transect lines within 5, 10, and 25 m from the brood location. Because habitat changes through time and broods are mobile, measurements are collected at each 10-day interval. Differences in vegetation use between night (roosting) and day (foraging) hours are also investigated. These surveys included one day and one night observation of habitat used by broods (within a 24 hour period), as well as, one observation of a random location within 200 m of the brood (dependent) to estimate disproportionate use to availability.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

Over the course of this monitoring effort (3 years), we will be able to determine certain population characteristics such as seasonal use areas, important movement corridors, and potential connectivity with other adjacent Bi-State DPS sage-grouse populations. In addition, we will be able to estimate vital rates among individual birds such as nest initiation rates, nest survival, adult and juvenile survival rates, brood survival rates and potential differences in mortality between seasons. These data, collected before, during and after implementation of several projects listed in the Bi-State Action Plan, and in the NEPA planning stages, will serve as one mechanism to monitor the overall effectiveness of the proposed habitat enhancement projects.

V. Project Schedule:

Initial capture work is expected to take place during the fall of 2015 with additional efforts in the spring of 2016. Follow up work on radio-marked birds will depend on success of capture efforts during the fall; however, intensive on-the-ground efforts will occur from March through August of 2016.

VI. Relationship to NDOW Plans, Policies and Programs:

This project fits within the 1st Edition of the Greater Sage-grouse Conservation Plan for Nevada and Eastern California (2004). The project also assists with objectives outlined in the Bi-State Action Plan (2012).

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: None

Project Costs and Funding

VIII. Cost Summary

A breakdown of the project's costs is found in the attached table.

IX. Is this Project Going to Continue After FY16? Yes X No _____

X. If Yes, is this Going to be an Annual, Recurring Project? Yes _____ No X
This project is scheduled to be a three year monitoring effort.

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year: We anticipate that the annual cost for population level monitoring will be approximately \$90,000 per year.

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes X No _____

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For? 75% of the funding would be made available through the Pittman-Robertson, Sport Fish and Wildlife Restoration program. The Nevada Department of Wildlife administers a grant labeled "Nevada Sage-grouse Conservation Program" that would specifically provide the funding for this project.

Project Cost Breakdown

<i>Project Components</i>	<i>Costs to be Paid by NDOW Special Reserve Account(s)*</i>	<i>Costs to be Paid by Other Sources*</i>
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	\$ 14,187.00	\$ 42,563.00
C. Total Personnel Costs	\$ 14,187.00	\$ 42,563.00
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	\$ -	\$ -
4. Equipment		
A. 50 transmitters @ \$225/ea.	\$ 2,812.00	\$ 8,438.00
B. Vehicles (2 @ \$10,500 per 6 month field season)	\$ 5,250.00	\$ 15,750.00
C. Radio receivers and antennas, GPS units	\$ 375.00	\$ 1,125.00
Total Equipment Costs	\$ 8,062.00	\$ 24,188.00
5. Materials		
A.		
B.		
C.		
D. Total Materials Costs	\$ -	\$ -
6. Miscellaneous		
A. Field Housing	\$ 250.00	\$ 750.00
B.		
C.		
D.		
F. Total Miscellaneous Costs	\$ 250.00	\$ 750.00
7. In-Kind Services		
A.		
B.		
C. Total In-Kind Services	\$ -	\$ -
Subtotals	\$ 22,499.00	\$ 67,501.00
Total Project Costs	\$	90,000.00



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Conservation Principles for Greater Sage-grouse in the Great Basin*

Date of Proposal: April 13, 2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Bird Stamp

NDOW Project Manager (PM): Shawn Espinosa

PM Phone Number and Email Address: (775) 688-1523; sespinosa@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$15,000

Total Cash to be Used from Other Funding Sources (please list by source):

Nevada Sage-grouse Conservation Program Grant (W-64) – Federal Match (75%): \$45,000

BLM: \$15,000

Total In-Kind Donations by Source (please list by source):

Total Project Cost to be Funded by All Sources: \$75,000

Project Proposal

I. Purpose of Project and Goals to be Achieved:

Although management guidance documents have been published (e.g., Connelly et al. 2000 and Connelly et al. 2004), a disproportionate amount of scientific investigation has focused on populations of sage-grouse in the northeastern portion of their range or outside of the Great Basin. Relying on these existing guidelines for the Great Basin can potentially mislead management and policy because of substantial variation in ecological relationships that likely exists across ecoregions, which has support from the literature (Kolada et al. 2008, Coates and Delehanty 2008). Thus, in-depth analyses on factors important to each sage-grouse life-stage and estimates specific to the Great Basin are needed to develop effective comprehensive management guidelines specific to the Great Basin ecoregion.

Specific objectives for the project include:

- 1) Develop a comprehensive scientifically-reviewed and edited book focused specifically on population ecology of greater sage-grouse in the Great Basin ecoregion.

- a) Each chapter will focus on a different life-stage of sage-grouse (e.g. nesting, brood rearing, and winter) and a final chapter of integrated population modeling techniques.
- 2) Develop an accompanying, easy-to-follow, management guideline handbook specifically focused on the Great Basin.

II. Project Location (include a map if available):

Range of Greater Sage-grouse in Nevada and potentially a portion of northeastern California, but more specifically, 10 previously established study sites (see Figure below).

III. Project Approach Including Tasks to be Accomplished:

Over the past 7 years, U.S. Geological Survey and others, have collected a substantial amount of field data on micro- and macro-habitat at sage-grouse telemetry (VHF and GPS) locations (nests, broods, winter) from approximately 10 field sites (various durations) in Nevada and 2 field sites in California. We propose to use these data for the completion of two important products to advance our understanding of sage-grouse population ecology and specific management practices in the Great Basin. First, we will develop a comprehensive scientifically-reviewed and edited book focused specifically on population ecology of greater sage-grouse. This book will provide a scientific outlet for sage-grouse population dynamics and micro- and macro-scale habitat factors that influence demographic rates. Each chapter will focus on a different life-stage of sage-grouse and a final chapter of integrated population modeling techniques. The process will utilize four editors: two for content and two for quantitative methods. Reviewers will be randomly assigned among experts in sage-grouse ecology from various universities, agencies, and organizations. Second, we propose to compile the information from this outlet into easy-to-follow management guidelines specifically focused on the Great Basin. This product will be published and citable as a USGS Open File Report. The guidelines will consist of habitat indicators and objectives (similar to those reported in the sub-regional EIS and Nevada State Conservation Plan) for each life-stage and may incorporate information from additional studies within the Great Basin that transcend findings from the book. Protocols for field and GIS measurements will be described as appendices. Other information will be in the form of tables, figures, and text. This document will be much more comprehensive than existing information, considering factors related to temporal and spatial variation as well as ecological site potential.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

This product will provide field managers with a comprehensive body of knowledge with respect to current data and analysis on how certain habitat parameters (micro and macro-scale) influence survival and reproductive capabilities of Greater Sage-grouse in the Great Basin. This information will provide support for habitat objectives and desired future condition recommendations for land use planning purposes and also inform adaptive management processes.

V. Project Schedule:

- Jul 2015: Call for sage-grouse population ecology papers
- Nov – Dec 2015: Deadline on paper submission, assignment of editors, distribution of papers to randomly assigned reviewers
- Dec – May 2015: Revised papers acceptance, type editing, and submission to publisher
- Feb – May 2016: Development of management guidelines
- May 2016: Guidelines submitted as U.S. Geological Survey Open File Report

June 2016: Guidelines published
August 2016 Final book publication and release

VI. Relationship to NDOW Plans, Policies and Programs:

This project fits within the 1st Edition of the Greater Sage-grouse Conservation Plan for Nevada and Eastern California (2004). The project also assists with objectives outlined in the Bi-State Action Plan (2012).

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: None

Project Costs and Funding

VIII. Cost Summary

A breakdown of the project's costs is provided in the attached table.

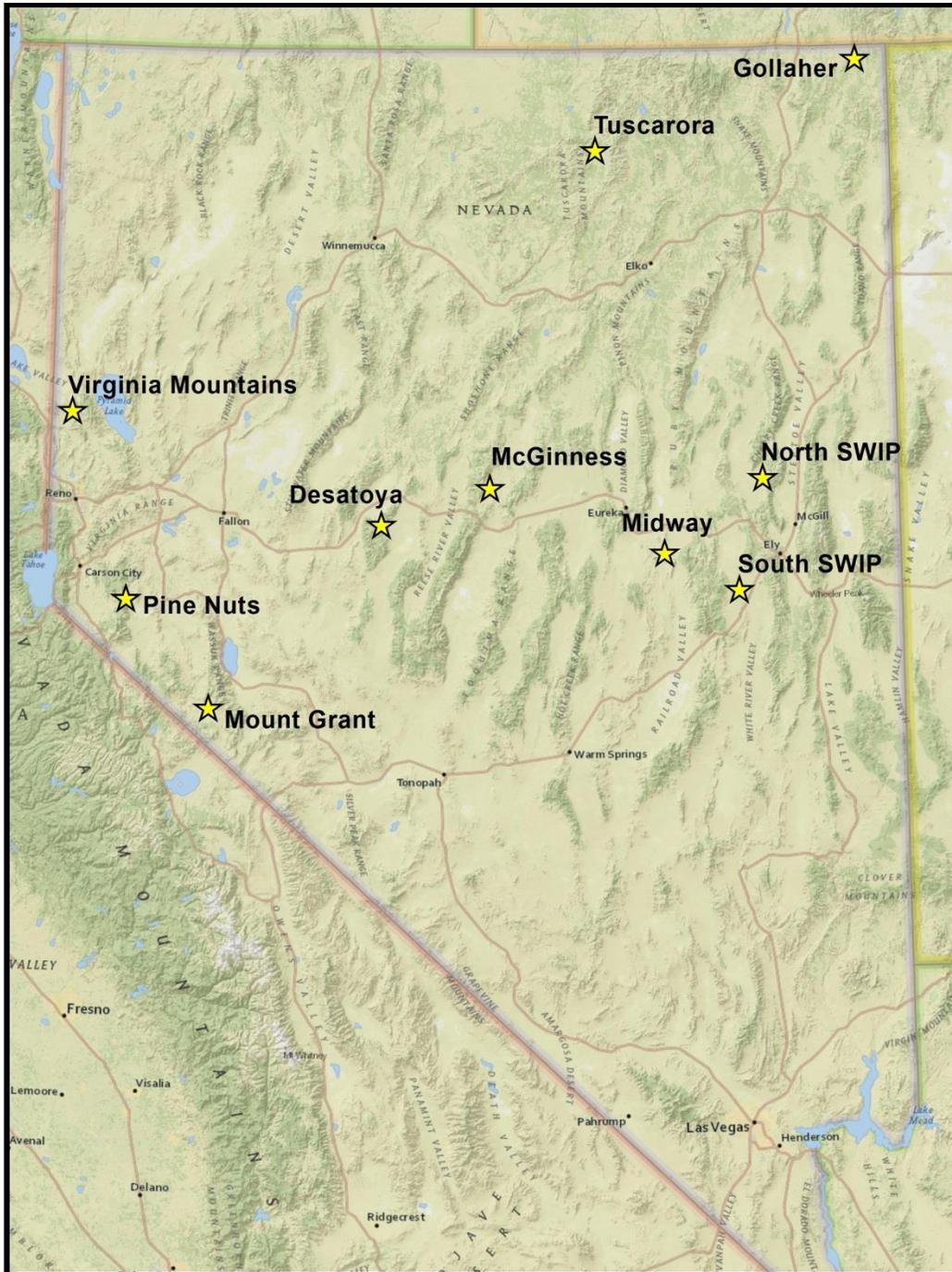
IX. Is this Project Going to Continue After FY16? Yes X No _____

X. If Yes, is this Going to be an Annual, Recurring Project? Yes _____ No X

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year: This project is expected to continue for an additional year after FY16 and the estimated contribution for FY17 is expected to be approximately \$60,000.

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes X No _____

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For? Federal funds would be made available through the Pittman-Robertson Sport Fish and Wildlife Restoration Grant. Specifically the Nevada Sage-grouse Conservation Program would be providing the 75% match.



Nevada study area locations where micro- and macro- habitat data have been collected to inform sub-regional habitat objectives for greater sage-grouse across all life stages.

