**United States Department of Agriculture**

NRCS

Natural Resources Conservation Service
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10 East Babcock Street
Federal Building, Room 443
Bozeman, MT 59715-4704

Frank Rigler
Box 970
Gardnier, MT 59030

May 24, 2011

Frank,

On May 17, 2011 Ron Hoagland and I met you on your place in Paradise Valley. You asked that we look over the property and give you our thoughts on the condition of the rangeland and some ideas, if necessary, to better manage the forage resource.

**History:** This smaller piece of the Slip & Slide is what remains after selling the majority the ranch. All cattle were taken off the unit in 2007 and the few horses that remained were removed in 2008. The historical climate data from the Gardiner Station in 2007 and 2008 show precipitation was well below average for the year and significantly below average from March – June of each year. 2009 was below average for the year but above average during March – June. In 2010 precipitation was above average for both the year and significantly above average for the time period of March – June.

**Soils & Ecological Sites:** Four major soil types occupy the steeper portions of the property; typic haploborolls, typic ustochrepts, argic cryoborolls and mollic cryoboralfs. The slopes vary from 20-70%. The majority of the soils are moderately deep (20-40 inches) well drained with very gravelly loam and very gravelly sandy loam textures. The ecological site descriptions for most of the steep ground above your house to the east would fall into the Central Rocky Mountain Major Land Resource Area and more specifically the "silty droughty" ecological site. The production on this site should be approximately 1300 lbs/per year (air dry matter). The composition should consist of; Grasses (80%) - Blue bunch wheatgrass, Needle and Thread grass, western wheat grass and other sedges and perennial grass, Forbs (10%) and Shrubs (10%).

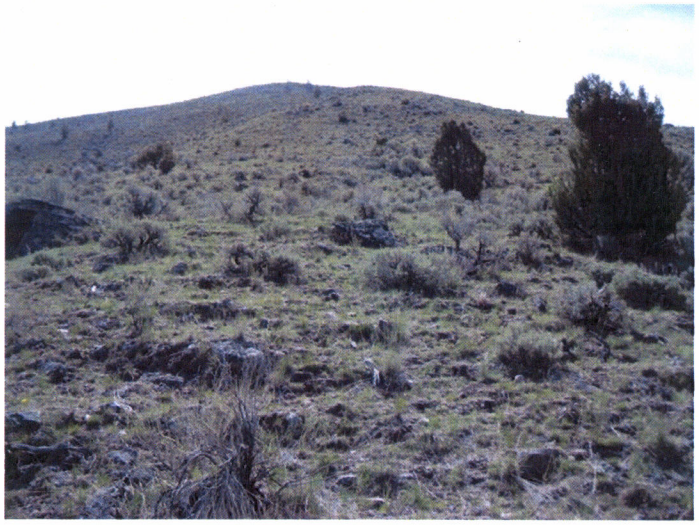
**Soil Health:** This ecological site has the potential to produce a sustainable, soil building, bunch grass plant community. The amount of bare ground should not exceed 20%. Litter greater than 0.5 inch deep should occupy 50 - 55% of the soil surface. Rills and water flow patterns should be short and infrequent. Evidence of soil erosion in the form of pedestals should be rare on this site. Litter movement could be evident on the steeper slopes but rare on the gradual slopes. This plant community is relatively resistant to noxious and invasive weeds.

**Existing conditions:** The winter of 2010 was one for the records for both snow depth and subsequent spring moisture. Since last fall the area is 3 inches ahead of the 30 year average for precipitation. This combined with the growing conditions of 2010 lead me to expect a bit of a different scene than what I experienced on May 17th.

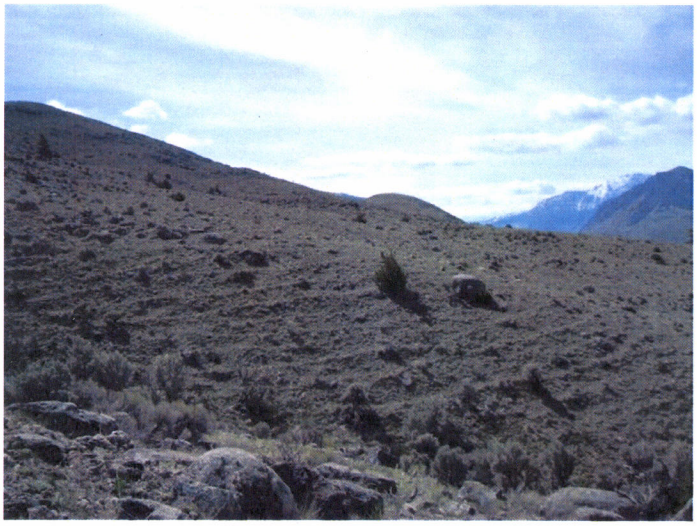
This would be a fair representation of what the potential is for this country. Robust bluebunch wheatgrass plants with sagebrush. Some bare ground would be expected but nothing excessive. This is in a draw, most likely covered by deep, hardened snow.

