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Cabinet-Yaak Grizzly Bear Ecosystem

1992 Forest Service Road Closure Program Compliance Inventory

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--Notes on Revision--

This revised document corrects several errors in the original report, released in December, 1992:

-- The total square mile figures used in the original report, derived from the Kootenai National Forest Plan, were updated after publication of that document. The current figures are included here, derived from information provided by Bob Krepps, Public Information Officer for the Kootenai National Forest (Personal Communication - Bob Krepps, 2/19/93).

The number provided by the Kootenai National Forest (KNF) -- 2,198.72 square miles -- did not agree with the area generated by calculations using a published U.S. Fish and Wildlife Service Bear Management Unit boundary map and a digital planimeter. These calculations count only KNF BMUs 1 through 17, and exclude a large area of private land within the ecosystem boundary (67 square miles). A total of 1,940.2 square miles are included in the KNF portion of the Cabinet-Yaak Grizzly Bear Ecosystem.

-- The closure structures inventoried in Bear Management Unit 22 (2) were dropped from this version of the report. BMU 22 is not included in the Kootenai National Forest portion of the Cabinet-Yaak Grizzly Bear Ecosystem and thus road mile figures were not available from the Kootenai National Forest. The document calculations have incorporated the changed figures, and all tables and figures have been modified to match the correct totals.

-- Several structural features of the report, in particular table and figure labels and text, have been improved to facilitate easier reading and comprehension.

The overall findings of the report are unchanged.

Abstract

The U.S. Forest Service manages habitat for sensitive wildlife species in the Kootenai National Forest of Montana. These species include the grizzly bear, gray wolf, Rocky Mountain elk, and others. Studies have shown these animals are sensitive to human disturbance and cannot effectively use habitat with high levels of human activity. In order to provide adequate habitat, the Forest Service is required by the Endangered Species Act to close logging roads from public use.

Findings

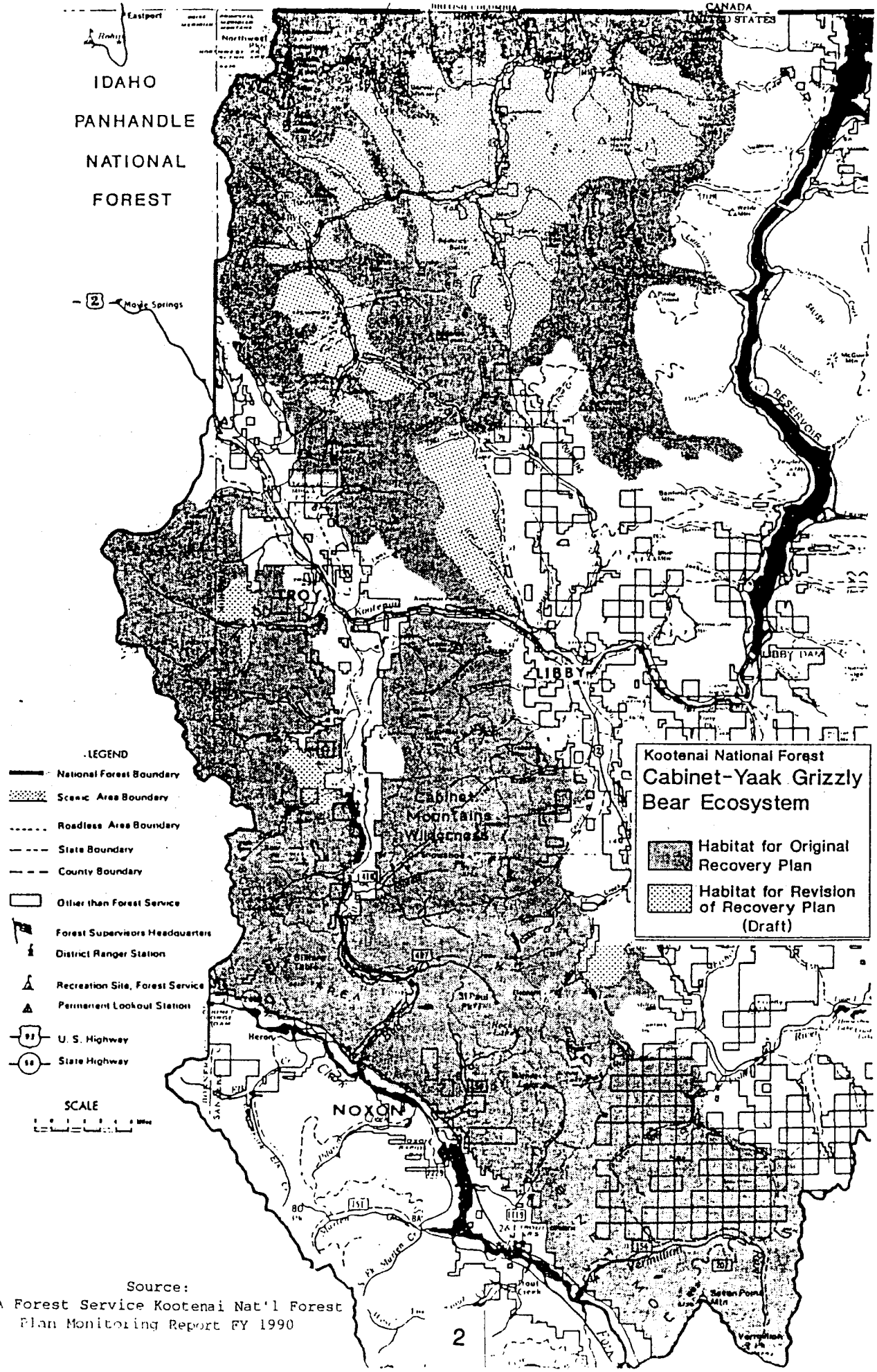
The Cabinet-Yaak Grizzly Bear Ecosystem (CYGBE) is located partially in the Kootenai National Forest (KNF). This management zone limits open road density to 0.75 miles of road per square mile. In October and November of 1992, this study inventoried 281 road closure structures, a sampling of those indicated on KNF road closure notice documents as restricting motor vehicle access for all or part of the year. The stated purpose of 96.1% these closures (270) was to protect wildlife habitat and water quality. The survey recorded: location details for each structure inventoried; miles of road behind the structure; and whether the structure was effective in restricting vehicles.

