RESTORATION OF CARNIVORE HABITAT CONNECTIVITY IN THE NORTHERN ROCKY MOUNTAINS

Bill Ruediger; Endangered Species Program Leader
USDA Forest Service, Northern Region, Missoula, MT

James J. Claar; Carnivore Program Leader
USDA Forest Service, Northern Region, Missoula, MT

James F. Gore; National Grizzly Bear Habitat Coordinator
USDA Forest Service, Northern Region, Missoula, MT

Abstract

The Northern Rocky Mountains are the best location in the lower 48 states to maintain functioning communities of large and mid-sized carnivores. Highways and railroads have created significant habitat fragmentation, habitat loss, mortality and other threats to these species. The authors reviewed existing highways and railroads, as well as land ownership patterns. "Key linkage areas" were evaluated across the Northern Rocky Mountains of Montana, Idaho and Wyoming. Sixty four highways were considered important as key linkage areas. Twenty of these were considered "high priority" due to the cumulative impacts of having four lanes, high traffic volume, high potential for upgrading, paralleling railroads or critical private lands. Highway planners are encouraged to move towards analyzing "geographic areas" when assessing impacts of highways on wide-ranging carnivores.

Introduction

The Northern Rocky Mountains were a place; where high mountains rose to the skies, covered with lush green forests and dotted with meadows, lakes and spectacular postcard vistas. Wide fertile valleys wove their way between ranges, laced with natural grasslands, shrublands and cottonwood bottoms as far as the eye could see. Carnivores, such as the grizzly bear *(Ursus arctos),* wolf *(Canis lupis),* wolverine *(Gulo gulo),* lynx *(Lynx canadensis)* and several other species roamed the valleys and mountains - moving back and forth - among some of the earth's most abundant and striking wildlife resources. And, as Norman Maclean so elegantly stated "Eventually all things come together and a river runs through it." Well, this may have been how it was, but those days are behind us and what "runs through it" now is not only a river, but also a major four lane highway, a railroad and strip development.

The Northern Rocky Mountain: The Last Best Place for Large and Mid-Size Carnivore.

The best opportunity for management of a functional carnivore community in North America is the Northern Rocky Mountains of the United States and the Southern Rocky Mountains of Canada. It may be the last place in the lower 48 states where this opportunity exists. The area extends from the Wyoming Range in Wyoming north to Jasper National Park in Canada (Paquet 1995). One of the major issues in conservation of carnivores in this area is the expanding highway and railroad system. Another is strip development as humans expand out from towns and cities. The authors have evaluated these two factors and are presenting an approach that would allow carnivore habitat and population connectivity in the Idaho, Montana and Wyoming portions of the Northern Rocky Mountains. Admittedly, this is not a fully developed concept, but a beginning point from which state departments of transportation (DOT's), Federal Highway Administration, land management agencies, wildlife agencies and conservation groups can begin a serious dialog. The problems of highways and human sprawl on wildlife and fish resources are increasing and will persistent. The solutions to these impacts are best solved sooner than later.

Many of the large carnivores are already listed under the Endangered Species Act (ESA). Grizzly bear and wolves are currently protected under ESA. Lynx have been proposed for listing and their status is being reviewed by the USDI Fish and Wildlife Service. Wolverine and fisher *(Martes pennanti)* are of concern and have been petitioned for listing in the past Federal and state agencies have a legal responsibility to manage native wildlife species, particularly those listed or reduced in numbers or range such that listing may be required.

The Progression of Forest Roads To Highways

As the highway system (and railroad) grows in size, traffic volume and total miles, its impacts on wildlife will grow. The impacts on low density carnivores like grizzly bears, wolves, lynx, wolverine and fisher will be more severe than most other wildlife species. This is due to their large home

ranges, relatively low fecundity, and low natural population density. The adverse effects of highways to rare carnivores and other wildlife include serious habitat fragmentation, mortality, direct loss of habitat, displacement from noise and human activity and secondary loss of habitat due to human sprawl (Ruediger 1996 and 1998).

When traffic volume increases, there is an evolution of highways from gravel roads to paved two lane roads, and from two lane highways to more problematic four lane highways and "super highways" like the Interstate system. The eventual result of such a progression in the highway system on rare carnivores is the slow strangulation of viability due to population isolation, loss of habitat, mortality of individuals and a decline in potential population size. All of these factors are primary causative agents in the decline and extirpation of wildlife worldwide.

Critical points in development of highways occur when: 1) Gravel forest or back-country roads are paved (this is the beginning of "highway" impacts compared to forest road, back country or county roads). This results in higher speeds, higher traffic volumes and increased human developments. 2) Two lane highways are upgraded into four lanes. 3) Two lane highways are upgraded by widening the pavement surface, widening the cleared right of way, adding passing lanes and straightening curves. While often necessary for safety purposes, improved highways adversely affect carnivores and other wildlife species.

Railroads: A Deadly Additional Factor

While the authors' major considerations were the identification of highways and critical private lands in key linkage areas, a serious additional factor is railroads. Railroads provide similar dangers to carnivores as highways such as habitat loss, habitat fragmentation and mortality sinks, plus several factors that are unique to only railroads (Woods & Munro 1996; Paquet and Callaghan 1996; Gibeau and Heuer 1996). For example, railroads often provide food sources that attract carnivores such as grain spills (grizzly bears) and carcasses of deer *(Odocoileus* sp.), elk *(Cervus elaphus)* and moose *(Alces alces)* that have been hit and are on, or near the railroad right-of-way. Railroads provide snow-free and/or level travel ways attractive to prey species (elk, deer and moose) and carnivores. Railroad bridges are occasionally used by wildlife to cross rivers, highways and valleys - sometimes with fatal results. Also, trains have no ability to maneuver to avoid animals on the tracks and can not stop quickly.

