Forest Plan
Monitoring and Evaluation Report
FISCAL YEARS 2003-2004
September 2005

Kootenai National Forest

United States
Department
Of Agriculture

Forest Service
Kootenai National Forest

Kootenai Forest Plan
Monitoring and Evaluation Report
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GLOSSARY OF ACRONYMS

ASQ- Allowable Sale Quantity

BMU- Bear Management Unit

BORZ- Bears Outside the Recovery Zone

BY- Bear Year (period from April 1 to November 30,defined by IGBC)

CFFHP- Cooperative Forestry and Forest Health Protection

CYE- Cabinet Yaak Ecosystem

EA- Environmental Assessment

FEIS- Final Environmental Impact Statement

FORPLAN- a linear programming system used for developing and analyzing Forest Planning alternatives

FP-Forest Plan

FSM – Forest Service Manual

FY- Fiscal Year

IGBC- Interagency Grizzly Bear Committee

IPM- Integrated Pest Management

IPNF- Idaho Panhandle National Forest

KNF- Kootenai National Forest

LCAS- Canada Lynx Conservation Assessment and Strategy

MA- Forest Plan Management Area

MBEWG - Montana Bald Eagle Management Plan

MDFWP- Montana Department of Fish, Wildlife and Parks

MMBF- Million Board Feet

NCDE- Northern Continental Divide Ecosystem

OMRD- Open Motorized Road Density

T&E- Threatened and Endangered

TMRD- Total Motorized Road Density

USFWS- United States Fish and Wildlife Service

WARC- Western Agricultural Research Center

WILDLIFE & FISHERIES: Old Growth Habitat; Monitoring Item C-5

ACTION OR EFFECT TO BE MEASURED:	Old growth habitat amount and condition.
MONITORING OBJECTIVE:	Maintain habitat capable of supporting viable populations of old growth-dependent species (10 percent old growth in each drainage).
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Reduction below 10 percent in a drainage which was previously over minimum or any reduction in a drainage previously under minimum.

Purpose: This monitoring item was established to help ensure that an adequate amount of old growth habitat is designated on the Forest. The Forest Plan requires that this item be reported every two years. This item was last published in September of 2003. The expected accuracy and reliability of the information is moderate to high.

Background: Old growth habitat is recognized as an important and necessary element of diversity that supports a myriad of wildlife species. Maintenance of adequate old growth habitat will assist in ensuring viable populations of native species and in maintaining diversity as required by the National Forest Management Act of 1976 (16 U.S.C. 1600) (FP, Appendix A17-14). To provide habitat for viable populations, the Plan (Volume 1, page II-22) specifies that at any time 10 percent of the KNF land base below 5,500 feet elevation would be managed as old growth habitat for dependent wildlife species. The old growth would be spread evenly through most major drainages, and would represent the major forest types in each drainage.

Kootenai Supplement (Supplement 85, 1991) to Forest Service Manual 2400 describes the validation process to be conducted on a compartment basis before the Forest conducts management activities that could affect old growth habitat. Validation, as defined in the Manual, is “on-the-ground verification.” One of the requirements established is that old growth habitat be designated at a minimum of 10 percent for each third order drainage or compartment (or combination of 3rd order drainages or compartments). If 10 percent old growth does not exist within a compartment, designate the best available, soon to be future old growth to bring the total up to 10%, or designate additional old growth from an adjacent area to make up the difference.

Mature stands identified as old growth replacement are stands replacing a current deficiency of higher quality (effective) old growth and will provide for old growth habitat in the future as they age and gain the desired attributes. This is shown as "Replacement Old Growth" in the tables below. See the Forest Plan Glossary and Appendix 17 of the Plan for more detail on the description of old growth attributes, including desired distribution patterns.

The Forest has been validating portions of its lands over the past seventeen years (1989-2004), with the exception of the year 2000 where no validation took place. During that year the Forest was extremely busy with numerous fires that consumed both time and funds.

In 2002, in response to litigation alleging that the Forest lacked sufficient information as to the overall amount and distribution of old growth, the Forest conducted a forest wide inventory, using various survey methods. The inventory included all of those lands previously validated as old growth, as well as other

National Forest lands. This inventory was conducted, in part, to verify that the Forest had an adequate amount of well-distributed old growth habitat to meet the Forest Plan standard (ie. 10% of the National Forest lands below 5500 feet in elevation), as well as the condition of the old growth (whether it was considered effective or replacement).

Results: Table C-5-1 summarizes the amount of designated old growth for fiscal year 2002 and 2003-2004. Table C-5-2 describes the current forest-wide inventory (FY 2003-04), displaying the total amount of old growth, whether the old growth is considered to be effective or replacement, and if the old growth has been designated or remains undesignated. The Forest is in the process of refining the inventory done in FY 2002 in several ways. Old growth validation is part of individual area analyses, and old growth stands may be reclassified in those areas as a result. A forestwide effort to refine the boundaries of old growth stands delineated in the 1987 Forest Plan is also ongoing. Specifically, old growth polygons are being redelineated using current satellite imagery as a base. This process associates the old growth polygon with the vegetatative component on the ground. The total amount of habitat shown as old growth habitat may vary from year to year as this redelineation process continues, as area analyses are being done, and as old growth habitat itself changes due to fires and other natural processes.

Table C-5-1 Old-Growth Habitat Conditions*

FY	Total Old Growth Habitat (This total includes both effective and replacement)		Portion of Old Growth Habitat that is Effective		Portion of Old Growth Habitat that is Replacement	
02	292,335	15.6%	196,538	10.5 %	95,797	5.1%
03-04	294,272	15.7%	196,774	10.5 %	97,498	5.2%

* These totals do not include over 19,000 acres of old growth habitat identified above 5500' in elevation.

There are approximately 1,870,000 acres of National Forest lands below 5500 feet in elevation. The 2002 inventory determined a total of 292,335 acres (15.6%) of National Forest lands below 5500 feet in elevation to be old growth (either effective or replacement). Approximately 10.5% (196,538 acres) of those lands were determined to be effective old growth and an additional 5.1% has been identified as replacement old growth. The 2003-04 inventory indicated that a total of 294,272 acres (15.7%) of National Forest lands below 5500 feet in elevation are old growth (either effective or replacement). Approximately 10.5% (196,774 acres) of those lands were determined to be effective old growth and an additional 5.2% has been identified as replacement old growth (see Table C-5-1).

Not all of the old growth habitat on the Forest has been designated. Designate or undesignated old growth may include both effective and replacement old growth. At the end of fiscal year 2004, a total of 220,831 acres have been designated as old growth with 207,405 acres designated as effective habitat below 5500' elevation, or 92.6% of the total amount of old growth that has been designated.

Evaluation: The monitoring and evaluation of old growth habitat continues to indicate that the Forest is meeting its Forest Plan requirement for designating 10% (currently 11.1%) old growth habitat well distributed across KNF lands below 5500 feet elevation. In addition, the 2003-2004 forest wide inventory indicates that there is more than 10% effective old growth on the Forest.

Recommended Actions: Old growth validation (on-the-ground verification) and designation needs to continue as described in FSM 2400. Priority should be to 1) complete validation as soon as practical for areas that have been partially validated and then to unvalidated areas and 2) designate existing unvalidated old growth.

Table C-5-2 **Forestwide Old Growth Below 5500' Elevation** **October 2004**

		Designated old growth (designated as an old growth MA)*				Undesignated old growth (not in an old growth MA)*			TOTAL EFFECTIVE old growth (designated and undesignated)*		TOTAL REPLACEMENT old growth (designated & undesignated)*	Grand Total ALL TYPES old growth*		FS Acres DESIGNATED as an old growth Management Area*	
Dist	FS ACRES (total FS acres under 5500' minus lakes and highways)	designated and effective (plot, walk, vrec)	designated and effective (pi)	designated and replacement	desig unknown (original FP - categorized as pi)	undesignated and effective (plot, walk, vrec)	undesignated and effective (pi)	undesignated and replacement	TOTAL acres effective og	Percent of FS Acres in effective og		Acres of all old growth	Percent of FS Acres as all types old growth	Acres designated as old growth MA	Percent of FS Acres as old growth MA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
1	245,830	21,947	0	4,071	343	16,575	173	6,808	38,832	15.80%	10,879	49,711	20.2%	26,361	10.7%
3	183,804	17,783	2,361	1,251	1,460	17,025	1,758	0	38,155	20.76%	1,251	39,406	21.4%	22,855	12.4%
4	504,527	35,081	270	15,371	1,586	5,080	4,185	3,536	43,786	8.68%	18,907	62,693	12.4%	52,308	10.4%
5	557,710	43,557	1,569	22,290	608	3,696	4,949	6,875	51,529	9.24%	29,165	80,694	14.5%	68,024	12.2%
7	378,187	4,585	2,128	14,487	16,657	2,046	10,951	22,809	24,473	6.47%	37,296	61,769	16.3%	37,857	10.0%
Forest Total	1,870,058	122,953	6,328	57,470	20,654	44,422	22,016	40,028	196,774	10.52%	97,498	294,272	15.7%	207,405	11.1%

** All old growth acreages and percents shown in this table include only those stands below 5500' elevation. Not shown are over 19,000 acres of old growth that has been identified above 5500' elevation.*

(1) Total FS Acres minus those acres over 5500' elevation, lakes and highways

(2) Designated Effective Old Growth stands - designated as a Management Area (MA) - inventoried by plot, walk-through or visual recon data

(3) Designated Effective Old Growth stands - designated as an MA - inventoried by photo interpreted data - only 60% of this acreage is calculated as effective old growth (reference FP Appendix 17, pg.17-3)

(4) Designated Replacement Old Growth stands - designated as an MA

(5) Designated unknown: Old Growth designated in the original Forest Plan as an MA, not inventoried yet to determine effectiveness - only 60% of this acreage is calculated as effective old growth (reference FP Appendix 17, pg.17-3)

(6) Undesignated Effective old growth - not in an old growth MA - inventoried by plot, walk-through or visual recon data

(7) Undesignated Effective old growth - not in an old growth MA - inventoried by photo interpreted data - only 60% of this acreage is calculated as effective old growth (ref. FP Appendix 17, pg.17-3)

(8) Undesignated Replacement stands

(9) TOTAL acres of effective old growth includes column (2) + column (6) and 60% of column (3), (5) and (7) (these columns reflect stands inventoried by photo interpretation: FP Appendix 17, pg 17-3)

(10) PERCENT of Forest Service acres that are effective old growth = TOTAL old growth (column 9) divided by total FS acres (column 1)

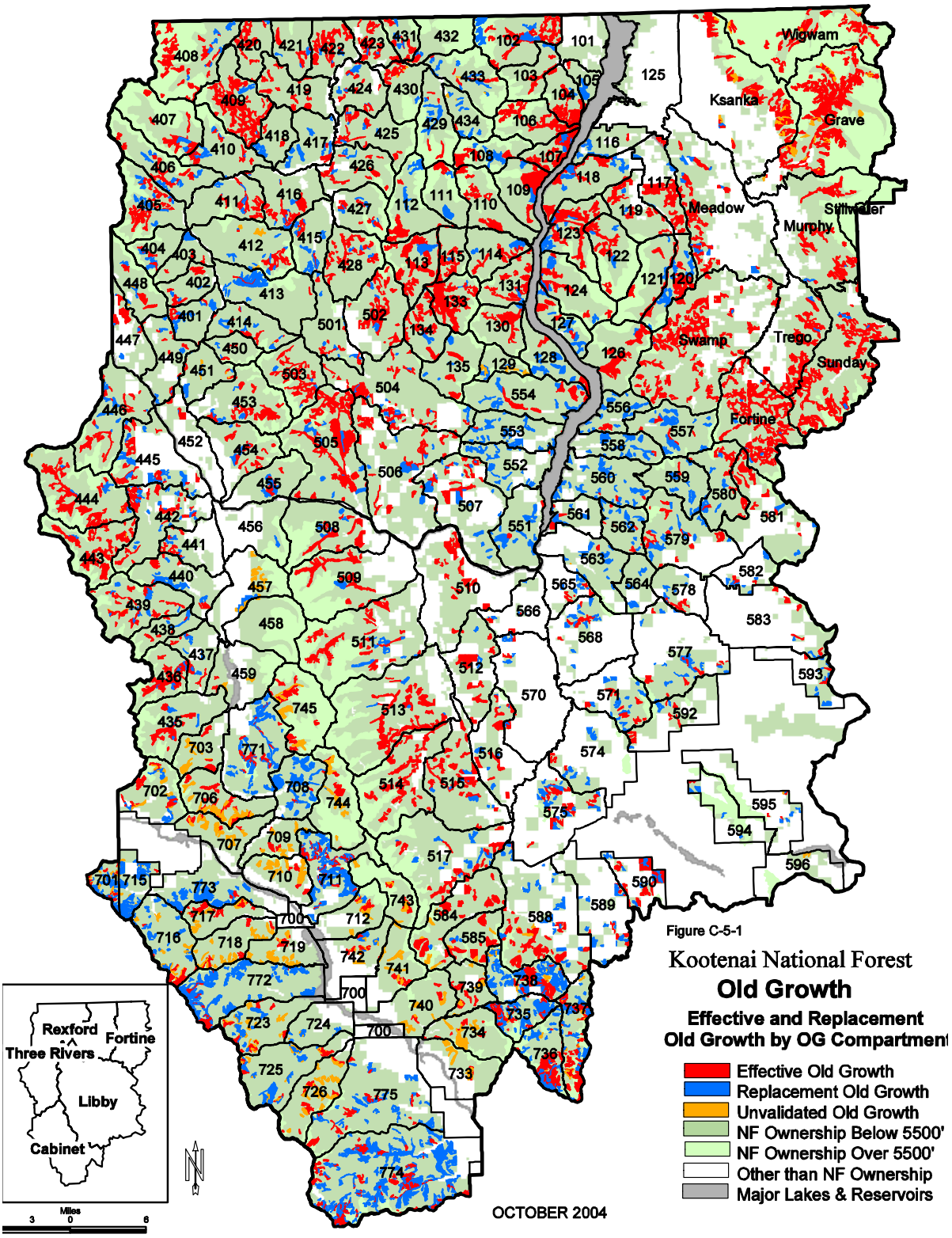
(11) Total Replacement old growth acres = column (4) + column (8)

