

IV. WILDLIFE

Introduction/Overview

The Red Whale Project includes management activities that would create open forest stand conditions to achieve one of the purposes of the project: to reduce crown fire potential and create a safer firefighting environment along Forest Service and private land ownership boundaries. Expanding upon the existing amount of wildlife habitat security is also an important purpose of the Red Whale Project. In addition, providing a road easement to Montana Department of Natural Resources and Conservation (DNRC) across National Forest land would also be considered by this project. Finally, up to nine localized areas would be considered for prescribed burning to increase the amount of early successional vegetation/habitat on south to southwest facing slopes. These are the kinds of forest resource management activities that will be considered on how they can/may affect wildlife/habitat in the project area.

The Red Whale Project would occur within the North Fork Flathead River drainage (North Fork), a well-known, ecologically diverse and productive area. Expected effects from proposed forest management actions on wildlife/wildlife habitats can best be ascertained when the existing affected environment (i.e. environmental baseline) is described with sufficient levels of detail and context. Considering this, a bigger picture look at the North Fork and recent environmental disturbances within it seems relevant (Table 3-24).

Table 3-24. A Profile of the North Fork Drainage.

Area/ Feature	North Fork Drainage ^a			
	BC	GNP	FNF	Total
Size of Portion of Drainage (acres)	386,063	286,646	327,071	999,780
Size of Portion of Drainage (mi ²)	603	448	511	1,562
Proportion of Drainage (%)	38	29	33	100
Amount of Private Land (acres/%)	Unknown	136/05	18,593/6	18,729/2
Amount of DNRC (State) Land (ac/%)	NA	NA	18,257/6	18,257/6
Miles of Roads ^b	354	56	886	1,296
Road Density ^b	0.59	0.13	1.73	0.83
Recent Fires - ac (within last 20 years)	Unknown	144,372	91,920	236,292
Past Timber Harvest ^c (ac)	Unknown	NA	73,796	73,796
Past Timber Harvest ^d – Not in Fires	Unknown	NA	44,927	44,927
% of Landscape with Major Disturbance (human/natural)	Unknown	50	42	46

^a Includes all acres for all ownerships within British Columbia (BC), Glacier National Park (GNP) and Flathead National Forest (FNF).

^b Road status (i.e. open or closed) was not considered; Land area divided by miles of road (from GIS layers; best information available) on the land.

^c Includes all timber harvest types; approximately 64% was regeneration harvest. Does not include harvest on State or private lands.

^d Does not include timber harvest that has occurred on State or private lands.

Data on the amount of the North Fork within British Columbia (BC) affected by timber harvest and/or wildland fires were not available for this assessment, however, it is important to note that there has not been, nor is there currently permanent human occupation within the BC portion of the drainage. Perhaps most importantly to consider is that while human-induced habitat modifications have occurred in the past, and continued pressures for additional resource extractions (e.g. coal mining) are ongoing, the impacts on wildlife/habitat from human settlements are absent in the BC portion of the North Fork. However, hunting, fishing and trapping continue and direct mortality of wildlife by these means continue.

Over half (62%) of the North Fork watershed area is contained within the U.S. (Table 3-24). This suggests that the U.S. plays a large role in conservation of wildlife and habitat found in the North Fork. Since there is only a small amount of private land within the Glacier National Park (GNP) portion of the North Fork, the impacts on wildlife/habitat from human settlement are also relatively small. Therefore, GNP can appropriately be viewed as a source, or refuge, for wildlife since natural processes dominate the landscape with relatively little human-induced habitat modifications. As for the Flathead National Forest (FNF) portion (including private and State lands) of the North Fork, this is where the challenge exists in maintaining ecological processes. Although comprising a relatively small proportion (6%) of the FNF side of the North Fork, approximately 1/3 of the area within one mile of the river (to the west) is in private land ownership. This is substantial since river bottom habitats are important for many wildlife species. Two important realities will be addressed relative to how the proposed Red Whale Project can continue to affect wildlife/habitat:

1. Increasing Human Density. Generally, human population increases in urban, suburban and rural areas tend to be gradual and subtle, but steady. This fits the situation within the Flathead Valley and North Fork where human presence, residential and recreational, has been on the increase in recent years. However, relatively few wildlife species in the North Fork cannot coexist with humans. The issue is whether there will be sustained wildlife/habitat conservation concerns among recent and new people moving into the area, because free-ranging animals are the ones that have to make the adjustment/accommodation by changing their habitat-use patterns when humans move into their domain. Therefore, with both residential and recreational human uses of the North Fork on the increase, there is a loss of habitat-use opportunities for wildlife; some habitat loss is seasonal or temporary, some is permanent.
2. Wildlife Need Space. From an ecological perspective, probably the main reason that the North Fork still contains its full complement of historical wildlife species (with the possible exception of Caribou) is that the vast majority is unroaded; or if it is roaded receives low levels of recreational use (BC portion). The entire eastern half of the North Fork is in Glacier National Park (GNP). GNP has relatively few roads and experiences high human use only at a few destination locations such as Bowman and Kintla Lake Campgrounds. The FNF portion of the North Fork contains a relatively high road density and relatively high levels of recreational use (Table 3-24). Therefore, the proposed Red Whale Project can incrementally affect the amount of useable space for wildlife now and into the future.

The North Fork continues to provide a collection of wildlife habitat values not observed in other drainages in the lower United States. The North Fork provides habitat for all of the ungulates, and most of the avian, small mammal, and amphibian species known to occur on the Flathead National. Examples include:

- Year-round range for white-tailed deer, mule deer, elk and moose.
- Year-round habitat for grizzly bear, black bear, gray wolf, coyote, cougar, lynx, bobcat and wolverine.
- Existing older-aged forest habitats provide habitat for species such as fisher, marten and other forest interior habitat inhabitants, such as northern goshawk.
- Nesting habitat for bald eagles.
- A wide variety of forest cover types and successional stages that include dry Douglas-fir with some Ponderosa pine, western larch dominated conifer mixes, lodgepole pine, spruce/subalpine fir, and whitebark pine. Some of these forest types provide specific habitat values for some species. For example; flammulated owls are associated with Douglas-fir/ponderosa pine and pileated woodpeckers are associated with mature/older aged western larch forests containing snags >20 inch in diameter.
- Harlequin ducks are known to occur and reproduce within several tributaries of the North Fork.
- Rich riverine habitats that provide for aquatic-oriented mammals and birds such as river otter, mink beaver, great-blue heron, belted kingfisher, common merganser, spotted sandpiper and a host of migratory songbirds that utilize the riparian cottonwood, willow, dogwood and grass/forb complexes.

Considering the above, it is apparent that the North Fork is rich in wildlife due to the productive array of habitats present. The GNP portion of the North Fork does not allow hunting or trapping of wildlife, contains minimal levels of motorized routes and generally allows natural processes to change/shape habitats. The FNF portion is more of a 'mortality sink' area due to the allowed activities of hunting, trapping, unnatural habitat modifications (e.g. timber management), a much greater amount of motorized use (which results in wildlife displacement from otherwise suitable habitats), private land development (loss of habitat) and some unknown level of poaching. In terms of providing habitat security, the Canadian (British Columbia) portion of the North Fork is somewhere between the FNF and GNP; it has a relatively high density of roads but relatively low levels of human use (Table 3-24).

