Nevada Department of Wildlife

Upland Game Bird Stamp Program

Fiscal Year 2017

June 2016

Table of Contents

Page

Relevant Upland Game Bird Stamp Nevada Revised Statutes 1

Progress Report on Upland Game Bird Stamp Projects Funded in FY 2016 2

Summary of Proposed FY 2017 Upland Game Bird Stamp Projects (table) 20

Upland Game Bird Stamp Account Budget Status (table) 22

Proposed FY 2017 Upland Game Bird Stamp Projects 23

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 2016

Columbian Sharp-tailed Grouse Restoration Project

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 reestablish a viable population of CSTG in northeastern Nevada, 190 grouse from 15 lek sites in southeastern Idaho were translocated to Elko County, NV, during April 2013-2016. Of these, 122 females and 41 males were marked with VHF transmitters and were monitored by ground and aerial telemetry. In addition, a subsample of female CSTG were artificially inseminated prior to translocation to promote nesting and the rearing of broods at the release site (n = 6, 2014; n = 9, 2015*; n = 9, 2016*).

Capture and Known Fate Results

During 2013, 50 CSTG were captured from 10 leks in southeastern Idaho and were translocated to northeastern Nevada. Of these, 49 birds were released, and one was euthanized due to injury. Thirty-six females and eight males were outfitted with VHF radio transmitters. One lek formed at the release site. Two males were observed displaying several times throughout April and May, and one female nested directly adjacent to the lek. Shortly before releases began in April 2014, four females (three non-collared) and two males (one non-collared) were observed displaying approximately 700 m from the 2013 release location. It is not known if the non-collared male was a yearling or a non-collared male from the previous season, but the non-collared females were most likely the offspring of females translocated in 2013. Despite high mortality rates and low reproduction during 2013, a generation of Nevada-hatched CSTG were present and on the lek at the beginning of the 2014 season.

Forty-four CSTG were captured in 2014, but only 42 were released. One female was euthanized during processing, and one female died overnight in a release box. Of the birds released, 27 females and 13 males

were outfitted with VHF radio transmitters. Two males were released without collars. Releasing CSTG near an active lek, rather than a simulated lek, appeared to have reduced immediate post-release dispersal from the release site. Several males quickly joined the active lek, and within two weeks of the release, 13 males were observed displaying at the lek.

In 2015, 51 grouse were captured and 49 were released in Nevada (n = 34 F, n = 15 M); five females and five males were released without VHF radio-collars. One female died during processing, and another was euthanized after discovering a trap-related broken wing. In 2015, we observed males displaying at the same lek that was present in 2014, but the lek shifted about 500 m from the original 2014 location. USGS personnel counted a max of three males and four females on lek prior to the first release, and NDOW personnel observed at least six displaying males prior to 2015 translocations. Grouse were released at the same location in 2015 as in 2014, and shortly after releases concluded, 16 displaying males were observed near the release location. While 16 displaying grouse was the highest lek count in 2015, 13 displaying males were observed three times at the same location. Within a month, birds from the single lek location (about 500 m from the 2014 lek) dispersed and formed three smaller groups, about 700 m apart from each other, forming a lek-triangle around the release location. Two five-male groups were observed regularly at two of the activity centers, and a smaller third group (1-5 males) was observed several times at a third activity center before lekking concluded in late May.

Nest Survival

During the first three years of this project, we have located 76 CSTG nests. Of these, 48 successfully hatched (63% apparent nest success). The daily survival probability and the probability that a nest would survive the entire nesting season increased each year of the study. The daily survival probability of a CSTG nest during all study years of the project was 0.984 (95% CI 0.974 – 0.990), and the cumulative nest survival probability during all years was 0.541 (95% CI 0.381 – 0.677).

Brood Survival

During 2013–2015, we tracked 45 females with broods (Figure 1). Of these, 27 successfully reared a minimum of one chick to 50-days old (60% apparent brood success). In that period, 27 successful brood-rearing females added a minimum of 81 chicks to the population. The daily survival probability of a CSTG brood across all years of the project was 0.990 (95% CI 0.984 – 0.994), and the cumulative survival probability that a brood would reach 50 days post-hatch across all years was 0.605 (95% CI 0.446 – 0.740).

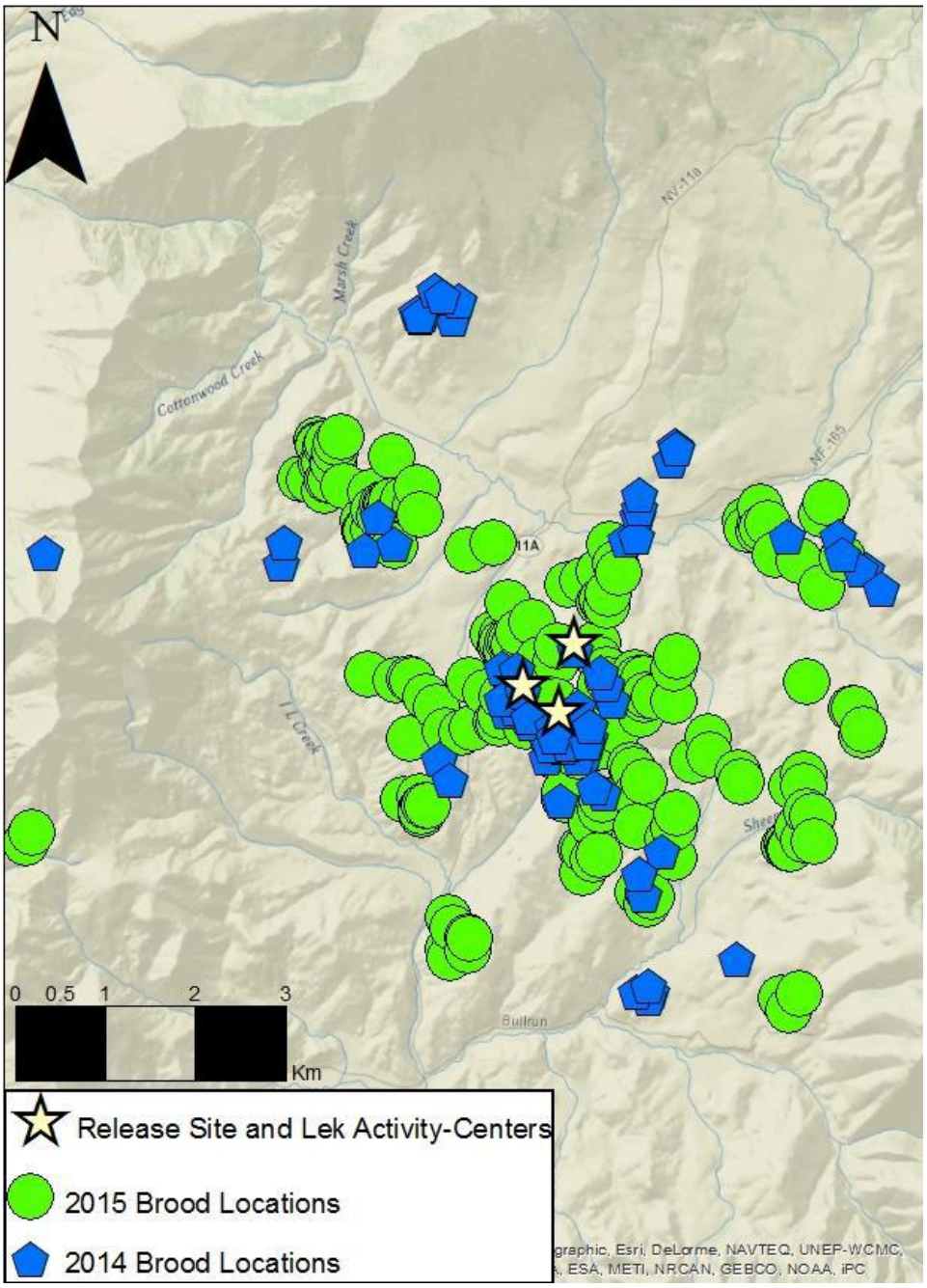


Figure 1. Brood locations of Columbian sharp-tailed grouse in the Bull Run Basin.

Mountain Quail and Ruffed Grouse Translocation

Mountain Quail Restoration Project

The focus of the mountain quail restoration project for the past two years has been to augment and expand existing mountain quail populations in the extreme northwest corner of Nevada in Hunt Unit 011. Over the last two years, 200 mountain quail have been released into the Horse Creek drainage just north of the Barrel Springs Road. In early December of 2015, 100 mountain quail were obtained from southwestern Oregon and released approximately 4.5 miles northwest of the initial release location in Horse Creek in 2014. The 2015 augmentation represented the final release of mountain quail currently planned for this portion of Nevada. Released birds are expected to help bolster the low density population that existed prior to the augmentations. Small coveys of mountain quail have been reported to the Nevada Department of Wildlife in several different locations along the Vya Rim.

Ruffed Grouse Establishment Project

The Nevada Department of Wildlife – Game Division initiated a ruffed grouse capture and translocation operation in late August/early September of 2015 to obtain birds for an augmentation of the species in the Toiyabe Range in Nye County. Trapping took place from August 27 – September 10, 2015 and a total of 40 ruffed grouse were captured consisting of 12 adults and 28 juveniles. Birds were held between 24-48 hours and transported to Stewart Creek located in the west-central portion of the Toiyabe Range (Figure 3). Two individuals died during the translocation process, which concluded on September 11, 2015. Thirty eight ruffed grouse were released during the effort, consisting of 12 adults and 26 juveniles. Each bird was banded with a uniquely numbered leg band.

Ruffed grouse are now established in the Birch Creek/Big Creek portion of the Toiyabe Range in Lander County from releases conducted in 2009 and 2012. The 2015 augmentation of the Toiyabe Range population should allow for establishment not only within Stewart Creek, but within adjacent drainages such as Clear Creek, Illinois Creek and possibly even the North Twin River on the east side of the mountain range. Developing two core populations with the potential for establishing another core population in the

future somewhere in between (e.g. San Juan and Washington Creek drainages) would allow for the interchange of individuals and a much larger, well connected population.

Figure 3. Stewart Creek release site in the Toiyabe Range.

Bi-State Greater Sage-grouse Monitoring

This year represents the first year of a three year project to capture, radio-mark and follow-up on sage-grouse through their seasonal life stages within the Desert Creek and Mount Grant Population Management Units (PMUs). U.S. Geological field crews are collecting data that will be used to investigate habitat selection and areas of utilization, estimate vital rates (e.g., nest, brood, and individual survival), and relate those vital rates to environmental factors, including the presence of specific predators. The crew has successfully concluded trapping and deploying VHF units on sage-grouse and is now concentrating efforts on monitoring leks, tracking collared grouse and locating nests.

Capture Results

During the field season, 23 sage-grouse have been captured and outfitted with VHF units: 10 at Mount Grant and 13 at Desert Creek. Units were deployed on females at each active lek to represent the entire study site.

Monitoring Results

These results are considered preliminary at this time due to this being the inaugural year of this effort. Thirty-eight telemetry locations have been obtained from 26 birds during the months of March and April. Ten females out of 22 active collars have been located in Mount Grant while 16 out of 21 radio-marked birds have been located in Desert Creek. Two individuals are outfitted with GPS units, which transmitted a total of 377 points during January - April.

Monitoring radio-marked females has resulted in the discovery of 12 nests: 3 at Desert Creek and 9 at Mount Grant (Figure 4). The first nest was discovered on 10 April. As of

25 April, 10 nests are still active. Nests are monitored every third day to determine whether the nest has succeeded, failed, or is still active. One mortality has been confirmed this season. The mortality occurred over the 2015 – 2016 fall and winter season. The cause of death is unknown but likely due to mammalian depredation, as evidenced by teeth marks and chewing on the VHF unit. Two other mortality signals have been detected but are currently inaccessible due to snowpack conditions on Mount Grant.

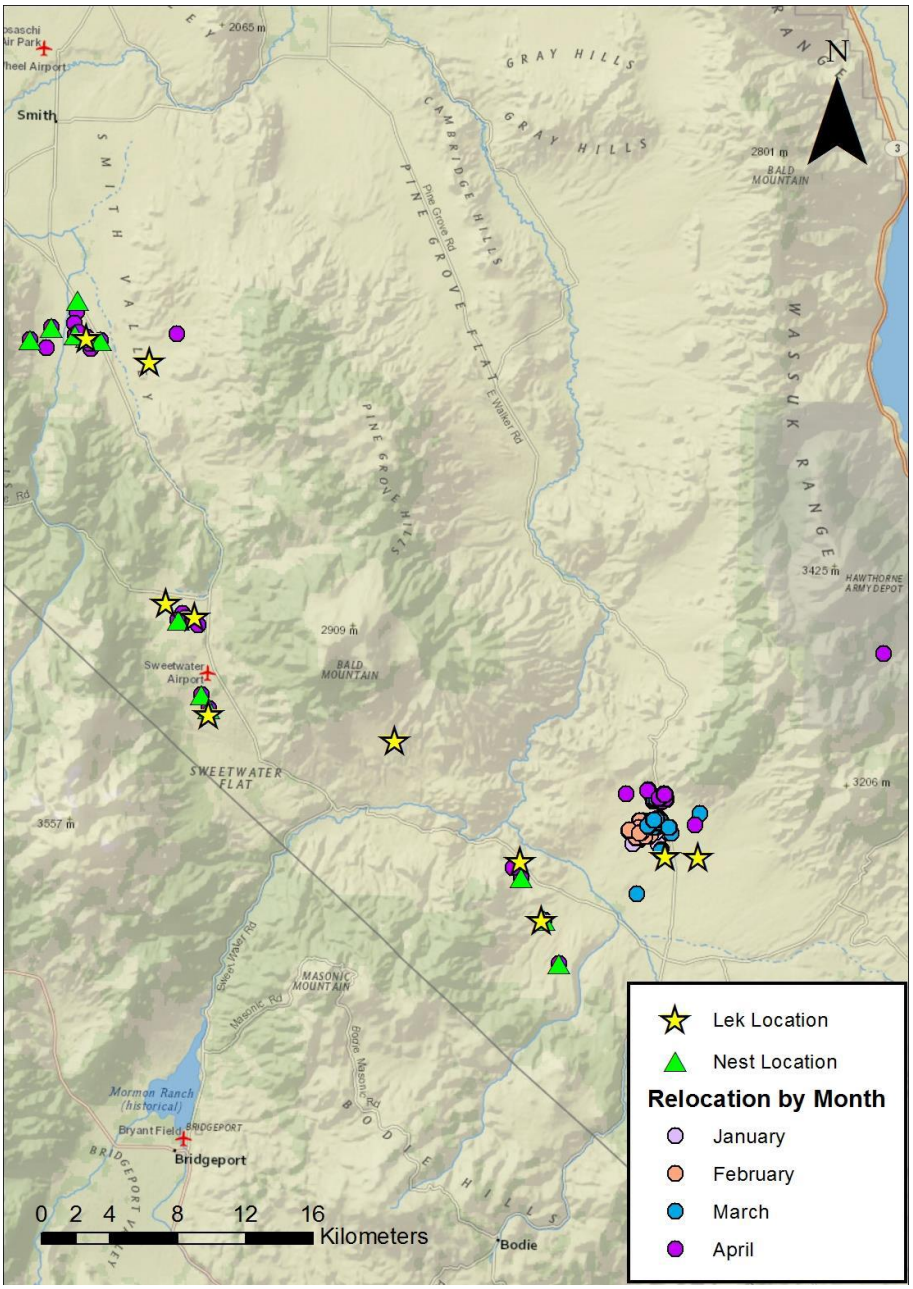


Figure 4. Telemetry, nest and lek locations within the Mount Grant and Desert Creek PMUs.

Conservation Principles for Greater Sage-grouse in the Great Basin

A sub-grant has been completed and signed to work collaboratively with the U.S. Geological Survey and the Nevada Chukar Foundation to develop a book on population ecology of Greater sage-grouse with emphasis on the Great Basin. One of the first steps in the development of this book will be to initiate a call for papers pertaining to the population ecology of sage-grouse during various annual life stages (e.g. breeding, nesting, brood rearing and winter). Chapters in the book will be devoted to these differenct life stages. The call for papers is expected to be released in June of 2016. A draft outline of the book that describes each section of the book plus drafts of Part One (Nesting Phase) and Part Two (Brood Rearing Phase) are expected to be completed in September of 2016.

Greater Sage-grouse Population Monitoring

Lek Count Technicians

A seasonal lek count technician was used to assist with lek counts in the Eastern Region during April and early May of 2016. The technician spent 9 days in the field and counted 16 leks. This assistance provides field biologists with great relief during an extremely busy time of year. Additional seasonal lek count technicians were also used; however, they were largely funded directly by a Nevada Bighorns Unlimited Sage-grouse custodial account.

Aerial Lek Survey

There are 652 active and 262 pending active sage-grouse leks within the Nevada Department of Wildlife's Sage-grouse Lek Database. Due to the large number of leks and the difficulty in accessing several of the lek locations during the spring months, helicopter surveys provide a useful tool to survey several leks in one morning and get to remote locations not accessible by vehicle. In some cases, NDOW aircraft are used to conduct these surveys; however, due to conflicts with spring deer surveys, we also contract aerial services through El Aero. During FY16, we used El Aero Services to conduct sage-grouse lek surveys in the following areas:

- Humboldt County: Black Rock Range, Montana Mountains, Pine Forest Range and the Santa Rosa Range;
- Churchill County: Desatoya Mountains
- Mineral County: Wassuck Range (Mount Grant)
- Lyon County: Pine Nut Mountains and Desert Creek/Sweetwater Range

Approximately 22.6 hours of helicopter lek survey time was covered by Upland Game Bird Stamp funding in FY16.

Fixed Wing Infrared Surveys

Aerial infrared (IR) surveys were conducted during the week of April 11 – 15, 2016 by Owyhee Air Research. The majority of these surveys took place in northern Elko County; however, a day of IR survey also took place in the Battle Mountains of Lander County. In Elko County, 36 leks were surveyed using the aerial IR technique (20 leks were surveyed in the Upper Humboldt Basin and 16 leks were surveyd in the Upper Owyhee watershed of the North Fork Population Management Unit). These leks were also surveyed simultaneously by U.S. Geological Survey (USGS) wildlife technicians (double blind counts) via ground observation to determine the difference between results of the aerial IR survey and actual on the ground counts. This will assist with developing valid correction factors for the IR survey.

