

IMPLEMENTATION OF SECRETARIAL ORDER 3362



UTAH ACTION PLAN

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INTRODUCTION

In 2018, Department of Interior (DOI) secretary Ryan Zinke signed Secretarial Order 3362 (SO 3362) at the Western Hunting and Conservation Expo in Salt Lake City. SO 3362 directs the bureaus within the Department of Interior (DOI) to collaborate and work closely with the respective state wildlife agency to improve migration corridors and winter ranges for mule deer, pronghorn, and elk in the western United States. The states have direct responsibility and jurisdiction for the management of big game and the Order recognizes this as well as the rights of private landowners. The purpose of this action plan is to describe habitat and research needs in Utah for the species described in SO 3362.

Utah has approximately 52,696,960 total acres, 33,275,132 or 63% of which are under the management authority of the federal government (Appendix A). The Bureau of Land Management (BLM) manages 22,882,950 acres; the US Forest Service (FS) manages 8,178,600 acres; and the National Park Service (NPS) manages 2,022,600 acres. The Department of Defense and others make up the rest of federal ownership. Also, the State of Utah owns 3,824,800 acres and private lands are weaved throughout big game habitats. This ownership structure requires cooperative partnerships to work across all the habitat categories and ownerships for big game species.

Utah is currently one of the fastest growing states in the country, and the state's population is projected to nearly double in the next 50 years. Population growth is resulting in significant changes to the landscape as roads are built and expanded, housing developments are constructed, and water is diverted to accommodate growth. Without careful planning and active mitigation efforts, these changes to Utah's landscape could have real and lasting consequences for big game and other wildlife species, some of which may not easily be undone in the future. Rapid change can result in the degradation, fragmentation, and in some cases the complete loss of wildlife habitat.

Wildlife movement data are critical to the conservation of big game populations, because the data are used to define the habitats animals use and the corridors that link seasonal habitats. Movement data, however, are often missing from planning efforts, because for most species little is known about their movement patterns.

In 2018, SO 3362 provided funding to document the movements of mule deer in three populations in Utah. That investment is already paying dividends. In this plan, data generated by these projects are used to describe migration corridors and winter range use in those populations, as well as, to create a list of needs that would improve the management and health of these populations. Additionally, three new research priorities have been identified that will further our understanding and conservation of big game in the state.

CORRIDOR & WINTER RANGE PRIORITIES

1. EAGLE MOUNTAIN



Location:

Eagle Mountain is located in central Utah on the west side of Utah Lake. In the early 1990s, the area was relatively undeveloped. Now there are approximately 30,000 residents, and the population is projected to triple by 2040. There are few businesses so most residents commute to work, which creates heavy traffic volumes, especially on SR-73. The Utah Department of Transportation (UDOT) is planning to expand SR-73 to accommodate the growth. Additionally, Facebook is building a \$750 million data center in this area. There are significant amounts of BLM, state, and private land in this area.

Prior to 2018, the DWR had a small amount of data that showed that mule deer migrated from the Oquirrh Mountains to the Lake Mountains to spend the winter. The migration crosses SR-73, which connects the City of Eagle Mountain with the Salt Lake and Provo areas. Deer-vehicle collisions have been a problem in this area for many years and currently ~100 mule deer are killed on roads in this area each year. The migration corridor is at risk due to rapid development and deer-vehicle collisions that are occurring in the area.

With financial support from SO 3362 and other partners, the DWR began a project to map deer migration corridors in this area. In December 2018, 38 mule deer were captured and fit with GPS tracking collars. Tracking data from spring 2019 indicates that there are two major migration routes in this area (Fig. 1), one eastern route and one western route. The western route crosses SR-73 at Five Mile Pass in an area with substantial recreational use but that is not at risk for development. The eastern migration route passes through The City of Eagle in an area that will likely be developed in the near future. The DWR is working the City of Eagle Mountain, UDOT, BLM, the Mule Deer Foundation, and others to preserve migration corridors in the response to the rapid changes that are occurring in the area.

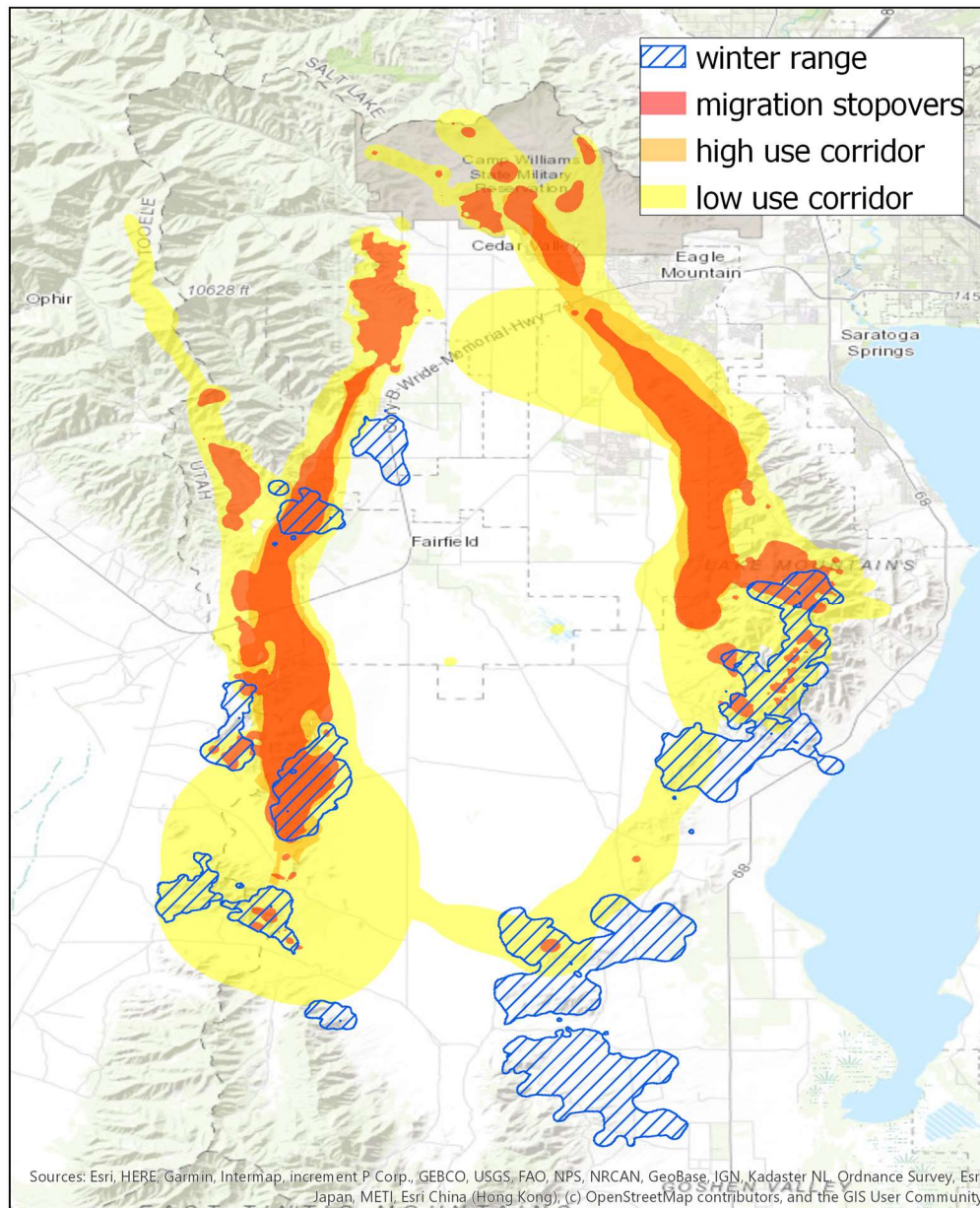


Figure 1. Mule deer migration corridors, winter ranges and stop over areas near the City of Eagle of Mountain in central Utah.