Project Cost Breakdown

<i>Project Components</i>	<i>Costs to be Paid by NDOW Special Reserve Account(s)*</i>	<i>Costs to be Paid by Other Sources*</i>
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	\$ 14,375.00	\$ 43,125.00
C. Total Personnel Costs	\$ 14,375.00	\$ 43,125.00
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	\$ -	\$ -
4. Equipment		
A.		
B.		
C. Total Equipment Costs	\$ -	\$ -
5. Materials		
A.		
B.		
C.		
D. Total Materials Costs	\$ -	\$ -
6. Miscellaneous		
A. Publisher Fees	\$ 625.00	\$ 1,875.00
B.		
C.		
D.		
F. Total Miscellaneous Costs	\$ 625.00	\$ 1,875.00
7. In-Kind Services		
A. USGS PI		\$ 15,000.00
B.		
C. Total In-Kind Services	\$ -	\$ 15,000.00
Subtotals	\$ 15,000.00	\$ 60,000.00
Total Project Costs	\$	75,000.00



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Greater Sage-grouse Monitoring*

Date of Proposal: April 13, 2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Stamp

NDOW Project Manager (PM): Shawn Espinosa

PM Phone Number and Email Address: (775) 688-1523; sespinosa@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$50,000

Total Cash to be Used from Other Funding Sources (please list by source):

Additional State Matching Funds:

Nevada Bighorns Unlimited - Midas Chapter: \$10,000

Carson Valley Chukar Club: \$5,000

Wildlife Restoration Federal Funds:

Nevada Sage-grouse Conservation Grant (W-64) – Federal Match (75%): \$195,000

Total In-Kind Donations by Source (please list by source):

Total Project Cost to be Funded by All Sources: \$260,000

Project Proposal

I. Purpose of Project and Goals to be Achieved:

This project supports various NDOW specific monitoring efforts throughout the range of Greater Sage-grouse in Nevada. Monitoring activities include ground surveys to conduct lek related work (e.g. counts, routes and searches), aerial lek surveys (helicopter), fixed-wing lek and wintering ground surveys using Forward looking Infrared (FLIR) technology and fixed-wing telemetry (VHF) follow-up surveys. As of 2014, there were 1,865 known lek locations identified in the Nevada Statewide Sage-grouse Database (Nevada portion only), of which 612 were considered active (defined as 2 or more males observed during 2 years in a 5 year period) and 270 were considered “pending active”, meaning that an additional year of observing 2 or more males is necessary to be considered and active lek. This volume of leks requires that some part-time and aerial resources are dedicated to support on the ground efforts.

II. Project Location (include a map if available):

This work will take place across the range of the species in Nevada.

III. Project Approach Including Tasks to be Accomplished:

Lek Count Technicians

Assistance with lek counts, in the form of part-time technicians, allows us to achieve our objectives of surveying at least 40% of known lek locations throughout Nevada (n=746). This is a somewhat lofty objective considering the number of field biologists in each region and the availability of volunteers and federal agency personnel available to conduct lek survey work. The use of part time technicians dedicated solely to lek surveys alleviates some of the workload on agency field biologists at a time of the year when surveys for other species (e.g. big game animals) are taking place.

Aerial Lek Survey

Aerial survey work provides an efficient tool to survey several leks in one morning and access areas that are not normally accessible by vehicle during the spring months. Surveying leks for activity using a helicopter allows for a more accurate classification of lek status from year to year and has been an effective method for locating undiscovered leks.

Forward Looking Infrared Surveys

We are also interested in the use of forward looking infrared (FLIR) imaging technology to remotely document activity for sage-grouse leks, count the number of birds in attendance, and detect other leks on the landscape. The objective here is to conduct approximately 4-5 flights within a given study area to record activity and size range of "pending active" status leks and potentially utilize this methodology in population estimation models. This technology will also be utilized to survey areas for wintering sage-grouse. Very little comprehensive work has been conducted to document winter use areas and delineate this important seasonal habitat. Funding is also requested to assist with aerial lek survey using a helicopter. A number of leks are inaccessible by vehicle during the spring months at upper elevations and helicopter survey provides efficient survey and search ability.

Aerial Telemetry Surveys

In addition to the lek survey work described above, this project will also cover fixed wing aerial telemetry surveys to follow-up on radio-marked grouse in several project areas. We anticipate at least 5-6 research and monitoring projects that will be in need of period follow-up flights. These flights will largely occur once each month from November through February and roughly involve approximately 45 hours of work. These surveys not only provide locations of birds, but are also able to document mortality which is important for estimating seasonal mortality. Additionally, telemetry information obtained from sage-grouse throughout Nevada has been utilized to inform a statewide resource selection function model (RSF) and mapping product for the species.

Lek Survey and Wintering Ground Identification

NDOW will conduct aerial lek surveys during late March and throughout April to determine lek status and lek size in areas where vehicle access is limited during the spring. We are proposing to design a stratified random sampling scheme using helicopter surveys or Forward Looking Infrared

thermal imagery to better determine population size. This will allow for applied statistical analysis and determine a more objective rate of change or population growth rate annually.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

Lek Count Technicians

Assistance with lek counts, in the form of part-time technicians, allows us to achieve our objectives of surveying 40% of known lek locations throughout Nevada (n=746). This is a somewhat lofty objective considering the number of field biologists in each region, volunteers and federal agency personnel available to conduct lek survey work. Additionally, this alleviates some of the workload on agency field biologists at a time of the year when surveys for other species (e.g. big game animals) are taking place.

Aerial Lek Survey

Aerial survey work also provides an efficient tool to survey several leks in one morning and access areas that are not normally accessible by vehicle during the spring months. Surveying leks for activity using aerial survey allows for a more accurate classification of lek status from year to year and has been an effective method for locating undiscovered leks.

FLIR Lek Detection and Wintering Ground Survey

Forward Looking Infrared technology is utilized on a fixed wing aircraft and has the ability to detect presence/absence of sage-grouse at leks without much disturbance, obtain counts of individuals at leks and detect new lek locations. Accurate counts of numbers of birds at a lek can also be determined; however, gender of birds is not considered reliable information at this point in time. This tool allows for efficient survey of multiple leks or suspected wintering grounds each morning. The methodology is very new and cost/benefit ratios are still being analyzed.

Forward Looking Infrared (FLIR) technology has proven to be effective to determine lek activity (presence/absence) and determine winter utilization areas. This tool may be employed in PMUs where we currently have limited knowledge of lek locations, but suspect there to be several more leks than now known, and to survey “pending active” status leks. A good example of this is the Desert PMU located in northwestern Elko County (remote and difficult to access) near the Idaho border. This survey would build upon initial FLIR surveys initiated during the 2012 spring breeding period and recent efforts conducted during the winter of 2013 in the Tuscarora PMU. The first flight would be conducted to survey known active lek locations and a second flight would be conducted within a previously identified polygon where sage-grouse breeding activity is suspected, but is currently unknown.

Fixed Wing Telemetry Surveys

These surveys greatly increase the strength of our dataset and can assist with the development of a resource selection function model being developed by the USGS. Additionally, beyond locating radio-marked sage-grouse, these surveys allow us to determine monthly survival and periods of elevated mortality which could help influence management decisions.

V. Project Schedule:

Lek count work conducted via ground/vehicle surveys would take place during the spring breeding season which is typically defined as March 1 – May 15 of each year.

Aerial survey work (helicopter lek counts) would be conducted during the spring breeding season defined as March 1 – May 15th.

FLIR work would be conducted during the winter of 2015/2016 and spring breeding season of 2016.

Fixed wing telemetry surveys would be conducted throughout the fiscal year, with emphasis on locating radio-marked birds during late fall, winter and early spring periods.

VI. Relationship to NDOW Plans, Policies and Programs:

This project fits within the 1st Edition of the Greater Sage-grouse Conservation Plan for Nevada and Eastern California (2004). The project also assists with objectives outlined in the Bi-State Action Plan (2012).

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: None

Project Costs and Funding

VIII. Cost Summary

A breakdown of the project’s costs is found in the attached table.

IX. Is this Project Going to Continue After FY16? Yes X No _____

X. If Yes, is this Going to be an Annual, Recurring Project? Yes X No _____

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year: We anticipate that approximately \$65,000 is necessary for implementing the four specific activities outlined above each year.

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes X No ___

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For? Federal funding for this project would be made available by Pittman-Robertson Sport Fish and Wildlife Restoration. Specifically, the Nevada Department of Wildlife administered grant labeled “Nevada Sage-grouse Conservation Program” would contribute 75% of the funds for this project.

Project Cost Breakdown

<i>Project Components</i>	<i>Costs to be Paid by NDOW Special Reserve Account(s)*</i>	<i>Costs to be Paid by Other Sources*</i>
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		\$ 195,000.00
B. Other Personnel (Lek Count Techs.)	\$8,000	\$ 4,000.00
C. Total Personnel Costs	\$ 8,000.00	\$ 199,000.00
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	\$ -	\$ -
4. Equipment		
A.		
B.		
C. Total Equipment Costs	\$ -	\$ -
5. Materials		
A.		
B.		
C.		
D. Total Materials Costs	\$ -	\$ -
6. Miscellaneous		
A. Helicopter Lek Survey	\$ 12,000.00	\$ 3,000.00
B. Infrared Imagery Flights (Leks)	\$ 17,000.00	\$ 5,000.00
C. Fixed-wing Telemetry Survey	\$ 13,000.00	\$ 3,000.00
D.		
F. Total Miscellaneous Costs	\$ 42,000.00	\$ 11,000.00
7. In-Kind Services		
A.		
B.		
C. Total In-Kind Services	\$ -	\$ -
Subtotals	\$ 50,000.00	\$ 210,000.00
Total Project Costs	\$	260,000.00



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Monitoring the Effects of Landscape-Level Treatments on Greater Sage-grouse Within the Desatoya Mountains of Central Nevada*

Date of Proposal: April 13, 2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Bird Stamp

NDOW Project Manager (PM): Shawn Espinosa

PM Phone Number and Email Address: (775) 688-1523; sespinosa@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$12,500

Total Cash to be Used from Other Funding Sources (please list by source):
Carson Valley Chukar Club: \$2,500

Nevada Sage-grouse Conservation Grant (W-64) – Federal Match: \$42,500

Total In-Kind Donations by Source (please list by source): \$19,842

Total Project Cost to be Funded by All Sources: \$77,342

Project Proposal

I. Purpose of Project and Goals to be Achieved:

Cooperative efforts are underway to improve habitat conditions in the Desatoya Range located in central Nevada (Churchill/Lander County border). The Bureau of Land Management, Smith Creek Ranch, Nevada Department of Wildlife and Natural Resources Conservation Service are all engaged in supporting various habitat and management related projects for vegetative and wildlife health. To better understand the effectiveness of these projects, we have been actively monitoring the sage-grouse population within the Desatoya Range for the last two years. As habitat related projects are implemented, it is vital to continue monitoring sage-grouse habitat usage and vital rates to determine the ultimate effects to the species.

Measuring how intended landscape improvement projects ultimately affect target species such as sage-grouse is critically important with respect to adaptive management. Information gained from this project will not only identify important seasonal use areas, movement and potential connectivity corridors to other adjacent populations of sage-grouse, but also help understand the response to various treatments or management actions including pinyon/juniper removal, meadow enhancement and wild horse removal.

Being that the primary purpose of the proposed action is to improve availability, quantity, and quality of sage-grouse habitat, in particular late brood rearing habitat that is dependent upon springs/wet meadows that support abundant and diverse forb and insect populations, continued monitoring of the sage-grouse population within this area will ultimately be the measure of success, failure or neutral effect of the overall project.

This project is intended to better understand habitat utilization, identify key habitats and determine movement patterns of sage grouse between these areas and determine vital rates within the Desatoya Population Management Unit. The greatest threat to this population of sage-grouse is pinyon and juniper encroachment and the degradation of small meadows and spring complexes over time that serve as late brood rearing habitat. Research efforts are expected to lead to the identification of factors limiting this population and habitat associations including:

1. Capture/maintain approximately 20-30 female sage-grouse marked with VHF radio transmitters per year;
2. Capture at least 10 female sage-grouse and place GPS/Satellite transmitters to determine seasonal movement patterns and determine home range;

This work will assist with determining the following:

- a) identification of nest sites and nest initiation rates;
- b) examination of nest-site vegetative characteristics and if differences exist between successful and unsuccessful nest sites;
- c) determination of nest survival rates;
- d) determination of survival rates of adults and juveniles (both male and female); and
- e) determination of differences of seasonal survival rates

II. Project Location (include a map if available):

The Desatoya Range is located on the border of Churchill and Lander County in central Nevada. The preponderance of the project area will be located on the eastern slope of the range (Lander County). Much of the radio-marking work will take place within the vicinity of Smith Creek Ranch with some work taking place on the western flank of the range near Rock Creek and Buffalo Creek.

III. Project Approach Including Tasks to be Accomplished:

Sage grouse movement, survivorship, and reproduction will be monitored following release. Portable receivers (Communication Specialist Inc., Orange, CA; Advanced Telemetry Systems Inc., Isanti, MN) are used along with 3-element Yagi antennas to monitor radio-marked grouse. Relocation error is minimized by circling around each grouse 30 – 50 m. Using the approximated distance and a compass bearing, the location coordinates (Universal Transverse Mercator) are

obtained using GPS. Throughout the nesting and brood-rearing period, researchers attempted to locate female grouse ≥ 2 times per week.

Relocation coordinates are transferred into a GIS (ArcMap 9.2, ESRI Products, Redlands, CA) for space-use analysis. Kernel density (50, 90, and 95%) is calculated for all radio locations and for each grouse separately (95%). The purpose of using all locations is to estimate area used at the population level. Kernel density is also calculated for brood-rearing females. Kernel calculations are carried out in multiple steps. First, relocation points are weighted to account for biases associated with non-equivalent relocation intervals. Second, robust estimates of smoothing parameters (h) are generated using Animal Space Use 1.3 (Horne and Garton 2009). Last, those parameters are used in Hawth's Tools (ArcMap 9.2) to calculate fixed kernel densities. Kernel density maps are generated based on the estimated densities for 2009 and 2010.

