

**2023 WYOMING ACTION PLAN**  
**For**  
**Implementation of Department of the Interior Secretarial Order 3362: “Improving**  
**Habitat Quality in Western Big-Game Winter Range and Migration Corridors”**

**Introduction**

The purpose of this action plan is to provide an update and further guide the implementation of the Department of Interior Secretarial Order 3362 (SO 3362) in Wyoming. The Wyoming Game and Fish Department (WGFD) has identified five migratory mule deer herds in the State where we are focusing management actions in the coming years. The rationale for prioritization as well as identification of threats to the corridors are briefly described and evaluated in the next section for each location. These priority areas all have some degree of mule deer movement data and conservation practices are ongoing with partners. These Priority herds are Platte Valley Mule Deer, Wyoming Range Mule Deer, Dubois Mule Deer, Sublette Mule Deer, and Bates Hole-Hat Six Mule Deer.

Wyoming has a considerable amount of information on habitat use and seasonal distribution including migration corridors. The University of Wyoming Cooperative Wildlife Research Unit and numerous partners created the Wyoming Migration Initiative (WMI) where many studies have occurred or are underway. The priority research herds for 2018 and 2019 Department of Interior (DOI) research funding included Sublette Pronghorn, Medicine Bow Pronghorn—Shirley Basin, North Bighorn Mule Deer, Platte Valley Mule Deer, Carter Mountain Pronghorn and Powder River and Pumpkin Buttes Mule Deer. The Bates Hole-Hat Six Mule Deer herd has been added to this action plan as a result of a recent mule deer collaring study which further defined winter ranges for mule deer.

Wyoming has approximately 62,147,200 total acres, 48% of which is under the management authority of the federal government. The Bureau of Land Management (BLM) manages 18,357,570 acres, the United States Forest Service (USFS) manages 9,237,620 acres, and the National Park Service (NPS) manages 2,393,200 acres. The United States Fish and Wildlife Service (USFWS) manages 93,040 acres, including 24,000 acres at the National Elk Refuge. Other agencies make up the remainder of federal ownership. Also, the Wyoming Game and Fish Commission (WGFC) manages approximately 450,000 acres and the State of Wyoming owns 3,696,800 acres through the Office of State Lands and Investments (OSLI). There are also private lands throughout big game habitats which are very important to wildlife. This ownership structure requires cooperative partnerships to work across all the habitat categories and ownerships for big game species.

**Priority Corridors/Winter Range**

The WGFD identified five priority herds with migratory mule deer in Wyoming. These include Platte Valley, Wyoming Range, Dubois, Sublette, and Bates Hole-Hat Six Mule Deer Herds. Managers have collected mule deer movement data in each of these areas and are currently working with stakeholders and agency personnel to identify proactive conservation actions geared toward conserving vital habitats in each of these herd units.



*Mule deer crossing Fremont Lake Bottleneck in the Sublette mule deer migration corridor*

### **Wyoming Migration Corridor Priority: Platte Valley Mule Deer**

#### Why the area was selected as a priority:

The Platte Valley mule deer designated migration corridor represents high priority seasonal habitats that were documented through the use of GPS collar technology and delineated using a Brownian Bridge Movement Model (BBMM). This corridor documents important habitats used by approximately 5,000 mule deer migrating from summer range in Colorado to winter range in Wyoming. The corridors also illustrate the barrier to migration caused by the development of Interstate 80 (I-80) where at present only approximately 400 mule deer utilize one machinery underpass for safe passage to winter range.

#### Spatial Location:

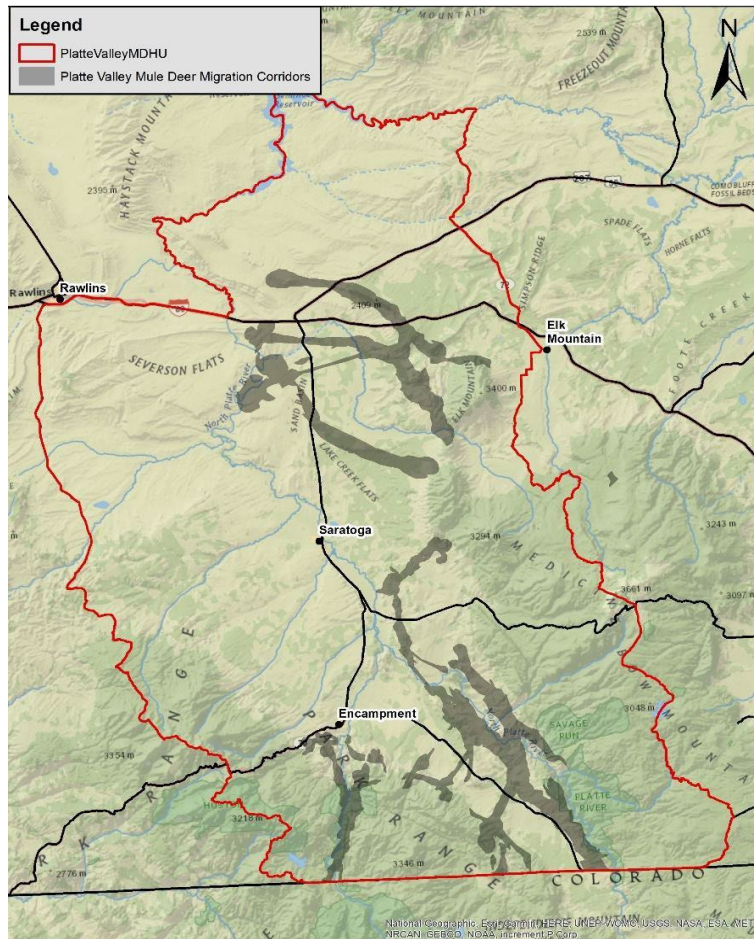
The Platte Valley migration corridor is located primarily in Carbon County in south central Wyoming and into Jackson County in north central Colorado.

#### Habitat Types:

Habitats include alpine meadows, subalpine and montane forests, mixed mountain shrub, sagebrush-grasslands, cottonwood riparian, and agricultural croplands. The forests are a mix of subalpine fir, Engelmann spruce, Douglas-fir, lodgepole pine, aspen, and a few ponderosa pines, with associated grass/forb/shrub understory vegetation. Big sagebrush, antelope bitterbrush, and true mountain mahogany dominate the lower elevation winter ranges. Elevation within the corridor ranges from just over 12,000 feet at Medicine Bow Peak to 6,400 feet along the North Platte River.

Important Stopover areas within the corridor:

Important stopover areas have been identified through the BBMM analysis and include areas in the Encampment River Wilderness Study Area (WSA), Beaver Hills, Bennett Peak, Baggot Rocks, Cedar Breaks, Savage Meadows and St. Mary's Ridge areas.



*Platte Valley mule deer designated migration corridor*

Land ownership:

Land ownership is mixed within the migration corridor and encompasses 196 square miles consisting of: Private (50%), BLM (30%), USFS (14%) and OSLI (6%).

Land Uses:

Federal lands not designated as Wilderness are managed for multiple use. Common uses include livestock grazing, motorized and non-motorized recreation, and extractive and renewable energy development. Some BLM lands are currently designated as WSAs. Mule deer also migrate through parcels that have been leased for oil and gas or through areas with ongoing energy development. Lands managed by the OSLI are managed primarily for livestock grazing. Private lands along the corridor network are primarily used for agricultural purposes and rural residential development.