Railroads pose a significant threat to carnivores by themselves. However, in combination with highways they produce a double threat that can be catastrophic to wildlife - especially carnivores. The worst documented example in the Northern Rocky Mountains is the Trans-Canada Highway and Railroad combination. In this instance, a high speed, high traffic volume four lane highway is paralleled by a busy railroad. The result has been a severe impact on wolf mortality and serious habitat fragmentation to grizzly bears, wolves, lynx, and wolverine (Leeson 1996). In the United States, the effects of railroads paralleling major highways has been poorly studied.

Benefits of Restoring Habitat Connectivity

Providing habitat and population connectivity in the Northern Rocky Mountains has many potential benefits to carnivores and other wildlife. These include:

1. Increase the amount of habitat available to carnivores by allowing movement and dispersal within and between major mountain ranges in Idaho, Montana and Wyoming. This would maximize the amount of available habitat and distribution of carnivores.
2. Maximize the potential population size, resulting in higher resilience of carnivore populations due to demographic, stochastic and genetic factors.
3. Decreased mortality rates for all, or most, carnivores due to collisions with cars, trucks and trains.
4. Reduce the need for controversial translocation programs since carnivores could expand throughout the Northern Rocky Mountains through natural movement and population expansion.
5. Meet the intent of the Endangered Species Act and the National Forest Management Act by providing maximum habitat use, maximum potential population size and increased dispersal potential which results in populations that are more viable due to being "well distributed" across the landscape.
6. Minimize land management restrictions because larger, well distributed populations are less fragile than smaller, insular populations.

Key Linkage Areas - What are they?

Key linkage areas are critical areas where carnivore habitat connectivity is diminished, eliminated or at risk over time. Usually, the factors placing connectivity at risk are highways and private lands. Special management emphasis, such as provisions for wildlife crossings (for highways) or acquisitions/easements (for private lands) are recommended to increase or maintain wildlife habitat connectivity.

Federal and State Lands As a Foundation For Carnivore Habitat Connectivity in the Northern Rocky Mountains

The foundation for the approach the authors took was the public land base - both federal and state. This minimized the reliance on private lands. However, where it was impossible to maintain habitat connectivity across public land, "key linkage areas" across private lands are identified. The solution to maintaining the key linkage areas revolves around future conservation easements, purchases or other agreements that result in providing habitat connectivity from one mountain range to the next.

Defining Problem Highway

The highway systems in Idaho, Montana and Wyoming were reviewed for potential impacts on carnivore habitat and population connectivity. These will be identified and addressed later in this paper. Also, a subset of "high priority" highways are proposed based on; 1) Existing four lane highways. 2) Two lane highways with a high potential for upgrading (to four lanes, or "Super Two Lanes"). 3) Two lane highways with high traffic volume. 4) Highways or forest roads with a high potential for improvements that could lead to more traffic and the associated problems. 5) Highways that have paralleling railroads. Other highways that can have a serious impact are the upgrading of gravel forest and backcountry roads into paved two lane highways. When located in carnivore habitat, these former low standard roads begin the processes of increasing traffic volumes and speed in carnivore habitat. Paving of forest roads increases the potential for permanent human occupancy of remote areas through encouragement of subdivisions, resorts and high-use recreation developments.

The increase in traffic volume in carnivore habitat create a challenge for carnivores (as well as for highway, wildlife management and land management agencies). An issue facing highway agencies is when should wildlife-crossing structures be implemented? This is a question without a precise answer. It is known that some highways are not barriers or significant mortality factors for carnivores. These highways generally have low traffic volume and long pauses between traffic pulses. They are also two lane roads, often with minimal clearing distances. At approximately 2,000-3,000 vehicles per day, highways usually have adverse impacts on wildlife due to habitat fragmentation and mortality (Dr. Tony Clevenger and Dr. Paul Paquet, personal communications). Highway departments and land management agencies should implement wildlife crossing structures at these traffic volumes. Traffic volume over 4,000 vehicles per day is most assuredly creating significant habitat fragmentation and wildlife mortality.

The effectiveness of highway crossing structures is a concern to all involved in looking for the solutions to the mortality and habitat fragmentation created by highways, railroads and other associated factors. The authors acknowledge there are problems to be addressed as to how and where wildlife crossings should be built. Other authors have addressed the effectiveness of wildlife crossing designs (Clevenger 1998; Gibeau and Herrero 1998; Paquet and Callaghan 1996; Gilbert and Wooding 1996). As more research is completed on carnivores and other wildlife, the mysteries of how and where to build effective wildlife crossings will be solved.