Information Sources

Site-specific wildlife habitat information for proposed management actions was collected from on-site visits during the 2006 field season. For most proposed fuels reduction sites, field visits were made and information collected concerning habitat values and suitability for various wildlife species. For the prescribed burns, existing stand examination data and aerial photo interpretations were used. Arcview geographical information system (GIS) was used to quantify various habitat characteristics and for habitat modeling.

In recent years, several Flathead National Forest land management projects within the North Fork have been approved and are in various stages of implementation. These projects include the

Moose Post Fire Project (2002), Robert-Wedge Post Fire Project (2004), Blankenship Fuels Reduction Project (2005) and Trail Creek Fuels Reduction Project (2006). These projects each had varying levels of habitat analyses that involved different portions of the North Fork. With the exception of a small portion of the very north end of the Red Whale Project, no overlap of project analysis areas occurred between the various projects. Information generated from the above named project environmental analyses of existing and proposed future conditions were used when deemed suitable and relevant to the proposed implementation of the Red Whale Project.

Wildlife Species/Habitat Selection Process for Effects Analysis

The Flathead Forest Plan lists as Management Indicator Species (MIS) all threatened and endangered species, sensitive species, elk, mule deer and white-tailed deer. However, not all wildlife MIS that occupy habitats within the North Fork would be affected by the proposed action (or alternatives). Therefore, to facilitate the identification of the MIS that would/could be impacted by the proposed Red Whale Project, a hierarchical synopsis of historical and current MIS distributions at the sub-basin, sub-watershed and project area scales was determined (Table 3-25). Information in Table 3-25 was then used to help determine which wildlife MIS contained habitat within the action area, and if an MIS and/or habitat were present, whether there would be any potential for effects to the species or habitat from the proposed Red Whale Project. Two criteria were used to determine which MIS to eliminate from further analyses: 1) habitat is absent in the project analysis area; and 2) existing potentially suitable habitat for the species within the project area would not be affected by the project (Table 3-26).

The remaining MIS were then carried forward into the analysis of effects from proposed implementation of the Red Whale Project. Indicators of effects, specific to each species, were used to determine potential effects on the species and/or habitat.

Table 3-25. Historic and Known Current Presence (where the species is known to breed/reproduce) and Distribution of Management Indicator Wildlife Species within the Red Whale Project Area, Flathead National Forest.

Species	MIS ST ¹	Historical Presence ²			Current Presence ²			Wildlife/Habitat Presence Potential Related to Project Area
		NFSB	SW	PA	NFSB	SW	PA	
Bald Eagle	T	Y	S	S	Y	S	S	An active nest exists along the North Fork Flathead River within the action area; fall big game hunter kills may provide a food source throughout the area.
Grizzly Bear	T	Y	Y	Y	Y	Y	Y	Bears can be present throughout the project area during the non-denning season (April thru November); during denning, bears are in the higher elevations, generally outside the action area.
Gray Wolf	E	Y	Y	Y	Y	Y	P	Kintla (GNP) wolf pack members occasionally use the area.
Canada Lynx	T	Y	Y	Y	Y	Y	Y	The action area is habitat with a mix of suitable and unsuitable habitat conditions.
Peregrine Falcon	S	P	Unl	Unl	Unk	Unl	N	No known nesting sites, current or historical, are known to exist in the area.
Flammulated Owl	S	P	Unk	Unk	P	Unk	Unl	Drier mixes of older aged Douglas-fir and Ponderosa pine forest types do not occur within the project area.
Harlequin Duck	S	Y	Unk	N	Y	Unk	N	Potential habitat exists in Whale, Red Meadow and Hay Creeks.
Common Loon	S	Y	N	N	Y	N	N	Tepee Lake is the only known lake within the action area with loon presence.
Townsend's Big-eared Bat	S	P	Unk	Unl	P	Unk	Unl	There are no known caves that can function as hibernacula or maternity roosts in the project area.
Black-backed Woodpecker.	S	Y	P	P	Y	P	P	Periodic, occasional beetle outbreaks would provide a forage base to support a woodpecker population.
Wolverine	S	Y	Y	P	Y	Y	P	This wide-ranging species likely occasionally visits or travels thru the project area in search of food; however, relatively little time is spent in lower elevation habitats.
Fisher	S	Y	P	P	Y	P	Unk	Mature and old growth forests adjacent to streams are potential denning habitat conditions; potential feeding habitat (forests 80-160 years old) exist within some proposed treatment sites.
Northern Goshawk	S	Y	P	P	Y	Y	Unk	Mature and old growth single-storied forests, is preferred nesting habitat condition; foraging habitat presence is probable within some proposed treatment sites.
Northern Leopard Frog	S	Unk	Unl	Unl	Unk	Unl	Unl	This species occurs in/near water in non-forest habitats. Closest reports about 20 miles to the northwest; riparian areas are protected habitats.
Boreal Toad	S	Y	P	P	Y	P	P	Breeding habitat occurs in lakes, ponds, slow streams, and ephemeral ditches.
Northern Bog Lemming	S	Unk	Unl	Unl	Unk	Unl	Unl	There is no known habitat for this species within the project area; known required habitat is protected.
White-tailed Deer	MIS	Y	Y	Y	Y	Y	Y	Year-round use occurs; not raised as an issue.
Elk and Mule Deer	MIS	Y	S	S	Y	S	S	Year-round habitats exist; not raised as an issue.
Old Growth Species	MIS	Y	Y	Y	Y	Y	N	No old growth forest habitat would be treated.
Snags & Down Wood	MIS	Y	Y	Y	Y	Y	Y	Large diameter snags are currently at low levels in most proposed treatment sites.

¹ST = Status; T= Federally Threatened; E= Federally Endangered; S=Forest Service Region 1 listed as Sensitive; MIS= Other habitat management indicator

²NFSB=North Fork Flathead River Sub-basin; SW=Sub-watersheds (Whale, Moose, Red Meadow, Hay and Moran Creeks); PA=Red Whale Project Area vegetation treatment sites; Y=Yes; N=No; P=Probable (based on known habitat requirements); Unl=Unlikely (based on known habitat requirements); Unk=Unknown; S= Seasonal.

Table 3-26. Rationale for MIS Exclusion from Effects Analysis in the Proposed Red Whale Project.