Study results indicate poor government compliance with road closure requirements. Sixty of the closures surveyed (21.4%) were totally ineffective in restricting motor vehicles. Another 71 (25.3%) were not limiting off-road vehicle use. Finally, 22 structures (7.8%) were closed, but showed evidence of recent use behind the structure, indicating authorized or unauthorized use of gate keys.

The total non-compliance indicated by the study was that 54.5% of all closures inventoried (153) were not restricting motor vehicle use from the closed roads beyond. This translates to 540 miles of supposedly closed road that are de facto open in the CYGBE. Calculations show that by adding this information to data provided by the Kootenai National Forest, the total open road density for the KNF portion of the grizzly bear recovery area is 0.85 miles per square mile. The open road density for the combined BMUs sampled by this study is 1.2 miles per square mile.

These numbers are legally unacceptable and must be improved. The study shows that forest road closures are not effective in securing sensitive wildlife habitat. The Forest Service must comply with its legal mandates under the National Forest Management Act (NFMA) and Endangered Species Act (ESA). This will involve a greater commitment to closing forest roads and seeing that they stay closed.

Figure 1



Source:
USDA Forest Service Kootenai Nat'l Forest
Plan Monitoring Report FY 1990

Introduction

This study was undertaken to assess the effectiveness of the U.S. Forest Service (USFS) road closure program in the Kootenai National Forest (KNF) of northwestern Montana (Figure 1). The study focused on the portion of the KNF designated by the Forest Service and U.S. Fish and Wildlife Service (USFWS) as the Cabinet-Yaak Grizzly Bear Ecosystem (USDA 1987b, p. D-8). The USFS, in cooperation with the USFWS and Montana Department of Fish, Wildlife, and Parks, has determined the Cabinet-Yaak area possesses a small but viable population of grizzly bears, as well as populations of other threatened, endangered, and sensitive species, such as the Rocky Mountain elk and gray wolf (USDA 1987a, pp. II 7-8). In order to manage these species so their numbers are stable or increasing, as mandated by the Endangered Species Act, the managing agencies must consider negative impacts of human disturbance. In particular, logging activity and road building are recognized as highly disruptive uses that must be carefully controlled (USDA 1987b, p. D-12).

The upper Yaak region of the KNF, administered by the Three Rivers, Libby, and Rexford Ranger Districts, has been heavily affected by these activities in recent years. It is a critically important habitat security area and travel corridor for bears entering the CYGBE from adjacent grizzly population islands in the Northern Continental Divide Grizzly Bear Ecosystem, Selkirk Mountains, and the mountain complexes of southern British Columbia (USDA 1987b, p. D-9). Because of this conflict between resource extraction and wildlife security, the USFS has been forced under the National Environmental Policy Act, the NFMA, and the ESA, to assess the effect of road building and use on sensitive species habitat, and generate guidelines satisfactory to the other managing agencies to protect these species from irreparable harm.

Road Density and the Forest Service

The USFS is required to calculate the density of open road miles on the Kootenai National Forest, in order to comply with grizzly bear management guidelines mandated by the Endangered Species Act. These guidelines are intended to minimize detrimental human disturbance in sensitive wildlife habitat security areas (USDA 1987b, p. D-6). The calculations are determined from the total length of all roads within grizzly bear management units (BMUs) divided by the area of each unit in square miles. The USFS is permitted a maximum open road density of 0.75 miles of open road per square mile of forest land (mi./sq. mi.) on the Kootenai National Forest (Personal Communication, Kevin Shuley - 10/14/92). The KNF calculates density using road miles within different forest management areas, then overlaying these data on BMU boundaries (Personal Communication, Jim Shadle - 11/24/92).

The density figure is based on numerous scientific studies, which have developed a quantitative standard for maximum allowable open road density that will permit effective habitat use by grizzlies, elk, and other animals (Jonkel 1977; Kasworm and Manley 1990; Lyon 1979 and 1983; McLellan and Shackleton 1988). Lyon (1984) showed that elk use is reduced below 60% in areas where road densities are above one mi./sq. mi. Researchers studying grizzly bears in the Rocky Mountains of Canada and Montana have demonstrated that habitat use is lower than anticipated within 500-900 meters of open roads, while bear mortality was significantly higher within one kilometer of an open road (Aune and Kasworm 1989; Kasworm and Manley 1990). Figure 2 shows that in the CYGBE, fully one half of all grizzly bear management units are providing less than the Forest Plan standard of 70% habitat effectiveness for grizzlies (USDA 1991, p. 9). Thus, it is clear that in areas where roads do exist, some method to limit their overall density is critical for providing effective habitat security to area wildlife.