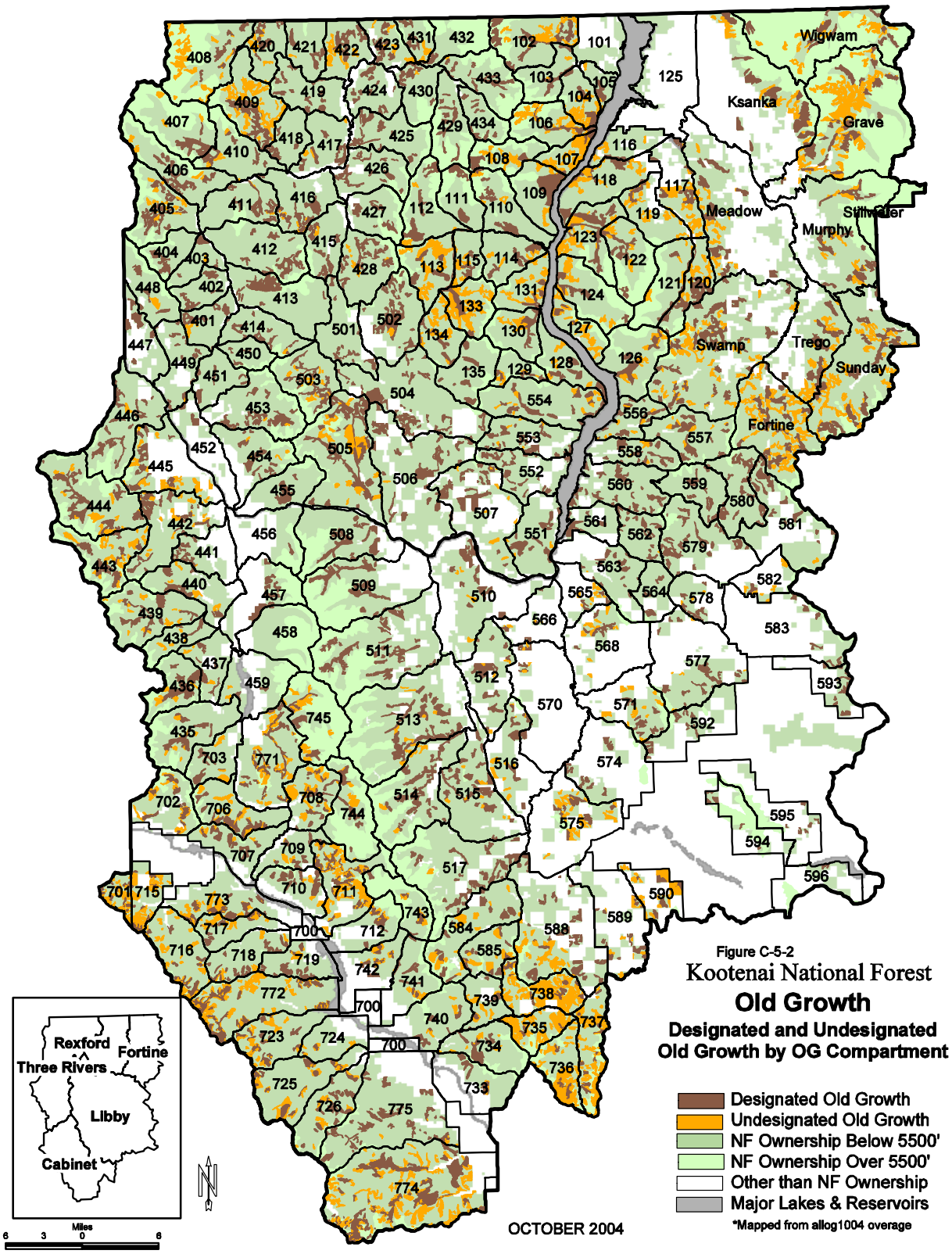
(12) TOTAL all acres of old growth below 5500' = total effective old growth (column 9) + total replacement old growth (column 11)

(13) Percent of Forest Service acres that are effective or replacement old growth below 5500' = Total all acres old growth (column 12) divided by total FS acres (column 1)

(14) Acres and Percent of FS acres Designated as an old growth Management Area (MA). Includes effective and replacement old growth. Does not include designated old growth over 5500'.

Since February, 2003, when this information was submitted to the court, several calculations in this table have been corrected. Several label changes were made after July 2003. Compartments 442, 445 and 446 were validated for old growth in 2004.


Wigwam
Ksanka
Grave
Meadow
Murphy
Swamp
Trego
Sunday
Fortine
Rexford
Fortine
Three Rivers
Libby
Cabinet
Miles
3 0 6
OCTOBER 2004
Figure C-5-1
Kootenai National Forest
Old Growth
Effective and Replacement
Old Growth by OG Compartment
Effective Old Growth
Replacement Old Growth
Unvalidated Old Growth
NF Ownership Below 5500'
NF Ownership Over 5500'
Other than NF Ownership
Major Lakes & Reservoirs


Wigwam
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Meadow
Murphy
Swamp
Trego
Sunday
Fortine
Rexford
Three Rivers
Fortine
Libby
Cabinet
Miles
6 3 0 6
OCTOBER 2004
Figure C-5-2
Kootenai National Forest
Old Growth
Designated and Undesignated
Old Growth by OG Compartment
Designated Old Growth
Undesignated Old Growth
NF Ownership Below 5500'
NF Ownership Over 5500'
Other than NF Ownership
Major Lakes & Reservoirs
*Mapped from allog1004 overage

WILDLIFE & FISHERIES: Threatened & Endangered Species Habitat; Item C-7

ACTION OR EFFECT TO BE MEASURED:	Provide habitat adequate to ensure KNF contribution to the recovery of Threatened and Endangered (T&E) Species including: Gray Wolf, Bald Eagle, Grizzly Bear, Bull Trout and White Sturgeon.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Any downward population trend. Any forest-wide decrease in habitat quantity or quality. Failure to meet recovery plan goals for the KNF.

Purpose: This monitoring item was established to help ensure that the KNF contributes to the recovery of listed threatened and endangered species. The Forest Plan requires that this item be reported annually. This item was last published in November of 2004.The expected precision and reliability of the information is high and moderate, respectively.

Evaluation:

Gray Wolf: The Wolf Recovery Plan (USFWS, 1987) provides guidance for the recovery of the gray wolf. The KNF is part of the Northwest Montana Wolf Recovery Area. The recovery goal for this area is ten wolf packs, which has been met for 3 consecutive years (USFWS, 2005).

The last remaining member of the eight radio-collared wolves that were released near the Caribou Campground in the Yaak River valley in 2001, was killed in 2003 by a vehicle on Highway 56.

Identified wolf packs on the Kootenai in 2003 are: Murphy Lake, Grave Creek, Fishtrap, Candy Mountain, Green Mountain, and Wigwam. Wolves from each of the known packs spend a portion of their time on the Forest and the remainder on other National Forests, State, or private lands. The Candy Mountain pair was identified as a new pack in 2003. In 2003 there was no evidence of the possible pack on the east side of Lake Koocanusa (Ural pack) that was observed in 2002. Following are the identified wolf packs on the Kootenai in 2004: Murphy Lake, Fishtrap, Candy Mountain, Wigwam and Kootenai (USFWS, 2005). Wolves from each of the known packs spend a portion of their time on the Forest and the remainder on other National Forests, State, or private lands.

Following is a brief summary of each of the known wolf packs during 2004 (MDFWP 2005):
Murphy Lake Pack – This pack spends part of their time in British Columbia, Canada but is counted as part of the Northwest Montana population. There were four adults in 2003. These wolves did not den in 2003. They moved widely outside their historic territory, spending considerable time in the Pleasant Valley area. The pack killed two calves, but because they left the area and moved into British Columbia (Elk River area), no control action was taken. There were two adults in the pack in 2004. They denned in 2004, producing one pup that survived to the end of the year.

Wigwam Pack – This pack is a Canadian pack that strays into Montana, but den and spend most of their time in Canada. It is not counted as part of the Northwest Montana population. It does not count toward the 10-pack recovery goal.

Fishtrap Pack – This pack of four adults was confirmed to have reproduced in 2003, producing 5 pups. This pack consisted of three adults in 2004 and was confirmed to have reproduced, producing two pups that survived to the end of the year. The pack size at the end of 2004 is five. There was one wolf mortality

in this pack in 2004. This pack occupies an area in the southeast corner (McGinnis Meadows and East Fisher Creek) of the Libby Ranger District but also uses the Fishtrap and main Thompson River drainages on the Plains/Thompson Falls District of the Lolo National Forest.

Candy Mountain Pack - Both the male and female were radio collared and tracking results in 2003 show they use the Yaak River valley for their territory. There were three adults confirmed in 2004 and this breeding status is unknown. Their territory is in the Yaak River drainage.

Kootenai Pack – This pack is a trans-boundary pack, spanning Montana and British Columbia, Canada. Monitoring of this pack began in 2001; denning was documented in 2004, for the first time since monitoring began. This pack produced two pups with confirmation that at least one survived to the end of the year The minimum pack size is three animals.

Pack Status Changes since 2003:

Green Mountain Pack – For the second consecutive year (2003, 2004), there were no wolf sightings in this pack area. The USFWS no longer recognizes this pack.

Grave Creek Pack – This pack seemed to disappear in 2003, with the few reports of wolves in their territory (most likely) the result of forays from the Murphy Lake pack. Grave creek female (#257) was legally killed in British Columbia. In 2004 there were no reports of wolves in this pack territory; the USFWS no longer recognizes this pack.

Habitat: The components of wolf habitat on the Kootenai did not change significantly in 2003-04. Big game populations have rebounded from the severe winter of 1996-97, and they are providing adequate prey resources for continued growth in the wolf population

Livestock Depredation: There were no known livestock depredation incidents from any packs using the KNF.

Population Trend: Wolf numbers using the Kootenai continue to increase.

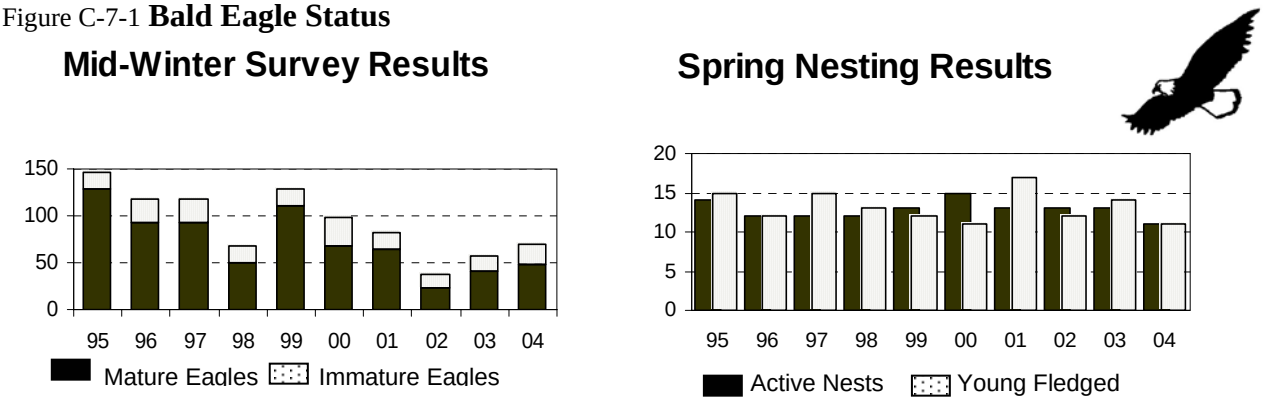
Bald Eagle: The Montana Bald Eagle Management Plan (MBEWG, 1994) and the Pacific States Bald Eagle Recovery Plan (USFWS, 1986) provide guidance for bald eagle recovery. These plans call for the establishment of 52 nesting pairs within Recovery Zone 7, the Montana section of the Upper Columbia River Basin. This recovery zone includes all public and private land west of the continental divide in Montana. The KNF area is about 15 percent of the zone. Based on this percentage, the Kootenai would be providing a minimum of eight nesting pairs (52 x 0.15) toward the recovery goal. Currently there are 18 pair territories on National Forest lands. There are also 17 pair territories on private, state or other federal lands within the KNF area. Eleven pair territories were active on KNF lands in 2004.

Bald eagle habitat is generally within one mile of major lakes and rivers. Habitat quality and quantity on the Kootenai is stable, and may be increasing in the long term as potential nest trees mature.

Figure C-7-1 shows the results of mid-winter bald eagle population surveys. Sightings occur mostly along major watercourses both on the Forest and on adjacent ownerships. Results are highly variable from year to year due to varying weather conditions. The survey results for 2003 show a total of 59 wintering (41 mature and 17 immature) bald eagles. This is below the average (1985-2003) of 97 wintering eagles. The survey results for 2004 show a total of 69 wintering bald eagles (49 mature, 20 immature). This is below the 20 year (1985-2004) average of 96 wintering eagles.

Numbers of active eagle nests and young eagles fledged are also shown in Figure C-7-1. Nesting surveys indicate that the 2003-04 nesting eagle population is slightly down on National Forest lands. Fourteen young were fledged from thirteen active nests in 2003. Eleven young were fledged (about the 23 year average) from eleven active nests. The overall reproduction (including private land sites) was among the top four production years with 30 fledged. USFWS believes the bald eagle has achieved recovery goals and they've proposed removing them from the threatened species list.

Figure C-7-1 **Bald Eagle Status**



Grizzly Bear: The KNF contains portions of two grizzly bear recovery zones: the Cabinet-Yaak Ecosystem (CYE) and the Northern Continental Divide Ecosystem (NCDE). About 72 percent of the CYE is located on the western portion of the Forest and about four percent of the NCDE is located in the extreme northeast corner of the Forest. Each of these ecosystems is further subdivided into smaller areas for analysis and monitoring, known as bear management units (BMUs) (see map, Figure C-7-1).