Landscape looks heavily used with many trails throughout.

Sagebrush is in poor condition, trails are evident, exposed rock and soil means little residual grass to cover the soil surface.



A view facing up the slope makes trails evident up and down the slope.



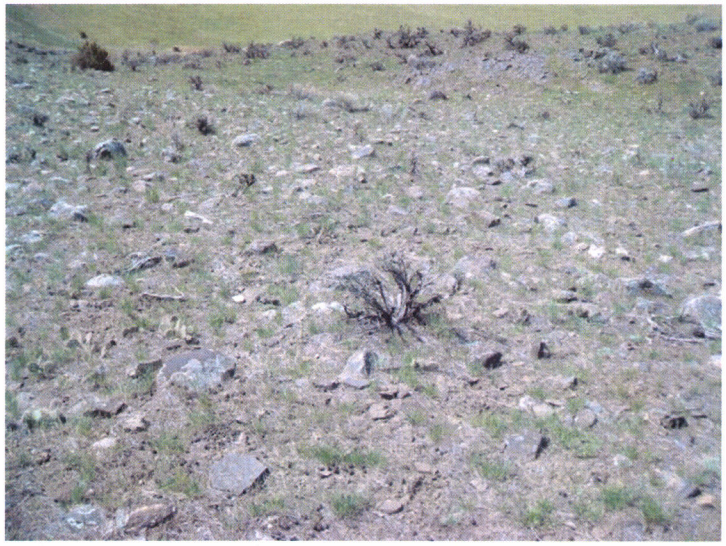
Another view of trailing across the slope. The sage brush is heavily impacted except where snow banks were obvious.

This is a view looking down on the soil surface. There is a lot of bare ground, very little litter and plant community is representative of a lower successional stage.

This is a view looking down the slope. Sage brush is heavily impacted and bluebunch is small and poorly represented.

There is a lot of bare ground and some litter. Prairie junegrass, fringed sagewort and small bluebunch plants make up the plant community.

Ungulate grazing is prevalent on this slope. Here the bluebunch wheatgrass plants have already been grazed this spring but do have some residual from last year.



Sage brush in a weakened state. Prairie junegrass and sandberg bluegrass make up the bulk of the vegetation on this slope.

Looking back toward the farmstead and the Yellowstone River. This steep, west facing slope is receiving heavy use by ungulates.

**Conclusion:** The range resource on this west facing slope is in a definite downward trend and is in low similarity (25-35%) compared to the potential. The potential plant community should produce 1300 pounds in an average year of which 80% would be grass, 10 % forbs and 10% shrubs. The grass component would be up to 80% bluebunch wheatgrass with needle & thread and western wheat making up the majority of the remainder. Prairie junegrass, bluegrass and upland sedges would complete the grass component. The current production of this site, after correction to normal, will be 400-600 pounds. Presently, prairie junegrass and sandberg bluegrass make up the bulk of the production with a small proportion of bluebunch hanging on. Sage brush is being impacted as well, in many areas excessively. Bare ground is averaging 40%, litter cover less than 10%, and rock is 25% of the soil surface. The remainder of the soil surface is covered by clubmoss (10%) other moss and lichen, etc (5%) and plants (10%). There appears to be adequate bluebunch plants to reoccupy the site if given time and proper management. "Periodic Rest" would allow this site to recover somewhat. A similarity this low will almost never recover with management alone. Management, however, would provide the most economical kind of return.

In the event the current management continues, the site will turn to one of short and mid-grasses with more non-palatable shrubs. Forbs will increase many with little value to livestock or wildlife and the site will become increasingly susceptible to noxious weed invasion. Soil erosion will increase with many rills and gullies forming on the slope.

Jan 19 2013

# Research aims to better predict bison migrations

**YellowstoneGate.com**

A ruling earlier this month by a Montana district court judge has upheld a plan to allow bison to roam freely in a designated area north of Yellowstone National Park. But predicting when bison will leave the park — and how many will be on the move — is hardly an exact science.

So park researchers are developing a predictive technique using statistical analysis, weather models and historical movement records for tagged bison to get a better idea of what each year's migration patterns might look like.

When hundreds of bison move through a small town like Gardiner, at the north entrance to Yellowstone, they have the potential to damage property, injure people and transmit disease to livestock.


National Park Service

A bison walks through downtown Gardiner.