Scale Matters When Assessing Highway Effects on Carnivores

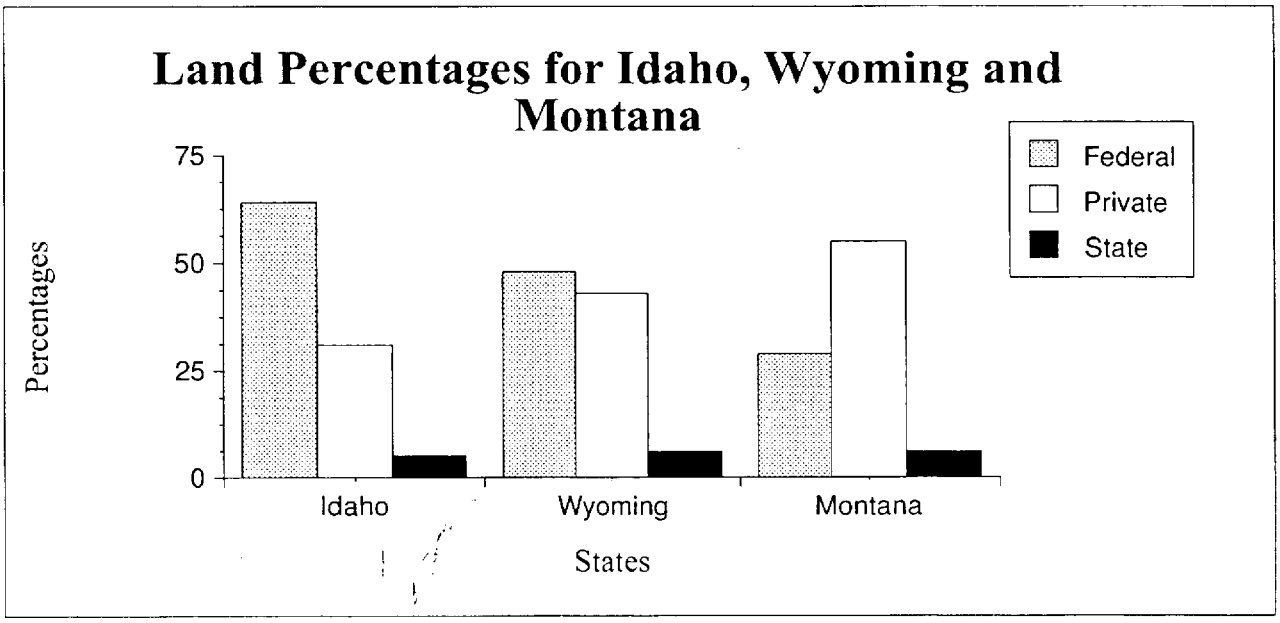
In past papers, Ruediger (1996 and 1998) defined the effects highways have on carnivores. There are many solutions that can be applied to reduce the impacts, such as underpasses, overpasses, management of human activities and vegetation management. In this paper, the authors will suggest where the solutions should be applied over a broad geographic area. Management of carnivores must be applied at proper scales to be effective (Noss 1991: Paquet 1995). An appropriate geographic scale for assessing the impacts and solutions to highways and railroads the is the Northern Rocky Mountains of the US and the Southern Rocky Mountains of Canada (Servheen et al. 1998; Gibeau and Herrero 1998; Gibeau and Heuer, 1996; Paquet 1994, 1995 and 1996). While the specific solutions must be applied locally, analysis and management of the overall problem must be at higher scales.

Highway impacts must be addressed at the geographic scale by state DOT's and the Federal Highway Administration, as well as by total length of highway. Trying to address impacts by short highway segment, as is presently done, is not appropriate. It is impossible to understand the importance or context of a highway segment to carnivores without looking at higher scales. What is urgently needed is a more comprehensive planning process involving highway management agencies, land management agencies, wildlife management agencies and the public.

Assessing the Northern Rocky Mountains Carnivore Habitat Connectivity

The following is a state by state overview of the key linkage areas for the Northern Rocky Mountain geographical area.

Figure 1 - Percentages of Federal, Private and State Lands in Idaho, Wyoming and Montana



Montana: Montana has a unique private land to public land ownership pattern that exacerbates maintenance of carnivore habitat connectivity. Montana has 29% federal land, 6% state land and 55% private land (Figure 1). While the public may have the perception that Montana is largely vast, open spaces of public land, Montana actually has one of the smallest percentages of public land of any rural western state. The ownership pattern is particularly problematic in western Montana, where mountain ranges are largely National Forest land, but the surrounding valley bottoms are mostly private lands. The private land is increasingly subject to subdivision, suburban sprawl and other uses incompatible to the long-term maintenance of wildlife habitat connectivity. Once the private lands are fully developed, western Montana will have only three large areas of carnivore refugia (Greater Yellowstone Area, Selway-Bitterroot Mountains and the Bob Marshall Wilderness-Glacier Park areas), with the remaining public land habitat between these areas existing as "island" mountain ranges surrounded by developed private land.

The challenge in Montana is to provide permeable highway segments and secure corridors across private land for carnivores and other wildlife. This will be necessary if the majority of public land is to remain useful as habitat. If we fail to provide access for wildlife across private lands and permeable highway segments in the "key linkage areas," severe habitat fragmentation will continue to occur. The Greater Yellowstone Area, Selway-Bitterroot and Bob Marshall-Glacier areas would be permanently isolated with a much lower potential for carnivore persistence. There is evidence that the isolation of these three areas already exists for many or most carnivores. Wolf recolonization in Montana occurred rapidly in the late 1980's and early 1990's from Canada to the Ninemile area north of Interstate 90. Southward movement of wolves appeared to be stopped by 1-90. Grizzly bear have poor pioneering and dispersal abilities and no known natural movements have occurred between grizzly bear recovery areas, in spite of distances of only 10-120 miles separating these areas.

Figure 2 provides a map of the highway and private land "key linkage areas" in Montana. A written description of each key linkage area is provided in Table 1. Thirty five highway segments and 16 private land corridor areas were identified in Montana as "key linkage areas.

Idaho: The situation in Idaho is clearly different than Montana. Idaho has a much more favorable public land ownership pattern than Montana. A much higher percentage of Idaho is public land (63% federal, 5% state and 31% private). Plus, public lands are much more contiguous, particularly in the mountainous areas.