If a grouse is found at the same location during the nesting period, researchers visually determined if a grouse is nesting. Nests are monitored ≥ 3 times per week until fate is determined. Successful nests are classified as ≥ 1 chick hatched. Nests are also scored as depredated, partially depredated, or abandoned.

Following nest fate, understory cover is recorded at the nest bowl using a coverboard (Jones 1968), Robel pole (Robel 1970), and digital photography method. Vegetation composition cover is measured at multiple subplots (20 X 50 cm) located ≤ 25 m of each nests using Daubenmire method (Daubenmire 1959). Canopy cover is measured along two 25-m transects, one 50-m transect, and one 100-m transect extending from the nest bowl every 90° . The orientation of the quadrants is randomized. Shrub species are recorded and measured. Width (cm) and heights (cm) of a random sample of individual shrubs along the line are recorded. These shrub widths are measured within 5, 10, and 25 m from the nest for all four transect lines, within 50 m for two transect lines, and 100 m for one transect line. The purpose of the different transect lengths is to identify the scale of use for shrub cover within 100 m radius of a nest site.

To identify vegetation factors selected by grouse, defined as the disproportionate use to availability, measurements of vegetation characteristics are compared at nests to those at random points. Thus, the same habitat measurements are conducted at random points to represent available habitat. Evidence for multi-scale selection generating two random points for each nest is evaluated. One point is within 200 m of the nest (dependent) and the other is within the study area (independent). The preliminary results are reported as means (\pm SE) of vegetation characteristics for random points and nests. However, multiple *a priori* generalized mixed effects models with a binomial error distribution at multiple spatial scales will be compared for strength of evidence. Researchers will use an information-theoretic approach, including Δ AIC, Akaike's weights, evidence ratios, likelihood-based R^2 , and likelihood ratio tests to evaluate models. Model averaged parameter estimates will be used to develop resource selection functions.

Following the completion of a successful nest, female grouse with broods are monitored closely by obtaining > 2 locations per week. Spotlights are used every 10 days following nest hatch during night hours to count the number of chicks in the brood. Broods are considered unsuccessful if no chicks are found during spotlight surveys. To confirm unsuccessful broods (prevent false negative), females are rechecked within 48 hours. A similar habitat measurement protocol is conducted at

brood sites as that at nest sites. However, transects maximum extent is 25 m for broods sites. Canopy cover is measured along three 25 m transects, which extended from the brood location every 120° with random orientation. The width (cm) of each shrub species is measured along the three transect lines within 5, 10, and 25 m from the brood location. Because habitat changes through time and broods are mobile, measurements are collected at each 10-day interval. Differences in vegetation use between night (roosting) and day (foraging) hours are also investigated. These surveys included one day and one night observation of habitat used by broods (within a 24 hour period), as well as, one observation of a random location within 200 m of the brood (dependent) to estimate disproportionate use to availability.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

This project will help understand sage-grouse habitat utilization prior to and during a landscape scale project that the Bureau of Land Management is conducting in the Desatoya Range of central Nevada. The BLM project area is approximately 230,000 acres within the Porter Canyon and Edwards Creek grazing allotments. There are 192,700 acres of the Desatoya sage-grouse Population Management Unit (PMU) and 34,195 acres of the Desatoya Wilderness Study Area within the project area.

Approximately 30,000 acres of various treatments are proposed within the project area. While the project's primary focus is to enhance sage-grouse habitat, multiple wildlife species dependent upon healthy forests and sagebrush communities will benefit. Treatments will include piñon/juniper removal and thinning, wet meadow and spring rehabilitation/protection, potential rabbitbrush control using herbicide treatment and seeding, and excess wild horse removal. It will be important to monitor sage-grouse movement and demographic parameters before, during and after project implementation.

V. Project Schedule:

This project is proposed for five years. Initial capture efforts were conducted in early fall of 2013 and re-commenced during the spring months of 2014. Follow-up of radio marked individuals has taken place monthly throughout the fiscal year. More intensive monitoring has occurred during the spring breeding period through late brood rearing (August/September). During the late fall and winter months, follow-up monitoring has been conducted using a contracted fixed-wing aircraft to monitor locations and mortality.

VI. Relationship to NDOW Plans, Policies and Programs:

This project fits within the 1st Edition of the Greater Sage-grouse Conservation Plan for Nevada and Eastern California (2004). The project also assists with objectives outlined in the Bi-State Action Plan (2012).

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: None

Project Costs and Funding

VIII. Cost Summary

A breakdown of the project's costs is provided in the attached table.

IX. Is this Project Going to Continue After FY16? Yes No

X. If Yes, is this Going to be an Annual, Recurring Project? Yes No

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year: We anticipate that this project will be completed in FY18. The estimated cost for FY17 will likely increase by approximately \$10,000 for a total project cost of approximately \$87,000. This would be applicable to the final year of the project (FY18) as well. It is likely that we will be requesting approximately \$15,000 to \$17,000 each year from the Upland Game Bird Stamp account for FY17 and FY18 depending on other funding sources.

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes No

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For? Federal funding for this project will be made available through the Pittman-Robertson Sport Fish and Wildlife Restoration Program. Specifically, the federal match (75%) will be made available through the Nevada Department of Wildlife administered "Nevada Sage-grouse Conservation Program" grant.

Project Cost Breakdown

<i>Project Components</i>	<i>Costs to be Paid by NDOW Special Reserve Account(s)*</i>	<i>Costs to be Paid by Other Sources*</i>
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	\$ 5,350.00	\$ 23,550.00
C. Total Personnel Costs	\$ 5,350.00	\$ 23,550.00
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	\$ -	\$ -
4. Equipment		
A. VHF Transmitters (30 @ \$225/ea.)	\$ 1,650.00	\$ 4,950.00
B. Vehicles (2 @ 10,500 per 6 month field season lease)	\$ 5,250.00	\$ 15,750.00
C. Total Equipment Costs	\$ 6,900.00	\$ 20,700.00
5. Materials		
A.		
B.		
C.		
D. Total Materials Costs	\$ -	\$ -
6. Miscellaneous		
A. Field Housing	\$ 250.00	\$ 750.00
B.		
C.		
D.		
F. Total Miscellaneous Costs	\$ 250.00	\$ 750.00
7. In-Kind Services		
A. USGS Research Wildlife Biologist (Permanent, 0.1 FTE)		\$ 6,417.00
B. USGS Wildlife Biologist (Term, 0.1 FTE)		\$ 4,925.00
C. Travel (Per-diem)		\$ 1,500.00
D. Additional equipment (radio receivers, antennas, capture and banding supplies, etc)		\$ 7,000.00
Total In-Kind Services	\$ -	\$ 19,842.00
Subtotals	\$ 12,500.00	\$ 64,842.00
Total Project Costs	\$	77,342.00



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Effects of Conventional Raven Control on Greater Sage-grouse Vital Rates within the Virginia Mountains of Northwestern Nevada*

Date of Proposal: April 13, 2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Stamp

NDOW Project Manager (PM): Shawn Espinosa

PM Phone Number and Email Address: (775) 688-1523; sespinosa@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$17,500

Total Cash to be Used from Other Funding Sources (please list by source):
Nevada Sage-grouse Conservation Grant (W-64) – Federal Match: \$52,500

Total In-Kind Donations by Source (please list by source): \$11,342

Total Project Cost to be Funded by All Sources: \$81,342

Project Proposal

I. Purpose of Project and Goals to be Achieved:

Over the past five years, The Nevada Department of Wildlife (NDOW), U.S. Geological Survey (USGS), and Idaho State University (ISU) have collaborated on an intensive effort to monitor and conduct research on a population of Greater Sage-grouse (hereafter sage-grouse) in the Virginia Mountains of southern Washoe County. This effort was implemented primarily to determine movement patterns, use areas and demographic parameters as baseline monitoring prior to the construction of a proposed utility scale renewable energy development (wind energy). At present, it does not appear that this particular energy development is going to take place at the initially proposed site. Results of this research and monitoring work has indicated that ravens are a causal factor contributing to low nest survival rates in the Virginia Mountains (Lockyer et al. 2012). Thus, we decided to conduct intensive raven control work using USDA Wildlife Services and placement of corvidicide injected eggs at strategic locations for three years to determine its effectiveness.

Research conducted by Lockyer et al. (2012) indicates that cumulative nest survival for the Virginia Mountain population (22.4%) was substantially lower than other published results within the Great Basin of 36% (Rebholz et al. 2009) and 42% (Coates and Delehanty 2010). Vital rates for other life stages of this population have not been analyzed, but such low nest survival could limit potential population size. Nest survival rates are highly variable across sage-grouse populations (Taylor et al. 2011), and such a low nest survival rate for a small population like that in the Virginia Mountains is of considerable concern. Modeling results found that horizontal cover was the most explanatory model predicting survival probabilities. The horizontal cover metric was not specific to any particular type of vegetation, but rather is an all-inclusive measure of concealment of the nest bowl. Land use practices that reduce concealment during the nesting period, such as burning or grazing, could reduce nest success for sage-grouse.

To identify predators responsible for nest failure, continuous digital video-recording systems were deployed at a subset of sage-grouse nests. Common ravens (*Corvus corax*), visually cued predators, were the most frequent sage-grouse nest predator identified and accounted for 46.7% of nest depredations. Raven population size, density, and distribution has increased substantially across the western United States as a result of habitat conversion and human activities that act to subsidize ravens with food and nesting opportunities (Sauer et al. 2004, Kristan and Boarman 2007, Bui et al. 2010, Howe 2012). For example, historically the sagebrush-steppe ecosystem likely had relatively low raven population densities (Leu et al. 2008). However, this ecosystem currently supports higher numbers of ravens because of increased vertical perching and nesting substrates (e.g., electrical power line towers and other structures), as well as human-related food sources (e.g., road kill and refuse; Boarman 1993, Sauer et al. 2004). This is an important change because sage-grouse rely on visual concealment for nesting while ravens rely on visual detection for hunting (Gregg et al. 1994, Conover et al. 2010).

The most explanatory nest site selection models identified low occurrence of cheatgrass (*Bromus tectorum*), low occurrence of ravens, increased shrub canopy cover (%), and high elevation as explanatory variables for nest site selection. Increased shrub canopy at local spatial scales was the most explanatory selection factor for sage-grouse nest survival.

While habitat continues to recover in the study area and projects and management actions are implemented to increase shrub canopy cover, raven control (both lethal and non-lethal e.g. nest removal) may be an appropriate tool to utilize as a conservation action to increase nest success and ultimately, recruitment. This situation offers an opportunity to research the effects of raven control within the context of a classic Before, After Control Impact (BACI) experimental project design. It is our intent to conduct raven control within the study area over a three year period and assess the effects to various sage-grouse vital rates and attempt to determine ultimate effects to recruitment of individuals into the adult population. Raven control work will conclude in the spring of 2016, with follow-up monitoring concluding in the early fall of 2016.

This project is intended to better understand the effects of raven control on a localized sage-grouse population where the extant habitat condition has been compromised by wildfire (1999). We intend to fulfill the following objectives through the implementation of this project:

- 1) Radio-mark a minimum of 20 sage-grouse hens annually to determine habitat utilization, nest site selection, nest initiation rates and nest survival rates;
- 2) Conduct lek counts on at least two leks within the study area to help determine population trend;
- 3) Place at least six to eight cameras at nest sites to determine type of predator and predation rates;
- 4) Determine recruitment rates through follow-up brood surveys;
- 5) Place corvidicide laced chicken-egg baits within identified nesting habitat to reduce raven numbers.

This project may have greater application range-wide to serve as guidance as to when raven control is appropriate and the overall effectiveness of its application.

II. Project Location (include a map if available):

This site is located in the Virginia Mountains located in southern Washoe County just west of Pyramid Lake. This area includes the Virginia portion of the Virginia/Pah Rah Population Management Unit. More specifically, the study area includes the Spanish Flat/Tule Ridge and the Sheep Springs/Vinegar Peak regions of the mountain range.

III. Project Approach Including Tasks to be Accomplished:

Sage grouse movement, survivorship, and reproduction have been and will continue to be monitored following release. Portable receivers (Communication Specialist Inc., Orange, CA; Advanced Telemetry Systems Inc., Isanti, MN) are used along with 3-element Yagi antennas to monitor radio-marked grouse. Relocation error is minimized by circling around each grouse 30 – 50 m. Using the approximated distance and a compass bearing, the location coordinates (Universal Transverse Mercator) are obtained using GPS. Throughout the nesting and brood-rearing period, researchers attempted to locate female grouse ≥ 2 times per week.

Relocation coordinates are transferred into a GIS (ArcMap 9.2, ESRI Products, Redlands, CA) for space-use analysis. Kernel density (50, 90, and 95%) is calculated for all radio locations and for each grouse separately (95%). The purpose of using all locations is to estimate area used at the population level. Kernel density is also calculated for brood-rearing females. Kernel calculations are carried out in multiple steps. First, relocation points are weighted to account for biases associated with non-equivalent relocation intervals. Second, robust estimates of smoothing parameters (h) are generated using Animal Space Use 1.3 (Horne and Garton 2009). Last, those parameters are used in Hawth's Tools (ArcMap 9.2) to calculate fixed kernel densities. Kernel density maps are generated based on the estimated densities for 2009 and 2010.