Needs:

- I. **Wildlife Crossings-** With the current and projected growth of the Eagle Mountain area, mitigation measures are necessary to offset the impacts of increasing traffic volumes and wildlife-vehicle collisions. Wildlife crossings and fencing are needed on SR-73 and possibly other roads in the City of Eagle Mountain to maintain migration corridors in this area.
- II. **Land Easements-** The UDWR and its partners are currently working with the City of Eagle Mountain and private land owners to preserve open space within migration corridors. To fully preserve the corridors, funding may be required to purchase land easements for wildlife.
- III. **Corridor Inventories-** Migration corridors need to be inventoried in this area to document current and potential barriers (roads, development, etc.). Rangeland and agricultural fencing needs to be examined to determine if it can be made more wildlife friendly.
- IV. **Habitat Improvements** - Like much of the West Desert, range lands in the Eagle Mountain area are subject to extensive conifer and cheat grass encroachment. Targeted habitat treatment projects in deer winter range and stopover areas could be used to bolster deer populations and offset some of the impacts of human development.

2. Chalk Creek/Kamas



Location:

The Chalk Creek/Kamas area is located in northern Utah to the northeast of Park City. The region is home to nearly 20,000 mule deer and over 4,000 elk. Northern Utah generally has more severe winter weather than central and southern Utah, and consequently most deer in the Chalk Creek/Kamas area are migratory. However, the amount of low-elevation winter habitat is severely limited.

The UDWR is concerned about the effects that roads, development, and vegetation change are having on mule deer in this area. Interstate 80 (I-80), the major east/west route in the state, borders the western edge of the area. In this portion of the state, I-80 has over 15,000 vehicles per day and is likely a considerable barrier to the movements of big games species. Additionally, the area has hundreds of wildlife-vehicle collisions each year and is one of most the problematic areas in the entire state (Fig. 2). To address the problem, UDOT has installed wildlife fencing along sections of the I-80 corridor to prevent deer and other species from crossing the roadway, but few wildlife crossing structures have been installed to provide connectivity. Additionally, the limited winter range that is in this region is being reduced due to housing development and conifer encroachment.

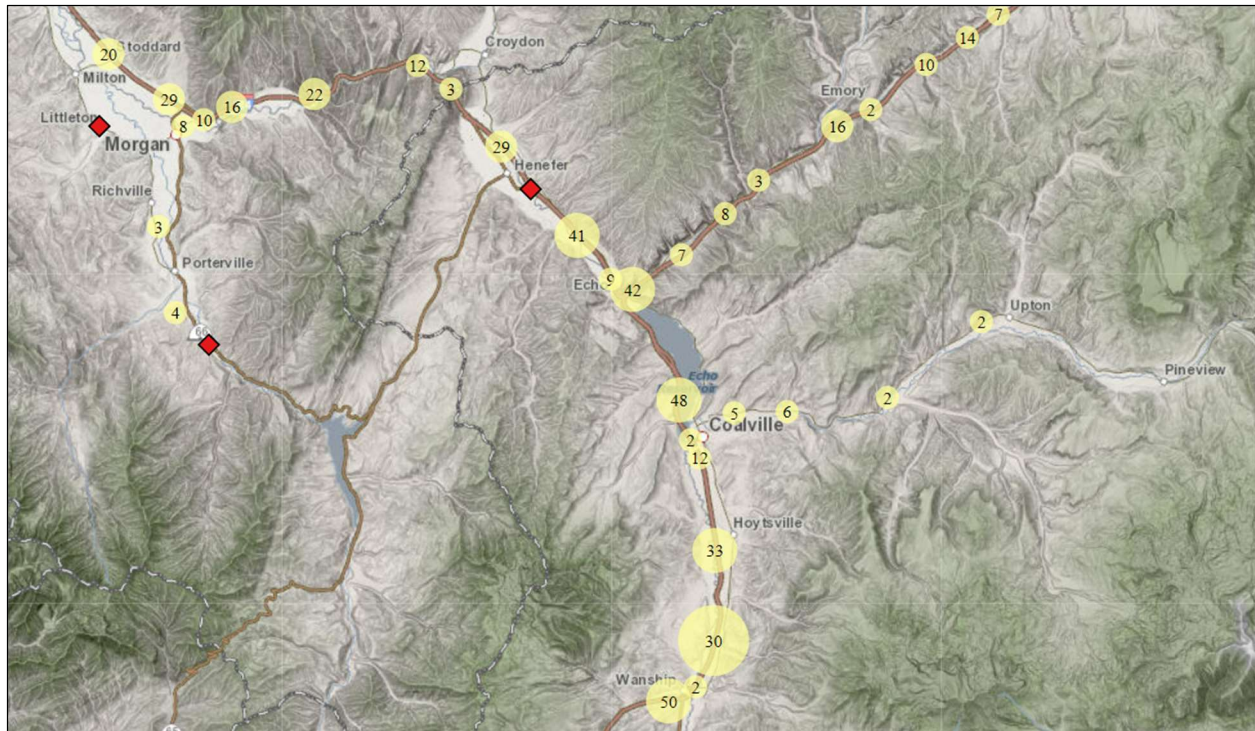


Figure 2. The locations of deer-vehicle collisions in the Chalk Creek/Kamas area for 2018.

With support from SO 3362 and other partners, the UDWR was able to capture 50 mule deer in December 2018 and fit them with GPS tracking collars. Unfortunately, due to the combination of severe drought and severe winter weather, deer survival was extremely low. Only half of the study animals survived the first winter. Tracking data for deer that survived indicates that there are several migration corridors in this area (Fig. 3). The interstate appears to have shaped migratory movements for one segment of the population, as the migration corridor follows the interstate corridor. Additionally, only one animal successfully crossed I-80 in this area.

Because the sample size for this project was reduced substantially due to low survival, the DWR is planning to capture 50 additional mule deer in December 2019. This portion of the project will be funded by the Utah Wildlife Migration Initiative and its partners.

