

NEW MEXICO STATE ACTION PLAN (Updated October 2024)
For
Implementation of Department of the Interior Secretarial Order 3362: “Improving Habitat Quality in Western Big Game Winter Range and Migration Corridors”

INTRODUCTION

The Department of the Interior Secretarial Order 3362 directs appropriate bureaus within the Department of the Interior (DOI) to work in close partnership with the State of New Mexico to enhance and improve the quality of big game winter range and migration corridor habitat on federal lands that are under the management jurisdiction of the DOI. These bureaus include the US Fish and Wildlife Service (USFWS), National Park Service (NPS), and Bureau of Land Management (BLM). The Secretarial Order recognizes the state’s authority to conserve and manage big game species and respects private property rights, and through scientific endeavors and land management actions, wildlife such as Rocky Mountain elk (elk), mule deer (deer), pronghorn antelope (pronghorn), and a host of other species will benefit.

The landscapes necessary to maintain important ungulate seasonal ranges, and connectivity between them, are becoming increasingly fragmented across the western United States due to human encroachment from development and urban sprawl (Radeloff et al. 2005), agriculture (Donald and Evans 2006), roadway and railway expansion (White et al. 2007, Johnson 2001), natural resource extraction (Drohan et al. 2012, Hennings and Soll 2012), and fencing (Gates et al. 2012). These conditions in the broader landscape may influence the function of migration corridors, seasonal ranges, and sustainability of big game populations.

Since 2020, New Mexico has benefitted from data collected with funding tied to SO 3362 in identifying important seasonal movements and ranges. While there are still limitations to the landscapes sampled, there have been important steps forward. Additional funding has helped with technical expertise in the development of maps and reports based on ungulate GPS-data. There are still some areas where GPS collar data is still limited. Additional funding would allow the Department, NM Department of Transportation (DOT), the BLM, and the Forest Service to revise management plans to retain and enhance the functionality of seasonal ranges. Amendments may include, but are not limited to, avoidance or exclusion overlays, mineral withdrawal recommendations, renewable energy development recommendations, changes to travel management zones, habitat restoration and enhancement, or other plan-based management prescriptions that contribute to the long-term integrity of these critical habitats.

The Department develops partnerships and leverages funds to increase the scope and scale of wildlife habitat restoration across the state of New Mexico, including identified priority areas. These collaborative efforts have resulted in the Department funding millions of dollars of restoration work since 2015, with more anticipated in the future. Additional habitat restorations and enhancements are encouraged in the identified priority areas using best management practices and peer reviewed literature to promote healthy ecosystem functions. Projects should seek to maintain connectivity and mitigate the effects of anthropogenic influences and habitat fragmentation on mule deer, elk, and pronghorn using published literature (Kauffman et al. 2024, 2022a, 2022b, Reddell and Cain 2024, Sawyer et al. 2017, 2019a, 2019b, Wyckoff et al. 2018). The Department emphasizes that more efforts are needed to identify important seasonal ranges,

especially in areas that currently have little focus. Additionally, with the rapid increase in renewable energy, particularly solar, more seasonal range information is critical in maintaining movement corridors and ultimately populations of big game. Some big game populations may not make the extensive movements between summer and winter ranges but these populations utilize the landscape in a manner that maximizes their fitness, and they are equally as ecologically and socially important. The Department recognizes the need to acquire seasonal use data from these populations.

NEW MEXICO'S PRIORITY LANDSCAPES FOR BIG GAME MOVEMENT

The Department has identified high priority landscapes for big game movement based on available information, local knowledge, expert opinion, known barriers to movement, and projected threats. These are landscapes in which the Department believes big game movement is being severed or at risk of being disrupted and is based on the best information available to date. The Department has received funding through SO 3362 and has completed, or is in the process of completing, projects to identify some corridors. This work is ongoing. However, funding was not available to collect data in all areas of the state, but the lack of data in a particular area does not mean it is unimportant. Because the Department lacks finite and defensible movement data in all locations, the scale of some priority areas is broad.

New Mexico has been participating in the Corridor Mapping Team, led by the United States Geological Survey (USGS), to compile movement data and develop maps from data that has been collected across jurisdictions throughout the state. These maps provide science-based information to assist with identifying critical movement pathways in some landscapes, and may narrow the focus of conservation or management activities. For information on specific herds and their movement patterns, see Kauffman et al. (2024, 2022a, 2022b). The Department encourages projects that maintain or reestablish connectivity and protect important seasonal ranges for any of the specific herds highlighted in the report, including any future volumes that are published. Any project that maintains or improves connectivity on the landscape is important, even if the project is in an area where no big game movement data has yet been collected. The Department is still in need of funding for identification of many key areas, especially in more moderate climates where big game may not make large seasonal movements dictated by snow, but utilize the landscape in the most efficient way nonetheless. Without this information we will be less effective in engaging with stakeholders to guide work or management that would benefit big game species in all landscapes across the state.

As a result of passage of the 2019 New Mexico Wildlife Corridors Act, the Department has also collaborated with the NM Department of Transportation to develop a "Wildlife Corridors Action Plan." This document prioritized five large game animal-vehicle collision hotspots based on analysis of large game animal-vehicle collision accident report data, and six big game corridors across highways based in part on Department Big Game Program biologists' expert opinion and priority landscapes identified in this S.O. 3362 Action Plan. The New Mexico Wildlife Corridors Action Plan proposes site-specific wildlife-dedicated overpasses and underpasses that will facilitate large game animal movement across prioritized highway segments. Funding has been secured to begin design for the first of these prioritized wildlife-vehicle collision mitigation projects, which will include the state's first wildlife-dedicated overpasses to facilitate movement

of elk, mule deer and other wildlife over the highway. For more information see Cramer et al. (2022).

1) NM Southeastern Plains landscape (pronghorn and deer)

The Southeastern Plains landscape is the Department's highest priority area currently as it is becoming an increasingly anthropogenic landscape and there is little big game movement data to help guide management recommendations, particularly for pronghorn. This area was also recently highlighted in the BLM's "21 Restoration Landscapes" initiative where pronghorn are listed as a priority species. Big game species certainly move throughout this landscape to meet their life needs, however the lack of knowledge on how ungulates move through this landscape poses challenges for the Department on how to offer recommendations to minimize impacts or improve connectivity.

Deer and pronghorn in this area are thought to make movements to take advantage of seasonal weather patterns. These movements are critical for the animals to meet energetic demands and complete their annual lifecycles. If their ability to move is impeded, they may not be able to acquire the necessary resources and their fitness, ability to rear young, and survival may be reduced. This ultimately could cause populations to decline. Due to the anthropogenic influences in Southeastern New Mexico, pronghorn and deer movements and populations may be challenged as the landscape becomes further fragmented with expanding renewable and non-renewable energy developments. Identifying movement corridors, seasonal ranges, and removing or modifying existing fencing in select areas may allow pronghorn and deer to more effectively utilize the landscape to meet their energetic demands.

Ownership in this landscape is intermixed BLM, State Land Office, US Forest Service, and private lands. Habitat types include Chihuahuan desert, riparian, shinnery oak, sand sagebrush, honey mesquite shrublands, grasslands, and agriculture. This anthropogenic landscape may result in secondary habitat loss as wildlife avoids the remaining habitat subject to elevated noise and human activity. In addition to secondary habitat loss, wildlife vehicle collisions increase with increasing traffic volume (Wakeling et al. 2015). Recently the Roswell and Carlsbad BLM offices have worked with the Department and lessees in southeast New Mexico to convert some domestic sheep woven-wire fences to wildlife friendly fences in targeted areas. This work has improved pronghorn movement across the landscape, but more work on a larger scale is necessary.

Current State Agency Activities

- Since 2014, the Department has translocated 188 pronghorn to Macho Flats in southeastern New Mexico to augment a declining population. The Department continues to monitor the success of this translocation.
- The Department is working with partners including the Bureau of Land Management, NM State Land Office, National Resource Conservation Service, Soil and Water Conservation Districts, and CEHMM to develop an analysis to prioritize areas for mesquite removal in landscapes important to pronghorn and lesser prairie chickens in SE New Mexico. This analysis will help to guide the efficient use of resources to gain regulatory compliance and implement on the ground mesquite removal and fence modification treatments.

- Funding was secured for approximately 4,000 acres of mesquite removal and up to 7 miles of fence modification.
- In 2022 New Mexico State University initiated a project to identify the impacts of development on mule deer movement in the extreme southern portion of New Mexico. Over 80 deer were collared and are currently being monitored.
- Partners for Fish and Wildlife recently initiated a project to remove mesquite and creosote and modify fences to be wildlife friendly in southeastern New Mexico.

Habitat and Mitigation Projects Identified:

Information is needed to identify movement patterns of pronghorn and deer to focus habitat work and make recommendations to minimize impacts to these populations. A current project is identifying mule deer movements, but information from a larger landscape, and including pronghorn in a sampling effort, would be especially informative. The Department encourages land management agencies to continue implementing habitat improvement projects that generally benefit deer and pronghorn in this landscape. We also encourage collaboration between the Department and land management agencies when considering landscape level planning.

Projects that will benefit deer and pronghorn are: GPS collaring deer and pronghorn to identify movement and seasonal use patterns, wildlife friendly fence modifications along high use areas, to facilitate movement, constructing wildlife-dedicated overpasses and underpasses to reduce wildlife-vehicle collisions at high risk areas, minimizing disturbance around development areas, improving forage conditions, and increasing fawn hiding cover. Projects may be focused at high use seasonal areas and pinch points based on GPS-collar data or expert knowledge, however little data presently exists. Additionally, projects outside of identified seasonal areas may also benefit populations for which no movement data has yet been collected.

2) Northwestern landscape (deer, elk, and pronghorn)

The San Juan Basin in northwestern New Mexico is facing threats and habitat fragmentation due to energy development and other anthropogenic influences and activities. Solar development has been increasing and is anticipated to continue to expand in this area. The associated fencing surrounding these facilities completely removes the habitat from being available and ungulates that may have used the area in the past are suddenly displaced. Many herds cross multiple jurisdictional boundaries (sometimes up to 4 different wildlife management agencies at different parts of their migratory pathway) and are important to each entity tasked with their management. The herds are partially migratory with a portion of the animals remaining year-round residents of the San Juan Basin while others use the basin as important winter range (Figures 2 and 3). This partially migratory deer herd provides year-round viewing opportunities for deer enthusiasts, and deer hunting licenses in this area are highly coveted. The resident portion of this deer population is lower than historic numbers indicate, and any additional sources of female mortality, such as from deer-vehicle collisions, reduce the capacity for population growth.

The migratory nature of the mule deer herd in Northwestern New Mexico has been well known and documented for many years; a large percentage of these deer summer in the San Juan Mountains in southern Colorado and overwinter in the lower elevations of northwestern New Mexico. However, it wasn't until recently that researchers began collaring these mule deer to more finitely identify their movement corridors and document the effects of the landscape on

individual and overall herd health (Sawyer et al. 2019a). The BLM and WEST Inc. identified how the movement patterns of the GMU 2C segment of the northwestern deer herd differed from deer that are north of NM-64 (Figures 2 and 3). Additionally, Jicarilla Apache Nation has been conducting movement studies on these herds since 1983.

The Department also has concerns over the growing feral horse population in the area. Feral horses can pose serious threats to the integrity of native wildlife populations because they invade and degrade native ecosystems. Riparian and wetland areas may also be impacted by feral horses through soil compaction and increased erosion. The overall impact feral horses have on any type of ecosystem depends on intensity and duration of use, timing, and the health and resilience of the area. The Department encourages prioritizing the habitat needs of native wildlife and plants, particularly in this important deer wintering area.

Other known seasonal movements or ranges of mule deer and elk in the Northwestern landscape occur on Navajo Nation (Figures 4 and 5), Santa Ana Pueblo (Figures 6 and 7), in the Jemez mountains (Figures 8 and 9), and on Mt. Taylor (Figure 10). A new study scheduled to begin winter 2023-2024 will document pronghorn movements and fill a knowledge gap in the area.

Ownership across this landscape is intermixed US Forest Service, Bureau of Land Management, State Game Commission-owned Wildlife Management Areas, private, and Tribal lands. Habitat types include mixed conifer woodlands at the higher elevations, oak and pinyon-juniper woodlands at the mid-elevations, and sagebrush communities and agricultural lands at the lower elevations.

Current Known Activities

- The Wildlands Network acquired funding for a project aimed at understanding pronghorn movements as solar facilities are being built in the region. Pronghorn were GPS-collared in winter 2022-2023 and will be monitored for several years as solar installations are completed. The Department has continued to serve in an advisory role for the project.

