

ARIZONA STATE ACTION PLAN

Update 8

UPDATED October 2025

For

**Implementation of Department of the Interior Secretarial Order 3362: “Improving
Habitat Quality in Western Big Game Winter Range and Migration Corridors”**



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EXECUTIVE SUMMARY

The Arizona Game and Fish Department (AZGFD) has identified five Priority Big Game Movement Corridors, which are detailed in this Action Plan. Within each Priority Corridor, various projects focused on vegetation management, barrier/fragmentation mitigation, and water development, have either been completed, initiated (i.e., ongoing efforts), or have been identified for future implementation. For federal fiscal year (FY) 25, the status of all ongoing and future projects has been updated within this Action Plan, encompassing various stages of funding and compliance, including archaeological surveys and environmental assessment review. Additionally, the AZGFD's Research Needs related to ungulate movement and migration are also outlined within this Action Plan.

INTRODUCTION

Human activities such as agriculture (Donald and Evans 2006), urban development (Johnson et al. 2017), roadway and railway construction (Coe et al. 2015), energy development (Sawyer et al. 2020, 2022), and the installation of barrier fences (Jakes et al. 2018) are increasingly fragmenting vital landscapes. These landscapes are essential for sustaining ungulate winter range and migration routes across the western United States. In response to anthropogenic development, agencies within the United States Department of the Interior (USDI), including the US Fish and Wildlife Service (USFWS), National Park Service (NPS), United States Geological Survey (USGS), and Bureau of Land Management (BLM), are directed to work in close partnership with the State of Arizona through Secretarial Order 3362 (SO3362). In addition, the United States Department of Agriculture (USDA), through the USDA Forest Service (USFS) and USDA Natural Resource Conservation Service (NRCS), collaborates with USDI, state authorities, and other natural resource managers to address landscape fragmentation issues. Together, these partners aim to enhance the quality of big game winter range and migration corridors for mule deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), pronghorn (*Antilocapra americana*), and numerous other species through research, mapping, planning, and management of ecological resources.

ARIZONA GAME AND FISH DEPARTMENT'S PRIORITY BIG GAME CORRIDORS

1) Grand Canyon to Prescott Corridor Complex

The Grand Canyon to Prescott Corridor Complex exhibits significant variations in elevation, ranging from 12,600 ft near Flagstaff, Arizona to 3,100 ft in the Verde River Valley. These varying elevations create winter conditions near Flagstaff, which prompts mule deer, elk, and pronghorn to migrate to lower elevations. Ongoing research and mapping efforts have identified several key migration corridors for these species (Figures 1–3).

Since FY19 (i.e., October 1, 2018–September 30, 2019), the AZGFD has deployed global positioning system (GPS) collars on 100 mule deer in Game Management Units (GMU) 7 & 9, near the San Francisco Peaks. Through this research, it was discovered that some mule deer travel up to 80 miles to reach winter range. During migration, mule deer must cross several highways such as US Highway (US) 180, US 89, and State Route (SR) 64. Data from elk and pronghorn collars also indicate that human activities influence seasonal movement and selection of habitat. Typically, elk and pronghorn that reside north of Interstate (I) 40 remain north of the interstate, while those south of I-40 tend to remain south of the interstate (Figure 2 and 3). Elk rarely manage to cross I-40 successfully, and attempted crossings often lead to dangerous collisions for motorists. Within this Complex, more than 65 elk vehicle-collisions occur annually (Gagnon et al. 2012). Moreover, major roadways act as a barrier to pronghorn within the corridor. For example, research conducted by Northern Arizona University and AZGFD has revealed genetic differences between pronghorn populations divided by US 89 and SR 64, demonstrating the restrictive impact these highways have on animal movement (Theimer et al. 2012).

The Grand Canyon to Prescott Corridor is primarily dominated by ponderosa pine (*Pinus ponderosa*) in the Petran Montane Coniferous Forest biotic community, as well as pinyon pine (*Pinus spp.*) and juniper (*Juniperus spp.*) species in the Great Basin Conifer Woodland biotic community. Land ownership in this corridor primarily includes USFS, private, and Arizona State Land Department (ASLD; Figure 4, Table 1).

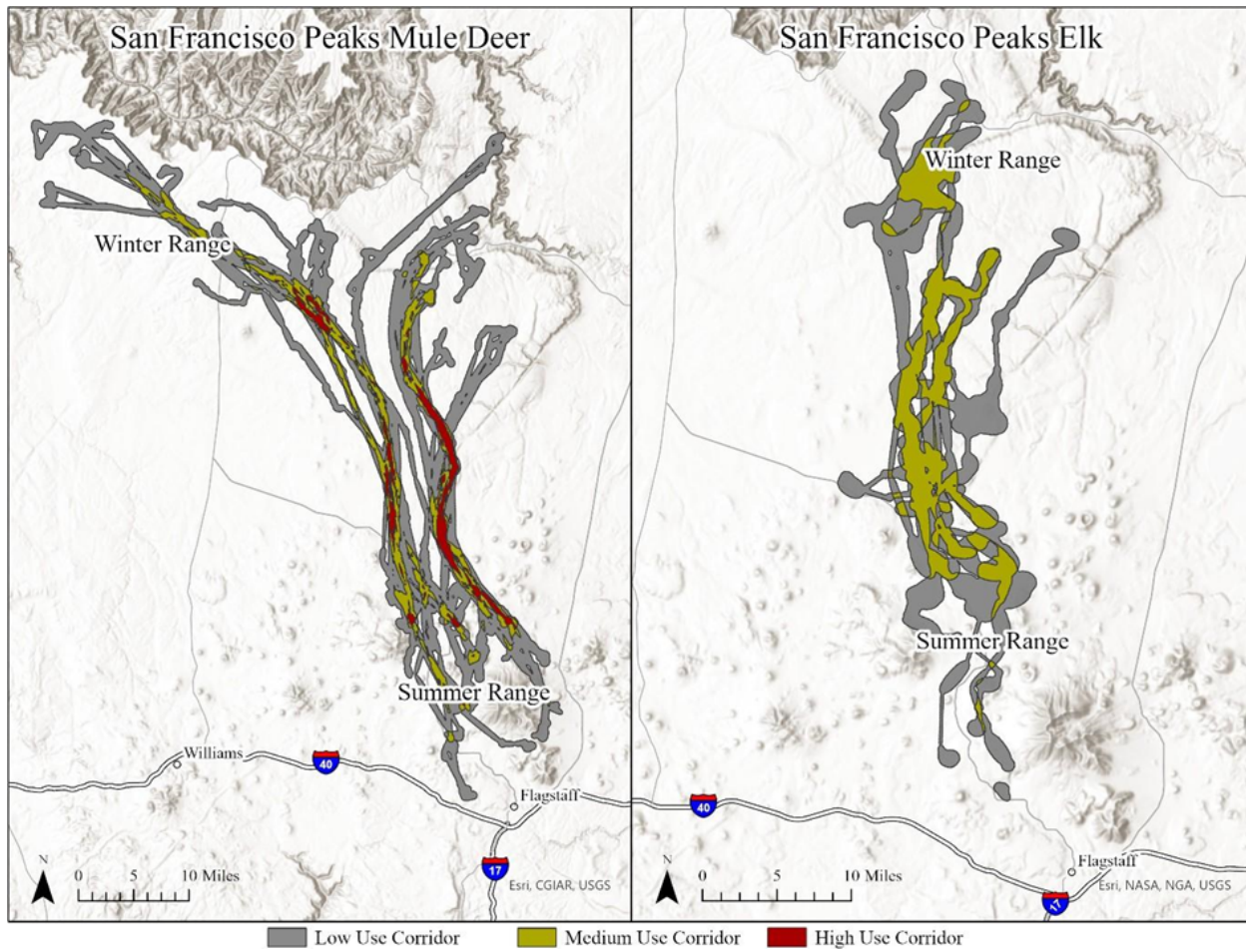


Figure 1. San Francisco Peaks mule deer and elk migration corridors within the Grand Canyon to Prescott Corridor Complex. Low use, medium use, and high use corridors are based on the relative number of individuals using the same migration corridor.

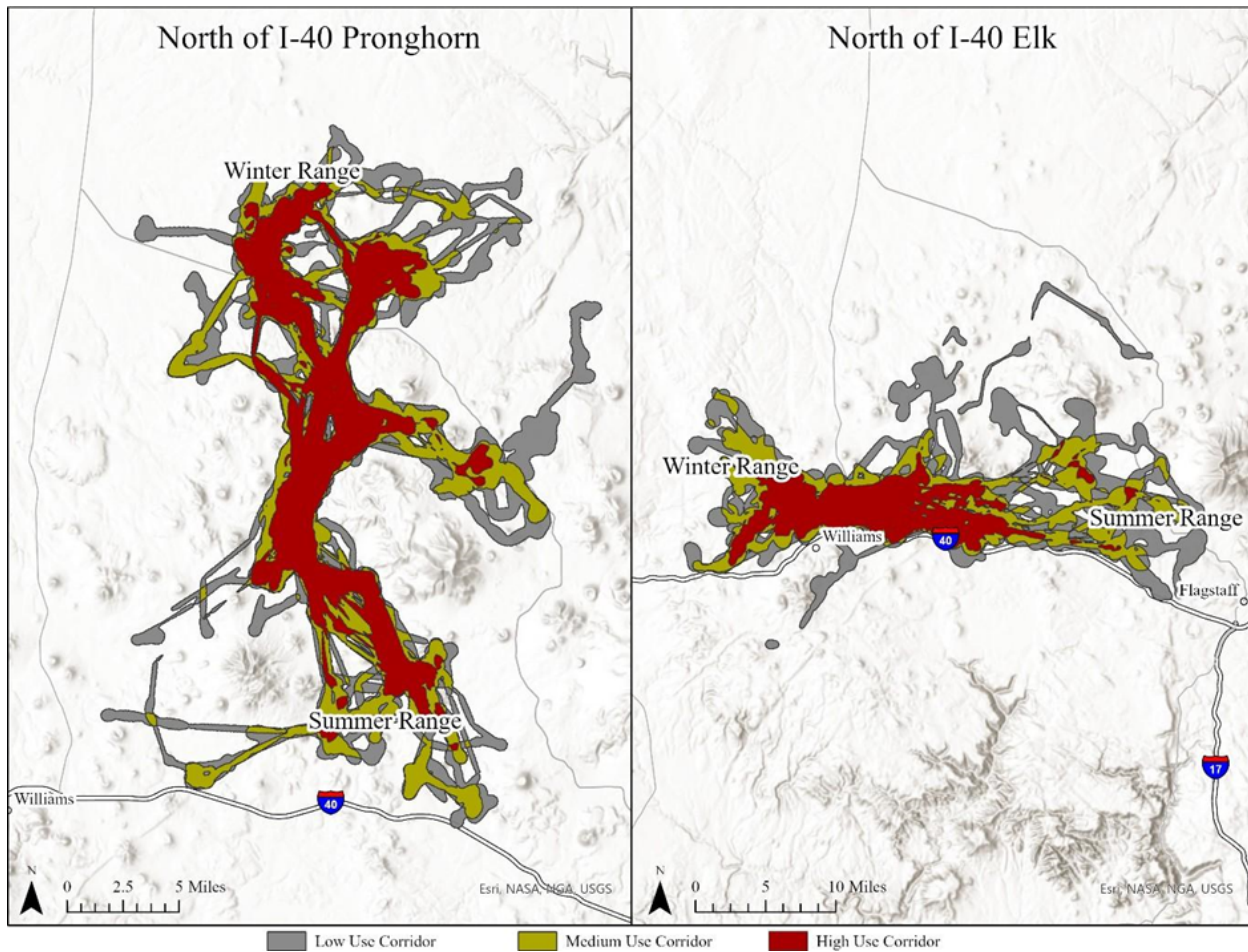


Figure 2. North of I-40 pronghorn and elk migration corridors within the Grand Canyon to Prescott Corridor Complex. Low use, medium use, and high use corridors are based on the relative number of individuals using the same migration corridor.