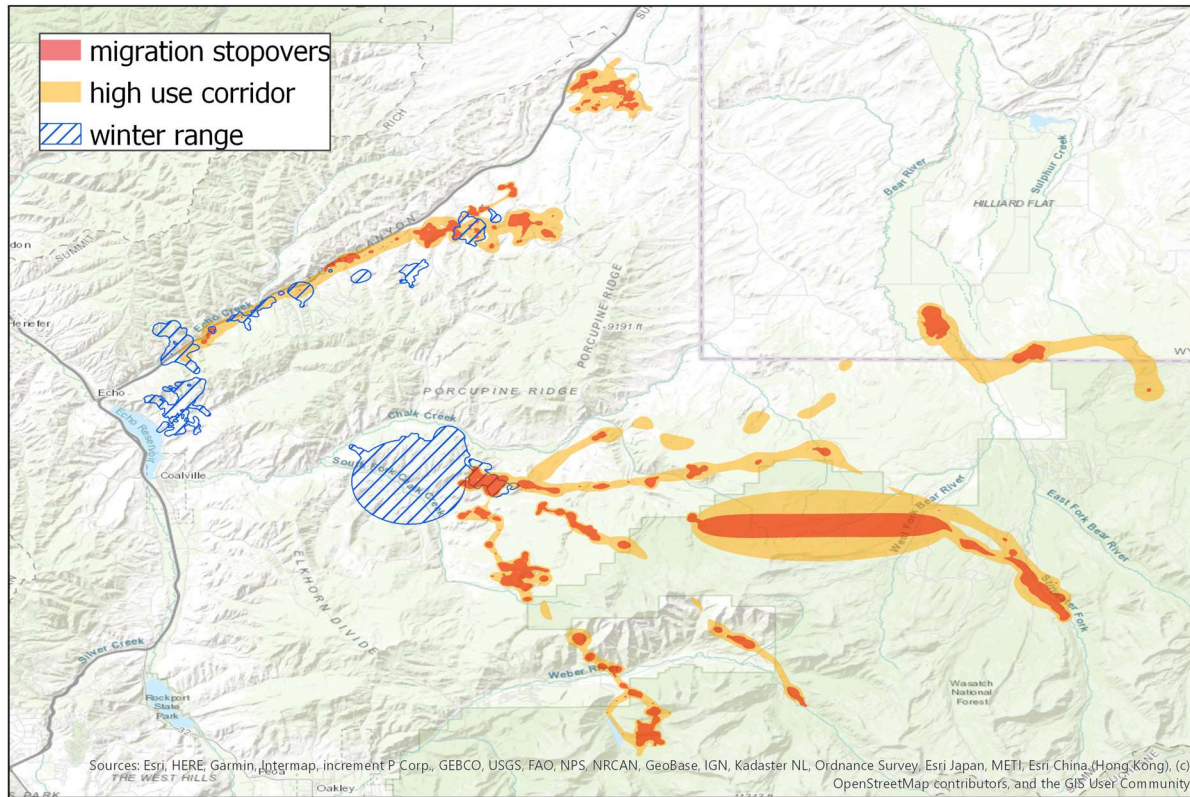


Figure 3. Mule deer migration corridors, winter ranges and stop over areas in the Chalk Creek/Kamas area.

Needs:

- I. **Wildlife Crossings-** At least one deer migration corridor in this area appears to be effected by roads. Mitigation measures are necessary to offset the impacts of wildlife-vehicle collisions and restore landscape connectivity. Wildlife crossings and fencing are needed on I-84 and I-80 mountain to improve the permeability of roads in this area.
- II. **Corridor Inventories-** Migration corridors need to be inventoried in this area to document current and potential barriers (roads, development, etc.). Rangeland and agricultural fencing needs to be examined to determine if it can be made more wildlife friendly. This past winter, several mule deer were observed caught in fences in this area (Fig. 4), indicating there may opportunities to work with landowners to make fencing more wildlife friendly.



Figure 4. Two mule deer caught in rangeland fencing on winter range in the Chalk Creek/Kamas area in 2018.

- III. Habitat Improvements** – Conifer encroachment on winter range is a problem in this area and is exacerbated because the amount of winter range is relatively limited. Targeted habitat treatment projects in deer winter range and stopover areas could be used to bolster populations and offset some of the impacts of conifer encroachment in this area.

3. Zion



Location:

The Zion unit is located in southern Utah near St. George. The area has one of the larger deer herds in the state with approximately 15,000 animals. Landownership is a complex mix of BLM, Park Service, Forest Service, and private lands. The area is adjacent to the Paunsaugunt unit that has some of the longest known deer migrations in Utah, with deer moving south from Utah into Arizona.

The area is experiencing rapid growth and development. St. George is the fastest growing metro area in the United States with a 4% annual growth rate. Additionally, the area is a popular vacation hot spot. For instance, Zion National Park is one of the most visited parks in the United States. As a result, traffic volumes are increasing substantially. The unit is bounded by Interstate 15 (I-15) on the west and US-89 on the east. Traffic volumes on I-15 are over 20,000 vehicles per day and volumes on SR-89 are over 4,000 per day. State route (SR-9) also runs east/west through the middle of the unit and has over 2,000 vehicles per day. Wildlife-vehicle collisions are a problem on both US-89 and SR-9 but the magnitude of the problem is not well understood because information on wildlife-vehicle collisions has not been consistently reported in this area.

Funding provided through SO 3362 allowed the UDWR to begin a major project to document mule deer movements in the Zion area in December 2018. Approximately 80 deer were fitted with GPS tracking collars. Data from Spring 2019 indicate that most deer are migratory and move north/south, similar to the Paunsaugunt herd. The longest migration that was documented was 55 miles. Many of the deer crossed SR-9 while migrating. None of the GPS tracked deer crossed I-15 or US-89 during migration.

The project will be expanded in December 2019 using funding provided the Utah Wildlife Migration and its partners.

