Idaho Panhandle National Forests

FOREST PLAN
MONITORING AND EVALUATION REPORTS
2007, 2008 and 2009

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I. INTRODUCTION

The monitoring and evaluation process compares the end results that have been achieved to the projections made in the Forest Plan. Costs, outputs, and environmental effects, both experienced and projected, are considered. This process comprises a management control system, which provides information to the decision maker and the public on the progress of implementing the Forest Plan. Monitoring is designed to gather data necessary for the evaluation. During evaluation, data provided through the monitoring effort are analyzed, interpreted, and then used to determine if the implementation of the Forest Plan is within the bounds of the plan. Annual reports have been prepared from fiscal year 1988 through fiscal year 2009.

The Forest Plan identifies 21 monitoring and evaluation items. (See Appendix A for requirements.) It requires that 11 items be reported every year, one be reported every 2 years, and 9 others be reported every 5 years. All 21 items were reported in fiscal year 2003; and are again included in the fiscal year 2008 portion of the report:

A-1	Outputs of Goods and Services
A-2	Effects on and of National Forest Management
B-1	Harvested Land Restocked within Five Years
B-2	Timberland Suitability
B-3	Validate Maximum Size Limits for Harvest Areas
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I-1	Minerals
J-1	Land Ownership Adjustments

K-1 Prescriptions and Effects on Land Productivity

This report also includes information on a number of topics not required by the Forest Plan but important to forest management. For this report, these subjects include ecosystem restoration, old growth, and snags.

II. SUMMARY OF FINDINGS

A few of the key findings are briefly summarized below. More details can be found in the section that discusses the desired monitoring item in the body of the report.

- The forest plan established an average annual allowable sale quantity (ASQ) of 280 million board feet (MMBF) for the first decade after the plan was adopted. This was to occur on an estimated 18,688 acres annually. The plan specified that the ASQ could increase to 350 MMBF in the second decade. The actual amount of timber sold has been much lower than anticipated in the plan. In fiscal year 2007, 2008, and 2009 respectively: 63.1 MMBF, 55 MMBF, and 51.5 MMBF was offered; 34.4 MMBF, 49.6 MMBF, and 51.5 MMBF was sold; and 28.1 MMBF, 24.4 MMBF, and 17.7 MMBF was harvested. The number of acres sold for harvest in 2007, 2008, and 2009 was 3,054, 5,048, and 3,814. Payments to counties in fiscal year 2007, 2008, and 2009 totaled $8,624,647, $8,725,451, 7,843,806, respectively.

- The woodland caribou population remains stable when compared to survey estimates from previous years. Forty-four, 46, and 46 caribou were documented from the winter census in 2007, 2008 and 2009; respectively. For fiscal years 2007, 2008, and 2009, seven of fifteen Grizzly Bear Management Units met core and road density standards.

- Forest monitoring of Best Management Practices (BMP) indicates that in most cases they continue to function as expected and are satisfying their intended purpose.

- Opportunities to use funds from a variety of sources to restore ecosystems continue to be sought after. Examples of forest ecosystem restoration work for fiscal years 2007, 2008 and 2009 are listed below. (Note: See the Ecosystem Restoration section of this report for more details.)
    - Planting approximately 749,519 rust resistant white pine seedlings.
    - Planting approximately 4,785 acres of white pine, larch and ponderosa pine. These are species that are in short supply on the IPNF.
    - Reducing forest density by thinning 7,882 acres, most of this released larch, white pine and ponderosa pine.
    - Pruning 5,772 acres of white pine saplings. This reduces mortality from white pine blister rust.
    - Integrated weed treatments were accomplished on 9,124 acres.
    - There were 18,246 acres of harvest related fuel reduction and 27,386 acres of natural fuel reduction.
    - Improving 758 acres of soil and water resources.
    - Decommissioning 3.4 miles, 21.1 miles, and 60.9 miles of road.

- Forest plan standards call for us to maintain 231,000 acres of old growth (10 percent of our forested acres). For 2009, the estimated percentage of old growth on all forested lands on the IPNF, using Forest Inventory and Analysis (FIA) data, is 11.8% with a 90% confidence interval of 9.6% to 14%.

Table 1 is a quantitative summary of some of the forest's other accomplishments for fiscal years 2007, 2008, and 2009.

III. MONITORING ITEMS

This section contains the monitoring and evaluation results for fiscal years 2007, 2008, and 2009 for some of the monitoring items discussed.

Forest Plan Monitoring Item A-1: Outputs of Goods and Services

Table 1. Quantitative Estimates of Performance Outputs and Services

Outputs and Services	Quantitative Estimates	Quantitative Estimates	Quantitative Estimates
	2007	2008	2009
Budget	$28,692,000	$31,068,766	23,337,000
Total number of employees	415 (permanent and temporary)	376 (permanent and temporary)	379 (permanent and temporary)
Volume of timber offered	63.1 MMBF	55 MMBF	51.5 MMBF
Volume of timber sold	34.4 MMBF	49.6 MMBF	51.5 MMBF
Volume of timber harvested	28.1 MMBF	24.4 MMBF	17.7 MMBF
Total acres of timber sold	3,054 acres	5,048 acres	3,814 acres
Payments to counties	$8,624,647.15	$8,725,451.00	$7,843,806.64
Total reforestation completed*	2,127 acres	1,455 acres	2,623 acres
Total number of seedlings planted	531,620	438,502	844,584
Timber stand improvement completed (precommercial thinning and release)	1,980 acres	3,545 acres	2,357 acres
Pruning of white pine	2,158 acres	1,404 acres	2,210 acres
Soil and water improvement completed	129 acres	345 acres	284 acres
Roads maintained	1,942 miles	1,797 miles	1,472 miles
Roads constructed	4.9 miles	0 miles	2.1 miles
Roads reconstructed	53.1 miles	76.2 miles	110.9 miles
Roads decommissioned	3.4 miles	21.1 miles	60.9 miles
Trails constructed/reconstructed	0/7 miles	0/53 miles	0/45 miles
Trails maintained to standard	661 miles	863 miles	960 miles
Number of wildfires	110 fires	102 fires	125 fires
Acres burned by wildfire**	226 acres	132 acres	431 acres
Harvest related fuel treatment	7,490 acres	6,032 acres	4,724 acres
Hazardous fuels reduction	13,356 acres	9,290 acres	4,740 acres
Wildlife habitat enhanced	1,560 acres	1,554 acres	6,706 acres
Noxious weeds treated	3,485 acres	2,742 acres	2,897 acres
Abandoned/inactive mines	6 sites addressed	10 sites addressed	14 sites addressed

*Includes both planted and natural regeneration that was established in 2007, 2008, and 2009.

Forest Plan Monitoring Item A-2: Effects on and of National Forest Management

The first part of this monitoring item "Effects of Other Government Agencies on the Idaho Panhandle National Forests (IPNF)" has proven to be very difficult to quantitatively measure and for this reason has been reported infrequently. The second part of this item "The Effects of National Forest Management on Adjacent Land and Communities" has been reported most frequently using data on payments to counties. In this year's report information is presented for two areas: payments to counties and Forest Service employment. Both of these economically impact adjacent communities.

A. Payments to Counties

Background

In the past, the Forest Service paid out 25 percent of its annual revenues collected from timber sales, grazing, recreation, minerals, and land uses to states in which national forest lands were located. The amount a county received depended upon the amount of these activities that occurred in the county and the amount of national forest land within the county.

Under that system the major source of revenue on the Idaho Panhandle National Forests was timber sales. Payments to counties depended on the amount of timber that was harvested during the past year. The following table compares payments to counties with harvested timber volume.

Monitoring Data

Table 2. Payments to Counties with Harvested Timber Volume

Fiscal Year	Payments (MM$)	Volume (MMBF)
1991	5.4	232
1992	7.4	235
1993	6.0	134
1994	6.4	117
1995	5.8	87
1996	6.0	81
1997	3.9	57
1998	4.8	85
1999	3.1	75
2000	4.0	90
2001	8.0	51
2002	8.1	41
2003	8.1	53
2004	8.2	40
2005	8.5	37
2006	8.6	16
2007	8.6	28
2008	8.7	24
2009	7.8	17

Table 3. Distribution of Payments to Counties, Fiscal Year 1991-2000

County	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00
Benewah	65,777	71,747	78,926	60,217	60,294	56,152	45,610	31,051	9,243	17,227
Bonner	830,257	1,229,474	823,120	929,071	966,681	880,735	491,055	761,712	732,841	953,000
Boundary	895,881	1,330,307	885,433	1,003,376	1,060,285	954,333	529,089	823,583	816,527	1,067,089
Clearwater	6,869	7,492	8,242	7,130	6,929	6,452	5,257	3,579	1,065	2,035
Kootenai	645,371	905,926	689,921	826,323	619,058	800,937	492,483	696,058	363,068	393,721
Latah	31,787	34,672	38,141	32,853	31,908	29,716	24,212	16,483	4,906	9,373
Lincoln, MT	41,692	61,909	41,192	46,624	49,267	44,186	24,498	38,160	37,707	49,278
Pend Oreille, WA	223,327	333,409	221,838	251,092	265,328	237,964	131,936	205,511	203,071	265,386
Sanders, MT	11,879	17,640	11,737	13,285	14,038	12,590	6,980	10,873	10,744	14,041
Shoshone	2,783,740	3,423,283	3,180,350	3,213,263	2,758,792	3,011,686	2,148,684	2,171,037	943,124	1,220,016
Total	**5,536,580**	**7,415,859**	**5,978,900**	**6,383,234**	**5,832,580**	**6,034,751**	**3,899,804**	**4,758,048**	**3,122,296**	**3,991,166**

Evaluation: Table 3 depicts how receipts have been distributed to counties for the years 1991 to 2000. There are seven counties in Idaho, two in Montana, and one in Washington that received payments from IPNF activities. The base for the 25 percent payment to states by the IPNFs for fiscal year 2000 was collection of $15,248,318.73. Timber volume harvested in FY 2000 was 90 million board feet, which increased from 58 million board feet in fiscal year 1999. Receipts to counties in fiscal year 2000 totaled $3,991,166, an increase of $868,870 from fiscal year 1999.

The receipts to counties from 1991 to 2000 varied from a high of $7.4 million to a low of $3.1 million. The loss in revenue to the counties for roads and school funds was not as proportional as the fall down in timber volumes from a high of 280 million board feet to a low of 57 million board feet because of the increase in the value of the timber during this same period.

Table 4. Distribution of Payments to Five Northern Idaho Counties, Fiscal Year 2001

County	Total Disbursement	% Split Title II/Title III	Title II (Forest Projects)	Title III (County)
Benewah	$115,381.00	50/50	$8,653.55	$8,653.55
Bonner	$1,390,140.00	10/5	$139,013.98	$69,506.98
Boundary	$1,388,722.00	50/50	$104,154.11	$104,154.11
Kootenai	$1,011,683.00	3/12	$30,350.49	$121,401.96
Shoshone	$4,079,756.00	3/12	$122,392.67	$489,570.72
Total	**$7,985,683.00**		**$404,564.80**	**$793,287.32**

Table 4 shows the payments made for fiscal year 2001 to the five Northern Idaho counties in accordance with the Secure Rural Schools and Community Self-Determination Act of 2000 (Public Law 106-393). Under this legislation, payment amounts are determined based upon each county's share of the average of the three highest 25 percent fund payments made to the state during the base period (fiscal years 1986 through 1999). This act also provides that 15 to 20 percent of the total disbursement to each county can be used to finance either Forest Service (Title II) or County (Title III) projects, as determined by each county. Depicted in this table is the total disbursement to each county, as well as the percentages and amounts distributed between Title II and Title III funded projects. Tables 5, 6, 7, 8, 9, 10, 11, and 12 which follow show the same information for fiscal years 2002 through 2009.

Table 5. Distribution of Payments to Five Northern Idaho Counties, Fiscal Year 2002

County	Total Disbursement	% Split Title II/Title III	Title II (Forest Projects)	Title III (County)
Benewah	$116,303.73	7.5/7.5	$8,722.78	$8,722.78
Bonner	$1,401,260.96	10/5	$140,126.08	$70,063.03
Boundary	$1,399,831.45	12.75/2.25	$178,478.51	$31,496.20
Kootenai	$1,026,776,54	15/0	$159,966.47	$0
Shoshone	$4,112,394.21	15/0	$616,859.13	$0
Total	**$8,056,566.89**		**$1,104,152.97**	**$110,282.01**

Table 6. Distribution of Payments to Five Northern Idaho Counties, Fiscal Year 2003

County	Total Disbursement	% Split Title II/Title III	Title II (Forest Projects)	Title III (County)
Benewah	$117,699.00	7.5/7.5	$8,827.45	$8,827.45
Bonner	$1,418,076.00	15/0	$212,711.41	0
Boundary	$1,416,630.00	12.75/2.25	$180,620.25	$31,874.16
Kootenai	$1,032,014.00	15/0	$154,802.07	$0
Shoshone	$4,161,743.00	15/0	$624,261.43	$0
Total	**$8,146,162.00**		**$1,181,222.61**	**$40,701.61**

Table 7. Distribution of Payments to Five Northern Idaho Counties, Fiscal Year 2004

County	Total Disbursement	% Split Title II/Title III	Title II (Forest Projects)	Title III (County)
Benewah	$119,229.00	7.5/7.5	$8,942.21	$8,942.21
Bonner	$1,436,511.00	15/0	$215,476.66	0
Boundary	$1,435,045.00	12.75/2.25	$182,968.31	$32,288.52
Kootenai	$1,045,430.00	15/0	$156,814.50	$0
Shoshone	$4,215,846.00	15/0	$632,376.83	$0
Total	**$8,252,061.00**		**$1,196,578.51**	**$41,230.73**

Table 8. Distribution of Payments to Five Northern Idaho Counties, Fiscal Year 2005

County	Total Disbursement	% Split Title II/Title III	Title II (Forest Projects)	Title III (County)
Benewah	$121,971.76	15/0	$18,295.76	$0
Bonner	$1,357,768.54	15/0	$203,665.28	$0
Boundary	$1,436,432.47	12.75/2.25	$183,145.14	$32,319.73
Kootenai	$1,069,474.95	15/0	$160,421.24	$0
Shoshone	$4,140,330.31	14/1	$579,646.25	$41,403.30
Total	**$8,125,978.03**		**$1,145,173.67**	**$73,723.03**

Table 9. Distribution of Payments to Five Northern Idaho Counties, Fiscal Year 2006

County	Total Disbursement	% Split Title II/Title III	Title II (Forest Projects)	Title III (County)
Benewah	$123,191.48	15/0	$18,478.72	$0
Bonner	$1,371,346.23	15/0	$205,701.94	$0
Boundary	$1,450,796.79	12.75/2.25	$184,976.59	$32,642.93
Kootenai	$1,080,169.70	15/0	$162,025.45	$0
Shoshone	$4,181,733.61	14.25/0.75	$595,897.04	$31,363.00
Total	**$8,207,237.81**		**$1,167,079.74**	**$64,005.93**

Table 10. Distribution of Payments to Five Northern Idaho Counties, Fiscal Year 2007

County	Total Disbursement	% Split Title II/Title III	Title II (Forest Projects)	Title III (County)
Benewah	$122,938.66	15/0	$18,478.72	$0
Bonner	$1,368,531.86	15/0	$198,678.09	$0
Boundary	$1,447,819.37	12.75/2.25	$184,595.97	$32,575.94
Kootenai	$1,077,952.90	0/15	$0	$161,692.93
Shoshone	$4,173,456.56	14.25/0.75	$594,717.56	$31,300.92.00
Total	**$8,190,699.35**		**$996,470.34**	**$225,569.79**

Table 11. Distribution of Payments to Five Northern Idaho Counties, Fiscal Year 2008

County	Total Disbursement	% Split Title II/Title III	Title II (Forest Projects)	Title III (County)
Benewah	$118,313.00	0/15	$0	$17,747
Bonner	$1,262,235.00	15/0	$183,245.00	$0
Boundary	$2,561,640.00	15/0	$384,246.00	$0
Kootenai	$778,346.00	15/0	$116,752.00	$0
Shoshone	$3,830,536.00	12.5/2.5	$478,817.00	$95,764.00
Total	**$8,551,070.00**		**$1,163,060.00**	**$113,511.00**

Table 12. Distribution of Payments to Five Northern Idaho Counties, Fiscal Year 2009

County	Total Disbursement	% Split Title II/Title III	Title II (Forest Projects)	Title III (County)
Benewah	$98,712.00	0/15	$0	$14,806
Bonner	$1,085,274.00	15/0	$162,790.00	$0
Boundary	$2,290,170.00	15/0	$345,525.00	$0
Kootenai	$693,703.00	11.25/3.75	$78,041.00	$383.00
Shoshone	$3,295,634.00	12.5/2.5	$411,954.00	$82,390.00
Total	**$7,463,493.00**		**$998,310.00**	**$97,579.00**

B. Forest Service Employment

Background

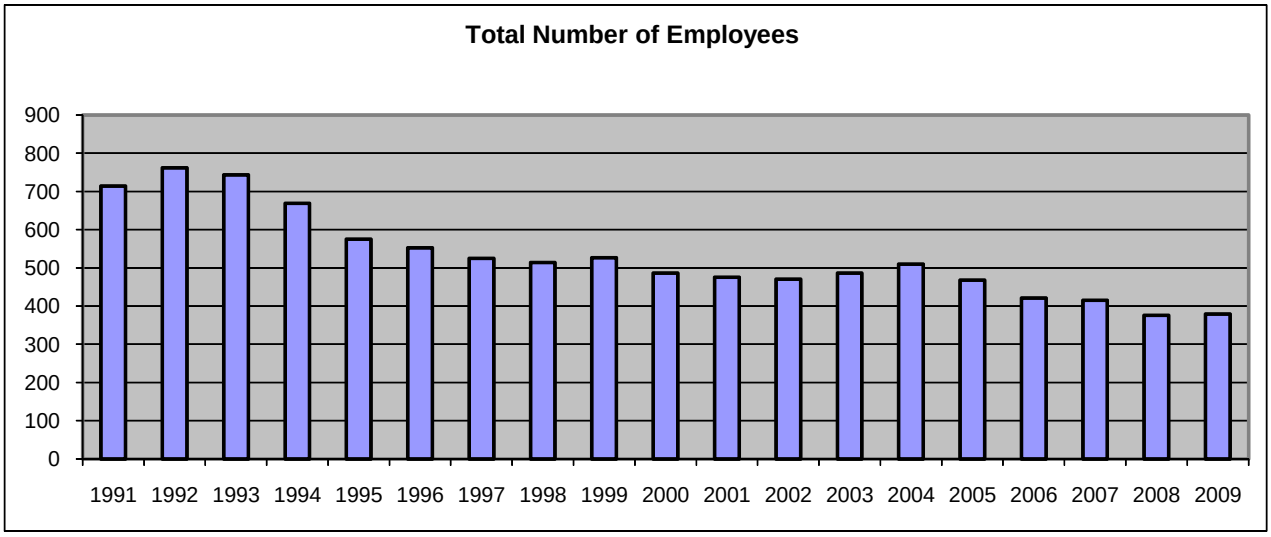
Employees of the Idaho Panhandle National Forests help to stimulate the economy by actively participating in their local economies. As Forest Service employment rates fluctuate each year, the amount of money contributed to the local economy also tends to fluctuate.

Monitoring Data

Table 13. Total Number of Employees

Fiscal Year	Employees
1991	714
1992	762
1993	743
1994	669
1995	575
1996	552
1997	525
1998	514
1999	526
2000	486
2001	475
2002	470
2003	486
2004	510
2005	468
2006	421
2007	415
2008	376
2009	379

Figure 1. Total Number of Employees



Evaluation: Table 13 and Figure 1 show how the forest workforce has changed from 1991 to 2009. In fiscal year 1992, employment was at a high of 762 permanent and temporary employees and decreased to 379 at the end of fiscal year 2009. This decrease in employment has had a greater effect on the smaller communities such as Bonners Ferry, Wallace and St. Maries than on larger communities such as Coeur d'Alene and Sandpoint where significant population growth has occurred.

Forest Plan Monitoring Item B-1: Harvested Lands Restocked in Five Years

The National Forest Management Act specifies that Forest Plans should: "insure that timber will be harvested from National Forest System lands only where . . . there is assurance that such lands can be adequately restocked within five years after harvest." To comply with this provision, the 1987 IPNF Forest Plan identified lands suitable for timber harvest that could meet this provision. To monitor compliance, item B-1 in the Forest Plan Monitoring Requirements specifies that we will report every 5 years on the percent of harvested lands restocked within five years. The identified monitoring threshold for further action is: "10% of harvested lands not adequately stocked 5 years following site preparation."

The last time we reported on 5 year restocking success was in our 2003 Monitoring Report. At that time the IPNF reported on 16 years of data with a five year reforestation success rate that averaged 88%. At that time the average had been pulled down by recent drought and site preparation problems in the preceding two years. Prior to those two years, the restocking success had averaged 90% or higher.

The next five year report on restocking success is due as part of the 2008 monitoring report. This document includes 2008 report information.

In previous years, the Timber Stand Management Record System (TSMRS) – also known as the Timber Stand Data Base – was used to report on restocking success. TSMRS was a Regional database used to track all Region 1 Forest Service activities. There were associated TSMRS reports to track five year restocking success. Since our last report, the entire Forest Service has moved to tracking activities with the new "Forest Service Activity Tracking System" (FACTS). The activity tracking portion of TSMRS is no longer operational. However, the FACTS database is still undergoing some design modifications to appropriately accommodate the large variety of activities that the Forest Service carries out across the U.S. At this time, FACTS does not yet have a functioning reporting tool that allows us to track five year restocking success in the same manner as we did with TSMRS. However, we are able to report on restocking success using the following information from FACTS.

Similar to TSMRS, FACTS is designed to give the percentage of stands in each regeneration status category. There are three possible regeneration status categories in the database: failed, progressing, and certified. Failed means that the stand is not expected to meet stocking standards for certification within five years without additional future treatment. Progressing means that the stand is on a trajectory that meets stocking standards, but that the crop trees are not yet old enough, large enough, or growing rapidly enough that the stand can be removed from regeneration status. Progressing stands are not expected to need any further major treatment to become certified. Certified stands fully meet the stocking standards, and the trees are large enough, old enough, and growing rapidly enough that the stand can be considered fully established and removed from regeneration status. To be considered either progressing or certified, a stand must be adequately stocked according to the prescribed stocking objectives for that site.

In January of 2010 we were able to run a FACTS-based report that shows what percent of planted stands listed in the report are currently either certified or satisfactorily progressing. This is the best information we have at this time. The following table presents data from that report.

Based on the data in this report, it appears that 98% of the stands planted in the last 21 years are currently satisfactorily stocked. For the five years since we last reported on restocking, the average satisfactory stocking is 94 %. And this five year period includes several unusually droughty summers. Based on this, we conclude that that the IPNFs is capable of restocking harvested lands within five years. In future Forest Plan Monitoring Reports, we will report more specific restocking data as it becomes available.

Table 14. Planted Acres Currently Satisfactorily Stocked

Harvest Year	Currently Progressing or Certified (% acres)
1983	100%
1984	100%
1985	100%
1986	100%
1987	100%
1988	99%
1989	100%
1990	100%
1991	100%
1992	100%
1993	100%
1994	100%
1995	99%
1996	100%
1997	100%
1998	100%
1999	98%
2000	98%
2001	92%
2002	97%
2003	83%
21 year average	98%

Forest Plan Monitoring Item B-2: Timberland Suitability

During the development of the Forest Plan, a determination was made on what lands were suitable for timber management. That determination was often based on broad-scale inventory data without the benefit of field verification. In the Forest Plan (Appendix M), it was acknowledged that during the planning for site specific timber management projects, on-site inspections might identify needs and/or opportunities to further refine the suitability determinations. Therefore, any project specific recommended changes to timberland suitability (suitable land that was actually unsuitable, or unsuitable land that was actually suitable) were to be noted. The monitoring threshold that was established in the Forest Plan was a 10 percent change in the 1,584,163 acres of timberland classed as physically suitable for timber production (a 158,416 acre change).

The following table contains a summary of the changes to timberland suitability that were recommended during the period of 2004 through 2008. The total of timberland suitability changes in the 2004 – 2008 reporting period was 1,843 aces. These total changed acres are only 0.1% of the total suitable acres. The 10% threshold has not been reached.

Suitable timberland was defined as land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions; for which there is reasonable assurance that such lands can be adequately restocked and for which there is management direction that indicates that timber production is an appropriate use of that area.

Unsuitable timberland was not selected for timber production during the development of the Forest Plan due to (1) the multiple-use objectives for the alternative preclude timber production, (2) other management objectives for the alternative limit timber production activities to the point where management requirements set forth in 36 CFR 219.27 cannot be met and (3) the lands are not cost-efficient over the planning horizon in meeting forest objectives that include timber production. Land not appropriate for timber production shall be designated as unsuitable in the Forest Plan.

Table 15. Recommended Suitability Changes, 2004-2008

Recommended Change	Acres	Project Name
From unsuitable to suitable	181	Ruby Cooper
From unsuitable to suitable	61	West Gold
From unsuitable to suitable	741	Mission Brush
From unsuitable to suitable	149	South Grouse
From unsuitable to suitable	412	Myrtle HFRA
From unsuitable to suitable	91	Bussel 484
From unsuitable to suitable	208	Tumbledown
Total of Changes	**1,843**	

Forest Plan Monitoring Item B-3: Validate Maximum Size Limits for Harvest Areas

The Forest Plan stated that openings created by even-aged silviculture were generally to be limited to 40 acres, and that "creation of larger openings must conform to current Regional guidelines regarding public notification, environmental analysis and approval." The Plan set a monitoring threshold to initiate further action when 10 percent or more of the openings exceeded 40 acres in size over the five year reporting period.

The following table presents both the percent of openings, as well as the acres of openings, that were sold during the 5 year monitoring period that will be created through the use of even-aged silviculture (clearcut, seedtree, or shelterwood harvests). All of the openings that exceeded 40 acres did conform to the current guidelines regarding public notification, environmental analysis and approval, and were approved by the Regional Forester. As indicated in the following table, 8.3 percent of the total number of openings will exceed the 40 acre size. This level is below the threshold that was established. The following discussion focuses on the primary reasons why the 40 acre size limit was exceeded.

Since the Forest Plan was approved in 1987, there has been an increase in the understanding and awareness of how the landscape pattern of a forest (e.g., arrangement, size and juxtaposition of different structure/age classes of timber stands) can influence such things as wildlife habitat and dispersal (e.g., fragmentation of habitat, travel corridors/linkages areas), plant habitat and dispersal, disturbance size and spread (e.g., wildfires, insects and pathogens), and esthetic or scenery values. A better understanding of how forest pattern affects these resources and disturbance agents has led to a gradual shift away from creating small, relatively uniform (mostly clearcut) openings across the landscape through even-aged silviculture, to more strategically planning the location, size and type of openings so that they will not tend to fragment the landscape, and may have a greater beneficial impact in affecting potential wildfire behavior or potential insect/disease agents. In addition, since the Forest Plan was adopted, there has been more awareness of how the arrangement of harvest openings on the landscape can negatively affect aquatic resources (e.g., through sediment inputs, stream crossings, and riparian vegetation) because of the road system that might be necessary to access rather small, scattered harvest openings versus fewer, larger openings. More discussion of historic and present forest patterns on the IPNF can be found in the following documents that have been prepared in anticipation of revising the Forest Plan: Analysis of the Management Situation for Revision of the Kootenai and Idaho Panhandle Forest Plans (AMS, 2003), the Comprehensive Evaluation Report (CER) and the various Geographical Assessments that were conducted for the IPNF.

For all of the reasons that were summarized above, a greater percentage of the openings that are being proposed on the Forest are larger than 40 acres in size. However, the type of even-aged silvicultural system being used has changed since the Forest Plan was adopted. In the Forest Plan, it was anticipated that almost all of the timber harvesting that would be done would use the even-aged silviculture – 97%. In addition, the plan anticipated that approximately 90% of the even-aged harvesting would be conducted using the clear cut method. However, that has shifted dramatically. For example, during the 5 year reporting period, only approximately 13 percent of the even-aged silviculture was clearcuts (730 acres) while the remaining 87 percent were seed tree or shelterwood type treatments, and commonly with reserve trees to be maintained on the site. None of the openings that would be created by clearcutting exceed the 40 acre size.

Lastly, compared to what the Forest Plan anticipated, there has been a shift in the "mix" of even-aged regeneration versus intermediate and uneven-aged harvest treatments. The Forest Plan anticipated that approximately 94% of all the harvesting would entail even-aged treatments and 6% intermediate and

uneven-aged type treatments. However, during the last 5 year reporting period, the mix was approximately 29% even-aged treatments and 71% intermediate and uneven-aged management treatments.

Table 16. Acres and Number of Units sold that will create openings through the use of even-aged silviculture

Years	Total acres sold that will create openings through even-aged silviculture	Acres sold that will create openings larger than 40 acres through even-aged silviculture greater (and percent of total)	Total number of Units sold that will create openings through even-aged silviculture	Number of Units sold that will create openings through even-aged silviculture greater than 40 acres (and percent of total)
2004-2008	5,634	1,859 (33%)	303	25 (8.3%)

Forest Plan Monitoring Item B-4: Insect and Disease Hazard

The purpose of this monitoring item is to determine insect and disease impacts. Aerial surveys, ground surveys, timber stand inventories, and actual insect trapping are all utilized to determine the extent of current pest problems and to predict future insect and disease impacts. The threshold is when insect and disease conditions are predicted to reach epidemic or serious levels on five percent of the Forest.

The following discussion includes a short summary of information for 2009 and trends during the last six years. This is followed by a discussion of the broad changes that have been noticed since the Forest Plan was adopted in 1987.

2009 Insect and Diseases Levels and Trends

Forest Diseases: Root diseases and the white pine blister rust are the dominant diseases affecting the Idaho Panhandle National Forests. Although the acreages associated with these diseases do not change dramatically from year to year, over a period of time, the cumulative impact on the Forest from such things as tree mortality, loss of productivity and effects on forest composition are substantial. About two million acres of north Idaho are infected with some level of root disease and blister rust is found throughout the range of white pine. The aerial survey conducted in 2009 identified approximately 21,500 acres on the Forest that had obvious white pine mortality from blister rust.

Forest Insects: While areas with root diseases or blister rust do not change dramatically from year to year, that is not the case with insect activity, which can change rapidly. Most of the acres infested with insects on the IPNFs in 2009 were identified during the annual aerial survey. The aerial detection map for the Forest indicates that there is a significant amount of mortality occurring in lodgepole pine from mountain pine beetles (MPB) - approximately 190,100 acres. Much of this MPB caused mortality is located in the Selkirk and Purcell Mountains on the Bonners Ferry Ranger District, in the Bitterroot Mountains on the St. Joe Ranger District, and in the upper portion of the Coeur d'Alene watershed on the Coeur d'Alene River Ranger District. Although over 190,000 acres of lodgepole pine forests are being affected by this bark beetle on the IPNFs, the scope of this epidemic is much larger than just the IPNFs. This insect is affecting forests across most of the Northern Rockies as well as other regions in the western states. Over the last three years, aerial surveys have identified a dramatic increase in the level of MPB attacks in lodgepole pine.

The aerial detection map indicates that the western spruce budworm is defoliating thousands of acres of forest on the IPNFs. Approximately 403,000 acres were mapped from the air as being impacted by this insect. Much of this activity is centered around the upper portion of the north fork of the Coeur d'Alene river on the Coeur d'Alene River Ranger District, but smaller amounts are occurring on the Sandpoint and St. Joe Ranger Districts. While the spruce budworm will probably not kill many trees, successive years of defoliation can certainly weaken the trees and predispose them to being killed by other mortality agents (e.g., root diseases or bark beetles). The level of spruce budworm defoliation has increased substantially during the last few years.

Other forest insects such as the balsam woolly adelgid, the Douglas-fir bark beetle and the fir engraver beetle, are killing trees in some areas of the Forest. However, the aerial detection map indicates that these insects are not affecting nearly as many acres on the Forest as are the MPB and spruce budworm.

If one adds up the forested acreage on the IPNF that was affected by the more significant insects and diseases agents that can be detected from the air, it amounts to approximately 640,000 acres for the year

2009. This is equivalent to more than 26% of the INPF. Lastly, because the root diseases are typically not identified during the aerial surveys, when the affects of those are considered, it would likely add up to much more than 26%.

1988 - 2009

What associated with insects and disease has changed since the Forest Plan was adopted in 1987?

Forest health continues to be a major issue on the Forest and impacts may be escalating do to major shifts in species composition, structure and climatic temperatures regimes. Tree mortality from insect and diseases has been relatively high and as a result, forest fuels have increased and the risk of fires has risen.

Douglas-fir beetle populations are no longer at epidemic levels as they were in the late 1990s and first few years of 2000. Rather, the population of mountain pine beetle is now at epidemic levels and is killing a lot of acres of lodgepole pine (and a smaller extent, ponderosa pine, white pine and whitebark pine). While white pine blister rust continues to cause mortality in white pine, the impact that this disease is having on whitebark pine trees is even a greater concern. Blister rust, combined with mountain pine beetle attacks and the impacts of fire exclusion, have cumulatively caused the loss of a large percentage of the whitebark pine on the Forest.

Treatments (either through harvesting or through the use of prescribed or wildfire) that are needed to reduce insect and disease hazards (by changing to less susceptible species or age classes) have been greatly reduced (specifically regeneration of tree species less susceptible to insect and disease) during the last decade or so due to reduced budgets and public concerns over how treatments may affect other resources.

What do we know now that we did not know in 1987?

First of all, in 1987 we did not fully appreciate the scope and scale of the role insects and diseases may play in driving forest conditions. This likely led to setting unrealistically low thresholds.

Second, the major change in forest composition and structure that has occurred in the past century has been documented and better quantified. As a result of changes in forest tree species composition, or changes to large homogeneous areas of older age classes (lodgepole pine) some areas of the forest now have insect and disease conditions that exceed the epidemic or 5% threshold. The amount of Idaho Panhandle National Forests forest area that is susceptible to insects increased significantly during recent decades. Due to the forest composition shifting towards tree species that are more susceptible to insect/diseases and droughts and fires, much more of the area is now at higher risks from these disturbance agents as well as potential climate change. Interior Columbia Basin Ecosystem Management Project modeling and Forest Health Assessments have shown that insect and disease drive succession in the absence of fire or management, and the result is further departure from more resilient historic forest conditions.

Recommendations:

- Recognize in the revised Forest Plan the important role of insects and diseases in forest ecosystem dynamics, and how critical forest tree species composition and structure are in influencing insect and pathogen levels.
- Treat forest composition, structure and pattern as a focus in the up-coming Forest Plan revision, and develop desired conditions for these elements that could lessen the potential detrimental impacts that these insects and diseases are having on the Forest.

- In the Forest Plan revision, emphasize the need to increase the use of unplanned ignitions (wildfires) to achieve desired forest conditions to lessen the insect and disease risk. Use openings created by wildfires as areas where blister rust resistant white pine and whitebark pine can be planted.
- Use Geographic Assessment (basin scale) information to identify locations where treatment is needed to reduce insect and disease susceptibility and improve forest conditions while also improving watershed conditions and wildlife habitat along with decreasing wildfire risk.
- Develop new monitoring approaches for insects and diseases that involve monitoring treated and non-treated lands for change in hazard and risk.
- Use multi-resource inventory, supplemented as needed, to monitor changes in root disease and bark beetle hazard and risk and evaluate the performance of blister rust resistant western white pine.
- Look for opportunities to do restoration treatment in whitebark pine in order to reverse its precipitous decline (which results from the combination of blister rust, mountain pine beetle, and fire suppression).

Forest Plan Monitoring Item B-5: Road Construction

The Forest Plan projected that 176 miles of new roads would be constructed each year and 97 miles would be reconstructed. The following table summarizes the number of miles of road construction and reconstruction that actually occurred from 1988 through 2009.

Table 17. Miles of Road Construction and Reconstruction, 1988 - 2009

Fiscal Year	Miles of Construction	Miles of Reconstruction
1988	103	233
1989	134	130
1990	83	140
1991	46	107
1992	65	109
1993	57	233
1994	2	43
1995	12	54
1996	1	41
1997	16	202
1998	12	276
1999	5	74
2000	2	373
2001	3	<1
2002	1	24
2003	4	64
2004	7	172
2005	0	838
2006	6	232
2007	5	53
2008	0	76
2009	2	111
Totals	**553**	**2,344**

This table shows that the projected amount of annual new road construction (176 miles) was much greater than the amount that actually occurred for every year from 1988 to 2009. For road reconstruction the amount projected (97 miles) was exceeded for 13 of the 22 years. Road reconstruction generally occurs on older roads and is necessary to bring them up to standards so they are drivable.

Forest Plan Monitoring Item B-6: Actual Sell Area and Volume

The purpose of this item is to monitor the actual amount of timber sold and the amount of acres associated with the volume sold.

Background

The allowable sale quantity (ASQ) is the quantity of timber that may be sold from the area of suitable land covered by the forest plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the "average annual allowable sale quantity".

The 1987 Idaho Panhandle National Forests' Forest Plan established an average annual allowable sale quantity of 280 million board feet (MMBF) for the first decade the plan was in effect. This was to occur on an estimated 18,688 acres annually. The forest plan stated that, depending on future conditions, the ASQ could increase to 350 million board feet a year for the second decade timber harvest level.

The forest plan identified a threshold of concern for ASQ when accomplishments fall below 75-percent of the desired volume and acres (below 210 MMBF and 14,016 acres).

Monitoring Data

Fiscal Years 2007, 2008, and 2009: For these fiscal years the Idaho Panhandle National Forests offered 169.6 million board feet of timber for sale. We sold 135.5 million board feet.

Fiscal Years 1991-2009: The following table depicts timber volumes offered and sold and sale acreages for the past 19 years. Figure 2 graphically presents trends in volumes offered and sold. Figure 3 shows total acres sold.

Table 18. Timber Volumes Offered and Sold (MMBF) and Total Acres Sold

Fiscal Year	*Volume Offered*	*Volume Sold*	*Total Acres Sold*
1991	201.6	163.2	13,989
1992	127.2	108.0	10,508
1993	109.4	124.3	13,939
1994	44.9	16.4	4,283
1995	64.1	37.5	8,437
1996	75.4	42.9	8,631
1997	79.3	108.3	10,914
1998	76.3	90.3	6,974
1999	63.4	30.3	8,751
2000	76.3	78.2	7,332
2001	65.8	40.7	5,626
2002	57.2	55.4	5,383
2003	42.2	22.1	3,282
2004	51.3	59.5	8,085
2005	40.6	23.4	3,081
2006	45.6	26	2,654
2007	63.1	34.4	3,054

Fiscal Year	*Volume Offered*	*Volume Sold*	*Total Acres Sold*
2008	55	49.6	5,048
2009	51.5	51.5	3,814

Figure 2. Timber Volume Offered (Series 1) and Sold (Series 2)

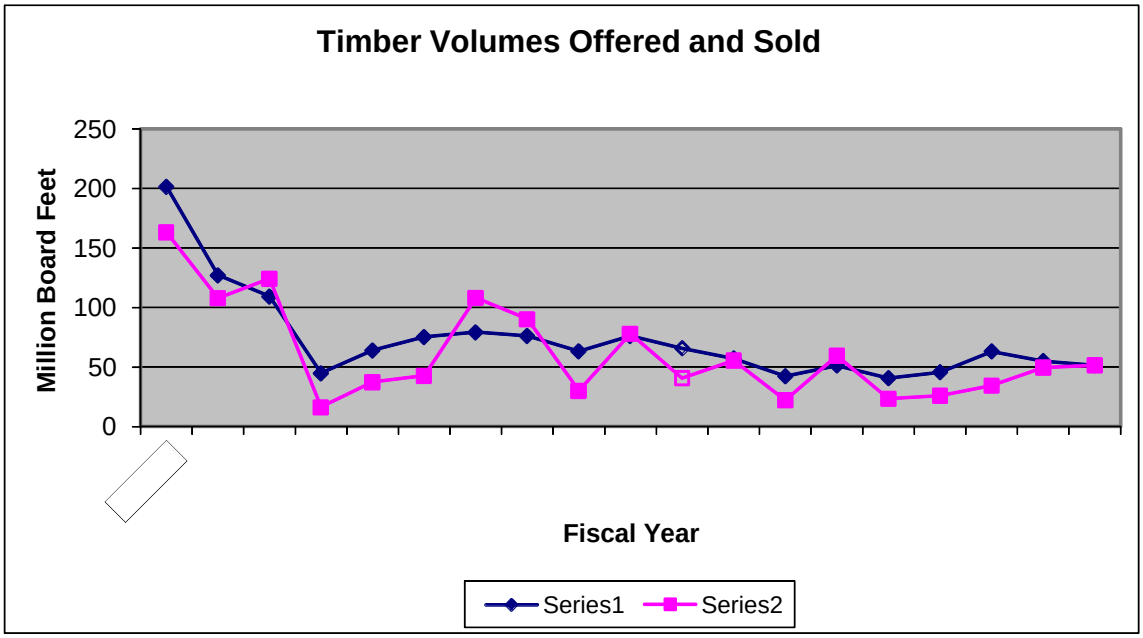
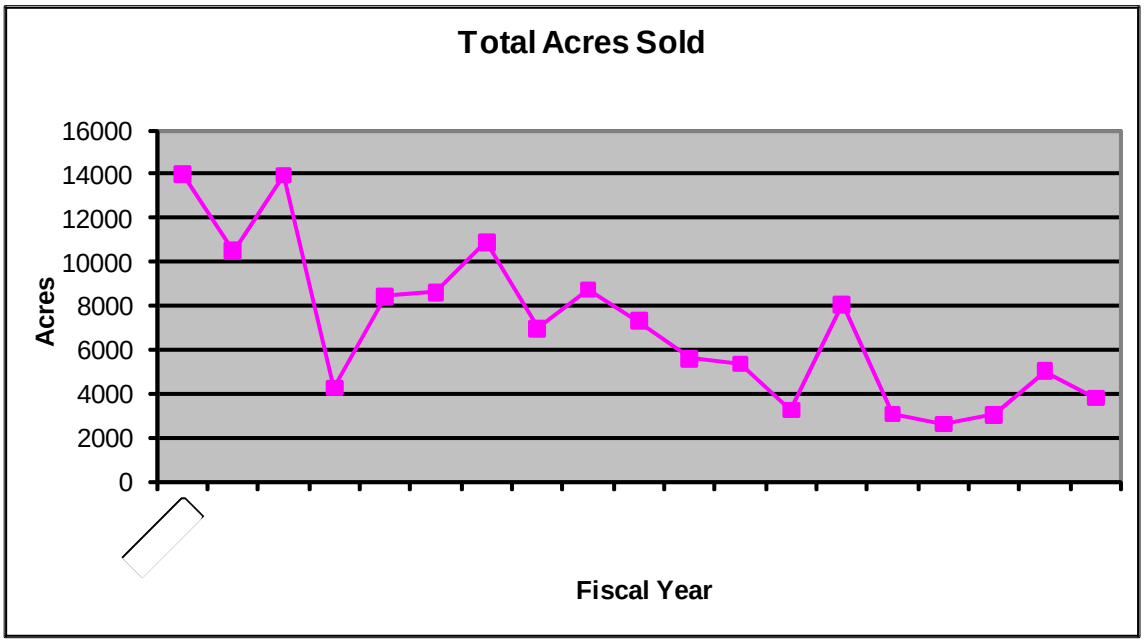


Figure 3. Total Acres Sold



Evaluation

For fiscal year 1988 through 1990 the volume of timber sold and acres sold exceeded the 75-percent threshold identified in the Plan. From fiscal year 1991 through 2009 volume sold and acres sold has fallen below the 75-percent threshold.

