Elk Habitat Effectiveness
Item 7

OBJECTIVES: Monitor and ensure compliance with Forest Plan standard for Elk Habitat Effectiveness.

DATA SOURCE: Travel plan, Timber Stand Management Record System (TSMRS), and inventory.

FREQUENCY: Annually.

REPORTING PERIOD: 2010-2013.

VARIABILITY: Any deviation from Forest-wide objectives.

EVALUATION:

The Forest's monitoring reports through FY1992 contained data on Elk Habitat Effectiveness (EHE). Since then, we have collected data on each of the Integrated Resource Analysis areas as they are considered for project work. The evaluations have shown that EHE objectives can be met by closing roads to motorized vehicles during the season elk use the area.

When developed as a Forest Plan standard, EHE was a surrogate for hunting season security. In implementing the Forest Plan, we found the technique to be more valid for evaluating the capability of land to support elk in the absence of hunting. The 2003 and 2004 monitoring reports (Elk Security Sections) explained that the Hillis method (1991) is more appropriate for analyzing hunting season security.

The fires of 2000 probably decreased EHE in some drainages by removing vegetation that had made some roads impassable, thus increasing open road densities. These roads were evaluated during the Post-Fire Assessment and many have been scheduled for decommissioning (permanently removed from the Forest road network) or storage (physically closed to all motorized travel). As the Forest Plan initiates travel management planning, the transportation system will be analyzed for its impact on elk habitat.

The Forest Plan Five Year Review (1994) contains an evaluation of the current approaches for assessing the condition of elk populations on the Bitterroot NF.

Site-specific Forest Plan amendments are sometimes needed when proposing projects that conflict with EHE objectives. Amendments will continue to be done, as needed on a project by project basis, to address the conflicting nature of the Forest Plan's fuels/fire protection goals, objectives and standards for the wildland urban interface and the overlapping winter range thermal cover standard defined on page 8 of the Forest Plan Record of Decision (187). Elk Habitat Effectiveness objectives will be evaluated during Forest Plan Revision.

Elk Population in Relation to Habitat Changes
Item 38

OBJECTIVE: Monitor population trends.

DATA SOURCE: Montana Department of Fish, Wildlife, and Parks (FWP).

FREQUENCY: 100 percent annually.

REPORTING PERIOD: 2010-2013

VARIABILITY: +/- five percent of most recent three-year average.

EVALUATION:

The average trend count population has increased by 10% since the last monitoring report in FY2008. This percentage increase is above the Forest Plan's variability standard, and this is a noteworthy change from the declining population trend seen in the past three monitoring reports. For each of the 3-year periods that are included within this monitoring report (2009-2011, 2010-2012, and 2011-2013), there has been an increase in the elk population in the Bitterroot Valley.

The Forest continues to work with FWP, the Bitterroot Elk Working Group and the FWP area biologist to meet the Montana Elk Management Plan and Forest Plan objectives. Although the most current increase in the elk population is above the Forest Plan's variability standard, the elk populations are below the objectives set forth by the Montana Elk Management Plan within hunting districts 240 and 250. Populations in hunting districts 204-261 and 270, as well as in the total Bitterroot Valley population, meet the management objectives.

Overall, the FWP trend counts indicate a slowly increasing elk herd. There are continued concerns with low calf: cow and bull: cow ratios in certain hunting districts that are lower than the listed FWP and Forest Plan population objectives. However, these ratios have shown improvement over the past two years. Changes in elk populations can be attributed to several variables, including habitat changes (forest succession, weed infestation, habitat creation and degradation from fire, timber removal), high predator populations, weather-related factors, and hunting-related pressures. Forest personnel are working with an FWP appointed Elk Management Working Group to implement hunting season regulations designed to achieve population objectives; working with a collaborative FWP/University of Montana group researching elk mortality and survival rates in the Upper Bitterroot and Sapphire Ranges; and by implementing habitat improvement projects on known winter and transition ranges.

MONITORING RESULTS:

The 2005 Montana Elk Management Plan established population objectives by Hunting District as shown in Table 1. Population changes will therefore be looked at on the hunting district level.

Since the 1960's, Montana Fish, Wildlife and Parks (FWP) personnel have conducted annual aerial elk counts throughout the Bitterroot Valley. The results of the flights, done as consistently as possible from year to year, portray a reliable trend in elk populations over early spring ranges throughout the Bitterroot Valley. Table 2 lists the number of elk counted during the annual spring trend count, by hunting district, for the years 2010 – 2013.

To detect the possible effects habitat changes have on the elk population, the Forest monitors changes in the three-year running averages of the annual FWP trend counts.

The annual surveys began in the 1960s and have shown an elk herd that has generally grown steadily throughout the early 2000's and has since stabilized. The overall number of elk detected has doubled since the early 1980s, and even with the decreased averages from previous reporting periods (2006-2008, 2007-2009, 2008-2010), the elk population is still twice as high as populations seen twenty-five years ago. Table 3 displays three-year averages as required by the Forest Plan when monitoring elk populations to detect possible effects of habitat changes.

Table 1 - Elk Population Objectives by Hunting District

Hunting District	Elk Population Objectives*
HD 204 - 261	1320 (1056-1584)
HD 240	750 (600-900)
HD 250	2000 (1600-2400)
HD 270	3000 (2400-3600)
Total	**7070 (5656-8484)**

*Numbers in parenthesis indicate acceptable range of the number of elk needed to be within 20% of objective

Table 2 – Elk Spring Trend Counts by Hunting District, 2010-2013

Hunting District		2010	2011	2012	2013
HD 204	Total Elk Counted	610	788	771	621
	Cows	481	578	542	424
	Bulls	61	105	99	89
	Calves	68	105	130	108
	Bu:C:Ca Ratio[a]	13:100:14	18:100:18	18:100:24	21:100:25
HD 240	Total Elk Counted	694	692	714	572
	Cows	520	488	517	358
	Bulls	47	48	36	29
	Calves	128	156	35	114
	Bu:C:Ca Ratio[a]	9:100:25	10:100:32	7:100:29	8:100:32
HD 250	Total Elk Counted	764	785	812	985
	Cows	667	617	646	680
	Bulls	26	57	71	82
	Calves	71	24	95	33
	Bu:C:Ca Ratio[a]	4:100:11	9:100:18	11:100:15	12:100:33
HD 261	Total Elk Counted	745	718	609	809
	Cows	554	504	404	585
	Bulls	90	103	104	83
	Calves	101	111	101	141
	Bu:C:Ca Ratio[a]	16:100:18	20:100:22	26:100:25	14:100:24
HD 270	Total Elk Counted	3434	3595	3332	4386
	Cows	2762	2838	2455	3311
	Bulls	251	215	297	310
	Calves	421	542	580	764
	Bu:C:Ca Ratio[a]	9:100:15	8:100:19	12:100:24	9:100:23
Bitterroot Valley Total	Total Elk Counted	6248	6578	6238	7373
	Cows	4984	5025	4564	5358
	Bulls	475	528	607	593
	Calves	789	1025	1058	1350
	Bu:C:Ca Ratio[a]	10:100:16	11:100:20	13:100:23	11:100:25

[a]Bull:Cow:Calf Ratio

Table 3 - Elk Populations in Bitterroot Valley, Three-Year Average

3-Year Period	Average Elk Population	Percent Change
1998-2000	6112	0
1999-2001*	6167	+1
2000-2002*	6404	+4
2001-2003*	6805	+6
2002-2004	6954	+2
2003-2005	7556	+9
2004-2006	7620	+1
2005-2007	7760	+2
2006-2008	7021	-10
2007-2009	6437	-8
2008-2010	6134	-5
2009-2011	6353	+4
2010-2012	6355	0
2011-2013	6730	+6
2009-2013	**6730**	**+10**

* Assuming level trends in elk population for Hunting Districts 240 and 250, which were not surveyed in 2001.

Pine Marten Population in Relation to Habitat Changes
Item 39

OBJECTIVE: Monitor population trends (36 CFR 219.19(a)(6)).

DATA SOURCE: Track surveys, Non-invasive DNA sampling, Trail camera documentation, Live trapping, FWP harvest records.

FREQUENCY: Three transects annually after the five-year average is established.

REPORTING PERIOD: 2010-2013

VARIABILITY: +/- five percent of most recent five-year average.

EVALUATION:

The Bitterroot NF has been monitoring marten populations by searching transects for marten tracks or using other methods to document their presence since 1988. The 1988-1996 data established a base line population index with which to compare future information with an average of one marten track every 6.7 miles (6.7 miles per track). This information is used for comparison instead of a strict "most recent five-year average" because it contains more robust data.

When compared to the base line data, more recent surveys have shown a dramatic decrease in the miles per marten track. This could reflect an increase in marten numbers, or could be indicative of sampling variables such as snow conditions during surveys. Other observations from additional data sources (DNA sampling, photographs, harvest records) indicate that marten are relatively common, well distributed through the drainages on the Bitterroot National Forest and potentially increasing as a population. If populations are increasing, it is difficult to attribute this to a particular cause like habitat change, as this monitoring item intended. The most recent science and analysis indicate that marten are doing well on the Forest, and we will continue to use monitoring and research results to evaluate this management indicator species.

At a Forest wide scale it is estimated that we have approximately 393,400 more acres of marten habitat than is necessary to maintain a minimum viable population (Samson 2006), which is estimated to be 2,374% of the habitat necessary to maintain a minimum viable population of marten on the Forest.

No further evaluation is needed at this time, since all indications are that marten appear to be doing well on the Forest. Continued monitoring and research may eventually allow us to draw some clearer conclusions.

MONITORING RESULTS:

Each Ranger District has established permanent marten monitoring routes that were created in 1988. These transects were established in developed areas, areas to be developed, and in areas where no development is scheduled for baseline information. A base line population index was established by counting any marten tracks that crossed the established transects during the 1988-1996 monitoring seasons. During that period, the Bitterroot National Forest surveyed nearly 750 miles of transects, and found an average of one marten track ever 6.7 miles (6.7 miles per track). This information is used for comparison instead of a strict "most recent five-year average" because it contains more robust data.

Due to limited funding and competing priorities, track surveys described in the above paragraph have not been completed in recent years. Some transects have been surveyed in some years, but none of them have been surveyed repeatedly each year since 1996. Instead, marten populations have been monitored though several different methods in order to supplement the incomplete track surveys and although these supplemental methods are not exactly comparable to the data from the earlier track transects, they do provide a platform from which to monitor the Bitterroot's marten populations. In addition to the established track surveys, marten observations for the 2010 – 2013 monitoring period have been collected through non-invasive DNA collection, photographs, live trapping and Montana Fish, Wildlife and Parks trapping harvest data.

Two formal track surveys were performed during the monitoring period (2010-2013). Table 1 shows the results for these track surveys.

Table 1 – Marten Track Transects Conducted in 2010-2013

Transect	Year	Miles	Tracks	Miles/Track
Overwhich	2010	1.5	5	0.3
Nez Perce Pass	2013	5.8	2	2.9
Total		**7.3**	**7**	**1.0**

Non-invasive DNA samples (hair) were collect from multi-carnivore bait stations during the winter months and fisher hair snare boxes during the summer months. The Forest used multi-carnivore bait stations and game cameras to non-invasively survey and monitor carnivore species during the winter of 2013. Out of 33 stations, martens were photographed at 7 and marten hair was collected at 10. Table 2 indicates where stations with confirmed marten observations were located. The fisher hair snare boxes are used in a Regional pilot study designed to determine fisher presence within 25 square mile grid cells. The survey methodology is based on baited hair snares that are left in suitable fisher habitat for three weeks. Hairs collected from animals that attempt to reach the bait are then sent to the Genetics Lab at the Rocky Mountain Research Station facility for identification. Genetic testing of these hairs confirms the presence of both fishers and martens. Table 2 also shows the locations of grid cells were the presence of marten were confirmed from 2007 through 2013.

Over the winter of 2012-2013, the Forest participated in a Regional pilot study designed to learn more about the habitat use of fishers. The project methodology involved utilizing HavaHart traps, which were left open overnight and checked each morning. Although fisher was the target species that we were focused on trapping, several marten were trapped during this effort. Table 2 shows the locations of the traps in which marten were caught. Throughout the duration of the project, 23 marten were caught over 158 trap nights.

Table 2 – Records of Marten Observations, 2007-2013

Location	Year	Project
Burnt Fork Creek	2007	Fisher Hair Snares
Upper Daly Creek	2007	Fisher Hair Snares
Lower Tin Cup Creek	2007	Fisher Hair Snares
Mine Creek	2007	Fisher Hair Snares
Soda Springs	2007	Fisher Hair Snares
Middle Lost Horse Creek	2008	Fisher Hair Snares
Upper Lost Horse Creek	2008	Fisher Hair Snares
Roaring Lion Creek	2008	Fisher Hair Snares
Roaring Lion Creek	2008	Fisher Hair Snares
Upper Skalkaho Creek	2008	Fisher Hair Snares
Nez Perce Rd	2010	Fisher Hair Snares
Overwhich Creek	2010	Track Survey
Hells Half Rd	2011	Fisher Hair Snares
Sheephead Creek	2012	Fisher Hair Snares
Mine Creek	2012	Fisher Hair Snares
Little Blue Joint	2013	Multi-Species Winter Bait Station – DNA
Martin Creek	2013	Multi-Species Winter Bait Station – DNA, Photograph

Location	Year	Project
Sheephead Creek	2013	Multi-Species Winter Bait Station – DNA
Nez Perce Pass	2013	Multi-Species Winter Bait Station – Photograph
Overwhich Creek	2013	Multi-Species Winter Bait Station – DNA
Wapiti Creek	2013	Multi-Species Winter Bait Station – DNA, Photograph
Magruder Corridor	2013	Multi-Species Winter Bait Station – DNA, Photograph
Cayuse Creek	2013	Multi-Species Winter Bait Station – DNA
Devils Point Trailhead	2013	Multi-Species Winter Bait Station – DNA
Sheep Creek	2013	Multi-Species Winter Bait Station – Photograph
Woods Creek	2013	Multi-Species Winter Bait Station – Photograph
Nez Perce Road 1	2013	Fisher Habitat Pilot Study (3x)
Nez Perce Road 2	2013	Fisher Habitat Pilot Study (5X)
Nez Perce Road 3	2013	Fisher Habitat Pilot Study
Nez Perce Road 4	2013	Fisher Habitat Pilot Study
Mine Creek	2013	Fisher Habitat Pilot Study
Overwhich Creek 1	2013	Fisher Habitat Pilot Study
Overwhich Creek 2	2013	Fisher Habitat Pilot Study (2x)
Overwhich Creek 3	2013	Fisher Habitat Pilot Study
Overwhich Creek 4	2013	Fisher Habitat Pilot Study
Overwhich Creek 5	2013	Fisher Habitat Pilot Study (7x)
Slate Creek	2013	Fisher Habitat Pilot Study
Nez Perce Pass	2013	Track Survey

Marten are known to be highly vulnerable to trapping, and trapping records are another way of monitoring marten distribution and relative abundance. FWP trapping data indicates that the statewide marten harvest has continued to increase, with an increasing harvest trend during the past several years (including the 2010-2013 monitoring period). Results calculated from FWP's annual trapper harvest survey reports trapper effort for all species provide Catch per Unit Effort (CPUE = # animals harvested/1,000 trap days). Examining the trend in marten CPUE, it appears harvest effort has remained relatively stable on a statewide base, indicating more marten are being taken with consistent effort. Table 3 shows the number of marten harvested in Trapping District 2 (TD2) (which covers the Bitterroot National Forest) during the monitoring period. From 2004, through 2010, the average number of marten taken by trappers annually was 362 within TD2, and 181 within Ravalli County. The higher harvest

numbers in recent years in TD2 indicated that marten continue to be a relatively common species in the Bitterroot drainage and surrounding areas. Annual trapping harvest reports can be located at: http://fwp.mt.gov/hunting/trapping/.

Table 3 – Marten Harvested in Trapping District 2, 2009-2013

Year	Harvest
2009-2010	402
2010-2011	363
2011-2012	420
2012-2013	656

REFERENCES:

Samson, F. 2006. Habitat estimates for maintaining viable populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten, and Fisher.

Pileated Woodpecker Population in Relation to Habitat Changes
Item 40

OBJECTIVE: Monitor population trends in relation to habitat changes.

DATA SOURCE: Call transects.

FREQUENCY: Three transects annually after the five-year average is established.

REPORTING PERIOD: 2010-2013.

VARIABILITY: +/- five percent of most recent five-year average.

MONITORING:

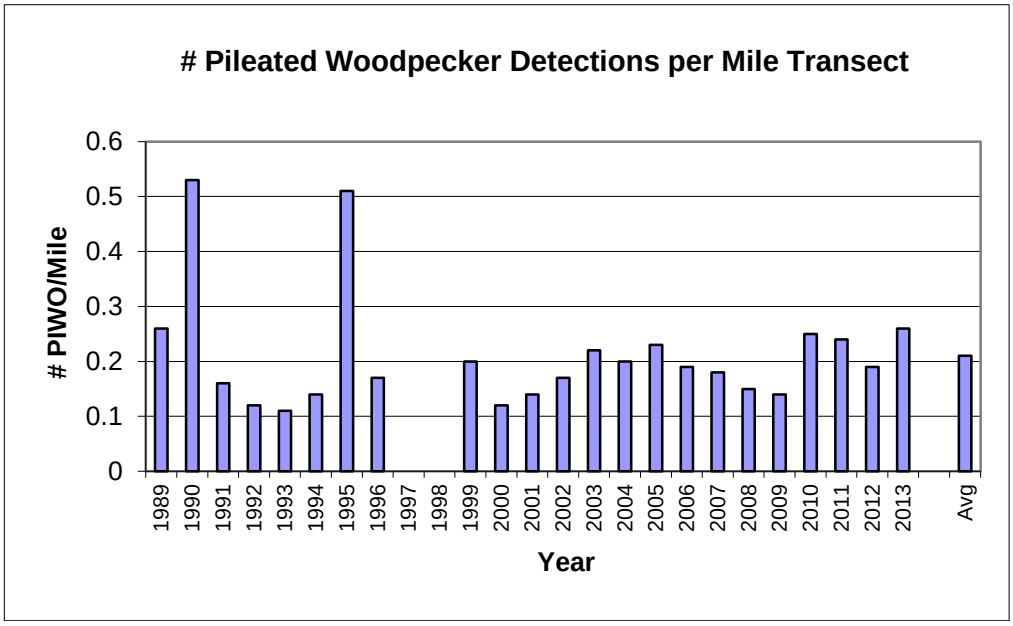
Most Forests in Montana and Idaho use the Northern Region's standardized technique for establishing and monitoring pileated woodpecker call routes. We established nine call routes on the Bitterroot National Forest (BNF) that are each monitored three times annually, if weather and budgets allow. In 1997 and 1998, no routes were surveyed. In FY 2010, we completed one survey on two routes, two surveys on three routes, and three surveys on each of four routes for a total of 20 transects. We surveyed all of the established routes at least once. We recorded an average of 0.25 pileated woodpecker detections per mile of transect, which is about 80% higher than the 2009 detection rate, and the highest detection rate since 1995. The 2010 figure is about 25% above the long-term average of 0.20 detections per mile, and is 40% above the most recent 5-year average of 0.18 detections per mile.

In FY 2011, we completed one survey on four routes, two surveys on three routes, and three surveys on each of two routes for a total of 16 transects. We surveyed all of the established routes at least once. We recorded an average of 0.24 pileated woodpecker detections per mile of transect, which is very similar to the 2010 detection rate. This year's figure is about 20% above the long-term average of 0.20 detections per mile, and is 33% above the most recent 5-year average of 0.18 detections per mile.

