MONTANA ACTION PLAN October 2019

For

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

Prepared by Montana Fish, Wildlife and Parks

INTRODUCTION -

Many wildlife populations migrate long distances each year to survive and reproduce but that movement has become increasingly difficult due to habitat fragmentation and barriers created by a range of factors. Additionally, winter range has been eroded by habitat fragmentation and noxious weeds for example. State and federal agencies, conservation groups, and others are trying different ways to maintain connectivity, big game mobility, and improve winter ranges.

Montana Fish, Wildlife, and Parks (MFWP) has anchored many big game migrations by acquiring Wildlife Management Areas (WMAs) that serve as protected ungulate winter range. The Judith River, Sun River, Wall Creek, Mount Silcox, and many other WMAs were purchased to protect and conserve winter elk habitat. These critical WMAs, purchased in partnership with wildlife conservation organizations such as the Rocky Mountain Elk Foundation (RMEF) and others, provide secure winter habitat for elk that reduces damage to adjacent private land by hungry elk and ensures the long-term conservation of wintering habitat. Conservation easements—legal agreements purchased by partners and MFWP that prevent subdividing on private land and the accompanying fences and roads that go with it—also sustain big game migrations. Over the past 35 years, MFWP's Habitat Montana Program has used hunter license dollars to purchase conservation easements to protect and enhance several hundred thousand acres of wildlife habitat. According to MFWP biologists and researchers, more big game animals migrate to or reside year-round in wintering areas on private ranch and farm lands than public land holdings in Montana.

Elk are the most well-known migratory big game species in Montana. Elk migrations range from just 15 miles, such as between the Sun River WMA and the Bob Marshall Wilderness, to 125 miles, like the one from winter range in Dome Mountain WMA in the Paradise Valley to summer range high in Yellowstone National Park. Because of the past and continued public interest in elk, most early game range acquisitions were for elk winter habitat, and more winter range and migration routes have been conserved for elk than any other species in Montana.

Many populations of pronghorn antelope don't need to travel far, meeting their seasonal needs by moving only within their home range. But some make great migrations. Biologists have tracked herds traveling more than 200 miles south from southern Alberta and Saskatchewan into Montana in winter.

Many eastern Montana mule deer are non-migratory, moving annually within their home range to find preferred seasonal habitats, while many western Montana mule deer populations occupying mountainous habitat are partially migratory, with varying proportions of herds travelling between distinct seasonal habitats. For example, some mule deer summering in Yellowstone National Park have migrated north through the Paradise Valley and over I-90 to winter in lower elevations of the Bridger Mountains. In late fall, other mule deer migrate from

the Swan Mountains across the full extent of the Bob Marshall Wilderness to winter ranges on the Rocky Mountain Front (Williams and Dixon 2013).

Secretarial Order 3362

U.S. Secretary of the Interior Ryan Zinke signed Secretarial Order 3362, on February 9, 2018 (Appendix A), to improve habitat quality and western big game winter range and migration corridors for antelope, elk, and mule deer. The order fosters improved collaboration with states and private landowners and facilitates all parties using the best available science to inform development of guidelines that helps ensure that robust big game populations continue to exist. Priority states currently include Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

SO3362 directs appropriate bureaus within the Department of the Interior to work in close partnerships with the above-mentioned states 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 continue 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.

The United States Department of Agriculture (USDA), through the USDA Forest Service (USFS) and USDA Natural Resource Conservation Service, will collaborate with DOI, the states, and other natural resource managers across the broader landscape when developing an all-lands approach to research, planning, and management, for ecological resources, to include migration corridors in a manner that promotes the welfare and populations of elk, deer, and pronghorn, as well as the ecological integrity of terrestrial ecosystems in the plan area.

Federal Lands

Montana boasts over 27 million acres of federal lands, nearly one third of the state. Much of that land provides excellent hunting opportunities and support winter habitat and migration corridors for elk, mule deer, and pronghorn. The Bureau of Land Management (BLM) manages over 8 million acres of mostly range land and some forested land across the state. The BLM undertakes various conservation and restoration efforts that benefit big game, winter range, and migration corridors, such as fence removal, invasive weed treatments, and native vegetation seedlings. The U.S. Fish & Wildlife Service (USFWS) manages ten national wildlife refuges in Montana (over 1.2 million acres) most of which allow hunting during some portion of the season.. National parks contain important big game seasonal ranges and migration corridors. The National Park Service (NPS) manages 1.2 million acres in Montana and maps wildlife corridors, treats invasive species , addresses wildlife mortalities-vehicle collisions, and employs fuel reduction to conserve and restore big game winter range and migration corridors. The USFS manages 10 national forests in Montana that comprise nearly 19 million acres. Most national forest lands that are legally accessible via a public road, navigable waterway, or adjacent state or federal land are open to hunting. MFWP and USFS biologists collaborate to identify forest management prescriptions that will manage forests in ways conducive to continued use by large numbers of migratory elk and deer (e.g. Lyon et al. 1985, USFS and MFWP 2013).

Overall Approach to Updates

Two major changes are reflected in the October 2019 version of the Montana Action Plan for Implementation of Department of the Interior (DOI) Secretarial Order 3362: "Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors."

The largest change from our 2018 Montana Action Plan is that we added a priority area in Northwest Montana. We considered the "Heart of the Salish" area when we first responded to the DOI request for identification of priority areas in 2018, but we dropped this area from the 2018 Montana Action Plan for logistical reasons. We appreciate the opportunity to add this important wintering and migration area for big game back into the Montana Action Plan for 2019. We worked closely with landowners, tribes, and DOI partners to define this area as well as the conservation opportunities therein.

Second, while we retained the large, landscape-scale definition of our five priority areas, we identified smaller focal areas within the landscape-scale priority areas in the 2019 Montana Action Plan. We identified these honed-in 2019 focal areas using assessments of existing big game GPS collar data, threats to winter ranges and migratory movements, and conservation opportunities primed for action that we identified in close collaboration with private landowners, NGOs, and federal agency partners. We think that great progress can be made and measured during 2019-20 within these smaller-scale focal areas. And, because we are keeping the landscape-scale nature of our five priority areas, we anticipate that focal areas for conservation action within the Montana priority areas will change in future iterations of the Montana Action Plan.

During 2019-20, Montana Fish, Wildlife and Parks (MFWP) will also begin spatial analyses of big game GPS movement data in earnest, working closely with university and other partners. Results from these analyses will help to guide identification of focal areas within our large priority areas in future Montana Action Plans, along with assessments of threats to seasonal habitats or animal movements and conservation opportunities that we identify in collaboration with private landowners, NGOs, and other government agencies.

Montana continues to take an overall approach that emphasizes improving our scientific knowledge and understanding of migration, and sharing migration information with local, state, federal, private landowner, and NGO partners who are making management decisions in areas with migrations. We are relying upon local stakeholders to guide our collective strategy and actions for managing and conserving ungulate migration.

Priority Area A: Continental Divide to Rocky Mountain East Front

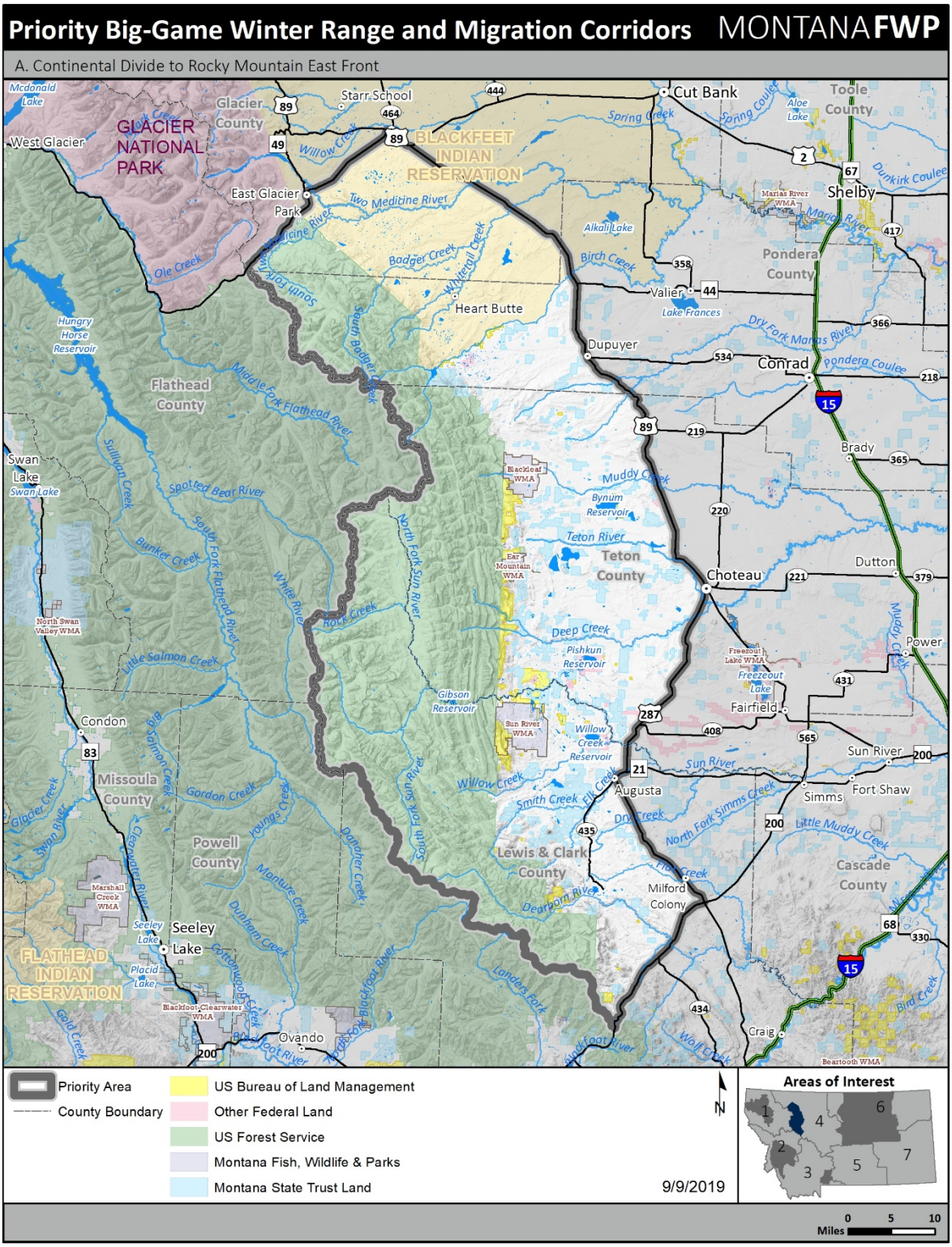

Figure 1. Continental Divide to Rocky Mountain East Front Priority Area. Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from ESRI and Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

Why: This corridor hosts an extensive diversity of wildlife species including elk, mule deer and pronghorn. Further, this corridor hosts multiple iconic wildlife species, such as grizzly bears, mountain goats, bighorn sheep, wolves and wolverines, and connects the world-renowned Bob Marshall Wilderness complex with the similarly valued "Front" where the Rocky Mountains meet the plains. Recently, a portion of this area was included in the Rocky Mountain Front Heritage Act passed by the 113th Congress of the United States in 2013.

The Rocky Mountain East Front contains some of Montana's longest studied and/or monitored big game migrations: the first studies of elk migration in the Sun River herd took place in the 1920s (Picton and Picton 1975). These studies followed the creation of the Sun River Game Preserve by the Montana legislature in 1913, which closed hunting and eliminated livestock grazing in a large portion of wildlife habitat (e.g., elk) along the east side of the continental divide within what eventually would become part of the Bob Marshall Wilderness. Due to the latter and in conjunction with other management strategies, elk populations subsequently grew, leading to conflicts with livestock producers over forage utilization and eventually to the establishment of the MFWP-owned Sun River Game Range (now Wildlife Management Area) to provide winter forage and space for elk. Hunting seasons were liberalized in the area following studies finding overutilization of winter and summer forage by elk in the 1940s and 1950s (Picton and Picton 1975). More detailed elk migration studies later revealed specific migratory paths used by elk and provided evidence that resident elk were being overharvested, as migratory elk did not return to shared winter range until after hunting seasons were over (Picton 1960). Following these studies, elk hunting seasons in the area have been designed and managed by quota and other licenses to ensure balanced harvest representation of both migratory and resident herd segments. Current elk distribution within the Rocky Mountain Front Priority Area extends from its northern to southern boundary and includes year-round range, to include critical winter range habitat.

Seasonal mule deer ranges, migration routes and associated timing along the Rocky Mountain Front (RMF) were mapped in general terms approximately 40 years ago (Kasworm 1981, Ishle 1982). These studies identified that wintering mule deer populations along the RMF were composed of 1) deer that were yearlong residents on the winter range or migrated short distances into the foothills, 2) deer that migrated to summer ranges located between the Front Range and the Continental Divide and travelled between 8 and 34 km between ranges, and 3) deer that migrated across to the west side of the Continental Divide in the Middle Fork of the Flathead River with movements ranging from 21 – 50 km. These early studies provided information on the timing of migration and location of winter ranges that has since been used to structure mule deer hunting seasons to ensure population segments with different migration strategies are not overharvested. Recently, a study investigating fine-scale mule deer winter habitat selection was conducted to improve understanding of habitat requirements in this area (Smith 2011). Since 1980, wintering mule deer population sizes along the southern RMF (south of the Teton River) have declined, while wintering herds north of the Teton River have generally been stable. The causes for the decline of southern RMF mule deer is not known, but there are hypotheses related to reduced summer range quality for migratory herd segments, declining winter range forage quality, competition with growing elk and white-tailed deer populations, and effects of increased predation. Beginning in 2017, new research was started along the southern RMF area to begin to better understand

various vital rate and ecological information for mule deer in this area. Similar to elk, mule deer distribution within the RMF Priority Area extends from it's northern to southern boundary and includes year-round range, to include critical winter range habitat.