If a grouse is found at the same location during the nesting period, researchers will visually determine if a grouse is nesting. Nests are monitored ≥ 3 times per week until fate is determined. Successful nests are classified as ≥ 1 chick hatched. Nests are also scored as depredated, partially depredated, or abandoned. In addition to monitoring nests with radio-telemetry, camouflaged micro-cameras are installed with time-elapsd digital video recorders (DVR). The primary purpose of cameras is to identify nests predators. Another purpose is to identify factors that influence patterns of incubation. Cameras are placed about 0.5 m from the nest bowl, which aided in

unambiguous identification of animal encounters and grouse behavior. Cameras and video recorders are uninstalled immediately following nest depredation, abandonment, or hatch. Researchers reduce human scent by wearing rubberized gloves and using spray designed to mask scent.

Following nest fate, understory cover is recorded at the nest bowl using a coverboard (Jones 1968), Robel pole (Robel 1970), and digital photography method. Vegetation composition cover is measured at multiple subplots (20 x 50 cm) located ≤ 25 m of each nests using Daubenmire method (Daubenmire 1959). Canopy cover is measured along two 25-m transects, one 50-m transect, and one 100-m transect extending from the nest bowl every 90° . The orientation of the quadrants is randomized. Shrub species are recorded and measured. Width (cm) and heights (cm) of a random sample of individual shrubs along the line are recorded. These shrub widths are measured within 5, 10, and 25 m from the nest for all four transect lines, within 50 m for two transect lines, and 100 m for one transect line. The purpose of the different transect lengths is to identify the scale of use for shrub cover within 100 m radius of a nest site.

To identify vegetation factors selected by grouse, defined as the disproportionate use to availability, measurements of vegetation characteristics are compared at nests to those at random points. Thus, the same habitat measurements are conducted at random points to represent available habitat. Evidence for multi-scale selection generating two random points for each nest is evaluated. One point is within 200 m of the nest (dependent) and the other is within the study area (independent). The preliminary results are reported as means (\pm SE) of vegetation characteristics for random points and nests. However, multiple *a priori* generalized mixed effects models with a binomial error distribution at multiple spatial scales will be compared for strength of evidence. Researchers will use an information-theoretic approach, including Δ AIC, Akaike's weights, evidence ratios, likelihood-based R^2 , and likelihood ratio tests to evaluate models. Model averaged parameter estimates will be used to develop resource selection functions.

Following the completion of a successful nest, female grouse with broods are monitored closely by obtaining >2 locations per week. Spotlights are used every 10 days following nest hatch during night hours to count the number of chicks in the brood. Broods are considered unsuccessful if no chicks are found during spotlight surveys. To confirm unsuccessful broods (prevent false negative), females are rechecked within 48 hours. A similar habitat measurement protocol is conducted at brood sites as that at nest sites. However, transects maximum extent is 25 m for broods sites. Canopy cover is measured along three 25 m transects, which extended from the brood location every 120° with random orientation. The width (cm) of each shrub species is measured along the three transect lines within 5, 10, and 25 m from the brood location. Because habitat changes through time and broods are mobile, measurements are collected at each 10-day interval. Differences in vegetation use between night (roosting) and day (foraging) hours are also investigated. These surveys included one day and one night observation of habitat used by broods (within a 24 hour period), as well as, one observation of a random location within 200 m of the brood (dependent) to estimate disproportionate use to availability.

Predator Monitoring and Control

Raven and Raptor Surveys: Surveys are conducted for Common Ravens (*Corvus corax*; hereafter ravens) and raptors during nesting and following nest fate. Surveys are conducted using binoculars at each nest for 15 minutes searching all four quadrants around the nest equally. Time of sighting, bearing, distance (using a rangefinder) of each raptor and corvid is tallied and birds are identified to species when possible.

Additional surveys are used to estimate raven and raptor densities using Program Distance (Thomas et al. 2009) across the landscape and relate it to nest survival parameters. Survey points are randomly generated within the study area. Points are generated on and off roads. No points are assigned to paved roads. Surveys are completed between mid-May and late-July. The time of survey is randomized between one half hour our before sunrise to one half hour following sunset. The same protocol for nest surveys is carried out at points. These data will provide valuable information on factors that influence raven and raptor numbers before and after energy development throughout the study area.

Raven videography: Because ravens are known to be an effective sage grouse nest predator, additional observational data is collected on raven nests using videography within the study area. Objectives for using videography included: (1) investigate links between raven foraging activities with sage-grouse incubation patterns, (2) estimate feeding frequencies, and (3) identify components of nestling diet. Researchers plan to investigate differences between nests in anthropogenic and natural nesting substrates. Information might lead to management implications in the future on how to properly manage raven and sage-grouse interactions, especially in areas with increasing energy development.

Badger Surveys: Following each nest fate, American badgers (*Taxidea taxus*; hereafter, badgers) surveys are conducted by walking in a bowtie pattern with the nest bowl at the center for a total length of 680 m. An area 4 m on each side of the survey line is actively searched for badger sign. Specifically, fresh intact holes, collapsed holes, small digs or scrapes, and scat or tracks encountered along the survey line are recorded. Surveys are conducted at random points generated for each nest.

Predator Control: Raven control work will be conducted by USDA – Wildlife Services located in Reno, NV. Raven control work will take place from March through May within the study area through the use of chicken egg baits treated with DRC-1339, a corvidicide used to control avian species (Spencer 2002). USDA-WS will place 2 egg baits every 250 m along identified raven removal routes every 7 days. Egg bait fate will be recorded within 72 hours of placement, and non-depredated eggs will be disposed. During the spring, nearby transmission lines will be surveyed for active raven nests. If located, nests will either be removed or eggs will be oiled to decrease viability while still maintaining the territorial pair at the site.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

This project has provided the Nevada Department of Wildlife with a substantial amount of data relative to sage-grouse habitat selection, adult survival rates, nest initiation rates and success, and

nest predator identification. A journal article entitled “Greater Sage-grouse Nest Predators in the Virginia Mountains of Northwestern Nevada” was published in the Journal of Fish and Wildlife Management (Lockyer et al. 2013) and “Nest Site Selection and Reproductive Success of Greater sage-grouse in Fire Impacted Habitats in Northwestern Nevada” (Lockyer et al. In Review) is undergoing a second peer review and will likely be published in the Journal of Wildlife Management.

This area provides a good opportunity to monitor the ultimate outcome of proposed raven control work including the use of DRC-1339 corvidicide and non-lethal means of control. We are proposing to conduct intensive raven control work in the Virginia Mountains over the next three year period and monitor sage-grouse and raven population response. Additionally, some habitat enhancement work is expected to occur over the next couple of years within the Virginia Mountains including sagebrush planting in areas affected by wildfire within the Spanish Flat/Vinegar Peak area. Continued monitoring of this population would help determine the effects of certain habitat enhancement efforts.

V. Project Schedule:

FY16 will be the final year of research and monitoring within this project area.

VI. Relationship to NDOW Plans, Policies and Programs:

This project fits within the 1st Edition of the Greater Sage-grouse Conservation Plan for Nevada and Eastern California (2004). The project also helps monitor a project identified within the Nevada Department of Wildlife’s Predator Management Plan (Project 21).

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: None

Project Costs and Funding

VIII. Cost Summary

A breakdown of the project’s costs is provided in the attached table.

IX. Is this Project Going to Continue After FY16? Yes ___ No X

X. If Yes, is this Going to be an Annual, Recurring Project? Yes ___ No X

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year:

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes X No ___

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For? Federal funds for this project are being provided by the Pittman-Robertson Sport Fish and Wildlife Restoration program administered by the USFWS. Specifically, funding will be provided by the Nevada Sage-grouse Conservation Program grant.

Project Cost Breakdown

<i>Project Components</i>	<i>Costs to be Paid by NDOW Special Reserve Account(s)*</i>	<i>Costs to be Paid by Other Sources*</i>
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	\$ 10,350.00	\$ 31,050.00
C. Total Personnel Costs	\$ 10,350.00	\$ 31,050.00
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	\$ -	\$ -
4. Equipment		
A. VHF Radio Transmitters (30 units @ \$225/ea.)	\$ 1,650.00	\$ 4,950.00
B. Vehicles (2 @ \$10,500 per 6 month field season)	\$ 5,250.00	\$ 15,750.00
C. Total Equipment Costs	\$ 6,900.00	\$ 20,700.00
5. Materials		
A.		
B.		
C.		
D. Total Materials Costs	\$ -	\$ -
6. Miscellaneous		
A. Field Housing	\$ 250.00	\$ 750.00
B.		
C.		
D.		
F. Total Miscellaneous Costs	\$ 250.00	\$ 750.00
7. In-Kind Services		
A. USGS Research Wildlife Biologist (Permanent, 0.1 FTE)		\$ 6,417.00
B. USGS Wildlife Biologist (Term, 0.1 FTE)		\$ 4,925.00
C. Total In-Kind Services	\$ -	\$ 11,342.00
Subtotals	\$ 17,500.00	\$ 63,842.00
Total Project Costs	\$	81,342.00



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Estimating Greater Sage-grouse Vital Rates within Nevada's Most Novel Habitats*

Date of Proposal: April 13, 2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Bird Stamp

NDOW Project Manager (PM): Shawn Espinosa

PM Phone Number and Email Address: (775) 688-1523; sespinosa@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$22,500

Total Cash to be Used from Other Funding Sources (please list by source):

\$22,500 of Ruby Pipeline mitigation funds will be used for one of the control sites in the northern portion of the state (either in Elko or Humboldt County).

Also, the Nevada Sage-grouse Conservation Program Grant (W-64) will be used for Federal Match (75%): \$135,000

Total In-Kind Donations by Source (please list by source): N/A

Total Project Cost to be Funded by All Sources: approximately \$180,000

Project Proposal

I. Purpose of Project and Goals to be Achieved:

Much of the recent research that has been conducted on Greater sage-grouse in Nevada has been in response to some form of anthropogenic perturbation such as the development of utility scale transmission lines, geothermal energy development or mining activity. Some of these developments have offered a classic Before, After, Control, Impact (BACI) design, but many have not. In order to better understand how sage-grouse are responding to anthropogenic disturbances and, potentially, habitats that are in less than desirable condition, we feel that it is important to gain a more comprehensive knowledge base of demographic parameters and habitat use in areas that are considered in relatively good ecological condition, free from anthropogenic structures (utility scale) and associated noise, and are contiguous.

This project is intended to determine key demographic parameters and gain a better understanding

of habitat utilization and movement patterns within otherwise healthy and un-fragmented sagebrush habitats. Areas that have been selected for research and monitoring generally contain a diverse array of sagebrush species and mountain shrub community with an understory of perennial grasses and forbs. Additionally, little in the way of anthropogenic development has been realized in these areas. Research efforts are expected to lead to the identification of habitat associations and estimation of vital rates over a period of three years.

1. Capture approximately 20 female sage-grouse and place VHF radio transmitters and leg bands on the birds. At a minimum, maintain that number of radio marked females annually;
2. Capture at least 5 female sage-grouse and place GPS/Satellite transmitters to determine seasonal movement patterns and determine home range;

This work will assist with determining the following:

- a) determination of survival rates of adults and juveniles (both male and female); and
- b) identification of nest sites and nest initiation rates;
- c) determination of nest survival rates;
- d) examination of nest-site vegetative characteristics and if differences exist between successful and unsuccessful nest sites;
- e) determination of differences of seasonal survival rates; and
- f) determine movement patterns, seasonal distribution and key habitats.

II. Project Location (include a map if available):

This work will take place in two separate locations, one in northern Nevada and one in central Nevada to account for geographic and regional variation. The first site will either be within the Santa Rosa Population Management Unit (PMU) on the east side of the Santa Rosa Range as it transitions into the Owyhee Desert, or alternatively, within the North Fork PMU near the Beaver Creek watershed in Elko County. Both areas support robust populations of grouse. The second study site will be located in central Nevada in northern Monitor Valley in Nye County.

III. Project Approach Including Tasks to be Accomplished:

Field work for this project will be conducted by the USGS Western Ecological Research Center in Dixon, California. Match funding for this project is being provided by the Nevada Upland Game Stamp program and the Ruby Pipeline mitigation account (\$45,000), allowing for the expenditure of \$135,000 of WSFR-PR funds for a total project cost of around \$180,000.

Radio-Telemetry. We are proposing to capture approximately 20-30 female and up to 10 male sage-grouse annually over a three year period and maintain at least 20 live females during each reproductive season. Sage grouse movement, survivorship, and reproduction will be monitored following release. Portable receivers (Communication Specialist Inc., Orange, CA; Advanced Telemetry Systems Inc., Isanti, MN) will be used along with 3-element Yagi antennas to monitor radio-marked grouse. Relocation error is minimized by circling around each grouse 30 – 50 m. Using the approximated distance and a compass bearing, the location coordinates (Universal Transverse Mercator) are obtained using GPS. Throughout the nesting and brood-rearing period, researchers attempted to locate female grouse ≥ 2 times per week.