There are many reasons why the amount of timber harvested has dropped below the 75-percent threshold. Some of these include: movement away from clearcutting to partial cuts, which means harvesting produces less volume per acre, inventoried roadless areas have not been largely entered, protection of existing and replacement old growth, implementation of INFISH direction, downsizing of the Forest's workforce, budget changes, complexity of NEPA analysis and process, protection of Threatened and Endangered Species habitat, and water quality concerns.

The amount of timber to be harvested on the IPNFs is being addressed in forest plan revision.

Forest Plan Monitoring Item C-1: Visual Quality

Item C-1 evaluates forest management activities effectiveness meeting visual quality objectives. This report summarizes timber sale projects from fiscal years 2005 through 2009. Detailed project information can be obtained from the respective IPNFs District Offices.

The 1987 IPNFs Land Management Plan identifies all forest lands according to the public's concern for scenic quality (sensitivity levels) as well as diversity of natural features (variety classes). Visual Quality Objectives (VQOs) are the measurable objectives used for the visual management of these public lands. The Visual Management System (VMS) provides five goals or objectives for managing the visual resource. The five goals are: *Preservation, Retention, Partial Retention, Modification and Maximum Modification*. Except for *Preservation,* each of these terms describes a different degree of acceptable alteration of the landscape in terms of visual contrast with the surrounding natural landscape. *Preservation* allows ecological changes only.

How well we do meeting Forest Plan Visual Quality Objectives (VQOs) is a measure of how successfully we're keeping our promise to the public to perpetuate valued scenery to the standards set by the Forest Plan. Ever-increasing interest and concern for environmental quality has given impetus to improved techniques and approaches to land management processes and outcomes. The trend toward lighter-on-the-land harvest methods that emphasize healthy ecosystems over commodity output, coupled with more accurate assessment and planning tools, have, for the most part, provided better outcomes for the scenic resource. With social and forest environmental factors increasingly driving projects into visually prominent, sensitive areas, new, more complex challenges and goals have arisen. We continue to strive to meet or exceed the Adopted Visual Quality Objectives commensurate with other resource concerns.

Throughout this report, reference is made to *Scenic Integrity Objectives* (SIO). In the mid 1990s, the Forest Service published "*Landscape Aesthetics - A Handbook for Scenery Management"*. As of December, 1995 this handbook officially superseded "*Landscape Management - The Visual Management System"*. The Scenery Management System (SMS) is based on VMS principles. It uses six objectives to assess vegetative management activities, one more than the VMS. Unlike the VMS, the SMS takes into consideration humanly altered landscapes that have become accepted through time as positive attributes on the landscape. The IPNFs is prepared and ready to implement the SMS once the revised Forest Plan is adopted.

1) *PLANNING* for Meeting Visual Quality Objectives

Thirty–four timber sales with Retention (Very High SIO) and/or Partial Retention (High SIO) VQOs were advertised and/or sold fiscal years 2005 through 2009.

Timber Sales Advertised or Sold: Fiscal Years 2005 through 2009

Table 19. SOUTH ZONE – St. Maries & Avery Ranger Districts

Sale Name & Award Date		Was project designed to meet Forest Plan VQO's?
Palouski	01/01/09	Yes. Silcultural Rx and mitigation designed to meet VQO of R (Retention)
T Bone	08/15/07	These units are in Mg1B/PR (Partial Retention) Sivicultural Rx and topography should limit viewing of these units, assisting with the project's meeting VQOs.

Prepared by Steve Nelson, District Visual Management Paraprofessional

Table 20. CENTRAL ZONE -Wallace & Fernan Ranger Districts

Sale Name & Award Date		Was project planned to meet Forest Plan VQO's?
Flat Roundwood	10/26/04	Yes
Ridge Runner Thin	07/27/06	Yes
Barker Thin	05/04/05	Yes
CDA Vista Thin	06/14/05	Yes
Conventional Caribou	05/01/09	Yes - Units are in Partial Retention and Modification areas.
Twomile	10/01/07	Yes – Units are in Partial Retention, Retention, Modification, and Maximum Modification areas.
JoCat	09/26/07	Yes – Partial Retention for foreground views and Modification in the middle-ground and background views
Pulaski Peak	09/28/09	Yes - Units visible from Road 456 and segments of trails in the area will have short term visual impacts and will meet Partial Retention once grasses and new brush have had a season to resume vigorous growth.
Prichard Murray	04/16/08	Yes - Anticipated short term impacts to scenery will be slight and short term. Once grasses and new brush have had a season to resume vigorous growth any disturbance will not be noticeable on the landscape.
Blue Alder Stewardship	09/15/09	Yes - Units in Partial Retention areas will not undergo changes from management activities that will render them inconsistent with the Partial Retention VQO.

Prepared by: Sherri Lionberger, Resource planning staff, Bob Rehnborg, Small Sales, Sarah Jerome, Fire & Fuels Planning, Jeanne White, Planning (TERRA), Mike Leverick, Forestry Technician

Table 21. NORTH ZONE - Sandpoint Ranger District

Sale Name & Award Date		Was the project planned to meet Forest Plan VQO's?
Sam Owen Fuels	11/17/04	Yes – Retention & Partial Retention
Wrenco	09/20/06	Yes - Partial Retention
Gold Crown	09/30/08	Yes – Retention
TD	09/28/09	Yes - Partial Retention
West Gold	None	Yes - Offered 07/27/07. No bids
Golden Pond	09/30/09	Yes - Partial Retention
Tumbledown	None	Yes - (04-01-09 agreement to cancel) No activity occurred on this sale.

Prepared by: Nancy Kertis, Forester and A.J. Helgenberger, Forester

Table 22. NORTH ZONE - Bonners Ferry Ranger District

Sale Name & Award Date		Was the project planned to meet Forest Plan VQO's?
Boundary	02/09/06	Yes – Partial Retention
Brushy Mission	09/29/06	Yes – Partial Retention
Haller Down	09/29/06	Yes – Partial Retention
Mission Fly By	None	Yes – Partial Retention - No bids
Two Tail Clearing	06/25/07	Yes-Partial Retention-Road reconstruction clearing of trees
Stampede Thinning	07/09/07	Yes-Partial Retention
Snuffed Smith Blowdown	09/25/07	Yes-Partial Retention
South Grouse	09/18/07	Yes VQO's of Retention & Partial Retention – Harvest began 08/08

Prepared by Barry Wynsma, District Visual Management Paraprofessional

Table 23. NORTH ZONE – Priest Lake Ranger District

Sale Name & Award Date		Was the project planned to meet Forest Plan VQO's?
Kedish Ridge Hazardous Fuels	11/05/04	Yes - Specific details regarding individual units available through B. Wynsma at Bonners Ferry R.D.
57 Bear Paws	03/03/06	No – As designed, will not meet Retention VQOs in foreground units along Hwy 57. Specific details available at the Priest Lake R.D. office.
Down Sheet	07/25/07	Yes – This was a small blowdown sale in the vicinity of the Dickensheet Visitor/Information area. Although there was no planning for this sale because it was an act of nature, based on the small amount of uprooted and damaged trees that were removed, the area will continue to meet the assigned VQO of Retention.
Blown Outlet	07/25/07	No – A severe blowdown in and around Outlet Bay Campgound caused a lot of damage to trees and uprooted many trees. Because this was an act of nature, there was no pre-planning for VQO purposes. Once the slash piles to the south of the campground are burned and the area greens up, it will start to heal towards more of a Partial Retention appearance. Currently, it is Modification. The area within the boundaries of the Outlet campground will continue to meet a Retention VQO.
Canyon Creek	07/28/06	N/A. Sale is within the Priest River Experimental Forest. Due to the nature of the Experimental Forest, VQO reports are not applicable & not completed.
Gleason Pine	02/28/06	Yes
Lakeface Lamb	05/23/02	No

Prepared by Debbie Butler, District Visual Management Paraprofessional

2) *RESULTS MONITORING Sales Closed/Completed* Fiscal Years 2005 through 2009

Table 24. SOUTH ZONE – St. Maries & Avery Ranger Districts

Timber Sale Name & ClosureDate		VQO's Met?	Remarks
Golden Wind	11/30/04	Yes	Unit boundry's adjusted during prep to meet Partial Retention.
Rye on Ham III	09/27/05	Yes	Rx's meet Partial Retention
Sweet Francis	11/16/05	Yes	Units are in Mg1B/PR. Silvicutural Rx and topograghy allow these units to meet and excede Partial Retention.
Tin Cup	12/13/06	Yes	Most units are in Modification, units 58A, 58B and 58C are in Mg1B/R. The silvicultural Rx, harvest and topograghy allow these units to meet the VQO.

Table 25. CENTRAL ZONE -Wallace & Fernan Ranger Districts

Timber Sale Name & Closure Date		VQO's Met?	Remarks
Brewski	05/12/05	Yes	Ski area runs met planned VQO's.
Small Beetle Trails	10/27/05	Yes	Based on limited review.
Spion Heli Pine	07/01/05	Yes	White pine salvage with helicopter.
South Bumblebee	07/21/05	Yes	Blowdown in campground – stumps ground or removed to help visuals.
Dead Grassy	01/27/06	Yes	Based on limited review.
Yon Ferguson	06/14/06	Yes	Based on limited review.
English Point Equestrian	10/01/07	Yes	Salvage of scattered dead, down & dying trees met Partial Retention.
South Copper Down	01/02/08	Yes	Individual tree salvage and commercial thin met Partial Retention even though Max/Mod allowed in this area. No review since completion of underburn.
Callis Burn Salvage	01/01/09	Yes	Met and exceeds Partial Retention & Retention VQOs.
Conventional Caribou	05/01/09	Yes	Partial Retention was met where required.

Table 26. NORTH ZONE - Sandpoint Ranger District

Timber Sale Name & Closure Date		VQO's Met?	Remarks
Longshot	11/30/04	Yes	VQO's of Retention, partial retention and modification. +/- 400 acres of commercial thinning and shelterwood harvests. 3.5 miles temporary road construction. Harvest and roadbuilding occurred on gentle ground not discernible from high sensitivity view points.
Jeru Lindsey	09/02/05	Yes	VQO of Partial Retention. +/- 900 acres of thinning. Four miles of road construction. "The thinning treatments would not disrupt the visual continuity of the landscape" (EA page III-1). Change in canopy density was irregular and occurred over a large enough area to not be visually apparent.
Blanchard Pole	01/31/06	Yes	VQO of Partial Retention. Hazardous fuels reduction activities on +/- 20 acres. Treatments retained 20-30 trees per acre of larger ponderosa pine, western larch, and Douglas-fir trees. Blends in to previously-harvested private land.
Cocolalla West	01/03/06	Yes	VQO of Partial Retention. 66 acres of fuel reduction activities including thinning, group selection and grapple piling. ½ mile of temporary road. Low level of canopy disturbance and small area treated allowed VQO to be met.
Greenbay Blowdown	10/01/07	Yes	Salvage of campground blowdown.
Sam Owen Blowdown	07/05/07	Yes	Salvage of campground blowdown.

Table 27. NORTH ZONE - Bonners Ferry Ranger District

Sale Name & Closure Date		VQO's Met?	Remarks
Phase III	06/09/05	Yes	
Kootenai Small Thin (CE) 06/28/2005		Yes	This sale, implemented under the Kootenai Small Thin Categorical Exclusion in 2003 (CE #12, Limited Timber Harvest) involved 46 acres of improvement cutting and 17 acres of commercial thinning. The improvement cutting was a continuation of an uneven-aged management prescription that was initiated with the Kootenai Small Sale in 1992. The commercial thinning occured in previously untreated stands that were adjacent to the original harvest. The long-term objective is to manage all 63 acres under an uneven-aged management system. All treatments have met the VQO of Retention (High SIO).

Kootenai Small Thin Unit 2 "Before Harvest"

Kootenai Small Thin Unit 2 "After Harvest"

No Da Hardous Fuels Reduction Unit 1
Before Treatment 2003

No Da Hazardous Fuels Reduction Unit 1
After Treatment June 26, 2007

Sale Name & Closure Date	VQO's Met?	Remarks
Salt Lick 08/02/2005	Yes	This sale was implemented under the Myrtle-Cascade Environmental Impact Statement (2001). The purpose of this sale was to restore historic structure and composition to the project area, to improve tree vigor, reduce susceptibility to insects, diseases, and wildfires, to provide wildlife habitat and to maintain the hydrologic function. The project included a combination of commercial thinning, sanitation salvage, overstory removal and irregular shelterwood harvest treatments on about 268 acres. All treatments have met the VQO of Partial Retention (Moderate SIO).
Deerskin Roundwood 08/12/2007	Yes	This was one of 4 sales implemented under the Skin Creek EA (1997) and included 216 acres. The purpose of this sale was reduce overall stocking to promote healthy and vigorous stand conditions, to favor the development of larger diameter long-lived seral species (WP & DF), and to promote white-tailed deer winter range habitat. The entire sale removed mostly small diameter trees (i.e. less than 9" dbh). The sale easily met the Partial Retention VQO along this level 2 road, and actually enhanced the visual character by thinning out doghair stands of small diameter trees and leaving the largest and healthiest looking Douglas-fir and larch dominated timber stands.
Moyie Wood 09/12/2005	Yes	This sale, implemented under the Moyie Wood Hazardous Fuels Reduction Categorical Exclusion in 2004 (CE #10 HFI) involved a commercial thin/sanitation salvage treatment in the overstory to favor the largest most fire-resistant trees. In addition, the understory was pre-commercially thinned to remove hazardous ladder fuels and involved the removal of sapling-sized regeneration, generally less than 8 feet high, which was encroaching on the larger-diameter overstory trees. The overstory treatment removed approximately one-fourth of the overstory and retained an average of approximately 30-40% forest canopy closure. In general, the trees harvested were lodgepole pine and smaller size class Douglas-fir (generally under 12 inches diameter at breast height). Large diameter ponderosa pine, western larch, and Douglas-fir now dominate the residual stand. Some smaller-

Sale Name & Closure Date	VQO's Met?	Remarks
		diameter trees were retained for age-class diversity. The treatment has met the VQO of Retention (High SIO).

Moyie Wood, visual analysis photo point along County Road #63 (Moyie River Road), established October 29, 2004

Before Treatment

Moyie Wood, from same photo point.
June 26, 2007

After Treatment

Sale Name & Closure Date	VQO's Met?	Remarks
Bussard Lake, 8/31/05 Hasta La Fiesta 5/23/06	Yes	This sale, implemented under the Bussard Feist Hazardous Fuels Reduction Categorical Exclusion in 2004 (CE #10 HFI) involved reducing the fine (1 hour) and ladder fuels in order to transition the project area from a fuel model 10 to a fuel model 8. In the event of a wildfire, the treatment should reduce the safety risks to suppression forces and adjacent landowners and make protection of structures and power line right-of-ways easier and less costly to accomplish. Decreasing stand densities and removing nearly all the ladder fuels will lower the probability of a surface fire moving into the tree crowns. The visual analysis completed for this project (2004) made the determination that the VQOs would be met under the following design criteria: 1. *Unit(s) that are located on the west side of Bussard Lake that will utilize the skyline logging system will be the most visually sensitive treatment for the project. Care must be exercised when developing the silvicultural prescription and during the operational phase to ensure that skyline corridors are not obvious when viewed from County Road #34 (Meadow Creek Road) and especially from the Feist Creek Inn. The best way to accomplish this would be to leave a residual stand that has some space between tree crowns and that has had any dense understory slashed in order to eliminate the unnatural appearance on mountainsides created by "multiple vertical rows" of corridors that can result when treating dense timber stands.* *2. In order to meet the VQO of Retention (High SIO) for that portion of the unit located in section 14 that is immediately adjacent to the county road (nearest <u>Kreist</u> Creek, use flashers for boundary markers along the road and minimize the use of leave tree paint marking for that portion of the unit that can be viewed by passersby on the county road. Finally, landings should not be placed immediately adjacent to the county road.* All treatments have met the VQOs of Retention, Partial Retention and Modification (High, Moderate and Low SIO).

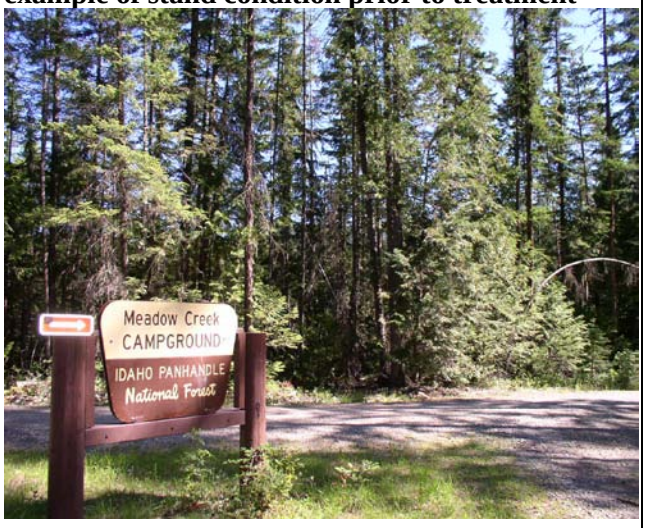
Bussard Feist photo point established during visual analysis, looking at Bussard Lake TS location October 29, 2004.

Same photo point June 26, 2007. This is a good example of using the right prescription to eliminate obvious skyline corridors that could have been visible from this critical viewpoint at a restaurant and motel.

Sale Name & Closure Date	VQO's Met?	Remarks
Moyieplace 05/22/06	Yes	This sale, implemented under the Moyieplace Hazardous Fuels Reduction Categorical Exclusion in 2004 (CE #10 HFI) involved reducing the fine (1 hour) and ladder fuels in order to transition the project area from a fuel model 10 to a fuel model 8. In the event of a wildfire, the treatment should reduce the safety risks to suppression forces and adjacent landowners and make protection of structures and the Northern Lights power line right-of-way easier and less costly to accomplish. Decreasing stand densities and removing nearly all the ladder fuels will lower the probability of a surface fire moving into the tree crowns. The visual analysis completed for this project (2004) made the determination that the VQOs would be met under the following design criteria: *1. Unit(s) in and immediately adjacent to Meadow Creek Campground and around the Meadow Creek townsite (both locations are on south side of Moyie River) will meet Retention as long as 40 to 50 percent of the existing and largest available trees per acre*

Sale Name & Closure Date	VQO's Met?	Remarks
		remain (excluding hazard trees). Use flashers for boundary markers next to campground and remove after project is completed. If paint is needed to designate trees, use cut-tree designation rather than leave-tree marking. Landings should not be placed immediately adjacent to roadsides. *2. All other units will meet Partial Retention with the proposed treatments as long as the areas immediately adjacent to Meadow Creek and Placer Creek roads maintain at least 40-50 percent of the current tree stocking, concentrating on leaving the largest available trees. If paint is needed to designate trees, use cut-tree designation rather than leave-tree marking. Shelterwood treatments that occur farther than about 300 feet off the roadsides would meet the Partial Retention VQO. Landings should not be placed immediately adjacent to these roadsides.* All treatments have met the VQOs of Retention and Partial Retention (High and Moderate SIO).

Moyieplace at Meadow Creek C.G. entrance, example of stand condition prior to treatment



Moyieplace following harvest at Meadow Creek C.G. entrance. June 26, 2007

Table 28. NORTH ZONE – Priest Lake Ranger District

Sale Name & Closure Date	VQO's Met?	Remarks
Shoshone Blowdown 02/15/07	Yes	B. Wynsma designed project to meet VQOs. Specific details regarding individual units are available through him at the Boners Ferry Ranger Station.
Down Sheet 10/01/07	Yes	Blowdown at the Priest Lake Visitor center. Roaded Natural setting -Retention and Partial Retention VQOs.
Blown Outlet 10/01/07	Yes	A severe blowdown in and around Outlet Bay Campgound caused a lot of damage to trees and uprooted many trees. Because this was an act of nature, there was no pre-planning for VQO purposes. Once the slash piles to the south of the campground are burned and the area greens up, it will start to heal towards more of a Partial Retention appearance. Currently, it is Modification. The area within the boundaries of the Outlet campground will continue to meet a Retention VQO.
Kedish Ridge 01/07/08	Yes	Yes - Barry Wynsma was the assigned VQO person for this project. Specific details regarding individual units available on request.
Lakeface Lamb Fuels Reduction 12/02/08	No	Approximately 432 of the 620 (70%) of the total project acres did not meet the Retention or Partial Retention VQO.
57 Bear Paws 03/24/09	No	This 725 acres fuel reduction project located in Sections 27, 28, 33, 34, T58N., R5W., Sections 4, 5, 7, 8, 9, T57N., R6W., Boise Meridian, Bonner Co. did not meet the Retention VQO in units along Hwy 57.

3) *MEETING THRESHOLD for the five year period from 2005 through 2009*

A 10% departure from Forest Plan direction after five years initiates further evaluation.

Findings:

Forest Plan Visual Quality Objectives were achieved, as follows, during the 5-year period from 2005 - 2009. The IPNFs had a 6% departure from direction within the five year period from 2005-2009. The forests were within the allowed 10% departure from Forest Plan direction.

Table 29. Meeting threshold for the five year period from 2005 through 2009

Year	Number of Projects Completed/ Closed	Number of Projects Meeting VQOs	Departure from Direction
2005	13	13	0
2006	9	9	0
2007	3	3	0
2008	5	5	0
2009	5	3	60%
2005 through 2009	35	33	6%

Forest Plan Monitoring Item D-1: Off-Road Vehicles

Background

The purpose of this monitoring item is to determine the impacts of off-road vehicles on resources or other resource users. It is also to determine if Forest Travel Plan direction is being followed.

Monitoring Data

The principal source of information for this monitoring item is the number of violations documented by Forest Service Law Enforcement Officers that are associated with off-road vehicle use. Listed below is the number of violations issued for fiscal years 1991 to 2009.

Table 30. Total Number of Violations Issued

Fiscal Year	Number of Violations
1991	144
1992	167
1993	204
1994	185
1995	88
1996	133
1997	240
1998	246
1999	394
2000	164
2001	285
2002	191
2003	445
2004	411
2005	337
2006	298
2007	224
2008	272
2009	301

Evaluation

The *Number of Violations* noted in the table above is a summary for the fiscal year noted and represent a subset of the total number of violation notices issued for that fiscal year. Beginning in 2008 the number shown is represented by 26 *Offense Codes* as listed in the LEIMARS (Law Enforcement & Investigation Management and Reporting System) database. These 26 codes[1] represent violations associated with off-road vehicle use and other travel management violations that help assess whether Forest Travel Plan direction is being followed.

[1] Codes include: 261.9(a), 261.10(a), 261.12(c), 261.12(d), 261.14, 261.15(h), 261.15(i), 261.53(a), 261.53(b), 261.53(c), 261.53(d), 261.53(e), 261.54(a), 261.54(b), 261.54(c), 261.54(d), 261.54(e), 261.54(f), 261.55(a), 261.55(b), 261.55(c), 261.55(d), 261.55(e), 261.56, 261.58(g), 261.58(h)

Some violations by off-road vehicle users occur when no Forest Service personnel are around to witness them. For this reason the number of documented violations is not an accurate measure of the amount of actual violations or resource impacts. However, it can be used as a general indicator of trends in violations and law enforcement activities associated with off-road vehicles.

Forest Plan Monitoring Item E-1: Heritage Resources

The purpose of this monitoring item is to ensure that projects do not cause adverse effects to heritage resources. The threshold of concern is any unmitigated adverse impact. The Idaho Panhandle National Forests (IPNF) monitors land disturbing projects to identify potential impacts to heritage resources. Our 2007, 2008, and 2009 monitoring program concluded that forest projects generally caused no adverse effects to heritage resources. However, several projects were incorrectly implemented leading to adverse effects to eligible cultural properties. All effects were disclosed to the proper agencies and action was taken to make sure future projects did not have similar implementation problems.

Vegetative Treatments (Timber Sales and Fuel Reduction Projects): For 2007, the Forest reviewed 11 timber sale or fuel reduction projects to completion, while several others were begun for implementation in fiscal year 2008. Two of the projects were redesigned to avoid affecting heritage sites, while one has initial input for avoidance in which the decision will be made in fiscal year 2008 for implementation. During an Environmental Management System review of the *Moyie Springs Fuels Reduction Project* it was noted a historic site was inadvertently damaged through piling and burning outside of the unit boundary and material not previously discovered due to dense vegetation was damaged within the boundary of the unit. This incident was reported to the Idaho State Historic Preservation Office (SHPO) and Advisory Council on Historic Preservation (ACHP). Additional review and agreement on appropriate mitigation measures will be completed in fiscal year 2008 with the SHPO and ACHP. In addition, procedures were agreed upon by the Forest Service, SHPO and ACHP that should help prevent similar occurrences in the future, as outlined below.

In 2008, the Forest reviewed 20 timber sale or fuel reduction projects to completion, while several others were begun for implementation in FY 2009. One hundred forty-nine sites were found within project analysis areas that could be potentially affected by project actions. Six projects were redesigned to avoid affecting heritage sites. No sites are known to have been adversely affected by timber and fuel project implementation.

For 2009, the Forest reviewed 17 timber sale or fuel reduction projects to completion, while several others were begun for implementation in FY 2010. Twenty sites were found within project analysis areas that could be potentially affected by project actions. Nine projects were redesigned to avoid affecting heritage sites. No sites are known to have been adversely affected by timber and fuel project implementation.

Lands (Land Conveyance Projects): One land conveyance project each was completed in fiscal years 2007, 2008, and 2009 in which no National Register eligible sites were affected.

Roads: Three road projects each were reviewed during the fiscal years 2007 and 2008, with no affect to any heritage resources; however, implementation of a prior year's project documented adverse effects to one historic property. During Environmental Management System monitoring of the *Placer Creek Fuel Reduction Project* it was noted a historic Civilian Conservation Corp constructed road was not recorded during the cultural resource review. It was subsequently destroyed through reconstruction and obliteration. This incident was reported to the Idaho SHPO and ACHP and since the site had been destroyed mitigation measures could not be implemented. However, procedures were agreed upon by the Forest Service, SHPO and ACHP that should help prevent similar occurrences in the future, as outlined below.

In fiscal year 2009, twenty-three road projects were reviewed, with no affect to any heritage resources. Eleven Heritage sites were documented within the projects and none had any adverse effects on eligible sites.

Range: Two allotments were reviewed in fiscal year 2007 in which no heritage resources were affected. In fiscal year 2008, one allotment was reviewed in which there was the potential for four heritage resources to be affected. Sites were on an upward trend and will be monitored every five years for condition. In fiscal year 2009, no range projects were reviewed.

Trails: In fiscal year 2007, six trail projects were reviewed in which only one had a potential to affect heritage resources. A historic trail was not recorded during the inventory and review of the *Coeur d'Aene River Trails 20 and 448 Project*. It was subsequently reconstructed, causing adverse effects to its historic character. This incident was reported to the Idaho SHPO and ACHP. It was agreed that the trail would be recorded during fiscal year 2008 and a formal determination of eligibility completed. In addition, procedures were agreed upon by the Forest Service, SHPO and ACHP that should help prevent similar occurrences in the future, as outlined below.

In fiscal year 2008, two trail projects were reviewed in which only one had a potential to affect heritage resources. Archaeological testing of a historic site was conducted and the project was designed to avoid adverse effects to the site.

Five trail projects were reviewed in fiscal year 2009. Only two had a potential to affect heritage resources. Archaeological testing of a historic site was conducted in 2008 and the project was designed to avoid adverse effects to the site for implementation in 2009/10. In the other the two projects a bridge, historic trail and three other sites were evaluated and the project was designed to reduce or eliminate effects to the sites.

Special Use Permits: In fiscal year 2007**,** ten special use permit projects were reviewed by Forest heritage resource staff. One project was redesigned so that no effects to heritage resources occurred. In preparation for the renewal of special use permits for the recreation residences on the IPNF, all residences were visited to determine eligibility to the National Register of Historic Places and the consultation for two tracts was completed. During inventory of the Priest Lake Recreation Residence Tracts it was noted that one of the eligible residences had been reconstructed. Upon review of the compliance documentation it was found that the Memorandum of Affect had not been executed with the Idaho SHPO. Since all of the mitigation measures had been completed and the only fault was not executing the MOA in a timely manner, the SHPO and ACHP agreed that the FS would provide the documentation in the Annual Programmatic Agreement Report.

In fiscal year 2008, 26 special use permit projects were reviewed by Forest heritage resource staff. Eight projects were redesigned so that no effects to heritage resources occurred. In preparation for the renewal of special use permits for the recreation residences on the IPNF, all residences were visited to determine eligibility to the National Register of Historic Places and the consultation for three tracts were completed.

Fifty-one special use permit projects were reviewed by Forest heritage resource staff in fiscal year 2009. Six projects were redesigned so that no effects to heritage resources occurred. In preparation for the renewal of special use permits for the recreation residences on the IPNF, all residences were visited to determine eligibility to the National Register of Historic Places and the consultation for ten tracts were completed along with a comprehensive summary of the tracts and a programmatic agreement for management of the program.

Recreation: In fiscal year 2007, seven recreation projects were reviewed and five were determined to have effects to heritage resources. Each of the projects with effects to historic properties involved Forest recreation rental properties that were completed using the Secretary of the Interior's Standards for Historic Preservation Projects. The SHPO concurred that there was no Adverse Effect to any of the structures.

In fiscal year 2008, four recreation projects were reviewed, which had the potential to affect eligible heritage resources. A toilet was installed at the historic Snyder Guard Station recreation rental site. The toilet was designed to fit into the historic landscape for No Adverse Effect. The Avery Patrol Cabin and Red Ives recreation rentals and Shoshone Park Pavilions, renovation projects were reviewed to reduce or eliminate adverse effects to the historic structures.

Seven recreation projects were reviewed which had the potential to affect eligible heritage resources in fiscal year 2009. Two projects had eligible Heritage sites that were avoided through design considerations.

Minerals: Twelve mining plans of operation or mine restoration projects were reviewed in fiscal year 2007. A single project was redesigned to avoid adverse effects to a historic mine site. The remainder of the projects had no effect to any listed or eligible heritage property.

Seven mining plans of operation or mine restoration projects were reviewed in fiscal year 2008. Two projects were redesigned to avoid adverse effects to historic mine sites. The remainder of the projects had no effect to any listed or eligible heritage property.

Nine mining plans of operation, rock removal permits or mine restoration projects were reviewed in fiscal year 2009. Two projects were redesigned to avoid adverse effects to Heritage sites. The remainder of the projects had no effect to any listed or eligible heritage property.

Facilities: The Forest undertook two projects in fiscal year 2007, neither of which affected any National Register listed or eligible heritage property. In the first project one non-contributing structure within a National Register of Historic Places eligible Forest Service compound was removed. In the other project the location of the new Sandpoint Ranger Station building was analyzed.

The Forest undertook two projects in 2008, neither of which affected any National Register listed or eligible heritage property. In the first project the non-eligible Spades Lookout structure was determined ineligible so that it can be removed as a safety hazard. In the other project the location of the water and sewer lines at the Hoyt Flat Ranger Station was analyzed with no effect to any eligible properties.

The Forest undertook one project in fiscal year 2009, which did not affect any National Register listed or eligible heritage property. The collapsed cabin at the Yellow Dog Ranger Station was determined to be a noncontributing feature within the site and will no longer be maintained as a FS administrative site.

Wildlife and Fisheries: Two projects were reviewed in fiscal year 2007. The *Hungry Deer Stream Restoration Project* was reviewed and the project was redesigned to avoid effects to three heritage sites. Discussions regarding removal of the National Register of Historic Places eligible Red Ives Dam to allow fish passage was begun. Development of appropriate alternatives and consultation on adverse effects will continue in fiscal years 2008 and 2009.

Three projects were reviewed in fiscal year 2008. The *Road 308 Decommission Project* was reviewed and the project was redesigned to avoid effects to two heritage sites. Discussions regarding removal of the National Register of Historic Places eligible Red Ives Dam to allow fish passage was continued.

Development of appropriate alternatives and consultation on adverse effects on the Red Ives Dam continued in fiscal year 2009. In addition, one watershed restoration project was reviewed in which eight heritage sites are known. No sites were adversely affected by project actions.

Other Heritage Resource Accomplishments:

Fiscal Year 2007

Four Historic Preservation projects were undertaken in fiscal year 2007, including the Shoshone Park Picnic Pavilions, Avery Creek Cabin, Snyder Guard Station, and Little Guard Lookout. For public outreach the IPNF co-sponsored three presentations and a dedication ceremony for a David Thompson Bicentennial display for Idaho Archeology Month. Finally, David Thompson Display panels for traveling displays and a permanent display at Sam Owen Campground were contracted for production. The Idaho Panhandle National Forests continues to collaborate with the Kootenai National Forest, Parks Canada, and local groups in planning the bicentennial observance of David Thompson's achievements.

In addition, numerous heritage sites were monitored under the *Kalispel Basin Heritage Project* and *FY 2007 Idaho Panhandle National Forests Heritage Monitoring Report*. During the Kalispel Basin project 34 sites were monitored for condition through fuels funding by the Heritage Enterprise Team. The *FY 2007 Idaho Panhandle National Forests Heritage Monitoring Report* describes the condition of 34 sites monitored during the fiscal year. Overall it was noted that the condition of heritage resources on the IPNF is deteriorating due to weathering, erosion, vandalism, and rarely, project implementation.

Fiscal Year 2008

The Forest recreation and heritage staffs accomplished a significant number of preservation and public outreach projects in 2008. Eight Historic Preservation projects were undertaken in 2008, including the Priest Lake Inventory, Pulaski Tunnel Trail evaluation, Cinnabar Creek domed oven stabilization, Shoshone Park Picnic Pavilions restoration, Avery Creek Patrol Cabin restoration, Mallard Peak Lookout restoration, Snyder Guard Station restoration, and the Red Ives Ranger's House maintenance projects. For public outreach the IPNF co-sponsored nine presentations for Idaho Archeology Month. The Idaho Panhandle National Forests continues to collaborate with the Kootenai National Forest, Parks Canada, and local groups in planning the bicentennial observance of David Thompson's achievements. Finally, a large number of interpretive and research related materials were posted on the IPNF website for public education and enjoyment.

In support of the recreation residence program 22 recreation residences were reviewed and initially recorded for purposes of better managing the properties. Consultation on a recreation residence programmatic agreement for appropriate management of these important resources is ongoing with the local homeowner associations, Idaho State Historic Preservation Office, and Advisory Council on Historic Preservation.

In addition, numerous heritage sites were monitored under the *FY 2008 Idaho Panhandle National Forests Heritage Monitoring Report*, which describes the condition of 65 sites monitored during the fiscal year. Overall it was noted that the condition of heritage resources on the IPNF is deteriorating due to weathering, erosion, vandalism, and rarely, project implementation.

Fiscal Year 2009

The Forest recreation and heritage staffs accomplished a significant number of preservation and public outreach projects in 2009. Two Historic Preservation projects were undertaken in 2009, including the Priest Lake Inventory and Mallard Peak Lookout restoration. For public outreach the IPNF co-sponsored eleven presentations for Idaho Archeology Month. Finally, additional interpretive and research related materials were posted on the IPNF website for public education and enjoyment.

In support of the recreation residence program over one hundred recreation residences within 10 tracts were described within separate documents for each tract and all tracts within the Forest were described in a single summary document. Consultation on a recreation residence programmatic agreement for appropriate management of these important resources was concluded with the local homeowner associations, Idaho State Historic Preservation Office, and Advisory Council on Historic Preservation.

In addition, numerous heritage sites were monitored under the *FY 2009 Idaho Panhandle National Forests Heritage Monitoring Report*, which describes the condition of 40 sites monitored during the fiscal year. Overall it was noted that the condition of heritage resources on the IPNF is deteriorating due to weathering, erosion, vandalism, and rarely, project implementation.

Procedural Changes to Project Implementation: Efforts at monitoring site conditions provided significant information on project implementation and site conditions on the IPNF for fiscal year 2007. While there were some problems with project implementation in fiscal year 2007, for the most part the system worked very well. Over 50 projects were reviewed for Section 106 consultation at some level during the fiscal year and 34 sites were monitored for condition and assessed against National Register criteria. The problems encountered were generally due to working out lines of communication within the Forest and Heritage program during a transitional period between Heritage program leaders. The Forest Leadership Team has taken active steps to correct deficiencies in lines of communication that should assure similar problems are few and far between in the coming years. These steps are summarized below and discussed in more detail on pages 7-8 of the *FY 2007 Idaho Panhandle National Forests Heritage Monitoring Report*:

- ✓ The appropriate Forest or Zone level archaeologist will monitor the NEPA team process for changes that may need additional consultation work and compare the draft and final NEPA document with the NHPA consultation document for inclusion of all appropriate information, effects and mitigation measures.
- ✓ Evaluate all extant cultural resources that may be potentially affected by project actions for significance against the National Register criteria. This will ensure that insignificant sites are not unduly protected, and if inadvertent damage occurs, at least a minimum of information regarding the resource is preserved.
- ✓ Avoidance procedures should be designed to insure inadvertent damage does not occur to significant sites.
- ✓ Where avoidance or other mitigation measure procedures are used a pre-implementation plan-in-hand review must be completed involving the implementation staff and appropriate Zone or Forest Archaeologist.
- ✓ If implementation monitoring is required, designate an appropriate staff member to inform the Forest, Zone or Tribal archaeologist of project implementation schedules in a timely manner.

Future Trends for Heritage Site and Program Condition: Given the nature of the resources, climate and active management on the Idaho Panhandle it is likely that historic cultural resource sites will continue to degrade over time. For the most part, those resources that could be saved with the time, staff

and money available have been highlighted and actively protected, stabilized and restored as evidenced by the tremendous work accomplished on Forest Service administrative sites, cabin and lookout rentals, Marble Creek historic trails, Hiawatha Trail, Pulaski Trail, Mullen Tree and Road and other historical interpretive sites on the Forest. The remaining mining, logging, trail and homesteading sites are slowly melting into the forest floor and without extremely large commitments of money and effort they will not be saved. The long term outlook for Forest Service budgets and personnel levels is a downward trend, at least with respect to inflation, while project complexity and federal requirements are on an upward trend. While the Forest will continue its commitment to preserve and protect significant sites and work toward preservation of a sample of the remaining sites it is unlikely that the downward trend will be stopped or even slowed.

Forest Plan Monitoring Item F-1: Population Trends of Indicator Species

This monitoring item has a five year reporting period. In 1987, the Forest Plan for the IPNFs identified indicator species to help assess the impact of land management decisions on the wildlife resource. The ten indicator species are: bald eagle, grizzly bear, woodland caribou, gray wolf, elk, moose, white-tailed deer, goshawk, pine marten and pileated woodpecker. The peregrine falcon was listed after the Forest Plan was adopted.