Park managers and other wildlife agencies try to reduce those potential conflicts but don't always know where and when the animals will move, said Chris Geremia, a National Park Service researcher at the Yellowstone Center for Resources.

In 2000, wildlife managers developed a bison management plan based on their best idea of how the animals had been moving around the park and its bordering lands, Geremia said in October during the Biennial Scientific Conference on the Greater Yellowstone Ecosystem.

"But the bison didn't move as we thought they might," Geremia said. Initial movement models were too simple, and far more bison than expected left the park.

Bison numbers grew in unexpected ways, and between 2001 and 2009, approximately 3,700 bison were slaughtered as part of efforts to cull herds and reduce conflicts outside the park.

Researchers started working on a new predictive model, putting tracking collars on more bison to better understand their movements.

Geremia's research showed that different groups in different places moved around for different reasons.

Bison in the central herd that moved toward the Firehole and Gibbon rivers, for instance,

**Please see Bison, C7**

## Bison

Continued from C1

might be more likely to stay near thermal features as snow piled up, rather than moving out through West Yellowstone.

But animals in the northern herd were more sensitive to the availability of forage when deciding whether to leave the park through Gardiner, he said. So deep snows often drive them out of the park in search of more accessible grass at lower elevations.

Simulations based on the improved model suggest that culling up to half of the bison that migrate out of the park still won't prevent large recurring migrations in the future. Likewise, keeping overall park bison populations at the low end of acceptable ranges might reduce major migrations, but it won't eliminate them entirely, the model indicates.

Geremia said his research suggests that if wildlife managers want to avoid future large-scale slaughters like those seen over the past decade, it will be necessary to limit overall numbers and to allow increasing numbers of bison to wander outside of the park during the harshest winter periods.

The predictive model Geremia and other researchers have developed is likely to play an increasingly important role in helping managers know what to expect when Yellowstone bison start to move.

# Missing moose

January 25, 2013

CHRONICLE FILE PHOTO

The Montana Department of Fish, Wildlife & Parks is planning to conduct an extensive study on declining moose population.

## FWP launching long-term study of dwindling moose population

**By LAURA LUNDQUIST**
Chronicle Staff Writer

While bison, wolves and elk dominate Montana's wildlife spotlight, another antlered icon may be slipping away.

After more than a decade of dwindling hunting success, Montana Fish, Wildlife & Parks will conduct a long-term study of the moose population, including possible threats.

Within the next few weeks, FWP biologist Nick DeCesare will start capturing and collaring female moose in three different areas of the state: the Cabinet Mountains in the northwest, the Big Hole Valley in the southwest and along the northern Rocky Mountain Front.

> "Counting moose is harder than counting something like elk. They don't roam in herds, and their brown hide is hard to see from the air. So we have to rely on other data."
>
> **Andrea Jones**, FWP Region 3 spokeswoman

Logging created much of the habitat for moose in the Cabinet Mountains, but now trees are filling in. The Big Hole Valley has more riparian areas and swamplands while the Front is drier and colder.

DeCesare said he plans on collaring a dozen cows in each area this year, but he hopes to increase that to about 30 per region.

Biologists will track the animals for at least 10 years and record their ages, survival rates and pregnancies, along with the survival rates of their calves.

Scientists will also monitor crucial details of each habitat, such as weather and vegetation characteristics, to see how environmental changes affect moose survival.