In addition to surveying known leks, the Nevada Department of Wildlife worked cooperatively with the USGS to set up "pseudo" leks using captive reared pheasants. Pheasants have a similar spectral image to sage-grouse and were tethered to stakes to prevent escape. A total of 20 "pseudo" leks of varying size were set up to determine how well the aircraft performed when searching for new or unknown leks using the aerial IR technology. Results of the survey have not been provided as of this writing; however, this monitoring should be integral to the development of a publication on the practical use of new infrared technology that illustrates both advantages and limitations.

Fixed Wing Telemetry Surveys

The Nevada Department of Wildlife uses Upland Game Stamp funding to acquire locations of VHF radio marked grouse through a contracted vendor, Owyhee Air. Owyhee Air has provided this service for several years and their overall performance has been exceptional. As of April 2016, Owyhee Air has conducted approximately 32 hours of aerial survey to either locate marked sage-grouse or obtain a mortality signal to help determine monthly survival estimates for the population. Locations are mostly obtained during the fall and winter months when research and monitoring crews have left the field. The areas where populations have been aerially monitored in FY16 include the following:

- Pine Nut Mountains (Lyon County);
- Virginia Mountains (Washoe County);
- Hayes Canyon Range/Nellie Springs Mountain (Washoe County);
- Sheldon National Wildlife Refuge (Washoe/Humboldt County);
- Mount Grant (Mineral County);
- Desert Creek/Sweetwater (Lyon County)

Monitoring the Effects of Landscape-Level Treatment on Greater Sage-grouse within the Desatoya Mountains of Central Nevada

The Nevada Department of Wildlife (NDOW) and the U.S. Geological Survey Western Ecological Research Center (USGS) initiated a before-after study design to investigate the potential effects of landscape scale habitat enhancement and restoration projects on sage-grouse population vital rates, habitat selection, movement patterns, as well as effects on predator community composition, in the Desatoya Mountains located in central Nevada. The Bureau of Land Management (BLM), in collaboration with NDOW and Smith Creek Ranch, have proposed a landscape-scale, multi-year integrated habitat restoration and maintenance project (also known as the Desatoya Mountains Habitat Resiliency, Health and Restoration Project) to improve wildlife habitat and restore degraded vegetation communities within the Desatoya Mountains through singleleaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*; hereafter PJ) removal treatments and restoration of sagebrush communities, wet meadows, and other riparian complexes over a ten year period (BLM 2012). Proposed habitat enhancement and restoration actions that will directly impact approximately 32,000 acres include various PJ removal treatments (20 – 100% removal), fencing to protect wet meadows and riparian areas, stabilizing stream channels, and wild horse removal.

Capture Results

During 2013–2015, 84 sage-grouse were captured and outfitted with VHF radio or GPS – Satellite PTT devices within the study area. In 2014 and 2015, six of the ten known leks were active, two were inactive, and two were not surveyed within the Desatoya Population Management Unit (PMU). During both seasons of monitoring, 34 nests were located, 13 broods were monitored, and 372 ground telemetry locations were obtained. A total of 643 raptor, raven, and livestock surveys were performed with the detection of 404 ravens during 232 surveys. Primary data collection efforts include gathering baseline data on space-use, habitat selection, and population vital rates. Further data are required to reach conclusions concerning sage-grouse populations in the Desatoya Mountains.

Movement Patterns

Two general patterns of sage-grouse movement from spring breeding areas to summer habitat were observed; grouse moved to either lowland riparian and agricultural complexes or to alpine areas within the Desatoya Mountains (Figure 5). Grouse were observed 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 surrounding 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 2014. In the Desatoya Mountains, it appears that birds are using springs and other ephemeral water sources near Edwards Creek, Haypress, and Topia Creek.

Brood Monitoring

All five broods monitored in 2014 failed. In 2015, we monitored eight broods, of which two were successful, five failed, and one was unknown. The 10-day interval brood survival probability was 74.8% (95% CI, 57.3% - 86.1%), and the cumulative average survival probability for the 50-day brood rearing period during was 23.4% (95% CI, 6.2% - 47.2%; Figure 19). In 2014, 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. In 2015, three broods failed before the 10-day check; two failed between the 10 and 20-day checks, and one failed between the 30 and 40-day checks.

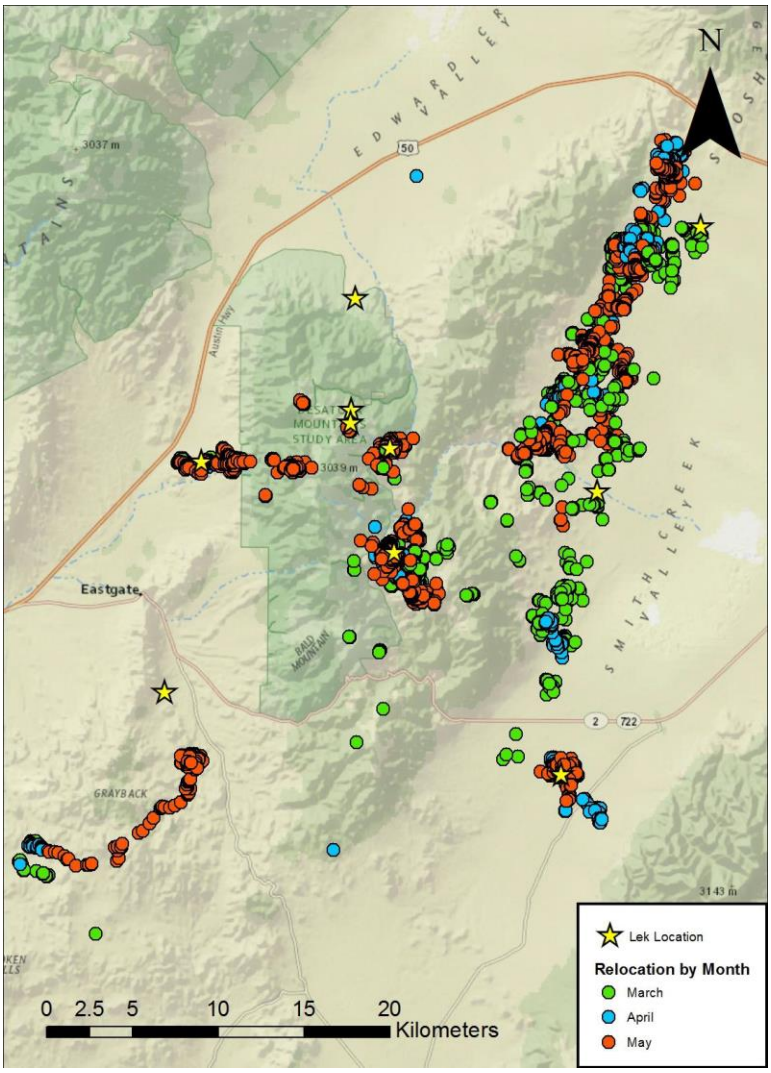


Figure 5. GPS locations during spring (n=10,290) by month in the Desatoya Mountains, 2014 – 2015.

Effects of Conventional Raven Control on Greater Sage-grouse Vital Rates within the Virginia Mountains

The initial impetus for investigating the Greater sage-grouse population in the Virginia Mountains was to better understand movement patterns and vital rates prior to an anticipated renewable energy development (wind) proposed for the Tule Ridge/Spanish Flat portion of the mountain range. This provided a good opportunity to develop a classic before, after, control impact study design to accurately depict any effects that the development might have on the population. Research and monitoring activities were initiated in 2009 working in cooperation with the U.S. Geological Survey – Western Ecological Research Center (USGS). Subsequent to this, the wind energy project was withdrawn due to the importance of the area to sage-grouse and other wildlife concerns (e.g. golden eagle nesting). Still, the project provided valuable insight into the population dynamics of the area and two publications were developed from the research efforts including Lockyer et al. 2013 on nest predator identification published in the Journal of Fish and Wildlife Management and Lockyer et al. 2015 on nest site selection and reproductive success in a fire impacted habitat published in the Journal of Wildlife Management. The prior study demonstrated that cumulative nest survival in the Virginia Mountains was 22.4%, well below other published estimates for the Great Basin of between 36 and 43%, with common ravens being the most common nest predator. Thus, it was determined that this area represented an opportunity to conduct targeted raven control work and to determine the effects on the population both during and after treatment. This year represents the third year of intensive raven control work in the Virginia Mountains.

Sage-grouse Movement Patterns

From 2009 through 2015, a total of 216 sage-grouse with VHF transmitters have been monitored. The total number of males and females tracked by radio telemetry were 15 and 201, respectively. Most sage-grouse were relocated in the Spanish Flat area. From 2009 to 2015, the core area of sage-grouse activity (50% UD) during spring (March – May) was 2,937 ha and for summer (June – July) was 816 ha, according to pooled telemetry locations. The population level home range (95% UD) encompassed 15,730 ha during spring and 4,319 ha during summer. In each year, the core area was located at Spanish Flat. The majority of individual home ranges throughout spring and summer overlapped within the Spanish Flat area (Figure 6).

Nest Survival

Cumulative average nest survival probability for the 37-day egg-laying and incubation phase for study years 2009–2011 and 2013–2015 was 26.3% (95% CI, 18.4 – 34.9%). 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. In seven years, 130 sage-grouse nests were monitored. Of these, we documented 59 successful nests (first attempt = 51, second attempt = 8) and 71 failed nests (first attempt = 66, second attempt = 5), of which we were able to determine that 50 were depredated (first attempt =48, second attempt = 4). 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. We did not document third nesting attempts.

Sage-grouse Nest Videography

Fifty-one nests were video-monitored during 2009 (n = 6), 2010 (n = 16), 2011 (n = 17), 2014 (n = 2), and 2015 (n = 10). Nest depredations, partial nest depredations, and successful hatches were recorded. We calculated nest survival for video-monitored nests in the same manner as described for all nests in Section 4.4. The reason for calculating survival of video-monitored nests both together and separately from all nests was to determine if video-monitored nests are more or less likely to fail. Nest survival across all video-monitored nests for 2009–2011 was 43.7 ± 0.1% (means ± SE), with yearly survival rates of: 22.2% ± 0.1 (2009), 35.0% ± 0.1 (2010), 60.6% ± 0.1 (2011). Successful hatching was recorded at 22 nests. Predator activity was recorded at 19 nests, of which 16 nests were depredated, 2 nests were partially depredated, and one nest hatched with no eggs apparently lost directly due to removal by the predator. Both partially depredated nests still hatched ≥1 egg following the event. Depredation was the primary cause of sage-grouse nest failure. Nest predators were avian, mammalian, and reptilian. Predation of both eggs and chicks were recorded at the nest. Ravens were the most frequent sage-grouse nest predator in the Virginia Mountains, accounting for 39% of nest predation events.

Brood Survival

During 2009–2015, 67 broods were monitored. Thirty-three females with broods were confirmed successful (≥1 chick survived to 50-days post-hatch) and 26 broods failed. Of the 26 unsuccessful females, 16 were confirmed as failed on or before the 25-day post-hatch interval. The remaining eight 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 90.9% (95% CI = 86.6–93.9%) during 2009–2015. The cumulative average brood survival probability for 50-day brood rearing phase (probability of success through the brood rearing period) was 62.2% (95% CI = 48.6–73.1%, Figure 16) for 2009–2015.

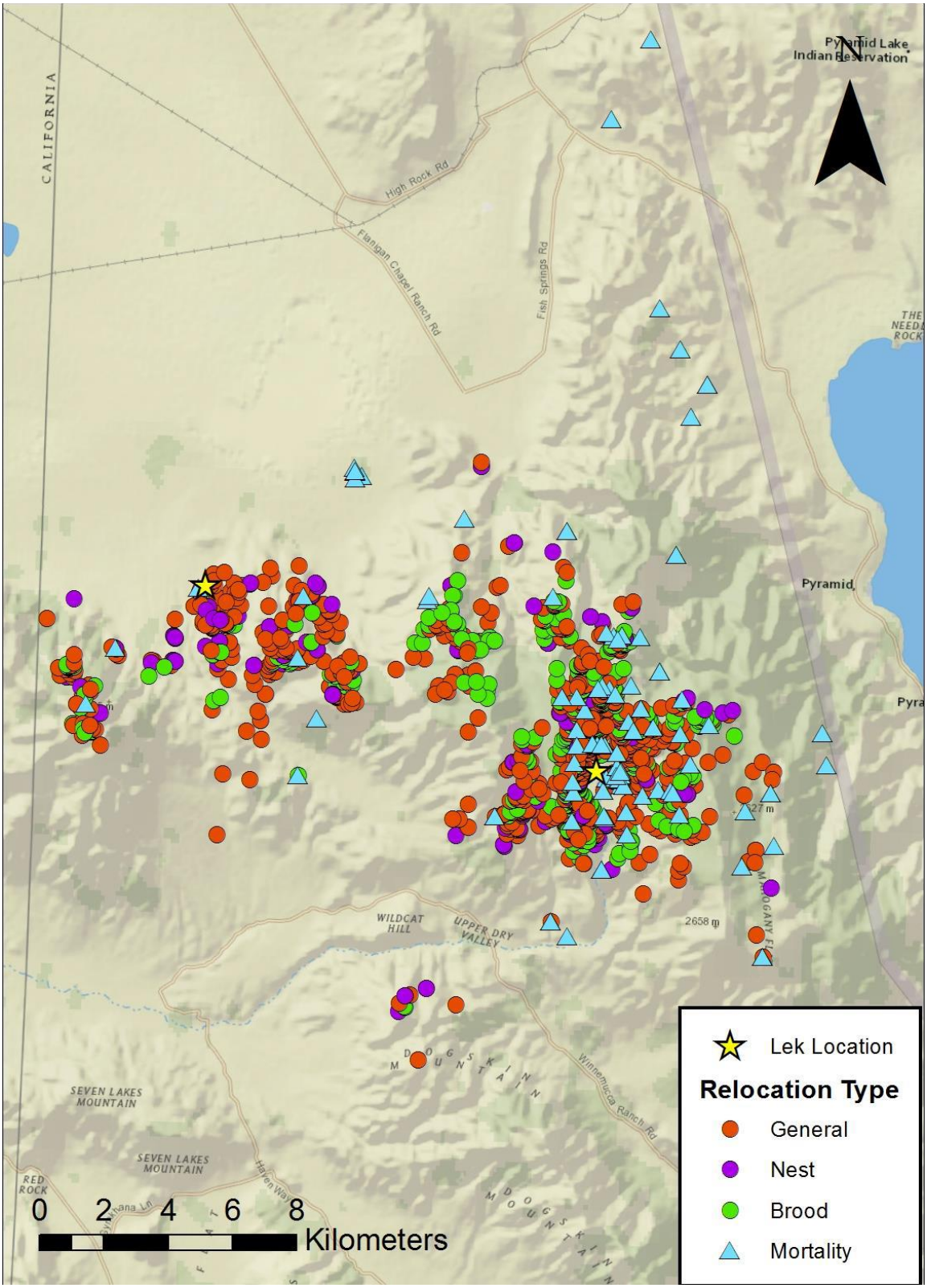


Figure 6. Greater sage-grouse telemetry locations through 2015.

Estimating Greater Sage-grouse Vital Rates within Nevada's Most Novel Habitats

U.S. Geological Survey field crews initiated the first field season of monitoring greater sage-grouse populations in the Monitor Valley and Santa Rosa field sites on March 8, 2016. The field crews will collect data used to investigate habitat selection and areas of utilization, estimate vital rates (e.g., nest, brood, and individual survival), and relate those vital rates to environmental factors, including the presence of specific predators. The crews concluded sage-grouse trapping on 9 April and are currently tracking birds. Field efforts are now focused on locating and monitoring nests.

Monitor Valley Capture Results

Capture was initiated on March 8, 2016 and 16 female sage-grouse were captured and outfitted with VHF transmitters. Monitoring efforts are now focused on locating birds and their nests using radio-telemetry. Field technicians have located 23 of 44 marked females (VHF = 43; GPS = 1). An aerial telemetry flight located several missing birds, but 10 individuals are still considered missing at this time. In addition, 674 locations have been obtained from two GPS transmitters during January – April (Figure 7).

Monitor Valley Monitoring Results

As of 25 April, three nests have been discovered. The first was found on 22 April; all three nests are currently still active. Nests are monitored every third day to determine success or failure. After the fate of a nest is determined, we conduct habitat surveys at the nest site to characterize the vegetation selected by the grouse.

So far, four mortalities (two VHF and two GPS) have been recovered. The GPS mortalities occurred during the late fall and winter, so minimal evidence of predation was found and only feathers remained. Remains at one VHF mortality were a head and collar, which was buried under a sagebrush. The second VHF mortality had remains of body and primary feathers.

Santa Rosa Capture Results

Capture was initiated on 8 March, and 30 female sage-grouse were captured and outfitted with VHF units throughout March and early April. Females were captured from a high proportion of the known leks in the Santa Rosa Mountains to obtain a representative sample across the study area.

Santa Rosa Monitoring Results

Telemetry locations have been obtained from 27 of the 30 active VHF collared females during the months of March and April (Figure 8). An aerial telemetry flight has recently been conducted to aid in relocating missing birds. Flights provide crews with reliable ground locations for birds that have not previously been found.

Monitoring radio-marked females has resulted in the discovery of four nests. As of 25 April, all four nests were still active. We will continue to monitor nests every three days in order to determine nest fate. No mortalities have been observed thus far. We will recover and report mortalities as they occur throughout the field season.