Population Estimates

Estimating population numbers and trends can be extremely difficult. Most estimates involve cooperative surveys and information sharing with other agencies, such as the Idaho Department of Fish and Game (IDFG), Washington Department of Fish and Wildlife, U.S. Fish and Wildlife Service (USFWS), and Forest Service and University researchers. Examples of the sources of information for population trends include ground surveys, aerial surveys, radio-collared animals, mortality and harvest reports, transplant activities, incidental sightings and law enforcement activities. Habitat information may be used where population data are lacking.

Population Surveys

Threatened and Endangered Species

Canada Lynx: Canada Lynx: Lynx in the contiguous United States are at the southern margins of a widely-distributed lynx population whose center is in north-central Canada and Alaska. Lynx populations in the contiguous United States are sustained by cyclic influx from lynx populations in Canada. In Idaho, lynx were never abundant but were distributed throughout northern portion of the state. Lynx populations are cyclic in nature and population information for this species is difficult to obtain. DNA hair snare sampling has been use since the late 1990s.

The IPNFs have recent verified records of lynx occurrence and are considered occupied based on the National Lynx Survey and other documented sightings (USDI FWS 2006a). The IPNFs contains both "core"[2] and "secondary"[3] habitat.

Gray Wolf: The IDFG and Montana Department of Fish Wildlife and Parks have monitored wolf activity over time (Idaho Conservation Database 2008, Montana Department of Fish, Wildlife, and Parks 2009). The number of wolf packs has increased dramatically on the IPNFs since 2003 (Table 31).

Grizzly Bear: See monitoring item F-2 for details on grizzly bear population estimates for the Selkirk and Cabinet-Yaak Recovery Zones.

Woodland Caribou: See monitoring item F-3 for details on woodland caribou population surveys.

State of Idaho Threatened Species

[2] *Core areas* have the strongest long-term evidence of lynx persistence. Lynx have consistently been found in these areas and there is recent (within the past 20 years) evidence of reproduction.
[3] *Secondary areas* have fewer and more sporadic current and historical records of lynx, and as a result historical abundance has been relatively low. Reproduction has not been documented.

Bald Eagle: This species was originally listed as a threatened species under the Endangered Species Act but was removed once recovery goals were met in 2008. The bald eagle is classified as "threatened" by the state of Idaho (Idaho Department of Fish and Game 2005). Current population data is derived from monitoring of known nesting territories and annual mid-winter census of total numbers of bald eagles observed from year-to-year at particular wintering sites (Idaho Department of Fish and Game 2006; IPNF records 2004-2009).

Peregrine Falcon: This species was originally listed as a threatened species under the Endangered Species Act but was removed once recovery goals were met in 1999. The peregrine falcon is classified as "threatened" by the state of Idaho (ibid). Current population data is derived from monitoring known nesting territories (i.e. eyries) (Idaho Department of Fish and Game 2008; IPNF records 2007-2009).

Forest Plan Management Indicator Species

Northern Goshawk: According to NatureServe the northern goshawk has a conservation status rank of G5. This indicates the species is globally secure – common, widespread and abundant (from Brewer et al. 2009). Trends are difficult to determine due to the paucity of historic quantitative data and because of biases inherent in the various methodologies used to track bird populations.

During the 2005 breeding season, Region 1 piloted the "Northern Goshawk Bioregional Monitoring Design," a grid-based survey protocol developed by Woodbridge and Hargis (2006) based on a random sampling design with suggestions for stratification by habitat quality and ease of access. The purpose of survey was to employ a statistically-based approach to: (1) estimate the rate of goshawk occupancy (frequency of presence) within a grid that approximates the territory size for the species (1,700 acres); and (2) better define and document the geographic distribution of goshawks across Region 1. Six active territories were confirmed on the IPNFs (USDA Forest Service 2005). See Brewer et al. 2009 for details on this effort.

American Marten: IDFG furbearer harvest records represent the best available data over time of the presence and general trends in populations for this species. Marten is one of the most five most common furbearer species trapped throughout the state, and populations are considered to be stable statewide as of 2008 (Idaho Fish and Game 2008x). Low numbers of marten were reported in trapping records from 2007-2008, with the highest numbers on the IPNFs reportedly taken in the southern part of the forest (i.e. Shoshone County) (ibid).

The IPNFs conducted non-invasive DNA hair snare surveys aimed at documenting fisher presence in suitable habitats from 2007 through 2009. This technique was also useful for determining the presence of marten and wolverine. Samples were analyzed at the Rocky Mountain Research Station Conservation Genetics laboratory in Missoula, Montana.

Moose Population Monitoring by IDFG: Moose populations in Idaho have greatly expanded their range and numbers in Idaho over the past few decades, moving westward into Washington and northeastern Oregon and southward into Utah. Although data on moose population size are difficult to obtain, it appears that moose populations in central Idaho Wilderness areas are declining as wolf populations expand. Presently, moose populations are steadily expanding in most areas of the Panhandle which includes the IPNF (Idaho Fish and Game 2008a).

In 2007, a helicopter survey for moose population estimation was initiated in Hunt Area 1-3 early in December but abandoned after only a few hours of flight time due to poor snow cover. Current management direction is to develop an index to moose population trends that does not rely solely on aerial surveys (ibid).

Pileated Woodpecker: According to NatureServe, this species is considered abundant and secure throughout its range. Species specific surveys for this species have not been conducted since the Landbird monitoring effort in the 1990s.

Rocky Mountain Elk Population Monitoring by IDFG: The Panhandle Zone is a large and diverse zone consisting of Units 1, 2, 3, 4, 4A, 5, 6, 7, and 9. Traditionally, the majority of elk habitat, elk numbers, and elk hunting activity occurred in Units 4, 4A, 6, 7, and 9. These units are primarily composed of forested public lands and private timber companies and consistently record some of the highest hunter densities and elk harvest densities in the state. Expanding elk herds have recently increased hunter activities in Units 1, 2, 3, and 5, particularly in the agricultural areas of Units 3 and 5. Elk losses due to the deep persistent snow during the winter of 2007-2008 likely reduced the Panhandle elk population, particularly in areas with significant predator pressures (Idaho Fish and Game 2008b).

A sightability survey was conducted during February and March 2006 to estimate elk numbers in the Panhandle Zone Trend Area. Results of the survey indicated that cow numbers were slightly below objectives for the zone and bull numbers exceed objectives. During sightability surveys and herd composition surveys over the past seven years, recruitment rates have been high with calf:cow ratios in the low to mid 40 calves per 100 cows. The 2007-2008 winter conditions were extreme in many portions of the region, with record low-elevation snowfall and persistent snow through late spring (ibid).

Aerial surveys, both population estimates and herd composition surveys, are a valuable part of regional elk management, but must be considered in combination with other information sources. The homogenous, heavy-cover habitat that typifies the Panhandle Zone necessitates caution when interpreting elk sightability survey results. During this reporting period it was determined that the Panhandle Zone Trend Area would be discontinued in favor of establishing a population estimated for the entire zone. Given the large size of this zone, flying will be conducted over a two year span. During January and March 2008, approximately 60 hours were flown, covering half of the anticipated flying. A total of 1,873 elk were observed, of which 1,699 were classified, yielding 40 calves and 15 bulls observed per 100 cows. Most flights were conducted during January, prior to most winter mortality (ibid).

White-tailed Deer Population Monitoring by IDFG: White-tailed deer in Idaho are widely dispersed and occupy a variety of habitats, most of which is comprised of thick vegetative cover making most population enumeration techniques ineffective. IDFG has experimented with various techniques including aerial surveys, spot-light counts, and radio telemetry, among others. To date, no single population technique provides reliable and cost-effective measures of population demographics and abundance. However, IDFG has been monitoring harvest, an index to population abundance and distribution, since 1975. Additionally, species-specific deer hunter participation information has been collected since 2005 and provides additional information relative to catch-per-unit-effort indices (Idaho Fish and Game 2008c). Hunter densities in Panhandle (Data Analysis Unit 1) are relatively high, success rates are moderate, and the opportunity to harvest a mature buck white-tailed deer is high. These data support the general consensus of the public that the white-tailed deer population in DAU 1 is continuing to increase (ibid).

Table 31. Summary of population data and monitoring efforts on the IPNFs for MIS from 1998 to 2009*

Species	Population Data and Estimates				
	1998	2003	2008	2004 - 2009 Surveys	Trend
Canada Lynx (Threatened)	Unknown	Unknown	Unknown	**SZ** DNA hair snare surveys 2001 - 2003 w/ no detections	Unknown
Gray Wolf (Threatened)	No Packs	2 Packs	17 Packs 1 Suspected Pack 2 areas-wolf activity	2008 IDFG database and 2009 Montana Fish, Wildlife and Parks State Management Plan data summary with IPNFs observations included	Increasing
Grizzly Bear (Threatened)	**SRZ** - 45 to 50 **CYRZ** - 30 to 40	**SRZ** - 35 to 50 (U.S. only) **CYRZ** - 30 to 40	**SRZ** - no updated estimate **CYRZ** - 47	**SRZ** - 2005 DNA study in BC=33 bears **SRZ** - 2007 DNA study in US=15 bears	**SRZ**-67% probability increasing **CYRZ**-78% probability decreasing
Woodland Caribou (Endangered)	45	41	46	IDFG/BC Ministry of Forests annual winter census	Stable
Bald Eagle[1]	3 IPNF / 34 Regionally	10 IPNF / 52 Regionally	15 IPNF / 60 Regionally in ***2006***	2004 – 2009: Monitoring of 4-15 known territories in/near IPNFs boundary 2007 - 2009. Plus Annual Winter Census for Individuals 2007 - 2009 on NZ, CZ, SZ.	Stable to Increasing
Peregrine Falcon[1]	2	0 to 2	2	Surveyed one territory located on the NZ in 2008 and 2009	Stable
Northern Goshawk	51 known territories	53 known territories[2]	63 known territories	**2005** Region 1 Survey of all NFs including IPNFs **2007** Monitoring of 11 territories on NZ **2008** Monitoring of 14 territories on NZ and SZ **2009** Monitoring of 30 territories on NZ and SZ	Unknown
Pileated Woodpecker	Unknown	Unknown	Unknown	None	Unknown
American Marten	Unknown	Unknown	Unknown IPNFs Stable based on statewide catch rates, 2007-2008	**DNA Hair Snare Surveys** **2007** NZ- 6 detections out of 48 hair snare sets CZ-15 detections from 196 hair snare sets SZ-6 detections from 36 hair snare sets **2008** NZ- 24 detections out of 82 hair snare sets CZ-1 detections from 32 hair snare sets SZ-1 detection from 33 hair snare sets **2009** NZ-16 detections from 32 hair snare sets SZ-no detections	Unknown IPNFs Stable statewide
Moose	Unknown	Unknown	Increasing	**2007** Partial helicopter survey	Increasing
Rocky Mountain Elk	Unknown	Unknown	Stable to Increasing	**2006 and 2008** Surveys—see writeup for details	Stable to Increasing
White-tailed Deer	Unknown	Unknown	Stable to Increasing	**2004 through 2008** Harvest monitoring **2005 through 2008** Hunter Participation surveys	Stable to Increasing

*Data is provided from a variety of sources including Idaho Fish and Game (IDFG), U.S. Fish and Wildlife Service (USFWS), and the U.S. Forest Service. North Zone=NZ; Central Zone= CZ; South Zone=SZ

[1]No longer a listed species under the Endangered Species Act. Considered a Threatened species by the State of Idaho (Idaho Department of Fish and Game 2005).

[2]Corrected from 66 territories in 2003 Monitoring Report

Forest Plan Monitoring Item F-2 Grizzly Bear Recovery

The purpose of this item is to monitor the population changes and habitat effectiveness of grizzly bears in the Selkirk and Cabinet-Yaak recovery zones to determine if recovery objectives outlined in the Grizzly Bear Recovery Plan are being met.

Background

The grizzly bear was listed as threatened in 1975. The bear originally occupied a variety of habitats throughout western North America, but today is confined to less than two percent of its original range. Its decline is associated with habitat loss and direct and indirect human-caused mortality. Grizzly bears are considered habitat generalists and opportunistic feeders. They commonly choose low elevation riparian areas and wet meadows during the spring and generally are found at higher elevations the rest of the year.

The Selkirk (SRZ) and Cabinet-Yaak (CYRZ) recovery zones are two of six grizzly bear recovery zones identified in the Grizzly Bear Recovery Plan [USDI Fish and Wildlife Service (1993)]. Located in northwestern Montana, northern Idaho, northeastern Washington, and British Columbia, the two ecosystems encompass approximately 4,560 square miles of habitat. Portions of the Idaho Panhandle National Forests (IPNFs), Kootenai National Forest (KNF), Lolo National Forest (LNF) and Colville National Forest (CNF), and the Kootenay Lakes Forest District (British Columbia) are included in the two recovery areas. State and private lands are also included in both grizzly bear recovery zones.

Population Status

The US Fish and Wildlife Service (FWS) estimated that there were approximately 46 bears in the SRZ in 1999 by extrapolating previous research (Weilgus et al. 1993) completed on the British Columbia portion of the recovery zone (USDI Fish and Wildlife Service 1999). Wakkinen and Kasworm (2004) estimated that the SRZ grizzly bear population has a 67% probability that it is increasing. Wakkinen et al. 2009 states that grizzly bears appear to be increasing in the SRZ both in numbers and distribution based on an increase of sightings of bears, and changes in the distribution of credible sightings.

Other estimates for population size in the SRZ includes M. Proctor's 2005 DNA-based hair snare project north of B.C. Highway 3. His population estimate for this portion of the recovery zone was 33 bears (Wakkinen et al. 2009). A similar DNA-based hair snare effort was implemented for a 466 square mile portion of the ecosystem south of B.C. Highway 3 in 2007 (Wakkinen et al. 2009). Preliminary results indicated that 15 different grizzly bears (nine females, six males) were detected. Three of the 15 bears were detected in an earlier DNA hair sampling effort north of B.C. Highway 3 (Wakkinen 2010). Initial mark-recapture analysis indicated an abundance estimate of 17.9 bears for this 466 square mile portion of the recovery zone (ibid).

Kasworm et al (2009) calculated a minimum population estimate of 47 bears for the CYRZ from 2000 to 2008 with a 78% probability of a downward population trend. This included a minimum of 18 individuals in the Cabinet Mountains and 29 individuals the Yaak portion of the recovery zone. Human caused mortality has been a significant component in these declines and appears to be largely responsible for the decline in the rate of increase (Kasworm et al 2009).

As part of an effort to maintain the existing small population of bears in the CYRZ, four subadult female grizzly bears were captured in British Columbia and released into the Cabinet Mountains from 1990 to 1994 (USFWS 1990, Servheen et al. 1987). Three of the four bears remained within the area for at least one year. The success of this initial effort resulted in additional augmentations of seven grizzly bears (six

females and one male) from 2005-2010 from the North and South Fork of the Flathead River (U.S.) and the Whitefish Mountain Range (Kasworm et al. 2006, Kasworm et al. 2009, Kasworm 2009, and W. Kasworm pers. comm. 7/21/2010, W. Kasworm pers. comm. 7/27/2010). Two of the female grizzlies returned to their capture area in the Whitefish Mountains in 2010 (W. Kasworm pers. comm. 8/18/2010).

Augmentation has not been used in the SRZ to date.

Bear Mortality

Grizzly bear mortalities, both natural and human-caused, are important factors limiting the growth of bear populations in the SRZ and CYRZ (USDI Fish and Wildlife Service 1993). The mortality goal for both SRZ and CYRZ is zero human-caused mortality (ibid). This goal has not been reached as the number of mortalities has been exceeded during many years since research began in the SRZ and CYRZ in the early 1980s.

SRZ 2007-2009 Mortalities: Three grizzly bear mortalities (two females and one male) were documented in this ecosystem in 2007. Cause of death included one removal due to sanitations issues on private property in the Priest Lake area, one death due to collision with a vehicle on Highway 3 in British Columbia, and one illegal killing in the Priest Lake area. In 2008, another male grizzly was removed due sanitation issues on private property in the Priest Lake area. No mortalities were reported in 2009 for the SRZ (W. Wakkinen, pers. comm. 2010).

CYRZ 2007-2009 Mortalities: One grizzly bear death due to a self-defense killing occurred in the CYRZ in 2007. In 2008, four human-caused mortalities occurred due to poaching, a train collision, and a trapping incident in British Columbia. The fourth mortality is still under investigation. In 2009 two human-caused mortalities were documented including a case of mistaken identity and a case of self-defense. None of these mortalities from 2007-2009 occurred on the IPNFs (W. Kasworm, pers. comm. 2010).

The following table displays all documented grizzly bear mortalities and their causes for the past 28 years (K. Annis pers. comm. 2010, W. Kasworm pers. comm. 2010, Wakkinen et al. 2010)[4].

[4] This includes mortalities that occurred within the SRZ and CYRZ boundaries and a 10 air-mile area surrounding both the SRZ and CYRZ. This data is largely based on radio-collared animals, and as such, represents an incomplete picture of the total mortality occurring within the populations. For instance, almost all of the natural mortalities are derived from collared bears, while many of the human-caused mortalities represent a combination of radio-collared mortalities and mortalities reported by the public or documented during some law enforcement action (i.e., mistaken identity of poaching).

Table 32. Number of known grizzly bear mortalities by cause and jurisdiction from 1982 - 2009

Type of Mortality[1]	Cabinet-Yaak Ecosystem[2]			Selkirk Ecosystem[3]				Total
		United States			United States			
	British Columbia (BC)	KNF LNF IPNFs	Other[4]	British Columbia (BC)	IPNFs	CNF	Other[4]	
Natural – conspecific predation[5]	0	3	0	2	0	0	0	5
Natural - other	4	7	0	2	3	0	0	16
Subtotal (natural)	**4**	**10**	**0**	**4**	**3**	**0**	**0**	**21**
Human - poaching	0	2	6	2	2	3	0	15
Human – mistaken identity	0	3	2	0	4	0	0	9
Human – self defense	2	4	0	1	0	0	0	7
Human - management removal/sanitation	0	0	4	16	0	0	1	21
Human-legal hunting (BC only)	3	0	0	6	0	0	0	9
Human – trapping (for other spp)	1	0	0	0	0	0	0	1
Human-research	1	1	0	0	0	0	0	2
Human-train collision	0	0	3	0	0	0	0	3
Human-motor vehicle	0	0	0	1	0	0	0	1
Human-unknown	1	3	2	6	5	1	4	22
Subtotal (human)	**8**	**13**	**17**	**32**	**11**	**4**	**5**	**90**
Unknown	0	1	0	1	1	0	0	3
Total	**12**	**24**	**17**	**37**	**15**	**4**	**5**	**114**

[1] Type of Mortality – some of these mortalities could be categorized into more than one type of human-caused mortality.
[2] The official recovery zone is located in the United States only.
[3] The official recovery zone includes habitat in the United States and British Columbia.
[4] Includes private, state, and railroad lands
[5] Conspecific = grizzly bears killing grizzly bears

Demographic Recovery Plan Criteria

The 1993 Grizzly Bear Recovery Plan identified three demographic criteria to evaluate the status of grizzly bear recovery (USDI Fish and Wildlife Service 1993). This included: 1) the number of unduplicated counts of female grizzly bears with cubs; 2) distribution of females with cubs by bear management unit (BMU); and 3) the number of known human-caused grizzly bear mortalities. Tables 33 and 34 display the 2007 - 2008 data for the SRZ and CYRZ.

Table 33. Status of the SRZ in relation to the demographic recovery targets, 2007-2008 (from Wakkinen et al. 2008 and 2009)

Delisting Parameter	Delisting Target	2007 Status	2008 Status
Females w/Cubs (6-year average)	≥6.0	0.5	0.5
Mortality Limit (4% of minimum estimate)	0	3.0	2.5
Female Mortality Limit (30% of total mortality)	0	2.0	1.2
Distribution of Females w/Young	7 of 10 BMUs	4 of 10 BMUs[1]	4 of 10 BMUs[2]

[1]Myrtle, Sullivan-Hughes, Long-Smith, and Kalispell-Granite BMUs were occupied by family groups in 2007.
[2]Myrtle, Sullivan-Hughes, Long-Smith, and Kalispell-Granite BMUs were occupied by family groups in 2008.

Table 34. Status of the CYRZ in relation to the demographic recovery targets, 2007-2008 (from Kasworm et al. 2008 and 2009)

Delisting Parameter	Delisting Target	2007 Status	2008 Status
Females w/Cubs (6-year average)	≥6.0	2.2	2.0
Mortality Limit (4% of minimum estimate)	1.6	1.5	0.8
Female Mortality Limit (30% of total mortality)	0.5	1.2	0.5
Distribution of Females w/Young	18 of 22 BMUs	14 of 22 BMUs[1]	12 of 22 BMUs[2]

[1]Snowshoe (2), Spar (3), Bull (4), St. Paul (5), Wanless (6), Roderick (11), Newton (12), Keno (13), NW Peak (14), Garver (15), East Fork Yaak (16), Big Creek (17), Boulder (18), and Scotchman (21) BMUs were occupied by family groups in 2007.
[2]Snowshoe (2), Spar (3), Bull (4), St. Paul (5), Wanless (6), Roderick (11), Keno (13), NW Peak (14), Garver (15), East Fork Yaak (16), Boulder (18), and Scotchman (21) BMUs were occupied by family groups in 2008.

Habitat Security Management for Grizzly Bears

The Grizzly Bear Recovery Plan (USDI Fish and Wildlife Service 1993) identified adequate effective habitat as the most important element in grizzly bear recovery. Effective habitat is a reflection of an area's ability to support grizzly bears based on the quality of the habitat and the type/amount of human disturbance imposed on it. Security habitat allows for sufficient space for grizzly bears to roam and effectively use available habitats. By definition, security habitat is an area or space outside or beyond the influence of high levels of human activity. Open roads, vegetation and fuel projects, and high-use recreational areas such as trails or campgrounds are examples of activities that reduce the amount of secure habitat that is available to grizzly bears. Traffic on roads disrupts bear behavior and social dynamics, reduces the availability and use of adjacent habitats, creates barriers to movement, and leads to an increased risk of mortality.

Habitat security for grizzly bears is measured annually in fifteen grizzly bear BMUs in the SRZ and CYRZ. The SRZ contains ten BMUs including five on the IPNFs, four which are shared with CNF, and one BMU located on the Idaho Department of Lands (IDL). One of these BMUs, LeClerc, (which is

primarily on the CNF with a minor portion on the IPNFs) is less than 75% Federal ownership. Twenty-two BMUs are contained within the CYRZ, including 15 BMUs on the KNF, one BMU on the LNF, four BMUs on the IPNFs, and two BMUs shared between the KNF and IPNFs. One of these BMUs (Grouse BMU on IPNFs) is less than 75 percent Federal ownership. With the exception of the 28 square mile Lakeshore BMU in the SRZ, each BMU is approximately 100 square miles which represents the average home range of a female grizzly bear with cubs (Christensen and Madel 1982).

Controlling and directing motorized access is one of the most important tools in achieving habitat effectiveness and managing grizzly bear recovery (ibid). By controlling motorized access, certain objectives can be achieved including minimizing human interactions and potential grizzly bear mortality, reducing displacement from important habitats, and minimizing habituation to humans. Habitat effectiveness, Open Motorized Road Density (OMRD), Total Road Density (TMRD), and Core Area are four parameters used to quantify habitat security for the grizzly bear. These are explained in more detail below:

Habitat Effectiveness: The IPNFs Forest Plan directs that grizzly bear management emphasize maintaining adequate security while providing seasonal habitat components. The Forest Plans specify that management for grizzly bear recovery strive for a minimum of 70 % (KNF) or 70 square miles (mi^2) (IPNFs[5]) of security habitat or other established thresholds within each grizzly bear management unit (BMU) based on a BMU size of approximately 100 mi^2 (i.e. Christensen and Madel 1982 cumulative effects analysis process). Habitat effectiveness is calculated by buffering all open roads, timber harvest activities, and high use recreational features by ¼ mile. Habitat outside of the buffer is considered secure.

OMRD, TMRD, and Core Area: Research completed after the development of the Forest Plan indicated that open road density and security habitat calculations alone are not a complete measure of the effects of motorized access on grizzly bear habitat use, since grizzly bears tend to avoid closed roads as well as open roads (Mace and Manley 1993, Mace et al. 1996, Mace et al. 1999). Results from those studies demonstrated that grizzly bear use of an area declines as total road densities (open and closed roads) exceed 2.0 mi/mi^2 and open road densities exceed 1.0 mi/mi^2 (Mace and Manley 1993). In addition, if roads are located in or next to key habitat components such as riparian areas, snow chutes and shrub fields, important resources within these areas may be unused by bears because of their avoidance behavior, resulting in significant habitat loss. Core Area habitats are defined as areas of secure habitat within a BMU that contain no motorized travel routes or high use non-motorized trails during the active bear year and are more than 0.31 miles (500 meters) from a drivable road. These areas are an important component for adult female grizzly bears that have successfully reared and weaned offspring (IGBC 1994 and 1998).

Within the SRZ and CYRZ, Wakkinen and Kasworm (1997) found that grizzly bears used the following conditions in regards to roads:

- Open Road Density > 1 mi/square miles (must be 33 percent or less of a BMU);
- Total Road Density > 2 mi/square miles (must be 26 percent or less of a BMU); and
- Core Habitat must be at least 55% of the BMU.

Per the 2001 Biological Opinion (BO) for the IPNFs, access standards were set for each BMU (greater than ≥75% federal ownership) with regards to OMRD, TMRD, and Core Area in order to maintain the

[5] Selkirk RZ: Minimum security habitat standards for the Kalispell-Granite BMU were established at 70% of the BMU (USDA Forest Service 1995) as opposed to 70 mi^2, as this was felt to be more appropriate for the size of the BMU (130 mi^2) and better met the intent of the cumulative effects process outlined by Christensen and Madel (1982). When the Lakeshore BMU was delineated, it was recognized as atypical since it is significantly smaller than most other BMUs (28 square miles) and would not be able to meet the 70 square miles of security standard (USDA Forest Service 1995).

unit in a condition that promotes viability of the grizzly bear population (USDI Fish and Wildlife Service 2001). In general, the BO grizzly bear Terms and Conditions adopted the Rule Set access parameters (i.e. OMRD≤33%:TRMD≤26%:Core≥55) and spelled out timelines for implementation, administrative use, and reporting requirements Table 35 and 36 displays the history of OMRD, TMRD, and Core Area in each BMU (2002 - 2009).

Table 35. Grizzly bear habitat security in BMUs situated within the CYRZ IPNFs, 1999 - 2009

BMU & Total Size (Acres)	Access Parameter	YEAR										
		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
13-Keno (51,715)	OMRD(%)	36	35	33	33	33	33	34	34	34	34	**34**
	TMRD(%)	26	24	24	24	24	23	24	25	25	25	**25**
	CORE(%)	56	59	62	62	61	61	61	59	59	59	**59**
	HE(sq mi)	57	58	56	56	N/A	N/A	N/A	N/A	57	57	**57**
14-NW Peak (83,028)	OMRD(%)	32	28	35	28	27	28	28	28	28	28	**28**
	TMRD(%)	23	26	26	26	25	26	26	26	26	26	**26**
	CORE(%)	60	56	56	56	57	57	56	55	55	56	**56**
	HE(sq mi)	92	97	91	91	N/A	N/A	N/A	N/A	99	99	**99**
18-Boulder (62,379)	OMRD(%)	37	37	34	29	31	31	29	29	31	31	**31**
	TMRD(%)	35	35	35	35	35	35	35	35	35	35	**35**
	CORE(%)	48	48	48	49	49	49	49	50	50	50	**50**
	HE(sq mi)	67	68	68	75	N/A	N/A	N/A	N/A	73	73	**66**
19-Grouse (65,086)	OMRD(%)	45	45	59	59	59	59	61	60	60	60	**60**
	TMRD(%)	42	41	59	59	59	59	59	59	59	59	**59**
	CORE(%)	41	41	32	32	32	32	32	32	32	32	**32**
	HE(sq mi)	63	63	63	63	N/A	N/A	N/A	N/A	51	52	**50**
20-North Lightning (68,724)	OMRD(%)	38	38	38	38	38	39	39	40	37	36	**36**
	TMRD(%)	20	20	20	20	20	20	21	21	19	20	**20**
	CORE(%)	59	61	61	61	61	61	61	60	62	62	**62**
	HE(sq mi)	68	71	71	71	N/A	N/A	N/A	N/A	72	72	**73**
21-Scotch-man (62,288)	OMRD(%)	35	35	35	35	35	35	35	35	35	35	**35**
	TMRD(%)	27	27	27	27	27	26	26	26	27	27	**27**
	CORE(%)	63	63	63	63	63	63	63	63	63	63	**63**
	HE(sq mi)	67	67	67	67	N/A	N/A	N/A	N/A	67	67	**67**

[1]Not Available—With the signing of the 2004 Record of Decision (USDA Forest Service 2004) for the Grizzly Bear Access Amendment to the IPNFs, KNF, and LNF Forest Plans, habitat effectiveness became obsolete until the decision was remanded in the winter of 2006.

Table 36. Grizzly bear habitat security in BMUs situated within the SRZ, IPNFs, 1999 - 2009

BMU & Total Size (Acres)	Access Parameter	YEAR										
		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Blue Grass (57,325)	OMRD(%)	30	30	30	27	33	31	28	30	28	33	**33**
	TMRD(%)	33	29	30	30	30	31	28	28	28	28	**28**
	CORE(%)	45	49	50	50	50	51	51	50	50	50	**50**
	HE(sq mi)	66	64	63	69	N/A	N/A	N/A	N/A	69	65	**72**
Long-Smith (65,735)	OMRD(%)	21	21	22	23	21	22	21	21	21	21	**21**
	TMRD(%)	12	13	13	13	13	14	14	14	14	14	**14**
	CORE(%)	71	73	73	73	73	73	73	73	73	73	**73**
	HE(sq mi)	80	84	83	80	N/A	N/A	N/A	N/A	85	85	**85**
Ball-Trout (57,907)	OMRD(%)	17	16	16	18	17	17	17	17	17	17	**17**
	TMRD(%)	10	9	11	11	11	11	11	11	11	11	**11**
	CORE(%)	72	74	72	72	72	72	72	72	72	72	**72**
	HE(sq mi)	74	77	77	76	N/A	N/A	N/A	N/A	77	77	**77**
Myrtle (63,781)	OMRD(%)	28	31	31	30	30	31	32	31	31	33	**29**
	TMRD(%)	18	19	19	19	21	21	21	21	21	20	**20**
	CORE(%)	61	60	60	60	57	58	58	58	58	60	**60**
	HE(sq mi)	73	71	70	70	N/A	N/A	N/A	N/A	73	70	**74**
Salmo-Priest (87,115)	OMRD(%)	30	30	30	31	31	30	30	30	31	31	**30**
	TMRD(%)	24	24	24	25	26	26	25	26	25	25	**24**
	CORE(%)	64	64	64	65	65	65	66	66	66	66	**66**
	HE(sq mi)	102	102	102	102	N/A	N/A	N/A	N/A	102	102	**102**
Sullivan-Hughes (78,210)	OMRD(%)	23	23	23	23	23	24	24	24	24	24	**24**
	TMRD(%)	20	20	20	21	21	21	20	19	19	19	**19**
	CORE(%)	55	55	62	59	59	59	59	61	61	61	**61**
	HE(sq mi)	N/A	92	92	92	N/A	N/A	N/A	N/A	99	99	**99**
Kalispell-Granite (85,641)	OMRD(%)	31	31	31	31	28	29	29	29	29	32	**31**
	TMRD(%)	29	29	29	29	27	27	27	27	29	29	**28**
	CORE(%)	46	46	47	48	48	48	48	48	47	48	**49**
	HE(sq mi)	96	95	100	100	N/A	N/A	N/A	N/A	102	99	**100**
Lakeshore(17,972)	OMRD(%)	82	82	78	78	78	80	81	79	82	82	**82**
	TMRD(%)	56	56	50	50	50	51	51	51	54	54	**54**
	CORE(%)	16	16	21	20	20	20	20	20	19	19	**19**
	HE(sq mi)	8	8	8	8	N/A	N/A	N/A	N/A	9	9	**9**
Le Clerc (77,176)	OMRD(%)	N/A	24	24	38	39	38	38	38	48	45	**45**
	TMRD(%)	N/A	49	49	55	57	57	58	58	59	59	**58**
	CORE(%)	N/A	33	33	30	28	27	27	27	27	26	**27**
	HE(sq mi)	N/A	74	74	74	N/A	N/A	N/A	N/A	74	75	**78**

[1]N/A - With the signing of the 2004 Record of Decision (USDA Forest Service 2004) for the Grizzly Bear Access Amendment to the IPNFs, KNF, and LNF Forest Plans, habitat effectiveness became obsolete until the decision was remanded in the winter of 2006.

Tables 37 - 39 illustrate the specific changes that occurred in access for individual BMUs from 2007 through 2009.

Table 37. Actions taken in individual BMUs that resulted in changes from Bear Year 2006 to Bear Year 2007 in the SRZ and CYRZ within the IPNFs

BMU	ACTIONS
CABINET-YAAK RECOVERY ZONE	
Keno	Data compiled by the Kootenai NF
Northwest Peak	Data compiled by the Kootenai NF
Boulder	OMRD increased; no change to Core or TMRD. Specifically, private roads in T61N, R2E, S17 are open & drivable (change from restricted & barriered). Core and TMRD were recalculated for 2006 reporting, but OMRD was overlooked.
Grouse	No change from bear year 2006 (Core unchanged; net OMRD decrease; TMRD unchanged from bear year 2005). Road 2636 (Van Dyke Road) repair of the obliteration section was accomplished during the fall of 2007
North Lightning	Core increase; OMRD net decrease; TMRD decreased. The gate closing Forest Service Road *2641* had been breached based on the number of ATV tracks observed behind the gate. An OMRD deduction was taken. During the fall of 2007 boulders were placed along the left side of this gate (#206) which is expected to resolve the unauthorized motorized activity from this access point. The 2006 flood that occurred within the Lightning Creek drainage caused a significant amount of road resource damage. The Rattle Creek Rd 473 was rendered inaccessible to motorized vehicles as far as Clatter Creek during the 2007 bear year. Increase in core and decreases in TMRD and OMRD are attributed to this loss of motorized access.
Scotchman	No change in core or OMRD, slight increase TMRD. TMRD decrease due to mapping correction for a small segment of road (969-FDR, 0.4 mile) not previously identified on the 2006 road coverage. The segment doesn't impact core since the new segment is already within buffers of adjacent roads and its impact is accounted for within the OMRD calculations of moving windows.
SELKIRK RECOVERY ZONE	
Blue Grass	OMRD decrease, no change to Core or TMRD; Same condition and activities as 2006, except upper (S) 3.0 miles of FR 636 to gravel pit not needed so no road discount taken for this segment.
Long-Smith	No change in Core, OMRD, or TMRD
Kalispell-Granite	Core decrease, OMRD unchanged, TMRD increase. Temporary core loss (second year): Roads *1015UA-FDR* and *1015UD-FDR* (~0.5 mile and 0.8 mile, respectively) were opened and accessed for rehab purposes (Plowboy fire). Gated in 2007 and access behind the gate would be light and not in excess of allowable administrative trips. Road *1323-FDR* was accessed via the gate (109) at the junction with *1341-FDR* for the Plowboy fire rehab. Administrative access did not exceed that permitted. OMRD deduction was not taken. Roads 2231A (~0.6 mi.), 2231C (~0.6 mi.), 2231CUC (~0.1 mi.), and 2516 (~1.2 mi.) had unauthorized use (around gates 110 and 111) that appeared to be consistent enough to take an OMRD deduction. Both these gates have since been relocated (fall 2007) to improve effectiveness of these closure points. Other mapping corrections combined to bring baseline core down to 48%. This, combined with the temporary core impact due to the wildfire, resulted in the additional decrease. TMRD remained elevated due to the fire rehab use as well as mapping corrections changing IGBC codes from impassable to gated or open roads.

BMU	ACTIONS
Salmo-Priest	Data compiled by the Colville NF
Sullivan-Hughes	Data compiled by the Colville NF
Myrtle	No change in Core, OMRD, or TMRD
Ball-Trout	No change in Core, OMRD, or TMRD
Lakeshore	Core decrease, OMRD and TMRD increase: Roads 2231A (~0.6 mi.), 2231C (~0.6 mi.), 2231CUC (~0.1 mi.), and 2516 (~1.2 mi.) had unauthorized use (around gates 110 and 111) that appeared to be consistent enough to take an OMRD deduction. Both these gates have since been relocated (fall 2007) to improve effectiveness of these closure points. In addition to the above unauthorized use, map review in spring 2007 of the Lakeshore BMU road conditions identified inaccuracies that resulted in a net loss of core (~177 acres) and increases in OMRD and TMRD.
Le Clerc	Data compiled by the Colville NF

Table 38. Actions taken in individual BMUs that resulted in changes from Bear Year 2007 to Bear Year 2008 in the SRZ and CYRZ within the IPNFs

BMU	ACTIONS
CABINET-YAAK RECOVERY ZONE	
Keno	A 0.01 change in OMRD between bear years is due to electronic variation in computer model. No actual changes in road access.
Northwest Peak	Berm placed on spur road increased Core by 1% for 2008.
Boulder	No change from bear year 2007.
Grouse	FS Road *2636* berm was improved and a portion of the east side of this road was obliterated in the fall of 2007 to eliminate the unauthorized motorized access. Therefore, an OMRD deduction was not needed for the 2008 bear year. The gate on FS Road 2236 showed evidence of consistent breaching during the active bear year. Without knowing the condition of FS Road 2236 and 2236A it is assumed the entire restricted segment (~2.8 miles) was potentially available to motorized users at use levels exceeding allowable administrative trips. Therefore, and OMRD deduction was taken here for the 2008 bear year. FS Road 280C is gated at the FS/Private boundary and continues to its terminus on Forest Capital (FC) land. This road, from the gate to the end is on FC property, provides access to the owners and is not restricted in terms of allowed trips. For the purposes of OMRD calculations this portion of road behind the gate should be considered "open" since there is no enforceable agreement to restrict FC's access to allowable levels. This change in road condition is not likely to change OMRD measurably since all private ownership in the Grouse BMU is already assumed to have high road densities. Due to the slight changes in open and gated road configuration, security habitat increased very slightly (enough to round from 51 mi^2 to 52 mi^2).
North Lightning	During the fall 2007 boulders were placed along the left side gate (#206) on FS Road 2641 which appeared to resolve the unauthorized motorized activity from this access point. Approximately 3000 feet of Rattle Creek Road (473-FDR) was accessible to motorized vehicles (ATVs and motorcycles) during the 2008 bear year and therefore impacted CORE, OMRD and TMRD. This road condition (3000' motorized) was mistakenly missed during the annual reporting to FWS for bear year 2007 and was reported last year as impassible.

BMU	ACTIONS
Scotchman	Gate 261 on FS Road 54 had consistent evidence of breaching throughout the active bear season. Therefore, an OMRD deduction was taken. This also slightly impacted security habitat (temporary seasonal decrease of about 70 acres).
SELKIRK RECOVERY ZONE	
Blue Grass	OMRD increased to accommodate Boundary Timber Sale follow-up activities (access FR 636 borrow pit & resurface FR 2253, pile/burn units on FR 1011), Blazing Saddle #1 harvest (FR 2254) and NuNu View salvage (FR 2251). Also, FR 2546 (Blue Joe Creek) modeled as "open" to account for unknown level of use by Continental Mine property owners.
Long-Smith	No change from bear year 2007.
Kalispell-Granite	Roads 1015UA-FDR and 1015UD-FDR were put back into an impassable condition following rehab work in bear year 2007. Core and TMRD levels here returned to "pre-Plowboy Fire" conditions. Change in TMRD, once rounded, did not result in whole-number change in reporting. In 2007, Roads 2231A (~0.6 mi.), 2231C (~0.6 mi.), 2231CUC (~0.1 mi.), and 2516 (~1.2 mi.) had unauthorized use (around gates 110 and 111) that appeared to be consistent enough to take an OMRD deduction. Both these gates have since been relocated (fall 2007) to improve effectiveness of these closure points. These roads were considered closed (gated) for the 2008 OMRD calculation. Dusty Peak road decommissioning of Roads 1373, 1373A and 1373UL totaling approximately 6.7 miles exceeded the total trip allowance during the project implementation, therefore a OMRD deduction was taken for 2008 bear year. Roads 1351, 1351UI, and 1351UX (approximately 3.97 miles) were accessible to motorized vehicles during the 2008 bear year due to a faulty gate (#113). The gate closing access (1351UI) was damaged during routine snow groomer activities during the winter 2007/2008 and attempts made by District personnel to chain the damaged gate closed were unsuccessful as evident by the tire tracks behind the closure. An OMRD deduction was taken. Trail to Hungry Mountain (T-162) has been receiving some level of unauthorized motorcycle use although trail is signed as non-motorized. North Zone Travel Map should not show it as motorized and this will be corrected during map revision in near future. This will result in gaining back some core lost (virtual) associated with the mapping change.
Salmo-Priest	Open road density process changed for 2008--should have been including active roads.
Sullivan-Hughes	No change from bear year 2007.
Myrtle	OMRD increased due to temporarily reopening vegetated roads for decommissioning purposes in Mack and Jim Creeks. Also modeled FR 1309 as "open" to accommodate resurfacing for haul route (Mini Mack TS) and to decommission upper ~ ½ mile. Core increase/TMRD decrease as a result of road decommissioning (FR 633-E) conducted during 2007 bear year. Also, a correction to road near end of FR 2692: wrong road had been modeled as "drivable" (IGBC 4 should have been IGBC 1 for longer of two adjacent road segments).
Ball-Trout	No change from bear year 2007.
Le Clerc	Data compiled by the Colville National Forest

BMU	ACTIONS
Lakeshore	In 2007, Roads 2231A (~0.6 mi.), 2231C (~0.6 mi.), 2231CUC (~0.1 mi.), and 2516 (~1.2 mi.) had unauthorized use (around gates 110 and 111) that appeared to be consistent enough to take an OMRD deduction. Both these gates have since been relocated (fall 2007) to improve effectiveness of these closure points. These roads were considered closed (gated) for the 2008 OMRD analysis. Roads 1351 and 1351UI (approximately 1.9 miles associated with Lakeshore BMU roads) were accessible to motorized vehicles during the 2008 bear year due to a faulty gate. The gate closing access (1351UI) was damaged during routine snow groomer activities during the winter 2007/2008 and attempts made by District personnel to chain the damaged gate closed were unsuccessful as evident by the tire tracks behind the closure. An OMRD deduction was taken, however it did not result in a whole-number change in OMRD reported.