Nevertheless, Idaho also has significant key linkage areas of concern. In northern Idaho from Coeur d' Alene north, key linkage areas between the Selkirk Mountains, Cabinet Mountains and the Bitterroot Mountains are at risk and will require restoration. In western Idaho, linkage to the Wallowa and Blue Mountains in Oregon and Washington is at risk or absent. In eastern Idaho Interstate 15 provides a formidable barrier between the Greater Yellowstone Area and Bitterroot Mountains.

Figure 3 provides a map of the highway and private land "key linkage areas" in Idaho. A written description is provided in Table 2. Twenty one highway segments and 7 private land corridor areas were identified in Idaho as key linkage areas.

Wyoming: Within carnivore habitat in the Northern Rocky Mountains, Wyoming has the best land ownership pattern reviewed. The western two thirds of Wyoming are largely connected by an extensive network of National Forest, BLM and state land. Yellowstone National Park, in the extreme northwest corner of the state, is a world-renowned refugia for wolves, grizzly bears and other forest carnivores. Special concern must be given in and around Yellowstone and Grand Teton National Parks. Nine of Wyoming's ten highways of most concern lead visitors to these parks. With increasing visitor use, traffic volume increases and there is pressure to accommodate more and faster traffic by upgrading the access highways. The upgrading of highways will negatively effect carnivores and other wildlife by increasing habitat fragmentation and wildlife mortality. Wolves have been killed by vehicles in both Grand Teton and Yellowstone National Parks The long-term effects of increasing traffic and potentially faster moving traffic should be addressed now Reducing speed limits to decrease vehicle speed, as some people have proposed, has not been effective in decreasing Florida panther mortalities. Land ownership in Wyoming is 48% Federal, 6% state and 43% private. The majority of private land in Wyoming is in the eastern one third of the state.

Figure 4 provides a map of the highway and private land "key linkage areas in Wyoming. A written description is provided in Table 3. Nine highways were identified in Wyoming as "key linkage areas." No private land corridors were found.

Other Areas of Concern: A concern outside of the analysis of this paper is the relationship of the Wasatch and Uinta Mountain Ranges to the Northern Rocky Mountains. Geographically and biologically, Utah mountain ranges were almost certainly a part of the Northern