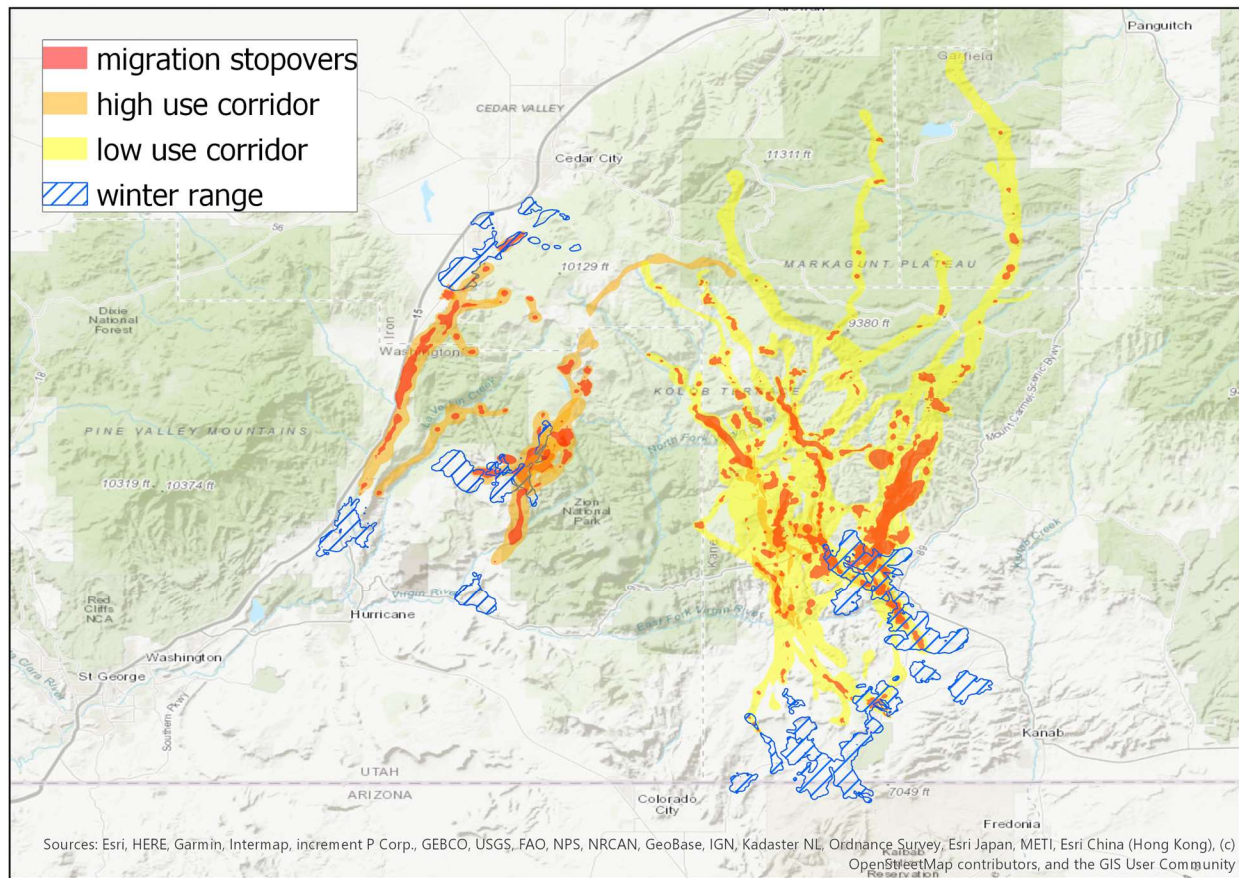


Figure 5. Mule deer migration corridors, winter ranges and stop over areas in the Zion unit.

Need:

- I. **Wildlife Crossings-** Most migratory movements of deer in this area are north/south. SR-9 needs to be evaluated to determine if crossings and wildlife fencing are needed. Crossing may be necessary on I-15 and US-89 to maintain connectivity between adjacent management units.
- II. **Corridor Inventories-** Migration corridors need to be inventoried in this area to document current and potential barriers (roads, development, etc.). Rangeland and agricultural fencing needs to be examined to determine if it can be made more wildlife friendly.
- III. **Habitat Improvements -** Targeted habitat treatment projects in deer winter range and stopover areas could be used to bolster deer populations and offset some of the impacts of human development.

4. PAUNSAUGUNT



Location:

The Paunsaugunt unit is located in southern Utah, east of the Zion unit. The area has approximately 6,000 mule deer and is one Utah's most famous trophy hunting units. Deer in this area are migratory, with some animals moving over 70 miles. The population is interesting because a major effort has been made by UDOT, UDWR, and their partners to maintain the deer migration in that area. In the 1990s and early 2000s, SR-89 east of Kanab was infamous for having high numbers of deer-vehicles collisions, especially during the migration periods. In 2013, mitigation measures were installed along a 13-mile stretch of SR-89 that intersected a major migration corridor deer. This reduced deer-vehicle collisions and maintained the migration in that area.

Since 2017, GPS tracking has been used to document the migratory movements on mule deer in the Paunsaugunt unit. The project is a joint effort with the Arizona Game and Fish, because some deer in this area move between Arizona and Utah seasonally. The project is going into its third year and has amassed over 500,000 animal locations from over 130 deer. The study has allowed the UDWR to accurately describe migration corridors and habitat use in this area.