Habitat and Mitigation Projects Identified:

Sawyer et al. (2019a) identified major mule deer migration corridors in GMU 2B, east of Navajo Lake, NM (see Figures in Sawyer 2019a). This research found that mule deer utilizing exterior migration routes (i.e. low use routes) have lower survival than mule deer using the interior routes (i.e. high use areas). When resources are limited, habitat enhancement actions should focus on the interior routes to preserve the core migration corridor which will benefit the most individuals in the population and improve fitness of individuals in the population. Additional resources could then focus on exterior routes to benefit individuals using the fringe of the corridor. We encourage land management agencies to implement habitat improvement projects that generally benefit deer and elk and facilitate big game movement in Northwestern New Mexico. We also encourage collaboration between the Department, Tribal nations, and land management agencies when considering landscape level planning.

Habitat and mitigation projects focusing on the interior migration routes that will benefit the mule deer herd in northwestern New Mexico include: limiting pinyon and juniper encroachment, improvement of browse availability and access within the corridors and on winter range,

reseeding native forbs and grasses in disturbed areas, minimizing feral horse access and impacts to the seasonal range and migration corridors, modifying fences along the migration corridor to make them wildlife friendly and facilitate movement, taking mitigation actions to reduce wildlife-vehicle collisions at high risk areas, and limiting surface disturbance including restricting the timing of energy development activities. Projects may be focused at high use seasonal areas and pinch points based on GPS-collar data (Figures 2, 3, 4, 5, 6, 7, 8, 9, and 10, Kauffman et al. 2022a, 2022b) or expert knowledge. Jicarilla Apache Nation has additional movement information not included herein. Projects outside of identified seasonal areas may also benefit populations for which no movement data has yet been collected. Interest has been growing for installing roadway fencing in this Northwest landscape, but the Department cautions that this may be detrimental to the longevity of these migratory herds if not properly vetted.

3) Northcentral landscape (deer, elk, pronghorn)

With SO 3362 funding, the Department collected data on pronghorn, elk, and mule deer movement in several locations across this landscape. In partnership with USGS, some maps of these movements have been published and more are forthcoming (Figures 11, 12, 13, 15, 16 and 18, Kauffman et al. 2024, 2022a, 2022b).

Northcentral New Mexico is a destination for hunters, with sportsmen and women spending over \$31 million annually on hunting activities in Rio Arriba and Taos counties alone. The deer herd is among the densest in the state, and it is socially important to residents and sportspersons. In addition, this area is home to one of the state's largest elk herds, the Northcentral herd. This is a very important herd for both non-consumptive and consumptive public recreation.

Ownership on this landscape is intermixed US Forest Service, Bureau of Land Management, State Game Commission-owned Wildlife Management Areas, private, and Tribal lands. Habitat types include mixed conifer-aspen forests at the higher elevations, oak-woodland savannahs at the mid-elevations, and sagebrush communities and agricultural lands at the lower elevations.

This area is at risk for increased habitat fragmentation from human developments, including private subdivisions, highways, increasing traffic volumes, and solar energy development. In addition to barrier effects from highways, increasing traffic volumes result in many wildlife-vehicle collisions and animal mortalities annually, with the majority occurring in the winter and seasonal transition periods. US Highway 64 connects Tierra Amarilla to Chama and then on to Farmington and is a perennial hotspot for wildlife vehicle collisions. An 8-foot-tall fence to exclude deer and elk from accessing highway 64 and funnel them to existing drainage structures was constructed west of Chama. Additionally, data on recently collared mule deer and elk suggests there are several distinct migratory pathways that may direct future conservation efforts (Figures 11, 12, 13, and 18). Jicarilla Apache Nation (JAN) has been collecting data on big game movement since 1983 and can also be a resource. While the area is still considered "rural" there is likely to be future fragmentation in the form of development. Conservation easements on private lands have already proven beneficial to deter subdividing crucial deer winter range in the Chama area, for example. Moving forward, these private lands will be critical to maintaining landscape connectivity and ensuring these herds are maintained. We recommend that future housing developments consider wildlife movement in early stages of planning.

Current Known Activities

- NMDGF has collaborated with the New Mexico Department of Transportation to implement ten wildlife-vehicle collision mitigation projects across the state. In the Northcentral landscape, these projects include retrofit of small corrugated metal culverts to large box culverts and approximately 5 miles 8-foot fencing to direct mule deer and other wildlife to the culverts on U.S. 550 north of Aztec to the Colorado border; an enlarged bridge structure and fencing to direct mule deer and elk below U.S. 64 west of Chama, and a mitigation project completed along U.S. 550 south of Cuba where deer and elk vehicle collisions are high. This project included construction of 4 miles of 8-foot fence to direct mule deer and elk to cross below the highway at two large bridges over the Rio Puerco. Funding has been secured by NMDOT to begin design for a large game animal-vehicle collision mitigation project along 17 miles of U.S. Highway 550 north of Cuba, which has high rates of elk and mule deer collisions, and will include the state's first wildlife-dedicated overpasses. This project is the highest ranked wildlife-vehicle collision hotspot identified in the New Mexico Wildlife Corridors Action Plan (Cramer et al. 2022).
- The Department has collaborated with the USFS to establish several landscape-scale forest and wildlife habitat restoration project areas totaling over 200,000 acres on the Carson National Forest in the Northcentral landscape. To date, the Department has funded archeological clearances, several thousand acres of forest thinning, and has developed a prescribed fire plan with the USFS and other partners to return historic levels and intensities of fire to larger and larger landscapes in this part of New Mexico.
- The Chama area and U.S. Highway 285, from Tres Piedras to the Colorado border, through the Rio Grande del Norte National Monument, are also prioritized within the New Mexico Wildlife Corridors Action Plan for wildlife-vehicle collision mitigation and habitat connectivity projects to facilitate large game animal and other wildlife crossings (Cramer et al. 2022).
- Pheasants Forever (Kathy McKim) was awarded NFWF funding for fence modification within the landscape to benefit big game movement.
- In cooperation with USGS a report was developed, "Barrier behavior analysis: pronghorn of north central New Mexico." The team used a tool to assist with identifying problematic fence segments (Xu et al. 2021), particularly for a partially migratory pronghorn herd. The report compiles digitized fence data on the landscape, calculated which segments of fence were most problematic, and developed maps highlighting these segments. This tool will be used to target fence modification, focusing on the most problematic segments, to benefit pronghorn movement. For more information see Reddell and Cain (2024).

Habitat and Mitigation Projects Identified:

The Department collaborated with USGS to map movement corridors of ungulates in the northcentral landscape (Figures 11, 12, and 13, Kauffman et al. 2022a, 2022b) and anticipates that some maps will be published in Volume 4 of the report, "Ungulate Migrations of the Western United States." We also encourage land management agencies to implement habitat improvement projects that generally benefit deer, elk, and pronghorn in Northcentral New Mexico. Collaboration between the Department and land management agencies is important when considering landscape level planning. Dependent on funding, the New Mexico Wildlife

Corridors Action Plan (Cramer et al. 2022) identifies highway projects that would benefit wildlife and big game in particular. The Department is working proactively with NMDOT to seek funding to implement projects through programs such as the Wildlife Crossing Pilot Program and the Highway Safety Improvement Program.

This landscape is dominated by private lands that are at risk of being fragmented or subdivided in several areas which can negatively impact ungulate herds and hinder their ability to complete necessary seasonal movements. Due to the biological and social importance of these herds, strategic conservation easements or land conservation purchases may benefit these populations. General habitat and mitigation projects that will benefit deer, elk, and pronghorn in other parts of the northcentral landscape are similar to those described in the Northwestern Landscape Priority Area including: modifying fences along high use areas to make them wildlife friendly and facilitate herd movement, taking mitigation actions to reduce wildlife-vehicle collisions at high risk and known crossing areas, removing decadent shrubs and improving the browse component on the landscape through shrub pruning and juniper mastication, and minimizing disturbance from oil and gas development areas including restricting the timing and noise levels of exploration activities. Projects may be focused on high use seasonal areas and pinch points based on GPS-collar data or expert knowledge. However, projects outside of identified seasonal areas may also benefit populations for which no movement data has yet been collected.

4) Sangre de Cristo landscape (deer, elk)

Deer and elk summer in the high elevations of the Sangre de Cristo Mountain range. Winter conditions can force these herds to lower elevations, but exact wintering areas and movement pathways are unknown. With funding from SO 3362 and in partnership with USGS, maps of some movement patterns have been published (Figures 15 and 16, Kauffman et al. 2024), but others are still forthcoming. However, more data is needed particularly in the southern end of the Sangre de Cristos (the Pecos Mountains).

The landownership in the Sangre de Cristo Mountains is comprised of US Forest Service, private, Department Wildlife Management Areas, and Tribal properties. The habitat ranges from alpine tundra at the highest elevation, mixed conifer-aspen forests and oak woodlands at the mid-elevations, and sagebrush flats intermixed with agriculture and urban development at lower elevations. In 2022 the largest wildfire in New Mexico's history burned 342,000 acres. This was a mixed intensity fire that may ultimately benefit big game in the area.

Because this area is a recreational destination with an expanding human population that also has potential for mineral extraction, the risk of development and increasing fragmentation is high. Development in this portion of the Sangre de Cristo Mountains could sever seasonal movements and prevent animals from reaching their seasonal ranges or remove wintering areas altogether. In addition, a high number of wildlife-vehicle collisions occur along NM 522 and NM 38 every year.

Current Known Activities

- In collaboration with the Carson National Forest and other partners, the Department initiated a concept design and restoration plan for treatments focused on reducing active

degradation of streambanks and slope wetlands, reestablishing floodplain connectivity, and raising water tables within wetlands and former wetlands in the 27,430-acre Comanche Creek Watershed of north-central NM.

- The Department has partnered with the US Forest Service to promote prescribed fire activities across all districts of the Santa Fe National Forest in order to enhance wildfire habitat, improve forest health, and lessen the threat of large-scale, high-intensity wildfire.

Habitat, Research, and Mitigation Projects Identified:

The Department is currently working with USGS to map movement corridors of ungulates in the northern Sangre de Cristo landscape and anticipate that some maps will be published in Volume 4 of "[Ungulate Migrations of the Western United States](#)." We also encourage land management agencies to implement habitat improvement projects that benefit deer, elk, and pronghorn in this landscape. We also encourage collaboration between the Department and land management agencies when considering landscape level planning. Depending on funding, the New Mexico Wildlife Corridors Action Plan (Cramer et al. 2022) identifies highway projects that would benefit wildlife and big game in particular.

General habitat and mitigation projects that can benefit the big game herds in the Sangre de Cristo Mountains are: limiting pinyon and juniper encroachment, prescribed fire, improvement of browse within the anticipated corridors and on winter range, modifying fences along the migration corridor to make them wildlife friendly and facilitate movement, and taking mitigation actions to reduce wildlife-vehicle collisions at high risk and known crossing areas. Projects may be focused on high use seasonal areas and pinch points based on GPS-collar data or expert knowledge. However, projects outside of identified seasonal areas may also benefit populations for which no movement data has yet been collected.

While some data has recently been gathered and published on mule deer and elk movement in this landscape, it is from a small portion of the entire mountain range and there are other herds within the range that have not yet been sampled. Based on recent information, mule deer and elk certainly migrate in this range and sampling a larger geographical area would yield more information on specific routes and timing of movements. The area has several highly desirable locations to live and recreate and wildlife habitat continues to be fragmented, especially on presumed winter range. It is critical that the Department understands mule deer and elk movements in the area to ensure they are maintained into the future.

5) I-25 corridor from Las Vegas, NM to the Colorado Border (pronghorn)

This area is likely a historic movement corridor that was disrupted when Interstate 25 was constructed. While no data has been collected on pronghorn and other ungulate movement across this landscape, linkage east and west of the interstate is expected to be minimal, as has been observed with major highways and interstates in Arizona (Bristow et al. 2013). Land ownership on this landscape is largely private with some intermixed New Mexico State Land Office property. The habitat includes mixed conifer-aspen forests, oak woodlands, and grassland mesas.

Current State Agency Activities

- Approximately 5 miles of fencing have been constructed to direct mule deer and black bears under I-25 through Raton.

- A second project to fence I-25 to direct mule deer and elk under the interstate from Raton to the Colorado border is being implemented primarily to address motorist safety in an area with high wildlife-vehicle collisions. The state's first arch culvert with a natural substrate bottom is being installed beneath both north- and south-bound lanes to facilitate mule deer and elk movement.
- A third project at a high collision area at Watrous is in design and will include approximately 4 miles of 8-foot fence that will direct elk and deer to cross below the highway at two bridges over the Rio Mora and Rio Sapello.

Habitat and Mitigation Projects Identified:

Interstate 25 represents the biggest impediment to pronghorn movement and migration in this identified corridor. Wildlife crossings along the interstate would improve migrations for multiple big game species, including pronghorn. Linkage of animal movements east and west of the interstate would be improved with the construction of several wildlife crossing structures across/under I-25 between Las Vegas, NM and the Colorado border, along with fencing to direct wildlife to the crossings. We also encourage collaboration between the Department and land management agencies when considering landscape level planning.

