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Improving Big Game Migration Corridors in Southwest Wyoming

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Land use in Sublette County, Wyoming has changed in the last decade with the trend appearing to continue into the future. Sublette County experienced a 17 percent growth rate from 2000 to 2005 with over 10 percent of the growth occurring in the rural or unincorporated areas of the county (Lieske 2007). The American Farmland Trust (AFT) estimates that Sublette County is the most at risk among Wyoming counties for the conversion of private agricultural lands to non-agricultural uses. More than 336,000 acres of ranchland are predicted to be converted to residential development by 2020 (Taylor 2003). In addition to expanding rural residential development, energy production has been a driver of land use change in Sublette County.

As the Sublette County landscape changes, the construction of roads and fences associated with residential and energy development poses potential threats to local wildlife populations. The ability of some big game animals (pronghorn, mule deer, elk, and moose) to migrate between summer and winter ranges in Sublette and Teton counties has become an issue of concern as herds contend with accumulating alterations to their traditional migration corridors.

As a result, people and organizations in the region have come together to address the integrity of these migration corridors. The Corridor Conservation Campaign (CCC) is a collaborative approach to conservation that focuses on wildlife-friendly fencing in conjunction with other conservation tools. The CCC's mission is to connect agricultural lands to maintain the integrity of migration corridors for big game species in Sublette County. A project organized by the Green River Valley Land Trust (GRVLT), the CCC uses fence modifications, public education, and conservation easements to span political boundaries and provide varying organizations the opportunity to work together toward a common goal.

This publication highlights the efforts of the CCC to conserve wildlife migration corridors in Sublette County, provides further explanation of how the wildlife-friendly fencing program works, and describes the context and significance of this collaborative conservation effort.

Migration Corridors in Wyoming: Status and Significance

The survival of big game species largely depends on a herd's ability to migrate between seasonal habitats. In the longest-known terrestrial animal migration in the 48 contiguous states, pronghorn antelope migrate between summer range in Grand Teton National Park and winter range in Sublette County - a distance of more than 300 miles roundtrip (Feeney et al. 2004). Development that fragments wildlife habitat within this migration corridor hinders the pronghorns' ability to move between ranges, threatening their survival. Fragmented habitats "isolate and eventually suffocate species diversity and abundance," (Green River Valley Land Trust 2009).

Seasonal changes that reduce access to or availability of food, make movement more difficult, and make conditions unsuitable for bearing young prompt big game migration. Migration corridors, or transition

ranges, provide migrating animals with foraging opportunities that reduce the amount of time and forage needed on winter ranges (Sawyer 2007). More time spent on transition range and less spent on winter range allows animals to recover body condition earlier in the year and maintain it longer (Sawyer 2007). In this way, maintaining migration corridors is vital to a herd's survival by meeting important foraging needs and connecting habitats.

In Sublette County, roads and fences associated with residential development and energy production frequently obstruct migration (Figure 1). Specifically, development and associated infrastructures "cause 8 of 13 major threats to wildlife identified in Wyoming's Comprehensive Wildlife Conservation Strategy (WCWCS)." The WCWCS is part of a national effort where states implement an action plan to conserve species of greatest concern and their habitats (Wyoming Game and Fish Dept. 2005).

Figure 1. Subdivisions and associated fencing within a pronghorn migration corridor.



ENR photo



Photo courtesy of Wyoming Department of Transportation

Figure 2. Mule deer use a highway underpass in Southwest Wyoming. Wyoming Department of Transportation cameras document animals' use of the underpasses.

A dramatic example of threats to the migration corridor can be seen at Trapper's Point, a natural bottleneck located near the town of Pinedale, Wyoming (Figure 4). As many as 800 pronghorn have been observed passing through the area, which has been further narrowed by residential subdivisions. When passing through Trapper's Point, the animals contend with traffic and human presence along Hwy 191 (Riis 2009). Residential and commercial development near Trapper's Point has narrowed the navigable width of the bottleneck from its natural width of 1.6 kilometers to less than 0.8 kilometers (Sawyer et al. 2005).