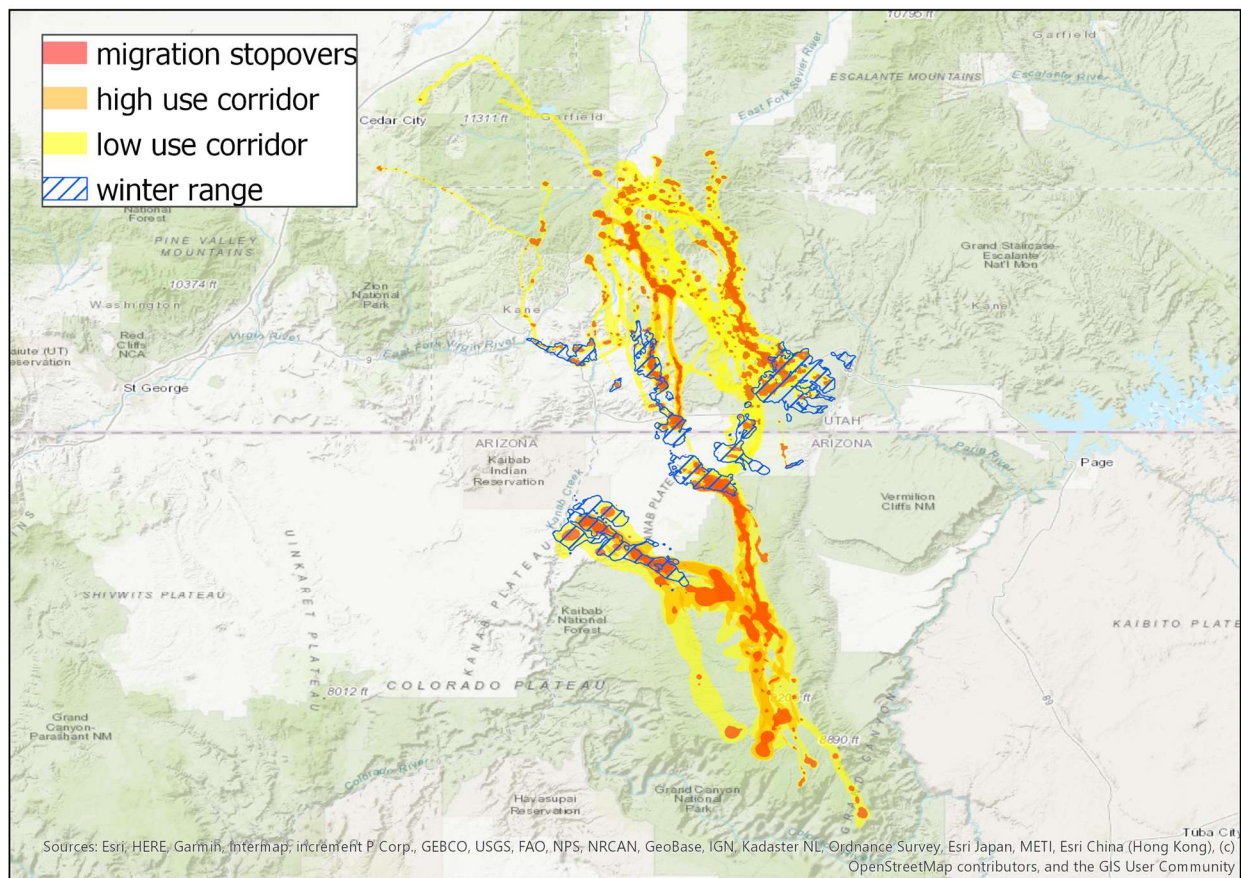


Figure 6. Mule deer migration corridors, winter ranges and stop over areas in the Paunsaugunt unit.

Need:

- I. **Wildlife Crossings-** There are currently seven wildlife crossings on SR-89 east of Kanab that facilitate the movements of thousands of migrating deer each year. GPS tracking data indicates there is an additional movement corridor that crosses SR-89 at Johnson Canyon. Currently, there are no wildlife fencing or wildlife crossings at that location. Mule deer may benefit from road mitigation in that area. Mule deer may also benefit from road mitigation on SR-89 north of Kanab near Mt. Carmel and between the towns of Glendale and Hatch, as many of the deer migrate across SR-89 in those locations.
- II. **Corridor Inventories-** Migration corridors need to be inventoried in this area to document current and potential barriers (roads, development, etc.). Rangeland and agricultural fencing needs to be examined to determine if it can be made more wildlife friendly.
- III. **Habitat Improvements –** Targeted habitat treatment projects in deer winter ranges and stopover areas could be used to bolster deer populations.

RESEARCH PRIORITIES

1. THE BOULDER MOUNTAIN PROJECT



Location:

The Boulder Mountain management unit is part of the high plateau complex in southern Utah. The area is unique as it is the highest timbered plateau in North America. The unit encompasses 1.3 million acres and is home to approximately 7,000 mule deer and 1,200 elk. The area is largely rural and bordered by a few small towns. Landownership is a mix of BLM, Forest Service, and state lands, with small amounts of private lands on the periphery of the unit.

Need:

The Boulder Mountain deer population is migratory, with animals using high elevation habitat on Forest Service lands in the summer and lower elevation habitats on BLM and state lands in the winter. Currently, little is known about migration timing and the locations of migration corridors for mule deer in this area.

Population movements appear to be rather complex, as deer that share the same summer range have the option to move to over 15 different winter ranges (Fig. 1). The UDWR would like to monitor the movements of mule deer in this population to describe migratory corridors and determine the relative importance of those winter ranges to the population.

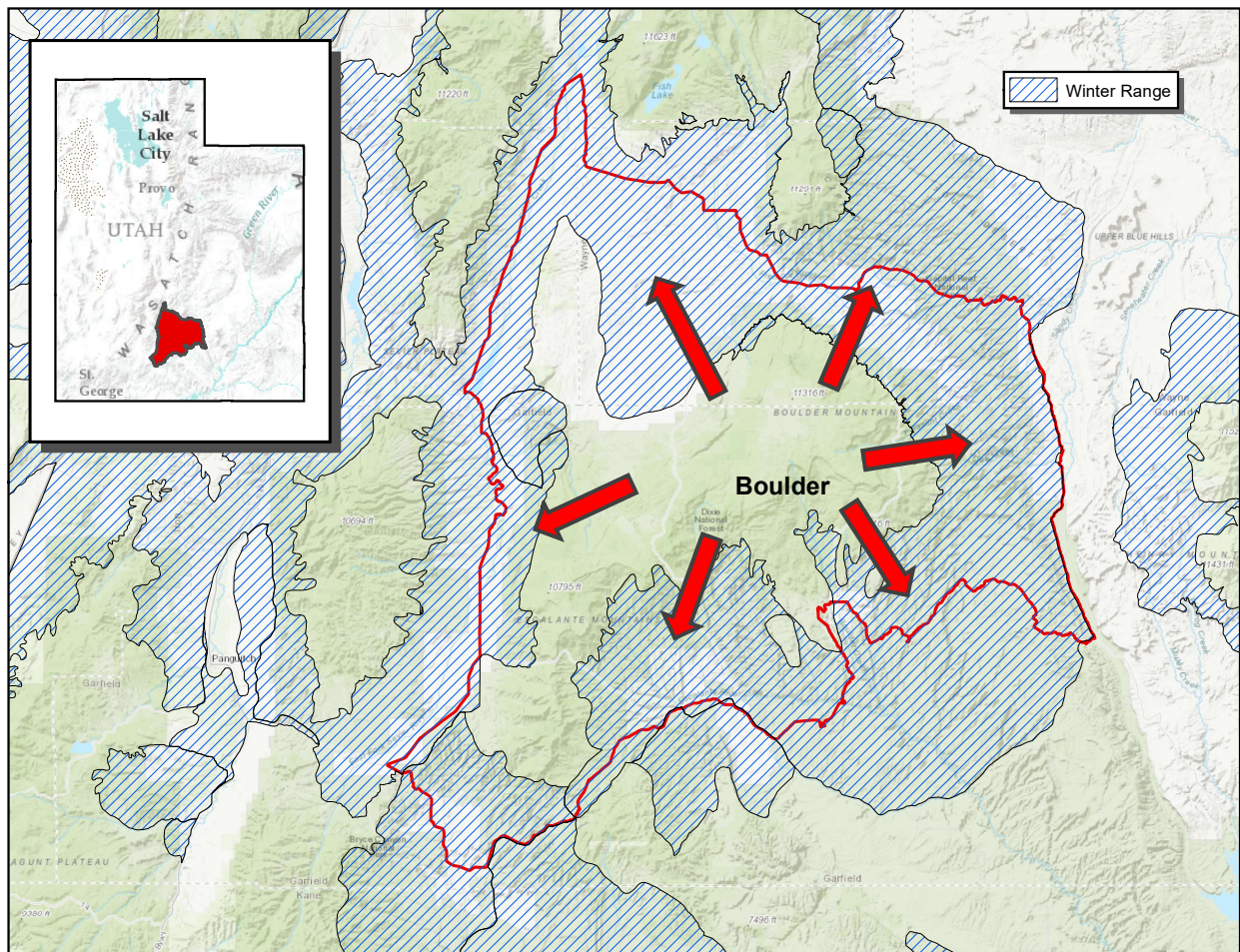


Figure 7. The locations of Boulder Mountain big game winter ranges in southern Utah.