Although there are pronghorn located year-round within the Priority Area, eastern fringes primarily, less is known of their annual habitat use and/or migration strategies (if any). The RMF Priority Area is considered to be at the western edge of quality pronghorn habitat on this side of the continental divide in Montana. Other wildlife studies have or continue to occur in this Priority Area and certainly can help to bolster, albeit secondarily, support for conservation management ideas and projects related to SO 3362.

Spatial Location: This corridor includes a swath of land in west-central Montana running from Highway 200 in the south to Glacier National Park in the north and connects Federal USFS and BLM properties in the west to private lands in the east.

Habitat Types: Habitat types range from alpine above tree line, both mesic and xeric conifer forests, open grasslands, shrub grasslands, and deciduous wetland/riparian.

Important Stopovers: Seasonal use by wildlife includes areas within the Bob Marshall Wilderness Complex to the continental divide during the summer to lower elevation parturition, breeding and transitional in the spring through fall seasons; to important intermountain grassland and foothill habitats during the winter period located on the interface between public and private lands.

Landownership: Dominated by public USFS and BLM lands in the west, this corridor trends to private lands in the east mixed with Montana state lands (DNRC/MFWP), USFWS, Bureau of Reclamation, and Tribal lands.

Land Uses: Recreation (public and commercial), livestock grazing, ranching and farm production.

Risks/Threats: Habitat fragmentation or conversion primarily associated with some private lands. Erosion or modifications in habitat quality via noxious weeds, ongoing habitat management concerns (i.e., conifer encroachment on big game winter range), and large landscape wildfires. Highway 2 and associated railroad corridor in the north, and HWY 200 in the south, represent some level of deterrents to successful wildlife movement.

Current Focal Areas and Actionable Habitat Projects:

- Noxious Weed Management (Figure 2)
  The RMF consists of some of the most diverse habitat and vegetative communities within Montana. This heterogeneity demonstrates why this area hosts diverse wildlife species, including key winter range and migratory corridors for the three focal species related to SO 3362 (mule deer, elk and pronghorn). Minimizing the impacts of noxious weeds within this Priority Area has been and continues to be one of the primary habitat management priorities amongst private and public landowners. The Rocky Mountain Front Weed Round Table (Round Table) conducts strategic, collaborative noxious weed

management while partnering with local stakeholders to benefit the economic, biological, and social well-being of the RMF. The Round Table consists of landowners, community leaders, local county weed districts, the Blackfeet Indian Tribe, local watershed groups, and non-government/government entities. For this group to be more effective, additional funding would help with administration and implementation of projects and areas in which the Round Table has been focusing. Focal areas within the Priority Area include key watersheds/drainages such as Muddy Creek, upper Dearborn River, Deep Creek, and Birch Creek (see Figure 2). To be most effective, this would require funding for three years of work with an *estimated* request up to $200,000. Further refinement of this estimate related to work to be conducted would be included within a project proposal.

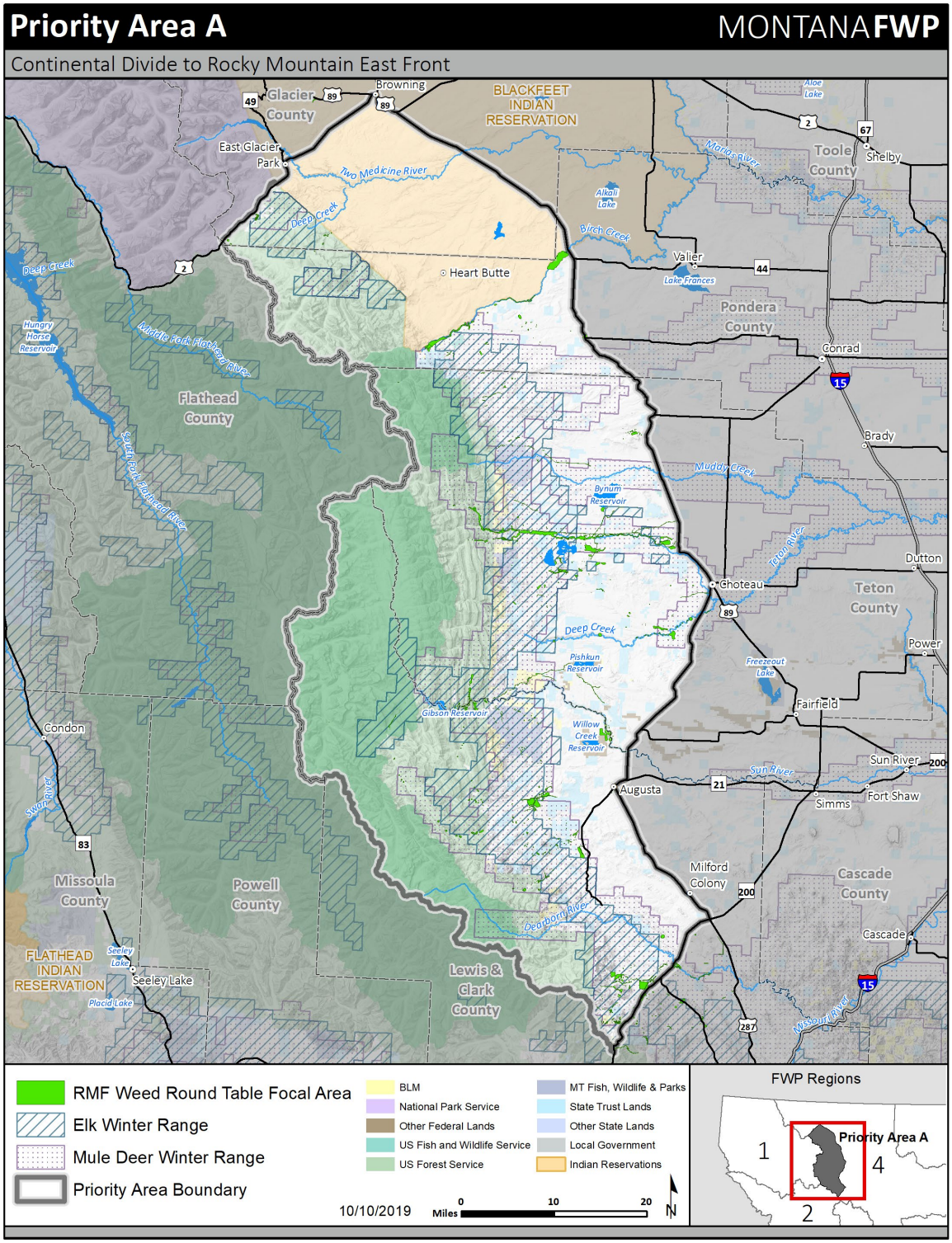

Figure 2. Focal area 1 in the Continental Divide to Rocky Mountain East Front Priority Area: Noxious weed mitigation work areas based on inventories by the Rocky Mountain Front Weed Round Table. Weed data, big game winter range, and administrative boundaries from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

- Highway 2/Railroad Wildlife Mitigation (Figure 3)
  At over 2.5 million acres, the Bob Marshall Wilderness complex and Glacier National Park form one of the largest protected areas in the continental United States. Straddling the Continental Divide, these two areas form a vital linkage between vast areas of public land to the south towards Yellowstone, and contiguous protected areas north of the US-Canada border. However, US Highway 2 (US2) and the Burlington Northern-Santa Fe (BNSF) railroad separate Glacier National Park to the north from the Bob Marshall Wilderness complex to the south. Although the geographic boundary of the priority area does not include this entire corridor, any potential work/project proposal related to this area would have to factor in the entire corridor (as outlined in Figure 3) to best reflect the intent to better understand the impacts and/or implement any potential future mitigation measures.

  Wildlife movement locations across this corridor have only been moderately studied, but as traffic volumes increase, we expect that connectivity to diminish. Concern over maintaining wildlife movements has led the Crown Manager's Partnership, the Great Northern Landscape Conservation Cooperative, Cushman et al. (2009), and a recent interagency group of biologists working in this region to identify this corridor as a priority area for wildlife connectivity planning (Ament and Creech 2016; Waller and Graves 2018). Wildlife using this area include moose, elk, mule deer, white-tailed deer, grizzly bears, and many other species. The recent local working group summarized existing research and has begun to address research needs to prioritize specific highway mitigation efforts (Waller and Graves 2018). The initial report found that animal trails are closely associated with culverts and suggested that upsizing culverts would likely promote animal movement. They also found that several previous reports identified 6 moderately fine-scale locations for wildlife highway crossing structures (1) the South Fork of the Flathead intersection with US2 near Hungry Horse, MP 142 (Ament et al. 2014), 2) near MP 173 (Roesch 2010), 3) east of Essex, MP 181 to 184 (Roesch 2010; Ament et al. 2014), 4) MP 189 to 193 (Roesch 2010; Ament et al. 2014), 5) MP 197-197.2 (Holdhusen 2016), and 6) MP 199.8-200 (Holdhusen 2016). Data currently and recently collected can be used to prioritize more specific locations. Costs of any options are currently unknown.

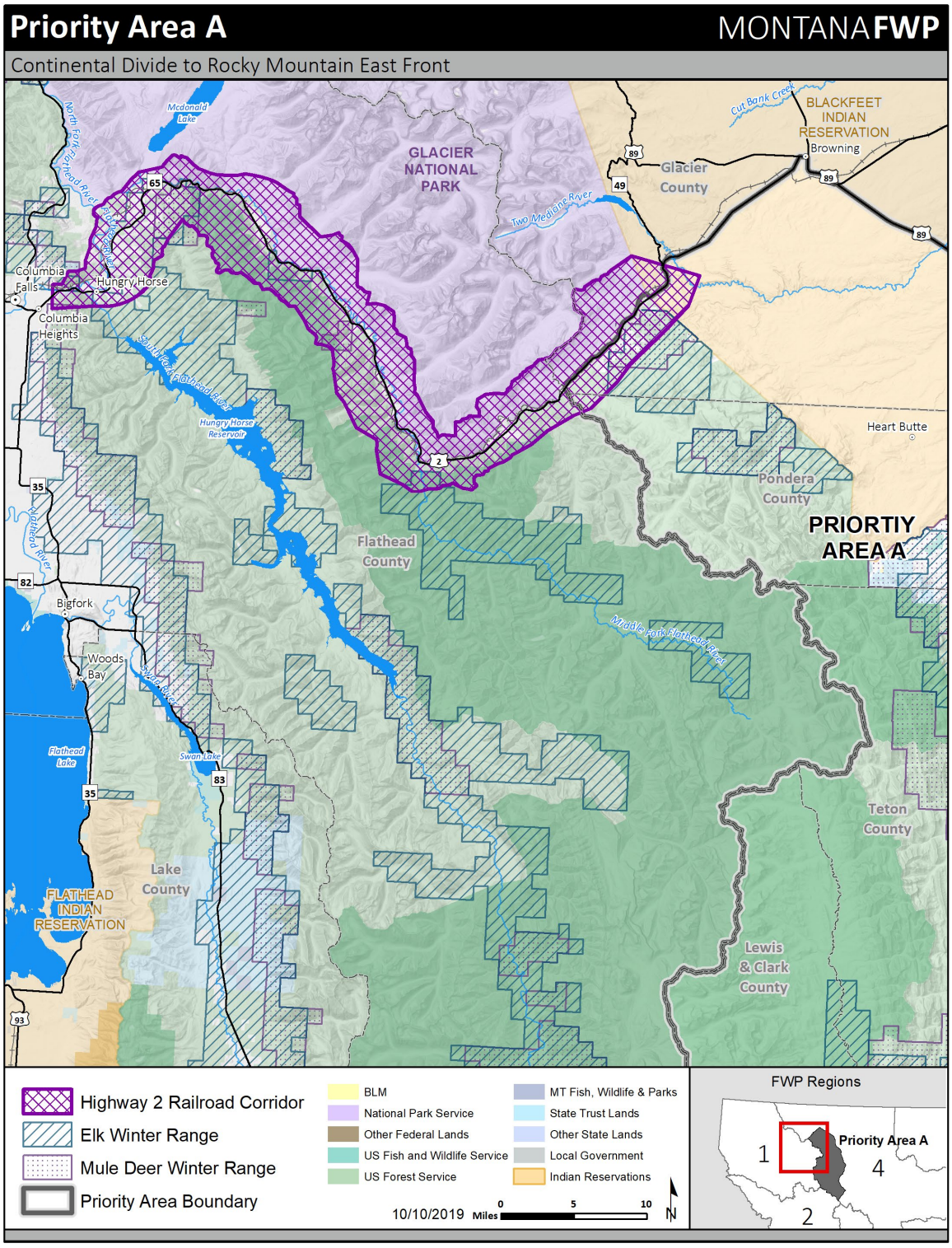

Figure 3. Focal area 2 in the Continental Divide to Rocky Mountain East Front Priority Area: U.S. Highway 2 and the BNSF Hi Line railroad corridor. Railroad corridor, big game winter range, and administrative boundaries from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

- Habitat Fragmentation (Figure 4)
  The RMF Priority Area maintains some of the most intact, unfragmented habitat and landscapes in not only Montana, but the lower 48 states. Big game (elk, mule deer, pronghorn, bighorn sheep, moose, etc.), large carnivores (grizzly/black bears, mountain lions, wolves, etc.) and a host of other small mammals (seasonal and resident), reptiles and amphibians depend on these large intact ecosystems. Large working private ranches play a vital role in conserving fish and wildlife habitat on the RMF. Preserving these lands through conservation easements (CE) helps to maintain the biological integrity of this landscape (to include critical habitat for mule deer, elk and pronghorn) while ensuring a way of life for ranchers and others who depend on the land for their livelihoods. Over the last 20+ years, significant collaborative work has been completed through CE implementation within this Priority Area (see Figure 4). To date, tens of thousands of private land acres have been conserved with CEs through working with partners such as the USFWS, The Nature Conservancy, The Conservation Fund and other land trusts. Clearly, the need to include this awareness within this Action Plan is important. At this time, discussions with landowners related to CEs are ongoing, but no clearly defined project has been identified. However, as/if an opportunity does come to forward, the ability to develop a project proposal through SO 3362 to assist with successful implementation of a CE would be warranted. As such, costs associated with any such proposal is unknown at this time.