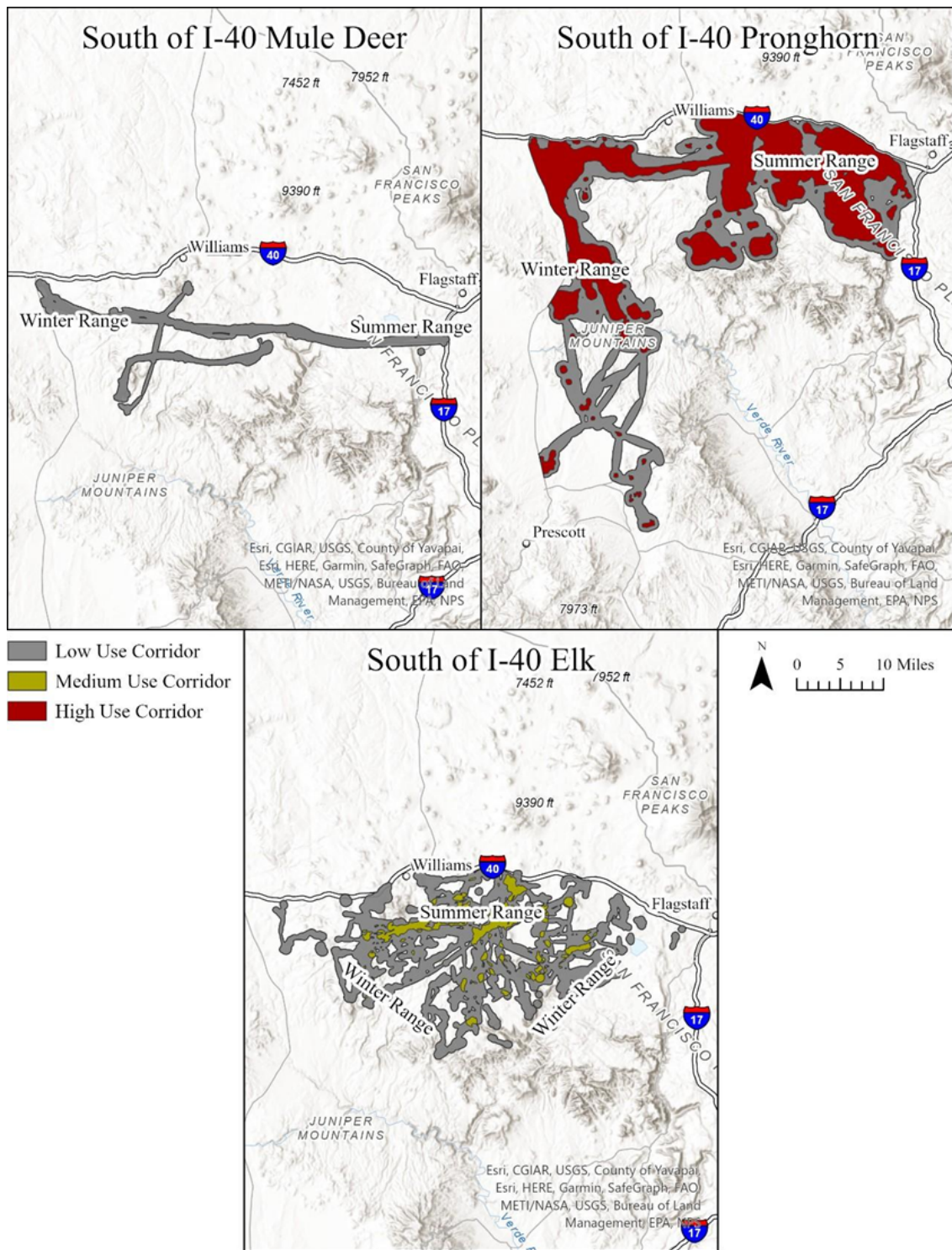


Figure 3. South of I-40 mule deer, pronghorn, and elk migration corridors within the Grand Canyon to Prescott Corridor Complex. Low use, medium use, and high use corridors are based on the relative number of individuals using the same migration corridor.

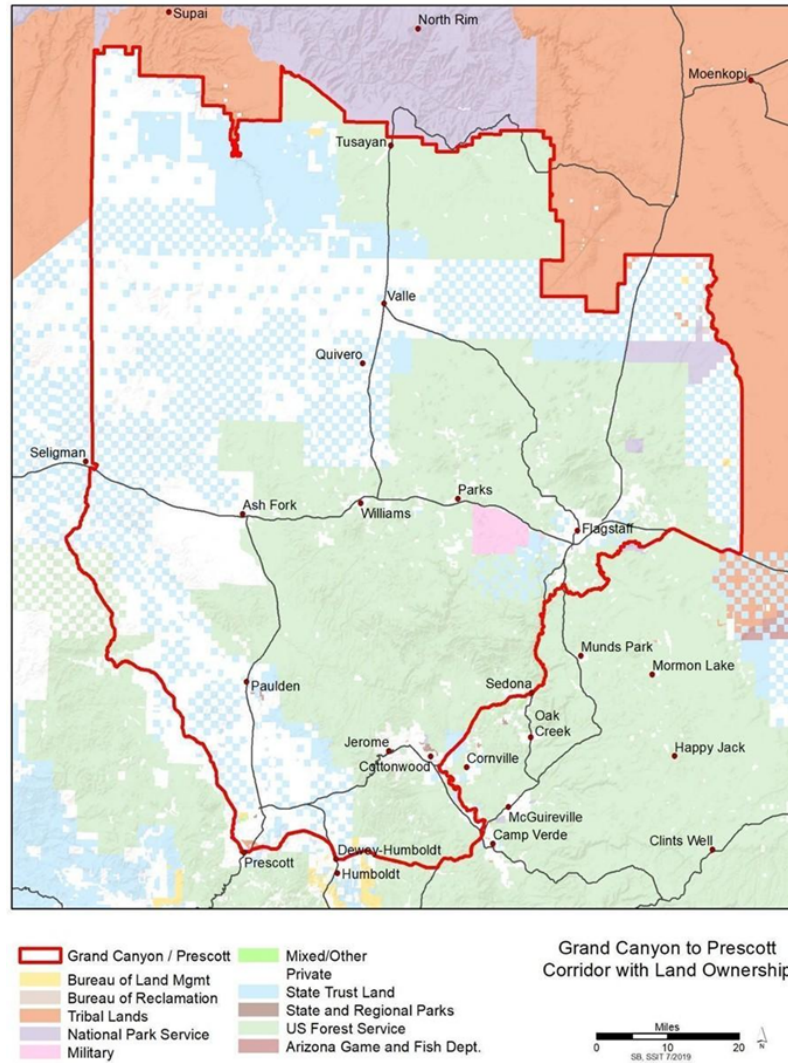


Figure 4. Land ownership within the Grand Canyon to Prescott Corridor Complex.

Table 1. Land ownership within the Grand Canyon to Prescott Corridor Complex.

Category	Area (acres)	%
US Forest Service	1,953,023	43.48
Private	1,551,696	34.55
State Trust Land	903,000	20.10
National Park Service	38,934	0.87
Department of Defense	28,873	0.64
Bureau of Land Management	5,646	0.13
Tribal Lands	4,552	0.10
Bureau of Reclamation	4,064	0.09
State and Regional Parks	1,173	0.03

Completed State and Federal Agency Activities in Federal Fiscal Year 2025

Completed Barrier/Fragmentation Mitigation Projects

- *Movement Studies*: Through the USGS, the AZGFD and Mule Deer Foundation (MDF) published Ungulate Migrations of the Western United States, Volume 5.

Completed Wildlife Water Developments

- *Inner Basin Waterline Wildlife Waters Project (Funded, Arch Complete, EA Complete)*: The Coconino National Forest (CNF) and AZGFD worked together to install two new wildlife drinkers and five underground 25,000-gallon storage tanks along the Inner Basin Waterline. Work was completed in June 2025. This project aims to improve access to water on the eastern slope of the San Francisco Peaks Mountains, which has limited natural water sources.

Ongoing State and Federal Agency Activities in Federal Fiscal Year 2025

Ongoing Vegetation Management Treatments

- *Drake Pronghorn Corridor Vegetation Treatment (Partially Funded, Heritage Surveys Complete, EA Complete)*: The Prescott National Forest (PNF), AZGFD, and various funding partners – Salt River Project (SRP), National Fish and Wildlife Foundation (NFWF), Conservation First USA – are currently implementing the Drake Pronghorn Corridor Project covering over 9,000 acres within the Chino Valley Ranger District in GMU 8. The project will improve pronghorn connectivity between the PNF, KNF, and CNF while improving grassland habitat for a variety of wildlife species. The project seeks to mechanically remove encroaching juniper from historic grassland habitat and will be maintained through future prescribed burns. The AZGFD and Triangle Natural Resource Conservation District have partnered to successfully complete heritage surveys on the entire 9,630-acre project area. Implementation of Phase 1 is underway and approximately 1,100 acres have been completed to date. Final compliance and funding is being sought for Phase 2.
- *Perrin Ranch Grassland Restoration (Funded, Arch Complete, EA Complete)*: From FY20–23 6,216 acres of grassland restoration were completed on the Perrin Ranch. In FY24, 1,192 acres of woody vegetation mastication treatment were completed on the Perrin Ranch to improve elk and pronghorn habitat. An additional treatment of 1,178 acres began in December 2023 and was completed in May 2024. Funding has also been secured for a 900-acre grassland restoration treatment on the Perrin Ranch, north of Williams, Arizona,

which was completed in 2025.