In FY 2012, limited budgets reduced our capacity to accomplish pileated woodpecker surveys. We completed one survey on four routes, and two surveys on one route for a total of 6 transects. We did not complete any surveys on four of the established routes. We recorded an average of 0.19 pileated woodpecker detections per mile of transect, which is about 21% below the 2010 detection rate. This year's figure is very similar to the long-term average of 0.20 detections per mile, and matches the most recent 5-year average of 0.19 detections per mile. Most of the surveys conducted in 2012 were late in the breeding period, which may have reduced the number of detections per mile of transects because woodpeckers become less vocal as breeding season wanes.

In FY 2013, better funding levels allowed us to complete one survey on one route, two surveys on one route, and three surveys on each of seven routes for a total of 24 transects. We surveyed all of the established routes at least once. We recorded an average of 0.26 pileated woodpecker detections per mile of transect, which is very similar to the 2010 detection rate. This year's figure is about 24% above the long-term average of 0.21 detections per mile, and is 37% above the most recent 5-year average of 0.19 detections per mile. Further evaluation of these data follows.

Figure 1 - Results of Pileated Woodpecker Call Counts, 1989-2013



EVALUATION:

Data from nine monitoring transects scattered over the Forest show high variability in pileated woodpecker detections among transects and between years. Although the scientific literature has validated the usefulness of the call route technique to monitor population trends, more transects may be needed to reduce variability and increase confidence in our data. Lack of funding has precluded establishment of more transects, but we do have some baseline information. We have systematically run approximately 2,272 miles of transects since 1988. We recorded an average of 0.21 calls or sightings per mile of transect over that period. The 2013 recording of an average 0.26 pileated woodpecker detections per mile of transect is about 24% above this long-term average, and is about 37% above the most recent 5-year average.

Figure 1 displays the number of pileated woodpecker calls or sightings detected per mile of transect monitored across the entire Forest by year. Ignoring the large spikes in pileated detections in 1990 and 1995, these data show that pileated detections declined somewhat in the early 1990s but increased from then until 2000, when they declined again. The spikes in 1990 and 1995 illustrate the variability inherent in these types of transects, and may or may not indicate actual changes in population levels. The low number of detections per mile in 2000 could indicate that populations declined that year, but could also be a result of other factors. The number of detections per mile generally increased slightly each year from 2000 to 2005, despite the fact that several transects were burned extensively during the fires of 2000. Pileated woodpeckers are not normally associated with moderate to high-severity burned areas. Number of detections declined slightly each year from 2005 to 2009, but increased markedly in 2010. Number of detections has averaged higher from 2010 to 2013 than any period since we started monitoring pileated woodpecker detections on standardized routes.

The number of detections can be influenced by local weather or stream conditions which can make hearing difficult, the period of time during the breeding season when transects are run which can influence the frequency of vocalizations, and the ability of the observer to hear and correctly identify pileated calls. Changes in the number of detections over time may also indicate actual changes in the number of birds present, which could be a result of habitat change or a number of other factors such as weather. Cool, wet springs, for example, drastically reduce the productivity of many bird species. The variability introduced by these factors makes it difficult to determine, by themselves, whether pileated woodpecker populations are changing on the Bitterroot National Forest, and if so, why.

We know that habitat quality for this species declined in the late 1800s and early 1900s across the Forest as a result of extensive cutting of mature ponderosa pine habitats. Fire suppression has also reduced habitat quality since the 1930s. Nevertheless, a recent habitat assessment for the pileated woodpecker indicates adequate habitat exists and is well distributed on the Forest and across the Northern Region. Based on this assessment,

the Bitterroot National Forest is estimated to contain sufficient suitable nesting habitat to support about 91 pairs of pileated woodpeckers, and enough winter foraging habitat to sustain almost 800 pairs of this species (Samson 2005). This habitat is well-distributed across the BNF at lower to mid elevations. Habitat estimates for the BNF only include National Forest System lands and those are estimated to provide 86% of the habitat necessary for a minimum viable population (Samson 2006). Additional nesting habitat for pileated woodpeckers is located on private lands in the Bitterroot valley in the mixed cottonwood and ponderosa pine forests along the Bitterroot River and many of its larger tributaries. These bottomland forests provide some of the most productive habitat for this species, and also serve to connect subpopulations in the surrounding mountains. The presence of large amounts of high quality habitat on private land indicates that the Bitterroot drainage is capable of supporting a much larger population of pileated woodpeckers than indicated by the Forest's estimates alone.

At the Regional scale, habitat modeling estimates that there is enough suitable nesting habitat to support about 2362 pairs of pileated woodpeckers, and enough winter foraging habitat to sustain about 19,430 pairs of birds (Samson 2005). Again, this estimate does not include the high quality habitat located along the river and stream corridors on private land. Median dispersal distance for pileated woodpeckers is estimated to be about 150 miles, which indicates that pileated woodpeckers across the entire Region belong to a single, well connected population. The Forests neighboring the Bitterroot to the north and west show pileated woodpecker habitat in excess of the quantity modeled to maintain a minimum viable population on their Forests alone (Lolo -165%, Clearwater -346% and Nez Perce -459%). Although no population estimates are available, the large amount of apparently suitable habitat well distributed across the Region combined with the interconnectedness of the population indicates that short-term viability of pileated woodpeckers across the Region is not an issue (Samson 2005).

These findings are also consistent with the broader view offered by the Natural Heritage Program. The international network of Natural Heritage Programs employs a standardized ranking system to denote global (G — range-wide) and state (S) status. Species are assigned numeric ranks ranging from 1 (critically imperiled) to 5 (demonstrably secure), reflecting the relative degree to which they are "at-risk." The pileated woodpecker is listed as G5 and S4 in Montana. G5 indicates that throughout its range, it is considered common, widespread, and abundant, although it may be rare in parts of its range. It is not vulnerable in most of its range. S4 indicates that in Montana, it is uncommon but not rare, although it may be rare in parts of its range, and usually widespread. This statewide rating also indicates the species is apparently not vulnerable in most of its range. The positive trends from Forest monitoring discussed above indicate both the pileated woodpecker and its habitat are doing well on this Forest.

Given the above evaluation of data since 1988, we conclude that current management on the Bitterroot National Forest is having little discernable negative impacts on the pileated woodpecker. Our evaluation of the 2010 to 2013 detections being somewhat above the five-year average indicates current management practices are appropriate. Suitable habitat appears to be well distributed across the Forest, river basin, and Region. Most of the Forest's recent management activities in lower elevation forests emphasize restoration of mature ponderosa pine habitats, which should benefit pileated woodpeckers over time.

REFERENCES:

Samson, F. B. 2005 (amended March 6, 2006). Conservation assessment of the northern goshawk, blacked-backed woodpecker, flammulated owl, and pileated woodpecker in the Northern Region, USDA Forest Service. Unpublished report on file, Northern Region, Missoula, Montana, USA.

Samson, F.B. 2006. Habitat estimates for maintaining viable populations of the northern goshawk, black-backed woodpecker, flammulated owl, pileated woodpecker, American marten and fisher. USDA Forest Service. Unpublished report on file, Northern Region, Missoula, Montana, USA.

Threatened and Endangered Wildlife Species

OBJECTIVE: Monitor threatened and endangered species populations and trends, and initiate recovery as planned. Determine population and habitat relationships and recovery needs as specified by the Region and USDI Fish and Wildlife Service (FWS).

DATA SOURCE: Monitoring wolf recovery updates, off-forest environmental impact statements (e.g., Wolf Recovery Plan and Grizzly Bear Recovery Plan), and other data as available.

FREQUENCY: Annually.

REPORTING PERIOD: 2010 - 2013.

VARIABILITY: Changes in trends that indicate recovery or further declines.

INTRODUCTION:

In 2013, FWS included Canada lynx, wolverine and yellow-billed cuckoo on their list of wildlife species that may be present on the BNF. Evaluations of those species follow.

FWS removed gray wolves in Montana and Idaho from Federal listing as an endangered species on May 4, 2009. Several court orders temporarily reversed this delisting, but the 2011 Appropriations Act reissued the 2009 delisting rule and made it permanent. Wolves are now classified as a Sensitive wildlife species on National Forests throughout Forest Service Region 1. As a result, the summary of gray wolf monitoring efforts is located in the Sensitive Wildlife Species monitoring item.

FWS removed bald eagles from Federal listing as a Threatened species on August 8, 2007. Per Region One policy, the bald eagle was automatically added to Regional Forester's Sensitive Species List when it was removed from Federal listing. As a result, the summary of bald eagle monitoring efforts is located in the Sensitive Wildlife Species monitoring item.

FWS removed grizzly bear from the list of threatened or endangered wildlife species that may occur on the Bitterroot National Forest in 2007. Grizzly bears have not been confirmed as occurring in the Bitterroot drainage since the 1950s, with one exception (see Grizzly Bear section). Grizzly bears are included in this section for informational purposes, even though FWS does not currently classify them as a species that may be present on the Forest.

Peregrine falcons were delisted by FWS in August 1999. They were added to the Regional Forester's Sensitive Species List at that point. The summary of peregrine falcon monitoring efforts is located in the Sensitive Wildlife Species monitoring item.

LYNX (Threatened)

Lynx are uncommon and occur in low densities even in the best habitat. Lynx habitat in the Bitterroot National Forest has been identified through an interdisciplinary process with FWS to be generally areas exceeding 6,200' elevation which support vegetation types dominated by subalpine fir or spruce. Lynx do not use open or semi-open areas (Maj 1992). They use mature and over mature spruce and subalpine fir forests with deadfalls for denning. Foraging habitat typically is dense 20- to 30-year-old sapling and pole-sized stands of lodgepole pine and other conifer species (Quinn and Parker 1987; Koehler and Brittell 1990; and Thompson et al. 1989). Lynx are dependent on snowshoe hare (*Lepus americanus*) as their primary prey. Lynx abundance and density varies with the cyclic snowshoe hare population fluctuations and trapping pressure. In this area, snowshoe hares frequent dense stands of trees in early successional stages (Koehler and Brittell 1990). The shrubs and saplings provide food for the hares as well as cover from predators. Providing good hare habitat will benefit lynx (Quinn and Parker 1987).

Canada lynx were proposed for listing under the Endangered Species Act in 1999. FWS listed lynx as threatened in 2000, and included them on the list of threatened and endangered wildlife species that may occur on the Forest until 2006. In an amendment to the 2005 Canada Lynx Conservation Agreement the Bitterroot National Forest

was classified as unoccupied lynx habitat by the USFWS and the Forest Service. At that time, lynx were removed from the FWS list of threatened and endangered species that may occur on the Forest. In 2013, FWS added lynx to the Forest's list as a species that may be present on the Forest as transient individuals in secondary lynx habitat. However, the Forest continues to be classified as unoccupied lynx habitat.

The Record of Decision (ROD) (USDA Forest Service 2007a) for the Northern Rockies Lynx Management Direction (NRLMD) FEIS (USDA Forest Service 2007b) became effective July 16, 2007. The ROD amended the management direction in the selected alternative into all Forest Plans in the planning area, including the BNF Forest Plan. The NRLMD FEIS management direction incorporates the Terms and Conditions the US Fish and Wildlife Service (FWS) issued in their Biological Opinion and Incidental Take Statement (USDI Fish and Wildlife Service 2007). Direction in the NRLMD FEIS ROD applies to mapped lynx habitat on National Forest System lands presently occupied by lynx, as defined by the Amended Lynx Conservation Agreement between the Forest Service and USFWS.

From 2010 to 2013, the Bitterroot NF analyzed project effects to lynx using the objectives, standards, and guidelines contained in the NRLMD ROD (USDA Forest Service 2007a) and FEIS (USDA Forest Service 2007b) for projects in mapped lynx habitat. Technically, the objectives, standards, and guidelines only apply on Forests classified as occupied lynx habitat, and then only when projects are in mapped lynx habitat. Although the NRLMD ROD (USDA Forest Service 2007a) encourages compliance with the objectives, standards, and guidelines even on Forests classified as unoccupied lynx habitat, it specifically states that there is no requirement to do so. Current Regional policy, however, includes direction that Forests classified as unoccupied lynx habitat comply with the NRLMD objectives, standards and guidelines in mapped lynx habitat.

Monitoring and Evaluation:

The Forest was part of a pilot program to test the effectiveness of lynx monitoring using hair snare methodology in 1999, 2001, 2002-3 and again in 2010. The Forest established a grid of stations scented with a lynx attractant near the Continental Divide east of Lost Trail Pass in a potential lynx linkage zone identified in the NRLMD ROD (USDA Forest Service 2007a). We checked hair snares at these stations on a regular basis, and collected any hair samples found. Additionally, the Forest used 33 multi-carnivore bait stations and game cameras to non-invasively survey and monitor carnivore species during the winter of 2013. Lab analysis of the samples from both surveying efforts identified hair from a number of different mammal species, but so far none of the samples have contained lynx hair.

The Montana Natural Heritage Program maintains a database of species observations (Montana Natural Heritage Tracker). A query of the database (August 2013, records available from Stevensville District Wildlife Biologist) located 41 records of lynx observations totaling 51 lynx in Ravalli County from 1910 through 2009. These observations are categorized as either verified or anecdotal. Verified observations or records are those that scientifically document a lynx by identifying physical remains, live-captured animals, or DNA samples (USDA Forest Service 2007b). Anecdotal observations are generally tracks and reported sightings where physical evidence is lacking. Table 1 summarizes the lynx observations from the Montana Natural Heritage Tracker database by year and category. In total, there are 27 verified (physical remains from trapping) lynx observations from Ravalli County from 1910 to 1995. The location recorded in the Tracker database indicates that 21 of these observations were located on BNF lands, while 6 observations were located on State or private land within 10 miles of the Forest. The most recent verified records occurred in 1995 and 1987 (2). There are a total of 24 anecdotal records (no physical evidence) from Ravalli County from 1964 to 2009. The location recorded in the Tracker database indicates that 15 of these observations were located on BNF lands, while nine observations were located on State or private land within 10 miles of the Forest. Anecdotal sightings may include repeat sightings of the same individual.

Table 1 - Summary of Lynx Observations in Ravalli County from the Natural Heritage Tracker database, by year and category

Mountain Range	Verified Observations	Anecdotal Observations
Bitterroot Mountains	1987, 1982, 1980 (3) 1910 (3)	2004, 2000, 1989, 1982, 1980, 1971
Sapphire Mountains	1987, 1986, 1985 (2), 1983 (2), 1982, 1978 (2)	1984, 1982

Mountain Range	Verified Observations	Anecdotal Observations
"Triangle" Area	1983 (2), 1982 (2)	1991 (5), 1982, 1981
Off Forest	1995, 1985, 1979 (2), 1978 (2)	2009* (2), 1986, 1985, 1984 (2), 1983, 1980, 1964
Total	N = 27	N = 24

*Records shown as "Fur harvest" in the Natural Heritage Tracker database, but do not appear in official trapping records from Montana Department of Fish, Wildlife and Parks, and are therefore considered anecdotal.

The Montana Department of Fish, Wildlife and Parks (FWP) regulates trapping in Montana and requires trappers to present all pelts of bobcats, otter, marten, fisher, wolverine and swift fox to FWP personnel for pelt tagging. Lynx can no longer be legally harvested, but any lynx taken incidentally must be turned in to FWP personnel within 5 days of capture. FWP records dates, locations and numbers of these harvested animals and keeps official records of these harvested species. FWP trapping records for Ravalli County show that 30 lynx were harvested by trappers between 1975 and 2010. The last lynx trapping records in Ravalli County in the official FWP database are one animal harvested during the 1994-1995 trapping season, and two animals harvested during the 1986-1987 trapping season. Montana Natural Heritage Tracker data for this same time period shows 26 lynx harvested from Ravalli County.

Included in the Montana Natural Heritage Tracker data is one record showing two lynx taken during trapping year 2008-2009 that are absent from FWP's official trapping records. The location shown in the Tracker database for both of these lynx is on private land off of the BNF along Hwy. 93 just north of Stevensville. This location is miles from the nearest lynx habitat. Any lynx caught in a trap since the lynx season closed in 2000 is defined as incidental take. An email from FWP's Statewide Furbearer Coordinator Brian Giddings dated 4/21/2011 confirms that no incidental lynx captures have been reported in Ravalli County since legal lynx harvest ended in 2000 (records available from Stevensville District Wildlife Biologist). Since there is a discrepancy between the FWP official trapping records and the Montana Natural Heritage Tracker records concerning these particular observations, the observations are not considered reliable, and thus do not represent verified observations of lynx. While evaluating the validity of lynx records for their publication, McKelvey et al. (2000) stated that "If there was a discrepancy between published tabulations of harvest data and records obtained directly from state or provincial agencies, we assumed the latter to be more reliable and used those data in our analyses."

In addition to the information from the Montana Natural Heritage Tracker and FWP trapping records, several collared lynx captured in Canada and transplanted to Colorado were later radio-located in Montana (Devineaux et al. 2010). Eight of Colorado's 218 reintroduced lynx made 10 forays into Montana, lasting from 1 to 217 days (records available from Stevensville District wildlife biologist). Two of these individuals traveled through portions of the BNF. In 2005, one individual spent 91 days in Montana, including traveling through the Pryor, Absaroka, Gallatin, Madison and Tobacco Root ranges, past Anaconda and presumably over the Sapphires before being found dead along Hwy. 93 near Stevensville. In 2007, one individual spent 98 days in Montana, travelling west out of Yellowstone into the Gravelly Range, then northwest through the Tobacco Root, Flint Creek and northern Sapphire ranges before passing Lolo and heading into Idaho. These individuals are considered transients.

WOLVERINE

On February 4, 2013 FWS issued a proposed rule to list the wolverine in the contiguous United States as a threatened species under the Endangered Species Act (USDI Fish and Wildlife Service 2013a). At the same time, FWS published a proposed special rule under Section 4(d) of the ESA outlining the prohibitions necessary and advisable for the conservation of the wolverine (*Ibid*). This proposed Section 4(d) rule would prohibit take of wolverine from trapping, hunting, shooting, etc., while allowing incidental take associated with activities such as dispersed recreation, timber harvest, firefighting, mining, etc., if those activities are conducted in accordance with applicable laws and regulations (*Ibid*). Once a species is proposed for listing, a year-long review period commences at the end of which the FWS will make a final listing determination. In the interim, the wolverine is classified as a proposed species by FWS. The wolverine was removed from the Region 1 Sensitive Species list when it was classified as a proposed species by FWS.

Wolverines are solitary animals that range extensively over a wide variety of habitats. Isolation from human presence and association with subalpine habitats characterize the general understanding of wolverine-habitat associations in the southern extent of the species' North American range (Copeland et al. 2007). Wolverine home ranges are very large, averaging approximately 150 square miles for females and 163 square miles for males in a study in northwest Montana (Hornocker and Hash 1981), and 142 square miles for females and 611 square miles

for males in a study in central Idaho (Copeland 1996). Wolverines feed primarily on rodents and carrion, although they are opportunists and will also consume berries, insects, fish, birds, and eggs when available. Ungulate carrion seems to be particularly important in the winter.

Recent research indicates that wolverine distribution in the mountains of the western United States is closely tied to high-elevation areas containing alpine vegetation, alpine climatic conditions, or relatively high probabilities of spring snow cover (Aubry et al. 2007). Copeland et al. (2007) found that wolverines in central Idaho favored high elevations throughout the year, and that the downward shift in elevation during the winter described by earlier investigators was relatively minor in their study area, and was restricted largely to males. They noted that carrion resulting from hunter wounding losses was an important forage resource for wolverines in the winter, but that wolverines utilized carrion found in mid-elevation forests and largely avoided big game winter ranges.

With few exceptions, known wolverine reproductive dens have been located in alpine, subalpine, taiga, or tundra habitats (Magoun and Copeland 1998 including extensive internal citations). In Idaho, wolverine dens occurred in snow-covered boulder talus in subalpine cirque basins located at high elevations, and consisted of long, complex snow tunnels leading under inaccessible boulder scree that provided a high degree of security (*Ibid*). A critical feature of wolverine denning habitat appears to be dependability of deep snow throughout the denning period (February through April). Almost all verified reproductive dens were under 1-5 meters of snow (*Ibid*).