Space-Use. Relocation coordinates will be transferred into a GIS (ArcMap 9.2, ESRI Products, Redlands, CA) for space-use analysis. Kernel density (50, 90, and 95%) is calculated for all radio locations and for each grouse separately (95%). The purpose of using all locations is to estimate area used at the population level. Kernel density is also calculated for brood-rearing females. Kernel calculations are carried out in multiple steps. First, relocation points are weighted to account for biases associated with non-equivalent relocation intervals. Second, robust estimates of smoothing parameters (h) are generated using Animal Space Use 1.3 (Horne and Garton 2009). Last, those parameters are used in Hawth's Tools (ArcMap 9.2) to calculate fixed kernel densities. Kernel density maps are generated based on the estimated densities for 2009 and 2010.

Nests and vegetation. If a grouse is found at the same location during the nesting period, researchers visually determined if a grouse is nesting. Nests are monitored ≥ 3 times per week until fate is determined. Successful nests are classified as ≥ 1 chick hatched. Nests are also scored as depredated, partially depredated, or abandoned.

Following nest fate, understory cover is recorded at the nest bowl using a coverboard (Jones 1968), Robel pole (Robel 1970), and digital photography method. Vegetation composition cover is measured at multiple subplots (20 X 50 cm) located ≤ 25 m of each nests using Daubenmire method (Daubenmire 1959). Canopy cover is measured along two 25-m transects, one 50-m transect, and one 100-m transect extending from the nest bowl every 90° . The orientation of the quadrants is randomized. Shrub species are recorded and measured. Width (cm) and heights (cm) of a random sample of individual shrubs along the line are recorded. These shrub widths are measured within 5, 10, and 25 m from the nest for all four transect lines, within 50 m for two transect lines, and 100 m for one transect line. The purpose of the different transect lengths is to identify the scale of use for shrub cover within 100 m radius of a nest site.

To identify vegetation factors selected by grouse, defined as the disproportionate use to availability, measurements of vegetation characteristics are compared at nests to those at random points. Thus, the same habitat measurements are conducted at random points to represent available habitat. Evidence for multi-scale selection generating two random points for each nest is evaluated. One point is within 200 m of the nest (dependent) and the other is within the study area (independent). The preliminary results are reported as means (\pm SE) of vegetation characteristics for random points and nests. However, multiple *a priori* generalized mixed effects models with a binomial error distribution at multiple spatial scales will be compared for strength of evidence. Researchers will use an information-theoretic approach, including Δ AIC, Akaike's weights, evidence ratios, likelihood-based R^2 , and likelihood ratio tests to evaluate models. Model averaged parameter estimates will be used to develop resource selection functions.

Brood-rearing and vegetation. Following the completion of a successful nest, female grouse with broods are monitored closely by obtaining >2 locations per week. Spotlights are used every 10 days following nest hatch during night hours to count the number of chicks in the brood. Broods are considered unsuccessful if no chicks are found during spotlight surveys. To confirm unsuccessful broods (prevent false negative), females are rechecked within 48 hours. A similar habitat measurement protocol is conducted at brood sites as that at nest sites. However, transects

maximum extent is 25 m for broods sites. Canopy cover is measured along three 25 m transects, which extended from the brood location every 120° with random orientation. The width (cm) of each shrub species is measured along the three transect lines within 5, 10, and 25 m from the brood location. Because habitat changes through time and broods are mobile, measurements are collected at each 10-day interval. Differences in vegetation use between night (roosting) and day (foraging) hours are also investigated. These surveys included one day and one night observation of habitat used by broods (within a 24 hour period), as well as, one observation of a random location within 200 m of the brood (dependent) to estimate disproportionate use to availability.

Predator Monitoring

Raven and Raptor Surveys. Surveys are conducted for Common Ravens (*Corvus corax*; hereafter ravens) and raptors during nesting and following nest fate. Surveys are conducted using binoculars at each nest for 15 minutes searching all four quadrants around the nest equally. Time of sighting, bearing, distance (using a rangefinder) of each raptor and corvid is tallied and birds are identified to species when possible.

Additional surveys are used to estimate raven and raptor densities using Program Distance (Thomas et al. 2009) across the landscape and relate it to nest survival parameters. Survey points are randomly generated within the study area. Points are generated on and off roads. No points are assigned to paved roads. Surveys are completed between mid-May and late-July. The time of survey is randomized between one half hour our before sunrise to one half hour following sunset. The same protocol for nest surveys is carried out at points. These data will provide valuable information on factors that influence raven and raptor numbers before and after energy development throughout the study area.

Fall and winter location. During the fall and winter months (September – February), flights will be conducted every 3-4 weeks to determine location and survivorship. Attempts will be made to locate each individual radio-marked sage-grouse and determine its status (alive or dead).

These approaches are subject to change based on improved data collection techniques and improved technologies.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

Over the course of this monitoring effort (3 years), we will be able to estimate sage-grouse vital rates (e.g. nest initiation rates, nest survival rates, male and female, adult and juvenile survival rates, and brood survival rates) as well as determine important seasonal use areas, movement corridors, and potential connectivity with other adjacent sage-grouse populations within Nevada's most undisturbed and intact sagebrush landscapes. These data can be used for comparison purposes for other ongoing research projects that are currently investigating various forms of anthropogenic disturbance or development such as utility scale transmission lines, geothermal energy development and mining activities/associated infrastructure.

V. Project Schedule:

We anticipate that capture and radio-marking efforts for this project will take place during the spring of 2016 (i.e. March). Follow-up work will extend from this period through August of 2016. Monthly flights to locate radio marked individuals will occur from November through February.

VI. Relationship to NDOW Plans, Policies and Programs:

This project fits within the 1st Edition of the Greater Sage-grouse Conservation Plan for Nevada and Eastern California (2004).

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: None

Project Costs and Funding

VIII. Cost Summary

A breakdown of the project's costs is found in the attached table.

IX. Is this Project Going to Continue After FY16? Yes X No _____

X. If Yes, is this Going to be an Annual, Recurring Project? Yes _____ No X

This research and monitoring project is scheduled to take place over a three year period from FY16 through FY18.

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year: This project is estimated to cost approximately \$180,000 each year to implement (2 study areas each year @ \$90,000 per site).

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes X No _____

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For? Federal funding would be made available through the Pittman-Robertson Sport Fish and Wildlife Restoration grant program. More specifically, this project would be 75% funded by the Nevada Sage-grouse Conservation Grant.

Project Cost Breakdown

<i>Project Components</i>	<i>Costs to be Paid by NDOW Special Reserve Account(s)*</i>	<i>Costs to be Paid by Other Sources*</i>
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	\$ 16,437.50	\$ 98,441.00
C. Total Personnel Costs	\$ 16,437.50	\$ 98,441.00
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	\$ -	\$ -
4. Equipment		
A. VHF transmitters (60 units @ \$225/ea.)	\$ 1,687.50	\$ 10,125.00
B. Radio receivers/antennas	\$375	\$ 2,250.00
C. Total Equipment Costs	\$ 2,062.50	\$ 12,375.00
5. Materials		
A.		
B.		
C.		
D. Total Materials Costs	\$ -	\$ -
6. Miscellaneous		
A. Field Housing	\$250	\$ 1,500.00
B. Vehicles (4WD truck lease: 4 @ \$7,500/ea.)	\$ 3,750.00	\$ 22,500.00
C.		
D.		
E. Total Miscellaneous Costs	\$ 4,000.00	\$ 24,000.00
7. In-Kind Services		
A. USGS Research Wildlife Biologist (Permanent, 0.2 FTE)		\$ 12,834.00
B. USGS Wildlife Biologist (Term, 0.2 FTE)		\$ 9,850.00
C. Total In-Kind Services	\$ -	\$ 22,684.00
Subtotals	\$ 22,500.00	\$ 157,500.00
Total Project Costs	\$	180,000.00



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Post-Fire Upland Habitat Restoration Near Guzzlers*

Date of Proposal: April 2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Bird Stamp

NDOW Project Manager (PM): Anthony Miller, Habitat Biologist

PM Phone Number and Email Address: Office: 702-486-5127 ext. 3613
Mobile: 702-280-1177
ajmiller@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$23,700

Total Cash to be Used from Other Funding Sources (please list by source): N/A

Total In-Kind Donations by Source (please list by source): N/A

Total Project Cost to be Funded by All Sources:

BLM	\$180,000
<u>NDOW</u>	<u>\$23,700</u>
Total	\$203,700

Project Proposal

- I. **Purpose of Project and Goals to be Achieved:** In conjunction with fire prevention projects associated with the BLM's Healthy Lands Initiative and the Mojave Desert Initiative, NDOW proposes to augment those efforts by supplementing NDOW's FY2015 Post-Fire Upland Habitat Restoration Project at guzzler locations affected by wildfire. NDOW's objective includes the planting of native vegetation at selected upland guzzler sites and adjacent areas. Results from NDOW's FY2015 Post-Fire Upland Habitat Restoration Project have shown good success rates for restoring habitat structure adjacent to and at guzzler sites within burned areas utilizing native cover plants that benefit wildlife that use guzzlers. The primary species that will benefit include Gambel's quail, chukar, mourning dove, and desert cottontail; this project will also benefit multiple other wildlife species dependent on water.

- II. Project Location (include a map if available):** Pending field evaluations, development sites and adjacent areas will be selected from the following burned areas: Mormon Mountains, Gregerson Basin, and Lyman Crossing to Kane Springs Valley. The proposed water development sites are located within Lincoln County, Nevada. Guzzler units and adjacent areas to be evaluated for treatment include but are not limited to: KS #6&7, KS #19 – 21, KS #37-46, KS#50, 51, 53.
- III. Project Approach Including Tasks to be Accomplished:** To reduce wildfire potential, BLM will be creating fuel breaks by treating brome grasses with herbicide along roads and subsequently seeding for green stripping. The roadways will include access roads leading to area guzzlers. During implementation of the project NDOW will subsequently plant perennial native vegetation at, or adjacent to, described small game water developments. Plantings will be protected from herbivores and monitoring of the planting sites will be necessary to ensure the survival of new plants.
- IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:** Restoring strategically located islands of habitat, and connectivity of intact habitats. Establishing and maintaining habitat corridors is key for plants and wildlife.
- V. Project Schedule:** Winter 2015/ Spring 2016 – NDOW Habitat Restoration Planting
- VI. Relationship to NDOW Plans, Policies and Programs:**
This project is consistent with NDOW Habitat Division’s program emphasis: 1) Protect, enhance, and rehabilitate wildlife habitats throughout the State; 2) Enhance water deficient habitat for wildlife through the effective development and maintenance of water sources; 3) Develop and implement an aggressive maintenance program on existing water developments; and, 4) Develop positive communication with partner governmental agencies having land management or wildlife habitat responsibilities.
- VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status:**
The BLM Ely District Office will prepare a Determination of NEPA Adequacy (DNA) document for the above described federal actions (to ensure the actions are adequately covered by a previously prepared NEPA document). They will include NDOW’s restoration objectives and activities at selected sites on BLM-managed lands. We anticipate BLM completion of the DNA within the month. NDOW’s contract with GBI will be updated once this project is approved.

Project Costs and Funding

VIII. Cost Summary

A breakdown of the project's costs is provided in the attached table.

IX. Is this Project Going to Continue After FY16? Yes X No _____

X. If Yes, is this Going to be an Annual, Recurring Project? Yes X No _____

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year: Approximately \$ 24,000 per Fiscal Year. FY16 – FY20.

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes X No X

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For? NDOW's Wildlife Habitat Restoration Grant

Project Cost Breakdown

<i>Project Components</i>	<i>Costs to be Paid by NDOW Special Reserve Account(s)*</i>	<i>Costs to be Paid by Other Sources*</i>
1. Land Acquisitions		
2. Personnel Costs		
A. BLM Personnel	\$ -	\$ 53,000.00
B. GBI Contract Personnel	\$ 5,000.00	
C. Total Personnel Costs	\$ 5,000.00	\$ 53,000.00
3. Travel Costs		
A. Per Diem		
B. Mileage	\$ -	
C. Total Travel Costs	\$ -	\$ -
4. Equipment		
A. Hand and Power Tools	\$ 1,000.00	
B. Tank, hose, pump	\$ 3,000.00	
C. Total Equipment Costs	\$ 4,000.00	\$ -
5. Materials		
A. Dri- Water Irrigation System	\$ 5,500.00	
B. Plant Cage Materials	\$ 3,200.00	
C. Plants and Herbicide	\$ 5,500.00	\$ 57,000.00
D. Total Materials Costs	\$ 14,200.00	\$ 57,000.00
6. Miscellaneous		
A. Miscellaneous supplies	\$ 500.00	\$ 5,000.00
B. Helicopter		\$ 65,000.00
C.		
D.		
F. Total Miscellaneous Costs	\$ 500.00	\$ 70,000.00
7. In-Kind Services		
A.	\$ -	
B.		
C. Total In-Kind Services	\$ -	\$ -
Subtotals	\$ 23,700.00	\$ 180,000.00
Total Project Costs	\$	203,700.00



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Black Mountain Telephone Line Removal*

Date of Proposal: March 30, 2015

Special Reserve Account(s) that Would Fund this Project: Habitat Conservation Fee and Upland Game Bird Stamp

NDOW Project Manager (PM): Kari Huebner

PM Phone Number and Email Address: (775) 777-2324, khuebner@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$24,900 (\$12,450 from each of the two accounts)

Total Cash to be Used from Other Funding Sources (please list by source): N/A

Total In-Kind Donations by Source (please list by source):

Total Project Cost to be Funded by All Sources: \$24,900

Project Proposal

I. Purpose of Project and Goals to be Achieved:

There is an abandoned telephone line that runs east to west from Highway 93 to Oneil Basin. The wire is down in several places, but for the most part it is intact. The goal would be to remove the unnecessary line for the safety of aerial wildlife surveys as well as removing perching and nesting substrate for raptors through primary (core) sage grouse habitat. The line runs within one mile of six sage grouse leks.