Research Plan:

The Boulder Mountain project is scheduled to begin in December 2019. A contractor will be used to capture 100 mule deer (60 does, 40 bucks) using a standard helicopter and net technique. The large sample size is necessary so tracking collars can be distributed across winter ranges in the area. Mule deer will be fit with GPS tracking collars that record locations at two-hour intervals for over three years. After the first year of the project, data will be analyzed to determine if there were areas that were not

adequately sampled. If there are holes or under sampled areas, the Utah Wildlife Migration initiative will fund the capture of additional deer in those areas.

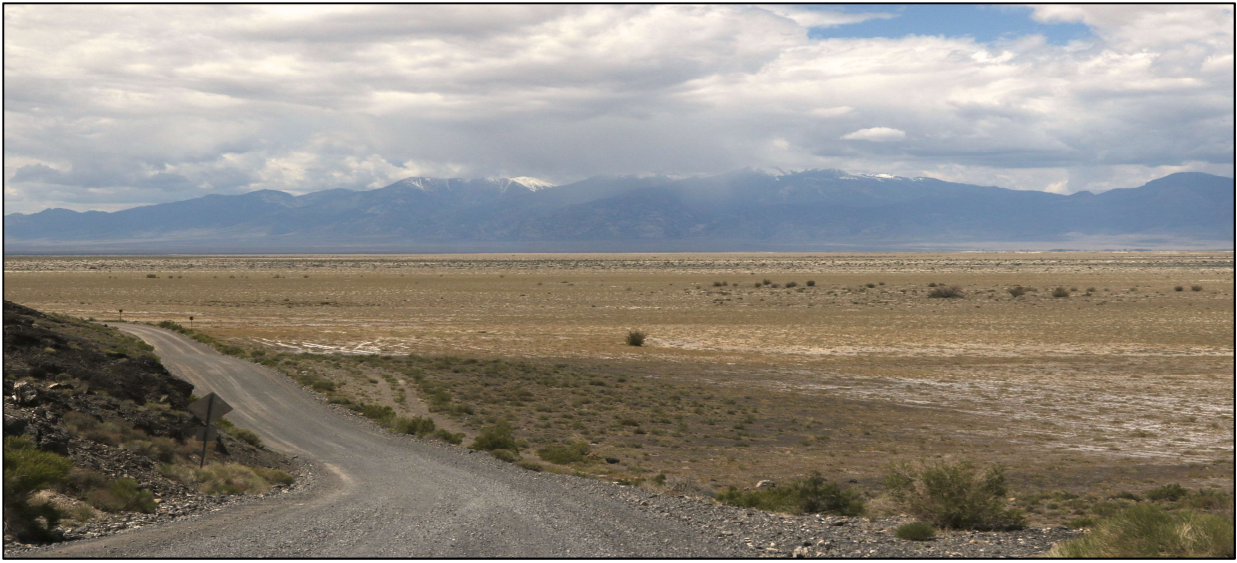
GPS tracking information will be analyzed using Net Squared Displacement (NSD) plots and Brownian Bridge Movement Models (BBMMs) to describe migration corridors and winter range use. Data will be analyzed by UDWR staff when multiple seasonal migrations have been documented. Reports and migration corridors polygons will be made available when these analyses are complete approximately 2-3 years after the beginning of the project.

Budget:

The UDWR is asking for \$172,400 to begin the study. Additional funding will be provided by the Utah Wildlife Migration Initiative to analyze and report data, as well as expand the project to include more deer and possibly elk in subsequent years.

Boulder Mountain Project				
Equipment	Item	Quantity	Cost per Unit	Total
	Iridium GPS collars	100	\$1,150	\$115,000
	Collar expansions for male deer collars	40	\$10	\$400
	Shipping for collars	100	\$1.00	\$100
				\$115,500
Supplies	Item	Quantity	Cost per Unit	Total
	Veterinarian supplies (testing, antibiotics, etc.)	100	\$69	\$6,900
				\$6,900
Contractor	Item	Quantity	Cost per Unit	Total
	Helicopter capture services	100	\$500	\$50,000
				\$50,000
Project Total				\$172,400

2. THE WEST DESERT PROJECT



Location:

The West Desert is located west of the Wasatch Mountains in the central portion of Utah (Fig. 2). The area is over seven million acres and encompasses several management units. Ownership is largely a checkerboard of BLM and state land; however, there are Forest Service lands at higher elevations and a large block of Department of Defense (DOD) land. Much of the area receives less than eight inches of precipitation annually.

I-80 transverses the northern extent of the West Desert and has approximately 7,000 vehicles per day. Additionally, while most of West Desert is undeveloped, substantial develop is occurring on the eastern side of the area due to its close proximity to Salt Lake City and the other urban centers along the Wasatch Front. There are approximately 1,500 pronghorn, 22,000 mule deer, and 1,500 elk in this area of the state.