This has been attempted through the road closure program implemented by the USFS. Each forest has a maximum allowable open road density which is met by closing miles of existing road in excess of the permitted standard. Through the use of gates, earth berms, and signs, forest roads are removed from public access for all or parts of each year.

But there have been questions raised about the effectiveness of this administrative removal of roads. Hammer (1986) inventoried USFS closure structures on the Flathead National Forest to determine agency closure compliance and the effectiveness of road closure structures. His results showed only 62% of the structures inventoried were effective in excluding vehicles from the closed roads beyond, and only 56% of the closed road mileage was effectively protected. In order to assess the effectiveness of the KNF road closure program, this study undertook a similar inventory process to that used by Hammer.

Study Area

The study area occupies the extreme northwestern section of Montana where it adjoins Idaho and Canada. This area is comprised mostly of public lands administered by the Kootenai National Forest. The study selected, based on density of road networks and known use by grizzlies, portions of four ranger districts (RDs), and nine grizzly bear management units (BMUs) to assess area-wide compliance with KNF Forest Plan road density standards.

These districts, the Three Rivers, Rexford, Libby, and Cabinet, occupy the northwestern portion of the KNF. The greatest intensity of the survey was directed at the Three Rivers District, an area intensively managed for timber harvest and with a dense concentration of roads.

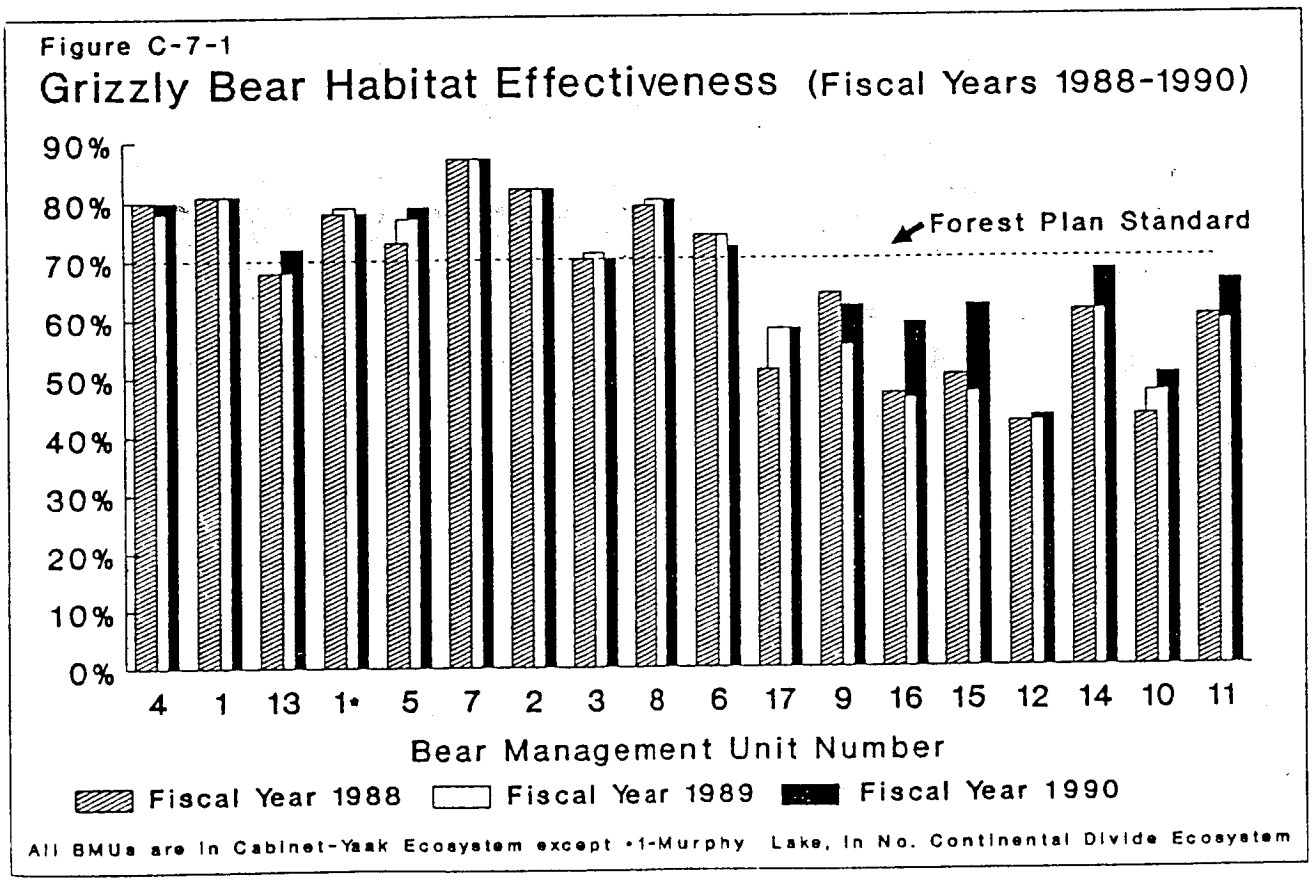
Figure 2

Grizzly Bear Habitat Effectiveness (%) by Fiscal Year (FY)