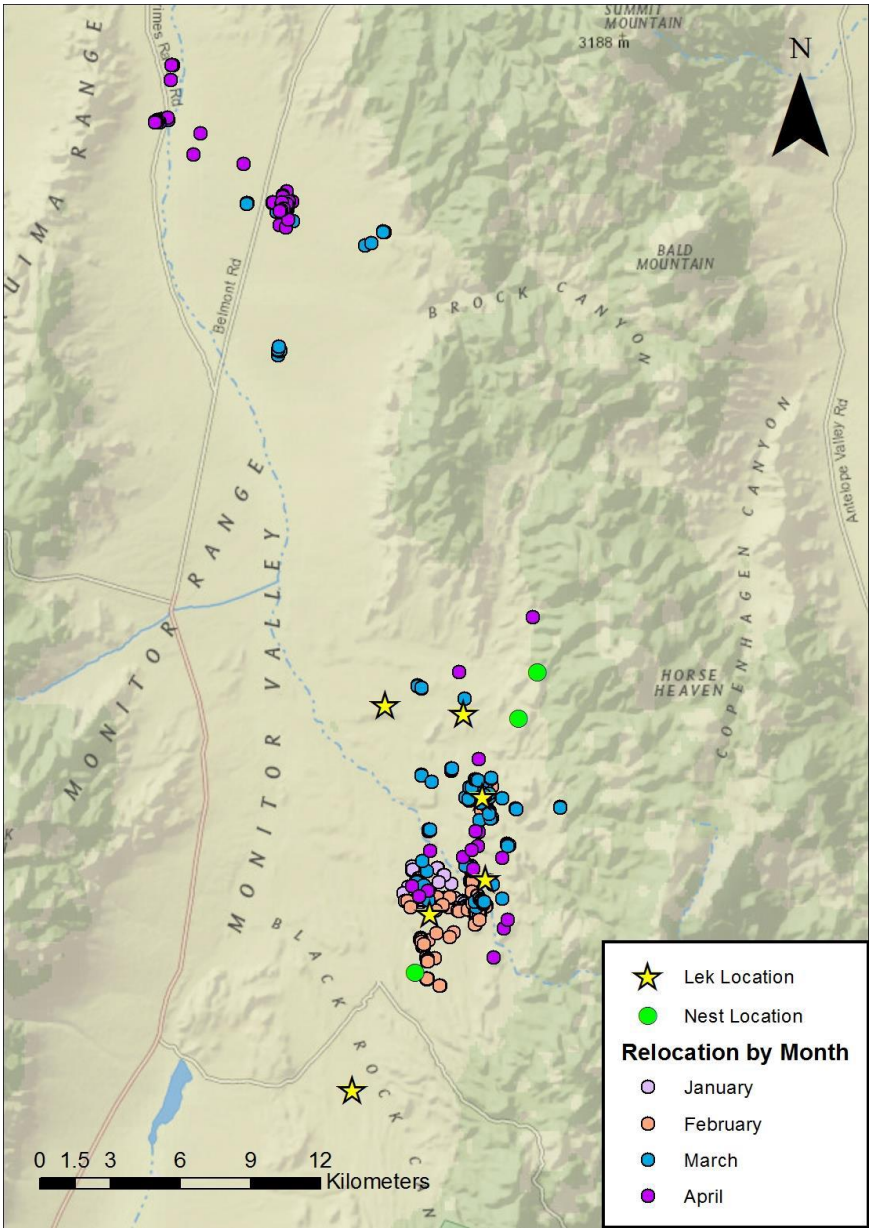


Figure 7. Leks (n = 6), nests (n = 3) and telemetry and GPS locations (n = 697) during January – April 2016, in Monitor Valley.

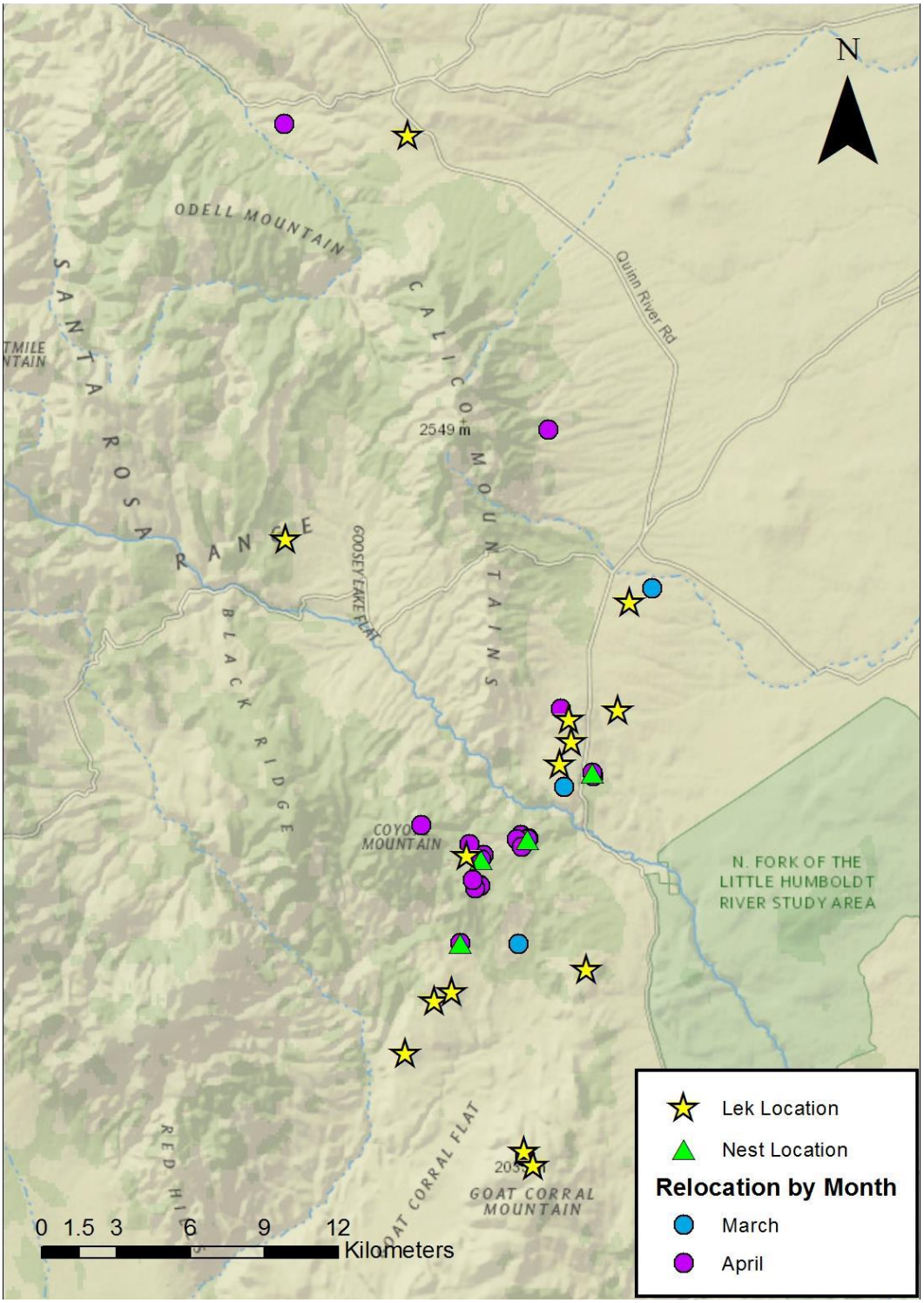


Figure 8. Leks (n = 14), nests (n = 4) and telemetry locations (n = 27) during March – April 2016, in the Santa Rosa Mountains study area.

Kirch WMA Wildlife Food Plots

Forty acres of the lower dove field were 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, 2016. 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 $2,700 was spent on seed.

Eastern Region WMAs Weed Control

Funding for this project was used on herbicide treatments at the Bruneau WMA. Canada thistle, Scotch thistle, hoary cress, perennial pepperweed, were treated on state-owned lands to restore important upland game habitat. The Stowell property which was acquired in 2012 has been the target of specific weed control efforts in FY16. It is hoped that the current effort will reduce further weed encroachment on the Bruneau WMA and diminish the transportation of noxious weed seeds to other areas. Efforts to address weeds on the Bruneau WMA and other unmanned WMAs within the Eastern Region are hampered by the remoteness of some of these state holdings. The hiring of another Habitat Biologist for the Elko office will greatly enhance efforts to manage these areas in the future. In addition, Elko Habitat Staff have developed an RFP for contract spraying on a state-wide basis. We anticipate using these contracts to facilitate additional weed control within the Eastern Region in the near future.

Key Pittman WMA Wildlife Food Plots

Approximately 60 acres were planted in October with wheat, oats, cereal rye, barley, and hairy vetch as a winter cover crop. An additional 40 acres were planted in November with ryegrass, tall fescue, sand dropseed, and Sandberg bluegrass to enhance desirable vegetation in areas where the removal of noxious weeds and fuel break construction left areas that were lightly vegetated or bare ground. During February, 60 acres were seeded with spring wheat, oats, barley, alsike clover, native annual sunflower, small burnett, and rocky mountain bee plant. Selected areas along the shoreline of the upper ponds will be hand seeded in June, 2016 with millet and native sunflower to increase forage production in feeding areas on the WMA and to enhance hunting opportunities. This project was completed by WMA personnel and a total of $3,900 was spent on seed.

Proposed FY 2017 Upland Game Bird Stamp (UGBS) Projects

Title of Project	**Project Manager**	**$ Requested from UGBS Account**	**Other Funding Sources Contributing to the Project** (not including in-kind contributions)
Columbian Sharp-tailed Grouse Restoration Project	Shawn Espinosa	$25,000	Federal Game Management Grant: $75,000 Carson Valley Chukar Club (CVCC): $2,500 Nevada Bighorns Unlimited (NBU) – Midas Chapter: $2,500
Mountain Quail and Ruffed Grouse Translocation	Shawn Espinosa	$8,000	Federal Game Management Grant: $28,000 CVCC: $2,000
Greater Sage-grouse Monitoring	Shawn Espinosa	$55,000	Federal Sage-grouse Conservation Grant: $220,000 NBU - Midas Chapter: $5,000 CVCC: $5,000 Nevada Chukar Foundation: $5,000
Estimating Greater Sage-grouse Vital Rates within Nevada's Most Novel Habitats	Shawn Espinosa	$22,500	Federal Sage-grouse Conservation Grant: $135,000 Ruby Pipeline Mitigation Funds: $22,500
Bi-State Sage-grouse Monitoring within the Desert Creek and Mount Grant Population Management Units	Shawn Espinosa	$22,500	Federal Sage-grouse Conservation Grant: $65,000 CVCC: $2,500
Monitoring the Effects of Pinyon and Juniper Removal on Greater Sage-grouse in Southeastern Nevada	Shawn Espinosa	$10,000	Federal Sage-grouse Conservation Grant: $30,000
Monitoring the Effects of Landscape- Level Treatments on Greater Sage-grouse within the Desatoya Mountains of Central Nevada	Shawn Espinosa	$15,000	Federal Sage-grouse Conservation Grant: $45,000 CVCC: $2,500
Predicting the Value of Greater Sage-grouse Late Brood Rearing Habitats	Shawn Espinosa	$12,750	N/A

Title of Project	**Project Manager**	**$ Requested from UGBS Account**	**Other Funding Sources Contributing to the Project** (not including in-kind contributions)
Effects of Conventional Raven Control on Greater Sage-grouse Vital Rates within the Virginia Mountains of Northwestern Nevada	Shawn Espinosa	$17,500	Federal Sage-grouse Conservation Grant: $52,500
Conservation Principles for Greater Sage-grouse in the Great Basin	Shawn Espinosa	$15,000	Federal Sage-grouse Conservation Grant: $45,000
Cricket Springs Restoration	Matthew Glenn	$12,000	Habitat Conservation Fee: $20,000 Ruby Pipeline Mitigation Fund: $32,000
Statewide Water Development Maintenance	Matt Maples	$25,000	Federal Water Development Grant: $275,000 Habitat Conservation Fee: $25,000
Evans Creek/Indian Springs Fencing	Matthew Glenn	$10,000	Habitat Conservation Fee ($20,000) Ruby Pipeline Mitigation Fund ($30,000)
Key Pittman WMA Wildlife Food Plots	Ron Mills	$3,900	Duck Stamp: $2,600
Kirch WMA Wildlife Food Plots	Adam Henriod	$2,880	Duck Stamp: $1,920
Mason Valley WMA Upland Wildlife Food Plots	Isaac Metcalf	$10,000	Carson Valley Chukar Club (CVCC): $4,000
Eastern Region WMAs Weed Control	Steve Foree	$7,500	Duck Stamp: $7,500
Total		**$274,530**	

Budget Status of Upland Game Bird Stamp Account

Balance in the Account at Start of FY 2016	$ 513,441
Estimated Revenue Accrued During FY 2016	$ 255,722
Estimated Total FY 2016 Expenditures	$ 262,000
Estimated Administrative Costs (10% of Revenue)	$ 25,572
Estimated Balance at End of FY 2016 / Start of FY 2017	$ 481,591
Estimated Revenue to be Accrued During FY 2017	$ 255,722
Estimated Administrative Costs (10% of Revenue)	$ 25,572
Proposed New Project FY 2017 Expenditures	$ 274,530
Estimated Balance at End of FY 2017	$ 437,211

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

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Columbian Sharp-tailed Grouse Restoration Project

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):
The following are possibilities that are subject to review and approval by each entity. Contributions would reduce the match requirement from Nevada Upland Game Stamp funds:

1) Carson Valley Chukar Club: $2,500
2) Nevada Bighorns Unlimited – Midas Chapter: $2,500

The rest of the project's costs are covered by NDOW's Game Management Grant (around $75,000)

Total In-Kind Donations by Source (please list by source):$36,250

Total Project Cost to be Funded by All Sources: $141,250

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 distribution has declined greatly over the last 50-75 years. However, improvements in historic habitats has resulted from improved 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 existing populations in southern Idaho. Requested funding would provide match for the Nevada Department of Wildlife's W-48 grant to conduct research and monitoring on the translocated birds and the ultimate outcome of the project. This work has been 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 Columbian Sharp-tailed Grouse (CSTG) in northeastern Nevada that exhibits long-term persistence. Approval and implementation of this proposal would help 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 offer 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 2017 and translocate the birds to the identified release sites in the Independence and Bull Run Mountains. To date, a total of 187 grouse (127 females, 60 males) have been released into the Bull Run Basin. State Fiscal Year 2017 would represent the fifth year of this planned 5-year effort to capture and translocate sharp-tailed grouse to Nevada.

II. Project Location (include a map if available): (See Figure 1 at the end of this proposal)

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 km^2 or 6,700 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 km^2 or 5,300 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. Nevada Department of Wildlife personnel would assist with capturing birds for translocation.

- Capture approximately 250 Columbian sharp-tailed grouse over a five-year period (in total) consisting of approximately 60% females and 40% males from areas located in Idaho and Utah (currently, the gender composition is 71% females and 29% males);
    - Capture approximately 30-40 females and 10-20 males for releases in each year beginning in 2013 (year 1) through 2017 (year 5).
    - 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-terms goal, this project will assist with expanding Columbia Sharp-tailed grouse 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 2017: Capture approximately 30-35 CSTG females and ≤15 males from established leks in Idaho during the spring breeding season and translocate them to the Bull Run Basin in 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. 2015).

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 provided in the attached table.

IX. Is this Project Going to Continue After FY17? Yes ____ No _X__

FY2017 is likely to be the last year of the project unless it is determined that additional releases with smaller complements of birds are needed to help develop a self-sustaining population.

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

XI. If it is Going to Continue After FY17, Define the Total Dollars to be Spent During Each Fiscal Year:

If additional, but smaller releases are necessary to develop a self-sustaining population, then we may propose an additional project for FY18 at a reduced cost. We would anticipate that capturing up to 25 females and 10 males may be necessary for up to an additional two years (FY18 and FY19). This is contingent upon approval by the Idaho Department of Fish and Game or the potential for source stock availability in southern British Columbia, Canada.

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?

NDOW's Pittman-Robertson Sport Fish and Wildlife Restoration – Game Management Grant.

Project Cost Breakdown

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)**	*Costs to be Paid by Other Sources**
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	$ 17,625.00	$ 58,125.00
C. Total Personnel Costs	$ 17,625.00	$ 58,125.00
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	$ 116,313.00
Total Project Costs	$	141,250.00

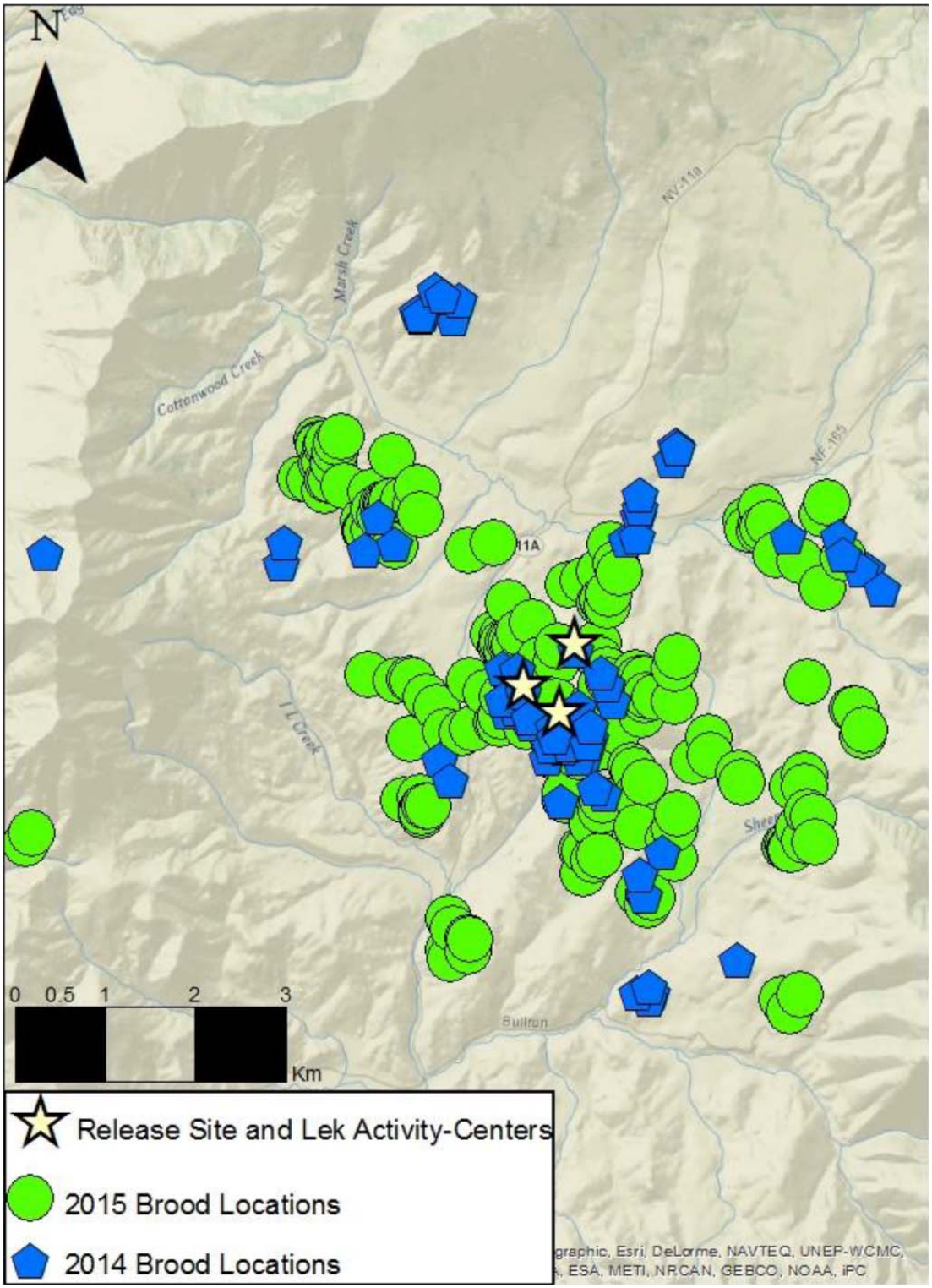


Figure 1. Brood locations of translocated CSTG in 2014 (n=14 broods) and 2015 (n=24 broods).