NOTE: On-going field validation of road status and INFRA road database cleanup may contribute to some change each year. Conditions on the ground do not necessarily change from the previous year.

Table 39. Actions Taken that Resulted in Changes from Bear Year 2008 to Bear Year 2009 in the SRZ and CYRZ on the IPNFs

BMU	ACTIONS
CABINET-YAAK RECOVERY ZONE	
Keno	There were no changes from bear year 2008.
Northwest Peak	There were no changes from bear year 2008.
Boulder	OMRD increased due to post-sale piling activities on FR 2267 (Kitkatkee Timber Sale) and trip limits possibly exceeded by fire crews conducting road maintenance (mostly sawing) on FR 1304.
Grouse	FS Road *2636 (Van Dyke Road)* on the north end (gate #240) was open most of the 2009 season due to a missing lock and missing swing arm tab. In October 2009 the gate was moved closer to the FS boundary and will no longer provide access to Forest Capital property and the swing arm was replaced. An OMRD deduction was taken for the 2009 Bear Year. The gate on FS Road 2236 (gate #203) showed evidence of breaching during the 2008 active bear year. During 2009, field crew walked portions of the 2236 road and confirmed evidence of motorized vehicles was noted along portions of the restricted road access. In October 2009, a contractor used heavy equipment to place large boulders on the left side of the gate. A large, deep trench was dug on the right side to deter breaching. Approximately 2.8 miles of restricted road was potentially accessed during the 2009 season prior to improvements, therefore, an OMRD deduction was taken again here for the 2009 Bear Year. FS Road 280C is gated at the FS/Private boundary and continues to its end on Forest Capital (FC) land. This road, from the gate to the end is on FC property, provides access to the owners and is not restricted (as far as we know) in terms of allowed trips. For the purposes of OMRD calculations this portion of road behind the gate will be modeled as "open" since there is no enforceable agreement to restrict FC's access to allowable levels. FS Road 280D is gated however the private landowners have access to their property via this gate and trips were not tracked for the 2009 bear year. The private landowner's access road was modeled as "open". The road use permit was reissued in the fall of 2009 with the requirement for tracking their own access and reporting it to the District's Lands staff.

North Lightning	Access to Cochran's Draw FS Road 1082 (Gate #221) exceeded allowed administrative trips during late June/early July of 2009 and resulted in an OMRD deduction for the 0.37 mile section of restricted road. Approximately 3000 feet of Rattle Creek Road (473-FDR) was again accessible to motorized vehicles (ATVs and motorcycles) during the active bear year again in 2009 and therefore impacted Core, OMRD, and TMRD. The Lake Darling trail was converted from a motorized trail to a non-motorized trail. This improved core (~760 acres) and decreased OMRD and TMRD. However, see the discussion below to understand why there was a net increase to TMRD. FS Roads 1054 & 1054A were temporarily open for access to a quarry site for rock for road work associated with the Lightning Creek Restoration project. Approximately 1.2 miles of barriered road was opened for this project. Opening this road temporarily added approximately 387 acres into grid-code 4 which was more than what was gained by converting the Lake Darling trail into non-motorized (lost 165 acres of grid-code 4). This change/temporary change resulted in a slight net increase to TMRD and a temporary impact to core (~116 acres). OMRD gains from the trail conversion were substantial enough to still offset any temporary OMRD deductions associated with the use of the 1054/1054A and 1082 roads.
Scotchman	The gate on FS Road 54 (gate 261) had consistent evidence of breaching throughout the 2009 active bear season. Therefore, an OMRD deduction was taken. This also again slightly impacted security habitat (temporary seasonal decrease of about 70 acres). In October 2009 the gate was relocated approximately 500 feet further in on FS Road 54 which should make this access point more secure.
SELKIRK RECOVERY ZONE	
Blue Grass	OMRD decrease from 2008 bear year due to sharp drop in major activities in this BMU. Boundary TS follow-up activities were nearly wrapped up in 2008, with the exception of tree planting on Grass Mountain. Burning/piling was only conducted in several Blazing Saddle units immediately adjacent to FR 1009. No timber sale activity in remaining Blazing Saddle units, and FR 2251 back to restricted status in 2009 (NuNu View salvage completed 2008). Administrative use trips on 1009 (Saddle Pass road to Grass Creek) likely exceeded limits during the summer season due to tree planting, grazing allotment management, roadside brushing, gate repair, and miscellaneous trips for research and other purposes. However, this use is dispersed in three directions at Grass Creek, and monitoring does not indicate that administrative use levels were exceeded beyond this point. Once again, FR 2546 (Blue Joe Creek) modeled as "open" to account for unknown level of use by Continental Mine property owners.
Long-Smith	No changes from the 2008 bear year.
Kalispell-Granite	Dusty Peak road decommissioning of Roads 1373, 1373A and 1373UL totaling approximately 6.7 miles was completed during bear year 2008, therefore an OMRD deduction was not taken for bear year 2009. The decommissioning resulted in a TMRD reduction and a CORE increase (approx. 1,018 acres) Gate 113, which serves FS Roads 1351, 1351UI, and 1351UX, had sustained damage during winter grooming activities in 2007/2008. Repairs of the gate and locking post, along with some boulder repositioning were completed during the fall of 2009. An OMRD deduction (~4 miles of gated road was considered "open") was taken again since the repairs were implemented late in the 2009 fall season. Hungry Creek road decommissioning FS Road 2119 was completed during the summer and fall season of 2009. Administrative trips needed to complete this work exceeded the allotted 23 (summer) and 15 (fall) trips, therefore, an OMRD deduction was taken. Deer Creek road decommissioning FS Road 2120 was initiated during the fall season 2009.

Salmo-Priest	No CNF timber sales were active in this BMU in 2009. In the spring, the ranger district's fire crew completed a broadcast burn of one harvest unit located on the Slate Creek road system (FR 3155). During the spring, tree planters and a weed spraying contractor required administrative access on the Slate and Slumber Creek Road (FR 3160) systems. In the fall, the fire crew burned logging slash piles on the Slate Creek road system. In late summer / fall of 2008, the CNF placed two restricted roads in this BMU in "storage". The Forest's backhoe operator established long term drainage on the roads, removed the gates, and excavated several large earthen berms on each road entrance. The entrances were planted with shrubs and conifer trees. Forest Roads treated in this manner were; FR 2212180 and FR 2212400. These actions were required mitigation for the Totem Timber Sale. Because this work was completed late in the 2008 season, we continued to count the roads as restricted road in 2008. These roads are classed as impassable / obliterated for 2009. In 2009, the CNF bermed several other restricted roads in this BMU in like fashion to the above. These roads included; FR 2200255, FR 2212207, FR2212210, FR 2212219, and FR 2212220. Because these roads were gated (restricted) during a portion of the 2009 season, we will not classify them as impassable / obliterated until 2010.
Sullivan-Hughes	Fire personnel put out the Pass Creek Fire (lightning caused) in August of 2009. They brushed out FR 2200130 (Oh John's Road) wide enough for ATV to use in order to ferry equipment and supplies to the fire. They also knocked down a portion of the berms on the road entrance. After the project, several trees were cut down into the road prism to block access by the public. Next summer we will assess whether further action is needed to effectively close this road. A lightning-caused fire on Hall Mountain was also fought in the summer of 2009. This fire required motorized access on a seasonally closed road (FR 2200500) for a couple days. The Colville NF completed no other activities that affected road densities, core habitat, or seclusion habitat in this BMU.
Myrtle	OMRD decreased as there were no road decommissioning activities in 2009, and FR 1309 resurfacing for haul route (Mini Mack TS) completed in 2008. No change in core or TMRD percentages, although an approximately 90-acre core increase due to decommissioning of upper ~ ½ mile of FR 1309 and barriers placed in FR 2692A in 2008. There is some discrepancy in core acres between 2008 and 2009: 2009 should show ~90 acres more core, but in fact is about 45 acres less than 2008. The math was rechecked and the mapping appeared accurate. Closer inspection showed what appear to be minor differences in the road buffers between the two. These "slivers", although quite narrow, collectively comprise almost 150 acres BMU-wide. It is not known how 2008 coverage was generated, but typical approach (used in 2009) is to buffer road segments by 500 m and use "identity" to fill BMU space in ArcGIS.
Ball-Trout	No changes from the 2008 bear year.
Le Clerc	Data compiled by Colville National Forest

Lakeshore	Roads 1351 and 1351UI (approximately 1.9 miles associated with Lakeshore BMU roads) were accessible to motorized vehicles during the 2009 bear year due to a faulty gate. The gate closing access (1351UI) was damaged during routine snow groomer activities during the winter 2007/2008. Repairs of the gate and locking post, along with some boulder repositioning were completed during the fall of 2009. An OMRD deduction was taken again since the repairs were implemented late in the fall season. Road 2231-UA-FDR was field checked during summer 2009 and could not be found so it was recoded as "1" (~0.2 mile) impassible road from a "4" open road. This is a mapping change that resulted in a tiny decrease in OMRD/TMRD. "Raven Ranch" Roads 308UA, 308UC, 308UD, 2519D, and 2519DUA (~0.8 miles "4" and ~0.9 miles "2") were field reviewed during summer of 2009 and resulted in the above change from "1" impassible. This mapping change resulted in a small (less than 0.5%) OMRD/TMRD increase. In October 2009, boulders were strategically placed to limit access into the gravel pit.

Administrative Use and Monitoring

Per the 1998 IGBC recommendations (Selkirk Cabinet-Yaak Subcommittee of the Interagency Grizzly Bear Committee 1998) and 2001 BO (USDI Fish and Wildlife Service 2001), the IPNFs has adhered to recommended standards to address the level of motorized use on restricted roads (i.e. behind gates). This parameter is applied on an individual road basis, with those roads that exceed the use limits being treated as "open" for purposes of calculating OMRD. Per the 2001 Biological Opinion, the administrative use standards allow a certain number of vehicles on official Forest Service business to access gates that are closed to the general public. These include private vehicles which have authorized to conduct Forest Service business behind these gates. The maximum number of allowable vehicle trips by bear season for each gate is as follows: **19** trips during spring (April 1 to June 14) **+ 23** trips during summer (June 15 to September 14) **+ 15** trips during fall (September 15 to November 15) **= 57** total. Administrative use needs change from year to year. Tables 40 - 45 illustrate administrative use for the SRZ and CRZ from 2007 through 2009.

In addition, the 2001 BO required that at least 10 percent of restricted roads be monitored to provide a reliable count of the combined FS and industry administrative use occurring on these roads.

SRZ Administrative Use: During bear year 2007 in the SRZ, there were no instances where administrative use levels exceeded allowable seasonal or total use levels.

Table 40. Seasonal administrative use within the IPNFs portion of the SRZ by BMU, 2007

Bear Management Unit	Number of Restricted Roads with Administrative Use During Bear Year 2007	Number of Restricted Roads Exceeding Administrative Use Levels During Bear Year 2007			
		Spring 4/1-6/15 (≥19 round trips)	Summer 6/16-9/15 (≥23 round trips)	Fall 9/16-11/15 (≥15 round trips)	Total Use 4/1-11/15 (≥57 round trips)
Blue Grass	9	0	0	0	0
Long Smith	1	0	0	0	0
Kalispell Granite	8	0	0	0	0
Salmo Priest	1	0	0	0	0
Sullivan Hughes	3	0	0	0	0
Myrtle	3	0	0	0	0
Ball Trout	0	0	0	0	0
Lakeshore	0	0	0	0	0
Total	**25[1]**	**0**	**0**	**0**	**0**

[1]Corrected from 2008 monitoring report to USFWS (reported total=20 trips). Does not include the LeClerc BMU.

During bear year 2008 in the SRZ, there were four instances where administrative use levels exceeded allowable seasonal use levels. In seven cases, the seasonal administrative use also resulted in the total allowable use levels (57 trips) being exceeded for 2008.

Table 41. Seasonal administrative use within the IPNFs portion of the SRZ by BMU, 2008

Bear Management Unit	Number of Restricted Roads with Administrative Use During Bear Year 2008	Number of Restricted Roads Exceeding Administrative Use Levels During Bear Year 2008			
		Spring 4/1-6/15 (≥19 round trips)	Summer 6/16-9/15 (≥23 round trips)	Fall 9/16-11/15 (≥15 round trips)	Total Use 4/1-11/15 (≥57 round trips)
Blue Grass	8	0	2	1	2
Long Smith	2	0	0	0	0
Kalispell Granite	4	3	0	0	3
Salmo Priest	0	0	0	0	0
Sullivan Hughes	0	0	0	0	0
Myrtle	4	0	2	0	2
Ball Trout	3	0	0	0	0
Lakeshore	0	0	0	0	0
Total	**21[1]**	**3**	**4**	**1**	**7**

[1]Corrected from 2008 monitoring report to USFWS (reported total=18 trips). Does not include the LeClerc BMU.

During Bear Year 2009 in the SRZ, there were eight instances where administrative use levels exceeded allowable seasonal use levels. In five cases, the seasonal administrative use also resulted in the total allowable use levels (57 trips) being exceeded for 2009.

Table 42. Seasonal administrative use within the IPNFs portion of the SRZ by BMU Seasonal Administrative, 2009

Bear Management Unit	Number of Restricted Roads with Administrative Use During Bear Year 2009	Number of Restricted Roads Exceeding Administrative Use Levels During Bear Year 2009			
		Spring 4/1-6/15 (≥19 round trips)	Summer 6/16-9/15 (≥23 round trips)	Fall 9/16-11/15 (≥15 round trips)	Total Use 4/1-11/15 (≥57 round trips)
Blue Grass	12	0	1	0	0
Long Smith	2	0	0	0	0
Kalispell Granite	11	0	1	2	0
Salmo Priest	13	3	3	3	3
Sullivan Hughes	6	0	2	3	2
Myrtle	4	0	0	0	0
Ball Trout	5	0	0	0	0
Lakeshore	2	0	0	0	0
Total	**55**[1]	**3**	**7**[2]	**8**	**5**

[1]Does not include LeClerc BMU.
[2]Corrected from 2009 monitoring report to USFWS (reported total=6 trips).

CYRZ Administrative Use: During Bear Year 2007 in the CYRZ, there were no instances where administrative use levels exceeded allowable seasonal use or total use levels.

Table 43. Seasonal administrative use within the IPNFs portion of the CYRZ by BMU, 2007

Bear Management Unit	Number of Restricted Roads with Administrative Use During Bear Year 2007	Number of Restricted Roads Exceeding Seasonal and Total Administrative Use Levels During Bear Year 2007			
		Spring 4/1-6/15 (≥19 round trips)	Summer 6/16-9/15 (≥23 round trips)	Fall 9/16-11/15 (≥15 round trips)	Total Use 4/1-11/15 (≥57 round trips)
13-Keno	2	0	0	0	0
14-NW Peaks	0	0	0	0	0
18-Boulder	7	0	0	0	0
19-Grouse	1	0	0	0	0
20-North Lightning	0	0	0	0	0
21-Scotchman	2	0	0	0	0
Total	**12**	**0**	**0**	**0**	**0**

Note: Once roads exceeded allowable round trips, they were considered open for analysis purposes for the remainder of the bear year.

During Bear Year 2008 in the CYRZ, there were no instances where administrative use levels exceeded allowable seasonal use levels.

Table 44. Seasonal Administrative Use within the IPNFs portion of the CYRZ by BMU, 2008

Bear Management Unit	Number of Restricted Roads with Administrative Use During Bear Year 2008	Number of Restricted Roads Exceeding Seasonal and Total Administrative Use Levels During Bear Year 2008			
		Spring 4/1-6/15 (≥19 round trips)	Summer 6/16-9/15 (≥23 round trips)	Fall 9/16-11/15 (≥15 round trips)	Total Use 4/1-11/15 (≥57 round trips)
13-Keno	1	0	0	0	0
14-NW Peaks	3	0	0	0	0
18-Boulder	6	0	0	0	0
19-Grouse	1	0	0	0	0
20-North Lightning	1	0	0	0	0
21-Scotchman	0	0	0	0	0
Total	**12**	**0**	**0**	**0**	**0**

Note: Once roads exceeded allowable round trips, they were considered open for analysis purposes for the remainder of the bear year.

During Bear Year 2009 in the CYRZ, there was one instance where administrative use levels exceeded allowable seasonal use levels.

Table 45. Seasonal Administrative Use within the IPNFs portion of the CYRZ by BMU, 2009

Bear Management Unit	Number of Restricted Roads with Administrative Use During Bear Year 2009	Number of Restricted Roads Exceeding Seasonal and Total Administrative Use Levels During Bear Year 2009			
		Spring 4/1-6/15 (≥19 round trips)	Summer 6/16-9/15 (≥23 round trips)	Fall 9/16-11/15 (≥15 round trips)	Total Use 4/1-11/15 (≥57 round trips)
13-Keno	1	0	0	0	0
14-NW Peaks	5	0	0	0	0
18-Boulder	7	0	0	0	0
19-Grouse	3	0	0	0	0
20-North Lightning	4	0	1	0	0
21-Scotchman	2	0	0	0	0
Total	**22**	**0**	**1**	**0**	**0**

Gate and Barrier Monitoring

Closure Device Inspection and Maintenance Forms were completed on each district and utilized by wildlife personnel to determine closure effectiveness within the CYRZ and SRZ. Table 46 summarizes the monitoring completed from 2007 through 2009 on restricted roads and barriers within the respective

recovery zones. See Tables 40 through 45 for details on restricted routes that experienced excessive, unauthorized motorized use and the net effect on OMRD.

Table 46. Summary of restricted and closed route monitoring within the SRZ and CYRZ located on the IPNFs, 2007-2009*

Grizzly Bear Recovery Zone	Closure Type	Number of Devices	2007		2008		2009	
			Number of Closures Monitored once or more during Active Bear Year					
			1	≥2	1	≥2	1	≥2
Selkirk	Gate	93	10	59	11	68	11	42
	Barrier	18	0	8	3	13	6	7
Cabinet -Yaak	Gate	58	12	36	5	37	5	32
	Barrier	39	8	0	2	1	0	5

*Data is on file at the Bonners Ferry, Sandpoint, and Priest Lake Ranger Stations.

Record of Restricted Road Closure Repairs (Gates and Berms), 2007 – 2009

Maintenance and repair of the existing closure devices within the recovery zones is an on-going process of site inspection and implementation of repairs and enhancements. Table 47 documents the repairs and maintenance that occurred within the recovery zones from 2007 through 2009 by BMU.

Table 47. Summary of restricted and closed route maintenance within the SRZ and CYRZ located on the IPNFs, 2007-2009*

BMU	Annual Road Closure Repairs (by Gate Number)		
	2007	2008	2009
Blue Grass			
Long Smith		#80, #81	
Kalispell Granite	#104, #105, #108, #109, #111, #GR8, #GR9		#25, #87, #113
Salmo Priest			#9
Sullivan Hughes	#15		#1, #12, #13, #17
Myrtle	#60	#60, #120	#60, #54
Ball Trout	#32	#31, #32	
LeClerc			
Lakeshore	#72, #110		#28, #70, #112
Keno			#20 and new gate at Buckhorn Mine road
Northwest Peaks			#117
Boulder	#53	#26, #53	#53, #129 + berms reinforced
Grouse	#29, #B216, #236	#86, #87 and berm improved on Rd. 2636	#240, #203, #241
North Lightning	#255, #206, #B2640A, #B2640B, #B2640E	#206	#T-51, #210, #206, #257
Scotchman			#248, #247, #261

*Most maintenance involved placing concrete posts or boulders or digging trenches adjacent to gates. Data is on file at the Bonners Ferry, Sandpoint, and Priest Lake Ranger Stations.

In 2009, more than $37,000 was spent to purchase new gates, new gate parts, new locks, and implement closure maintenance and repairs with the two recovery zones.

Other Monitoring

Population Estimation using DNA Hair-Snares: The IPNFs participated in a one-year DNA-based hair snaring effort in 2007 to quantify a grizzly bear population estimate in a portion of the SRZ. The effort was lead by Idaho Fish and Game and involved sampling in five kilometer square grids. IPNFs wildlife crews monitored eight hair snare stations located within the SRZ and collected a total of 248 hair samples. This information was used as part of Wakkinen's 2010 population evaluation (see page 48 of this report).

Photo Documentation of Grizzly Bears in the SRZ: The IPNFs purchased fifteen digital cameras in 2009 to assist with documenting grizzly bears in the SRZ. IPNFs wildlife biologists coordinated with Idaho Fish and Game biologists and conservation officers to set up photo stations in several drainages in ecosystem. Grizzly bears were documented at two different sites.

Forest Plan Monitoring Item F-3 Caribou Recovery

The purpose of this item is to monitor the population changes and the effectiveness of their habitat too determine if recovery objectives outlined in the Woodland Caribou Recovery Plan are being met (USDI Fish and Wildlife Service 1994).

Background

The Selkirk population of woodland caribou was listed as endangered by the U.S. Fish and Wildlife Service under an emergency listing process in 1983, with a final rule published in 1984 (USDI 1985). At the time of listing, the population consisted of some 25-30 animals with a distribution situated around Stagleap Park in British Columbia and the nearby international border (Scott and Servheen 1985). The recovery area for caribou in the Selkirk Mountains is comprised of approximately 1,477 square miles in southern British Columbia, northeastern Washington and northern Idaho. Forty-seven percent of the recovery area is located in British Columbia, while the remaining 53 percent falls within the U.S. (USDI Fish and Wildlife Service 1994). The Fish and Wildlife Service recently agreed to designate critical habitat within the Recovery Area with work beginning on the effort in 2010 (B. Holt, pers. comm. 11/18/2009).

The decline in woodland caribou numbers has been generally attributed to habitat loss, habitat fragmentation, and excessive mortality by predators and humans (Mountain Caribou Technical Advisory Committee 2002, USDI Fish and Wildlife Service 1985, 1994, and 2008).

Population Status

An intermediate population target of 100-109 caribou was initially set in the first recovery plan for woodland caribou (USDI Fish and Wildlife Service 1985). However, this target was not assumed to be a recovered population, with additional genetics and population modeling work required to reevaluate population viability and a recovered population size (USDI Fish and Wildlife Service 1994). In the short term, the 1994 Plan set a goal of maintaining two herds (in B.C. and Idaho) and the desire to establish a herd in Washington as well (ibid).

As part of the plan for their recovery, caribou were augmented into the ecosystem from populations[6] in British Columbia (USDA Forest Service 1985). In 1987, 1988, and 1990, 60 caribou were augmented into the Idaho portion of the ecosystem. As a result of these efforts the population within the southern Selkirks increased to approximately 55 to 70 animals by 1990. However, the population declined in 1996 in what is believed to be the result of increased rates of predation (Wakkinen and Johnson 2000). A subsequent augmentation effort was conducted in 1996 and 1997 to place 32 caribou into the Washington portion of the ecosystem, followed by a 1998 effort to release 11 additional caribou into the British Columbia portion of the recovery area (Almack 2000, USDI Fish and Wildlife Service 2008). However, similar declines were noted in the Washington portion of the recovery area (Almack 2000). Idaho Fish and Game documented only 1-3 caribou in the vicinity of Snowy Top and Little Snowy Top[7] during the last five years of late winter census efforts. The Selkirk caribou population is currently estimated at 43 animals, with 41 of these animals residing in British Columbia (late winter aerial surveys, Wakkinen et al. 2010).

[6] Augmented caribou included both *mountain* and *northern* ecotypes based on the availability of animals from several source populations in British Columbia.

[7] Shedroof Divide situated on both the IPNF and CNF.

Neither the interim population target of 100-109 animals nor the creation and maintenance of herds in Idaho and Washington have been achieved at this time. Currently, the existing distribution of caribou appears to be nearly identical to the mid-1980s when only a handful of caribou were using the Little Snowy Top/Shedroof divide area with any consistency. While the goal of establishing new herd groups and increasing the local population within the United States has not been successful the program has been important in maintaining a core population of caribou within the overall recovery area (USGAO 1999) (USDI Fish and Wildlife Service 2008).

Forest Plan Direction

Appendix N of the Idaho Panhandle National Forests Forest Plan listed specific habitat management guidelines for caribou. The Forest Plan defined target conditions for each of five seasonal caribou habitats. Achieving target conditions is a long-term process, resulting from natural succession or manipulation of vegetation. The Forest Service continues to implement recommendations of the caribou steering committee and recovery teams, support Idaho Department of Fish and Game and Washington Department of Fish and Wildlife in winter caribou censuses and monitoring radio-collared caribou, and support research on predation and other factors that are preventing the recovery of this species.

A stand-based habitat suitability index (HSI) and habitat capability index (HCI) was developed as part of the 1987 IPNF Forest Plan (USDA 1986). Subsequent updates and evaluation of the Idaho/Washington portion of the recovery area have been used for land management decisions from 1994 to 2007 (Allen and Deiter 1993, and Allen 1998). A landscape level habitat priority model was recently developed to facilitate a unified broad-scale assessment of caribou habitat throughout the SRZ (Kinley and Apps 2007).

The 2001 Amended Biological Opinion for the Continued Implementation of the Idaho Panhandle National Forests Land and Resource Management Plan[8] (USDI Fish and Wildlife Service 2001), emphasized that increasing recreation pressure (during both winter and summer seasons) was decreasing habitat effectiveness for caribou. This included potential increases in caribou harassment, displacement, and possible injury in late winter habitats by snowmobile recreational activity (ibid).

The IPNFs responded by developing a "Situation Summary and Management Strategy for Mountain Caribou and Winter Recreation" (USDA Forest Service 2004). This document provided a strategy to 1) educate the public on the existing closure areas and the effects of winter recreation on caribou; 2) emphasize law enforcement of existing snowmobile closure areas; and 3) monitor the effectiveness of closure areas and define existing snowmobile use (ibid). Subsequent implementation by the IPNFs included enhanced information and education efforts and aerial monitoring of recreation versus caribou use. However, litigation in 2005 resulted in a 2007 injunction to preclude snowmobile use within much of the caribou recovery zone until the IPNFs completed a Winter Travel Plan. Since 2007, the IPNF has conducted aerial and ground patrols in order to enforce this closure.

Monitoring the Court Ordered Snowmobiling Closure

2008 Monitoring

In January 2008, about 1,000 user maps were distributed to Ranger Districts, resorts and snowmobile dealers over the north zone. Priest Lake employees visited the 302 trailhead on numerous occasions and

[8] The 2001 Biological Opinion for the continued implementation of the 1987 Forest Plan was necessary in order to comply with the revised regulations governing section 7 procedures of the Endangered Species Act. The 2001 BO administratively amended the original 3/24/1986 biological opinion to include an analysis of incidental take and an incidental take statement pursuant to CFR Part 402.14(i) (USDI Fish and Wildlife Service 2001).

checked signing at Boulder Loop, Hemlock Loop, the 1013 road and Mollies hut. User tracks were seen at Lime creek but reported to be Border Patrol. District employees handed out closure maps at trailheads and confirmed that users contacted knew of closures. Two Sandpoint avalanche technicians visited the Pack River trailhead and traveled to the closure boundary and found closure signs in place at the 2620 road junction. Bonners Ferry RD employees refreshed the Smith Creek closure sign as well as Joe Peak, West Fork and Cow Creek access points.

In February, Bonners Ferry RD employees visited Smith Creek and found the closure signs in place. There was evidence of snowmobile tracks into West Fork Cabin but no evidence found of closure violations. Later in the month two Bonners Ferry RD employees patrolled Fall Creek to Roman Nose and from Snow Creek to Roman Nose and discovered that the closure sign at Ruby Pass was missing. The missing sign at Ruby Pass was replaced. Priest Lake employees patrolled trail system to Mollies Hut, Boulder Meadows and Hemlock Loop. Closure signs were in place and users were aware of closure. On the Sandpoint District, an employee visited the Pack River trailhead. Fourteen vehicles were noted and closure maps were in place.

In March, the Priest Lake LEO traveled to Lime Creek to post additional closure signing. At that time documented use off the 1013 road indicated some closure violations were occurring. In March, four Forest Service LEOs patrolled within the closure north of Phoebe's Tip to try and track snowmobiler users high marking along a ridge line. Later in the month, the Priest Lake LEO contacted users at the 302 trailhead parking lot and then rode to Mollie's Hut, contacting 25 users along the trail system. Late in March, three violation notices were given to snowmobile users found in the closure (Lime Creek area).

2009 Monitoring

In mid-January, 1,000 closure maps were distributed to snowmobile dealers and area resorts on the North Zone. Two Priest Lake employees visited the 302 trailhead and contacted users and distributed closure maps. A week later, two Sandpoint avalanche technicians patrolled Pack River. They found the closure sign in place and no snowmobile activity was noted. Late in January, the Sandpoint LEO and two others patrolled the Snow Creek and Roman Nose area where they found the closure map at Roman Nose missing. It was replaced. There was no evidence of closure violations occurring.

In February, Priest Lake employees visited the 302 trailhead. They found maps and signs in place, contacted 2 users, and posted closure signs at Boulder Loop to replace stolen signs. In mid-February, two Sandpoint avalanche technicians patrolled the Pack River. They found the closure sign in place and no snowmobile activity. Late in February, Priest Lake employees contacted four user groups at the 302 trailhead. They also patrolled Hemlock Loop and verified that signing was in place. The next day, Priest Lake employees patrolled Lime Creek Road up to Mollie's Hut and noted that the Lime Creek "T" sign needed replacement.

On the 1st of March the Priest Lake LEO plus one patrolled the 302 parking lot and then posted a new closure sign at the Lime Creek "T". The next day, on the Bonners Ferry RD, snowmobile tracks noted near Blue Jo Creek were believed to be from the owners of the Continental Mine and also Border Patrol. A week later the Priest Lake LEO and two IDFG officers conducted patrol at Hughes Meadows. There they contacted three users; no closure violations were noted. In mid-March, two Bonners Ferry RD employees patrolled Smith Creek and found signs in place at West Fork, Shorty Peak, Hidden Lake and Cow Creek. One sign at the Cow Creek road junction was replaced. Concurrently, the Priest Lake LEO patrolled from the 302 trailhead to Mollie's Hut and contacted 25 users and distributed maps. Later that month the Priest Lake LEO patrolled from the 302 trailhead to Mollies Hut and contacted 25 users and distributed maps.

Winter Census

As part of the recovery plan, a technique for censusing woodland caribou in forested habitats was developed and initiated in 1991 by the Idaho Department of Fish and Game to provide a minimum population and recruitment estimates (Compton et al. 1990b, Wakkinen et al. 1996, USDI Fish and Wildlife Service 1994 and 2008). The technique quantifies the factors affecting visibility and provides statistically valid population estimates. The census is conducted in the winter (February through April) when caribou are at higher elevations and in open-canopy forests. It involves a two-phase aerial survey using a "pre-survey" fixed-wing aircraft flight and a subsequent helicopter survey flight to note distribution, total numbers, and recruitment (via classification of adults versus calves) (Wakkinen et al. 1996). This technique is similar to what has been developed and implemented by others to accurately census big game populations (Resource Inventory Committee 2002). When coupled with the fixed-winged monitoring of the closure area that has been occurring since 2007[9], the population census effort provides the most accurate picture of woodland caribou numbers and distribution during the late winter season.

The IPNFs biologists coordinated with IDFG to assist in the preliminary fixed-wing survey for woodland caribou during the Forest Service aerial monitoring of the closure area, 2007-2009. Minimum population estimates of 44, 46, and 46 caribou were documented from the winter census inn 2007, 2008 and 2009, respectively. Only 2 to 3 caribou were observed in the United States portion of the recovery effort over this three year period (Wakkinen et al. 2010). Woodland caribou have not been observed south of the Little Snowy Top area during the combined winter census or snowmobile closure monitoring efforts since March of 2007 (Wakkinen 2003, 2004, 2005[10]; Wakkinen et al. 2006). At that time, a lone caribou was observed in the upper portion of the Ball Creek drainage (Wakkinen et al. 2007).

[9] The USDA Forest Service has been conducting aerial monitoring of the closure area since 2007, and the Selkirk Conservation Alliance has been conducting aerial monitoring since 2008. In addition to documenting violations of the current snowmobile closure, observers also note the location and numbers of caribou or caribou tracks in the recovery area. This information is shared with IDF&G biologists to assist with census efforts (Project File Data).

[10] "Due to poor snow conditions the 2005 survey must be considered a minimum count and not a population estimate or census" (Wakkinen 2005).

Forest Plan Monitoring Item G-2: Water Quality

Monitoring item G-2 describes the monitoring results designed to check and evaluate the effectiveness of forest management activities on watersheds, water resources, and their beneficial uses within the forest. Practices include Best Management Practices (BMP) monitoring, which cover implementation and effectiveness monitoring of activities that took place in 2007, 2008, and 2009.

Water Quality and Water Resource Monitoring is intended to demonstrate that actions and practices are *implemented as designed* (implementation monitoring), are *functioning as effectively as intended* in controlling non-point sources of pollution (effectiveness monitoring), and are *achieving the objectives* of protecting water quality and beneficial uses as assumed (validation monitoring). The primary purpose of BMP monitoring is to demonstrate that BMPs (and the forest's *Soil and Water Conservation Practices*) are functioning as effectively as intended. If they do not adequately demonstrate effectiveness, then the practices may be re-evaluated and redesigned as necessary. Implementation and effectiveness monitoring on the forest during 2007, 2008, and 2009, demonstrated that present and past projects were usually successful in meeting their intended objectives (see also section K-1 for BMP monitoring results).

2008 Interagency Forest Practices Water Quality Audit

A statewide forest practices water quality audit was conducted between July and October 2008. The purpose was to complete an on-site review of timber harvest and forest practice activities and assess the application and effectiveness of forestry BMPs as described in the 2007 administrative rules pertaining to the Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code. The 2008 Audit Team was comprised of representatives from the Idaho Department of Lands and the Idaho Department of Environmental Quality (IDEQ 2009).

The audit team observed 1,796 instances in which the Idaho forest practices rules were applicable within the 43 timber sales audited. Of these, 1,737 occasions were in compliance, resulting in an overall compliance rate of 97%. The overall compliance rates within each of the four landownership categories were above 90% (Figure 4). It is notable that federal agencies have consistently had the highest compliance rating of the four categories audited since about 1996, but slightly less than state agencies in 2008. Federal agencies had 98% compliance in 2008, while state agencies were rated at 99% compliance. Two timber sales on the Idaho Panhandle National Forests were audited in 2008, 57 Bear Paws and Bear South.

North Fork Coeur d'Alene River TMDL Assessment

The Idaho Department of Environmental Quality (IDEQ) Coeur d'Alene Regional Office and the U.S. Forest Service Idaho Panhandle National Forests (USFS-IPNF) Coeur d'Alene River Ranger District are working on a cooperative project in the North Fork Coeur d'Alene River Subbasin of north Idaho. The *North Fork Coeur d'Alene River Subbasin Sediment TMDL Implementation Effectiveness Review* is a multi-phase project to evaluate water quality impairments related to excess sediment in streams. In 2002, a sediment TMDL was developed for sediment-impaired streams in this subbasin. Since that time, watershed restoration, road decommissioning and maintenance upgrades, and instream habitat work has improved water quality conditions. The primary focus of this project is to evaluate whether this work has attained the goals set by the TMDL and whether these streams now fully support cold water aquatic life.

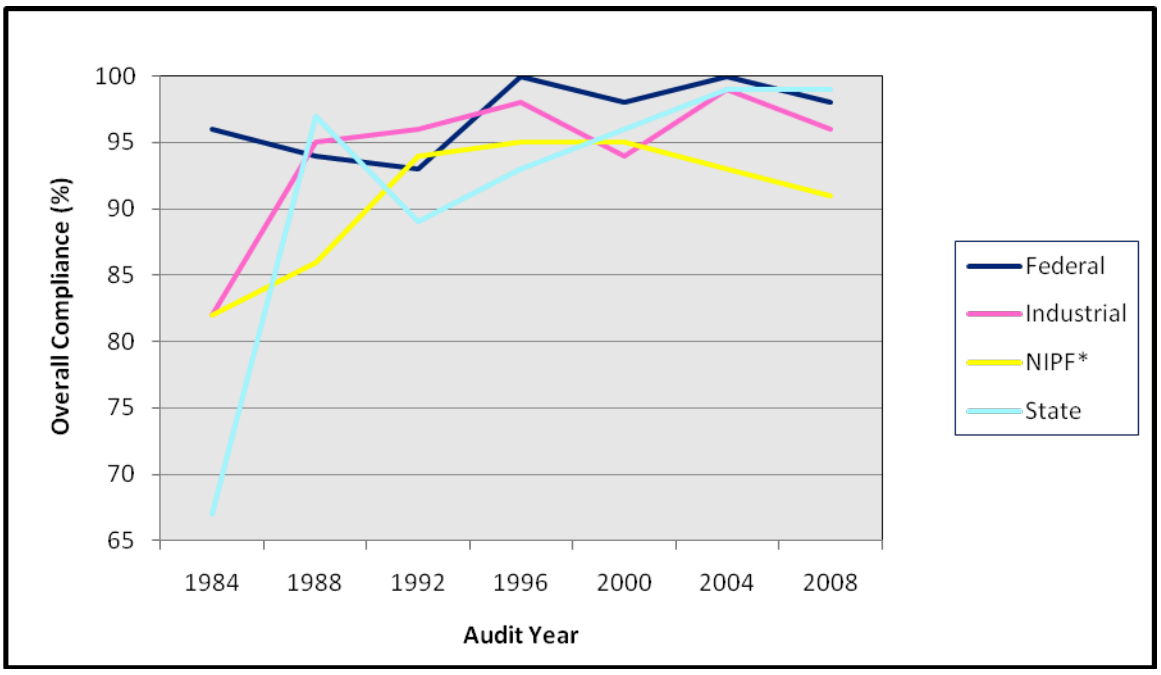


Figure 4. Overall compliance rates by landownership category among audit years (IDEQ 2009)

A large portion of the project involves paired monitoring of eight selected streams and protocols from IDEQ and USFS were utilized in 2009 for field validation of modeling results. One crew used the IDEQ Beneficial Use Reconnaissance Program (BURP) protocols for rapid assessment of wadeable streams, and collected fisheries, macroinvertebrate and habitat data that can be easily incorporated into the IDEQ water body assessment framework for determining beneficial use support and water quality compliance. Another crew visited the same sites as part of the USFS *PACFISH/INFISH Biological Opinion* (PIBO) Effectiveness Monitoring Program. Results are currently being analyzed. Preliminary results from the BURP program index scores indicate water quality goals for sediment have likely been met and that these streams have likely attained their sediment load reductions called for in the TMDL and now fully support cold water aquatic life. These results will be compared to PIBO data, other field data and modeling results for the final assessment product.

Additionally, we will use this project as a pilot comparison of the BURP and PIBO protocols for water body assessment purposes. We are evaluating whether data generated through the PIBO program can be used to generate BURP-compatible index scores. PIBO index scores will be compared with BURP index scores and the Idaho water body assessment framework to determine whether and how PIBO data can be utilized in determining beneficial use support. We are also analyzing data collected under the two protocols to compare the compatibility and variability of results. Outcomes will include increased monitoring data available for water body assessments, increased data coordination between USFS and DEQ, and improved understanding between agencies of PIBO and BURP data and how these data may be used. This should increase the quality and efficiency of monitoring and water body assessments. A final report of this project is anticipated by the end of calendar year 2011.

WATSED Validation Monitoring

Predicted sediment and runoff for the Bird Creek subwatershed were derived from the methods documented in the R1/R4 Sediment Guides (USDA Forest Service 1981) and the WATBAL Technical User Guide (Patten 1989). The model calibrated for the Idaho Panhandle National Forests, known as

WATSED, is a tool that organizes typical watershed response relationships resulting from land management activities. Use of the model is designed to provide information to the resource specialist, who, along with knowledge of the model and its limitations, other data and analyses, experience, and professional judgment, integrates all available information to draw conclusions about the probable effects of land management activities on sediment and water yield and to compare alternatives during project planning efforts.

WATSED estimates the most probable mean annual sediment loads, expected sediment load modifications over time, and water yield. WATSED is not intended to determine event-based processes or specific in-channel responses. It does, however, incorporate the results of those processes in the calibration of its driving coefficients. Furthermore, WATSED does not evaluate increases in sediment and peak flows specifically resulting from "rain-on-snow" events or other stochastic events, nor does it attempt to estimate in-channel and stream-bank erosion. WATSED includes assumptions and cannot determine the exact response of a given subwatershed.