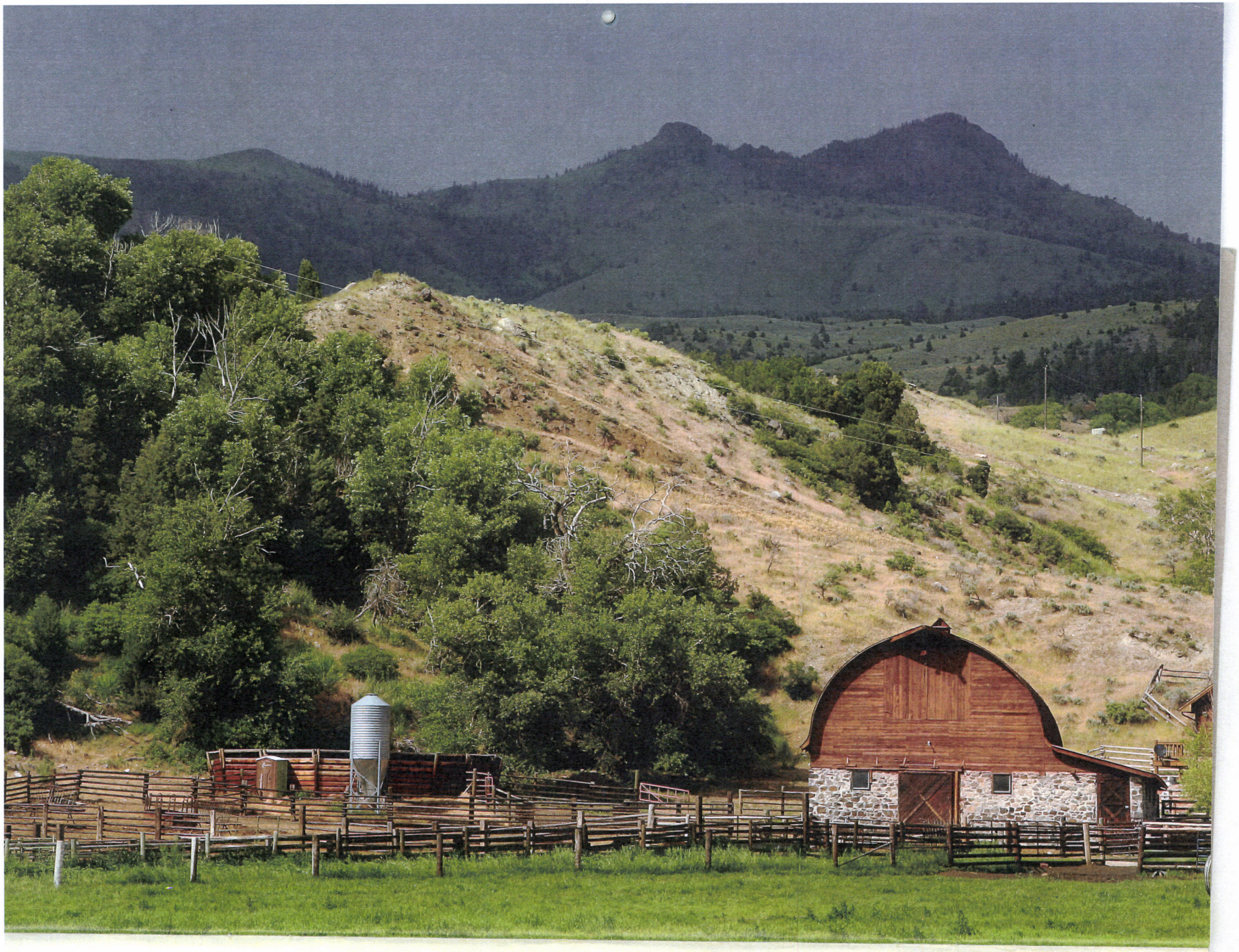
"Moose can live for a long time, so we had to commit to doing it for a while to get a good sample size," DeCesare said. "Based upon what's going on in other parts of the country, we have assumptions of what might be affecting them. But we may have our own combination of factors."

FWP hasn't conducted much research on moose since the 1960s, when it did some initial studies in southwest Montana. Since then, biologists have relied mainly upon reports from hunters.

"Counting moose is harder than counting something like elk," said FWP Region 3 spokeswoman Andrea Jones. "They don't roam in herds, and their brown hide is hard to see from the air. So we have to rely on other data."

The hunting data shows that moose numbers have probably been decreasing since the mid-1990s, DeCesare said. That's when the number of moose permits peaked.

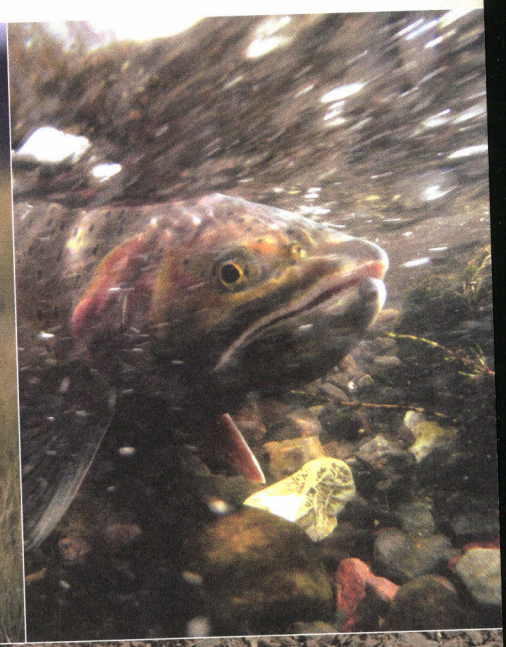
More **MOOSE** | C2



# September 2013

Rigler Barn, Park County. *The Paul Rigler family bought a ranch in the Paradise Valley in 1908. Paul died in 1909, leaving his wife, Cecilia, and their six sons to run it. They eked out a living raising cabbages, potatoes, and apples to sell at Corwin Springs near the north entrance of Yellowstone National Park. In 1912, the family began collecting stones from nearby hills for this horse and tack barn completed in 1915. A carpenter who had worked in the park framed the barn; a local stonemason laid the two-foot-thick walls. Rigler great-grandchildren still operate the ranch.* (Barn courtesy Rigler Family)