Suitable wolverine denning habitat exists in the higher elevations in all the mountain ranges on the Forest. The Bitterroot Mountains, in particular, provide a large area of high elevation, subalpine to alpine habitats that maintain snow cover well into the spring. Many of the basins within the Selway-Bitterroot Wilderness are very remote and receive very little human use, especially during the winter. The combination of these characteristics provides ideal denning and year-round habitat for wolverines. In addition to providing a large core area of suitable habitat, the Bitterroot Range has been proposed as the central artery for wolverine gene flow in the Rocky Mountains, connecting wolverines at the southern extent of their current range to more robust populations in northwest Montana and Canada (Schwartz et al. 2007).

Researchers have reported that female wolverines may be sensitive to human disturbance in the vicinity of natal and maternal dens, and may abandon dens and move their kits a considerable distance if they detect human presence in the area (Copeland 1996, Magoun and Copeland 1998). This could reduce kit survival rates by increasing the potential for predation or reducing the amount of time the female can spend procuring food. However, other reports indicate that wolverines may be able to tolerate at least some close approach by humans without abandoning their dens (Heinemeyer et al. 2010; Inman et al. 2007; Persson et al. 2006). At least one ongoing study in central Idaho is designed to address whether winter recreational use is compatible with denning wolverines (Heinemeyer et al. 2010). Outside of the denning season, wolverines do not appear to avoid people or roads and trails, and are sometimes found near trails and active campgrounds during summer (Copeland et al. 2007). They will also use unmaintained winter roads for travel (*Ibid*).

Monitoring:

The Forest implemented a new forest carnivore survey methodology in the winter of 2012-2013. Parts of road-killed deer were hung in trees to attract forest carnivores. Motion-activated cameras aimed at the bait tree captured photos of animals that climbed the tree, and gun cleaning brushes situated around the bole of the bait tree collected hair samples. In the winter of 2012-2013 this methodology collected evidence of wolverines in several locations in the Selway River drainage and at one location in the upper West Fork drainage. Prior to implementation of this survey methodology, records of wolverine occurrence on the BNF come from incidental observations or trapping records. These sightings indicate that wolverines are present on the BNF, and that they occur in a variety of locations across the Forest.

The Montana Natural Heritage Program maintains a database of species observations (Montana Natural Heritage Tracker). A query of the database (June 2014, records available from Stevensville District wildlife biologist) located 50 records of wolverine observations totaling 52 wolverines in Ravalli County from 1948 through 2013. These observations are categorized as either verified or anecdotal. Verified observations or records are those that scientifically document a wolverine by identifying physical remains, live-captured animals, or DNA samples (USDA Forest Service 2007b). Anecdotal observations are generally tracks and reported sightings where physical evidence is lacking. Table 2 summarizes the wolverine observations from the Montana Natural Heritage Tracker database by year and category. In total, there are 20 verified (physical remains from trapping) wolverine observations from Ravalli County from 1976 to 2011. Trapping locations are open to question since they are reported by the trappers, who may have an interest in concealing areas where they have been successful. All wolverine trapping records reported for Ravalli County in the Tracker database included GPS coordinates that

were actually in the County. There are a total of 32 anecdotal records (no physical evidence) from Ravalli County from 1948 to 2013. Anecdotal sightings may include repeat sightings of the same individual.

Table 2 - Summary of Wolverine Observations in Ravalli County from the Natural Heritage Tracker database, by year and category

Mountain Range	Verified Observations	Anecdotal Observations
Bitterroot Mountains	2011, 2006 (2), 2005, 2003 (2), 2001, 1998, 1986, 1983, 1980, 1979 (2), 1978, 1976	2013, 2004, 2003, 2001, 1999 (2), 1992 (2), 1983, 1980,1979 (2), 1978 (4), 1977 (2), 1976, 1969, 1952
Sapphire Mountains	1995, 1983, 1982, 1977	2004, 2001, 1999, 1996, 1995, 1992 (2), 1986 (2), 1982, 1948
"Triangle" Area	1982	N/A
Total	N = 20	N = 32

In addition, the BNF has records of several wolverine observations on the Forest that are not in the Tracker database and are not reflected in Table 2. These include a verified observation from the Bitterroot Mountains in 2013 (DNA from hair samples), two from the Sapphires in 2009 (radio-collared animals) and one from the Triangle area in 2009 (radio-collared animal). Additional anecdotal observations from the Bitterroot Mountains occurred in 2011, 2006, 2004, 2001 (2), and 1995, and from the Sapphires in 2011 and 2004.

Montana is the only state that still allows limited trapping of wolverines. However, the wolverine trapping season was closed via a temporary restraining order from a state district court judge in December 2012. Wolverine trapping in Montana will remain closed for the foreseeable future. MDFWP trapping records indicate that between 1996 and 2010, trappers harvested an annual average of about 0.55 wolverines within Ravalli County (trapping records available from Stevensville District Wildlife Biologist).

Evaluation:

The wolverine is one of the rarest and least-known mammals in North America (Aubry et al. 2007). Since the 1800s, dramatic contractions have occurred within the historical range of the wolverine in the contiguous United States. Although the species once occurred in California, Utah, Colorado and the Great Lakes states, its current range in the lower 48 states is limited to north-central Washington, northern and central Idaho, western Montana, and northwestern Wyoming (Ruggiero et al.2007).

Wolverines in the Western United States and the interior Columbia basin occur widely at very low densities, but only in northwestern Montana are wolverine populations considered to be healthy and thriving (Witmer et al. 1998). In Montana, the wolverine was thought nearly extinct by 1920 from over-trapping. Wolverine numbers increased in the western, mountainous region of Montana from 1950 to 1980 (Hornocker and Hash 1981), presumably as a result of reduced trapping seasons on other furbearers and increased dispersals from Canada. Hornocker and Hash (1981) concluded that in Montana, extensive wilderness habitat, coupled with more restrictive furbearer harvest regulations, should provide secure wolverine populations in the foreseeable future. With approximately 73% of the Bitterroot National Forest in inventoried roadless areas or wilderness, it appears abundant wolverine habitat exists and is well distributed across the Forest.

MDFWP classifies the wolverine as a Montana Species of Concern. The Montana Natural Heritage Program and MDFWP rank the wolverine as a G4 S3 species (MDFWP 2014). This means that across its range the species is considered uncommon but not rare (although it may be rare in parts of its range), and usually widespread. It is apparently not vulnerable across most of its range, but there is possibly cause for long term concern. In Montana, the species is considered potentially at risk because of limited and potentially declining numbers, extent, and /or habitat, even though it may be abundant in some areas.

YELLOW-BILLED CUCKOO (Western Population) (Proposed)

Monitoring and Evaluation:

FWS includes the yellow-billed cuckoo on its list of Threatened, Endangered, Proposed and Candidate wildlife species that may occur on the BNF. It was formerly listed as a Candidate species, but was proposed for listing as threatened by FWS on October 3, 2013 (USDI Fish and Wildlife Service 2013b). The species' breeding distribution includes the continental U.S. from the western edge of the Great Plains eastward, with scattered populations in the western U.S. Range boundaries have been confused by recurrent observations of nonbreeding

individuals away from breeding sites, and vagrants are not uncommon. Montana Natural Heritage Program (MNHP) and FWP show the range of yellow-billed cuckoo in Montana to occur in the southern quarter of the state generally east of I-15. The MNHP lists two recorded occurrences of the species in the Bitterroot drainage. One cuckoo was found dead on a sidewalk in Hamilton in June 1961, and another was found dead after striking a window near Middle Burnt Fork Creek about 7 miles east of Stevensville in June 1988.

Yellow-billed cuckoos' preferred breeding habitat includes open woodlands, especially where undergrowth is thick. In the western U.S., they breed in riparian habitats dominated by cottonwoods and dense riparian shrubs. Western subspecies require patches of at least 25 acres of dense, riparian forest with a canopy cover of at least 50 percent in both the understory and overstory (MNHP and FWP 2014). These habitat conditions are common along the Bitterroot River and the lower reaches of some of its larger tributaries, but are rare on the BNF. The BNF does not have a monitoring program in place for this species. However, two bird banding stations (one on the Lee Metcalf National Wildlife Refuge [NWR] and another on a private ranch north of Florence) and other bird inventory efforts in the Metcalf NWR, the Teller Wildlife Refuge and the Bitterroot River Important Bird Area are located in riparian habitats along the Bitterroot River that appear to support ideal habitat for yellow-billed cuckoos. None of these bird monitoring efforts has ever recorded a yellow-billed cuckoo. Based on these results, it seems likely that there is no established population of yellow-billed cuckoos in the Bitterroot drainage, although they may occur rarely as vagrants. Given the lack of suitable habitat for this species on the BNF, it is highly unlikely that the yellow-billed cuckoo occurs on Forest lands.

GRIZZLY BEAR (Threatened)

Grizzlies are far-ranging animals that require protection from human caused mortality, but subsist in a wide variety of habitats depending primarily on food availability. Historical records indicate that grizzly bears were once abundant in the Bitterroot Mountains, but did not survive the intense pressure to eliminate them as threats to domestic sheep and cattle. The last known grizzly was hunted and killed in the area in 1956. Since that time, occasional sightings of grizzly bears have been reported in the Bitterroot drainage, most of which were probably black bears. FWS does not currently list the grizzly bear as a species that may occur on the Forest.

The Selway-Bitterroot ecosystem is one of six ecosystems in the continental U. S. outside of Alaska that are managed for grizzly bears. FWS studied the Bitterroot Grizzly Bear Evaluation Area to determine its habitat capability for grizzly bears. The evaluation determined the area was suitable for grizzly bears, and it is now a grizzly bear recovery area. The FWS prepared an Environmental Impact Statement and issued a Record of Decision in November 2000 (USDI Fish and Wildlife Service 2000), which approved reintroduction of grizzlies into the Selway-Bitterroot ecosystem as a nonessential experimental population starting in 2002. Implementation of this decision is currently on indefinite hold due to political considerations.

Monitoring and Evaluation:

The only recent confirmed sighting of a grizzly bear in the Bitterroot drainage was an apparent transient bear that was seen two nights in a row on private land on Sunset Bench southeast of Stevensville in late September, 2002. This animal had apparently crossed the Sapphire Range from the Rock Creek drainage, where it was seen and photographed feeding on a moose gut pile the previous day. The bear disappeared after it was seen on Sunset Bench, although FWP has evidence that it returned to the Rock Creek drainage. The origin of this bear is uncertain; no other grizzly bears had been confirmed in either Rock Creek or the Sapphire Range for many years.

A mature male grizzly was shot by a black bear hunter in the North Fork Kelly Creek drainage in Idaho about 35 miles northwest of the northern edge of the BNF on September 3, 2007. This was the first confirmed grizzly bear in the Bitterroot Mountains in over 50 years. Testing confirmed that this bear was genetically tied to the small grizzly bear population in the Selkirk Mountains of northern Idaho, northeast Washington and southern British Columbia, indicating that it had traveled at least 140 miles to the North Fork Kelly Creek drainage. It is unclear whether this bear was a wandering individual or if it is part of a previously unknown population that has become established in that area.

In an effort to determine whether this bear was an isolated individual or part of an unknown population, FWS and several cooperators installed and maintained 68 baited hair snare sites in the Bitterroot Mountains between Lolo Pass and Lookout Pass in 2008 (Servheen and Shoemaker 2009). 55 of these sites were also equipped with motion-triggered cameras. Hair collected on barbed wire around the bait stations was genetically analyzed to determine what species it came from, and animals shown in photos were identified. They collected 422 non-ungulate hair samples, 379 of which contained material suitable for genetic analysis. 279 of these samples were identified as black bears, but none were identified as grizzly bears. The 408 photos taken at these sites included up to 83 different black bears, but no grizzly bears. Based on these results, it seems unlikely that there is a population of grizzly bears in the northern Bitterroot Mountains at this time. Although none of the stations sampled

the BNF, the results imply that it is unlikely that there is a grizzly bear population in the Bitterroots south of Lolo Pass, since the northern Bitterroots would be a likely corridor for grizzlies to reoccupy the BNF.

REFERENCES:

Aubry, K.B., K.S. McKelvey, and J.P. Copeland. 2007. Distribution and broadscale habitat relations of the wolverine in the contiguous United States. Journal of Wildlife Management 71(7):2147-2158.

Copeland, J. P. 1996. Biology of the wolverine in central Idaho. M.S. Thesis, University of Idaho. Moscow, ID. 152 pp. [0738]

Copeland, J.P., J.M. Peek, C.R. Groves, W.E. Melquist, K.S. MeKelvey, G.W. McDaniel, C.D. Long, and C.W. Harris. 2007. Seasonal habitat associations of the wolverine in Central Idaho. Journal of Wildlife Management 71(7):2201-2212.

Devineaux, O., T.M. Schenk, G.C. White, P.F. Doherty, Jr., P.M. Lukacs, and R.H. Kahn. 2010. Evaluating the Canada lynx reintroduction program in Colorado: patterns in mortality. Journal of Applied Ecology 47: 524-531.

Heinemeyer, K.S., J.R. Squires, and J.P. Copeland. 2010. Investigating the interactions between wolverines and winter recreational use: 2010 annual report. USFS Rocky Mountain Research Station. Missoula, MT. 42 p

Hornocker, M. G., and H.S. Hash. 1981. Ecology of the wolverine in northwestern Montana. Canadian Journal of Zoology 59: 1286-1301. [0714]

Inman, R.M., K.H. Inman, M.L. Packila, and A.J. McCue. 2007. Wolverine reproductive rates and maternal habitat in Greater Yellowstone. Chapter 4 (Pages 65-84) in: Greater Yellowstone Wolverine Program, Cumulative Report, May 2007. Wildlife Conservation Society, North American Program, General Technical Report, Bozeman, Montana, USA.

Koehler, G.M. and J.D. Brittell. 1990. Managing spruce-fir habitat for lynx and snowshoe hares. J. of Forestry: 88(10) pp. 10-14.

Magoun, A. J. and J. P. Copeland. 1998. Characteristics of wolverine reproductive den sites. Journal of Wildlife Management 62(4):1313-1320. [0724]

Maj, M. 1992. Interim management recommendations, sensitive species. USDA Forest Service, Northern Region Office. Unpubl. report. 16 pp.

McKelvey, K.S., K.B. Aubry, and Y.K. Ortega. 2000: History and distribution of lynx in the contiguous United States. Chapter 8 (pages 207 – 259). in: Ruggeiro, L.F., K. B. Aubry, S. W. Buskirk, G.M. Koehler, C.J. Krebs, K.S. McKelvey, and J.R. Squires. 2000. Ecology and conservation of lynx in the United States. University Press of Colorado, Boulder, CO. 480 pages. Available online at: http://www.fs.fed.us/rm/pubs/rmrs_gtr030.pdf [1087]

MNHP and FWP (Montana Natural Heritage Program and Montana Department of Fish, Wildlife and Parks). 2014. Montana animal species of concern. Montana Natural Heritage Program, Helena, MT. Available online at: http://fieldguide.mt.gov/detail_ABNRB02020.aspx

Perrson, J., A. Landa, R. Andersen, and P. Segerstrom. 2006. Reproductive characteristics of female wolverines (*Gulo gulo*) in Scandinavia. Journal of Mammalogy 87(1): 75-79.

Quinn, N.W.S. and G. Parker. 1987. Lynx. pp. 682-695 *in:* Wild furbearer management and conservation in North America, Novak, M., M. O. Baker, and B. Malloch, eds. 1987. Ministry of Natural Resources, Ontario, Canada. 1150 pp.

Ruggiero, L.F., K.S. McKelvey, K.B. Aubry, J.P. Copeland, D.H. Pletscher and M.G. Hornocker. 2007. Wolverine conservation and management. J.Wildl. Manage. 71(7): 2145-2146.

Schwartz, M.K., J.P. Copeland, N.J. Anderson, J.R. Squires, R.M. Inman, K.S. McKelvey, K.L. Pilgrim, L.P. Waits and S.A. Cushman. 2007. Wolverine gene flow across a narrow climatic niche. Ecology 90(11): 3222-3232.

Servheen, C. and R. Shoemaker. 2009. Bitterroot Mountains bear DNA and camera survey – 2008 results. Unpublished report, U.S. Fish and Wildlife Service, Missoula, MT. 6 pp plus appendices.

Thompson, I.D., I.J. Davidson, S. O'Donnell, and F. Brazeau. 1989. Use of track transects to measure the relative occurrence of some boreal mammals in uncut forest and regeneration stands. Can. J. Zool. 67:1816-1823.

USDA Forest Service. 2007a. Northern Rockies Lynx Management Direction Record of Decision. National Forests in Montana, and parts of Idaho, Wyoming and Utah. U.S. Dept. of Agriculture, Forest Service, Northern Region Office, Missoula, MT. March 2007. 71pgs [0757]

USDA Forest Service. 2007b. Northern Rockies Lynx Management Direction FEIS Volume 1. National Forests in Montana, and parts of Idaho, Wyoming and Utah. U.S. Dept. of Agriculture, Forest Service, Northern Region Office, Missoula, MT. March 2007. 587pgs [0755]

USDI Fish and Wildlife Service. 2000. Grizzly bear recovery in the Bitterroot ecosystem: Final Environmental Impact Statement. Missoula, MT.

USDI Fish and Wildlife Service. 2007. Biological opinion on the effects of the Northern Rockies Lynx Amendment on the distinct population segment (DPS) of Canada lynx (*Lynx canadensis*) in the contiguous United States. Unpublished. Montana Field Office, Helena, Montana. 85 p. [0753]

USDI Fish and Wildlife Service. 2013a. Threatened status for the distinct population segment of the North American wolverine occurring in the contiguous United States; establishment of a nonessential experimental population of the North American wolverine in Colorado, Wyoming, and New Mexico; proposed rules. Federal Register 78(23): 7864-7890, dated February 4, 2013. Available online at: http://federalregister.gov/a/2013-01478. [1377]

USDI Fish and Wildlife Service. 2013b. Proposed threatened status for the western distinct population segment of the yellow-billed cuckoo (*Coccyzus americanus*); proposed rule. Federal Register 78(192): 61622-61666, dated October 3, 2013

Witmer, G.W.; S.K. Martin and R.D. Sayler. 1998. Forest carnivore conservation and management in the interior Columbia basin: issues and environmental correlates. Gen. Tech. Rep. PNW-GTR-420. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 51 p. (Quigley, Thomas M., ed.; Interior Columbia Basin Ecosystem Management Project: scientific assessment). [0278]

Sensitive Wildlife Species

OBJECTIVE: Monitor sensitive wildlife species habitat and populations to minimize impact until conservation strategies are prepared. Track populations and trends. Determine population and habitat relationships.

DATA SOURCE: Surveys and habitat mapping from project planning.

FREQUENCY: When a project area is analyzed.

REPORTING PERIOD: 2010 - 2013.

VARIABILITY: Data that indicate downward trends in populations or habitat or stable, viable populations or habitat.

INTRODUCTION: Sensitive species are those animal species identified by the Regional Forester for which population viability is a concern, as evidenced by:

- Significant current or predicted downward trends in population numbers or density; and/or
- Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

The Region 1 sensitive species list was last updated in 2011, and the current sensitive wildlife species listed for the Bitterroot NF are bald eagle, bighorn sheep, black-backed woodpecker, Coeur d'Alene salamander, fisher, flammulated owl, gray wolf, long-eared *Myotis*, long-legged *Myotis*, northern bog lemming, northern leopard frog, peregrine falcon, western big-eared bat, and western toad. Northern goshawk was dropped from the list in 2007, while bald eagle was added. Gray wolf was added to the list in 2009 when it was removed from the Endangered Species List. Wolverine was removed from the R1 sensitive species list in 2013 when it was proposed for listing as a threatened species under the Endangered Species Act (ESA).