The Forest's primary efforts in grizzly bear recovery are in habitat management, cooperating in grizzly bear studies in the Yaak River and Cabinet Mountains areas, and working with local citizens and interest groups to achieve understanding and consensus on grizzly bear management issues.

Recovery goals for each recovery zone are based on the Grizzly Bear Recovery Plan (USFWS, 1993). Three main criteria are used to evaluate grizzly bear recovery: 1) the number of unduplicated sightings of females with cubs averaged over a six-year period; 2) the distribution of females with cubs, yearlings, or two-year-olds measured as the number of BMUs occupied over a six-year period; and 3) the level of known human-caused mortality measured as a percentage of the estimated population average for the past three years. Management of roads is also an important factor in grizzly bear recovery.

Habitat Effectiveness: In FY 2003, fourteen of the eighteen BMUs were at or above the desired 70 percent level and the Forest-wide average for all BMUs remained 73 percent, slightly above the average for the past ten years. The 2003 monitoring report was the last year habitat effectiveness was reported due to new standards established in the Forest Plan Amendment on Motorized Access (see Access Management section below). The Amendment no longer requires monitoring of habitat effectiveness.

Unduplicated Sightings of Females with Cubs: In 2003, there were four credible sightings of two unduplicated female grizzly bears with cubs in the Kootenai portion of the CYE (Kasworm 2003), and

none in the KNF portion of the NCDE.. In 2004, there was one credible sighting of unduplicated female grizzly bears with cubs in the Kootenai portion of the CYE, and four in the KNF portion of the NCDE.

Distribution of Females with Young: Seven of the seventeen BMUs on the Kootenai portion of the CYE were occupied by females with young in 2003, five in 2004. The total number of different BMUs occupied over the entire recovery zone during the past six years was thirteen, compared to the Recovery Plan goal of eighteen (Kasworm, 2003). The one BMU in the Kootenai's portion of the NCDE was not occupied in 2003, and was occupied by 4 females with young during the year. These numbers are above the six year average for the NCDE and average for the CYE.

Mortality: There were no human caused grizzly mortalities reported in 2003 or 2004 for the CYE. Considering the past 6 year mortality rate, there is a 75% probability that the grizzly bear population trend in the CYE may be declining (Wakkinen and Kasworm, 2004). There were two reported grizzly bear mortalities in or near the Kootenai portion of the NCDE in 2003 and one reported mortality just outside the Kootenai portion of the NCDE in 2004.

Sightings of females with cubs of the year, distribution of females with young and human-caused moralities are summarized for the past six years in Table C-7-1. These levels do not yet meet recovery goals for the CYE.

Table C-7-1 Grizzly Bear Females with Cubs, Distribution of Females with Young, and Human-Caused Mortalities

Fiscal Year	NCDE (KNF Portion)			CYE (KNF, IPNF and Lolo)		
	# Females with Cubs of the year	#BMUs Occupied by Females with Young	# Human Caused Mortalities	# Females with Cubs of the year	# BMUs Occupied by Females with Young	# Human Caused Mortalities
1999	0	0	0	0	2	2
2000	2	1	0	2	3	1
2001	2	1	0	1	3	2
2002	2	1	0	4	7	5
2003	0	0	2	2	7	0
2004	4	1	1	1	5	0
Six-year Average	1.7	1	0.5	1.7	4.5**	1.7

**Thirteen different BMUs were occupied during the past six years.

Access Management: A Forest Plan amendment (Motorized Access Management Amendment signed March, 2004) has established additional access management direction in the CYE. Identified monitoring parameters include Open Motorized Road Density (OMRD), Total Motorized Road Density (TMRD) and Core.

Tables C-7-2 A, B, and C display Core, OMRD, and TMRD values by BMU for bear years (BY) 1998 through 2004. Changes in core, OMRD and TMRD in FY04 are the result of management activities, activities on private land, and field verified corrections in road status from FY03.

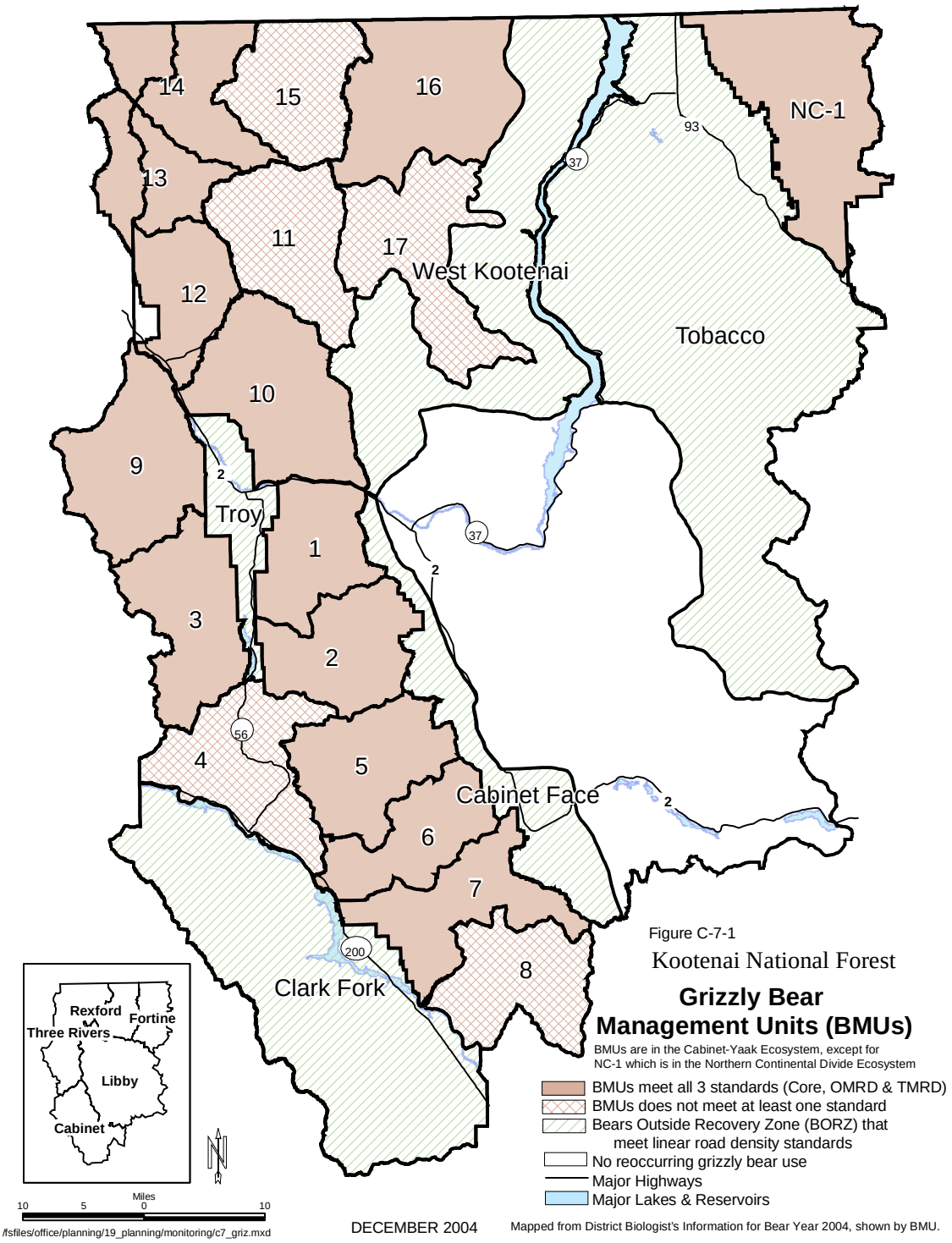

14
15
16
NC-1
13
11
17
West Kootenai
12
Tobacco
10
9
Troy
1
3
2
4
5
Cabinet Face
6
7
8
Clark Fork
93
37
2
56
200
Rexford
Fortine
Three Rivers
Libby
Cabinet
N
Miles
10 5 0 10
/fsfiles/office/planning/19_planning/monitoring/c7_griz.mxd
Figure C-7-1
Kootenai National Forest
Grizzly Bear Management Units (BMUs)
BMUs are in the Cabinet-Yaak Ecosystem, except for NC-1 which is in the Northern Continental Divide Ecosystem
BMUs meet all 3 standards (Core, OMRD & TMRD)
BMUs does not meet at least one standard
Bears Outside Recovery Zone (BORZ) that meet linear road density standards
No reoccurring grizzly bear use
Major Highways
Major Lakes & Reservoirs
DECEMBER 2004
Mapped from District Biologist's Information for Bear Year 2004, shown by BMU.

Table C-7-2A Bear Year (BY) (4/1-11/30) Percent Core for the CYE by BMU

BMU	BY 98 %	BY 99 %	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %
1 Cedar	69	84	83	83	83	83	84
2 Snowshoe	-	77	78	77	77	78	78
3 Spar	-	57	58	61	62	62	63
4 Bull	62	61	63	63	62	62	63
5 Saint Paul	60	61	62	62	63	60	60
6 Wanless	51	51	53	55	55	54	56
7 Silver Butte/Fisher	65	66	66	66	66	66	66
8 Vermilion	54	57	57	56	56	56	56
9 Callahan	-	53	56	57	57	59	60
10 Pulpit	42	45	48	49	49	52	52
11 Roderick	52	52	55	54	54	53	53
12 Newton	-	56	56	57	57	56	56
13 Keno	58	56	59	62	62	61	61
14 NW Peak	58	60	56	56	56	57	57
15 Garver	35	46	48	47	50	50	48 **
16 E Fk Yaak	38	40	45	45	45	49	55
17 Big Creek	32	42	49	50	50	50	50
Average	52	57	58	59	59	59	60

* Highlighted value does not meet new standard established in 2004.

** In BMU 15, percent core change is the result of an error correction in BY03. Correction was made after on-the-ground validation of road status.

Bear Year (BY) Percent Core for the NCDE by BMU

BMU	BY 98 %	BY 99 %	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %
Murphy Lake NC-1	69	69	70	70	72	72	72

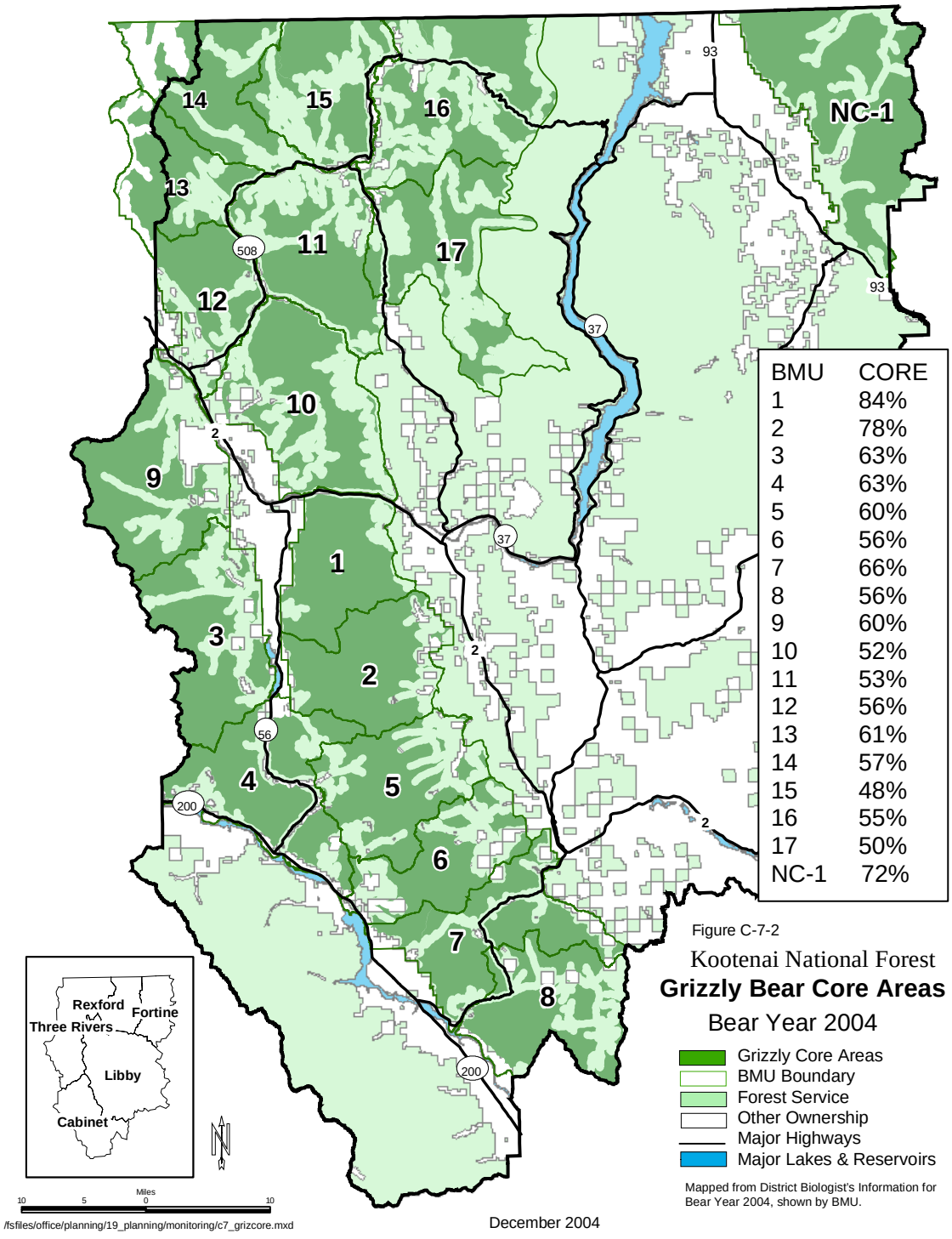


Figure C-7-2

Kootenai National Forest

Grizzly Bear Core Areas

Bear Year 2004

Grizzly Core Areas
BMU Boundary
Forest Service
Other Ownership
Major Highways
Major Lakes & Reservoirs

Mapped from District Biologist's Information for Bear Year 2004, shown by BMU.