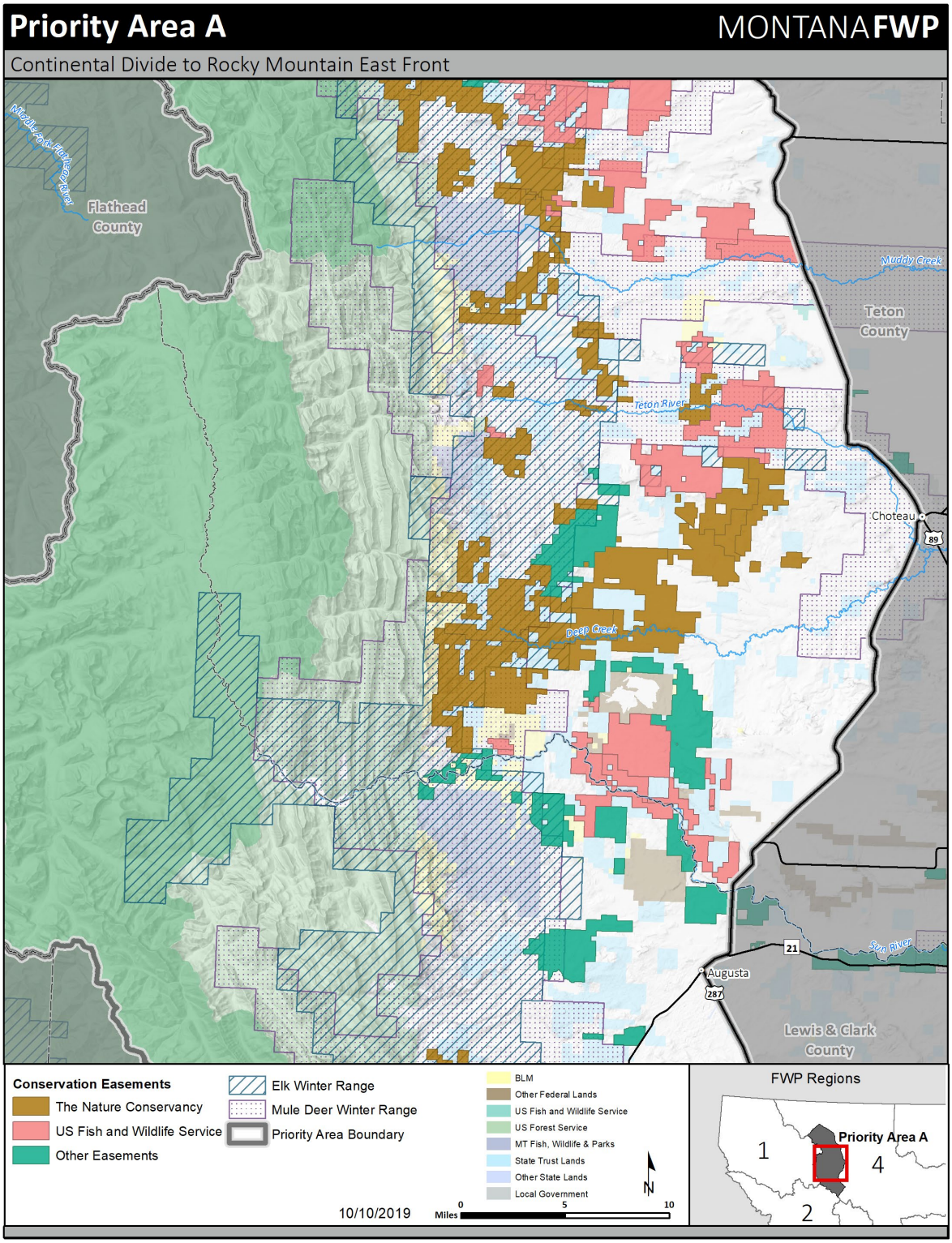

Figure 4. Focal area 3 in the Continental Divide to Rocky Mountain East Front Priority Area: Conservation easements and big game winter range. Big game winter range and administrative boundaries from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

- Habitat Enhancement (Figure 5)
  As with many areas, habitat enhancement work is a critical component of maintaining and improving wildlife habitat. The RMF is no different with one such focus currently related to conifer encroachment (Douglas fir) and removal. Such work is intended to improve native grass, forb and/or shrub production (big game forage); improve productivity in aspen stands by removing competing conifers; improve forest health by selectively thinning Douglas fir stands impacted by insects, disease, and overcrowding; and/or minimize the threat of wildfire in the area by reducing fuels. Two areas with ongoing work related to this effort are on the Blackleaf and Sun River Wildlife Management Areas (WMA), both of which are managed first and foremost as winter range habitat for elk and mule deer. Current work on the Sun River WMA is in cooperation with local USFS staff conducting on-the-ground work with additional funding assistance being provided by the Rocky Mountain Elk Foundation (RMEF). Although this habitat management need is certainly something pertinent to portions of the entire priority area, especially with respect to big game winter range/migration corridor habitat types, current thoughts are to build on success in the Blackleaf WMA area, potentially including adjacent private and public lands (see Figure 5). Estimated costs related to this project would depend on the size and location of the project, although proposed financial ask from any SO3362 project proposals could be in the neighborhood of $50,000 – $100,000 (with match money coming in from other private, state, and federal resources).

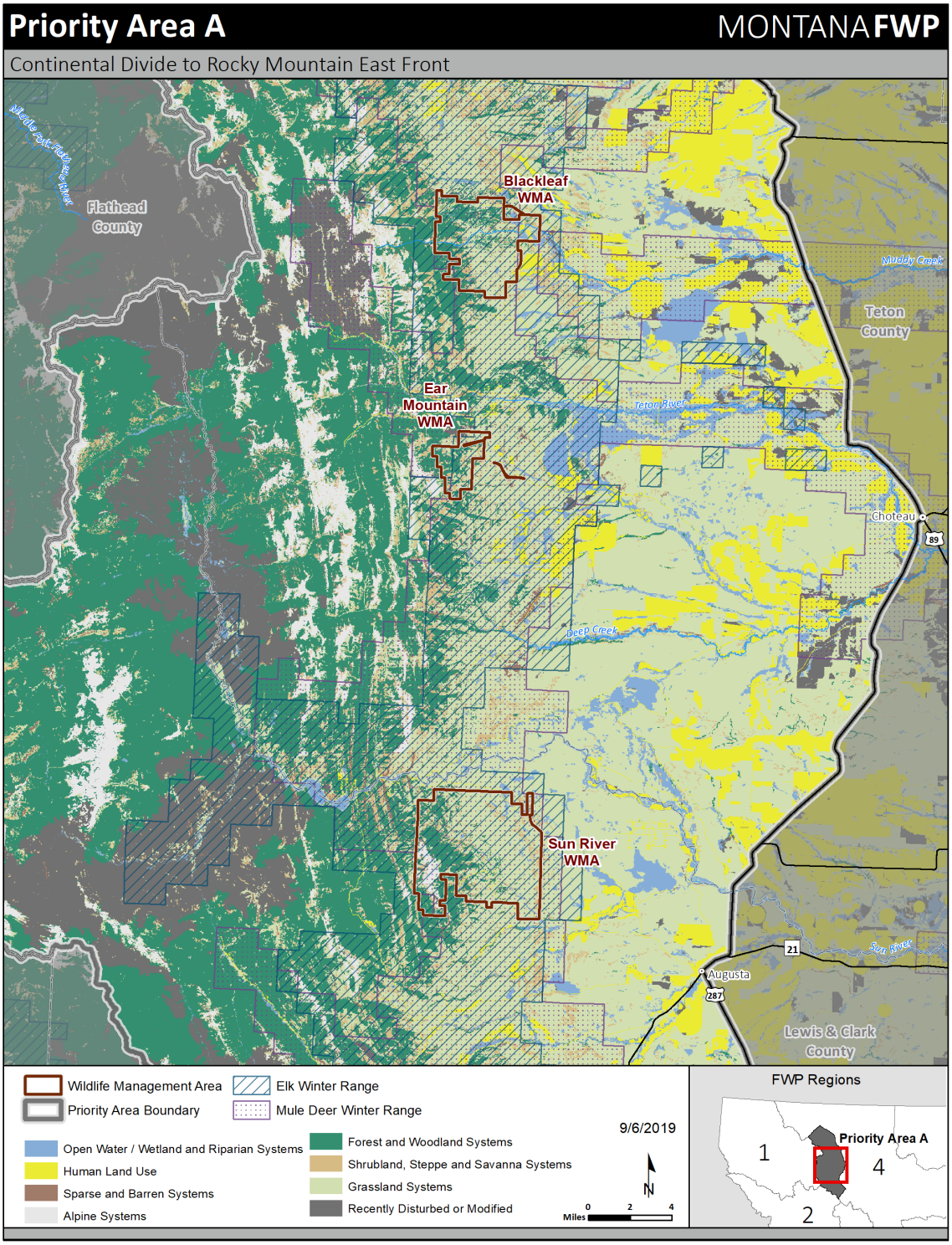

Figure 5. Focal area 4 in the Continental Divide to Rocky Mountain East Front Priority Area: Landcover types in MFWP Wildlife Management Areas and elk and mule deer winter range. Habitat enhancement projects will focus on conifer removal in the forest/woodland cover types to improve big game winter range habitat. Big game winter range and administrative boundaries from Montana Fish, Wildlife & Parks, Helena, MT. Land cover and other reference information from Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

Current Conservation Efforts: Land conservation efforts such as conservation easements by public agencies, private NGOs, and private ownerships. Private/public land noxious weed mitigation work. Habitat management strategies such as conifer removal, prescribed burn activity, wildfire management, etc.

Cost of current or needed projects: See estimated costs under Actionable Habitat Projects above.

Current Activities

- MFWP is using GPS collar technology to produce fine-scale maps of seasonal ranges and perhaps migration routes of southern RMF mule deer and examine the quality and distribution of their seasonal forage (DeCesare et al. 2017).
- The USFWS and The Nature Conservancy are working in collaboration with many partners including MFWP and the Conservation Fund, acquiring perpetual conservation easement along the RMF. Landscape conservation at this scale will have significant benefits to big game corridors. The USFWS seeks to acquire conservation easements on up to 295,000 acres of private land in the RMF to protect elk, mule deer, and pronghorn habitat and migration corridors.
- The RMF Weed Roundtable continues to conduct strategic, collaborative noxious weed management while partnering with local stakeholders to benefit the economic, biological, and social well-being of the RMF. Other public/private weed management efforts are also ongoing in this area.
- Douglas fir management/removal is occurring in cooperation with RMEF (Sun River) on the Sun River and Blackleaf Wildlife Management Areas in order to improve winter range habitat conditions for elk and deer.
- RMEF, with support from other government and non-government organizations, recently completed a land purchase and transfer to the USFS in the Falls Creek area. This project will considerably improve public access to 25,000+ acres of public land (USFS), much of which is general year-round (varying depending on the time of year) habitat by mule deer and elk.

Priority Area B: Yellowstone National Park to Paradise Valley

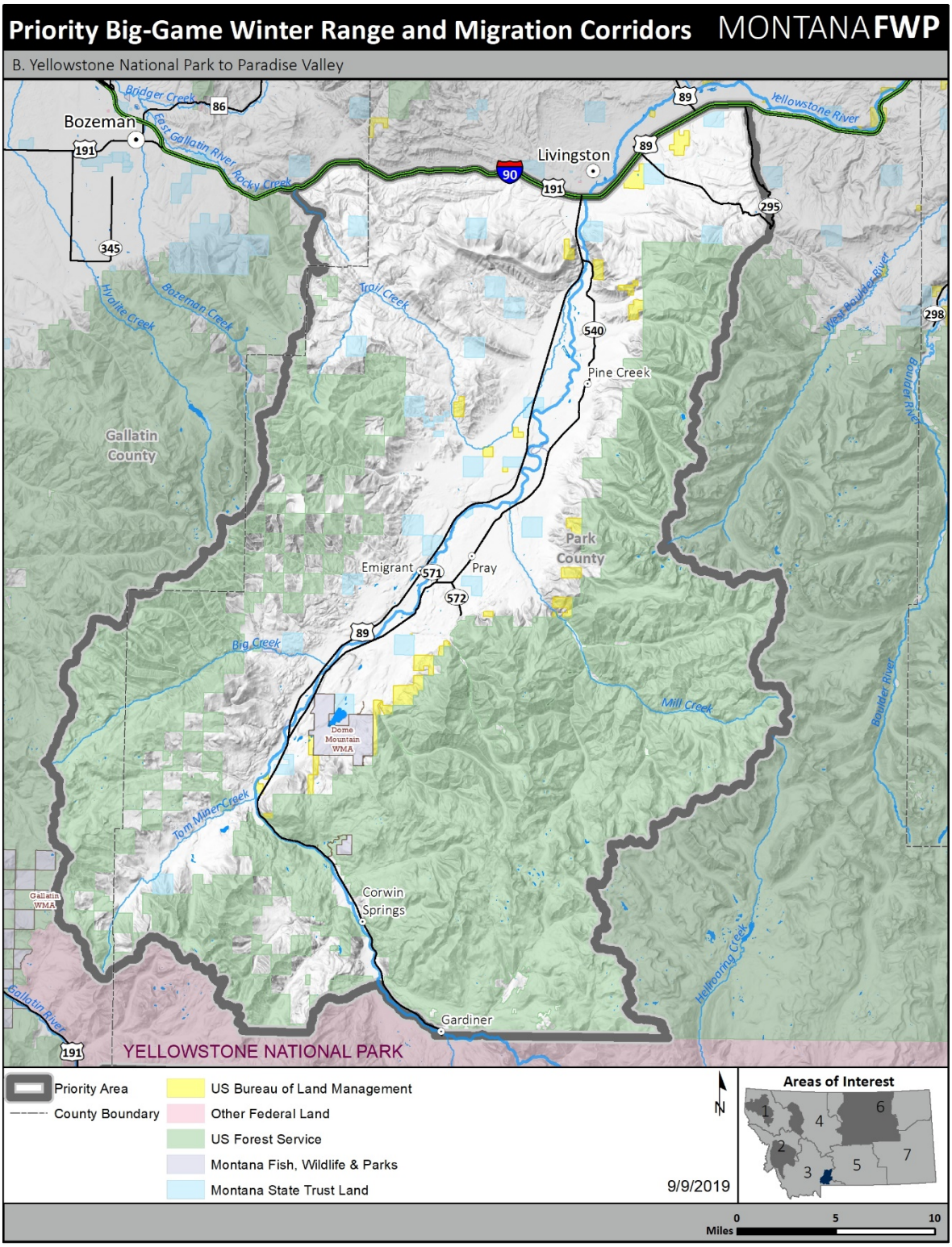

Figure 6. Yellowstone National Park to Paradise Valley Priority Area. Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from ESRI and Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

Updates for this priority area for 2020: MFWP will be collaring pronghorn in the southern Paradise Valley during the upcoming winter season as part of the larger pronghorn research project and will be collaborating with Yellowstone National Park and the University of Wyoming to collar mule deer just north of Yellowstone National Park. This will inform future on-the-ground projects and updates to the Montana Action Plan.