It is estimated that each spring and fall between 1500 and 2000 pronghorn and 2500 to 3500 mule deer pass through the Trapper's Point bottleneck (Sawyer et al. 2005). Roadways pose a threat to wildlife by creating a barrier to movement and by increasing mortality from vehicle collisions (Sawyer and Rudd 2005). According to the Wyoming Department of Transportation, there were 125, 1838, 30, and 158

collisions with elk, deer, moose, and antelope, respectively, in the state in 2007 (Wyoming Department of Transportation 2007). Specifically, there were 538 carcasses collected and 157 crashes reported along the 11.9 mile stretch of Hwy 191 that bisects Trapper's Point from 2000 to 2008 (Wyoming Department of Transportation 2009) (Table 1).

The Wyoming Department of Transportation has proposed the installation of both bridges and underpasses for migrating wildlife to use along Trapper's Point to help minimize these animal mortalities along Hwy 191. Similar improvements have been used in other areas in the state (Figure 2).

Fences can be a barrier to most migrating big game species, and are especially problematic for migrating pronghorn. Some big game species, such as elk and deer, negotiate fences by jumping over them; however, pronghorn, though physically capable of jumping them, primarily pass underneath fences (Figure 3).

Location	Stretch of Hwy, in miles	Crashes	Carcasses	Crash/mi	Carcass/mi
I-80 Wam	3.6	136	240	37.78	66.67
US 191	11.9	157	538	13.19	45.21
US 189	15.5	70	699	4.52	45.10

Table 1. Crash statistics from the Wyoming Comprehensive Report on Traffic Crashes in 2007. Interstate 80 near Wamsutter, Wyoming saw the most crashes per mile in 2007.

Many fences on Wyoming rangelands are constructed with woven or barbed wire, with bottom wires as close as 10 inches to the ground. Consequently, pronghorn are unable to cross these fences, and cannot access foraging areas, making it difficult to meet energetic and nutritional requirements they need to survive on a daily and seasonal basis (Sawyer 2007).

Corridor Conservation Campaign: Overview

Each year, the CCC focuses on a different big game species and migration route. In mid-2008 and the first half of 2009, the CCC focused on the

pronghorn migration corridor between summer range in Grand Teton National Park and winter range in Sublette County.

Sublette County is the primary geographic focus of the CCC because it is the nexus of substantial wildlife resources, residential growth and energy development. The CCC provides cost-free wildlife-friendly fencing modifications to private landowners and public land permittees.

The goal of the initiative is to create 500 miles of wildlife-friendly fencing in Sublette County by 2012.

Figure 3. Pronghorn pass under a wildlife-friendly fence. The CCC includes a wildlife-friendly fencing initiative.



Photo courtesy of Joe Riis

The CCC works by:

- Identifying key wildlife migration routes based on sound science
- Inventorying existing fences within these routes with landowner permission to determine whether and to what extent the fences impede migration
- Talking with each landowner about modifications to make their fence passable for wildlife and functional for the landowners' needs
- Hiring fencing contractors to modify the fences at no cost to landowners
- Monitoring the modified fences with game cameras to ensure that animals can easily negotiate them.

The CCC expanded in late 2009 to a mule deer migration route at the foot of the Wind River Mountains. This route covers 86,000 acres and was confirmed as part of the Sublette Mule Deer Study, a collaborative effort between oil and gas operators, federal and state wildlife agencies and private organizations that began in the 1990s. Figure 5 shows Phase I (pronghorn) and Phase II (mule deer) migration routes.

The CCC saw considerable collaborative success and broad support in both its initial and subsequent stages. The Jonah Interagency Mitigation and Reclamation Office (JIO), a multi-agency office that oversees on-site and off-site mitigation activities for natural gas development in the area, awarded the CCC with a grant from its Jonah Compensation Mitigation Fund. The fund was committed by industry for mitigation projects like the CCC. Many individuals, foundations, industry, sportsmen groups, and agencies provided generous matching funds for the JIO grant.