- *South Zone (SZ) Grassland Restoration:* In partnership with the AZGFD, Habitat Partnership Committee (HPC), NRCS, and permittees, the USFS has mechanically treated 4,000–5,000 acres annually under the SZ Grassland EA. Treatment methods include using agra-ax, mastication, fuel wood sales, and dozer piling. Thousands of acres of grassland restoration are also ready for implementation on the KNF under the SZ Grasslands Restoration EA. Additionally, starting with the SZ Grassland prescription footprint, the KNF is developing a geodatabase to better track project implementation with an interest to expand this effort forest-wide.
 - *Clark Project Grassland Restoration (Partially Funded, Arch Complete, EA Complete):* In FY24, 1,200 acres of grassland restoration was completed for the Clark Project Area on the KNF. Additional funding has been secured through the HPC to treat an additional 589 acres, and an additional 500 acres were applied for in FY25. Mastication began at the end of FY25 to be completed by summer 2026. This work will connect previously treated areas to create additional connectivity and foraging habitat for grassland obligate species.
 - *Partridge Creek Allotment Grassland Restoration (Funded, Arch Complete, EA Complete):* The Partridge Creek Allotment Grassland Restoration is part of the SZ Grassland Restoration project. The South KNF has identified historical grassland and completed archaeological surveys on 3,448 acres of the Partridge Creek allotment, north of Ash Fork, Arizona. Funding has been secured to masticate approximately 1,203 acres. In FY25, 1,203 acres of treatment were completed and phase 2 went to bid, which aims to treat 800 more acres. This work is expected to begin in December 2025. Treatments will reduce woody vegetation encroachment in historical grassland and improve east-west pronghorn movement corridors.
- *Additional KNF Projects (Funding UNK, Arch UNK, EA UNK):* The KNF plans to treat 438 acres via dozer push on the 4 Rd Dozer project in the Williams District in FY23. Additional projects include the Irishman Dam (123 acres), Hat Allotment (770 acres), Cowboy Tank (504 acres), Juan Tank (235 acres), and Pine Creek (691 acres). Each of these projects will include lop and scatter treatment.
- *Flying M Ranch Grassland Restoration (Funding UNK, Arch Complete, EA Complete):*

20,928 acres of historical grassland have been identified for treatment on the Flying M Ranch, east of Flagstaff, Arizona. In FY25, 600 acres were put under bid. The project area includes a large pronghorn movement corridor between summer and winter range. Removal of encroaching juniper trees through mastication treatments will help to improve habitat connectivity in this area.

Wildlife Water Developments

Ongoing Barrier/Fragmentation Mitigation Projects

- *Movement Studies (Funded, Arch Not Needed, EA Complete):*
 - Each year, the AZGFD aims to deploy collars on mule deer, elk, and/or pronghorn in the Grand Canyon to Prescott Corridor to further assess movements related to highways and the landscape. Although collars were not deployed in this Complex in FY25, the AZGFD plans to deploy GPS collars on 30 mule deer and 25 pronghorn in FY26. As part of this collaring effort, the AZGFD is working with Babbitt Ranches to integrate movement corridors through a planned solar field. The collection and analysis of ungulate GPS data will help to determine the degree of interaction between ungulates and renewable energy infrastructure.
 - The Northern Arizona Landscape Connectivity Alliance (NALCA) continues to collaborate with partners to realize the benefits from landscape connectivity for the FS Southwestern Region's valuable natural resources. Coordination with the MDF and other external stakeholders occurred in FY25 to identify and implement priority projects.
- *Wildlife-Friendly Fence Modifications (Partially Funded, Arch TBD, EA TBD):*
 - The PNF partnered with AZGFD to access the AZGFD's fence collecting application. This allows for consistency in data collection across partnerships and will help prioritize fences that require modification to allow for increased permeability. In FY24, PNF surveyed over 33 miles of fences and the CNF surveyed over 10 miles of fence. Further, in FY25, the CNF inventoried, modified, or removed 22.5 miles of fence to reduce the negative effects that they pose to big game and other wildlife.
 - The AZGFD, USFS, Wildlife Conservation Organization (WCO)s, nonprofit conservation organizations, and local ranchers are collaborating to inventory, modify, or remove barrier fences south of I-40. In addition to the 75+ miles inventoried in FY23 and 10 miles inventoried in FY24, 2.5 miles of modification were completed through

an Arizona Antelope Foundation (AAF) workday in FY25.

Future State and Federal Agency Activities

Future Vegetation Management Treatments

- *Anderson Springs Allotment (Funded, Arch Complete, EA Complete)*: There are 861 acres of historical grasslands identified for treatment on the Anderson Springs allotment on the CNF. This work is permitted under the Anderson Springs and Bar T Bar allotment 2005 Record of Decision. Archeological surveys were completed in FY25, and mastication is expected to begin in FY26. This area contains an important pronghorn migration corridor. Treatment of this area will improve habitat connectivity for pronghorn.
- *Clarkdale Vegetation Clearing (Partially Funded, Arch In Progress, EA In Progress)*: Inter-agency collaboration (i.e., PNF, CNF, and AZGFD) has led to the current drafting of a Categorical Exclusion and project proposal for a key pronghorn crossing across the Verde River near Clarkdale. Once complete, it will allow for approximately 40 acres of vegetative clearing that will help to reestablish a historical corridor which connected pronghorn on the Red Rock Ranger District to the pronghorn on the Chino Valley Ranger District. Work is planned for FY26.
- *Clarkdale Grassland Restoration (Funding UNK, Arch in Progress, EA UNK)*: Archaeological surveys are near completion that will allow for implementation of several thousand acres of grassland restoration on the PNF near Clarkdale, AZ. Collar data has indicated that this area is an important movement corridor used by pronghorn moving from the KNF to the Prescott area.
- *CO Bar Grassland Restoration (Funding UNK, Arch Complete, EA Complete)*: The CO Bar Ranch in Northern Arizona contains important mule deer movement and migration corridors, as well as high-quality pronghorn habitat. To date, the CO Bar Ranch has worked with numerous partners to complete 43,445 acres of grassland restoration. Currently, there are 4,656 acres of historical grassland ready for treatment.
- *KNF and MDF Habitat Project (Funding UNK, Arch UNK, EA UNK)*: This project will occur in the Tusayan RD of the KNF and involves the removal of small diameter trees. Treatment polygons were identified by the KNF and are in the planning phases.
- *Slate Mountain Grassland Restoration (Funding UNK, Arch in Progress, EA In Progress)*: Funding for archeological surveys was obtained during FY24 and a contract bid was awarded to an archaeological survey firm to complete the surveys. In FY25, 1,178 acres of

mastication went out to bid, with expected completion in June 2026.

- *Upper Verde Watershed Mechanical (Partially funded, Arch Complete, EA UNK)*: Funding was secured for this project in FY25. Located north of Paulden, AZ, this project includes collaboration between the PNF and MDF. The project proposes a mechanical tree removal to decrease density of juniper trees in locations where fire is not desired or will not carry. The proposed treatment also includes mastication, hand thinning with chainsaws, and logging and scattering of fuel. The result will be healthier grasslands and the enhancement of wildlife habitat and watershed function. The proposed treatments will also provide future opportunities for management by prescribed fire.
- *Coconino Forest-wide Grassland Restoration Project (Funding UNK, Arch UNK, EA in Progress)*: This project will restore grasslands in the northernmost portion of the CNF, located east of the North Forest Project. This work will be permitted under the North Forest Grasslands EA.
- *Black Hills Timber Stand Improvement Project (Fully Funded, Arch Complete, EA Complete)*: The Prescott NF and MDF have partnered to complete 861.5 acres of lop and scatter work on Mingus Mountain. Work is expected to start October 2025.

Future Barrier/Fragmentation Mitigation Projects

- *Movement Studies (Funded, Arch Not Needed, EA Complete)*: In FY25, the AZGFD collared 45-50 elk to assess movement patterns between GMU 7 and 9, which will assist Department personnel in crafting hunt recommendations and other elk management recommendations.
- *Wildlife Crossings*:
 - *I-40 Wildlife Crossings (Unfunded, Arch UNK, EA UNK)*: I-40 represents the biggest impediment to migration within the Grand Canyon to Prescott Corridor Complex. After various studies were conducted by the AZGFD and Arizona Department of Transportation (ADOT; Gagnon et al. 2012), a section along I-40 near Parks, AZ (mileposts 171-175) was identified as the best location for a wildlife overpass. The AZGFD, ADOT, CNF, and KNF are nearing final design for the overpass. While implementation may take several years, constructing the overpass and including 8' woven-wire fencing will provide safer passage for small and large wildlife across I-40, and enhance road safety for the public. In anticipation of the future overpass, in FY23, approximately 100 acres of woody vegetation were thinned on the north side to facilitate use of the overpass by pronghorn. This is a key link in the GC to Prescott

corridor. AZGFD has worked with ADOT to bring the overpass design plans to 60% complete and has submitted a Rural and Tribal Assistance Pilot Program grant application, that if funded, would bring the design plans to 100%. The AZGFD is working with ADOT to seek funding for the overpass through the Wildlife Crossing Pilot Program and other relevant sources.

- *US 89, SR 64, and US 180 (Unfunded, Arch UNK, EA UNK)*: Additional wildlife crossings, including at least some overpasses on US 89, SR 64, and US 180 would connect these fragmented populations leading to more robust population growth and resilience to additional stressors such as prolonged drought and habitat fragmentation caused by human development. The AZGFD has conducted wildlife movement studies and provided similar recommendations as I-40 to wildlife crossings along US 89 and SR 64 (Dodd et al. 2011, Dodd et al. 2012).
- *Maintaining Habitat Connectivity Through Landowner Partnerships (Unfunded, Arch TBD, EA TBD)*: The AZGFD is collaborating with partners and landowners to identify and prioritize conservation opportunities, such as conservation easements on private lands and land exchanges through the USFS Land and Water Conservation Fund (LWCF) program. Their efforts are focused on the protection of wildlife habitats and connectivity across approximately 100,000 acres for long-term benefits. In 2025, the Department sent a letter of support to the USFS for the FY27 LWCF request for the Upper Verde River Watershed – Yavapai Ranch Phase V project submitted by the Prescott National Forest. The 52,000-acre Yavapai Ranch comprises the largest remaining private in-holding in the Southwestern Region of the USFS. This LWCF project would conserve important native fish and wildlife habitat in the Upper Verde and upper Bill Williams watersheds, protect key wildlife habitat and migration corridors, and enhance public recreational access.

Future Wildlife Water Developments

- *New Wildlife Water Developments and Redevelopments in the Corridor (Unfunded, Arch TBD, EA TBD)*: The AZGFD has identified several wildlife water developments to be built or redeveloped to provide the necessary water to support big game. Water redevelopments restore functionality on an existing water development that no longer provides year-round water. Typically, this involves the replacement of the old system with a newer, higher capacity system.
- *PNF Trick Tank Rebuild (Funded, Arch Complete, EA Complete)*: The AZGFD and its

partners are collaborating with the PNF to rebuild five trick tanks. Three of the wildlife waters are located on the northwest portion of the forest and two waters are on the southwest portion of the forest, north of the Cleator area. National Environmental Policy Act (NEPA) documentation was finalized in FY24 and an Environmental Assessment Checklist was submitted for future approval.

- *Riparian Restoration (Unfunded, Arch TBD, EA TBD)*: Wetland and riparian habitats are rare in northern Arizona and provide key habitat within big game migration corridors and winter range. The AZGFD is working with several non-profit partners to implement restoration at four perennial springs in 2024-2025 on the CNF.

2) Flagstaff to Sedona Corridor

The Flagstaff to Sedona Corridor encompasses a 50 mile stretch of I-17, which is a four-lane divided highway that serves as a vital link between Phoenix and Flagstaff. This heavily trafficked interstate is traveled by millions of people each year, with some sections experiencing >20,000 vehicles each day. The 31-mile section between the Verde Valley to Flagstaff is particularly notable due to its rapid change in elevation and its role as a migration corridor for mule deer and elk during both summer and winter months. Unfortunately, elk comprise 75% of all wildlife-vehicle collisions (WVCs) along this stretch, resulting in more than 85 elk mortalities each year (Gagnon et al. 2013).