Why: This corridor hosts multiple species that include elk, antelope, and mule deer. Further, this corridor hosts multiple iconic wildlife species and connects the world-renowned Yellowstone National Park with the adjacent Paradise Valley.

Early studies of migration in the Northern Yellowstone elk herd occurred almost 50 years ago (Craighead et al. 1972). In the late 1980's, after the herd increased in numbers as compared to the previous studies, new studies of Northern Yellowstone elk distributions and migrations were conducted (Vore 1990). In the 2000's, several GPS collaring studies documented Northern Yellowstone elk fine scale movement and migration patterns. Collaborative analyses of Yellowstone National Park and MFWP elk GPS collar data have delineated migratory routes using Brownian bridge movement models and revealed a high level of fidelity by individual elk to their winter ranges, summer ranges, and migration corridors (White et al. 2010). Since wolf reintroduction and recovery, the proportion of the Northern Yellowstone herd wintering outside of Yellowstone National Park has increased substantially (White et al. 2012). The Northern Yellowstone elk wintering area outside of Yellowstone National Park is centered around Dome Mountain Wildlife Management Area and the surrounding private ranchlands, highlighting the importance of these areas to the future of this herd.

Pronghorn that winter in the Paradise Valley near Gardiner are partially migratory, with some animals moving into Yellowstone National Park, using a well-defined migration route near Mount Everts, and some animals remaining on winter range near Gardiner year-round (White et al. 2007). Following a decline from >500 to <250 animals in the early 1990's, this pronghorn herd remained below 300 animals for almost two decades, and scientists hypothesized that poor forage conditions on winter range would limit the herd size into the future (Boccadori et al. 2008). While winter ranges and migration routes for this herd have been mostly consistent over time, some animals have displayed behavioral plasticity in their seasonal ranges and whether they migrate (White et al. 2007). In recent years, pronghorn in this area have pioneered a new winter range further into the Paradise Valley, and this wintering herd segment is now approaching 20% of the >600 pronghorn that winter in the southern Paradise Valley and Gardiner Basin. The growth of this herd is an example of successful collaboration among private landowners, agencies, and NGOs to improve migratory movements and population sustainability by removing or modifying fences in the area.

Spatial Location: This corridor includes a swath of land in southwest Montana running from YNP in the south to Livingston, MT in the north.

Habitat Types: Habitat types range from alpine above tree line, both mesic and xeric conifer forests, open grasslands, and deciduous wetland/riparian.

Important Stopovers: Seasonal use by wildlife includes the wintering exodus of elk, mule deer, and pronghorn from YNP to winter range in the Paradise Valley and their return in spring/summer.

Landownership: Dominated by NPS lands in the south, public USFS lands in the higher elevation areas to the east and west, and largely privately owned lower elevation areas along the Yellowstone River valley bottom. Other land types include Montana state lands.

Land Uses: Timber, livestock and farm production, recreation.

Risks/Threats: Habitat fragmentation primarily of private lands. Erosion of habitat quality via noxious weeds. HWY 89 is a high traffic source of mortality for wildlife.

Current Efforts: Land conservation efforts by public agencies, private NGOs, and private ownerships.

Cost of current or needed habitat treatments: Unknown

Priority Area C: Anaconda Range to Big Hole, Bitterroot, and Upper Clark Fork Watershed

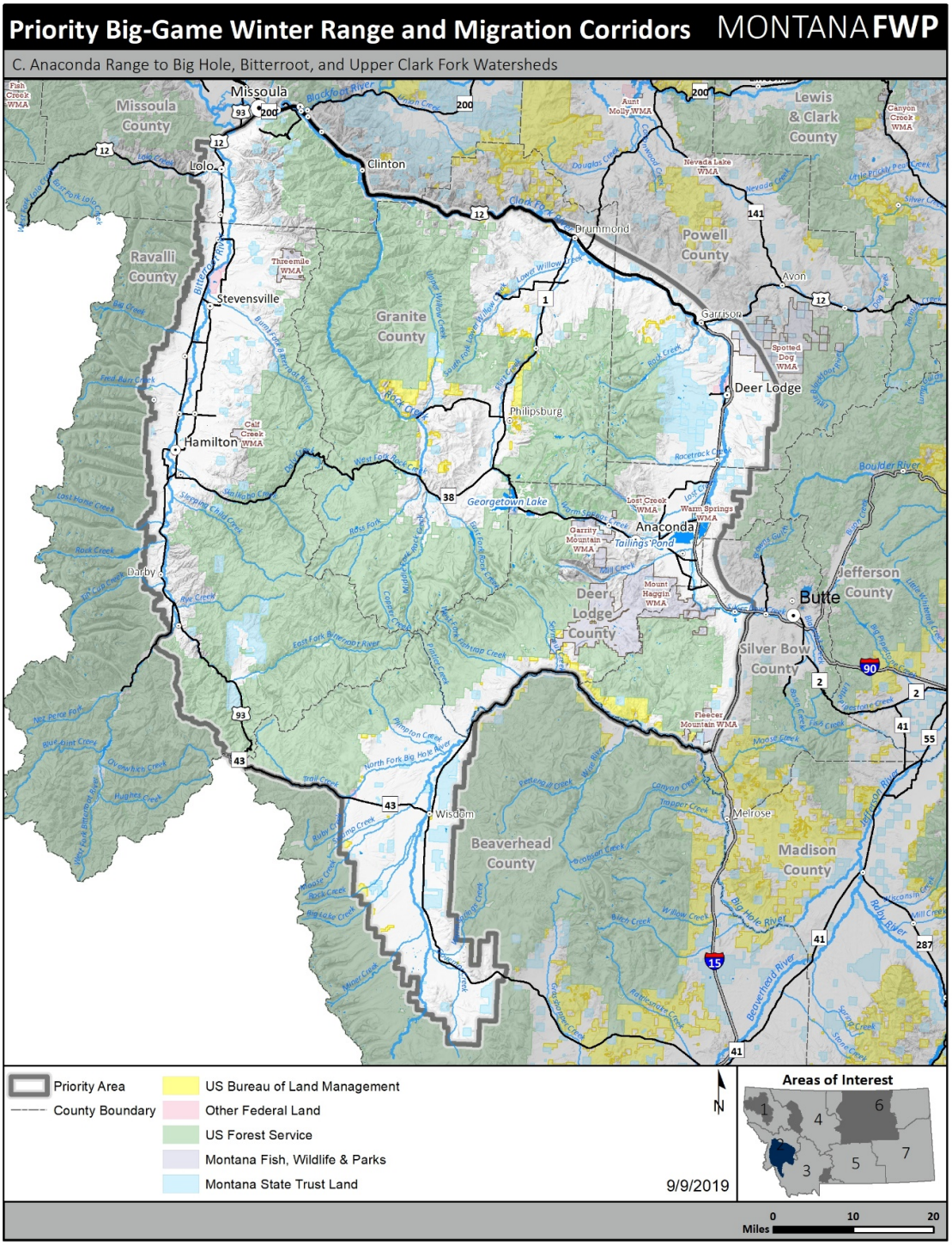

Figure 7. Anaconda Range to Big Hole, Bitterroot, and Upper Clark Fork Watershed Priority Area. Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from ESRI and Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

Why: This corridor hosts multiple species that include elk, mule deer, and pronghorn. Further, this corridor and an established USFS Wilderness area include portions of three wildlife-rich watersheds.

Elk herds in Western Montana are composed of variable mixtures of residents, partial migrants, and migrants. Forage quantity and quality on both winter and summer ranges has a large effect on the proportion of herds that migrate from winter ranges to higher elevation summer ranges. Irrigated agriculture on winter range reduces elk migratory behavior, but elk are more likely to migrate away from winter range if better forage is available elsewhere or if they experience high elk density on winter range (Barker et al. 2018, Barker et al in review). When higher-elevation, summer range forage varies predictably between years, elk are more likely to migrate regardless of whether they have access to irrigated agriculture on winter range (Barker et al in review). Plant productivity is the strongest predictor of elk habitat selection during summer across western Montana (Ranglack et al. 2016), and the influence of plant productivity on elk distribution continues into the late summer and early fall period (Ranglack et al. 2017), when migration to winter range begins. However, exposure to hunting pressure has a large effect on the timing of fall elk migration (Rickbeil et al. in prep), and restricted elk hunter access on private lands and security areas for elk on public lands (i.e., areas further from roads with at least some canopy cover) are the primary drivers of elk distribution in the fall migratory period across southwestern and western Montana (Proffitt et al. 2013, Ranglack et al. 2017). Undeveloped, native winter ranges for elk, elk hunter access on private land winter ranges, areas where elk are secure from hunters on public land, and predictably high-quality forage on public land summer ranges are important for the conservation of elk migration and for elk distribution on public lands in general. Habitat management practices and disturbances can alter elk forage quantity and quality (Proffitt et al. 2016, DeVoe et al. 2018). Habitat treatments such as logging, forest thinning, removal of encroaching conifers, invasive weed management, and prescribed fire can be used to modify forage quantity and quality, as can large-scale natural disturbances such as wildfire and forest insect outbreaks.

Spatial Location: This corridor includes a swath of land in southwest Montana running from the Idaho border through the Bitterroot, Upper Clark Fork, and lower Big Hole watersheds

Habitat Types: Habitat types range from alpine above tree line, both mesic and xeric conifer forests, open grasslands, and deciduous wetland/riparian.

Important Stopovers: Seasonal use by wildlife includes the wintering exodus of elk from the Anaconda-Pintler Wilderness and Big Hole Valley to winter range in the Bitterroot Valley and lower reaches of the Big Hole River and their return in spring/summer.

Landownership: Dominated by public USFS lands east and west above the largely private valley bottom. Other land types include Montana state lands.

Land Uses: Timber, livestock and farm production, recreation.

Risks/Threats: Habitat fragmentation primarily of private lands. Erosion of habitat quality via noxious weeds. Interstates 15 and HWYs 1 and 93 represent high-traffic sources of mortality for wildlife.

Current Efforts: Land conservation efforts by public agencies, private NGOs, and private ownerships.

Cost of current or needed habitat treatments: Unknown

Current Priorities:

- MFWP and partners will be collaring and studying the Big Hole pronghorn herd this winter, as part of the larger pronghorn research project. This will inform future on-the-ground projects and updates to the Montana Action Plan.

- Upper Clark Fork Winter Range - 1500 elk from Priority Area C winter in the Flint Creek and Rock Creek Valleys southwest and west of Philipsburg, Montana (Figure 8). This winter range occurs almost exclusively on private land. The large property ownerships in the Antelope Hills south of Highway 348 and north of Highway 38 currently maintain some connectivity and undisturbed natural habitat for wintering elk amdist agrigultural landscapes. However, Philipsburg and Georgetown Lake are growing in popularity for housing development with access to winter and summer recreation only an hour from Missoula, Montana. While Granite County's resident population has gradually increased over the last 50 years and is projected to reach about 4,000 people in 2030, this does not account for seasonal residents and tourists (U.S. Census Bureau). The 2012 Granite County Growth Policy states that "many of the residential units in Granite County are occupied as secondary residences, not primary residences". The percentage of housing units classified as seasonal, recreational, or occasional increased from 33% in 2000 to 41% in 2010 (U.S. Census Bureau).

  With the unique challenge of managing important wildlife habitat on private land, MFWP Region 2 Wildlife Staff is prioritizing this area for funding within SO3362 efforts. Conservation easements (CEs) are the most appropriate tool to prevent large properties from being broken into subdivisions. State or federal government purchase of private lands in this area is not supported by the local community. With CEs, landscape integrity has a greater chance of being maintained long term. CEs could include agreements on subdivision and building locations, weed management, public access, grazing rotations to promote access to vegetation for wildlife, and protection of important habitats.

  Currently, there are 7,642 acres of CEs in the 100,000 acres of the elk wintering habitat in the Antelope Hills. With less than 8% of the habitat protected, efforts to work with landowners and communities to keep the landscape functional as habitat is of utmost importance for long term management of wildlife. Five Valley's Land Trust, Montana Land Reliance, USDA, and MFWP have all worked together in developing and funding large scale land conservation with these cooperative easements. Contributers of funding and technical support for these easements also include the Natural Resource Damage Program, Rocky Mountain Elk Foundation, Department of Natural Resources and Conservation, USFS, BLM, sportsman and conservation nonprofit organizations, and the diverse group of ranchers and citizens in Granite County.