Grizzly Bear Management Unit	FY 1988	FY 1989	FY 1990
Above 70 percent:			
Bull #4	80	78	80
Cedar #1	81	81	81
Keno #13	68	68	72
Murphy Lake #1[1]	78	79	78
Saint Paul #5	73	77	79
Silver Butte-Fisher #7	87	87	87
Snowshoe #2	82	82	82
Spar #3	70	71	70
Vermillion #8	79	80	80
Wanless #6	74	74	72
Below 70 percent:			
Big Creek #17	51	58	58
Callahan #9	64	55	62
East Fork Yaak #16	47	46	59
Garver #15	50	47	62
Newton #12	42	42	43
Northwest Peak #14	61	61	68
Pulpit #10	43	47	50
Roderick #11	60	59	66

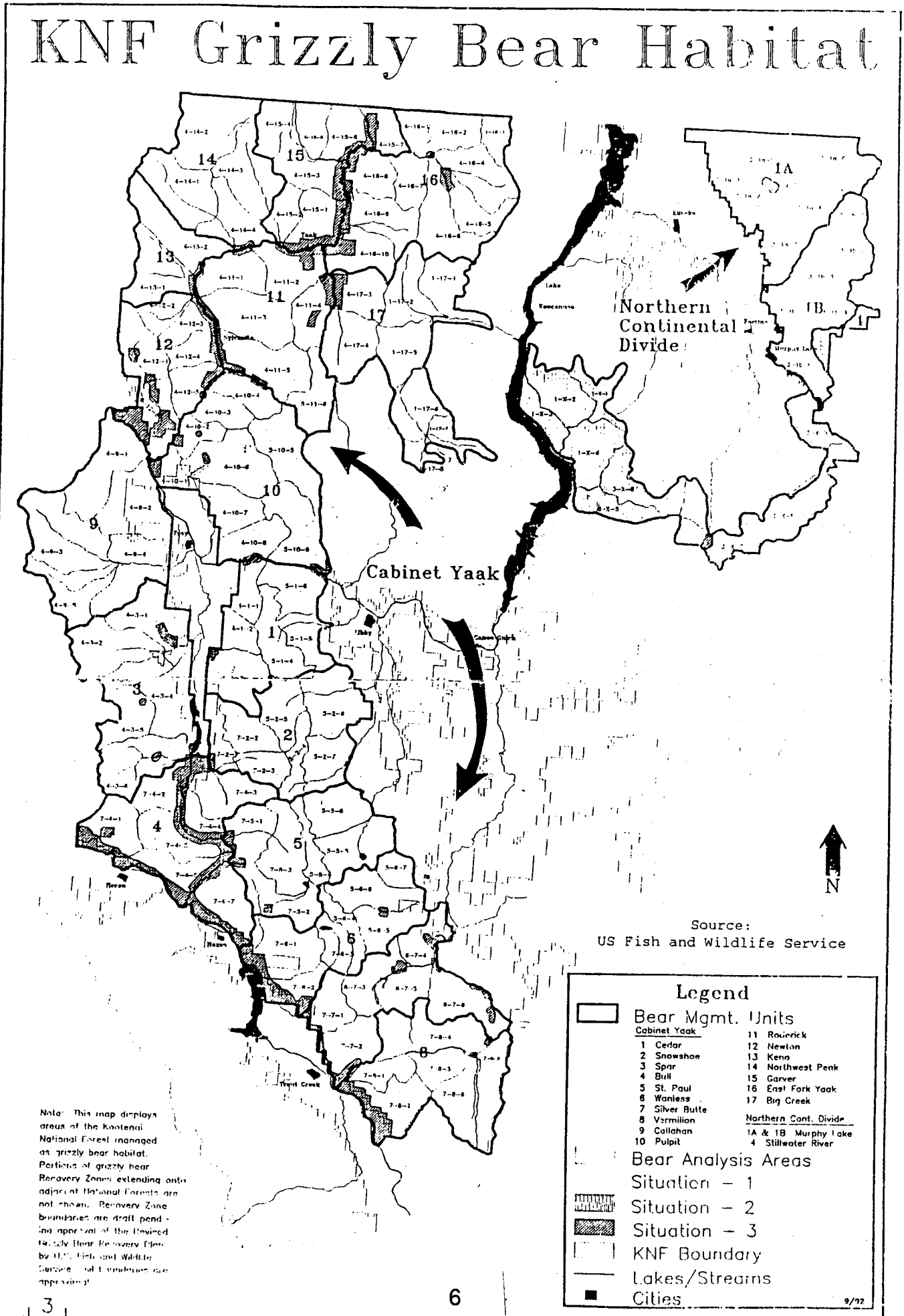
[1]MURPHY LAKE #1 is located in the North Continental Divide Ecosystem. All others are in the Cabinet Yaak Ecosystem.

Figure C-7-1



Source:
USDA Forest Service Kootenai Nat'l Forest
Plan Monitoring Report FY 1990

Figure 3


KNF Grizzly Bear Habitat
Northern Continental Divide
Cabinet Yaak
1A
1B
N
Source:
US Fish and Wildlife Service
Legend
Bear Mgmt. Units
Cabinet Yaak
1 Cedar
2 Snowshoe
3 Spar
4 Bull
5 St. Paul
6 Wanless
7 Silver Butte
8 Vermilion
9 Callahan
10 Pulpit
11 Rockcrick
12 Newton
13 Keno
14 Northwest Peak
15 Garver
16 East Fork Yaak
17 Big Creek
Northern Cont. Divide
1A & 1B Murphy Lake
4 Stillwater River
Bear Analysis Areas
Situation – 1
Situation – 2
Situation – 3
KNF Boundary
Lakes/Streams
Cities
9/92
Note: This map displays areas of the Kootenai National Forest managed as grizzly bear habitat. Portions of grizzly bear Recovery Zones extending onto adjacent National Forests are not shown. Recovery Zone boundaries are draft pending approval of the Revised Grizzly Bear Recovery Plan by U.S. Fish and Wildlife Service. All boundaries are approximate.