Figure 2 - Montana
Key Linkage Areas & High Priority HWY

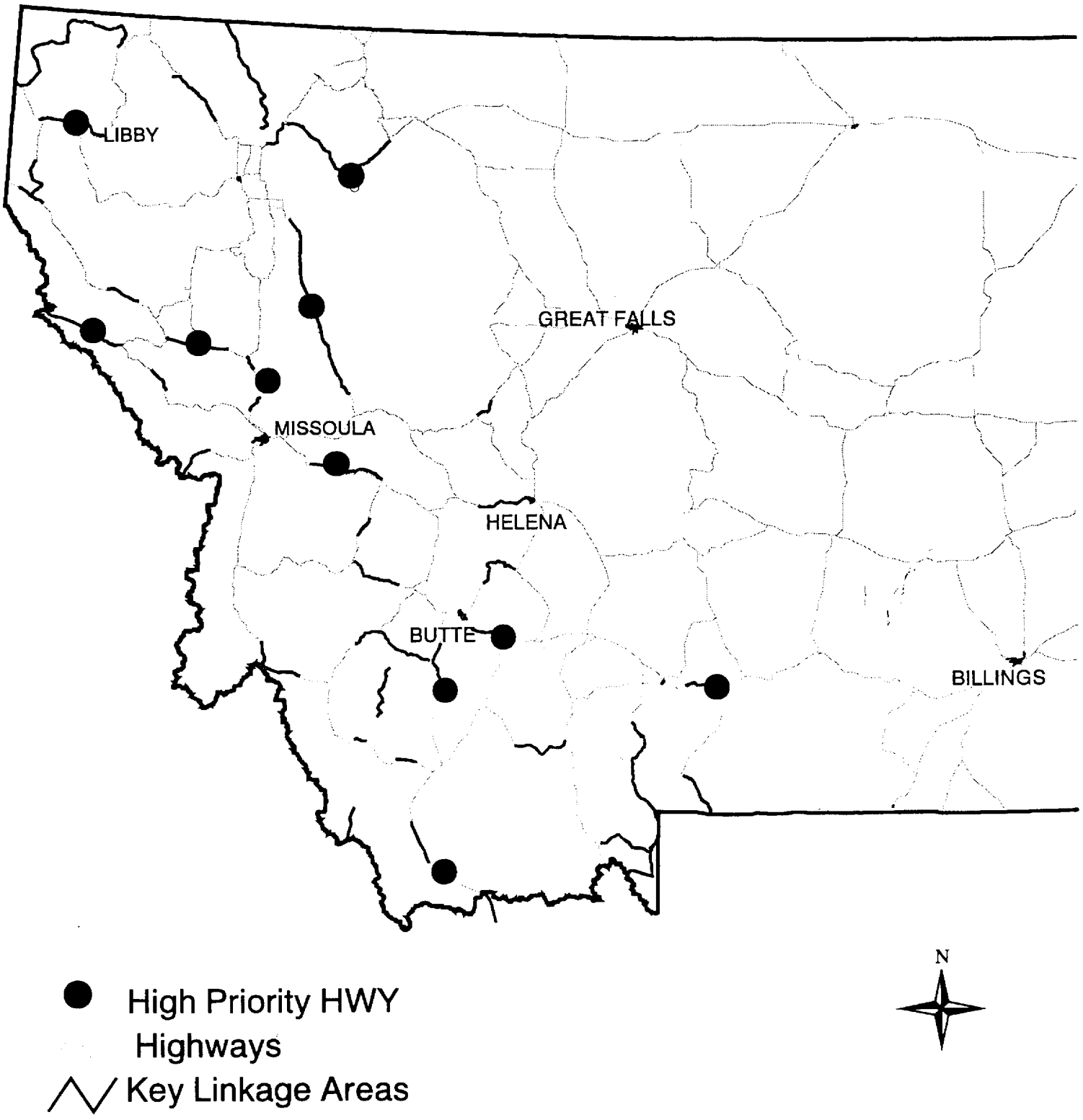


Table 1: Summary of Montana Key Linkage Areas						
Highway Segment	High Priority	4-lanes	High Traffic Volume	High Potential For Upgrade	Railroad Paralleling	Critical Private Lands
1. Yaak Hwy (Mt 508)				X		X
2. Hwy 2 – Troy to Libby	X		X	X	X	
3. Hwy 93 – Fortine to Olney			X	X	X	
4. Mt 486 – North Fork Road				X		
5. Hwy 2 – Columbia Falls to East Glacier	X		X	X	X	
6. Hwy 56 – Bull Lake to Hwy 200				X		X
7. Hwy 200 – Dixon to ID Border (3 sections)	X		X	X	X	X
8. Hwy 83 – Swan Lake to Clearwater Junction	X		X	X		X
9. Hwy 93 – Ravalli to Evaro Hill (2 section)	X	X	X	X	X	X
10. I-90 – ID Border to Alberton (2 sections)	X	X	X	X	X	X
11. I-90 – Rock Creek to Drummond	X	X	X	X	X	X
12. I-90 – Butte to Whitehall	X	X	X	X	X	X
13. I-90 – Bozeman Pass	X	X	X	X	X	X
14. Hwy 200 – Lincoln to Roger's Pass			X	X		
15. Hwy 12 – Elliston to McDonald Pass		X	X	X		
16. Hwy 12 – Lolo to ID Border	X		X	X		X
17. Hwy 1 – I-90 to Anaconda (2 sections)				X		X
18. I-15 – Butte to Boulder Exit		X	X			
19. Hwy 43 – Divide to Lost Trail Pass (2 sections)				X		
20. Pioneer Mountain Scenic Byway (Forest Service)				X		
21. Hwy 278 – Badger Pass to Big Hole Pass			X	X		X
22. I-15 – Monida Pass to Clark Canyon (2 sections)	X	X	X	X	X	X
23. Hwy 287 – Alder to Hwy 20 Jct (2 sections)			X	X		X
24. Hwy 191 – Big Sky to Hwy 287 Jct			X	X		
25. Hwy 20 – Hwy 287 Jct to ID Border			X	X		
26. Hwy 89 – Yankee Jim Canyon thru YNP			X	X		X
27. I-15 – Glen to Deerlodge Pass	X	X	X	X		X