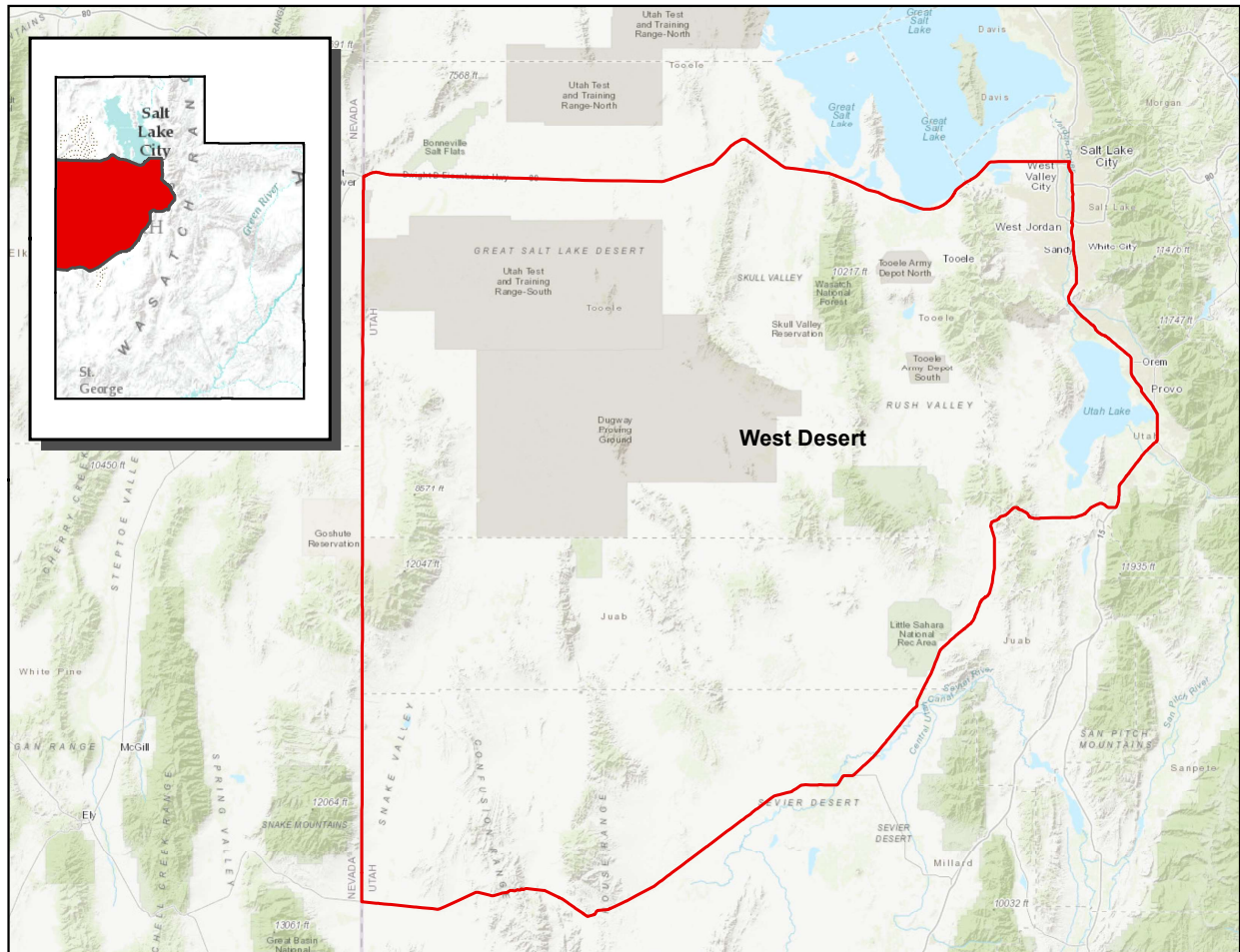


Figure 8. The West Desert in central Utah.

Need:

Currently, the UDWR has limited movement information for ungulates in the West Desert of Utah. This information is needed to conserve populations as traffic volumes increase and lands are developed. Portions of the West Desert project were started last year with help from many partners. The BLM, as part of SO 3362, helped the UDWR start a study on mule deer near the City of Eagle Mountain. That study has already provided valuable information to work with the City and other landowners to preserve migration corridors in that area. Additionally, the DOD and UDWR were able to capture ten pronghorn on DOD land to begin understanding the locations of movement corridors and the effects of roads.

Pronghorn are a major concern in this area because it is likely that I-80 is a barrier to their movements. Tracking data are needed to evaluate barriers and plan mitigation projects that connect populations.

Research Plan:

The UDWR would like expand efforts to document migration corridors and winter range use by pronghorn in the West Desert during the winter of 2019-2020. For this study, a contractor will be used to capture 30 adult pronghorn antelope. Pronghorn will be captured using a standard helicopter and net gun method. Each captured pronghorn will be fit with a GPS tracking collar that records the animal's location every two hours for a period of over three years. After the first year of the project, data will be analyzed to determine if there were areas that were not adequately sampled. If there are holes or under sampled areas, the Utah Wildlife Migration initiative will fund the capture of additional pronghorn in those areas.

Pronghorn movement data will be analyzed to define migration corridors and movement barriers. NSD plots will be used to segment pronghorn movements into seasonal range use and migratory movements. We will then construct population level BBMMs for winter range use and migration corridor use. Data will be analyzed by UDWR staff when multiple seasonal migrations have been documented. Reports and migration corridors polygons will be made available when these analyses are complete approximately 2-3 years after the beginning of the project.

Budget:

The UDWR is asking for \$50,000 to expand research efforts on pronghorn in the West Desert. Additional funding will be provided by the Utah Wildlife Migration Initiative to analyze and report data, as well as expand the project to include more pronghorn in subsequent years.

West Desert Project				
Equipment	Item	Quantity	Cost per Unit	Total
	Iridium GPS collars	30	\$1,150	\$34,500
	Shipping for collars	30	\$1.65	\$50
				\$34,550
Supplies	Item	Quantity	Cost per Unit	Total
	Veterinarian supplies (testing, antibiotics, etc.)	30	\$15	\$450
				\$450
Contractor	Item	Quantity	Cost per Unit	Total
	Helicopter capture services	30	\$500	\$15,000
				\$15,000
Project Total				\$50,000

3. THE CURRANT CREEK PROJECT



Location:

The Currant Creek management unit is located in central Utah on the eastern side of the Wasatch Mountains (Fig. 3). The unit encompasses 721,000 acres and is home to approximately 14,000 mule deer and 4,200 elk. The area is rural and somewhat removed from the large populations centers on the Wasatch front. Landownership is a mix of federal, state, private, and tribal lands. The area has eight state-owned Wildlife Management Areas (WMAs), which contain both summer and winter range for big game.

There are two highways in this area that impact big game populations: US-40 and SR-191. US-40 bisects the middle of the Currant Creek management unit. In this area, US-40 has approximately 6,000 vehicles per day and 30% of the vehicles are large trucks. Traffic volumes on US-40 have doubled in the past decade. Each year, this section of US-40 has hundreds of wildlife-vehicle collisions (Fig. 4), most of which involve mule deer and elk. SR-191 is the southeastern boundary for the Currant Creek management unit. This highway has 2,100 vehicles per day and traffic volumes have more than tripled in just ten years.