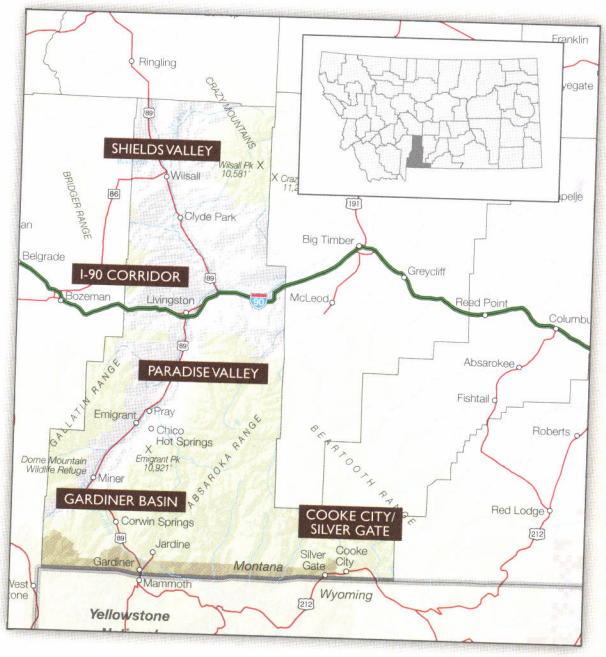
# PARK COUNTY WILDLIFE



# WILDLIFE OVERVIEW

Park County is located in southwest Montana where "the mountains meet the prairie." The unique combination of large fertile valleys, major continental mountain ranges, a significant island mountain range (Crazy Mountains), and the beginning of the eastern prairie grassland provides a variety of wildlife habitats.

Remarkably, Park County supports a complete component of all the large species of wildlife that were present when Lewis and Clark first stepped foot in Montana in 1805. All 12 species of ungulates and major predators still occur. Not all species are easy to see, however in the right place and time of the year white-tailed deer, mule deer, elk, antelope, bighorn sheep and bison are often viewed from the roads. If you're lucky you may also spot black bear, moose, wolf or some other interesting wildlife species.

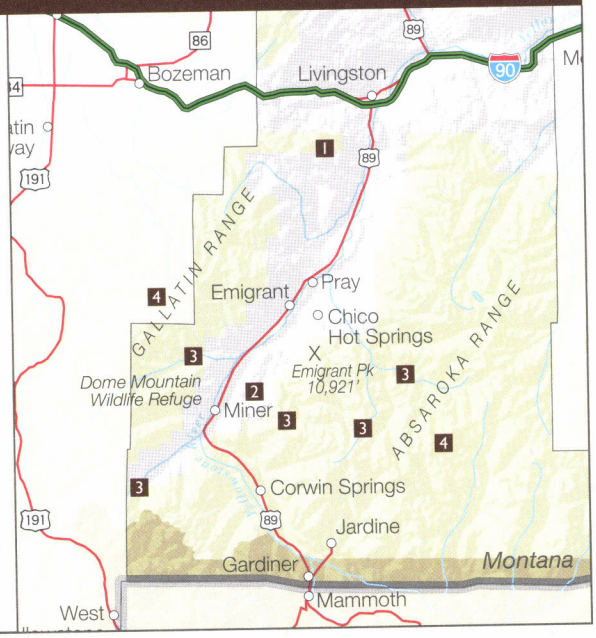



This rich wildlife resource and our open vistas help define Montana. Both Park County residents and visitors enjoy and are greatly enriched from diverse and healthy wildlife populations. Studies have shown that the presence of thriving wildlife populations and habitats are important factors in determining the "quality of life" in a particular area.

# PARADISE VALLEY

Paradise Valley includes the area east and west along the Yellowstone River from Livingston running south towards Tom Minor Basin and includes portions of the Absaroka Beartooth Mountains and Gallatin Range.

Total area is approximately 500 square miles, ranging from 4,500 feet to 10,921 feet (Emigrant Peak) in elevation, and includes approximately 2,100 residents.




1 Home to a large resident population of 3,000-4,000+ elk, the majority on the west side of the valley in the Gallatin Range.

2 The state-owned 4,600 acre Dome Mountain Wildlife Management Area is located at the southern end of the valley near Dailey Lake. This area provides critical winter range for up to 2,000 of the migratory Northern Yellowstone elk herd.

3 Grizzly bear numbers are increasing on both sides of the valley with prime grizzly habitat from Six-mile Creek to Mill Creek and from Tom Miner Basin to Big Creek. Grizzly bear density decreases going north up to I-90.

