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Working to Protect Native Species and Their Habitats

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May 23, 2003

Renee Dana
Rock Springs Field Office, BLM
280 Highway 191 North
Rock Springs, WY 82901

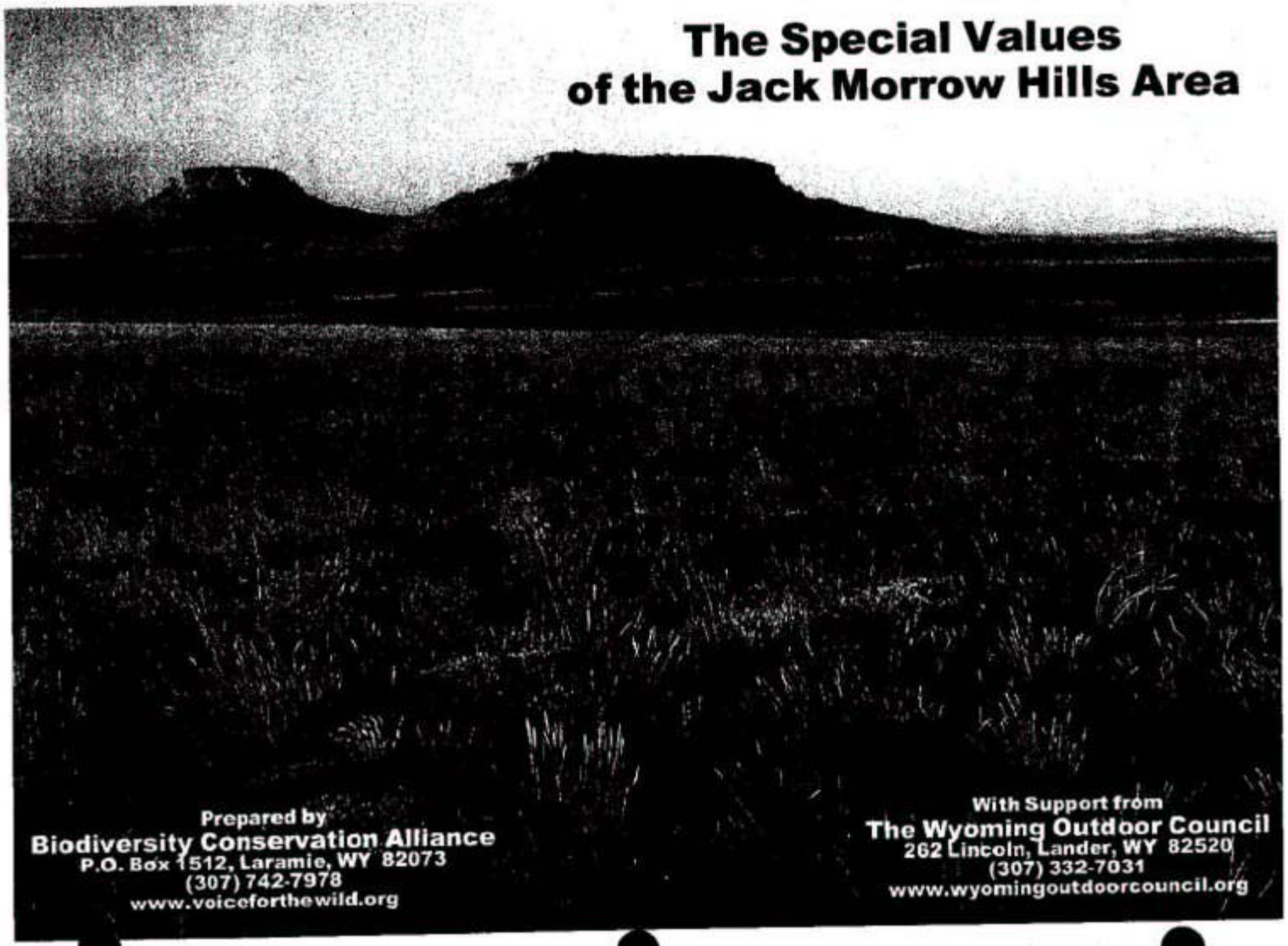
Attachment to BCA/WOC/TWS Comments

Dear Ms. Dana:

Enclosed please find The Special Values of the Jack Morrow Hills, a report that is an attachment to the comments submitted by Biodiversity Conservation Alliance, Wyoming Outdoor Council, and The Wilderness Society. We incorporate this report in full into our comments.

Sincerely,

Erik Molvar
Biodiversity Conservation Alliance


The Special Values
of the Jack Morrow Hills Area
Prepared by
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Note: This is the fourth version of *The Special Values of the Jack Morrow Hills Area*, completed February 1, 2001. This version differs slightly from the original version submitted with the Citizens' Red Desert Protection Alternative:

- typographical errors have been corrected
- the page orientation for the narrative has been changed to make it easier to read the maps
- narrative has been added to or changed slightly in these sections: Important Big Game Habitat, Sage Grouse and Mountain Plover, Raptors, Animals of Special Concern, Rare Plants, WSAs and Potential Wilderness, and Threats to Special Values
- map colors have been corrected in the Waters, Wetlands, & Watersheds of Concern map
- several photos have been added (no photos were in the first version), and
- a "summary of special values" foldout map has been added.

This report was written and produced by Biodiversity Conservation Alliance. Financial support was provided by the Wyoming Outdoor Council, Peradam Foundation, The Wildlands Project, National BLM Wilderness Campaign, and individual donors. Thanks to Wild Utah Project for help with the roadless area inventory. We would also like to gratefully acknowledge GIS hardware and software donations from the Conservation Technology Support Program (CTSP) and ESRI Inc.'s Environmental Conservation Program (ECP).

Cover Photograph of Oregon Buttes by Scott Smith.

Introduction

The lands administered by the Bureau of Land Management in the western United States hold many special natural values and important historical and cultural resources. In a few locations, several of these values come together in a relatively small area. The Jack Morrow Hills (JMH) study area, located in the Red Desert of Wyoming, is just such a place. In the JMH one finds an incredible array of wildlife, rare plants, wildland recreational opportunities, wonderful scenery, archeological resources, historic sites, and areas important to Native Americans.

While there is a relatively large amount of information available about the Jack Morrow Hills and its remarkable natural and human history, this information is generally scattered about in dozens of government documents and hundreds of other articles, books, and reports. The draft environmental impact statement (DEIS) prepared by BLM for the Jack Morrow Hills Coordinated Activity Plan (CAP) collects a great deal of the most important information about the JMH in a single document. Unfortunately, this information is dispersed throughout more than 700 pages. There are many maps in the DEIS, but most of the maps display only a single group of features. Thus it is difficult for the reader to get a feel for the overall picture. And, importantly, some key information about native species and other natural values simply has not been included in the DEIS.

Right now, the Jack Morrow Hills is under great industrial development pressure, primarily for oil and natural gas. The very features that make the JMH special are threatened by the push towards industrial development. Other threats exist as well. Through the JMH CAP, BLM will decide what level of protection is offered to the JMH, and what level of development will be allowed. In a very real sense, the BLM's decision on the CAP could seal the fate of this remarkable place. Our goal in creating this document is to present the essential information demonstrating the many special values of the JMH—and the threats to these values—in a more concise and easy to grasp format. Our belief is that only through full consideration of these values will they be protected.

Study Area

For this study we used the boundary of the BLM's JMH Coordinated Activity Plan and DEIS. The 622,000 acre area is located in southwest Wyoming, north and east of Rock Springs, Wyoming and directly south of South Pass. A vicinity map, is included below, along with a land ownership map and a shaded relief map to show general topography.

Data Sources

We collected information from BLM, Wyoming Natural Diversity Database, Wyoming Game and Fish Department, interviews with individual scientists and researchers, library sources (books and journals), and public digital data repositories (such as the University of Wyoming's Spatial Data Visualization Cluster). A key source was the JMH DEIS itself, as well as various specialists at BLM in Rock Springs and Cheyenne. Wherever possible, we acquired digital data to facilitate mapping with our Geographic Information System (GIS). A list of references is included at the end of the report.

Findings

In the following pages, we present twelve maps depicting the special values of the Jack Morrow Hills study area. Each map is accompanied by a short narrative description of the features shown on the maps and relevant citations from the scientific literature. Preceding the special values maps are three general information maps showing the location of the study area, the land ownership, and topographic relief. Following the special values maps is a "geologic constraints" map showing areas with geologic conditions which would limit development activities. Three additional maps show a subset of the development threat that could diminish or eliminate the special values of the study area. The final large foldout map is our attempt to show on a single map all of the special values shown on the individual maps. Because so many natural and historical values intersect in the study area, it was necessary to omit the scenic/visual resources and predicted wildlife habitat from the summary map.

Most maps show several different pieces of information, but each map is based on a particular unifying theme. For example, all rare plant and plant community information is shown on a single map. Likewise for all big game information. Where there was simply too much to show on a single map, we attempted to break up the maps into logical subthemes.

Although we had visited the Jack Morrow Hills area numerous times in the past, and had some familiarity with the literature describing many of the natural features, we were nonetheless quite surprised by the number of different and remarkable values found to occur in this one region of Wyoming. Whether one considers biological values like big game and rare plants, or cultural and historical values like petroglyphs and historical sites, the confluence of so many special values makes the Jack Morrow Hills a truly exceptional place. Equally surprising was the fact that virtually no part of the Jack Morrow Hills area is lacking in special values.

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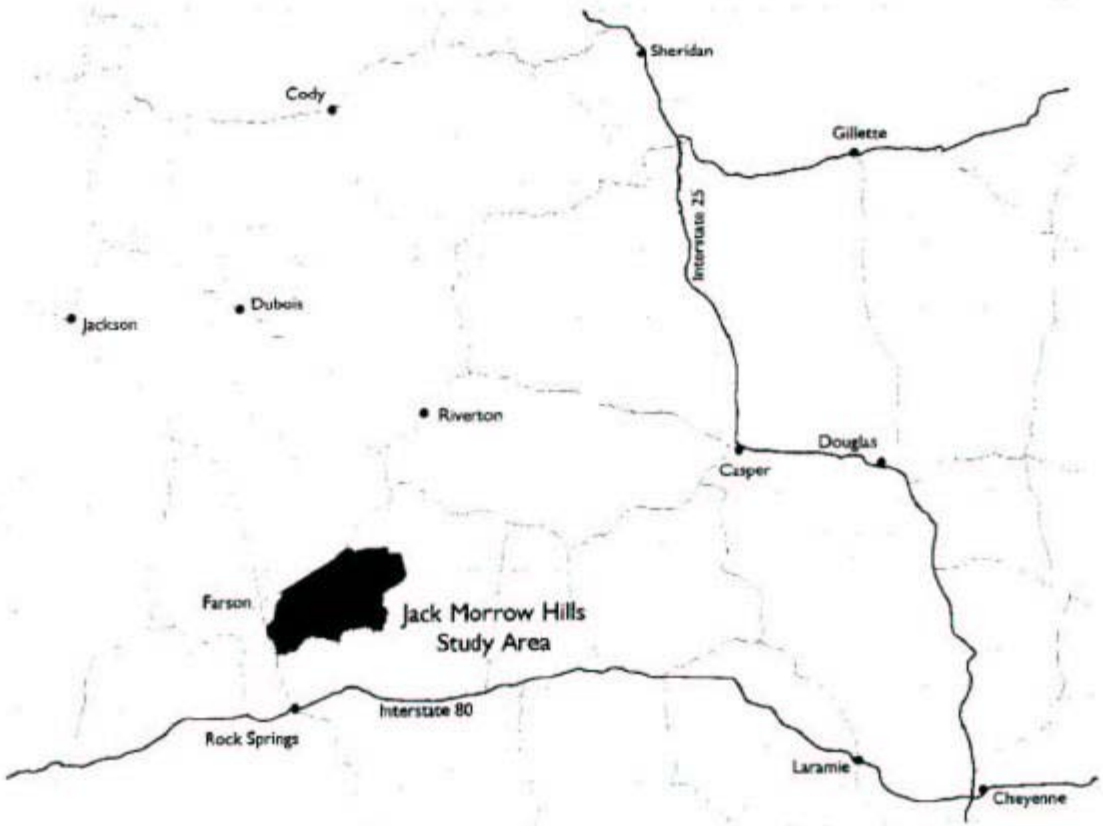
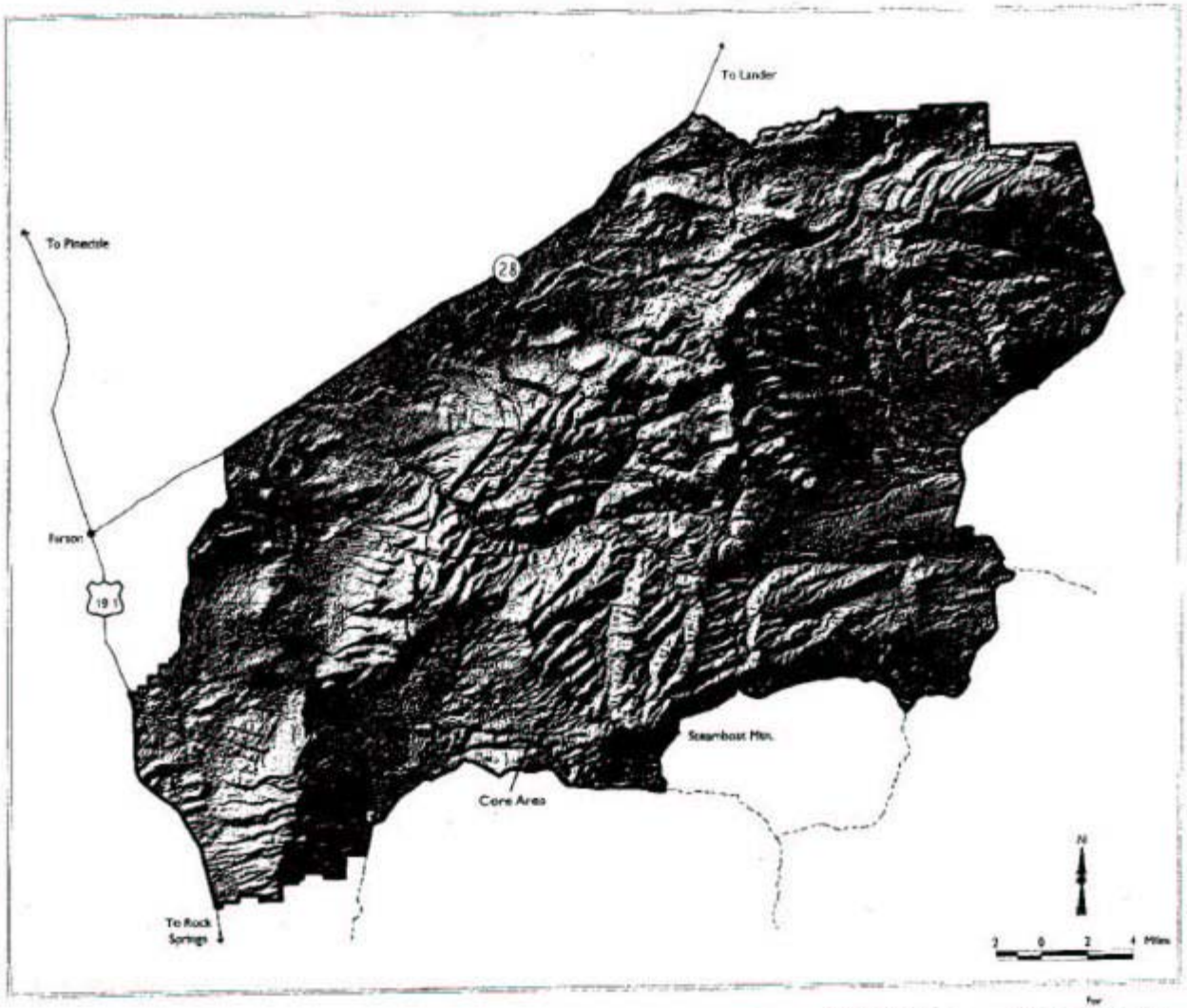
Jack Morrow Hills Vicinity Map



Hillshade of the Jack Morrow Hills Study Area



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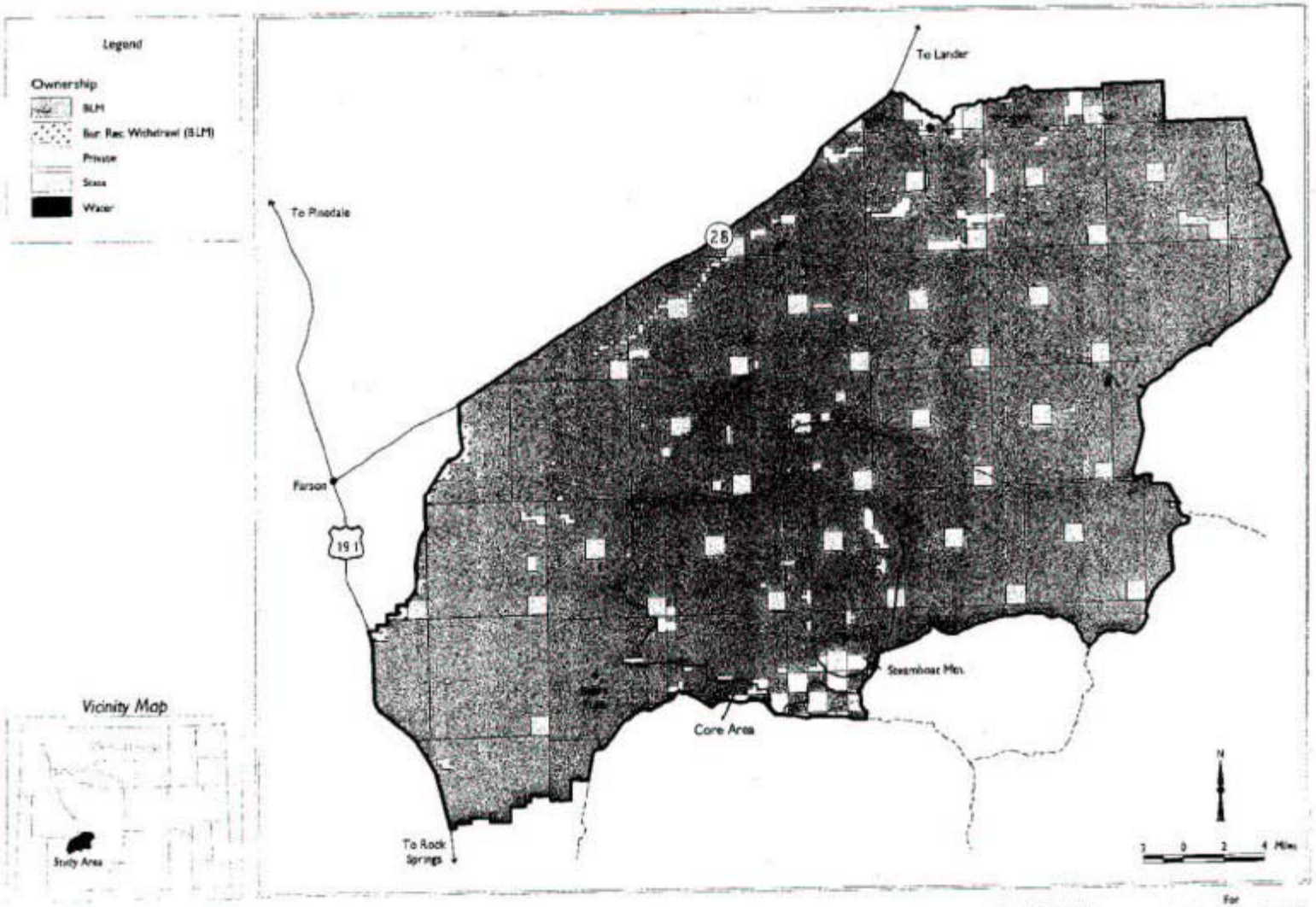
Land Ownership



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Important Big Game Habitat

The Red Desert contains important habitat for elk, mule deer, and pronghorn (commonly known as antelope). The area provides "crucial habitat" for all three big game species, birthing grounds (parturition areas) for both elk and mule deer, as well as more general habitat over vast expanses. Crucial habitat is "the determining factor in a population's ability to maintain itself at a certain level." Approximately 187,000 acres are crucial winter or crucial yearlong range for elk, shown in gold on the map. This is about 30% of the study area. In total, at least 72% of the study area is used by elk during some part of the year. Mule deer find over 112,000 acres of crucial winter or crucial yearlong range here, and another 13,000+ acres of severe winter relief range. Important mule deer habitat is shown in red patterns on the map. In total, about 49% of the study area is used by mule deer during some part of the year. Pronghorn use the entire study area, 100%, during some portion of the year. About 82,000 acres of this are crucial range for antelope. This is shown in light blue-grey on the map. Acreage figures are shown in the table below.