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Mountain Quail and Ruffed Grouse Translocation

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): $8,000

Total Cash to be Used from Other Funding Sources (please list by source):
Carson Valley Chukar Club: $2,000
NDOW's Federal Game Management Grant: $27,000

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

Total Project Cost to be Funded by All Sources: $37,000

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 772 mountain quail within Churchill, Humboldt, Washoe and White Pine Counties. In addition, 203 ruffed grouse have been captured and translocated to portions of Elko, Humboldt, Lander and Nye Counties. These translocations, and subsequent augmentations, are conducted to fulfill the objective of expanding mountain quail and ruffed grouse distribution within Nevada as stated in the Nevada Upland Game Species Management Plan. 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 2016/2017 is the Fish Creek Range within Hunt Unit 153; however, habitat conditions during the fall/winter of 2016 will dictate whether or not a release is warranted.

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 was completed in FY16. The priority for ruffed grouse in FY17 would be to augment the Pine Forest population.

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.

<u>Mountain Quail:</u>

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.

<u>Ruffed Grouse:</u>

We propose to capture 20-30 ruffed grouse to augment a recent prior release in the Pine Forest Range of Humboldt County. 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 2016, 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 2016 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 FY2016-17;
- 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 provided in the attached table.

IX. Is this Project Going to Continue After FY17? 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 FY17, Define the Total Dollars to be Spent During Each Fiscal Year: We estimate that the cumulative annual expenditure on this project is 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

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)**	*Costs to be Paid by Other Sources**
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		$ 25,416.00
B. Other Personnel		
C. Total Personnel Costs	$ -	$ 25,416.00
3. Travel Costs		
A. Per Diem		$ 3,584.00
B. Mileage		
C. Total Travel Costs	$ -	$ 3,584.00
4. Equipment		
A. VHF radio transmitters (10 @ $200/ea.)		
B.		
C. Total Equipment Costs	$ -	$ -
5. Materials		
A. Capture materials (ruffed grouse)	$ 1,000.00	
B.		
C.		
D. Total Materials Costs	$ 1,000.00	$ -
6. Miscellaneous		
A. Capture Vendor (Relocator LLC)	$ 7,000.00	
B.		
C.		
D.		
F. Total Miscellaneous Costs	$ 7,000.00	$ -
7. In-Kind Services		
A.		
B.		
C. Total In-Kind Services	$ -	$ -
Subtotals	$ 8,000.00	$ 29,000.00
Total Project Costs	$	37,000.00

*NDOW personnel and per diem costs will be covered by the Game Management Grant funded through the USFWS Wildlife Restoration Program. Transmitters will be covered by a combination of NDOW Special Reserve Account and Sportsmen's Organizations such as the Nevada Chukar Foundation or Carson Valley Chukar Club.

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Greater Sage-grouse Monitoring

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): $55,000

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

Additional State Matching Funds:

1) Nevada Bighorns Unlimited - Midas Chapter: $5,000
2) Carson Valley Chukar Club: $5,000
3) Nevada Chukar Foundation: $5,000

Wildlife Restoration Federal Funds:

Nevada Sage-grouse Conservation Grant (W-64) – Federal Match (75%): $220,000

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

Total Project Cost to be Funded by All Sources: $290,000

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) using seasonal technicians, 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 2015, there were 1,891 known lek locations identified in the Nevada Statewide Sage-grouse Database (Nevada portion only), of which 613 were considered active (defined as 2 or more males observed during 2 years in a 5 year period), 264 were considered "pending active", meaning that an additional year of observing 2 or more males is necessary to be considered an active lek, and 629 were

considered "unknown" status leks. This volume of lek locations 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=756). 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 and quota recommendations are being made.

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=756). 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 spring breeding season of 2017. This work has traditionally taken place during the first two weeks in April of each year, but depends upon schedules of other states employing the use of this methodology as well.
Fixed wing telemetry surveys would be conducted throughout the fiscal year, with emphasis on locating radio-marked birds during late fall and winter 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: No NEPA compliance is necessary for this particular project.

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 FY17? 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 FY17, 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

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)**	*Costs to be Paid by Other Sources**
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		$ 120,000.00
B. Other Personnel (Lek Count Techs.)	$8,000	$ 30,000.00
C. Total Personnel Costs	$ 8,000.00	$ 150,000.00
3. Travel Costs		
A. Per Diem		
B. Mileage		$ 15,000.00
C. Total Travel Costs	$ -	$ 15,000.00
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	$ 40,000.00
B. Infrared Imagery Flights (Leks)	$ 20,000.00	$ 20,000.00
C. Fixed-wing Telemetry Survey	$ 15,000.00	$ 10,000.00
D.		
F. Total Miscellaneous Costs	$ 47,000.00	$ 70,000.00
7. In-Kind Services		
A.		
B.		
C. Total In-Kind Services	$ -	$ -
Subtotals	$ 55,000.00	$ 235,000.00
Total Project Costs	$	290,000.00

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

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

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 Program Grant (W-64) – Federal Match (75%): $135,000
Ruby Pipeline Funds are being used as match ($22,500) at one of the control sites in the northern portion of the state (Santa Rosa Range/Owyhee Desert, Humboldt County).

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

Total Project Cost to be Funded by All Sources: $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 among other things. 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 offer contiguous habitat (large, uninterrupted blocks).

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 25-30 female sage-grouse and place VHF radio transmitters and leg bands on the birds at each study site. 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 at each study site;

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) understand and map 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 is located within the Santa Rosa Population Management Unit (PMU) on the east side of the Santa Rosa Range as it transitions into the Owyhee Desert lying to the east.
- The second study site is located in central Nevada in northern Monitor Valley and the north-central portion of the Monitor Range including Butler Basin 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 ($22,500) and the Ruby Pipeline Mitigation Fund ($22,500), allowing for the expenditure of $135,000 of WSFR-PR funds for a total project cost of $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 (±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 ΔAIC, Akaike's weights, evidence ratios, likelihood-based R2, 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:
Capture and radio-marking efforts for this project will take place during the spring of each year from early March through April. Follow-up work will extend from this period through August of each year. 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: This is a research and monitoring project.

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 FY17? 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 FY17, 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

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)**	*Costs to be Paid by Other Sources**
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	$ 14,500.00	$ 122,850.00
C. Total Personnel Costs	$ 14,500.00	$ 122,850.00
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	$ -	$ -
4. Equipment		
A. VHF transmitters (32 units @ $225/ea.)	$ 1,800.00	5,400.00
B. Radio receivers/antenneas	$750	$ 2,250.00
C. Total Equipment Costs	$ 2,500.00	$ 7,650.00
5. Materials		
A.		
B.		
C.		
D. Total Materials Costs	$ -	$ -
6. Miscellaneous		
A. Field Housing	$250	$750.00
B. Vehicles (4WD truck lease: 2 @ $10,500/ea.)	$ 5,250.00	$ 26,250.00
C.		
D.		
E. Total Miscellaneous Costs	$ 5,500.00	$ 27,000.00
7. In-Kind Services		
		$ -
		$ -
	$ -	$ -
Subtotals	$ 22,500.00	$ 157,500.00
Total Project Costs	$	180,000.00

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

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

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%): $65,000

Total In-Kind Donations by Source (please list by source):
The following are possibilities and subject to review and approval, which would reduce the match requirement from Nevada Upland Game Stamp funds: Carson Valley Chukar Club: $2,500

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 and used at 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 will attempt 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 (±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 ΔAIC, Akaike's weights, evidence ratios, likelihood-based R2, 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:

State Fiscal Year 2017 will be the second year of a planned three year monitoring effort within the Mount Grant and Desert Creek Population Management Units of the Bi-State Sage-grouse Conservation Area. Initial capture work took place during the fall of 2015 with additional efforts in the spring of 2016. Follow up work on radio-marked birds is ongoing and technician follow-up work will conclude in August of 2016. Fall and winter location and mortality monitoring will be conducted using aircraft. Capture and radio-marking of additional birds will take place during the fall of 2016 and the spring of 2017 followed by additional follow-up and vegetative monitoring work during the spring and summer of 2017.

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. This is a research and monitoring project.

Project Costs and Funding

VIII. Cost Summary

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

IX. Is this Project Going to Continue After FY17? Yes __X__ No _____

This project will continue through FY18.

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 concluding after FY18.

XI. If it is Going to Continue After FY17, 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?

Seventy-five percent of the funding would be made available through the Pittman-Robertson 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

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)**	*Costs to be Paid by Other Sources**
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	$ 14,188.00	$ 42,562.00
C. Total Personnel Costs	$ 14,188.00	$ 42,562.00
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	$ 22,500.00	$ 67,500.00
Total Project Costs	$	90,000.00

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Monitoring the Effects of Pinyon and Juniper Removal on Greater Sage-grouse in Southeastern Nevada

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): $10,000

Total Cash to be Used from Other Funding Sources (please list by source):
Nevada Sage-grouse Conservation Grant (W-64) – Federal Match (75%): $30,000

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

Total Project Cost to be Funded by All Sources: $40,000

Project Proposal

I. Purpose of Project and Goals to be Achieved:

The Nevada Department of Wildlife (NDOW) and the Bureau of Land Management – Ely District (BLM) are partnering on a Greater Sage-grouse (hereafter referred to as "sage-grouse") monitoring project to determine the efficacy of various vegetative treatments, particularly pinyon and juniper removal on local sage-grouse population enhancement within portions of Lincoln and southern White Pine County. Baruch-Mordo et al. (2013) suggests that population level impacts to sage-grouse can occur at very low levels of conifer encroachment, whereas no sage-grouse leks remained active when conifer canopy exceeded 4%. The BLM and NDOW, along with various other partners including private landowners, are working to address this issue throughout Sage-grouse Management Zone III within south-central Nevada and southern Utah. Sage-grouse monitoring work is currently ongoing in southern Utah in the Skutempah, Dog Valley and Hamlin Valley areas by Dr. Nicki Frey with Utah State University. We would like to expand upon her ongoing efforts and include study sites in Lincoln and southern White Pine Counties. Some of Dr. Frey's monitoring work in southern Utah has actually trickled into this portion of Nevada because sage-grouse are using habitats in both states. This monitoring effort is expected to span a three year period beginning in State Fiscal Year 2016.

II. Project Location (include a map if available): See Figure 1 at the end of this proposal.

The study area largely is encompassed within northern Lincoln County; however, some monitoring work may also take place in southern White Pine County. The primary sage-grouse use areas include the southern portion of Cave Valley located in the northwestern portion of Lincoln County and Hamlin Valley/Table Mountain located in the eastern portion of the County.

Cave Valley

Southern Cave Valley is located between the Egan Range and the Schell Creek Range in Lincoln County. There are 7 active sage-grouse leks located in southern Cave Valley ranging in size from 2 to 29 males. Breeding and nesting occurs mainly on the valley floor itself; however, brood rearing is expected to occur within the surrounding mountain ranges as birds disperse once the valley habitat dry during late spring and summer.

Hamlin Valley/Table Mountain

Hamlin Valley is located on the northeastern edge of Lincoln County and is flanked on the west by the Wilson Creek Range. A portion of Hamlin Valley extends into Utah. There are three active leks in the Nevada portion of Hamlin Valley and one in the northern portion of the White Rock Mountains and range in size from 7 to 20 males.

III. Project Approach Including Tasks to be Accomplished:

- Capture and GPS satellite PTT mark up to 15 female sage-grouse initially at each study site (South Cave Valley and Hamlin/Table Mountain) and maintain that approximate sample size over the course of the 3-year study;
    - Dropped transmitters will be refurbished (if possible) and redeployed during the second and third breeding season.
- Capture and band any male sage-grouse encountered during trapping efforts;
- Periodically download and categorize data obtained from GPS satellite PTT transmitters;
- Determine approximate nest initiation dates of each female grouse;
- Identify movement patterns during the nesting season;
- Determine nest fate of each female grouse and estimate daily nest survival probabilities;
- Estimate the effects of environmental characteristics on nest survival rates;
- Calculate kernel home-ranges of female grouse during the nesting season;
- Identify specific use areas during the brooding period;
- Conduct brood counts every 10-d interval through the brood-rearing period to document brood success. Broods with no chicks will be scored unsuccessful and confirmed within 48-hours;
- Calculate 10-day interval brood survival rate;
- Identify late-fall feeding area for congregated broods;
- Estimate differences between male and female (with broods) departure dates to wintering areas;
- Identify wintering grounds and attempt to develop a winter seasonal habitat map;
- Calculate Brownian bridge movement path models to identify corridors between seasonal use areas;
- Calculate seasonal and annual survival rates and identify differences between sexes.

Habitat Measurements and Analyses

- 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 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, including Jones cover, board to estimate vertical and horizontal cover at each point of subplots and at the nest bowl;
- Conduct multiple measurements to quantify the amount of conifers within the nesting area (Monitor study site);
- Use maps of vegetation types derived from remote sensing data in a Geographical Information System (GIS) to measure habitat characteristics at larger spatial scales;
- Measure the habitat characteristics (field and GIS) at random points that are spatially dependent and independent from the nest site;
- Develop a cover class layer of conifers using 1-m resolution NAIP and NDVI data (Monitor study site);
- Conduct multi-scale habitat selection analysis using random and used points;
- Estimate the effects of grouse age and body condition on nest survival rates;
- Conduct habitat measurements (field and GIS) at a subsample of brood locations dependent random locations for each 10-day interval;
- Develop and compare brood survival models that include vegetation characteristics as covariates to identify the effects of vegetation factors;

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. There are several collaborators on the project including, but not limited to, the Nevada Department of Wildlife, the U.S. Fish and Wildlife Service and the Smith Creek Ranch. 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 a 3 year period and the initial year of capture and monitoring work began in State Fiscal Year 2016. Individuals are marked with GPS/Satellite PTT devices which allows for locations of birds several times a day. This monitoring project is expected to be completed in early fiscal year 2019 (September/October of 2018).

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:

National Environmental Policy Act compliance for sage-grouse monitoring has been addressed in NDOW's Sage-grouse Conservation Project grant program. Habitat improvement projects taking place on public lands within the project area have been documented through the BLM Ely District offices.

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 FY17? 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 FY17, Define the Total Dollars to be Spent During Each Fiscal Year: We anticipate that this project will be completed in FY18 or early FY19 (September/October of 2018).

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 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

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)**	*Costs to be Paid by Other Sources**
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	$ 7,250.00	$ 21,750.00
C. Total Personnel Costs	$ 7,250.00	$ 21,750.00
3. Travel Costs		
A. Per Diem	$ 500.00	$ 1,500.00
B. Mileage	$ 1,750.00	$ 5,250.00
C. Total Travel Costs	$ 2,250.00	$ 6,750.00
4. Equipment		
A.		
B.		
C. Total Equipment Costs	$ -	$ -
5. Materials		
A.		
B.		
C.		
D. Total Materials Costs	$ -	$ -
6. Miscellaneous		
A. Field Housing	$ 500.00	$ 1,500.00
B.		
C.		
D.		
E. Total Miscellaneous Costs	$ 500.00	$ 1,500.00
7. In-Kind Services		
A. Travel (Per-diem)		
B. Other		
Subtotals	$ 10,000.00	$ 30,000.00
Total Project Costs	$	40,000.00

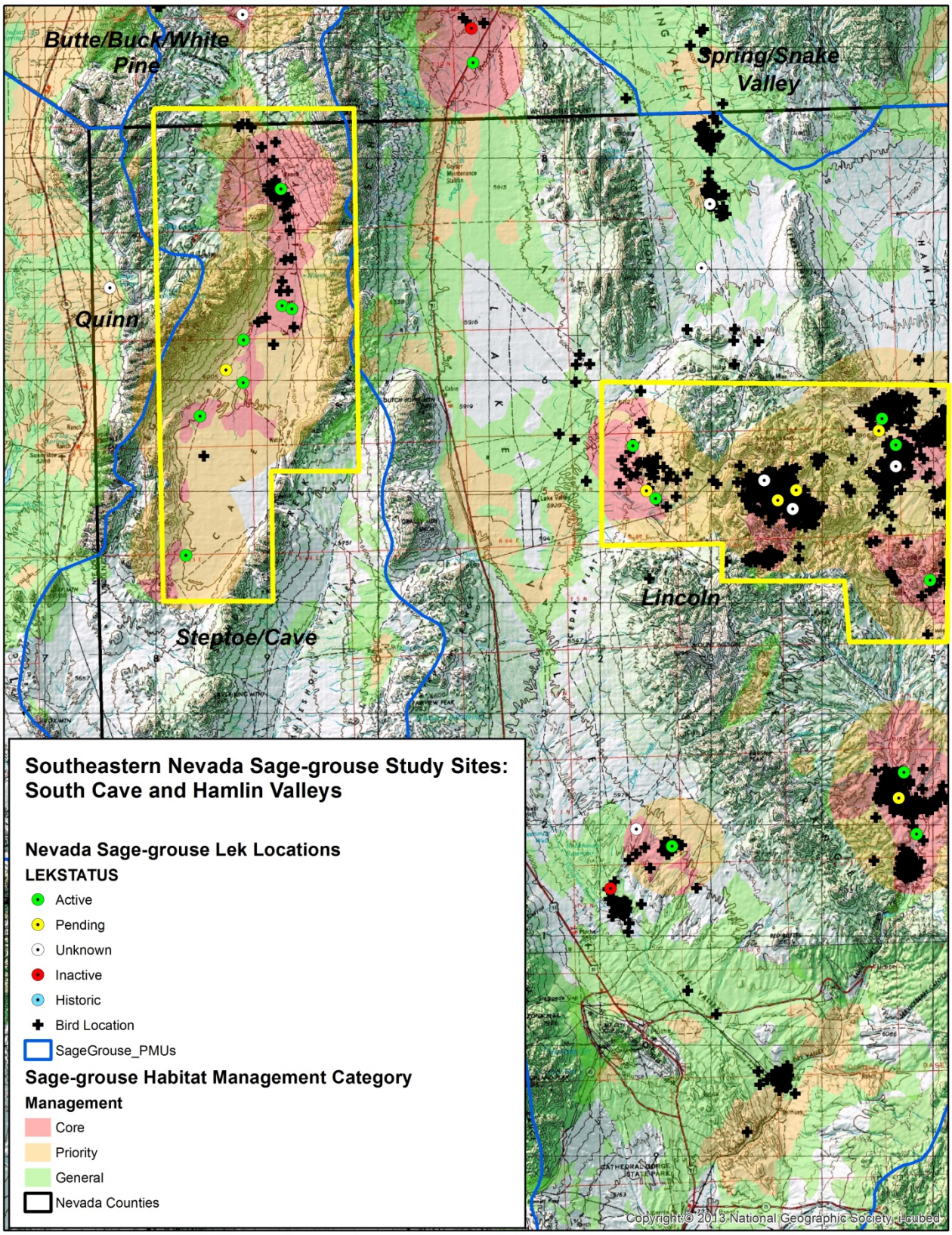


Figure 1. South Cave and Hamlin Valley sage-grouse general study areas.