Funding for fencing and labor, and expertise in inventorying and constructing wildlife-friendly fencing, was contributed by a private corporation. Such contributions, along with partnerships and collaboration, have made it possible for the campaign to move forward. The project now has nearly 30 partners (a complete list of partners is shown in sidebar).

Partners of the Corridor Conservation Campaign

Bridger-Teton National Forest
 Bureau of Land Management
 EnCana
 EnerCrest
 Environmental Defense Fund
 Good Sportsman Marketing, LLC
 Grand Teton National Park
 Greater Yellowstone Coalition
 Family foundations
 Heart of the Rockies Initiative
 James Family Foundation
 Jonah Interagency Mitigation and Reclamation Office (JIO)
 Mule Deer Foundation
 National Fish and Wildlife Foundation
 Natural Resource Conservation Service
 Patagonia
 Private donors
 Questar
 Rocky Mountain Elk Foundation
 Safari Club International
 Shell Oil Company
 Ruckelshaus Institute of Environment and Natural Resources, University of Wyoming
 US Department of Agriculture
 US Department of Interior
 Western Governors' Association
 WLC Engineering
 Wyoming Department of Agriculture
 Wyoming Department of Environmental Quality
 Wyoming Department of Transportation
 Wyoming Game & Fish Department
 Wyoming Wildlife and Natural Resource Trust

Wildlife-friendly Fencing Initiative

The initial step of the CCC's Wildlife-friendly Fencing Initiative was to inventory existing fences within the pronghorn migration route from the Bridger-Teton National Forest boundary to Trapper's Point, located slightly west of Pinedale, Wyoming (Figure 6). The inventory mapped existing