The elk herd is particularly noteworthy because it is one of the nation's only elk herds that lives in a sagebrush-desert environment. "The Steamboat elk herd is unique in that it occupies the sagebrush steppe ecosystem year-round. While elk were historically a plains animal, as well as a resident of the forested/mountainous areas, most of the plains elk were eliminated with increased human settlement of the late 1800's and early 1900's." Wyoming Game and Fish Department (WGFD), Sept. 25, 2000. The Steamboat elk herd is currently the focus of a great deal of concern due to increasing mineral development and road construction. Indeed, public concern about existing and potential impacts to big game and its habitat was one of the driving forces behind BLM's initiation of the Jack Morrow Hills CAP planning process.

The accompanying map shows the location of important big game habitat: crucial elk, mule deer and antelope range; birthing areas for elk and mule deer, severe winter relief for mule deer, and the important elk migration/connection zone. We obtained digital map coverages from the Wyoming Game and Fish Department, and digitized the migration corridor/connectivity area from Map 59 in the DEIS. Habitat not considered "crucial" or severe winter relief is not shown on the map. Thus spring/summer/fall, winter/yearling, and noncrucial winter habitat are not shown on the map.

Big game, particularly elk, need protection from development activities. Otherwise, construction of roads, facilities and other industrial activities can have severe consequences. "Maintaining connectivity between important habitats (crucial winter ranges, severe winter relief areas, calving/fawning habitats, migration corridors, topographic relief areas, mountain shrub communities, forest type habitats) within the planning area is paramount to sustaining viable big game herds and other wildlife. Fragmentation of these crucial habitats will not sustain big game population objectives..." DEIS, page 235.

The DEIS also notes that elk in the Steamboat Mountain area previously were migratory but, "due to the large amount of human disturbance and activities associated with oil and gas development," these migrations are no longer observed. DEIS, page 236. A recent study in the Jack Morrow Hills area found that elk avoided major roads (those used throughout the year, including those used for energy development). The pattern of avoidance extended more than 1.86 miles from major roads. Bock and Lindzey, December 1999.

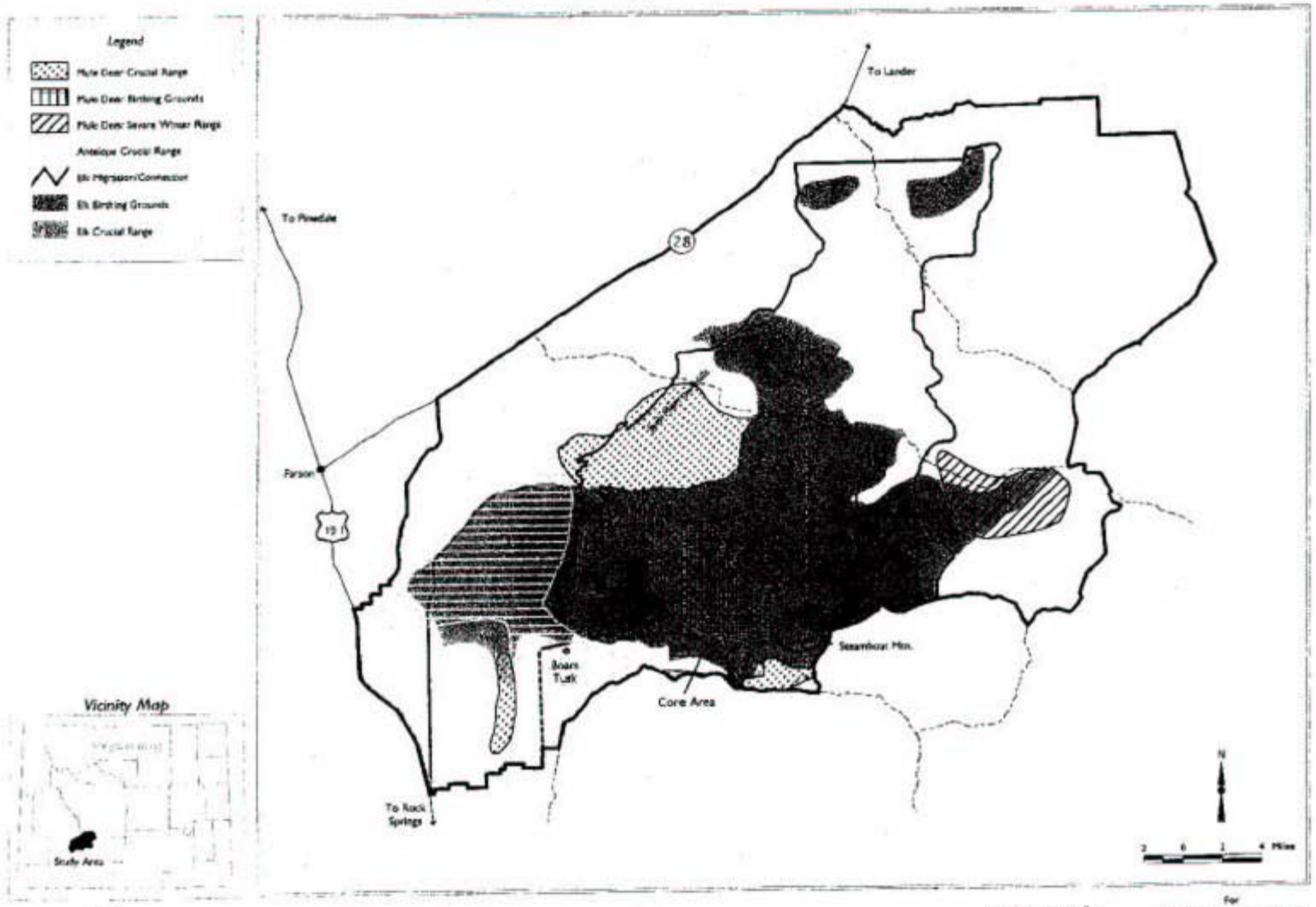
Of particular concern to the WGFD is the issue of roads, road density and traffic levels. "[E]lk use of an area is dependent on the amount of human disturbance the area receives. The DEIS does not provide a scientific foundation for the road densities of 2.0 road miles/square mile in open habitats. We are unaware of any scientific literature that would support the assumption that elk will continue to use areas that have road densities of 2.0 road miles/square mile in open habitats. Thomas et al. (1979) reported that elk habitat effectiveness declined 54% when improved road densities were 2.0 square mile in a forested environment. *We anticipate the decline would be much greater in the unforested habitat in the Jack Morrow Hills area, due to less cover, topographic relief, and consequent higher visibility of disturbance factors than are found in forests*.. The document does not delineate an upper limit to road densities in crucial habitats outside the core and connectivity areas. An upper limit should be established in these areas as well..." WGFD, September 14, 2000. Emphasis added.

Before adoption of the current Wyoming Governor's "one voice" policy, the WY Game and Fish Department characterized industrial development in southwest Wyoming this way: "Can we continue to allow gas development or some other extractive/industrial use on every acre of land desired by industry in southwest Wyoming? Is this multiple use of public lands and public resources? Can we protect the environment and dependent populations of wildlife... When is enough development enough? What will be left for wildlife or recreation?" Bohne and Rudd. 1994.

Big Game Habitat in Jack Morrow Hills (excluding birthing areas)

(acres)	Crucial	Severe Winter	Spring/Sum./Fall	Winter/Yearlong	Winter	Total
Elk	187,000	0	142,000	69,000	53,000	451,000
Mule Deer	112,000	13,500	40,135	143,000	5	308,640
Antelope	82,000	0	348,000	190,000	0	620,000

Important Big Game Habitat



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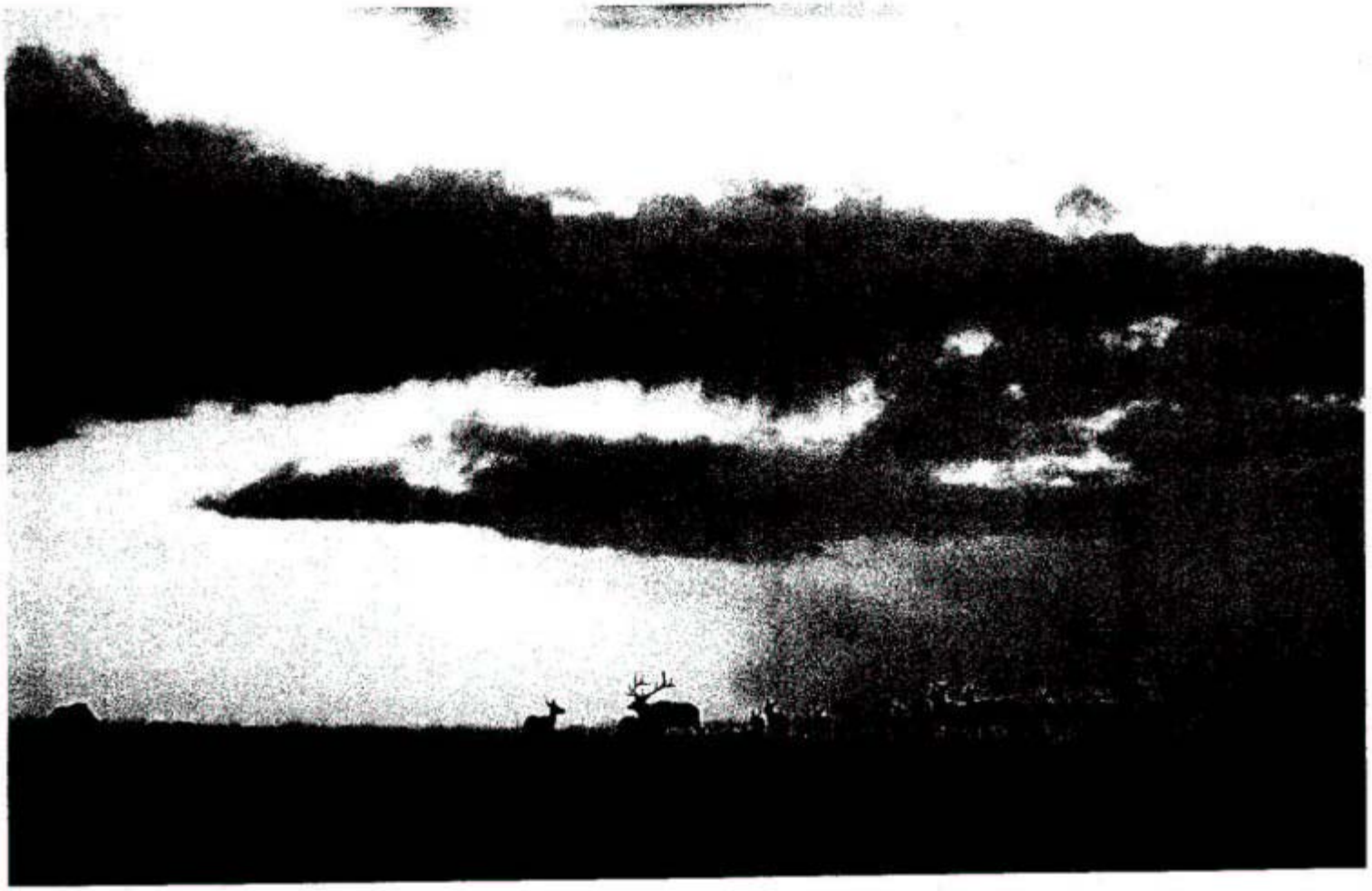


Bull elk with harem, near the Continental Divide. Photo by Scott Smith.

Pronghorn in the Great Divide Basin. Photo by Scott Smith.

Sage Grouse and Mountain Plover: Observations and Primary Habitat

Both the sage grouse and mountain plover have experienced precipitous declines throughout many parts of their range. Fortunately, the Red Desert is still home to significant populations of both. It is interesting to note that the study area "encompasses the site where John Kirk Townsend collected the first mountain plover known to science in 1832." Beauvais and Smith, 1999. Wyoming is also home to the largest population of sage grouse in the world. Wyoming Game and Fish Department (WGFD), June 21, 2000.

The status of the mountain plover is so precarious that the U.S. Fish and Wildlife Service has proposed mountain plover for listing under the Endangered Species Act, and is expected to formally list the species in the near future. U.S. Fish and Wildlife Service, 1999. At least twenty-three recent plover observations were made in the study area, occurring in two general clusters: Bush Rim and its western extension, and the divide between Bush Creek and Bear Creek about 13 km west of Bush Rim. Beauvais, 1999.

The status of Wyoming's sage grouse is also troubling. Populations have declined significantly since the 1950s: 20-40% statewide—more than 80% in some populations, and extirpation in parts of eastern Wyoming. WGFD, June 21, 2000; Christiansen, 2000. The area surrounding the Wind River mountains, including the study area, is considered to be a last stand for this species.

The map shows known occurrences and primary habitat of mountain plover and sage grouse. Data were obtained in electronic form from the Wyoming Game and Fish Department and BLM. It is significant that a large portion of the area provides habitat for these two declining species. On the map, we show 2 mile buffers (3.2 km) around sage grouse leks but do not show buffers for the plover nests—though they may be needed. The hatched areas are predicted primary habitat for both species.

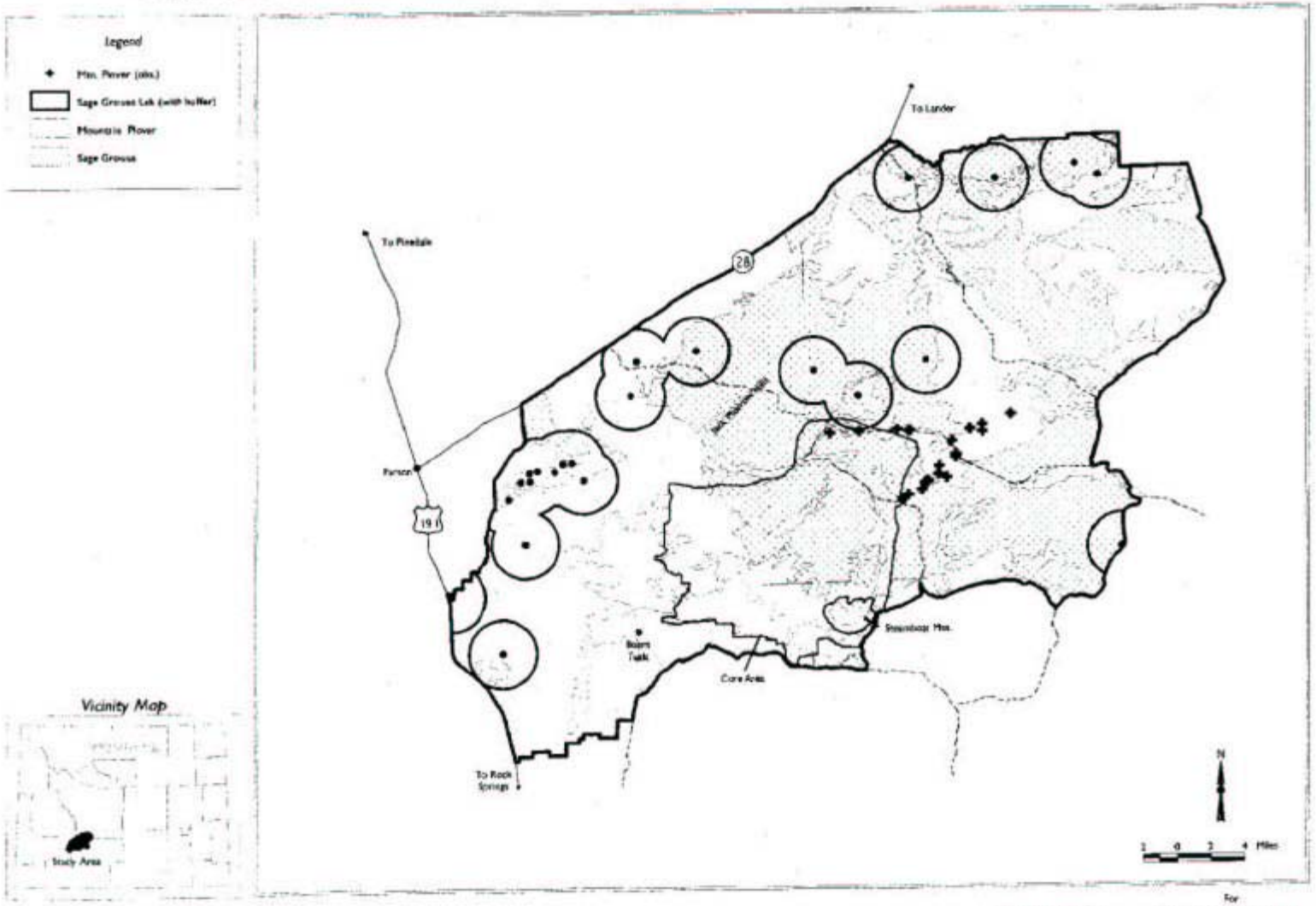
Known factors negatively influencing the mountain plover include roads, which "present a direct hazard for a variety of reasons," including direct mortality, disturbance, etc. "Thus, development of oil and gas resources could adversely affect mountain plover habitat or cause the death of individuals.... [H]uman disturbance during the nesting period may directly impact mountain plovers due to their sensitivity to stress.... Mountain plover chicks less than 2 weeks old may die in 15 minutes if shade is not available on days when the temperature exceeds 27°C (81°F).... Adults have been known to abandon eggs after being disturbed on the nest, and adults also may die from stress (Graul 1975). Consequently, any human activity that significantly modifies behavior by adults will not only increase the exposure of chicks to natural elements, but will also increase the vulnerability of adults to stress-related mortality." USFWS, 1999. Pesticides have also been implicated in the decline of plovers, as a result of both loss of prey (grasshoppers and other insects) and increased metabolism of pesticide residue. Recommendations from the literature include protecting "habitat from disturbance, especially during the breeding season (Wershler 1991, Ball 1996, Knopf 1996a). Areas traditionally used by Mountain Plovers should be protected, as some individuals return to the same sites year after year...." Dechant, et al., 1999.