The management goal for sensitive species is to maintain a viable population of a species throughout its range within the planning area (FSM 2670.5 19,28). The planning area is the Bitterroot NF. The Forest provides special management emphasis to ensure sensitive species viability and to preclude trends toward endangerment that would result in the need for federal listing under ESA. On National Forest projects, our wildlife biologists complete biological evaluations to determine the effects each project will have on sensitive species.

The following is a description of the sensitive species' habitats and recent monitoring and evaluation information.

BALD EAGLE

Bald eagles are usually associated with large rivers, lakes or the ocean coast where fish are readily available as a prey item. During the winter, they are sometimes found in more diverse locations that provide concentrations of other foods such as waterfowl or carrion.

Bald eagles have made a dramatic recovery in Montana and across the country since they were listed as Endangered in 1973. As a result of this recovery, the U.S. Fish and Wildlife Service (FWS) downlisted bald eagles to Threatened in 1995, and removed them from Federal listing as a Threatened species in August 2007. Per Region 1 policy, the bald eagle was automatically added to the Regional Forester’s Sensitive Species List when it was removed from Federal listing.

Monitoring:

Bald eagle nests in the Bitterroot drainage are monitored by a combination of BNF personnel, Lee Metcalf NWR personnel, Montana FWP personnel and a network of citizen scientists coordinated by Kate Stone of the MPG Ranch. Observers discovered a number of new bald eagle nests in the valley from 2010 to 2013. There are now 25 known bald eagle nesting territories in the Bitterroot drainage. In 2013, 20 Bitterroot bald eagle nests were known to be active in the spring. 14 of these nests were known to be successful, producing a total of at least 16 juvenile bald eagles (K. Dubois, pers. comm. 2014), for an average productivity of 0.8 fledglings per active nest. Two active nests failed, and the outcome of four other active nests was unknown. The presence of these nests

indicates that the breeding population of bald eagles in the Bitterroot Valley has increased dramatically in the past five years.

We discovered the first and only known bald eagle nest on Bitterroot NF lands near Lake Como in April 2003. This nest was successful every year from then until 2010, when it apparently failed. The Lake Como nest fledged at least two young in 2011, appeared to be inactive in 2012, and fledged at least one young in 2013. Two nests in the Painted Rocks Lake territory (the second discovered in 2007) are on private land but are very close to the BNF boundary. The second Painted Rocks Lake nest fledged one young in 2010, failed in 2011, was not monitored in 2012 and fledged one young in 2013.

The Bitterroot drainage also provides fall, winter, and spring habitat for bald eagles. The Hamilton and Stevensville Christmas Bird Counts indicate that the number of bald eagles wintering in the Bitterroot Valley is large and stable or increasing. Wintering eagles can be found throughout the Bitterroot Valley, especially in areas near the Bitterroot River and in areas where road-killed deer are common. Wintering bald eagles usually leave the area in February and March for northern breeding grounds. Bald eagles use Painted Rocks Lake and the East and West Forks of the Bitterroot River during migrations.

Evaluation:

The breeding population of bald eagles in the Bitterroot valley has increased dramatically since the late 1990s, when the only known active nests were one on the Schroeder Ranch east of Florence and another on the Lee Metcalf National Wildlife Refuge. Active bald eagle nests are now distributed along the entire length of the Bitterroot River. The valley's bald eagle population swells during the winter when migrants join the resident birds, and the species is now a fairly common year-round resident in the Bitterroot valley. The biggest threat to the local breeding population appears to be residential development on private lands along the Bitterroot River.

There were only 12 known nesting pairs of bald eagles in Montana in 1973. The number of eagle territories rose slightly through the 1980s, but has increased steadily since then. By 2010 (the latest year for which the state-wide summary is available), there were at least 557 identified bald eagle territories across Montana. 389 of these territories were monitored in 2010, and 347 of those were considered active. At least 233 of the active nests were successful, while 53 were unsuccessful and 68 had unknown outcomes. The nesting success rate for the 286 known fate active nests was 81.5%. The successful nests fledged a minimum of 332 young eagles, which gives a mean brood size of 1.42 fledglings per successful nest. When extrapolated to the nests with unknown outcomes, this mean brood size results in an estimate of 402 eagles fledged from known active nests in Montana in 2010 (MFWP 2012). Comparing fledgling numbers between years may be difficult due to the variation in monitoring effort. However, the nesting success rate for known fate active nests and mean brood size should be comparable regardless of monitoring effort. The nesting success rate of known fate nests increased from 77.5% to 81.5% from 2009 to 2010, while the mean number of eaglets fledged per successful nest decreased slightly from 1.77 to 1.42.

MDFWP classifies the bald eagle as a Montana Special Status Species. The Montana Natural Heritage Program and MDFWP rank the bald eagle as a G5 S4 species (MDFWP 2014). This means that across its range the species is considered common, widespread and abundant (although it may be rare in parts of its range). It is not vulnerable in most of its range. In Montana, the species is considered to be apparently secure, though they may be quite rare in parts of their range, and/or suspected to be declining.

BIGHORN SHEEP

Bighorn sheep occur in a variety of habitats, but rough, rocky terrain with steep cliffs in association with meadows or grasslands are required habitat components of both summer and winter range. Although not as agile climbers as the mountain goat, sheep still depend on cliffs and steep hillsides for escape terrain to avoid predators. Bighorns can eat a much broader range of foods and can live in more arid conditions than mountain goats (Foresman 2001).

Bighorn sheep are susceptible to several lung diseases that cause pneumonia-like symptoms and often result in very high mortality rates among infected herds. These disease outbreaks are frequently thought to result from direct contact between bighorn sheep and domestic sheep or goats. There have not been any active sheep allotments on the Bitterroot National Forest for many years, which limits the risk of contact between wild and domestic sheep. However, there are some domestic sheep herds and small bands of sheep and goats on ranches and hobby farms on private land relatively near the Forest boundary in some areas. Bighorn rams have been documented visiting domestic sheep on some of these private operations on occasion, and could potentially transmit diseases from the domestic sheep to wild sheep herds on the Forest.

The distribution of bighorn sheep on the Bitterroot National Forest is currently more limited than any other big-game species, and much apparently suitable habitat on the Forest is unoccupied. As with many big-game

species, winter habitat is more limited than summer habitat. Ewes, lambs, and young rams often occupy winter ranges on the Bitterroot National Forest year-round, while mature rams are prone to migrate considerable distances to summer ranges at higher elevations. Montana Fish, Wildlife & Parks' bighorn sheep distribution maps (available from the Stevensville District Wildlife Biologist) indicate that there are about 282,935 acres of occupied bighorn sheep habitat on the Bitterroot National Forest, of which about 45,009 acres is classified as sheep winter range.

.**Monitoring and Evaluation:**

There are currently three distinct bighorn sheep herds on the Bitterroot National Forest. While these herds seem relatively isolated based on their distribution, DeCesare and Pletscher (2006) suggest that distinct populations of bighorn sheep may be more connected than previously known due to the propensity of rams (especially) to travel relatively long distances. Although the majority of documented long distance movements were not during the breeding season, such movements suggest that bighorn sheep may be able to maintain genetic connectivity among sub-populations separated by distances greater than 30 kilometers (*Ibid*).

The East Fork herd occupies historic sheep habitat, but is the result of a reintroduction of 35 sheep in 1972 (MDFWP 2010). The population had grown to 200 to 250 animals by 2008 (*Ibid*), but was reduced to 85-100 sheep by a pneumonia-like disease (and culling of symptomatic sheep by FWP) during the winter of 2009-10. This herd winters in two areas: the steep southwest-facing slopes between Sula Peak and Robbins Gulch and on the steep, open slopes from west of Bunch Gulch to those east of Jennings Camp Creek. Most ewes, lambs and young rams stay on or near these winter ranges year-round, but mature rams and a few ewe/lamb bands migrate to and summer in the vicinity of the Chain of Lakes in the Sapphire WSA (*Ibid*).

The West Fork herd consists of two largely separate groups. A winter survey in 2006 counted about 120 sheep in the Montana portion of this herd's territory (MDFWP 2010). The Painted Rocks group is a result of reintroductions in 1990, 1991, and 2004. This group winters mostly on rocky, south-facing bunchgrass slopes north of Painted Rocks Reservoir (*Ibid*). This group tends to stay fairly close to their winter range all year, although some rams migrate to locations in the northern Allan Mountain IRA such as Piquett Mountain and upper Warm Springs Creek during the summer. The Watchtower group is the only fully native bighorn population left in the Bitterroot Valley. Most of this group winters along the Selway River in Idaho, although a few move to the limited winter ranges on lower elevations in Sheephead and Watchtower Creeks (FWP 2010). Summer ranges for the Watchtower bighorns occur near the upper elevations of Watchtower and Sheephead Creeks and along the Montana-Idaho divide toward Nez Perce Pass. Some are found as far east as Little West Fork Creek (*Ibid*). Almost 90 percent of the occupied sheep habitat for this group is in the Selway-Bitterroot Wilderness (*Ibid*). There is some evidence of limited mixing between the Watchtower and Painted Rocks groups (*Ibid*). There is no evidence that either of the groups in this herd has been affected by pneumonia.

The Skalkaho drainage is historic sheep habitat, but sheep had not occupied the area in the recent past until 1973, one year after a reintroduction in the East Fork Bitterroot River (MDFWP 2010). The Skalkaho herd grew to about 36 sheep in 1999, and was supplemented with 27 animals from the Sun River herd in 2000. There are currently about 130 sheep in the Skalkaho herd (*Ibid*). This group winters mostly in the steep, open cliffy areas between Newton Gulch and Tenderfoot Gulch, and in similar country in the Sleeping Child drainage between Twomile Creek and private land near Brookins Gulch. Ewe/lamb groups tend to stay in or near these areas year-round, while ram groups summer higher in the main drainages in open areas near Gird Point, Railroad Creek, Skalkaho Mountain, and as far away as Burnt Fork Lake (*Ibid*). Montana Fish, Wildlife & Parks personnel removed several of the sheep in this herd that exhibited pneumonia-like symptoms in the summer of 2010, but none of these sheep tested positive for the bacteria that usually cause pneumonia. The cause of the symptoms was not identified, but so far the herd has not been affected by a wide-spread pneumonia outbreak or an obvious decline in numbers

The Montana Natural Heritage Program and FWP rank the bighorn sheep as a G4 S4 species (MDFWP 2014). This means that across its range and in Montana, the species is considered apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining. The present distribution and status of bighorn sheep in Montana is due to improved range conditions, reduced competition for forage from livestock and other wildlife, reductions in the number of sheep grazing permits on public land, reductions in the number of domestic sheep and goat herds, regulated hunting, and transplanting of bighorns to reintroduce or augment herds (MFWP 2010). By 2008, there were 45 different populations in the state, with an estimated total of 5,694 bighorn sheep (*Ibid*).

BLACK-BACKED WOODPECKER

Black-backed woodpeckers' preference for recently burned forest has led to its listing as sensitive. Most research on black-backed woodpeckers indicates that they are dependent upon fires, particularly in the Northern Rockies (Hutto 1995, Caton 1996, Hitchcock 1996, Murphy and Lehnhausen 1998, Saab and Dudley 1998, Hejl et al. 2000). Post-burn area studies in Oregon, Montana, Idaho, and South Dakota consistently report that wood-boring beetles that occur in abundance (2 to 8 years) following a fire are an important food source for the woodpecker. Hutto (1995) stated the black-backed woodpecker appears nearly restricted to post-burns, and Murphy and Lehnhausen (1998) postulated that local populations increase in number in post-burned areas and decrease in unburned areas. Preferred nesting habitat is characterized by high snag densities (Hejl et al. 2000).

Black-backed woodpeckers however, are also found in unburned forests and in areas of insect outbreaks (Bock and Lynch 1970, Apfelbaum and Haney 1981, Harris 1982, Goggans et al. 1988), but they likely occur at lower densities and viability may not be maintained over time without sufficient post-fire habitat. For example, home ranges for black-backed woodpeckers in beetle-killed forests were estimated to be 1,000 acres, compared to an estimated territory size of 56 acres/pair in post fire habitat (Powell 2000). Some studies indicate that black-backed woodpeckers forage primarily on wood-borers, which may explain this difference in suitability between beetle outbreaks and post-fire habitat. Wood borers are much less abundant than bark beetles in areas of bark beetle outbreaks (Powell 2000). However, insect outbreak studies (without fire) suggest the species is attracted to other insects such as bark beetles when these insects provide an abundant prey base (summarized in Samson 2006). Arnett et al. (1997a and 1997b) found similar densities of black-backed woodpeckers in mountain pine beetle killed areas, as in post-burns, further suggesting the species is not “restricted” to post-burns. Hoyt and Hannon (2002) noted that few studies have considered all habitats in proportion to availability nor considered the difficulty in comparing bird densities observed in open post-fire habitats versus bird densities observed in closed canopy and structurally complex, live forests.

Monitoring:

The Avian Science Center at UM coordinated a four-year study of black-backed woodpecker occurrence within 17 fires that burned in 2003. These fires were scattered across western Montana, and included the Big Creek and Gold 1 fires on the BNF. The results confirmed that black-backed woodpeckers are more restricted to burned forest conditions than any other bird species for which there is sufficient data, at least in western Montana. Further, black-backed woodpeckers are relatively abundant only in high fire severity portions of burns. Intensive salvage harvest soon after a fire appears to have strong negative effects on black-backed woodpeckers, while light salvage appears to have little effect on the species. Finally, burned forests that were harvested fairly intensively (seed tree or shelterwood cuts) within a decade or two prior to the fires were much less suitable as post-fire habitat for black-backed woodpeckers. Even forests that were harvested more selectively within a decade or two prior to fire were less likely to be occupied by black-backed woodpeckers. The species apparently prefers areas that were recently burned with high severity fire where snag densities are high (Hutto 2007).

Forest personnel located six active black-backed woodpecker nests in 2004 as part of the preliminary stage of a University of Montana PhD study looking at the genetics of black-backed woodpeckers. All of these nests were located in areas that burned during 2003.

The Forest established several transects in 2002 to monitor the amount and duration of cavity nester use of forests burned at different intensities in 2000. We found a number of active cavity nests in forests that burned with moderate to severe severity, but few active cavity nests in forests that burned with low severity. We did not document any black-backed woodpecker nests on these transects in 2003 or 2004, but have not run these transects since then.

A research project conducted by scientists at the Rocky Mountain Research Station, Forestry Sciences Lab in Missoula looked at cavity nesting densities of nine species in the Ward Mountain fire (burned in 1994) and the Swet/Warrior Fire (burned in 1996). The BNF harvested portions of the Ward Mountain fire using a salvage prescription in 1995. The Swet/Warrior fire, located within the Selway-Bitterroot Wilderness, was not harvested. The researchers found nesting densities of black-backed woodpeckers were higher in the unharvested area than in the area that had been salvage logged (Hejl et al. 2000).

Evaluation:

Frequent large fires since the mid-1990s indicate that the BNF provides sufficient and well distributed habitat to support the black-backed woodpecker. This conclusion is based on Forest monitoring and the following evaluation of other available information.

Habitat modeling based on Forest Inventory and Analysis data (FIA) estimates that the Bitterroot National Forest contains sufficient post-fire habitat to support between 2898 and 4490 pairs of BBWO (Samson, 2005). At a Forest-wide scale it is estimated that we have 373,615 acres of black backed woodpecker habitat over what is necessary to maintain a minimum viable population (Samson 2005). Another way to say this is that we have an estimated 1,371% of the habitat necessary to maintain a minimum viable population of black-backed woodpeckers on the Forest. Although the portion of this habitat that burned in 2000 may no longer be suitable, fire records show continual recruitment of new post-burn habitat. This habitat is well-distributed across the BNF as a result of the widespread fires in 2000, 2003, 2005 and 2011, plus smaller amounts of fire in other years. Since 1989, the Bitterroot National Forest has averaged over 28,000 acres of new wildfires each year. Excluding the exceptionally large fires of 2000 from the average, the Forest still averaged over 10,000 acres of wildfire (new quality black-backed woodpecker habitat) each year (see the fire section of this report for annual figures). This is in addition to the ongoing bark-beetle epidemic on the Forest (see item 37 – Insect and Disease status).

MDFWP classifies the black-backed woodpecker as a Montana Species of Concern. The Montana Natural Heritage Program and MDFWP rank the black-backed woodpecker as a G5 S3 species (MDFWP 2014). This means that across its range the species is considered common, widespread, and abundant (although it may be rare in parts of its range). It is not vulnerable in most of its range. In Montana, the species is considered potentially at risk because of limited and potentially declining numbers, extent and /or habitat, even though it may be abundant in some areas.

Hillis et al. (2003) reported a 258% increase in habitat (post-fire) for the species in Region One from 2000 to 2003, and Samson (2006) reported that black-backed habitat (post-fire and insect outbreaks) has increased across the Northern Region in the last decade (from 278% on the Kootenai to over 300,000% on the Flathead). Samson (2006) also found that no gap between current post-burn or insect-infested (with no burn) areas occurs that would limit black-backed woodpeckers from interacting Region wide. Information provided in Dixon and Saab (2000) suggests the species is increasing in numbers in the United States.

At this Regional scale, habitat modeling based on FIA data estimates that there is enough suitable post-fire habitat to support at least 3,719 to 6,405 pairs of black-backed woodpeckers (Samson, 2005). Areas of insect outbreaks offer additional potential habitat, and black-backs have been documented using this habitat in Idaho and Oregon. Median dispersal distance for this species is estimated to be about 65 miles, although they are known to travel farther than this during irruptions. This dispersal distance indicates that black-backed woodpeckers across the entire Region belong to a single, well connected population. Although no population estimates are available, the large amount of suitable habitat well distributed across the Region combined with the interconnectedness of the population indicates that short-term viability of black-backed woodpeckers across the Region is not an issue (Samson, 2005).

Furthermore, a recent state-wide insect and disease condition report shows dramatic increases in tree mortality from 2002 to 2005 (USDA-FS 2005c). Across all Federal ownership in Montana, mountain pine beetle mortality was evident on about 172,050 acres of lodgepole pine and 17,434 acres of ponderosa pine in 2002. In 2005, the area affected by mountain pine beetle mortality increased to 577,481 acres of lodgepole pine and 25,244 acres of ponderosa pine (*Ibid*. at 48). Across the same area, Douglas-fir beetle mortality in Douglas-fir stands increased from about 60,112 acres in 2002 to about 168,798 acres in 2005. (*Ibid*. at 46). These areas containing trees recently killed by bark beetles are available as secondary habitat that could support lower numbers of black-backed woodpeckers than recently burned areas.

COEUR D'ALENE SALAMANDER

This small terrestrial salamander is generally found below 5,000 feet in elevation in seeps, spray and splash zones of waterfalls, or cascades along streams and creeks. They use rock fissures or boulder piles covered by moss mats, remaining beneath the moss during the day. The salamanders hibernate from November to April. Removal of overstory vegetation, increases in water temperature, changes in water table and flow, and physical disturbance of talus or rock habitat can affect Coeur d'Alene salamander populations. The southernmost record of this salamander in Montana is in the Chaffin Creek drainage on the east side of the Bitterroot Mountains.

Monitoring and Evaluation:

An amphibian survey crew working under contract for the Regional Office surveyed suitable habitat for this species at numerous sites on the Forest from 2001 to 2004. They found Coeur d'Alene salamanders at five new sites on the Forest: one in the Rock Creek drainage, one in the Little Rock Creek drainage, one in the Chaffin Creek drainage (Maxell 2004), and two along Lake Como (Maxell, pers. comm. 2004). Previous surveys by biologists from the Montana Natural Heritage Program (Montana Natural Heritage Program 1987) and 1988 (Genter et al. 1988) only found Coeur d'Alene salamanders at Sweathouse Falls. Coeur d'Alene salamanders are

very difficult to survey for, and the new locations probably reflect improved survey techniques and increased effort rather than an increase in the species' abundance or distribution. Still, these new locations hint that Coeur d'Alene salamanders may be more widely distributed in the Bitterroot Mountains than previously thought. Forest Plan standards which protect riparian and aquatic habitats continue to provide appropriate protections for the Couer d'Alene salamander and its habitat. There were not any project related impacts to Couer d'Alene salamander habitat on the Forest in 2013. The Gash Creek fire burned some areas upstream of Sweathouse Falls in 2006, potentially increasing sediment loads or affecting water flows or water chemistry at the falls.