#### Risk/Threats:

The northern Platte Valley corridor network has been modified by the construction of I-80, U.S. Highway 30 and the Union Pacific (UP) railroad. There is one I-80 machinery underpass where approximately 400 mule deer have been documented passing through the structure seasonally. This underpass is located in an area where there is game fencing to direct animal movement to the crossing structure. On other portions of I-80 which are not game fenced, the Wyoming Department of Transportation (WYDOT) has documented a high number of wildlife/vehicle collisions for mule deer, elk, pronghorn and moose. The most significant future threats in this area are increased traffic on I-80, Highway 30, and the UP railroad, as well as extractive and renewable energy development. The southern corridor network is currently used by approximately 5,000 mule deer, most of which are migrating into Wyoming for winter range from summer ranges in Colorado. The most significant future threat to these corridors is presumed to be habitat fragmentation from rural residential development, as well as increased disturbance from off highway vehicle (OHV) recreation and human disturbance on winter ranges (e.g. antler hunting).

Additionally, throughout the herd unit habitat conditions have deteriorated over time with invasion of noxious weeds including cheatgrass as well as invasion of conifers and late seral stages of vegetation which provide forage value far below potential. Fence conditions are variable throughout the herd unit and in many places include woven wire fence or designs that pose challenges for migrating mule deer. In many cases, livestock class has changed from sheep to cattle which would allow for conversion away from woven wire fence design.

#### Are the Risk/Threats Immediate or Long-term:

All of the identified threats are current and will need to be managed long-term.

#### Actions necessary to reduce or eliminate risks/threats:

In the northern corridor network, risks/threats could be reduced with the development of underpasses/overpasses on I-80, U.S. Highway 30, and the UP railroad. Threats to the corridor network in the southern portion could be reduced by maintaining open habitats on private lands through use of conservation easements and planning and zoning at the county level. BLM lands could provide protections for corridor and stopover habitats through implementing motorized travel management plans. Implementation of a shed antler season east of the Continental Divide has reduced human disturbance to wintering and migrating mule deer, but additional work could still be done. Invasive species control and vegetation management have been implemented; however additional treatments are needed to improve foraging conditions throughout the herd unit. Fence modification efforts have begun but have great opportunity to be expanded upon, particularly with the collaborative efforts in place with other partners and several private landowners.

#### Current efforts (what is the activity; who is conducting the work; and partners involved):

The WGFD has partnered with Carbon County Conservation District (CCCD), BLM, USFS, OSLI and private landowners to implement vegetation management treatments targeting cheatgrass, juniper encroachment, shrub communities and aspen stands totaling over 35,500 acres since 2014. Additionally, fence modifications had occurred on more than 45 miles to further enhance the functionality of migration corridors.





*Fence modification and juniper thinning projects have occurred in the Platte Valley mule deer herd*

The WGFD is also working with WYDOT, CCCD, local conservation organizations, BLM, USFS, and OSLI to influence improvements/protections where possible. Underpasses/overpasses in many cases are cost prohibitive for conventional funding sources but are being evaluated with stakeholder groups and may be incorporated into future federal funding requests. The BLM advises they are potentially a decade away from completing a travel management plan in this area.

The Wyoming-USDA Big Game Partnership was initiated in 2023 to emphasize wildlife conservation practices on private land. USDA is supporting this partnership with a focused application of the Agricultural Conservation Easement Program (ACEP), Environmental Quality Incentives Program (EQIP), and Grassland Conservation Reserve Program (CRP). USDA provides support for habitat leasing through a combination of EQIP and CRP, with opportunities for partners to contribute resources. Through this partnership, USDA programs work in a complementary way to support big game conservation. The implementation of these programs is prioritized based on areas identified by Wyoming Game and Fish Department and Tribal leaders on the Wind River Indian Reservation to be of particular benefit to big game.

Cost of current or needed habitat treatments; road crossings etc.:

The large scale habitat treatments and interstate/highway crossings structures and fencing necessary to improve the Platte Valley network of migration corridors would be very costly and could be in excess of \$30 million dollars. Over \$2 million has been allocated for habitat treatments, monitoring, fence modifications

and migration work in the Platte Valley herd unit in the last five years.

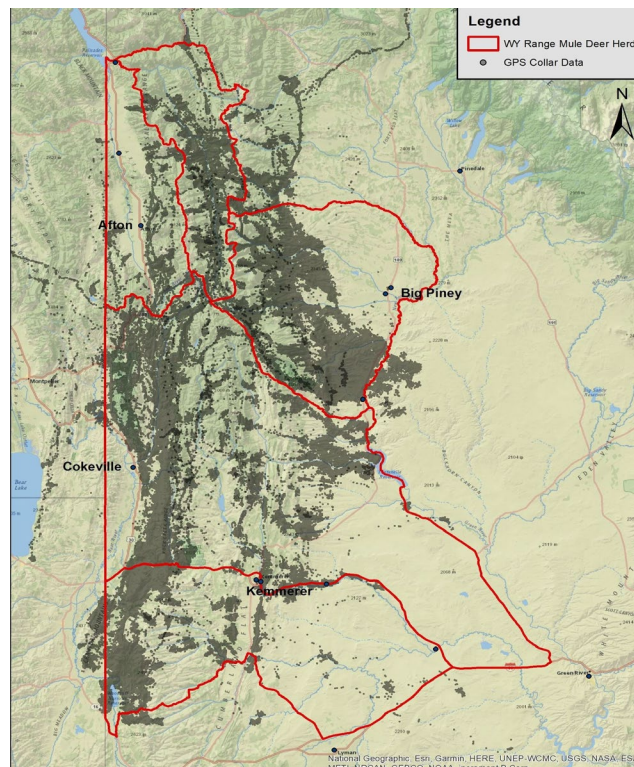
Other species impacted:

Fence modification projects benefit a variety of big game species including pronghorn, elk, moose and bighorn sheep as well as sage grouse in some places. Habitat treatments benefit a wide variety of wildlife species both by a direct improvement of foraging habitat as well as reducing the risk of wildfire. Land use planning including travel management, energy development and county planning and zoning decisions have wide-sweeping impacts by the potential to maintain open space and connected landscapes for many species.

**Wyoming Migration Corridor Priority: Wyoming Range Mule Deer**

Why the area was selected as a priority:

The Wyoming Range mule deer herd is one of the premier mule deer populations for both hunting and wildlife viewing in the Intermountain West. This herd has complex and dynamic movement patterns with some mule deer migrating extensive distances (150+ miles) between high elevation summer ranges to several distinct winter range complexes. GPS telemetry studies have demonstrated that individual mule deer have a strong fidelity to the same summer and winter ranges. The WGFD plans to analyze GPS collar data in order to identify a draft Wyoming Range mule deer migration corridor. Proactive management is necessary to assure persistence of migration corridors as mule deer cross a mix of land ownership and land-use patterns.



*GPS Collar Data collected in the Wyoming Range mule deer herd*

#### Spatial Location:

The Wyoming Range mule deer herd migrates up to 150 miles between seasonal ranges across western Wyoming, southeastern Idaho, and northeastern Utah.

#### Habitat Types:

Mid to high elevation summer ranges include alpine basins, spruce-fir forests, aspen stands and mountain meadow/tall forb communities. Fall/transition areas at slightly lower elevation contain mountain big sagebrush, mixed conifers, aspen, and riparian communities. Lower elevation foothill and basin habitats are typified by Wyoming and mountain big sagebrush communities interspersed with areas of antelope bitterbrush and mixed-mountain shrubs. Sagebrush dominated winter range habitats are primarily located along the southern and southeastern flanks of the Wyoming Range, and also include some juniper, isolated aspen stands, and limited acreages of antelope bitterbrush. Much of the winter range habitats are sagebrush and desert shrub basins, with rocky outcrops and topographically diverse canyons.