4 Small numbers of rare wolverines and lynx (mid-sized carnivores) occur in the Absaroka and Gallatin Mountains on each side of the valley.

THROUGHOUT THE PARADISE VALLEY:

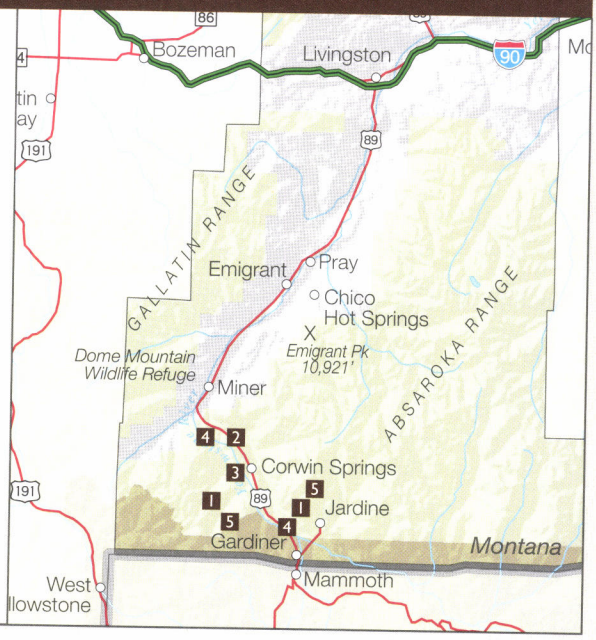
- Several wolf packs use Paradise Valley and adjacent mountains to include some packs that move back and forth between Yellowstone National Park and Montana.
- Moose also occur in small numbers in appropriate habitats in many drainages.

Wildlife Overview

# GARDINER BASIN

The Gardiner Basin includes the area north and south along Yankee Jim Canyon, the community of Gardiner and Jardine, and the area adjacent to Yellowstone River and the north entrance to Yellowstone National Park.

Total area is approximately 265 square miles, ranging from 4,900 feet to 10,969 feet (Electric Peak) in elevation, and includes approximately 1,200 residents.



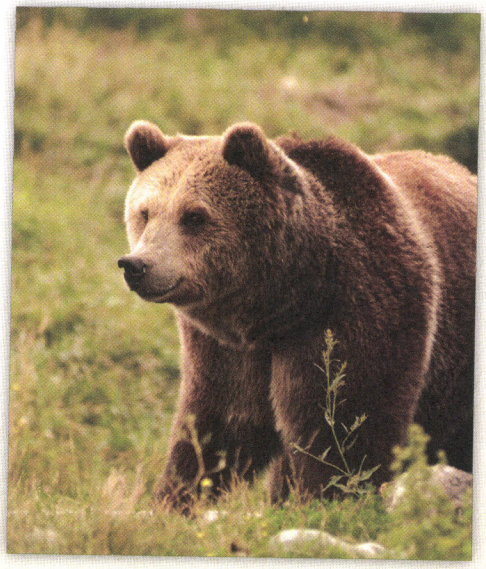

1 This area contains critical/high density winter range habitat for a variety of wildlife providing outstanding and unique opportunities to view large numbers of elk, bison, mule deer, antelope and bighorn sheep.

2 Due to large numbers of wildlife along US Hwy 89 drivers are urged to use caution to avoid wildlife collisions, especially through Yankee Jim Canyon where Bighorn Sheep are often close to the road.

3 Bighorn sheep can often be observed during the fall breeding season (November-December) from the road at the base of Cinnabar Mountain, across the river from Corwin Springs.

4 Gardiner Basin contains healthy Yellowstone cutthroat trout populations in the river and important spawning habitat in several tributaries including Mol Herin Creek.

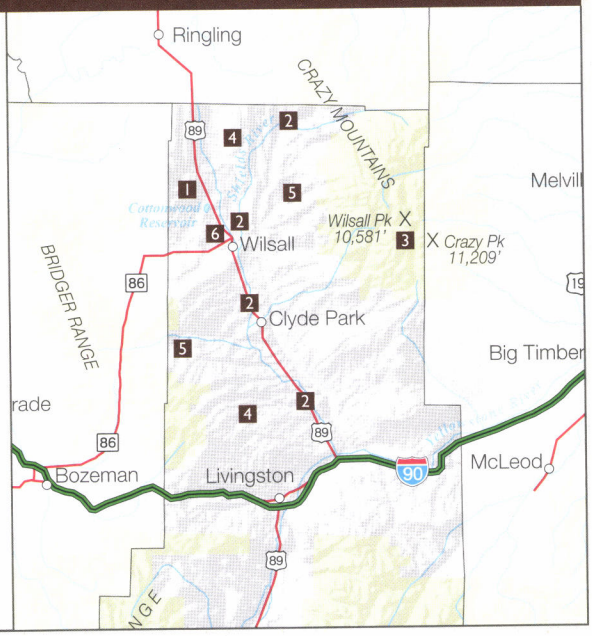
5 Gardiner Basin supports a healthy grizzly bear population. Grizzlies have been observed in all areas of Gardiner Basin, with most frequent sightings in Beattie Gulch, Sphinx Creek and Eagle Creek.