II. Project Location (include a map if available): The project is near Salmon Falls Creek, Elko County, Nevada; see the attached map.

III. Project Approach Including Tasks to be Accomplished:

A contractor would be hired to remove the wire, insulators, and cross arms. The poles would be cut to ground level and left on the ground for later salvage.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

It is difficult to measure the project's benefits, however removal of the line would reduce opportunities for raptor perching and nesting substrate for raptors that may be preying on sage grouse and their nests. Removal would also benefit other types of prey and eliminate the risk of helicopter collisions during routine aerial wildlife surveys conducted in the area two or three times per year.

V. Project Schedule: Summer 2015

VI. Relationship to NDOW Plans, Policies and Programs: This project is in line with the agencies mandate of preserving and protecting habitat for a key species such as sage grouse. Very seldom do we have the opportunity to remove a communication or power line once it is installed. It will be important to take advantage of this opportunity.

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: No NEPA required. NDOW received permission from the owner of the line (Joe Durant) to remove it and permission from the BLM to access the right-of-way.

Project Costs and Funding

VIII. Cost Summary

All of the funds awarded to this project would be used to hire a contractor to remove the telephone line and cut the poles.

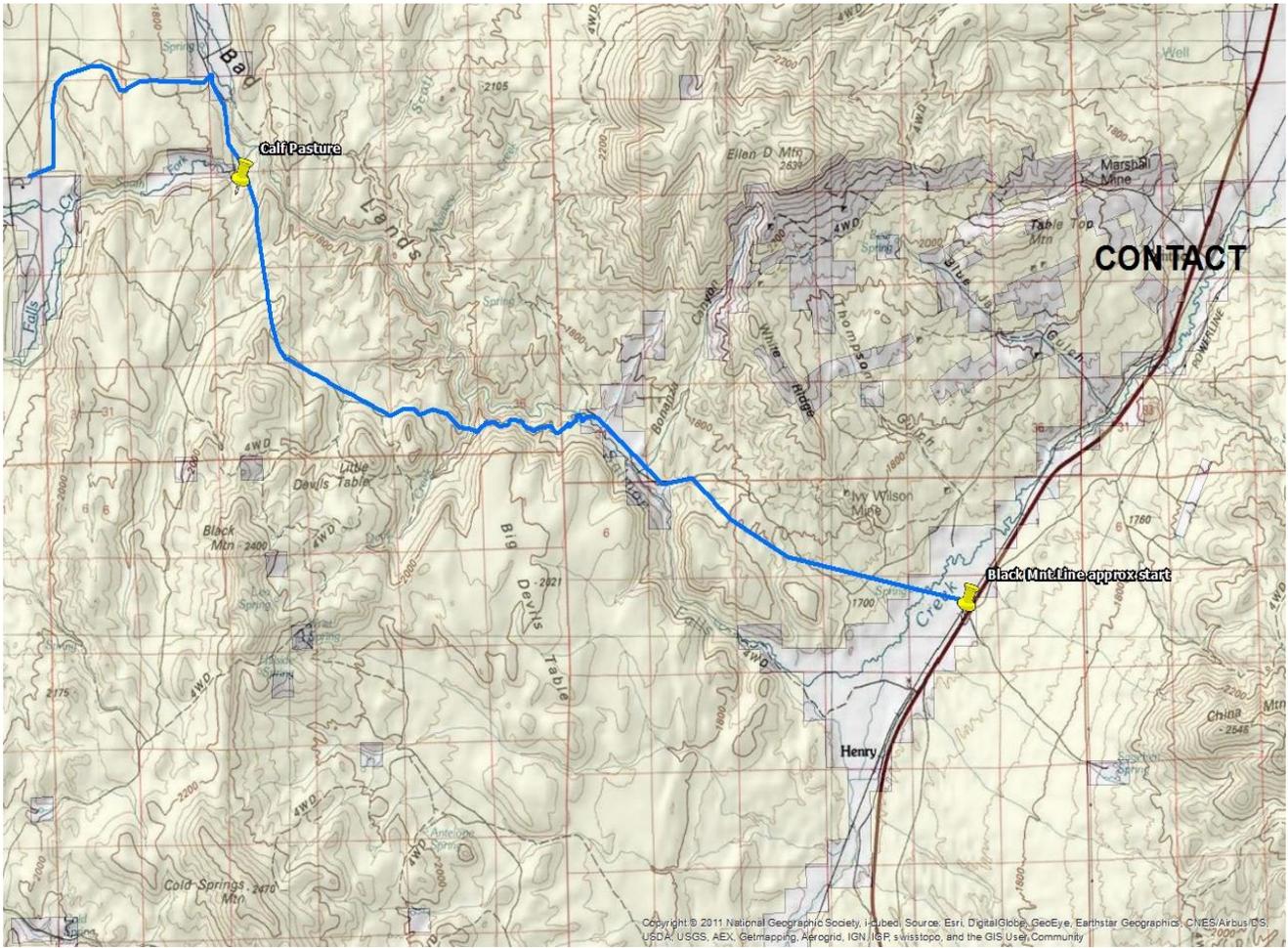
IX. Is this Project Going to Continue After FY16? Yes ___ No X

X. If Yes, is this Going to be an Annual, Recurring Project? Yes ___ No ___

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year:

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes ___ No X

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For?



Approximate Location of Black Mountain Telephone Line, near Salmon Falls Creek, Elko County, NV



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *McGinness Hills Pinyon-Juniper Removal*

Date of Proposal: 3-16-2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Bird Stamp and Habitat Conservation Fee

NDOW Project Manager (PM): Jeremy Lutz

PM Phone Number and Email Address: 775-635-5070; jlutz@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$17,500 / year from both the Upland Game Bird Stamp and Habitat Conservation Fee accounts for 4 years total (a total of \$140,000 from the Wildlife Reserve Accounts)

Total Cash to be used from Other Funding Sources (please list by source):

White Pine – Nye Resource Advisory Committee - \$32,000

USFS – estimated \$140,000 for treatments

Other funding sources - estimated \$140,000

(May include McGinness Hills Working Group, RAC, USFWS, etc.)

Total In-Kind Donations by Source (please list by source):

US Forest Service – Wildlife Biologist 10 days thru Sept 30, 2014 (FY2014) - \$3,245

US Forest Service – Wildlife Biologist 10 days thru Sept 30, 2015 (FY2015) - \$3,245

US Forest Service – Wildlife Biologist 10 days thru Sept 30, 2016 (FY2016) - \$3,500 (est)

US Forest Service – Wildlife Biologist 10 days thru Sept 30, 2017 (FY2017) - \$3,500 (est)

US Forest Service – Wildlife Biologist 10 days thru Sept 30, 2018 (FY2018) - \$3,500 (est)

US Forest Service – Wildlife Biologist 10 days thru Sept 30, 2019 (FY2019) - \$3,500 (est)

Total Project Cost to be Funded by All Sources:

The total project cost over 4 years is expected to be around \$442,400.

Project Proposal

I. Purpose of Project and Goals to be Achieved:

This project seeks to improve sagebrush habitats important for sage-grouse, winter range for mule deer, and sagebrush obligate wildlife species. This area supports the South Grass Valley Lek Complex. This complex supports several hundred sage grouse and includes summer, winter, nesting, brood rearing, and lekking habitats. Additionally, the project area includes identified mule deer winter habitat and habitats for sagebrush obligates such as sage sparrows, Brewer's sparrows, sagebrush voles, sagebrush lizards and others.

Currently, the project area is experiencing conifer encroachment by pinyon and juniper trees due to a combination of past fire suppression and vegetation succession. The majority of the area still remains dominated by sagebrush with associated grasses and forbs but small trees (Phase 1 and some Phase 2) have become established. Without treatment these trees will continue to grow in size and number initially disrupting the ecological function and eventually replacing the sagebrush ecosystem and the wildlife it supports.

This project proposes to cut all of the existing pinyon and juniper trees within each treatment units using a combination of chainsaws, hand saws, loppers, and other hand tools. All cut material will be limbed and bucked to ensure a 3 foot maximum height of slash. All stumps will be less than 8 inches.

The USFS completed all NEPA documents and a Decision Memo was signed March 14, 2014 authorizing a total of 5000 acres of treatments within the larger 50,000+ acre project area. The first treatment unit of 308 acres was cut in November 2014 with a contract crew. Funding for this first unit was provided by White Pine – Nye Resource Advisory Committee. Treatment cost was approximately \$100/acre for the contract crew plus Forest Service staff time for contract administration.

Treatment Unit 1: Pre-treatment and Post treatment photos. Nov 2014



This proposal seeks funding to treat additional units. Estimated costs range from \$75/acre to \$120/acre depending on the density of trees in a particular unit. Individual units with estimated treatment costs are listed below.

Unit 2 has the highest priority for treatment to improve connectivity to suitable habitat in Rye Patch Canyon and the Givens Ranch Lek to the south. Currently Unit 2 still has a moderately intact understory of sagebrush with scattered forbs and grasses. However, canopy cover is increasing as pinyon and juniper trees increase in size and density. It is estimated that another 5-10 years without treatment the understory will be lost due to lack of sunlight.

Units 6 and 9 are also of high priority. Treatment of Unit 6 will arrest the northward encroachment of pinyon – juniper into intact sagebrush that currently supports sage-grouse. This is similar to the benefits of treating Unit 1. Unit 9 is a large unit with sparse to medium density of pinyon - juniper and is a source for future northward encroachment. Barton Creek borders this unit on the west side. Sage-grouse sign has been observed in the unit as recently as February 2015.

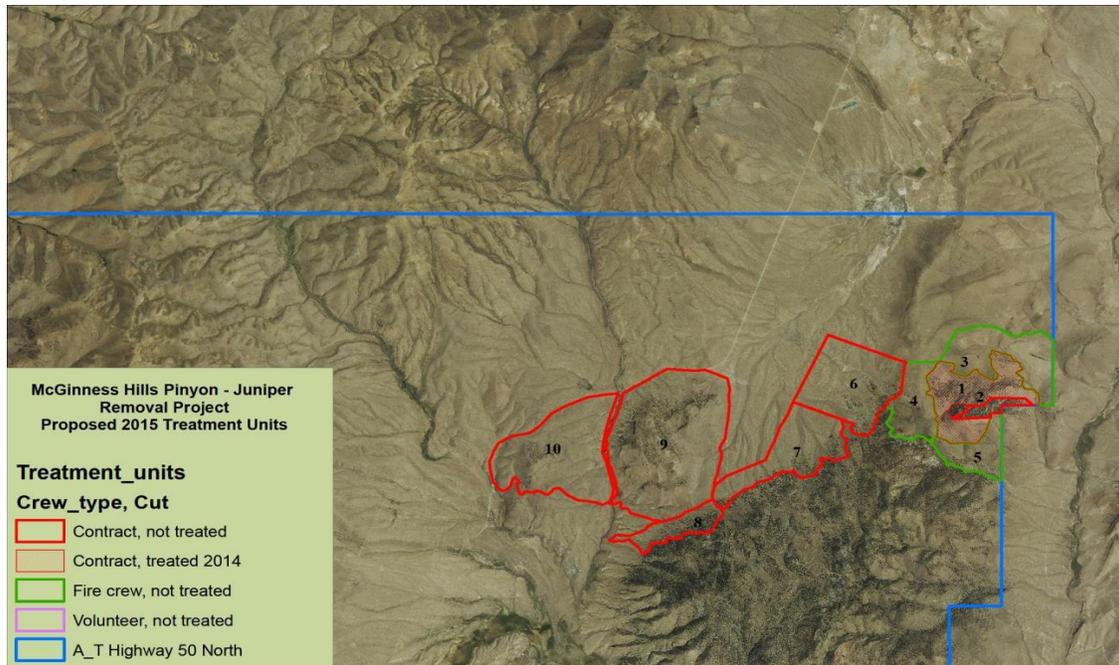
Units 3, 4, and 5 have sparse mature pinyon – juniper but smaller seedling and small sapling size trees are established throughout. Tree canopy cover is well below 1%. Currently, these units still function as good quality sagebrush habitat. While several years are required before habitat degradation begins in earnest, the Forest Service is seeking internal funding for FY2016 to treat these units with hand loppers and chainsaws using either the fire crew or a personal service contract. If approved, these units will be treated fall/winter 2015 -2016.