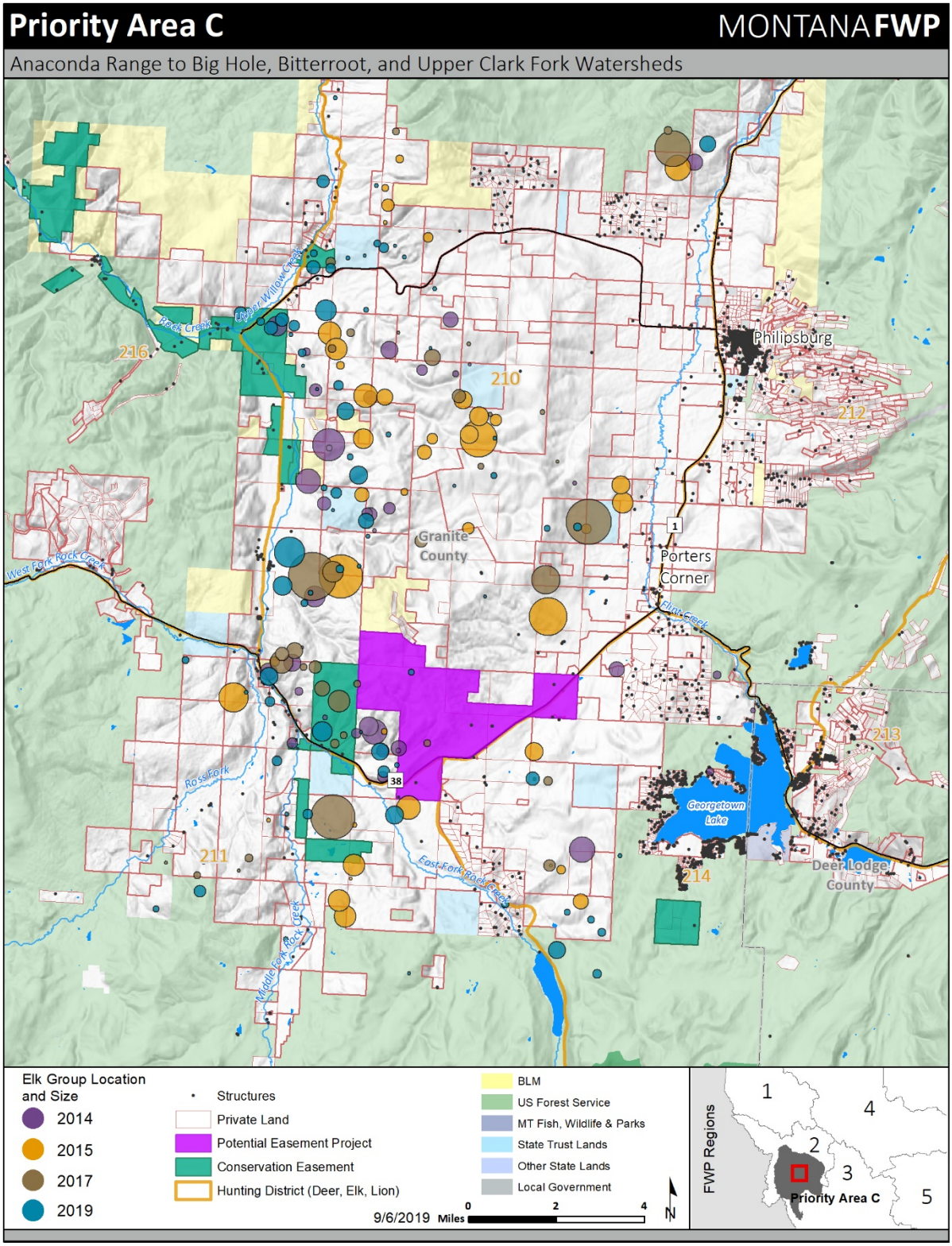

Figure 8. Winter elk group size in the Antelope Hills, Upper Clark Fork Winter Range, 2014–2019. Elk survey data, lands data, and administrative boundaries from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

Priority Area D: Canadian Border to Musselshell Plains

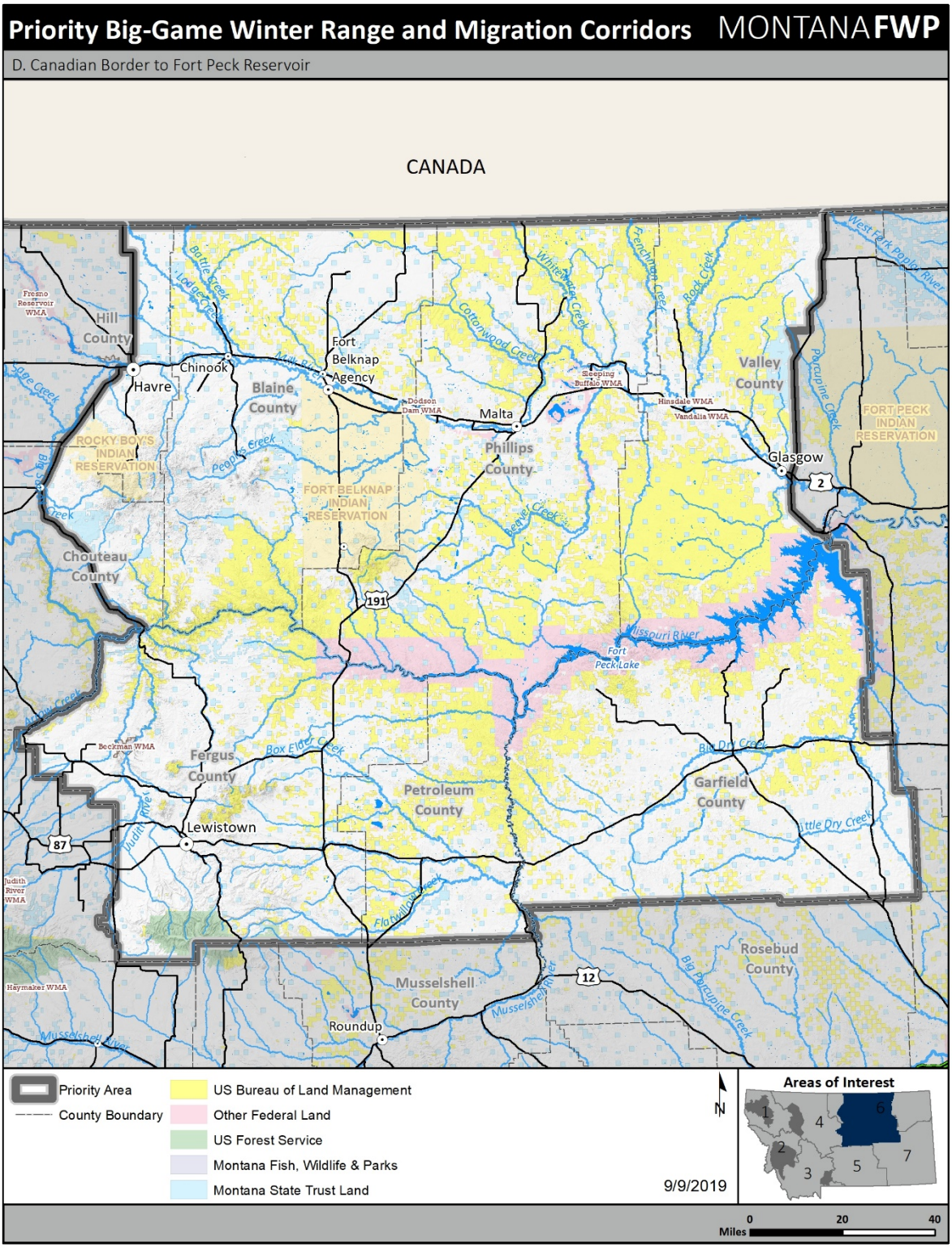

Figure 9. Canadian Border to Musselshell Plains Priority Area. Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from ESRI and Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

Why: This corridor hosts elk, mule deer, and pronghorn. Pronghorn populations inhabiting the grasslands of northern Montana and southern Canada are composed of variable mixtures of residents and migrants, with several distinct migratory behaviors including seasonal migration, facultative winter migration, post-fawning migration, and the use of stopover sites (Jakes et al. 2018). The longest documented round-trip migration for the species occurred in this region, totaling over 550 miles (Jakes et al. 2018). During migration and at stopover sites, pronghorn movements are affected by native habitat and landscape characteristics (e.g., intact grassland and sagebrush steppe areas, forage productivity, hydrological features, southerly aspects, and intermediate slopes) and anthropogenic features (e.g., roads, railways, energy wells, and fences) at variable spatial scales (Jakes 2015). Scale-integrated movement models have allowed for predictive modeling and mapping of priority spring and fall migration corridors for pronghorn among blocks of native grassland habitat across the region (Jakes 2015).

These mapping efforts, along with maps of known movement impediments for pronghorn (e.g., fences; Poor et al. 2014) have allowed private landowners, agencies, local sportsmen and conservation organizations, and NGOs to focus management actions on facilitating pronghorn movement and migration across the region. Management actions have included land conservation, transportation planning and highway collision mitigation, railway operational planning, and fence removal and modifications on public and private lands. Additional work in this region has clarified the most effective fence modification designs to facilitate movements by pronghorn and deer (Burkholder et al. 2018, Jones et al. 2018).

Mule deer herds in this region are composed of varying proportions of resident and migratory animals. Based on radio telemetry data, approximately half of the mule deer wintering in the northeastern portion of this region in the Bitter and Buggy Creek areas make long-distance migrations to summer ranges ≥60 miles north in southern Canada (MFWP, unpublished data). Mule deer wintering areas north of Highway 2 further west in this region are composed of resident animals inhabiting winter ranges year-round largely along linear drainages entering Montana from Alberta and Saskatchewan (Hemmer et al. 2017). South of the Missouri River, the only data available in this portion of the priority area originates from Hamlin and Mackie (1989), and while seasonal movements occurred in the Sand Creek/Carroll Coulee study area, most deer were non-migratory. It is assumed that this pattern is similar across the rest of this area with larger movements from higher elevation summer ranges to lower elevation winter ranges in the isolated mountain ranges (i.e., North and South Moccasins, Judiths, Big and Little Snowies).

Elk in this region are generally non-migratory, occupying what would traditionally be considered “winter ranges” year-round (Proffitt et al. 2016), as is thought to be the case with elk herds across eastern Montana in prairie-breaks habitat. Despite their non-migratory nature, elk herds across this region are larger than herd size objectives, and elk throughout central and eastern Montana are the most over-objective herds in the state (http://fwp.mt.gov/fishAndWildlife/management/elk/). A primary issue leading to the large and growing elk herds in this region is the propensity for elk to use private lands without hunter access during hunting seasons, reducing the effectiveness of public elk harvest for limiting population growth (Proffitt et al. 2016, Thompson et al. 2016). In the western part of

this region in the Missouri River Breaks, elk distribution overlaps publicly accessible lands in some areas enough for hunter harvest to be effective at limiting population size, but selection for private lands without hunter access by elk inhabiting the Larb Hills in the eastern portion of this region reduces the ability of harvest to control elk population size (Thompson et al. 2016). Elk populations in this region are approaching, or have surpassed, the limits of tolerance by many private landowners, and hunter over-crowding is a consistent public comment theme when proposals are made to liberalize elk hunting opportunities. Hunter access to hunt elk on private lands and opportunities to harvest elk on public lands will therefore be paramount to the future of elk populations in this region. Other portions of the priority area south of the Missouri River have more limited public land and therefore very limited elk harvest opportunities.

Spatial Location: This corridor includes a swath of land in north central Montana ranging from the US/Canadian border in the north to the Musselshell plains in the south. The area is bisected in the middle by the Missouri River and Fort Peck Reservoir.

Habitat Types: Habitat types range from sagebrush grasslands to deciduous wetland/riparian areas to Missouri River Breaks.

Important Stopovers: Annual use by elk and mule deer. Winter use by pronghorn that rely heavily on sage brush and seasonal use by fawning pronghorn.

Landownership: Dominated by private lands with some BLM and Montana state lands. The Charles M. Russell National Wildlife Refuge in the south is managed by the USFWS.

Land Uses: Livestock and farm production.

Risks/Threats: Habitat fragmentation primarily of private lands. Erosion of habitat quality via noxious weeds. One major highway and railroad corridor run generally east/west that represents the greatest threat when they serve as wildlife travel/resting corridors during heavy snow accumulation. The Montana Department of Transportation has recorded carcass data with hot spots showing areas where multiple wildlife and vehicle collisions occur (Figure 10). In addition, during heavy snow years pronghorn have found themselves unable to clear railroad tracks and frequently entire migrating herds have been wiped out by trains.

Actionable habitat projects: Once the project prioritization tool is completed in early 2020, we will be able to focus funds and efforts in areas that will have the biggest impact. Habitat projects will primarily focus on increasing permeability of the landscape in known pronghorn migration corridors, especially as they overlap with winter ranges and are associated with major anthropogenic features such as highways, fence lines, and railways. Priority will be placed on projects that look to remove old sheep fence that is no longer in use in mapped pronghorn migration corridors. Where projects look to improve habitat conditions on winter range, priority will be placed on using the more permeable fence design possible to achieve the desired grazing effects and still allow for wildlife movement. An example is using temporary electric fence to divide pastures, opposed to permanent fence, which will allow for more intensive management on areas that include crested wheatgrass monocultures.