Methodology

In order to provide an overview of closure effectiveness, this study evaluated all accessible road closures in four BMUs, numbers 10, 15, 16 and 17. These areas were selected for their dense concentrations of roads and known grizzly activity. A small selection of closures was then sampled in BMUs 5, 6, 7, 8, and 12, in order to assess compliance on different districts across the length of the KNF (Figure 3).

Data were collected from 10/18/92 to 11/1/92, using a standardized inventory data sheet detailing 22 separate closure features. Appendix A presents a copy of the data sheet. Each data sheet was filled out at the closure structure and specifically catalogued information on:

1) Whether the structure was open or closed.
2) Evidence of vehicle traffic on the road behind the structure.
3) Evidence of detour or vandalism that rendered the structure ineffective.
4) Information on type of structure.
5) Number of road miles protected behind the closure.

If there was a closure violation, a photograph was taken to document the violation, and the photograph was indexed by road number, date, BMU, and compartment number. Also, where special circumstances required, margin notes were taken and entered into the database as memo files (see Appendix B for data field codes, raw data, and memoranda).

The most important category from the data sheets is that which documents structure effectiveness. This category, question #19 on the data sheet, was assessed using several factors for each sub-heading:

1) Does not effectively restrict any vehicle -- The structure is listed as closed on the closure notice but is found:
   A) Readily passable to a normal width passenger vehicle, without recourse to the use of tools or damaging the structure, either through an unlocked structure, a detour, a vandalized structure, or because the indicated structure is not in place.
   B) Open and actively in use by contractors.

2) Restricts vehicles over 40" in width but not narrower vehicles -- The structure is listed as closed on the closure notice and effectively restricts passenger vehicles, but is found:
   A) Readily passable by off road vehicles (ORVs) and shows evidence of detours.
   B) Readily passable by ORVs with no evidence of detour, but a substantial likelihood of detour based on other closure violations in the area.

3) Effectively restricts all vehicles -- Structure is listed as closed on the closure notice and appears totally effective, showing no evidence of motor vehicle use in closure.

4) Effectively restricts only vehicle operators without a gate key -- Structure is listed as closed on closure notice, is locked, and shows no evidence of detour, but is found to:

A) Have fresh tracks on road behind gate, indicating recent use of road by authorized or unauthorized parties passing through gate in normal passenger vehicles.
B) Be in active use by authorized personnel at time of inventory.

Once all field checking was completed, the data were entered into a computer database. Simple calculations were performed for several combinations of data variables, to determine totals and percentages for each category, and tables were generated for these data. The results are summarized below.

Results

To facilitate better understanding of the data presented in this report, and to more effectively correlate the results to USFS management areas, the figures will be presented both by RD and BMU. The Forest Service does not compile open road densities by ranger district, so while a district level assessment is useful for readers from the general public, the use of BMU level comparisons is necessary in order to determine how far out of compliance with stated road density goals the agency is in light of this study.

Of the RDs and BMUs surveyed, none were in complete compliance with their published road closure document. A total of 281 closure structures were evaluated on the KNF, with 842.5 miles of road supposedly protected behind these structures. Of the structures checked, 271 were in existence as indicated on the notice, while 12 could not be found or had obviously been removed and so were counted as not effective. Attached Table 1 gives the figures calculated by BMU, while Table 2 is tallied by Ranger District.*

Figure 4 shows the count totals for the three non-compliance categories as defined above:

1) Ineffectiveness 1 - failure to restrict passage of any vehicle.

* Some rounding inconsistencies exist in the calculations, as a result of limiting decimals to one place for consistency and to save space in tables and figures.

2) Ineffectiveness 2 - failure to prevent ORV or other vehicle detour.
3) Ineffectiveness 4 - ineffective due to authorized or unauthorized use of gate key.

Figure 4
Total Percentage and Number of Ineffective Closures

	Percentage	Total #
Ineffectiveness 1	21.4	60
Ineffectiveness 2	25.3	71
Ineffectiveness 4	7.8	22
Total structures ineffective:	54.4%	153

Figure 5 shows the mileage totals for the three non-compliance categories. These figures show how many miles of unprotected road were behind ineffective closure structures, and the percentage of total road miles surveyed for each ineffectiveness category inventoried.

Figure 5
Unsecured Road Mileage and Percentage of Total Inventoried Miles

	Percentage	Road Miles
Ineffectiveness 1	25.9	217.9
Ineffectiveness 2	25.7	216.6
Ineffectiveness 4	12.6	106.1
Total supposedly closed miles unprotected	64.1%	540

Of the total number of closure structures inventoried, 116 (41.3%) were "closed" as indicated on the closure notice. Fifty-six (19.9%) were not "closed." The remaining 109 (38.8%) were listed in the "closed with exception" category. These three categories present a measure of whether a "closed" structure actually excludes vehicles. Combination of the latter two categories produces Figure 6.

Figure 6
Most Common Structure Inadequacies

Problem due to:	Total #	% Roads Inventoried	% of Ineffective Closures
1. Vandalism	4	1.4	2.4
2. Unlocked gate	31	11.0	18.8
3. Detour	68	24.2	41.2
4. Other (see memos)	62	22.1	37.6
Totals	165	58.7%	100%

The differences between the totals from Figure 4 and Figure 6 result from:

1) Obvious detours around or traffic through "closed" structures that rendered them ineffective. This added to ineffective structure totals.