Table C-7-2B **Bear Year (BY) OMRD Conditions (% BMU > 1 mi/mi^2) for the CYE by BMU**

BMU	BY 98 %	BY 99 %	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %
1 Cedar	23	13	12	12	12	12	13
2 Snowshoe	-	18	17	17	17	17	17
3 Spar	-	23	24	26	27	24	25
4 Bull	39	39	36	36	36	36	37
5 Saint Paul	29	28	27	27	26	27	26
6 Wanless	37	32	34	34	33	37	33
7 Silver Butte/Fisher	27	23	23	23	23	23	23
8 Vermilion	32	11	32	32	32	32	32
9 Callahan		36	32	32	32	26	26
10 Pulpit	50	50	45	41	41	41	41
11 Roderick	32	33	29	29	31	30	29
12 Newton	-	43	45	43	43	41	41
13 Keno	34	37	34	33	28	33	33
14 NW Peak	31	32	28	35	28	27	28
15 Garver	32	30	31	31	31	31	29
16 E Fk Yaak	38	36	31	28	29	28	31
17 Big Creek	43	37	32	32	31	31	31
Average	34	29	28	30	28	29	27

Highlighted value does not meet new standard established in 2004.

Bear Year (BY) OMRD Conditions (% BMU > 1 mi/mi^2) for the NCDE by BMU

BMU	BY 98 %	BY 99 %	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %
Murphy Lake NC-1	23	23	20	20	19	19	20

Table C-7-2C Bear Year (BY) TMRD Conditions (% BMU > 2 mi/mi^2) for the CYE by BMU

BMU	BY 98 %	BY 99 %	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %
1 Cedar	16	9	11	11	10	11	10
2 Snowshoe	-	15	14	14	14	14	14
3 Spar	-	31	30	27	26	26	24
4 Bull	28	27	26	26	26	26	26
5 Saint Paul	23	21	21	21	21	21	21
6 Wanless	35	34	33	32	32	32	31
7 Silver Butte/Fisher	22	19	20	20	20	20	21
8 Vermilion	23	21	21	23	23	23	23
9 Callahan	-	31	28	27	27	26	26
10 Pulpit	41	37	34	32	32	30	31
11 Roderick	31	31	27	28	28	28	29
12 Newton	-	28	31	29	30	31	31
13 Keno	23	26	24	24	24	24	23
14 NW Peak	24	22	26	26	26	25	26
15 Garver	45	34	32	32	30	29	29
16 E Fk Yaak	45	42	38	38	38	30	25
17 Big Creek	44	33	27	26	26	25	25
Average	31	27	26	26	24	25	24

Highlighted value does not meet new standard established in 2004.

Bear Year (BY) TMRD Conditions (% BMU > 2 mi/mi^2) for the NCDE by BMU

BMU	BY 98 %	BY 99 %	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %
Murphy Lake NC-1	15	15	12	12	6	6	6

Bears Outside the Recovery Zone (BORZ)

In addition to the monitoring items inside the recovery zone, the 2004 Forest Plan Amendment (USFS 2004) established access standards for areas outside the recovery zones that were occupied (occupied areas are areas with reoccurring grizzly bear use over an extended time period ie. past 5-10 years; Wittinger, et al.). The standards for bears outside the recovery zone (BORZ) are: 1)no increases in linear open road density above baseline conditions and 2) no permanent increases in linear total road densities above baseline conditions. Table C-7-3 shows the baseline conditions established as of 2003, as well as FY04 conditions. Currently, the Forest is working with the USFWS to correct the baseline data for the Tobacco BORZ polygon. It is expected that the corrected information will result in a TMRD of 3.0 and a ORD of 2.0.

Table C-7-3 Linear Open and Total Road Densities (miles/mile^2) by BORZ Polygon

BORZ Polygon	Baseline Linear Open Road Density (ORD)	FY 04	Baseline Linear Total Road Density (TRD)	FY 04
Clark Fork	0.9	0.9	2.6	2.6
Troy	1.2	1.1	2.6	2.5
Cabinet Face	2.2	2.2	3.9	3.9
West Kootenai	1.3	1.3	3.0	3.0
Tobacco	1.8	1.8	3.3	3.3
Libby	1.9	1.9	3.4	3.4
Fisher	1.0	1.0	2.7	2.7

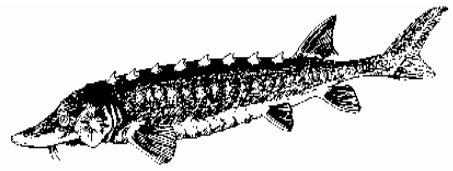
Summary: Overall in 2003, grizzly bear habitat effectiveness remained about the same as in FY02, and is above the desired level of 70 percent forest-wide. Seventy-seven percent of BMUs meet the desired 70 percent habitat effectiveness level. In 2003 and 2004, sightings of female grizzly bears with cubs were down from previous years, as was the six year average. Females with young occupied fewer BMUs than in previous years, but the number was average for the CYE. There were no human caused grizzly mortalities in 2003 or 2004.

Overall, open and total road densities declined slightly. In 2003, the amount of core area in grizzly habitat remained the same as 2002 with some individual BMU core levels increasing and some declining slightly. In 2004, open and total road densities declined slightly during the year. The amount of core area in grizzly habitat increased slightly over last year (See Table C-7-2A). The grizzly bear population trend in the CYE has about a 75% probability that it is declining (Wakkinen and Kasworm 2004). Implementing the new core, OMRD, and TMRD standards is expected to provide more secure habitat and contribute to reduced mortality rates.

Lynx – The Canada lynx was listed as threatened in March 2000. The KNF currently manages for lynx habitat using the Canada Lynx Conservation Assessment and Strategy (LCAS) (Ruediger et. al. 2000). The Forest Service Northern Region (Region 1) is in the process of completing a Region wide amendment to Forest Plans for all forests in Region 1 with lynx or lynx habitat. In compliance with the LCAS, the Forest delineated 47 Lynx Analysis Units (LAUs) which approximate a lynx home range size.

At the end of 2003 all LAUs except one met the LCAS habitat standards ($\geq$ 10% denning habitat, $\leq$ 30% unsuitable condition, and $\leq$ 15% changed to unsuitable condition in last 10 years).

At the end of 2004, all LAUs except two (# 14104 and 14107) met the LCAS habitat standards ($\geq$ 10% denning habitat, $\leq$ 30% unsuitable condition, and $\leq$ 15% changed to unsuitable condition in last 10 years). One LAU does not meet the percent unsuitable, as it has 32% lynx habitat in an unsuitable condition because of natural wildfire events in 1994. The other LAU has 18% of the lynx habitat that has been changed to an unsuitable condition within the last 10 years because of vegetation management actions. Seventeen of the 47 LAUs were known to be occupied by lynx in 2004.



White Sturgeon -- The USFWS Recovery Plan for the Kootenai River white sturgeon was signed on September 30, 1999. The short-term goals of the Plan are to re-establish natural reproduction and prevent extinction of the species. Long-term goals include providing suitable habitat conditions and restoring a natural age-class structure and an effective population size. This stock of fish (distinct population segment) will be considered for down listing to threatened status after 10 years only if natural reproduction occurs in three different years; the estimated population is stable or increasing; enough captive-reared juveniles are added to the population for 10 consecutive years that 24 to 120 juveniles survive to maturity; and a long-term Kootenai River Flow strategy is implemented that ensures natural reproduction. Delisting of this population is estimated to take at least 25 years, beginning with the approval of the Recovery Plan in 1999.

The Recovery Plan for the white sturgeon outlines a comprehensive set of actions needed to begin the recovery process. The Plan does not identify actions or objectives that directly affect management of the KNF. However, under the Endangered Species Act (Section 7(a)(1)), the Forest is obligated to use its authorities to aid in the recovery process and to consult with the USFWS on all proposed or authorized activities. All proposed projects and activities evaluated by the Forest in FY03 and 04 were found to have No Effect on the species.

In December 2000, the USFWS issued a biological opinion stating that Libby Dam is the primary factor affecting the Kootenai River white sturgeon. The USFWS also designated 11.2 miles of river below Bonners Ferry, Idaho as critical habitat.

The most recent population estimate from the Idaho Department of Fish and Game indicates there are approximately 600 adult sturgeons in the population. Natural reproduction has been confirmed in the Kootenai River. Currently the majority of juvenile fish in the population are hatchery reared fish.

Bull trout -- The KNF continues to consult with the USFWS on activities under Section 7(a)(1) of the Endangered Species Act. During FY04 the Forest consulted on all proposed activities. The Forest continues to work closely with the five other western Montana National Forests, Bureau of Land Management and the USFWS to implement Programmatic Biological Assessments and maintain consistency for consultation standards.

In 2003, there was one new project evaluated by the Forest that "May Affect but is Not Likely to Adversely Affect" bull trout. This one recovery action project was covered under a Regional FWS 10(a)(1)(A) permit. This project, the Pipe Creek Habitat Enhancement Project, included instream channel work and culvert replacement. Numerous proposals to suction dredge were submitted to FWS for formal consultation. The remainder of new projects evaluated was determined to have "No Effect" on the species. In 2004, There were five new small suction dredge permits evaluated by the Forest (permits authorized in FY 04) that resulted in "May Affect and are Likely to Adversely Affect" determinations for bull trout. The Pipe Creek Enhancement Project continued in FY04. The Troy Mine was re-opened and concurrence was given by the USFWS for a "May Affect but Not Likely to Adversely Affect" bull trout determination in Lake Creek in FY 04. The remainder of new projects evaluated were determined to have "No Effect" on the species. The Forest continues to work closely with MDFWP and the USFWS to determine distribution and abundance of bull trout within the boundaries of the KNF. No new areas of bull trout habitat were identified in 2003 or 2004 on the KNF.

In 2003, blueprints of completed structures and fish density surveys were completed for the Pipe Creek Enhancement Project to determine project effectiveness. Redd counts completed for fall 2003 identified 245 bull trout redds above the Glen Lake Irrigation District diversion which was improved as a recovery action in 2001. This number is nearly four times the annual redd count numbers for Grave Creek counted prior to the implementation of the project. It is our hope that the Pipe Creek Enhancement Project will show similar results. Redd counts completed in the fall of 2004 identified 141 redds in Grave Creek, down from the 245 bull trout redds above the Glen Lake Irrigation District diversion (diversion on Grave Creek) counted in 2003. One possible change affecting this population is the legal harvest of bull trout in Koocanusa Reservoir which started in the spring of 2003. This recreational fisheries in Koocanusa targets large, mature bull trout. More than 20 structures have been constructed in Pipe Creek and approximately 3 miles of potential bull trout habitat was made accessible to fish in FY04 as a result of a pipe replacement completed in 2004. Redd counts for Pipe Creek were eight for FY04. Positive impacts from the restoration projects completed in Pipe Creek are expected in 2008-2010.

Recommended Actions: Based upon the best available information, populations of all threatened or endangered terrestrial species (except grizzly bear in the CYE) on the Kootenai are stable or increasing. The bald eagle is proposed for removal from the threatened and endangered list (USFWS 1999). All of the threatened and endangered species' habitats being monitored appear to be maintaining or improving. Information shows that the KNF is progressing toward providing adequate habitat for threatened and endangered species recovery. Based on review of this monitoring item, specific changes to Forest Plan direction are not needed at this time. It is recommended that the Forest continue to implement recovery actions and actively seek to improve habitat conditions for listed species populations. It is further recommended that the Forest increase information and education efforts related to grizzly bears, especially food attractants. Finally it is recommended that the Forest increase cooperative efforts with county officials to place bear resistant dumpsters to reduce grizzly bear mortality risks due to food attractants.

The bull trout population on the Forest appears to be down from previous years. Ongoing population research on the white sturgeon determined that while there has been successful spawning (in 1997), estimates of the adult population have been reduced. Recovery of white sturgeon is managed by Idaho Fish and Game, Kootenai Tribe of Idaho, and MDFWP. Bull trout redd count numbers were reduced from previous years. It is recommended that the Forest continue to implement recovery actions and actively seek to improve connectivity of bull trout populations.

Literature Cited:

Kasworm, Wayne; H. Carriles, and T.G. Radandt. 2004. Cabinet-Yaak Grizzly Bear Recovery Area 2003 Research and Monitoring Progress Report. USFWS, U of M. Missoula, MT. 62 pp.

Kasworm, Wayne; H. Carriles, and T.G. Radandt. 2003. Cabinet-Yaak Grizzly Bear Recovery Area 2002 Research and Monitoring Progress Report. USFWS, U of M. Missoula, MT. 53 pp.

MBEWG. 1994. Montana bald eagle management plan. Montana Bald Eagle Working Group. Bureau of Reclamation, Billings, MT. 104 pp.

Ruediger, Bill et.al. 2000. Canada Lynx Conservation Assessment and Strategy. USDA Forest Service, USDI Fish & Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication #R1-00-53, Missoula, MT. 142 pp.

USFS. 2004. Record of Decision Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones. USDA Forest Service, Kootenai, Idaho Panhandle, Lolo NF.90 pp.

USFWS. 1986. Recovery plan for the Pacific bald eagle. U.S. Fish and Wildlife Service, Portland, OR. 160 pp.

USFWS. 1987. Northern Rocky Mountain wolf recovery plan. U.S. Fish and Wildlife service, Denver, CO. 67 pp.

USFWS. 1993. Grizzly bear recovery plan. U.S. Fish and Wildlife Service, Missoula, MT. 181 pp.

USFWS 1995. Amended biological opinion on the Kootenai Forest Plan. U.S. Fish and Wildlife Service, Helena, MT. 15 pp.

USFWS. 1999. Proposed rule to remove the bald eagle in the lower 48 states from the list of endangered and threatened wildlife. Federal Register July 6, 1999, Volume 64 No. 128: 36453-36464

USFWS. 2005. Rocky Mountain Wolf Recovery 2004 Annual Report. D. Boyd ed. USFWS Ecological Services, 100 N Park Suite 320, Helena, MT 72 pp.

Wakkinen, Wayne L. and Wayne F. Kasworm. 2004. Demographics and population trends of grizzly bears in the Cabinet-Yaak and Selkirk Ecosystems of British Columbia, Idaho, Montana, and Washington. Ursus 15(1) Workshop Supplement: 65-70 (2004)

MDFWP. 2005. Personal communication between Kent Laudon (MDFWP wolf coordinator) and Wayne Johnson (KNF Forest Wildlife Biologist) on 1/21/2005. Status of wolf packs using the Kootenai National Forest in 2004. 1 pp.