There is voluminous information on impacts to sage grouse from development, but it is clear that habitat loss from energy development, habitat fragmentation (from fences, roads and powerlines, herbicide use), exotic weeds such as cheatgrass, and artificial perching habitat for predatory birds all play a role. In addition, nesting grouse are easily disturbed and readily abandon nests. Sage grouse are known as sagebrush obligate species, which means they depend on this habitat type for survival. "Given the specificity of sage grouse nesting requirements that include mature sagebrush, it is unlikely that destroyed nesting habitat can be restored to pre-disturbance condition in 20 years." DEIS, page 292.

Recommendations for protective buffers for sagegrouse nests and other habitats range from a few kilometers to over 5 km. (to minimize nest abandonment and prevent perching sites for raptors, to avoid sagebrush habitat fragmentation and loss, etc.). "Avoid building powerlines and other tall structures providing perch sites for raptors within 3 km [1.86 miles] of seasonal habitats.... Whenever possible, build energy-related facilities ≥3.2 km [1.98 miles] from active leks." Conelly, 2000, page. 23. Large continuous areas of habitat which is unfragmented, such as that in the study area, are apparently very important to sage grouse. "Habitat fragmentation threatens sagebrush obligate species that evolved in a vast, continuous landscape of sagebrush habitat... The safest approach to the habitat fragmentation issue is to manage for no net loss of sagebrush steppe habitat and to *maintain native vegetation communities in large and continuous stands wherever possible*." "Roads also fragment sagebrush communities and play a role in the spread of noxious weeds. Limit the number of roads and consider closing and rehabilitating old roads." Paige and Ritter, 1999. Emphasis added. "Sage grouse and sharp-tailed grouse need several thousand hectares of adequately connected habitat to maintain self-sustaining populations." Id. "[F]ragmentation of shrubsteppe significantly influenced the presence of shrub-obligate species. Because of restoration difficulties, the disturbance of semiarid shrubsteppe may cause irreversible loss of habitat and significant long-term consequences for the conservation of shrub-obligate birds." Knick and Rotenberry, 1995.

Given their troubled status, it is clear the mountain plover and sage grouse are in need of strong protection. According to the WGFD, "[W]e will not recover sage grouse without some active changes in management." Id. The impacts to mountain plover and sage grouse from increased oil and gas development, if allowed to take place, could be severe.

Sage Grouse and Mountain Plover: Observations and Primary Habitat



Raptors: Observations & Primary Habitat

A large number of raptors are present in the study area, including the prairie falcon, golden eagle, ferruginous hawk, burrowing owls, red-tailed hawk, and Swainson's Hawk, and more. There is nesting habitat for 17 raptor species, and at least 83 nests of the various species have been confirmed. Keith, 2001. The data we received from BLM Rock Springs Field Office included 93 raptor nest observations, not 83 as mentioned in the DEIS. Of the 93 total, 34 were ferruginous hawk, 25 were prairie falcon, 15 were golden eagle, and the rest were great-horned owl, red-tailed hawk, burrowing owl, kestrel, short-eared owl, and Swainson's hawk. Based on our own observations, nest sites for burrowing owl are vastly underreported in the DEIS, so these totals should be viewed as conservative.

On the accompanying map, actual observations of raptors or raptor nests are shown as points, and locations of potential primary habitat are shown in hatched green. All raptor nests are shown with 1-mile buffers.

Several raptor species require protection from development activities and other disturbances. Destruction of nesting and foraging habitat, accidental poisoning, direct mortality from automobile collisions, and disturbance from drilling and associated activities are just of few of the many potential negative impacts. Of particular concern are ferruginous hawks, which "are declining in numbers" in the area (DEIS, page 238) and which "are very sensitive to disturbance." Parrish, et al., 1994; and burrowing owls, which are "declining populations and/or habitat conditions... throughout all of part of their range." DEIS, page 238. The study area is thought to be part of the stronghold for global populations of ferruginous hawk, so it is particularly disconcerting that the population is known to be in decline.

"Oil and gas development has an impact on raptors through direct human disturbance and the elimination and fragmentation of habitats... Taken individually, well sites occupy a relatively small area... Collectively, however, habitat loss can be substantial if many wells and connecting roads are cleared, as in the case of full-field development... [O]il and gas development results in secondary impacts such as increased traffic and human encounters with raptors." Postovit and Postovit, 1987. "New roads, on the other hand [in contrast to railroads], provide access to otherwise relatively inaccessible land where even limited access by humans can affect the ferruginous hawk." Olendorff, 1993.

Buffer zones are an important measure to protect raptor nests from disturbance, abandonment and damage. Typical buffer radii of up to one mile have been used. Larger buffers are needed in areas with less topographical screening. Importantly, "buffer zones around ferruginous hawk nests should be larger in years of scarce prey than when prey are abundant..." Parrish, et al, July, 1994. Buffers larger than 1 mile may be necessary. One study in South Dakota found that of 36 ferruginous hawk nests, the average distance from human disturbance was 3.31 km (2.05 miles). Olendorff, 1993.

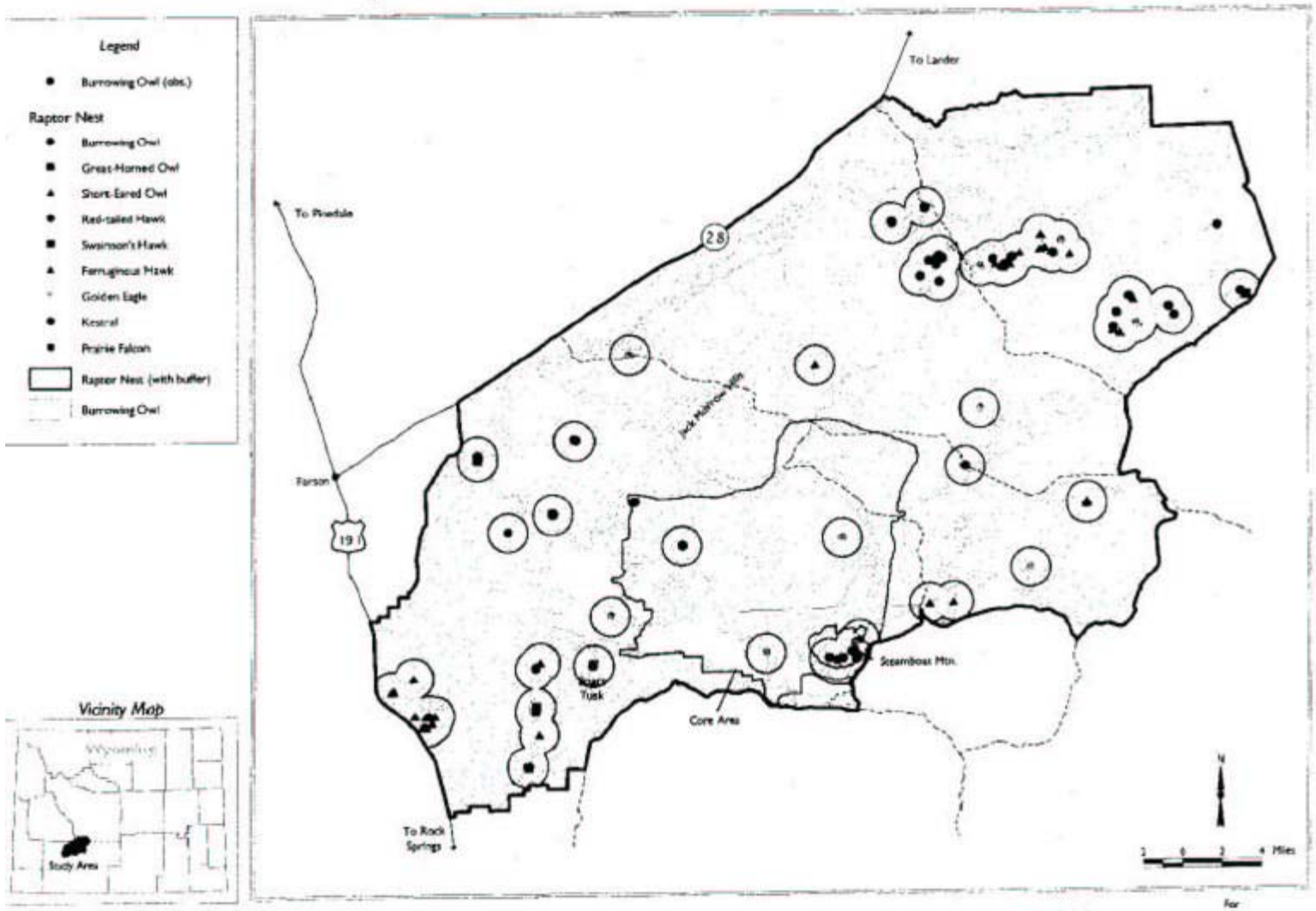
A study in Canada concluded that the causes of burrowing owl declines "are complex and interrelated. The National Recovery Team has identified loss, fragmentation and degradation of breeding habitat, mortality from collisions with vehicles, exposure to pesticide carbofuran and reduced productivity as contributing factors (Haug, et al. 1992)." Hjertaas, 1996.

Prey populations are critically important for maintenance of raptor populations. "The strong tie between raptor populations and their prey makes it difficult to manage raptors effectively without also managing their prey (Garton, et al., 1989). Land management and reclamation activities influence prey populations. Raptor populations can be as effectively excluded by absence of prey as by absence of nesting substrates." Parrish, et al., July, 1994. p. 52. "Maintain ground squirrel and prairie dog colonies to provide nesting burrows for burrowing owls, and maintain small mammal populations as prey for many bird and mammal predators." Paige, et al., 1999, p. 11. The western subspecies of burrowing owl which inhabits Wyoming "need the protection of the natural habitat and the burrowing mammal population (Green, 1983)." Mealey, 1997.

These small mammal species therefore must also be protected from recreational shooting, intentional poisoning, accidental poisoning from spills, insecticides and pesticides, etc., major habitat modifications and other impacts. "Burrowing owls will benefit from management that maintains zones free of herbicides and pesticides within a 600-m (655-yd) radius of burrows and that provides uncultivated plots of dense grasses and forbs within owl home ranges to support rodent and insect prey (Rich, 1986; Haug and Oliphant, 1990)." Paige, et al., 1999, p.44. Burrowing owls also can be preyed upon by larger raptors such as ferruginous hawks, so artificial perches (powerline poles, ancillary facilities...) should be prohibited within one mile of burrowing owl nests.

GIS coverages of the raptor nest locations and observations were obtained from BLM State Office, Rock Springs Field Office, and the Wyoming Natural Diversity Database.

Raptors: Observations and Primary Habitat



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Animals of Special Concern: Observations and Primary Habitat

Many species of concern not previously discussed—particularly small mammals, native fish, reptiles, amphibians, and birds besides raptors—are also found in the Red Desert/Jack Morrow Hills area. However, the DEIS provides almost no information on such species, nor their conservation status or the importance of the habitat or populations in the study area to the various species. On the adjacent map, we show actual sightings or primary habitat for five animal species known to be of concern. These species are the flannelmouth sucker, pygmy rabbit, Eastern short-horned lizard, Great Basin Gopher Snake, and Wortman's Golden-mantled ground squirrel.

Other species of concern are present in the study area and must be investigated before any analysis could be considered complete. For example, four groups of species which require further information are bats, colonial nesting water birds, invertebrates, and sagebrush obligates such as sage thrasher, sage sparrow, Brewer's sparrow, sagebrush vole, and sagebrush lizard. "Sagebrush obligate songbirds (sage thrasher, sage sparrow, and Brewer's sparrow) are also sensitive to fragmentation. These species prefer larger stands with high shrub cover and decline with increasing disturbance." Paige and Ritter, 1999.

The flannelmouth sucker, a fish native west of the Continental Divide, is found in both Jack Morrow Creek and Pacific Creek. This species has experienced dramatic reductions in its range and may need "immediate conservation action." Wheeler, 1997. This native fish is ranked G3G4/S3 by Wyoming Natural Diversity Database, but NSS1 (populations are greatly restricted or declining, extirpation appears possible and ongoing significant loss of habitat) by Wyoming Game and Fish Department—the highest (i.e., most serious) non-game ranking a species of concern can receive. See also Wyoming Game and Fish Department Native Species Status Classification System, Undated.

Pygmy rabbits, "believed to be declining in most known populations," are relatively rare in Wyoming and may be disjunct from the main populations in the Great Basin. Katzner, 1994. Several occurrences are known from the study area. This species is ranked G4/S2 and was formerly designated a C2 species by the U.S. Fish and Wildlife Service. It is ranked NSS3 by the Wyoming Game and Fish Department—declining or restricted in numbers and/or distribution... species may be sensitive to human disturbance. The State's plan for nongame animals provides concise recommendations to address the needs of the pygmy rabbit including a limit on the reduction or elimination of "stands of structurally complex, dense, or late successional stands of big sagebrush on public and private land." Oakleaf, et al, October 1996.

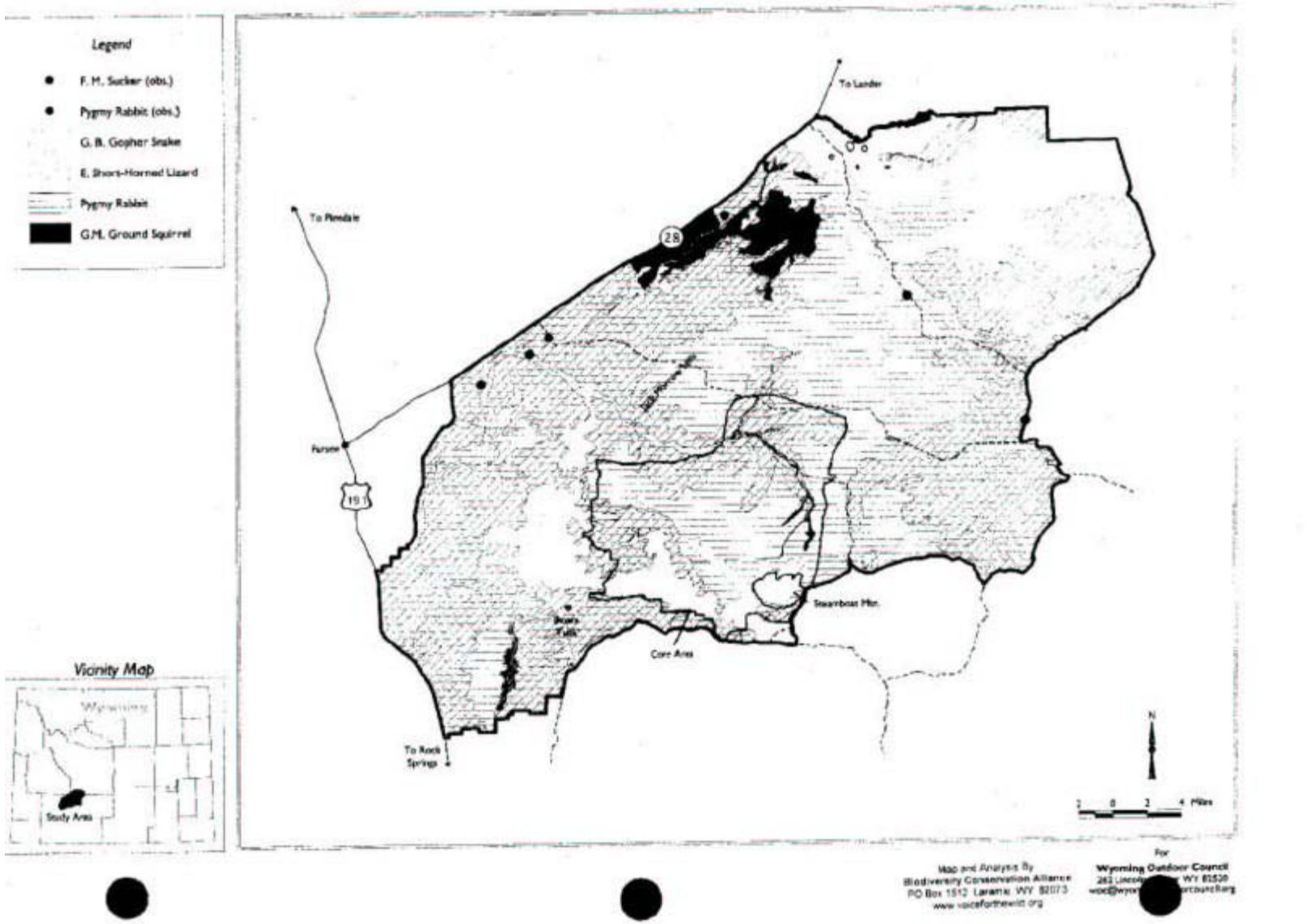
The Eastern short-horned lizard, also a former USFWS Category 2 species, is present in the study area. Knight, et al., 1976. Staff of Biodiversity Conservation Alliance have observed them as well (see photo). These lizards appear to be more sensitive to disturbance than other lizard species, and can be adversely impacted by roads (direct mortality), contaminants, and modification of habitat due to exotic plants. Peterson, September 14, 2000. "In Wyoming and Colorado the eastern short-horned lizard is no longer present in several large areas... Reasons for decline: Loss of habitat due to cropping, intensive grazing, and oil development has affected the species in the shortgrass prairie badlands of North Dakota and other western states. Aerial spraying of insecticides may have also affected insect populations, the main diet of eastern short-horned lizards." USFWS, 1997.

Great Basin Gopher Snakes are recommended as species of concern in the most recent assessment of amphibians and reptiles in Wyoming. The Wyoming Natural Diversity Database also considers this species to be "of special concern," giving it an S3 ranking (rare or local or found local in a restricted range). They were found to be uncommon in Wyoming and are also a species of concern in Nevada, which is the core of their range. Patton and Anderson, August 1999.