Units 7 and 8 are important to further arrest the encroachment of pinyon – juniper northward from the large block of forest at higher elevations along the Toiyabe Range. Unit 10 is similar to Unit 9 but on the west side of Barton Creek. It has a lower density of trees.

Units 11, 12, and 13 are tentative treatment units for future years. However, as additional information on sage-grouse habitat use and movement becomes available, future units or priorities may be identified or modified.

<u>Unit</u>	<u>Crew type</u>	<u>Treatment date</u>	<u>Priority</u>	<u>Acres</u>	<u>Estimated cost per acre</u>	<u>Estimated total unit cost</u>	
1	Contract	14-Nov	completed	308	\$98/ac	\$30,184	
2	Contract		high	47	\$120/ac	\$5,640	
3	Fire crew / volunteer		high	301	\$30/ac	\$9,030	
6	Contract		high	420	\$100/ac	\$42,000	
9	Contract		high	942	\$100/ac	\$94,200	
4	Fire crew / volunteer		medium	183	\$30/ac	\$5,490	
5	Fire crew / volunteer		medium	145	\$30/ac	\$4,350	
7	Contract		medium	338	\$75/ac	\$25,350	
8	Contract		medium	130	\$75/ac	\$9,750	
10	Contract		medium	570	\$75/ac	\$42,750	
11	Contract		low	126	\$120/ac	\$15,120	
12	Contract		low	219	\$120/ac	\$26,280	
13	Volunteer		low	23	Volunteer	Volunteer	
14+	Future unidentified units		low	1248	\$100/ac	\$124,800	
				Total Acres	5000	Total treatment cost	\$434,944

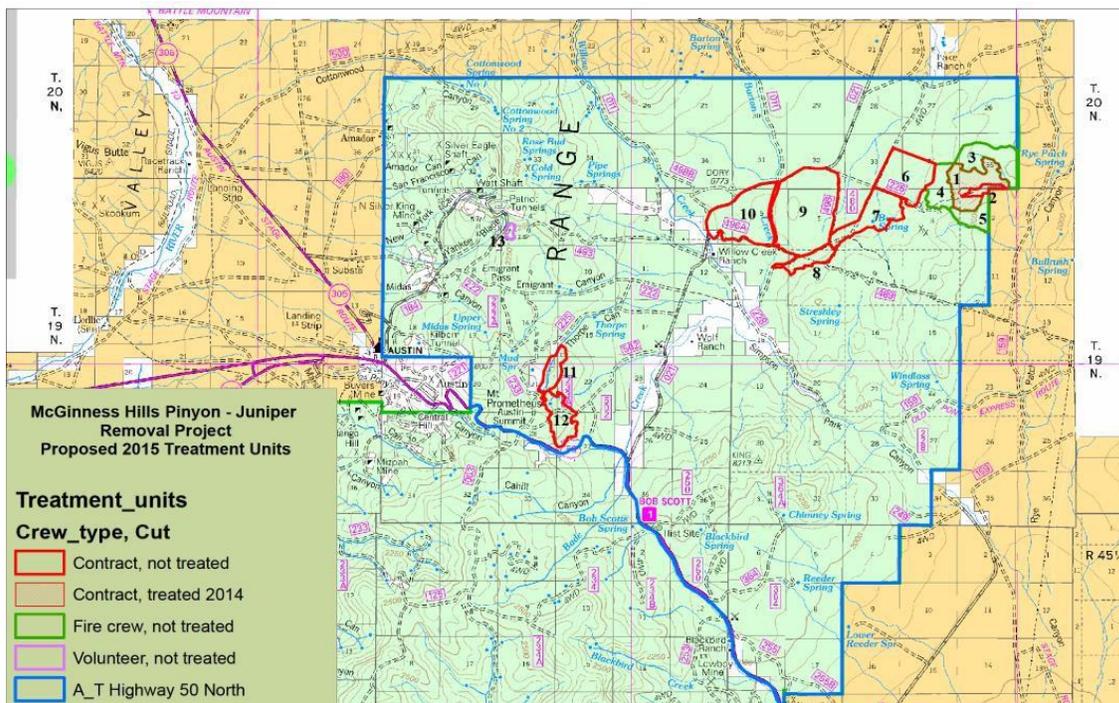
Proposed Treatment Units 2-10



Project Location (include a map if available):

This project is located adjacent to Austin, Nevada in the northern end of the Toiyabe Range in Lander County. This includes all USFS on lands managed by the Humboldt-Toiyabe National Forest north of Hwy 50.

McGinness Hills Project: General location map



II. Project Approach Including Tasks to be Accomplished:

The general approach for this project is to continue cutting pinyon – juniper trees as funding allows.

Priority tasks are:

- Secure funding for Units 2, 6, and 9 for treatment in fall 2015 by contractors.
- Conduct follow-up photo monitoring of Unit 1 in spring 2015.
- Prepare Request-for-Bids for contract Units 2,6, and 9.
- Secure FY2016 USFS funding for Units 3, 4, and 5 for treatment fall/winter 2015-16.
- Secure FY2016 USFS funding for additional units to be contracted out. Contracts are anticipated to awarded in FY2016 but treatments will occur fall 2016 (i.e. FY2017).

Other tasks are:

- Continue seeking outside funding to reduce dependence upon primary partners.
- Continue monitoring of sage-grouse habitat use and movement patterns.
- Identify future treatment units.

III. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

The primary benefit will be the arrest of conifer encroachment into established and functioning sagebrush habitats. A secondary benefit will be the restoration of moderately degraded sagebrush habitats by removing the pinyon-juniper over story in areas with an intact understory of sagebrush, forbs, and grasses.

The treatments will be monitored through two different approaches. The first is simple photo points will be established for each treatment unit to document pretreatment, post-treatment, and restored conditions. For an example please see the photos of Treatment Unit 1 from Nov 2014. Each photo point will be established by GPS with a compass direction recorded for each view. Photos will be collected prior to treatment, immediately after treatment, and yearly each spring for 5 years. Afterward photos will be collected once every 3-5 years. The wildlife staff for the Austin-Tonopah Ranger District, USFS will conduct the photo monitoring.

The second approach will be the monitoring of sage-grouse use and movement patterns. Currently USGS, WERC Research Team is conducting their fourth year of sage-grouse monitoring associated with the McGinness Hills Geothermal Project. This project includes lek surveys, telemetry data, nest monitoring, habitat surveys, and raptor/raven surveys. NDOW and USFS will provide logistical support to USGS. Also both NDOW and USFS will conduct additional lek and habitat surveys outside the study area for USGS.

IV. Project Schedule:

Spring 2015

- Prepare proposals for funding (NDOW FY2016, USFS FY2016, and McGinness Hills Working group). USFS will prepare proposals with cooperation from NDOW.
- USFS will conduct spring photo monitoring.
- USGS will continue study activities.

Summer 2015

- Continue seeking funding for treatment units (USFS and NDOW).
- Prepare Request-for-Bids / contract packages (USFS and NDOW).
- Flag treatment units and establish photo points (USFS with NDOW assistance).
- USGS will continue study activities.

Fall 2015

- Implement treatment for units with funding (USFS and NDOW).
- Conduct post-treatment photo monitoring (USFS and NDOW).

Winter 2015-2016

- Continue treatments as funding and weather allows (USFS).
- Identify future treatment units (USFS and NDOW).
- Continue to seek funding (USFS and NDOW).

V. Relationship to NDOW Plans, Policies and Programs:

Nevada Wildlife Action Plan 2006 has an objective of reducing the loss of sagebrush to pinyon-juniper encroachment (page 101). Additionally, the Toiyabe/Monitor/ Toquima Ranges are identified as Preliminary Focal Areas (page 103).

Strategic Plan for Conservation of Greater Sage-Grouse in Nevada 2012 has the objective of “reversing the effects of pinyon – juniper encroachment and restore healthy, resilient sagebrush ecosystems.” Furthermore it identifies Federal and State Agency Actions as “aggressively implement plans to remove Phase I and Phase II encroachment” (page 16).

Sage Grouse Conservation Plan for Nevada and Eastern California 2004 identified pinyon – juniper encroachment as possibly becoming “permeant and irreversible without appropriate management” (page 38) and combined with other factors as contributing to habitat fragmentation (page 44).

VI. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status:

All NEPA compliance for this project has been completed by the USFS. A Decision Memo was signed March 14, 2014.

Project Costs and Funding

VII. Cost Summary

A breakdown of the project’s costs is provided in the attached table.

VIII. Is this Project Going to Continue After FY16? Yes X No _____

IX. If Yes, is this Going to be an Annual, Recurring Project? Yes X No _____

X. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year:

The NEPA on this project is authorized thru March 2019 and allows for a total of 5,000 acres of treatments. As of March 2015, only 308 acres have been treated. The NEPA can be extended if need be but would require updating by the USFS who will cover the cost.

Approximate treatment costs per year are \$110,600 with funding from NDOW, USFS, and McGinness Hills Working Group till FY2019 of \$35,000/year. The contribution of these funds may be reduced if outside funding can be secured. The total project cost over 4 years is expected to be around \$442,400, including in-kind services valued at around \$14,000.

XI. Would Funds from this Program Be Used for State Matching Purposes? Yes No

XII. If Yes, Which Federal Grant Would the Matching Funds be Used For?

Project funds will be used to match USFS internal funding and mitigation money from the McGinness Hills Working Group. Additionally, funds may be used to match other outside funding sources as appropriate and opportunities arise.

Project Cost Breakdown

<i>Project Components</i>	<i>Costs to be Paid by NDOW Special Reserve Account(s)*</i>	<i>Costs to be Paid by Other Sources*</i>
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel		
C. Total Personnel Costs	\$ -	\$ -
3. Travel Costs		
A. Per Diem (USFS staff)		\$ 2,000.00
B. Mileage (USFS vehicles)		\$ 2,000.00
C. Total Travel Costs	\$ -	\$ 4,000.00
4. Equipment		
A. Chain saws / hand tools		\$ 2,000.00
B. Camera		
C. Total Equipment Costs	\$ -	\$ 2,000.00
5. Materials		
A. Flagging		\$ 400.00
B. Saw gas and bar oil		\$ 2,000.00
C.		
D. Total Materials Costs	\$ -	\$ 2,400.00
6. Miscellaneous		
A. Contract crews	\$ 140,000.00	\$ 280,000.00
B.		
C.		
D.		
F. Total Miscellaneous Costs	\$ 140,000.00	\$ 280,000.00
7. In-Kind Services		
A. USFS staff		\$ 14,000.00
B.		
C. Total In-Kind Services	\$ -	\$ 14,000.00
Subtotals	\$ 140,000.00	\$ 302,400.00
Total Project Costs	\$	442,400.00

*Note: the \$140,000 sub-total in the table above will be the total over 4 years and will use \$70,000 each from the Habitat Conservation Fee and Upland Game Bird Stamp accounts over the 4 year period.



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Pinyon-Juniper Thinning with Bootstraps Crews*

Date of Proposal: 4/3/2015

Special Reserve Account(s) that Would Fund this Project: Habitat Conservation Fee and Upland Game Bird Stamp

NDOW Project Manager (PM): Steve Foree

PM Phone Number and Email Address: 775.777.2306, sforee@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$50,000 (\$25,000 each from Habitat Conservation Fee and Upland Game Bird Stamp)

Total Cash to be Used from Other Funding Sources (please list by source): \$50,000 will be used from the McGinness Hills Mitigation Account.

Total In-Kind Donations by Source (please list by source): no in-kind donations are available

Total Project Cost to be Funded by All Sources: \$100,000

Project Proposal

- I. Purpose of Project and Goals to be Achieved:** The purpose of the project is to provide necessary funding to allow Bootstraps Crews to complete the 2015 field season. At present the University of Nevada Cooperative Extension (UNCE) has \$200K available through BLM. An additional \$100K may be needed to finish out the season. Currently we have \$100K of spending authority left in the NDOW/UNCE contract. BLM funding is projected to carry the crews through August 2015. We will need NDOW and McGinness Hills mitigation funds to complete the seasonal work which could go through October 2015. This will be the last field season for Bootstraps Crews as Rod Davis, Lander County Cooperative Extension Educator, is retiring at the end of the year.
- II. Project Location (include a map if available):** Most, if not all, of the work during the 2015 field season will be in Grass Valley or Reese River Valley, Lander County and specifically within the Toiyabe PMU and on the east and west sides of Mt. Callaghan, Toiyabe Range. We currently have numerous NEPA authorizations for tree thinning within this PMU and crews will be

targeting tree removal based on telemetry information coming from the McGinness Hills sage grouse study conducted by USGS.