WILDLIFE & FISHERIES: Indicator Species; Monitoring Item C-8

ACTION OR EFFECT TO BE MEASURED:	Determine habitat and population trends for viable populations of Indicator Species.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Any reduction approaching minimum habitat needed for viable population levels (40% of potential population).

Purpose: This monitoring item was established to help ensure that habitat was provided for the identified indicator species on the Forest. The Forest Plan requires that this item be reported once every five years. This item was last published in September of 2003.The expected accuracy and reliability of the information is moderate.

Background: The list of indicator species and the habitats they represent on the KNF can be found in Volume 2, Appendix 12 of the Plan. The species include grizzly bear**,** gray wolf, bald eagle, peregrine falcon, elk, whitetail deer, mountain goat, and pileated woodpecker.

Results and Evaluation:

Grizzly Bear: See Monitoring Item C-7.

Gray Wolf: See Monitoring Item C-7.

Bald Eagle: See Monitoring Item C-7.

Peregrine Falcon: On average, one or two peregrine falcons per year are observed on the KNF. Nesting activity has been confirmed on the Three Rivers Ranger District. Peregrine sightings on the Kootenai may be the result of a hacking (release) program further down the Clark Fork River on the Idaho Panhandle National Forest. Suitable nesting habitat on the Kootenai is localized and not abundant. Due to the steep, cliffy nature of peregrine nesting habitat, activities which could lead to adverse impacts are rare. Peregrine falcons appear to be maintaining their rare presence on the Kootenai.

Elk: Aerial survey data on elk numbers show an increase since the last five year report (2002). The numbers of elk observed during surveys increased from 1,778 in 2002 to 2,206 in 2003 (MDFWP was unable to survey all hunting districts on the Kootenai in 2004). The number of calves per 100 cows shows a slight downward trend, going from 31 (2002) to 25 (2004). Elk populations increased through 1990 or 1991 and then had a gradual decrease until 1997. The downward trend appears to have changed over the most recent five year reporting period (1998-2002) and continues through 2004. The number of spike bulls observed show an increase which is another indication of recruitment into the population. Elk habitat has been steadily improving (see Item C-1 Table C-1-2 in FY 2002 Monitoring Report: p.6).

Whitetail Deer: This species is the most widespread and abundant big game animal on the Forest. The whitetail deer numbers show a significant recovery from the effects of the severe winter conditions of 1996-1997. MDFWP officials have restored the week-long either-sex whitetail season in all hunting districts that cover the KNF. Habitat conditions for whitetail deer show improvement is some areas (ie. increased security due to access management) and slight declines in others (ie. reductions of cover on

winter range due to management activities designed to reduce fuels in the urban interface and activities on private land such as subdivision).

A fluctuating pattern in whitetail populations is typical of how the species responds to weather conditions in northern heavy-snow regions, and does not appear to be directly related to management actions of the Forest Plan standards for winter range. The standards emphasize small opening sizes and retention of cover, and are expected to buffer winter population fluctuations to some degree.

Mountain Goat: This species is limited primarily to rugged topography in the East and West Cabinet Mountain ranges. The habitat trend is static to possibly decreasing in the long term. Any potential long-term decrease may be attributed to continuing vegetative succession resulting from a lack of periodic wildfires or prescribed burning at higher elevations. Because primary mountain goat habitat is located at high elevations and the Forest Plan has allocated these lands to non-commodity uses, management activities (other than fire suppression) are not a major concern. Hunter harvest statistics and aerial survey data support a conclusion that goat populations have been relatively stable over the past decade with minor annual fluctuations.

Pileated Woodpecker: Observations by Forest biologists indicate that pileated woodpeckers are observed frequently on the Kootenai. Observations provide no indication of any major population change for the species. Additional information is being collected through the Region 1 Landbird Monitoring Program and through sampling special paired monitoring sites to begin assessing the effects of intermediate timber harvest on pileated woodpeckers. The landbird monitoring results for the Northern Region, the preliminary population transects, and Forest staff observations all point to the same consistent interpretation that pileated woodpeckers are widespread and are relatively common on the KNF. In addition, monitoring item C-5, Old Growth Habitat, indicates that the Forest is meeting Forest Plan standards for old growth habitat. See Monitoring Item C-5 for more information.

Recommended Actions: The results for these indicator species generally shows stable or increased sightings during the last 17 years of monitoring. Elk and white tail deer show an increase since the last reporting period. All of the species' habitats appear to be maintaining or improving, with the possible exception of mountain goat. The information shows that the KNF is progressing toward providing adequate habitat for these indicator species. The Forest will continue habitat maintenance and improvement projects through partnerships with MDFWP, and Rocky Mountain Elk foundation

Based on review of this item, specific changes to Forest Plan direction are not needed at this time. However, the Forest is in the process of revising the Forest Plan. Revision efforts will review the species used as management indicators.

RANGE: Noxious Weed Infestations; Monitoring Item D-2

ACTION OR EFFECT TO BE MEASURED: Determine acreage infested with noxious weeds.

VARIABILITY, WHICH WOULD INITIATE FURTHER EVALUATION: 10% increase in number of acres infested, 10% increase in density of existing infestations or a change in the diversity of noxious weed species.

Purpose: This monitoring item was established to identify the changes in noxious weed infestations on the Forest. The Forest Plan requires that this item be reported annually. This item was last published in September of 2003 for fiscal year 2002. The expected accuracy and reliability of this information is moderate to high.

Background: The Forest Plan states that noxious weed infestations will be monitored for increases in total acreage, increases in weed density and the introduction of new weed species on the Forest. In some areas, weed infestations have been established along many roadsides, railroad and power line rights-of-way and other disturbed areas such as gravel pits. Spotted knapweed and other weed species have migrated away from the road right-of-way onto undisturbed hillsides, especially within the drier vegetation types. Weeds are also becoming established in harvest units where the seeds have been brought by machinery and other vectors such as wildlife, cattle, railcars, and/or wind.

Table D-2-1 shows the types of weeds that occur on the Forest and their respective category.

Table D-2-1 **Noxious Weeds on the Kootenai National Forest**

Category	Status	Threat	Goal	Species Included
Group Ia. *Potential Invaders*	not known to exist	high probability of causing severe economic or environmental damage	prevention, eradication	plumeless thistle (*Carduus acanthoides*), yellow starthistle (*Centaurea solstitialis*), common crupina (*Crupina vulgaris*), Dyer's woad (*Isatis tinctoria*), purple loosestrife (*Lythrum salicaria*), Eurasian milfoil (*Myriophyllum spicatum*), tamarisk (*Tamarix* spp.)
Group Ib. *New Invaders*	small populations at limited sites	high probability of causing severe economic or environmental damage	eradication	bugloss (*Anchusa officinalis*), whitetop (*Cardaria draba*), musk thistle (*Carduus nutans*), diffuse knapweed (*Centaurea diffusa*), Russian knapweed (*Centaurea repens*), dwarf snapdragon (*Chaenorrhium minus*), rush skeletonweed (*Chondrilla juncea*), Scotch thistle (*Onopordum acanthium*), Japanese knotweed (*Polygonum cuspidatum*), tall buttercup (*Ranunculus acris)*
Group Ic. *New Invaders*	medium populations at limited sites	high probability of causing severe economic or environmental damage	containment within main body of infestation, eradication of populations	blueweed (*Echium vulgare*), leafy spurge (*Euphorbia esula*), Dalmatian toadflax (*Linaria dalmatica*), yellow toadflax (*Linaria vulgaris*), tansy ragwort (*Senecio jacobaea*)

Category	Status	Threat	Goal	Species Included
Group II. *Existing Populations*	large, widespread populations	high probability of causing environmental or economic damage	prioritize areas to be treated, reduction of plant populations, reduce rate of spread	common burdock (*Arctium minus*), absinth wormwood (*Artemisia absinthium*), spotted knapweed (*Centaurea maculosa*), oxeye daisy (*Chrysanthemum leucanthemum*), Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), common hound's tongue (*Cynoglossum officinale*), orange hawkweed (*Hieracium aurantiacum*), meadow hawkweed (*Hieracium pratense*), common St. John's-wort (*Hypericum perforatum*), sulfur cinquefoil (*Potentilla recta*), common tansy (*Tanacetum vulgare*)
Group III. *Species of Undeter-mined Status*	variable, some new, some well established	undetermined – potential for environmental and economic damage	monitor known populations for trends	meadow knapweed (*Centaurea pratensis*), chicory (*Chicorium pratensis*), poison-hemlock (*Conium maculatum*), Scot's broom (*Cytisus scoparius*), spotted cat's-ear (*Hypochaeris radicata)*, kochia (*Kochia scoparia*), scentless chamomile (*Matricaria maritime var. agrestis*)/, germander speedwell (*Veronica chamaedrys*), common speedwell (*Veronica officinalis*)

Nomenclature for vascular plants follows Hitchcock and Cronquist (1973) and for bioagents follows Rees et al. (1996).

Evaluation: All the weed species listed in Table **D-2-1** are of concern on the Kootenai National Forest (KNF). This list includes the State of Montana and Lincoln County lists as well as other weed species that the Forest considers important. The State of Montana and Lincoln County are very concerned about new invaders, especially two relatively new weed invaders--tansy ragwort and rush skeletonweed. There is a strong desire to keep these two species from moving east of the Continental Divide into the large farming areas of central and eastern Montana. The State has provided added monies for surveys and spraying to contain the expansion of these species and to eradicate them. Even though strong emphasis is placed on these two species, grave concern remains for all the other weed species listed. Control is not confined to these two species. Treatments for the weed species is an Integrated Pest Management approach that includes one, or a combination, of the following: **biological**--release of bioagents; **mechanical**--hand pulling, hoeing, clipping of seed heads, etc.; **chemical**--application of herbicides; and **cultural**--establishment of desirable plants as competition.

Existing weed infestations have expanded greatly over the past 25 years. The most common weed on the KNF is spotted knapweed. In 1995, county weed specialists estimated that knapweed infested over 250,000 acres across the forest (Hirsch and Leitch 1996). Two-thirds of the total infestations are in forestlands, rangelands, and/or wildlands; the remaining third are in road or railway corridors. The most widespread infestations are in the Clark Fork, Fisher River, and Kootenai River valleys. The spread of weeds has become apparent on winter game ranges, especially to the east of Libby. As an example, the "horse range" behind (north of) Canoe Gulch Ranger Station is estimated to have lost >80 percent of its effectiveness as winter range. Most of the encroachment has been by spotted knapweed. Spotted knapweed is less widespread in the Tobacco Valley area because of earlier weed control programs that included the use of herbicides (1986 Noxious Weed Treatment Program Final Environmental Impact Statement allows the use of herbicides on the Rexford and Fortine Ranger Districts). Kootenai National Forest specialists estimate that approximately 250,000 acres are at moderate or high risk of infestation by spotted knapweed, tansy ragwort, leafy spurge, blueweed, and goatweed; one million acres are at high

risk of infestation by orange and meadow hawkweeds; and 500,000 acres are at moderate or high risk of infestation by tansy ragwort. These acres were compiled by applying a modification of the process described by Mantas and Jones (2001).

Orange and meadow hawkweeds, oxeye daisy, and common St. John's-wort have made significant increases in the last ten years in areas across the Forest. The toadflaxes, absinth wormwood, and common hound's-tongue are increasing in different parts of the Forest. Blue weed has been observed in many recent harvest units in the Clark Fork Valley area.

Inventory

Four hundred twenty-nine weed surveys were completed in the summers of 2003-2004. Table D-2-2 summarizes the percent of a weed species found within each survey. The surveys note each noxious weed species seen in the survey (from the KNF list of weed species) as well as the predominant infestation size and cover class, or density, of each species. Weeds listed on table D-2-1 are those currently being tracked by the KNF. Three types of surveys were conducted last summer. One was a road survey, specifically looking for rush skeletonweed (This survey also noted the presence or absence of other weed species.). The second survey type was a survey confined to the Little Wolf Creek drainage and surrounding areas, specifically to locate tansy ragwort plants. The third survey type was a general survey noting weed species on roads traveled.

Table D-2-2 displays the information from the three types of surveys discussed in the preceding paragraph. Infestation sizes were noted and characterized as one of the following: <.1 acre, .1 to 1 acre, 1 to 5 acres, and > 5 acres. Cover classes (plant densities) were characterized as trace (<1%), low (1 to 5%), medium (6 to 25%), or high (>25%). Twenty-three of the forty-three weed species were identified during road surveys. Over 600 miles of open and closed road were inventoried and two new rush skeletonweed were identified.