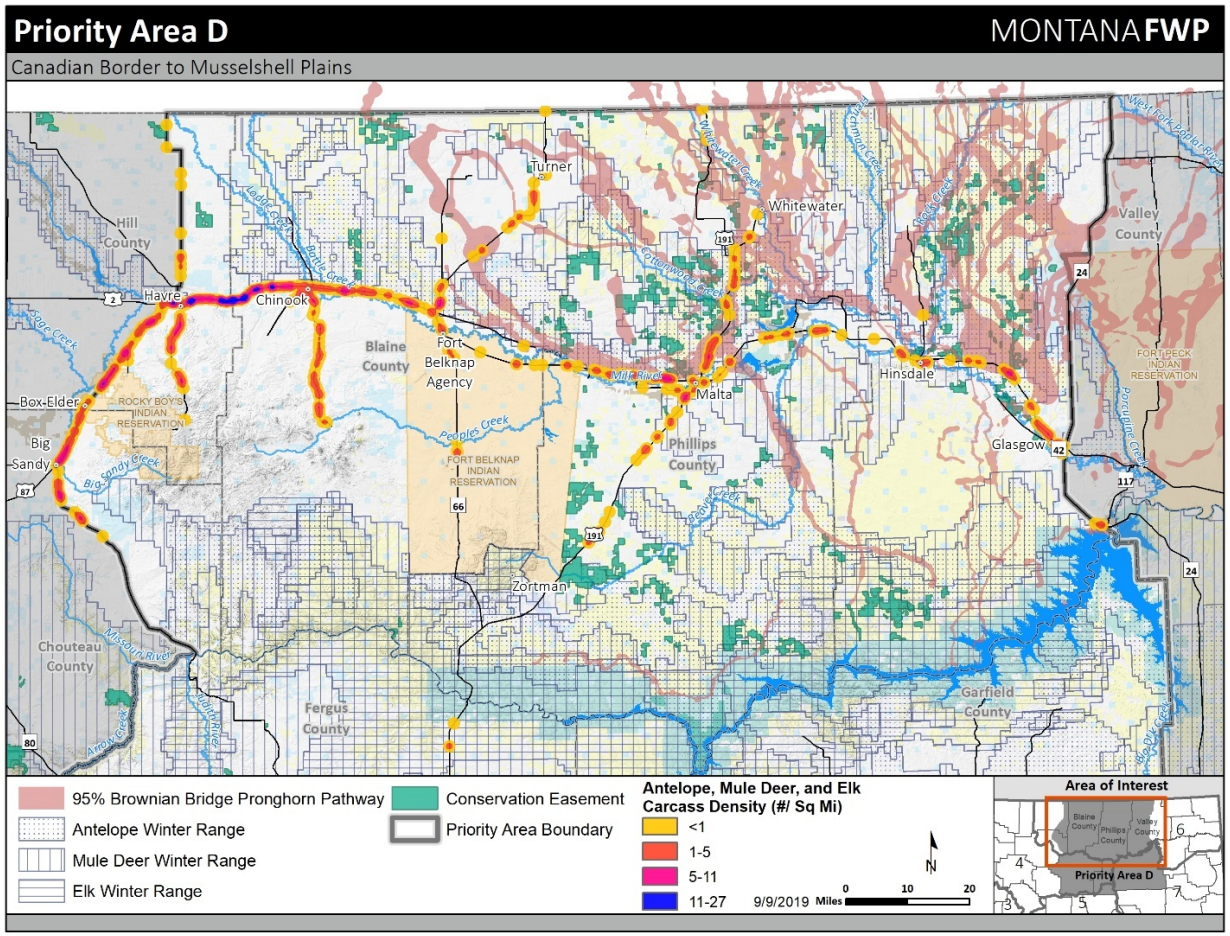

Figure 10. Northern portion of the Canadian Border to Musselshell Plains Priority Area. Pronghorn movement pathways, antelope, mule deer, and elk vehicle collision carcass locations 2009–2019, and big game winter range. Carcass density was estimated with the Kernel Density tool (ArcMap 10.6.1), 1 mi search radius. Carcass data provided by MT Department of Transportation, Helena, MT. Big game data and administrative boundaries from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services. *Disclaimer: The MDT Carcass Database contains information on carcasses collected by MDT maintenance personnel; however, not all carcass collection is reported consistently or on a regular schedule. This makes the information provided by the Carcass Database useful for pattern identification over space and time, but not statistically valid.*

Current Efforts: Land conservation efforts by public agencies, private NGOs, and private ownerships.

Cost of current or needed habitat treatments: Unknown

Current Activities

- MFWP and partners will be collaring and studying the pronghorn herds in south Phillips County, east Fergus and Petroleum Counties, and in Garfield and Rosebud Counties this winter, all of which are within this priority area, as part of the larger pronghorn research project. This will inform future on-the-ground projects and updates to the Montana Action Plan, beyond the currently available data and maps of pronghorn habitat and migration routes from the northern portion of this priority area.
- MFWP is working to minimizing the effects of barriers such as fences, roads, highways, and railroads on migrating ungulates in this area. Because agency and NGO resources are limited, current work has focused on some of the most important migration routes. Even within those priority areas, much work is yet to be done and additional resources would advance this conservation action.
- MFWP continues to work with transportation (highway department and railroad) to facilitate wildlife passage is needed. The Montana Department of Transportation, MFWP, and Montanans for Safe Wildlife Passage sponsored a wildlife-highway summit in December 2018 where participants worked together and discussed the importance of planning for wildlife.
- MFWP works with the Rancher Stewardship Alliance (RSA) on the RSA Conservation Committee to facilitate projects that improve ranching and wildlife habitat. Since 2016, the RSA through their Conservation Committee and Board has received four NFWF grants and through those funds has been able to positively impact habitat through the reseeding of approximately 9,000 acres, transitioned roughly 11,000 acres worth of expired CRP stands into grazing systems along with approximately 7,800 acres of crested wheatgrass treated, which does overlap some of the CRP acres.
- The USFWS Charles M. Russel National Wildlife Refuge is using best available science and restoration techniques to enhance and restore pronghorn migration corridors and winter range for mule deer and elk on the refuge. In the past 5 years, the CMR has removed 88 miles of interior fence as well as improved approximately 2,500 acres of wildlife habitat through prescribed burns.
- The USFWS is collaborating with numerous partners including MFWP and the National Wildlife Federation on studies to better understand connectivity and corridors for pronghorn, greater sage grouse and mule deer in this Northern Great Plains Landscape.
- The USFWS has a very active conservation easement program across this landscape. Perpetual landscape protection is based off biological priorities.
- The USFWS has developed a Candidate Conservation Agreement with Assurances (CCAA) for working with private landowners in this landscape. While the primary focus of the CCAA is threat reductions for grassland birds and sage grouse, it will support habitat conservation for pronghorn and other big game species. Key partners are The Nature Conservancy, BLM and many private landowners.
- The BLM Malta Field Office works with the MFWP, BLM permittees, and private landowners to maintain wildlife-friendly fencing and keep fence gates open during the

winter, where possible, within wildlife migration corridors. They are also currently in the process of mapping all allotment fences in their area to help in future mitigation improvement projects.

- The BLM Malta Field Office finalized the Pumpkin Creek Area land exchange in 2009, creating a contiguous block of federal land covering approximately 20,556 acres. The BLM partners with NGOs and MFWP to improve wildlife habitat, stream restoration and wildfire suppression.
- Between 2015 and 2018 the BLM Glasgow Field Office staff have mapped all anthropogenic features on BLM lands in Valley County. This dataset will allow for prioritization of habitat and migration improvement projects.
- Since 2009, the Lewistown BLM Field Office has treated ~50,000 acres through prescribed burns and mechanical treatments to improve habitat conditions. They have completed four logging treatments to focus on aspen rehabilitation for ~60 acres and continually work on fence modifications. They have identified ~50 crossing locations and 20 crossing have been modified since 2015. Specifically, there have been four pronghorn crossing locations identified and modified to improved permeability. Next year they plan to have prescribed burns on ~3,000 acres and perform additional aspen treatments on another 60 acres.
- The BLM Miles City Field Office has replaced 130 miles of woven-wire and/or barrier fences since 2008. These fences impede big game daily and/or seasonal movement, cause direct mortality, and interrupt habitat use in areas crucial for pronghorn, mule and white-tailed deer, and elk populations.
- Since 2008, the BLM Miles City Field Office has enhanced wildlife habitat on 23,000 acres of public lands with the use of mechanical tree thinning. Mechanical treatment has been shown to provide protections of forage crucial to ungulate species during winter months and rejuvenated forbs and shrubs used by big game in the spring. Prescribed fire in forested habitat has been applied to 4,400 acres of public land, which has been known to increase native forbs and grasses for big game the years following the fire.
- BLM Miles City Field Office inventoried 3,087 miles of roads on BLM public lands and evaluated 2,354 miles to identify impacts on big game and upland game birds throughout the field office. Identified ways to improve game species' habitat throughout the Miles City Field Office by focusing on big game crucial winter range and game bird winter range, breeding, and nesting habitat

Priority Area E: Heart of the Salish

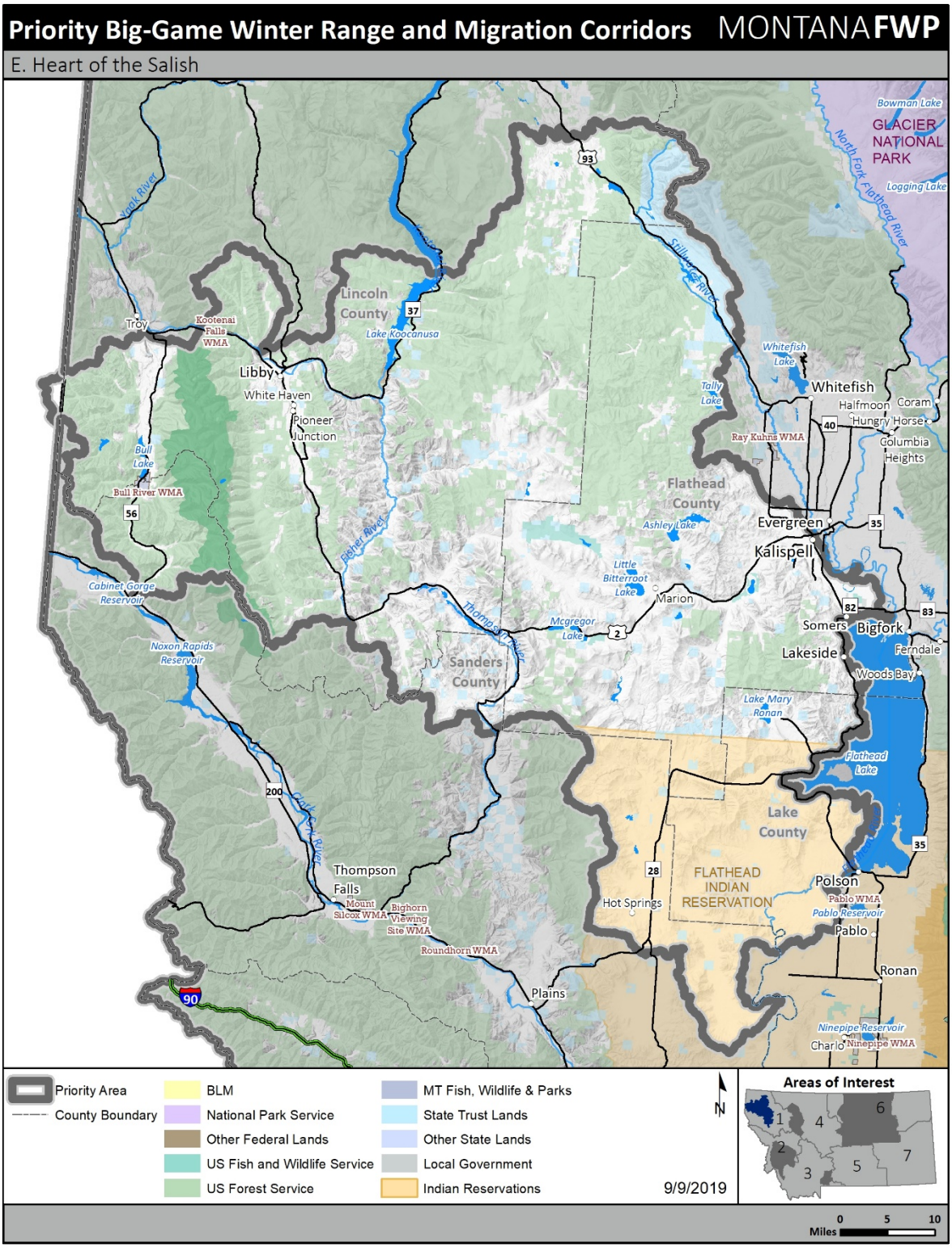

Figure 11. The Heart of the Salish Priority Area. Administrative boundaries and FWP Lands data from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from ESRI and Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

Why: This area is a migration corridor and wintering grounds for both elk and mule deer. The area also provides essential habitat for several species protected under the Endangered Species Act and prioritized for conservation under the 2015 Montana State Wildlife Action Plan. Elk GPS collaring data collected by the Confederated Salish and Kootenai Tribes between 2012 and 2016 shows elk wintering grounds on the Flathead Indian Reservation and a movement corridor to the north all the way to where Sunday Creek enters the Stillwater River.

Mule deer GPS collaring data collected by the University of Montana, in collaboration with MFWP, between 2017 and 2019 shows deer wintering along the Fisher River and then migrating to higher grounds both west and east of this area for fawning and summer foraging areas. For those that move west, some go as far as the alpine cirque basins of the Cabinet Mountains Wilderness. Those that migrate east move into the Flathead National Forest along Good and Sunday creeks and just to the west of the Stillwater State Forest.

Spatial Location: This corridor includes a swath of land in northwest Montana running from the Flathead Indian Reservation north through the Lost Trail National Wildlife Refuge (NWR) and even farther north to the national forest land west of the Stillwater State Forest. It also runs from the top of the Cabinet Mountains to the same area west of the Stillwater State Forest.

Habitat Types: Habitat types include both mesic and xeric conifer-dominated forests, subalpine meadows, alpine above tree line, deciduous dominated forest and woodland, deciduous shrubland, floodplain and riparian, forested marsh, montane grasslands, and wet meadow with a few bog/fen areas.

Important Stopovers: Important stopover areas for mule deer include areas of core winter range along the Fisher River, some of which have been protected by a conservation easement, and an area along Libby Creek just south of Libby that deer use in the spring until their high-elevation summer ranges are accessible. Important stopover areas for elk include core winter ranges on the Flathead Indian Reservation and around the Lost Trail National Wildlife Refuge that provides key habitat for both migratory and resident elk.

Landownership: This area is primarily a mix of national forest land (some of which is designated wilderness), the Lost Trail National Wildlife Refuge, private timber company land, and Flathead Indian Reservation land. Other land types include other private land and Montana state lands.

Land Uses: These public and private lands have a mix of uses, but primarily consist of timber harvest, recreation, and some farm and livestock production.

Risks/Threats: The main risk or threat in this area is habitat fragmentation due to conversion of timber land to private residential use. This threat is both immediate and long-term. The main solution would be to place as much of the remaining private land

under conservation easements as is feasible. Degradation of habitat quality via the spread of noxious weeds is also a threat.