MDFWP classifies the Coeur d'Alene salamander as a Montana Species of Concern. The Montana Natural Heritage Program and MDFWP rank the Coeur d'Alene salamander as a G4 S2 species (MDFWP 2014). Range wide, this means that the species is considered uncommon, but not rare (although it may be rare in parts of its range), and usually widespread. On the state scale, the species is at risk because of very limited and potentially declining numbers, extent and/or habitat, making it vulnerable to extirpation in the state.

FISHER

The home range of fishers varies in size from 4 to 32 square miles, wherein optimum habitat is thought to include mature, moist coniferous forest with a woody debris component, particularly in riparian/forest ecotones in low- to mid-elevation areas that do not accumulate large amounts of snow (Jones 1991, Heinemeyer 1993, Ruggiero et al. 1994). A review of fisher research suggests that the species uses a diversity of tree age and size class distributions at the patch or stand level that provide sufficient (generally greater than 40%) overhead cover (either tree or shrub).

Fishers use lower elevations than pine marten (i.e. are restricted to areas of lower snow accumulation compared with marten) and are better adapted to earlier successional stages of forests than marten (Banci 1989, Jones 1991). However, the studies conducted in this region have concluded that fishers use late successional forest more frequently than the early to mid-successional forests that result from timber harvest (Aubry and Houston 1992; Buck et al. 1994; Rosenberg and Raphael 1986). Similarly, fishers in the Rocky Mountain study preferred late-successional forests with complex physical structure, especially during the summer (Jones and Garton 1994). Fisher seem to avoid non-forest and pole/sapling stands, and spend little time in ponderosa pine stands. They show a strong affinity for forested riparian habitats throughout the year (Jones 1991).

Documented den sites have occurred in cavities of live or dead trees in forested areas with some structural diversity (forb/shrub cover, downed wood, multiple forest canopy layers) that maintain a prey base of snowshoe hare, porcupine, and a variety of small mammals (Ruggiero et al. 1994). Almost all known natal dens for fishers (where parturition occurs) and maternal dens (other dens where kits are raised) have been discovered in Eastern North America (Arthur 1987; Paragi 1990). Of these, the vast majority were located high in cavities in living or dead trees. This strongly suggests that female fishers are highly selective of habitat for natal and maternal den sites. Information is available for only two natal dens (California, Buck et al. 1983; Montana, Roy 1991) and one maternal den (California, Schmidt et al. 1993, unpubl.) in the western United States. The den found in Montana was in a hollow log 11m long with a convoluted cavity averaging 30 cm in diameter. Female fishers will use 1-3 dens per litter. (Paragi 1990). Riparian stringers of late successional stage vegetation provide important connectors. Fishers use forested riparian areas extensively for foraging, resting, and as travel corridors (Claar et al. 1999; Witmer et al. 1998, p. 15).

Research and Monitoring:

The Forest implemented a new forest carnivore survey methodology in the winter of 2012-2013. Parts of road-killed deer are hung in trees to attract forest carnivores. Motion-activated cameras aimed at the bait tree capture photos of animals that climb the tree, and gun cleaning brushes situated around the bole of the bait tree collect hair samples. In the winter of 2012-2013 this methodology identified fishers in Wapiti Creek and Lost Elk Creek in the Selway River drainage.

The Forest participated in a Regional pilot study designed to determine fisher presence within 25 square mile grid cells in 2007, 2008, 2009, 2010 and 2012. The survey methodology is based on baited hair snares that are left in suitable fisher habitat for three weeks. Hairs collected from animals that attempt to reach the bait are then sent to the Genetics Lab at the Rocky Mountain Research Station facility on the University of Montana campus for identification. Surveys performed by Forest personnel in 2012 sampled fisher habitat in Deep Creek (Selway River drainage), several tributaries entering Nez Perce Creek from the north, Mine Creek, Willow Creek and Butterfly Creek. A fisher was detected in Deep Creek, but none were detected in the other areas. Surveys in 2010 sampled fisher habitat in several tributaries of Nez Perce Creek and in several tributaries entering both sides of the East Fork Bitterroot River near the end of the East Fork Road. No fishers were detected. Surveys in 2009 sampled several tributaries on both sides of the West Fork Bitterroot River. No fishers were detected. However,

the Region also contracted with FWP to conduct fisher surveys using this methodology in 2009. Montana Fish, Wildlife & Parks' surveys identified two fishers in the Lost Horse drainage in 2009. In 2008, this survey methodology identified one fisher in Trapper Creek, one fisher in Bear Creek, and one fisher in a tributary of Nez Perce Creek. No fishers were detected in Lost Horse Creek, Roaring Lion Creek, upper Skalkaho Creek, or Woods Creek. In 2007, one fisher was detected in the Burnt Fork drainage, but no fishers were detected in Willow Creek, Daly Creek, Sleeping Child Creek, Moose Creek, Meadow Creek, Mine Creek, Coal Creek, or Soda Springs Creek.

The Montana Natural Heritage Program maintains a database of species observations (Montana Natural Heritage Tracker). A query of the database (see Stevensville District Wildlife Biologist for data) located 101 records of fisher observations totaling at least 102 fisher sightings in Ravalli County from 1965 through 2014. These observations can be categorized as either verified or anecdotal. Verified observations or records are those that scientifically document a fisher by identifying physical remains (usually from trapping), live-captured animals, or DNA samples. The verified fisher records resulting from DNA collected by the BNF's monitoring efforts described previously are not included in the Tracker database.

Anecdotal observations are generally tracks and reported sightings where physical evidence is lacking. Table 1 summarizes the fisher observations from the Montana Natural Heritage Tracker database by year and category. In total, there are 62 verified (physical remains from trapping) fisher observations reported from Ravalli County from 1965 to 2014. Trapping locations are open to question since they are reported by the trappers, who may have an interest in concealing areas where they have been successful. The coordinates reported for11 of the fisher harvest locations listed for Ravalli County in the Tracker database are actually not in Ravalli County, and are therefore shown in Table 1 as "Unknown". There are a total of 40 anecdotal records (no physical evidence) from Ravalli County from 1965 to 2014. The location coordinates recorded in the Tracker database indicates that all of these observations actually occurred in Ravalli County. Anecdotal sightings may include repeat sightings of the same individual.

Table 1 - Summary of Fisher Observations in Ravalli County from the Natural Heritage Tracker database, by year and category

Mountain Range	Verified Observations	Anecdotal Observations
Bitterroot Mountains	2011 (2), 2010, 2009 (2), 2008, 2007 (3), 2006 (3), 2005 (3), 2003, 2001, 2000 (2), 1999, 1995, 1994, 1989 (2), 1988 (2), 1987 (3), 1986 (2), 1985, 1984 (2), 1981, 1978	2014, 2013, 2011, 2004 (2), 1998, 1996, 1995 (2), 1994, 1990 (2), 1989 (2), 1988 (2), 1987, 1986 (2), 1985, 1984 (6), 1978 (5), 1977 (2)
Sapphire Mountains	2006, 1995, 1990, 1988, 1986, 1985 (2), 1984, 1965	1994, 1986, 1985 (2), 1984 (2)
"Triangle" Area	2011, 2010, 2005, 1986 (2), 1985	
Unknown	2007, 2006, 2004 (2), 2002, 2001, 2000 (2), 1997, 1989, 1985	
Total	N = 62	N = 40

The Montana Department of Fish, Wildlife and Parks (FWP) regulates trapping in Montana and requires trappers to present all pelts of bobcats, otter, marten, fisher, wolverine and swift fox to FWP personnel for pelt tagging. FWP records dates, locations and numbers of these harvested animals and keeps official records of these harvested species. FWP trapping records for Ravalli County show that 63 fishers were harvested by trappers between 1975 and 2010, although the listed coordinates place 9 of those records outside of Ravalli County. Based on these figures, trappers harvested an average of about 1.8 fishers per year from Ravalli County between 1975 and 2010, mostly from the Bitterroot Mountains. Montana Natural Heritage Tracker data for this same time period shows 59 fishers harvested from Ravalli County, although the listed coordinates place 11 of those records outside of Ravalli County.

The BNF has records of several other fisher sightings that don't appear in the Tracker database. A BNF wilderness ranger spotted a fisher near Nez Perce Creek in 2009. A wildlife biologist spotted a fisher while hiking in the Larry Creek area in 2006. Dr. Kerry Foresman from the University of Montana detected fishers in the Big

Creek and Bear Creek drainages during a study in the winter of 1994-1995. He feels most of the Bitterroot canyons support fisher populations.

Evaluation:

Based on the above research, monitoring, and the following evaluation of other available information, it appears suitable fisher habitat is well distributed within capable ecotypes across the Bitterroot National Forest and, although uncommon by nature, the species is using that habitat. Fisher habitat and fisher sightings appear to be more common in the Bitterroot Mountains than in the Sapphire Mountains.

MDFWP classifies the fisher as a Montana Species of Concern. The Montana Natural Heritage Program and MDFWP rank fisher as a G5 S3 species (MDFWP 2014). This means that across its range the species is considered common, widespread, and abundant (although it may be rare in parts of its range). It is not vulnerable in most of its range. In Montana, the species is considered potentially at risk because of limited and potentially declining numbers, extent and /or habitat, even though it may be abundant in some areas.

Witmer et al. (1998, p.14) states that the status of the fisher in the Western United States is poorly known but generally perceived as precarious and declining. Fisher populations in all the other states in the northern Rocky Mountains and Pacific Northwest are considered Imperiled, Critically Imperiled or Possibly Extirpated (MNHP, 2006). Fisher are apparently secure in their core range, which includes the boreal forest zone across Canada.

Fishers were apparently extirpated from Montana by 1930, and there are no records of their occurrence in the state from then until fishers from other areas were released at several sites in the early 1960s (Vinkey, 2003). The Bitterroot Mountains possess the most verified records of fisher in the state both before and after 1989, and appear to be the stronghold of fisher populations in Montana (Vinkey, 2003). This is largely due to a release of 39 fishers from British Columbia in the Idaho side of the Bitterroots in 1962, although genetic investigations indicate that some native fishers may have survived in the Selway-Bitterroot region (Vinkey, 2003). Twelve fishers from British Columbia were released at Moose Lake on the eastern edge of the Sapphire Mountains in 1962, and apparently became established in the Sapphires based on trapping records. However, there have been few verified records of fishers in the Sapphires since 1989, and researchers have been unable to verify the presence of a self-sustaining population in this area (Vinkey, 2003). University of Montana mammalogist Dr. Kerry Foresman considers the Sapphire Mountains to be generally too dry for fishers, and has been unable to locate any on the east side of the Bitterroot Valley (K. Foresman, pers. comm. 2006).

At the Bitterroot National Forest-wide scale, a query of FIA data estimates that we have 95,134 acres of summer habitat and 286,142 acres of winter fisher habitat. This is 95% of the habitat necessary to maintain a minimum viable population of fishers (Samson 2006; Samson 2005). The adjacent Lolo National Forest and Clearwater National Forest have an estimated 149% and 358% of the habitat necessary to maintain a minimum viable population, respectively (Samson, 2005).

Given the large amount of estimated suitable habitat on the Bitterroot National Forest and additional connected habitat on the adjacent Forests (indicated, in part, by the successful expansion and continued presence of re-introduced populations), short term viability of the fisher at this scale does not appear to be concern. For the fisher, managing the landscape within the natural range of composition, structure and frequency and extent of ecological drivers (fire, insects, and wind) may be most effective for long-term fisher persistence (Samson 2006 p. 11).

FLAMMULATED OWL

Flammulated owls evolved in an ecosystem primarily shaped by frequent, low severity fires. Fire suppression has resulted in conversion of many pine forests to shade-tolerant fir forests with high tree densities in smaller diameter classes. Overall “fire suppression may be resulting in sub-optimal habitat for flammulated owls” (Linkhart 2001, page 168). These same stand conditions increase the potential for moderate or severe stand replacing fires. A Bitterroot National Forest assessment after the extensive fires of 2000 found that, “Of the 11 sensitive species on the Forest, flammulated owl habitat was the most severely affected” (USDA Forest Service, 2000b).

Based on current literature, flammulated owls are dependent on mature to old growth ponderosa pine/Douglas-fir forests at lower elevations in the Rocky Mountains. These habitats correspond very closely to habitat type groups 1, 2 and 3 on the BNF. They are found in mature open park-like stands with some understory shrubs and small trees (McCallum 1994). In general, flammulated owls nest in relatively large trees in relatively open areas. They are not typically associated with burned areas or extensive beetle-killed trees, probably due to the lack of physical and biological components needed to support both the owls and the insects they prey on.

Composition of forests within favored areas where flammulated owls foraged repeatedly suggests the importance of old ponderosa pine or ponderosa pine and Douglas-fir in the foraging behavior of the owl. Old ponderosa pine forests (whether pure or mixed with other species) typically form open stands with well-developed grass or shrub understories, as long as frequent fires are allowed to limit invasion of shade-tolerant conifers. These understories support arthropods (insects for food) in a forest layer that is used extensively by fledged owlets and molting adults in late summer (Reynolds and Linkhart, 1992).

The associated prey for flammulated owls in the early spring are primarily noctuid (night flying) moths and in the summer crickets, grasshoppers, moths and beetles (McCallum, 1994). The openness of these stands also provides space for hawking flying insects between crowns and for hover-gleaning them from outer needle bunches (Reynolds and Linkhart 1987).

Reynolds and Linkhart (1992) reported that males sang from hidden positions next to tree trunks or in dense clumps of foliage and that ponderosa pine and Douglas-fir were the only species used as song trees. These trees had a mean age of 289 years. Security cover is provided by regenerating Douglas-fir thickets and large-diameter, veteran trees with heavy branching. These features are utilized by both foraging and roosting owls for cover from predators (van Woudenberg 1999, including extensive internal citations).

Ponderosa pine is an important habitat component of flammulated owls. Ponderosa pine was found by some researchers to be the preferred nest tree (McCallum 1994 IN van Woudenberg 1999). Wright (1996) found that flammulated owl occurrences were correlated with the number of ponderosa pine trees > 15" and live basal area (IN Samson 2005, p. 55).

Flammulated owls depend on woodpeckers to create nesting cavities, usually in large dead trees. Reynolds and Linkhart (1992) state that in reports where forests surrounding nests were described or photographed, all nests were in, or adjacent to, mature or old growth stands (Hanna 1941, Bull and Anderson 1978, Cannings et al. 1978, Hasenyager et al. 1979, Cannings 1982, Bloom 1983, Reynolds and Linkhart 1984, 1987, Fix 1986, Goggans 1986, Hayward 1986, Howie and Ritcey 1987, McCallum and Ghelback 1988). However, Hasenyager et al. (1979) and Bloom (1983) reported nests in forests that had been partially cut but contained large, residual trees, and Winter (1974) found the owl in second-growth forests, although they did not report nesting in this age-class (Reynolds and Linkhart 1987).

Flammulated owls appear to be tolerant of humans, and are known to nest close to occupied areas (Hayward and Verner, 1994).

Monitoring:

From 2010 to 2013, BNF personnel and volunteers monitored flammulated owls at a total of 159 calling points, sampling approximately 6,630 acres of habitat. We detected flammulated owls in 2010, 2011 and 2012, but did not detect any in 2013. Comparing these transects with previous years of our own surveys shows a decrease in the number of owls detected per calling station. Based just on these surveys, flammulated owl populations on the BNF appear to be declining over the last few years. BNF surveys are not necessarily comparable with the LBMP surveys described below.

In 2008, the Landbird Monitoring Program conducted a second round of surveys for flammulated owls in those Forests within Region 1 that support flammulated owl populations based on the 2005 surveys (see below). 24 transects were surveyed on the BNF, and many of them were surveyed twice. We detected flammulated owls on about 7.8% of the 245 calling points, on a total of 8 of the transects (Smucker et al. 2008). Most flammulated owl detections were on the southern half of the Forest, similar to the 2005 survey.

In 2005, the Landbird Monitoring Program initiated the first systematic Region-wide survey for flammulated owls. This survey was coordinated through the Avian Science Center at the University of Montana. The Region-wide survey indicated that flammulated owls occur on every National Forest (NF) in the Region with the exception of the Custer, Lewis and Clark and Gallatin NFs. The highest detection rates for flammulated owls were on the Nez Perce, Lolo, Helena and Bitterroot NFs. Locally, we surveyed 30 transects across the Forest, many of which had not been previously surveyed for this species. We detected flammulated owls on about 15% of the 279 calling points, on a total of 14 of the transects (Cilimburg 2006). Most flammulated owl detections were on the southern half of the Forest, similar to a mid-1990s study (Wright, 1996).

A graduate student from the University of Montana surveyed much of the suitable habitat on the Bitterroot NF for flammulated owls in 1994 and 1995 (Wright 1996). She found concentrations of this species in several locations on the Darby and Sula Districts. The Forest has continued to monitor some of the routes where Wright found owls in the mid-1990s. The number of flammulated owl detections on unburned transects remained fairly consistent from 2000 to 2004, but seems to have declined somewhat since then. High and mixed severity fires

burned through several of the areas known to support concentrations of flammulated owls on the Bitterroot NF in August 2000. We monitored several of the previously established transects through these areas in 2001, and detected about half the number of flammulated owls that were found before the fires. Flammulated owl detections on burned transects have continued to decline, and we found very few owls in severely burned areas in 2004. Our 2008 surveys detected very few owls in burned areas except where some unburned patches of trees occurred. We will continue to monitor established transects to determine changes in owl use.

Evaluation:

MDFWP classifies the flammulated owl as a Montana Species of Concern. The Montana Natural Heritage Program and MDFWP classify the flammulated owl as a G4 S3B species (MDFWP 2014). This means that at the global scale, the species is considered to be uncommon but not rare (although it may be rare in parts of its range), and usually widespread. It is apparently not vulnerable in most of its range, but there is possibly cause for long-term concern. At the state scale, the breeding population is considered to be potentially at risk because of limited and potentially declining numbers, extent and/or habitat, even though it may be abundant in some areas.

The flammulated owl is perhaps the most common raptor of the montane pine forests of the western United States and Mexico (McCallum 1994). The BNF is near the northeast edge of the known range of this species. As of 1998, flammulated owls were considered to have a widespread presence in Missoula and Ravalli counties, (Wright 1996 and http://nhp.nris.state.mt.us/mbd/).

Regional surveys in 2005 and 2008 showed that flammulated owls are well-distributed in suitable habitat on the southern half of the Forest, which was heavily sampled. They were only detected on a few transects on the north half of the Forest, but this area was not heavily sampled (Smucker et al. 2008, Cilimburg 2006). Wright (1996) found a similar distribution pattern for flammulated owls on the BNF during field work for her Master's thesis in 1994 and 1995. The Region 1 Wildlife Ecologist has looked at viability for this species and has determined that habitat is well distributed and abundant for the flammulated owl in the Northern Region, and that short-term viability of the species in the Northern Region is not an issue (Samson 2005).

Bitterroot National Forest-wide, habitat modeling based on FIA data estimates that the Forest contains 11,144 acres of flammulated owl habitat more than what is estimated to be necessary to maintain a minimum viable population (Samson 2006; Samson 2005). Another way to say this is that we have an estimated 337% of the habitat necessary to maintain a minimum viable population of flammulated owls on the Forest.

Based on our evaluation of available research, monitoring, and the above information, it appears flammulated owl habitat is adequately distributed within capable ecotypes across the Bitterroot National Forest and sufficient to support the species. The extensive fires of 2000 disproportionately reduced the amount and distribution of flammulated owl habitat within the burned portion of the Forest, and the literature indicates the successional trends resulting from fire suppression within the habitats used by the owl may be further reducing the quality of the remaining habitat. Therefore the Forest's policy since the 2000 fires has been to maintain these remaining habitats and, where appropriate, design management treatments that increase the longevity of the habitat by reducing the risk of moderate-to-severe fires, reducing competition for water and nutrients, and increasing stands' resistance to insect and diseases.