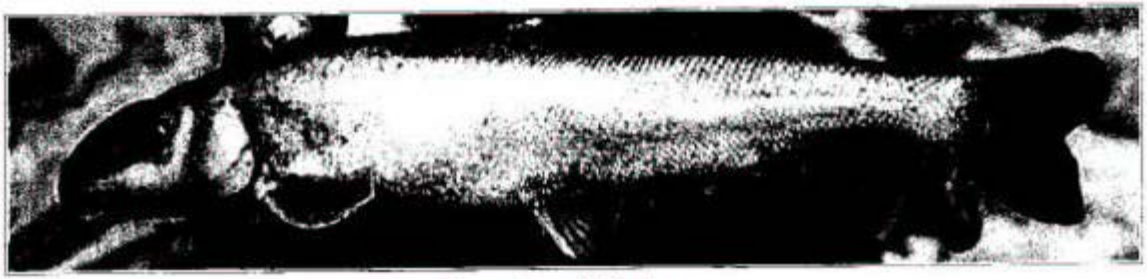
Invertebrates are not discussed in the DEIS at all. Given the important role invertebrates play in the ecological function of most ecosystems, and the prevalence of dunes in the study area, this is a glaring omission. The dunes in the JMH study area makes it likely there are endemic beetles present. Griswold, 2000. A search of but a single museum collection revealed the presence of four insects "of significance" in the Jack Morrow Hills vicinity: Anthophora flexipes-edge of range or disjunct; primarily found on dunes; Perdita cognata-known only from Sweetwater Co, WY & Grand Co, UT; Anthidium rodecki-sand dune obligate in Great Basin & CO Plateau; and Osmia n. sp. aff. giffardi-known only from Sweetwater Co & Fremont Co, WY. Griswold, 2000. Other deserts have a highly diverse insect fauna with high levels of endemism. See e.g., Davidson, et al. 1996. It seems reasonable to assume the same is true for the Red Desert and JMH area.

The DEIS is also silent on the contribution of the study area to conservation of species which may not be extremely rare but which are unique or valuable in some way. For example, consider the Great Basin spadefoot toad Scaphiopus intermontanus. According to the Wyoming Gap analysis, this species "has < 1% of its total habitat in status 1 or 2 lands.... This species is the only amphibian in Wyoming with a range limited to the southwestern sagebrush and desert shrub communities of the state. *Official designation of the BLM wilderness areas in this portion of the state, particularly the Honeycomb Buttes and Sand Dunes WSAs, would nearly double (0.77% to 1.54%) the amount of protected habitat for this species.*" Merrill, et al., 1996, emphasis added.

Animals of Special Concern: Observations and Primary Habitat



Eastern Short-horned Lizard in the Red Desert. Photo by Erik Molvar.



Flannelmouth Sucker.

Rare Plants and Plant Communities

The Jack Morrow Hills/Red Desert area is home to a large number of rare and imperiled plants and plant communities, including at least 14 rare plant species and several rare plant communities. Of particular importance are populations of 3 plant species considered "very vulnerable to extinction globally and statewide" and ranked G2/S2 by the Wyoming Natural Diversity Database (WYNDD). DEIS, page 229 and WYNDD species list, Oct. 2000.

These three species, and their locations in the study area, are: Meadow Pussytoes, found within the South Pass Historic Site ACEC and in the Oregon Gulch drainage; Nelson's Milkvetch (recently upgraded from G3 to G2) found near Black Rock, Split Rock Canyon, Bush Rim and Greasewood Wash; and Large-fruited Bladderpod, found in only 9 places in the world, six of these are within the study area—Blind Canyon, Bush Rim, between Continental Peak and Oregon Buttes, Continental Peak, Alkali Draw, and near the Middle Hay Bar X Ranch road. Jones and Fertig, 1996. Note that Alkali Wild Rye is a species of special concern recently added by WYNDD and not mentioned in the DEIS. It is found in two sections in the central part of the study area.

Also present in the study area is the world's *only* known occurrence of the basin big sagebrush/lemon scurfpea association. For this reason and others, a good portion of the study area is ranked B1—the highest biodiversity site ranking by WYNDD. Several other high-ranked associations occur here as well.

The accompanying map shows many of the known locations of rare plants and plant communities. The B1 "macrosite" is in the southcentral portion of the Jack Morrow Hills area, shown on the map with SW-NE diagonal hatching. Specific areas of the basin big sagebrush/lemon scurfpea association are shown with NW-SE diagonal hatching. The latter were digitized by Biodiversity Conservation Alliance from paper maps in Fertig, et al., 1998.

Another macrosite, the Oregon Butte/Continental Peak area, is ranked B2 for a cluster of rare plants large-fruited bladderpod, intermountain phacelia, and Payson's beardtongue. It is also shown with SW-NE diagonal hatching, but is located northwest of the B1 site. Portions of a third macrosite, rated B2 for Meadow Pussytoes and other rare plants and communities, are located on tributaries of the Sweetwater River in the extreme northeast corner of the study area. The macrosites are from WYNDD, September 14, 2000. The small crosses are centroids of populations of rare plants from WYNDD, and in some cases represent more than one location. The "Candidate Plants" crosshatching shows BLM's actual and potential locations of Meadow Pussytoes and Large-fruited Bladderpod we obtained from BLM (as opposed to from WYNDD).

The cover types given the highest priority for protection by the Wyoming Gap Analysis—because "their current protection is minimal and because they are potentially the most vulnerable to ongoing land management practices," are vegetated dunes, active sand dunes, forest-dominated riparian, and shrub-dominated riparian areas. These are shown with horizontal hatching in the map, along with second priority cover types which include limber pine woodland, saltbush fans and flats, desert shrub, and greasewood fans and flats. These second priority types are "vulnerable to development, especially from oil and gas extraction activities...." Merrill, et al., December, 1996.

It is noteworthy that just outside the project area, in the Pine Creek Outcrops, is an occurrence of small rockcress, a G1S1 (critically imperiled) and USFWS candidate threatened species. See WYNDD, September 14, 2000 and Fertig, et al., 1998. This rare plant may also occur in the JMH planning area.

The rare species and community types mentioned need protection from development and other activities. Specific threats are listed in the WYNDD documents. For example, Meadow pussytoes habitat "should be managed to minimize impacts from vehicle trampling and mineral development." Jones and Fertig, 1996. Habitat for several other rare plants "may be threatened by trampling by vehicles, mineral development activities, or livestock."

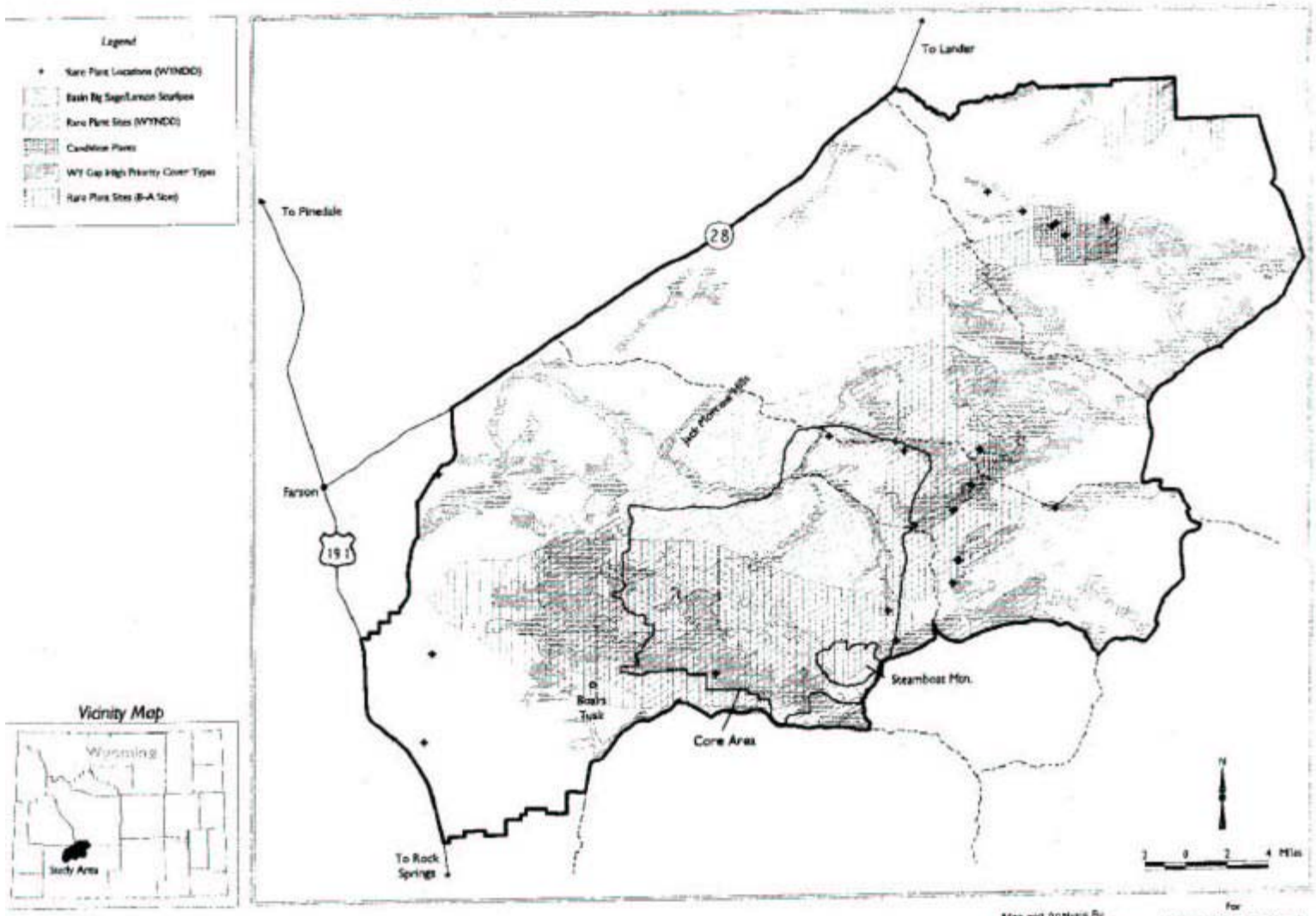
"Given the amount of regional endemism, number of rare species, and number of under-represented land cover types, Southwest Wyoming is emerging as a high priority landscape for conservation attention in the state. At present, less than 2% of the region is managed specifically for the enhancement of natural vegetation or plant species, and less than 40% of the high-ranking plant species and 80% of the known land cover types are adequately represented (Stoms et al., 1998). An impending 'boom' cycle in the development of natural gas and other mineral resources in the area makes the status of plants and vegetation a practical management concern." Fertig, et al., November 1998, p.10.

Unfortunately, of all the rare plants in the study area, only two are managed as "special status" species by BLM. The remaining dozen or so rare species are "are not similarly managed" and therefore are afforded no protection. This is the case primarily because the BLM state office has not developed a list of special status species. DEIS, page 227.

Rare Plants in Jack Morrow Hills Study Area

Species	Common Name	Global/State Rank
Antennaria arcuata	Meadow Pussytoes	G2/S2
Astragalus nelsonianus	Nelson's milkvetch	G2/S2
Carex parryana var. parryana	Parry sedge	G4T4/S1
Cryptantha scoparia	Desert cryptantha	G4/S2
Elymus simplex	Alkali wild rye	G4?Q/S1?
Erisimum wilcoxii	Wilcox erisimum	G5/S1S2
Erigeron utahensis	Utah fleabane	G3G4/S2
Eriogonum divaricatum	Divergent wild buckwheat	G4G5/S1
Ipomopsis cristifolia	Compact gilia	G4?S2S3
Lesquerella macrocarpa	Large-fruited bladderpod	G2/S2
Monolepsis pusilla	" Red poverty-weed	G5/S1
Oryzopsis contracta	Contracted Indian ricegrass	G3G4/S3S4
Oxytropis desdroides	Tree-like oxytheca	G4/SH
Penstemon paysonianus	Payson beardtongue	G3/S3
Phacelia demissa	Intermountain phacelia	G5/S1
Phacelia nelsoni	Nelson phacelia	G3?Q/S1

Rare Plants and Plant Communities



Predicted Vertebrate Species Richness

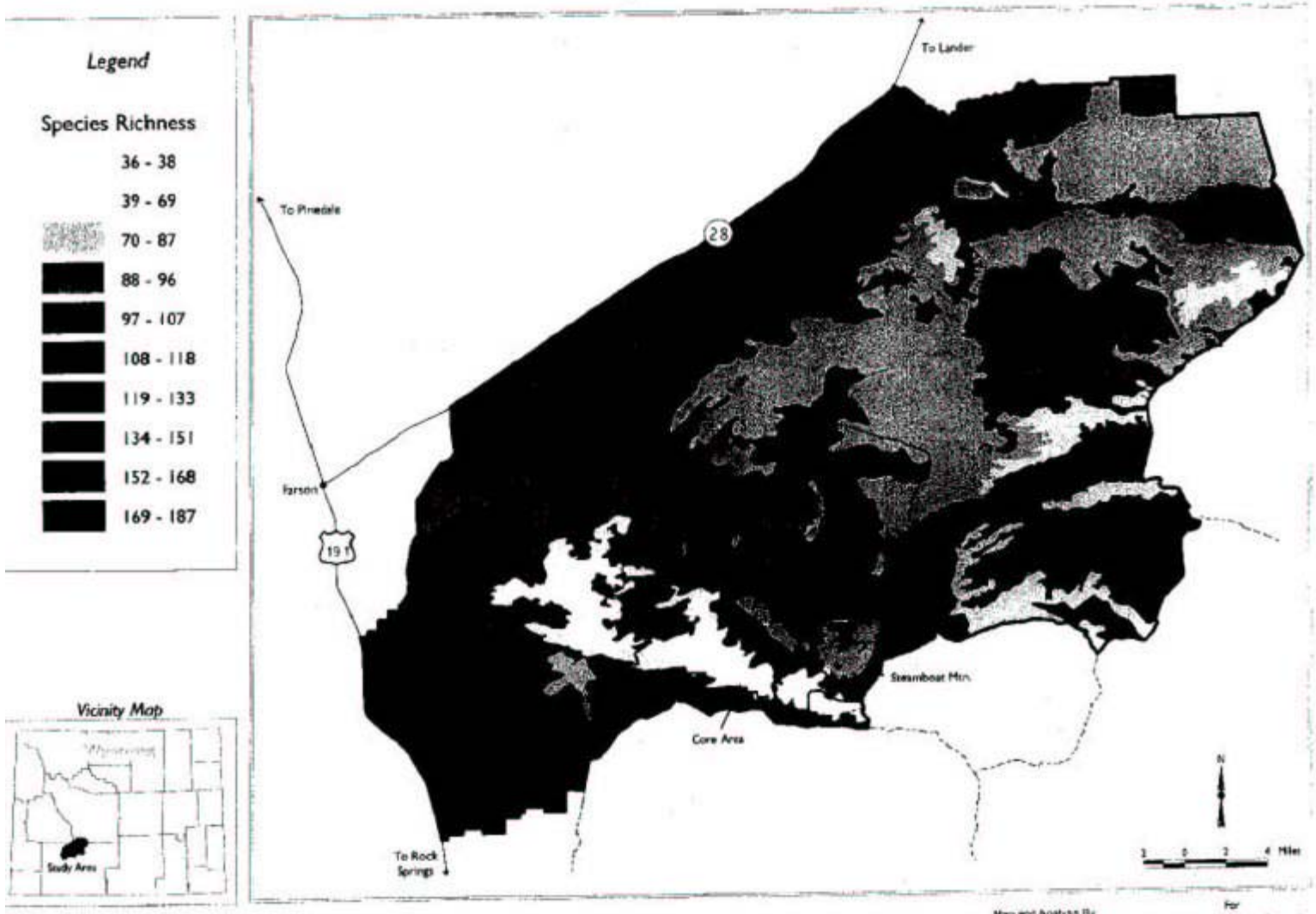
Although each type of habitat is important for some species, there are occasions when a particular kind of habitat is used by an unusually large number of different species. Protection of areas of unusually high species richness—biological "hot spots" if you will--is critically important for the conservation of biological diversity across the landscape.

The accompanying map shows predicted vertebrate species richness for the Jack Morrow Hills planning area. The map was produced using the Wyoming Gap Analysis digital data on predicted total vertebrate species richness. The map uses different shades of red to show different levels of predicted vertebrate species richness—the darker the red, the greater the number of different species predicted to inhabit the area.

The habitats around Jack Morrow Creek, Pacific Creek, and Alkali Draw appear to be particularly rich in species. Interestingly, while the eastern portion of the Jack Morrow Hills area has generally been subject to less development, many of the areas of higher predicted richness are located in the western part of the area where there are fewer restrictions on development. Thus, it appears that some of the most biologically diverse places are the least protected. The Action Alternatives considered in the Draft EIS would allow further impacts to many biologically rich areas. These findings suggest a gap in biodiversity protection. The BLM must fill this gap by developing measures to protect the areas of unusually high vertebrate species richness.

This is not to suggest areas with low predicted species richness are not important for biodiversity conservation or should not be protected. Indeed, a quick comparison of Species Richness Map with other distribution maps—"Rare Plants and Plant Communities" and "Animals of Special Concern"—reveals that many of the key habitats for rare and sensitive species do not occur in the areas of high predicted species richness. This may be due to the fact that species are of concern are of concern precisely because their habitats are uncommon or specialized, and therefore not likely to be used by many other species. Likewise, the key habitats shown on the maps of "Important Big Game Habitat," "Sage Grouse and Mountain Plover" Habitats, and "Raptor Habitat" do not always occur in areas of higher predicted species richness. Yet those key habitats are undoubtedly important for the species in question.

Predicted Species Richness



Waters, Wetlands and Watersheds of Concern

In the arid Red Desert, water is life for countless species. The scattered streams, lakes, ponds, springs, seeps and other wetlands are therefore critically important elements of the Red Desert ecosystem. Because water is so vital to this desert ecosystem, the water bodies it contains are far more important than is suggested by the small area they encompass. Moreover, the sand dune ponds are "integral parts of the adjacent terrestrial habitats, and should be included in any natural landmark the sand dune or floodplain natural history theme." Knight, et al., 1976, page 87. The alkaline ponds in the area are also "an important natural history theme ... and believed to be of considerable ecological significance..." Id.

All water bodies in the area must be protected from adverse impacts associated with development—not only to protect the sites themselves, but also to ensure wildlife will not be displaced from these scarce areas. Indeed, even when development activities are located away from water bodies and wetlands, the sights and sounds of such activities can still displace wildlife from important sources of water. It is therefore essential to buffer known water bodies and wetlands to prevent displacement of wildlife or reductions in habitat quality or utilization.