#### Important Stopover areas within the corridor:

Recent research indicates that mule deer spend over 90% of their time during migration in a series of stopover sites, where they congregate to feed and replenish energy stores in areas with nutritious forage. In many instances mule deer stopover sites overlap with delineated crucial winter range habitat due to the extensive movement into and through some winter habitats as snow depth and winter severity increases through winter months. This is especially true in the Wyoming Range, and illustrates the importance of stopover habitat within migration corridors as foraging habitats. Stopover habitats will be delineated through the upcoming BBMM analysis.

#### Land ownership:

During annual migrations, mule deer in the Wyoming Range herd cross a mix of land ownership patterns. While most summer ranges are located on USFS lands, transition areas and winter ranges can include a variety of USFS, BLM, OSLI and private lands.

#### Land Uses:

Land uses on both USFS and BLM lands include livestock grazing, timber harvest, motorized and non-motorized recreation, and energy development. Some BLM lands are designated as areas of critical environmental concern (ACEC), special recreation management areas (SRMA), special management areas (SMA), or WSAs. Some Wyoming Range mule deer move through the Raymond Mountain and Rock Creek ACECs as well as the Lake Mountain WSA. Also, conservation easements are in place protecting habitats on some private lands. Mule deer also migrate through parcels that have been leased for oil and gas, or areas with ongoing energy development and production. State lands, managed by OSLI, are managed primarily for long-term growth in value and optimum, sustainable revenue production to generate funds for public schools. Accordingly, the primary uses of these lands are livestock grazing and energy development. Private lands along the corridor are primarily used for agriculture and suburban development.

#### Risk/Threats:

Portions of the Wyoming Range mule deer migration corridor are intact and functioning with significant conservation work already completed to facilitate habitat enhancements, highway crossings, and wildlife-friendly fencing. Additional conservation and land use efforts are needed to benefit mule deer in the future. Habitat conditions are critical due to the arid climate and condition of some plant communities. Habitat

treatments in aspen communities are especially important to improve understory plants to maximize nutrition for does and fawns on transitional and summer ranges. Invasive plants in portions of the corridor have decreased habitat functionality, and the invasion of cheatgrass is currently limiting management options in some places. Significant resources must be put into cheatgrass control or many proactive habitat enhancements for some of the vegetation communities will not be feasible.

A critical highway crossing at Nugget Canyon has been addressed with several underpasses. Roadways and increasing traffic volumes in the corridor can impact seasonal movements of deer and may become a more significant barrier to mule deer movements. Right-of-way fences and deep snow conditions are a concern for late migrants (difficult for deer to cross). Mule deer habitats are often favored recreation areas, and protection of these vital habitat features from excessive human recreation (motorized and non-motorized) would enhance their long term functionality on the landscape. The possibility of additional wind energy projects and solar farms seem imminent. Subdivision and recreational property development could have adverse impacts in specific areas. Minimizing or mitigating disturbance in the corridor will benefit mule deer habitats in this herd.

Are the Risk/Threats Immediate or Long-term:

Establishment of invasive plant communities are an immediate and long-term threat. Improving vegetation conditions and fence permeability are long-term threats that have ongoing attention. Managing public access and recreation are long term, as is urban development and energy development. Increasing traffic volume, wildlife vehicle collisions, and wildlife crossing structures are also long-term issues.

Actions necessary to reduce or eliminate risks/threats:

Maintaining collaborative relationships with private landowners, oil and gas operators, non- governmental organizations (NGO's), county governments, federal land managers and the public is essential to ensure mule deer migration remains unimpeded and functioning at a high level. Management actions in this herd have proven to be most successful with a collaborative approach. Conservation easements are strongly supported as an important tool to maintain open space.

Current Efforts:

Habitat enhancement work in cooperation with federal land management agencies, livestock grazing permittees, and private landowners has been ongoing and will continue into the future. In 2022, within the Big Piney to Fontenelle Creek area, approximately 5,000 acres of sagebrush--grassland habitat were treated with herbicide to control cheatgrass, spot treatments were completed to control thistles in prescribed burn areas, 225 acres were treated to control spotted knapweed, 305 acres surveyed and treated to control Dyer's woad, 5-miles of electric fence was maintained to defer livestock grazing on 19,000 acres of treatment area, 83 acres of conifer thinning to restore healthy aspen habitat, and deployment of 276 virtual fencing collars to begin a pilot project in deferring grazing use on vegetation treatment areas and reduce grazing use/improve grazing rotations in riparian areas. Habitat enhancement efforts for the southern Wyoming Range area included: 3,488 acres of sagebrush mowing treatments, 5 miles of fence replaced with wildlife friendly specifications, 192 acres of conifer thinning to restore aspen habitat, and 24,540 acres of aerial herbicide treatment to control cheatgrass in sagebrush-grassland and mixed mountain shrub habitats.

The WGFD is currently working with WYDOT and others to address wildlife crossings throughout the herd unit, with particular focus on an underpass project near Dry Piney Creek on Highway 189 south of Big Piney.



In early 2019 the Wyoming Game and Fish Commission (WGFC) and WYDOT Commission both provided \$1.25 million towards the Highway 189 crossing project which prompted the successful acquisition of a \$14 million federal Department of Transportation grant to complete the project. This project includes the construction of 9 underpasses and 16 miles of high fence, and is scheduled to be completed in fall 2023. The next large wildlife crossing project on Hwy 189, south of Kemmerer, is currently in a planning and engineering phase and an application for federal funding has been submitted. This project will likely include multiple underpasses, an overpass and many miles of high fence.



*Fence modification and prescribed fire have been use throughout the Wyoming Range mule deer herd*

Cost of current or needed habitat treatments; road crossings etc.:

Aspen and sagebrush projects on BLM land are adequately funded in the Big Piney to LaBarge area by the various partners. The 10-year project implementation on additional private land and BLM land on the south end of the Wyoming Range is only partially funded (\$1 million, of an anticipated \$6 million total, funded by the BLM). Cheatgrass management and fence modification projects will require significant funding for many

years into the future. The South Kemmerer wildlife crossing project will likely cost more than \$20 million. Smaller locally-led solutions to wildlife vehicle collisions without structure construction are less costly and are actively being pursued throughout the herd unit.

Other Issues for awareness:

Additional deer winter ranges and migration corridors are suspected between LaBarge and Kemmerer (LaBarge Creek and the Ham's Fork River). With support from the BLM, mule deer in this area were captured in March 2019, and data will be incorporated into any upcoming GPS collar analysis.