Bird Creek, on the St. Joe Ranger District, was analyzed for this report. In addition, all databases were updated with data collected from the operational stream monitoring gages through 2009. Bird Creek is a 14.5 mi^2 watershed that drains into the St. Joe River. The Bird Creek watershed burned in 1910 and management activities were intense during the 1980s, which included numerous timber harvest projects and extensive road building. The most recent timber harvest occurred around 2000 (Eagle Bird NEPA plan signed 1999). Road failures have caused debris slides since management activities and some road decommissioning has occurred. Forty-one miles of road were decommissioned in the Eagle and Bird Creek drainages and a culvert in Bluebird Creek was replaced in 2003. Stream restoration and habitat improvement projects on approximately two miles were completed in 2003. The gaging station was established in 1986 and data collected at this site includes water level, stream flow, bedload and suspended sediment. The site is a baseline monitoring station. Baseline stations are long-term sites that were established to provide information on the natural processes, functions, and variability of steams and watershed systems over time. Some baseline site also are a control to compare to other watersheds with similar climatic, physical, and hydrologic character, to help determine what may have occurred naturally versus through management activities (Appendix JJ, IPNF Forest Plan, Amendment No. 1). Skookum Creek is a control watershed that is paired with Bird Creek. Information for Skookum Creek was reported in the 2005/2006 Monitoring Report.

In the Bird Creek sub-watershed, there were substantial differences between estimated sediment and measured sediment yields. The divergence could be related to assumptions used by the WATSED model, or from sampling errors related to inadequate timing or frequency of bedload measurements. The model typically overestimates sediment delivery, but underestimated sediment production in this case, because of extreme events in the 1990s, which shows limitations in the model to predict natural variability and stochastic events. Stream flow estimates and measured flows were somewhat more consistent with previous modeling results. WATSED generally underestimated flow for Bird Creek, on average, but year to year estimates are highly variable.

Table 48. Bird Creek Predicted and Measured Sediment and Runoff

Year	Predicted Sediment Tons/Year	Measured Sediment Tons/Year	Predicted Runoff Peak Month Q (CFS)	Measured Runoff Peak Month Q (CFS)	Predicted Runoff Duration time > 75% Qp (days)	Measured Runoff Duration time > 75% Qp (days)
"natural" background	230	na	87.1	na	39	na
1988	230	98	87	87	39	27
1989	566	107	92	178	45	28
1990	575	108	93	116	46	48
1991	559	1,286	93	136	46	68
1992	559	1,288	93	76	46	74
1993	552	1,326	93	114	45	55
1994	533	152	93	83	45	33
1995	522	144	92	71	45	30
1996	513	7,499	92	190	45	40
1997	506	19,197	92	275	45	30
1998	506	19,181	92	68	44	50
1999	503	12,099	92	116	44	48
2000	451	428	92	160	44	28
2001	451	433	92	91	44	22
2002	451	342	92	199	44	30
2003	451	335	91	91	44	49
2004	453	365	91	108	44	35
2005	455	131	91	68	44	65
2006	457	172	91	140	44	51
2007	457	220	92	127	44	42
2008	453	286	92	179	44	32
2009	448	282	91	144	44	36
AVERAGE	484	2,976	92	128	44	42

Literature Cited

IDEQ (Idaho Department of Environmental Quality). 2009. Idaho 2008 Interagency Forest Practices Water Quality Audit Rule Compliance and Stream Crossing Assessments. Prepared by 2008 Forest Practices Audit Team. 45pp.

Patten R. 1989. WATBAL Technical User Guide.

USDA Forest Service. 1981. R1/R4 Sediment Guides.

Forest Plan Monitoring Item G-3: Fish Habitat Trends

Threshold: Declining trend in habitat quality.

Reporting Period: 5 years

Forest personnel conduct stream surveys and monitor habitat conditions across the forest to provide baseline information for evaluating trends in habitat composition, quality, and complexity. Common parameters include, but are not limited to; stream morphology, pool conditions, large woody debris amounts and conditions, substrate composition, and water temperature.

PACFISH/INFISH Biological Opinion Effectiveness Monitoring (PIBO EM)

There is a long term, tri-region project underway to evaluate the effects of land management activities on aquatic and riparian communities at multiple scales and assess whether management direction, implemented through INFISH and its anadromous cousin PACFISH and their respective Biological Opinions, is effective in maintaining or improving aquatic and riparian conditions at both the landscape and watershed scales on federal lands. The monitoring program includes portions of the upper Columbia River basin on 21 National Forests and seven BLM districts. Preliminary analysis of the first three years of return visit data across sites in the entire upper Columbia River basin suggests that present management may be meeting the intent of the 1998 Biological Opinion for bull trout, salmon, and steelhead.

The PIBO Effectiveness Monitoring Project is in its first 5-10 year sampling cycle. It will be several more years (2009 and beyond) before conclusions can be made through this effort. The Idaho Panhandle National Forests (IPNFs) is one of the forests the PIBO team is monitoring. On the IPNFs, a total of 66 PIBO EM sites were inventoried from 2007-2009 and there are more than 100 total monitoring sites located across forest. There has not been a synthesis of the data collected specifically on the IPNFs because of the limited amount of data that has been collected, reducing the population size necessary for a complete analysis of habitat conditions. Future data collection by the PIBO team will help provide more information of habitat trends on the IPNFs.

For complete PIBO summary information: www.fs.fed.us/biology/fishecology/emp/index.html

Table 49. North Zone PIBO EM Sites

Stream/River	District	Management
American	Bonners Ferry	Managed
Ball	Bonners Ferry	Managed
Blue Joe	Bonners Ferry	Managed
Boulder	Bonners Ferry	Managed
Canuck	Bonners Ferry	Managed
Cow	Bonners Ferry	Managed
Deer	Bonners Ferry	Managed
Katka	Bonners Ferry	Managed
Meadow	Bonners Ferry	Managed
Myrtle	Bonners Ferry	Managed
Myrtle	Bonners Ferry	Managed
Skin	Bonners Ferry	Managed
Smith	Bonners Ferry	Managed
Spruce	Bonners Ferry	Managed
Trout	Bonners Ferry	Managed
Long Canyon	Bonners Ferry	Reference
Beaver	Priest Lake	Managed
Benton	Priest Lake	Managed
Canyon	Priest Lake	Managed
Dubius	Priest Lake	Managed
Gold	Priest Lake	Managed
Granite	Priest Lake	Managed
Hughes	Priest Lake	Managed
Hungry	Priest Lake	Managed
Kavanaugh	Priest Lake	Managed
Lamb	Priest Lake	Managed
Lower West Branch Priest River	Priest Lake	Managed
Malcom	Priest Lake	Managed
Moores	Priest Lake	Managed
Quartz	Priest Lake	Managed
S.F. Granite	Priest Lake	Managed
Upper West Branch Priest	Priest Lake	Managed
Zero	Priest Lake	Managed
Cedar	Sandpoint	Managed
Cocolalla	Sandpoint	Managed
East Fork	Sandpoint	Managed
Grouse	Sandpoint	Managed
Johnson	Sandpoint	Managed
Lightning	Sandpoint	Managed
Lindsey	Sandpoint	Managed
N.F. Grouse	Sandpoint	Managed
Pack River	Sandpoint	Managed
Trout	Sandpoint	Managed
West Gold	Sandpoint	Managed

Table 50. Central Zone PIBO EM Sites

Stream/River	District	Management
4th of July	Coeur d'Alene River	Managed
Big Elk	Coeur d'Alene River	Managed
Brett	Coeur d'Alene River	Managed
Bumblebee	Coeur d'Alene River	Managed
Carlin	Coeur d'Alene River	Managed
Cedar	Coeur d'Alene River	Managed
Copper	Coeur d'Alene River	Managed
Cougar Gulch	Coeur d'Alene River	Managed
E.F. Eagle	Coeur d'Alene River	Managed
E.F. Steamboat	Coeur d'Alene River	Managed
Falls	Coeur d'Alene River	Managed
Hayden	Coeur d'Alene River	Managed
Hudlow	Coeur d'Alene River	Managed
Independence	Coeur d'Alene River	Managed
Laverne	Coeur d'Alene River	Managed
Leiberg	Coeur d'Alene River	Managed
Marie	Coeur d'Alene River	Managed
Mokins	Coeur d'Alene River	Managed
Moon	Coeur d'Alene River	Managed
Picnic	Coeur d'Alene River	Managed
Rampike	Coeur d'Alene River	Managed
Skookum	Coeur d'Alene River	Managed
Stewart	Coeur d'Alene River	Managed
Tepee	Coeur d'Alene River	Managed
Trail	Coeur d'Alene River	Managed
Trib of Armstrong	Coeur d'Alene River	Managed
W.F. Eagle	Coeur d'Alene River	Managed
W.F. Steamboat	Coeur d'Alene River	Managed
Yellow Dog	Coeur d'Alene River	Managed
Yellowbanks	Coeur d'Alene River	Managed
E.F. Lost	Coeur d'Alene River	Reference
Emerson	Coeur d'Alene River	Reference
Graham	Coeur d'Alene River	Reference
Jordan	Coeur d'Alene River	Reference
North	Coeur d'Alene River	Reference

Table 51. South Zone PIBO EM Sites

Stream/River	District	Management
Bussel	Avery	Managed
E.F. Big	Avery	Managed
Homestead	Avery	Managed
Marble	Avery	Managed
N.F. St. Joe	Avery	Managed
Slate	Avery	Managed
W.F. Slate	Avery	Managed
Bean	St. Joe	Managed
Beaver	St. Joe	Managed
Bechtel	St. Joe	Managed
Bird	St. Joe	Managed
Charlie	St. Joe	Managed
E.F. Emerald	St. Joe	Managed
E.F. Emerald	St. Joe	Managed
Falls	St. Joe	Managed
Floodwood	St. Joe	Managed
Heller	St. Joe	Managed
Hume	St. Joe	Managed
Little N.F. Clearwater	St. Joe	Managed
N.F. Glover	St. Joe	Managed
Ramskull	St. Joe	Managed
Red Ives	St. Joe	Managed
Simmons	St. Joe	Managed
St. Joe	St. Joe	Managed
W.F. Floodwater	St. Joe	Managed
Foehl	St. Joe	Reference
Mosquito	St. Joe	Reference

NORTH ZONE
(Sandpoint, Priest Lake, and Bonners Ferry Ranger Districts)

McCormick Creek Stream Survey

McCormick Creek has long been recognized as an important refugia and fishery for native westslope cutthroat trout. In 2006 a flood in excess of a 100 year return interval occurred and altered the drainage from the recent observed channel characteristics. A complete channel and fish habitat survey has never been conducted in McCormick Creek and with the new baseline of conditions present in the drainage the North Zone Aquatics staff felt it was important to survey the conditions. The following is a sample of the survey information compiled from the McCormick Creek survey conducted in September of 2009. The survey started at the confluence with an unnamed tributary to McCormick Creek ~ 1 mile from the headwaters at McCormick Lake. The survey was completed at the confluence with the main stem of Pack River. The purpose of the survey was to determine the existing condition of the creek after the 2006 flood, and to set up a baseline for future surveys.

The survey methods used to determine the channel characteristics and quality of fish habitat of McCormick creek were; Rosgen channel classification, Wolman pebble counts, Region 1/Region 4

(R1/R4) Fish Habitat Inventory (every 1000 meters per reach or at each cross-section), large woody debris (LWD) with every R1/R4 survey, and BEHI (bank erosion hazard index) at all stream bank failures if they were directly influencing the active stream channel. The BEHI protocol quantifies factors that contribute to bank stability including bank height, bankfull height, root depth, root density, surface protection, stratification, and bank material. Once all of these are recorded, using the BEHI, one can determine the amount of sediment contribution from the stream bank. BEHI information was taken in feet and recorded on data sheets. A map of all BEHI locations is attached to this document for reference. The R1/R4 and LWD surveys were conducted for 100 meters above and below the cross-section, and for 200 continuous meters per 1000 meters of stream reach. The cross-section sites were marked with metal tags and pink flagging indicating the reach number, channel type, date, and surveyors' initials. GPS coordinates were taken at all reach break, cross-section, and BEHI sites. Digital photos were taken at all cross-section and BEHI sites and at various points of interest throughout the reach. The photos were downloaded onto a disk and a copy of each photo was inserted into the specific reach packet.

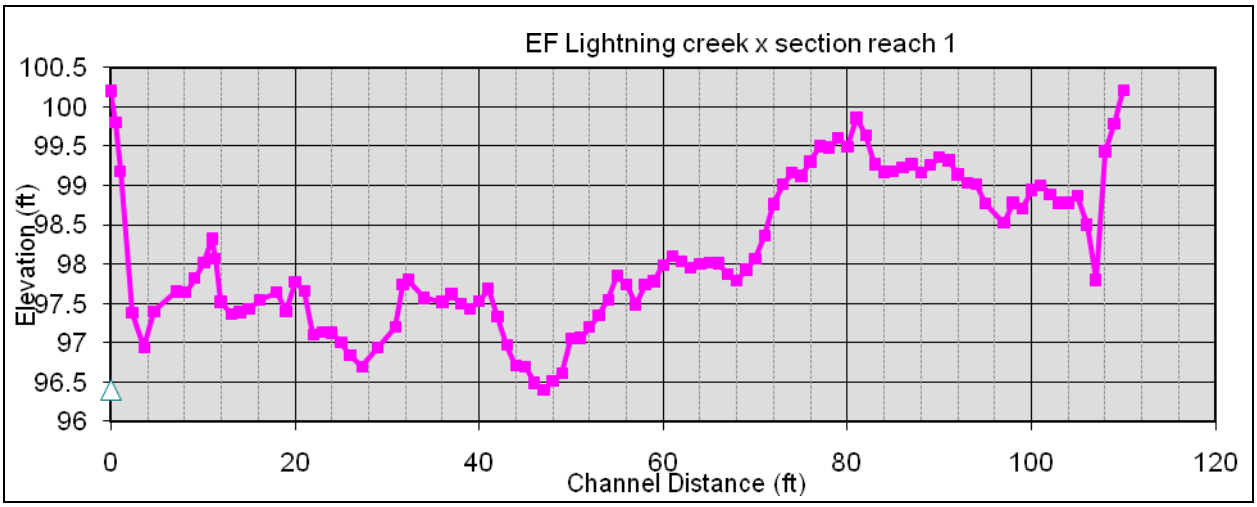
With the absence of any significant amount of woody debris, boulder scour pools served as the primary fish habitat. Undercut boulders and bedrock and average depths of ~1m offered sufficient cover within pools. Fish were present in nearly every pool, some reaching lengths of ~20cm. Many cascades appeared to be barriers for upstream travel, restricting fish to seasonal residency within scour pools during low flow. Fish were observed exiting pools downstream through cascades and slides to a lower pool when spooked and it is likely that larger pools with greater depth and structure act as sinks and have much higher seasonal populations.

It is likely that fish spill over from McCormick and Fault Lakes during high flows and populate reaches of McCormick Creek that exist above barriers. The Fault, McCormick Lake tributary enters at the lower extent of reach 2 ~ 600m upstream of the start of reach 4. Deep pools that are common in reach 4 could potentially host the largest size classes and populations since this is the first optimal habitat encountered by fish moving downstream.

East Fork Lightning Creek Stream Survey

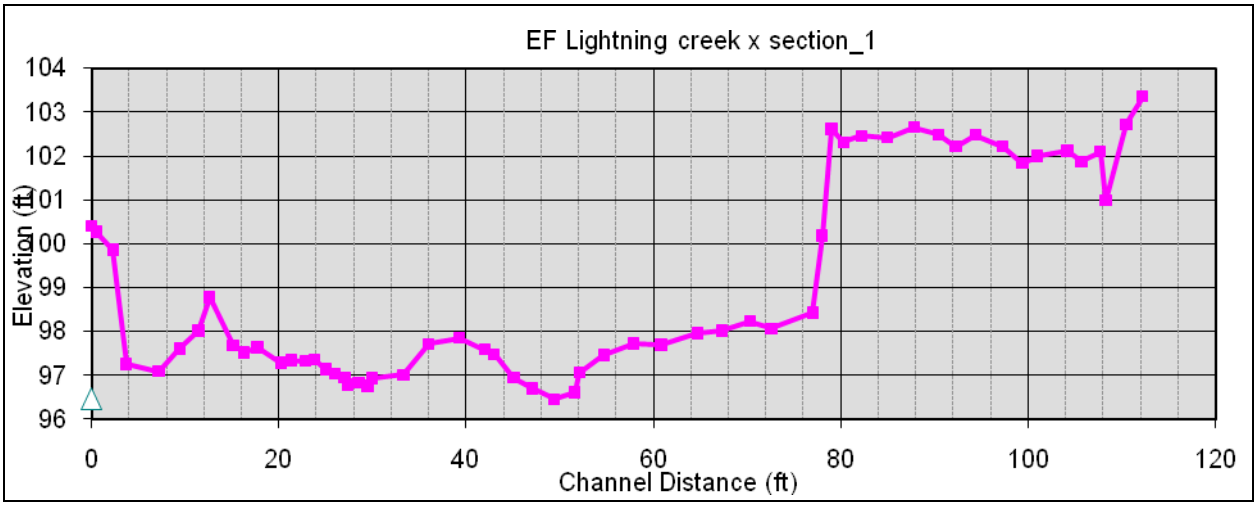
The East Fork of Lightning Creek is one of the most important bull trout fisheries in the Pend Oreille ecosystem. The NZ Aquatic staff has monitored East Fork Lightning Creek extensively through Rosgen channel surveys, R1/R4 habitat surveys, snorkel/electrofishing surveys, and cross-sectional/longitudinal surveys. East Fork Lightning Creek was extensively altered in the 2006 flood event and numerous perturbations to the channel were documented. In 2004, a watershed assessment was funded and a thorough baseline of information was established from the assessment. Part of this information was cross sectional surveys conducted in the lower portion of East Fork Lightning Creek, which were reproduced in 2007 and 2009. This information will assist management and stream enhancement efforts and also allow us to observe changes in hydraulic function influenced by the bridge that was constructed in 2009. NZ Aquatics has a pilot project that will occur in 2010 to install point bar structures in point bar features upstream of the new bridge. They are designed to recruit large wood, influence sediment deposition, promote growth of riparian vegetation, and influence a more sinuous channel. Cross sections will assist in interpreting subsequent changes to the channel. If desired effects are achieved the point bar structure project may have beneficial uses in further locations of lower Lightning Creek.

Figure 5. 2007 East Fork Lightning Creek Cross-section, Reach 1



The channel dimensions, as surveyed in the original 2003 survey showed a 51 foot wide channel that was approximately 3 feet deep. Initial observations of 2007 cross sectional data above (Figure 5), shows that the channel has incised slightly but the width increased due to the effects of the 2006 flood. Year 2009 cross sectional data below (Figure 6) shows that the channel width is beginning to decrease as it adjusts to the recurrence of bankfull flows. Entrenchment ratio is also decreasing and this is also a function of large wood, which was deposited from the 2006 flood, being more prevalent on the floodplain. One of the desired effects of the point bar structure project is to enhance the amount of large wood retained in the bankful width to improve channel function and fish habitat and increase the amount of large wood on the floodplain to disperse flood flow energy, create microsites for riparian vegetation, and improve floodplain function.

Figure 6. 2009 East Fork Lightning Creek Cross-section, Reach 1



Cross sectional data is also being collected in Lightning Creek just upstream of the confluence of Morris Creek and also in Rattle Creek where North Zone Aquatics will be monitoring changes to bull trout habitat from decommissioning of the 473 road in 2009 and 2010.

Literature Cited

Archer, E., J. Heitke, P. Ebertowski, and R. Leary. 2009. PACFISH INFISH Biological Opinion Effectiveness Monitoring Program For Streams and Riparian Areas. USDA Forest Service Annual Summary Report. *unpublished*. 30 pp.

Forest Plan Monitoring Item G-4: Fish Population Trends

Threshold: Downward trend

Reporting Period: 2 years

The 1987 Forest Plan lists the following goals related to fish populations:

- Provide for diversity of plant and animal communities.
- Manage vertebrate wildlife habitat to maintain viable populations of all species.

In conjunction with Idaho Department of Fish and Game (IDFG), annual surveys of a subset of streams on the Idaho Panhandle National Forests (IPNF) are conducted. The primary focus of these surveys has been westslope cutthroat trout (*Oncorhynchus clarki lewisi*) and bull trout (*Salvelinus confluentus).* Some of these surveys are only conducted once, while others have been surveyed multiple years in the same location (Index Streams). Surveys for bull trout have been focused in the Priest, Pend Oreille, and St. Joe basins. Extensive surveys for cutthroat trout have been conducted in the Coeur d'Alene basin. Population trends of these two species are analyzed to determine the current status of the species, within the context of current land management across the entire IPNF landscape.

Current Status and General Population Trends of Bull Trout

Bull trout were listed on June 10, 1998 as Threatened under the Endangered Species Act. Populations are tracked annually by IDFG, by monitoring the amount of reproduction potential, where redd counts are used as a surrogate to estimate population trends. Based on current information, bull trout appear to be stable or increasing across most of the Idaho Panhandle National Forests (Table 52).

Table 52. Status of bull trout populations in representative core areas of the IPNFs (IDFG 2009)

Core Area	2009 adult bull trout pop. estimate	Population stable or increasing	Streams with man-made barriers that block bull trout migrations
Priest Lake	109	no	Gold Creek
Pend Oreille Lake	2,771	yes	Clark Fork and Pend Oreille rivers
Coeur d'Alene Lake	182	yes	Red Ives, Entente, Cascade*, and Bluebell*

* Cascade and Bluebell barriers were removed over the course of this monitoring period and additional habitat is now available (personal communication with L. Hawdon, SZ Fisheries Biologist 2010)

Redd count data in the Pend Oreille Lake (Figure 7) and St. Joe River (Coeur d'Alene Lake Core Area) (Figure 8) basins show that bull trout populations are increasing, while populations in the Priest basin appear to be declining overall (Figure 9). All data in referenced figures were adapted from the Fredricks et al (2009a).

Figure 7. Number of redds in consistently monitored streams since 1983 in the Pend Oreille basin (includes: Trestle, East Fork Lightning, Gold, North Gold, Johnson, and Grouse Creeks)

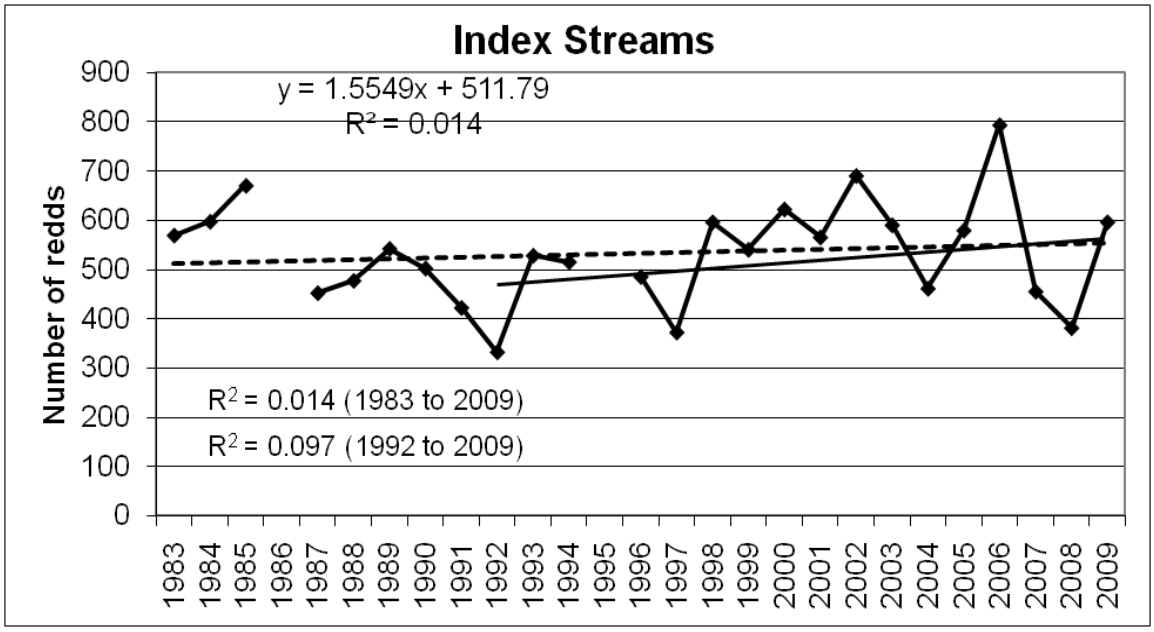
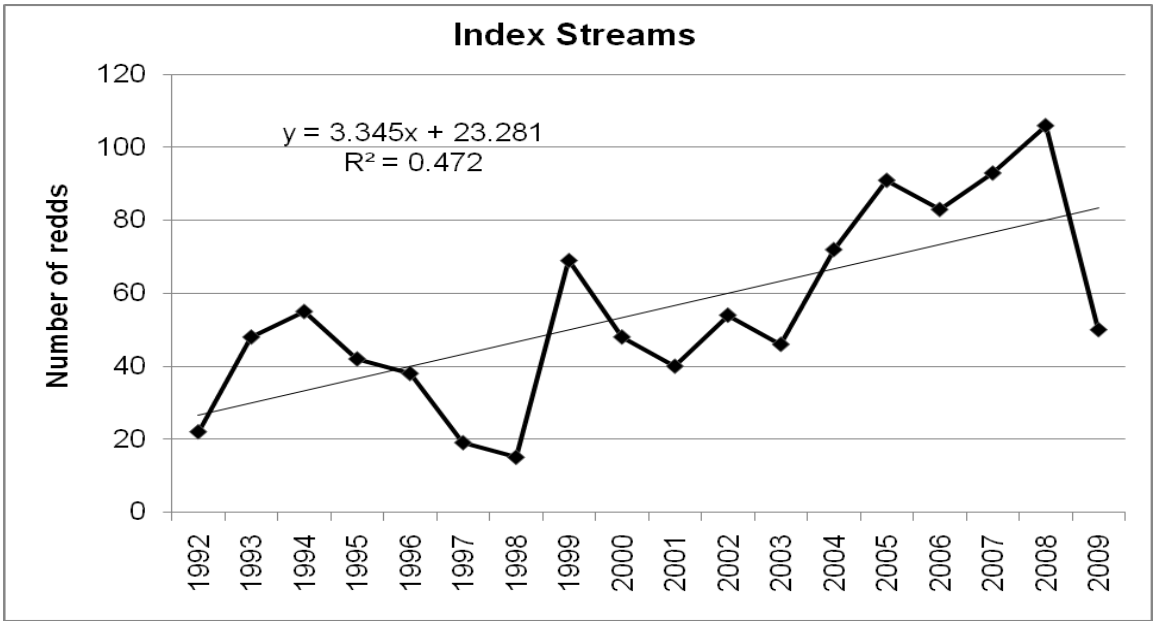


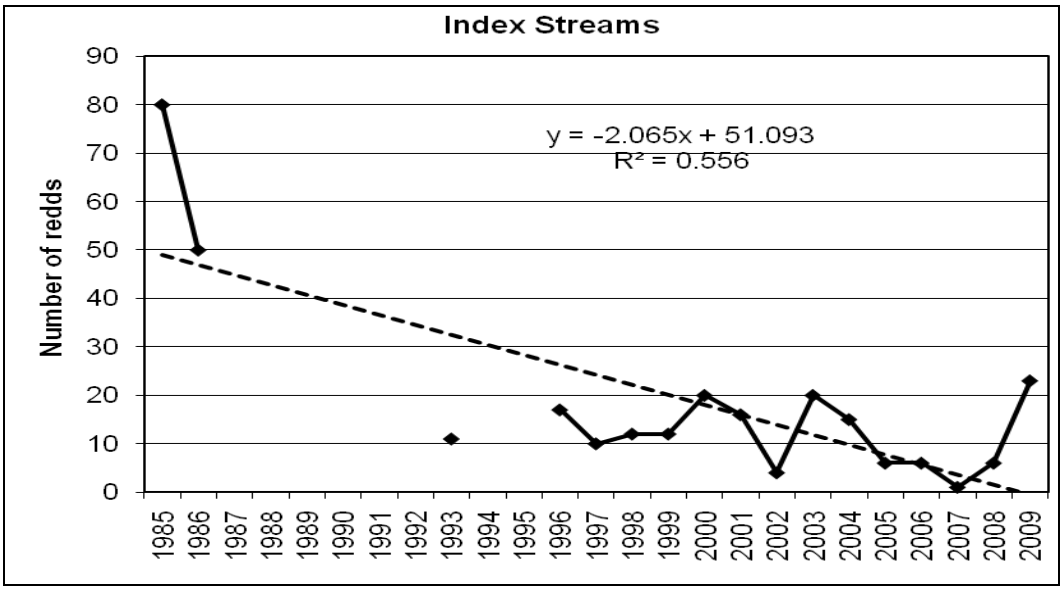
Figure 8. Number of redds observed in in the St. Joe River drainage (includes: Medicine Creek, Wisdom Creek, St. Joe River from Heller to St. Joe Lake)



Upper Priest Lake

Bull trout redd counts have occurred intermittently in the Upper Priest River and its tributaries. There has been a downward trend over time in this watershed, as indicated by the data from stream reaches were redd counts have consistently occurred (Figure 9). Data are not collected on tributaries to the main lake so the occasional bull trout redds observed are not reported here. Index stream include: Lime, Cedar, Hughes, Bench, Gold, Trapper Creeks and Upper Priest River.

Figure 9. Number of redds observed since 1985, in the Upper Priest Lake drainage



Kootenai River

Within the Kootenai River System in Idaho, only Callahan Creek and Boulder Creek have been surveyed for bull trout redds since 2002, which is not enough data to determine meaningful population trends. Most tributaries to the Kootenai River in Idaho have natural migration barriers within the first 2+ kilometers of the confluence. Bull trout have been observed over the years or are thought to occur in the lowest reaches of Deep, Caribou, Snow, Myrtle, Long Canyon, and Boundary creeks; however, densities are low.

Current Status and General Population Trends of Westslope Cutthroat Trout

The United States Fish and Wildlife Service (USFWS) lists westslope cutthroat trout as a "Species of Concern" with respect to section 7(c) of Endangered Species Act. The USFWS found that listing the westslope cutthroat trout was not warranted on April 14, 2000. By court order, the USFWS was directed to reconsider the decision that listing of westslope cutthroat trout was not warranted. On August 8, 2003 the USFWS again affirmed the decision that listing of westslope cutthroat trout was not warranted.

Westslope cutthroat trout populations are monitored by IDFG and Forest Service. Forest Service monitoring efforts are less extensive and are typically conducted for project-specific analyses, such as removal of barriers to fish migration. Based on these efforts, westslope cutthroat trout populations appear to be stable or increasing throughout most of northern Idaho. Trend data from Idaho Fish and Game

snorkel counts show that cutthroat trout populations in the North Fork Coeur d'Alene River (Figures 10 and 11) and St. Joe River (Figure 12) basins appear to be stable or increasing. All data were adapted from Fredricks et al (2009b).

Figure 10. Average density of all size classes observed, during 1973 to 2009 snorkeling surveys

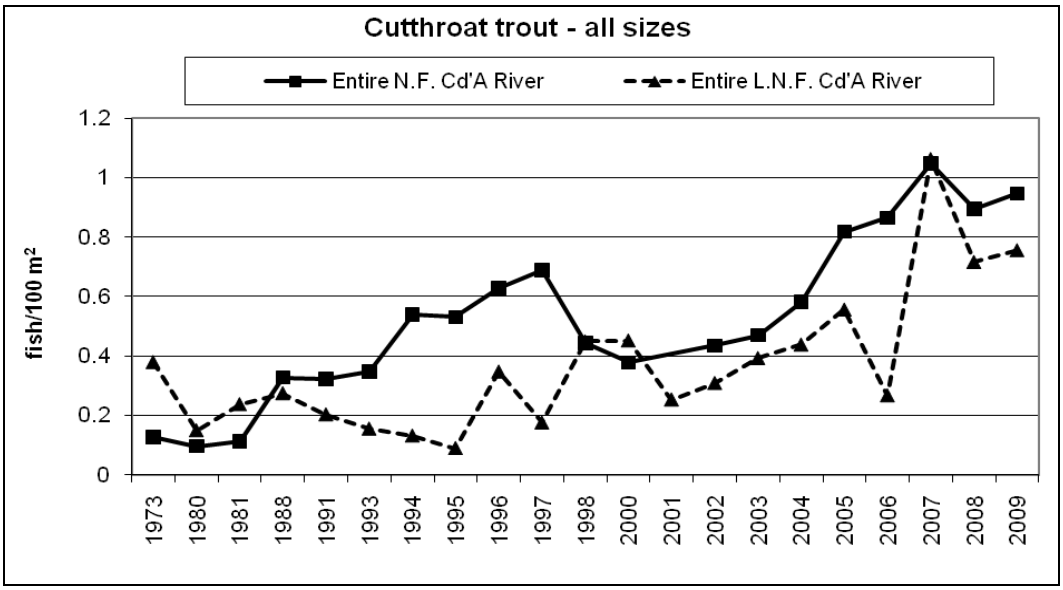


Figure 11. Average density of cutthroat trout ≥ 300 mm observed during 1973 to 2009 snorkeling surveys

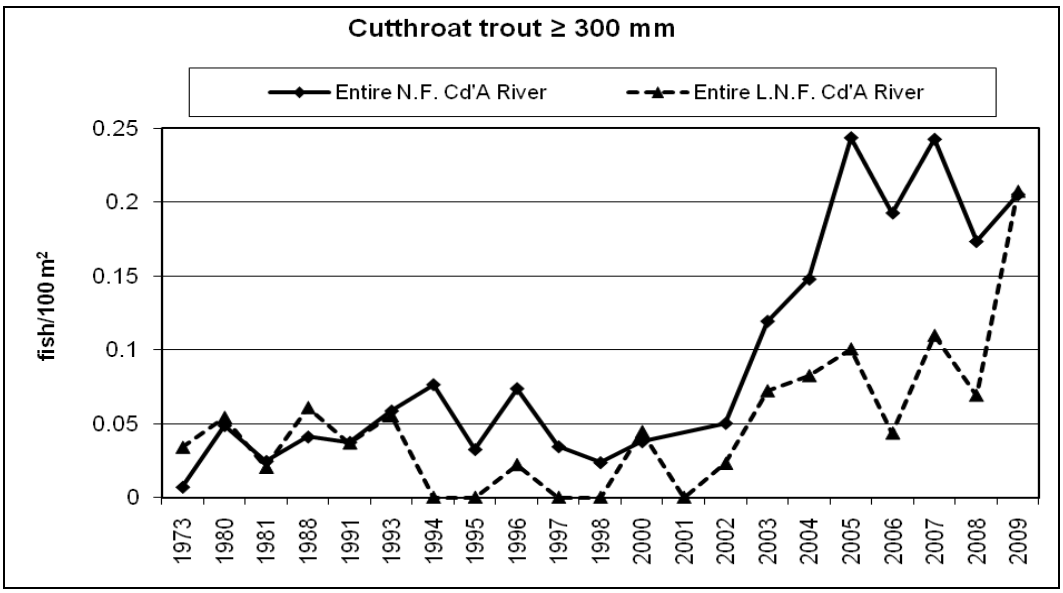
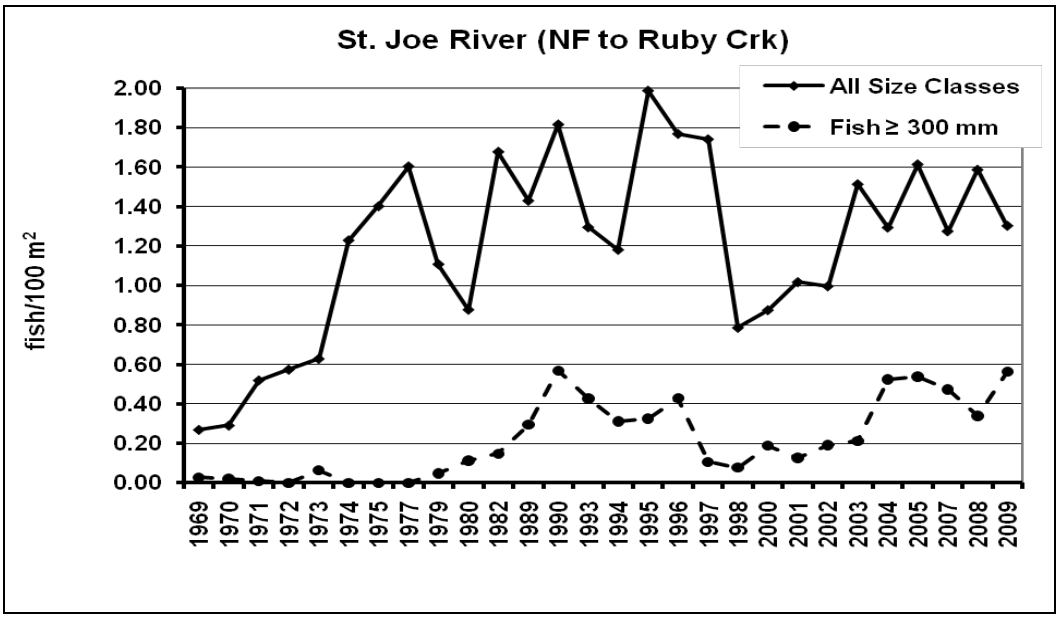


Figure 12. Average density of cutthroat trout observed while snorkeling the St. Joe River, Idaho from 1969 to 2009 (Coeur d'Alene Lake Core Area)



CENTRAL ZONE
(Coeur d'Alene River Ranger District)

Snorkeling Survey Results

Relative abundance of fish species (#fish/100m^2) observed during 2008 and 2009 snorkel surveys in selected tributaries on the Central Zone is displayed in the following table.

Table 53. Relative abundance of sampled species (Fish/100m^2)

Sample Location	Westslope Cutthroat Trout	Brook Trout	Sculpin	Unknown Salmonid
Cinnamon Creek	6	0	78	4
East Fork Moon Creek 1	16	18	5	46
East Fork Moon Creek 2	25	16	20	13
East Fork Moon Creek 3	30	6	50	30
Pleasant Creek	94	0	0	0
Tepee Creek	2	0	0	0
Upper Tepee Creek	4	0	7	2
Stewart Creek*	3	0	29	0
Cougar Gulch	0	4	26	0
Skookum Creek	<1	0	38	0

Beauty Creek Sculpin Assessment (IDEQ 2009)

The assessment was undertaken to investigate why sculpins have not been detected through electrofishing in Beauty Creek, a tributary of Wolf Lodge Bay, Coeur d'Alene Lake, Idaho. No sculpins have been caught by the Idaho Department of Environmental Quality during collection efforts in 1998, 1999 or 2008; or by the IPNFs personnel during collection efforts in 2004. Shorthead (*Cottus confusus*) and torrent (*C. rhotheus*) sculpins are routinely collected throughout the Coeur d'Alene Lake drainage.

Eight factors were evaluated in this assessment. Stream gradient, cumulative drainage area, substrate texture, species interactions, sampling effort, and structural barriers to fish passage were found to be unlikely reasons for the lack of sculpin detections in Beauty Creek. Concentrations of cadmium, lead and zinc in streambed sediments and low to intermittent flows in Beauty Creek were also hypothesized as contributing to the lack of sculpin.

This assessment indicated that stream gradient, cumulative drainage area, substrate texture, species interactions, sampling effort, and structural barriers are not limiting factors to sculpin occurrence in Beauty Creek. Sculpin occurrence in Beauty Creek may be influenced by heavy metal concentrations in streambed sediment and flow regime, but this evaluation was inconclusive, due to unknown comparability between data collection methods. Future surveys of streambed metals, fish tissue, fish assemblages, and flow regime should be conducted around Mount Coeur d'Alene, to evaluate this hypothesis.

Placer Creek Idaho Giant Salamander Survey

The purpose of the 2009 presence/absence survey was to identify presence or absence of Idaho giant salamander in the Placer Creek watershed.

Placer Creek was sampled and amphibians were located within the transect, that included: Three frogs as adults or in advanced metamorphosis, 11 tadpoles, and 1 Idaho giant salamander.

Dry Gulch, a tributary of Placer Creek: A few amphibians were collected, that included 22 frogs as adults, or in advanced metamorphosis, and 27 tadpoles. The species was not described.

Twenty-nine westslope cutthroat trout were sampled during these efforts and 2 unknown salmonids were also captured.

NORTH ZONE
(Sandpoint, Priest Lake, and Bonners Ferry Ranger Districts)

Grouse Creek Snorkel Survey

A snorkel survey of Grouse Creek was conducted in 2009 to monitor use of stream reaches that underwent habitat restoration projects in 1996 and 2002. Improvements included large boulders placed as point break structures as well as large woody debris and timbers imbedded in bank to serve as grade control structures. Counts of species and size class were taken but likely only represent between 40 and 90% of actual numbers of fish present. Much of the area surveyed is nursery habitat for juvenile rainbow trout that were present in rather high numbers, often in riffles and side pools too shallow to snorkel and obtain an accurate count.