Removing or modifying other barriers to movement, such as fences, in this landscape will maintain or restore necessary seasonal pronghorn movements, improving forage conditions, and increasing fawning cover. Projects should be focused on high use areas and pinch points based on expert knowledge of personnel at the Department and land management agencies. Dependent on funding, the New Mexico Wildlife Corridors Action Plan (Cramer et al. 2022) identifies a portion of this broader priority landscape as the high priority "Pronghorn Triangle" wildlife corridor, which is defined by I-25, U.S. Highway 64, and New Mexico highways 445 and 505. Recommended highway mitigation projects such as overpasses, underpasses and highway right-of-way fence modifications would benefit wildlife and pronghorn in particular.

RESEARCH NEEDS:

1) Seasonal movement and survival of deer and pronghorn in southeastern NM.

Need: Because of the concerns identified in the "Priority Landscapes" section above, the Department desires full implementation of a project that will identify seasonal movements and survival of deer and pronghorn in an increasingly anthropogenic landscape in southeastern NM. The project would identify critical movement corridors and seasonal use areas for these biologically and socially important herds including: timing and magnitude of movements, potential for weather patterns impacting movement, and if distances moved, routes travelled, and stopover areas remain consistent across years. A study on deer has been initiated but is limited in scale. No data is available for pronghorn.

Because of the variety of stakeholders and jurisdictions, it is imperative that the Department more fully understand deer and pronghorn movements in this area to improve management recommendations and guide landscape scale planning. As identified above, this area is home to socially and biologically important deer and pronghorn populations that cross jurisdictional boundaries on an increasingly anthropogenic landscape.

Management Implications: This research would provide an opportunity to learn about big game movements in a landscape that is important for deer and pronghorn, but where anthropogenic factors may alter movement patterns. By identifying the specific movement pathways, seasonal use areas, timing, and magnitude of movements, the Department can more effectively work with stakeholders to plan for and improve deer and pronghorn movement across southeastern NM.

2) Seasonal movements of mule deer in the Sangre de Cristo mountains.

Need: As described in the “Priority Landscapes” section above, the Department requests full implementation of a project to identify seasonal movements of mule deer in the Sangre de Cristo mountains.

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Appendix A - Secretarial Order 3362

SECRETARIAL ORDER NO. 3362

Subject: Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors

Sec. 1 Purpose. This Order directs appropriate bureaus within the Department of the Interior (Department) to work in close partnership with the states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming to enhance and improve the quality of big-game winter range and migration corridor habitat on Federal lands under the management jurisdiction of this Department in a way that recognizes state authority to conserve and manage big-game species and respects private property rights.

Through scientific endeavors and land management actions, wildlife such as Rocky Mountain Elk (elk), Mule Deer (deer), Pronghorn Antelope (pronghorn), and a host of other species will benefit. Additionally, this Order seeks to expand opportunities for big-game hunting by improving priority habitats to assist states in their efforts to increase and maintain sustainable big game populations across western states.

Sec. 2 Authorities. This Order is issued under the authority of section 2 of Reorganization Plan No. 3 of 1950 (64 Stat. 1262), as amended, as well as the Department's land and resource management authorities, including the following:

- a. Federal Land Policy and Management Act of 1976, as amended, 43 U.S.C. 1701, *et seq.*;
- b. U.S. Geological Survey Organic Act, as amended, 43 U.S.C. 31, *et seq.*;
- c. National Wildlife Refuge System Improvement Act of 1997, as amended, 16 U.S.C. 668dd *et seq.*; and
- d. National Park Service Organic Act of 1916, as amended, 54 U.S.C. 100101, *et seq.*

Sec. 3 Background. The West was officially “settled” long ago, but land use changes continue to occur throughout the western landscape today. Human populations grow at increasing rates with population movements from east and west coast states into the interior West. In many areas, development to accommodate the expanding population has occurred in important winter habitat and migration corridors for elk, deer, and pronghorn. Additionally, changes have occurred across large swaths of land not impacted by residential development. The habitat quality and value of these areas crucial to western big-game populations are often degraded or declining.

The Bureau of Land Management (BLM) is the largest land manager in the United States (U.S.) with more than 245 million acres of public land under its purview, much of which is

found in Western States. The U.S. Fish and Wildlife Service (FWS) and National Park Service (NPS) also manage a considerable amount of public land on behalf of the American people in the West. Beyond land management responsibilities, the Department has strong scientific capabilities in the U.S. Geological Survey (USGS) that can be deployed to assist State wildlife agencies and Federal land managers. Collectively, the appropriate bureaus within the Department have an opportunity to serve in a leadership role and take the initiative to work closely with Western States on their priorities and objectives as they relate to big-game winter range and migration corridors on lands managed by the Department.

Consistent with the American conservation ethic, ultimately it is crucial that the Department take action to harmonize State fish and game management and Federal land management of big-game winter range and corridors. On lands within these important areas, if landowners are interested and willing, conservation may occur through voluntary agreements.

Robust and sustainable elk, deer, and pronghorn populations contribute greatly to the economy and well-being of communities across the West. In fact, hunters and tourists travel to Western States from across our Nation and beyond to pursue and enjoy this wildlife. In doing so, they spend billions of dollars at large and small businesses that are crucial to State and local economies. We have a responsibility as a Department with large landholdings to be a collaborative neighbor and steward of the resources held in trust.

Accordingly, the Department will work with our State partners and others to conserve and/or improve priority western big-game winter range and migration corridors in sagebrush ecosystems and in other ecotypes as necessary. This Order focuses on the Western States of: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. These States generally have expansive public lands with established sagebrush landscapes along with robust big-game herds that are highly valued by hunters and tourists throughout the Nation.

The Department has broad responsibilities to manage Federal lands, waters, and resources for public benefit, including managing habitat to support fish, wildlife, and other resources.

Secretary's Order 3356, "Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories," (SO 3356) was issued on September 15, 2017. SO 3356 primarily focused on physical access to lands for recreational activities, particularly hunting and fishing. This Order is focused on providing access to big game animals by providing direction regarding land management actions to improve habitat quality for big-game populations that could help ensure robust big-game populations continue to exist. Further, SO 3356 includes a number of directives related to working with States and using the best available science to inform development of guidelines, including directing relevant bureaus to:

- a. Collaborate with State, tribal, and territorial fish and wildlife agencies to attain or sustain State, tribal, and territorial wildlife population goals during the Department's land management planning and implementation, including prioritizing active

habitat management projects and funding that contributes to achieving wildlife population objectives, particularly for wildlife that is hunted or fished, and identifying additional ways to include or delegate to States habitat management work on Federal lands;

b. Work cooperatively with State, tribal, and territorial wildlife agencies to enhance State, tribe, and territorial access to the Department's lands for wildlife management actions;

c. Within 180 days, develop a proposed categorical exclusion for proposed projects that utilize common practices solely intended to enhance or restore habitat for species such as sage grouse and/or mule deer; and

d. Review and use the best available science to inform development of specific guidelines for the Department's lands and waters related to planning and developing energy, transmission, or other relevant projects to avoid or minimize potential negative impacts on wildlife.

This Order follows the intent and purpose of SO 3356 and expands and enhances the specific directives therein.

Sec. 4 Implementation. Consistent with governing laws, regulations, and principles of responsible public stewardship, I direct the following actions:

a. With respect to activities at the national level, I hereby direct the BLM, FWS, and NPS to:

(1) Within 30 days, identify an individual to serve as the "Coordinator" for the Department. The Coordinator will work closely with appropriate States, Federal agencies, nongovernmental organizations, and/or associations to identify active programs focused on big- game winter range and/or migration corridors. The programs are to be organized and cataloged by region and other geographic features (such as watersheds and principles of wildlife management) as determined by the Deputy Secretary, including those principles identified in the Department's reorganization plan.

(2) Within 45 days, provide the Coordinator information regarding:

(i) Past and current bureau conservation/restoration efforts on winter range and migration corridors;

(ii) Whether consideration of winter range and corridors is included in appropriate bureau land (or site) management plans;

(iii) Bureau management actions used to accomplish habitat objectives in these areas;

(iv) The location of areas that have been identified as a

priority for conservation and habitat treatments; and

(v) Funding sources previously used and/or currently available to the bureau for winter range and migration corridor conservation/restoration efforts.

(3) Within 60 days, if sufficient land use plans are already established that are consistent with this Order, work with the Coordinator and each regional Liaison (see section 4b) to discuss implementation of the plans. If land use plans are not already established, work with the Coordinator and each regional Liaison to develop an Action Plan that summarizes information collected in section 4 (a) (1) and (2), establishes a clear direction forward with each State, and includes:

(i) Habitat management goals and associated actions as they are associated with big game winter range and migration corridors;

(ii) Measurable outcomes; and

(iii) Budgets necessary to complete respective action(s).

b. With respect to activities at the State level, I hereby direct the BLM, FWS, and NPS to:

(1) Within 60 days, identify one person in each appropriate unified region (see section 4a) to serve as the Liaison for the Department for that unified region. The Liaison will coordinate at the State level with each State in their region, as well as with the Liaison for any other regions within the State. The Liaison will schedule a meeting with the respective State fish and wildlife agency to assess where and how the Department can work in close partnership with the State on priority winter range and migration corridor conservation.

(2) Within 60 days, if this focus is not already included in respective land management plans, evaluate how land under each bureau's management responsibility can contribute to State or other efforts to improve the quality and condition of priority big-game winter and migration corridor habitat.

(3) Provide a report on October 1, 2018, and at the end of each fiscal year thereafter, that details how respective bureau field offices, refuges, or parks cooperated and collaborated with the appropriate State wildlife agencies to further winter range and migration corridor habitat conservation.

(4) Assess State wildlife agency data regarding wildlife migrations early in the planning process for land use plans and significant project-level actions that bureaus develop; and

(5) Evaluate and appropriately apply site-specific management activities, as identified in State land use plans, site-specific plans, or the Action Plan (described

above), that conserve or restore habitat necessary to sustain local and regional big-game populations through measures that may include one or more of the following:

(i) restoring degraded winter range and migration corridors by removing encroaching trees from sagebrush ecosystems, rehabilitating areas damaged by fire, or treating exotic/invasive vegetation to improve the quality and value of these areas to big game and other wildlife;

(ii) revising wild horse and burro-appropriate management levels (AML) or removing horses and burros exceeding established AML from winter range or migration corridors if habitat is degraded as a result of their presence;

(iii) working cooperatively with private landowners and State highway departments to achieve permissive fencing measures, including potentially modifying (via smooth wire), removing (if no longer necessary), or seasonally adapting (seasonal lay down) fencing if proven to impede movement of big game through migration corridors;

(iv) avoiding development in the most crucial winter range or migration corridors during sensitive seasons;

(v) minimizing development that would fragment winter range and primary migration corridors;

(vi) limiting disturbance of big game on winter range; and

(vii) utilizing other proven actions necessary to conserve and/or restore the vital big-game winter range and migration corridors across the West.

c. With respect to science, I hereby direct the USGS to:

(1) Proceed in close cooperation with the States, in particular the Western Association of Fish and Wildlife Agencies and its program manager for the Crucial Habitat Assessment Tool, prior to developing maps or mapping tools related to elk, deer, or pronghorn movement or land use; and

(2) Prioritize evaluations of the effectiveness of habitat treatments in sagebrush communities, as requested by States or land management bureaus, and identified needs related to developing a greater understanding of locations used as winter range or migration corridors.

d. I further hereby direct the responsible bureaus and offices within the Department to:

(1) Within 180 days, to update all existing regulations, orders, guidance documents, policies, instructions, manuals, directives, notices, implementing actions, and any other similar actions to be consistent with the requirements in this Order;

(2) Within 30 days, provide direction at the state or other appropriate level to revise existing Federal-State memorandums of agreement to incorporate consultation with State agencies on the location and conservation needs of winter range and migration routes; and

(3) Consult with State wildlife agencies and bureaus to ensure land use plans are consistent and complementary to one another along the entire wildlife corridor in common instances where winter range or migration corridors span jurisdictional boundaries.

e. Heads of relevant bureaus will ensure that appropriate members of the Senior Executive Service under their purview include a performance standard in their respective current or future performance plan that specifically implements the applicable actions identified in this Order.

Sec. 5 Management. I hereby direct the Deputy Secretary to take is responsible for taking all reasonably necessary steps to implement this Order.

Sec. 6 Effect of Order. This Order is intended to improve the internal management of the Department. This Order and any resulting reports or recommendations are not intended to, and do not create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its departments, agencies, instrumentalities or entities, its officers or employees, or any other person. To the extent there is any inconsistency between the provision of this Order and any Federal laws or regulations, the laws or regulations will control.

Sec. 7 Expiration Date. This Order is effective immediately. It will remain in effect until its provisions are implemented and completed, or until it is amended, superseded, or revoked.