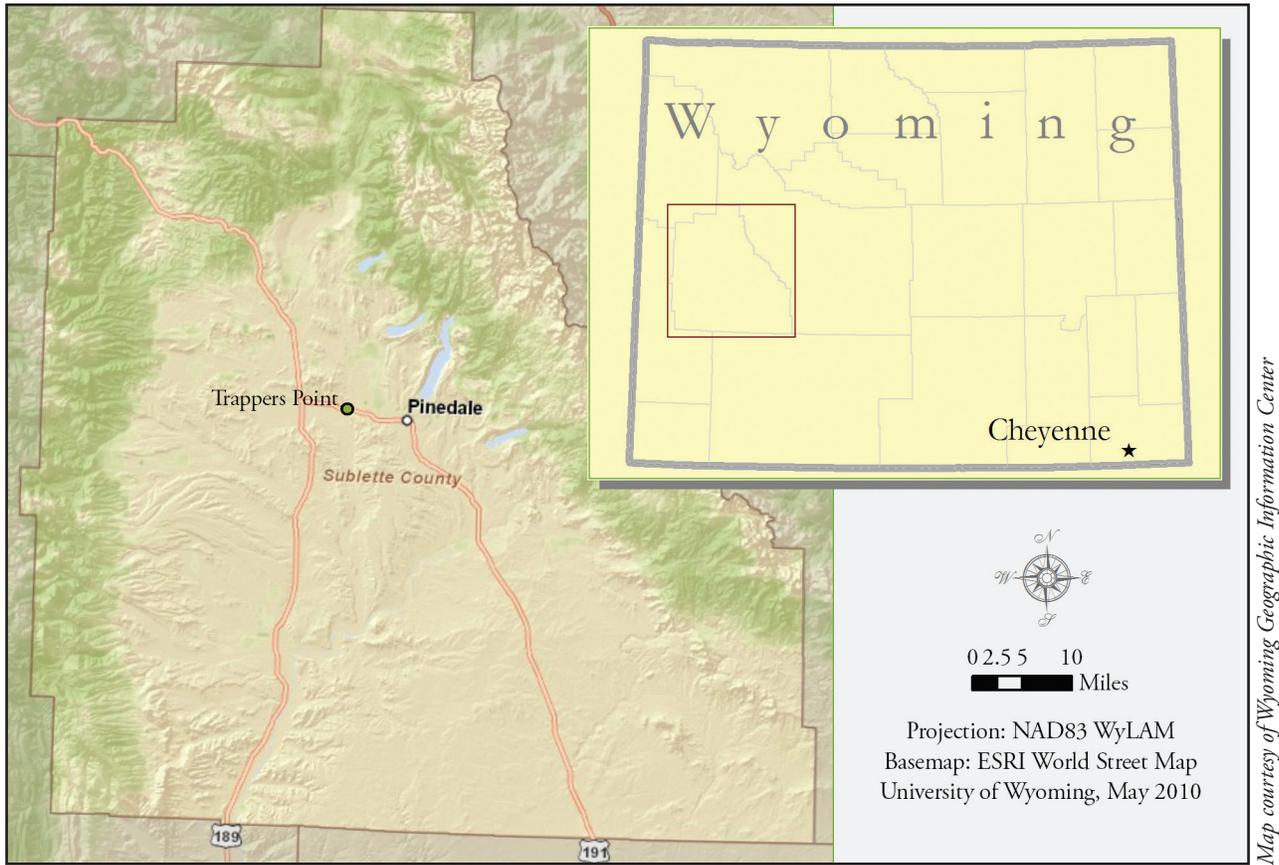


Figure 4. Sublette County is shown within the state of Wyoming (right). The town of Pinedale and Trappers Point are shown along Hwy 191 in Sublette County (left).

fences and included information such as strand heights, material types, fence condition, and other relevant attributes in addition to photographs. After the inventory was completed, consultation with the Wyoming Game and Fish Department, the Bureau of Land Management (BLM), and other partners determined which fences most affected pronghorn and other big game species' movements and how they might best be modified.

Wildlife-friendly fences, generally, are constructed with a minimum of 16 inches between the ground and the bottom wire of fence, though a distance of 18 inches is also recommended (Sawyer and Rudd 2005). The bottom wire should be smooth, to avoid injury to passing pronghorn. The top wire should be no higher than 42 inches, to allow for deer, elk, and moose to safely clear them.

For fences that are identified as not being wildlife-friendly, the initiative works with landowners to

select a fence design that is wildlife-friendly and meets the landowners' needs. Funding from partners of the CCC makes it possible for the fencing to be installed at no cost to the landowner. Estimated costs of new fencing, at the time of the project's inception, were between \$18,000 and \$25,000 per mile (Green River Valley Land Trust 2009). Reducing fencing costs for landowners offers them some economic assistance for their operations.

The initial fencing inventory mapped more than 100 miles of fence in the corridor between Trapper's Point and the USFS boundary; nearly 75 miles were modified by the end of 2009.

With the support and financial assistance of the Bridger-Teton National Forest, an additional fence inventory was conducted in the route from the USFS boundary to Grand Teton National Park, adding another 56 miles of mapped fence to the project's scope.