Table D-2-2 **Percent of a Weed Species within each Survey**

Species (*Six Letter Code*)	**Percent of Surveys with this Species**	**Predominant Infestation Size**	**Predominant Cover Class**
Ia Potential Invaders			
Plumeless thistle (*Caraca*)			
Yellow starthistle (*Censol*)			
Common crupina (*Cruvul*)			
Dyers woad (*Isatin*)			
Purple loosestrife (*Lytsal*)			
Eurasian milfoil (*Myrspi*)			
Tamarisk (*Tamarix spp*.)			
Ib New Invaders (small populations)			
Bugloss (*Ancoff*)	*		
Whitetop (*Cardra*)	*		
Musk thistle (*Carnut*)	1	<.1	trace
Diffuse knapweed (*Cendif*)	3	<.1	trace
Russian knapweed (*Cenrep*)	*		
Dwarf snapdragon (*Chamin*)	*		
Rush skeletonweed (*Chojun*)	2	<.1	trace
Scotch thistle (*Onoaca*)	<1	.1-1 acre	.1-1
Japanese knotweed (*Polcus*)	*		
Tall buttercup (*Ranacr*)	*		
Ic New Invaders (medium populations)			
Blue weed (Viper's bugloss) (*Echvul*)	*		

Species (*Six Letter Code*)	Percent of Surveys with this Species	Predominant Infestation Size	Predominant Cover Class
Leafy spurge (*Eupesu*)	<1	.1-1	high
Dalmatian toadflax (*Lindal*)	2	<.1 acre	low to high
Yellow toadflax (*Linvul*)	2	<.1 acre	trace
Tansy ragwort (*Senjac*)	3	***	***
II Existing Infestations			
Common burdock (*Arcmin*)	*		
Absinth wormwood (*Artabs*)	2	<.1	***
Spotted knapweed (*Cenmac*)	83	****	****
Oxeye daisy (*Chrleu*)	62	****	****
Canada thistle (*Cirarv*)	74	****	****
Field bindweed (Conarv)	*		
Common hound's-tongue (Cynoff)	9	**	**
Orange hawkweed (*Hieaur*)	55	****	****
Meadow hawkweed (*Hiepra*)	36	****	****
Common St. John's-wort (*Hypper*)	52	****	****
Sulfur cinquefoil (*Potrec*)	9	<.1-1 acre	trace to low
Common tansy (*Tanvul*)	20	<.1-1 acre	trace to med
III. Species of Undetermined Status			
Meadow knapweed (*Cenpra*)	<1	<.1- 1 acre	trace to med
Chicory (*Cicint*)	*		
Bull thistle *(Cirvul)*	28	**	**
Poison-hemlock (*Conmac*)	*		
Scot's broom (*Cytsco*)	*		
Spotted cat's-ear (*Hyprad*)	<1	<.1	trace
Kochia (*Kocsco*)	*		
Scentless chamomile (*Matmar*)	*		
Germander speedwell (*Vercha*)	*		
Common speedwell (*Veroff*)	<1	<.1	trace

* = Species known to occur on the KNF, Lincoln County, and/or Sanders County but not noted on any surveys.
** = Indicates that the lower two categories of size and cover class are well represented
*** = Indicates that the lower three categories of size and cover class are well represented.
**** = Indicates that all infestation size and cover class categories are well represented.
Blanks indicate no information.

Approximately 2600 acres were surveyed and mapped for tansy ragwort. Both the size and density were noted and provided the basis for the spraying of tansy. The tansy ragwort population was originally noted only in the upper Little Wolf area on the KNF and the Upper Good Creek area of the Flathead National Forest (FNF)[see page 26 of this monitoring report for information about the Little Wolf Fire of 1994]. It was hoped that it could be contained to these areas; however, it has been identified up to 20 air miles away from the original sites.

Change over time can be measured by observing changes in percent of surveys with each species present, and by observing changes in the most common size and density of those populations. Table D-2-2 also shows that spotted knapweed, common St. John's-wort, meadow hawkweed, Canada thistle, orange hawkweed, common hound's-tongue, and oxeye daisy are the most common weed species present on the KNF, all having been recorded on over 30% of the surveys conducted. Canada thistle, spotted knapweed, and bull thistle are the most prevalent. Many weed species are just becoming established, such as rush skeletonweed, blue weed, chicory, kochia, Dalmatian and yellow toadflaxes, common and germander speedwells, scentless chamomile, and tall buttercup. Common St. John's-wort, orange hawkweed, rush skeletonweed, common tansy, and oxeye daisy all appear to be more common on the west side of the Forest; whereas, absinth wormwood, meadow hawkweed, hound's-tongue, musk thistle, and tansy

ragwort are more common on the east side of the Forest. Whitetop, Japanese knotweed, Russian knapweed, kochia, poison-hemlock, and Scot's broom have been found on the Forest, but were not recorded in surveys conducted in FY 03/04.

Table D-2-3 describes the average infestation size and density for each of the weed categories (New Invader, Existing Infestation, etc.) and then gives the overall average for all weeds tracked by the Forest. For this monitoring period, the overall infestation size has shifted and larger populations have been identified; however, the overall density class is fairly uniform. The New Invaders and Undetermined Status categories remain about the same. However, weeds in the existing infestation category are more evenly spread throughout the size and density categories, showing that they have not remained in the smaller size classes and densities, but rather trend toward larger populations and higher densities if left unchecked/untreated.

The results in Table D-2-3 were calculated by dividing the total number of recorded weed infestations in each category (size class and density class) by the total number of recorded weed infestations in each category. This gives a percentage of the total weeds in each category found in each size and density class. This same process was used to calculate the overall average, adding up weed infestations in all categories by their infestation sizes and densities, and dividing by the total weed infestations recorded.

Table D-2-3 Percentage of Weed Populations in Each Infestation Size and Density by Weed Category

	Infestation Size				Infestation Density			
Weed Category	Number/% <.1 acre	Number/ %.1-1 ac	Number/% 1-5 acres	Number/% >5 acres	Number/ % Trace	Number/% Low	Number/% Medium	Number/% High
Potential Invaders	0	0	0	0	0	0	0	0
New Invaders (small populations)	19/76	5/20	1/4	0	18/72	5/20	2/8	0
New Invaders (medium populations)	21/88	3/12	0	0	18/69	2/8	5/19	1/4
Existing Infestations	417/36	397/34	246/21	102/9	329/28	320/28	272/23	241/21
Undetermined Status	61/67	18/20	10/11	2/2	48/53	33/36	8/9	2/2
Overall Average	40	32	20	8	34	25	22	19

CONTROLS

Biological Agents

Implementation

The KNF's present weed management program is an Integrated Pest Management (IPM) approach that combines prevention, education, and biological, mechanical, cultural, and chemical control of weeds. Biological control (biocontrol) has been a method of weed control across much of the forest since 1987. Seventeen bioagents as well as two fungi have been released in the KNF (Lincoln County area). Since 1987 the KNF, in cooperation with the Western Agricultural Research Center (WARC) and other agencies and entities, has made approximately 250 releases (Table D-2-4) of biocontrol agents and fungi. Each release contains 50 to 200 insects. Most of these releases have been targeted at control of spotted knapweed, though several biocontrol agents for common St. John's-wort, tansy ragwort, leafy spurge, Canada thistle, musk thistle, and Dalmatian and yellow toadflaxes have also been released. Due to the

length of time required to locate a plant's natural enemy and the required quarantined period, noxious weeds normally gain a very competitive edge over the bioagents (biological control agents). The releases have been made in approximately 100 different locations. Some releases have been made in the same sites to help build the populations faster in these areas. Recently, releases have been made from collections taken locally; therefore, releases have been made from local collections. In some areas populations from earlier releases have increased sufficiently to provide collectible numbers.

The following table indicates the number of bioagents released and the year of release.

Table D-2-4 **Releases of Biological Control Agents and Funguses**

Year	1987	1988	1989	1990	1991	1992	1993	1994	1995
No.	2	6	4	4	10	10	12	14	28

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
No.	58	40	11	38	2	6	4	3	6

The banded gallfly (Urophora affinis) was released in Montana and Oregon in 1973. This bioagent attacks the seed heads of spotted knapweed. It has survived and become established to the point where it can be found throughout much of the Forest. The spotted knapweed seed head moth, UV knapweed seed head fly, lesser knapweed flower weevil, sulphur knapweed moth, and the knapweed root weevil have also been released. The former three attack the seed head, while the latter two attack the root system. Two spotted knapweed funguses have also been released. Even though the bioagents are expanding, at this time they are not known to be having a significant impact on populations' densities or population spread.

An explosion of tansy ragwort followed the Little Wolf Fire in 1994. The fire started on the KNF and extended into the Flathead National Forest. Initially, spraying was used to control the spread of tansy. Subsequently, two bio-agents (ragwort seed fly and cinnabar moth) were released. These two bioagents have proved very successful in the Flathead National Forest area. On the Kootenai side, the releases have not been as successful; reduced success is believed to be a result of climatic differences and release dates. These two bioagents seem to be successful in controlling the denser portions of the populations. However, chemicals will also be needed to treat the outlying populations.

Biocontrols have advantages and disadvantages. If biocontrols become established, they will increase in number and continue to attack the target organism. These controls are generally species or species group specific. Other vegetation and resources are not harmed. However, many years are required for biocontrol populations to become large enough to impact the host weed. Other insects and animals may also prey upon Biocontrols. Some biocontrols may be limited by climatic and environmental conditions (rainfall, cold, shade etc.). Biocontrols usually do not eradicate the host weed completely and are often required in very large numbers to significantly affect the host. Thus, biocontrols are best used on existing, widespread weed infestations and not on new invader species for which the goal is eradication (Herbicide Weed Control EA 1997).

Effectiveness:

In many cases the effect of the releases has been minimal thus far, although the bioagent populations have been building and the increase in weeds has slowed in some areas. Biocontrol has not measurably reduced populations of knapweed, common St. John's-wort, Canada thistle, or toadflax on the KNF, probably because populations of the biocontrol agents are still very small relative to the size of the weed infestations. There is observational evidence that seed head flies have slowed the rate of knapweed spread and, with continued releases and reproduction, these and other biocontrol insects may, over time, begin to reduce existing weed populations. However, it is unlikely that biocontrol agents will cause any widespread reduction of spotted knapweed for at least 10 years, during which time spotted knapweed, St.

John's-wort, toadflax, and other existing infestations will continue spreading (Herbicide Weed Control EA 1997).

Various spot checks have shown that larvae of the released bioagents can readily be found. Last summer the Northern Region office of Cooperative Forestry and Forest Health Protection (CFFHP) Department monitored the survival of released bioagents (*Agapeta zoegana* and *Cyphocleonus achates)*. Of the 15-bioagent release sites checked, all had larvae and/or adults of the bioagents present. A determination was made that at least four of the sites have populations sufficient to use as insectaries (a population large enough to collect insects for transfer to other sites). A local insectary is beneficial as these insects have adapted the best to conditions of the local area.

Biological control agents have not proven to effectively control new infestations because populations are generally small and scattered or because effective biocontrol agents have not been found (Herbicide Weed Control EA 1997). Biological controls are best used to decrease the density or vigor of established noxious weed infestations, but are generally not effective at stopping the spread of new invaders.

Herbicide Application

Implementation:
In 2003/2004 approximately 4500 acres were treated with herbicides to specifically control rush skeletonweed, spotted knapweed, Canada thistle, Dalmatian and yellow toadflax, leafy spurge, absinth wormwood, and tansy ragwort. These applications also reduced populations of diffuse knapweed, sulfur cinquefoil, oxeye daisy, common St. John's wort, orange hawkweed, and meadow hawkweed. In the last 10 years more than 25,000 acres have been sprayed for spotted knapweed, leafy spurge, Dalmatian and yellow toadflax, rush skeletonweed, tansy ragwort, orange hawkweed, meadow hawkweed, oxeye daisy, absinth wormwood, Canada thistle, sulfur cinquefoil, common tansy, Russian knapweed, and diffuse knapweed.

Effectiveness:
Monitoring of the rush skeletonweed populations by Lincoln County has shown that Tordon 22K is effective against this species. Follow-up spraying of individual plants that were not sprayed because they were missed earlier, or germinated later in the year has been found to be a key element in the control of this species. Monitoring of rush skeletonweed sites is accomplished by several methods. Photo points have been established for selected sites. Photos will be taken at these sites for ten years. Photo points were established in 2001. Also, every site is visited several times each year as rush skeletonweed can go from seed to mature, seed-producing plants in less than a month. The on-site monitoring looks at the effectiveness of the spraying and for new plants. The sites are also visited by a county weed person who does nothing but follow up on rush skeletonweed sites.

The KNF has used herbicides to control noxious weeds with success. Spraying of roadsides, administrative sites, and gravel pits has visibly reduced weed populations in many areas and prevented weeds from spreading to un-infested areas. In 1997, the KNF began spraying on a relatively large scale; prior to 1997 the only large scale spraying occurred at the Troy and Libby Airports after the 1994 fires and rush skeletonweed spraying which began in 1993. Lincoln, Sanders, and Flathead Counties have sprayed roadsides, which cross National Forest lands (where the county has rights-of-way), since the early 1990's. The KNF completed an Herbicide Weed Control Environmental Assessment in 1997 and has initiated the process for a forest wide Environmental Impact Statement (EIS) for ground and aerial herbicide application. The primary purpose of the existing EA and the proposed EIS is to be able to have full use of all the tools available for control of noxious weeds.

Mechanical and Cultural

Implementation:
Seed heads of tansy ragwort are clipped along roadways and recreation areas. Seed heads of rush skeletonweed are clipped and then the remainder of the plant is sprayed. Areas of Dalmatian toadflax are hand pulled. In 2004 orange hawkweed plants were pulled within the Hoskins Lake Research Natural Area, specifically adjacent to the lake and the hiking path. All these plants and plant parts are burned.

Effectiveness:
The KNF's mechanical and cultural control efforts have not effectively contained or reduced widespread noxious weed infestations. In most cases, roadside mowing has not prevented knapweed from flowering and going to seed. Hand pulling, which is the principal method of mechanical control used on the KNF, has been effective on individual plants of some species or very small and isolated weed populations. Attempts to hand-pull large infestations of knapweed and toadflax have provided only temporary control because seeds remain viable in the soil for up to 12 years. Hand pulling has been proven to be ineffective on weeds with deep taproots and weeds which reproduce through runners or shoots, such as rush skeletonweed and leafy spurge. Pulling these species stimulates growth in the roots and fragments, which remain in the soil, resulting in more plants instead of less (Herbicide Weed Control EA 1997).

Most soil-disturbing activities on the KNF require reseeding of exposed soil. Though reseeding is done principally to prevent erosion, it does inhibit invasion of disturbed sites by noxious weeds. The KNF requires seed to be certified "noxious weed free." In addition, the KNF has established a native seed bank to assist in restoring disturbed sites. Reseeding and re-vegetation has prevented weeds from spreading onto many disturbed sites. However, these practices have not effectively prevented existing infestations from spreading into wildlands and forests and, also, have not reduced existing infestations. In 1996 a clause, Noxious Weed Control Provision C(T) 6.26, was added to timber sale contracts. This is a mandatory provision that applies to all new sales and will be included when sales are modified or extended. The clause requires off-road equipment such as tractors, skidders, and processors to be washed prior to operating. This clause is expected to continue to help prevent the establishment of new weeds to disturbed sites.