Lower - upstream of the confluence with the North Fork of Grouse Creek

Size Class	Bull Trout	Cutthroat	Brook Trout	Rainbow Trout
<100mm			29	239
101-200mm	1		4	100
>201mm		1	4	31

Comments: One hybrid Bull/Brook Trout (~400MM) observed at start of reach. Very wide food plain with large aggradation zones on the point bars. Grade control structures appear to be withstanding high water well. There is abundant recruitment of wood within reach. Many fish observed.

North Fork Grouse

Size Class	Bull Trout	Cutthroat	Brook Trout	Rainbow Trout
<100mm			1	95
101-200mm			1	28
>201mm			5	8

Comments: One sculpin, at 45mm, observed.

Pool below culvert - below the 280 culvert and then ~150 m upstream of crossing

Size Class	Bull Trout	Cutthroat	Brook Trout	Rainbow Trout
<100mm				10
101-200mm				10
>201mm				10

Comments: Fish ladder goes dry at the road crossing and the main culvert is an 8' culvert. During low flows the 280 crossing is an effective fish barrier.

Middle - upstream of the confluence of Wiley Creek and then upstream from Trespass Creek.

reach 1

Size Class	Bull Trout	Cutthroat	Brook Trout	Rainbow Trout
<100mm		1	41	2
101-200mm			42	3
>201mm			5	1

reach 2

Size Class	Bull Trout	Cutthroat	Brook Trout	Rainbow Trout
<100mm			14	60
101-200mm	2		2	45
>201mm		3	1	8

Upper - downstream of Chute Creek and then downstream of confluence with Plank Creek.

reach 1

Size Class	Bull Trout	Unknown	Brook Trout	Rainbow Trout
<100mm	1	5	1	1
101-200mm	1	1		8
>201mm	1			1

Comments: Observed a size class 2 bull trout with fish viewer.

reach 2

Size Class	Bull Trout	Cutthroat	Brook Trout	Rainbow Trout
<100mm	1	3		
101-200mm		11		
>201mm	4			

Comments: Suspected breeding pair on redd beneath boulder just below confluence with Chute Creek. Both individuals were ~700mm.

Most fish observed appear to be juveniles and residents and are using structures placed in habitat restoration. Point breaks and log aggregates are probably serving as holding water for migrating spawning rainbows and bull trout. To gain a greater understanding of the use of Grouse Creek for spawning by bull trout, additional surveys focused in the upper reaches of main Grouse and the South Fork should occur during peak spawning periods.

Upper Priest Snorkeling Survey

Eight tributary streams to the Upper Priest River were surveyed in August 2009 for bull trout, westslope cutthroat trout, and brook trout. These surveys were initially designed to re-survey streams from Irving's 1982 through1984 surveys and determine bull trout persistence or distribution. Eight of Irving's original streams were surveyed. Bull trout were observed in four of the eight streams, while westslope cutthroat and brook trout were found in all streams.

Only 19 bull trout were observed in 4 of the 8 streams, 17 of which were smaller than 100 mm, and 8 of those were less than 50 mm (Table 54). Most bull trout observed were between 50 and 100 mm in length (Table 54), while on average 56% were between 100 and 200 mm (Table 55). Bull trout were generally observed in streams with few brook trout, such as Lime, Gold, and South Fork Gold Creeks, while they were not observed in streams with many brook trout (Figure 13). One bull trout was apparently observed in Jackson Creek, though observers questioned its identification. One night survey was also conducted in Lime Creek, and no bull trout were observed.

Westslope cutthroat trout were the most abundant species, with 844 individuals observed. Most WCT were between 50 and 100 mm in length, and 21 fish were over 200 mm (Table 54). Brook trout, meanwhile, were nearly as abundant as westslope cutthroat trout in 3 of the 8 streams, but were nearly non-existent in 4 other streams including the 3 streams with bull trout (Figure 13). Over 80% of brook trout were also less than 50 mm in length (Table 55). Rainbow trout were only observed in Cedar Creek, and 45% of individuals were 100-200 mm, while the rest were evenly distributed among the other three size classes.

It was determined that bull trout can be difficult to positively identify underwater, especially in the presence of brook trout. Bull trout also appear to be present, though not in great abundance, when brook trout are largely absent in these streams. Future surveys should focus on identification of bull trout, verified by in-hand observations, and include more streams to help determine bull trout distribution as well as demographic and community characteristics.

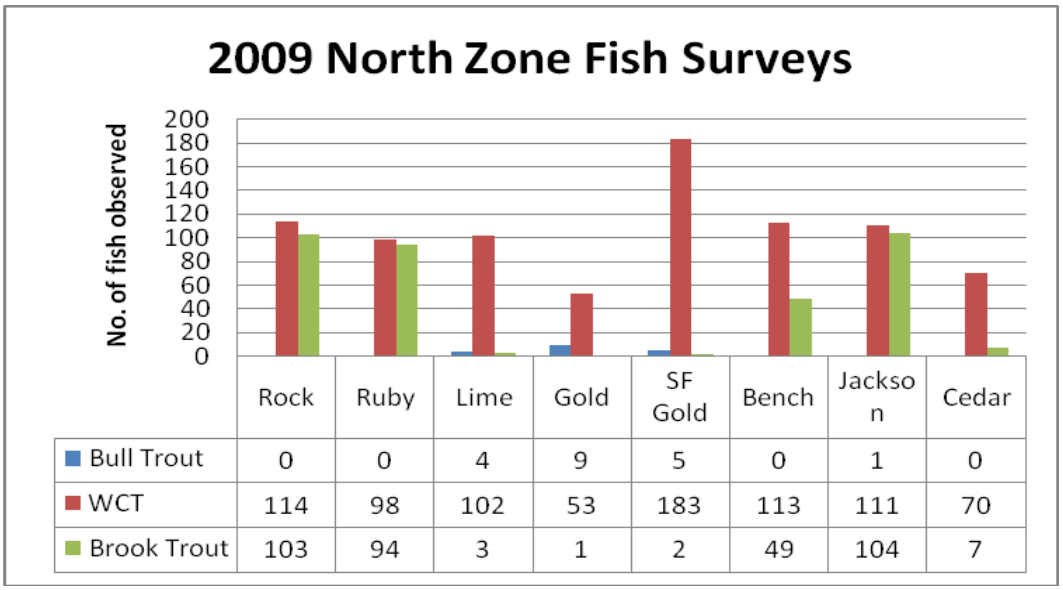
Table 54. Number of individuals of each species observed in each size class

	Bull Trout	Westslope Cutthroat Trout	Brook Trout	Rainbow Trout
Length surveyed (m)	2450	2450	2450	2450
# streams with sp.	4	8	8	1
No. <50 mm	8	302	309	11
No. 50-100 mm	9	383	34	11
No. 100-200 mm	2	132	17	25
No. >200 mm	0	21	3	9

Table 55. Average of individuals observed, by size class, for 8 streams

	< 50 mm	50-100 mm	100-200 mm	>200 mm	unk
Bull Trout	49	71	56	0	0
Westslope Cutthroat	38	47	33	9	5
Brook Trout	82	36	10	3	0
Rainbow Trout	20	20	45	16	0
Other/Sculpin	60	60	45	0	0

Figure 13. Number of individuals by fish species observed in each stream



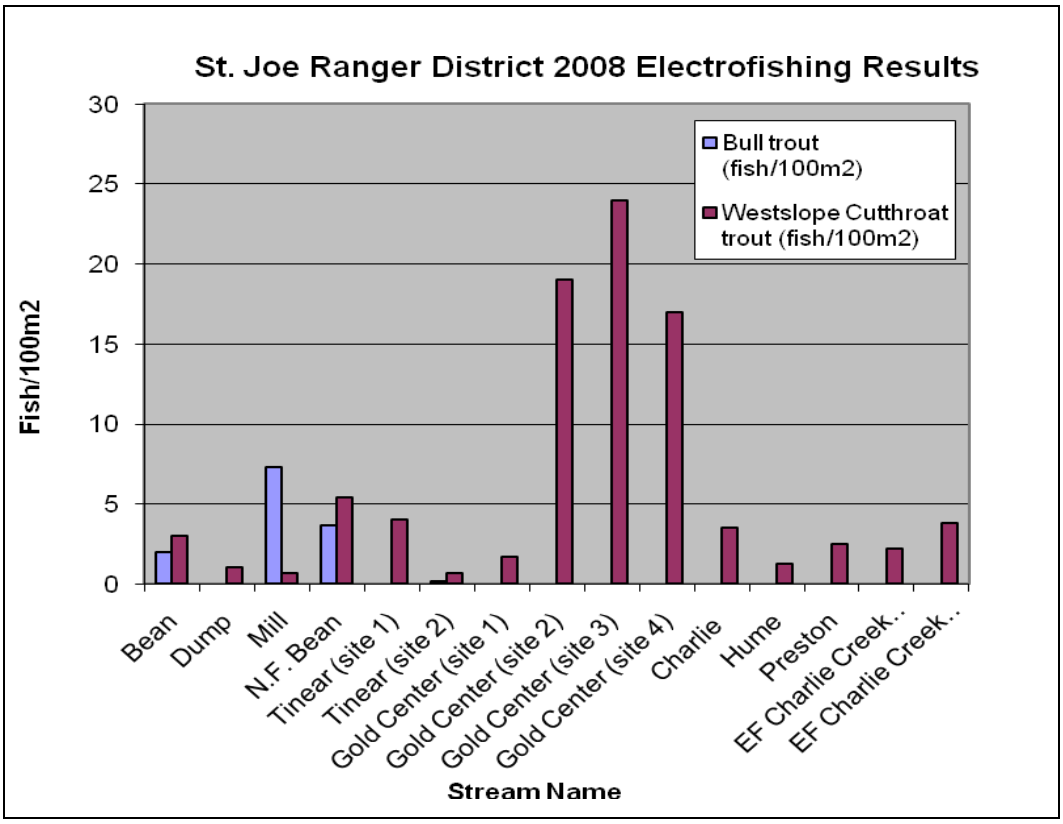
SOUTH ZONE
(St. Joe Ranger District)

Relative abundance of fish species observed during surveys in 2007 and 2008 in selected tributaries on the South Zone is displayed in the following table and Figure 14.

Table 56. Electrofishing Data for West Fork St. Maries River

Species	Total Catch	Catch/Unit Effort	Population Estimate	Abundance (Fish/mi)
Cutthroat	24	.0099	35	386
Brook Trout	17	.0070	22	274
Sculpin	112	.0462	287	1802
Dace	7	.0028	11	113
N. Pike Minnow	4	.0017	4	64

Figure 14. 2008 Electrofishing Data St. Joe Ranger District



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IDEQ (Idaho Department of Environmental Quality). 2009. *Stressor Assessment for Beauty Creek*. 16 pp.

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Forest Plan Monitoring Item H-1: Threatened, Endangered and Sensitive Plants

Forest Plan direction for sensitive and rare species, including plants, is to manage habitat to maintain population viability, to prevent the need for federal listing, and to determine the status and distribution of Threatened, Endangered, Sensitive (TES) and other rare plants.

Background

Threatened Species: Prior to 1998, only one threatened plant was listed for the Idaho Panhandle National Forests, *Howellia aquatilis* (Water Howellia). This species was historically (1892) known to occur within the Pend Oreille sub basin, near Spirit Lake, Idaho, on private land. Surveys conducted by Idaho Conservation Data Center (ICDC) botanists in 1988 failed to relocate this population. Existing populations are known for adjacent areas in eastern Washington, western Montana, and south in the headwaters of the Palouse River in north-central Idaho. Surveys of suitable habitat (vernal pools) across northern Idaho by USFS and ICDC botanists in subsequent years have failed to find additional populations. It is believed to be locally extinct. Surveys of suitable habitat on federal lands will continue following requirements found in the Endangered Species Act of 1974 and Forest Service policy. According to USFWS, water howellia is suspected to occur on the IPNF in Kootenai, Shoshone and Benewah Counties (USDI 2010).

In early 1998, the U.S. Fish and Wildlife Service (USFWS) listed the orchid, *Spiranthes diluvialis* (Ute ladies'-tresses), as threatened. Based on populations that occur in inter-montane valleys of Montana, the shores of an alkaline lake in Washington, and populations in southern Idaho, Utah, Nevada, Wyoming, and Colorado, northern Idaho was thought by USFWS to have some potential habitat. Surveys of habitat (deciduous cottonwood and open meadow riparian areas) by USFS and ICDC botanists have yet to document populations or any highly suitable habitat in northern Idaho. In reports released in 1999 and 2001 on predicting the distribution of potential habitat, the Idaho Conservation Data Center disclosed that very few of the plant associations known to host Ute ladies'-tresses occur in northern Idaho. The likelihood of Ute's ladies-tresses actually occurring in northern Idaho is remote. In 2004 USFWS, which has the responsibility for this species, removed *S. diluvialis* from the list of threatened species suspected to occur on the IPNF.

In November of 2001, the USFWS listed the plant *Silene spaldingii* (Spalding's catchfly) as threatened. This long-lived perennial forb species is known from 52 sites in west-central Idaho, northwestern Montana, adjacent British Columbia, northeastern Oregon, and eastern Washington. In eastern Washington, this species is known from remnant patches of native bluebunch wheatgrass and fescue grasslands. This habitat is limited on National Forest lands to some low elevation areas in close proximity to the Palouse prairie and breakland areas along the major river corridors.

In the spring of 2000, IPNF botanists developed a process to predict potential habitat (e.g. grasslands) utilizing the SILC (Satellite Imagery Land-cover Classification) data. Broad-scale and project level field surveys were conducted from 2000 to 2003 to validate predicted habitat and search for populations. Potential habitat identified in proposed project areas is surveyed prior to implementation. No populations of Spalding's catchfly have been found to date on the IPNF. According to USFWS, this species is suspected to occur on the IPNF in Kootenai, Shoshone and Benewah Counties.

Sensitive Species and Forest Species of Concern: In October of 2004, the Region 1 sensitive species list was updated, following the Region 1 Species-at-Risk Protocol. The new list contains 59 species designated as sensitive by the USFS. The Species-at-Risk Protocol allows forests to also develop a Forest

Species of Concern (FSOC) List to address other rare species for which there may be local concern. While no biological evaluations are prepared for Forest species of concern as for sensitive plants, viability concerns are addressed in environmental documents. The IPNF currently addresses 44 Forest species of concern.

Candidate Plant Species: Candidate species are those species for which the United States Fish and Wildlife Service believes sufficient information is available on biological vulnerability and threats to support proposals to list them as Endangered or Threatened. Slender moonwort (*Botrychium lineare*) was listed by the USFWS as a candidate species for the IPNF until it was removed from the candidate list on December 6, 2007 (USDI 2007). This species was found to be more abundant and widespread than previously recognized is lacking sufficient information to justify continued candidate status.
The only known location in Idaho is an historical occurrence documented in 1925 from Upper Priest River on Idaho Panhandle National Forests lands. This occurrence was searched for in 2002, but was not relocated. This species remains on the Regional Forester's sensitive plant list and is addressed in biological evaluations. Project clearance surveys and proactive plant surveys since 2002 have failed to locate new occurrences of slender moonwort.

Monitoring Data

Surveys: During project planning, qualified botanists assess habitats for their suitability to support sensitive and rare plants. Habitat found to be suitable within project areas, and which would be affected by project-related activities, is surveyed to determine the presence of rare plant species. Protection measures are implemented to maintain population and species viability following the National Forest Management Act and Forest Service policy.

From 2007 through 2009, Forest botany personnel performed on-the-ground clearance surveys on 23,657 acres of suitable rare plant habitat in support of various projects including timber, fuels reduction, watershed restoration, fisheries, recreation/trails, grazing, and special uses. The following table displays survey acres by year.

Table 57. IPNF Rare Plant Survey Acres 2007-2009

Fiscal Year	IPNF Survey Acres
2007	12,816
2008	6,029
2009	4,812
Total 2007-2009	**23,657**

Survey trends: The number of acres surveyed for rare plants is a measure of the Forest Plan commitment to determine the status and distribution of rare plants within the Idaho Panhandle National Forests. Qualified botanists and other personnel with training in botany and rare plant identification conduct botanical surveys.

Prior to 1988, the Forest Service did not conduct surveys, and rare plant observations reported to the ICDC were incidental. From 1988 until 1993 the exact number of acres surveyed was not well documented, but is estimated to be about 5,000 acres. Good records of the number of acres surveyed by botany personnel have been kept since 1994. From 1994 through 2009, surveys occurred on 136,769 acres of federal lands with the express purpose of documenting and protecting rare plant populations from management activities and mitigating potential adverse effects. The acreage represents approximately 20 percent of the estimated 705,000 acres of suitable rare plant habitat on the IPNF that have been surveyed to date.

Observations: Another measure of the status and distribution of rare plants is the number of occurrences documented for the five northern counties of Idaho. Information was compiled from the Idaho Conservation Data Center (ICDC 2010), which is the repository of all information relating to rare species in the State. The information below includes some sightings on non-federal lands. However, the vast majority of observations come from lands under federal management. Sightings on adjacent private lands are important in understanding the distribution of occurrences in the ecosystem as a whole. However, there are no laws governing rare plants on non-federal lands in the State of Idaho; subsequently, few surveys have occurred on non-federal lands, and observations have generally been incidental discoveries. Between 1892 and 1987 there were 119 rare plant observations documented in the five northern counties, on federal and non-federal lands. Since 1988, botanists and other personnel from the Forest Service, the Bureau of Land Management, and the Idaho Conservation Data Center have documented over 900 occurrences of 85 plant species, mostly on federal lands. The following table shows rare plant element occurrences reported by fiscal year and total IPNF occurrences 2007-2009.

Table 58. IPNF Rare Plant Element Occurrences 2007-2009

Fiscal Year	IPNF Element Occurrences
2007	46
2008	5
2009	34
Total 2007-2009	**85**

Formal Population Monitoring: ICDC and Forest Service botanists have installed a number of formal, permanent monitoring plots over the last ten or more years, and baseline information has been collected (see 1998 Forest Plan Monitoring and Evaluation Report). However, only a few of the formal monitoring plots have actually had multiple-year, repeated measures to evaluate population trends.

In 2007, 2008, and 2009, monitoring plots for several sensitive species in Grass Creek and Cow Creek on the Bonners Ferry Ranger District were sampled (in early summer and again in autumn).

In 2008 and 2009 monitoring for Clustered Lady's-slipper (*Cypripedium fasciculatum*) was done in Chloride Gulch on the Sandpoint Ranger District. Transects for this species were also monitored in Eagle Creek on the St. Joe portion of the IPNF's.

Howell's gumweed (*Grindelia howellii*) plots established on the St. Joe Ranger District in 1995 near Lindstrom Peak were monitored in 2008 and 2009.

Monitoring at Grass Creek and Cow Creek

Monitoring plots within Grass Creek and Cow Creek were initiated in 2004 to determine effects of grazing within cattle allotments on fen habitats that support rare plant species. Three plots were established within Cow Creek, three plots within Grass Creek, and one control plot was established nearby in Smith Creek Research Natural Area (RNA.)

The plots consist of permanent photo points and site monitoring that indicates overall site quality, rare plant population vigor, and any damage to the habitat. The plots are visited each year, both before grazing begins in the allotments and also as the grazing season ends in October.

Monitoring in 2004 revealed extensive cattle use of one plot, as well as the surrounding fen habitat. As a result, beginning in 2005, and every year since, a season-long exclusion fence has been erected around the fen before the grazing season begins.

2007 Pre-Grazing Results: Plots in Cow Creek contained vigorous populations of the sensitive species *Trientalis arctica* and *Carex magellanica* ssp. *irrigua.* The sensitive species *Trichophorum alpinum* and *Carex leptalea* were also represented in the Cow Creek plots.

All three plots in Grass Creek contained vigorous populations of the sensitive species *Trientalis arctica* and *Carex magellanica* ssp. *irrigua*. *Carex leptalea* was also represented. One plot in Grass Creek also encompassed a population of *Trichophorum alpinum*. The plot in Grass Creek which had been damaged by cattle in 2004, and is now protected annually by exclosure fencing, appears to have completely recovered.

The control plot in Smith Creek RNA also contained populations of *Carex magellanica* ssp. *irrigua.*

2007 Post-Grazing Results: Only incidental use by cattle was observed within fen habitats. Most of that use was associated with the cattle accessing the streams. No damage from cattle to fens within any of the plots (including the control plot in Smith Creek) was observed.

By the end of the grazing season in 2007, like 2006, much drier conditions were observed within the fens than previous years. Cattle use within the fens continued to consist primarily of passage or access through, with little actual damage to the fens, themselves. If the fens and surrounding habitats become unusually dry in successive years, the potential for damage to the fens from cattle may increase.

2008 Pre-Grazing Results: Pre-grazing results in 2008 were essentially the same as was documented in 2007. All the same sensitive species were observed.

2008 Post-Grazing Results: Only incidental use by cattle was observed within fen habitats. Most of that use was associated with the cattle accessing the streams. No damage from cattle to fens within any of the plots (including the control plot in Smith Creek) was observed. Cattle use within the fens continued to consist primarily of passage or access through, with little actual damage to the fens, themselves.

2009 Pre-Grazing Results: Pre-grazing results in 2009 were essentially the same as was documented in 2007 and 2008. All the same sensitive species were observed. However, due to cool spring conditions and late spring snowpack melting, all six monitoring plots and one control plot were exhibiting delayed emergence. Only a low percentage of plants had begun flowering; most were still in vegetative stages.

2009 Post-Grazing Results: Some cattle use (including both feeding/bedding) was observed within and adjacent to Plots 1 and 2 in Cow Creek, as well as adjacent to the control plot in Smith Creek. However, no serious damage to the fens was observed. Figure 15 below illustrates post-grazing conditions at Plot 1 in 2009. Bedding/feeding use of this plot area was evident but not severe.

The third plot in the Cow Creek drainage and the remaining, unfenced plots in the Grass Creek drainage incurred only incidental cattle usage or trampling, likely a result of passage to or from the streams.

Figure 15. Post-grazing Monitoring Cow Creek- Plot 1, October 2009

Clustered Lady's-slipper (*Cypripedium fasciculatum*) Monitoring at Chloride Gulch

Cypripedium fasciculatum is a U.S. Fish and Wildlife Service Species of Concern and a Forest Service Region 1 sensitive species. The Idaho Department of Fish and Game Conservation Data Center lists the species as having a rank of G4S3S2. A Global rank of G4 indicates the species is not rare and is apparently secure on a range wide basis, but with cause for long-term concern (usually more than 100 occurrences range wide). A SRank of S3 indicates the species is rare or uncommon in Idaho but not imperiled (typically 21 to 100 occurrences statewide). A State Priority listing of S2 indicates the species is likely to be classified as Priority 1 (endangered of becoming extirpated from Idaho within the foreseeable future), if factors contributing to population decline or habitat degradation or loss continue. (ICDC 2010).

In 2003, a large population of *Cypripedium fasciculatum* was discovered on National Forest System (NFS) land in the Chloride Gulch drainage of the Sandpoint Ranger District. This large population, of over 700 individuals, is scattered in several subpopulations within and adjacent to a proposed timber harvest and fuel reduction project area. Although the proposed timber harvest and fuel reduction treatments which prompted this botanical find have been delayed, the District desired to initiate monitoring, both to obtain baseline data and also following any treatment to determine the species' response to overstory canopy removal (timber harvest) and prescribed burning activities (either spring or fall).

In June 2008, in cooperation with volunteers from the Kinnikinnick Chapter of the Idaho Native Plant Society, the North Zone Botanist and field botanist began the first year of this long-term monitoring project. The second year's monitoring was completed in June 2009. Ten subpopulations will be monitored annually, for five consecutive years. Later monitoring will occur at two to three-year intervals until project treatment activities occur, after which monitoring will occur annually for ten years. Three of the ten subpopulations will eventually become control plots, in which no treatment activities would occur.

Within each plot, all *C. fasciculatum* stems in each size class (< 40mm and > 40mm) were counted; the total number of flowering and fruiting stems in each plot were also recorded. Because it is possible for clusters of aerial stems to emerge from the same rhizome (Seevers and Lang 1998), aerial stems rather than genets (genetically distinct individuals) were counted. Provision was made for any undeveloped buds and capsules present; flower number would be estimated by counting floral bracts.

Cypripedium fasciculatum makes a bract that subtends each individual flower (Thorpe et al. 2007). Occasionally, a bract is made for a bud that does not fully mature, and these were called undeveloped buds in this study (Thorpe et al. 2007). Most of these undeveloped buds are so small that they either do not have a bract or the bract itself is so tiny that it would not be confused with a functional flower bract (Thorpe et al. 2007). Most undeveloped buds are small, translucent, whitish nubs at the center of the leaf axil (Thorpe et al. 2007). Sometimes they are larger and identifiable as flower buds, but one can usually tell by their lack of color, small size, and stage of development relative to other flowers in the population that they will not develop into mature flowers (Thorpe et al. 2007). Undeveloped buds can occur with or without functional flowers (Thorpe et al. 2007).

Litter depth and browsing were also noted. Litter depth was determined by inserting a ruler into the soil until the ruler reached firm resistance indicating the presence of mineral soil. The depth of insertion was recorded in millimeters. At most plots, five measurements of litter depth were made in random locations, and the average litter depth was recorded for each plot. The number of browsed plants was tallied for each plot.

All associated trees, shrubs, forbs, grasses, or other plants identified within each plot were documented. Finally, overstory tree and mid-story shrub canopy cover were recorded by ocular estimation. The ocular estimation of canopy cover was performed by the same individual on all plots.

The following table summarizes the data obtained in 2008 and 2009. A complete and detailed monitoring report for each year is available upon request.

Table 59. Clustered Lady's-slipper (*Cypripedium fasciculatum*) Monitoring at Chloride Gulch

Year	Total No. Stems	Veg <40 mm	Veg ≥ 40mm	Flr ≥ 40mm	Fruit ≥ 40mm	Total Flowers	Total Fruits	Avg/Flrs/ Flrg Stem	Avg Fruits/Flrg Stem	Browsed	Avg Litter Depth (mm)	Avg Overstory Tree Canopy Cover (%)	Avg Shrub Canopy Cover (%)
2008	636	103 (16.19%)	276 (43.4%)	241 (37.9%)	16 (2.52%)	372	20	1.54	1.25	55 (8.65%)	32.11	35.00	69.5
2009	718	98 (13.65%)	301 (41.9%)	238 (33.1%)	81 (11.28%)	435	115	1.58	1.38	15 (2.09%)	26.82	28.5	79.5

Monitoring at Lindstrom Peak: Howell's gumweed (*Grindelia howellii)*

1) 2008 Monitoring:

Monitoring plots south of Lindstrom Peak on the St. Joe Ranger District were initiated in 1995 to determine effects of recreation and noxious weed encroachment on habitats that support rare plant species. Three plots were established.

The plots consist of permanent site monitoring transects that indicate overall site quality, rare plant population vigor, and any damage to the habitat. The plots are visited annually during flowering.

Plot 1: 20 by 50 foot macro plot. One plant with two flowering heads inside plot. Five plants, multiple flowering heads outside of macroplot.

Plot 2: 10 by 100 foot macro plot. Fourteen adults in flower and 27 juveniles.

Plot 3: 20 meter by 1 meter macro plot (unable to relocate).

2008 Results: Only incidental use by humans was observed within plot one. Plot two is crisscrossed with ATV tracks. No noxious weeds are in plot one; however, knapweed was pulled from less than 20 feet away. Plot two has St. Johnswort throughout the plot and surrounding area.

2) 2009 Monitoring:

Plot 1: 20 by 50 foot macro plot. Three plants with multiple flowering heads inside plot. Five plants, multiple flowering heads outside of macroplot.

Plot 2: 10 by 100 foot macro plot. Forty plus plants on transect and several juveniles.

2009 Results: Only incidental use by humans was observed within plot one. Plot two is crisscrossed with ATV tracks. No noxious weeds are in plot one; however knapweed was pulled from less than 20 feet away. Sulfur cinquefoil is within 5 feet of the plot. Plot two has St. Johnswort throughout the plot and surrounding area.

There are a total of 14 Howell's gumweed 'colonies' within an approximately two square mile area; this represents the extent of known populations in Idaho. These three plots are representative of the 14 colonies, and likely reflect what is happening to the entire population in the area.

Eagle Creek (Unit 50): Clustered lady's-slipper (*Cypripedium fasciculatum)* monitoring[11]

Monitoring at this site began in 1996 to determine indirect effects on the population from use of a nearby trail system.

This site had not been monitored in several years. However a monitoring record from 1997, the last time monitoring was read, show results similar to the 2009 monitoring results below. The monitoring plots consist of two linear plots that parallel the old trail. The trail was previously re-routed and no current use was apparent. Large logs blocking the route to the clustered lady's slipper site are still in place. Individual clustered lady's slipper plants were noted along the existing trail also. The population appears to be maintaining its health and vigor.

Plot one: 70 total plants; 29 vegetative, # of fruiting 41 with 49 fruits.

Plot Two: 51 total plants; 21 vegetative, # of fruiting 30 with 34 fruits.

[11] Site was visited post bloom.

Emerald Creek grazing allotment: Deerfern (Blechnum spicant) monitoring

In 1998, formal monitoring of a population of deerfern was conducted on the Emerald Creek Grazing Allotment on the St. Joe Ranger district. The population was split into 30 groups of plants that encompass a single, large area.

Formal monitoring has not been repeated since 2000. Informal monitoring in the form of a population count was done during a site visit in 2009.

198 individual plants were counted in 2009. The original population total was 197 plants. The population is maintaining its viability.

Elk Prairie

This area of upland grass inclusion has a history of grazing by stock from a nearby outfitter. The area was removed from grazing in order to allow native vegetation to re-establish and to slow erosion. This small inclusion of grassland has the potential to support Spalding's catchfly. However, to date no plants of this species have been found. In 2008 the site was visited by the South Zone Botanist and District Ranger. The overuse was evident. The site was re-visited in the summer of 2009. Recovery is still occurring. In 2009, great numbers of individual grass clumps (*Festuca idahoensis*, *Pseudoroegneria spicata*, *Poa secunda*, and others) where present. A greater number of forbs were observed, both in number and variety as compared to 2008; however, re-vegetation is still in progress. No grazing is recommended for 2010. The site will be re-visited in 2010.

Illegal ORV use was also found in 2009. A second trail was created by single-track motorized users on the steep areas near the top of the prairie to the tree line paralleling the original trail. If these additional trails continue to be made, Elk Prairie will soon be lined with trails.

Informal Monitoring

In addition to formal monitoring, the following five site revisits were done on the St. Joe portion of the IPNFs:

- Shefoot Mt. (*Ivesia tweedy*, previously listed species).
- Big Creek (*Cardamine constancei* and *Mimulus clivicola*).
- Botrychiums near the Hobo Cedar parking area found by Art Zack in 2007 were determined to be Botrychium multifidium, a common species of moonwort.
- Sandhouse Special Interest Area (SIA) for (Botrychium minganense and *B. montanum)*.
- Hobo botanical area (Botrychium minganense).

At Sandhouse an inventory which was started in 2008 was completed. This SIA has over 2,000 individual moonworts (*Botrychium spp.).* A new location adjacent to the SIA for Botrychium minganense was also located.

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Forest Plan Monitoring Item I-1: Minerals

The purpose of this monitoring item is to determine if the operation of mining activities meet forest plan standards.

Background

The most current mining activity on the IPNF consists of placer mining for gold in alluvial bottoms (placer mining) on the central part of the forest. There is a small amount of exploration for vein deposits of metals (hard rock mining). There is a facilitated garnet digging site on the southern part of the forest with some saleable activity for commercial garnet production.

Exploration or mining activity that is likely to result in a significant amount of land disturbance requires a reclamation bond to insure that funds are available to reclaim the site. If the amount of resource damage would be negligible no bond is required. When the term "processing" is used it means that the plan submitted by the miner has been processed by the Forest Service and a decision has been made on whether they can proceed with the exploration or mining activity.

Monitoring Data

For 2007, 2008, and 2009 there were 18, 20, and 26 open "active" mining plans on the forest. All were inspected regularly for compliance when active. Any noncompliance was corrected with a notice of noncompliance and documented appropriately. As for inactive mine sites addressed – this includes clean-ups (CERCLA) and safety mitigation (Bat gates, plugs, etc) – six sites were addressed in 2007, 10 sites in 2008, and 14 sites in 2009.

A. *Non-Bonded Non-Energy Operations Processed*: The number of operations processed that did not require a reclamation bond. Accomplishment is reported when an operation plan is processed to a decision.

Total Non-Bonded Non-Energy Operations Processed – 4,310 (2007), 6,622 (2008), and 6,569 (2009) (for 2007, 2008, and 2009 respectively, 4,275, 6,490, and 6,418 of these were garnet collecting permits on the St. Joe Ranger District)

B. *Bonded Non-Energy Operations Processed*: The number of operations processed for which reclamation bonds were required. Accomplishment is reported when an operating plan is processed to a decision.

Total Bonded Non-Energy Operations Processed – 13 (2007), 32 (2008), and 18 (2009)

C. *Total Bonded Non-Energy Operations*: The total number of new and existing bonded operations on which surface disturbance has occurred.

Total Number of Bonded Non-Energy Operations – 18 (2007), 44 (2008), and 37 (2009)

D. *Bonded Non-Energy Operations Administered to Standard*: The number of bonded operations administered to a level that ensures compliance with operating plans.

Total Operations Administered to Standard – 18 (2007), 44 (2008), and 37 (2009)

Evaluation: All bonded non-energy operations are being administered to standard.

Forest Plan Monitoring Item J-1: Land Ownership Adjustments

Table 60. Land Ownership Adjustment

Year	Acres of Federal Land Disposed	Acres of Non-federal Land Acquired
1981	8,582	12,187
1982	2,960	5,728
1983	2,277	520
1984	3,718	3,126
1985	7,556	15,775
1986	8,044	9,815
1987	2,779	4,632
1988	3,097	3,164
1989	3,692	4,062
1990	2,376	3,281
1991	630	1,080
1992	0	10
1993	11,282	14,009
1994	294	370
1995	1,965	3,229
1996	35	40
1997	4,755	7,533
1998	3,728	2,077
1999	2,744	1,880
2000	1,350	1,920
2001	813	2,261
2002	1,143	1,798
2003	0	0
2004	1	0
2005	0	0
2006	0	0
2007	3	0
2008	3,065	406
Total	**76,895**	**98,903**

Forest Plan Monitoring Item K-1: Prescriptions and Effects on Land Productivity

Our Forest Soil Resource objective is to maintain and restore long-term productivity, to support healthy vegetative communities and protect watersheds. Key elements of maintaining long-term soil productivity include retaining surface organic layers, surface volcanic ash, and the bulk density of the surface volcanic ash within natural ranges of variability.

The major detrimental impacts to long-term soil productivity are:

- Compaction
- Removal of topsoil (displacement)
- Units with insufficient organic matter and coarse woody-debris left on-site
- Areas that have been severely burned

Definitions of what is considered detrimental impacts:

- Detrimental Compaction: *More than 15% increase in bulk density over natural for volcanic ash surface soils. The compacted soil displays a massive or platy structure.*
- Detrimental Displacement: *Removal of the forest floor and one inch or more of the surface mineral soil over a 25 ft^2 or more area.*
- Severely Burned: *The soil surface is in a condition where most woody debris and the entire forest floor are consumed down to mineral soil. The soil surface may have turned red due to extreme heat. Also, fine roots and organic matter are consumed or charred in the upper inch of mineral soil.*

Coarse woody-debris recommendations are as follows:

- Douglas-fir sites - 7 to 13 tons per acre
- Grand fir sites - 7 to 14 tons per acre
- Western hemlock/western red-cedar sites - 17 to 33 tons per acre
- Subalpine fir sites - 10 to 19 tons per acre
- Optimum levels of fine organic matter are 21 to 30 percent in Douglas fir and grand fir habitat types. In subalpine fir, moist western hemlock and western red-cedar habitat types, strong levels of fine organic matter exist at 30 percent or greater (Graham et al. 1994).

2007 SOIL MONITORING

This years monitoring focused on the following:

- Monitoring of pre-harvest soil conditions on 11 timber sales
- Monitoring of post-harvest soil conditions on 4 timber sales
- BMP monitoring
- Effectiveness monitoring of decompaction on the *Moyie Woods Timber Sale*, Bonners Ferry RD
- Monitoring of two prescribed burns
- Stump Creek Rehab

1. Monitoring of Pre-harvest Soil Conditions on 11 Timber Sales.

One-hundred eighty units on 11 proposed timber sales were evaluated to determine existing pre-harvest conditions and what additional mitigation recommendations needed to be made to ensure that Forest Plan and Regional Soil Quality Standards are met. Results showed that about three-quarters of the units had

little to low existing impacts while legacy management activities impacts in the remaining quarter are higher.

With the exception of units that are first entry, numerous areas that do contain legacy impacts from past activities show that disturbances diminish over time. Seven of the monitored units exceeded 15% soil quality standards. Based on these results, design criteria recommendations were provided to reduce any additional impacts that may occur from proposed activities. These can include but are not limited to:

- Utilizing existing skid trails and landings where appropriate in order to maintain current soil compaction levels below the 15% requirement.
- Avoiding operation of equipment in moist or wet depressional areas.
- Limiting logging to times when conditions are dry.
- Operating equipment on a layer of slash whenever possible to reduce compaction.
- Considering winter logging. Operating logging equipment in the winter with either:
    - A 24 inch snow layer or 18 inches of settled snow;
    - Restricted equipment operation to skid trails or where adequate slash matting exists, or
    - Operating when the ground is frozen to a depth of 4 inches.
- Considering post-harvest decompaction of skid trails and landings to improve the activity area and initiate recovery of soil productivity (this is a good option for units that already have elevated existing detrimental condition; however, it is site specific since more damage than good may be done under certain circumstances; i.e. increased mixing of remaining ash layer with less productive subsoils, surface sealing of decompacted soils with greater clay content, damage to remaining root structures, etc.).
- Changing logging system or requesting specific equipment combinations where applicable (i.e. utilize less impacting skyline; utilize in-woods processors and forwarders rather than feller bunchers, processors, and skidders).
- Dropping a unit.

<u>Recommendations related to soil productivity:</u>

- Overwintering slash to recycle nutrients back into the soil.
- Ensuring that enough coarse woody debris will be left to sustain long term soil productivity following guidelines in Graham et al. (1994).
- Limiting prescribed burning to those times when soil moisture is above 25% or duff moistures are elevated to reduce the potential for hot burns, to retain duff and organic material, and to reduce or eliminate potential erosion, especially in steeper terrain.

Table 61. Ranges of impacts evaluating existing conditions on 11 timber sales on the IPNF

	Existing Condition - Range of Disturbance			
Proposed Timber Sale	**0% to 5%**	**6% to 10%**	**11% to 15%**	**>15%**
Barney Thin	3			
Blue Alder	22	5	1	4
Callis Burn		1		
Capitol Dudley	1			
Carpenter Thin	4			
Fallen Bear	5			
Lakeview Reeder*	74	26	7	3
Northern Prairie	10			
Ruby Copper	6	1	2	
Templeman		1		
Twin Skin		4		
Total (180 Units)	125	38	10	7

*Timber stands, not units

Monitored levels of organic matter were variable in all units but generally ranged between low to optimal with some having higher values, especially in moist site habitats. Coarse woody debris was occasionally too low (<5 tons/acre) for several of the proposed timber sale units for existing conditions. These evaluations allowed for recommendations to be made to leave additional coarse woody debris after the harvest.

Assessment of proposed stands or units also showed that existing available data from TSMRS does not always reflect actual conditions on the ground, which is remedied by on-the-ground visits to confirm existing conditions.

2. Monitoring of Post-harvest Soil Conditions

Nine units in four timber sales were monitored for post harvest levels of management impacts. The majority of tractor units were in the range of 11 to 14 percent of detrimental soil impacts for summer logging which were around the expected (~13%) disturbance associated with such equipment, therefore meeting Forest Plan and Regional Standards. One unit exceeded due to a big landing that served several units. Retention of coarse woody debris was satisfactory in all units though some were not burned yet.

Table 62. Background and monitoring results of post-harvest detrimental soil impacts on four timber sales and two prescribed burns

Timber Sale	Unit	Accomplished Year	Equipment	Fuels Rx	Detrimental Soil Impacts %	CWD Tons/ acre
Moyie Place (NZ)	8a	2006	FB/P/S	GP	13*	26
	9	2006	FB/P/S	GP	16	18
Broadaxe (SZ)	1	2006	FB/Sky	NYB	4	19
	2	2006	FB/Sky	NYB	5	14
	4	2006	FB/S	none	9	8
Deer Skin (NZ)	6a	2004	FB/P/S	GP – NYB	11	21
	6c	2004	FB/Sky	BP	8	44
	13	2004	FB/P/S	GP	14	14
Big Mack (NZ)	1	Winter ’01, ’05, ‘06	FB/P/S	NYB	5**	38

H = Harvester
FB = Feller-Buncher
P = Processor
Sky = Skyline
S = Skidder
GP = Grapple Pile
BP = Burn Piles
UB = Underburn

One of the up-and-coming equipment uses are a combination of mechanical equipment, such as a feller-buncher, and skyline. So far results have shown that disturbance levels are low between 4 to 8 percent but are likely a bit higher if grapple piling is added as well. Impacts from the ground-based equipment increases with steeper gradients so that these equipment combinations have slope limitations to no more than ~40 percent before creating greater disturbance levels, primarily in the form of rutting and displacement, even under dry conditions.