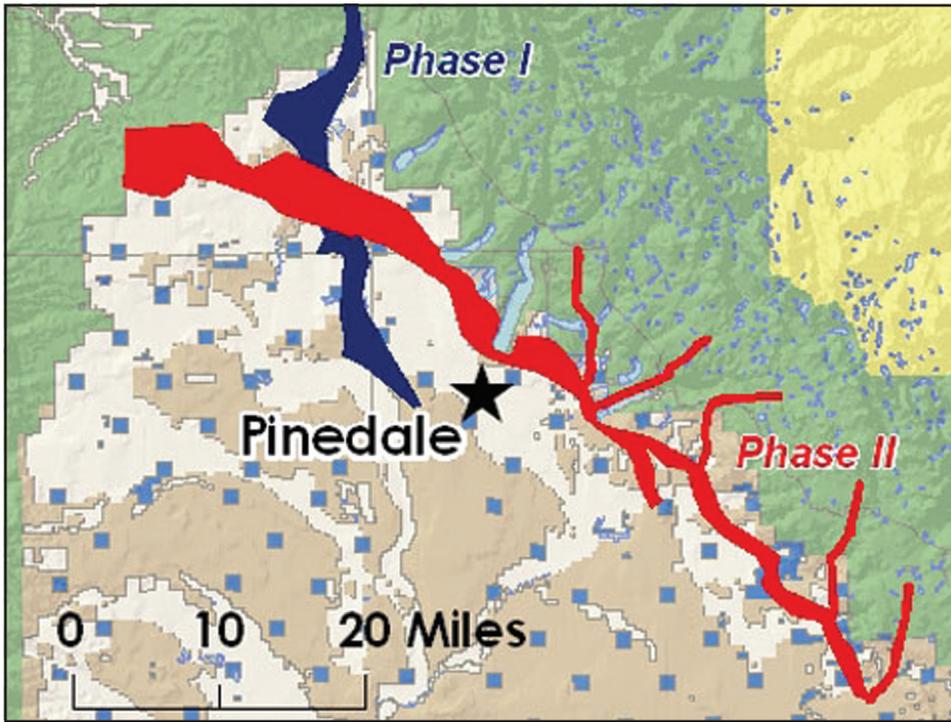


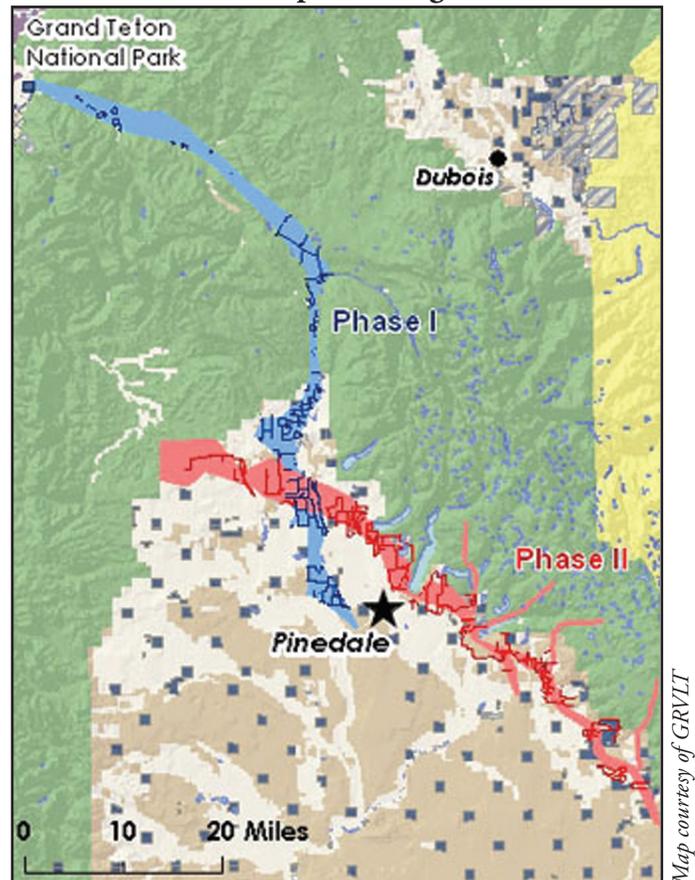
Figure 5. (left) The pronghorn migration route, Phase I of the CCC, is shown in blue, and the mule deer migration route, Phase II of the CCC, is shown in red, both in relation to the town of Pinedale, Wyoming.

The CCC's expansion to the Wind River Front mule deer migration route in 2009 inventoried an additional 200 miles of fence, and included the mapping of animal crossing points and carcasses that existed in and under fences to better inform CCC partners in making recommendations for fence modifications.

Conservation Easements

While projects like the wildlife-friendly fencing initiative are designed to enhance big game's ability to move between seasonal ranges, conservation easements are another tool that GRVLT and others are using to conserve agricultural properties and protect wildlife habitat in migration corridors. Conservation easements are voluntary agreements between landowners and an easement holder (usually a land trust) designed to protect parcels of land by limiting development. When entering into a conservation easement, landowners are exchanging their right to develop the land for payment or tax benefits. (For additional information on conservation easements, refer to the Wyoming Open Spaces Initiative's Conservation Easements publications, www.uwyo.edu/openspaces/content.)

Figure 6. (below) Pronghorn (Phase I) and mule deer (Phase II) migration routes and fences inventoried within respective migration corridors.



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