In addition to frequent elk-vehicle collisions, the high traffic volumes on I-17 will often deter elk from attempted crossings (Figure 5). Analysis of GPS collar data suggests that elk migration patterns are greatly influenced by I-17 (Figure 5). Because elk must follow I-17 to reach lower elevation winter range, or attempt to cross the busy highway, the AZGFD has identified this corridor as a priority area for mitigation efforts. These initiatives aim to improve connectivity for migration routes while also reducing wildlife-vehicle collisions.

Vegetation within the Flagstaff to Sedona Corridor is primarily dominated by ponderosa pine within the Petran Montane Coniferous Forest biotic community. Land ownership within this corridor is primarily USFS, with smaller private parcels (Figure 6, Table 2).

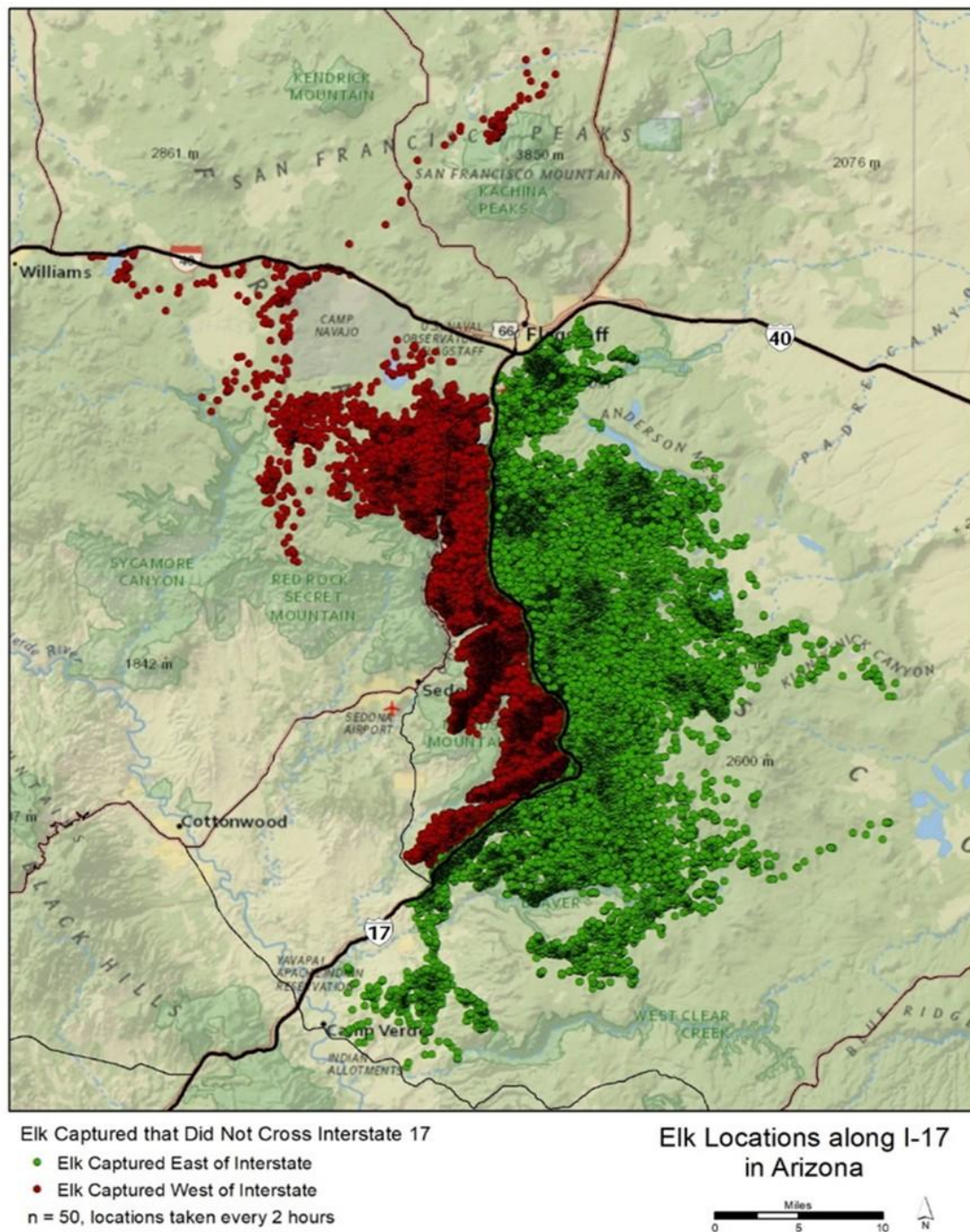


Figure 5. Elk locations associated with I-17 highway crossing study illustrate that 70% of the GPS collared population (represented here) were never located on the opposite side of I-17 from where they were collared.



Figure 6. Land ownership within the Flagstaff to Sedona Corridor.

Table 2. Land ownership within the Flagstaff to Sedona Corridor.

Category	Area (acres)	%
US Forest Service	686,040	93.62
Private	39,470	5.39
State Trust Land	4,821	0.66
National Park Service	995	0.14
Tribal Lands	630	0.09
State and Regional Parks	296	0.04
Mixed/Other	238	0.03
Arizona Game and Fish Dept.	199	0.03

Completed State and Federal Agency Activities in Federal Fiscal Year 2025

Completed Barrier/Fragmentation Mitigation Projects

- *Wildlife-Friendly Fence Modifications:* In FY23 and 24, the AZGFD entered into a new agreement with the CNF to improve fences for landscape permeability and to monitor wildlife friendly fences using a standardized approach. Additional funds were allocated for connectivity work on the CNF in the Mogollon Rim District, and during FY25, five miles of fence were removed and another seven miles were modified.
- **Agua Fria National Monument (AFNM): BLM-Hassayampa Field Office constructed a wildlife-friendly exclosure fence around silver creek, incorporating roughly 9.8 miles of new and existing fence to protect riparian habitat.**

Ongoing State and Federal Agency Activities in Federal Fiscal Year 2025

Ongoing Vegetation Management Treatments

- *Cedar Flat Grassland Restoration (Funding UNK, Arch UNK, EA UNK):* In FY23, the Red Rock Ranger District entered into an agreement with SPR and AZGFD to complete grassland restoration work in the Cedar Flats area. This project continues to improve habitat and movement corridors for large ungulates by treating several thousand acres of vegetation. Phase two was completed in FY24, and phase three began in FY25.

Ongoing Barrier/Fragmentation Mitigation Projects

- *Wildlife Crossings:*
 - *I-17 Wildlife Overpasses (Funded, Arch Complete, EA Complete):* I-17 represents the biggest impediment to migration in the Flagstaff to Sedona Corridor. A priority for this linkage is the design and construction of several wildlife crossing structures across and under I-17, along with wildlife exclusion fencing to make these crossing structures effective. The ADOT and the USFS have coordinated closely with the AZGFD to plan for crossings in key areas through the I-17 Elk Movement Studies Report (Gagnon et al. 2015). In FY24, the AZGFD and ADOT were awarded a \$24 million grant through the Wildlife Crossing Pilot Program for the construction of the Willard Springs Overpass along I-17. Overpass design was funded by the AZGFD and construction began in FY25 and will be completed mid FY26. An additional overpass is proposed near Kachina Village, and AZGFD has funded ADOT to bring this project design to 60%. The AZGFD will work with ADOT to seek funding for the Kachina Village overpass through the Wildlife Crossing Pilot Program or other relevant sources.

- *I-17 Woods Canyon to Munds Canyon Fencing Retrofit (Funded, Arch TBD, EA TBD):*
In 2011, the ADOT and AZGFD collaborated to retrofit the right-of-way fence along I-17 from Woods Canyon to Munds Park (MP 316-322), resulting in a 97% reduction in WVCs. However, over time, these retrofit fences have degraded and WVCs have become problematic once again. The ADOT has prioritized upgrading the fence to a permanent woven-wire design to more effectively reduce deer and elk collisions within this priority corridor. In FY24, the AZGFD and ADOT were awarded a one million dollar grant through NFWF America the Beautiful funds for the retrofitting of wildlife funnel fencing along I-17, which will help to mitigate barrier and fragmentation effects. In FY25 an additional \$385,000 of non-federal funding was secured to match the NFWF grant through partner agencies and NGOs including Rocky Mountain Elk Foundation (RMEF), MDF, and HPC. ADOT and AZGFD will complete an agreement in early FY26, and project construction should begin by summer of 2026.
- *Wildlife-Friendly Fence Modifications:* In August 2024, the AZGFD worked with AAF and CNF to modify two miles of fencing at the future I-17 Willard Springs Overpass site. In August 2025, AZGFD, AAF, and CNF completed an additional three miles of fence modifications.

Future State and Federal Agency Activities

Future Vegetation Management Treatments

- *Agua Fria Grasslands Project (Funding UNK, Arch UNK, EA UNK):* The AZGFD is working with partners to improve habitat connectivity for mule deer and pronghorn by enhancing grassland habitat and forage in the Agua Fria project area. Specifically, this project thins juniper and reduces thickets of catclaw and mesquite.
- *Black Hills Project (Funding UNK, Arch UNK, EA UNK):* The Black Hills Project is located north and west of the I-17 corridor, west of Clarkdale, to the intersection of I-17 and the PNF. The main purpose of this project is to improve vegetation conditions in the project area, which would improve habitat and forage for both mule deer and elk. Treatments include mechanical thinning, hand thinning, and prescribed fire.
- *Smith Butte I-17 Crossing Vegetation Prep. (Funded UNK, Arch Complete, EA UNK):* This project is proposed for FY26 between CNF and MDF. This project involves hand-thinning 247+ acres of ponderosa pine up to nine inch dbh immediately west of the Willard Springs Overpass on I-17 which is currently under construction. Thinning will reduce ladder fuels and help facilitate wildlife movement in the vicinity of the Willard Springs Overpass. This project

will also accomplish pre-commercial thinning objectives prior to the proposed Smith Butte timber offering (currently slated for 2027). The Scope of Work has been completed, and funding is expected despite pauses in federal agreements. Work is expected to begin in FY26, with additional acres available for future treatment if additional funding is secured.

Future Barrier/Fragmentation Mitigation Projects

- *Movement Studies (Funded, Arch Not Needed, EA Complete)*: In FY25, the AZGFD collared 50 elk near Mormon Lake. The goal of this project is to assess elk movement and distribution between GMU 5A, 5B, and 6A, particularly those residing near Mormon Lake during the summer months. This project will help the AZGFD to better understand movement dynamics and inform management actions (e.g., hunt recommendations and population surveys).
- *I-17 Willard Springs Overpass Monitoring (Funded, Arch not needed, EA Complete)*: AZGFD will collar up to 25 elk in the vicinity of the Willard Springs Wildlife Overpass Project to assess highway permeability and use of the crossing. Captures will begin summer 2026.
- *I-17/Cedar Flat Pronghorn Movement Study (Funded, Arch not needed, EA Complete)*:: AZGFD will collar up to 25 pronghorn east of I-17 to assess movements in relation to I-17, identify corridors for conservation or enhancement, and evaluate the grassland restoration treatments conducted by CNF and SRP at Cedar Flat in GMU 6A. This project was funded through HPC, SRP, and NFWF.

3) Paunsaugunt to Kaibab Plateau Corridor

The mule deer herds of the North Kaibab and Paunsaugunt Plateaus in Arizona and Utah are among North America's most valued big game species. The AZGFD and Utah Division of Wildlife Resources (UDWR) have identified migration corridors and winter ranges for these mule deer herds by analyzing GPS data collected from 248 individuals (Figure 7). Mule deer of the Kaibab and Paunsaugunt Plateaus are representative migrants, traveling distances of 100 miles between summer and winter ranges. The lower elevations connecting the Kaibab and Paunsaugunt Plateaus serve as crucial wintering grounds for herds migrating between both states (Figure 7).