Secretary of the Interior

Appendix B – New Mexico Landscape Maps

Figure 1 – New Mexico Land Ownership

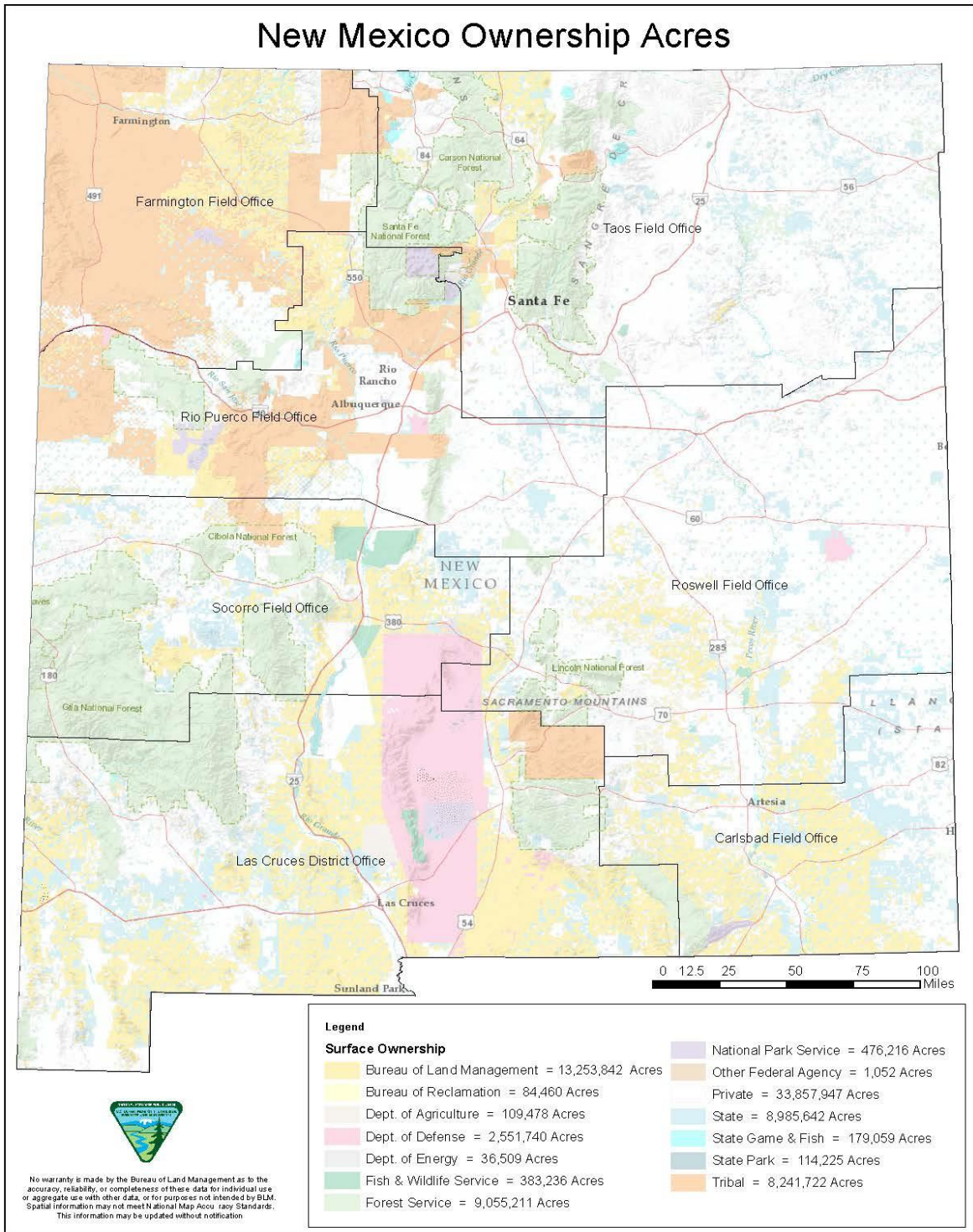


Figure 2: Rosa mule deer movements and seasonal ranges.

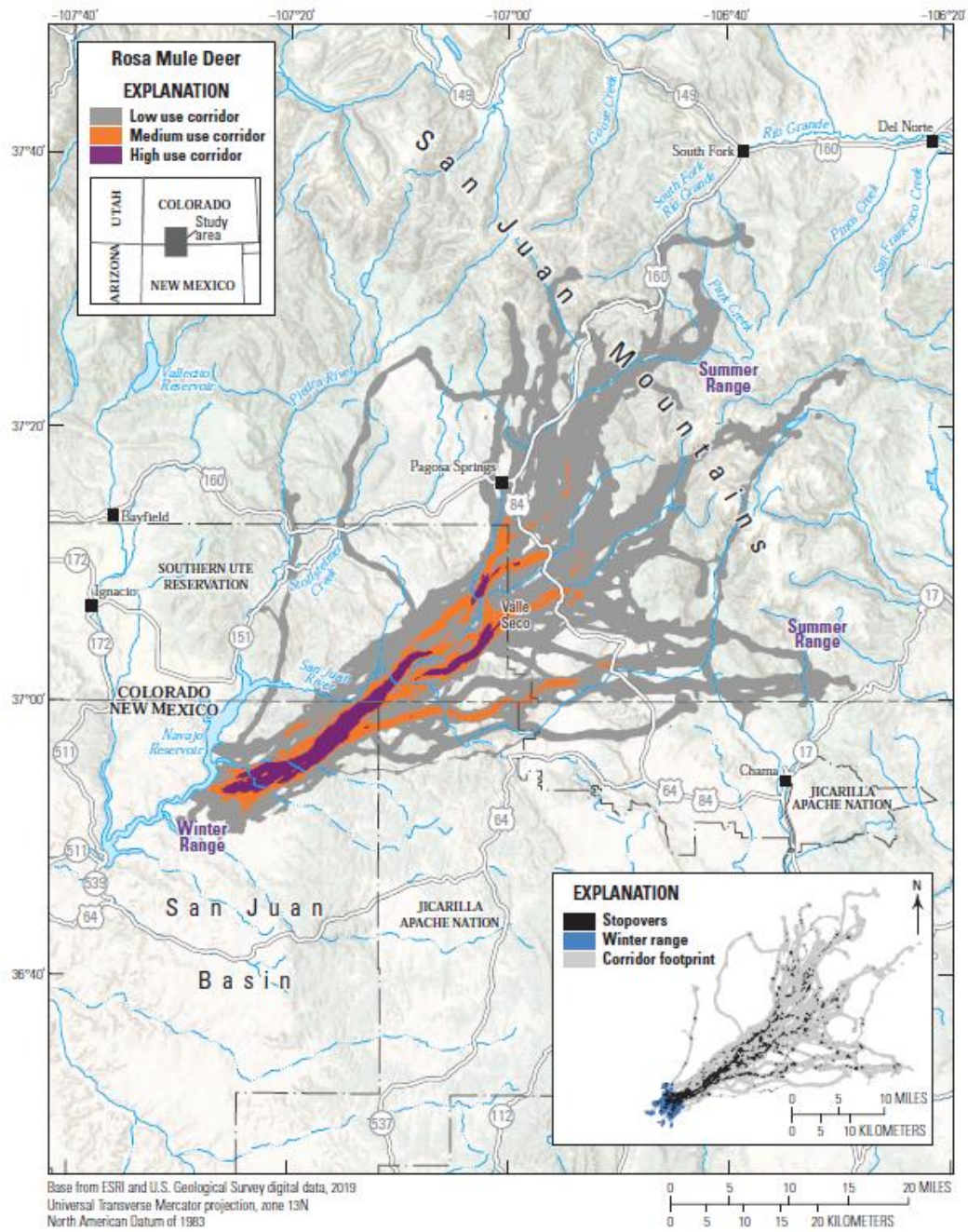


Figure 3: Crow Mesa mule deer movements and seasonal ranges.

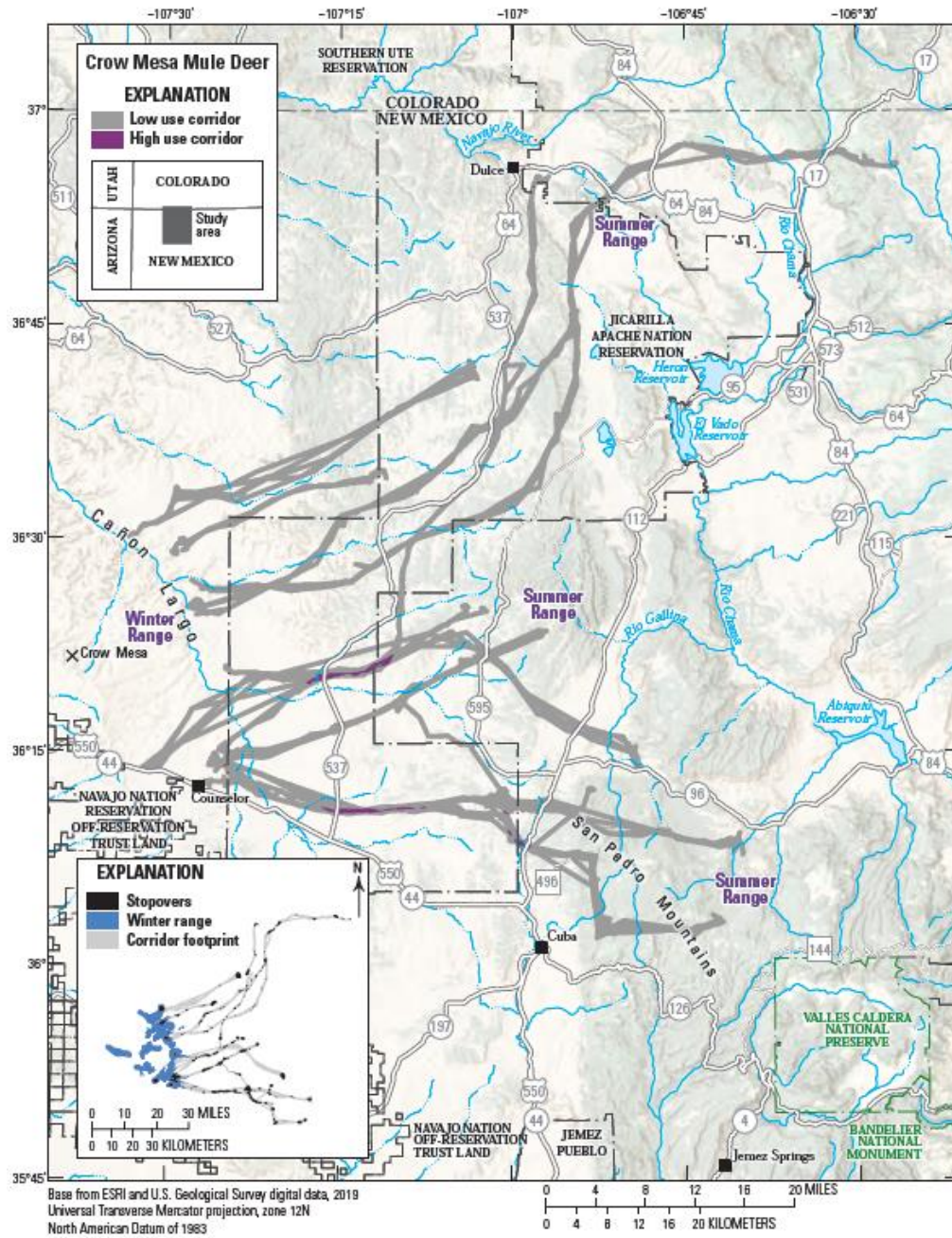


Figure 4: Canyon de Chelly mule deer movements and seasonal ranges.