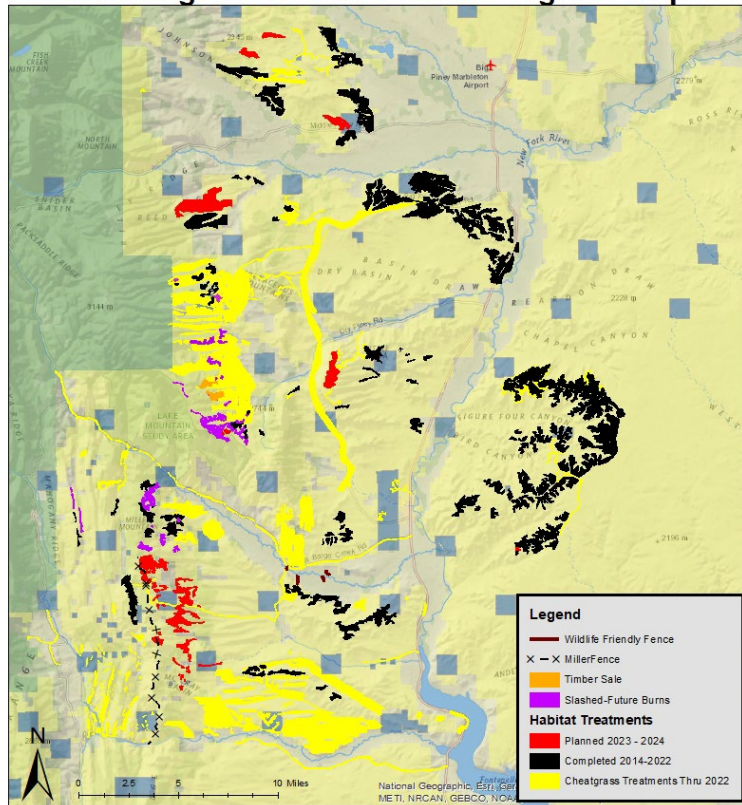


*Construction is underway on the Dry Piney Wildlife Crossing project in 2022*

Other species impacted:

Fence modification projects benefit a variety of big game species including pronghorn, elk and moose as well as sage grouse in some places. Habitat treatments benefit a wide variety of wildlife species both by a direct improvement of foraging habitat as well as reducing the risk of wildfire. Land use planning including travel management, energy development and county planning and zoning decisions have wide-sweeping impacts by the potential to maintain open space and connected landscapes for many species.

## WY Range Mule Deer Habitat Progress Map



*Habitat treatments that have been implemented from 2014-2022 in the Wyoming Range mule deer herd*

## Wyoming Migration Corridor Priority: Dubois Mule Deer

### Why the area was selected as a priority:

This area or herd unit is part of the Eastern Greater Yellowstone Ecosystem mule deer monitoring project implemented to collect GPS data to catalog big game seasonal use patterns in northwestern Wyoming. While the Dubois Herd is identified as a priority, mule deer from the Wind River Indian reservation and the Owl Creek-Meeteetse herds also have seasonal movements through the Dubois mule deer herd. This data, in concert with an analysis of WYDOT crash and Wildlife Vehicle Crash (WVC) data from 2010-2018, shows that U.S. Highway 26/287 from approximately milepost 45 to milepost 75 consistently has a high frequency of mule deer-vehicle collisions every year. This stretch of highway was ranked as the highest priority within WYDOT District 5 at the 2017 Wyoming's Wildlife and Roadways Summit (Lutz et al. 2017). Deer-vehicle collision rates, according to WYDOT's data, are highest in the fall (mid-October to mid-November coinciding with mule deer migration into and through the area), somewhat lower through the winter and early spring (January-April), and low in the summer and early fall (June-September). Traffic volume along this stretch of highway is relatively low. Annual average daily traffic is about 1,700 vehicles, with fall and winter months averaging about 1,100 vehicles daily. The high number of collisions relative to traffic makes this area one of the worst in the state in terms of risk to drivers.



Additionally, significant efforts are underway to improve forage conditions through cheatgrass and other invasive species treatments and improvements to aspen and shrub communities. Fence modification projects have also gained momentum in recently and are underway with partners throughout the herd.



*Dubois mule deer herd unit*

Spatial Location:

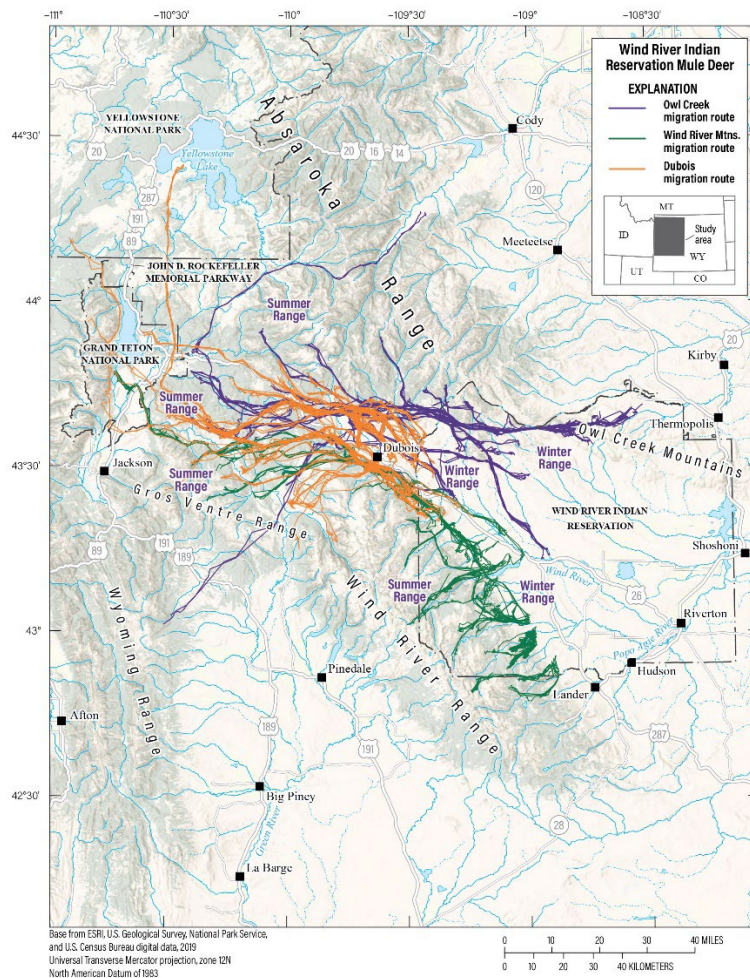
The area is located in northwestern Wyoming starting in Fremont County near the town of Crowheart westward to the higher elevations of Togwotee Pass in the Teton Wilderness and Mount Leidy Highlands in Teton County.

Habitat Types:

Habitats are best described as mule deer first move during the fall from the mountains into foothill and riparian habitats within the upper Wind River Basin. This is an area of diverse habitats, including mountain big sagebrush, mixed conifers, aspen, juniper, and riparian communities associated with the Wind River and its tributaries. Agriculture fields consist primarily of alfalfa and native grass hay production.

Important Stopover areas within the corridor:

Recent research on the Sublette mule deer herd indicates that mule deer spend greater than 90% of their migration period in a series of stopover sites, where they congregate to feed and replenish energy stores in areas where forage is especially nutritious. This appears to be very similar in the Dubois herd and some seasonal mule deer movements overlap with delineated crucial winter range habitat as well.



*The Dubois, Wind River Indian Reservation and Owl Creek mule deer herds seasonal movements*

#### Land ownership:

Migrations occur primarily on USFS and BLM lands. Winter ranges are primarily on BLM, WGFD Wildlife Habitat Management Areas (WHMAs) and private lands.

#### Land Uses:

USFS and BLM lands are primarily managed for wildlife habitat and have been removed from mineral and oil/gas leasing. Also, conservation easements are in place protecting habitats on some private lands. WSAs on BLM lands also provide management emphasis for wildlife habitats. WGFC lands on the Whiskey Mountain, East Fork, and Spence/Moriarity WHMAs protect wildlife habitats. Small acreage ranchettes and small hay meadows are prevalent in this area.

#### Risk/Threats:

Increased traffic volume on this stretch of highway is resulting in increased wildlife mortality (primarily mule deer, but also includes bighorn sheep, moose, elk and white-tailed deer). Also, continued private land development is a concern. Invasive species invasion including both cheatgrass and other species as well as



generally late seral vegetation and conifer encroachment has decreased forage conditions throughout the herd unit. Fences throughout the herd unit include variable styles, many of which are old and not constructed to wildlife friendly specifications.