The accompanying map shows the known locations of select Waters and Wetlands in the Jack Morrow Hills Area. Specifically, the map shows (1) the locations of lakes and streams as identified in the U.S. Geological Survey's Digital Line Graph (DLG) data for the area, and (2) the locations of wetlands identified in the BLM's Wetland GIS coverage for the area. The maps include a 100-foot buffer for non-perennial and a 500-foot buffer for perennial streams, lakes and ponds, as listed in the DEIS. However, we feel much larger buffers (e.g., 1,000-2,500 feet) are needed to fully protect these habitats given their importance and scarcity.

It should also be noted that this map does not show all water bodies and wetlands in the area. Springs and seeps are generally not shown, and there are more wetlands in the area than are depicted on the map. For the Final EIS, the BLM should consult the National Wetlands Inventory, topographic maps, and other sources to ensure all water bodies and wetlands are identified and protected from development.

While all water bodies in the Red Desert are very important, certain water courses in the area are more sensitive to others to degradation and therefore deserve higher levels of protection. For instance, only a small fraction (1/5th) of the stream miles in the Jack Morrow Hills planning area are known to be in Proper Functioning Condition (PFC)—the minimum physical desired stability rating. DEIS, pages 232 and 234. Forty percent of the observed stream in the area are showing signs of becoming more unstable, and another forty percent have "limited stability." DEIS, page 234. "This high percentage of instability results in a greater than natural loss of soil and elevated levels of sediment, and salinity over what would occur in a stable stream system." Id. The streams with declining PFC rating include segments of Jack Morrow Creek, Pacific Creek, Parnell Creek, and Rock Cabin Creek. DEIS, page 282, Table 3-35. Pacific Creek is of particular concern because it is known to be home to the Flannelmouth Sucker.

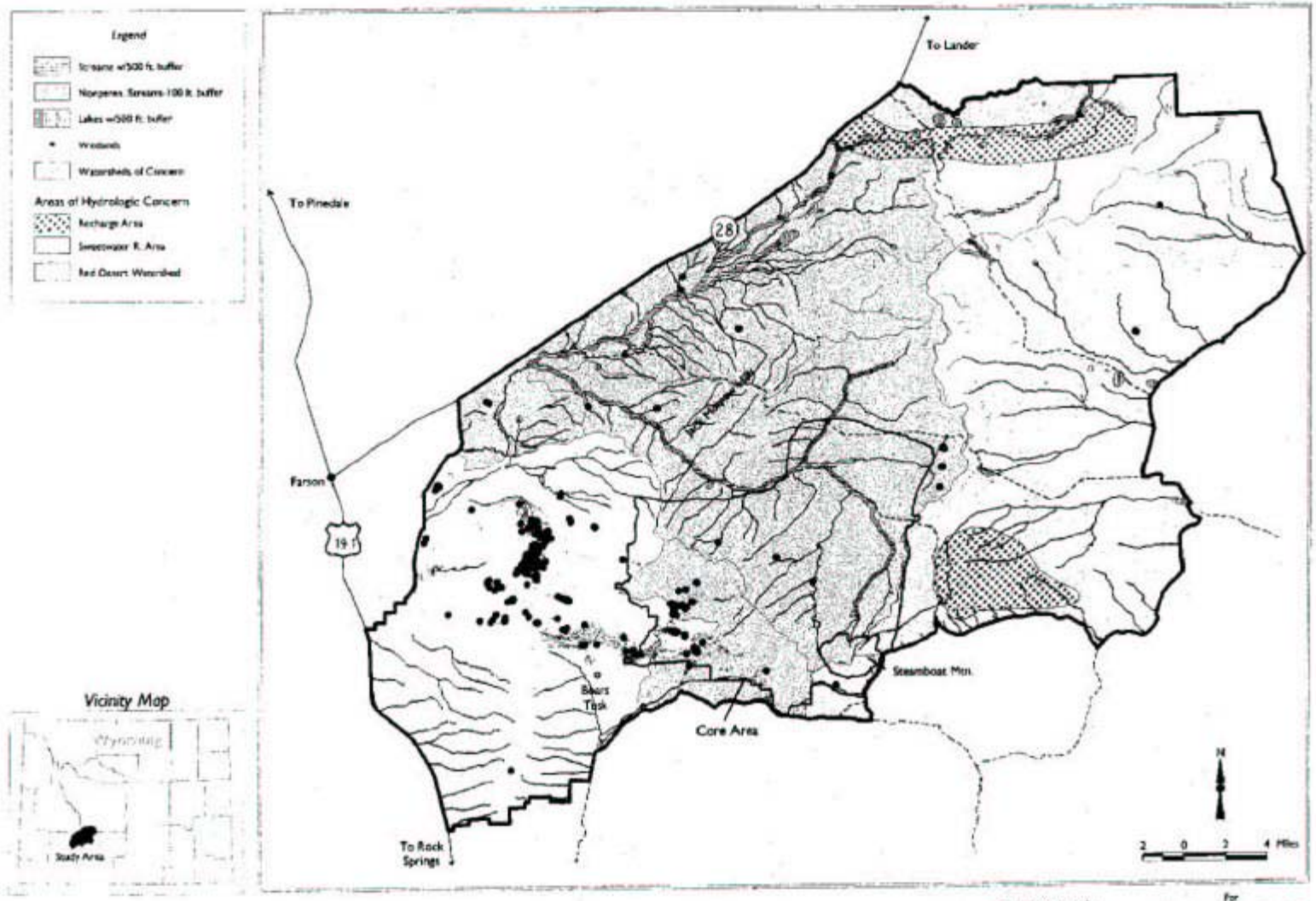
For these reasons, BLM has classified the watersheds of Jack Morrow Creek (including the sub-watersheds of the Parnell Creek and Rock Cabin Creek tributaries), Pacific Creek, and Nitchie Creek as "Watersheds of Concern." DEIS, map 55.

In addition to Watersheds of Concern, there are also several areas of Hydrologic Concern in the Jack Morrow Hills planning region. These include the Red Desert Watershed, the Sweetwater River Watershed, and two recharge areas. DEIS, map 43. The Green River RMP designated the Red Desert Watershed Area to be managed to emphasize "protection of visual resources, watershed values, and wildlife resources, and to provide large areas of unobstructed views for enjoyment of scenic qualities." DEIS, page 245.

The accompanying map depicts the locations of all Watersheds of Concern and Areas of Hydrologic Concern in the Jack Morrow Hills planning area. This map was produced using BLM's GIS coverages for these resources.

In light of the importance and sensitivity of these watersheds and hydrologic areas, it is essential that BLM prohibit development activities that might further impair the watersheds—for instance, through increased erosion—or further decrease stream functioning in the area.

Waters, Wetlands & Watersheds of Concern



Important Scenic and Visual Resources

The scenic beauty and wild character of Wyoming is gradually being lost. Where once there were nothing but natural and unblemished vistas for as far as the eye could see, there are now countless roads, road signs, pipeline scars, mining scars, oil pumping platforms, storage tanks, fences, off-road vehicle scars, power lines, and many other signs of human alterations of the land.

The Red Desert contains some special areas that have thus far escaped development. People can visit these areas, still get a sense of the way things were, and know there are still wild places where our species has not changed the landscape. Given the extent of development on BLM lands throughout Wyoming, it is essential to protect the few areas that still appear natural. It is also important to prevent further degradation of areas that have interesting or remarkable scenic qualities, even if they have been subject to some degree of past development.

The accompanying map shows the areas believed to have high scenic value or visual quality deserving of protection. For Visual Resource designations, we used the BLM's VRM definitions (DEIS, page 485): Class I areas shown are those areas appearing "unaltered by humans" and are essentially wilderness; Class II areas are those areas where "management activities may be seen, but [do] not attract attention of the casual observer;" Class III areas are areas where changes from management activities "may be evident and begin to attract attention;" and in Class IV areas, major modification is evident.

Apart from most Class IV areas, the VRM classifications on our map—which show actual on-the-ground conditions—differ from the BLM's existing and proposed VRM classifications. This is because BLM's VRM classifications are based on what landscape changes the BLM would permit in the areas, not on existing on-the-ground visual conditions. For example, an area may be relatively undeveloped but still classified as VRM Class IV by BLM to allow future development. For this reason, we believe some of the Class II-IV areas shown on the map may have higher actual visual quality than is depicted. Locations of Class I areas were based on WSAs and potential wilderness area boundaries inventoried in the Citizen's Wilderness Proposal - Wilderness At Risk. Because roads might be seen from inside one of these areas—and thereby reduce visual quality—we applied a 1-mile buffer from existing roads into potential Wilderness areas to determine the approximate boundaries of the areas with Class I visual resources.

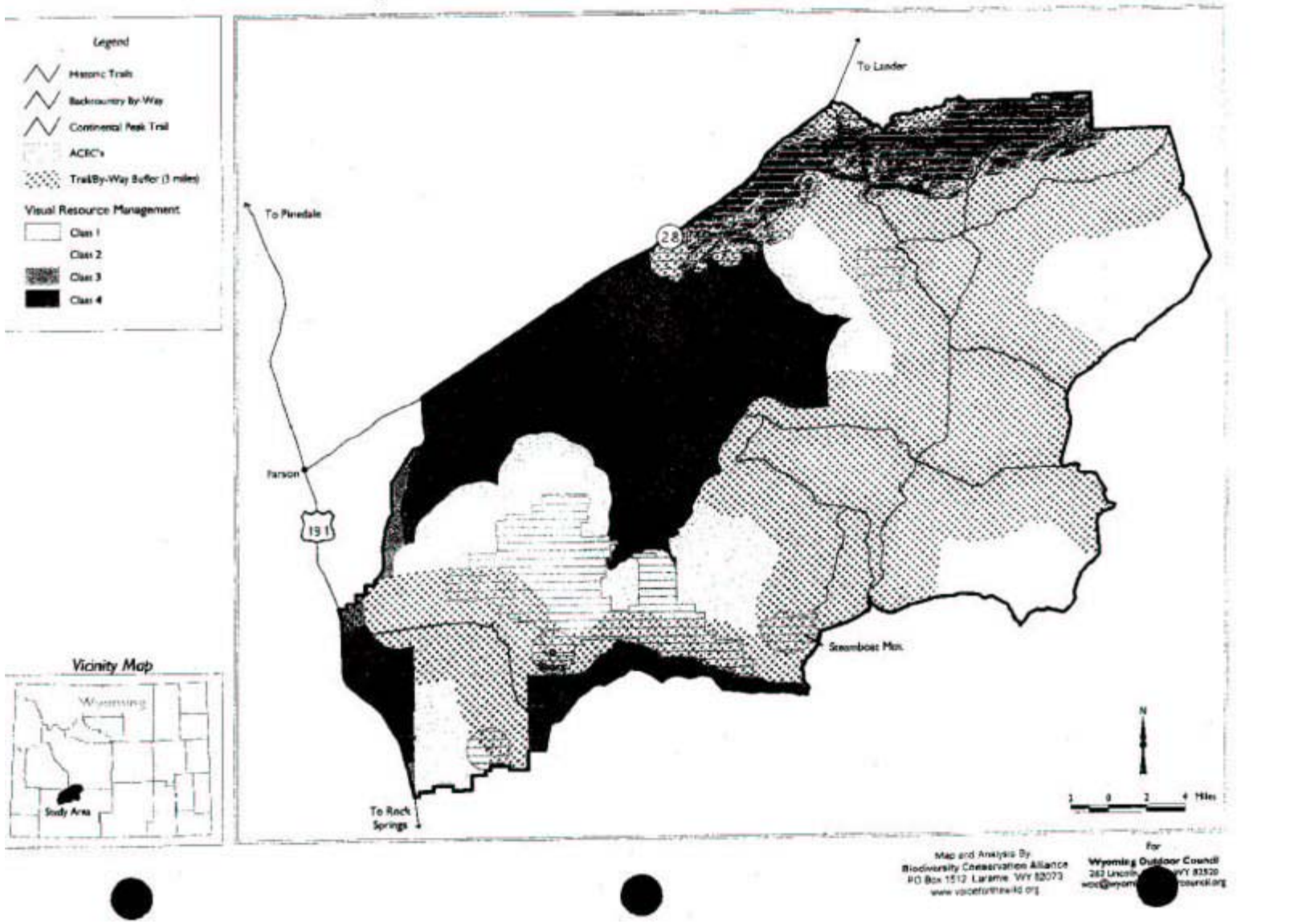
Other areas with "important scenic and visual values include recreation sites, the Greater Sand Dunes area, ... South Pass Historic Landscape, White Mountain Petroglyphs, Steamboat Mountain, rivers, historic trails, and scenic vistas along Wyoming Highway 28." DEIS, pages 233-234. The accompanying map depicts the locations (based on BLM's GIS data) of the Greater Sand Dunes area, White Mountain Petroglyphs, Oregon Buttes ACEC, and Steamboat Mountain in yellow. The Boar's tusk is located on the southern boundary of the Greater Sand Dunes area, so its southern viewshed is not contained within the Greater Sand Dunes ACEC. Therefore, we added a 1-mile visual buffer around the Boar's tusk which extends beyond the southern boundary of the ACEC.

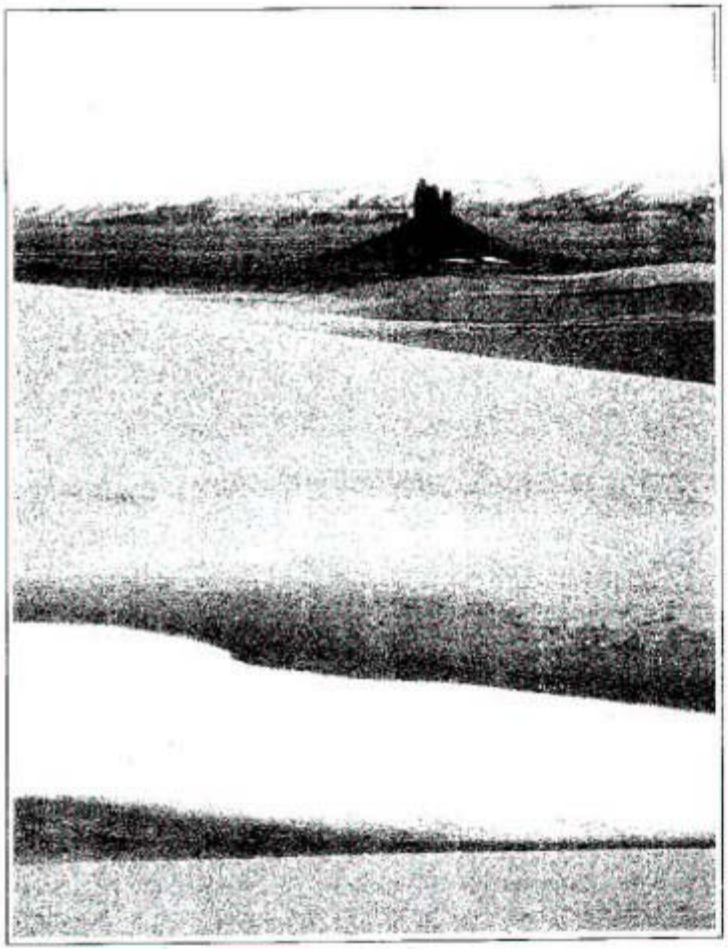
A viewshed analysis for the Oregon/Mormon Trail near South Pass was conducted by BLM for the DEIS, apparently limited by the borders of the South Pass Historic Landscape ACEC extending approximately 3 miles from the Trail. The accompanying map depicts this viewshed as red and the South Pass Historic Landscape ACEC as yellow.

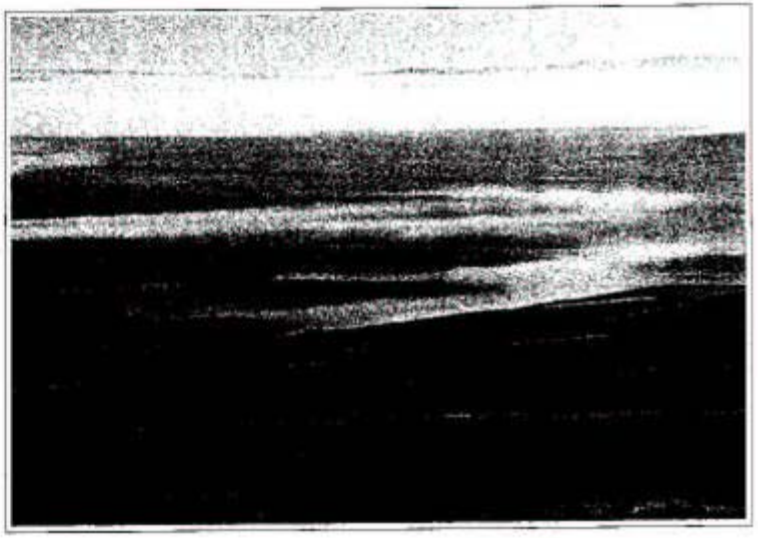
Other historic trails in the area are shown on the map as black lines. The Continental Divide National Scenic Trail (called the Continental Peak Trail in the DEIS), and scenic backcountry by-ways are shown as blue on the map. We did not perform a viewshed analysis for these important historic and scenic trails or by-ways. However, we did apply a 3-mile buffer to delineate the approximate location of the viewshed for these trails. These buffers are depicted with speckled red. Because the DEIS recognized the value of the scenic vistas along Wyoming Highway 28 (DEIS, page 234), this route is also given a 3-mile visual viewshed buffer.

There are no doubt other areas in the Jack Morrow Hills region that have important scenic values. In particular, we did not attempt to analyze or disclose visual resources along rivers or streams, nor did we attempt to do any analysis of lands outside the JMH planning area boundary to determine how visitors to those areas might be impacted by visual scars from development inside the JMH area. For the Final EIS, BLM should conduct additional viewshed analyses and perform additional study to identify all potentially important visual and scenic resources in the area.

Important Scenic and Visual Resources







Beautiful landscapes of the Jack Morrow Hills (clockwise from above): Boar's Tusk and Killpecker Sand Dunes, Fog in the Great Divide Basin, Lichen on Rocks in Great Divide Basin. Photos by Scott Smith.

Important Non-motorized Recreation Resources

Due to widespread development that has occurred throughout Wyoming's basins over the past century, there are few large areas left that still provide "primitive" or "semi-primitive non-motorized" (SPNM) recreation opportunities on BLM lands. Given their scarcity, these undeveloped areas are immensely important for meeting recreation demands.

In contrast, road construction and development have created abundant areas where motorized recreation can occur. Because the supply of roaded areas exceeds present and future demand for motorized recreation opportunities, converting undeveloped areas to roaded areas would have a significant adverse impact on primitive and SPNM recreation without providing any new recreational benefits. Therefore, BLM should protect the few remaining areas still providing primitive or SPNM recreation opportunities. Likewise, there are several important hiking trails, part of the Continental Divide National Scenic Trail, and other scenic landscapes in the Jack Morrow Hills area. These invaluable recreation resources must also be protected.