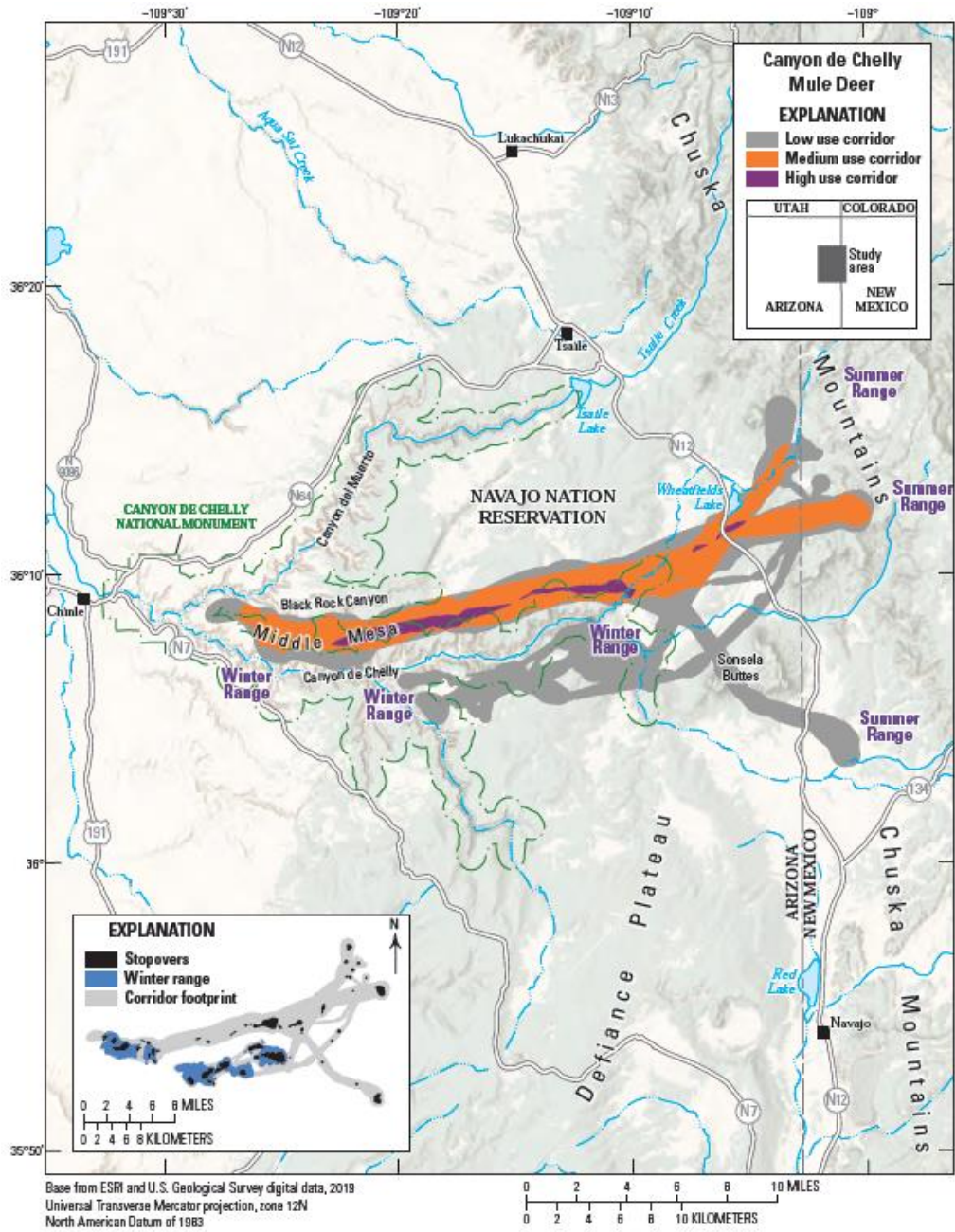


Figure 5: Ram Pasture movements and seasonal ranges.

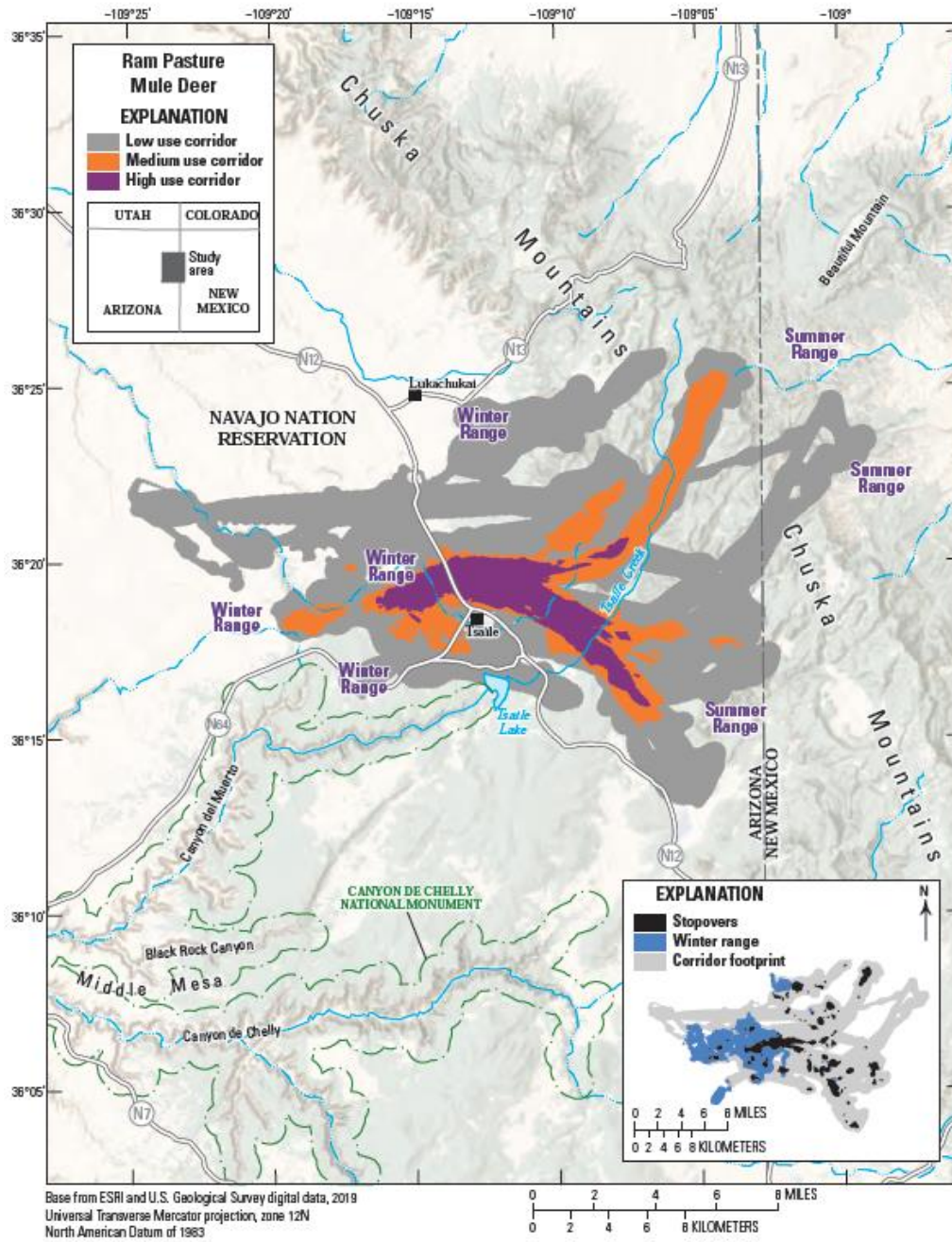


Figure 6: Pueblo of Santa Ana mule deer movements and seasonal ranges.

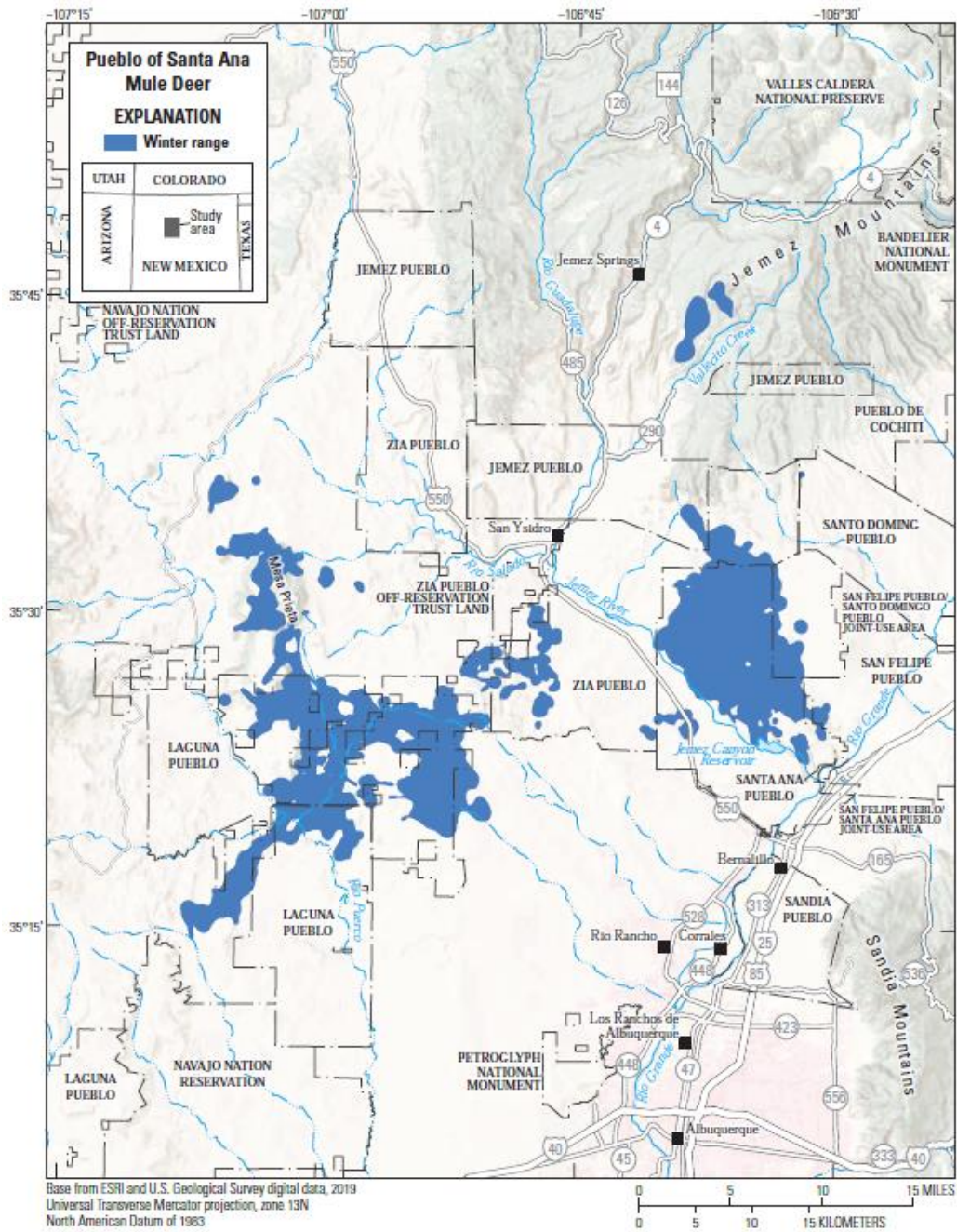


Figure 7: Pueblo of Santa Ana elk movements and seasonal ranges.

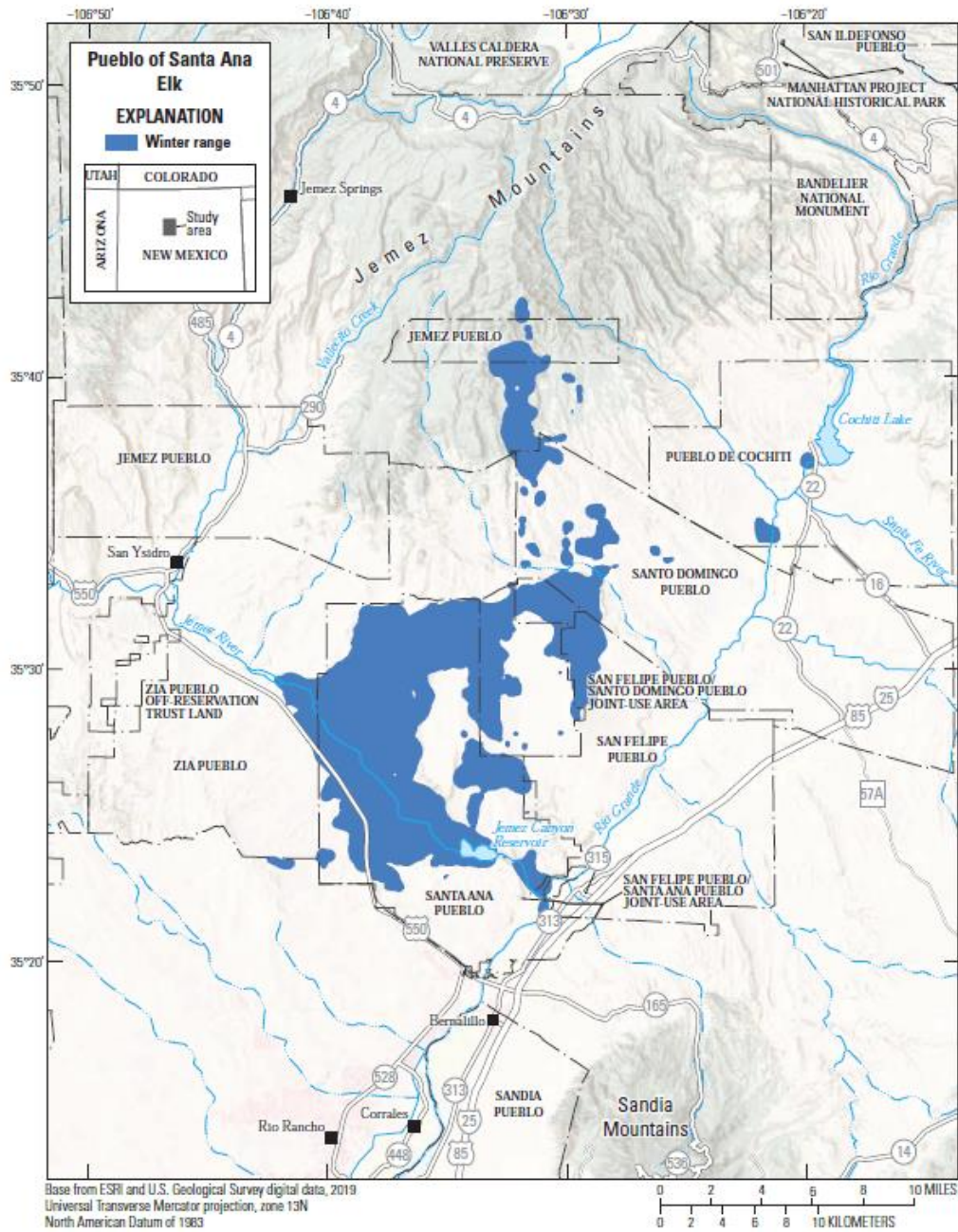


Figure 8: Jemez Springs mule deer movements and seasonal ranges.