*A variety of habitat types exist in the Dubois mule deer herd*

Are the Risk/Threats Immediate or Long-term:

Increasing traffic volume, wildlife vehicle collisions, and fences are both short and long-term. Invasive species invasion is both immediate and long-term. Vegetation management is a long-term threat.

Actions necessary to reduce or eliminate risks/threats:

The WGFD and WYDOT are collaboratively working on solutions to the highway crossing challenges. A report outlining potential solutions has been completed and discussed with stakeholders. Fundraising and engineering need to be completed prior to construction. Fence modifications, invasive species control and vegetation management projects have been implemented and these efforts need to be expanded.

Current efforts (what is the activity; who is conducting the work; and partners involved):

The WGFD and WYDOT have purchased and deployed 2 sets of Variable Messaging Signs (VMS) for use only when wildlife are in the area to warn drivers during key periods of the year when wildlife and motorists are at most risk. The two agencies have also engaged with the Dubois community about the need to mitigate wildlife vehicle collisions. Collaborative efforts with USFS and Fremont County Weed and Pest have resulted in vegetation and invasive species project plans, many of which are awaiting full funding to complete implementation. Fence modification opportunities exist. While many have been improved, there are still many miles of suitable fences for modification efforts.

Cost of current or needed habitat treatments; road crossings etc.:

The cost of completing the proposed wildlife crossing project is likely in excess of \$8 million. Fence modification projects are scalable and directly correlated to funding availability. Vegetation management projects are ongoing and will require additional funding to expand their footprint and effectiveness.



*WYDOT and WGFD site visit to discuss highway crossing solutions in the Dubois mule deer herd*

Other Issues for awareness:

U.S. Highway 26/287 from approximately milepost 45 to milepost 75 has high traffic volumes seasonally and there is considerable local interest (Dubois citizens) to work collaboratively to mitigate wildlife/vehicle mortality.

Other species impacted:

Fence modification projects benefit a variety of big game species including pronghorn, elk, moose and bighorn sheep as well as sage grouse in some places. Habitat treatments benefit a wide variety of wildlife species both by a direct improvement of foraging habitat as well as reducing the risk of wildfire.

**Wyoming Migration Corridor Priority: Sublette Mule Deer**

Why the area was selected as a priority:

Migration in this herd unit is complex and dynamic with some mule deer migrating extensive distances (150+ miles). Animals migrate between high elevation summer ranges to several distinct winter range complexes. GPS based telemetry studies have demonstrated that not only do individual mule deer have a strong fidelity to the same winter ranges every year, they also use the same migration corridors and summer ranges. Proactive management is necessary to assure persistence of this migration corridor as mule deer cross a mix of land ownership and land-use patterns. During additional collaring efforts, mule deer movements have been documented into Idaho. This migration corridor will be periodically evaluated as additional animal movements are documented.

Spatial Location:

The Sublette mule deer herd migration corridor is approximately 150 miles in length including lands in western Wyoming with one radio collared animal traveling into southeast Idaho (a distance of over 240 miles).

#### Habitat Types:

Mid to high elevation summer ranges include alpine basins, spruce-fir forests, aspen stands, and mountain meadow/tall forb communities. Fall and spring habitat use includes the mountain foothill habitat in the upper Green River Basin (an area of diverse habitats including mountain big sagebrush, mixed conifers, aspen, and riparian communities) then in winter transitions down in elevation to foothill and basin habitats (typified by Wyoming and mountain big sagebrush communities interspersed with areas of antelope bitterbrush and mixed-mountain shrubs with serviceberry and chokecherry), and then finally into sagebrush dominated winter range habitat (sagebrush and desert shrub habitat with isolated aspen stands and limited acreages of antelope bitterbrush). Much of the winter range habitats can be characterized by sagebrush and desert shrub basins, rocky outcrops and canyons, and diverse topography. Aspen communities are often isolated with limited regeneration due to low precipitation, conifer encroachment, and ungulate browsing pressure. The southern reaches of the corridor receive wild horse use.

#### Important Stopover areas within the corridor:

Recent research indicates that mule deer spend greater than 9% of their migration period in a series of stopover sites, where they congregate to feed and replenish energy stores in areas where forage is especially nutritious. In many instances these mule deer stopover sites overlap with delineated crucial winter range habitat due to the extensive movement into and through some winter habitats to access winter habitats elsewhere within this herd unit. Stopover habitat includes the Prospect Mountains, Finger Lakes area on the west slope of the Wind River Range and area near Monument Ridge in the Hoback River drainage.

#### Land ownership:

During migration, mule deer in the Sublette herd cross a mix of land ownership patterns. In the extreme northwest portions of the corridor, mule deer cross private lands, USFS, designated Wilderness areas, and NPS lands. In the central and southern portion of the 150 mile corridor animals cross private lands, OSLI, WGFC, and BLM lands.

#### Land Uses:

Federal lands not designated as Wilderness or managed by the NPS are managed for multiple use. Common uses include livestock grazing, motorized recreation, and energy development. Some of the BLM lands are designated as ACEC, SRMA, and SMA. The Sublette mule deer herd migrates through the Greater Sand Dunes, Steamboat, and South Pass Historic Landscape ACECs, as well as the Steamboat Mountain SMA, Scab Creek WSA, Scab Creek SRMA, and the Wind River Front SMA. Mule deer also migrate through parcels that have been leased for oil and gas or areas with ongoing energy development. State lands, managed by OSLI are managed primarily for “long-term growth in value” and “optimum, sustainable revenue production” to generate funds for public schools. Accordingly, the primary uses of these lands are livestock grazing and energy development. Private lands along the corridor are primarily used for agricultural purposes and suburban development. Also, conservation easements are in place protecting habitats on some private lands.



*Sublette mule deer designated migration corridor*

#### Risk/Threats:

Portions of the Sublette corridor are intact and functioning. Numerous conservation projects have been completed to address fencing, bottlenecks, and habitat concerns. Additional efforts focusing on conservation and land use will benefit mule deer in the future. Habitat conditions and range use are important factors due to the arid conditions and the advanced seral stages of some plant communities. Invasive plant communities in portions of the corridor decrease habitat functionality. Increasing traffic volumes on some highway segments and on popular secondary roads may result in these areas becoming a more significant barrier to mule deer movements in the future. Wildlife crossing areas on several roadways impact seasonal movements of deer.

Right-of-way (ROW) and rangeland fences are a concern in some areas and these fences become a greater barrier for late migrants as deeper snow conditions make it more difficult for deer to cross fences. Fence permeability near subdivisions and WGFD elk feed grounds will also be an important factor for maintaining corridor function. Habitat features in the southern portions of the corridor as well as in the more mesic habitats in the northwestern portion of the corridor are also favored recreation areas. Protection of these



vital habitat features from excessive human recreation, unregulated motorized access, and overuse by ungulates would enhance their long term persistence on the landscape.

Are the Risk/Threats Immediate or Long-term:

Late seral communities and invasive plants are an immediate and long-term threat. Managing public access and recreation are long-term, as are sub-urban development, oil and gas leasing and demand for renewable energy such as wind and solar facilities. Preparing for increasing traffic volume, wildlife vehicle collisions, and wildlife crossing structures is long-term.

Actions necessary to reduce or eliminate risks/threats:

Overall, managers believe the risks mule deer face can be addressed to some extent through maintaining relationships with private landowners, oil and gas operators, NGO's, local county governments, federal land managers, and the public. Ongoing effort to continue to collaborate with stakeholders to ensure mule deer migration remains unimpeded will be necessary. Cheatgrass and other vegetation management projects need to continue into the future to protect vital habitats from wildfire threat and maintain the habitat quality mule deer require. Fence modifications, conservation easements and appropriate land use decisions are important tools for managers to continue to prioritize.