The accompanying map shows the locations of important non-motorized recreation resources in the Jack Morrow Hills area. The locations of areas with Primitive and Semi-primitive Recreation opportunities correspond to areas with Visual Resource Class I or II (as defined above), respectively. We took this reasonable approach because areas where there is no evidence of human alteration correspond to visual resource Class I areas and areas where there is little evidence of human alteration correspond to visual resource Class II.

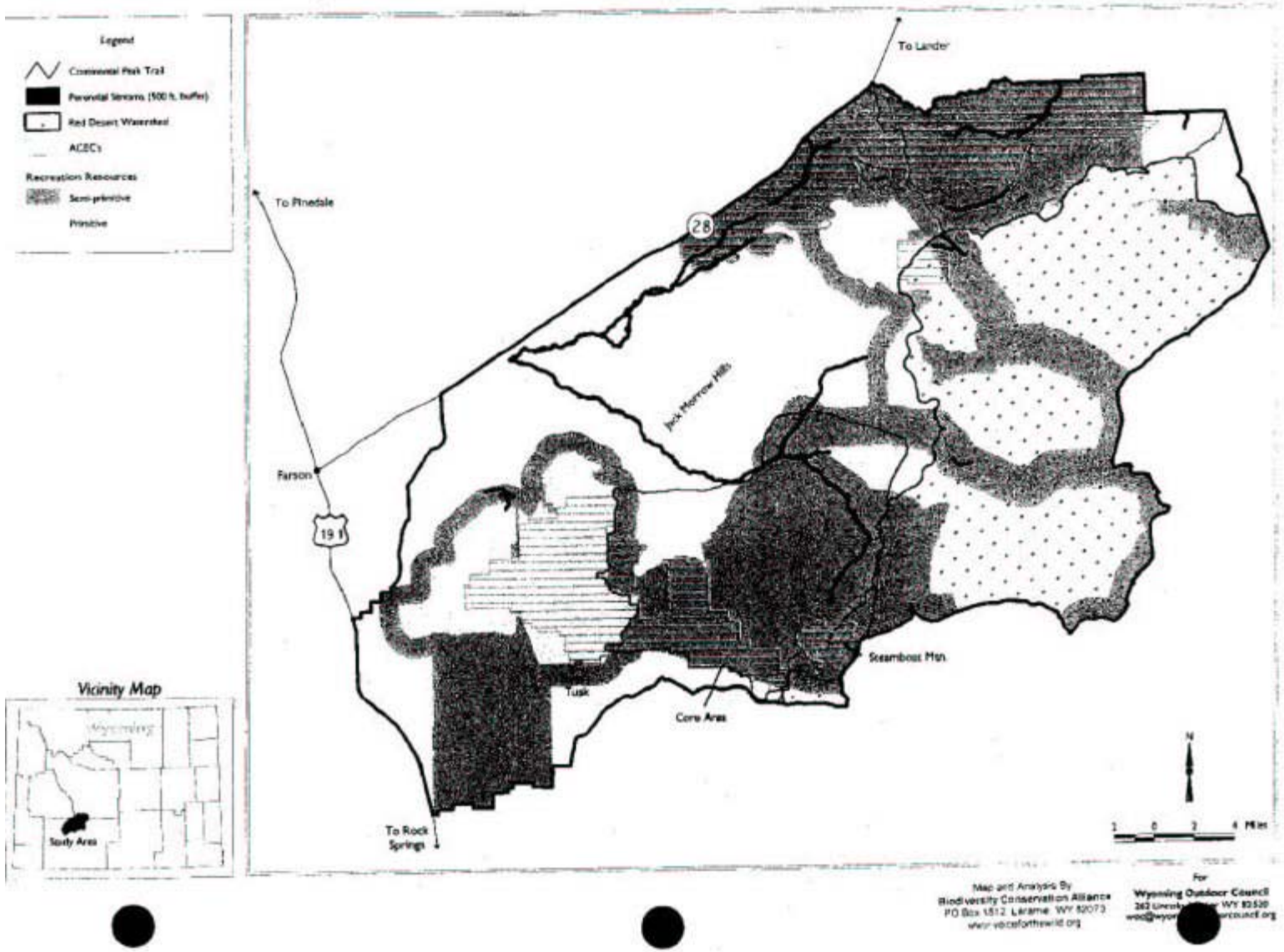
Nearly all of the eastern portion of the Jack Morrow Hills planning area is seen to provide primitive or semi-primitive opportunities. This area corresponds to the Red Desert Watershed Area which the DEIS (pages 246) recognizes as having "Outstanding opportunities ... for solitude," implying this large area offers rare opportunities for primitive recreation. The accompanying map shows the location of the Red Desert Watershed Area in red speckle.

In addition to depicting primitive and semi-primitive recreation opportunities, the map also shows the ACECs, the Continental Divide National Scenic Trail (Continental Peak Hiking Trail), and perennial streams. These areas are also important non-motorized recreation resources that deserve protection.

It should be kept in mind that this map of important non-motorized recreation opportunities is not based on BLM's Recreation Opportunity Spectrum (ROS) classifications for the area. This is because the ROS classification does not reflect actual on-the-ground conditions or potential recreation opportunities, but is based on allowed recreational uses, such as off-road-vehicle (ORV) use areas. For example, the DEIS (map 39) shows many areas that are eligible for classification as VRM Class II resources, implying they have not been significantly altered by development. Yet some of these same areas have been assigned ROS classifications of RURA or RONA by BLM. DEIS, map 52. This implies the BLM's ROS classifications were based on allowed or expected future development, not on actual on-the-ground conditions.

In addition, there are likely other important non-motorized recreation resources in the Jack Morrow Hills planning area that are not shown on the accompanying map. In particular, we did not include all hiking trails, camping areas, off-road bicycling areas, lakes, and other recreation sites. Also, in preparing the accompanying map, we assumed all areas designated as VRM Class IV by BLM have no significant non-motorized recreational resources. As mentioned in the description of the Important Visual and Scenic Resources map, the designated VRM Class IV areas may actually include regions that are relatively undeveloped and offer back-country recreation opportunities. For the Final EIS, BLM should re-evaluate the entire planning area to identify actual on-the-ground conditions and use this information to identify where existing primitive, semi-primitive and other important non-motorized recreation resources exist.

Important Non-motorized Recreation Resources



WSAs and Potential Wilderness in the Jack Morrow Hills Vicinity (2 Maps)

There are seven wilderness study areas (WSAs) within the Jack Morrow Hills boundary, totaling 117,000 acres. Wyoming BLM recommended 70,371 acres of these areas for wilderness designation, but Congress has yet to act on this recommendation. The WSAs are therefore managed under BLM's interim management policy for lands under wilderness review. However, as in other parts of the country, the BLM inventory process overlooked many exceptional areas worthy of WSA status and wilderness designation.

To remedy this situation, Wyoming citizens conducted their own inventory of BLM wildlands. After several years of field work by volunteers and staff, sixteen Wyoming conservation groups released Wilderness at Risk: Citizens' Wilderness Proposal for BLM Lands in 1994. Wyoming Wilderness Coalition. 1994. In Wilderness at Risk, Wyoming citizens inventoried and recommended wilderness designation for 233,000 acres of lands within the Jack Morrow Hills study area. This is over three times the amount recommended by BLM. On the adjacent map, WSAs in the study area are shown in red vertical hatching, and citizen-proposed areas from Wilderness At Risk are shown in solid brick-red. Two examples of areas possessing wilderness qualities but which BLM inappropriately excluded from the BLM inventory or WSA designation (and interim protection) are presented following the maps.

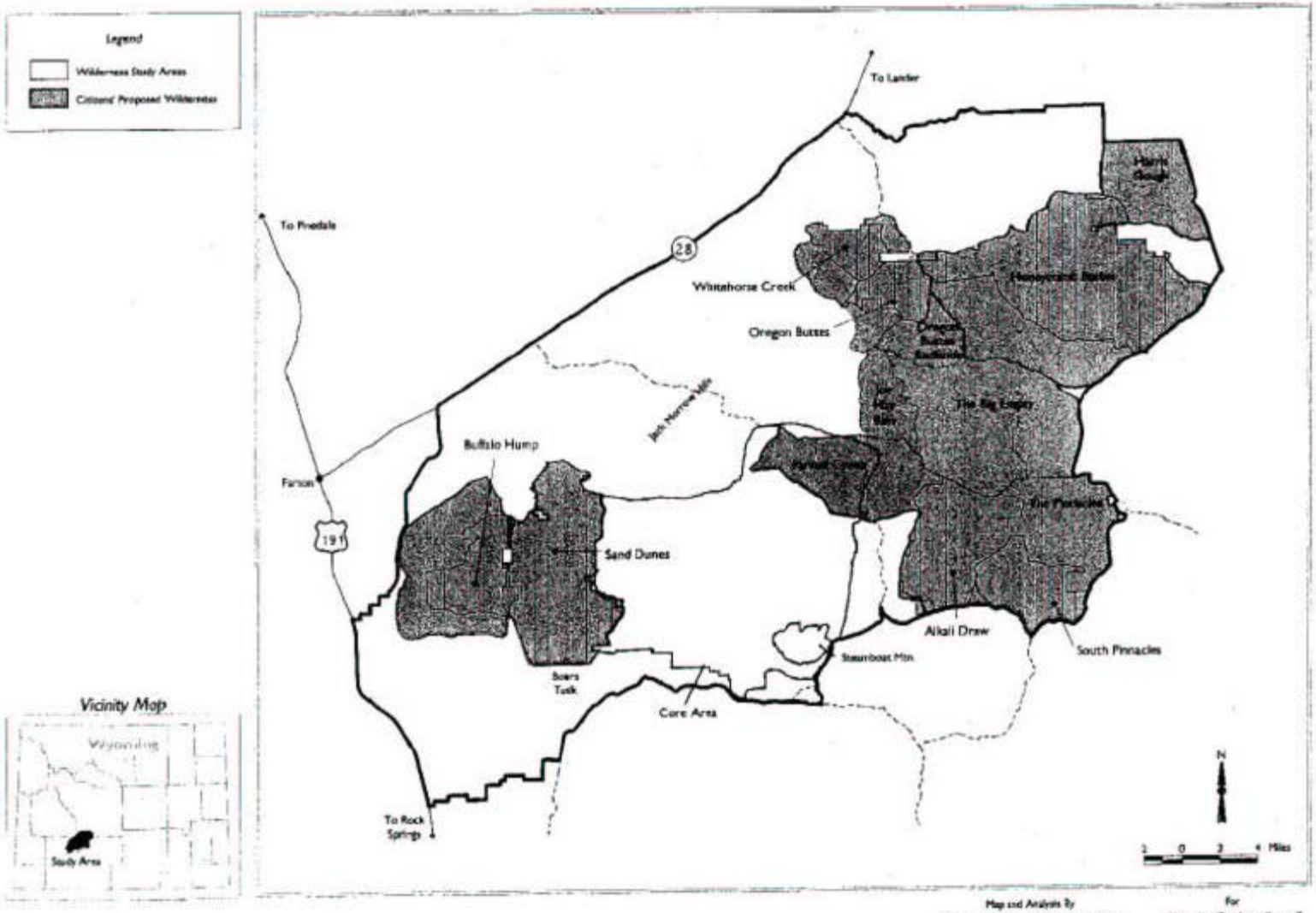
Given the significant threats of new development—coupled with the lack of designated Wilderness and permanently protected wildlands on BLM lands in Wyoming—all WSAs and other potential wilderness areas must be protected. Without adequate protection, areas that should be conserved as Wilderness may be lost to development.

Unfortunately, many wildlands in the Red Desert/Jack Morrow Hills area are not adequately protected. In particular, the wildlands identified in Wilderness at Risk which are not designated BLM WSAs are ignored in the DEIS and are not protected under BLM's interim management guidelines. As a result, these important wild areas are threatened by mineral development, new roads, ORV damage, etc.

Currently, citizens groups are conducting a new wildlands inventory for the Jack Morrow Hills study area—using methods and criteria adopted by conservation groups in Utah. Preliminary results indicate that both BLM and Wilderness at Risk inventories overlooked some wild areas which possess wilderness qualities and which deserve protection. The groups are also doing field investigations to determine the level of illegal damage (e.g., ORV use) to WSAs and other wildlands in the Jack Morrow Hills area.

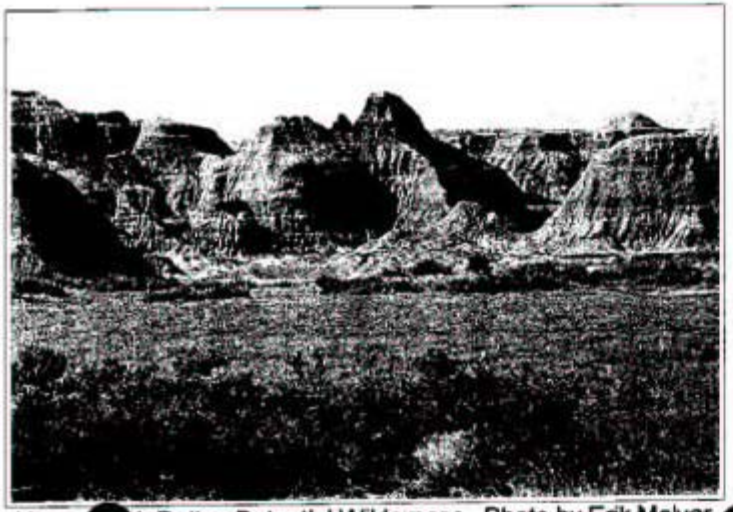
Several WSAs and citizens'-proposed wilderness areas totaling approximately 50,000 acres lie just to the east and northeast of the Jack Morrow Hills study area. To protect potential wilderness areas, citizens are requesting that the Jack Morrow Hills boundary be expanded to include the nearby parcels, as shown on the second map.

Wilderness Study Areas and Potential Wilderness



The Pinnacles Potential Wilderness. Photo by Erik Molvar.

Oregon Buttes Potential Wilderness. Photo by Erik Molvar.



Honey[illegible]b Buttes Potential Wilderness. Photo by Erik Molvar.

Sand Dunes Potential Wilderness. Photo by Sco[illegible]mith.

Expanded Study Area WSA's

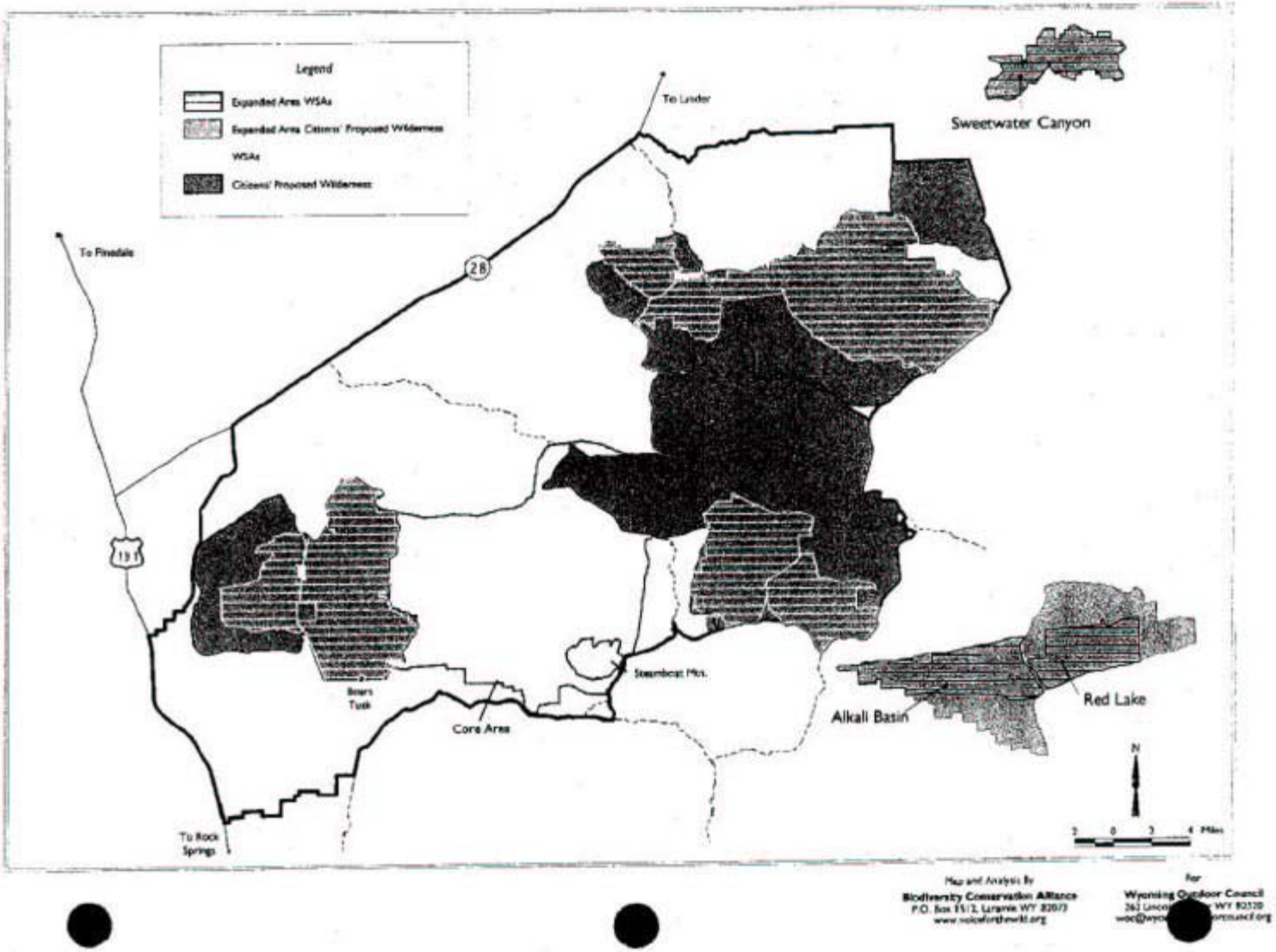


Figure 1 (above): View south from Alkali Rim, showing lands excluded under Blue Rock Release Tract. Photo by B-A.

Figure 2 (below): Parnell Creek, a large tract of roadless lands never inventoried by the BLM. Photo by B-A.

BLM's Inadequate Wilderness Inventory: A Case Study in the Jack Morrow Hills

The Pinnacles unit, detailed in *Wilderness at Risk: the Citizens' Wilderness Proposal for BLM Lands* of 1994, illustrates the Bureau of Land Management's policy to exclude lands with wilderness attributes from wilderness study, interim protection, and congressional wilderness consideration. The current BLM position wrongly asserts that all lands that meet wilderness criteria are already protected within Wilderness Study Areas established in 1991.

This unit contains within its bounds two WSAs established by the BLM: the South Pinnacles unit (10,800 acres) and the Alkali Draw unit (16,990 acres). Our recent field inventory has identified adjacent lands totaling 34,587 acres that possess the full complement of wilderness qualities, but were excluded from wilderness consideration by the BLM.