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

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

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):
Carson Valley Chukar Club: $2,500

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

Total In-Kind Donations by Source (please list by source): USGS in-kind services ($19,842)

Total Project Cost to be Funded by All Sources: $79,843

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): See Figure 1 on page 7.

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 (±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 ΔAIC, Akaike's weights, evidence ratios, likelihood-based R2, 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. There are several collaborators on the project including, but not limited to, the Nevada Department of Wildlife, the U.S. Fish and Wildlife Service and the Smith Creek Ranch. 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. State fiscal year 2017 will be the fourth year of this monitoring effort.

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:

National Environmental Policy Act compliance for sage-grouse monitoring has been addressed in NDOW's Sage-grouse Conservation Project grant program. Habitat improvement projects taking place on public lands within the project area have been documented through the BLM Carson City District and Battle Mountain District offices.

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 FY17? 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 FY17, Define the Total Dollars to be Spent During Each Fiscal Year: We anticipate that this project will be completed in FY18.

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 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

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)**	*Costs to be Paid by Other Sources**
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel	$ 7,813.00	$ 23,438.00
C. Total Personnel Costs	$ 7,813.00	$ 23,438.00
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	$ -	$ -
4. Equipment		
A. VHF Transmitters (30 @ $225/ea.)	$ 1,687.00	$ 5,063.00
B. Vehicles (2 @ 10,500 per 6 month field season lease)	$ 5,250.00	$ 15,750.00
C. Total Equipment Costs	$ 6,937.00	$ 20,813.00
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 Biolgist (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	$ 15,000.00	$ 64,843.00
Total Project Costs	$	79,843.00

Note: $2,500 of the $15,000 may come from the Carson Valley Chukar Club or Nevada Chukar Foundation depending on approval by those entities. This would lessen the amount requested or needed from the Nevada Upland Game Stamp program fund.

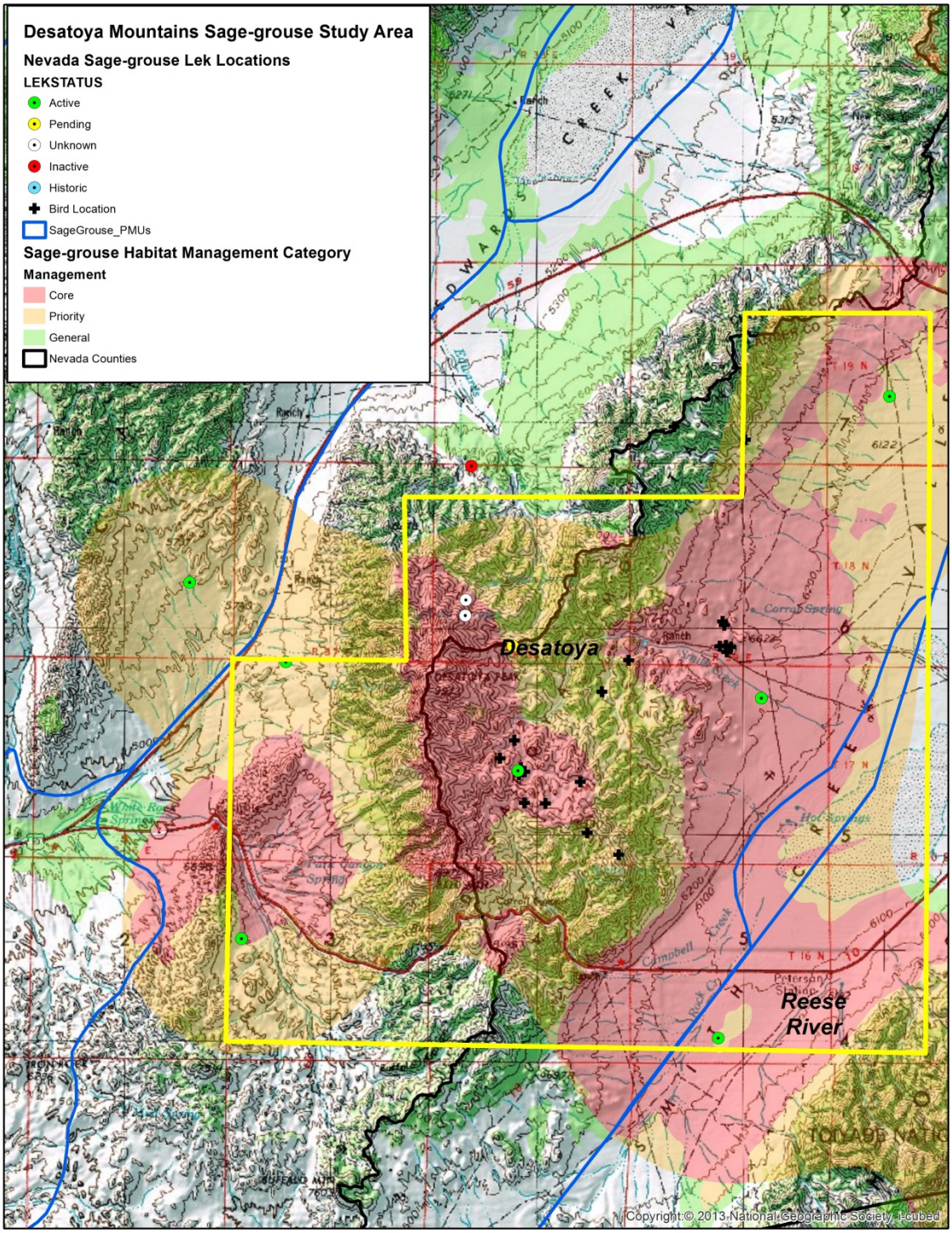


Figure 1. Desatoya Range sage-grouse study area.

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Predicting the Value of Greater Sage-grouse Late Brood Rearing Habitats

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

Funds Requested from Each Special Reserve Account(s): $12,750

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): $0

Total Project Cost to be Funded by All Sources: $12,750

Project Proposal

I. Purpose of Project and Goals to be Achieved:
The purpose of this project is to assess the role of late brood rearing (LBR) habitat on population dynamics of Greater sage-grouse and to predict the value of Greater sage-grouse late brood rearing (LBR) habitats using lek count data, a spatial use-informed buffer around leks, and an annual "performance" model of potential LBR habitats developed by the Desert Research Institute (DRI) dating back to 1985. If some correlations can be found to link lek dynamics to LBR performance temporally, it will be a valuable tool for managers to consider when developing projects to enhance or restore habitat for sage-grouse.

II. Project Location (include a map if available): This project would encompass the range of Greater Sage-grouse in Nevada.

III. Project Approach Including Tasks to be Accomplished:

Dr. Jim Sedinger and Dr. Peter Weisberg at UNR will work cooperatively on this project; however, staff from each professor's lab will also be key personnel including Phillip Street, currently working on the Sheldon-Hart-Massacre sage-grouse research project, and Tom Dilts, GIS analyst in Dr. Weisberg's lab.

GIS staff in Dr. Weisberg's lab and staff within Dr. Sedinger's lab will be assigned to:

1) Identify LBR within a pre-determined buffer around existing active leks (this could be limited to just "trend" leks depending on the availability of data) using a LBR model developed by UNR, which may also incorporate LBR models developed by USGS;
2) Incorporate a riparian and spring performance model developed by Justin Huntington with the Desert Research Institute assesses annual productivity of these habitats dating back to 1985;
3) Evaluate lek size and trends associated with identified LBRs (within pre-determined buffer zone of leks); and
4) Determine the extent to which lek dynamics are governed by performance of LBR habitats from the period between 1985 and 2015.

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

Providing that correlations can be determined, this would be a valuable tool for land managers and private landowners to consider when developing projects to enhance or restore habitat for Greater sage-grouse. This could also serve as a prioritization tool when utilized at a regional or landscape perspective. For example, the exercise could shed some light on some valuable LBR habitat that may have a sub-standard rating that may benefit from active or passive management alterations that would theoretically enhance sage-grouse population numbers.

V. Project Schedule: A final product will be developed by June 30, 2017

VI. Relationship to NDOW Plans, Policies and Programs: This project would help to inform the State's Greater Sage-grouse Conservation Plan and provide a tool for NDOW personnel to provide feedback to the BLM's Greater Sage-grouse Land Use Plan Amendment.

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: This project would not require any NEPA compliance from a federal land management agency.

Project Costs and Funding

VIII. Cost Summary

All of the Upland Game Bird Stamp funds that would be awarded to this project will be used to cover approximately $12,750 of UNR personnel costs.

IX. Is this Project Going to Continue After FY17? Yes ____ No __X__

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

XI. If the Project is Going to Continue After FY17, 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?
This funding would be used as match for Nevada's Sage-grouse Conservation Program grant.

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

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

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): $17,500

Total Cash to be Used from Other Funding Sources (please list by source):
Nevada Sage-grouse Conservation Grant (W-64) – Federal Match (75%): $52,500

Total In-Kind Donations by Source (please list by source): USGS ($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 six 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 corvicide 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 such as 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 corvicide laced chicken-egg baits within identified nesting habitat to reduce raven numbers (this task is covered under a Nevada Predator Management Plan project.

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): See Figure 1 on page 8.
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-elapsed 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 (±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 ΔAIC, 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 corvicide 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 NDOW 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 corvicide 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:

Raven control will be extended into State Fiscal Year 2017 to provide three full years of comprehensive raven control efforts using the deployment of corvicide injected eggs at strategic locations. We hope to continue monitoring the local sage-grouse population in the Virginia Mountains for another three years after raven control efforts have ceased in order to understand the longer term impacts of raven control on the sage-grouse population and whether or not there are lasting effects.

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:

Project Costs and Funding

VIII. Cost Summary

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

IX. Is this Project Going to Continue After FY17? 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 FY17, Define the Total Dollars to be Spent During Each Fiscal Year: This project will conclude after State Fiscal Year 2020.

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

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)**	*Costs to be Paid by Other Sources**
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

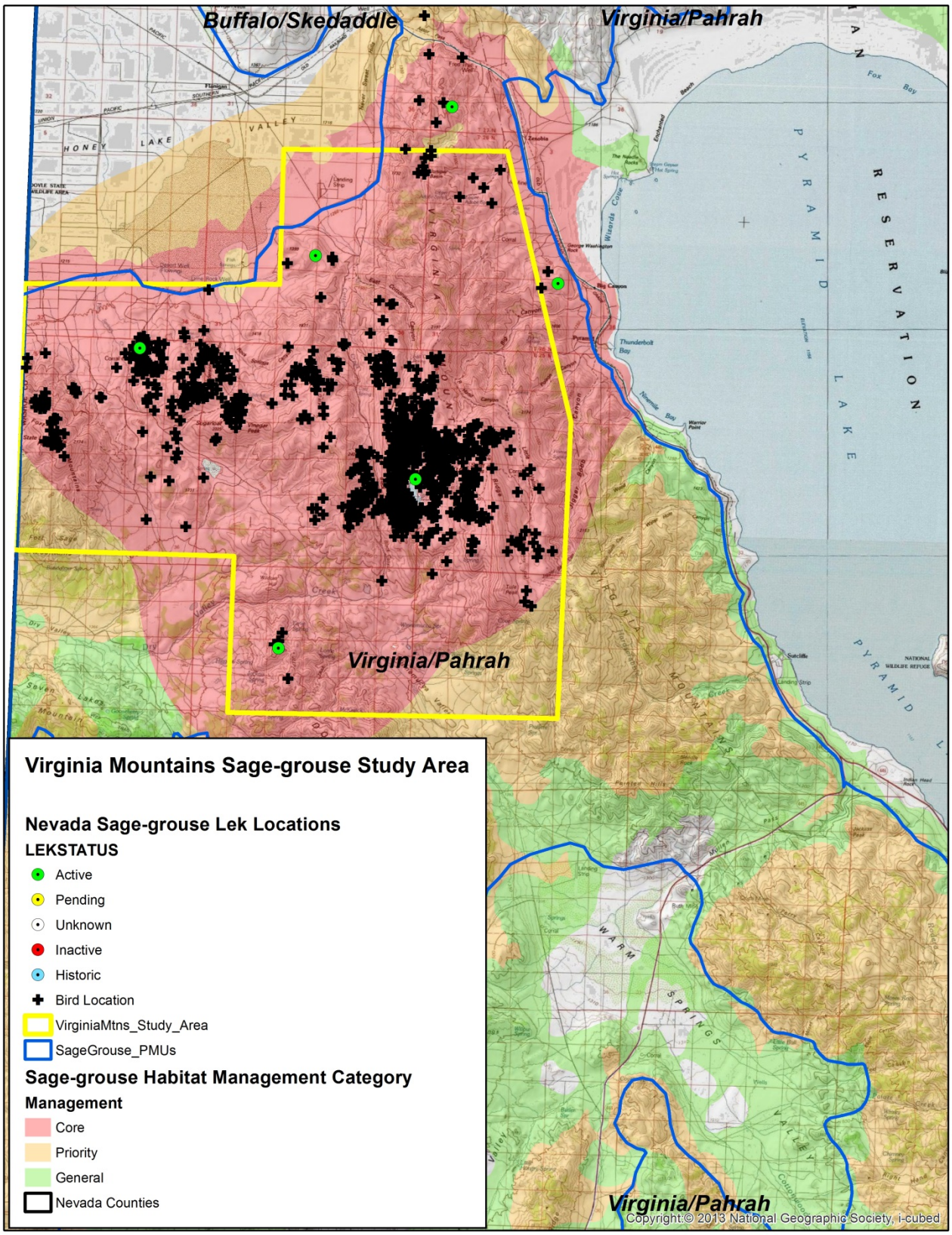


Figure 1. Virginia Mountains sage-grouse general study area.

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

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

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

Total In-Kind Donations by Source (please list by source): USGS $15,000

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 8 years, the 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 and recommendations 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 California-Nevada Greater Sage-grouse Plan Amendment and the State of Nevada's Sage-grouse Conservation Plan) for each life-stage and may incorporate information from additional studies within the Great Basin that transcend findings from the book (e.g. Utah). 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: No NEPA compliance documents are necessary for this particular project.

Project Costs and Funding

VIII. Cost Summary
A breakdown of this project's costs is provided in the attached table.

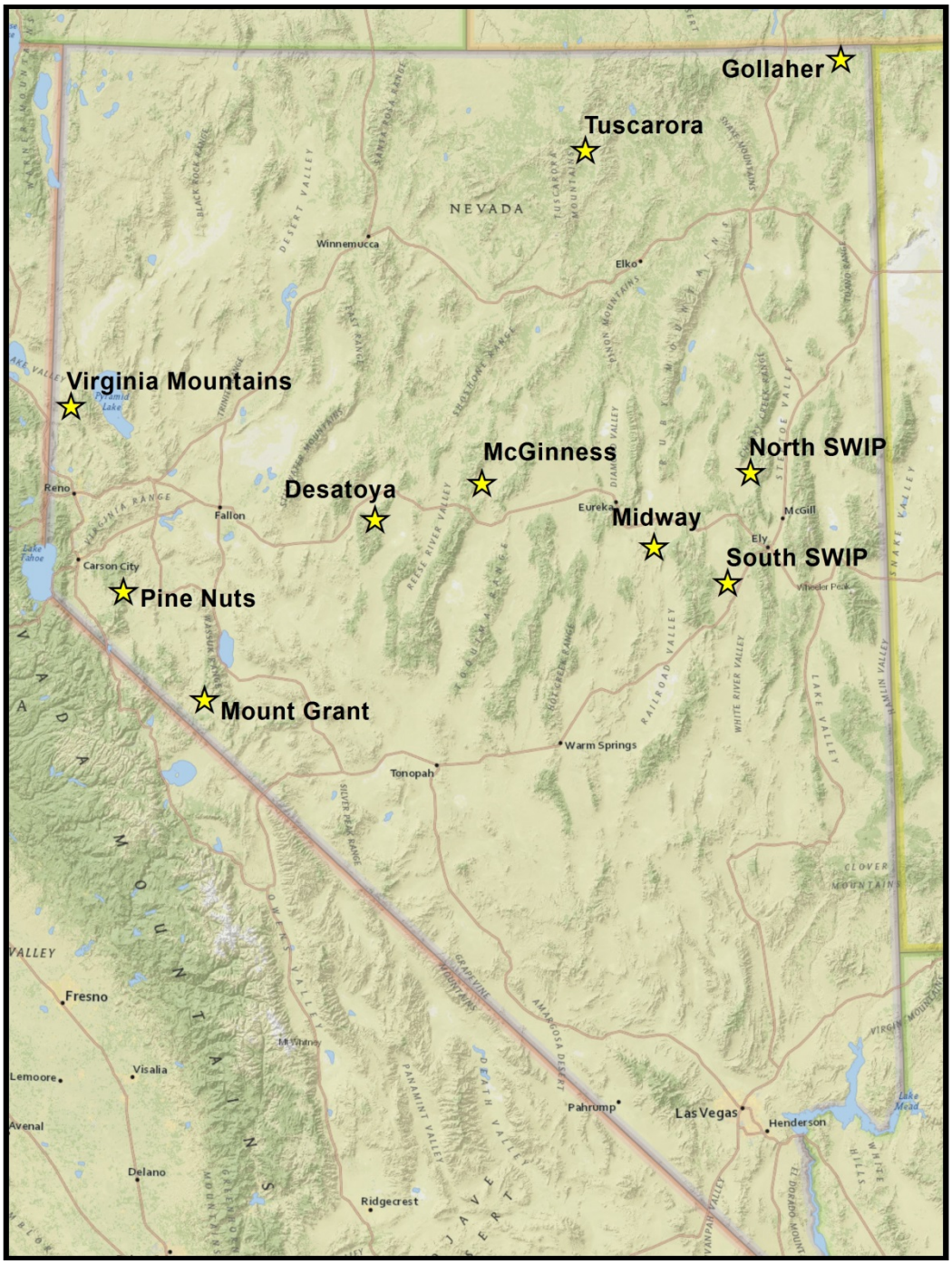
IX. Is this Project Going to Continue After FY17? Yes _X__ No _____

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

XI. If it is Going to Continue After FY17, Define the Total Dollars to be Spent During Each Fiscal Year: Funding commitment to this project would conclude at the end of FY17.