In general, grapple piling activities and close spacing of skid trails were observed to be the main cause for increased disturbance levels in several harvest areas. Site prep activities should re-use existing skid trails whenever possible and avoid adverse skidding or turning of equipment, especially on steeper slopes. Backing in and out is a practice that reduces displacement and the creation of berms. Skid trails should be designated and spacing should be maximized whenever possible.

3. Best Management Practices

Best Management Practices (BMPs) were reviewed on the Big Mack Timber Sale. Big Mack Unit #1 has been winter logged during several stages over the past 6 years. Soil impacts from winter logging were estimated to be 5% for the entire Unit 1. These are excellent results which show that ground-based operations can greatly reduce resource impacts during favorable winter conditions. Additional monitoring is planned once grapple piling and burning have been completed.

BMPs were reviewed separately from logging impacts during this visit and found several shortcomings regarding landings, skid trails, intermittent streams, and Forest Service Road 2405, primarily towards the last quarter of a mile. Findings mainly focused on culverts and proper drainage as well as some close locations to Mack Creek itself.

Recommendations included:

- Ensure that landings are located in areas that minimize fire damage to residual trees. If terrain and residual vegetation is complex, pay extra attention on mitigating any negative outcome once burning takes place and ensure that the site is stabilized to prevent sediment movement off site, especially on steep slopes above drainages with streams.
- Maintain road and proper drainage. If road work cannot be properly completed during winter conditions, return during the summer to inspect culverts, clean ditches, and install waterbars, especially if a sale continues over several seasons, such as this one.
- Provide better ground truthing during sale prep phase (and beyond) to ensure that intermittent streams are properly buffered. Though such locations may not be evident during winter operations, the placement of debris in the drainage, such as in this case, is improper.

4. Effectiveness Monitoring of Decompaction on the Moyie Place Timber Sale, Bonners Ferry RD

Unit 8a of the *Moyie Place Timber Sale* was visited in 2006 and was found to contain exceeding levels of compaction. The disturbance was due to harvest equipment but also from legacy impacts from roads and the public who entered the flat area from a neighboring farm and road system. The eastern end of the unit was especially disturbed due to a looping road that, though vegetated with grasses and forbs, was very compacted prior to harvest. A powerline related trail also dissects the unit to the west.

Monitoring in 2006 revealed 19% detrimental impacts in this cedar, larch, and white pine dominated stand before grapple piling took place. Today, the activity area has been piled, burned and, in addition, contains several trails that were decompacted by the grapple piling operator. Overall decompaction work is excellent with trails showing reduced platy and massive characteristics and an encouraging trend towards re-vegetation. Though some weeds are present, the majority of plants that are re-establishing on the trails are not invasive.

Plenty of small and larger size debris has been incorporated, which is important to reduce re-compaction as the soil settles, and to provide additional organic material for long-term productivity. Smaller needles and duff can still be found, adding to an increased recovery through protection from weeds, insulation, and enhanced moisture holding media for new growth. An earlier windstorm in 2007 has uprooted numerous large trees that now cross over the trails making future passage of motorized vehicles unlikely for now. The coarse woody debris count is therefore quite high.

The eastern part of the unit still contains the biggest remaining impacts due to the concentration of old trails but most were decompacted as well. Mixing with underlying cobbles and gravels is increased here but is due to previous conditions and was unavoidable. The remainder of the decompacted trails show little mixing of the valuable ash-capped soils with less productive subsoils. Overall, rehab in this unit is a success and reduced previously monitored disturbances from 19% to 13% that now meet R1 Soil Quality Standards. As long as public access and traffic are restricted, this unit is on its way to recovery.

Figure 16. Decompacted trail in Moyie Place Unit 8a with incorporated debris

5. Monitoring of Two Prescribed Burns

a. Canfield Prescribed Burn, Coeur d'Alene RD

Units around the Canfield Mountain area were treated with a prescribed burned on May 9 & 10, 2007, to reduce fuels in this heavily used recreational area adjacent to the City of Coeur d'Alene. According to the burn plan, air temperatures ranged around 68ºF with a relative humidity of 25 percent. Soil moistures were measured to be 30 to 35 percent.

Impacts to soils from prescribed burning measured ~2% in both of the monitored units. The burns were light in nature and only small scale localized patches showed some elevated burn severity, which is to be expected. None of these areas gave rise to any concerns in regards to increased sediment movement or deteriorating long-term soil productivity over time. On the contrary, more area within the units could have been treated since the extent of the burn was very patchy, leaving lots of unburned area throughout the landscape.

Preservation of coarse woody debris and organic matter is likely the most important factor during prescribed burning since it protects the soils from erosion and provides favorable conditions for re-vegetation, moisture retention, and nutrients. Coarse woody debris levels were at 15 tons/acre and 9 tons/acre for Units 5 and 6, respectively. Organic matter and coarse woody debris levels for the two assessed units are satisfactory for this relatively dry habitat type. Burned areas are expected to naturally re-vegetate since the majority of underlying roots were preserved.

b. Flatmoore Prescribed Burn, Priest Lake RD

The *Flatmoore Timber Sale* Unit 65 was logged around 2002 with a tractor and rubber tired skidder. Prescribed burning occurred on April 26, 2006, when air temperature was ~58ºF with a relative humidity of 34%. Soil moistures were greater than 25% and isolated snow patches were still present on the ground.

Soil disturbance was very limited to absent 16 months after the prescribed burning of Unit 65 took place and amounted to ~2%. This number reflects the expected disturbance level that is generally assigned to prescribed burn activities. Organic matter is generally less than to 1 inch in over 90% of the unit and continuous over the landscape. No signs of erosion were observed and sediment movement was only present in few isolated locations surrounded by ample buffering from existing forbs, grasses, and shrubs. Remaining coarse woody debris was estimated at 10 tons/acre and meets Graham et al. (1994) recommendations.

6. Stump Creek Rehab, Coeur d'Alene RD

Figure 17. Aerial view of Stump Creek meadows before rehab. Included are transect path and locations for control and compacted samples (Hayden Lake 7.5 min. quad)

The rehabilitation work in Stump Creek took place in 2006 and covered approximately six acres. The area was heavily impacted by OHVs who used the site as a recreational mudbog. Numerous trails descending from Forest Service Road 209 and from all other directions entered the flat meadow area and the below lying Stump Creek drainage and altered stream flow; displaced, rutted, and compacted soils; and disturbed vegetation and riparian areas. Trespasses also occurred through the fence onto adjacent private land to the south.

In an attempt to close the site, access was first restricted in 1994 by closing and placing boulders on the main arteries of roads to block thoroughfare and to protect the fragile meadow habitat. However, OHV riders soon breached the physical closures again to illegally enter the area.

In 2006, a second attempt to improve riparian and meadow habitat around Stump Creek consisted of decompacting and leveling soils and seeding areas with native grasses. An excavator was utilized to decompact the soils to an approximate depth of 30 inches within the meadow. Several small shallow ponds were also created in some of the existing depressions to provide breeding habitat for Boreal toads, considered a "sensitive" species on the Idaho Panhandle National Forests. Discarded garbage and car parts that littered the landscape were cleaned up throughout the meadow area. To provide large woody debris, logs were hauled to the meadows to be used for instream restoration and to discourage illegal access into the meadows.

Figure 18. Mudbog area

Figure 19. Rutted and compacted area

Eighteen bulk density (BD) samples were taken on a north-south transect to determine how current bulk densities compare with readings from eight undisturbed control sites as well as eight compacted samples from remaining compacted trails adjacent to the meadow. Unfortunately, no pre-decompaction BD data

is available directly for the meadow area which contains slightly different soils than those found on the side slopes above the terrace. All samples were taken on the surface layer.

Pre-rehabilitation photos (Figures 17, 18 and 19 - above photos) show that the area was heavily impacted. Recovery, especially on the compacted OHV trails, would not be this advanced would it not have been for the decompacting, leveling, and seeding efforts. Within one year, the area has greened up once again and the meadow is host to forbs, grasses, and a respectable herbaceous cover that displays great improvement over the previous deteriorated site conditions. Over time, the meadow is expected to provide for an even denser ground cover as it recovers.

Though some patches still appear more compacted than others, the overall improvement is undeniable. Decades of abuse on the sites' soils have introduced less desirable subsurface material which, after the decompaction and ripping efforts, now make up the surface soils in several spots since the natural more productive layer and organic material have been removed. This is especially visible along one of the main north-south trails where lots of small gravels and cobbles are present. However, with no additional motorized disturbance, continuous increase in ground vegetative cover and root penetration, the meadow is expected to build its soils back up over time.

a. Control

Six control samples were collected on the southeast and northeast edge of the meadow terrace (Figure17 - aerial view above). Two additional samples were taken on the northwest side but soils along the foot slope of the hill differed under the forested canopy by containing lighter ash textures compared to the heavier and darker meadow soils. These samples were therefore excluded. Organic matter averaged between 1 to 3 inches. Average bulk density (BD) for the control was 0.78 g/cm^3 with a standard deviation of 0.04.

Table 63. Bulk densities for undisturbed controls

Location	Bulk Density g/cm^3
Near Access Road - SE corner	0.73
	0.81
NE corner above Stump Ck.	0.76
	0.77
	0.79
	0.85
Average	**0.78**
Standard Deviation	**0.04**

Region 1 soil quality standards define a 15 percent increase in natural bulk density or a 50 percent reduction in infiltration rate as detrimental. Therefore, soils in the decompacted area that have a BD above 0.90 g/cm^3 are considered to still be detrimentally impacted; however, spatial differences in physical soil characteristics generally produce an array of readings.

b. Compacted Areas

Table 64. Bulk densities for compacted areas

Location	Bulk Density g/cm^3
Old access road – SE corner	1.01
	1.12
	1.18
	1.13
Old road – SW corner	1.29
	1.22
Side road – SW corner	0.85
	0.88
Average	**1.09**
Standard deviation	**0.16**

An old road adjacent to the meadow was not decompacted and provides access from the riparian bottom to the above lying terrace that contains the meadow. Samples were taken here as well as in the southwest corner adjacent to the meadow on an old trail and a side trail (Table 64). Platy, massive, and blocky structure up to several inches in depth are present, giving an approximation of how deep the previous disturbance affected the subsoil. Zero to two inches of organic matter was recorded over brown silty loam ash influenced soils.

c. Meadow Transect and Bulk Densities

A transect was paced from south to north zig-zagging through the meadow (Figure 17). Samples were taken every 30 feet (see following table). The entire meadow was decompacted (with the exception of the frog ponds, which are located in old, well compacted depressions with reduced infiltration capacity to retain water longer into the year) and some evidence of ruts are still visible. Mixing with lighter colored sandier and gravelly subsoils was observed, especially on the old main trail.

Table 65. Bulk density results for a transect traversing north to south through the meadow*

Location	Bulk Density g/cm^3
South end – at cottonwood	0.46
Old main road	0.82
Near stump – old ruts	1.18
Near stump – depression	0.45
Old rut - vegetated	1.01
Old rut - vegetated	1.12
Old main road	0.99
Edge of old road – vegetated rut	0.84
Edge of old road – vegetated rut	0.72
Old main road	1.00
Old main road – rocky berm	0.87
Next to cottonwood on west side - vegetated	0.49
Next to cottonwood on west side - vegetated	0.57
***Uncompacted in upper part of pond*	*1.06*
***Uncompacted between ponded areas – rutted, vegetated*	*1.03*
***Uncompacted vegetated ruts near pond*	*1.19*
Vegetated ruts	0.84
Vegetated ruts	0.91
Average	**0.82** *(0.87)*#
Standard deviation	**0.24** *(0.28)*#

* Short comments note observations about the locations at which the samples were taken)
** Sample points fell onto areas that purposely were not decompacted as part of the Boreal toad ponds.
# Numbers in bold represent average and standard deviation for the 15 samples on the decompacted meadow area. Numbers in Italics and parenthesis give the totals for all 18 transect points.

Sixty percent (9) of the samples resulted in acceptable bulk densities while the remaining 40 percent (6) still exceeded R1 disturbance limits above 15% when compared to the control. It is therefore suggested that decompaction efforts at Stump Creek Meadows resulted in a 60 percent improvement over previous conditions. Three additional samples were also part of the transect (see Table 65 – italics) but were not counted because the locations were not decompacted on purpose as part of the establishment of boreal toad ponds.

Overall, the average for the compacted samples was 1.09 g/cm^3, undisturbed controls averaged 0.78 g/cm^3, and the rehabilitated area averaged 0.82 g/cm^3. It shows that the rehab efforts resulted in a definite improvement over past site conditions. Based on the small sample number, however, the results are not statistically valid but provide a rough estimate of what can be accomplished when decompaction efforts are undertaken.

Summary

Decompaction efforts in Stump Creek Meadows were successful in improving approximately 60% of the area when compared to adjacent undecompacted areas. Some mixing of surface soils and underlying gravelly subsurface material were observed in localized areas, especially along the old main road, but likely have occurred prior to decompaction efforts over numerous years of recreational abuse. Even so, the overall improvement is evident. Considering that the whole meadow was heavily compacted and would have remained so for decades to come, the restoration efforts have allowed for re-seeding and have promoted grass and forb growth to establish and contribute to the speedy recovery of the area.

Figure 20. View south to private land (Photo taken in June 2007)

Figure 21. View south towards private land (Photo taken during rehab)

The success of restoration is a reflection of the people who implement these efforts. Their commitment and dedication, as well as the expertise of the equipment operator, is crucial. Though impacts should be avoided or reduced before they can take over an extensive area, this project is a good example how decompaction can be used to aid the recovery process when areas are heavily impacted.

2008 SOIL MONITORING

Monitoring of Pre-harvest Soil Conditions on Three Timber Sales

Thirty units in three proposed timber sales were evaluated to determine existing pre-harvest conditions and mitigation recommendations to ensure that Forest Plan and Regional Soil Quality Standards are met (Table 66). Results showed that none of the pre-harvest monitoring exceeded standards in the proposed units and that almost all units contained little to no existing disturbance.

Table 66. Ranges of impacts evaluating existing conditions on three timber sales on the IPNFs

	Existing Condition - Range of Disturbance			
Proposed Timber Sale	**0% to 5%**	**6% to 10%**	**11% to 15%**	**>15%**
Red Beauty (CZ)	19	4		
Rutledge (NZ)			2	
Hoodoo Ames (CZ)	4	1		
Total (30 Units)	**23**	**5**	**2**	**0**

*Timber stands, not units

Additional monitoring of existing conditions occurred for two proposed projects. The Rolling Hills Larch timber sale on the Central Zone was covered with a walk through since none of the proposed units had been

harvested in the past. The Heller Cascade Landscape Burn was also evaluated but did not include transects due to being a large-scale prescribed burn proposal in the back country of the St. Joe Ranger District.

With the exception of units that are first entry, numerous areas that do contain legacy impacts from past activities show that disturbances diminish over time. None of the pre-harvest monitored units exceed Regional or Forest Plan soil quality standards.

Monitored levels of organic matter were variable in all units but generally ranged between low to optimal with some higher values, especially in moist site habitats. Coarse woody debris was low on occasion (<5 tons/acre) for a few of the proposed timber sale units for existing conditions. These evaluations allowed for recommendations to be made to leave additional coarse woody debris after the harvest.

Monitoring of Post-harvest Soil Conditions

Eight units in four timber sales were monitored for post-harvest levels of management impacts. The majority of ground-base units were in the range of 11 to 13 percent of detrimental soil impacts for summer logging which confirms the expected (~13%) disturbance associated with such equipment, therefore meeting Forest Plan and Regional Standards.

Table 67. Background and monitoring results of post-harvest detrimental soil impacts on four timber sales

Timber Sale	Unit	Accomplished Year	Equipment	Fuels Rx	Detrimental Soil Impacts %	CWD Tons/ acre
South Copper Down (CZ)	1	2007	C	none	5	13
	2	2007	C	none	3	9
	11	2007	C	none	3	10
Lakeface Lamb (NZ)	69	2006	HF	GP	11	24
	71	2006	HF	GP/UB	11	32
	72	2006	HF	GP	13	20
Curious Bruin (SZ)	3A	2007	FB/S/Ch	LS	18	11
Clover Thin (CZ)	1	2006	P/F	GP	12	43

H = Harvester
FB = Feller-Buncher
F = Forwarder
P = Processor
S = Skidder
GP = Grapple Pile
Ch = Chainsaws/handfell
C = Cable
UB = Underburn
LS = Lop and scatter
CWD = Coarse Woody Debris

Post-Harvest Monitoring Spotlights

One unit exceeded due to an excessive amount of skid trails often situated side by side or with distances that could have likely been doubled or tripled during the hand-felling and skidding operations. Branching of trails also increased the amount of disturbance with most of them showing equal usage and little dedication of main trails that could have concentrated impacts.

In comparison, the other ground-based units had previous impacts but incorporated old trails into the most recent harvest activities or displayed use of a slash mat. More careful spacing of dedicated trails during skidding operations and a slash mat continuously show reduction of soil disturbances and should be of high priority in any future sale, especially where past impacts are already elevated.

Unit 71 of the Lakeface-Lamb sale also displayed how different ground cover establishes as it was partially underburned and grapple piled. The vegetative cover on this northeast-facing aspect was much more diverse and continuous in the grapple piled portion vs. the underburn. Though direct soil disturbance from burning was minimal to non-detectible, the initial differences in vegetative cover need to be weighed, especially for areas that are steep and erosive.

Of greatest concern with the Lakeface-Lamb monitoring was that a temporary road was still in place despite the NEPA direction stating that it would be re-contoured and obliterated. District personnel were informed, a review was initiated, and the road is scheduled to be decompacted in the early summer of 2010.

Cable logging on the South Copper Down sale showed that little disturbance occurs when hand felling and winching is utilized. The biggest impacts can occur on steeper cut slopes along roads and may be remedied by pulling logged boles over strategically placed logs on top of the cut slope so that entrenching and sediment displacement are kept minimal.

Broadaxe Prescribed Burn

The Broadaxe timber sale was monitored for soil disturbance from logging activities in September of 2007. Units 1 and 2 were harvested with a feller-buncher and yarded with a skyline system. Disturbance was determined to be 4% and 5% respectively, which are excellent results (2007 FP Monitoring Report).

In the late spring of 2008, the units were burned. Soil disturbance was found to be minimal with ample organic matter still remaining on the surface. Only small localized patches were burned more severely. Coarse woody debris also remains though some of the smaller material has been removed.

All burn piles along the road were burned as well. Numerous observations showed that soils below an often deceiving layer of orange and grey ashes were still intact with an undisturbed root mat and fine and larger roots below still unharmed (Figure 22). The biggest concern associated with the piles would be weed invasion and inhibited growth due to a thick ash layer that does not readily promote growth.

Figure 22. Intact fine roots and remaining organic layer over unaltered soils in a burn pile

Figure 23. Re-emerging bear grass

Ground vegetation is also returning, specifically bear grass and other small shrubs (Figure 23). However, a good 50% to 75% of the leave trees have been burned. The fire also slopped over beyond the unit boundary uphill and scorched numerous trees and shrubs on a leave island and on the other side of the road.

A temporary road was located in Unit 2 and has been obliterated. The previous roadbed has been decompacted and coarse woody debris was worked in and scattered on its entire length. Small sprouts and revegetation are visible. Where the fire moved over the road, the small debris has been burned while only larger wood pieces remain. The reduction in fines is not favorable as it provides organic material, shade, and microsites for vegetation on the recovering roadbed.

Figure 24. Re-contoured temp road burned over

Figure 25. Section of re-contoured temp road with intact coarse and fine woody material

To test soils for hydrophobicity (water repellency) a transect was established to compare unburned with lightly scorched and burned soils (Table 68). This comparison deemed important because much of the natural root mat or duff layer is very hard and naturally hydrophobic. The dense mat has likely established from heavy snow packs over long winter months. Results showed that burned and unburned sample sites behaved similar so that it is impossible to say if the fire increased water repellency. More likely the slopes are naturally hydrophobic, especially during the dry summer months.

Table 68. Hydrophobicity Transect

Hydrophobicity	Burned	Scorched	Unburned	Total
Low	2	2	8	**12**
Moderate	5	2	3	**10**
High	10	2	19	**31**
	17	**6**	**30**	**53**

Low – water infiltrates between 0-10 sec.; Moderate – water infiltrates between 10-40 sec; High – water infiltration >40 sec.

Summary

The order of burning, specifically elimination of the slash piles next to the roads prior to burning of the unit, was not followed and resulted in slopped over fire patterns across the road and also burned the majority of woody organic material, specifically fines, that was worked into the temp road obliteration.

A close look should be taken in the future to evaluate whether a burn can be accomplished successfully given the circumstances. Options should remain open to decide on no action if further site treatment is not deemed necessary. When road obliteration is present in a unit that is to be burned, fine and coarse woody material needs to remain on the re-contoured road surface to protect soils and to provide for a faster recovery.

2009 SOIL MONITORING

Pre-harvest Soil Conditions on three Timber Sales

Thirty units in three proposed timber sales were evaluated to determine existing pre-harvest conditions and additional mitigation recommendations necessary to ensure that Forest Plan and Regional Soil Quality Standards are met (Table 69). Results showed that over three quarters of the units had little to low existing impacts while legacy management activities impacts in the remaining quarter were higher.

Table 69. Ranges of impacts evaluating existing conditions on three timber sales on the IPNFs

	Existing Condition - Range of Disturbance			
Proposed Timber Sale	**0% to 5%**	**6% to 10%**	**11% to 15%**	**>15%**
East Fork Meadow Creek (NZ)	5	8	2	
Fern Hardy (CZ)	12		1	1
Rochat Creek (SZ)	1			
Total (30 Units)	**18**	**8**	**3**	**1**

With the exception of units that are first entry, numerous areas that do contain legacy impacts from past activities show that disturbances diminish over time. One of the monitored units exceeded 15% soil quality standards. Based on these results, design criteria recommendations were provided to reduce any additional impacts that may occur from proposed activities.

Monitored levels of organic matter were variable in all units but generally ranged from low to optimal with some higher values present in moist site habitats. Coarse woody debris was generally satisfactory for the majority of the proposed timber sale units for existing conditions while some were below ($\leq$5 tons/acre) for a sale on the Central Zone. These evaluations allowed for recommendations to leave additional coarse woody debris after the harvest.

Assessment of proposed units also showed that existing available information from the past harvest database does not always reflect actual conditions on the ground, which is remedied by on-the-ground visits to confirm existing conditions of past management activities.

Post-harvest Soil Conditions

Six units in four timber sales were monitored for post harvest levels of management impacts. The majority of ground-based logged units were in the range of 11 to 15 percent of detrimental soil impacts for summer logging which is around the expected (~13%) disturbance associated with such equipment, therefore meeting Forest Plan and Regional Standards. Retention of coarse woody debris was satisfactory in all units.

Table 70. Background and monitoring results of post-harvest detrimental soil impacts on four timber sales

Timber Sale	Unit	Accomplished Year*	Equipment	Fuels Rx	Detrimental Soil Impacts %	CWD Tons/ acre
Conventional Caribou (CZ)	1	2009	FB/P/S	UB	12	17
Wrenco Loop (NZ)	9	2008	P/F	none	13	14
Manhattan (SZ)	27A	2009	FB/P/S	UB	15	8
	31A	2009	FB/P/S	UB	8	18
	53	2009	FB/P/S	UB	12	13
Quarling Eagles (SZ)	15	2007	FB/S	none	14	23

FB = Feller-Buncher F = Forwarder P = Processor CWD = Coarse Woody Debris UB = Underburn
S = Skidder
*The accomplished year displays when latest entry was made, either for harvest or fuel treatment – the latter usually occurs the following year after harvest.

Prescribed Burn Monitoring

Prescribed fires were used for site preparation in Units 12, 13, and 14 of the HBO sale on the Priest Lake Ranger District. All units were winter logged with a harvester/forwarder system between 2006 and 2008. Before burning, numerous soil moisture samples were taken with a duff moisture meter (by Campbell Scientific) which was also calibrated for soil sampling. Photos and GPS locations accompanied the pre-burn readings so that the sample sites could be visited after the burn.

Table 71. Summary comparison of the burned units on the HBO sale

Unit #	Harvested (Burned)	Soil Moisture (Average)	Fuel Moisture (10 hr. fuels)	Slash Cover	Slash Type	Duff Depths (inches)	Other
12	Winter '07-'08 (10/6/2009)	31% - 39% (34%)	11 – 12%	Pockets of slash	LP/DF/L /GF	NA	2-4 mph wind
13	Winter '06-'07 (9/27/2009)	18% - 33% (27%)	6 – 8%	Continuous thick cover	LP/L	1¾ to 2¼	3-6 mph gusting to 9 mph
14	Winter '06-'07 (9/27/2009)	8% - 14% (11%)	8 – 9%	Light, less continuous thinner cover	LP/GF/S /L	¾ to 1½	2-4 mph wind

*GF – Grand fir; DF – Douglas-fir; L – Larch; LP – Lodgepole; S – Spruce

Unit 12

This unit was harvested in the winter of 2007/2008 and contained slash that had the least amount of time to cure compared to the other two units. It was also burned the latest (in October) and had additional time to pick up soil moisture after rain fell during the previous week. Soil moistures were between 31 and 39% with an average of 34%. The fire did not carry well and has the appearance of a jackpot burn with a mosaic of intact vegetation remaining throughout.

Duff consumption in the burned areas was satisfactory for the soils resource with a good layer of fine debris remaining. No impacts to soils were noted since roots of all sizes were still plentiful below the charred layer.

Figure 26. Patchy burn mosaic

Figure 27. View south west from upper corner – plenty of vegetation remains

Unit 13

Unit 13 had the highest fuel loading out of all three units which may also explain while soil moistures below the protective slash layer ranged from 18% to 33% with an average of 27%. However, an adjacent wetland system may have also contributed to increased soil moistures due to higher water levels.

The entire unit burned easily and continued to do so overnight as well, leaving few vegetative patches. Increased winds from the southwest fueled the fire that burned hottest in the northernmost corner of the unit while an increased mosaic of vegetation remains in the westernmost section.

Overall duff consumption was higher and left a discontinuous mantle of small debris. However, when soils were checked, roots of all sizes were still intact under the charred surface. Larger coarse woody debris also appears to be plentiful and a higher amount of decomposing soils wood was also noted with most of them still intact.

Figure 28. View east towards road

Figure 29. Variable duff depths remain

Unit 14

Pre-burn photos show that not much continuous large or small woody debris was available before the burn. Kinnickinick, pachistima, grasses, and seasonal forbs made up the majority of understory in addition to numerous lodgepole saplings that were not removed during the harvest or the burn.

The fire had difficulties carrying through the unit so that a mosaic of unburned pockets remained (see photos below). Soil moistures ranged between 8% to 14% with an average of 11% - well below the usually recommended 25%. Despite that, much of the duff layer was conserved and roots of all sizes were still present. Besides the occasional small scale higher burn severity, such as around smoldering stumps, no impacts to soils were observed.

Figure 30. Undisturbed soils – fine roots are still present and duff still protects the surface

Figure 31. Skid trail burned due to former fuel load

Findings

In the spring of 2009, a revision of the 25% soil moisture requirements was proposed with the caveat that on-the-ground observations would have to be made to review the impacts of prescribed burning on soils. To provide fewer restrictions and a larger operational window, design criteria for burning was revised to provide for a desired outcome rather than requiring that a certain soil moisture level needs to be present to burn.

Fire personnel on the Priest Lake RD were of great help in this endeavor and started out by monitoring soil moisture levels for a while before fall burning started in the 2009 season. After a fairly dry summer and a light rain in early September, soil moistures averaged in the mid- to upper teens, still well below the previously required 25%.

Three units of the High Bridge Outlet (HBO) sale were targeted. All are located in R5W T58N Sec. 2 on flat terrain made up of glacial outwash overlain by ash-influenced light brown silt loams south of Priest Lake. Regeneration harvest occurred during the winter with a cut-to-length and forwarder system in 2006-2007 for Units 13 and 14 and 2007-2008 for Unit 12. Slash was left after the harvest and, over time, cured and dropped its needles.

The pre-harvest overstory consisted primarily of lodgepole with larch, Douglas-fir, with some grand fir and Engelmann spruce. The main species remaining after the harvest is larch. The understory contains kinnickinick, pachistima, various grasses and other low forbs. A stand replacing fire occurred in 1926 and consumed much, often resulting in a reduced amount of coarse woody debris. However, Unit 13 contains an elevated amount of decomposing soil wood.

Comparison of the three burned units of the HBO sale revealed an array of different conditions that resulted in a variety of outcomes. Above all, it shows that soil moisture by itself is not a stand-alone prediction for how a burn unit will be affected. Table 71 displays the variables of each unit.

The most interesting results can be seen in Units 13 and 14, which are separated only by a few hundred feet. Soil moisture varied greatly between the two with an average of 27% in Unit 13 and 11% in Unit 14. Fuel moistures in 10 hour fuels were lower in Unit 13 but not by too much. The biggest difference was the fuel loading that was fairly thick and continuous in Unit 13 compared to a more patchy distribution in Unit 14 where the majority of the slash remained along the skid trails. This resulted in burned trails while the surrounding vegetation stayed intact.

Duff depth was apparently thicker in Unit 13 to begin with but post-fire the consumption was definitely higher, leaving behind a thinner veneer of duff as well as an increase in bare spots. It is difficult to judge the current amount of bare soils due to the charred surface but burn severity was certainly higher. Scratching the mineral soil also showed an increased amount of hydrophobicity, especially since ongoing rains previous to the visit have wetted the area and showed the difference in water repellency across the area. However, soils still contained roots of all sizes and showed no signs of severe burning besides isolated localized spots scattered about, which is to be expected.

The consumption of ground vegetation was also much higher in Unit 13 and left few patches in comparison to Unit 14. A southwestern wind played an important factor in Unit 13 and apparently fueled the fire, increasing burn intensity in the northern portion of the unit and continuing the fire during the night. Where fuel and soil moistures were high, such as in Unit 12, the fire resulted in a patchy jackpot burn.

These results show the complexity of prescribed burning and the variety of outcomes that occur. The greatest contributors appear to be fuel moisture, slash load and distribution, and weather conditions, primarily wind. Most importantly for soils, it appears that increased soil moistures in Unit 13 provided protection so that the elevated fuel load and burn intensity had little direct impact on the surface soils. The patchy hydrophobic conditions will likely clear up over the winter and are of little concern on these flat slopes.

Summary

Soil moistures consequently are not the main driver in outcome of prescribed fire but appear to be critical when fuel loads are high and fuel moistures are low. The requirement for elevated soil moisture levels should therefore be strongly considered when burning under these conditions takes place.

IV. OTHER TOPICS OF INTEREST

The Forest Plan does not require that the information in this section be part of the monitoring report. The information is included because of public interest in these subjects of forest-wide importance. Topics addressed include ecosystem restoration and old growth.

Ecosystem Restoration

The scientific assessment of the interior Columbia River basin describes northern Idaho as dominated by heavily roaded moist forest types. The area is rated as having low forest, aquatic, and composite integrity. It also has moderate to high hydrologic integrity (Quigley, Thomas, et al, 1996. Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basins, Gen. Tech Rep. PNW-GTR-382. Portland, OR, USDA Forest Service, Pacific Northwest Research Station).

Our forestland problems include the large-scale loss of potentially long-lived, shade-intolerant, tree species, such as white pine, whitebark pine, western larch and ponderosa pine. These species have been replaced with species such as grand fir and hemlock, which are less drought tolerant and more prone to attacks from insects and disease and less fire resistant. Besides reductions in the shade-intolerant tree species, the number of shade-tolerant, moisture-demanding small understory trees per acre may have also increased. There is also less old and mature forest, fewer large trees, and more uniform areas dominated by dense stands of small and medium-sized trees. Overall, our landscapes are more homogenous than they were historically. Combined, these factors increase the risk of drought damage, large-scale insect and disease attack, and severe stand-replacing fires. They also reduce the amounts of some types of wildlife habitat.

Watershed and hydrologic functions can be impaired by weakened stream channel stability interacting with roads and normal flood events. This can result in excessive erosion rates and downstream sedimentation.

Our aquatic resource problems include the loss of quality fish habitat, the introduction of exotic species, such as brook trout, and potential damage from severe fires.

The scientific assessment identified primary opportunities to address risks to integrity. Some of the broad restoration actions that could be taken included:

1) Increase mature and old forest structures; manage stand densities; increase the proportion of white pine, larch, whitebark pine, and ponderosa pine; increase patch size, interior habitat, and variability in patch size, and allow larger areas to rest for longer times between disturbances.

2) Restore watershed function and aquatic habitats to provide a connection between aquatic strongholds (existing populations of native fish species).

3) Reduce fire, insect, disease (root rot, blister rust) susceptibility through management of forest tree species composition and structure.

Idaho Panhandle National Forests Restoration Activities, 1992-2009

Prior to completing the assessment, the Idaho Panhandle National Forests had been working to address many of these same concerns. Listed below are some of the types of activities the Forest has been working on.

1) Increasing the proportion of white pine, larch, and ponderosa pine.

- Approximately 1,558, 1,381, and 1,846 acres, respectively, were planted to these species in 2007, 2008, and 2009. (This includes the new, more blister rust resistant white pine). These three species tend to be best adapted to local climate, and most resilient to droughts, insects and root disease, and fire.
- From 1992 - 2009 there were 78, 630 acres planted to these species.

2) Restoring White Pine Forests

The major cause of the loss of the white pine forests has been the introduction of the exotic disease, white pine blister rust. The Idaho Panhandle National Forests has a two part long-term strategy to restore these important forests. Natural white pine has a very low level of resistance to the blister rust disease. For the first part of our strategy, the Northern Region of the U.S. Forest Service has used selected resistant trees in a multi-generational breeding program to accelerate the development of rust resistance in white pine.

- In 2007, 2008, and 2009, the IPNFs planted approximately 749,519 rust resistant white pine seedlings.
- From 1992 through 2009 the IPNFs planted over 13,058,227 rust resistant white pine seedlings.

The second part of the IPNFs' strategy involves maintaining white pine as a forest component while they grow and mature. This includes retaining a landscape-wide, naturally breeding, and genetically diverse population of wild white pine that can develop blister rust resistance through natural selection. The IPNFs has cooperated with the U.S. Forest Service, Northern Region, Forest Health Protection Staff in publishing *White Pine Leave Tree Guidelines (Schwandt and Zack, Forest Health Protection Report 96-3*. March 1996). The guidelines include pruning natural reproducing young white pine. Since the publication of these guidelines, the forest has also included the pruning of genetically improved planted stock. This practice has been demonstrated to reduce mortality significantly where implemented; thereby increasing the likelihood that white pine will be maintained during forest development.

- In 2007, 2008, and 2009, the Idaho Panhandle National Forests pruned approximately 5,772 acres where pine is a major portion of the forest.
- From fiscal year 1992 through 2009, the Forest has pruned about 39,992 acres.

The implementation of the guidelines also ensures that even where the forest is harvesting trees it will maintain a naturally breeding white pine population that has a high probability of capturing the available blister rust resistant genes. The forest began using these guidelines in 1996.

3) Managing tree stocking and forest structure

- 7,882 acres were thinned or released in fiscal year 2007, 2008, and 2009. Most of the thinning and release was to allow shade-intolerant larch, white pine, and ponderosa pine to maintain stand dominance, or to reduce density in over-crowded stands.
- From fiscal year 1992 - 2009, 90,443 acres were thinned or released.

4) Restoring the role of fire in the ecosystem thereby reducing risk of severe fires

- There were 7,490, 6,032, and 4,724 acres of harvest related natural fuel reduction accomplished fiscal years 2007, 2008, and 2009.
- There were 13,356, 9,290, and 4,740 acres of natural fuel reduction accomplished in fiscal years 2007, 2008, and 2009.

5) Watershed Improvement

- There were 129, 345, and 284 acres of watershed improvement accomplished in fiscal years 2007, 2008, and 2009.
- From fiscal year 1992 to 2009 there were 11,112 acres of watershed improvement accomplished.

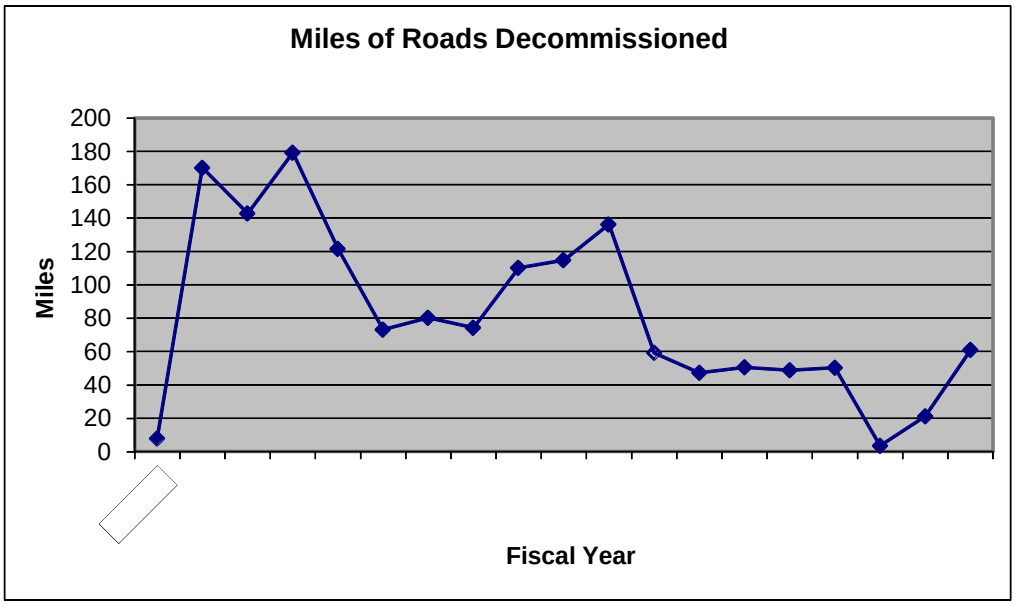
6) Road decommissioning

- There were about 85 miles of road decommissioned in fiscal years 2007, 2008, and 2009 as part of ecosystem restoration work, using a variety of funds.
- The following table shows that there were about 1,552 miles of road decommissioning on the Idaho Panhandle National Forests from fiscal year 1991 to 2009. Classified roads are generally the ones that are inventoried, maintained and managed by the forest. The unclassified roads are not.

Table 72. Miles of Roads Decommissioned

Fiscal Year	Classified Roads	Unclassified Roads	All
1991	0	8.0	8.0
1992	141.8	28.3	170.1
1993	115.2	27.6	142.8
1994	119.3	59.9	179.2
1995	95.9	25.7	121.6
1996	58.9	14.3	73.2
1997	79.2	1.1	80.3
1998	71.5	2.8	74.3
1999	51.9	58.3	110.2
2000	91.8	23.0	114.8
2001	107.0	29.2	136.2
2002	40.2	19.0	59.2
2003	22.6	24.6	47.2
2004	48.9	1.6	50.5
2005	30.8	17.9	48.7
2006	24.1	26.1	50.2
2007	3.4	0	3.4
2008	18.3	2.8	21.1
2009	49.2	11.7	60.9
TOTAL	**1,170**	**381.9**	**1,551.9**

Figure 32. Miles of Roads Decommissioned



Restoration Activities

Our ecosystem restoration activities focus on the following types of activities:

- Reducing road densities, especially in areas with high densities.
- Stabilizing and improving channel stability.
- Creating openings for the reintroduction of white pine, ponderosa pine, larch and whitebark pine.
- Concentrating vegetation treatments in larger blocks, coupled with allowing other large blocks to remain undisturbed for longer intervals.
- Increasing the use of prescribed fire to reduce severe fire risk and restore the role of fire in the ecosystem.
- Restoring whitebark pine by two methods: 1) Reintroducing prescribed fire to encourage whitebark pine restoration; and 2) Collecting whitebark pine cones and testing seedlings for blister rust resistance, to begin developing blister rust-resistant whitebark pine seed sources.
- Thinning dense stands to favor white pine, ponderosa pine, and larch, and to promote large trees and reduce competition for moisture on dry sites.
- Restoring riparian areas and protecting inland native fish strongholds.
- Protecting habitat for threatened and endangered species, such as woodland caribou, Canada lynx, and grizzly bear.
- An important aspect of our ecosystem management strategy is to focus restoration activities in priority areas where multiple ecological problems can be addressed. The objective is to improve the condition of several ecosystem components and not just a single one, such as vegetation or aquatics.

Old Growth

The 1987 Idaho Panhandle National Forest (IPNF), Forest Plan, Standard 10.b says the Forest shall: "Maintain at least 10% of the forested portion of the IPNFs as old growth". The Forest Plan identified 2,310,000 forested acres on the IPNFs. Therefore, the Forest Plan requires maintaining at least 231,000 acres of old growth. Forest Plan Standard 10.a incorporates the definitions of old growth developed by the Regional Old Growth Task Force, documented in: *Green, and others. 1992 (errata corrected 10/08). Old Growth Forest Types of the Northern Region. USDA, Forest Service, Northern Region*.

The IPNF is using a multi-scale approach to monitoring old growth, based on two separate, independent tools. These are:

1) Forest Inventory and Analysis (FIA) data used to calculate IPNF Forest-wide and mid-scale old growth percentages.
2) IPNFs stand map displaying all stands allocated for old growth management, with old growth allocation recorded in the TSMRS database.