NEW INVADERS

All weeds species are a focus for The Kootenai National Forest, State of Montana, and Lincoln County; however, new invaders are of special interest since they are generally confined to one area or part of the state. Tansy ragwort and rush skeletonweed are two such species. The Montana Department of Agriculture is working strenuously to keep these two species west of the Continental Divide. The Forest has prioritized Rush skeletonweed for eradication since its discovery in Lincoln and Sanders Counties in the early nineties. Known populations are located along roads and are flagged. Located plants are removed and/or sprayed. Every site that has been known to have rush skeletonweed is visited several times each year. The known populations are decreasing.

Tansy ragwort exploded after the Little Wolf Fire in 1994. A cooperative program between the State of Montana Lands Division, Plum Creek Timber Company, Bonneville Power Administration, Lincoln County, Flathead County, KNF, FNF, US Fish and Wildlife Service, Montana Department of Agriculture, and private land owners has been in effect since 1996 to contain tansy in the Little Wolf/Upper Good vicinity. Through an IPM program of biological, mechanical, cultural, and chemical factors these entities are working hard to contain tansy. Other than some new isolated sites, located approximately 20 air miles to the northeast, tansy has remained in the Little Wolf/Island Lake area on the KNF and the Upper Good area on the FNF. The main strategy has been to eliminate new populations located away from the main population and contain the main population. Spraying has been used for the outlying populations and

bioagent releases for the main population. This strategy of bioagent release in the center of the infestation, spraying of the perimeter populations and clipping adjacent to water bodies has been very successful in containing tansy ragwort.

Conclusion: Monitoring indicates that several noxious weeds (see Table D-2-2) have increased more than 10% in the numbers of acres affected and some have had a 10% or more increase in density of existing infestation since 1987. In addition, with the discovery of several new invaders over the last several years, it is apparent that the diversity of noxious weed species has increased. Based on this, this monitoring item is outside the range prescribed in the Forest Plan; however the Forest continues to implement strategies to reduce the spread of noxious weeds and in many areas weed populations have been visibly reduced and weeds have been prevented from spreading to un-infested areas.

Recommended Actions: Prior to 1997, weed control focused on the use of biological and cultural controls (cultural control uses plant competition to maintain or enhance desired plants) on the southern part of the Forest and the use of herbicides and biological and cultural controls on the north end of the Forest. In 1996, a Noxious Weed Control Provision was added to the timber sale contracts. In 1997, the Herbicide Weed Control EA was issued giving the Forest the ability to use a more integrated approach to controlling weeds. These actions are occurring under the direction of the Forest Plan and should help improve the noxious weed situation on the Forest. Additionally, the Forest is currently working on an updated approach to noxious weed management across the Forest. It is recommended that no changes are needed in the Forest Plan at this time.

BIBLIOGRAPHY

Hirsch, S.A., and J.A. Leitch. 1996. *The Impact of Knapweed on Montana Economy*. Agricultural Economic Report No. 355.., Dept. of Agri. Econ., Agri. Exp. Sta., North Dakota State Univ., Fargo, ND.

Hitchcock, C.L., and L. Cronquist. 1973. *Flora of the Pacific Northwest*. 8th Printing 1991. Illustrations by Jeanne R. Janish. Univ. of Wash. Press, Seattle and London. 730 pp.

Kootenai National Forest. 2002. *Noxious Weed Handbook.* Edition 4.0. 110 pp.

Mantas, Maria, and Jeff Jones. 2001. *Evaluating Risk to Native Plant Communities from Invasion of Selected Exotic Plant Species.* A Proposal for the Western Montana Planning Zone. Flathead National Forest. 20pp.

USDA Agri. Res. Ser. and MT Dept. of Agri. Montana State Univ. 1996. *Biological Control of Weeds in the West*. ed. by Norman Rees et al. Western Society of Weed Science. Bozeman, MT.

USDA Forest Service. Northern Region. 1996. *Noxious Weed Treatment Program*. Final Environmental Impact Statement, Kootenai National Forest, Libby, MT. 72 pp.

USDA Forest Service, Northern Region. 1987. *Kootenai National Forest Plan - Final Environmental Impact Statement*, Vol. 2. 405 pp.

USDA Forest Service, Northern Region. 1987. *Kootenai National Forest - Land and Resource Management Plan*, Vol. 1 201 pp.

USDA Forest Service, Northern Region. 1987. *Kootenai National Forest - Record of Decision*. 44 pp.

USDA Forest Service, Northern Region. 1997. *Herbicide Weed Control, Environmental Assessment*. Kootenai National Forest, Libby, MT. 50 pp plus appendices.

Whitson, Tom D. (editor), Larry C. Burrill, Steven A. Dewey, David W. Cudney, B.E. Nelson, Richard D. Lee, and Robert Parker. 1996. *Weeds of the West*. Published by the Western Society of Weed Science. University of Wyoming. Pioneer of Jackson Hole Jackson, Wyoming. 630 pp.

TIMBER: Allowable Sale Quantity (ASQ); Monitoring Item E-1

ACTION OR EFFECT TO BE MEASURED:	Determine if the sell volume meets the projections of the Forest Plan, including other permissible sale volumes.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	+/- 5 percent deviation for the ASQ volume, and +/- 10 percent deviation for the other permissible volumes.

Purpose: This monitoring item was established to help ensure that the ASQ stated in the Forest Plan is not exceeded and, to explain when/if the ASQ is not attained. The Plan requires that this item be reported annually. This item was last published in September of 2003.The expected accuracy and reliability of the information are high.

Background: The ASQ is a maximum or ceiling and not a target. The Forest Plan projected a total maximum timber sell volume for the decade from suitable management areas at 2,270 million board feet (MMBF), or an average of 227 MMBF per year (see Forest Plan, Appendix 11). In addition, 60 MMBF was estimated to be sold from unsuitable management areas, averaging six MMBF per year. These two components of suitable and unsuitable sell volumes comprised the total maximum timber sale program of 2.3 billion board feet for the decade, or an average of 233 MMBF per year. The total maximum sale quantity was adjusted in November 1995, when the Chief of the Forest Service issued a decision on a Forest Plan appeal related to a technical error in the calculation of the Forest's ASQ. The issue centered on how timber age classes were cataloged in the inventory information used to calculate ASQ. A description of the problem is in the FY92 Monitoring Report. The decision required that the Forest not exceed a sell volume of 150 MMBF per year until the Plan is either amended or revised.

Results: Table E-1-1 shows that sell volumes have declined from approximately 200 MMBF per year in FY 88 to approximately 34 MMBF per year in FY03 and 53.4 MMBF in FY04. For the past seventeen years, the average yearly amount sold has been 92.6 MMBF from suitable lands, and 1.7 MMBF from unsuitable lands. In total, this amounts to 94.3 MMBF average per year. This actual sell volume is well below the total maximum sale quantity limit as set in the Plan and adjusted by the Chief of the Forest Service (see figure E-1-1).

Evaluation: After seventeen years of implementation, the trend of decreasing sell volume is continuing. In the FY92 and FY97 Monitoring Reports, the Forest reported in detail on a number of factors that caused this decrease. Most of these factors are still influencing the sell volume. During the first five years of implementation, sell volume was relatively high, averaging 161 MMBF/year (see the FY92 Monitoring Report). During the second five years of implementation, sell volume averaged about 81 MMBF/year. The average for 1998-2002, the third five-year period, was 60.9 MMBF/year.

Many factors have influenced the timber sale program. In general, it has become more difficult to plan and execute sales due to public controversy, scheduling requirements necessary to meet resource needs, and decreasing budgets.

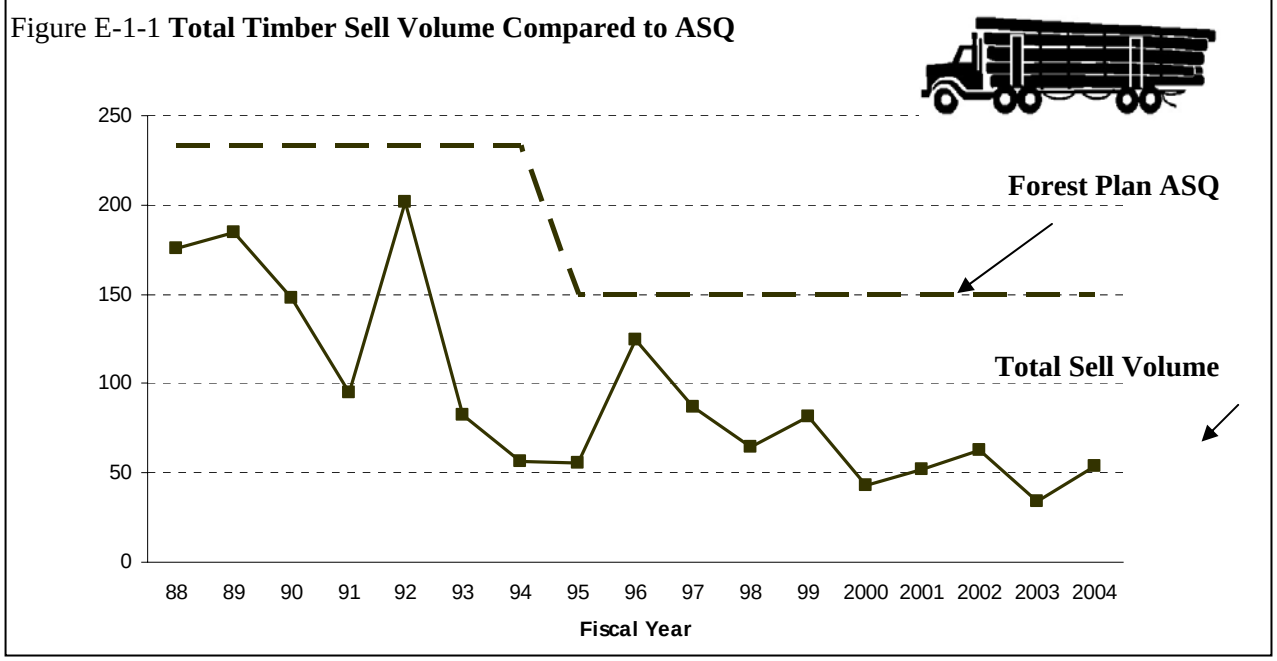
The evaluation limit for this monitoring item is plus or minus 5 percent for suitable volumes and plus or minus 10 percent for unsuitable volumes. These limits have been exceeded, and this indicates that evaluation of these factors, which started in the FY92 Monitoring Report, will need to continue during the revision of the Forest Plan.

The following table and figure display ASQ and volume by fiscal year.

Table E-1-1 **Timber Sell Volume (MMBF) by Category by Fiscal Year (FY)**

	Forest Plan Annual ASQ Projection	Average Sell Volume FY 88-92	Average Sell Volume FY 93- 97	Average Sell Volume FY 98- 02	FY 2003	FY 2004	Average Sell Volume FY 2000 - 2004	Average Sell Volume FY 1988 - 2004
Suitable Lands	227	159	81	58.5	32.6	51.3	47.0	92.6
Unsuitable Lands	6	2	0.4	2.4	1.4	2.1	2.1	1.7
Total Timber Sell Program	233	161	81.4	60.9	34.0	53.4	49.1	94.3

Figure E-1-1 **Total Timber Sell Volume Compared to ASQ**



Recommended Actions: The Forest has not exceeded the ASQ in 17 years of Forest Plan implementation. Large changes in the actual program levels versus the projections of the Forest Plan indicate that revision of the Plan will need to address the sustainability of the timber sale program.

TIMBER: Suitable Timber Management Area (MA) Changes; Monitoring Item E-3

ACTION OR EFFECT TO BE MEASURED:	Determine if significant cumulative changes are occurring in the suitable timber base by tracking management area boundary changes.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	+/- 5,000 acre cumulative total change in any suitable timber management area.

Purpose: This monitoring item was established to help ensure that the suitable timber base was being validated before any projects were authorized and to determine what influence any significant changes have on the ASQ. The Forest Plan requires that this item be reported annually. This item was last published in September of 2003.The expected accuracy and reliability of the information are both high.

Background: The allowable sale quantity (ASQ) calculated for the Plan is partially dependent on the amount of suitable timber acreage. This acreage is located within Management Areas (MAs) 11, 12, and 14-17. These MAs are validated during site-specific project analysis. When inaccuracies are found, an MA boundary correction is made to keep the Forest Plan MA Map and acreage current. MA boundary changes can result in gains or losses in MA acreage, depending on the conditions found. The important items to track are the total changes by MA and the net gains or losses in suitable timber acreage. The most common conditions that cause an MA map change are mapping and drafting errors found on original maps, non-productive forest land located within an MA mapped as productive (the reverse situation is also found), lack of big-game winter range habitat (the reverse is also found), or additional acreage is designated to meet the 10 percent minimum old growth standard. Differences in calculating acreages also occurred in FY95-96 when the Management Areas were converted to GIS.

Evaluation: Table E-3-1 displays the net MA acreage changes in suitable timberland for the last seventeen years (FY 88-04) and the net change in all suitable timberland. Acreage losses occurred in all suitable MAs except MA 17 in FY03 and in all suitable MAs in FY04. Total net loss in the suitable timberland at the end of FY04 was 72,916 acres. Table E-3-2 also shows MA acreage changes for the largest unsuitable MAs. Most of these MA changes were made in the process of designating MA 13 and other old growth management areas. This monitoring item is outside the prescribed range for MAs 11, 15 and 16 (more than 5,000 acres of change). The remaining suitable timber MAs are within evaluation limits (MAs 12, 14, 17).

Recommended Actions: The degree to which changes have been made to management area designations indicate continuing validation of Forest Plan data and on-the-ground validation. The large change in the suitable management area category (over 70,000 acres) amounts to just over three percent of the total suitable base. At this time, it is not apparent that this is significant in terms of the calculation of the long term sustainability of the timber harvest program or ASQ. During revision of the Forest Plan, timber suitability and long-term sustained yield will be analyzed.