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

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)**	*Costs to be Paid by Other Sources**
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 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: **Cricket Springs Restoration**

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

NDOW Project Manager (PM): Kari Huebner and Matthew Glenn

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

Total Funds Requested from the Wildlife Reserve Account(s): $32,000 ($12,000 from Upland Game Bird Stamp and $20,000 from Habitat Conservation Fee)

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

- Ruby Pipeline Mitigation Fund $32,000

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

- Jeff Venturacci (Earth Work Construction) equaling $2,300

Total Project Cost to be Funded by All Sources: $66,300

Project Proposal

I. Purpose of Project and Goals to be Achieved:

The overall goal of this project is to help restore Cricket Springs to a functioning riparian and wet meadow habitat for the benefit of wildlife. In doing this, we would build a permanent pipe rail fence with a single gate around two of the five spring sources and wet meadow.

Water and associated riparian/meadow habitat is limited in this region making this spring complex extremely valuable to all wildlife including game and non-game species. Antelope, elk, mule deer, and upland game species rely heavily on springs, placing heavy importance on the proper functioning of limited resources like Cricket Springs.

Project Objective:

The primary objective would be to preclude the use of cattle on what is already a severely hummocked and degraded riparian/meadow zone. The exclusionary fence would allow for wildlife access and exclude cattle in order to allow for restoration and riparian function. Elk, pronghorn antelope, mule deer, sage-grouse, small mammals and a variety of passerines rely heavily on this limited water source. The project area lies entirely on private land and is one of the only water sources in the area for wildlife and cattle.

A single trough will be installed in conjunction with a spring box in order to provide water for the cattle as well as divert livestock activity from the meadow area that will not be fenced. Diverting cattle activity away from the water source and to a trough will benefit wildlife in lessening the effects of over grazing and the loss of important riparian sedges for nutrition for wildlife and cover for Greater Sage Grouse.

II. Project Location (include a map if available): Cricket Springs, Windemere Hills, Elko County
Map included.

UTM's: Cricket Springs
11T 687310 m E
4567790 m N

Upper Springs
11T 688473 m E
4567213 m N

III. Project Approach Including Tasks to be Accomplished:

The Cricket Springs complex consists of five springs along a single drainage with our proposed action being to fence the two spring sources with the greatest surface water expression. The three lower springs are approximately one mile below the upper spring where site potential presents the opportunity for meadow connectivity between the major spring sources, where there presently is no meadow. At Cricket Springs, a spring box would be installed and water pipped to a livestock trough constructed at a distance far enough from the spring to help limit cattle use on the riparian/meadow habitat. Total area fenced at Cricket Springs is approximately four acres with a 1,719 foot perimeter. The Upper Cricket Springs site will fence in an area of approximately two acres with a 1,386 foot perimeter.

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

The deer herd that populates the range that Cricket Springs lies in has withstood major disturbances such as wildfire and poor cattle management in recent years. These disturbances to the natural landscape have led to the loss of critical habitat and the succession in plant communities trending toward lesser habitat for mule deer. Opportunities such as this project present the chance to restore and preserve habitat for a species that might otherwise lose a critical resource needed to persist in the area.

In the fall, elk use at this spring is high and the spring is a consistent water source during the strenuous rutting period for the species. A temporary fence was constructed around a previous spring box due to the wallowing activity of bull elk where the spring box was damaged and rendered inoperable.

Antelope utilize this site year around and depend heavily on this consistent water source. Frequently cattle are camped at the spring and preclude the use by all wildlife to some degree including antelope. Having a separate trough from the spring site would allow for unrestricted access to water for all wildlife while preserving the nutritious vegetation and cover for sage grouse.

As the fence will be purchased and provided free of charge to the land owner, the Nevada Department of Wildlife will require a Fence Loan Agreement that requires the leasee to provide all maintenance for the fence. The agreement will also include the requirement that cattle will be excluded from the fenced area unless otherwise agreed upon by an NDOW representative. If the fenced area is to be grazed, duration and seasonality will be defined and agreed upon by an NDOW representative and the leasee.

V. Project Schedule:

As the project is located on a private inholding, NEPA compliance is not required and implementation could begin as soon as contracting and funding is established. There are two major tasks to complete this project. The first will be to install a spring box, pipe, and trough. The second major task will be to construct a permanent pipe rail fence around two of the five spring sources.

Presently these two projects require funding for materials and labor. In addition, NDOW's Eastern Region staff are working with Nevada State Purchasing to develop a contract for fencing which would facilitate the project work at Cricket Springs. The RFP agreement is being developed and should be completed this spring concurrent with the funding time frame.

Task one: Install spring box, pipe, and trough (Late summer/Fall 2016)
Task two: Construct two pipe rail fence around springs (Late summer/Fall 2016)

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. This project specifically meets the objectives in subsection 1(a) of NRS 501.3575, "…the protection, propagation, restoration, transplantation, introduction, and management of any game fish or mammal, game bird or fur-bearing mammal in this state." By restoring crucial habitats necessary for the sustainability of sage-grouse and mule deer populations, this project specifically meets this objective.

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status: No NEPA compliance is required.

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 _____

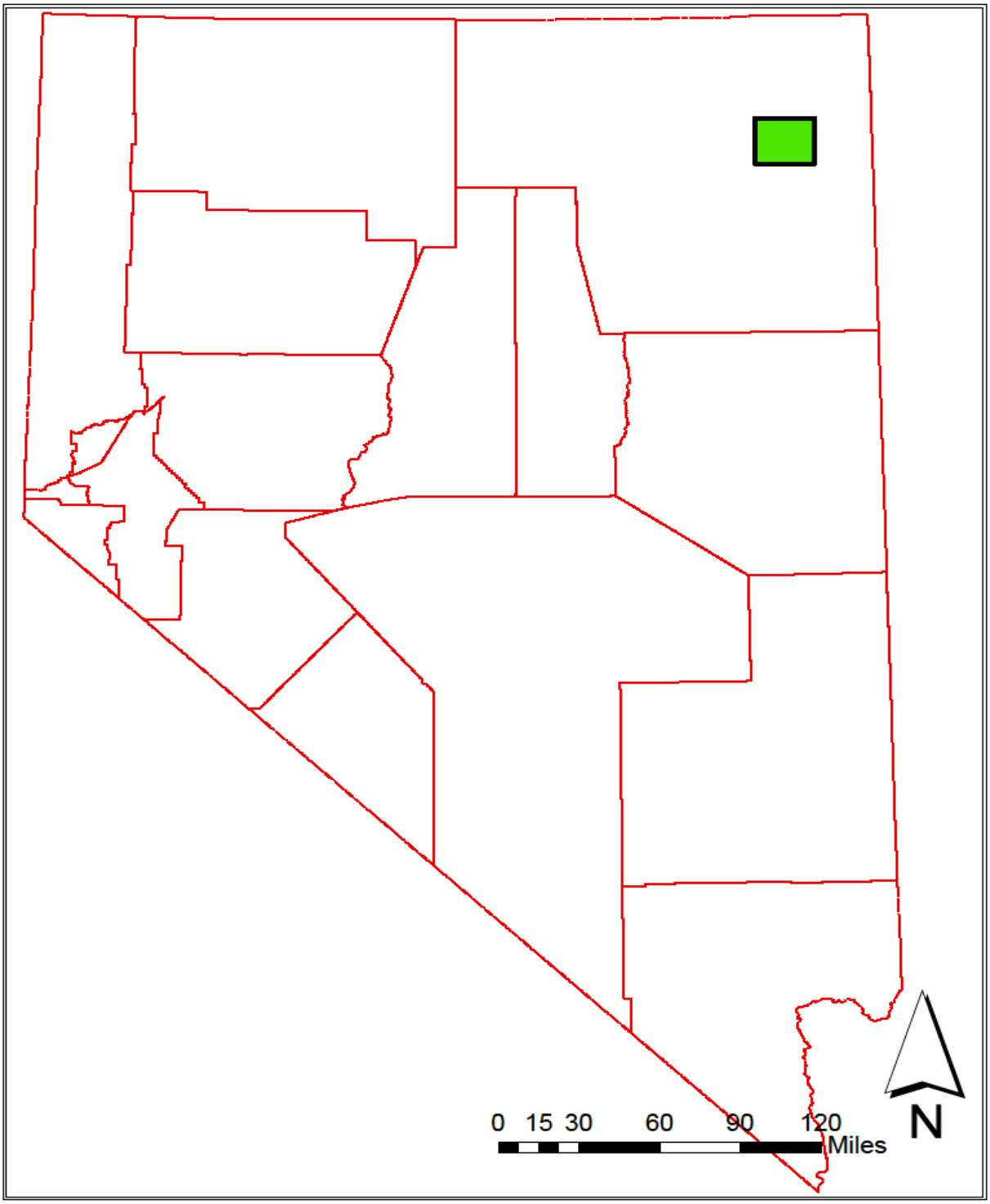
XI. If it is Going to Continue After FY16, Define the Total Dollars to be Spent During Each Fiscal Year:

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?

Project Cost Breakdown

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)*	*Costs to be Paid by Other Sources*
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		
B. Other Personnel		
C. Total Personnel Costs	$ -	$ -
3. Travel Costs		
A. Per Diem		
B. Mileage		
C. Total Travel Costs	$ -	$ -
4. Equipment		
A.		
B.		
C. Total Equipment Costs	$ -	$ -
5. Materials		
A. Spring Box, Pipe, Trough	$ 1,200.00	$ 1,200.00
B. Fence Materials/Labor	$ 30,800.00	$ 30,800.00
C.		
D. Total Materials Costs	$ 32,000.00	$ 32,000.00
6. Miscellaneous		
A.		
B.		
C.		
D.		
F. Total Miscellaneous Costs	$ -	$ -
7. In-Kind Services		
A. Earth Work Construction		$ 2,300.00
B.		
C. Total In-Kind Services	$ -	$ 2,300.00
Subtotals	$ 32,000.00	$ 34,300.00
Total Project Costs	$	66,300.00



Legend

- Project_Area
- Nevada_Counties_2015

NEVADA DEPARTMENT OF WILDLIFE

Cricket Springs Project Area

April 12, 2016

Projection: UTM Zone 11 North, NAD83

No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of the data for individual use or aggregate use with other data

Legend

CricketSprings_Gate

CricketSprings_Piperail

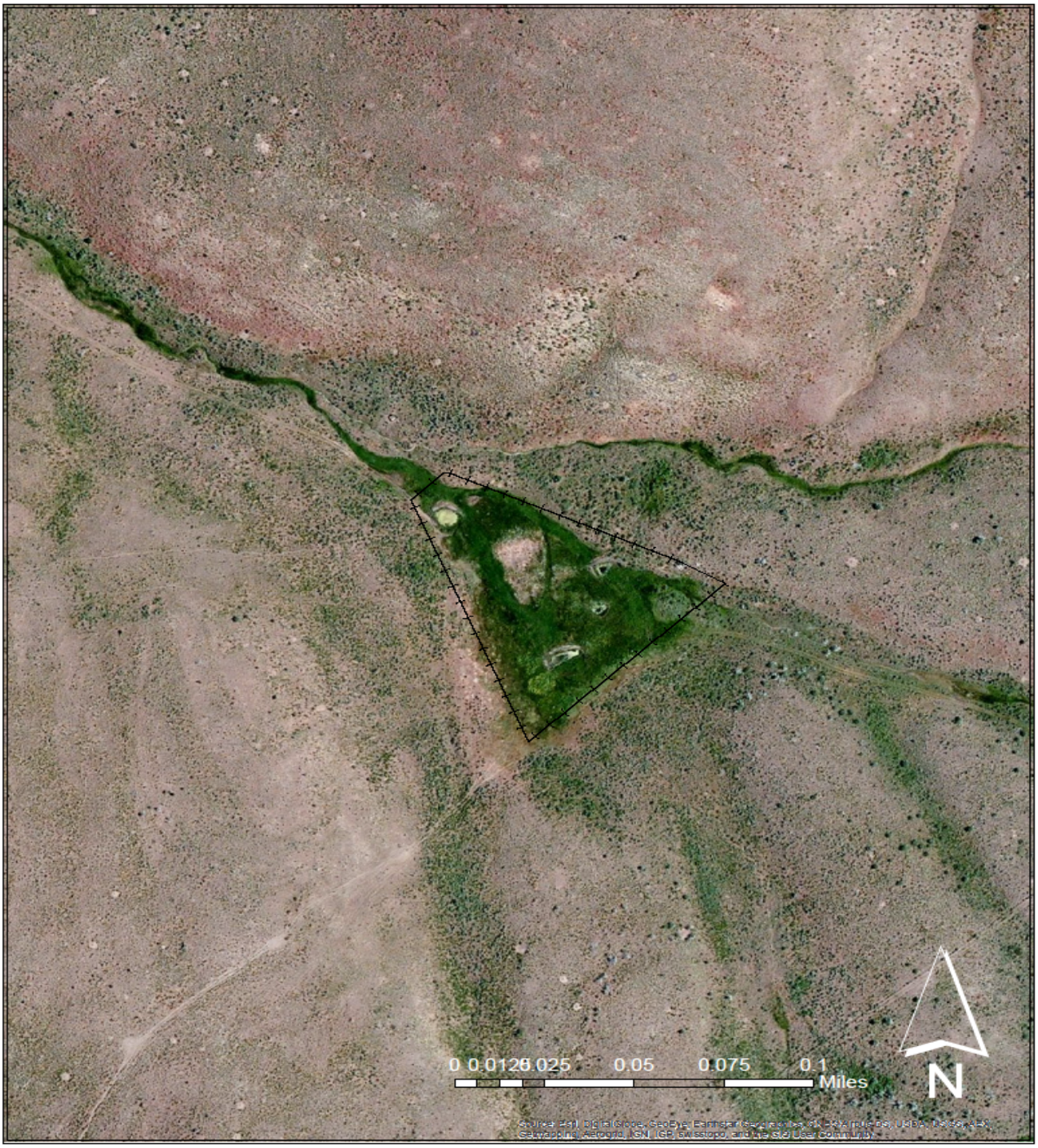
NEVADA DEPARTMENT OF WILDLIFE

Cricket Springs Fence and Water Devleopment Project

April 12, 2016

Projection: UTM Zone 11 North, NAD83

No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of the data for individual use or aggregate use with other data.



Legend

Gate

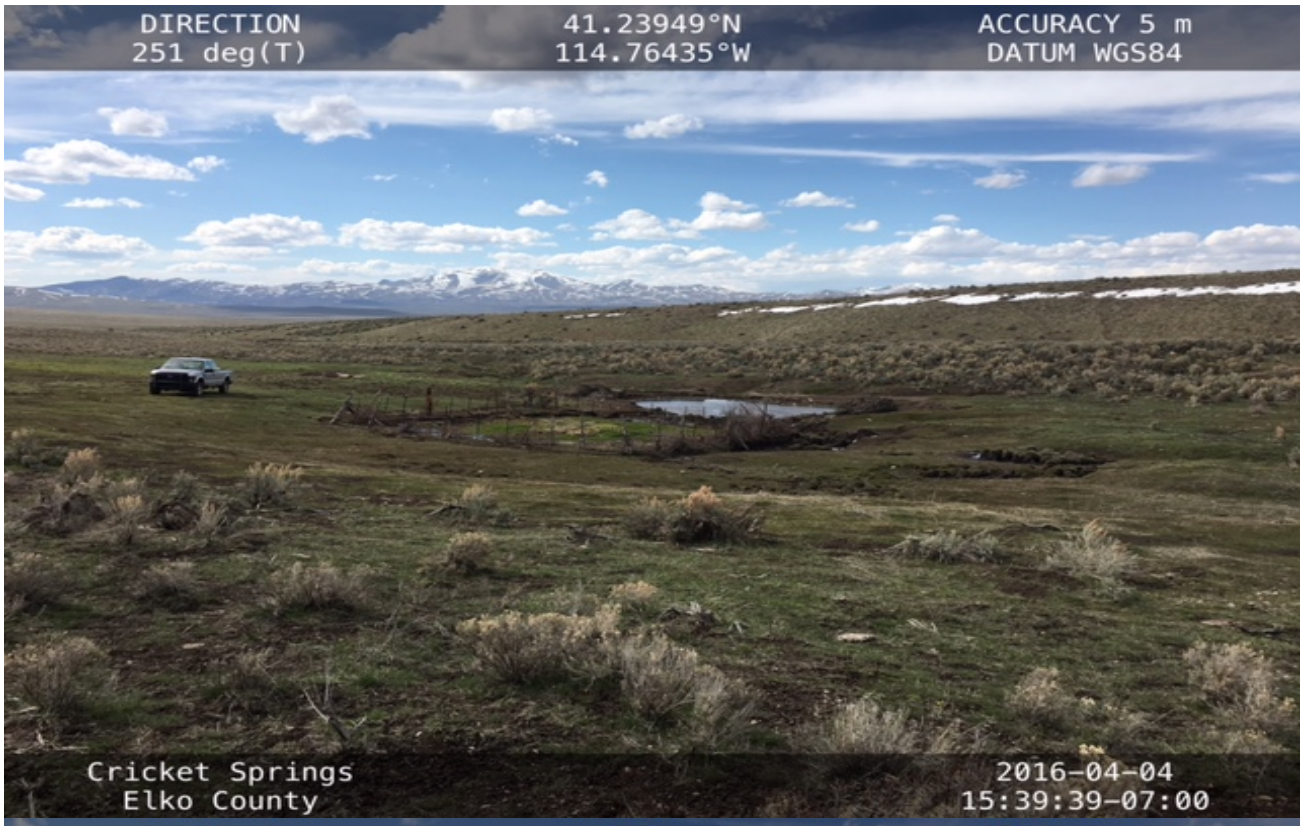
Piperail_Fence

NEVADA DEPARTMENT OF WILDLIFE

Upper Cricket Springs Fencing Project

April 25, 2016

Projection: UTM Zone 11 North, NAD83
No warranty is made by the Nevada Department of Wildlife
as to the accuracy, reliability, or completeness of the data
for individual use or aggregate use with other data.