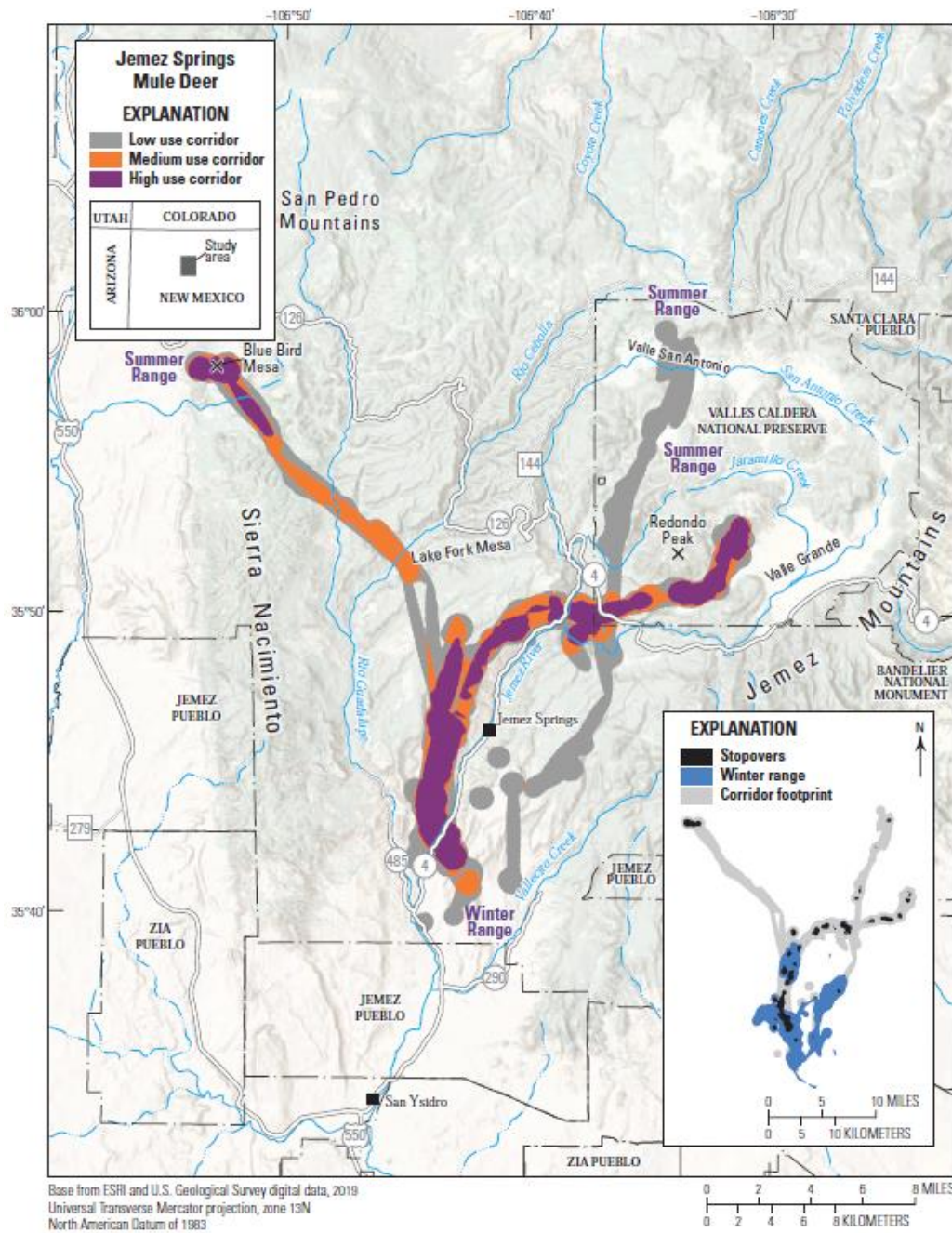


Figure 9: Jemez elk movements and seasonal ranges.

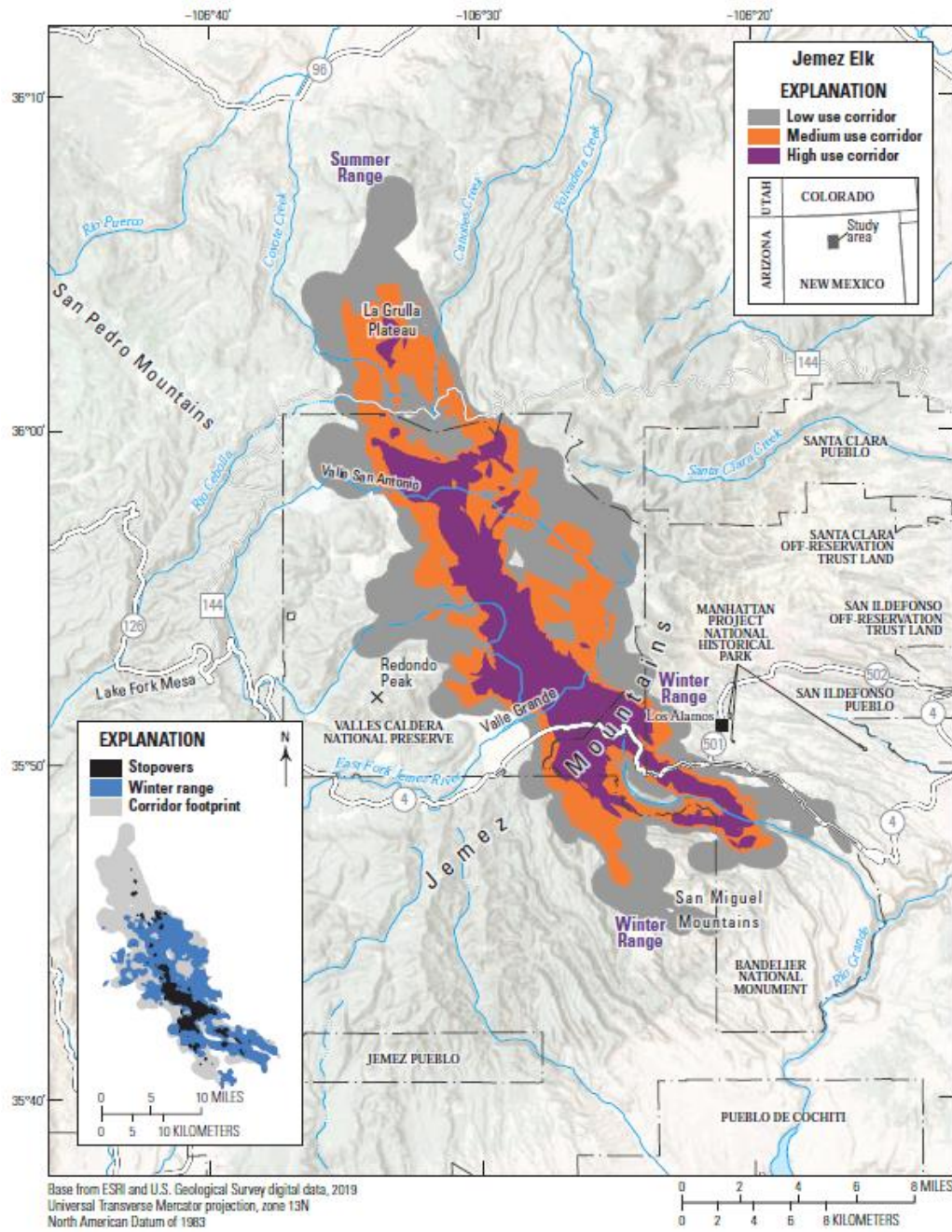


Figure 10: Mt. Taylor elk movements and seasonal ranges.

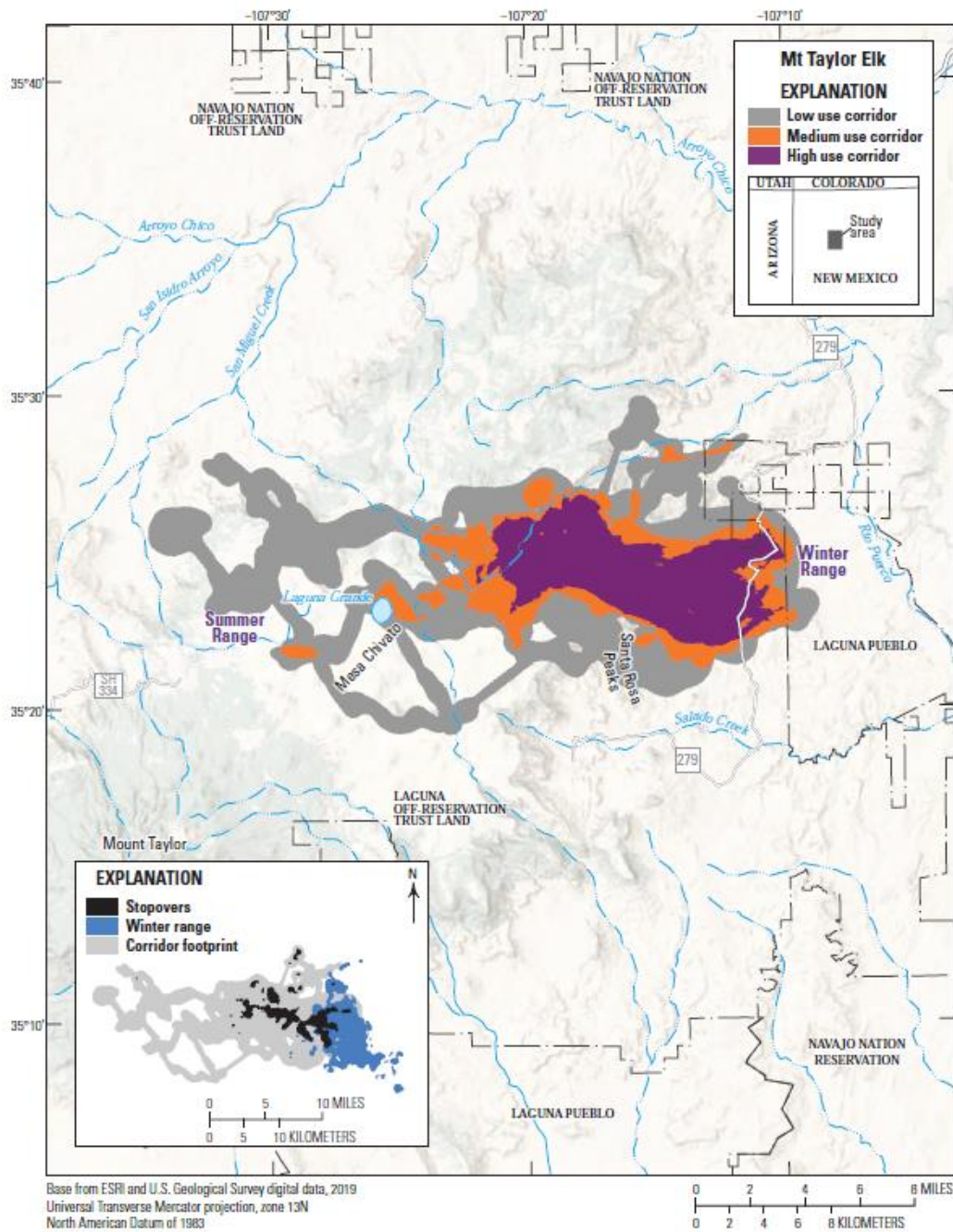


Figure 11: Rio Chama mule deer movements and seasonal ranges.