Vehicle collisions along US Highway 2 (US 2) are a source of mortality for wildlife as is the BNSF railroad through Wolf Creek and the lower Fisher River. These threats are both immediate and long-term. Several areas have been identified for consideration for wildlife crossings or other mitigation measures where Montana Department of Transportation (MDT) has active highway improvement projects in progress. The following are general locations for prioritization.

- US 2 from reference post (RP) 51.0 to RP 55.0. experiences considerable seasonal and daily movements by large ungulates and has been identified as an important corridor for grizzly bear movement. This area is located to the northeast of Pleasant Valley and the Thompson Chain of Lakes. MDT has completed several aquatic mitigation projects in this area that provide high quality nesting, rearing, foraging and loafing habitat for a wide variety of wildlife species. Engineering and geotechnical work that was completed for recent highway re-construction revealed that some areas may be suitable for construction of wildlife crossings while most of it is not due to unstable geology and fens. MDT has worked to maintain habitat connectivity by minimizing right-of-way fence construction thereby allowing wildlife to move freely across the landscape.
- US 2 from RP 106.0 to RP 113.0 experiences substantial seasonal movements by large ungulates, especially elk. This area is around Smith Valley and Kila just to the west of Kalispell. MDT works to minimize wildlife-vehicle collisions by placing eastbound and westbound facing Portable Variable Message Signs to alert motorists to the seasonal presence of elk. This would be an appropriate location to consider implementing emerging technologies such as radar detection and driver warning systems.

Current focal areas: MFWP has designated two focal areas within this priority area for actionable habitat projects and current conservation efforts for the next year. Both areas contain private timber company lands that are the subject of potential future habitat protection projects.

The first focal area is centered around the USFWS Lost Trail National Wildlife Refuge (NWR) and surrounding US Forest Service and private timber company land (Figure 12). This area has been a priority for conservation for MFWP Region 1 for decades and is the focus of a current conservation easement project with Weyerhaeuser which adjoins the Lost Trail NWR to the south.

The second focal area is located east and south of the City of Libby (Figure 12). This area has been the focus of the past habitat conservation efforts and there are currently two new conservation easement projects proposed for the area totaling just over 50,000 acres.

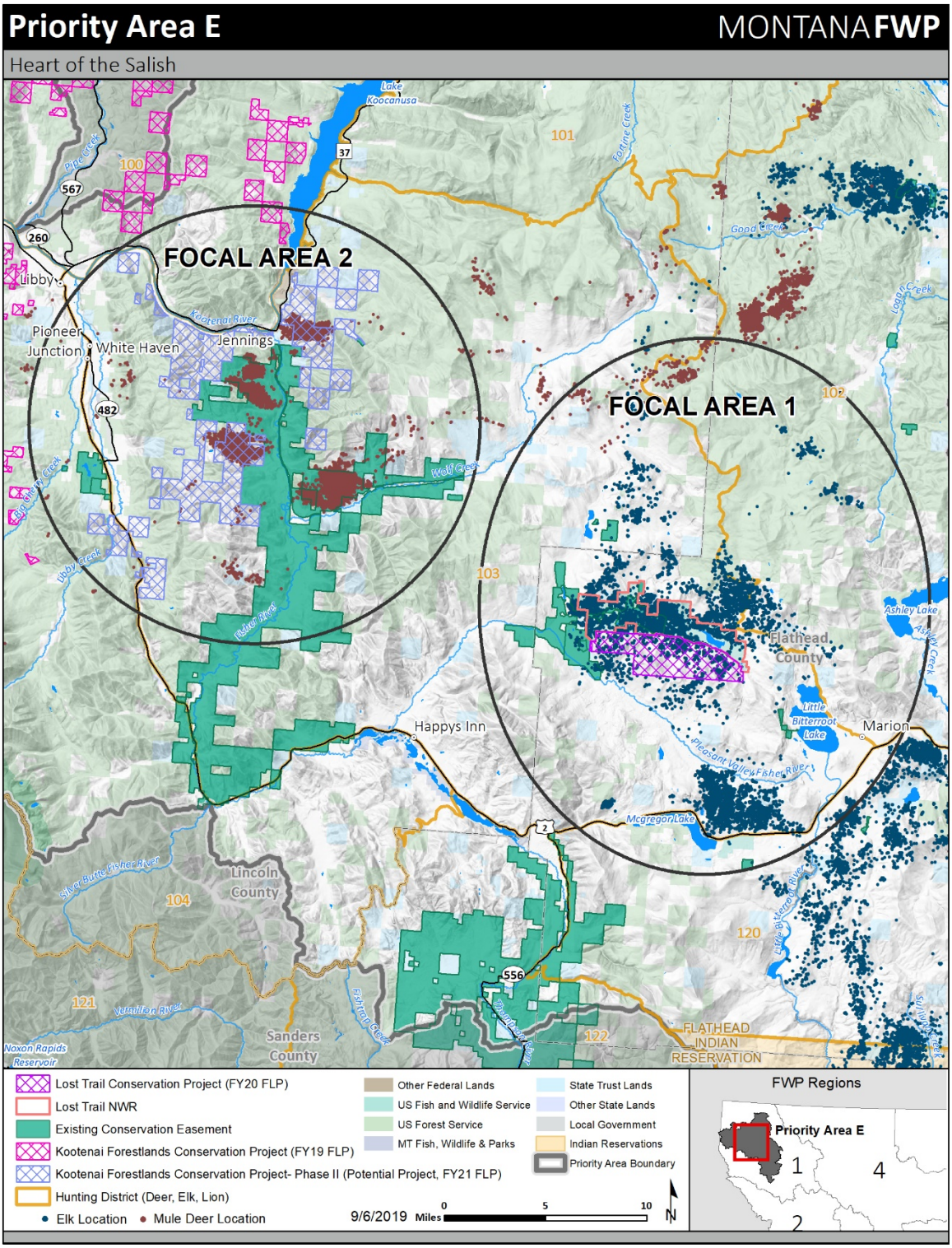

Figure 12. Focal areas in the Heart of the Salish Priority Area. Both focal areas contain private timber company lands that are the subject of potential future habitat protection projects through no-development conservation easements held by MFWP. Elk and mule deer survey data, lands data, and administrative boundaries from Montana Fish, Wildlife & Parks, Helena, MT. Other reference information from Montana State Library, Helena, MT. Map Produced by MFWP Geographic Data Services.

Actionable Habitat Projects: The Trust for Public Land (TPL) and MFWP are working with Stimson Lumber Company (Stimson) on a proposed conservation easement covering portions of the mule deer winter range, transitional spring range, and migratory corridor. TPL will be soliciting NFWF and other potential funding partners to assist with this 28,000-acre conservation project.

MFWP area biologists will continue to support grassroots communication and coordination between watersheds. MFWP will continue to track proposed projects and progress so that future high priority projects are included in Montana SO3362 documents and funding opportunities.

Current Efforts: Public agencies, NGOs, and private landowners have been and continue to collaborate on land conservation in this area. The Lost Trail NWR area is the focus of a current conservation effort between MFWP, The Trust for Public Land, and Weyerhaeuser to conserve just over 7,000 acres directly south of the refuge. MFWP and TPL applied for USFS Forest Legacy Program (FLP) funding for FY2020 in the amount of $2.85 million, and this project ranked #9 in the nation. Land owned by Weyerhaeuser in the Thompson and Fisher River drainages, 142,000 acres, was placed under conservation easement in 2003. There are 22,274 acres of land owned by Stimson that are anticipated to be placed under a conservation easement in the fall of 2019, including mule deer summer range adjacent to the Cabinet Mountains Wilderness. MFWP and TPL applied for FY2019 FLP funding for this project in the amount of $6 million and this project was ranked #1 in the nation. An additional 28,000 acres of Stimson land adjacent to the existing conservation easement in the Fisher River drainage is proposed for conservation in FY2021, with the majority of funding for this project potentially coming from FLP.

Cost of current or needed habitat treatments: The three current conservation projects that partners are working on in this area will cost an estimated $20 million to complete. Costs of weed management in this area is unknown, but MFWP can partner with private landowners for noxious weed control through our Wildlife Habitat Improvement Program (WHIP). The remaining habitat conservation in this priority area will cost tens, to hundreds, of millions of dollars.

The Heart of the Salish priority area also serves as winter range for elk. Currently, little is known about the movement and habitat use of these resident elk. Management of this wildlife resource would be greatly enhanced by obtaining information on how the migratory and resident herds use the area. Placing radio collars on elk found on the Lost Trail National Wildlife Refuge and surrounding area would provide information on how migrating and residential elk use this landscape. The data would also improve our ability to work with land management agencies and private timber companies to improve habitat conditions for elk through various timber and land manage practices. This monitoring effort would cost approximately $150,000 or more to collar and track 20 to 30 animals. This data will also be crucial to understand potential pathways for movement of chronic wasting disease should it spread from recently discovered white-tailed deer in the City of Libby. Information gained from collared elk would help to establish potential surveillance areas and formulate plans for managing chronic wasting disease.

Costs to prevent wildlife-vehicle collisions vary greatly depending on the method employed: radar detection systems cost tens of thousands of dollars, underpass crossings are $350,000 or more, and overpasses for a 2-lane highway start at approximately $3 million.

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APPENDIX A: SO3362: Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors

THE SECRETARY OF THE INTERIOR

WASHINGTON

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:

Federal Land Policy and Management Act of 1976, as amended, 43 U.S.C. 1701, U.S. Geological Survey Organic Act, as amended, 43 U.S.C. 31, *et seq.;*

b. National Wildlife Refuge System Improvement Act of 1997, as amended, 16 U.S.C. 668dd *et seq.;* and

c. 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:

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

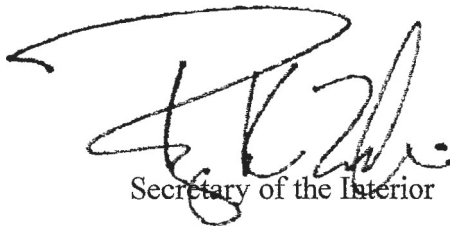
(3) Consult with State wildlife agencies and bureaus to ensure land use plans are consistent and complementary to one another along the entire wildlife corridor in common instances where winter range or migration corridors span jurisdictional boundaries.

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

Date: FEB O 9 2018

APPENDIX B: Proposal to research ungulate movements and spatial ecology in the Devils Kitchen elk population and southern Carbon County mule deer population of Montana (Funded by FY19 USFWS Science Applications Funding)

STATE: **Montana**
AGENCY: **Montana Fish, Wildlife & Parks**
GRANT: **Ungulate movements and spatial ecology in Montana**

Need:

MFWP proposes to initiate efforts collect ungulate movement data in two populations during winter 2019-2020: the Devils Kitchen elk population and the southern Carbon County mule deer population (Figure 1). These two populations have been identified by MFWP Statewide and Regional Wildlife Program Managers as priority areas within Montana to collect information on ungulate seasonal ranges and migration routes. We propose to implement elk GPS collaring efforts in the Devils Kitchen area and mule deer GPS collaring in the Carbon County area to meet this information need. This information will inform ungulate habitat and management decisions, and enhance the management of Montana's ungulate populations, their habitats, and the public's opportunity to enjoy them.

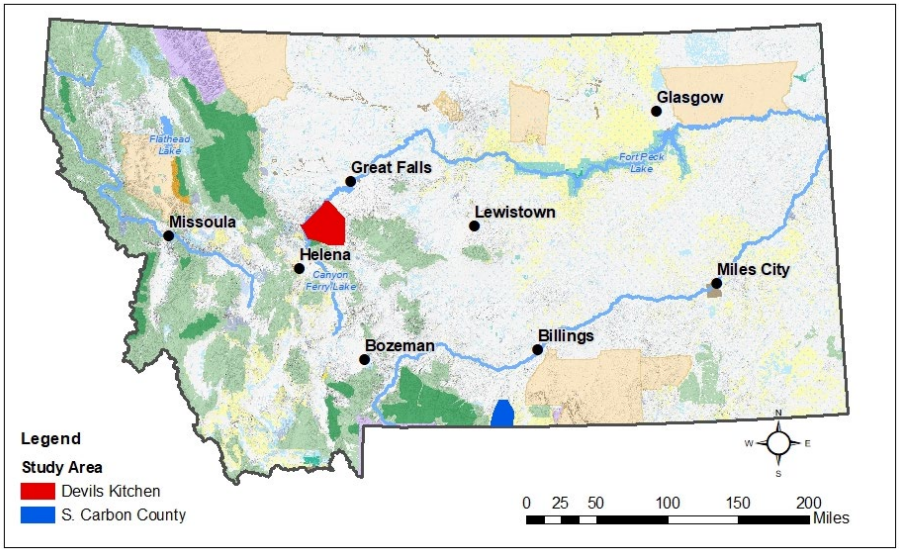


Figure 1. The 2019 priority areas identified within Montana to collect ungulate movement data and delineate seasonal ranges and movement corridors are elk in the Devil's Kitchen area northeast of Helena and mule deer in the southern Carbon County area south of Billings. These ungulate movement data will be used to inform ungulate population and habitat management decisions.

The main objective of the Devil's Kitchen elk project is to delineate current seasonal ranges and movement corridors to better inform conservation and management of elk in this area. The elk population far exceeds numerical population objectives, and recent observations regarding changing elk distributions and timing of seasonal movements has resulted in local conflict and controversy, challenging the community's ability to develop effective harvest and habitat management strategies. Recent elk GPS movement data do not exist in this area, and the only existing movement data are from VHF collars deployed in 1990, making decision regarding elk habitat and harvest management challenging. We anticipate that fine-scale location data collected during this study will identify important seasonal habitats and movement

corridors, as well as provide information regarding the timing of movements to refine harvest management strategies that maximize the effectiveness of harvest regulations in achieving harvest objectives in this area. Landowners and MFWP share common objectives and have a close working relationship in this area; this community and elk herd represent perhaps the longest-standing local, collaborative group focused on elk management in the state of Montana. Therefore, the information we collect will immediately and effectively be incorporated into collaborative elk population and habitat management strategies.