GRAY WOLF

The reporting period for grey wolves in this monitoring item is calendar year 2013, rather than Fiscal Year 2013. This is because the Rocky Mountain Wolf Recovery Report (USFWS et al. 2014) that contains all the wolf population data used in this monitoring item is based on the calendar year, and wolf population numbers are as of December 31, 2013, which of course is technically in FY 2014.

USFWS removed gray wolves in Montana and Idaho from Federal listing for the second time on May 4, 2009, and the Montana Department of Fish, Wildlife and Parks and Idaho Department of Fish and Game conducted the first legal wolf hunting seasons in Montana and Idaho during the fall and early winter of 2009. For the remainder of FY 2009, wolves were classified as a Sensitive wildlife species on National Forests throughout Forest Service Region 1 (Montana, northern Idaho, and North Dakota).

On October 26, 2010, USFWS issued a final rule to comply with a court order that had the effect of reinstating regulatory protections under the ESA for gray wolves in most of the northern Rocky Mountains. Pursuant to the District of Montana court order of August 5, 2010, this rule corrected gray wolf listing for the northern half of Montana, the Idaho panhandle and other areas as endangered, and reinstated the former 10(j) special rules designating gray wolves in the remainder of Montana and Idaho (including the BNF) as nonessential experimental populations. No legal wolf hunting season was conducted in Montana or Idaho in the fall of 2010.

On April 15, 2011, the 2011 Appropriations Act that was signed by the President included the following language: "Before the end of the 60-day period beginning on the date of enactment of this division, the Secretary of the Interior shall reissue the final rule published on April 2, 2009 (74 Fed. Reg. 15123 et seq) without regard to any other provision of statute or regulation that applies to issuance of such rule. Such reissuance (including this section) shall not be subject to judicial review and shall not abrogate or otherwise have any effect on the Order and Judgment issued by the United States District Court for the District of Wyoming in Case Numbers 09-CV-118J and 09-CV-138J on November 18, 2010."

As a result of this legislation, USFWS reissued the 2009 wolf delisting rule on May 5, 2011. Wolves in Montana and Idaho are no longer listed as Endangered, and wolf management has been returned to the state wildlife management agencies. According to the provisions of the 2011 Appropriations Act, this reissuance is not subject to judicial review. Wolves were automatically added to the Regional Forester's Sensitive species list at the time they were delisted.

Monitoring:

Wolf monitoring efforts conducted by the Montana Department of Fish, Wildlife and Parks, the Idaho Department of Fish and Game, and the Nez Perce Tribe documented a total of 113 wolf packs in the Central Idaho Recovery Area (CIRA) that includes the BNF at the end of 2013, an increase of 11 packs over the total in 2009 (USFWS et al. 2014). 87 of these packs were in the Idaho portion of the CIRA, and 26 were in the Montana portion of the CIRA. Estimated wolf numbers within the CIRA decreased from about 913 in 2009 to 673 in 2013. This decrease in estimated numbers was likely due to increased wolf mortality from legal wolf hunting and trapping in Montana and Idaho, combined with a lack of information caused by a reduction in the intensity of wolf monitoring efforts. This population data indicates that wolves occupy a similar amount of habitat as in 2009, but that the average known pack size has declined. Reproduction was confirmed in 57 packs within the CIRA, 23 of which met the recovery standards for a breeding pair. These packs produced a minimum of 136 pups in Idaho in 2013. There was no estimate of the number of pups produced in Montana. 404 wolves were confirmed to have died in 2013 within the CIRA, including at least 399 due to human-related causes. 282 of the human-caused mortalities were legal harvest during wolf hunting and trapping seasons

Sixteen wolf packs were known or suspected to use portions of the Forest in 2013, 13 in Montana and 3 in Idaho. Three new wolf packs (Ambrose, Burnt Fork and Overwhich) were documented using the Montana portion of the Forest in 2013, while two Montana packs extant in 2012 were thought to have been removed through legal harvest in 2013 (Painted Rocks and Shook Mountain).

Table 1 summarizes known information on the number of individuals in each pack, as well as the number of known wolf mortalities from any cause and the number of livestock or domestic animals confirmed killed by each pack as of 12/31/2013 (USFWS et al. 2014).

Table 2 – Status of Known Wolf Packs on the Bitterroot National Forest as of 12/31/13

Pack Name	State	Estimated Pack Size	Reproduction Confirmed	Met Breeding Pair Criteria	Known Wolf Mortalities	Confirmed Depredations
Alta	MT	3	N	N		
Ambrose	MT	3	N	N	5	
Burnt Fork	MT	3	Y	N	1	
Divide Creek	MT	4	Y	Y	3	
Gash Creek	MT	4	Y	N		
Gird Point	MT	8	N	N	2	
Hughes Creek	ID	7	Y	Y	1	
Indian Creek	ID	?	Y	N	1	
One Horse	MT	11	Y	Y	1	1 cow
Overwhich	MT	4	N	N		
Selway	ID	6	Y	N	1	
Sula	MT	4	Y	N	2	
Teepee Point	MT	6	Y	Y		
Trail Creek	MT	2	Y	N	1	2 cows
Trapper Peak	MT	3	Y	N	1	
Watchtower Creek	MT	2	N	N		
MINIMUM TOTALS		**70**	**11**	**4**	**19**	**3**

FWP receives numerous reports of wolf sightings outside the territories of the known packs each year, and it is possible that other packs exist on the Forest. Transient wolves pass through the BNF on a regular basis.

Evaluation:

The number of known packs using portions of the BNF increased from 15 to 16 between 2009 and 2013. The number of known packs using the Montana portion of the Forest increased from 10 to 13, while the number of known packs using the Idaho portion of the Forest declined from five to three. There were 56 known wolves using the Montana portion of the Forest at the end of 2009, and 57 at the end of 2013. Average known pack size for these packs declined, from 5.6 wolves per pack in 2009 to 4.4 wolves per pack in 2013. There was insufficient population data available for packs using the Idaho portion of the Forest to establish population trends. There still appear to be some areas on the Forest that are outside the territory boundaries of any known pack, but we do not know whether those areas support unknown packs.

Lack of radio collars in many packs makes territory boundaries uncertain. Generally, the Alta pack uses the upper West Fork drainage and adjacent areas in Idaho. The Ambrose pack is a new pack that uses the area between Eightmile Creek and the Burnt Fork in the Sapphire Mountains. The Burnt Fork pack is a new pack that uses the area between the Burnt Fork and Gird Creek in the Sapphire Mountains. The Divide Creek pack uses the area between Skalkaho Creek and upper Cameron Creek in the Sapphire Mountains. The Gash Creek pack uses the area between Kootenai Creek and Bear Creek in the Bitterroot Mountains. The Gird Point pack uses the area between Gird Creek and Skalkaho Creek and east into the Rock Creek drainage in the Sapphire Mountains. The Hughes Creek pack is an Idaho pack that uses the Allan Mountain IRA on both sides of the state line. The Indian Creek pack is an Idaho pack that uses Indian Creek and adjacent drainages on both sides of the Selway River around Magruder. The One Horse pack uses the area between One Horse Creek and Kootenai Creek in the Bitterroot Mountains. The Overwhich pack is a new pack that uses the area between Overwhich Creek and Hughes Creek in the West Fork drainage. The Selway pack is an Idaho pack that uses the area north of Paradise on both sides of the Selway River. The Sula pack uses the “triangle” area west of Highway 93 between Sula and Lost Trail Pass. The Teepee Point pack uses Martin Creek and adjacent drainages to the north of the East Fork. The Trail Creek pack is believed to use the southwest part of the East Fork drainage including Tolan Creek, as well as the Trail Creek area on the Beaverhead-Deer Lodge NF. The Trapper Peak pack uses the Bitterroot Mountains between Tin Cup Creek and Trapper Creek. The Watchtower pack appears to use the drainages to the north of the Nez Perce Road in Montana, and probably adjacent areas in Idaho mostly north of Hughes Creek.

Wolves were not present on the Forest during much of the past period of management activities. Statewide bounties were placed on gray wolves from 1883 to 1915 with approximately 80,730 wolves killed during that period. Wolves were exterminated from most of Montana with the last known wolf shot in Lincoln in 1961. Wolves were reintroduced into central Idaho in 1995, and populations have increased and expanded their ranges since then. Most wolves on the Bitterroot National Forest are probably descendants of wolves released in central Idaho.

The Montana Natural Heritage Program and MDFWP classify the gray wolf as a G4 S4 species (MDFWP 2014). This means that at the global scale, wolves are considered to be uncommon but not rare (although they may be rare in parts of their range), and usually widespread. They are apparently not vulnerable in most of their range, but there is possibly cause for long-term concern. At the state scale, wolves are considered to be apparently secure, though they may be quite rare in parts of their range, and/or suspected to be declining.

LONG-EARED *MYOTIS*

Long-eared *Myotis* is part of the little brown bat genus that has been detected in the Bitterroot drainage, but little is known about their local abundance or distribution. They occur singly or in small groups in many habitats where suitable roost sites exist. In forested habitats, they are often associated with mature or old growth conditions (Foresman 2012). They roost in buildings, hollow trees, mines, caves or rock fissures. Small maternity colonies have been found in buildings or in rock crevices (*Ibid*). Long-eared *Myotis* forage over water or among trees and shrubs by picking prey from the surface of foliage, bark, rocks or the ground. There is at least one record of this species overwintering in Montana in a mine, but many individuals probably migrate (*Ibid*).

Monitoring and Evaluation:

Long-term bat monitoring stations using automated acoustic monitoring systems were initiated at Sula Canyon and Painted Rocks Reservoir in 2012. Thousands of bat vocalizations were detected and recorded for later analysis and identification. Long-eared *Myotis* were detected in Sula Canyon in June and July 2013 and at Painted Rocks in every month from April through September 2013. A BNF bat survey caught 2 long-eared *Myotis* at each of two sites along Meadow Creek on the Sula Ranger District in 2006. The same survey also used hand-held acoustic bat detectors to positively identify long-eared *Myotis* along the East Fork Bitterroot River near the confluence of Meadow Creek, and along Bush Creek and Balsam Creek. Specimens of long-eared *Myotis* were collected from numerous locations around the Bitterroot Valley in the 1930s through the 1960s.

The Montana Natural Heritage Program and MDFWP rank the long-eared *Myotis* as a G5 S4 species (MDFWP 2014). This means that across its range the species is considered common, widespread, and abundant (although it may be rare in parts of its range). It is not vulnerable in most of its range. In Montana, the species is considered apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining. Foresman (2012) classifies it as locally abundant and widely distributed in Montana.

LONG-LEGGED *MYOTIS*

Long- legged *Myotis* is part of the little brown bat genus that has been detected in the Bitterroot drainage, but little is known about their local abundance or distribution. They occur most often in montane coniferous forests, although they can also be found in riparian cottonwood woodlots (Foresman 2012). Many Montana records come from elevations greater than 6,000' (*Ibid*). This species roosts in abandoned buildings, under bark and in rock crevices. Nursery sites are often located in hollow trees, but buildings and rock crevices are also used (NatureServe 2014). Hibernacula are located in caves or mines. Long-legged *Myotis* feed primarily on moths, although they also consume a variety of other insects. They chase prey for relatively long distances around, through or over the forest canopy, forest clearings or water (*Ibid*). There is at least one record of this species overwintering in Montana in a mine, but many individuals probably migrate (Foresman 2012).

Monitoring and Evaluation:

Long-term bat monitoring stations using automated acoustic monitoring systems were initiated at Sula Canyon and Painted Rocks Reservoir in 2012. Thousands of bat vocalizations were detected and recorded for later analysis and identification. Long-legged *Myotis* were detected in Sula Canyon in June and July 2013, and at Painted Rocks in every month from March through November 2013 A BNF bat survey caught 1 long-legged *Myotis* at one site and 2 long-legged *Myotis* at another site along Meadow Creek on the Sula Ranger District in 2006. The same survey also captured one long-legged *Myotis* along Martin Creek near its confluence with Bush Creek. Specimens of long-legged *Myotis* were collected from numerous locations around the Bitterroot Valley in the 1940s through the 1960s.

The Montana Natural Heritage Program and MDFWP rank the long-legged *Myotis* as a G5 S4 species (MDFWP 2014). This means that across its range the species is considered common, widespread, and abundant (although it may be rare in parts of its range). It is not vulnerable in most of its range. In Montana, the species is considered apparently secure, though it may be quite rare in parts of its range, and/or suspected to be declining. Foresman (2012) classifies it as common and locally abundant in Montana.

NORTHERN BOG LEMMING

Northern bog lemmings (*Synaptomys borealis*) prefer sphagnum bogs as primary habitat, but they also occur in wet meadows and mesic forest environments. Discovery of individuals on the Beaverhead NF, near its boundary with the Bitterroot NF, extended the known range of the species nearly 100 miles to the south. Populations in Canada are extensive, but bog lemmings are difficult to trap and little is known about their population status in the United States.

Monitoring and Evaluation:

The Regional Forester added the northern bog lemming to the Sensitive Species List for the Bitterroot NF in June of 1994. The Forest has not conducted systematic surveys for bog lemmings, but one was trapped in Meadow Creek in the East Fork of the Bitterroot River in June of 1992. Another was trapped near the old growth cedar bottom along Big Creek in 1996. A third was found in the stomach of a garter snake near a bog in the vicinity of Duffy Lake in 2003 during an undergraduate research project on the diet of snakes. The Lost Trail Fen is probably suitable habitat, but we have not completed surveys there. None of the project analyses completed in FY2013 prescribed treatments in potential northern bog lemming habitat. Forest Plan standards that protect riparian and aquatic habitats continue to provide appropriate protections for the northern bog lemming and its habitat.

MDFWP classifies the northern bog lemming as a Montana Species of Concern. The Montana Natural Heritage Program and MDFWP rank the northern bog lemming as a G5 S2 species (MDFWP 2014). Range wide, this means that the species is considered common, widespread, and abundant (although it may be rare in parts of its range). It is not vulnerable in most of its range. On the state scale, the species is at risk because of very limited and potentially declining numbers, extent and/or habitat, making it vulnerable to extirpation in the state.

NORTHERN LEOPARD FROG

Northern leopard frogs inhabit lakes and ponds in non-forested areas that contain dense emergent vegetation such as cattails or sedges. They were formerly widespread in Montana, but they appear to have been extirpated from most of their historic range in western Montana (Hendricks and Reichel 1996). The Regional Forester added this species to the sensitive species list for the Bitterroot NF in March 1999, even though their known habitat requirements make it unlikely they ever occupied many sites on National Forest lands.

Monitoring and Evaluation:

Personnel from the Montana Natural Heritage Program performed amphibian and reptile surveys on the Bitterroot NF in 1995. They did not find any northern leopard frogs in the two valley bottom sites where they were reported in the 1960s (Hendricks and Reichel 1996). An amphibian survey crew working under contract for the Regional Office surveyed almost 200 still-water (lentic) habitats on the Bitterroot NF from 2000 to 2004. Most of these sites were not suitable habitat for leopard frogs and the crew did not find any evidence of leopard frogs in the Bitterroot drainage (Maxell 2004). One of the sites occupied by leopard frogs in the 1960s was filled in for a housing development in 2000 or 2001. It is likely that this species no longer occurs in the Bitterroot drainage, although no thorough survey of lentic habitats on private lands has been conducted (Maxell 2004).

MDFWP classifies the western Montana population of the northern leopard frog as a Montana Species of Concern. The Montana Natural Heritage Program and MDFWP rank the northern leopard frog population in western Montana as a G5 S1 species (MDFWP 2014). This means that across its range the species is considered common, widespread, and abundant (although it may be rare in parts of its range). It is not vulnerable in most of its range. In western Montana, the species is considered at high risk because of extremely limited and/or rapidly declining population numbers, range and/or habitat, making it highly vulnerable to global extinction or extirpation in the state.

Forest Plan standards that protect riparian and aquatic habitats continue to provide appropriate protections for the northern leopard frog and its potential habitat if it still exists on the Forest.

PEREGRINE FALCON (Delisted 1999)

Following their remarkable sustained population recovery across the country, USFWS removed peregrine falcons from the Endangered Species List in August 1999. They were added to the Regional Forester's Sensitive Species List in 2000.

Peregrine falcons occupy a wide variety of habitats, but need adequate cliff ledges or rock outcrops for nesting. Peregrines prefer dominant high open cliff faces. Habitat surveys for the Bitterroot NF identified suitable nesting

sites along the west side of the valley on cliffs in or adjacent to the Selway-Bitterroot Wilderness. USFWS considers peregrines as a migratory species for this area.

The Forest, in partnership with The Peregrine Fund, the Liz Claiborne/Art Ortenberg Foundation and Patagonia, Inc., released (hacked) juvenile peregrine falcons in the Painted Rocks area in 1989, 1990, and 1991. In 1992 birds returned to the area, selecting lands along the river for nesting. We also hacked peregrine falcons in the Canyon Creek drainage in 1992, and in the Little Rock Creek drainage in 1993. We curtailed further hacking on the Bitterroot NF after wild adults harassed the recent fledglings at both these sites, indicating that nearby territories were already occupied. Since we now have a number of established breeding pairs, there is no need to continue reintroduction efforts.

Monitoring:

The Bitterroot NF participates in the statewide peregrine monitoring program coordinated by the Montana Peregrine Institute and the Montana Department of Fish, Wildlife, and Parks. Bitterroot NF personnel and/or volunteers from Bitterroot Audubon monitored all the known eyries on the Forest in 2010 through 2013 to determine productivity. They also inventoried several canyons that contain good habitat in an effort to find new eyries. We found one new eyrie in 2010, one new eyrie in 2012, and another in 2013. As of 2013, we know of 17 canyons in the Bitterroot drainage that have had active peregrine eyries at least once since 1992.

Table 3 summarizes the total number of known eyries, active eyries, known peregrines fledged and the average number of young fledged per active nest since 1992.

Table 3 - Peregrine Falcon Productivity on the Bitterroot National Forest

Year	# of Known Eyries	# of Active Eyries	# Known Young Fledged	# Young/Active Eyrie
1992	1	1	0	0
1993	1	1	0	0
1994	2	1	2	2
1995	2	1	2	2
1996	3	3	4	1.33
1997	3	Unknown	Unknown	Unknown
1998	4	3	4	1.33
1999	5	4	9	2.25
2000	7	7	14	2
2001	11	10	18	1.8
2002	11	9	17	1.89
2003	11	8	13	1.63
2004	11	9	12	1.33
2005	12	11	15	1.36
2006	13	10	21	2.1
2007	14	11	14	1.27
2008	14	11	22	2
2009	14	11	22	2
2010	15	13	31	2.2
2011	15	13	24	1.85
2012	16	14	31	2.21
2013	17	15	33	2.2

15 known eyries were occupied by peregrines in 2013, and produced at least 33 fledged peregrines. This equates to a known productivity of 2.2 fledged peregrines per active eyrie, well above the national average of about 1 per active eyrie. The number of fledged young on the BNF exceeded the previous record by about 6%. We were unable to detect any fledglings at three of our eyries that had appeared active, although some may have been present. The number of young produced indicates the largest number we could positively distinguish at one time, but may be an underestimate of the actual number of young present, so should be considered a minimum count.

Evaluation:

Peregrine falcons were widespread and common raptors across much of North America until the 1950s, but they were one of the species most affected by DDT. Peregrine populations declined precipitously throughout most of the United States, and by the early 1980s not a single peregrine eyrie was known to exist in Montana. Following a ban on DDT and intensive reintroduction efforts across the west and in Montana, peregrine numbers have recovered dramatically. The east face of the Bitterroot Mountains now contains the highest known density of peregrine falcon eyries in Montana. The BNF accounted for about 18% of the 82 known active territories and about 27.3% of the known production of 121 juvenile peregrines in Montana in 2013 (Sumner 2013). Documented peregrine productivity in Montana in 2013 was down about 31% from the 2009 record of 176 young, largely due to reduced survey effort.