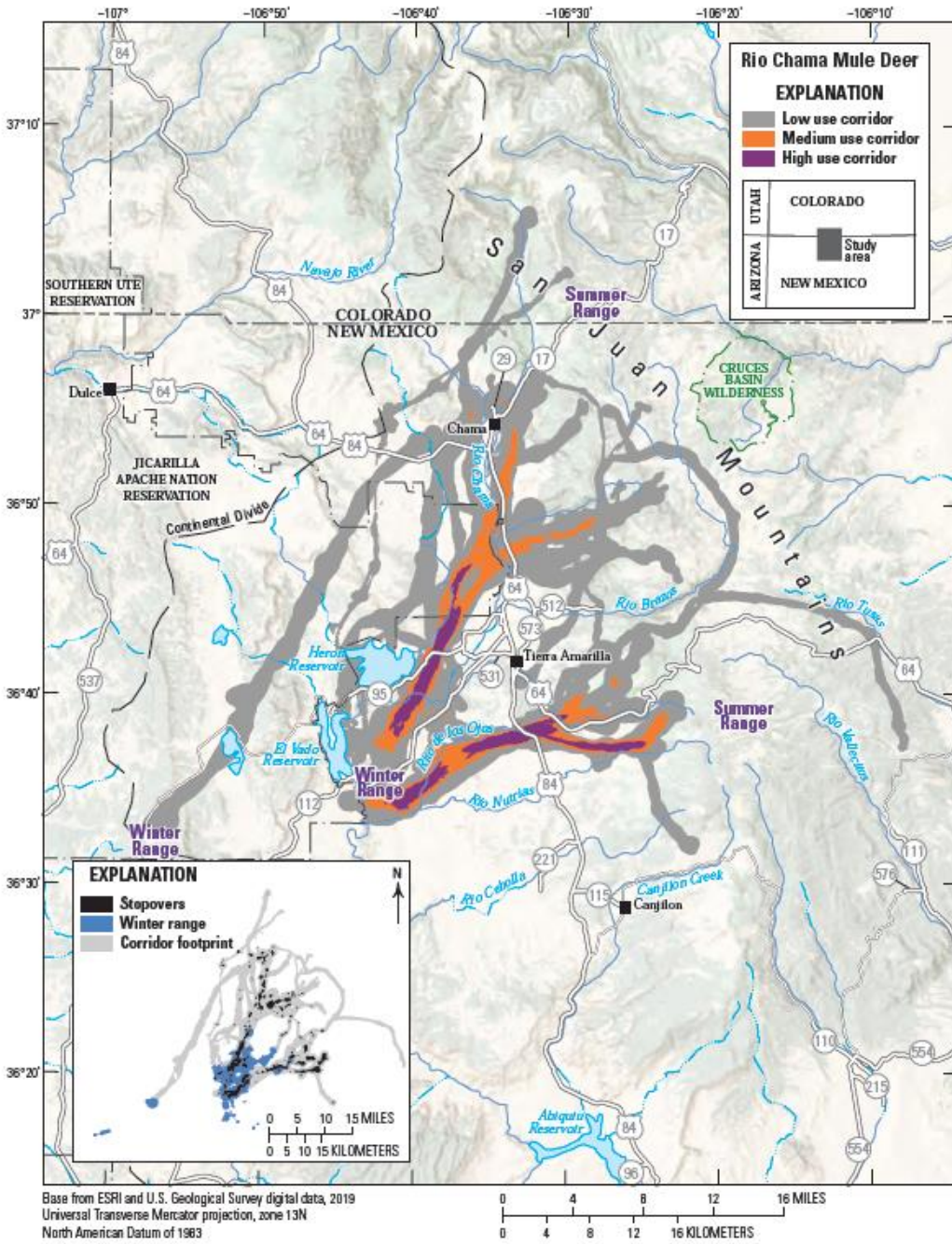


Figure 12: North central pronghorn movements and seasonal ranges.

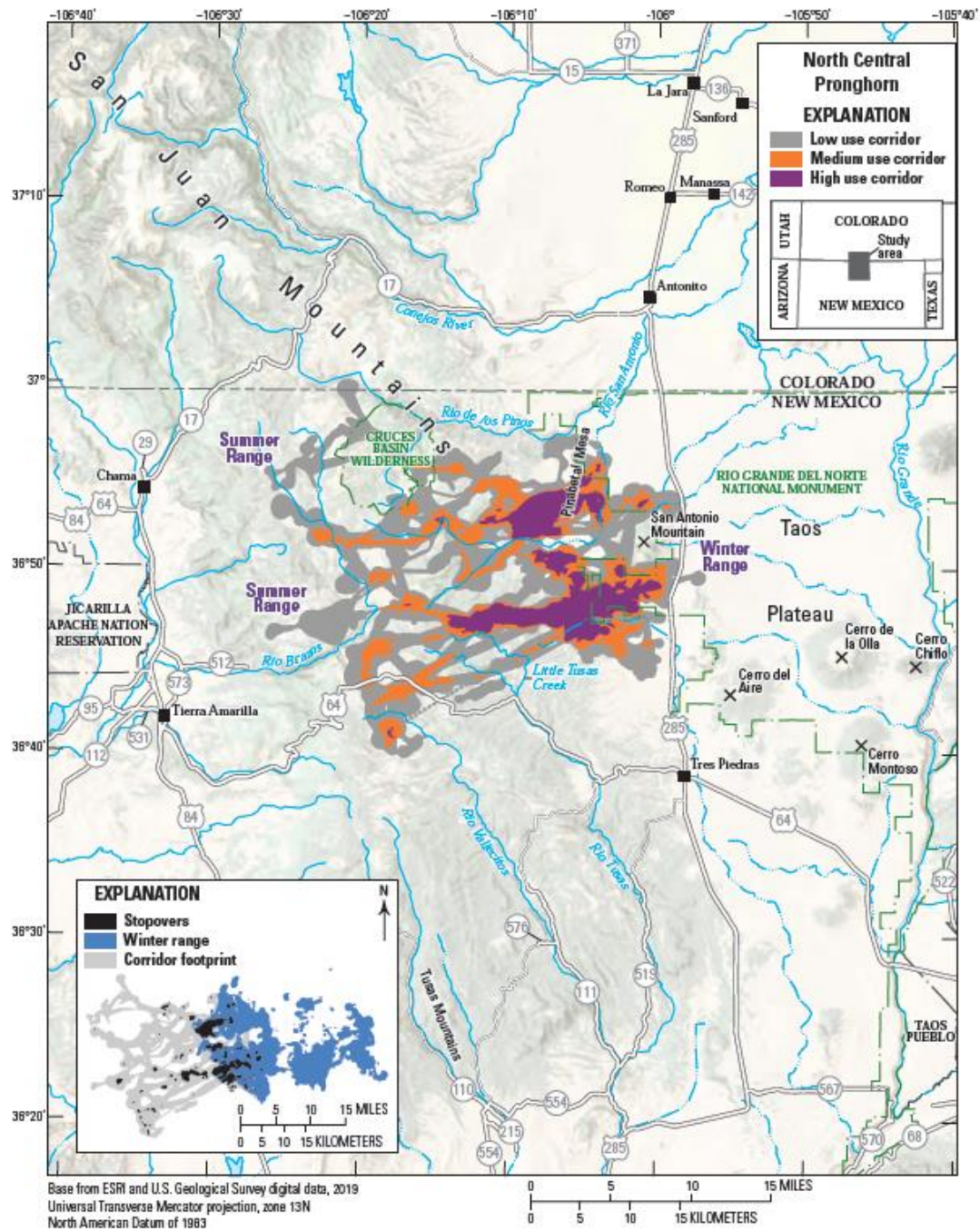


Figure 13: San Antonio elk movements and seasonal ranges.

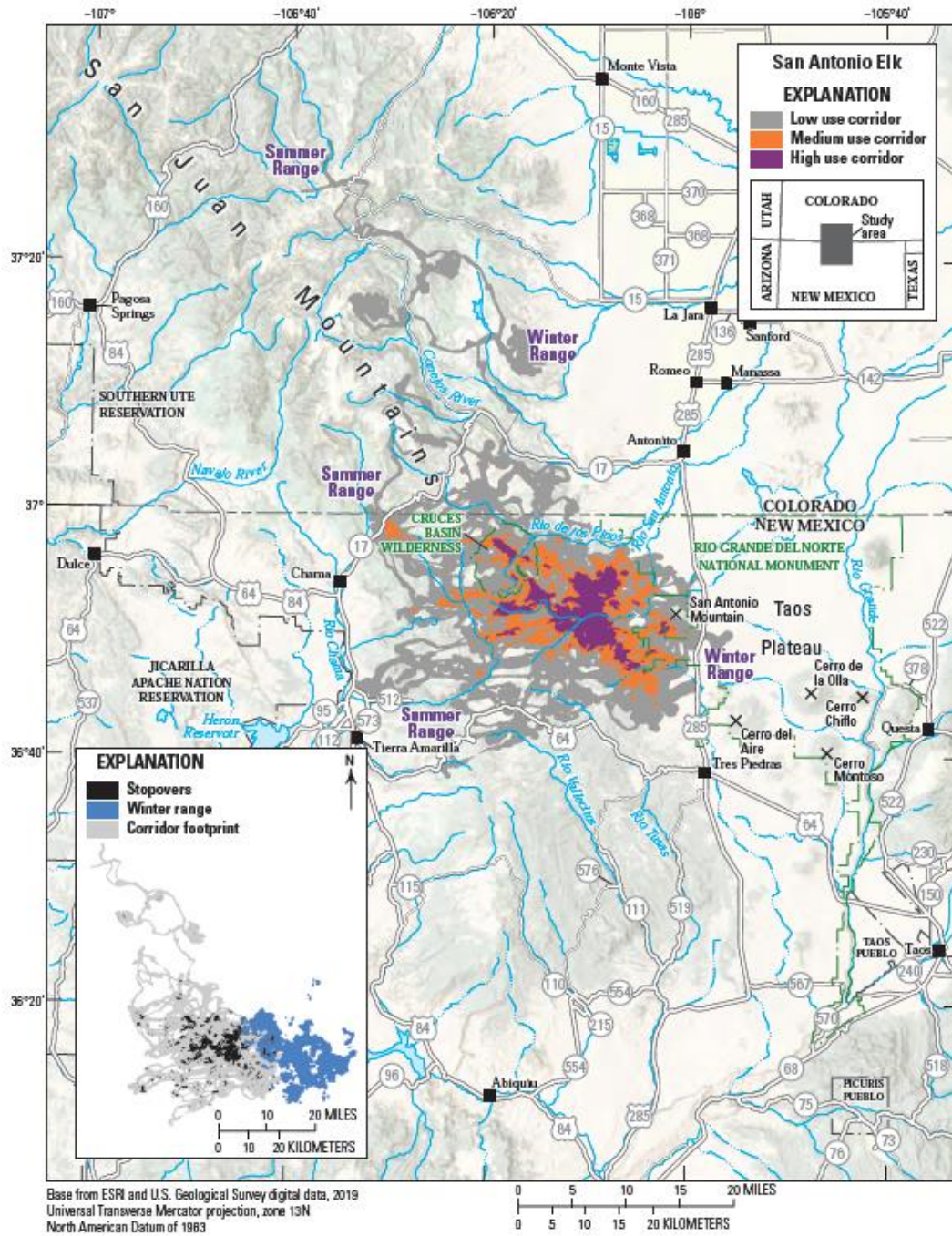


Figure 14: Gila elk movements.

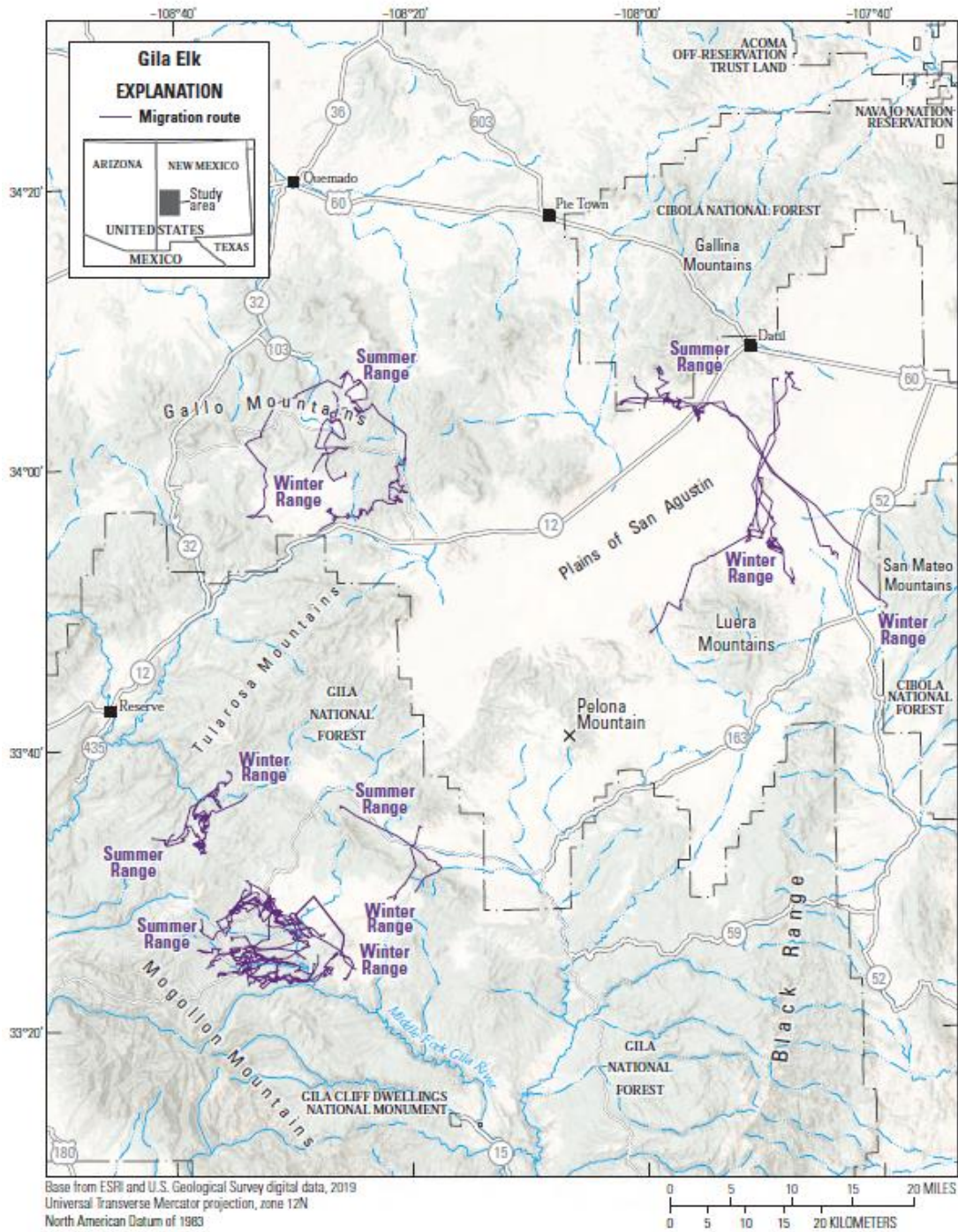


Figure 15: San Cristobal mule deer movements and seasonal ranges.