Species	Rationale
Peregrine Falcon	No rocky outcrops with suitable ledges that could function as nesting habitat occur in or near the Red Whale Project area. This project would have “no effect/impact” on the peregrine falcon or its habitat.
Flammulated Owl	Nesting occurs in older, open, and relatively dry mixed-species forests; these sites nearly always support ponderosa pine. Special habitat features used by this owl include large-diameter trees with relatively large cavities. Forest stands that are dry enough to meet habitat requirements do not occur within the project area; therefore, this project would have ‘no effect/impact’ on the flammulated owl or its habitat.
Harlequin Duck	Potential, un-surveyed habitats include: Whale, Red Meadow and Hay Creeks. However, even if any of these streams contained harlequins, normal protections afforded fish bearing streams (RHCA, INFISH) would be more than adequate to protect harlequins. Therefore, this project would have ‘no effect/impact’ on harlequin ducks or their habitat.
Common Loon	The only known suitable lake in the project vicinity containing loons is Tepee Lake; this lake is a considerable distance away (approximately 3 miles) from the closest proposed treatment site and absolutely no effects are expected. Therefore, this project would have ‘no effect/impact’ on common loons or their habitat.
Townsend’s Big Eared Bat	Caves, tree cavities, rock outcrops, and some human structures (buildings/mines) may provide sites for roosting, communal nurseries, or winter hibernation (Reel, et al. 1989; Tuttle and Taylor 1994). These bats forage on insects high in the forest canopy near wet meadows. The Red Whale Project would have little to no impact on bat habitat; therefore, this project would have ‘no effect/impact’ on Townsend’s big-eared bats or their habitat.
Wolverine	Wolverines spend most of their time in higher elevation cirque basins and occasionally visit lower elevation ungulate winter ranges. This project is not expected to adversely affect any habitat components important to wolverine; therefore, there would be no effect/impact on population viability.
Northern Leopard Frog	This frog reproduces in slow-moving or standing water, typically supporting dense sedges or cattails, and feed in damp meadows and wet forests nearby. Leopard frogs do not use drier upland habitat. No project activities would occur in or near potentially suitable habitat; therefore this project would have ‘no effect/impact’ on leopard frogs or their habitat.
Boreal Toad	This toad spends much of its time near water, especially during the breeding season. However, occasionally this toad will traverse terrestrial habitats to reach other breeding and/or feeding sites. It is when they are terrestrial is when implementation of this project may actually trample one or more individuals, however, primary riparian habitat will not be affected. Therefore, this project “may impact individuals, but is not likely to contribute to a trend towards federal listing.”
Northern Bog Lemming	The bog lemming is a rare, short-tailed rodent, found in wet meadows containing standing water and extensive coverage of sedges and species such as sphagnum moss. Bog lemmings do not use drier upland habitat. No suitable habitat occurs within the proposed project area; therefore, this project would have ‘no impact’ on bog lemmings or their habitat.
Old Growth Associates	Species associated with older-aged/old growth forest habitats are generally to be managed according to Amendment 21. However, no old growth forests would be treated and, therefore, this project would have ‘no impact’ on old growth associates or their habitat.

Considering information in Tables 3-24 and 3-25, the following species deserve an analysis of effects from the proposed implementation of the Red Whale Project: grizzly bear, gray wolf, bald eagle, Canada lynx, black-backed woodpecker, northern goshawk, fisher, boreal toad,

ungulates (elk and deer) and snags/down wood associates. While the wildlife section of this environmental assessment does not contain a separate section titled *Management Indicator Species*, each species that may occur within the project area, or for which habitat exists in the project area, is addressed.

Threatened and Endangered Wildlife

Grizzly Bear (Threatened)

Analysis Area and Information Sources

Three individual grizzly bear subunits were used for direct/indirect effects analysis for the proposed action; the combined areas of all three subunits were used for cumulative effects analysis (see Maps 2-1, 2-3, 2-5, and 2-7). These analysis areas were deemed appropriate because: a) each subunit contains year round grizzly bear habitat components making it possible to determine potential effects on both denning and non-denning habitat; b) the subunit is the standardized area for which the Amendment 19 (A19) motorized access strategy/grizzly bear habitat security is applied; and c) the maximum combined total area proposed for treatments (~5,000 acres) only amounts to approximately 6% of the combined total of the three subunits (~86,000). This ratio of proposed habitat treatments was considered appropriate to capture the full extent of potential cumulative effects.

The three grizzly bear subunits used in this analysis included Lower Whale, Red Meadow Moose and Hay Creek. Subunits are areas that approximate the size of a female home range (~30-50 mi²). In addition to above spatial scales of analyses, an assessment at the Forest and Northern Continental Divide Grizzly Bear Ecosystem (NCDE) area scales examined conditions within 73 grizzly bear subunits totaling 2,452,410 acres, and considered the FNF within the context of the larger NCDE Recovery Area (project file, section N).

Data used for the analysis were from existing resource information sources, research literature, aerial photography and field visits (project file, section N). Arcview geographical information system was used for quantification of various habitat characteristics.

Affected Environment/Existing Condition

Subunits

All three subunits are within the Northern Continental Divide Grizzly Bear Ecosystem (NCDE) and all National Forest lands within them are designated as Management Situation 1, which are areas needed for the survival and recovery of the species, where management actions would favor the needs of the grizzly bear. Important habitat elements that tend to influence long-term habitat effectiveness within each of the subunits are displayed in Table 3-27.

Perhaps the two most influential habitat issues that affect the well being of grizzly bears that occupy the action area and are common to each of the subunits include the amount of private lands (rural area), and the amount of habitat security available to grizzly bears. Much of the

private lands within each of the subunits are still relatively undeveloped. However, it is likely that more residences would be constructed and more people would move into grizzly bear habitat in the coming years. When one compares the existing situation with the situation 50 years or more ago, it is obvious that the private land portion of the action area has, and would continue to, become more developed; this has and would continue to have effects on grizzly bears. Mace and Waller (1997) studied grizzly bears in the Swan Mountains, Montana and found that most mortalities in their study occurred in roaded areas near private lands; they termed this as the Rural Zone. Twelve of 14 (86%) bear mortalities in their study area occurred in the Rural Zone; six of the mortalities were management removals of adult females with young that had become food-conditioned and habituated. The study area (Ibid.) was comprised of approximately 9% private land and man-caused mortality was approximately 7 times higher in the rural portion than in the core area (public land). The authors suggested that the mortality figures could be used to establish acceptable levels of change (risk) within similar areas with the required assumption that similar types and levels of habitat degradation in the Swan Mountains would result in similar demographic (i.e. population vital rates) responses elsewhere. The Whitefish Mountain Range has had similar types and levels of habitat degradation as the Swan Mountains and, coincidentally, the action area is comprised of 9% private lands (average of three subunits, Table 3-27). It seems reasonable to expect continuing human-caused mortality in the action area.

A common habitat cover type within each of the subunits is the presence of avalanche chutes. Mace and Waller (1997) throughout their multi-year investigation into the ecology of grizzly bears in the nearby Swan Mountain range consistently found that avalanche chutes were preferred physiographic locations, where bears were found in all seasons. They believe that avalanche chutes provide a variety of vegetal foods for grizzly bears and that visual security is often high due to the frequent presence of dense stands of alder. Moose, Red Meadow and Hay Creeks each contain many avalanche chutes, especially on the south facing slopes.