2) Ineffective structures that were not capable of excluding ORVs, but which had no evidence of being violated. This added to effective structure totals.

Structures in Ineffectiveness 1, 2, or 4 were always ineffective, regardless of their "closed" status. The higher figure in Figure 6 results from a large number of structures with potential detours, but which were not being violated and so were classified as totally effective.

Conclusions

The data above show details about structure effectiveness and the difference between theoretically and actually protected habitat. Each structure is designed to protect an area of habitat from the negative effects of open road density. An important element of this study is to provide data on actual Forest Service compliance with the mandated 0.75 miles/square mile mentioned above.

The study inventoried structures that supposedly protect 32.4% of the total recorded KNF road miles. Adjusting the actual open road numbers in light of the study data requires adding 540 miles (from Figure 5) to the total KNF open road miles figure provided by the Kootenai National Forest (Appendix B [document provided by James Shadle, KNF]). These figures, when divided by the total 1,940.2 square miles in the KNF portion of the CYGBE,* generate the figures in Figure 7.

Figure 7
Forest Service and Adjusted Road Density Figures for the Cabinet-Yaak Area

Total KNF Portion Road Miles (2,602)
Total KNF Portion Area (1,940.2 sq. mi.)

	Forest Service #s	Yaak Road Survey #s
Miles of road open	1,108	**1,648**
Percentage open	43%	**63.3%**
Miles of road closed	1,494	**954**
Percentage closed	57%	**36.7%**
Forest-wide road density	0.57 mi/ sq. mi	**0.85 mi/ sq. mi**

In addition to the density calculation for the whole KNF portion of the CYGBE, figures for the individual BMUs sampled can be generated. BMUs 5, 6, 7, and 8 were lumped together because of their small sample size and random sampling technique. BMUs 10, 12, 15, 16, and 17 are displayed individually. Finally, all of the BMUs sampled are totalled by area, adjusted road open road miles, and adjusted road density. Figure 8 presents these calculations.

Figure 8
Adjusted Road Densities for BMUs Sampled

* This number is derived from information provided by the Kootenai National Forest (Personal Communication - Bob Krepps, 2/19/93) and calculations using a digital planimeter and BMU boundary map. See Note on Revisions inside front cover.

BMU #	Area (Sq. Mi.)	Adjusted Open Road Miles	Adjusted Open Road Density
5-8	417.76	259.0	0.6
10	151.5	198.9	1.3
12	81.1	87.9	1.1
15	102.6	168.3	1.6
16	150.0	302.1	2.0
17	124.6	213.9	1.7
Total	1,027.56	1,230.1	**1.2 miles/sq. mi.**

As can be seen here, the overall road density for the BMUs sampled by this study is far above compliance. This is especially the case for BMUs 10, 15, 16, and 17, whose actual inventoried road densities are absolutely unacceptable. Considering that these BMUs were the only ones completely checked for compliance, it may be inferred that the adjusted road density figures for the partially inventoried or unchecked BMUs would be higher still if a thorough analysis were undertaken for the entire KNF portion of the Cabinet-Yaak recovery area.

The Forest Service admits that 33% of its bear analysis areas (BMU compartments) do not currently meet Forest Plan standards, and that they have an average exceedence of 0.39 mi./sq. mi. (Appendix C). This admission is compounded by the above data, which show a much higher open road density based on road miles added by ineffective closure structures. These figures are considerably above the maximum allowable open road density permitted by the Kootenai National Forest Plan. The Forest Service will have to respond to this problem quickly in light of ongoing public concerns about how well the agency is complying with its own plans.

Recommendations

As the above figures indicate, this study discovered overall poor compliance with the published road closure documents provided by the Forest Service. This low compliance is a direct threat to sensitive wildlife species found in the area. Several questions need to be addressed as a result of the study findings.

First, why is Forest Service compliance so low? The type of closure structure is very important in how effectively vehicle traffic is restricted. Many of the closures inventoried (31) were simply open gates or gates without locks. This problem is easily remedied by checking that all structures listed as closed in the closure notice are closed and locked. Additionally, the study found many gates being used by individuals holding keys (7.8% of the

total). The Forest Service uses a standard issue key to secure area closures, and these keys are in the possession of many administrative personnel and private contractors. Additionally, the Three Rivers Ranger District uses commercially available locks to secure gates. This type of lock presents no difficulty for copies to be made of keys, as do Forest Service issue locks which require special key blanks. An effort must be made to limit access to keys, in order that closure effectiveness be enhanced.

Also, the data suggest that gates themselves are not an effective method for securing roads. The agency should re-evaluate its policy of using gates to secure habitat. This study found that 52% of the total counted structures were steel gates (146), of which 65.6% were not restricting motor vehicle traffic (96 total). This reflects poorly on the usefulness of steel gate road closures for protecting wildlife habitat. On the other hand, of the 40.6% of road closures that were earth berm/road pits (114), 62.3% were effectively halting motor vehicle passage (71 total). Implicit in a gate is the potential to open it and pass through, whearas a earth berm is designed to halt all motorized traffic. Habitat protection will be continually compromised as long as a high percentage of road closures employed by the Forest Service are designed to allow easy access. A serious commitment to securing habitat would require replacement of many steel gates with more permanent earth berms.