DIRECTION
251 deg(T)
41.23949°N
114.76435°W
ACCURACY 5 m
DATUM WGS84
Cricket Springs
Elko County
2016-04-04
15:39:39-07:00

DIRECTION
327 deg(T)
41.23410°N
114.74943°W
ACCURACY 5 m
DATUM WGS84
Upper Cricket
Elko County
2016-04-04
16:04:46-07:00

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Statewide Water Development Maintenance

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

NDOW Project Manager (PM): Matt Maples, Staff Specialist, Habitat Division

PM Phone Number and Email Address: 775-688-1568; mmaples@ndow.org

Funds Requested from Each Special Reserve Account(s): $25,000 each from the Upland Game Bird Stamp and Habitat Conservation Fee accounts

Total Cash to be Used from Other Funding Sources (please list by source):
Approximately $275,000 of FY17's Water Development Grant is expected to be used for the small game water developments, which includes construction of new units and maintenance of existing units. An undefined amount of in-kind services (volunteer labor and equipment use) are provided by volunteer sportsman's groups. The Habitat Conservation Fee and Upland Game Stamp accounts will directly provide $50,000 towards the total project budget of $325,000.

Total In-Kind Donations by Source (please list by source):
In-Kind donations for this project usually come in the form of volunteer time and miles and are not available at this time.

Total Project Cost to be Funded by All Sources: Approximately $325,000

Project Proposal

I. Purpose of Project and Goals to be Achieved:

Small volume water developments or guzzlers play an important role in expanding and maintaining the populations of both small game and non-game species in areas of the state where water is considered a limiting factor. The funds associated with this project will be expended to construct new water developments, maintain existing water developments, and replace poorly designed wire fencing with higher quality pipe rail fencing. The funds used for this project also are an important source of matching dollars for the Federal Water Development and Maintenance Grant.

Small volume water developments (or guzzlers) expand and maintain small game populations in suitable habitats where a lack of water is the limiting factor. These types of projects benefit a number of small game species, including: chukar, sage grouse, quail and rabbits. In addition to these target species, guzzlers are used by a variety of non-game species, including golden eagles, jays and other birds, bats, rabbits, foxes, coyotes, bobcats and toads. Water development projects also help mitigate for lost and/or fragmented game and non-game habitat resulting from human disturbances such as urban and agricultural development, highway/freeway construction, power plant and transmission line development, mining, livestock grazing, wild horse and burro use, etc.

The FY17 project funds would be used to inspect, maintain and repair existing units on a statewide basis. The objective is to inspect approximately 200 units via air and the ground, and complete major repairs or fence replacements on 20 units.

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

The project encompasses every county in Nevada. There are approximately 1,292 small volume water developments in Nevada.

III. Project Approach Including Tasks to be Accomplished:

Inspections and Maintenance

Existing small game guzzlers will be evaluated by air using a helicopter and on the ground using trucks and ATVs to facilitate access. Water levels will be inspected along with wildlife use and structural damage, if any. Minor repairs and maintenance will be conducted on the spot while more complex work will be scheduled for repair depending on guzzler wildlife use and workload. Maintenance activities to be performed include: removing brush and debris, taking pictures, documenting local habitat conditions and evidence of wildlife use, installing trail cameras if available, confirming UTM's with GPS units, tightening fences, rebuilding fences, adding fence stays-clips, fixing gutters, downspouts, end caps, pipe, patching tank, replacing lids/ramps, cleaning tanks/drinkers, checking water levels, patching/rebuilding apron and painting burned aprons.

Major Repairs

Major repair prioritization is based upon annual inspection results and incidental reports from sportsmen. NDOW typically completes 10-30 moderate or major repairs to small volume guzzlers each year. This work typically consists of replacing wire fencing with pipe rail fencing, replacing cross beams, aprons, storage tanks or other major components that have suffered storm damage, unusually heavy snow loads, or have reached the end of their useful lives. This work is sometimes performed with just NDOW employees and at other times with the assistance of volunteers.

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

The benefits of this project include:

- Existing wildlife populations will continue to have a dependable source of water as existing water developments are repaired and maintained. This will prevent wildlife from having to search for new water sources, especially during periods of drought. This will allow wildlife to stay in preferred habitat and increase their survival rates.
- By providing wildlife with a dependable water source away from human disturbances, water developments help lessen conflicts between wildlife and urban and agricultural development, highway construction, off-highway vehicle use, power development, mining activities, livestock grazing, etc.
- This program will increase both game and non-game wildlife viewing and hunting opportunities in Nevada.
- Expenditures by NDOW's water development programs financially benefit the private companies and employees that supply NDOW with guzzler equipment and supplies, helicopter services and vehicle maintenance services.

The wildlife population effects of the project are nearly impossible to measure and are dynamic from year to year; thus, success will be measured in terms of the total number of guzzlers inspected, maintained, repaired and functioning properly. Success can be seen in both bringing damaged guzzlers back "on-line" and confirming that they are in proper functioning condition. Trail camera photographs at selected units will help define how successful related guzzler units are from both a game and non-game species standpoint. Information collected from inspections is maintained in a database and can be used to improve the design of guzzler components in the future.

V. Project Schedule:

The small game water development work described in this document will take place from July 1, 2016 to June 30, 2017. Aerial inspections take 1-2 weeks and are usually completed in the spring or summer. Water Development employees will complete repairs and fence replacements throughout the project duration. In Northern Nevada, two seasonal conservation aides will augment existing crew capacity from June through August to complete major repairs and fence replacements. A Federal Aid Report (FAR) is produced in August describing all of the yearly activities within the water development program. There will be a write up of the small game evaluation flights within the yearly FAR.

VI. Relationship to NDOW Plans, Policies and Programs:

Management and Enhancement Objectives associated with water developments are included in NDOW's Comprehensive Strategic Plan.

This type of work also is compatible with BLM district-specific Resource Management Plans (RMPs). NDOW staff works closely with BLM staff on water development-related activities and also must comply with its guzzler maintenance responsibilities defined in the MOU's/ cooperative agreements that are in place within multiple BLM districts.

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

NDOW works closely with the staff of federal land management agencies, usually the BLM, to comply with NEPA, the National Historic Preservation Act and any other federal laws that apply to the ground disturbance activities associated with new water development installations or major repair work. Any activities that would take place within designated wilderness must be defined in advance and approved by the related federal land management agency.

Project Costs and Funding

VIII. Cost Summary

Upland Game Bird Stamp and Habitat Conservation Fee account funding ($50,000) will be needed for travel costs, equipment, materials, inspection costs related to flight time, and miscellaneous supplies. Depending on the annual need for materials purchases, which is based on inspection results, some funding may be applied to NDOW labor costs associated with inspecting and repairing units. A breakdown of the project costs is provided in the table on the next page.

IX. Is this Project Going to Continue After FY17? Yes _X__ No _____

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

XI. If the Project is Going to Continue After FY17, Define the Total Dollars to be Spent During Each Fiscal Year:

The total annual cost of this project ($325,000) and the annual contribution from the Upland Game Stamp and Habitat Conservation Fee accounts ($50,000) are expected to remain stable into the foreseeable future.

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?

NDOW's Federal Water Development and Maintenance Grant (W-58)

Project Cost Breakdown

Project Components	*Costs to be Paid by NDOW Special Reserve Account(s)*	*Costs to be Paid by Other Sources*
1. Land Acquisitions		
2. Personnel Costs		
A. NDOW Personnel		$ 160,000.00
B. Other Personnel		
C. Total Personnel Costs	$ -	$ 160,000.00
3. Travel Costs		
A. Per Diem	$ 2,000.00	$ 2,000.00
B. Mileage	$ 8,000.00	
C. Total Travel Costs	$ 10,000.00	$ 2,000.00
4. Equipment		
A. Vehicle & Trailer Purchase		$ 15,000.00
B.		
C. Total Equipment Costs	$ -	$ 15,000.00
5. Materials		
A. Guzzler Materials	$ 40,000.00	$ 35,000.00
B.		
C.		
D. Total Materials Costs	$ 40,000.00	$ 35,000.00
6. Miscellaneous		
A. Air Operations		$ 25,000.00
B. NDOW Indirect Cost		$ 38,000.00
C.		
D.		
F. Total Miscellaneous Costs	$ -	$ 63,000.00
7. In-Kind Services		
A.		
B.		
C. Total In-Kind Services	$ -	$ -
Subtotals	$ 50,000.00	$ 275,000.00
Total Project Costs	$	325,000.00

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Evans Creek/ Indian Springs Fencing

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

NDOW Project Manager (PM): Matthew Glenn, Eastern Region Habitat Biologist

PM Phone Number and Email Address: 775.777.2369, mglenn@ndow.org

Total Funds Requested from the Wildlife Reserve Account(s):
The value of both project sites to big game and upland game species is critical and should be considered for both Habitat Conservation Fee and Upland Game Bird Stamp funding sources. We are asking for $10,000 from Upland Game Bird Stamp funds and $20,000 from the Habitat Conservation Fee account.

Total Cash to be Used from Other Funding Sources (please list by source):
The other project funding source is the Ruby Mitigation Account contributing 50% for materials and or labor for both projects ($30,000).

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

Total Project Cost to be Funded by All Sources: $60,000

Project Proposal

I. Purpose of Project and Goals to be Achieved:
These projects will serve to protect both riparian areas and meadow complexes that have been severely disturbed by wildfire, cattle over-utilization, and noxious weed invasion. Constructing exclusionary fences to preclude livestock use is necessary to ensure real rehabilitation and protect any investment made toward that rehabilitation.

<u>Evans Creek:</u>
The Evans Creek project area is approximately 320 acres containing two spring heads on the southern end of the Snowstorm Mountain range in Elko County. The project area is owned by the State of Nevada and was acquired in the purchase of Nevada First Corporation holdings in the Snowstorm and Izzenhood Range in 2009. The approximate perimeter of the fence will be 3.22 miles. Proximal cheatgrass understory and poor grazing practices on the allotment in which the spring complex is

encompassed put the riparian area at major risk of invasion and further degradation. A fire in the summer of 2015 burned approximately 40 acres within the project area.

This project would help protect important seasonal habitat for mule deer, sage grouse, pronghorn antelope and upland game. Riparian areas in the State of Nevada are the most limited form of habitat and when necessary these areas should be protected with exclusionary fence to preclude livestock grazing and promote native plant release and establishment. No action would facilitate the continued invasion of cheatgrass and further limited control over grazing practices which will only slow or stop the recovery and normal succession of the native plant community. In a location like Evans creek it is important to recognize the limited amount of water available in the Snowstorm Mountain range and its surrounding area which only makes the case for protection measures all that more important.

Indian Creek:

Indian Creek is a spring source and riparian area composed of both wet meadow and creek channel that lies on the north end of the Izzenhood Range in Elko County with a perimeter of 2 miles and approximately 120 acres in area. The spring and associated riparian habitat are captured within a State of Nevada inholding that we acquired in the purchase of Nevada First Corporation properties in 2009. The surrounding habitat is characterized by upland species that is dominated by cheatgrass along an alluvial slope set against steep rim rock/cliffs (fig. 2.a). In the summer of 2015 a madussahead invasion was dicovered within the lower riparian/meadow zone and treated in the fall of 2015. The importance of riparian habitat in such an arid region is paramount and important to protect from further degradation and noxious weed invasion.

The protection of critical habitat is the primary goal of the project using permanent fence in order to exclude livestock influence (badly hummocked meadow fig. 2.b.). With the addition of permanent fence to protect the area the treatments that are meant to remove the medusahead and thus reduce the spread of medusahead will be more affective (proposed fence fig. 1.a.). Promoting native release and persistence of perennial grasses that otherwise could be over utilized by livestock is critical for many species of wildlife. Fencing an existing area will help prevent the further propagation of medusahead or other noxious weeds throughout the area and surrounding range.

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

The Evans and Indian Creek project areas are 46 and 37 miles respectively due north of Battle Mountain.

- Evans Creek UTM's 11T 513170 E
  4562845 N

- Indian Creek UTM's 11T 507060 E
  4553149 N

III. Project Approach Including Tasks to be Accomplished:

Riparian habitat within the state of Nevada is often limited and in many cases degraded to the point of diminished ecological function. In the case of the Evans Creek project area where a major fire disturbance recently impacted most plant life, the site remains extremely vulnerable to cheatgrass and other noxious weed invasion. Due to the level of grazing in the area and the inability to keep livestock off of the disturbed area, some method of exclusion should be established. Much of the surrounding area proximal to the site is critical mule deer winter range that has been struck with drought, over grazing, and wildfire leaving only fragments of functioning habitat like the Evans Creek area intact.

As a state inholding any NEPA assessment is not required and implementation could begin as soon as contracting and funding is established. The initial approach in the Evans Creek project will be implemented in the spring of 2016 by seeding all of the fire breaks used to extinguish the 2015 wildfire. Phase two of the project will consist of the construction of exclusionary fence in order to protect the vulnerable landscape.

Restoring and maintaining proper ecological function at the Indian Springs site is a long term project important to pursue. In that pursuit, the further treatment of noxious weeds is a priority and the protection of that investment is the goal of this project. The solution to protect every spring in Nevada cannot be to simply fence them, but in the circumstances that surround Evans and Indian Springs we believe that fencing is the best available option.

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

The area six mule deer herd has been struck with a significant loss of habitat stemming from debilitating wildfire, drought, and the invasion of cheatgrass all of which have contributed to the loss of a critical brush component. Some of the most devastated range impacted has been the winter range that has seen little to no rest from grazing and subsequently delivers only fragmented functioning habitat. This project presents an opportunity to restore necessary and scarce habitat for multiple wildlife species at both sites.

Evans Creek:

The importance of riparian zones for wildlife under suitable range conditions cannot be understated, however when the riparian area is surrounded by poorly functioning range its importance increases dramatically.

Throughout the year mule deer necessitate a brush component in their diet, especially on the winter range. Presently sagebrush, bitterbrush and other species on the range are a limiting factor for mule deer and with a protected riparian area a crucial brush component would populate and restore the function for mule deer.

Brood rearing and nesting habitat for sage grouse are the most important for the game birds lifecycle and limited in the area. Previous to the wildfire in 2015 the Evans Creek site was characterized by a healthy and diverse brush complex with native forbs and grasses.

<u>Wildlife Use:</u>

- Year around mule deer use
- Summer pronghorn antelope use
- Sage grouse brood rearing use

- upland game use

Indian Springs:
Noxious weed invasion is a wide spread problem across that state however medusahead, much like cheatgrass has a high growth rate, high seed production, and a long life that contribute to its ability to out compete native grasses. It has little to no grazing value for either wildlife or cattle due to its high silica content and stiff awns that clump in the mouth of the grazer.

Presently mesdusahead is not widespread in Nevada but because of its ability to outcompete even cheatgrass, any occurrence should be treated immediately. At the Indian Springs site medusahead was first observed in the summer of 2015 and treated that fall with at least one more chemical treatment needed. The net benefit for wildlife would be a healthy meadow complex that would provide forbs and grasses for better forage value.

Wildlife Use:

- Wintering mule deer use
- Summer pronghorn antelope use
- upland game use

Monitoring:
For both the Evans creek and Indian springs fencing projects long term observations will be made by both the area game biologist and habitat biologist for NDOW to ensure that both the fencing and the chemical treatment implementation are working.

V. Project Schedule:
Presently these two projects require funding for materials and labor. In addition, Eastern Region staff are working with State Purchasing to develop a contract for fencing which would facilitate the project work at Evans Creek and Indian Spring. The RFP agreement is in the process and should be completed this spring approximately concurrent with the funding time frame.

VI. Relationship to NDOW Plans, Policies and Programs:
This project specifically meets the objectives in subsection 1(a) of NRS 501.3575, "…the protection , propagation, restoration, transplantation, introduction, and management of any game fish or mammal, game bird or fur-bearing mammal in this state . More specifically, by restoring crucial habitats necessary for the sustainability of sage-grouse and mule deer populations, this project specifically meets this objective.

VII. NEPA Compliance or other Activities that Need to be Accomplished Before this Project Can be Completed and their Status:
Both Indian and Evans creek fencing projects will be conducted solely on state owned land and will not require any NEPA analysis.

Project Costs and Funding

VIII. Cost Summary
All of the funds awarded from the Special Reserve Accounts will be used to purchase fencing material and perhaps will also be used to pay for the fence contractor.

IX. Is this Project Going to Continue After FY17? Yes _____ No _X____

The fencing project will be complete but monitoring and maintenance of the project will be required into the future. Funding for these future activities will come out of base budgets for the wildlife management areas.