Motorized access was recognized by the FNF Forest Plan in 1986 as a major factor affecting grizzly bear habitat security and was confirmed by research conducted in the nearby Swan Mountains of Montana (Mace and Waller 1997). Wielgus et al. (2002) demonstrated the tendency for grizzly bears to select against open roads in a 1986-1991 study in the Selkirk Mountains of northern Idaho and southern British Columbia. Mace and Waller (1997) recommended that until effective management programs for reducing human-caused grizzly bear mortalities are developed for private lands, federal lands should be considered invaluable source areas (where more bears survive than die) and managed to reduce man-caused mortality. The authors suggested that this could be accomplished by establishing high security areas that include seasonal habitats and where vehicle access is restricted. Programs that control human access to grizzly bear habitat are necessary for recovery efforts (US Fish and Wildlife Service 1993) and will become even more important as human populations grow (Mace and Waller 1997). Research supports the premise that forest roads facilitate human access into grizzly bear habitat, which directly or indirectly increases the risk of mortality to grizzly bear (US Fish and Wildlife Service 2005). Clearly, roads affect grizzly bear habitat and grizzly bear distribution on the landscape.

Amendment 19 of the Flathead Forest Plan is a comprehensive programmatic strategy that addresses grizzly bear habitat security. The U.S. Fish and Wildlife Service (FWS) in their Biological Opinion (BO) for A19 (US Fish and Wildlife Service 1995) put forth 'Terms and

Conditions' with which the Forest was required to comply. The requirements were to gradually achieve motorized access objectives across the FNF in grizzly bear habitat. The terms and conditions established five and ten-year numerical motorized access density objectives. The FNF was unable to meet the timelines set by the FWS BO and re-initiated formal consultation with the FWS. A new BO was issued in October 2005 on a revised implementation schedule for A19 that provided new Terms and Conditions. The FWS reaffirmed its biological judgment in the BO (US Fish and Wildlife Service 2005) that "harm" of grizzly bears is likely to occur in the following conditions: when the open motorized access density (OMAD) exceeds 19% of a subunit; when the total motorized access density (TMAD) exceeds 19% of a subunit; and when security core is less than 68% of a subunit. In this context, the existing levels of habitat security within the action areas subunits are displayed in Table 3-27 and currently do not fully meet A19 standards.

Similar to the presence of private land and motorized access routes, recreations sites are often places of avoidance for grizzly bears due to human presence. However, food, garbage and other human associated bear attractants could attract bears to these sites. Inadequately stored food or other attractants could allow bears attracted to a recreation site to get some sort of reward. The risk that a bear takes when it comes close to humans, or attempts to gain human food, is that of mortality. However, when food storage requirements are followed, the possibility of grizzly bears receiving a reward is greatly diminished. Generally, the greater the number of recreation sites the higher the probability that a bear will be attracted to one of these sites, possibly resulting in the beginning of the habituation/food conditioning process. The number of recreation sites within each subunit is found in Table 3-27.

Table 3-27. Characterization of Existing Conditions within Subunits in the Red Whale Project.

Habitat Element	Subunits		
	Lower Whale	Red Meadow Moose	Hay Creek
Gross size of Subunit (acres; all ownerships)	18,846	33,333	33,347
Proportion in Forest Service Land	83%	92%	85%
Proportion in Private Land	11%	8%	8%
Proportion in State Land	6%	<1%	7%
Management Situation 1 (FS Land only)	100%	100%	100%
Potential Denning Habitat	674 ac	5,900 ac	4,496 ac
Potential Spring Range (\leq 4,900 ft)	15,384 ac	13,749 ac	15,090
Proportion of Subunit - Older Forest Habitat ¹	9%	44%	39%
Proportion of Subunit - Young Forest ¹	14	20%	27%
Proportion of Subunit - Early Seral ¹	73%	32%	24%
Area Burned by Wildland Fires Since 1988	12,463 ac	4,764 ac	5,360 ac
Habitat Security: Existing Amendment 19 ²	37-18-29	25-17-52	39-13-41
Amendment 19: Security Core Habitat (acres)	4,851	15,931	14,919
Total of Security Patches <2,500 ac	5,525 ac	2,404 ac	2,569 ac
Total Area Providing Security- Early Spring ³	10,149 ac	26,196 ac	22,027 ac
Area w/in 500m of Road and/or Motorized Trail	9,180 ac	12,444 ac	13,390 ac

Habitat Element	Subunits		
	Lower Whale	Red Meadow Moose	Hay Creek
Miles of Roads ⁴	46	53	49
Number of Recreation Sites ⁵	19	11	8
Known Grizzly Bear Mortalities (1982-2000)	4	2	3

¹Data from GIS 'Structure' coverage: older forest=>150 yrs.; young forest=50-100 yrs.; early seral=<50 yrs/non-forest.

²Amendment 19 motorized access management standards (19-19-68) only apply to Red Meadow Moose and Hay Creek grizzly bear subunits; Amended A19 standards (US Forest Service 2004) for the Lower Whale subunit: 37-19-47.

³The amount of area >500m from a road open for motorized use during April and May; includes county/private roads.

⁴Does not include small private roads or roads categorized as 'historic'; includes North Fork Road.

⁵Includes sites such as cabin rentals, trailheads, river access sites, dispersed and developed campgrounds.

Lower Whale Subunit

This subunit is relatively small, and when the FNF delineated these polygons back in the early 1990s the methodology endorsed by the Interagency Grizzly Bear Committee (IGBC 1994) was used. However, this particular subunit probably should have been enlarged because its size (Table 3-27) was not close enough to the desired average subunit size of approximately 50 square miles (~32,000 acres). This was an oversight and it became evident that meeting A19 objectives in the Lower Whale subunit would be extremely difficult due to its small size and the relatively high amount of private lands that would be affected. Consequently, A19 objectives for this subunit were amended in a 2004 decision for the Robert Wedge Post-Fire Project (US Forest Service 2004) and the current trajectory is to meet the amended standards (Table 3-27) by the end of 2009.

This subunit contains year round habitat components for grizzly bear (Table 3-27). Potential spring range habitat was modeled as areas below 4,900 feet in elevation. This elevation zone was termed the low temperate zone by Mace and Waller (1997) and comprises approximately 82% of this subunit (Table 3-27). Of this, approximately 2,050 acres (11% of subunit) are in private land ownership. This subunit appears to be highly valuable as spring range for grizzly bears. Conversely, a relatively low amount of high elevation country makes for a low amount of potential denning habitat. In terms of vegetation, prior to the Wedge Canyon fire in 2003, this subunit contained forest age classes spread throughout with approximately equal amounts of older forest (30%), young forest (31%) and early seral (31%) age classes. However, the current post-fire condition is now skewed heavily toward the early seral stage vegetation condition (Table 3-27). Since most of the subunit is below 5,000 feet in elevation this means that there would be abundant spring range for many years to come. With the presumed abundance of spring forage from the post-fire habitat, there may be a long-term benefit of having sufficient natural forage that would keep bears away from private land/residences, at least during the spring.

The northwestern portion of this subunit probably contains the best overall habitat due to the presence of at least 15 avalanche chutes. Mace and Waller (1997) found that avalanche chutes were used (by grizzly bears) in high during all seasons. The authors emphasized that avalanche chutes are an important habitat component, even when in proximity to roads. In this subunit, Road #907 traverses between avalanche chutes; however, it is currently closed to motorized use during the non-denning season and the area functions as security core.