Finally, the data show a high percentage of the closure structures surveyed were being violated by ORV users. This is a difficult problem to prevent, but by using more careful closure design and increasing enforcement efforts, many of these violations could be eliminated. It is beyond the scope of this study to suggest engineering improvements. However, the data indicate a need for them. Table 3 presents a breakdown of structures by type and effectiveness to illustrate the relative utility of each type in halting motor vehicle traffic.

A second question to consider is whether simply closing high quality roads with a blockade and sign is adequate, especially in light of the compliance problems discovered by this study. Public pressure to use existing road networks creates a difficult situation for the Forest Service. It must comply with the threatened and endangered species habitat protection requirements of the Endangered Species Act. But at the same time, the agency attempts to satisfy the public clamoring for road access. If more roads are totally obliterated, open road density compliance will be more easily achieved and public pressure for access will be avoided. Finally, where roads must be installed, constructing lower quality temporary roads with mandated road bed removal must be a priority with the Forest Service, especially in sensitive species habitat.

More study is required of road problems in the Upper Yaak region of the Kootenai National Forest. In the Upper Yaak, habitat fragmentation from logging and road building is so advanced that habitat quality may not be improved by simply closing roads. Further analysis of the data collected by this study will provide greater insight on the road density situation in the Upper Yaak. Preliminary evaluation of those data, as shown above in Figure 8, indicate much lower road closure effectiveness in BMUs 15, 16, and 17 than that found in the study overall, and thus a higher open road density than projected by the Forest Service. Appendix D presents preliminary figures and findings.

The Forest Service; U.S. Fish and Wildlife Service; and Montana Department of Fish, Wildlife, and Parks must all work harder to protect sensitive habitat for the grizzly bear, gray wolf, Rocky Mountain elk, and other vulnerable species. The law is clear: Agencies must limit habitat disturbance in designated endangered and threatened species recovery areas. Road closure programs have been a standard agency response to the protection mandate, and though scientific debate continues about the effectiveness of such programs, their implementation has been touted as a solution to wildlife habitat loss.

This study will help clarify the question of road closure effectiveness. Habitat is not protected by road closures if those closures are ineffective. The Forest Service must work harder to secure these rudimentary protection measures if it is to comply with the law of the land and its own regulations. The agency efforts reflected by this study are inadequate and must be improved if the Forest Service is to be allowed continuing responsibility in managing the public lands. Citizen monitoring will be continued, to check agency compliance with its legal responsibilities.

Table 1

INEFFECTIVENESS #		RANGER DISTRICT# 5	6	7	8	10	12	15	16	17	totals
1	# of structures	1	1	1	0	6	0	12	26	13	60
	% total	0.4	0.4	0.4	0	2.1	0	4.2	9.2	4.6	21.4%
	total road miles	2.5	2	12	0	18	0	55.8	66.2	61.4	217.9
	% total road miles	0.3	0.2	1.4	0	2.1	0	6.6	7.8	7.3	25.9%
2	# of structures	3	3	0	4	11	10	14	18	8	71
	% total	1.1	1.1	0	1.4	3.9	3.5	4.9	6.5	2.8	25.3%
	total road miles	5	8	0	8	28.5	23.6	42.5	65.2	36.1	216.6
	% total road miles	0.6	0.9	0	0.9	3.4	2.8	5	7.7	4.3	25.7%
3	# of structures	1	1	0	2	39	1	24	37	22	127
	% total	0.4	0.4	0	0.7	13.8	0.4	8.5	13.1	7.8	45.2%
	total road miles	2.5	6	0	6	91.1	1.4	51.1	100.3	40.5	298.9
	% total road miles	0.3	0.7	0	0.7	10.8	0.2	6	11.9	4.8	35.5%
4	# of structures	0	0	0	0	6	0	2	10	4	22
	% total	0	0	0	0	2.1	0	0.7	3.5	1.4	7.8%
	total road miles	0	0	0	0	30.8	0	3.4	58.5	13.4	106.1
	% rdmi	0	0	0	0	3.6	0	0.4	6.9	1.6	12.6%
5	# of structures	0	0	0	0	0	0	0	0	1	1
	% total	0	0	0	0	0	0	0	0	0.4	0.4%
	total road miles	0	0	0	0	0	0	0	0	3	3
	% total road miles	0	0	0	0	0	0	0	0	0.4	0.4%
totals											
	# of structures	5	5	1	6	62	11	52	91	48	
	% total	1.8	1.8	0.4	2.1	22.1	3.9	18.5	32.4	17.1	
	total road miles	10	16	12	14	178.4	25	152.8	290.2	154.4	
	% total road miles	1.2	1.9	1.4	1.6	21.2	3.0	18.1	34.4	18.3	

Table 2

INEFFECTIVENESS #		RANGER DISTRICT# 1	2	3	4	totals
1	# of structures	35	18	6	1	60
	% total	12.5	6.4	2.1	0.4	21.4%
	total road miles	118.9	67.5	19.5	12	217.9
	% total road miles	14.1	8	2.3	1.4	25.9%
2	# of structures	53	5	9	4	71
	% total	18.9	1.8	3.2	1.4	25.3%
	total road miles	165.7	25	17.9	8	216.6
	% total road miles	19.7	3.0	2.1	0.9	25.7%
3	# of structures	90	15	20	2	127
	% total	32.0	5.3	7.1	0.7	45.2%
	total road miles	235.9	23.5	33.5	6	298.9
	% total road miles	28.0	2.8	4.0	0.7	35.5%
4	# of structures	16	5	1	0	22
	% total	5.7	1.8	0.4	0	7.8%
	total road miles	87.1	15.5	3.5	0	106.1
	% rdmi	10.3	1.8	0.4	0	12.6%
5	# of structures	0	1	0	0	1
	% total	0	0.4	0	0	0.4%
	total road miles	0	3	0	0	3
	% total road miles	0	0.4	0	0	0.4%
totals						
	# of structures	194	44	36	7	
	% total	69.0	15.7	12.8	2.5	
	total road miles	607.6	134.5	74.4	26	
	% total road miles	72.1	16.0	8.8	3.1	