Known eyries on the Bitterroot NF are typically located on ledges on tall, vertical cliff faces, and most are within or near the Selway-Bitterroot Wilderness. The Blodgett fire burned near peregrine nest cliffs in Blodgett and Mill Creeks in August of 2000, but juveniles had left those nests at least a month earlier. The Kootenai Creek fire burned near peregrine nesting cliffs in Kootenai Creek in 2009, and there was smoke and helicopter flights in the area while juveniles were at or near the nest. The eyrie still fledged at least three juveniles. There is no indication that the fires negatively affected peregrine occupancy or breeding success at these eyries. In fact, adult peregrines from territories within or near the 2000 fires appear to forage above the burned areas quite frequently.

The Forest has permitted a number of helicopter flights up occupied peregrine canyons to transport equipment and supplies for dam maintenance and repair at several dams in the Selway-Bitterroot Wilderness. Mitigations typically include limiting the helicopter flight path to the side of the canyon furthest from the nesting cliffs. To date, we have seen no indication that these flights have affected peregrine productivity.

Recreational rock climbing has been suspected of disturbing peregrine falcons and other cliff nesting raptors at sites in other parts of the country. We have documented climbing activity near some of our known peregrine eyries. Some of our peregrines have changed the location of their eyrie dramatically since we first started to monitor them. We suspect, but cannot prove, that repeated disturbance by climbers may have caused these shifts in eyrie locations to sites that are less popular for climbing. However, productivity in the canyons where eyrie locations have changed has stayed fairly consistent, indicating that in most cases the peregrines have been able to adapt to the presence of climbers by moving to other sites.

MDFWP classifies the peregrine falcon as a Montana Species of Concern. The Montana Natural Heritage Program and MDFWP rank the peregrine falcon as a G4 S3 species (MDFWP 2014). This means that across its range the species is considered uncommon but not rare (although it may be rare in parts of its range), and usually widespread. It is apparently not vulnerable across most of its range, but there is possibly cause for long term concern. In Montana, the breeding population is considered to be potentially at risk because of limited and potentially declining numbers, extent and/or habitat, even though they may be abundant in some areas.

WESTERN BIG-EARED BAT

The Bitterroot NF is within the range of the western big-eared bat (*Plecotus townsendii*). Hoffman et al. (1969) reported specimens collected northeast of Florence at the Curlew Mine, in Hamilton, and at Lake Como. The bats used a wide variety of vegetation types, from juniper/pine to high elevation mixed conifer forests (Barbour and Davis 1969). Roosting, maternity, and hibernating colonies use caves, abandoned mine tunnels, and occasionally abandoned buildings. Females generally tend the young alone and are most often found associated with a maternity colony. Males are more solitary and may venture farther out into the forest to forage and occasionally roost in cavities or behind loose bark. Caves or mine tunnels are essential to western big-eared bat nursery colonies.

Monitoring and Evaluation:

Long-term bat monitoring stations using automated acoustic monitoring systems were initiated at Sula Canyon and Painted Rocks Reservoir in 2012. Thousands of bat vocalizations were detected and recorded for later analysis and identification. Western big-eared bats were detected in Sula Canyon in June and July 2013, and at Painted Rocks in November 2012 and every month from May through November 2013. Bat surveys using mist

nets and hand-held acoustic bat detectors were conducted at several locations on the southern end of the Forest in 2006. A number of bats were captured and identified, including one big-eared bat near the confluence of Meadow Creek and the East Fork Bitterroot River. A MT FWP biologist recorded the echolocation sounds of a big-eared bat near Woods Cabin on Lake Como in August 2006 during a public presentation about bats. The FWP biologist and a BNF biologist surveyed the same area for bats in August 2007, and detected a number of bat species. They did not detect any big-eared bats. The Forest did not propose any projects near suitable hibernacula or roost sites in 2013.

MDFWP classifies the western big-eared bat as a Montana Species of Concern. The Montana Natural Heritage Program and MDFWP rank the western big-eared bat as a G4 S3 species (MDFWP 2014). This means that across its range the species is considered uncommon but not rare (although it may be rare in parts of its range), and usually widespread. It is apparently not vulnerable across most of its range, but there is possibly cause for long term concern. In Montana, the species is considered potentially at risk because of limited and/or declining numbers, range and/or habitat, even though it may be abundant in some areas.

WESTERN TOAD (aka BOREAL TOAD)

This species is largely terrestrial, but can occur in a variety of habitats from valley bottoms to high elevations. These toads breed in shallow, muddy areas in lakes, ponds, and slow streams. They may lay eggs and reproduce successfully in depressions seasonally filled with water, including wheel ruts on roads. The species seems to be widespread across the Bitterroot NF, although local population trends are unknown.

Monitoring and Evaluation:

There is no formal monitoring program for western toads in place on the Bitterroot NF at this time. Amphibian surveys indicate that they are well distributed across the Forest, but are uncommon to rare (Maxell 2004). Personnel from the Montana Natural Heritage Program performed amphibian and reptile surveys on the Bitterroot NF in 1995. They found western toads at a number of sites across the Forest, and evidence of reproduction was apparent at several sites (Hendricks and Reichel 1996). An amphibian survey crew working under contract for the Regional Office surveyed many of the ponds and lakes on the Forest from 2000 to 2004 to document evidence of amphibian breeding. They only found evidence of western toad reproduction at about 3% of the suitable sites surveyed, which is similar to the percentage they found throughout western Montana (Maxell 2004). The Forest did not have any projects within breeding habitats of western toads in 2010. This species has undergone severe population declines in many portions of its range, so the low reproductive success documented in western Montana is a concern.

MDFWP classifies the western toad as a Montana Species of Concern. The Montana Natural Heritage Program and MDFWP rank the western toad as a G4 S2 species (MDFWP 2014). Range wide, this means that the species is considered uncommon, but not rare (although it may be rare in parts of its range), and usually widespread. On the state scale, the species is at risk because of very limited and potentially declining numbers, extent and/or habitat, making it vulnerable to extirpation in the state.

REFERENCES:

Apfelbaum, S. and A. Haney. 1981. Bird populations before and after wildfire in a Great Lakes pine forest. Condor 83:347-354.

Arnett, E.B., B. Altman, and W.P. Erickson. 1997a. Relationships between salvage logging and forest avifauna in lodgepole pine forests of the central Oregon Pumice Zone. Unpubl. 1996 annual report to the Weyerhaeuser Co., Springfield, OR

Arnett, E.B., B. Altman, and W.P. Erickson. 1997b. Effects of salvage logging on neotropical migratory landbirds in lodgepole pine forests of central Oregon: 1997 preliminary results. Unpubl. report to the Weyerhaeuser Co., Springfield, OR

Arthur, S.M. 1987. Ecology of fishers in south-central Maine. Orono, ME: University of Maine. Ph.D. dissertation. 112 pp

Aubry, K.B and D.B. Houston. 1992. Distribution and status of the fisher in Washington. Northwestern Naturalist 73: 69-79.

Banci, V. 1989. A fisher management strategy for British Columbia. Victoria, British Columbia: British Columbia Ministry of the Environment, Lands and Parks, Wildlife Branch. Wildlife Bulletin No. B-63

Barbour, R.W. and W.H. Davis. 1969. Bats of America. University of Kentucky Press, Lexington, KY. 286 pp.

Bloom, P.H. 1983. Notes on the distribution and biology of the flammulated owl. Western Birds 14:49-52.

Bock, C.E. and J.F. Lynch. 1970. Breeding bird populations of burned and unburned conifer forest in Sierra, NV. Condor 72:182-189.

Buck, S., Mullis, C., Mossman, A. 1983. Final report: Corral Bottom-Hayfork Bally fisher study. [Unpublished report]: U.S. Dept. of Agriculture. In cooperation with: Arcata, CA: Humboldt State University

Buck, S., Mullis, C., Mossman, A. 1994. Habitat use by fishers in adjoining heavily and lightly harvested forest. Pp. 368-376 In: Buskirk, S.W., Harestad, A., Raphael, M., comps. Eds. Martens, sables and fishers: biology and conservation. Ithaca, NY: Cornell University Press.

Bull, E.L. and Anderson, R.G. 1978. Notes on flammulated owls in Northeastern Oregon. The Murrelet 59:26-27.

Cannings, R.J. 1982. A flammulated owl nests in a nest box. Murrelet 63:66-68.

Cannings, R.J., Cannings, S.R., Cannings, J.M., Sirk, G.P. 1978. Successful breeding of the flammulated owl in British Columbia. Murrelet 59:74-75.

Caton, EL. 1996. Effects of fire and salvage logging on the cavity-nesting bird community in NW Montana. Dissertation, University of MT, Missoula.

Cilimburg, A. 2006. 2005 flammulated owl surveys: final report. Avian Science Center, University of Montana. Missoula, MT Available on the Internet at http://avianscience.dbs.umt.edu/research_landbird_flam.htm

Claar, J.J., N. Anderson, D. Boud, M. Cherry, B. Conard, R. Hompesch, S. Miller, G. Olson, H. Ihsle Pac, J. Waller, T. Wittinger, H. Youmans. 1999. Carnivores. Pages 7.1-7.63 in Joslin, G. and H. Youmans, coordinators. Effects of recreation on Rocky Mountain Wildlife: A review for Montana. Committee on Effects of Recreation on Wildlife. Montana Chapter of the Wildlife Society.

DeCesare, N.J. and D.H. Pletscher. 2006. Movements, connectivity and resource selection by Rocky Mountain bighorn sheep. Journal of Mammalogy 87(3):531-538. [1337])

Dixon, R.D. and V.A. Saab. 2000. Black-backed woodpecker (Picoides arcticus) In: The birds of North America, No. 509 (A. Poole and F. Gill, eds). The Birds of North America, Inc. Philadelphia, PA.

Dubois, K. 2014. Personal communication. Non-game Wildlife Biologist, Montana Department of Fish, Wildlife and Parks, Missoula, Montana

Fix, D. 1986. Flammulated owls in the western Oregon Cascades. Oregon Birds 13:38-40. (0250)

Foresman, K. R. 2012. Mammals of Montana. Mountain Press Publishing Company. Missoula, MT. 430 pp.

Foresman, K.R. 2001. The wild mammals of Montana. Special Publication No. 12, The American Society of Mammalogists. Lawrence, KS. 278 pp.

Foresman, K. 2006, Personal communication. Professor of Biological Science, University of Montana, Missoula, Montana.

Genter, D. L., A. G. Wilson, Jr. and E. M. Simon. 1988. Supplementary report on the status of the Coeur d'Alene salamander (Plethodon vandykei idahoensis) in Montana. The Montana Natural Heritage Program, Helena, MT. 39 pp.

Goggans, R., R. D. Dixon, L. C. Seminara 1988. Habitat use by Three-toed and Black-backed woodpeckers. Oregon Dept. Fish and Wildl. Nongame Rep. 87302

Goggans, R. 1986. Habitat use by flammulated owls in NE Oregon. Master's thesis, Oregon State University, Corvallis.X

Hanna, W.C. 1941. Nesting of the flammulated screech owl in California. Condor 43:290-291

Harris, M. A. 1982. Habitat use among woodpeckers in forest burns. Master's thesis, Univ. of Montana, Missoula

Hasenyager, R.N., J.C. Pederson, A.W. Haggen.1979. Flammulated owl nesting in a squirrel box. Western Birds 10:224

Hayward, G.D. 1986. Activity patterns of a pair of nesting flammulated owls (Otus flammeolus) in Idaho. Northwest Science 60:141-144.

Hayward, G.D. and J. Verner, tech. eds. 1994. Flammulated, boreal and great gray owls in the United States: a technical conservation assessment. Gen. Tech. Rpt. RM-253. Fort Collins, CO: U.S. Dept. of Agriculture, Forest Service, Rocky Mtn. Forest and Range Experiment Station. 214 p

Heinemeyer, K.S. 1993. Temporal dynamics in the movements, habitat use, activity, and spacing of reintroduced fishers in northwestern Montana. M.S. Thesis, Univ. of Montana, Missoula, MT. 158 p

Hejl, S., M. McFadzen and T. Martin. 2000. Maintaining fire-associated bird species across forest landscapes in the northern Rockies. Report INT-99543-RJVA. Missoula, MT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Forest Sciences Lab. 20 pp. [0247]

Hendricks, P. and J.D. Reichel. 1996. Amphibian and reptile survey of the Bitterroot National Forest: 1995. Montana Natural History Program. Helena, MT. 95 pp.

Hillis, M., A. Jacobs and V. Wright. 2003. U.S. Forest Service Region One black-backed woodpecker assessment. Unpubl. Report, USDA Forest Service, Missoula, MT. 18 pp.

Hitchcock, S.M. 1996. Abundance and nesting success of cavity-nesting birds in unlogged and salvage-logged burned forest in northwestern Montana. M.S. Thesis, Univ. of Montana, Missoula, MT. 89 p.

Hoffman, R.S., D.L. Pattie and J.F. Bell. 1969. The distribution of some mammals in Montana. II. Bats. J. of Mammalogy 50(4):737-741.

Howie, R.R. and R. Ritcey. 1987. Distribution, habitat selection, and densities of flammulated owls in British Columbia. Pp. 249-254 in Biology and Conservation of Owls. USDA FS General Technical Report. RM-142, Fort Collins, CO.

Hoyt, J. S., and S. J. Hannon. 2002. Habitat associations of black-backed and three-toed woodpeckers in the boreal forest of Alberta. Canadian Journal of Forest Research 32:881-1888

Hutto, R.L. 2007. Understanding the influence of local and landscape conditions on the occurrence and abundance of black-backed woodpeckers in burned forest patches. Final Report – Joint Fire Science Program Project No. 04-2-1-106. University of Montana, Missoula, Montana. 17 pp. Available online at: http://avianscience.dbs.umt.edu/projects/documents/finalreport2007_000.pdf

Hutto, R.L. 1995. Composition of Bird Communities Following Stand-Replacement Fires in Northern Rocky Mountain (U.S.A.) Conifer Forests. Conservation Biology, V.9, No. 5, October, 1995. p 1041-1058.

Jones, J.L. 1991. Habitat use of fisher in northcentral Idaho. M.S. Thesis. University of Idaho, Moscow, ID. 147 pp.

Jones, J.L., and E.O. Garton. 1994. Selection of successional stages by fishers in northcentral Idaho. Pages 377–388 in S. W. Buskirk, A. S. Harestad, M.G. Raphael, and R. A. Powell, editors. Martens, sables, and fishers: biology and conservation. Comstock Publishing Associates, Cornell University Press, Ithaca, New York, USA. [0656]

Linkhart, B.D. 2001. Life history characteristics and habitat quality of Flammulated Owls in Colorado. PhD dissertation, University of Colorado, Boulder, Colorado. 206 pp

Maxell, B.A. 2004. Amphibian and aquatic reptile inventories conducted on and around the Bitterroot National Forest 2000-2003. Report to Region 1 Office of the U.S. Forest Service, Bitterroot National Forest, Montana Department of Fish, Wildlife, and Parks, and Biological Resources Division of the U.S. Geological Survey. Montana Cooperative Wildlife Research Unit and Wildlife Biology Program, University of Montana, Missoula, MT. 128 pp.

McCallum, D. A. 1994. Flammulated, Boreal, and Great Gray Owls in the United States: A Technical Conservation Assessment. USDA Forest Service and Rocky Mountain Forest and Range Experiment Station and Rocky Mountain Region GTR RM-253

McCallum, D. A. and Frederick R. Gehlbach. 1988. Nest-Site Preferences of Flammulated Owls in Western New Mexico. 9 pp.

Montana Fish, Wildlife and Parks. 2010. Montana bighorn sheep conservation strategy. Wildlife Division, Helena, MT. 313 pp. [1358] Available online at: http://fwp.mt.gov/fishAndWildlife/management/bighorn/plan.html#plan

MDFWP. 2012. Bald Eagle Nesting Season Summary. Unpublished report. Montana Dept. of Fish, Wildlife and Parks Region 2 Office. Missoula, Montana. 3 pp.

MFWP. 2014. Montana Field Guide. Available online at: http://fieldguide.mt.gov/default.aspx

MNHP and FWP (Montana Natural Heritage Program and Montana Department of Fish, Wildlife and Parks). 2009. Montana animal species of concern. Montana Natural Heritage Program, Helena, MT. 17 p. Available online at: http://mtnhp.org/Reports/MASOC_2009.pdf [1089]

MNHP. Montana Natural Heritage Program. 2007. Species of Concern Report. Helena, MT. Available online at http://nhp.mt.gov/SpeciesOfConcern/Default.aspx [0810]

MNHP. Montana Natural Heritage Program database. 2006. Montana Natural Resource Information System. Montana State Library, Helena, MT. http://nhp.nris.state.mt.us/

Montana Natural Heritage Program. 1987. Status report on the Coeur d'Alene salamander (Plethodon idahoensis) in Montana. The Montana Natural Heritage Program,. Helena, MT. 102 pp.

Murphy, EC and WA Lehnhausen. 1998. Density and foraging ecology of woodpeckers following a stand replacement fire. Journal of Wildlife Management 62: 1359-1372.

NatureServe Explorer. 2014. Long-legged Myotis. Available online at: http://explorer.natureserve.org/ Paragi, T.F. 1990. Reproductive biology of female fishers in southcentral Maine. Orono, ME: University of Maine. 107 pp

Powell, HDW. 2000. The influence of prey density on post-fire habitat use of the black-backed woodpecker. Master's thesis, University of MT, Missoula.

Reynolds, R.T. and B.D. Linkhart. 1984. Methods and materials for capturing and monitoring flammulated owls. Great Basin Naturalist 44: 49-51.

Reynolds, R.T. and B.D. Linkhart. 1992. Flammulated owls in ponderosa pine: evidence of preference for old growth. Pp. 166-169 in Old growth forests in the SW and Rocky Mt. regions: proceedings of a workshop. USDA FS General Technical Report. RM-213, Fort Collins, CO.

Reynolds, R.T. and B.D. Linkhart. 1987. The nesting biology of flammulated owls in Colorado. Pp. 239-248 in Biology and Conservation of Northern Forest Owls: proceedings of the symposium; 1987 February 3-7; Winnipeg, Manitoba. Gen. Tech. Rep. RM-142. USDA Forest Service, Fort Collins, CO.

Rosenberg, K.V. and R.G. Raphael. 1986. Effects of forest fragmentation on vertebrates in Douglas-fir forests. Pp. 263–272. in: Verner, J.; Morrison, M.L.; Ralph, C.J., eds. Wildlife 2000: Modeling habitat relationships of terrestrial vertebrates. Madison, WI: University of Wisconsin Press:

Roy, K.D. 1991. Ecology of reintroduced fishers in the Cabinet Mountains of northwest Montana. M. S. Thesis. University of Montana, Missoula, MT. 94 p.

Ruggiero, L.F., K.B. Aubry, S.W. Buskirk, L.J. Lyon, and W.J. Zielinski, Technical eds. 1994, September. The Scientific Basis for Conserving Forest Carnivores: American Marten, Fisher, Lynx and Wolverine, in the Western United States. USDA, Forest Service. Gen. Tech. Rep. RM-254.

Saab, V.A. and J.G. Dudley. 1998. Responses of cavity-nesting birds to stand-replacement fire and salvage logging in ponderosa pine/Douglas-fir forests of southwestern Idaho. Res. Pap. RMRS-RP-11, Ogden, UT.USDA Forest Service, Rocky Mountain Research Station. [0671]

Samson, F. B. 2006 (amended March 6, 2006). Conservation assessment of the northern goshawk, blacked-backed woodpecker, flammulated owl, and pileated woodpecker in the Northern Region, USDA Forest Service. Unpublished report on file, Northern Region, Missoula, Montana, USA.