However, ecological changes such as fire suppression and grazing practices have resulted in a significant increase in conifer vegetation across much of Arizona's mid-elevation mule deer winter range and migration routes. This has led to the formation of large, monotypic, high-density stands of conifers, which have diminished the quality and quantity of available browse, ultimately reducing the carrying capacity for mule deer. Masticating existing conifer stands can help to improve browse production for wintering populations. The winter range of the Kaibab Plateau also faces challenges from increasing fire frequency and the aggressive invasion of cheatgrass (*Bromus tectorum*). Additionally, mule deer populations throughout the corridor are constrained by limited water availability due to prolonged droughts, a lack of natural water sources, and the unreliability of existing dirt tanks.

Within the Paunsaugunt to Kaibab Plateau Corridor, primary vegetation includes oaks (*Quercus spp.*), ponderosa pine, and mixed conifer in higher elevations. In lower elevations, vegetation includes big sagebrush (*Artemisia tridentata*) and cliffrose (*Purshia stansburiana*). Land ownership in the Paunsaugunt to Kaibab Corridor includes BLM, USFS, and private, as well as some ASLD, NPS, and tribal lands (Figure 8, Table 3).

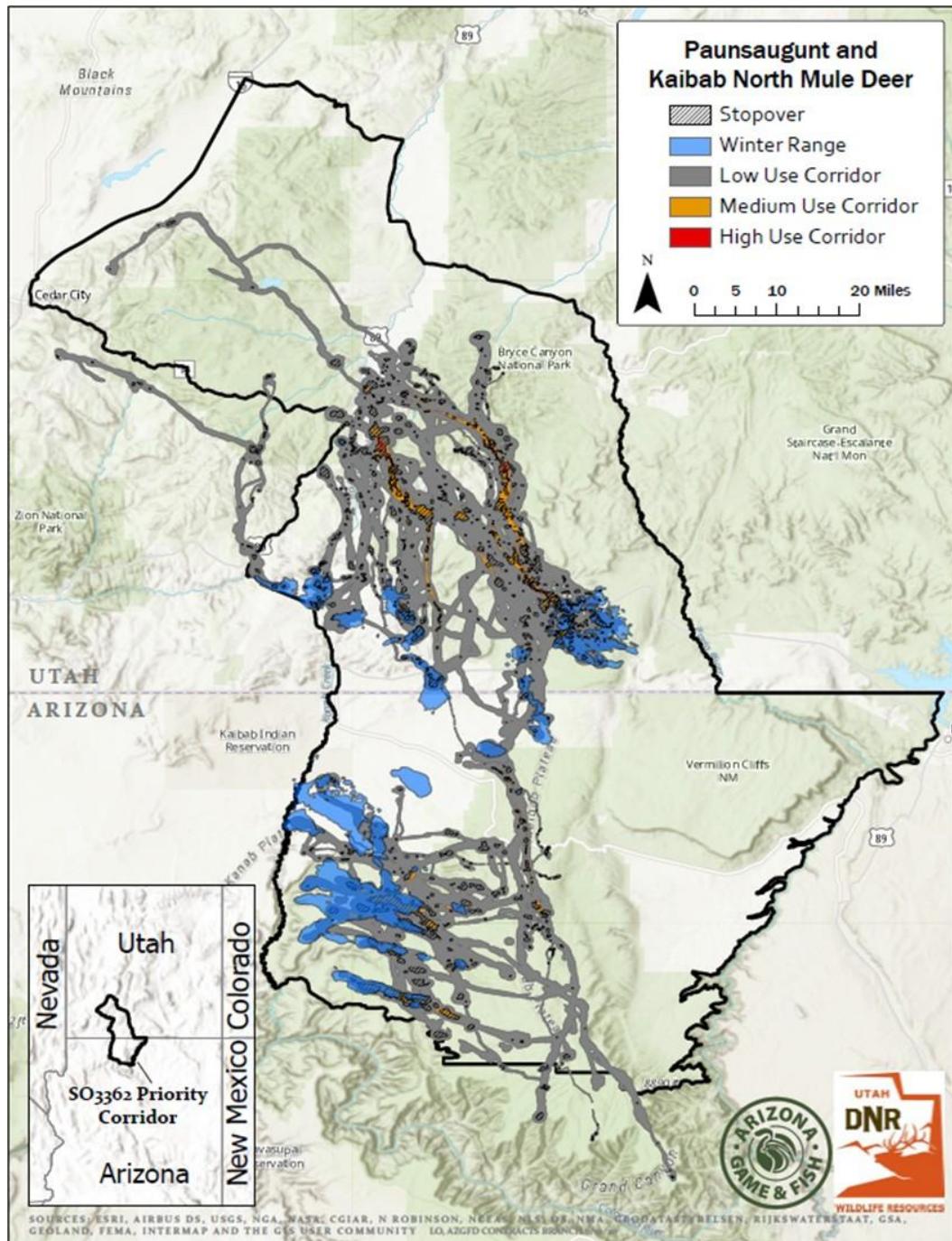


Figure 7. Migration corridors and winter range for the Kaibab Plateau and Paunsaugunt Plateau mule deer herds based on GPS locations collected from two research studies. Low, medium, and high use represent the relative number of individuals using the same migration corridor.

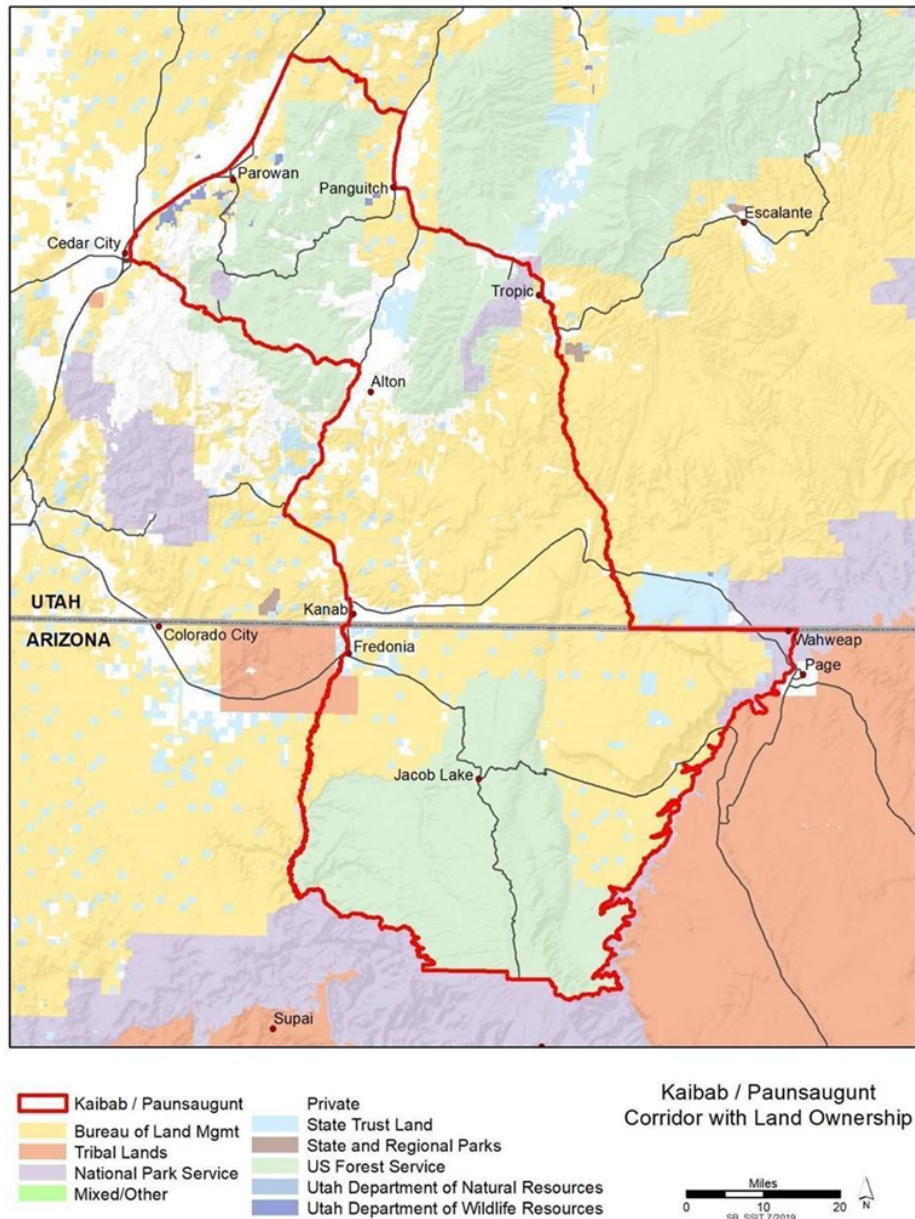


Figure 8. Land ownership within the Paunsaugunt to Kaibab Plateau Corridor.

Table 3. Land ownership within the Paunsaugunt to Kaibab Plateau Corridor.

Category	Area (acres)	% in Utah	% in Arizona	% of Total
Bureau of Land Management	735,271	25.57	20.98	46.55
US Forest Service	423,957	14.74	22.61	37.35
Private	285,369	9.38	0.54	9.92
State Trust Land	48,112	1.50	1.67	3.17
National Park Service	28,148	1.35	0.98	2.32
Tribal Lands	13,370	0.00	0.46	0.46

Ongoing State and Federal Agency Activities in Federal Fiscal Year 2025

Ongoing Vegetation Management Treatments

- *Westside Cliffrose Rejuvenation Project:* Approximately 2,000 acres of cliffrose were manually treated via lop and scatter to stimulate sprouting and continue growth at a height that could be reached by mule deer. Dramatic new growth was observed in areas that were treated in previous years and the full 2,000 acres were completed in FY24. Additional cliffrose enhancement acres are being identified for treatment and funding is being pursued through both internal and external grant opportunities.
- *Kaibab Plateau Ecological Restoration Project (Funded, Arch Complete, EA Complete):* A diverse set of habitat enhancement tools are being assessed by the Kaibab Plateau Ecological Restoration Project (KPERP) to treat approximately 518,000 acres in the North KNF, including approximately 30,000 acres of mule deer winter range within the corridor. In October 2020, the KNF released a Decision Notice and Finding of No Significant Impact (FONSI) for the final EA. This FONSI covers a substantial portion of the Paunsaugunt to Kaibab Corridor and will facilitate future enhancement projects. The AZGFD, in cooperation with the MDF and the Arizona Deer Association, has developed a management plan for approximately 27,000 acres of mule deer winter range covered under the KPERP NEPA. KNF and MDF are identifying specific treatment polygons using previous recommendations. Implementation for hand thinning began in FY23. In FY24, approximately 2,000 acres were treated. An additional 1,920 acres of hand thinning were completed in FY25, with plans to lop and scatter an additional 4,000 acres in the future.
- *Kanab Creek Landscape Planning Area:* The BLM Arizona Strip District continues to focus on an Integrated Vegetation Management process to align implementation of vegetation treatments in cooperation with their partners. In FY24, work continued in the Paunsaugunt to Kaibab Plateau Corridor, within the Kanab Creek Landscape Planning area. This area covers the Kanab Creek Riparian Restoration Project and the now completed, Shuttleworth and Suicide Allotments Vegetation Treatments.
 - *Kanab Creek Riparian Restoration Project (Funded, Arch Complete, EA Complete):* The Kanab Creek Riparian Restoration is a multi-year restoration project that was initiated in 2016. The project involves removing invasive riparian plant species (i.e., salt cedar [*Tamarix ramosissima*] and Russian olive [*Elaeagnus*

angustifolia]) to allow native riparian species (which have been suppressed) to flourish. This will restore the appropriate flows of water, provide habitat for riparian-dependent species (including the endangered southwestern willow flycatcher [*Empidonax traillii extimus*]), and reduce fuel loading in this ecologically sensitive area. Ten acres of invasive salt cedar and Russian olive are treated per year by cutting and piling the debris for prescribed fire. Stumps are treated with herbicide to prevent re-sprouting of the invasive species. The total size of the Kanab Creek riparian area is 25 miles/806 acres on BLM-administered lands. As of FY25, 70 acres in the riparian corridor have been treated and 10 more acres are planned for FY25. Mule deer, bighorn sheep (*Ovis canadensis*), raptors (e.g., golden eagles [*Aquila chrysaetos*]), and migratory birds will benefit from this project.