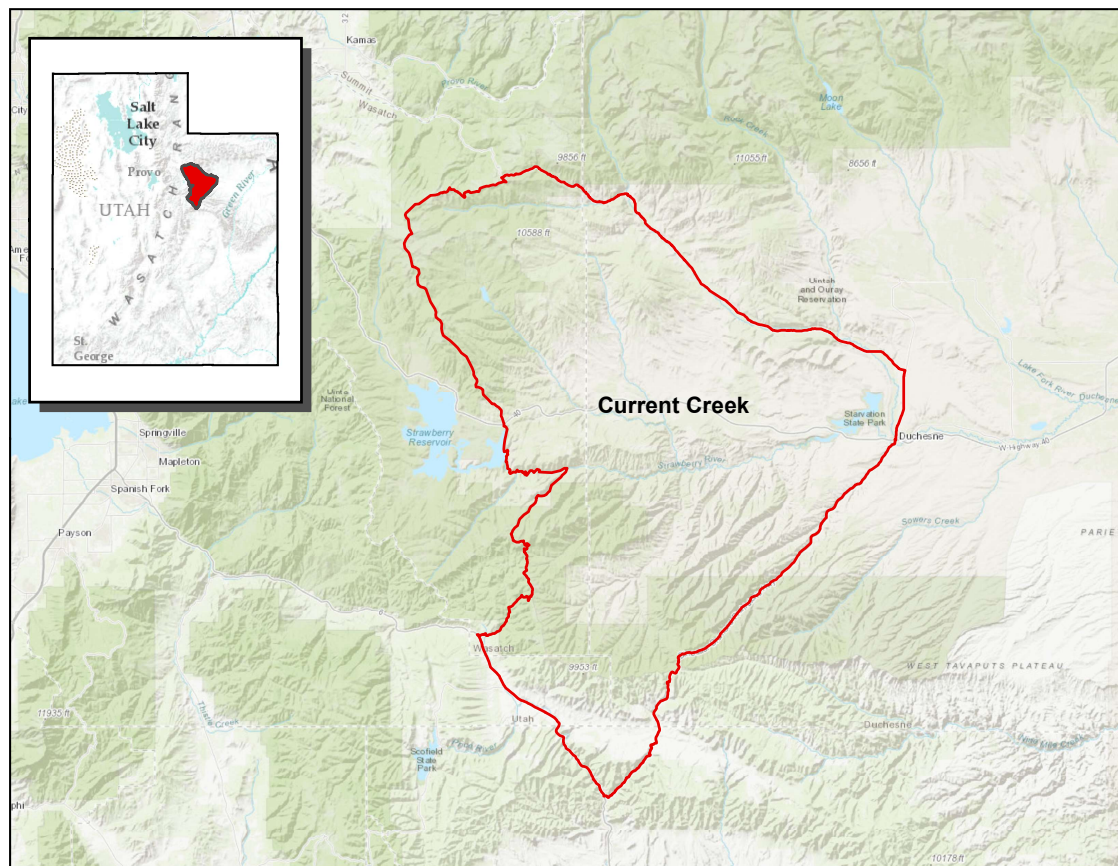


Figure 9. The Current Creek management unit in Utah.

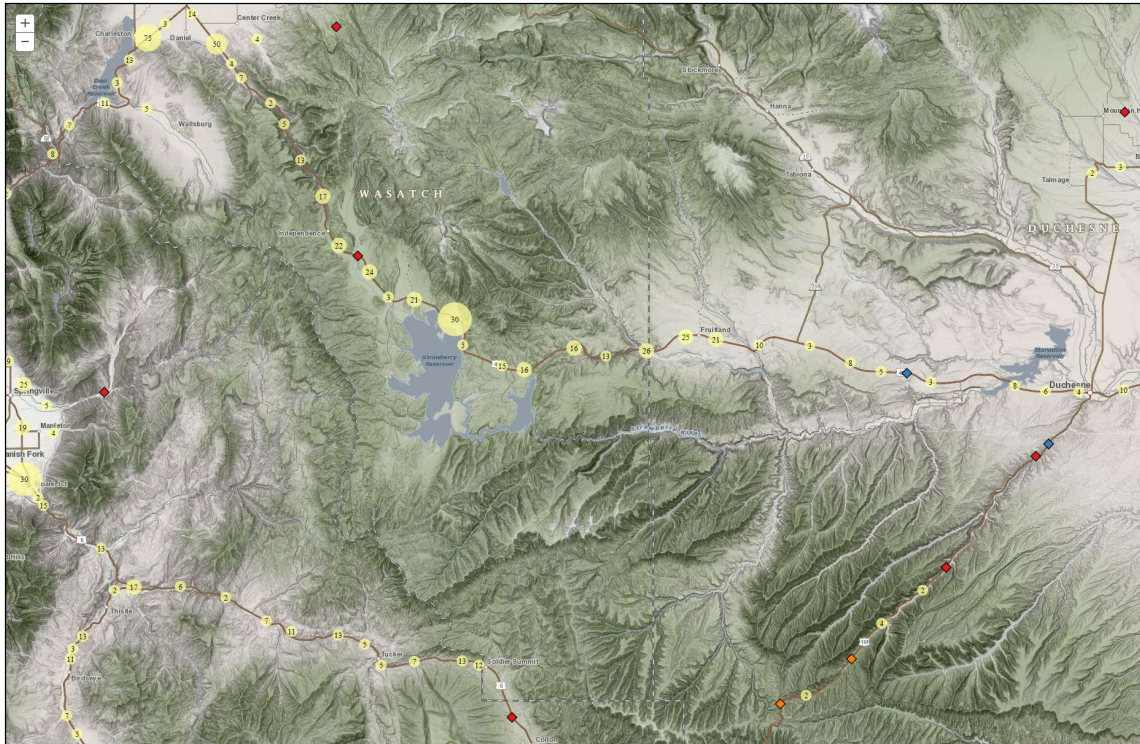


Figure 10. The locations of wildlife-vehicle collisions on US-40 and SR-191 in Utah.

Need:

The UDWR has limited information on the movements of mule deer in the Currant Creek area. It is believed that most mule deer in this area are migratory, but migration corridors have not been mapped. The UDWR has a critical need for corridor maps because of the high number of deer-vehicle collisions in the area. Right now, the Utah Department of Transportation (UDOT) is installing wildlife fencing on US-40 in Strawberry Valley to reduce wildlife-vehicle collisions. The fencing bisects a large block of mule deer summer range, and it is being installed without knowledge of the locations of mule deer migration corridors. It unknown how fencing will impact deer migrations, especially since there will be limited locations for deer to cross the highway with the new fencing installed. Migration data could help get wildlife crossings in key locations to maintain traditional movements. Work on this project needs to be started as soon as possible.

Research Plan:

The Currant Creek project is scheduled to begin in December 2019. A contractor will be used to capture 45 mule deer (25 does, 20 bucks) using a standard helicopter and net technique. Mule deer will be fit with GPS tracking collars that record locations at two-hour intervals for over three years. After the first year of the project, data will be analyzed to determine if there were areas that were not adequately sampled. If

there are holes or under sampled areas, the Utah Wildlife Migration initiative will fund the capture of additional deer in those areas.

GPS tracking information will be analyzed using NSDs plots and BBMMs to describe migration corridors and winter range use. Data will be analyzed by UDWR staff when multiple seasonal migrations have been documented. Reports and migration corridors polygons will be made available when these analyses are complete approximately 2-3 years after the beginning of the project.

Budget:

The UDWR needs \$77,600 to begin research on mule deer movements in the Currant Creek area. Additional funding will be provided by the Utah Wildlife Migration Initiative to analyze and report data, as well as expand the project to include more deer in subsequent years.

Currant Creek Project				
Equipment	Item	Quantity	Cost per Unit	Total
	ATS Model G2110 Iridium GPS collars	45	\$1,150	\$51,750
	Collar expansions for male deer collars	20	\$10	\$200
	Shipping for collars	45	\$1.00	\$45
				\$51,995
Supplies	Item	Quantity	Cost per Unit	Total
	Veterinarian supplies (testing, antibiotics, etc.)	45	\$69	\$3,105
	Supply cost total			\$3,105
Contractor	Item	Quantity	Cost per Unit	Total
	Helicopter capture services	45	\$500	\$22,500
	Contractor cost total			\$22,500
	Project Total			\$77,600

Appendix A