Figure 3 - Idaho

Key Linkage Areas & High Priority HWY

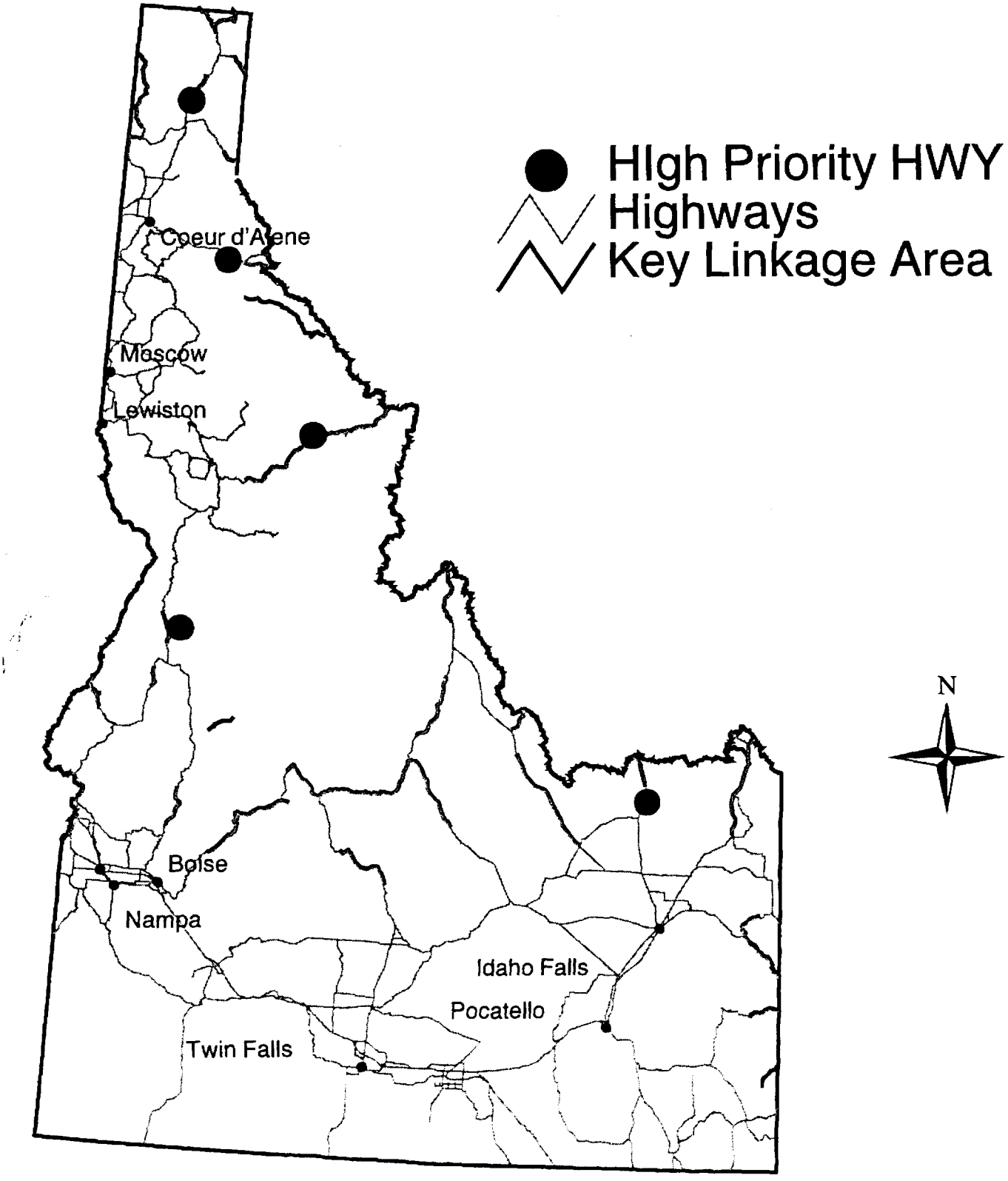


Table 2: Summary of Idaho Key Linkage Areas						
Highway Segment	High Priority	4-lanes	High Traffic Volume	High Potential For Upgrade	Railroad Paralleling	Critical Private Lands
1. Hwy 95 North (2 segments)	X	X	X	X	X	X
2. Hwy 2 – MT Border to Jct Hwy 95			X	X	X	X
3. Hwy 57 (Priest Lk Highway)			X	X		
4. I-90 MT Border to 4th of July Pass	X	X	X	X		X
5. St. Joe River Road				X		
6. Hwy 12 – MT Border to Kooskia	X		X	X		
7. Hwy 95 South (2 segments)	X	X	X	X	X	X
8. Hwy 93 MT Border to Challis (2 segments)			X	X		
9. Hwy 29 Bannock Pass				X		
10. Hwy 28 – Leadore to Atomic Energy Res.				X		
11. I-15 – MT Border to Spencer	X	X	X	X	X	X
12. Hwy 20 – MT Border to Ashton			X	X		
13. Hwy 93 – Jct Hwy 75 to Mackay Res.			X	X		
12. Hwy 75 – Jct Hwy 93 to Stanley			X	X		
13. Hwy 21 – Stanley to Arrow Rock Dam (2 seg.)			X	X		
14. Hwy 55 – Horseshoe Bend to Smith's Ferry			X	X	X	
15. Cascade to Warm Lake RD.				X		
16. Hwy 71 – Cambridge to OR Border				X		X
17. Moyie River Road – Moyie to East Gate				X	X	X