- *East Kanab Creek Vegetation Treatments Project (Partially Funded, Arch Complete, EA Complete)*: Pinyon-juniper thinning in the Buckskin Mountains would create a mosaic of pinyon-juniper densities and improve vegetative species diversity and desired wildlife habitat conditions. Cliffrose would also be treated to stimulate growth and increase vigor in decadent plants. Seeding these areas would also allow for improved understory growth, which would help to restore the landscape to its historic function. Mule deer heavily use this area during fall and spring migrations and all winter months. The BLM Arizona Strip District has completed an EA that will include approximately 9,535 acres of pinyon-juniper and cliffrose treatments within a 35,411-acre project area on the Buckskin Mountain within the Paunsaugunt to Kaibab Plateau Corridor. Archeological inventories have been completed and sensitive species (e.g. pinyon jay [*Gymnorhinus cyanocephalus*]) surveys are ongoing within the treatment areas. Wildlife Migration Corridor IRA funds in the amount of \$320,580 were awarded to complete the Water Canyon Cliffrose Lop and Scatter treatment between federal FY24 and FY25. Cliffrose, across approximately 1,068 acres, was trimmed to a maximum height of three feet to increase plant vigor and winter browse for mule deer in FY25.

Ongoing Barrier/Fragmentation Mitigation Projects

- *Movement Studies (Funded, Arch Not Needed, EA Complete)*: In January 2023, the AZGFD collared 35 pronghorn within GMU 12A/B and 13A/B, with 15 of these pronghorn collared in Units 12A and 12B. Collars will collect data until the end of 2025 or early 2026. The

goal of this project is to evaluate movements, disease, cause specific mortality, adult survival rates, and to discover habitat road-blocks to the pronghorn in Units 12A, 12B, 13A, and 13B. Understanding the challenges that these animals face will assist in management decisions.

- *US 89 Fencing Retrofit (Funded, Arch TBD, EA TBD):* UDWR, in collaboration with the AZGFD, is leading efforts to monitor movements in this corridor through GPS collars. In FY24, UDWR and Utah Department of Transportation was awarded funding through the Wildlife Crossing Pilot Program to extend the existing US 89 funnel fencing. The extension will include seven miles of fencing, upgrades to two existing underpasses, a new underpass, and escape ramps. Although this is within AZ it has implications for the portion of the Kaibab deer herd that migrates between Arizona and Utah. Design for this project is currently underway and construction should begin in FY26.

Ongoing Wildlife Water Developments

- *Winter Range Wildlife Waters in GMU 12A (Partially Funded, Arch UNK, EA Complete):* In FY23, the Cutler Pockets, Jacob Canyon, Summit Valley, and Round Valley wildlife waters were upgraded to new 10,000-gallon systems. In FY24, Big Ridge Wildlife Apron, Eastside #2 Apron, South Burro Aaron and Indian Hollow Wildlife Apron were upgraded to 10,000-gallon systems. An HPC grant application and funds from MDF were secured to redevelop an additional eight water catchments in FY25, with six more planned for the future.
- *Fire Recovery (Funded, Arch UNK, EA UNK):* In Arizona, the Mangum, Pine Hollow, and Wire Pass fires damaged or destroyed 11 wildlife and cooperative livestock water catchment facilities. Seven of these facilities have been repaired or replaced via Stewardship Agreements.
- *Summer Range Guzzler Refurbishment (Partially Funded, Arch Complete, EA Complete):* USFS, North Kaibab Ranger District, MDF, Conservation First USA, and AZGFD have undertaken the refurbishment of 58 USFS Wildlife guzzlers in GMU 12A. So far, the refurbishment of 20 guzzlers was completed in FY24. In FY25, materials for the remaining 38 guzzlers were purchased through HPC project 24-216. Funding to complete 31 guzzlers is currently being sought through FY25 HPC funding cycle.

Future State and Federal Agency Activities

Future Vegetation Management Treatments

- *East Kanab Creek/Buckskin Mountain Strategic Focus Area (Funding UNK, Arch UNK, EA Needed)*: The BLM is currently gathering data for the Kanab Creek Healthy Lands Project Area, which includes 213,900 acres on BLM lands and 12,400 acres on private lands. The project objectives are to identify priorities for enhancing ecosystem function for the Paunsaugunt and North Kaibab mule deer herds. NEPA documentation has not yet been completed.
- *Vegetation Management on the North Kaibab Forest (Funding UNK, Arch UNK, EA in Progress)*: The KNF and additional partners have identified a combination of mechanical treatment in juniper habitats and application of prescribed fire to ponderosa pine habitats within 28,060 acres of the North KNF Burnt Corral EA. They are currently working through the EA process and are likely to issue a decision notice by FY26. These projects will enhance undergrowth species for wintering and migrating mule deer within the corridor.

Future Barrier/Fragmentation Mitigation Projects

- *Maintaining Habitat Connectivity Through Landowner Partnerships (Unfunded, Arch TBD, EA TBD)*: Through coordination with UDWR, the AZGFD has identified and prioritized opportunities to partner with landowners along the Arizona/Utah border on conservation practices to maintain habitat connectivity, which includes fence modifications and habitat treatments.

Future Wildlife Water Developments

- *12A House Rock Water Developments (Funding UNK, Arch UNK, EA UNK)*: 12A has two waters that are ready for installation in the House Rock Valley for deer, pronghorn, and bison (*Bison bison*). These catchments will have a 25,000 gallon capacity with a concrete walk-in drinker. There are three other mule deer catchments that are ready to be redeveloped with a 10,000 gallon system, which includes the Eagle Pass Guzzler, East Slide Apron, and Little Mountain Apron
- *Burro Allotment Waters (Funding UNK, Arch UNK, EA Needed)*: Six livestock waters on the Burro Allotment have been identified for refurbishment and conversion to cooperative waters. In addition, two locations for new cooperative waters have been identified on the House Rock Allotment. NEPA documentation has not been completed for these projects.
- *Development of New Wildlife Water Developments on BLM Lands in GMU 12B (Funding UNK, Arch Complete, EA Complete)*: On BLM lands within GMU 12B, and within winter

range habitats identified within the corridor, nine wildlife water developments have been identified for new construction. These wildlife water developments will enhance water availability and distribution for all wildlife species within the corridor. The EA for this effort is completed.

- *Fence Modifications at Cooperative-Wildlife Waters (Unfunded, Arch TBD, EA TBD)*: The AZGFD and permittees regularly maintain fencing around wildlife-only water troughs, which are heavily used by wintering mule deer. Replacing the current barbed-wire fences with pipe-rail fences would improve long-term functionality and wildlife access to the waters, while also eliminating or reducing maintenance requirements.

4) Proposed Interstate 11 Corridor

As human populations and economies continue to grow in the western United States, the demand for extensive transportation networks, such as interstate highways, has increased. However, high volume transportation corridors often serve as impermeable barriers for migrating ungulates (Gagnon et al. 2013), restricting their movement and access to seasonal ranges, and ultimately leading to the loss of productive habitats (Sawyer et al. 2013).

In 2014, the Department of Transportation in Arizona and Nevada completed the I-11 and Intermountain West Corridor Study, which identified co-location with US 93 as the only “Recommended Corridor Alternative” for I-11, linking Wickenburg, Arizona to the Nevada border. Subsequently, the ADOT initiated a multi-tiered Environmental Impact Statement (EIS) process for the potential segment of I-11 from Nogales to Wickenburg. The AZGFD is a Cooperating Agency in ADOT’s tiered impact study for I-11, collaborating closely to assess the potential effects of the proposed highway on wildlife. Throughout the NEPA process, the AZGFD has worked with ADOT to provide input on routing and design considerations aimed at conserving important ungulate movement corridors. As of FY25, ADOT and FHWA agreed to conduct a formal Re-evaluation of the Tier 1 EIS. In early FY26, FHWA invited the Department to participate as a Cooperating Agency for the Tier 1 EIS Re-evaluation process, which the Department accepted on September 4, 2025.

The primary ecosystem within the Proposed Interstate 11 Corridor is Sonoran Desert, with vegetation dominated by saguaro cactus (*Carnegiea gigantea*), yellow palo verde (*Parkinsonia microphylla*), velvet mesquite (*Prosopis velutina*), ocotillo (*Fouquieria splendens*), and various cacti species. Land ownership primarily includes BLM, private, and State Trust Land (Figure 9, Table 4).

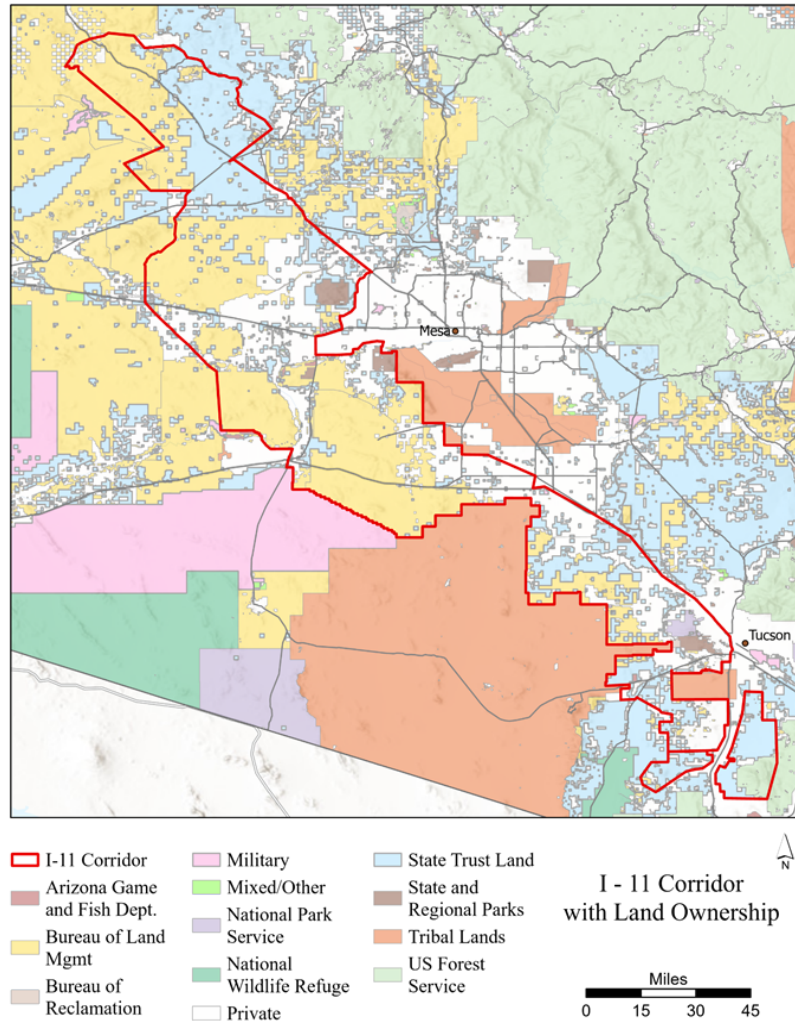


Figure 9. Land ownership within the Proposed Interstate 11 Corridor.