*Sublette mule deer herd also overlaps with the Pinedale Anticline and other important energy resources*

Current efforts (what is the activity; who is conducting the work; and partners involved):

The WGFD is working with UW, WYDOT, Sublette County Conservation District (SCCD), local conservation organizations, BLM, USFS, OSIL, and numerous land owners. Fence modification efforts have been extremely popular and effective, particularly on private and BLM land. Excellent partnerships with NRCS, SCCD, and landowners have generated a coordinated approach and prioritization of these projects and over 690 miles have been converted to wildlife friendly standards. Cheatgrass management has been very successful through partnerships with Sublette and Teton County Weed and Pest, NRCS, BLM, USFS, OSIL and many private landowners through the Sublette Invasives Taskforce to treat cheatgrass on a watershed level and intentionally across land ownership boundaries for the last ten years. Over 80,000 acres have been treated in the Sublette Herd.



Habitat management projects have been ongoing through partnerships with private landowners, USFS and BLM. These projects include aspen management through conifer reduction, a variety of shrub enhancement techniques and wet meadow restoration efforts. Cooperative livestock management strategies have also been utilized after wildfires and vegetation treatments.

The Wyoming-USDA Big Game Partnership was initiated in 2023 to emphasize wildlife conservation practices on private land. USDA is supporting this partnership with a focused application of the Agricultural Conservation Easement Program (ACEP), Environmental Quality Incentives Program (EQIP), and Grassland Conservation Reserve Program (CRP). USDA provides support for habitat leasing through a combination of EQIP and CRP, with opportunities for partners to contribute resources. Through this partnership, USDA programs work in a complementary way to support big game conservation. The implementation of these programs is prioritized based on areas identified by Wyoming Game and Fish Department and Tribal leaders on the Wind River Indian Reservation to be of particular benefit to big game.

Cost of current or needed habitat treatments; road crossings etc.:

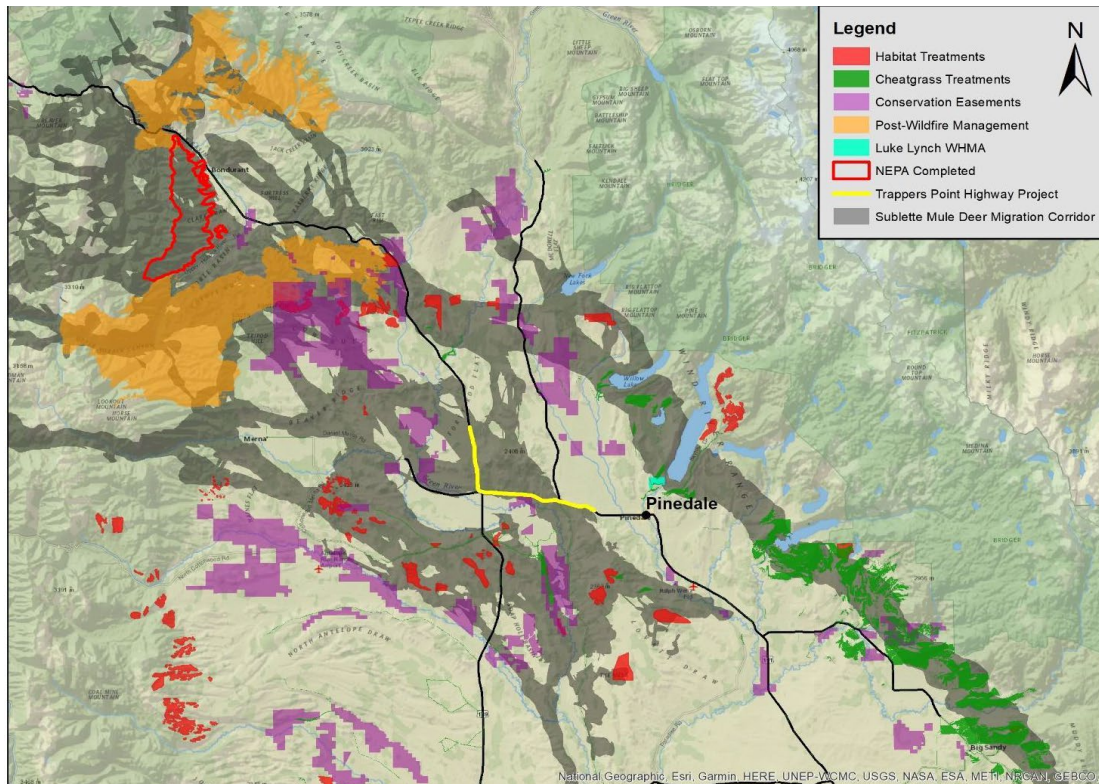
While a lot of work has been completed in this herd unit, regional personnel continue to work with stakeholders to improve seasonally important habitats, fence modifications, and land use planning. Over the last five years over \$6,000,000 has been expended on projects including noxious weed control, modifying fences to meet wildlife friendly standards and various habitat treatments. During the next several years, another \$1,500,000 has been committed working on fence replacement, habitat projects, and noxious weed management, but additional funding is required and would be useful to scale up all efforts.

Other Issues for awareness:

Additional collaring efforts are underway to identify short distance migrants in the southeastern portion of the herd unit and to further document animal movements through Grand Teton National Park (GTNP) and into southeast Idaho.



*Cheatgrass treatments and conservation easements have been important tools used in the management of the Sublette mule deer herd*



*Habitat enhancement/management projects and conservation easements that have been completed to enhance function of the Sublette Mule Deer migration corridor*

#### Other species impacted:

Fence modification projects benefit a variety of big game species including pronghorn, elk and moose as well as sage grouse in some places. Habitat treatments benefit a wide variety of wildlife species both by a direct improvement of foraging habitat as well as reducing the risk of wildfire. Land use planning including travel management, energy development and county planning and zoning decisions have wide-sweeping impacts by the potential to maintain open space and connected landscapes for many species.

#### **Wyoming Winter Range Priority: Bates Hole Mule Deer**

Why the area was selected as a priority: The Bates Hole-Hat Six herd has declined since the early 1990s. Despite conservative management and minimal harvest of females since 2008, the lack of sustained growth suggests that other limiting factors, such as habitat quality declines and disease, are significantly impacting the dynamics of this herd. Seasonal habitat use has been determined from two studies designed to evaluate CWD dynamics, cause-specific mortality, and general herd demography and movements. These data are being used to help prioritize habitat treatments for this mule deer herd. This area has a long history of habitat project implementation, willing landowners, engaged partners, and cooperative federal land management entities. Current project momentum and funding are in place to leverage additional opportunities to implement a suite of beneficial mule deer projects within crucial winter habitats over the next several years.

Spatial Location: The Bates Hole - Hat Six Mule Deer Herd Unit contains Hunt Areas 66 and 67 and is located in central Wyoming. The herd unit encompasses approximately 1,396 square miles from the City of Casper, east to Deer Creek, south to the Shirley Rim, west to Pathfinder Reservoir, and northeast along the North Platte River back to the City of Casper.