The main objective of the Carbon County mule deer project is to delineate current seasonal ranges and movement corridors, identify connections between this population and adjacent mule deer populations, and to better inform conservation and management of mule deer in this area. The recent detection of Chronic Wasting Disease (CWD) in the southern Carbon County area raises questions about movement patterns of mule deer in this area. No telemetry data have ever been collected for mule deer in this area, and seasonal observations of deer numbers suggest that a portion of the population is migratory. While summer ranges of these deer are unknown, local knowledge suggests that some of these deer migrate south into Wyoming where mule deer herds are infected with CWD, north into areas with higher-density, uninfected populations of mule deer and white-tailed deer in Montana, and west into higher-elevation areas in or near Yellowstone National Park (YNP). If some of these deer migrate toward YNP, their summer range may overlap with summer ranges of the northern range mule deer herd that winters in the Paradise Valley focal area identified in the 2018 Montana State Action Plan for S.O. 3362. With an emphasis on reducing the spread of CWD, it is important for MFWP, landowners, and all of our collaborators to understand the movement patterns of these mule deer, and how their movements overlap with adjacent infected mule deer populations in Wyoming and presumably uninfected mule deer populations in Montana. Seasonal location and movement data will contribute to our knowledge of the potential avenues for CWD spread across this region of Montana and Wyoming.

Purpose: The purpose of this project is to collect ungulate movement data in one elk and one mule deer population to inform ungulate habitat and management decisions and enhance the management of Montana's ungulate populations and habitat.

Objectives:
The objective of this grant is to complete one investigation by June 30, 2024.

Expected Results and Benefits:
Information gained from this project will be used for on-the-ground implementation by Montana Fish, Wildlife & Parks (MFWP) and partners to manage, protect, and improve important ungulate habitats and develop strategies to improve the management of the Devil's Kitchen elk and Carbon County mule deer populations. Movement data will be used to identify important seasonal habitats and movement corridors and inform habitat management and conservation decisions.

Specific goals for this project include:

1. Delineate seasonal range and movement corridors of the Devil's Kitchen elk and Carbon County mule deer populations.
2. Distribute maps of seasonal range and movement corridors to conservation partners and landowners via a web-based platform.

3. Use seasonal range and movement data to inform population and habitat management decisions.

Approach:

We will use a combination of helicopter netgunning and chemical immobilization to capture 50 female elk in the Devil's Kitchen study area northeast of Helena (Figure 2). These sample sizes were chosen primarily to address movement and habitat use. The Devils Kitchen study area includes hunting district (HD) 455, 445 and the northern portion of 446. There are approximately 4,000 elk that occupy approximately 400,000 acres in the Devil's Kitchen area. All animals will have a blood sample collected and a tooth extracted for aging. Blood serum will be collected to screen for disease exposure, following MFWP Wildlife Health Program protocols, and serum will be tested for pregnancy status and iron levels. We will sample body condition to estimate body fat, parasite loads, and conduct a body condition assessment.

We will use helicopter netgunning to capture 30 female and 10 male mule deer in the Belfry area of Carbon County (Figure 3). These sample sizes were chosen to address movement and habitat use, and male deer are included in this sampling plan because their rates of CWD infection are higher than female deer and understanding male movements is important for understanding disease spread. The study area includes portions of HDs 520 and 510. The wintering population of mule deer is approximately 475 animals. Blood serum and tissue biopsies will be collected to screen for pregnancy status and disease exposure, following MFWP Wildlife Health Program protocols.

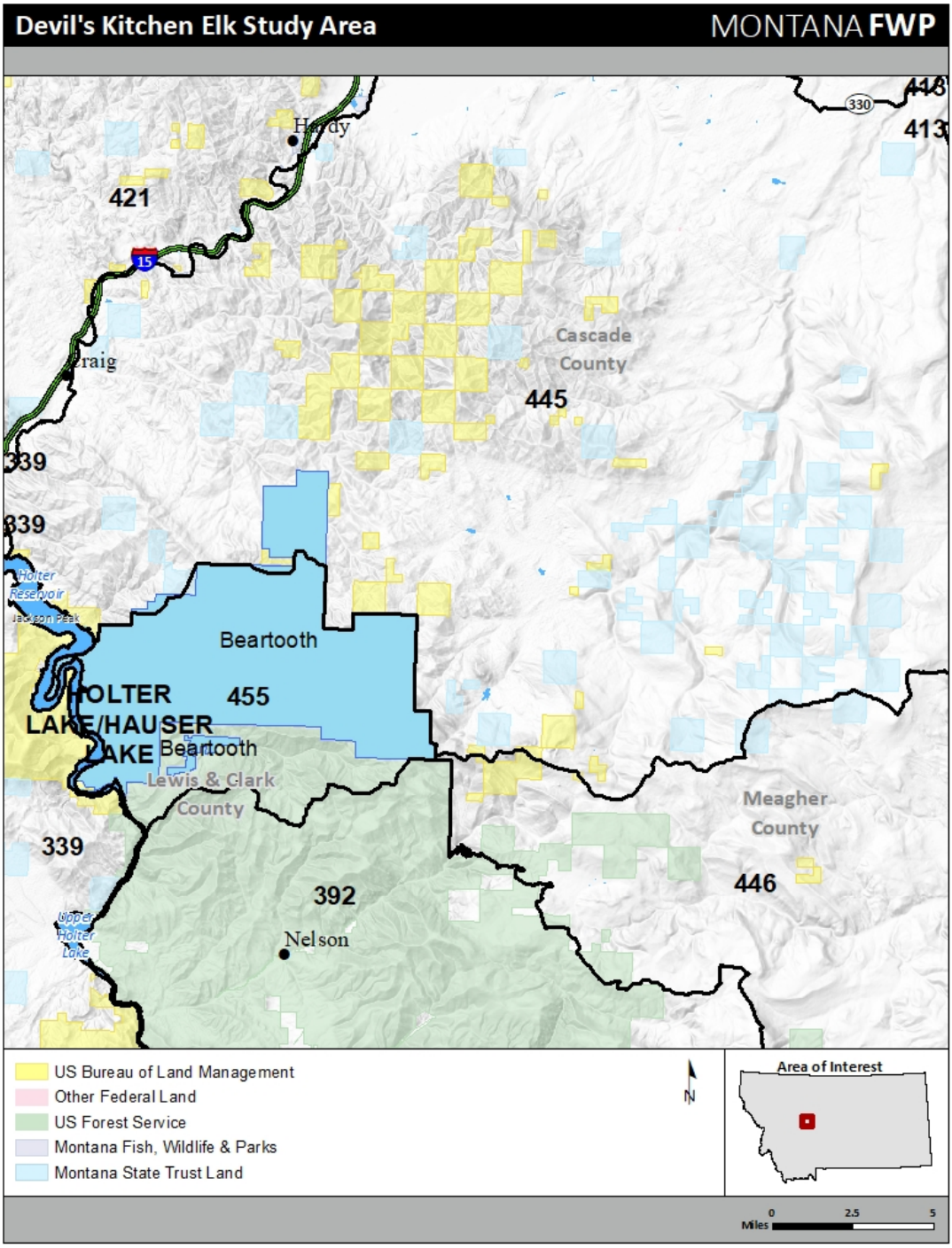


Figure 2. The Devils Kitchen study area has approximately 4,000 elk that winter on the Beartooth Wildlife Management Area (shaded blue) and adjacent private lands and migrate to summer ranges thought to be located primarily to the south, north and east. We will collect movement information from 50 adult female elk in this area.

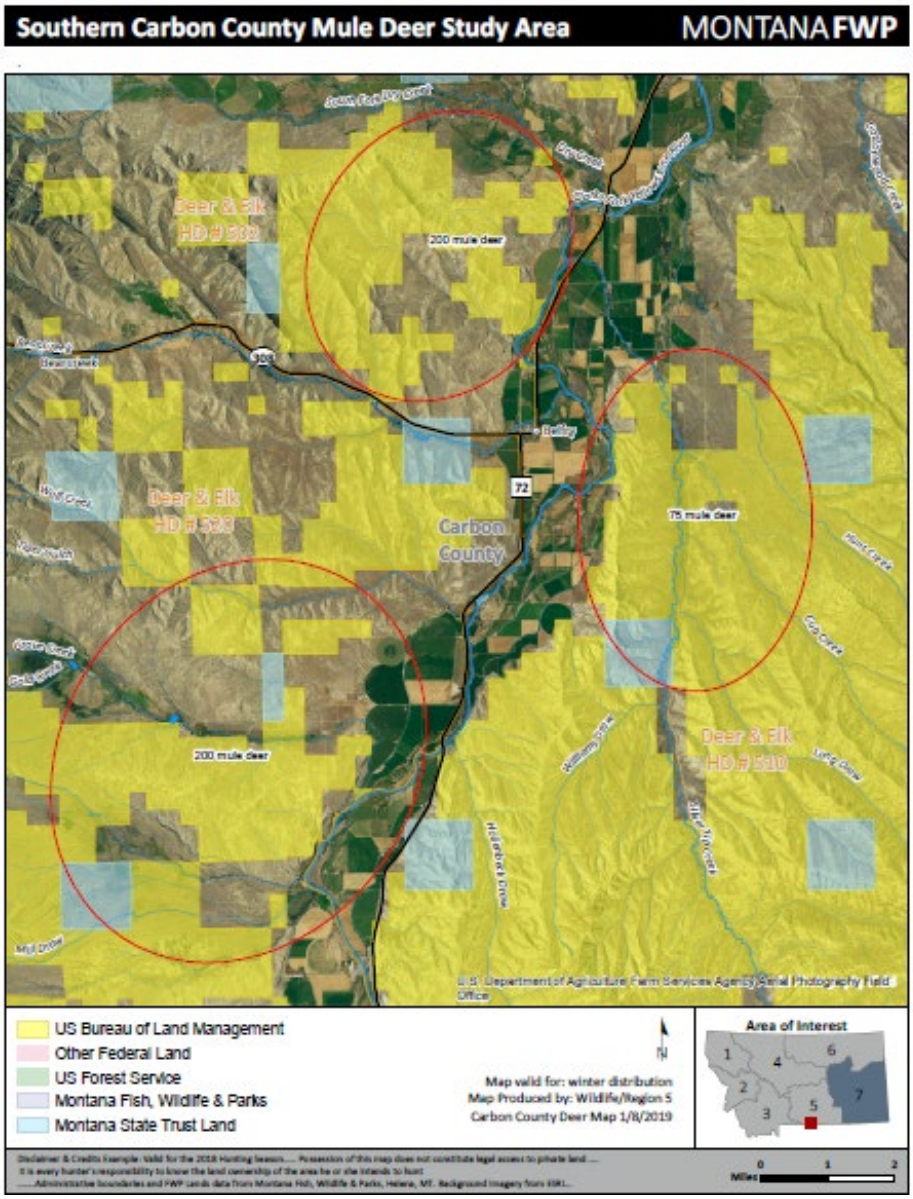


Figure 3. The southern Carbon County area near the town of Belfry has approximately 475 mule deer that winter on Bureau of Land Management and private lands and migrate to summer ranges presumably to the west, north and south. We will collect movement information from 30 adult female and 10 adult male mule deer in this area.

To collect movement and survival data, all animals (elk and mule deer) will be outfitted with remote-upload GPS collars programmed to collect a minimum of 12 locations per day for three years and transmit a mortality notice via email or text message if the collar is stationary for more than 6 hours. Mortality events will be promptly investigated to determine cause-specific mortality when possible.

We will use location data to delineate seasonal ranges and movement corridors. We are currently working to develop methodologies for delineating seasonal ranges and movement corridors and anticipate working with the USGS corridor mapping team and scientists in other State Agencies to refine methodologies during the next year. We will estimate seasonal core use areas during winter (Dec 15 – March 1), calving/fawning (May 25-June 10), summer (July 1-August 31), and hunting seasons (approx. Sept 1 – Nov 30), and summarize the attributes of seasonal ranges. We will assess migration behaviors and timing using the relative net squared displacement model of behavior for each individual (Bunnefeld et al. 2011, Spitz 2017, Peters et al. 2017). We will identify important movement corridors by estimating population-level migration routes (e.g., Horne et al. 2007, Kranstauber et al. 2012, Thurfjell et al. 2014, Avgar et al. 2016). Movement-based models are useful for mapping population-level movement corridors and identifying corridors with the highest levels of use. Summaries and maps of location and movement data will be presented in documents designed for landowners and managers that is intended for use in local decision making, and will be incorporated into data delivery platforms being developed to facilitate uptake and use by local decision makers, land trusts, NGOs, and other interested parties.

Budget Narrative:
Funding for this project shall be provided by the Department of Interior.

Item	FY 20
Capture/sample 50 Devils Kitchen elk	$ 53,000
Purchase 50 DK collars w drop	$ 62,500
Activation @ $40/collar	$ 2,000
Satellite @ $16/collar/month	$ 5,600
Thru-put @ 0.025/fix x 24 fix/day x Xdays	$ 5,400
Capture/sample 40 deer in Belfry	$ 42,000
Purchase 40 collars w drop	$ 77,000
Deer subscriptions at $12.50/collar/month	$ 3,500
Travel and misc. equip	$ 3,215
Overhead @18.01%	$ 45,785
Total	$ 300,000

Travel - Budget estimates are for travel costs for this project. Travel costs for FWP staff will include lodging, transportation and per diem following state policies and procedures.

Supplies - Budget estimates include supplies to complete the field work including necropsy supplies, radio collars and subscriptions, radio telemetry equipment, and other minor equipment necessary to implement field activities.

Contractual - Budget estimates include contract for animal captures using a helicopter to netgun the animals, and printing costs of reports and outreach literature.

Indirect Costs – MFWP has an approved indirect cost rate of 18.01% for state fiscal year 2020.

Location:
This study will be conducted in portions of Cascade, Meagher and Carbon Counties in Montana.

Schedule:
September 1, 2019 – June 30, 2024

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