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

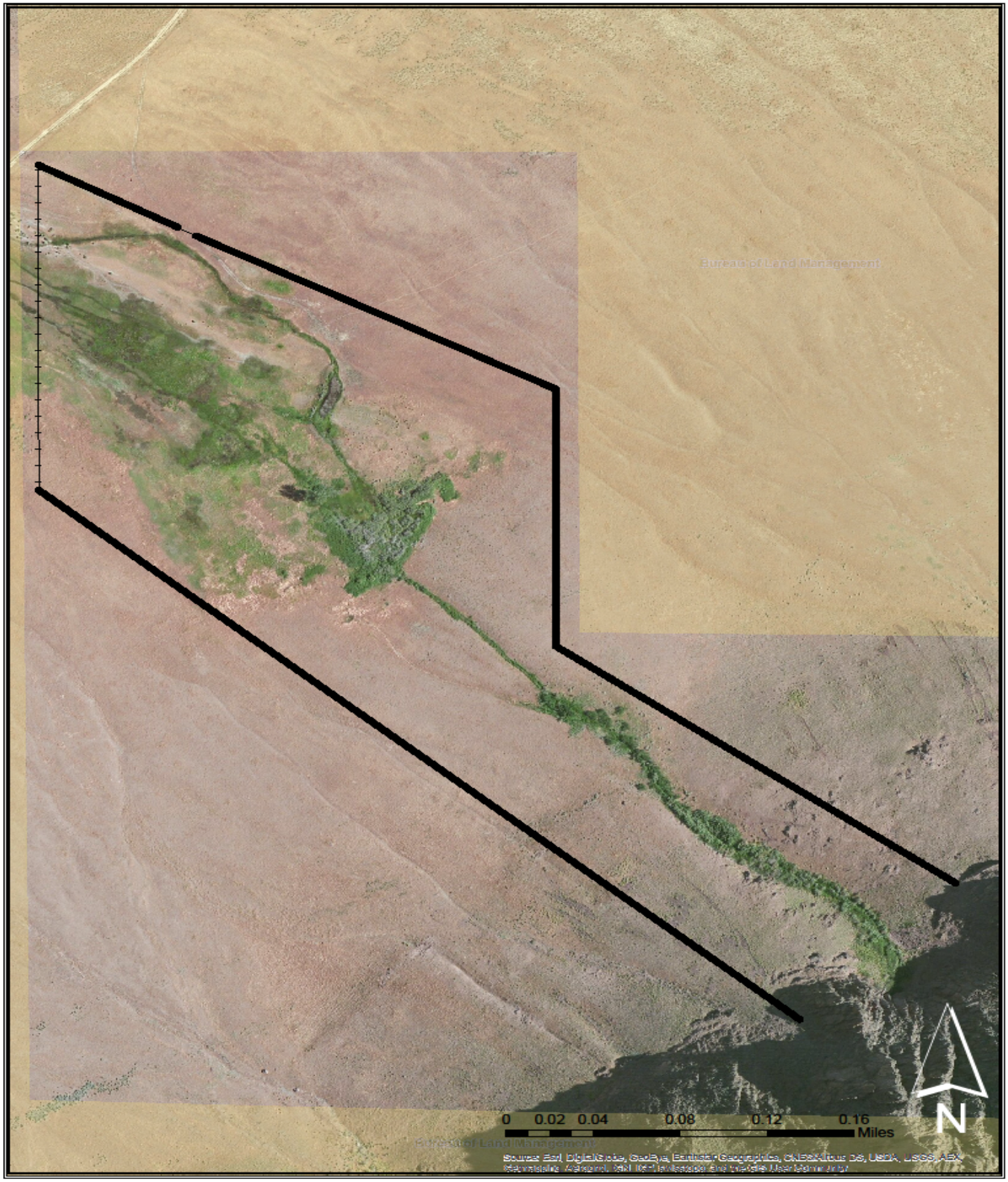
XI. If the Project is Going to Continue After FY17, Define the Total Dollars to be Spent During Each Fiscal Year:

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

It is possible that the monies derived from the Ruby Pipeline Mitigation Fund could be used for State Match.

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

Both the WMA Federal grand as well as the NPCD Federal grant would be appropriate.



Legend

- Gate
- Piperail_Fence
- Range_Fence

Indian Springs Fence Project

April 12, 2016

Projection: UTM Zone 11 North, NAD83

No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of the data for individual use or aggregate use with other data.

Indian Springs riparian/meaodow complex and Indian Springs hummocked wet meadow

. ***Indian Springs upper riparian zone***

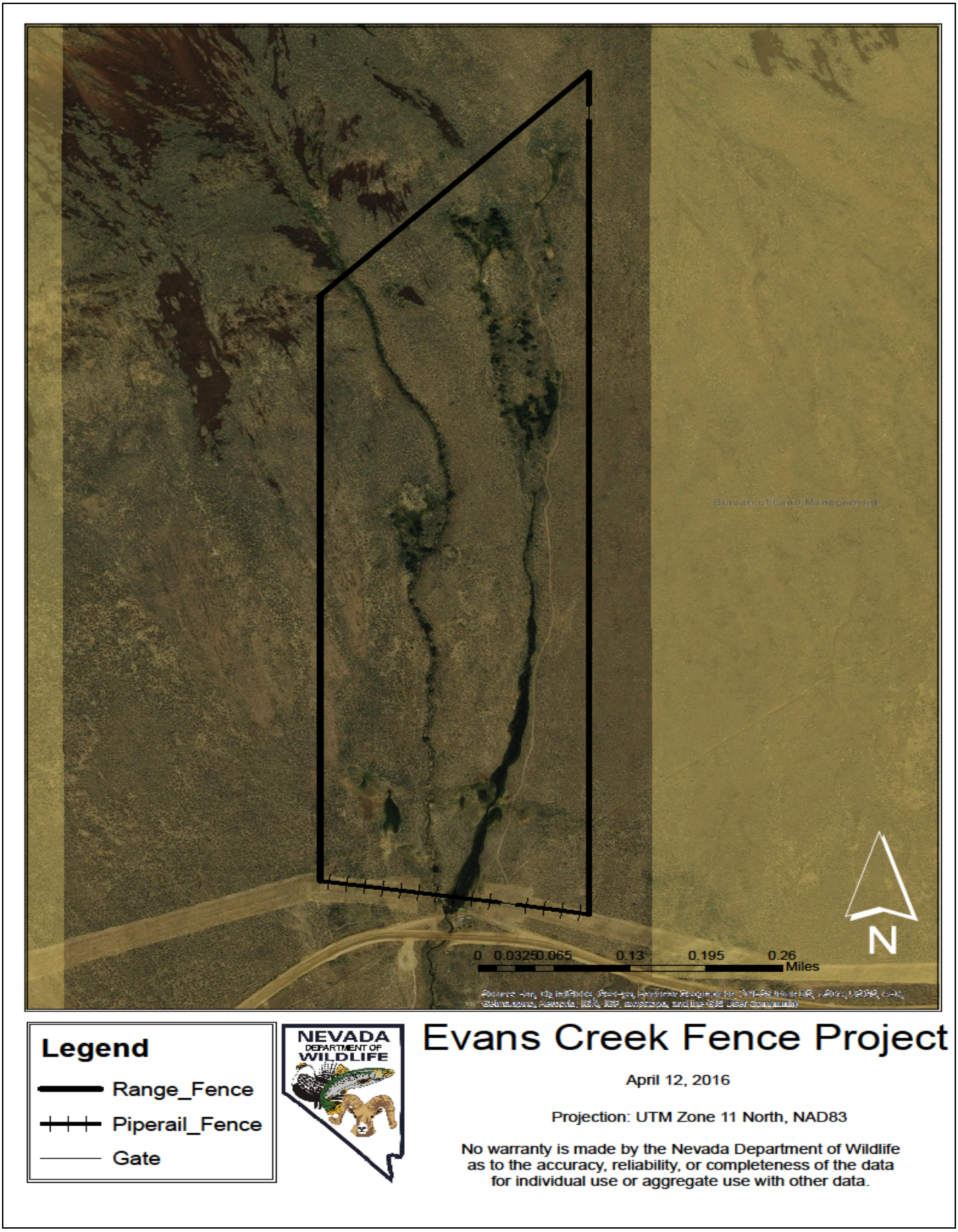
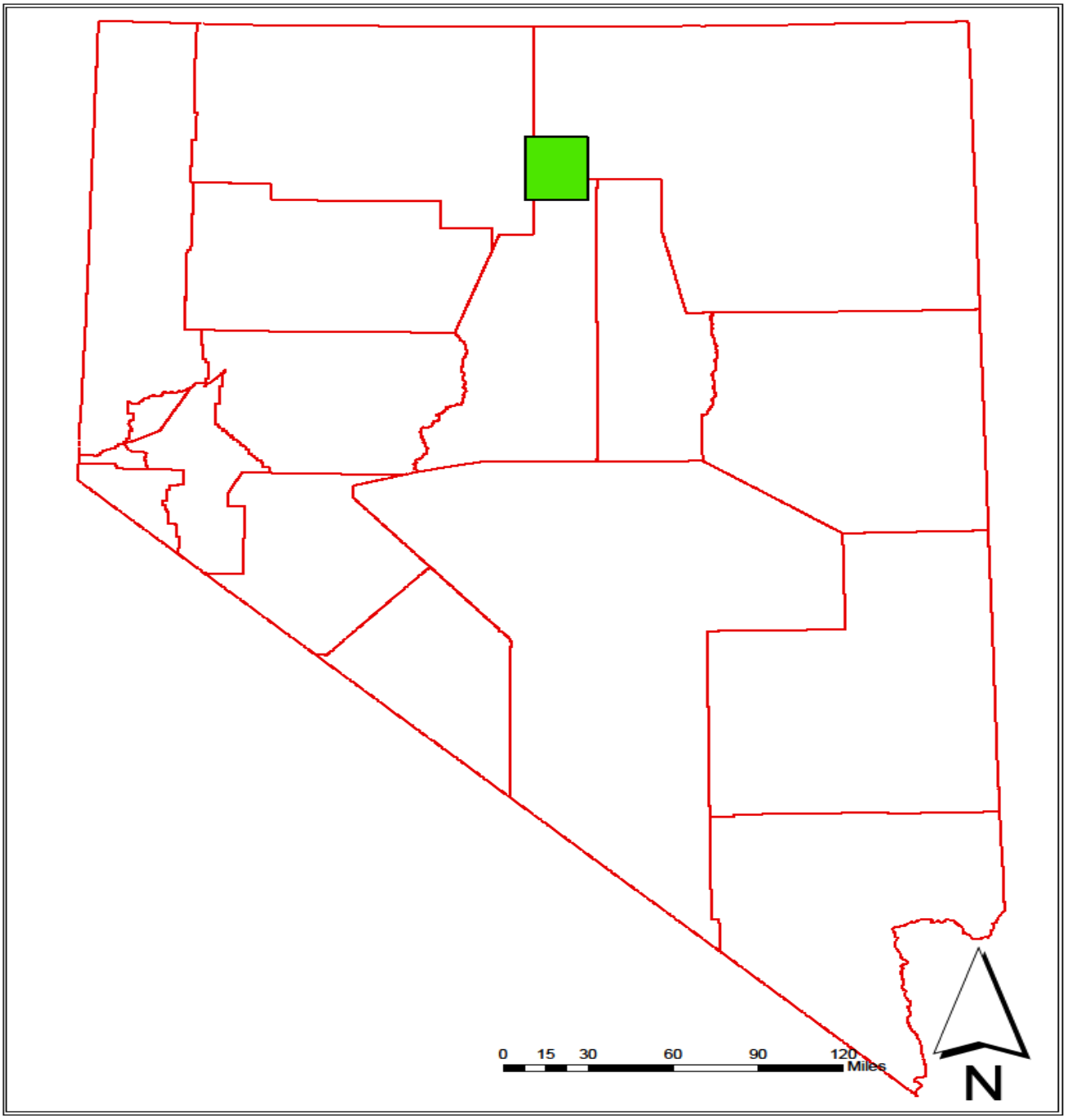


Fig 3.a *Evans Creek Fence Project*

Evans Creek headwaters

Evans Creek meadow and willow complex



Legend

- EvansCreek_IndianSprings_ProjectArea
- Nevada_Counties_2015

NEVADA DEPARTMENT OF WILDLIFE

Evans Creek and Indian Springs Projct Area

April 12, 2016

Projection: UTM Zone 11 North, NAD83

No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of the data for individual use or aggregate use with other data.

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Key Pittman WMA Wildlife Food Plots

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: (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): $2,600 Duck Stamp

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

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 and public use along with increased hunter success. This will be achieved by completing annual plantings and vegetation manipulation, and 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 (WMA) is near Hiko and Sunnyside, NV.

III. Project Approach Including Tasks to be Accomplished:
The food plot cycle begins October first. Following dove season the fields are mowed, disked, seed drilled (fall/winter cereal grains and legumes) 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 are 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, the dove season ends and the grazing lease ends and the cycle starts again. Due to the extended dove season conflicting with the waterfowl season opener, the food plots have to be mowed, disked, seeded and irrigated prior to the waterfowl opener starting around October 1st.

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

Benefits: The food plot program incorporates forbs, grasses, nitrogen fixing plants and cereal grains to provide forage for 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 other species is another bonus of this project. The KPWMA Food Plot program is an ongoing, yearly habitat management activity. The results of food plots in FY17 will be evaluated for their effectiveness and benefit to wildlife and sportsmen.

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 as a management action 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. 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 Special Reserve Account funds awarded to this project will be used to purchase seed.

IX. Is this Project Going to Continue After FY17? 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 FY17, Define the Total Dollars to be Spent During Each Fiscal Year:

Approximately $6,500 will be spent per fiscal year after FY17.

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?

NDOW's WMA System Federal Grant

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Kirch WMA Wildlife Food Plots

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

NDOW Project Manager (PM): Adam Henriod

PM Phone Number and Email Address: (775) 238-0240, ahenriod@ndow.org

Funds Requested from Each Special Reserve Account(s): $4,800 (project costs will be split as follows to reflect the benefits to upland game birds relative to waterfowl: 60% or $2,880 from Upland Game Bird Stamp account and 40% or $1,920 from the Duck Stamp account).

Total Cash to be Used from Other Funding Sources (please list by source): $1,920 Duck Stamp

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

Total Project Cost to be Funded by All Sources: $4,800

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 2017 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 2016 with winter wheat 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 2017 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 winter wheat in the fall of 2016. The upper 37 acre section of the Dove Field will be planted in the spring of 2017 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 2017 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 FY17 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 Special Reserve Account funds awarded to this project will be used to purchase seed.

IX. Is this Project Going to Continue After FY17? Yes __x__ No _____

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

XI. If the Project is Going to Continue After FY17, Define the Total Dollars to be Spent During Each Fiscal Year:

This project would spend $4,800 per fiscal year after FY17 until the cost of seed increases.

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?

NDOW's WMA System Federal Grant

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Mason Valley Upland Game Bird Food Plots

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

NDOW Project Manager (PM): Isaac Metcalf

PM Phone Number and Email Address: (775) 463-2741; imetcalf@ndow.org

Funds Requested from Each Special Reserve Account(s): $10,000

Total Cash to be Used from Other Funding Sources (please list by source): A donation of $4,000 was requested from the Carson Valley Chukar Club

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

Total Project Cost to be Funded by All Sources: $14,000

Project Proposal

I. Purpose of Project and Goals to be Achieved:

The purpose of the Mason Valley Upland Game Bird Food Plots Project is to enhance forage and cover for quail, dove, and turkey found on the Mason Valley WMA. The goals will be to plant 400 acres of food plots and cover in agricultural fields and designated food plot units located within the Mason Valley WMA. These food plots also improve hunting conditions for our constituents.

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

The Mason Valley WMA is located in Mason Valley, Lyon County, Nevada. Mason Valley is within the Walker River Basin in west-central Nevada.

III. Project Approach Including Tasks to be Accomplished:

Mason Valley WMA crew members will plant various vegetation types that provide forage, cover, and nesting habitat for upland birds during the fall and spring of FY17.

Spring time planting will begin in April of FY17. The south Sceirine unit, MV-7 and B-9 will be planted with a spring quail and turkey seed mix. Bolster 11 and 13 unit will be planted with a spring dove seed mix.

Fall food plot plantings will begin in September of FY17. Bolster 12 and 14 will be planted with winter wheat, and winter peas. B-15 will be planted with a fall dove seed mix.

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

Quail, doves and turkeys will benefit with the increase in forage and cover. Mule deer and other passerines will also benefit with the increased forage availability. Non-consumptive and consumptive WMA users will also benefit with more opportunities for wildlife viewing and hunting.

Bag check stations and survey cards will be used to collect data on hunter harvest and non-consumptive use. Surveys will be used to monitor waterfowl and shore bird use in the moist soil units.

V. Project Schedule:

Fall plantings will begin in September of FY17.

Spring food plot planting will begin in April of FY17.

VI. Relationship to NDOW Plans, Policies and Programs:

Annual vegetation control is identified as a management action in the Mason Valley WMA Conceptual Management Plan. 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 management 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 through 2009. (Comprehensive Strategic Plan-2004-2009 page –1).

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 funds awarded to this project will be used to purchase seed.

IX. Is this Project Going to Continue After FY17? Yes _X___ No _____

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

XI. If it the Project is Going to Continue After FY17, Define the Total Dollars to be Spent During Each Fiscal Year:

$14,000

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?

NDOW's Wildlife Management Area System Federal Grant

Fiscal Year 2017 Upland Game Bird Stamp Project Proposal

Project Summary

Project Title: Eastern Region WMAs Weed Control

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): $15,000 ($7,500 each from the Duck Stamp and Upland Game Bird Stamp accounts)

Total Cash to be Used from Other Funding Sources (please list by source): $7,500 from the Duck Stamp 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: $15,000

Project Proposal

I. **Purpose of Project and Goals to be Achieved:**
The herbicides purchased through this project would be used to control noxious weed invasion on the unmanned Eastern Region WMAs and properties. It our hope to control the spread of weeds to maintain and enhance waterfowl values on wetland and riparian areas associated with the WMAs and properties. The invasive weed control improves appearance, public access and wildlife habitat.

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**:
Funds allocated to this project would only be used to 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 public and NDOW personnel access to NDOW-owned lands, limit the spread of noxious and invasive plant species, improve wildlife habitat and enhance the general appearance of the properties. Sites treated with herbicides will be evaluated after their application 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 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 and tall whitetop on the Bruneau River WMA, hoary cress on Franklin Lake WMA and Canada and Musk thistle on the Birch Creek property. Treatments are typically done during the spring and summer months when weeds are actively growing. With the addition of a new habitat biologist in Elko with WMA responsibility, we have increased the request for funding for FY17 beyond what has traditionally been requested. We anticipate stepped up efforts to control weeds on the unmanned WMAs and other NDOW properties within the Eastern Region with the addition of personnel. The Bruneau River WMA, and in particular the Stowell component, will be the target of more aggressive weed control efforts in FY17.

VI. Relationship to NDOW Plans, Policies and Programs:

Annual vegetation control is identified as a management action 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 management 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:

No permits are necessary to treat 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:
All of the $7,500 to be allocated to this project will be used to purchase herbicides during FY17.

IX. Is this Project Going to Continue After FY17? 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 FY17, Define the Total Dollars to be Spent During Each Fiscal Year:
We expect the need to control weeds on Wildlife Management Areas will continue in perpetuity. We will request funding 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?
NDOW's WMA System Federal Grant