# THE SHIELDS VALLEY

The Shields Valley is the largest valley in Park County and expands north along US Hwy 89 and includes the Shields River, Crazy Mountains, Bangtail Mountains, and the vast rolling hills north towards Ringling.

Total area is approximately 690 square miles, ranging from 4,550 feet to 10,578 feet (Crazy Peak) in elevation and includes approximately 1,500 residents.




1. The Shields Valley supports an unusually high concentration of golden eagles.
2. One of the best preserved native Yellowstone cutthroat trout populations in the state.
3. One of the largest mountain goat populations (Crazy Mountains) in the lower 48 United States, with excellent viewing opportunities from many backcountry trails.
4. Largest antelope population in the county ranging from 1,500-2,000 antelope.
5. Elk population of over 5,000, with the majority occurring on the west side of the valley.
6. Cottonwood Reservoir (and other wetlands) provide important staging, resting, and viewing areas for migratory waterfowl and shorebirds.

THROUGHOUT THE SHIELDS VALLEY:

- Bighorn sheep do not currently inhabit the Crazy or Bridger Mountains.
- Excellent moose habitat occurs along the Shields River and tributaries, and moose can often be seen from the road during winter.
- Home to a small remnant sage grouse population, a species of concern throughout the western United States.

# THE I-90 CORRIDOR

The I-90 Corridor is the area adjacent to I-90 running from the top of the Bozeman Pass and continues through towards Big Timber. It includes portions of the Gallatin Range, Bangtail Mountains, Absaroka Beartooth Mountains and Crazy Mountains.

Total area is approximately 465 square miles, ranging from 4,550 feet to 9,314 feet in elevation, and includes approximately 10,000 residents (including the city of Livingston).


1 The Livingston area is the home of a large year-round resident Canada goose population of several hundred birds.

2 Several pairs of bald eagles nest along this stretch of the Yellowstone River and lower Shields River.

3 Seasonally, black bears, mountain lions and moose are seen within the city limits of Livingston.

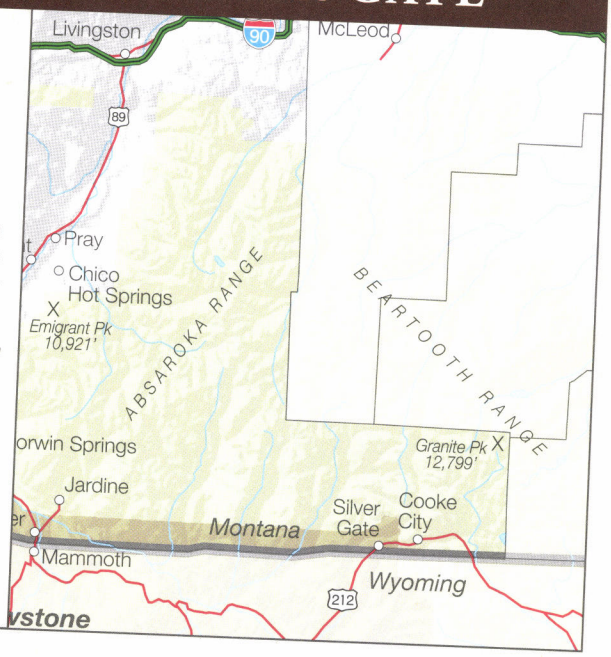
THROUGHOUT THE I-90 CORRIDOR:

- Major human population and development area in Park County adjacent to the free flowing Yellowstone River.
- Northern boundary of expanding grizzly bear distribution, no confirmed grizzly bear sightings north of I-90 as of yet.
- From west to east this corridor is a transition zone from the Rocky Mountains to the eastern prairies.