Samson, F.B. 2005. A Conservation Assessment for the Northern Goshawk, Black-Backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region, USDA Forest Service. Unpublished report on file, Northern Region, Missoula, MT

Smucker, K., A. Cilimburg and M. Fylling. 2008. 2008 flammulated owl surveys: final report. Avian Science Center, University of Montana. Missoula, MT Available on the Internet at http://avianscience.dbs.umt.edu/research_landbird_flam.htm

Sumner, J. 2013. 2013 Montana peregrine falcon survey. Montana Peregrine Institute, Arlee, MT. 42 pp plus appendices.X

USDA Forest Service. 2000. Bitterroot Fires 2000, an Assessment of Post-fire Conditions With Recovery Recommendations. Bitterroot National Forest, Hamilton, MT. [0075]

USDA Forest Service. 2005. Montana forest insect and disease conditions and program highlights. USDA Forest Service, Region One, Forest Health Protection Report 06-1, Missoula, MT

Van Woudenberg, Astrid M. 1999. Status of the flammulated owl in British Columbia. Ministry of Environment, Lands and Parks, Wildlife Branch, Victoria BC. Wildlife Working Report No. WR-95.

U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, Montana Fish, Wildlife & Parks, Wyoming Game and Fish Department, Nez Perce Tribe, National Park Service, Blackfeet Nation, Confederated Salish and Kootenai Tribes, Wind River Tribes, Confederated Colville Tribes, Spokane Tribe of Indians, Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, Utah Department of Natural Resources, and USDA Wildlife Services. 2014. Northern Rocky Mountain Wolf Recovery Program 2013 Interagency Annual Report. M.D. Jimenez and S.A. Becker, eds. USFWS, Ecological Services, 585 Shepard Way, Helena, Montana, 59601. Available online at: http://www.fws.gov/mountain-prairie/species/mammals/wolf/annualrpt13/index.html

Vinkey, R. S. 2003. An evaluation of fisher (Martes pennanti) introduction in Montana. M. S. Thesis, University of Montana, Missoula, Montana.97 pp.

Winter, J. 1974. The distribution of the flammulated owl in California. Western Birds 5(2): 25-44.

Witmer, Gary W.; Martin, Sandra K.; Sayler, Rodney D. 1998. Forest carnivore conservation and management in the interior Columbia basin: issues and environmental correlates. Gen. Tech. Rep. PNW-GTR-420. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 51 p. (Quigley, Thomas M., ed.; Interior Columbia Basin Ecosystem Management Project: scientific assessment).

Wright, V. 1996. Multi-scale analysis of flammulated owl habitat use: owl distribution, habitat management, and conservation. M. S. Thesis. University of Montana, Missoula, MT. 91 pp.

Neotropical Migratory Birds

OBJECTIVE: Monitor Neotropical migratory bird populations and trends. Determine population and habitat relationships. Cooperate with international program of monitoring.

DATA SOURCE: Survey routes established through several bird programs.

FREQUENCY: Annually.

REPORTING PERIOD: 2010-2013.

VARIABILITY: Trends that indicate declines in populations.

EVALUATION & MONITORING RESULTS:

Neotropical migratory birds (NTMBs) breed here and winter in suitable habitats in western Mexico, Central America or South America. NTMBs have attracted national public attention due to well-documented population declines of many species in the eastern hardwood forests. These general declines have not been noted in forest-nesting species in western North America. In the west, seven species have shown declines, five of which are prairie grassland species. Although the Forest and others are actively monitoring birds in the Bitterroot Valley and Forest, we have found few trends and have only been able to draw limited conclusions about local populations at this time. The effort involves several separate but related programs, which are discussed below.

Monitoring Avian Productivity and Survivorship (MAPS) Program

In cooperation with a national network of MAPS stations coordinated by the Institute for Bird Populations (IBP) at Point Reyes, CA, we mist-net, classify, and band NTMBs and resident birds at two sites. We have monitored the Lick Creek site since 1993. We established the Lower Rock Creek site in 1994. When netted, the birds are identified, sexed, aged, weighed, and measured before release. As a part of the national network, we hope to gain insight on the production of young and survivorship through the rigors of migration. Through 2013, we have captured and handled a total of 7,164 birds. Of these, we banded 4,316 birds, including 1,284 recently fledged young. We have had 2,524 recaptures of previously banded birds, including multiple recaptures of some individuals. Since 1993 about 30 percent of the birds caught and banded have been young of the year. In 2013, about 22 percent of the first time captured birds were young of the year. We have also captured 324 birds that we released unbanded. We have captured individuals of 71 species since 1993, including 31 species in 2013. The most frequently captured species at our two sites have consistently been common yellowthroat, Swainson's thrush, McGillivray's warbler, (all migratory species) and black-capped chickadee (a resident species). Banding procedures and reports summarizing MAPS results on a regional basis can be found at the IBP website: http://www.birdpop.org/

Breeding Bird Surveys (BBS) Program

Volunteers and/or Forest staff currently run five BBS routes that are at least partially on the Forest. The routes are 24.5 miles long, with 50 stations where birds are identified primarily by their songs. The Breeding Bird Laboratory of the National Biological Survey, USDI Fish and Wildlife Service (FWS) sanctions the routes. The information on numbers and species of birds counted is entered in a national database in order to monitor trends of breeding birds at various scales. There are approximately 3,000 BBS routes in the U.S.

The five BBS routes that are at least partially on the BNF are named Painted Rocks (53086), Skalkaho-Rye (53176), Sula (53036), Threemile WMA (53902), and Victor (53901). Summaries and species trends generated by the data collected on these routes can be viewed online at http://www.pwrc.usgs.gov/bbs. Click on USGS Results and Analysis, and then on Route Level Analysis.

Moderate and high severity fire affected approximately 50% of the Skalkaho-Rye and Sula BBS routes in 2000. The other three routes were unaffected by the fires. Since we have several years of pre-fire data from these routes, we have the opportunity to monitor changes in the bird communities caused by the fires over time.

Bitterroot Valley Raptor Survey

The Raptor Survey is an annual road survey from Florence to Hamilton that counts all raptors seen along the Eastside Highway. This is part of an effort coordinated by the Montana Department of Fish, Wildlife and Parks (FWP) native species program to monitor trends in statewide raptor populations. BNF biologists have conducted this survey in late May or early June every year since 1995. We have tallied a total of 1,444 fledged raptors and 243 unfledged juveniles along this route since 1995, for an average of 76 fledged raptors per visit. We counted 79 fledged raptors on this route in 2013, as well as 32 juvenile nestlings that had not yet fledged. This is the lowest number of fledged raptors we've counted on this transect since 2003, and is 23% below the average count for the previous 5 years (102 raptors). The number of raptors counted each year increased dramatically in 2003, due to a combination of a likely overall increase in the number of raptors present, and an increase in the amount of time spent viewing known nests. The most common raptor species tallied on this route are red-tailed hawk, osprey and American kestrel. We have counted a total of 12 raptor species on this route.

Research Note

In 2001 and 2002, the Forest provided logistical support and funding for a graduate student from the University of Montana who monitored the 13 transects that burned during 2000 as well as a similar number of unburned transects. She also conducted nest searches in several burned areas to determine which parts of the burns were most important to nesting birds. The study found that overall, seven species responded negatively and 16 species responded positively to fire. Further, seven species increased most dramatically at a single fire severity. She also found changes in abundance between one and two years after fire for most species that responded to fire. These findings underscore the importance of fire severity and time since fire, and imply that both factors must be considered to understand the complexities of fire effects on bird communities. Her results suggest a need to manage for a range of fire severities because different bird species respond positively to different fire severities (Smucker, et al. 2005).

Forest-wide Point Counts

In 1994 we began a program to monitor breeding bird population trends along a network of transects across the Forest as part of the Region 1 Landbird Monitoring Program (LBMP). Each transect has ten stations where surveyors identify and record every bird seen or heard in 10 minutes. They also record vegetation data at each point. The points are permanently marked for relocation, so that over subsequent years population trends can be ascertained. This point count protocol is followed on all national forests in the Region. In 1994, LBMP crews established 42 transects and counted resident birds and NTMBs at 413 points on the Bitterroot NF. The crews monitored transects and points again in 1995 and 1996, with only slight modification. Budget constraints dictated suspension of the point counts for the 1997 breeding season. Crews monitored a subset of transects in 1998, 2000, and 2004. They collected additional vegetation data but no bird data at a subset of the points in 1999. Researchers have incorporated these data into the revised habitat relationship analysis, which provides information about specific habitats occupied across the Region. Data and results of the LBMP efforts are viewable on the University of Montana's Avian Science Center website at http://avianscience.dbs.umt.edu/research_landbird.

Moderate and high severity fire affected approximately 25% of the Forest's established point count transects in 2000. The other routes were unaffected by the fires. We have several years of pre-fire bird data from these routes as well as baseline vegetation data, so we now have the unique opportunity to detect changes in bird communities along these transects and correlate them with habitat changes caused by the fires. Please see the adjacent "Research Note" for a brief description and the findings from one initial study.

In addition, in 2001 and again in 2003, crews from the Region 1 Landbird Monitoring Program established a number of new point count transects on the Forest in burned and unburned ponderosa pine forest. These transects are intended to monitor the different bird communities that are associated with various combinations of burn intensities and/or mechanical treatments in dry forests.

In 2007, LBMP crews established point count locations in stands that were classified as dry forest old growth based on criteria in Green et al. (1992, errata 2005). Point counts were established in five National Forests across Region 1, including 136 points in 29 stands on the BNF. These point counts were intended to characterize the bird communities associated with xeric old growth forests, and to determine whether that community was different from the birds associated with mature forests. Results indicated that many of our most common bird species, including several generalists that inhabit a wide range of forest types, are more abundant in, and possibly prefer old growth when it is available on the landscape. However, most of the birds that occur in old growth are also found in mature or younger forests, indicating that there is not a unique bird community restricted to old growth.

The final report is available online at:
http://avianscience.dbs.umt.edu/projects/documents/CompletedOldGrowthReport12_13.pdf.

Christmas Bird Counts

The Forest helps support Christmas Bird Counts (CBC) annually at Hamilton and Stevensville. These counts are part of a national effort to monitor broad-scale changes in the distribution and abundance of birds in the early winter. The CBC is coordinated by the National Audubon Society, and is the longest-running bird monitoring program in the world. Volunteer birders count birds on one day within count circles with radii of 7.5 miles centered on the Stevensville Ranger Station and the Hamilton airport. Both count circles include portions of the Forest. The Hamilton CBC started in 1988 and has a cumulative total of 128 species. The Stevensville CBC started in 1963 and has a cumulative total of 157 species. Among other findings, these CBCs document that the number of raptors wintering in the valley has increased dramatically since 1963. In addition, two species that we now think of as being very common winter residents (house finches and mourning doves) were rare or non-existent during the early years of the CBCs, and have both become much more common here in the winter since the mid-1990s. More recently, both CBCs have documented the arrival and increase of populations of the Eurasian collared-dove, a Eurasian species that has rapidly colonized North America since it arrived in Florida in the 1970s. In addition, both CBCs have recorded the recent population increases of wild turkeys and California quail, both species native to other parts of North America that were introduced here and have now established naturalized populations. These two CBCs are consistently within the top five CBCs in Montana in terms of bird species diversity. In FY 2013 the Hamilton CBC tallied 11,948 individual birds and 78 species. The Stevensville CBC tallied 15,385 individual birds and 83 species. Results from these and other CBCs can be viewed at the CBC website: http://birds.audubon.org/christmas-bird-count.

REFERENCES:

Green, P., Joy, J., Sirucek, Hann, W., Zack, A., and B. Naumann. 1992. Old-growth forest types on the Northern Region. R1 SES 4/92. USDA Forest Service, Northern Region, Missoula, MT. (errata corrected 2/05). [0132]

Smucker, K. M. 2003, R. L. Hutto and B. M. Steele. Changes in bird abundance after wildfire: importance of fire severity and time since fire. Ecological Applications 15(5): 1535-1549. Available on the internet at: http://avianscience.dbs.umt.edu/research_pub.

Hunter Season and Trends
Item 8

OBJECTIVE: Track the length of season and number of hunters.

DATA SOURCE: Montana Department of Fish, Wildlife and Parks (FWP) hunter survey.

FREQUENCY: Annually.

REPORTING PERIOD: 2010-2013

VARIABILITY: Any change in season length, +/- ten percent change in hunting population.

EVALUATION:

The latest data available on deer and elk hunters are from the Montana Fish Wildlife and parks website: http://fwp.mt.gov.

The general big game hunting season in the Idaho portion of the Forest has been open from September 15 through Thanksgiving weekend for several years. The general big game hunting season in the Montana portion of the Forest has been five weeks in length for many years. FWP reduced the season for antlered mule deer bucks to three weeks in length beginning in 1992. Mule deer does have been hunted via special permit in Bitterroot hunting districts since 1990. Mule deer bucks have been hunted via special permit since the mid-90s.

MONITORING RESULTS:

We combined hunter survey information for Hunting Districts 240, 250, 261, and 270 to draw the following conclusions (see Table 1).

Hunter trends are not available for the Idaho portion of the Forest because hunting district boundaries do not coincide with Forest boundaries. Except for the road corridors, the Idaho portion of the Bitterroot NF is Wilderness and little can be done by the Forest Service to directly influence seasons and numbers of hunters.

Table 1 - Total Number of Hunters for Hunting Districts 240, 250, 261, and 270

Year	# of Elk Hunters	% Change[1]	# of Deer Hunters	% Change[1]
1994	6318		7139	
1995	8381	32.7%	9063	27.0%
1996	No Data		7763	-14.3%
1997	No Data		7030	-9.4%
1998	No Data		7613	8.3%
1999	8273	-1.3%	7450	-2.1%
2000	8463	2.3%	8171	9.7%
2001	8122	-4.0%	8407	2.9%
2002	7356	-9.4%	7051	-16.1%
2003	7898	7.4%	6955	-1.4%
No Data				
2010	5314	-32.7%	4892	-29.7%
2011	5066	-4.7%	5028	2.8%
2012	3825	-24.5%		
2013	No Data		4977	-1.0%

[1]Percent change from the previous year that data was collected.

Diversity
Item 5

OBJECTIVE: To determine biological diversity at various scales.

DATA SOURCE: Interdisciplinary team review of altered habitats.

FREQUENCY: One project per District per year.

REPORTING PERIOD: 2010-2013

VARIABILITY: Failure to meet wildlife objectives.

EVALUATION:

The Forest Plan definition of diversity is "the distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan." Evolving definitions have expanded this concept of biological diversity into "the variety of life and its ecological processes." The important addition to the definition is the consideration of processes, such as fire and nutrient cycling, which sustain ecological systems. Sustaining ecosystem health and productivity is closely tied to maintaining biodiversity. This concept is reflected in our current management practices and may be further incorporated into the Forest Plan when it is revised. Until the Forest Plan and this monitoring item are revised to incorporate the wider definitions of diversity we will follow the Plan (page IV-6) and measure this item against the variability yardstick of "failure to meet wildlife objectives." Beyond that, we are also measuring how we are meeting our diversity goals on the landscape and regional levels.

Biological diversity exists at several levels, including genetic, species, landscape, and regional diversity. The Forest Plan focuses on monitoring species diversity, and over the past several years we have monitored biodiversity at the landscape level as well. Results of the landscape analyses, including Integrated Resource Analyses (IRAs), Ecosystem Assessments at the Watershed Scale (EAWS), and the Bitterroot Landscape Assessment, indicate changes have occurred in vegetation structure and composition that should be addressed in the Forest Plan revision. Scientific researchers have documented similar conditions in studies throughout the Rocky Mountains. These results also need to be considered in the Forest's future management. In 1996, the Columbia River Basin "Scientific Assessment" was published, which helps us understand diversity at the broad regional scale. In May 1999, the Bitterroot Ecosystem Management Research Project symposium presented to the public and resource professional’s data collected at the species and landscape levels by scientists and land managers. Interregional and forest-wide assessments were completed after the massive 2000 fire season, and a post-fire Forest Plan review was completed in 2001. Monitoring conducted as directed by the 1987 Forest Plan as well as other monitoring along with information from the above sources will be used in revising the Bitterroot Forest Plan.

MONITORING RESULTS:

Species Level Evaluation

Forest Plan goals and objectives for diversity are concerned with the need to support viable populations of wildlife and fish. Surveys for threatened, endangered, sensitive, and management indicator species provide information on distribution and important habitats for fish, plants, and wildlife. Monitoring discussions of these subjects may be found in the Sensitive Plant sections, the Wildlife sections, Old Growth Item 6, and Items 21 and 41 of the Aquatic section.

In an attempt to better preserve biological diversity and meet ecosystem management goals, we have, over the past several years, made many changes in the way we manage the land. These changes, implemented at the project scale, often represent different ways of management compared to what the Forest Plan predicted. For example, our silvicultural prescriptions have deemphasized clearcutting and expanded other harvest methods such as group and individual tree selection. We are retaining more snags, leave trees, and down woody debris in harvest units. We have designed vegetation management, particularly fire, to reflect the scale and pattern of natural processes. The Forest has reintroduced fire via prescribed burning to reduce natural fuels and restore

this critical process in appropriate areas (see the Fire Management section). Grassland restoration has become a focus of the noxious weed program. The Forest has ongoing efforts to obtain native seed and revegetate disturbed areas with native plants. These ways of managing are not reflected in the current Forest Plan. When we revise the Plan, we will need to consider these new approaches on a Forest-wide basis.

Landscape Level Evaluation

In addition to the individual species approach, the Forest has been monitoring diversity at the landscape scale. Interdisciplinary teams have analyzed diversity by comparing current vegetation patterns and processes to historical conditions. The Forest also completed watershed, fisheries, recreation, transportation system, and wildlife habitat analyses as part of these assessments. We have found changes in vegetation structure and composition for several portions of the forest. The noted changes are primarily a result of fire suppression, uncharacteristically severe wildfire, certain types of timber harvest, and natural succession. We are using the information to guide project proposals.

During the time period 2010-2013 we completed only two landscape level assessments; Lower West Fork Vegetation Management Project and Three Saddle Vegetation Management Project. Several other project analysis were completed during this time period but they were of a smaller and more focused scale.

Regional Level Evaluation

In 1996, we saw the publication of an important document, An Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin, produced through the Columbia River Basin (CRB) project. Many of the findings in that report reflect the same results we have found from our IRAs and EAWS. Ecological changes identified at the Forest level, such as increased fire severity and changed forest structures, are occurring throughout the entire basin. The report provides additional information, particularly with regard to aquatic systems and rangeland. The assessment states that, compared to historic conditions, "aquatic biodiversity has declined through local extirpations, extinctions, and introduction of exotic species". Another key finding is that "rangeland health and diversity have declined owing to exotic species introductions [and] changing fire regimes". The effects of exotic species and altered fire regimes on biological diversity will be important management considerations as we revise the Forest Plan. Results of the CRB study also indicate the need to coordinate management between Forests so the problems are addressed at the basin-wide scale. Information provided by the Scientific Assessment could help the Bitterroot NF address many issues identified in our Forest Plan Five Year Review (1994), including native fish species, watershed health and restoration, access management, noxious weeds, old growth, altered stand structures, and changing forest composition.

A Final Environmental Impact Statement (FEIS) and Proposed Decision for the Interior Columbia Basin were published in December 2000. The State Directors and Regional Foresters elected not to prepare a Record of Decision and instead have chosen to complete the Project through use of this "*The Interior Columbia Basin Strategy* "(Strategy). The Strategy provides guidance for incorporating the science data and resource information developed by the Project into land and resource management plans and project implementation. The Strategy takes into consideration concerns raised by the public along with the findings of the Science Assessment, and identifies key elements that need to be addressed in future planning efforts. Local planning will identify where, when, and how those needs should be addressed. The Strategy will be used to guide the amendment and revision of the Forest Plan.