As it formalized its boundaries for these WSAs, the BLM created several Release Tracts, thereby excluding lands that were designated as part of the original WSA. The Blue Rock Release Tract (see Figure 1) was excluded due to the presence of numerous seismograph trails. These trails have since been reclaimed naturally. The Bush Rim Release Tract was excluded due to the presence of "roads" that qualify as "ways" under BLM criteria. The route chosen as a WSA boundary along the Bush Rim is the historic Point of Rocks—South Pass Stage Road; the Wilderness Act explicitly provides for the inclusion of historical features like this one in wilderness. The Triangle Release Tract was separated from the South Pinnacles WSA by an abandoned route that is being reclaimed naturally; it too is suitable for wilderness study.

The BLM excluded vast expanses of land surrounding The Pinnacles from wilderness study, despite the fact that no roads penetrate this area. The area retains its natural character, and it contains the most outstanding landscapes and recreational opportunities to be found within the greater Pinnacles Citizens' Proposal. This omission is inexplicable.

To the west of Alkali Draw, the BLM entirely ignored the Parnell Creek roadless area (see Figure 2) from its Wilderness Intensive Inventory. This pristine area provides excellent hunting for desert elk as well as sweeping views that feature steep scarps, rims, and badlands.

These findings demonstrate conclusively the need to reevaluate roadless lands and the potential for expanding WSAs in the Jack Morrow Hills.

Cultural and Historical Resources

The Red Desert is rich in cultural and historical resources. These include the famous South Pass National Historic Landscape, several Native American respected places, the White Mountain petroglyphs, and about 1,000 "cultural resource localities." The actual number is likely quite higher, however, because only about 2 percent of the region has been formally inventoried. Thus, "a much larger number of resources should be expected in the area." DEIS, page 205. The Killpecker Dunes have been occupied by Indian cultures for at least 11,000 years. McGrew, et al., 1974. On the map, and in discussions below, we highlight a few notable examples of cultural and historic resources. These and many others need protection or they will be irreparably damaged by mineral development, road construction, ORV abuse, or vandalism.

Please note that many Native American sites and other sensitive cultural sites are not shown on the map. All of the descriptions below are paraphrased or quoted from the DEIS, pages 205 - 209 and Green River Resource Mgmt. Plan, page 361.

South Pass

South Pass was the singular overland passage that, beginning in the winter of 1812-1813, allowed hundreds of thousand of emigrants to move from the Nation's eastern seaboard and central prairies to the fertile farmlands of western coastal valleys and rich hardrock mining bonanzas throughout the west. Eventually, over a half million people and probably five times that many livestock traversed South Pass, on the Oregon, Mormon Pioneer, Pony Express, and California national Historic Trails. The significance of South Pass in the development of the United States as a nation was cause for the area's designation in 1959 as a National Historic Landscape

Archeological Sites and Paleosols

A region of soil deposition dating back over ten thousand years to the end of the Pleistocene Ice Ages occurs in the western portion of the planning area. A number of extremely significant archaeological resources including the Finley and Krmpotich sites are within this part of the planning area. Because this "paleosol" occurs across broad regions of the planning area, sites of great antiquity and tremendous scientific significance are expected to be found where the paleosol is preserved. Sites like Finley and Krmpotich are not typical of other sites in the region. Instead they hold cultural evidence from some of the earliest inhabitants of the continent, and "they are some of the most intact manifestations of such archeological evidence known anywhere on the continent."

White Mountain Petroglyphs

The White Mountain Petroglyphs site, in the southwest corner of the planning area, contains historic and prehistoric images carved into rock. All of the rock art is thought to have been emplaced within the past 500 years and represents several different styles of human forms.

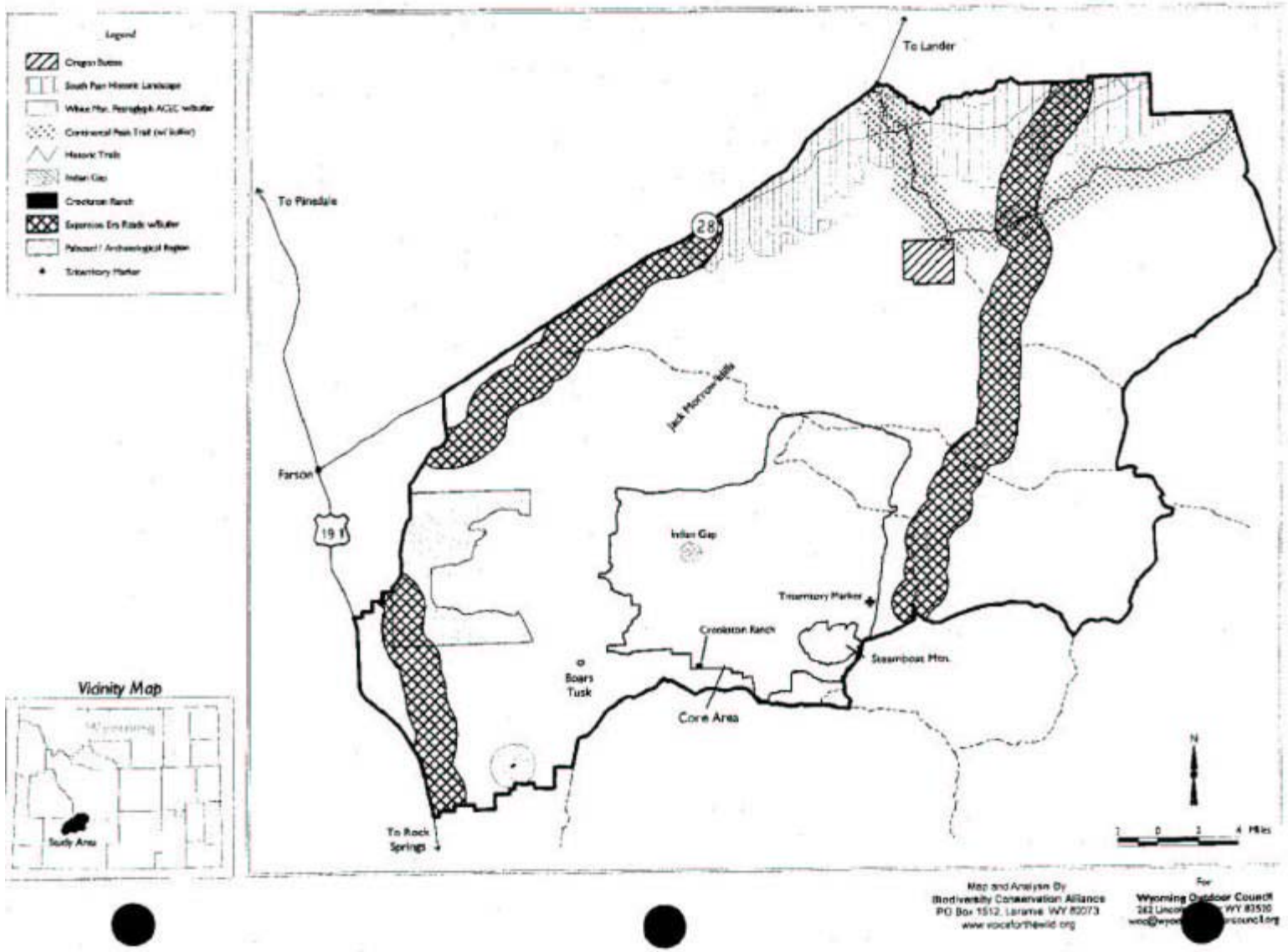
Indian Gap

An historic trail that passes through the gap between Essex Mountain and Steamboat Mountain (known as Indian Gap) represents an important route in historical Native American travels. The Indian Gap trail is a significant historic resource that was used extensively up to the early twentieth century. This trail also has significance among traditional elders as a route between the Ute Reservation in Utah and the Eastern Shoshone Reservation in the Wind River Basin.

Expansion-Era Roads

By 1870, roads to the gold fields in the South Pass region were constructed from three railheads on the Union Pacific - Point of Rocks, Green River, and Bryan. These roads represent important Expansion Era developments that were the initial links between communities along railways and mining, agricultural, and military settlements in the hinterlands of the central Rocky Mountains. In addition, other historically significant Expansion Area roads also run through the planning area from Rock Springs to military posts established to administer the Wind River Indian Reservation.

Cultural and Historical Resources



Geologic Constraints

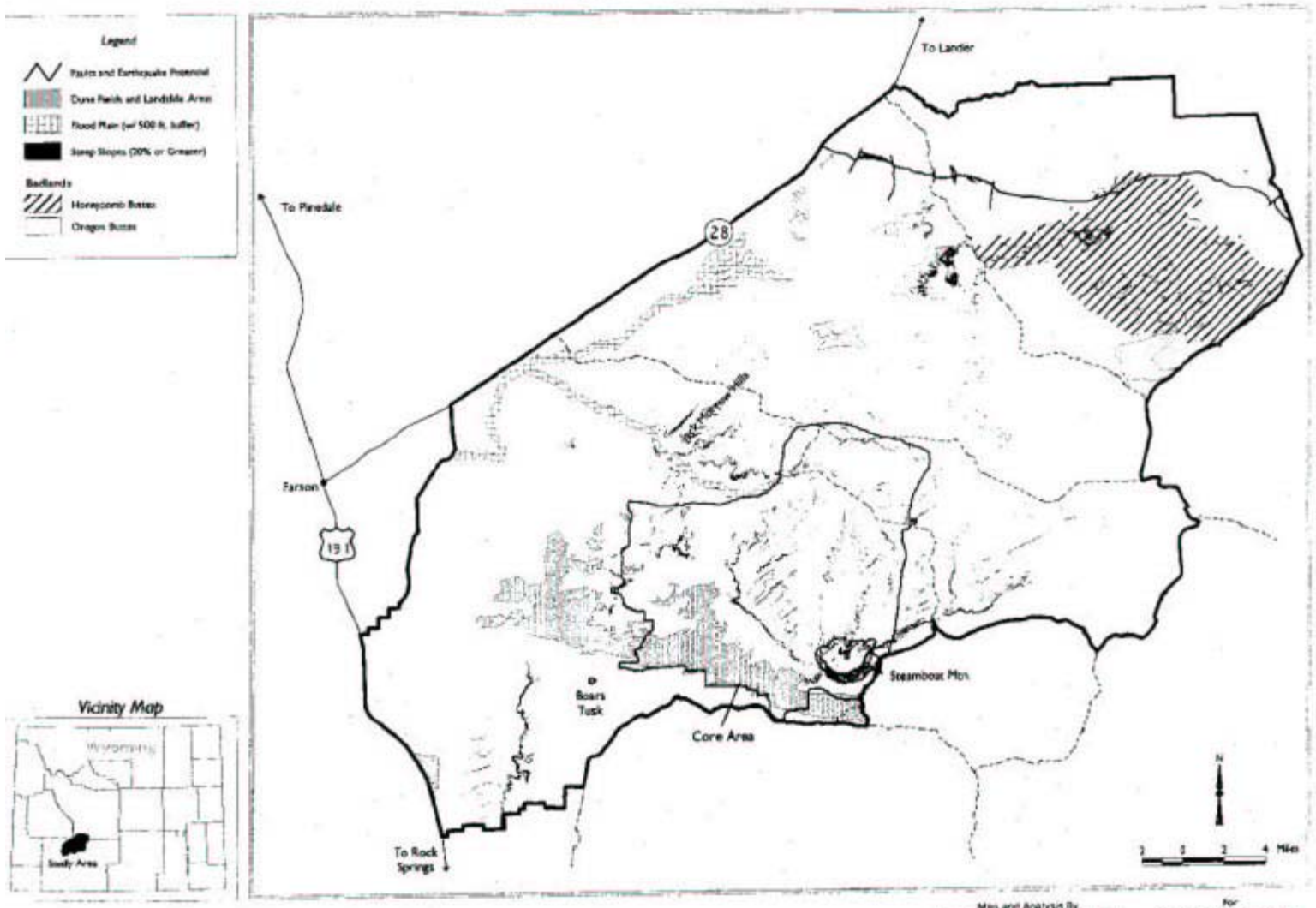
Given the arid conditions in the Red Desert, many areas are sparsely vegetated. As a result, the area has been subject to widespread erosion that has shaped the land and resulted in the development of considerable areas of badlands. See JMH DEIS, page 214. There are also dune fields, steep slopes, and sensitive soils. Not surprisingly, there are a number of geologic conditions in the Red Desert that limit where development activities—such as the construction of roads, drill pads, and pipelines—can occur without causing significant damage. The geologic constraints include:

- sensitive soils (e.g., erosive, hydric, cryptogamic)
- badlands
- flood plains
- steep, unstable, or potentially mass wasting slopes
- landslide areas (areas below unstable or mass wasting slopes)
- dune fields and windblown sand areas
- chemical emissions (e.g., hydrogen sulfide) from well development
- faults and earthquake potential

These and other sensitive or problematic geological areas must be avoided in any responsible management plan. This is particularly important because the Jack Morrow Hills area is subject to strong summer thunderstorms that cause intense runoff. DEIS, page 234. Unfortunately, the JMH DEIS does not contain any analysis for most of these geological constraints. For instance, the DEIS (page 226) mentions that highly erosive red soils occur in the area, but does not disclose their locations or evaluate how these soils would limit development. Instead, the DEIS only considers a few kinds of geological "hazards" that may exist in the area (specifically, hydrogen sulfide, earthquake, landslides, and windblown sand). See DEIS, page 218 and Map 49. This is not sufficient information to make an informed decision about where develop should be prohibited or restricted to prevent slope or soil damage.

The accompanying "Geologic Constraints" map presents the known locations of the following features: (1) All geological hazards depicted in Map 49 from the DEIS, (2) Steep slopes (20% or greater), (3) Badlands (based on locations of Honeycomb Buttes and Oregon Buttes), and (4) flood plains (buffered by 500-foot buffers). We were unable to obtain information in time to include in these comments for the locations of sensitive soils, unstable slopes, or potentially mass wasting slopes. Therefore, the map does not show all geologic constraints in the area. The BLM should gather this information and include it in the Final EIS.

Geologic Constraints



Threats to Special Values (3 Maps)

Although the Jack Morrow Hills and broader Red Desert region has many outstanding natural values, it is also true that these values are now threatened by many kinds of human activities and development. These threats include:

- coal, sodium, and other mineral development
- development of outstanding mining claims
- oil, gas, coalbed methane drilling and development activities
- construction of pipelines and related oil or gas transport facilities
- powerline and cable installation
- road construction for resource development
- illegal road and trail construction by motorized vehicle users
- off-road motorized vehicle use
- overgrazing
- trampling and destruction of rare plants and communities
- damage to cultural and historic resources
- water developments and over-utilization
- water quality degradation (e.g., reduction of PFC)
- noxious weeds and non-native species
- poaching, prairie dog shooting, and lethal predator control
- fences that fragment habitat and scar the landscape
- other range "improvements"
- loss of natural fire regime

The accompanying "Threats" maps present information on only a few of the many threats to the area—Oil and Gas Development, Other Mineral Development, and Range Improvements and Motorized Vehicle Use. Yet even considering this sample, there were simply too many different kinds of threats to be meaningfully depicted on a single map. Moreover, the maps do not convey the true extent of impacts these kinds of developments pose to the special values.

For instance, although the maps show locations where oil and gas development may occur, the maps do not show how associated oil and gas development would impact the scenic quality of the landscape. Drill platforms, pump jacks and other oil and gas developments can be seen miles away from the locations where they occur. The same can be said of fences shown on the Rangeland Developments and Motorized Vehicle Use map. Fences can be seen from considerable distance. Fences also fragment wildlife habitat by creating barriers to wildlife migration and dispersal. The DEIS (page 236) recognizes this problem, but it is a problem that cannot be conveyed on a simple map.

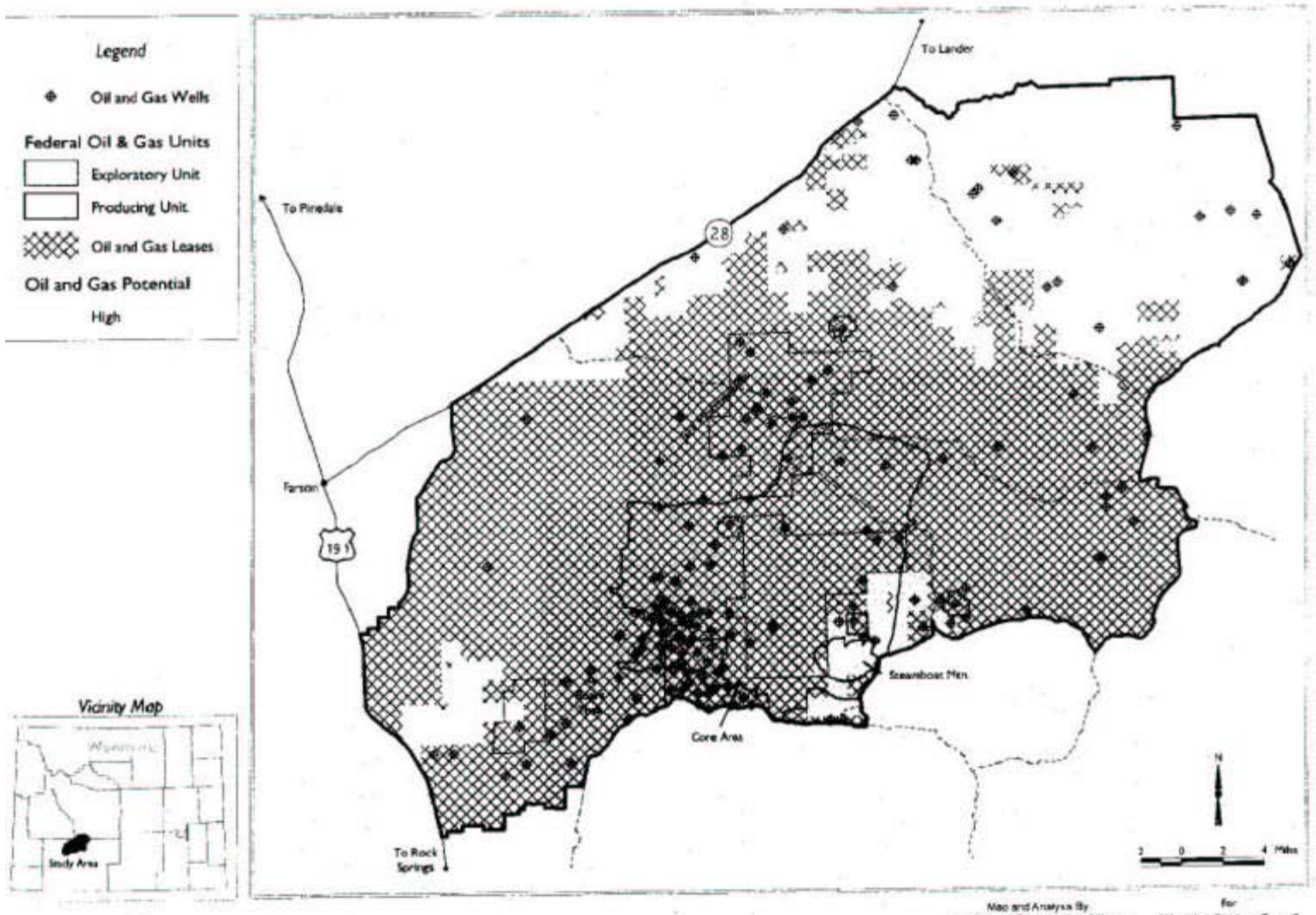
Likewise, the map of "Rangeland Developments and Motorized Vehicle Use" does not show the impact of noxious weeds introduced into the area by livestock and motorized vehicles. See, e.g., DEIS, pages 232-233. Nor does that map's depiction of areas open to motorized vehicle use indicate the extent of soil and vegetation impacts caused by these vehicles, all the unauthorized (i.e., illegal) roads and trails they have already created and will create in the future, or the conflicts they create. The DEIS (page 220) mentions the visitor conflict concerns caused by ORV use, but there is no way to fully illustrate this on a map. The map only provides information about where some motorized vehicle routes are known to exist and where off-road vehicle travel is currently allowed. (The DEIS was unclear about ORV restrictions on the lands shown as "Not Closed" on the map. Because these lands do not appear to be subject to any motorized travel closures or "white-arrow" restrictions, we have assumed these areas are currently not closed to off-road travel.) Thus, the accompanying "Threats" maps should be tempered by the knowledge that there are many more threats to the area than are shown.