Figure 4 - Wyoming
Key Linkage Areas & High Priority HWY

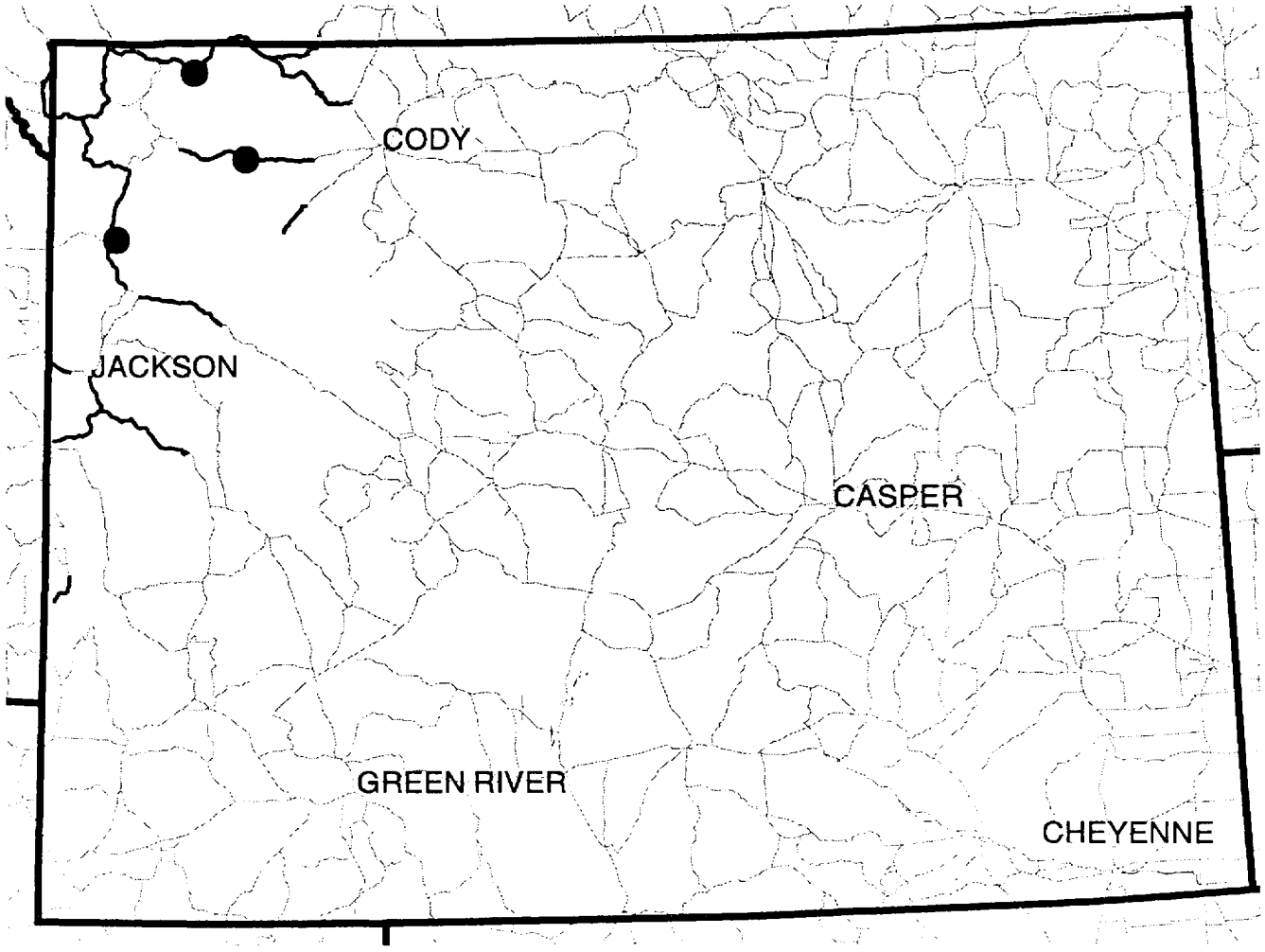


Table 3: Summary of Wyoming Key Linkage Areas

Highway Segment	High Priority	4-lanes	High Traffic Volume	High Potential For Upgrade	Railroad Paralleling	Critical Private Lands
1. Hwy 212 – Beartooth Pass to Jct of Hwy 89	X		X	X		
2. Hwy 89 - MT Border to Jackson	X		X	X		
3. Hwy 20 – Madison to West Yellowstone			X	X		
4. Forest Road from Hwy 120 to Hwy 212				X		
5. Hwy 16 - Wapiti to Lake	X		X	X		
6. Hwy 26 – National Forest Boundary to Moran			X	X		
7. Hwy 187 – National Forest Boundary to Jct 89			X	X		
8. Hwy 89 – Hoback to ID Border (2 sections)			X	X		

Rocky Mountain ecosystem. The largest manmade structure currently preventing habitat connectivity is Interstate 80. No analysis was made of where key linkage areas may be along Interstate 80, or in Utah. A recent draft Lynx Conservation Assessment and Strategy (USDI Bureau of Land Management, et al. 1999) considers the Wasatch and Uinta Mountains as part of the Northern Rocky Mountain Geographic Area. Another area that may be important, but was not analyzed is the Bighorn Mountains in north central Wyoming and its relationship to the rest of the Northern Rocky Mountains.

Identifying High Priority Key Linkage Areas in the Northern Rocky Mountains

Using the definitions for "high priority" highways discussed previously, the authors reviewed the 64 key linkage areas identified in Montana, Idaho and Wyoming. Of the 64 key linkage areas identified, 20 (31%) qualified as "high priority" areas.

Of the 20 "high priority" key linkage areas, 7 (35%) were located on two Interstate highways (1-90 and 1-15). Eleven (55%) have a railroad paralleling the highway. And eleven also have private lands, which are critical in maintaining key linkage areas. Nearly alt have a high potential for upgrading that could increase the right-of-way distances, increase traffic lanes and increase vehicle speeds. Figure 5 provides a map of the high priority key linkage areas in the Northern Rocky Mountains. Table 4 summarizes the high priority key linkage areas for Montana, Idaho and Wyoming. It also identifies risk elements such as critical private land segments, railroads paralleling highways, existing four lane highways and areas where there is a high potential for upgrading.

Conclusion

Highway systems provide a formidable impact to wildlife - particularly rare, wide-ranging carnivores. They continue to expand, becoming more problematic and dangerous to wildlife each year. Forest roads are being paved and lanes added, straightened and widened. Only recently have the problems to wildlife created by highways been highlighted. The solutions at this time are in the future. And, the cost will be significant.

The current practice of assessing highway upgrades and construction by individual segments is inappropriate for large and mid-sized carnivores. Planning by segments makes identification of the highest priority wildlife areas impossible and can lead to high investments into marginal return situations. There is no context to determine if a given highway segment is important. The appropriate scale for planning effects of highways and railroads is at the geographic level. In the case the authors reviewed, the appropriate geographic level is the Northern Rocky Mountains of Montana, Idaho and Wyoming. The authors developed this proposal with the support of their employer, the USDA Forest Service and with many hours of donated time. Land management, wildlife management and highway agencies should fund and coordinate a more intensive review of habitat fragmentation and key linkage zones. Highway agencies should increase the planning scale to at least an entire highway's length through the Northern Rocky Mountains - and other geographic areas where carnivores are of concern.

It is the author's hope that agencies and the public will take the efforts from this paper and improve upon them. The benefits to carnivores and other wildlife would be profound. A by-product of moving animals safely across highways (instead of over the road surface) would be a significant improvement in human traffic safety. Although not studied, much of the cost of providing safe wildlife crossings could be off-set by fewer vehicle collisions with wildlife, fewer human injuries, fewer human deaths and lower vehicle repair and insurance costs. Our highways in the $_{21}$**st** century can be much more ecologically sensitive. The restoration of carnivore habitat connectivity and reductions in wildlife mortality are issues that should be addressed and corrected.