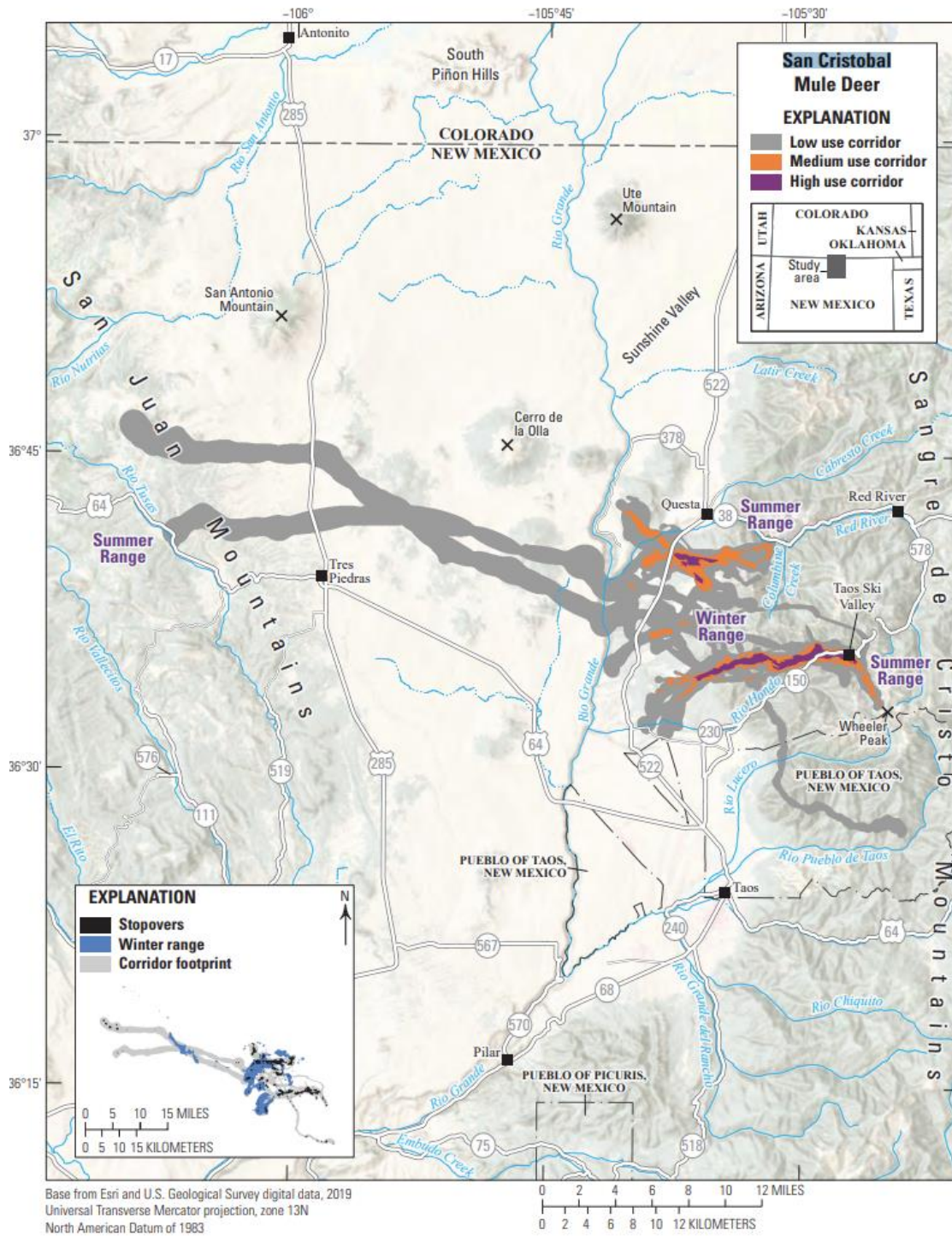


Figure 16: Urraca mule deer movements and seasonal ranges

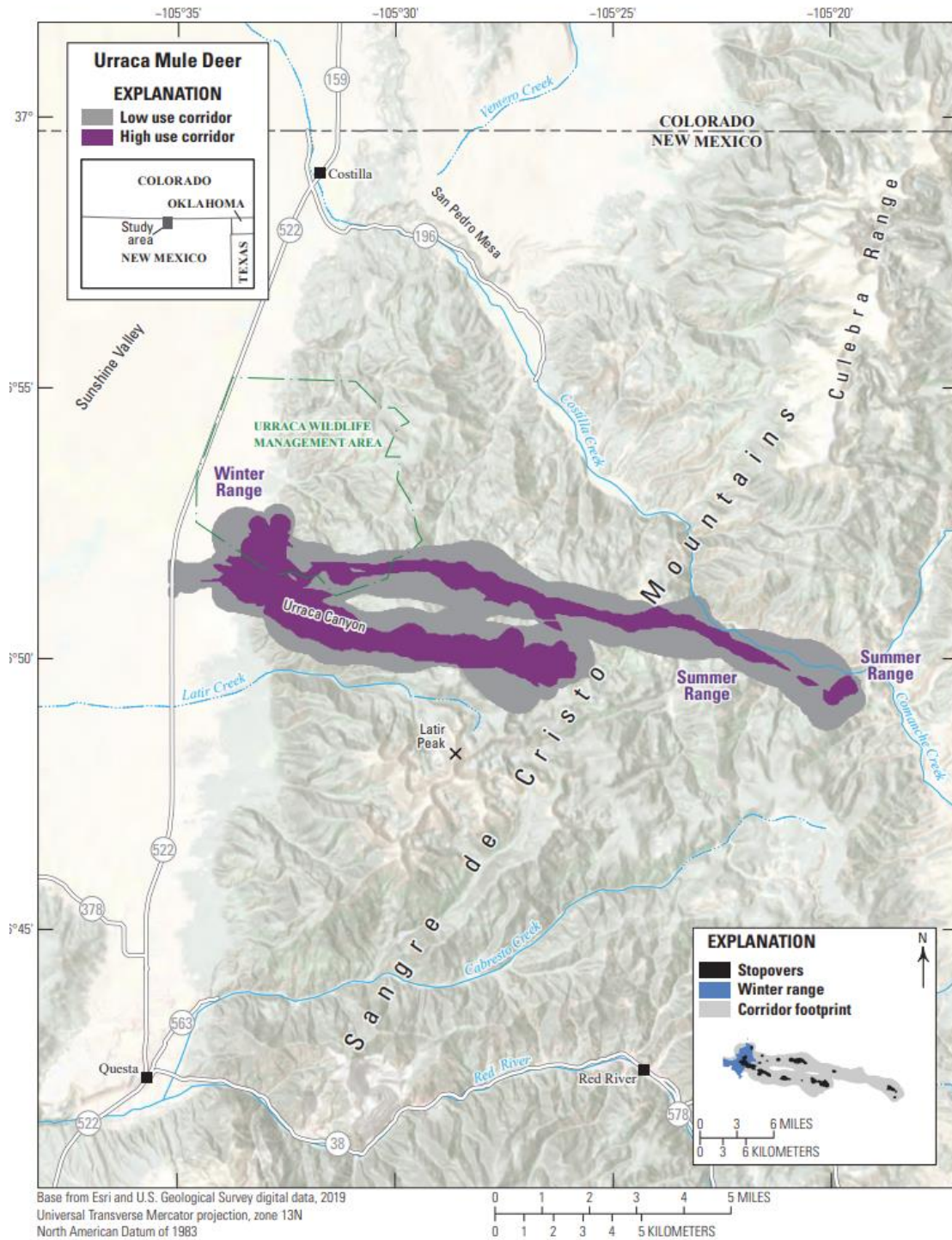


Figure 17: Jemez elk movements and seasonal ranges (updated)

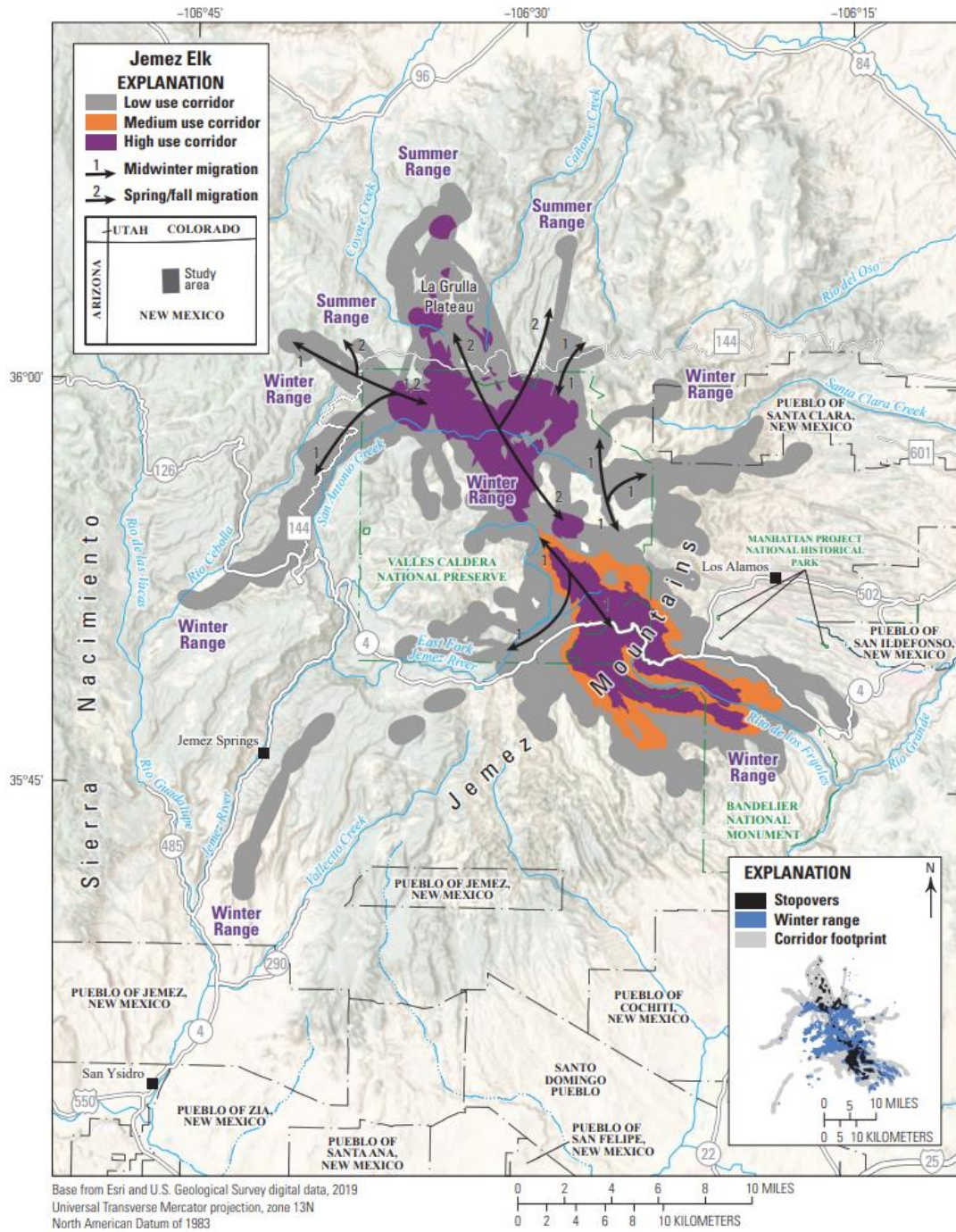


Figure 17: Rio Chama elk movements and seasonal ranges.