Habitat Types: The majority of this herd unit comprises winter-yearlong or crucial winter yearlong ranges. Sagebrush/grasslands are the dominant community in the herd unit, with true mountain mahogany being the dominant community on winter ranges. Riparian areas, and other important mountain shrub communities are also available and used by mule deer. Juniper woodlands are also prevalent in the central portion of the herd unit. Mid-elevation spring, summer, fall ranges are a mix of conifer woodlands, aspen stands, and meadows with a mixture of shrubs, forbs, and cool season grasses. Much of the herd unit is topographically diverse, with mule deer often keying in on the vegetative diversity offered by snow accumulation areas. Relative densities of mule deer vary significantly within the herd unit, with most deer found within the mountain shrub foothills, along drainages within sagebrush habitats, and along riparian corridors.

Important Stopover areas within the corridor: Most mule deer do not migrate long distances in this herd, although some individual migrations have been documented from Bates Hole to the eastern Laramie Range and Shirley Mountains. Therefore, there are no designated stopover areas. However, habitat treatments have been targeted in snow accumulation areas to enhance forage quality and quantity in areas where mule deer are often present in spring and fall.

Land ownership: Land status within the herd is a mosaic of public (BLM, USFS, and OSLI) and private lands, with about 44% public lands accessible to the hunting public.

Land Uses: The main land use is traditional ranching and grazing of livestock and motorized and non-motorized recreation. The Gateway West Transmission Line is currently under construction on the southeastern portion of the herd unit. There is also the potential for large-scale industrial wind development on the eastern boundary and along the periphery of this herd unit. Area 67 consists of the City of Casper, adjoining suburban communities, and cabin sites on Casper Mountain. Given the human presence within Area 67, habitat treatments are focused on Area 66 in this herd unit.

Risks/Threats: Declining upland shrub, riparian, and mesic area conditions, conifer encroachment, invasive annual grasses, sub-optimal landscape permeability due to non-wildlife friendly fences, highway collisions, and chronic wasting disease are the primary threats to this herd.

Are the Risks/Threats Immediate or Long-term: Vehicle collisions are an immediate threat to this herd. Habitat quality declines are a long-term threat. Chronic mule deer losses to vehicle collisions occur along Wyoming Highway 487 each year. Although some treatment of shrub stands within the right-of-way has occurred to reduce mule deer vehicular strikes, additional efforts to mitigate collisions should occur to the extent possible.

Actions necessary to reduce or eliminate risks/threats: Habitat treatments, wildlife-friendly fence conversions, Highway ROW shrub treatments (to increase deer visibility to motorists), and research have been conducted to mitigate threats to mule deer. Additional work is warranted to continue to address



limiting factors to this herd. Habitat treatments that can address issues within this herd include mechanical shrub rejuvenation, prescribed fire, beaver dam analogues, zeedyk structures, riparian planting, mechanical conifer removal, and cheatgrass treatments. Targeted fence modification is also beneficial for increasing landscape permeability.



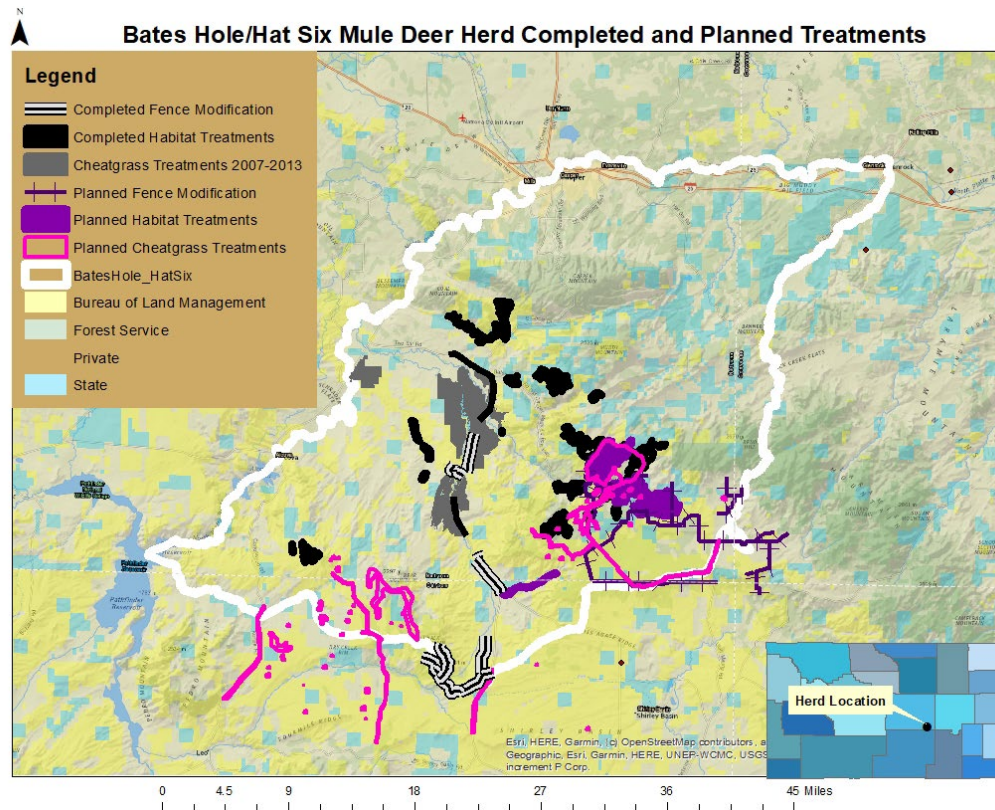
*Cheatgrass sources in the mid-elevation portions of this herd unit primarily occur along roads, disturbances, and near the mountain. Treating these sources before they spread into intact habitats is an important goal for this herd unit.*

Current efforts (what is the activity; who is conducting the work; and partners involved): The WGFD has a long history of conducting habitat treatments in this area since the late 1990's. The Department has extensively partnered with private landowners, BLM, NRCS, the Natrona County Conservation District, Natrona County Weed and Pest, and WYDOT to implement beneficial mule deer projects. The WGFD conducted the work in the majority of these projects, however, BLM is also implementing habitat treatments as well. Completed and planned projects within this herd unit include mechanical shrub rejuvenation, prescribed fire, beaver dam analogues, Zeedyk structures, riparian planting, mechanical conifer removal, and cheatgrass treatments, Highway ROW shrub treatments and targeted fence modification. Additional funding will allow for these efforts to be scaled up.

Cost of current or needed habitat treatments; road crossings, etc.: Approximately \$4 million in projects have been identified and planned for implementation in the next 3 years within or adjacent to this herd unit.

Other species impacted: Many of the treatments that will be implemented for mule deer are also beneficial to pronghorn and sage-grouse. This herd has substantial overlap with the Natrona Sage-Grouse Core Area, and provides some of the best sage-grouse habitat in North America. It boasts one of the highest densities of breeding sage-grouse in all of Wyoming. In addition, this area provides important habitat for a substantial portion of the Medicine Bow Pronghorn Herd Unit, which encompasses Shirley Basin and Bates Hole as well portions of the northern Laramie Range. This pronghorn herd is highly migratory and is one of the largest pronghorn herds in Wyoming. Every year several thousand pronghorn migrate from summer range in Shirley Basin and upper Bates Hole into lower Bates Hole to winter (in addition to migrations that occur

within the southwest part of the herd unit). Any work to rejuvenate sagebrush stands, address conifer encroachment, reduce cheatgrass expansion, or improve landscape permeability will undoubtedly benefit this important pronghorn herd.