- III. Project Approach Including Tasks to be Accomplished:** Bootstraps Crews will be removing pinyon-juniper within key sagebrush habitats in the vicinity of ORMAT's McGinness Hills Geothermal Plant. In addition crews will be working on the west side of the Toiyabe Range where telemetry data has indicated a need to open some movement corridors for sage-grouse as the birds move from lekking/nesting habitat to summer brood rearing habitats.
- IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:** We are entering year 3 of a 10 year study to monitor the effects of the geothermal development on sage-grouse. We are currently using telemetry information to identify areas in need of treatment and we expect that future telemetry information will provide details on the effectiveness of these treatments.
- V. Project Schedule:** Monies, if approved, will be expended before the end of the 2015 calendar year.
- VI. Relationship to NDOW Plans, Policies and Programs:** Project objectives fall in line with current efforts to enhance sage-grouse habitat. Additionally, this project is consistent with efforts to minimize or mitigate the impacts from geothermal development in Grass Valley, as identified within the McGinness Hills Sage-Grouse Monitoring and Mitigation Plan.
- VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status:** NEPA is complete and current authorizations will accommodate the 2015 Bootstraps field season work.

Project Costs and Funding

- VIII. Cost Summary**

All of the funds awarded to this project will be used to pay Bootstraps Crews via the NDOW/UNCE contract.
- IX. Is this Project Going to Continue After FY16?** Yes ___ No X
- X. If Yes, is this Going to be an Annual, Recurring Project?** Yes ___ No ___
- XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year:**
- XII. Would Funds from this Program Be Used for State Matching Purposes?** Yes X No ___
- XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For?** The only monies that would be available for match would be the \$50K from the McGinness Hills Mitigation Account. We would assume that it would be used for NDOW's Wildlife Habitat Restoration Grant.



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Key Pittman WMA Wildlife Food Plots*

Date of Proposal: 4/1/2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Bird Stamp

NDOW Project Manager (PM): Ron Mills

PM Phone Number and Email Address: 1(775) 725-3521; rmills@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$6,500 (Project costs will be split as follows to reflect the benefits to upland game birds relative to waterfowl: 60% or \$3,900 from the Upland Game Bird Stamp account and 40% or \$2,600 from the Duck Stamp account)

Total Cash to be Used from Other Funding Sources (please list by source): None

Total In-Kind Donations by Source (please list by source): None

Total Project Cost to be Funded by All Sources: \$6,500

Project Proposal

I. Purpose of Project and Goals to be Achieved:

The goal of this project is a measurable increase of wildlife use with increased hunter and public use and hunter success. This will be achieved by completing annual plantings and vegetation manipulation, and to enhancing existing habitat on the management area for the benefit of wildlife.

II. Project Location (include a map if available):

Key Pittman Wildlife Management Area, Hiko, NV

III. Project Approach Including Tasks to be Accomplished:

The food plot cycle begins October first. Following dove season the fields are mowed, disked and seed drilled and irrigated. At the same time the NW corner of the Frenchy Unit is mowed. In December and January the grass seed is broadcast in deficient habitats mostly created by noxious weed treatments or other mechanical disturbances. In February or March the food

plots are seeded again with additional cereal grains, forbs, legumes and sunflower. At this time the northern impoundments are drained. In June millet and sunflower is broadcast along portions of the pond edges. In mid-July grazing begins. In mid-August the desirable native vegetation (goose foot and alkali bulrush) has matured and the northern impoundments are mowed and filled with water. During the last week of August the food plots are strip mowed for the dove season. At the end of September/October the dove season ends and the grazing lease ends and the cycle starts again., due to the extended dove season and conflicting with the waterfowl season opener, the food plots have to be mowed, disked, seeded and irrigated prior to the waterfowl opener.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

Benefits: The food plot program incorporates cover crops, nitrogen fixing plants and cereal grains to provide forage to wildlife and maintain and/or improve the soil for better production, reduce noxious and invasive weeds and eliminate the need for commercial fertilizer. Results: Increased documented use of waterfowl, quail, dove, cottontail rabbit and deer, improved harvest of game species and a reduced need for noxious and invasive weed control. Benefits to non-game species such as small mammals, raptors, song birds, reptiles and many others is another bonus of this project. The KPWMA Food Plot program is an ongoing, yearly habitat management activity. The results of food plots in FY16 will be evaluated for their effectiveness and benefit to wildlife and sportsmen. The results of this evaluation will determine what species will be planted in subsequent years.

V. Project Schedule:

See Section III for the time line.

VI. Relationship to NDOW Plans, Policies and Programs:

Annual habitat maintenance and enhancement is identified in all of the current WMA Conceptual Management Plans. Desired Outcome: Wildlife habitats that are in good ecological condition, capable of supporting a diverse array of wildlife species. Goal: Habitat is the key to the success of all wildlife populations. Effective habitat is an integral function of the Department of Wildlife. NDOW will preserve and protect quality habitat and enhance deficient habitats. Objective: Maintain, protect and enhance wildlife habitats on wildlife management areas (WMA's) by applying good science and best management practices through implementation of Comprehensive Management Plans on all WMA's (Comprehensive Strategic Plan). Achieve an overall goal of no net loss of wetland area or function and the long-term goal to enhance and increase wetland quantity and quality within the WMA (Wetland Conservation Plan).

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status:

None

Project Costs and Funding

VIII. Cost Summary

All of the funding associated with this project will be used to purchase seed.

IX. Is this Project Going to Continue After FY16? Yes No

X. If Yes, is this Going to be an Annual, Recurring Project? Yes No

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year: Approximately \$6,500 will be spent per fiscal year after FY16.

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes No

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For?

NDOW's WMA System Federal Grant



Fiscal Year 2016 Special Reserve Account Project Proposal

Project Summary

Project Title: *Kirch WMA Food Plots*

Date of Proposal: 4/10/2015

Special Reserve Account(s) that Would Fund this Project: Upland Game Bird Stamp and Duck Stamp

NDOW Project Manager (PM): Marcus Jones

PM Phone Number and Email Address: (775) 289-1690; mztjones@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$4,500 (Project costs will be split as follows to reflect the benefits to upland game birds relative to waterfowl: 60% or \$2,700 from the Upland Game Bird Stamp account and 40% or \$1,800 from the Duck Stamp account)

Total Cash to be Used from Other Funding Sources (please list by source): \$1,800 - Duck Stamp

Total In-Kind Donations by Source (please list by source): None

Total Project Cost to be Funded by All Sources: \$4,500

Project Proposal

I. Purpose of Project and Goals to be Achieved:

This project consists of purchasing seed to be used in the planting of 110 acres of wildlife food plots at the Kirch WMA. The purpose of this project is to enhance habitat for upland game birds, mourning dove, mule deer, and waterfowl. The upper 37 acres of the Dove Field will be planted in the spring of 2016 with a mix of cereal grains and sunflower intended to attract mourning dove, and upland game birds, the lower 33 acres of the Dove Field will be planted in the fall of 2015 to winter wheat and Austrian winter peas and is intended to enhance feeding and nesting cover for upland game and provide forage for mule deer. The 40 acre Old Place unit will be planted in the summer of 2016 with a mix of Japanese Millet and cereal grains. Agricultural production of farmland crops is beneficial to a wide variety of wildlife, particularly upland and migratory birds. Maximizing wildlife populations on the WMA increases sportsmen use and satisfaction.

II. Project Location (include a map if available):

This project is located at the Wayne E. Kirch WMA located in the White River Valley in northeastern Nye County. The Kirch WMA has three food plots that are planted annually: two Dove Fields are located near the KWMA headquarters and the Old Place unit is north of Adams-McGill Reservoir.

III. Project Approach Including Tasks to be Accomplished:

The lower 33 acres of the Dove Field will be planted with a mixture of winter wheat and Austrian winter peas in the fall of 2015.

The upper 37 acre section of the Dove Field will be planted in the spring of 2016 with a mixture of browntop millet, bird magnet sorghum, foxtail millet, sesame, and hybrid oil sunflowers.

Forty acres of the Old Place unit will be planted in June of 2016 with a mixture of Japanese millet, browntop millet, Bengal rice, buckwheat, sorghum, smartweed, and barnyard grass.

IV. Describe the Beneficial Effects of the Project and How they Will be Measured and Monitored:

The Kirch WMA Food Plot program is an ongoing, yearly habitat management activity. The results of food plots planted in FY16 will be evaluated for their effectiveness and benefit to wildlife and sportsmen. The results of this evaluation will determine what species will be planted in subsequent years

V. Project Schedule:

The project's schedule is included in Section III above.

VI. Relationship to NDOW Plans, Policies and Programs:

This project is consistent with the goal and related strategy stated in the Kirch WMA's Conceptual Management Plan. Goal: maintain adequate habitat for migrating and local waterfowl, doves and sandhill cranes. Strategy: evaluate the potential for creating several food plots to attract and benefit migrating sandhill cranes and provide watchable wildlife opportunities. This project also is in accordance with NDOW's mission statement and Wildlife Commission Policy 66: farming may be initiated on some areas to meet site-specific management area needs.

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: None

Project Costs and Funding

VIII. Cost Summary

All of the funding associated with this project will be used to purchase seed.

IX. Is this Project Going to Continue After FY16? Yes No

X. If Yes, is this Going to be an Annual, Recurring Project? Yes No

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year:

This project would spend \$4,500 per fiscal year after FY16 until the cost of seed increases.

XII. Would Funds from this Program Be Used for State Matching Purposes? Yes No

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For?

NDOW's WMA System Federal Grant



Fiscal Year 2016 Wildlife Reserve Account Project Proposal

Project Summary

Project Title: *Eastern Region WMAs Weed Control*

Date of Proposal: April 26, 2015

Special Reserve Account(s) that Would Fund this Project: Duck Stamp and Upland Game Bird Stamp

NDOW Project Manager (PM): Steve Foree

PM Phone Number and Email Address: 775-777-2306; sforee@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s): \$3,750

Total Cash to be Used from Other Funding Sources (please list by source): \$3,750 of Duck Stamp funds

Total In-Kind Donations by Source (please list by source): \$0

Total Project Cost to be Funded by All Sources: \$7,500

Project Proposal

I. Purpose of Project and Goals to be Achieved:

The herbicides purchased for this project would be used to control noxious weed invasions on the unmanned Eastern Region properties owned by the State. It our hope to control the spread of weeds to maintain and enhance waterfowl values on wetlands and riparian areas associated with these parcels. The invasive weed control improves appearance, public access and wildlife habitats, including the habitat of upland game birds.

II. Project Location (include a map if available):

Treatment locations will be spread across the Eastern Region unmanned NDOW properties including the Bruneau River WMA, Franklin Lake WMA, Birch Creek, South Fork Little Humboldt and Izzenhood NDOW properties.

III. Project Approach Including Tasks to be Accomplished:

This proposal would only cover the cost of purchasing the needed herbicides and surfactants to treat the state properties. Salaries for those staff doing the treatments will be covered by existing

grant funding sources, or if a large enough need is identified a future proposal for other funds could be submitted for contracted assistance.

IV. Describe the Beneficial Effects of the Project and How they will be Measured and Monitored:

Noxious and invasive weed control will improve access for the public and NDOW personnel, limit the spread of noxious and invasive plant species, improve wildlife habitat and enhance the general appearance of the properties. Sites treated with herbicide will be evaluated after application of herbicides to determine the effectiveness of the timing, method, and chemicals chosen for the treatment. Effective treatments will show a significant die-off of targeted vegetation after treatment and reduced regrowth the following growing season.

V. Project Schedule:

The herbicides purchased by this proposal during FY16 will continue the Eastern Region weed treatment maintenance regime. In the past we have used the herbicides purchased with these funds to treat Canada and Bull thistle on the Bruneau River WMA, hoary cress on Franklin Lake WMA and Canada thistle on the Birch Creek property. Treatments are typically done during the spring and summer months when weeds are actively growing.

VI. Relationship to NDOW Plans, Policies and Programs:

Annual vegetation control is identified in all of the current WMA Conceptual Management Plans and is consistent with other NDOW plans and policies, for example: "Desired Outcome: Wildlife habitats that are in good ecological condition, capable of supporting a diverse array of wildlife species. Goal: Habitat is the key to the success of all wildlife populations. Effective habitat is an integral function of the Department of Wildlife. NDOW will preserve and protect quality habitat and enhance deficient habitats. Objective: Maintain, protect and enhance wildlife habitats on wildlife management areas (WMA's) by applying good science and best management practices through implementation of Comprehensive Management Plans on all WMA's" (from NDOW's Comprehensive Strategic Plan). "Achieve an overall goal of no net loss of wetland area or function and the long-term goal to enhance and increase wetland quantity and quality within the WMA" (from NDOW's Wetland Conservation Plan).

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status:

No permits are necessary to treat weeds on NDOW lands as we are using chemicals that do not require a certified applicator license. Should such chemicals be necessary for a given species, NDOW will either have an employee obtain certification or a contracted certified applicator will be hired. Any application on adjacent public land will be covered under existing BLM/USFS decisions relative to weed control activities.

Project Costs and Funding

VIII. Cost Summary:

NDOW personnel would use all of the funds allocated to this project to purchase herbicides during FY16.

IX. Is this Project Going to Continue After FY16? Yes No

X. If Yes, is this Going to be an Annual, Recurring Project? Yes No

XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year:

We expect the need for weed control on WMAs to continue in perpetuity. We will request funding each year.

XII. Would Funds from this Program Be Used for State Matching Purposes: Yes No

XIII. If Yes, Which Federal Grant Would the Matching Funds be Used For?

NDOW's WMA System Federal Grant