Table 3

		Structure Type #					
INEFFECTIVENESS #		1.1	1.2	2.1	2.2	2.4	4.0
1	# of structures	37	0	12	0	4	5
	% total	13.2	0	4.3	0	1.4	1.8
2	# of structures	37	1	31	0	2	0
	% total	13.2	0.4	11.0	0	0.7	0
3	# of structures	50	2	71	3	1	0
	% total	17.8	0.7	25.3	1.1	0.4	0
4	# of structures	22	0	0	0	0	0
	% total	7.8	0	0	0	0	0
5	# of structures	0	0	0	0	1	0
	% total	0	0	0	0	0.4	0
Totals	ineffective	96 (34.2%)	1 (0.4%)	43 (15.3%)	0	7 (2.5%)	5 (1.8%)
	effective	50 (17.8%)	2 (0.7%)	71 (25.3%)	3 (1.1%)	1 (0.4%)	0

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Appendix A

Ground-truthing Data Sheet

1992 Cabinet-Yaak Forest Road Closure Status
Ground Truthing Form

1. This form ground-truths:
   - [ ] 1. A closure inventoried on the Kootenai NF limiting access to all vehicles all year long, except over snow vehicles Dec. 1- Apr. 30.
   - [ ] 2. A closure inventoried on the Kootenai NF limiting access to all vehicles all year long,
   - [ ] 3. A closure inventoried on the Kootenai NF limiting access to all vehicles from Oct. 15 - June 30.
   - [ ] 4. A closure inventoried on the Kootenai NF limiting access to all vehicles from Oct. 15 - June 30, except over snow vehicles Dec. 1- Apr. 30.
   - [ ] 5. Other, as noted _____

Location of Closure

2. Ranger District: [ ] 1. Three Rivers [ ] 3. Libby [ ] 2. Rexford [ ] 4. Cabinet
3. Grizzly Bear Management Unit (BMU) number _____.
4. BMU Compartment number _____.
5. Road number _____ (from forest road inventory listing).
6. Location of closure by mile post on road # _____ is M.P. _____.
   (If no M.P. is available, use odometer reading or general description.)

Description of Closure or Road

7. Type of closure: (check one)
   1. Gate [ ] 1.1 Steel [ ] 1.3 Other (describe) _____.
      [ ] 1.2 Wood
   2. Physical barrier
      [ ] 2.1 Earth berm [ ] 2.3 Concrete
      [ ] 2.2 Boulders [ ] 2.4 Posts and rail
   3. [ ] Post and sign
   4. [ ] Other (describe) _____.
8. Vehicle type closed to:
   [ ] 1. Motorized >40 inches [ ] 3. All vehicles ex. snow
   [ ] 2. Trail vehicles [ ] 4. All vehicles
9. Miles of road behind closure: _____.
10. Authorized closure dates: _____ to _____.
11. Purpose of closure:
    [ ] 1. Wildlife [ ] 3. Public Safety
    [ ] 2. Hunting Opportunity [ ] 4. Wildlife/Water Qual.

12. Status of closure as per inventory:
    [ ] 1. Existing
    [ ] 2. Indicated on map but not found in field check
13. Describe termination of road being truthed (where road ends, i.e. junction with other road, section, trailhead, etc.): _____.
14. Total length of road as: 1. Taken from closure notice: _____.
    2. Measured by odometer: _____.
    3. Estimated from map: _____.
    4. Measured from map: _____.

Disposition of Closure

15. Is the closure structure, in any, actually in place? (For example, is a gate in existence?) [ ] 1. Yes [ ] 2. No
16. Is the closure being truthed within the authorized closure dates?
    [ ] 1. Yes [ ] 2. No
17. Is the structure "closed" (gate closed, sign up, dirt berm in place, etc.)?
    [ ] 1. Yes [ ] 2. No [ ] 3. Yes with exception
18. If (2) or (3), why is structure not effective?
    [ ] 1. Vandalism (gate destroyed or damaged, blockade removed)
    [ ] 2. Unlocked gate
    [ ] 3. Detour
    [ ] 4. Other _____.
19. Describe the effectiveness of the closure after looking for tracks of four wheel drives, motorcycles, etc., around or over closure barriers or past signs.
    [ ] 1. Does not effectively restrict any vehicle.
    [ ] 2. Restricts vehicles over 40" in width but not ORVs (using standard passenger width vehicle as a guideline).
    [ ] 3. Effectively restricts all vehicles.
    [ ] 4. Does not effectively restrict any vehicle with gate key.
20. Were photographs taken of the closure structure? [ ] 1. Yes [ ] 2. No
    Take photos to illustrate any aspects of the closure that are significant, i.e. if it is open, any detours, any vandalism, etc. Make a sign with date, BMU, Compartment, and road numbers, and place in photo for later identification. Write on back of photos the date, photographer, all numbers and what is being shown.
21. Film roll number: _____ Film frame number: _____

Ground-truthed by:

_____ Dated: _____

print and sign your name

Address:_____

_____