*The Bates Hole/Hat Six Mule Deer Herd Unit has a long history of habitat treatments across multiple landownerships.*

### **Other Current Activities, Management Actions:**

#### **Ungulate Migration Corridor Strategy**

WGFD spent several months working with the public and stakeholders to develop a strategy for conserving ungulate migration corridors. The culmination of that inclusive process was the Ungulate Migration Corridor Strategy adopted by the WGFC at their January 2016 Commission meeting. Migration corridors are considered “vital” under this strategy which also identifies key components of corridor, bottleneck, and stop-over research findings. Additionally the Commission revised their standard range definitions to include ungulate migration corridor, ungulate stopover, ungulate migration bottleneck, and ungulate movement route use by WGFD personnel.

#### **Wyoming Game and Fish Commission Activities**

The Wyoming Game and Fish Commission (WGFC) has contributed significantly to improved management of migration corridors through funding research, highway crossing projects and on the ground improvement projects. WGFC has committed \$2.5 million dollars over the last seven years towards nine priority Mule



Deer Initiative herds. These funds have been matched by outside funding totaling \$14.3 million dollars. In total, 45 projects have been funded that address either direct habitat challenges or studies that are designated to target future habitat actions. WGFC has also contributed over \$2,000,000 towards two highway crossing projects in the last two years. Additionally, from 2020 to 2022 WGFC contributed \$500,000 towards invasive annual grass mapping and management in important habitats.

#### Wyoming Governor's Advisory Group for Migration

In summer 2019, Governor Mark Gordon tasked a Migration Corridor Advisory Group with developing recommendations to improve the state's policies related to big game migration. In August, the group finished its work and presented the Governor with its recommendations. The recommendations begin with an overarching call to pursue an Executive Order related to big game migration corridors and the industries, economies and private landowners that enhance, overlap, and grow from Wyoming's world-class migrations. The advisory group included representatives from the oil and gas, mining and agriculture sectors, as well as conservation, recreation, sportsmen groups, and a county commissioner.

This effort was followed up by local stakeholder based local work groups for the Platte Valley, Baggs and Sublette Mule Deer herds. These local work groups generated recommendations for the Governor and WGFD to improve future conservation work in these corridors, as well as ways to improve upon the Governor's 2020 Mule Deer and Antelope Migration Corridor Protection Executive Order.

#### Wyoming Mule Deer and Antelope Migration Corridor Protection Executive Order 2020-1

In January 2020, the Governor of Wyoming signed into effect the Wyoming Mule Deer and Antelope Migration Corridor Protection Executive Order 2020-1. This Executive Order designated the Platte Valley, Baggs and Sublette Mule Deer Migration Corridors and outlined a process for additional corridors to be designated or identified in the future. The Executive Order also identified how development and disturbances should be managed in order to ensure functionality of the migration corridors into the future.

#### Wyoming Migration Initiative

The Wyoming Migration Initiative is a model for catalyzing science-based conservation and management of wildlife corridors. Founded in 2012 as a project of the Wyoming Cooperative Fish and Wildlife Research Unit, the initiative works with collaborators to collect data needed to effectively conserve migratory wildlife. (Kauffman, 2016)

#### Wyoming Wildlife Roadways

A collaborative effort was initiated between the WGFD and WYDOT to reduce wildlife vehicle collisions as a result of the Wyoming Wildlife and Roadways Summit in 2017. The Wyoming Wildlife and Roadways Initiative Implementation Team is a multi-stakeholder group tasked with prioritizing and implementing highway crossing projects that were identified at the Summit (Lutz et al. 2017).

In 2021, a second Wyoming Wildlife and Roadways Summit was held virtually to bring stakeholders back together and revive momentum around implementing additional wildlife crossing projects across Wyoming. Success stories and lessons learned were shared as well as updates on some of the new scientific information available to encourage the best design features for future projects.

#### National Fish and Wildlife Foundation (NFWF) Funds

The WGFD in collaboration with Mule Deer Foundation received a total of \$913,000 of NFWF funds in 2018 under the NFWF grant program - *Improving Habitat Quality in Western Big Game Range and Migrations Corridors Fall 2018*. The funds were allocated in the following manner and actions are further described in the herd units listed below:

\$150,000 for the Platte Valley Herd invasive species and habitat work

\$719,550 for the Sublette Herd Initiative invasive species and fence work

In 2019 WGFD was awarded \$249,000 of NFWF funds through the same grant program. The funds were allocated in the following manner and actions are further described in the herd units listed below:

\$75,000 for the Baggs Herd fence work

\$114,000 for the Wyoming Range Herd invasive species and fence work

\$60,000 for the Dubois Herd invasive species work

In 2020 WGFD was awarded \$249,000 of NFWF funds through the same grant program. The funds were allocated in the following manner and actions are further described in the herd units listed below:

\$60,000 for the Dubois Herd for invasive species work

\$75,000 in the Baggs Herd for fence work

\$114,000 in the Wyoming Range Herd for fence and invasive species work

In 2021 WGFD was awarded \$591,000 of NFWF funds through the same grant program. The funds were allocated in the following manner and actions are further described in the herd units listed below:

\$130,000 for the Dubois Herd for invasive species, fence and aspen work

\$100,000 in the Platte Valley Herd for invasive species work

\$340,000 in the Sublette Herd for fence and aspen work

\$21,000 in the Wyoming Range Herd for fence work

In 2022 WGFD was awarded \$280,000 of NFWF funds through the same grant program. The funds were allocated in the following manner and actions are further described in the herd units listed below:

\$75,000 for the Platte Valley Herd for fence work

\$185,000 in the Sublette Herd for fence and invasive species work

\$20,000 in the Wyoming Range Herd for fence work

In 2023 WGFD was awarded \$732,500 of NFWF funds through the same grant program. This funds were allocated in the following manner and actions are further described in the herd units listed below:

\$110,000 for the Dubois Herd for fence and aspen work

\$187,500 for the North Bighorn Herd for fence, conifer removal, aspen and Beaver Dam Analog work

\$100,000 for the Platte Valley Herd for fence and conifer removal work

\$150,000 in the Sublette Herd for fence and invasive species work

\$185,000 in the Wyoming Range Herd for fence, invasive and sagebrush work

#### Partners for Fish and Wildlife (PFW) Funds

In 2019 WGFD and USFWS PFW Program received a total of \$293,000 to implement projects associated with SO 3362. The funds were awarded in the following manner and the actions are further described in the herd units listed below:

\$150,000 for the Baggs Herd wildlife highway and habitat enhancement Work  
\$113,800 for the Sublette Herd fence work  
\$30,000 Platte Valley Herd fence work

In 2020 WGFD and USFWS PFW Program received a total of \$116,500 to implement projects associated with SO 3362. The funds were awarded in the following manner and the actions are further described in the herd units listed below:

\$47,500 Wyoming Range Herd fence work  
\$49,000 Baggs Herd grazing management and water development work  
\$20,000 Dubois Herd fence work

In 2021, WGFD and USFWS PFW Program received a total of \$187,000 to implement projects associated with SO 3362. The funds were awarded in the following manner and the actions are further described in the herd units listed below:

\$19,000 Dubois Herd reservoir work  
\$63,000 Platte Valley Herd fence work  
\$105,000 Sublette Herd fence work

#### DOI SO 3362 Research Funds

In both 2018 and 2019, DOI provided \$300,000 to assist with data collection efforts in Research Priority Herds. In 2018, \$175,000 was provided for Carter Mountain Pronghorn and \$125,000 was provided for Powder River and Pumpkin Buttes Mule Deer GPS collar projects. In 2019, \$125,000 was provided to Sublette Pronghorn, \$40,000 was provided for Medicine Bow Pronghorn—Shirley Basin, \$50,000 was provided for Platte Valley Mule Deer and \$85,000 was provided for North Bighorn Mule Deer GPS collar projects. Research is ongoing in several of these herd.

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