Habitat Security

When compared to Amendment 19 motorized access standards, this subunit currently provides a relatively low amount of security for grizzly bears. However, a recent decision made on the Robert Wedge Post-Fire Project EIS (US Forest Service 2004) amended these standards; this decision established new A19 standards that are specific to the relatively unique situation in this subunit. As discussed above, the relatively small area size coupled with the amount and locations of private/State land within the subunit made it inappropriate to achieve the A19 '19-19-68' standards while still providing legal access (private/State) and desired access for recreation and forest management. While the existing habitat security condition is low, road management actions would bring this subunit in compliance with the amended A19 standards over the next few years and habitat security will be improved as compared to the existing situation. Some of the best habitat in this subunit (Tepee Creek) is, and would continue to, provide full habitat security by virtue of its location within security core. There have been four recorded recent mortalities in this subunit; one in 1998 and the other three (a family group of three) in 2000.

Recreation Sites

This subunit contains 19 inventoried sites where people either camp, park (trailhead), or stay overnight in a structure (cabin rental). Three of these inventoried sites are cabin rentals (Hornet Lookout, Ford Cabin and Wurtz Homestead) where people can stay for 1-3 nights. The capacity of each cabin varies, but is generally in the range of 4 – 12 people. Wurtz is a year-round cabin rental; Hornet Lookout and Ford Cabin are seasonal. A partial spring closure of the Ford Cabin is in consideration of the needs of grizzly bear spring range. Proper storage of food, garbage and other potential grizzly bear attractants are emphasized during the rental process. However, it is possible that human mistakes could potentially allow bear habituation and/or food conditioning; potentially leading to bear mortality.

The Ford River Access site is a relatively highly used site during the river-floating season and is approximately ¼ mile from the Ford Cabin Rental. Besides the Hornet trailhead, which accesses the Hornet Lookout, the remaining sites in this subunit are dispersed campsites; most of which are adjacent to the North Fork Flathead River.

Red Meadow Moose Subunit

This subunit is about the right size for its purpose and contains a substantial amount of spring range, potential denning habitat and a relatively balanced proportion of forest age classes (Table 3-27); in all, these habitat components are well-distributed. In terms of habitat potential, this subunit contains the elevational range (3,600-8,000 feet), diversity of forest age classes, riparian habitats and presence of highly preferred avalanche chutes (~20) to make a critically important grizzly bear area. Most of the habitat types contained within this subunit produce important grizzly bear foods such as cow parsnip and huckleberry. Private land is clustered on the very east end of the subunit, leaving the majority of this subunit free from residences and the problems permanent human presence can present to grizzly bears. The fact that there is an abundance of seasonal habitats may help reduce potential grizzly bear incidences on private land.

The south-facing slope, north of Red Meadow Creek provides the best diversity of habitats in the entire subunit and perhaps the entire North Fork drainage. The valuable habitat features are the presence of avalanche chutes interspersed with patches of forest cover, riparian habitats and abundant huckleberry production. This is an extremely important habitat especially during the spring, and is valuable during the other seasons (including denning season.) An existing seasonal spring motor vehicle closure of the Red Meadow Road provides the opportunity for grizzly bears to effectively use available habitats during early spring.

Habitat Security

This subunit is relatively secure, though it does not meet the OMAD or security core standards of A-19 (Table 3-27). However, an existing spring motorized closure (April 1-May 31) on Red Meadow Road (#115) is an extremely beneficial road management action for grizzly bears not reflected in Amendment 19 numbers (only roads that are either open or closed to motorized use for the entire non-denning period count in A19 calculations.) The April 1 to May 31 closure of this road is of high value to grizzly bears. Although this closure does not span the entire spring season (April 1 to June 30), it does overlap with the annual spring black bear hunting season and lowers the probability of mistaken-identity killings of grizzly bears. This is a high quality habitat due to the rich riparian area adjacent to Red Meadow Creek, past timber harvests recovering to where they are providing abundant forage and security cover, the presence of over 15 avalanche chutes, high elevation lakes, whitebark pine stands and abundant huckleberry production.

A19 calculations are based in part on a 500-meter (0.3 miles) buffer of habitat adjacent to roads (open or closed) that tends to be avoided by bears. Using this buffer distance, the spring closure of the Red Meadow Road adds approximately 4,783 acres of additional habitat security during spring; and perhaps more importantly, has created a non-motorized habitat patch within the subunit of approximately 26,000 acres or approximately 79% of the subunit. Therefore, during the important post-denning spring period (April and May), the total amount of habitat security afforded to grizzly bears is significant and provides motorized disturbance-free protection of some of the best habitat in the subunit. Mace and Chilton (2007) show one grizzly bear mortality within the upper portion of Red Meadow Creek during 2006.

Recreation Sites

Eleven inventoried recreation sites exist within this subunit; six of these are dispersed campsites and two are trailheads. Relatively heavy use occurs at the remaining three sites; Schnaus Cabin rental, Red Meadow Lake Campground and Sondreson Meadows. Dispersed recreation occurs throughout the year at Sondreson Meadows with the renters of Schnaus Cabin (½ mile away) typically recreating there. The Red Meadow Campground is located at the head of the Red Meadow Creek drainage (at the saddle of the Whitefish Range), and is located in high quality grizzly bear habitat. This campground is open during the snow-free season, generally between June and October. No recent bear-human conflicts have been documented at this site.

Hay Creek Subunit

This subunit is comparable in size and shape, and contains similar habitat values as Red Meadow Moose (RMM, Table 3-27). In this subunit, the avalanche chutes on the south-facing slopes above Hay Creek and riparian areas adjacent to Hay Creek, Moran Creek and their tributaries contribute to high quality grizzly bear habitat. Most of the habitat types contained within this subunit produce important grizzly bear foods such as cow parsnip and huckleberry. Private lands are clustered on the very east end of this subunit leaving the majority of the area free of permanent human presence. However, bears in upland habitats desiring to get to riverine habitats adjacent to the North Fork Flathead River must cross privately owned lands in order to get there; this often comes at a risk of being attracted to human food, garbage and other attractants. Overall, the landscape of this subunit currently provides reasonably balanced proportions of forest age classes and high and low elevational seasonal habitats (Table 3-27), as discussed for the RMM subunit, making for a subunit with high quality habitat potential.

Habitat Security

Perhaps the main difference between this and the RMM subunit is that Hay Creek does not have a through road. This generally means a higher level of habitat security because there is no real destination or attraction that motivate people, perhaps other than locals, to spend the driving on a dead end road. Although Hay Creek has a road that traverses approximately 2/3 of the way up the drainage and then turns into a motorized trail, it does not receive nearly the motorized use as the Red Meadow Creek Road, which attracts people from both sides of the Whitefish Range.

This subunit has a high OMAD (39%) but a low security core (41%), so does not meet all A19 standards (Table 3-27). There are no spring motorized access restrictions anywhere in the subunit. Consequently, bears have reduced habitat security and the risk of mortality, especially during the spring black bear season, is relatively high. There have been at least three recorded mortalities in this subunit in 1983, 1990 and 1999. Two of these mortalities were on private lands and the third (1983) was in lower Hay Creek on National Forest land. Mace and Chilton (2007) show two grizzly bear mortality within the lower portion of Hay Creek during 2005.