1) Old Growth Estimates from FIA Data

The National Forest Inventory and Analysis (FIA) program provides a congressionally mandated, statistically-based, continuous inventory of the forest resources of the United States. Since 1930 the FIA program has been administered through the Research branch of the Forest Service, which makes it administratively independent from the National Forest System. The people who administer the FIA inventory on the IPNFs are employees of the Interior West Forest Inventory and Analysis work unit, headquartered at the USFS Rocky Mountain Research Station in Ogden, Utah.

FIA inventory design is based on the standardized national FIA grid of inventory plots that covers all forested portions of the United States (all ownerships). Both sample plot location and data collection standards are strictly controlled by FIA protocols. The sample design and data collection methods are scientifically designed, publicly disclosed, and repeatable. Data collection protocols are publicly available on the internet (http://www.fia.fs.fed.us/). There are also stringent quality control standards and procedures, carried out by FIA personnel of the Rocky Mountain Research Station. All of this is designed to assure that all measurements are accurate, and that there is no bias in sample design, plot location, trees selected for measurement, or the measurements themselves.

FIA does not provide a 100% annual census of every tree on every acre in a national forest. With approximately 2,500,000 acres on the IPNF alone, and hundreds to thousands of trees per acre, that would not be possible. Rather, the FIA design provides a statistically sound representative sample designed to provide unbiased estimates of forest conditions at large and medium scales. This inventory design is appropriate for making estimates of old growth percentages at the scale of a national forest, or large areas of forest land. (More detail on the statistical foundation of using FIA data to assess old growth on national forests is found in: *Application of Forest Inventory and Analysis (FIA) Data to Estimate the Amount of Old Growth Forest and Snag Density in the Northern Region of the National Forest System by Raymond L. Czaplewski, Ph.D. November 5, 2004* [available from Northern Region, US Forest Service]).

Because FIA data comes from a statistical sample rather than a 100% census, we describe attributes calculated from this data as estimates and the accuracy of these estimates is computed and reported as confidence limits. The Forest Service Northern Region and the IPNFs use a 90%-confidence interval for describing the reliability of FIA estimates. The 90% level was chosen to provide a fairly precise level for biological attributes that vary across the landscape. This confidence interval can be understood as

indicating that if we had a 100% census of every tree on every acre, there is a 90% probability that the true proportion of old growth for the population would be within this confidence interval. For an approximately normally distributed population, there is a 5% probability that the proportion of old growth would be less then the lower confidence limit. There is an equal 5% probability that the proportion of old growth would be greater than the upper confidence limit.

Using FIA data to assess the percent of old growth allows us to base our monitoring on an unbiased, statistically sound, independently designed and implemented representative sample of forest conditions on the IPNFs. This inventory is reasonably current because FIA plots on the IPNF were installed during 2000 to 2004. To remain current, FIA remeasures 10% of its plots every year. As these remeasured plots accumulate, we will periodically update our FIA old growth report. Current FIA old growth estimates are presented at this time.

FIA plot data is tested against the old growth minimum criteria in Table 1 of *Green and others (2008)*. The old growth minimum criteria are the number of trees per acre that meet or exceed old growth minimum ages and diameters, and a minimum forest density measured as basal area per acre. The criteria are specific by Habitat Type and Forest Type combinations. Plots that meet old growth minimum criteria are classified as old growth. Data analysis is automated in the Forest Service, Northern Region FIA Summary Database. The latest FIA old growth estimates for National Forests in the Northern Region are documented in Region One Vegetation Classification, Mapping, Inventory and Analysis Reports (available from the USFS Northern Region). The forest-wide results presented here are from Report 07-06 v1.2, dated May 16, 2007, titled "Estimates of Old Growth for the Northern Region and National Forests". The more detailed data for distribution of old growth across geographic areas are from Report # 06-07, dated April 11, 2006, titled "Estimates of Old Growth Percentages and Snag Density on the Idaho Panhandle National Forest".

Based on FIA data, the estimated percent of old growth on the forested lands of the IPNF is 11.8%. The 90% confidence intervals of this estimate are 9.6% to 14.0%. Given these values, we conclude that the IPNF is meeting and exceeding Forest Plan Standard 10.b. that calls for maintaining "10% of the forested portion of the IPNF as old growth".

FIA old growth percentages by Geographic Area also provide evidence that the old growth is well distributed across the IPNFs. Note that as the sample size becomes larger, the confidence intervals are tighter. Estimates for the IPNFs as a whole provide the tightest confidence intervals, and as we go to smaller geographic areas, the confidence intervals widen. Estimates of percentage Old Growth by IPNFs Geographic Areas and associated 90% confidence intervals are as follows:

Table 73. FIA Current Estimated Percent Old Growth by Geographic Area

IPNF Geographic Areas	90% Confidence Interval Lower Bound	Estimate of Percent Old Growth	90% Confidence Interval Upper Bound
Coeur d'Alene	*5.4%*	9.2%	*12.7%*
St. Joe	*7.9%*	12.0%	*16.5%*
Sandpoint / Pend Oreille	*5.3%*	11.1%	*17.6%*
Bonners Ferry / Kootenai	*10.2%*	15.9%	*21.9%*
Priest Lake	*6.3%*	12.5%	*19.3%*
Total IPNF	***9.6%***	**11.8%**	***14.0%***

2) IPNF Stand-Level Map of Allocated Old Growth

The IPNFs stand-level old growth map is a management tool. This stand map represents a census of those stands allocated for old growth retention to meet Forest Plan standards. The stand-level old growth allocation allows us to distribute old growth across the Ranger Districts and landscapes in ways that make ecological sense at the landscape scale, and serves as a basis for project planning. This forest-wide stand map also provides a useful starting point when we are considering any management activity, and need to take a more detailed look at old growth allocations within a potential project area. The stand map also allows us to display to the public that an adequate amount of old growth is allocated and distributed across the landscape.

The IPNFs stand-level old growth allocation represents a different approach to monitoring old growth than the FIA sample, and was designed and implemented independently from the FIA inventory. Forest stand information is gathered by Ranger District personnel or contractors working for the Ranger District. Approximately 98.8% of old growth allocations are based upon field examination. Most old growth stands are examined with a stand-wide formal systematic grid stand exam plots that count and measure all designated sample trees on the plots. Allocation decisions for old growth stands utilize field examination data, but usually also include landscape relationships in making old growth allocation decisions. A smaller proportion of stands were allocated to old growth based on less formal notes and measurements from walk-through, field verification surveys by foresters and forestry technicians knowledgeable about old growth definitions. Only 1.2% of old growth stands were initially allocated based on photo inventory, and all of these will be field verified before any forest management projects are carried out in those watersheds.

Ranger district stand-level old growth allocation utilizes the latest stand inventory data and field notes to assess how well stands meet the old growth definitions in the IPNFs Forest Plan, utilizing criteria in *Green, and others (2008).* The old growth definitions in *Green and others (2008)* are in two parts. First, there are tables of "Old Growth Type Characteristics". These tables include both "minimum criteria" (minimum age, tree diameter, number of old large trees, and basal area) and "associated characteristics" (ranges of numbers or proportions of broken topped trees, snags, canopy layers, diameter distributions, broken tops, and large down wood). Pages 11 and 12 of *Green and others (2008)* explain that: "The minimum criteria are used to determine if a stand is potentially old growth. Where these values are clearly exceeded, a stand will usually be old growth. The associated structural characteristics may be useful in decision making in marginal cases, or in comparing relative values when making old growth evaluations." *Green and others (2008)* also warns that: "A stand should not be accepted or rejected as old growth simply on the basis of associated characteristics." The associated characteristics are <u>not</u> part of the base old growth definition. Speaking of the minimum criteria, *Green and others (2008)* further says:

> "**Because of the great variation in old growth stand structures, no set of numbers can be relied upon to correctly classify every stand.... Do not accept or reject a stand as old growth based on the numbers alone; use the numbers as a guide.**"

(The previous 2 sentences are the only sentences printed in bold in the entire explanatory text of <u>Green and others (2008)</u>. The purpose of this bold font was to emphasize the importance of what was being said). Second, on pages 11 and 12, *Green and others (2008)* provides guidance for incorporation of landscape ecology considerations, and a full range of resource values (including human values) in the selection of stands to be managed as old growth. Professional consideration of a complex array of factors is necessary to make old growth stand allocations that also make sense at the landscape scale.

When making old growth allocation decisions for individual stands, ranger district personnel use the table of "Northern Idaho Zone Old Growth Type Characteristics" in *Green, and others (2008)* as the starting point, but also incorporate the array of other old growth resource considerations and landscape design criteria, as explained in pages 11 to 12 of the same document. Taking these other considerations into account is fully consistent with Forest Plan standard 10c., which states: "Areas will be selected as old-growth management stands based on a combination of wildlife, cost efficiency, and other resource values (interdisciplinary process)."

From 1990 through 1993 the IPNFs did a forest-wide inventory of old growth resources, and worked with local public Forest Watch groups to allocate and map old growth. This is the original source of the IPNFs stand-level old growth allocation and map. Since that time, we have continued to update our old growth stand allocation and map as the forest has changed by natural events, and as new information has became available.

In 2001 the Idaho Panhandle National Forests began a comprehensive review of old growth data, and did several years of new field reviews and exams, to incorporate changes in conditions on the ground. Various project-level stand examinations also provide updated information. Ongoing review, monitoring and updating of the old growth stand allocation and map results in some changes in the allocated old growth stand acres reported in annual Monitoring Reports over the years, in response to changing conditions on the ground and availability of better information. These changes are evidence that we are working to keep the stand-level allocation current as conditions change on the ground. Each year's Monitoring Report contains the most current old growth stand information available at that time. The stand allocation information below was extracted from our database in November 2009, and reflects conditions at that time. Evaluating this stand-level old growth allocation information together with the FIA old growth estimates provides the most comprehensive picture of old growth amounts on the IPNFs.

The IPNFs does <u>not</u> do timber harvest or other management that removes allocated old growth stands. We ceased this practice a number of years ago. However, old growth distribution will never be entirely static because forests are living, changing natural communities. Disturbances such as fire, insects, pathogens, and weather events may reduce the amount of old growth in some areas. Meanwhile, other stands will grow and age into old growth status. The IPNFs has almost 700,000 acres of mature forest (forests with the upper canopy dominated by trees 100+ years old), substantial amounts of which have the potential to grow into old growth in the next few decades. We will continue to update our old growth stand data in response to changing conditions on the ground, and as we obtain new information. The priority for our updating efforts will be those watersheds where we are considering management activities.

The IPNFs has allocated approximately 6,500 individual old growth stands distributed across 2.5 million acres of National Forest. It is not practical to visit every old growth stand every year. Because natural changes are going on continually (this includes both natural disturbances that remove some old growth, and other stands maturing into old growth), information about some individual allocated stands may be outdated at any given time. However, to ensure that all management actions are designed based upon current old growth conditions, whenever any management activity is being considered that could possibly impact old growth, we take a closer look at old growth allocations within the project area. And to ensure that we're meeting Forest Plan old growth standards forest-wide, we use FIA estimates to monitor the amount of old growth across the forest and at other large scales. FIA plots are remeasured on a 10 year schedule.

Before making any management decisions that could possibly impact old growth, we take a detailed look at old growth allocations for that project area. The forest-wide stand map provides us with stand-level information that is useful starting point at the project scale when we are considering management activity. We closely review and verify all old growth allocations within the project area, as well as review all

potential treatment stands, and look for previously unidentified stands that may now meet old growth criteria. The objectives of this review are to be sure we have the best old growth allocation and landscape arrangement possible within that project area, and to be sure we're not inadvertently, negatively impacting old growth. Where appropriate, project design may also include identification of potential future old growth in the area. Project-scale review often results in changes in old growth status for a few individual stands. We sometimes find that some previous old growth stands no longer meet criteria because of insect, pathogen, or weather mortality. However, because other stands have aged and grown into old growth status, or because we also find previously un-inventoried old growth, this project-scale review commonly results in a net increase in old growth allocation in the project area.

We record old growth stand allocations in the Forest Service Northern Region, Timber Stand Management Record System (TSMRS) database, because there are database fields and codes designed for recording stand old growth status. TSMRS is a very large Forest Service database containing a wide variety of information, and used by national forests across the Northern Region. A database is simply an electronic box with pre-defined fields to store specific information items. It is not possible to make meaningful sweeping general statements about the reliability of such a large, widely used database. The completeness and reliability of any specific data items in any database depends upon the local effort devoted to gathering and maintaining that specific information. In the last 10 years the IPNFs has devoted substantial time and effort in District-wide reviews and updating of old growth stand information in TSMRS. Most importantly, for all potential management projects, TSMRS old growth information is subject to additional project area review and validation prior to any management action on the ground. This assures that we don't, inadvertently, take any management action that negatively impacts old growth, and that all our project plans are based on the current old growth status for that project area. Updating old growth allocation information in the Idaho Panhandle National Forests portion of the TSMRS Database is ongoing as the forest continues to change and as new information becomes available.

A single observation somewhere in a stand will never be sufficient for determining old growth status. Because internal heterogeneity is a recognized characteristic of many old growth stands, the condition of the stand as a whole, and its context in the larger landscape all need to be considered in making old growth allocations.

The TSMRS database contains codes indicating individual stand old growth allocation status. The actual stand examination data that's used in old growth determination is found in the FSVEG database, and/or in field notes and other information in the individual stand folders. This information is updated when new exams are done. Larger scale perspectives about landscape context likely also was used in making old growth allocation decisions.

The "Special Uses" field in the TSMRS database allows us to track old growth in several categories, depending upon how it was identified in the inventory and how it is currently allocated. We separate our old growth into the "allocated" old growth stands that are specifically identified and retained to meet the 231,000-acre forest plan standard, and "additional" old growth that serves old growth ecological functions, even though it is not formally allocated.

"Retained Existing Old Growth" (TSMRS Special Uses code 9) meets (and often exceeds) *Green and others (2008)* old growth minimum criteria at the stand level. "Ancient Cedar" (Special Uses code 2) is also part of our existing allocated old growth, but we track it separately because we want to take special note and care of these special and unique stands. "Ancient Cedar" stands contain trees over 5 feet in diameter, with ages over 500 years old; they far exceed minimum old growth age and tree size criteria.

"Retained Potential Old Growth" (Special Uses code 11) meets, or comes close to meeting a number of old growth minimum criteria, but is lacking somewhat in some criteria. However, if it is listed as

"allocated", it does contribute to old growth functions at some scale. The most common situation is that the "potential old growth" has more than enough large trees to meet old growth criteria, but some of the trees are not quite old enough. However, these are usually some of the larger and older trees in a given area, and with some more time can be expected to meet the age criteria as well. Some "retained potential old growth" is included in our old growth allocation because it is close to meeting the minimum criteria, is the best that we have available in an area, and contributes to distribution of old growth characteristics across the landscape. Other allocated "retained potential old growth" stands are small patches that contribute to the integrity of a larger block of old growth, or serve as part of a corridor or as stepping stones, linking two larger old growth blocks. Larger old growth patches are often more valuable as wildlife habitat and linkages across the landscape are important. Allocated retained potential old growth contributes to the functional integrity of old growth at the landscape scale, and is managed as part of our old growth allocation. This is consistent with the direction in *Green and others (2008)* about the importance of using the numbers as a guide and incorporating landscape ecology and other resource considerations (as well as individual tree size, age and density attributes) in allocating land as old growth.

Old growth management can be monitored by tallying up acres of stands allocated and mapped as old growth. Totals from the IPNFs stand-level map are presented in the following table. Forest Plan Standard 10b calls for maintaining 10% of IPNF forested acres as old growth (231,000 acres). We have identified and allocated 285,502 acres of forest stands (12.4% of IPNF forested acres) to be retained as old growth. This total includes old growth codes 2, 9, 10, and 11. There are 241,394 acres of allocated field identified stands that fully meet old growth minimum criteria (codes 2 and 9) in addition to allocated potential old growth (code 11 – allocated using additional considerations in *Green and others)*. Old growth status in 98.8% of these stands has been field verified at some time by either a stand exam or walk though. Clearly, the IPNFs has allocated enough acres of old growth stands to meet and exceed Forest Plan Standard 10b. We also have an additional 6,961 acres (0.3% of forested acres) of previously field examined, unallocated old growth stands (code 12), which provides additional old growth habitat for wildlife and serves other ecological functions.

Table 74. Mapped Allocated Old Growth Stands Acres By River Sub-Basin

Sub-Basin (River)	Allocated Ancient Cedar *(code 2)*	Allocated Field Verified Old Growth *(code 9)*	Allocated Photo Inventory Old Growth *(code 10)*	Allocated Potential Old Growth *(code 11)*	Total Allocated Old Growth *(codes 2, 9, 10, 11)*	Additional Field Verified Old Growth *(code 12)*	Total All Old Growth *(codes 2, 9, 10, 11, 12)*
St. Joe	1,964	59,526	716	13.520	**75,726**	6,816	**82,542**
Coeur d'Alene	208	55,638		12,151	**67,997**		**67,997**
Pend Oreille	63	20,083	268	5,657	**26,071**		**26,071**
Kootenai	516	60,298	157	7,114	**68,085**	145	**68,230**
Priest	1,905	41,193	2,398	2,127	**47,623**		**47,623**
Forest Total	**4,656**	**236,738**	**3,539**	**40,569**	**285,502**	**6,961**	**292,463**

Forest Plan Standard 10.i. presents "goals for lands to be managed as old-growth" within some Forest Plan Management Areas with timber management goals. Only four Management Areas have specific

Forest Plan old growth numerical goals. The table below displays both those goals by Management Area, and acres we have currently allocated for old growth. These old growth allocations meet and far exceed these Forest Plan Management Area goals.

Table 75. Acres of Allocated Old Growth Compared to Management Area Goal

Forest Plan Management Area	Management Area goal: "Maintain approximately *xxxxx* acres"	Allocated Old Growth stand acres
1	25,000	100,793
2	6,000	21,880
3	400	1,934
4	4,000	14,626

Forest Plan Standard 10.e. says: "Old growth stands should reflect approximately the same habitat type series distribution as found on the IPNF." The following table displays habitat type series distribution for old growth compared to all our forested acres.

Table 76. Old Growth Habitat Type Series Distribution

Habitat Type Series	% IPNF Acres by Inventoried Habitat Type Series	Allocated Old Growth Acres by Habitat Type Series	% of Allocated Old Growth Acres by Habitat Type Series
Ponderosa Pine	< 0.1%	0	0.0%
Douglas Fir	6.9%	9,960	3.5%
Grand Fir	14.7%	14,799	5.2%
Western Red Cedar	15.9%	52,735	18.5%
Western Hemlock	37.6%	111,399	39.0%
Subalpine Fir	15.2%	53,870	18.9%
Mountain Hemlock	9.7%	42,337	14.8%
Lodgepole Pine	< 0.1%	0	0.0%

As displayed above, old growth on the IPNFs does reflect approximately the habitat type series distribution of the forest. On 78% of the forested land the amount of old growth is proportional to, or more than proportional to the distribution of those habitat type series. Old growth distribution is less than proportional to habitat type series distribution only in the Douglas-fir and grand fir series, which occupy the driest 22% of the land. The dry habitat type group (all of the Douglas-fir and the dry end of the grand fir series) occupies approximately 10% of IPNFs land. The moist end of the grand fir series (which is still drier than the rest of the forest) covers another 12 % of IPNFs land, and is often found at lower elevations and southerly aspects, and is subject to significant moisture stress during drought years.

The low proportion of old growth in these drier habitat type series is a function of the combined effects of the huge 1910 fire and other large high severity early 20th century fires; subsequent suppression of most low and mixed severity fires that served to maintain resilient old growth; early 20th century timber cutting; root diseases; and bark beetles. Much of the old growth inventoried on these two habitat type series is currently dominated by Douglas-fir or grand fir, which are at risk from bark beetles and root diseases. Where the moister, non-riparian grand fir habitat types are adjacent to dry sites, the fires, root diseases, and bark beetles that strike the dry sites have a high probability of carrying over into adjacent Douglas-fir / grand fir stands. During drought years the larger grand fir growing on upland grand fir habitat types are at risk from *Scolytus* bark beetles. Active management will often be necessary to manage stand density and restore more resilient tree species (ponderosa pine and western larch), which are necessary to increase the proportion of old growth on our dry habitat types and adjacent grand fir habitat types.

The natural processes that maintained old growth on dry sites were very different than on moister sites. Historically, most of these dry forest habitat types were subject to frequent low-severity underburns and short to medium interval mixed-severity fires that thinned out smaller trees; favored large trees of the most fire-resistant species (ponderosa pine and western larch); and created a mosaic of stand conditions. These fires reduced the total number of smaller trees (thus limiting moisture stress to large trees on dry sites), and reduced both dead woody fuels and live ladder fuel accumulations (thus reducing the risk of stand replacing crown fires), as well as creating small openings that limited fire spread. These low and mixed-severity fires were the keystone natural process maintaining dry site old growth forest structures.

Now, on dry habitat types, approximately 70 years of effective fire suppression has allowed in-growth of dense stands of smaller trees and accumulation of high woody fuel loads. Lack of fire has favored Douglas-fir and grand fir over ponderosa pine and larch. The large number of trees in these denser stands creates higher moisture demands than in the historic, fire-maintained open stands. This higher moisture demand stresses the old growth trees during drought years, and predisposes stands to bark beetle outbreaks. During drought years this can result in unusually high levels of mortality amongst old trees in these unnaturally dense stands. Dense Douglas-fir and grand fir are also more susceptible to root diseases and bark beetles than historic forest structures. Compared to the historic forest, dense Douglas-fir / grand fir stands on dry sites have a lower probability of surviving long enough to become old growth. Those dry site fir stands that do old reach old growth age are less likely to be as resilient and persistent as the historic old growth structures. In addition, during fires the dense small trees in the understory serve as fuel ladders that carry flames into the upper canopy of large old trees. This new situation creates an unnaturally high risk of stand replacing crown fire, which will kill old trees that historically were able to survive surface fires. Decades of fire suppression on dry sites has transformed stand structures in a way that threatens the continued persistence of existing old growth on these dry sites, and reduces the chances of current younger stands surviving long enough to become old growth.

On dry sites, hands-off management of existing overly dense mature and immature fir-dominated stands is not likely to increase the amount of future old growth, and likely will lead to a decrease in existing old growth. Active restoration by mimicking of historic disturbance processes may be necessary to meet the Forest Plan standard for maintaining old growth on dry habitat types. In those places where we find dry site old growth stands with unnatural in-growth of dense smaller trees (particularly firs), we may consider restoration opportunities. Restoration may include various mixes of prescribed fire, thinning, and planting of historic shade-intolerant, fire-adapted tree species. Restoration treatments will maintain existing large old trees. In existing old growth, the driving management objectives will be maintenance of old growth characteristics, and restoration of historic old growth structures and processes. In mature and immature stands where old growth and fire-adapted species are lacking, restoration activities may be necessary to create forests that are more likely to survive long enough to become old growth.

Summary -- Comparison of Two Tools for Monitoring Old Growth

As explained above, the IPNF is using a multi-scale approach to monitoring old growth, based on two separate, independent tools. These are:

1) Forest Inventory and Analysis (FIA) data used to calculate IPNF Forest-wide and mid-scale old growth percentages.
2) IPNF stand map displaying all stands allocated for old growth management, with old growth allocation status maintained in the TSMRS database.

These two independent tools use significantly different designs, and are carried out by different people. The FIA old growth estimates are based on a statistically sound, representative sample of the entire National Forest, carried out by the Interior West FIA Program of the Rocky Mountain Research Station of Ogden, Utah. This sample is designed to provide unbiased estimates of forest conditions at medium and

large scales. The acres of allocated old growth from the IPNFs old growth stand-level map are a census of stands allocated for old growth management, based upon examination of individual forest stands for old growth characteristics. Stand examinations and allocations are carried out by IPNFs Ranger District personnel. The stand-level map is a fine-scale tool that allows us to allocate old growth stands across Ranger Districts and landscapes in a way that serves as a basis for project planning.

As displayed above, the two independent Forest Service old growth monitoring tools produce remarkably similar results at the national forest scale:

- Based on FIA data, the current estimate of the proportion of old growth on the forested IPNFs lands is 11.8%. (90% confidence intervals of this estimate are 9.6% to 14.0%).
- The IPNFs total acres of mapped stands allocated and retained for old growth is 12.4% of forested lands.

The percent of forested acres of stands mapped and allocated for old growth is well within the 90% confidence interval of the FIA inventory. From a statistical perspective, at the 90% confidence level, the two numbers are not significantly different. Together, these two monitoring tools offer compelling evidence that the IPNFs is meeting Forest Plan standards for the amount of old growth to be retained.

Both of the Forest Service old growth monitoring methods and results are fully disclosed and available to the public. FIA old growth estimates are reported annually in our Monitoring Report. FIA design and protocols are public information and are readily available on the FIA website. More detailed reports on methodology for estimating old growth with FIA data are available from the Northern Regional Office of the Forest service in Missoula, Montana.

The entire IPNFs stand map and TSMRS database (including stand-by-stand old growth allocations) are available through the IPNFs public website (*http://fs.usda.gov/goto/ipnf/gis*), and are updated periodically. Project area old growth updates are disclosed in project-level NEPA documents. More detailed old growth information and stand examination data has been provided numerous times over the past few years in response to various Freedom of Information Act requests by several organizations.

Snags

Snags are standing dead trees. Snags are important for a number of reasons. They are important habitat structures (for nesting, feeding, perching, and/or roosting) for a wide variety of wildlife species. They provide substrate for some mosses and lichens. They also serve to ameliorate environmental conditions on harsh sites. Once they fall, snags become down wood that provide other habitat structures (including den sites) for a different and very wide suite of wildlife species and some plant species. Down wood is also critical for nutrient cycling, moisture retention, safe tree regeneration sites, diversity of soil micro-organisms, and hydrologic function. On the other hand, snags or down wood in excessive numbers can contribute to fire hazard.

The diameter range of snags in an area is limited by the diameter range of live trees potentially available to become snags after they die. The diameter of snags and down wood regulates both the ecological functions they provide, and how long lasting they may be.

Snags are an ephemeral resource that varies greatly throughout the life cycle of a forest stand. If a stand originates following a fire, the resulting young stand may begin under a high number of snags. However, most snags only remain standing for a few years, to a very few decades. How long these snags remain standing is a function of the structure, species composition, and age of the previous stand; the fire severity; snag size; and site factors like soil characteristics, slope position, and landscape position. An insect or disease outbreak may rapidly increase the number of snags. A severe windstorm may rapidly reduce the number of snags (while increasing the amount of down wood). Root pathogens may provide gradual input of snags until all the trees are killed, but depending upon the particular pathogen, these snags may not remain standing for very long. Various severe weather conditions may serve either to increase or decrease snag numbers.

Even at a given time, because of the variety of factors that regulate their numbers and characteristics, snag numbers and size distribution can vary considerably across the length of a stand. This high internal stand level variability in snag numbers and attributes makes it difficult to characterize the snag situation at the individual stand scale. Stand scale snag data tends to reflect high internal variability in wide confidence intervals around mean estimates of snag numbers.

Over time, because of the wide variety of factors that regulate and can rapidly change snag numbers, stand scale snag numbers may also change relatively rapidly. The smaller the spatial scale, the greater the probability of changes in snag numbers over relatively short time periods. However, at larger spatial scales, the variety of factors regulating snag numbers is more likely to balance each other out for longer periods of time. Therefore, it's important to look at mid and larger scale snag information to provide context for the snag situation in any specific area.

The National Forest Inventory and Analysis (FIA) program provides a congressionally mandated, statistically-based, continuous inventory of the forest resources of the United States. FIA inventory design is based on the standardized national FIA grid of inventory plots that covers all forested portions of the United States (all ownerships). The FIA design provides a statistically sound representative sample designed to provide unbiased estimates of forest conditions at large and medium scales. Among other things, the FIA sample design records all standing dead trees $\geq$ 5 inches in diameter. This data can be used to provide estimates of snag numbers at several different spatial scales on a National Forest.

Because FIA data comes from a statistical sample rather than a 100% census, we describe attributes calculated from this data as estimates and the accuracy of these estimates is computed and reported as

confidence limits. The Forest Service Northern Region and the IPNFs use a 90%-confidence interval for describing the reliability of FIA estimates.

The following snag information comes from FIA data collected on the IPNFs, and presents estimates of snag numbers by size class at several different spatial scales.

Density and Distribution of Snags on the Idaho Panhandle National Forests

The estimated average number of snags per acre on all forested lands on the IPNFs with diameter at breast height (dbh) between 10.0" and 19.9" is 10.4 snags per acre with a 90% confidence interval of 9.2 to 11.8 snags per acre. The average number of snags per acre with dbh of 20" and larger is 1.4 snags per acre with a 90% confidence interval of 1.2 to 1.8 snags per acre. Note: all estimates of snags per acre are rounded down to the nearest 0.1%.

Table 77. Estimates of the number of snags per acre by diameter class for each IPNFs Zone

	10.0" – 19.9" DBH				20.0" plus DBH			
IPNFs ZONE	**Standard Error**	**90% CI Lower Bound**	**Estimate of Snags / Acre**	**90% CI Upper Bound**	**Standard Error**	**90% CI Lower Bound**	**Estimate of Snags / Acre**	**90% CI Upper Bound**
Central	1.399	8.3	10.7	13.0	0.297	1.0	1.4	2 .0
North	1.355	10.7	12.9	15.1	0.288	1.3	1.9	2.2
South	1.061	5.3	7.0	8.9	0.244	0.8	1.0	1.6

Table 78. Estimates of the number of snags per acre by diameter class for IPNFs Geographic Areas

	10.0" – 19.9" DBH				20.0" plus DBH			
IPNFs ZONE	**Standard Error**	**90% CI Lower Bound**	**Estimate of Snags / Acre**	**90% CI Upper Bound**	**Standard Error**	**90% CI Lower Bound**	**Estimate of Snags / Acre**	**90% CI Upper Bound**
Coeur d'Alene	1.399	8.3	10.7	13.0	0.297	1.0	1.4	2.0
St. Joe	1.056	5.4	7.0	8.9	0.244	0.8	1.0	1.6
Sandpoint / Pend Oreille	3.214	10.8	15.7	21.2	0.522	1.1	2.0	2.9
Bonners Ferry / Kootenai	1.548	7.4	9.9	12.6	0.492	0.8	1.6	2.3
Priest Lake	2.388	10.0	13.9	17.9	0.468	1.2	2.0	2.9

Table 79. Estimates of the number of snags per acre by diameter class for IPNFs Landscape Areas

	10.0" – 19.9" DBH				20.0" plus DBH			
IPNFs ZONE	**Standard Error**	**90% CI Lower Bound**	**Estimate of Snags / Acre**	**90% CI Upper Bound**	**Standard Error**	**90% CI Lower Bound**	**Estimate of Snags / Acre**	**90% CI Upper Bound**
Priest Lake South	3.841	8.0	13.9	20.4	0.403	0.8	1.3	2.0
Priest Lake North	2.755	9.4	13.8	18.6	0.874	1.4	2.8	4.2
Selkirks	2.033	6.8	9.9	13.3	0.554	0.1	1.0	2.0
Purcell / Boulder	2.359	6.2	9.9	14.0	0.819	0.9	2.0	3.4
Cabinet / Scotchman	4.393	6.8	13.1	21.0	0.704	0.4	1.3	2.7
Pend Oreille	4.691	10.7	17.9	26.0	0.758	1.3	2.4	3.8
Lakeface / Lower Coeur d' Alene	3.503	5.8	11.0	17.1	0.426	0.8	1.3	2.1
Little North Fork Coeur d'Alene	2.72	7.8	12.0	16.8	0.746	0.7	1.7	3.0
Upper Coeur d' Alene	2.878	4.6	9.0	14.0	0.242	0.2	0.6	1.0
Central North Fork Coeur d'Alene	2.288	7.1	10.8	14.7	0.665	1.0	2.0	3.0
Little N. Fk. Clearwater	1.809	2.8	5.6	8.7	0.535	0.7	1.5	2.4
St. Maries/ Lower. St. Joe	1.969	3.2	6.3	9.7	1.046	0.6	2.0	4.0
West Central St. Joe	1.84	2.0	4.6	7.9	0.351	0.2	0.8	1.3
East Central St. Joe	2.738	6.0	10.3	15.0	0.484	0.2	1.0	1.9
Upper St. Joe	3.311	4.3	9.2	15.2	0.203	0.1	0.4	0.8

Appendices

A. Forest Plan Monitoring Requirements

B. Programmatic Forest Plan Amendments

C. List of Contributors

Appendix A. Forest Plan Monitoring Requirements

Table 80. Forest Plan Monitoring Requirements

Item Number	Standards, Practices, Activities, Outputs or Effects to be Monitored	Data Source	Frequency of Measurement	Reporting Period	Threshold to Initiate Further Action
A	All RESOURCE ACTIVITIES				
A-1	**Quantitative estimate of outputs and services**	Annual program accomplishment report	Annually	Annually	A trend established after 5 years that indicates less than 80% of Forest Plan goal has been accomplished
A-2	**Effects of other government agency activities on the national forests and the effects of National Forest Management on adjacent land and communities**	Other agency plans	Annually	Annually	When other agency programs affect attainment of Forest Plan Goals
B	TIMBER				
B-1	**Harvested lands restocked within 5 years**	Stand records	1,3,5 years	5 years	10% of harvest lands not adequately restocked 5 years following site preparation
B-2	**Timberland suitability**	Timber stand data base and forest data base, EAs	5 years	5 years	10% change in timberland currently classed as physically suitable
B-3	**Validate maximum size limits for harvest areas**	EAs	5 years	5 years	10% of openings exceed Forest Plan size limits
B-4	**Insect and disease hazard**	Insect and disease surveys	5 years	5 years	Insect and disease conditions are predicted to reach epidemic or serious levels on 5 % of the Forest
B-5	**Road construction**	Timber appraisals, construction contracts	Annually	5 years	Unit costs exceed estimates by 20% in two or more years
B-6	**Actual sell area and volume**	Cut and sold reports	Annually	5 years accumulation	Sell volume and acres less than 75% of FP goal

Item Number	Standards, Practices, Activities, Outputs or Effects to be Monitored	Data Source	Frequency of Measurement	Reporting Period	Threshold to Initiate Further Action
C	VISUAL RESOURCES				
C-1	**Meeting visual quality objectives**	EAs, field sampling	Ongoing	Annually	10% departure from Forest Plan direction after 5 years initiates further evaluation
D	RECREATION				
D-1	**Off-road vehicle effects**	Field evaluation, travel plan	Continuing	Annually	Conflicts with management area goals or between users
E	CULTURAL RESOURCES				
E-1	**Measure potential impacts of land disturbing projects on known cultural resources**	Field monitoring	Annually	Annually	Any unmitigated adverse impact
F	WILDLIFE				
F-1	**Population trends of management indicator species**	State Fish and Game Dept	Annually	5 years	Downward population trends
F-2	**Grizzly bear recovery objectives**	Idaho Fish and Game, USFWS	Annually	Annually	Not working toward recovery
F-3	**Caribou recovery objectives**	Idaho Fish and Game, USFWS	Annually	Annually	Not working toward recovery
G	WATER AND FISH				
G-2	**Are BMPs protecting water quality, are they: implemented as designed; effective in controlling non-point sources of pollution; protecting beneficial uses.**	Baseline stations on 11 streams. Implementation 10% timber sales; Effectiveness on-site 0ff-site measurement;	Annually	Annually	1 – Used for resource characterization and background data for predictive purposes; 2- Evaluate 10% of timber sales per year. Deviation from prescribed BMPs; 3- Ineffective on-site non-point

Item Number	Standards, Practices, Activities, Outputs or Effects to be Monitored	Data Source	Frequency of Measurement	Reporting Period	Threshold to Initiate Further Action
		WATSED validation			source pollution control. Off-site watershed system degrading due to lack of effectiveness of BMPs in use. 4 – Actual more than plus or minus 20% of model prediction
G-3	**Validate fish habitat trends**	Stream surveys	Annually	5 years	A declining trend in habitat quality
G-4	**Fish Population trends – cutthroat trout**	Cooperative with Idaho Fish and Game	2 years	2 years	Downward trend
H	THREATENED AND ENDANGERED PLANTS				
H-1	**Threatened and endangered plants**	Field observations incidental to project planning	Annually	Annually	Any plan adversely affected.
I	MINERALS				
I-1	**Environmental concerns affect operating plans**	Open plan compliance checks	Minimum one inspection of operating plan active season	Annually	Exceeds any Forest Plan Standard; any amend operating plan
J	LANDS				
J-1	**Land ownership adjustments**	EAs for land exchanges, land ownership records	Annually	5 years	Program is not contributing to Forest Plan goals. Less than 75% of program accomplishment.
K	ENVIRONMENTAL QUALITY				
K-1	**Prescriptions and effects on land productivity**	Field reviews	Annually	Annually	Non-compliance with BMPs or significant departure or effects significantly different than predicted

Appendix B. Forest Plan Programmatic Amendments

The Idaho Panhandle National Forests Forest Plan Record of Decision was signed in September 1987. Since then there have been a number of programmatic amendments to the plan. Programmatic amendments change Forest Plan direction for the duration of the Plan. These amendments can be based on a Forest-wide analysis, an area analysis, or a project specific analysis that supports the need for change. Programmatic amendments may be proposed as a result of new information or changed conditions, actions by regulatory agencies, monitoring and evaluation, or landscape analysis. These amendments may affect Forest-wide or management area direction.

The following programmatic amendments have changed the 1987 IPNFs Forest Plan. They are listed in chronological order.

1) The first amendment to the Forest Plan was signed on September 8, 1989. The purpose of this amendment was to incorporate the document "Idaho Panhandle National Forests Water Quality Monitoring Program", Appendix JJ, as agreed to with the State of Idaho in the Joint Memorandum of Understanding dated September 19, 1988, and replaced Forest Plan Appendix S (Best Management Practices) with Forest Service Handbook 2509.22 (Soil and Water Conservation Practice Handbook).

2) On March 12, 1991, the Regional Forester issued a Decision to Partition the allowable sale quantity (ASQ) into two non-interchangeable components, the quantity that would come from inventoried roadless areas and the amount that would come from existing roaded areas. This amendment applied to 11 of 13 Forest Plans in Region One.

3) On August 21, 1992, agreement was reached with American Rivers on an amendment that clarified the Forest's intent to protect eligible Wild and Scenic Rivers until suitability studies were completed.

4) The next amendment was signed on December 7, 1994. The purpose of this amendment was to comply with the Arkansas-Idaho Land Exchange Act of 1992. Through this land exchange, the IPNF acquired a total of 10,026 acres of land (9,114.44 acres from the Bureau of Land Management (BLM) and 912.1 acres from Potlatch Corporation). In turn, the Idaho Panhandle National Forests disposed of 7,978.91 acres to Potlatch Corporation. The Act directed the Idaho Panhandle National Forests to manage those lands acquired within the boundaries of the BLM's Grandmother Mountain Wilderness Study Area to preserve the suitability for wilderness until the Forest completes a wilderness study as part of its Forest Plan revision process.

5) Another amendment is associated with the Interim Strategies for Managing Fish-producing Watersheds in eastern Oregon and Washington, Idaho, western Montana and portions of Nevada (Inland Native Fish Strategy). This interim direction is in the form of riparian management objectives, standards and guidelines, and monitoring requirements. This action amends the management direction established in the Regional Guides and all existing land and resource management plans for the area covered by the assessment. The Decision Notice for the Environmental Assessment that covered this amendment was signed by the Regional Foresters for the Northern, Intermountain and Pacific Northwest Regions on July 28, 1995.

6) A 1995 amendment updated standards and guidelines for management of the Salmo-Priest Wilderness Area. This amendment applied to both the Colville and Idaho Panhandle National Forests portions of the wilderness area. The decision notice was signed by the Colville National Forest Supervisor on November 20, 1995, and the Idaho Panhandle National Forests Supervisor on January 23, 1996.

7) A 2004 amendment incorporated a set of motorized access and security guidelines into the IPNF, Kootenai and Lolo forest plans to meet our responsibilities under the Endangered Species Act to conserve and contribute to the recovery of grizzly bear. The amendment applied to the Selkirk and Cabinet-Yaak Recovery Zones as well as grizzly bear occupied areas outside of the recovery zones. The record of decision was signed by the IPNF, Kootenai, and Lolo Forest Supervisors on March 23rd and 24th, 2004. In subsequent litigation, the U.S District Court for the District of Montana, on December 13, 2006, ordered that the 2002 FEIS/2004 ROD be set aside as contrary to law and that the matter be remanded to the Forest Service for preparation of a new environmental analysis that complied with 40 CFR 1502.22

8) A 2005 amendment modified or removed from the forest plan certain objectives, standards and monitoring requirements pertaining to fry emergence (fish). Forest plan standards #1 and #2 for fisheries and monitoring requirement G-1 were removed in their entirety from the forest plan. The decision notice for this amendment was signed by Deputy Forest Supervisor on June 2, 2005.

9) In 2007, the Regional Foresters for the Rocky Mountain, Intermountain and Northern Regions signed a record of decision to amend the forest plans on 18 national forests within those regions to incorporate management direction to conserve Canada lynx and its habitat. The amendment included the IPNF and was signed by the Regional Foresters on March 23, 2007.

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