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Figure 5
Montana, Idaho and Wyoming
Key Linkage Areas and Priority HWY

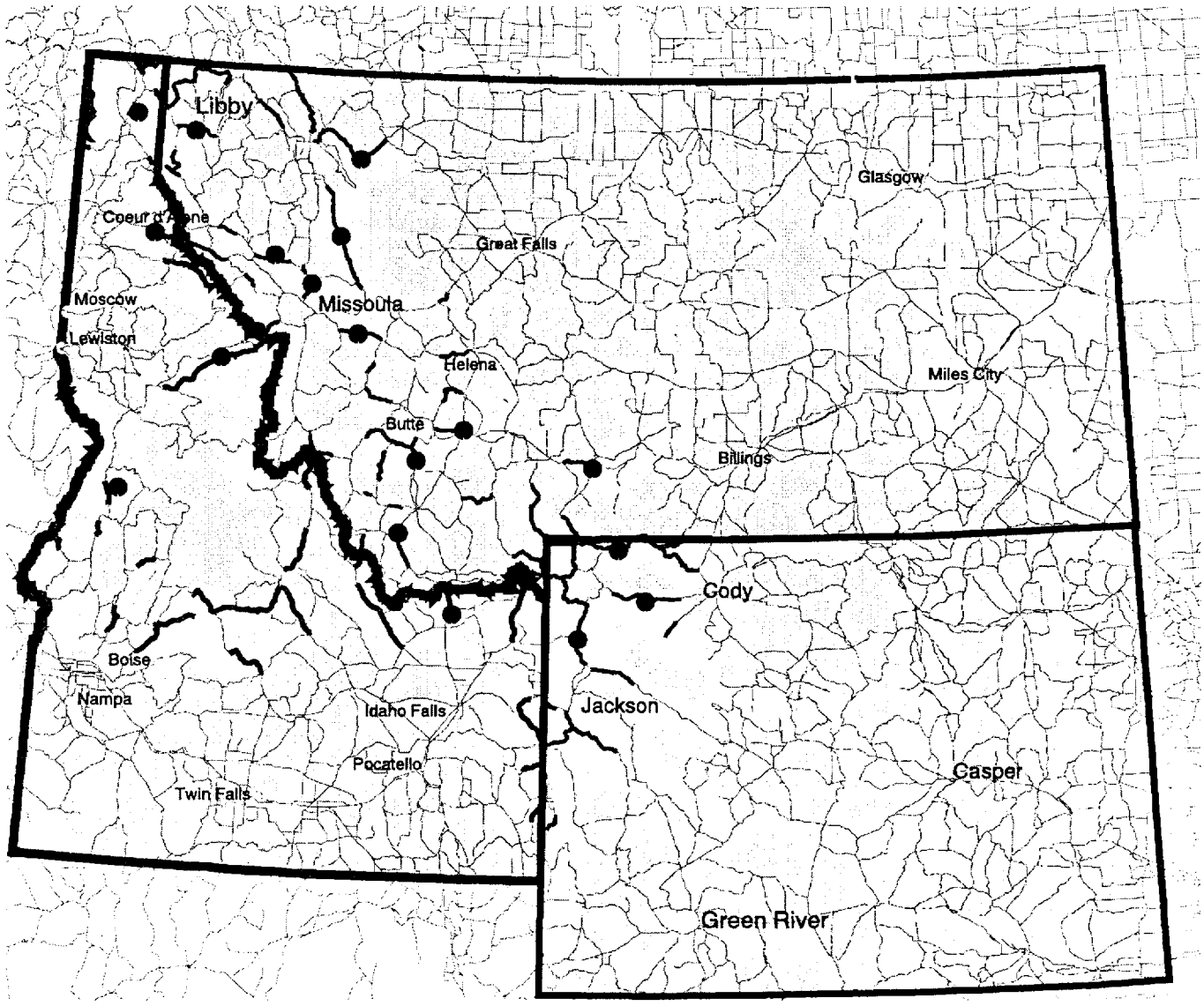

Table 4: Summary of High Priority Key Linkage Areas for Northern Rocky Mountains

Highway Segment	High Priority	4-lanes	High Traffic Volume	High Potential For Upgrade	Railroad Paralleling	Critical Private Lands
1. MT Hwy 2 - Libby to Troy	X		X	X	X	
2. MT Hwy 2 - Columbia Falls to East Glacier	X		X	X	X	
3. MT Hwy 200 - Dixon to ID Border (3 sections)	X		X	X	X	X
4. MT Hwy 83 - Swan Lake to Clearwater Jct.	X		X	X		X
5. MT Hwy 93 - Ravalli to Evaro Hill	X	X	X	X	X	X
6. MT/ID I-90 - Alberton to 4th of July Pass	X	X	X	X	X	X
7. MT I-90 - Rock Creek to Drummond	X	X	X	X	X	X
8. MT I-90 - Butte to Whitehall	X	X	X	X	X	
9. MT I-90 - Bozeman Pass	X	X	X	X	X	X
10. MT/ID Hwy 12 – Lolo to Kooskia	X		X	X		X
11. MT/ID I-15 – Spencer, ID to Clark Canyon	X	X	X	X	X	X
12. MT I-15 – Glen to Deerlodge Pass	X	X	X	X		X
13. ID Hwy 95 - North of Sandpoint (2 segments)	X	X	X	X	X	X
14. ID Hwy 95 South (2 segments)	X	X	X	X	X	X
15. WY Hwy 212 – Beartooth Pass to Jct of Hwy 89	X		X	X		
16. WY Hwy 89 MT Border to Jackson	X		X	X		
17. WY Hwy 26 – Nat'l Forest Boundary to Moran	X		X	X		

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