Recreation Sites

Eight inventoried recreation sites exist within this subunit; three of these are dispersed campsites and three are trailheads. Relatively heavy use occurs at the other two sites, Ben Rover Cabin rental and the Polebridge River Access. Both of these sites are adjacent to year-round open roads, and there is high potential for food storage violations to occur, especially at the river access site. No recent bear-human conflicts have been documented at either of these sites.

Environmental Consequences

Chapter 2 identified Issue #1, regarding Amendment 19 motorized access standards/objectives within grizzly bear subunits, as a significant issue. The effects indicators for this issue was the percent increase in security core and percent decreases in open and total motorized access densities.

In addition, the following effects indicators were used to understand what the potential effects on grizzly bear/habitat from proposed fuel reduction activities analysis would likely be:

- Whether fuel reduction and prescribed burn post treatment vegetation conditions would result in potential grizzly habitat use.
- *Longevity* of expected project implementation disturbances and *potential displacement* from seasonal habitats.

Direct and Indirect Effects

Alternative 1 (No Action)

This alternative would leave the Red Meadow Moose (RMM) and Hay Creek subunits in their current A19 condition (see Table 3-27). Habitat security would not be improved and the environmental baseline would continue to “harm” the grizzly bear, as per the Biological Opinion (US Fish and Wildlife Service 2004). Relative to the Lower Whale subunit (because A19 objectives were amended thru the Record of Decision for the Robert Wedge Post-Fire Project (US Forest Service 2004) and road management actions to produce the amended numbers are on a pre-set timetable), this No Action alternative would not prevent the achievement of amended A19 standards; therefore, the environmental baseline would be within the anticipated “incidental take” (US Fish and Wildlife Service 2004).

Since there would be no vegetation treatments, currently grizzly habitat conditions would remain unchanged and there would be no effects related to disturbance and/or potential displacement of grizzly bears.

Effects Common to Each Action Alternative

According to a recent US Fish and Wildlife Service Biological Opinion (2005; pg. 152), “Forest activities shall not result in an increase in OMAD (open motorized access density), TMAD (total motorized access density) or decrease in security core habitat without additional consultation.” Consultation has occurred (project file, section N) and the proposed mitigation, to avoid increases in OMAD/TMAD, would be to close selected currently open roads during the same timeframe as the proposed use of restricted roads/temporary roads/use of historic road templates that would occur within each subunit. A sufficient section of currently open road would be closed within each subunit to maintain the OMAD and TMAD at their current levels during project implementation. None of the alternatives would result in reductions in security core habitat. Existing habitat security based on current A19 conditions (i.e. % change in OMAD/TMAD would not change due to project implementation within any of the subunits in this analysis.

The proposed 0.3 miles of new road to provide the Department of Natural Resources and Conservation (State) access to their land would be off the North Fork Road (a county road.) This road segment would be within the area (500 meters/0.3 miles from each side of the road) accepted by A19 as the buffer that grizzly bears tend to avoid. Considering the location of this

road, measurable effects on grizzly bears/habitat from this relatively short segment of road would not be expected.

All mechanical fuels reduction activities would occur outside of the post-denning spring season (April 1 to June 30). Project implementation disturbance activities and potential displacement of grizzly bears would occur either during summer or autumn. Some activities may occur during the denning season (December 1 to March 31) and this would not be expected to affect denning grizzly bears. Implementation of the prescribed burns would occur during spring or fall; the duration of activities would be relatively short and, based on past experiences, would be in the range of 1-2 hours of helicopter use per prescribed burn unit. This would result in an estimated 1-2 days of disturbance during the spring or fall.

Implementation of road BMPs would be a connected action to this project that may occur during the spring season on open roads and may have displacement effects on bears that frequent open road-side habitats. Other BMPs on restricted roads would occur after July 1 to avoid more substantive displacement effects on grizzly bears.

Effects of Proposed A19 Motorized Access/Security Core Habitat by Subunit for Alternative 2, 3 and 4.

Lower Whale Subunit

As indicated in the 'No Action' alternative discussion, A19 standards were amended (US Forest Service 2004) for the Lower Whale subunit and access management actions are on a scheduled trajectory to meet those standards. Therefore, the Red Whale Project would have no effect on the achievement of amended A19 standards/grizzly bear habitat security for the Lower Whale subunit under any of the action alternatives. As discussed above, there would be no net loss of A19 related habitat security, because temporary use of restricted roads during the non-denning season would be offset by closure of currently open roads.

Specific access needs for accomplishing the proposed Red Whale Project fuels reduction activities would require a need to temporarily: 1) use a currently yearlong restricted road (~1.0 mile); 2) construct approximately 0.3 miles of temporary road; and 3) refurbish for use an historic road, approximately 0.7 miles in length in order to accomplish fuels reduction work. Both the currently restricted road and proposed temporary road location are in the 500-meter buffer of an existing open road and, therefore, are within road-adjacent avoidance areas for grizzly bears. A proposed access route (#1671) is scheduled to be bermed this summer, creating additional security core habitat that would overlap a historic road identified as potential access to Unit F. In order to remain in compliance with A19 "no net loss of security" potential use of the historic road would have to occur during the denning season.

In order to mitigate the temporary increase in OMAD, two options have been proposed in all of the alternatives. The first option is to temporarily close the upper two miles of the existing yearlong open road #9805 (Hornet) during the time period that restricted/historic/temporary roads would be used. These upper sections of the Hornet Road are located in higher elevation habitat within the 2003 Wedge Canyon Fire area and not likely producing huckleberries or other

foraging habitat. In the absence of huckleberry or other forage production in the burned portion of the subunit (65% of the subunit was burned), bears may occur more frequently in the green forest where project activities would occur. Since bears may be occurring where project activities are located more so than the area identified as mitigation, there is higher potential for displacement of bears.

The second option to mitigate for the temporary increase in OMAD is to use the currently restricted/historic/temporary roads in the winter. This option is more favorable towards grizzly bears than the first option because use of the existing restricted roads would occur during the denning season and could avoid displacing bears.

Red Meadow Moose Subunit

Alternatives 2 and 4 would improve grizzly bear habitat security and respond to A19 standards by increasing security core habitat; neither OMAD nor TMAD would be improved as compared to the existing situation (Table 3-28). Security core habitat would be improved upon and would meet the A19 standard of $\geq 68\%$ by virtue of the berming of approximately 7.5 miles of the 'Benchmark Road' (#1681). This action would bring security core habitat that exists above the Benchmark Road down slope to within 500 meters of the Red Meadow Road. Habitat included within the proposed additional security core habitat is dominated by older aged forests intermingled with early seral habitats originating from past timber harvesting and the 1988 Red Bench fire. A19 standards for TMAD and security core would be met and OMAD would remain at 25% with Alternatives 2 and 4. The highly beneficial spring closure (April 1- May 31) of the Red Meadow Road would remain in place.