Table 4. Land ownership within the Proposed Interstate 11 Corridor.

Category	Area (acres)	%
Bureau of Land Management	3,508,097	39.93
Private	2,684,377	30.56
State Trust Land	2,258,668	25.71
State and Regional Parks	151,578	1.73
US Forest Service	97,121	1.11
National Park Service	43,493	0.50
Bureau of Reclamation	14,162	0.16
Arizona Game and Fish Dept.	9,825	0.11
Department of Defense	7,335	0.08
Tribal Lands	3,368	0.04

Ongoing State and Federal Agency Activities in Federal Fiscal Year 2025

Ongoing Vegetation Management Treatments

- *Invasive Vegetation Treatments (Funded, Arch UNK, EA Complete)*: Buffel grass (*Cenchrus ciliaris*) treatments continue to occur on BLM administered lands within the Ironwood Forest National Monument, in addition to spot treatments of stinknet.

Ongoing Barrier/Fragmentation Mitigation Projects

- *Movement Studies (Funded, Arch Not Needed, EA Complete)*: In FY24, the AZGFD allocated funds to collar 16 mule deer near Tucson, AZ to study potential desert migrations and to gather pre-Interstate 11 movement data. In February 2025, the AZGFD captured and collared 16 mule deer in the Tucson Mountains to assess movement patterns. In FY25, the AZGFD also secured funding to capture and collar up to 25 mule deer in the Hassayampa plains, which is scheduled to occur in February 2026. Funding for this project also supports desert tortoise tracking and camera trap monitoring.
- *I-11 North Segment Data Collection (Funded, Arch Not Needed, EA In Progress)*: In FY25, the AZGFD secured funding to study interactions between wildlife and the proposed I-11 North corridor. In partnership with ADOT, 32 Sonoran Desert tortoises (*Gopherus morafkai*) were outfitted with GPS transmitters. In FY26, at least 20 mule deer will be collared. Both species will be tracked for up to three years to identify movement paths across the I-11 corridor. This data, in combination with occupancy modeling for a suite of native mammals developed from trail camera detections collected by 60 cameras placed around the corridor, will inform recommendations to ADOT for I-11 alignment selection, movement corridor avoidance, and wildlife accommodation needs.
- *Interactions Between Wildlife and Solar Facilities in a Desert Environment (Funded, Arch Not Needed, EA Complete)*: Through a BLM NOFO grant, the AZGFD will start collaring mule deer, bobcats, and kit fox near Buckeye, AZ in FY26, with intentions of monitoring for three years. The purpose of this project is to assess interactions between collared wildlife and solar facilities, which are in various stages of development. AZGFD will also include Sonoran pronghorn (which are already collared as part of standard management procedures) in the final project analysis. The final years of this project were funded in FY25.
- *Tucson Water Department Fence Removal (Funded, Arch Not Needed, EA Other)*: In

November 2024, Desert Fence Busters removed eight miles of fence associated with Saguaro National Park and City of Tucson Water Department Property. There are plans to continue this work in FY26.

Ongoing Wildlife Water Developments

- *Wildlife Waters 695 and 730 (Partially Funded, Arch UNK, EA UNK)*: In FY24, a categorical exclusion was completed for waters 695 and 730, located on BLM administered lands in the Ironwood Forest National Monument. In February 2024, Catchment 730 was completed with funding from HPC and Midwest Wild Sheep Foundation Youth Group.

Future State and Federal Agency Activities

Future Barrier/Fragmentation Mitigation Projects

- *Retired Fence Removal and Modification (Funding UNK, Arch UNK, EA UNK)*: In coordination with Friends of the Ironwood Forest, the BLM is developing plans to remove unused fence and to modify or repair existing fence to meet wildlife-friendly standards.

Future Wildlife Water Developments

- *Squabble Mine Water Distribution System (Funding UNK, Arch UNK, EA in Progress)*: An EA is currently underway to permit the construction of a new well, along with storage tanks and six drinkers, on BLM land within the Ironwood Forest National Monument on the Agua Dulce Allotment. This new water distribution system will replace a non-functional water source at Squabble Mine (now gated for bat habitat).

5) Game Management Unit 18A

The AZGFD has enhanced the quality and availability of habitat in GMU 18A to support a diversity of wildlife species, including mule deer, elk, and pronghorn. The GMU 18A Big Game Priority Corridor, which extends north and south of I-40 between Kingman and Seligman (Figure 10), has experienced a decline in mule deer and pronghorn populations over the past several decades. This decline may be attributed to various factors, including livestock grazing practices, the design and density of fences, habitat loss, and drought.

In GMU 18A, natural water sources are limited, as most water is provided through earthen tanks and well-fed pipelines designed for livestock. The landscape also contains hundreds of miles of pasture fences, which can impede the movement of wildlife, particularly pronghorn. These challenges have collectively diminished habitat availability and quality, reduced fawn recruitment rates, and contributed to a decline in total population numbers. The AZGFD and partner organizations continue to address these issues to restore and improve the ecological health of GMU 18A for the benefit of wildlife species.

Vegetation in the GMU 18A Corridor is primarily composed of pinon (*Pinus spp.*) and juniper (*Juniperus spp.*), as well as bursage shrubs (*Ambrosia spp.*) and grama grasses (*Bouteloua spp.*). Land ownership is complex and includes checker-boarded lands with 48% private lands, 40% ASLD lands, and 11% BLM lands (Figure 10, Table 5).

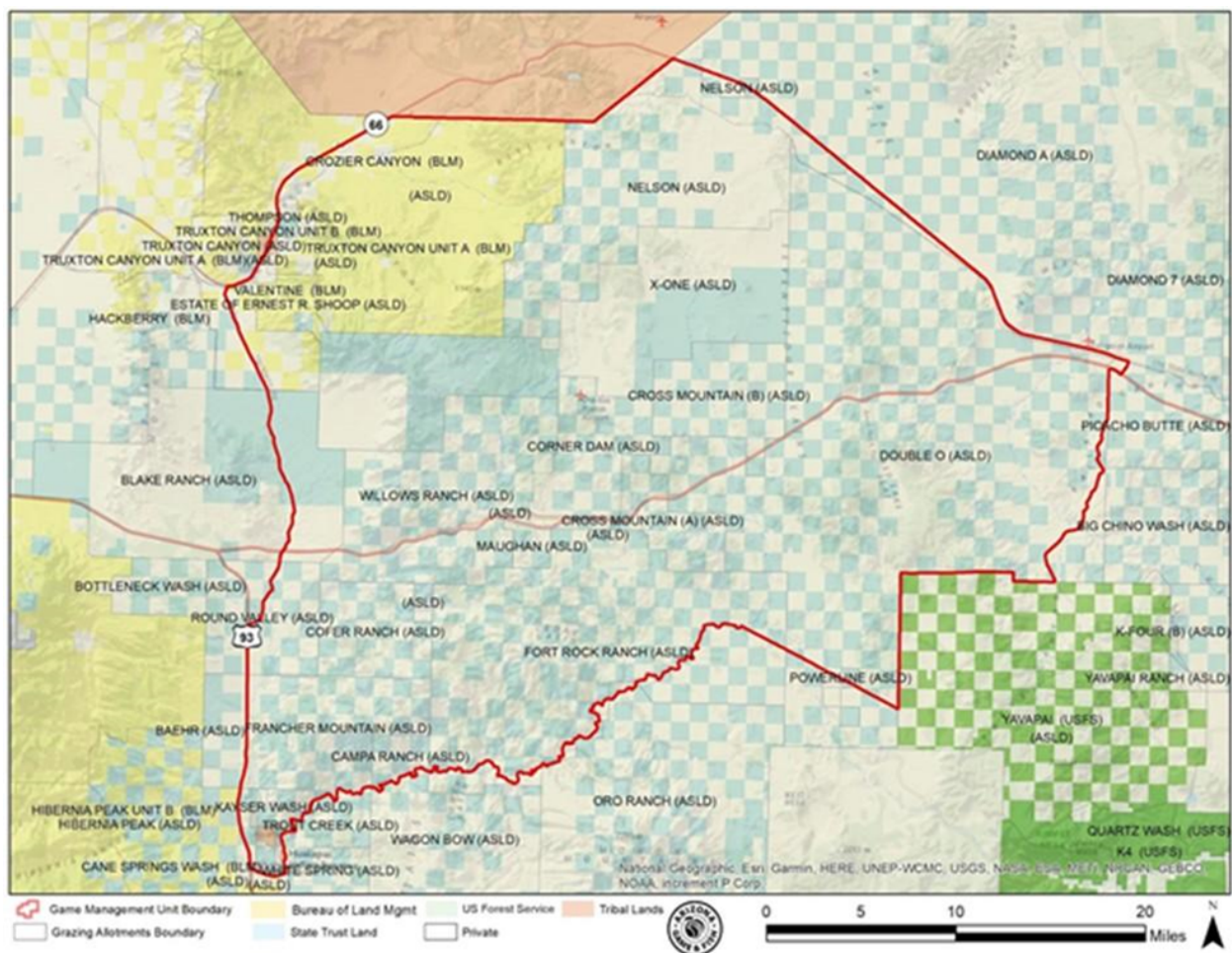


Figure 10. Land ownership within the Game Management Unit 18A Corridor.

Table 5. Land ownership within the Game Management Unit 18A Corridor.

Category	Area (acres)	%
Private	377,542	48.07
State Trust Land	317,542	40.43
Bureau of Land Management	89,214	11.38

Completed State and Federal Agency Activities in Federal Fiscal Year 2025

Completed Vegetation Management Treatments

- *Blye Canyon Mastication (Funded, Arch Complete, EA Complete)*: In partnership with the BLM, the AZGFD treated 2,131 acres of Juniper trees on Crozier Ranch in FY25. This project was aimed to improve browse for mule deer and pronghorn.
- *Dunton: Phase 3 Mastication (Partially Funded, Arch UNK, EA UNK)*: In FY25, over 365 acres of Arizona State Land were treated using mastication to improve browse quality for mule deer and elk.
- *Fort Rock: Phase 1 Mastication (Funded, Arch UNK, EA UNK)*: In FY25, the 3,840 acre browse and grassland treatment mastication project on Fort Rock Ranch was completed.
- *X-1: Phase 1 Browse Treatment (Funded, Arch UNK, EA UNK)*: In FY25, 1,297 acres were treated with a browse prescription for mule deer.
- *Conifer Habitat Treatments (Funded, Arch UNK, EA complete)*: The BLM Kingman Field Office has been working with the AZGFD to complete conifer treatments in the GMU 18A project area. The AZGFD was awarded a \$550,000 grant for this project for FY25.