Table E-3-1 **Net Acreage Changes by Management Areas (MA) in Suitable Timberland**

Fiscal Year	MA 11	MA 12	MA 14	MA 15	MA 16	MA 17	Total Chg
1988	330	0	1,070	(1,760)	(510)	0	(870)
1989	(1,142)	(345)	386	253	(22)	(48)	(918)
1990	(164)	(420)	(130)	(4,273)	916	(661)	(4,732)
1991	78	(442)	(1,050)	(3,188)	(1,414)	(281)	(6,297)
1992	(9,279)	(3,178)	(196)	(1,711)	(1,498)	(323)	(16,185)
1993	(1,329)	1,000	(705)	(7,444)	(2,271)	22	(10,727)
1994	(109)	(402)	106	524	111	(148)	82
1995	(457)	1,441	131	(1,845)	(193)	0	(923)
1996	(1,370)	2,743	(206)	(1,679)	229	440	157
97CLE*	(127)	(2,030)	2,392	(8,680)	(2,689)	(494)	(11,628)
97 other	(2,215)	2,168	(66)	(5,055)	(625)	366	(5,427)
1998	(827)	(1,075)	(1,432)	90	75	(60)	(3,229)
1999	316	1,434	(648)	(1,281)	(1,801)	(1,168)	(3,148)
2000	754	(894)	(434)	404	(307)	(425)	(902)
2001	(283)	93	(49)	148	144	(71)	(18)
2002	(307)	(1086)	(685)	(57)	(33)	1	(2,167)
2003	(1,196)	(704)	(1,031)	(2,248)	(202)	89	(5,292)
2004	(76)	(423)	(124)	(64)	(3)	(2)	(692)
Total Net Chg	-17,403	-2,120	-2,671	-37,866	-10,093	-2,763	-72,916

Suitable MAs indicate productive forest lands with consideration for other resources determining the difference among them. MA 15 lands are managed primarily for timber yields. MA 11 and 12 are lands which can provide for timber and big game habitat. MA 14 areas are timberlands which have been identified as essential for recovery of the grizzly bear. MA 16 and 17 indicate areas where protection of the visual resource is important. * The Checkerboard Land Exchange is shown as a separate breakout in FY97.

Table E-3-2 **Net Acreage Changes by Management Areas (MA) in Unsuitable Timberland**

FY	MA 2	MA 10	MA 13	MA 18	MA 19	MA 24	Total Chg
1988	240	1,670	(500)	190	(280)	480	1,800
1989	842	0	(149)	32	135	100	960
1990	150	1,080	1,877	381	(950)	2,564	5,102
1991	1,009	574	4,135	(140)	(231)	1,724	7,071
1992	196	3,211	7,980	2,656	231	823	15,097
1993	(338)	374	7,931	(595)	(2,115)	2,618	7,875
1994	(173)	(69)	914	(437)	(294)	177	118
1995	181	(643)	1,788	(657)	112	(128)	653
1996	32	(550)	3,290	(1,725)	(630)	(649)	(232)
97 CLE*	12,777	(149)	(2,249)	(417)	(464)	(1,581)	7,917
97 other	109	(550)	8,501	(1,625)	(644)	(165)	5,626
1998	37	(170)	2,797	(56)	(108)	(113)	2,387
1999	(131)	366	3587	(145)	(343)	(331)	3,003
2000	28	307	1,282	347	10	(49)	1,925
2001	6	(49)	(420)	(34)	26	(7)	(478)
2002	4	213	1,684	(12)	(1)	(7)	(1,181)
2003	172	(9)	5,015	(206)	196	174	5,342
2004	13	147	610	0	(1)	(1)	768
Total Net Chg	15,154	5,753	48,073	(2,443)	(5,351)	5629	66,815

Unsuitable MAs are used for areas where timber production is not a primary consideration; for example, MA 2 is Roadless Recreation; MA 10 is big game winter range not suited for timber production; MA 13 is old growth habitat; MA 18, 19, and 24 are lands with little timber value or lands difficult to regenerate (rocky areas, steep slopes). Other unsuitable MAs identify Wilderness, Special Interest Areas, Administrative Sites, etc. Included within unsuitable MAs are areas of inventoried old growth not identified as MA 13. NOTE: The differences displayed in the Fiscal Year totals and the Total MA Changes in the two tables shown above are the result of eight additional MAs which contain some minor changes plus the lands that have been acquired and disposed of in the land exchanges completed during the years since the Forest Plan was approved.

MINERALS: Mineral Activity Effects; Monitoring Item G-1

ACTION OR EFFECT TO BE MEASURED:	Determine the amount of management area (MA) change as a result of mineral activity.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Greater than 10,000 acres of MA change after 5 years.

Purpose: This monitoring item was established to track the amount of conflict with other resources that might occur if significant amounts of mineral development occur on the Forest. The Forest Plan requires that this item be reported every five years. This item was last published in August of 1998.The expected accuracy and reliability of the information is high.

Background: Major mining projects require a large amount of acreage to physically accommodate mine facilities (typically 500 to 1,000 acres for roads, powerlines, mining and milling facilities, tailings storage facilities, etc.). One project on the Forest is not expected to have a significant effect on the renewable surface resources. However, if a Forest is strategically located in a significantly mineralized area, the potential for a significant impact on the renewable resources could occur over time because of the cumulative effect of numerous projects.

The Kootenai Forest is located within a world-class mineralized area that could prove to be of significant economic importance. Currently there is one major operating mine on the Forest, the Genesis's Troy Mine (formerly owned by ASARCO). The Troy Mine was permitted and operational between 1981 and 1993. In 1999 Genesis Inc. a subsidiary of Revett Minerals Inc., Spokane Washington, acquired the property and initiated a restart of the mining operations in December 2004. Current production is 4,000 tons per day, employing 150 people. There are approximately four to five years of ore reserves.

Rock Creek Mine another project acquired Revett Minerals from ASARCO was permitted by the Forest in June, 2003. The project is under litigation in district court. The company is currently working on implementing the various mitigation requirement for phase one of the project, the evaluation adit. Phase two is the construction of the mill, mine development and tailings facility. All surface disturbing activity is put on hold until the litigation is resolved. The approved plan is for Revett to operate for about 30 years, milling 10,000 tons of ore per day and employing approximately 350 people.

In 1993, the Forest issued an approval to Noranda Minerals Corp. for their Montanore Project. However, Noranda abandoned the project in 2002 after completing a 14,000 foot evaluation adit. The minerals rights to the ore body was acquired by Mines Management Inc., Spokane Washington in 2003. Mines Management submitted a new plan of operations to develop the ore body and an EIS is currently being processed for this project. The new plan of operations is modeled after original approved Noranda project. The proposed plan is to operate at a rate of 20,000 tons of ore per day for a sixteen year period and employ 250 to 300 people.

No other major mines are proposed, nor is there any indication that another deposit might be proposed for development in the foreseeable future.

Results: Three major projects have been approved since the Forest Plan was approved; Troy Mine (1979), Noranda/Montanore (1993) and Rock Creek (2003). The Troy Mine currently has not resulted in MA changes.

The approval of the Noranda Montanore project included 1,540 acres of MA changes. In addition, if re-approved as proposed, the Montanore project would affect approximately 25 acres of the Cabinet Face East Roadless Area.

The decision on ASARCOs Rock Creek Mine (June 2003) approved 147 acres of MA changes.

While the Montanore and Rock Creek projects are very similar in terms of ore deposit size, mining methods, and milling processes, they differ significantly in terms of National Forest System land surface utilization. The Montanore Project has a larger tailing facility footprint (area of surface disturbance) which includes large borrow material areas. It also has a 16 mile utility corridor that follows a route that is entirely different from the project access road. The project also utilizes a relatively small amount of private land. On the other hand, the Rock Creek project is relatively compact. It has a smaller tailings facility footprint which is almost entirely on private land, has considerably less borrow material needs, and the access road and utility corridor follow the same route, nearly a half of which is on private land.

Over the past ten years the Forest has approved several hundred small scale plans of operations for exploration, mining (suction dredging) and mineral material extraction (sand gravel and building stone). None of these projects required a changes in MA status.

Evaluation: After ten years, the total MA changes needed are less than the projections outlined in the Forest Plan. This monitoring item is within the range prescribed in the Plan.

Recommended Actions: Continue monitoring.

FACILITIES: Road Access Management; Monitoring Item L-1

ACTION OR EFFECT TO BE MEASURED:	Determine if the road access management objectives are being met.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	+/- 20% of the proportion of open to closed roads, as described in the Forest Plan, by the end of first decade

Purpose: This monitoring item was established to ensure that the road access restrictions required in the Forest Plan were being achieved. The Plan requires that this item be reported every five years. This item was last published in September of 2003. The expected accuracy and reliability of the information is high.

Background: Just prior to the time the Plan was approved in 1987, about 27 percent of the Forest system roads were being restricted either yearlong or seasonally (Forest Plan FEIS, page IV-51). The Plan projected that in order to provide the issue resolution desired, about 57 percent of the roads would eventually need some form of restriction. This would be about double the amount of road restrictions at the time the Plan was approved. The assumption was that the number of new roads needed to harvest timber would increase significantly, and that they would all be restricted after the timber sales were completed -- the net result being an increase in the number of miles of road with restrictions but the number of miles of unrestricted roads would remain the same. The need for additional road restrictions was to protect dispersed recreation values, provide for wildlife security in big game winter and summer range, reduce road maintenance costs, and provide for grizzly bear recovery. Because of the significant increase in the amount of road restrictions needed (from 27 percent to 57 percent), it was assumed that it would take about 10 years to accomplish. This is about an 11 percent increase each year to reach the planned level.

Evaluation: By FY 97, the objective of having restrictions on approximately 57 percent of the Forest's roads (Forest Plan p. II-10) was achieved. By 2002 the percentage of existing roads in either yearlong of seasonally restricted status has reached 63 percent. In 2004 the percentage is stable at 63%. Table L-1-1 shows the progression. The roads in restricted status are both yearlong and seasonal restrictions. The percentage of roads in restricted status is 6 percent greater than estimated, and the total amount of unrestricted road access is 1,585 miles less than was estimated in the 1987 Forest Plan. This is partly a result of the fact that new road construction was less than anticipated due to reductions in the timber sale program. Road restrictions have been placed on previously existing unrestricted roads (which were not anticipated for a significant level of restrictions in the Forest Plan) and on newly constructed roads. The reasons for these unanticipated restrictions include additional wildlife habitat security measures, to decrease potential sedimentation, and to improve hydrological conditions. Table L-1-1 shows the total miles of road increasing by 494 miles between 1997 and 2002 (a 7 percent increase). Only 13.8 miles are from actual new road construction. The balance results from a more thorough accounting of previously un-inventoried roads.

The trend over the last four years is that the number of roads that restrict motor vehicle use, either yearlong or seasonally, has started to level off. This is an indication that the Forest is approaching the necessary level of access management to achieve wildlife and watershed objectives.

Recommended Actions: Continue to monitor the mileage of roads restricted and the reasons for the restrictions.

Table L-1-1 **Forest Roads Access Restrictions**

FY	Total Miles of Road	Total Miles of Restricted Access*	% of Total Roads Restricted	Total Miles of Unrestricted Access	Difference in Miles of Unrestricted Access from FY 87
87	6,200	1,669	27%	4,530	0
92	7,149	3,784	53%	3,365	(1,165)
97	7,460	4,275	57%	3,185	(1,345)
02	7,954	4,982	63%	2,934	(1,596)
04	7,916	4,971	63%	2,945	(1,585)

Data Source: Infra / Travel Routes / Linear Events 5/11/2004

*National Forest System roads only, where motor vehicle use is restricted either yearlong or seasonally.

FACILITIES: Road Density; Monitoring Item L-2

ACTION OR EFFECT TO BE MEASURED:	Determine if the road densities predicted in the Plan are still valid.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Any increase in road density over that predicted in the Forest Plan.

Purpose: This monitoring item was established because there was a strong public concern that the amount of existing and planned roads was too numerous and that the cost to other resources (soil, water, wildlife, roadless recreation and economics) was too high. The Forest Plan requires that this item be reported every five years. This item was last published in September of 2003.The expected accuracy and reliability of the information is high.

Background: The monitoring item was designed to test the assumption of road density used in the FORPLAN computer model. This model calculated the total road mileage needed to access all the suitable timberland. The maximum road densities projected in FORPLAN ranged from 4.4 to 5.8 miles per square mile depending on the steepness of the terrain and the logging system used. These road densities were calculated from previous experience on the Forest during the 1970s. Also, a Forest Goal was established to minimize the number of roads needed to manage the Forest (see Forest Plan, page II-1). As a result, it was anticipated that actual road densities would be less than or equal to the projected maximum.

Results: During the first 5 years of Forest Plan monitoring, the only way to measure road density was based on sample measurements made by Ranger Districts during project planning. This method is inherently incomplete, since only a small part of the Forest is sampled. In the FY 92 Monitoring Report, the road density for suitable lands was estimated to be 3.2 miles of road per square mile. During the next 10 years of Plan monitoring, the roads and management area information for the Forest's Geographic Information System (GIS) was completed, and it became possible to obtain an actual measurement of road density rather than a sample. In FY 97 the calculation for road density on suitable timberlands was 3.53 miles per square mile. As of FY 2002, this calculation showed that the road density for suitable lands is 3.34 miles per square mile. As of FY 2004, this calculation showed that the road density for suitable lands is 3.44 miles per square mile. This increase in density is the result of the decrease in the total number of acres of suitable timberlands (approx. 8,000 fewer acres) and the increase in total number of miles of roads (approx.154 miles) due to a more complete inventory of existing roads.

Evaluation: The actual road density on suitable timberlands has been measured to be 3.44 miles per square mile, which is significantly less than the road density that is necessary to fully access all the suitable timberlands on the Forest. Given the decreased harvest levels of the Forest's current program in comparison to its program of 10 years ago, it is unlikely that there will be any significant increase in road density in the near term. In January of 2001 a new Roads Policy was issued that stated, "… instead of focusing on new road construction, emphasis will be given to reconstructing, and maintaining classified roads while decommissioning unnecessary classified and unclassified roads."

Recommended Actions: The Forest Plan goal is to construct the minimum number of roads to permit efficient removal of timber and mineral resources. This is continuing to occur; therefore no change is needed at this time.

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