The commitment to meet all A19 standards with this project would only occur under Alternative 3. Perhaps the most beneficial effect on grizzly bear security that Alternative 3 proposes is the year round closure of a portion (~4 miles) of the Red Meadow Road (#115). The portion of this road proposed for closure would reduce motorized use effects on the majority of the avalanche chutes in the Red Meadow drainage and would allow grizzly bears to freely range throughout the closed-road portion of the drainage with minimal disturbance (the road would still be available for administrative use). The Red Meadow drainage would become a significantly more effective habitat area for bears because the 4 miles of Road #115 to be closed would cease to be a through road for the public. Bears would likely make more effective use of the 0.3 miles of each side of road-adjacent habitat that is presumed by A19 to be avoided by bears in response to motorized use on roads. This equates to approximately 1,536 acres of habitat that would not be avoided by bears along the Red Meadow Creek road due to motorized use. Security core would exceed the A19 security core standard of a minimum of 68% and be at 72% of the subunit; the result of the berming of the entire Benchmark road. A summary of the quantifiable effects of each of the alternatives on Forest Plan A19 grizzly bear habitat security is shown in Table 3-28.

To accomplish the proposed Red Whale Project fuels reduction activities for Alternatives 2 and 4, there would be a need to temporarily use approximately 3.5 miles of the 'Spruce Creek Cut-across Road' (Road #1685). There is a yearlong restriction on motorized use on this road, with the exception of over snow motor vehicles which are allowed between December 1 and April 1 (US Forest Service 2007). Use of this road for project activities would increase OMAD and

would violate the requirement of A19 to have no net gain in OMAD. The proposed mitigation for this subunit would be to restrict use on the upper 1.2 miles of the Moose Creek road (#210 C). In terms of tradeoffs, the Moose Creek road traverses high quality diverse habitat containing both spring and summer foraging opportunities; and Road 1685 traverses through the 1988 Red Bench burned area and does not currently provide good summer foraging opportunities. Therefore, this mitigation is expected to offset potential habitat security infringements, by the proposed restricted road access use of the Moose Creek road.

For Alternative 3, use of temporary restricted roads would be minimal. Approximately, 0.4 miles of the gated Road #1685 would be needed; this would not make a numerical difference in OMAD and would address the A19 standard of no net gain in motorized density. It is not expected that bears would experience habitat avoidance because of Alternative 3 restricted road access needs.

Hay Creek Subunit

The three action alternatives differ substantially in responding to A19 within this subunit and each would potentially have considerably different effects on grizzly bears/habitat. Each of the alternatives would have a combination of road and motorized trail closures and will be discussed separately.

Alternative 2 – Hay Creek Subunit. This alternative would achieve the A19 numbers displayed in Table 3-28. The improvement in OMAD would come from a change in status of 4 trails, (a cumulative length of approximately 24 miles) from motorized to the non-motorized category. Current and past conditions of two of the four trails (#14 – Coal Ridge and #239 – Coal Creek/Coal Ridge) preclude most motorcycle use due to the lack of maintenance and the presence of trees across the trails. Consistent motorized use only occurs on approximately six miles of Trail #3 (Hay Creek) with potential use of the three miles on Trail #2 in Moran Creek (Beth Burren, Recreation Forester, Glacier View Ranger District; personal communication). This means that although the A19 OMAD percentage would numerically improve from the existing 39% to 24% of the subunit, the actual on-the-ground change would not be as considerable as the numbers suggest. The elimination of wheeled motorized use in the Hay Creek drainage would provide a substantial benefit to bears that use the area because it possesses similar, but not quite the high-level quality habitat as Red Meadow Creek, the next drainage to the north. Even though bears would not realize any immediate net habitat benefits from legal motorized closures from the other trails (Table 3-28) there would be long-term benefits for bears because no established motorized use would likely occur.

With respect to proposed motorized access restrictions on existing open roads, this alternative would provide bears using the Hay Creek drainage with substantial spring range habitat protection. Approximately 4.6 miles of currently yearlong open roads would have a spring motorized use restriction placed on them in order to provide grizzly bears the opportunity to use most of the drainage in a disturbance-free manner. The drainage contains high quality habitat with numerous avalanche chutes and the probability of mistaken-identity grizzly bear mortalities during the spring black bear season would be highly reduced because of motorized access restrictions. Although this alternative would not fully achieve all A19 standards (Table 3-28), it

would provide substantial improvements in habitat security as compared to the existing situation. Grizzly bears would be expected to particularly benefit from the spring motorized access restrictions, which are not reflected numerically in A19.

In terms of restricted road access needs for accomplishing the proposed Red Whale Project fuels reduction activities for Alternatives 2 and 4, approximately 1.5 miles of three different roads that are either gated (one road) or bermed (two roads) within this subunit would be required. However, for the gated road (#1685), although only 0.4 miles of this road that are within the subunit would be required, in order to get to this segment approximately 2.0 miles of this road in the adjacent subunit (Red Meadow Moose) would need to be opened. The two bermed roads that would need to be re-opened would impact habitat security but not to a significant degree. The proposed mitigation for using these restricted roads would be to close trails (#2, #14 and #239) to motorized use. However, though these motorized use trails are available, they are not receiving much use due to lack of trail maintenance. Therefore, this mitigation does not appear to be adequate to offset the opening and use of three different roads in the subunit.

Alternative 3 – Hay Creek Subunit. This alternative would have similar trail access management strategy as Alternative 2 and the effects would be the same. However, the Cyclone Lookout trail would be closed, a benefit to grizzly bears. The motorized access strategy for roads would be very different with this alternative. All A19 standards (OMAD/TMAD/Security Core) would be met in this alternative and grizzly bears would significantly benefit from two non-motorized drainages (Hay and Moran Creeks) containing high quality habitats. The roaded access routes in both Hay (#376) and Moran Creek (#5241) drainages would become non-motorized and bears using these drainages would realize a gain in available road-adjacent habitats (Table 3-28). There would be a considerable reduction in the risk of human-caused grizzly bear mortality and an increase in habitat effectiveness within each of these drainages.

The Benchmark Road (#1681), currently a year round closure with a gate, would have a berm placed at its junction with the Spruce Creek Road (#1685) which would eliminate what little administrative traffic that now occurs. Permanent elimination of motorized access in grizzly bear habitat would be of significant benefit for grizzly bear habitat effectiveness.

In terms of restricted road access needs for accomplishing the proposed Red Whale Project fuels reduction activities for Alternative 3, approximately 0.3 miles of bermed road #1643 and 0.8 miles of bermed roads #10845/10845B would be needed. The proposed mitigation for re-opening and using currently closed roads is to implement the proposed berm closures on the Moran and the Hay Creek roads prior to project activities in this subunit. This tradeoff is expected to be more than adequate to offset habitat effects expected from reopening existing closed roads.

Alternative 4 – Hay Creek Subunit. This access management alternative is the same as the proposal for Alternative 2 with two exceptions: the Moran Creek Road (#5241) would be bermed and the Hay Creek trail (#3) would remain open to motorized use on a seasonal basis. The berming of the Moran Creek Road would provide a substantial benefit to overall grizzly bear habitat security, as discussed in Alternative 3. Leaving the Hay Creek trail as a seasonal motorized route would provide definite habitat security benefits during the spring. However, the entire drainage would be subject to motorized use for the summer and fall seasons and,

consequently, habitat effectiveness within the drainage would be similar to the existing situation. In terms of use of temporary restricted roads needed for accomplishing the proposed Red Whale Project fuels reduction activities see the discussion under Alternative 2.

Table 3-28. Amendment 19 Parameters as Affected by the Red Whale Project Action Alternatives.