Completed Barrier/Fragmentation Mitigation Projects

- *Truxton Wildlife-Friendly Fence Modifications (Partially Funded, Arch Not Needed, EA UNK)*: In FY25, five miles of fencing were replaced with wildlife-friendly fencing.

Completed Wildlife Water Developments

- *Water Maintenance and Construction*: Between FY20–24, ten dirt tanks had sediment removed, three waters were converted from windmills to solar pumping systems with drinker and storage improvements, and a new wildlife water was constructed in fringe pronghorn habitat to increase distribution.

Ongoing State and Federal Agency Activities in Federal Fiscal Year 2025

Ongoing Vegetation Management Treatments

- *Northern Migration Corridor (Funded, Arch Complete, EA Complete)*: Between FY22–24, environmental compliance was completed and vegetation treatment began for the northern migration corridor. In FY25, 505 acres were completed, with the remaining 38 acres expected to be completed early FY26.

Ongoing Barrier/Fragmentation Mitigation Projects

- *Movement Studies (Funded, Arch Not Needed, EA Complete)*: The AZGFD continued to

collect GPS data from 40 mule deer and 34 pronghorn. In FY24, it was observed that at least 15 collared pronghorn routinely crossed fences that were improved as a part of Barrier/Fragmentation Mitigation Projects in Unit 18A. Three of these individuals crossed the improved fencing in multiple different project sites. In FY25, funding was secured to collar 30 elk throughout the unit to better understand elk movement, resource needs, and habitat fragmentation. One of these collars was deployed in January 2025, with the rest of the collars set to be deployed in October 2025.

- *Wildlife-Friendly Fence Modifications (Partially Funded, Arch Not Needed, EA UNK):* On the Cross Mountain Ranch, there are approximately 36 miles of woven wire boundary fence and six miles of interior pasture fence that require modification. The ranch will work with WCOs to remove and replace the existing fence with wildlife friendly fence. Boundary fencing material provided to lease holders and installation expenses will be shared between ranches. In FY25, Cross Mountain Ranch received NRCS (EQIP) assistance to realign and replace interior pasture fencing to allow for more managed livestock rotation. To prioritize fence modification in this and other areas, the AZGFD received \$42,000 from HPC for wildlife friendly fencing. Final plans for new internal pasture fences have been approved by NRCS and six miles of pasture and boundary fence are planned for replacement or modification with up to an additional mile approved on Cross Mountain and Crozier Ranches. Between FY20–24 on the Cross Mountain Ranch, four miles of page-wire fence were removed. On the Cross Mountain, Double O, and Crozier Ranches, 15.5 miles of four-strand pasture fence were converted to a wildlife-friendly fence design within pronghorn corridors. In FY25, four miles of fence were converted to wildlife-friendly specifications on Cross Mountain. Additionally, three miles of fencing were replaced with wildlife-friendly fencing along the Double-O and Fort Rock ranch boundaries with help from AAF and Arizona Elk Society, and five miles were replaced by Crozier.

Ongoing Wildlife Water Developments

- *Wildlife Water Developments (Funded, Arch UNK, EA UNK):* The AZGFD has identified the need for as many as 20 new or redeveloped water sources within GMU 18A. These waters are in various stages of development ranging from planning to implementation. The AZGFD is collaborating with Windmill Ranch to redevelop two springs and upgrade a well with a larger solar system and new drinkers.

Future State and Federal Agency Activities

Future Vegetation Management Treatments

- *Grassland and Browse Treatments (Partially Funded, Arch UNK, EA UNK)*: In FY25, 10,000+ acres of grassland and browse treatments are planned. If land permit authorizations and additional funding are secured, treatments will be completed in FY25.

Future Wildlife Water Developments

- Final plans to assist with two solar conversions, 7.5 miles of pipeline, and three new water storage tanks and troughs on Cross Mountain Ranch have been approved by NRCS.

RESEARCH NEEDS

1) Interstate 11 Mule Deer Research

Beginning in FY19, the AZGFD initiated a large-scale research project along the proposed I-11 route. This project involved individual tagging and GPS tracking of 124 mule deer and 24 bighorn sheep. In FY19 alone, the AZGFD deployed 77 of the 124 mule deer collars across 190 miles, encompassing four key study areas: the Hassayampa Plains, Tucson Mountains, Rainbow Valley, and Buckeye Hills. The prioritization of collar deployment was driven by concerns of habitat fragmentation for mule deer, with the Hassayampa Plains and Tucson Mountains receiving the highest priority, followed by Rainbow Valley and Buckeye Hills.

The initial collar data collection period concluded in FY22, and data collection at both the northern and southern edges of the I-11 corridor concluded in FY24. Data from these collars have highlighted several important areas for continued research. As a result of preliminary findings, the AZGFD secured funding in FY24 to collar 16 additional mule deer in the Tucson Mountains, which occurred in FY25. The AZGFD also secured funding in FY25 to capture and collar up to 25 mule deer in the Hassayampa plains, which is scheduled to occur in February 2026.

Currently, the AZGFD is seeking funding to deploy an additional 35 mule deer GPS collars, prioritized by study area. The scheduling of each deployment will depend on available funding and optimal capture windows, with the ideal timeframe as January/February. By gathering comprehensive movement data before the construction of I-11, the AZGFD may provide the opportunity to share data-driven recommendations for cost effective mitigation strategies.

Project Budget: Estimated budget for the deployment of 35 mule deer collars between Priority Area #1 (Rainbow Valley; 20 collars) and Priority Area #2 (Green Valley to Three points; 15 collars).

Item/Activity	# of Individuals	Cost per Individual	Total
Capture Costs	35	\$1,600	\$56,000
Collars and Airtime	35	\$1,640	\$57,400
Personnel			\$40,000
Project Total:			\$153,400

2) Spatial and Temporal Distribution of Mule Deer in Game Management Units 1 and 27

In recent years, the AZGFD has observed seasonal fluctuations in deer density in GMU 1 and 27. The annual variation in the detection of mule deer during the December-January survey period suggests that immigration and emigration may influence the numbers of observed animals, rather than demographic processes such as recruitment and mortality. Despite the importance of this herd, crucial information regarding seasonal movements, such as the identification of a migration corridor and winter range, is currently incomplete.

Regular deer movements across jurisdictional boundaries pose potential challenges for effective management strategies. For example, Chronic Wasting Disease (CWD) has not yet been detected in Arizona. However, instances of infected free-ranging deer and elk have emerged in New Mexico, raising concerns for management in Arizona. Understanding potential interstate deer movements in this region will help to develop disease management strategies.

Between FY23 and 24, the AZGFD deployed 29 mule deer collars (25 does and four bucks) in GMU 1, with three additional buck collars deployed in fall 2024. Preliminary data has shown a movement between GMU 1 and the Blue Wilderness (GMU 27). Understanding seasonal movement patterns for the GMU 1 and 27 mule deer population will: 1) guide efforts to maintain and enhance winter range and migration corridors, 2) provide recommendations for transportation infrastructure to improve wildlife permeability, 3) develop hunting season dates and appropriate permit levels for both GMUs, and 4) acquire a better understanding of interstate deer movement patterns to manage CWD.

Project Budget: Estimated budget for the deployment of 25 additional mule deer collars in GMU 1/27.

Item/Activity	# of Individuals	Cost per Individual	Total
Capture Costs	25	\$1,600	\$40,000
Collars and Airtime	25	\$1,640	\$41,000
Personnel			\$30,000
Project Total:			\$111,000

3) Impacts of Alternative Energy on Big Game Movements

Alternative energy sources, particularly solar and wind, are being rapidly deployed across the United States. Arizona, ranking second in the nation in solar energy potential and fourth in net solar generation, has been a focus for developers. However, the rapid expansion of solar and wind facilities poses challenges to habitat availability for large game species (Sawyer et al. 2022). For example, the installation of security fences around solar facilities can directly block movement for large wildlife such as mule deer, elk, and pronghorn, leading to diminished habitat connectivity. New research suggests large-scale energy developments can also contribute to indirect habitat loss due to avoidance behaviors (Sawyer et al. 2025). Agencies tasked with the management and conservation of migratory ungulate populations are faced with insufficient information on optimal design, siting, and corridor widths for alternative energy sources. Several alternative energy facilities are planned to intersect with ungulate habitat, offering a unique opportunity to study project design in relation to wildlife movement. By utilizing GPS collars and remote cameras, the AZGFD proposes to gather quantitative data on effective corridor widths, which will inform future designs and mitigation strategies for alternative energy projects impacting their habitat.

In northern Arizona, construction of the CO Bar solar facility began in 2023, with full operations anticipated in 2025. Due to previously collared ungulates in the area, the AZGFD collaborated with landowners and developers to integrate wildlife corridors throughout the facility. In FY24, the USFS provided funds for the AZGFD to deploy 17 pronghorn collars near the CO Bar solar facility. In FY25, the AZGFD received funding through SO 3362 from Western Association of Fish and Wildlife Agencies (WAFWA) to deploy an additional eight pronghorn and 30 mule deer collars. All 55 collars will be deployed in October 2025. This research will enhance the AZGFD’s understanding of how alternative energy developments can coexist with wildlife conservation efforts. To evaluate how these corridors affect ungulate movement during construction and final development, the AZGFD intends to continue collar data collection.

Project Budget: Estimated budget for deployment of 30 collars in northern Arizona.

Item/Activity	# of Individuals	Cost per Individual	Total
Capture Costs	30	\$1,600	\$48,000
Collars and Airtime	30	\$2,600	\$78,000
Personnel			\$30,000
Project Total:			\$156,000

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APPENDIX A - ACRONYM GLOSSARY

Acronym	Definition	Acronym	Definition
AAF	Arizona Antelope Foundation	NFWF	National Fish and Wildlife Foundation
ADOT	Arizona Department of Transportation	NPS	National Park Service
ASLD	Arizona State Land Department	NRCS	Natural Resource Conservation Service
AZGFD	Arizona Game and Fish Department	PNF	Prescott National Forest
BLM	Bureau of Land Management	REMF	Rocky Mountain Elk Foundation
CNF	Coconino National Forest	SO3362	Secretarial Order 3362
CWD	Chronic Wasting Disease	SR	State Route
EA	Environmental Assessment	SRP	Salt River Project
EIS	Environmental Impact Statement	SZ	South Zone
FY	Fiscal year	TMP	Access and Transportation Management Plan
GMU	Game Management Unit	UDWR	Utah Division of Wildlife Resources
HPC	Habitat Partnership Committee	US	US Highway
I	Interstate	USDA	United States Department of Agriculture
KNF	Kaibab National Forest	USDI	United States Department of the Interior
KPERP	Kaibab Plateau Ecological Restoration Project	USFS	United State Forest Service
MDF	Mule Deer Foundation	USGS	United States Geological Survey
LWCF	Land and Water Conservation Fund	WCO	Wildlife conservation organization
NALCA	Northern Arizona Landscape Connectivity Alliance	WVC	Wildlife-vehicle collision
NEPA	National Environmental Policy Act		