The negative impacts of roads on big game wildlife are many. Although already presented above in the Important Big Game Habitat section, we repeat here the WGFD's comments on road densities: "[E]lk use of an area is dependent on the amount of human disturbance the area receives. The DEIS does not provide a scientific foundation for the road densities of 2.0 road miles/square mile in open habitats... Thomas et al. (1979) reported that elk habitat effectiveness declined 54% when improved road densities were 2.0 square mile in a forested environment. *We anticipate the decline would be much greater in the unforested habitat in the Jack Morrow Hills area, due to less cover, topographic relief, and consequent higher visibility of disturbance factors than are found in forests...* The document does not delineate an upper limit to road densities in crucial habitats outside the core and connectivity areas. An upper limit should be established in these areas as well..." WGFD, September 14, 2000. Emphasis added.

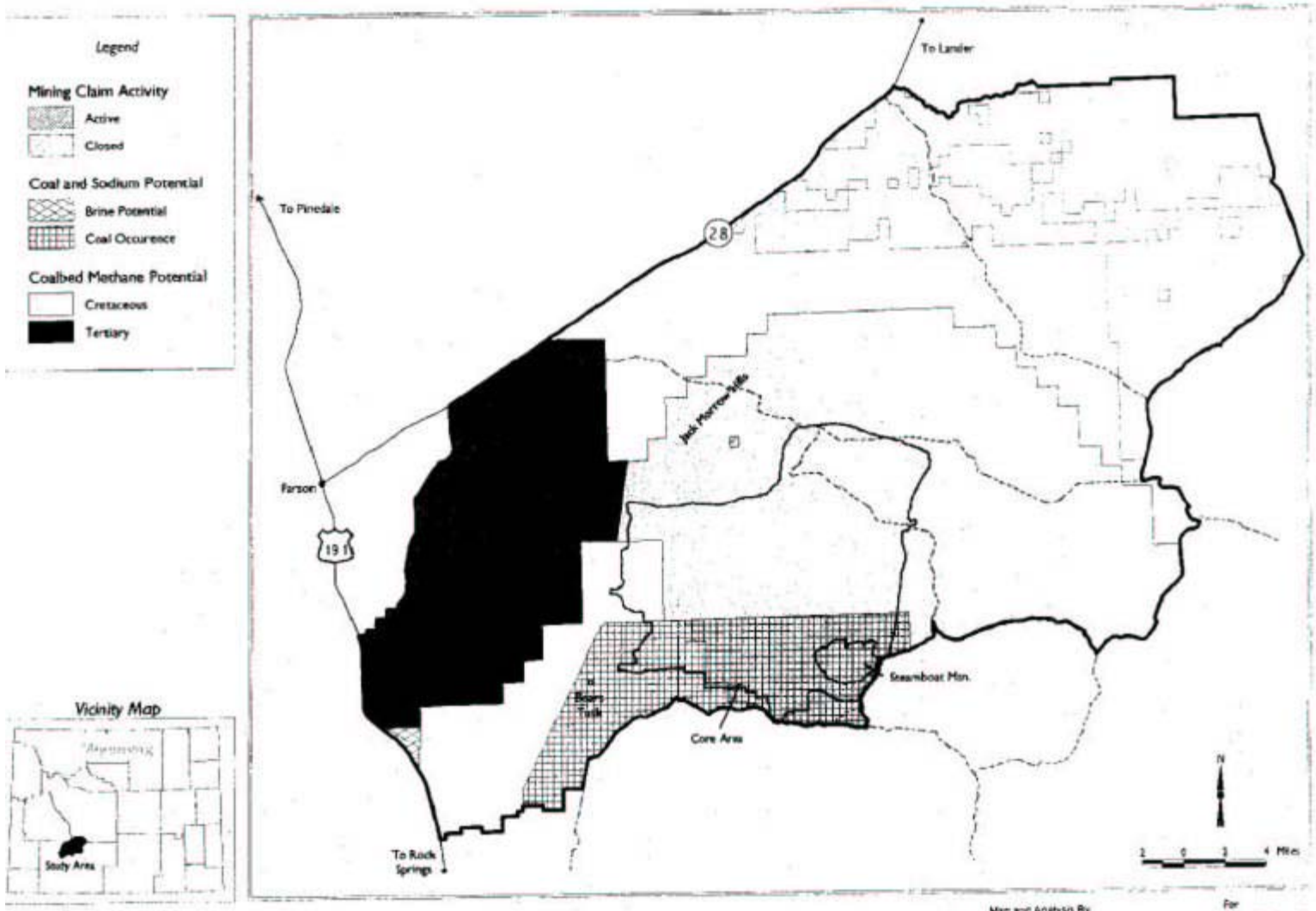
Coalbed methane development "could displace as many as 300 to 400 elk from the Steamboat/Sands elk herd and may cause them to permanently leave the plains habitat... This would make maintenance of the herd objective very unlikely. Antelope in the Killpecker drainage may be adversely impacted by displacement, animal stress, and long term forage loss..." DEIS page 291.

The impacts on wildlife beyond big game caused by fragmentation, destruction, or modification of sagebrush-steppe, mountain shrub, and other habitats—by construction and traffic roads, developments, etc.—are also great. Please refer to the Sage Grouse and Mountain Plover, Raptors, Animals of Special Concern, and Rare Plants and Plant Communities sections of this document for brief discussions and important references.

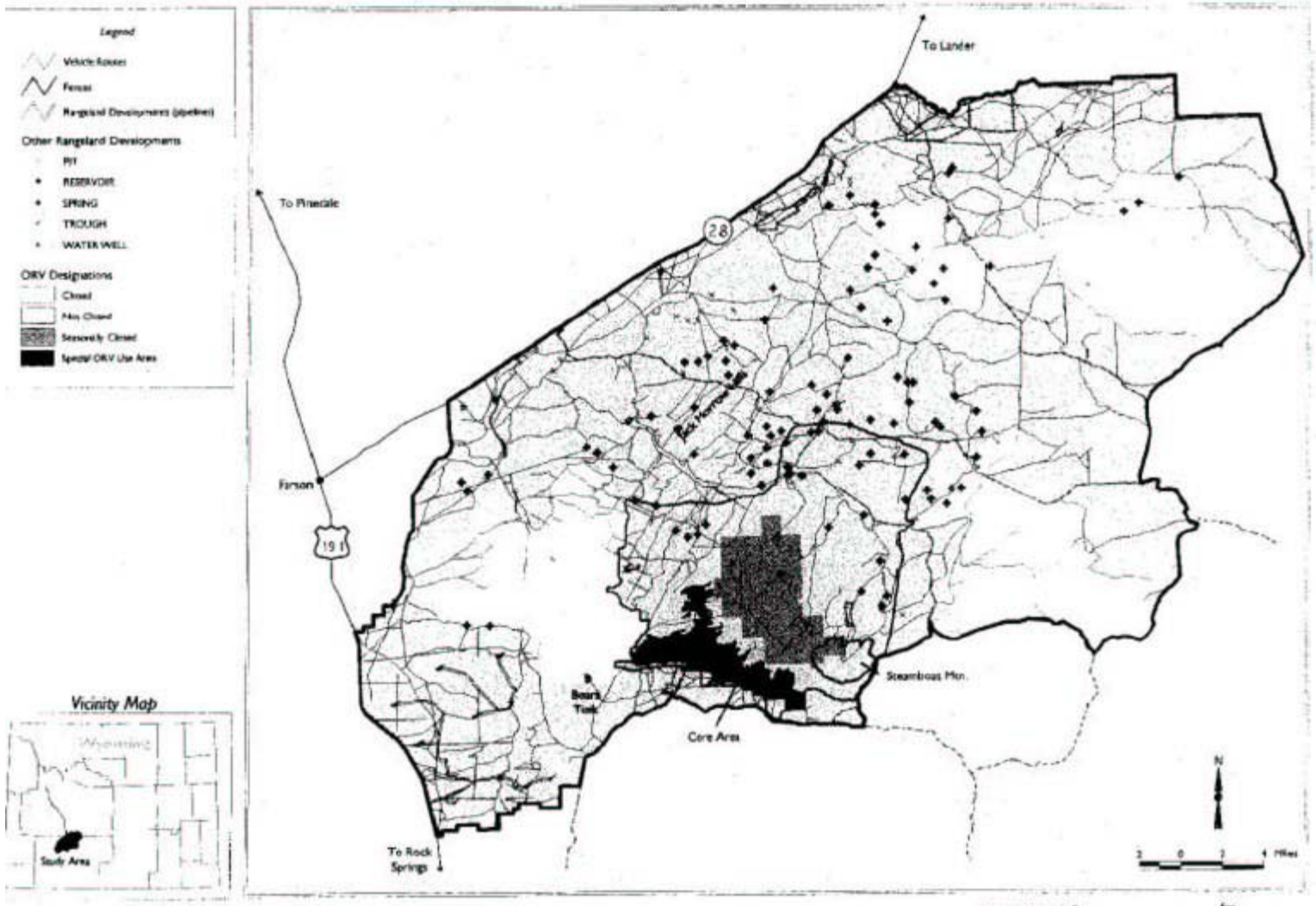
Threats: Oil and Gas Development



Threats: Other Mineral Development



Threats: Rangeland Developments & Motorized Vehicle Use



Summary of Special Values (foldout map)

This map is our attempt to show on a single page the many different special values of the Jack Morrow Hills area. The map was produced by combining information shown on the individual special value maps. Because so many natural and historical values overlap in the study area, it was necessary to omit the scenic/visual resources and predicted wildlife habitat from the summary map. Nonetheless, it is easily seen that nearly every acre of the study area possesses more than one special value.

References

Baxter, George T. and M.D. Stone. 1980. Amphibians and Reptiles of Wyoming. Wyoming Game and Fish Department. Cheyenne, WY.

Beauvais, Gary P. and R.S. Smith. September 1999. Occurrence of Breeding Mountain Plovers in the Wyoming Basins Ecorgion. Wyoming Natural Diversity Database. Laramie, WY.

Bock, R. and Fred Lindzey. December 1999. Preliminary Progress Report: Jack Morrow Hills Desert Elk Study. Wyoming Cooperative Fish and Wildlife Research Unit. Laramie, Wyoming.

Bohne, Joe and Bill Rudd. 1994. Wildlife vs. Energy Development. Wyoming Wildlife News, pg. 21-22.

Braun, C.E. 1998. Sage grouse declines in western North America: What are the problems? Proceedings of the Western Association of State Fish and Wildlife Agencies 78:139-156.

Christiansen, Tom. 2000. "Sage Grouse in Wyoming: What Happened to All the Sage Grouse?" Wyoming Wildlife News, March-April, 2000. Wyoming Game and Fish Department, Cheyenne, WY.

Connelly J.W. January 17, 2000. Guidelines for management of sage grouse populations and habitats. Draft of January 17, 2000. Idaho Department of Fish and Game. Pocatello, ID.

Davidson, Diane W., et al. 1996. Selecting Wilderness Areas to Conserve Utah's Biological Diversity. The Great Basin Naturalist: 56(2), pp.95-118.

Dechant, J.A., M.L. Sondreal, D.H. Johnson, L.D. Igl, C.M. Goldade, M.P. Nenneman, and B.R. Euliss. 1999. Effects of management practices on grassland birds: Mountain Plover. Northern Prairie Wildlife Research Center, Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. http://www.npwrc.usgs.gov/resource/literatr/grasbird/mnplove/mnplove.htm. (version 16Oct98).

Fertig, Walter, Laura Welp, and Stuart Markow. November 1998. The Status of Rare Plants in Southwest Wyoming. WYNDD. Laramie, WY.

Fertig, Walter and Gary Beauvais. March 1999. Wyoming Plant and Animal Species of Concern. Wyoming Natural Diversity Database, University of Wyoming. Laramie, WY.

Fertig, Walter. September 14, 2000. Wyoming Natural Diversity Database. Personal Communication.

Fertig, Walter. September 19, 2000. Wyoming Natural Diversity Database. Personal Communication.

Gregg, M.A. et al. 1994. Vegetational cover and predation of sage grouse nests in Oregon. Journal of Wildlife Management 58:162-166.

Griswold, Terry. October 5, 2000. U.S. Department of Agriculture, Agricultural Research Service, Bee Biology and Systematics Laboratory, Utah State University, Logan, UT. Personal communication.

Griswold, Terry. October 24, 2000. U.S. Department of Agriculture, Agricultural Research Service, Bee Biology and Systematics Laboratory, Utah State University, Logan, UT. Response to data request.

Hjertaas, Dale G. 1996. Recovery Plan for the Burrowing Owl in Canada. J. Raptor Research Report 9:107-111. p108. Raptor Research Foundation, Inc.

Jones, George and W. Fertig. February, 1996. Plant Associations and Plant Species of Special Concern in the Jack Morrow Hills Ecosystem. Wyoming Natural Diversity Database. Laramie, WY.

Katzner, Todd E. 1994. Winter ecology of the Pygmy Rabbit (Brachlyagus idahensis) in Wyoming. Masters Thesis, Department of Zoology and Physiology, University of Wyoming, Laramie.

Keith, Lorraine. February 1, 2001. Rock Springs Field Office Wildlife Biologist. Personal Communication. Rock Springs, Wyoming.

Knight, Dennis et al., 1976. Potential Natural Landmarks in the Wyoming Basin. University of Wyoming Dept. of Botany.

McGrew, Paul O., et al. July 1974. Inventory of Significant Geological Areas in the Wyoming Basin Natural Region. University of Wyoming Department of Geology. Laramie, WY.

Mealey, Brian. 1997. Reproductive Ecology of Burrowing Owls, Speotyo Cunicularia Floridana, in Dade and Broward Counties, Florida. J. Raptor Research Report 9:74-79. p78. The Raptor Research Foundation, Inc.

Merrill, E.H., et al. 1996. Wyoming Gap Analysis Final Report. Dept. of Zoology and Physiology, Univ. of Wyoming. Laramie, WY.

Oakleaf, Bob, A.O. Cerovski, and Bob Luce. October 1996. Nongame Bird and Mammal Plan. Wyoming Game and Fish Department.

Olendorff, Richard R. 1993. Status, biology, and management of the Ferruginous Hawks: a review. Raptor Research and Technical Assistance Center, Special Report. U.S. Dept. of Interior, Bureau of Land Management, Boise, ID.

Paige, C. and S.A. Ritter. 1999. Birds in a Sagebrush Sea: managing sagebrush habitats for bird communities. Partners in Flight Western Working Group. Boise, ID.

Parrish, T. L, S.H. Anderson, A.W. Anderson, and Steve Platt. July, 1994. Raptor Mitigation Handbook. Wyoming Cooperative Fishery and Wildlife Research Unit. University of Wyoming, Laramie.

Patton, Tim and S. Anderson. August 1999. Recommendations for the Development of an Amphibian and Reptile Conservation Program in the Wyoming Game and Fish Department, and a Tentative Status Assessment of Wyoming's Herpetofauna. Wyoming Game and Fish Department.

Peterson, Charles. September 14, 2000. Idaho State University. Personal conversation.

Postovit, H.R., and B.C. Postovit. 1987. Mining and energy development. In: B.A. Giron Pendleton, B.A. Millsap, K.W. Cline, and D.M. Bird. Eds. Raptor managment techniques manual. National Wildlife Federation, Washington, D.C.

USDI Bureau of Land Management. 1996. Green River Resource Area Resource Management Plan and Final Environmental Impact Statement. Green River Resource Area, Rock Springs District. Washington: Government Printing Office.

U.S. Fish and Wildlife Service. 1995. North Dakota's federally listed endangered, threatened, and candidate species 1995. U.S. Fish and Wildlife Service, Bismarck, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. http://www.npwrc.usgs.gov/resource/distr/others/ndanger/ndanger.htm (Version 16JUl97).

U.S. Fish and Wildlife Service. 1999. Endangered and threatened wildlife and plants: proposed threatened status for the mountain plover. Federal Register 64: 7587.

Wheeler, Charley A. 1997, Current Distributions and Distributional Changes of Fishes in Wyoming West of the Continental Divide. Masters Thesis, Department of Zoology and Physiology, University of Wyoming, Laramie.

Wyoming Game and Fish Department Native Species Status Classification System. Undated.

Wyoming Game and Fish Department. June 21, 2000. Minutes of Sage Grouse Conservation Plan Meeting. Cheyenne Wyoming.

Wyoming Game and Fish Department. September 2000. Big Game GIS data coverages. Cheyenne, Wyoming.

Wyoming Game and Fish Department. Sept. 25, 2000. History and Current Status of the Steamboat Elk Herd and a Brief Review of Literature Regarding Elk Response to Disturbance. Prepared for the Governor's Sub-cabinet for Natural Resources in preparation of the State's response to the BLM's Draft Jack Morrow Hills Coordinated Activity Plan. WGFD. Cheyenne.

Wyoming Natural Diversity Database. Response to Data Request. September 14, 2000. Laramie, WY.

Wyoming Wilderness Coalition. 1994. Wilderness at Risk: Citizens' Wilderness Proposal for Wyoming Bureau of Land Management Lands. Wyoming Wilderness Coalition, Sheridan, WY.