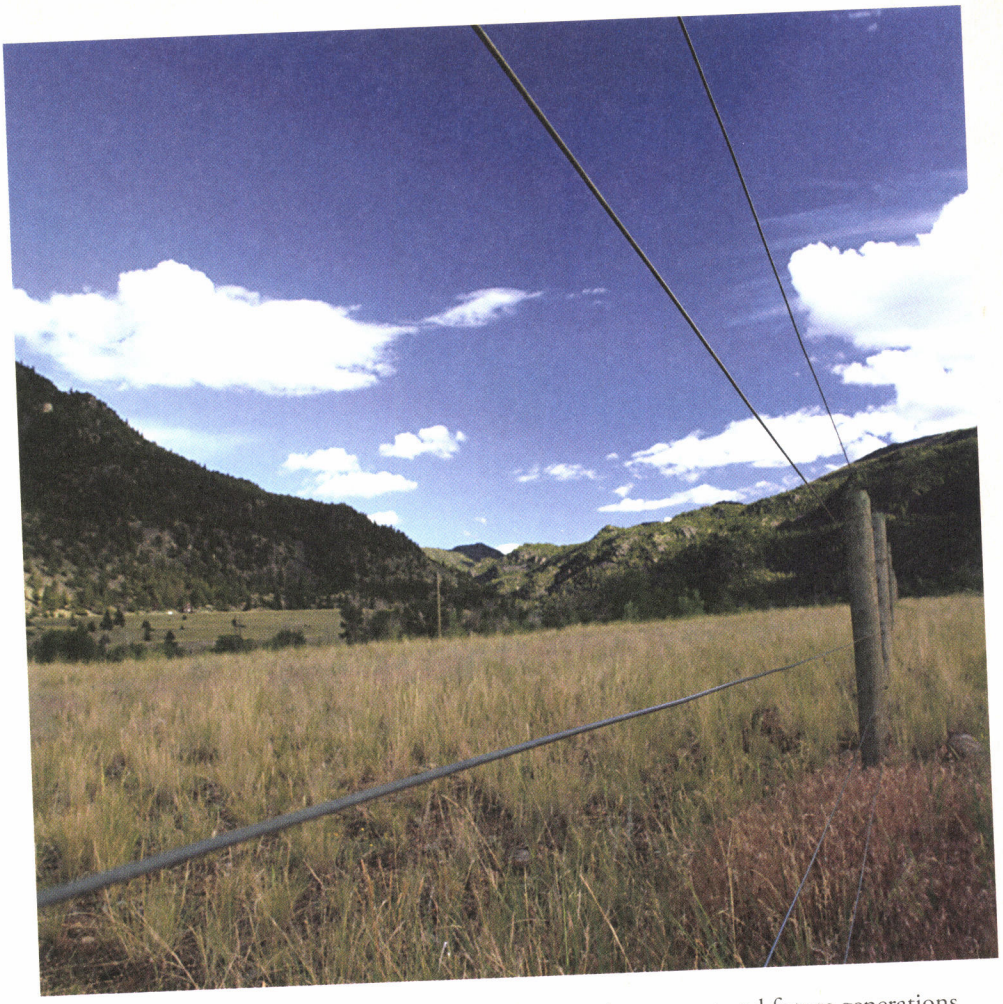
# COOKE CITY/SILVER GATE

The Cooke City/Silver Gate area includes the communities of Silver Gate and Cooke City and the northeast portion of Yellowstone National Park, running east towards Sunlight Basin and the Beartooth Pass.

Total area is approximately 170 square miles, ranging from 7,300 feet to 11,163 feet (Mount Rosebud) in elevation, and includes approximately 100 residents.




- This area contains important summer and winter range for a significant moose population and is perhaps the best place to observe moose in Park County.
- Cooke City and Silver Gate are small high elevation mountain communities surrounded by designated wilderness areas that support good numbers of bighorn sheep and mountain goats.
- The high elevation forested habitat provides summer habitat for small populations of elk, mule deer and white-tailed deer. Antelope do not occur in this area.
- This area is also well known for grizzly and black bear activity. The narrow valley corridor of Soda Butte Creek places people and bears in close proximity and in potential encounter situations.
- The high elevation forests in this area support several species of furbearers including pine marten, bobcat, wolverines, red fox and weasels.



Wildlife need places to live. If we are to guarantee that present and future generations continue to enjoy the benefits of diverse wildlife resources we need to provide and protect healthy habitats for them to use on private and public lands. It is important for everyone to consider wildlife and wildlife habitat in land planning activities and in our everyday lives. We need to find a balance between human activities and wildlife.

To accomplish that balance we all need to better understand our wildlife resources and what wildlife need to thrive in Park County. The best outcomes will be achieved when people get actively involved in public discussions and decisions and take measures to ensure wildlife and people can continue to co-exist. Montana has often been called the "Last Best Place" and our diverse wildlife heritage is a big part of that accolade.

This brochure was produced in part by:
Park County Planning Department
Members of the Park County Planning and Development Board
Montana Fish, Wildlife and Parks
National Parks Conservation Association, Yellowstone Field Office