Amendment 19 Parameters	Subunits								
	Lower Whale ¹			Red Meadow Moose			Hay Creek		
	Alternatives			Alternatives			Alternatives		
	2	3	4	2	3	4	2	3	4
Proposed A19 OMAD (%)	36	36	36	25	19	25	24	13	26
Proposed A19 TMAD (%)	18	18	18	17	17	17	13	13	13
Proposed A19 Security Core (%)	46	46	46	68	72	68	55	68	53
Ac of Security Core (SC) Habitat	7805	7805	7805	20,951	22,013	20,951	17,082	20,990	16,403
Ac of SC Compared to Alternative 1	NA	NA	NA	5020	6082	5020	2163	6071	1484
Ac >500m From Rd/Tr - Not Core	1334	1334	1334	176	169	176	2,624	2,157	2,564
Acres w/in 500m from Rd/Tr ²	7848	7848	7848	9,651	8,596	9,651	11,172	7,732	11,912
Ac of Road Adjacent Habitat Gained ³	NA	NA	NA	2841	4416	2816	9062	12,250	8448

¹A previous decision has access management on a scheduled trajectory to meet amended standards for which this project would not affect; see text under Lower Whale Subunit (above).

²Rd/Tr=roads or motorized trails; only National Forest and/or State acres are included; no private lands.

³Approximate acres of habitat within 0.3 mi of each side of motorized routes that would be gained and not avoided by bears due to the legal exclusion of motorized use during the entire non-denning season; this is all relative to the existing legal closures on access routes.

Effects of Proposed Vegetation Treatments on Grizzly Bear Habitat

Each of the alternatives would alter existing vegetation/habitat conditions in one of 6 ways (see Vegetation section) and in a variety of locations. The basic theme of the vegetation treatments is specifically aimed at reducing fuel by modifying existing forest stand structures that currently have what are considered closed-canopies, i.e. stands of trees whose tops more or less form a continuous overstory layer of tree crowns. The desired condition for targeted sites would be to create a discontinuous layer of tree crowns. The purpose of the proposed prescribed burns would be similar to that of fuel reduction, except that the method and locations would be more oriented toward enhancing wildlife habitat understory grass/forb/shrub vegetation.

Reducing the density of the trees would create open forest stand conditions. This generally has two different effects on grizzly bear habitat. One effect would be understory vegetation receiving more sunlight, which would provide better growing conditions for berry-producing bear foods

such as huckleberry. Even though analysis of field data (project file, section N) showed that huckleberry shrubs were not abundant within any of the proposed treatment sites, other shrubs such as buffaloberry and serviceberry were consistently present and this vegetation component would likely benefit from more open forest stand conditions. The second general effect would be that understory vegetation that was once dense enough to conceal a bear would no longer be able to function in that manner, thereby making the area potentially less secure. This situation would be most relevant in proposed treatment sites that are adjacent to open roads; in some cases, units that are located adjacent to gated roads can also increase the loss of habitat security. In addition to the effects of changes in vegetation, the operational mechanical activities associated with vegetation treatments are assumed to preclude the grizzly bear use of the habitats (and adjacent areas) being treated, during the activity, and may result in displacement due to disturbance.

Table 3-29 provides data on proposed vegetation treatments within subunits and the general forest conditions within which these treatments would occur. In a generic sense, each of these treatments would be expected to add variety to the landscape's vegetation conditions that, if human disturbance was not an issue, could be used by grizzly bears. The likelihood of grizzly bears being able to effectively utilize habitat (natural or managed) is to a large degree dependent on the habitats' juxtaposition/distance to roads open to motorized use during non-denning seasons (Mace And Waller 1997). Habitats that are attractive to bears and happen to be next to a motorized route that do not contain sufficient vegetation screening cover from the road, increases the risk of mortality. In this context, results are presented of an analysis of which proposed treatment units could potentially be effectively used by grizzly bears based on the unit's distance from roads open to motorized traffic, and whether the unit was in a road-adjacent avoidance buffer zone (Table 3-30).

The following indicators were used to determine the effects of proposed vegetation treatments on grizzly bears/habitat:

1. The number of units/acres where vegetation treatments would likely be utilized by grizzly bears based on their distance from open roads.
2. The number of units/acres of vegetation treatments that would likely reduce habitat security and increase the risk of mortality based on their juxtaposition to open roads.
3. The potential for displacement of grizzly bears due to project implementation duration and location of activities.

Lower Whale Subunit – Vegetation Treatment Effects - Alternatives 2, 3 and 4

Eight to 13 different sites would be treated within this subunit, depending on alternative (Table 3-29). The proposed treatments within units would commonly result in a reduced density of trees, i.e. thinning. The exceptions to this are the 2 or 3 units (depending on alternative) that would be patch seed tree cuts and the light understory thinning (Unit A) which would remove smaller understory trees. From a potential grizzly bear food production perspective, all of the treatments would have the common result of increasing understory vegetation biomass over time, in response to the increased sunlight. This is expected to enhance productivity of existing shrubs/herbaceous vegetation as well as potentially increasing numbers of new understory plants. Assuming that the amount of incidental damage to existing vegetation occurs during the actual

thinning operations is minimized (while using skidders etc.), the result of the thinning treatments would be expected to yield higher production of understory plant biomass; this generally a good thing for grizzly bears. However, Mace et al (1997) modeled potential and realized habitat values at the landscape scale and found that human activities in lower elevations during spring had the highest impacts on female grizzly bears and road-related human activities were especially influential in reductions of potential and realized habitat grizzly bear habitat values.

Female grizzly bears generally are expected to be in mid elevations during the summer, although their use of other elevations continues (Mace et al 1997). Considering the burned condition of the majority of this subunit, grizzly bear use of lower elevations may be either higher than normal or little use of this subunit would occur and use of higher elevation habitats in adjacent subunits may occur. Because grizzly bears are individualistic, and can be found at any elevation during any given non-denning season, un-burned habitats in this subunit may be especially attractive to bears. Occasionally, road-adjacent habitats may also be attractive to bears but if cover is lacking there would be the potential risk of mortality. Table 3-30 shows which units, by alternative, are likely to be avoided and which could potentially be utilized by bears based on their distances from open roads; proposed units with perimeters adjacent to open roads were also identified. Roughly half of the units would be avoided due to their locations within the “avoidance zone” and half would potentially be effectively utilized by grizzly bears. Based on the potential for use of bear foods within open-canopied forest stands, as compared to the existing closed-canopied forest situation, there appears there would be a net benefit for grizzly bears by thinning forest stands. If units within the avoidance zone would generally not be used anyhow, whether thinned or not, there appears to be a net gain in habitat use potential within units outside of the avoidance zone, with each of the action alternatives.

Since there is potential for bears to utilize road-adjacent habitats, including managed sites; units that had some portion of their perimeters bordering open roads were identified (Table 3-30). This provided an index of the potential for a decrease in habitat security and increase in risk of mortality along open roads because of this project. Five of 8, one of 7 and six of 11 units for Alternatives 2, 3 and 4 respectively, would result in decreased habitat security and an increase in risk of mortality due to a lack of visual screens along each of the units’ common boundaries with open roads. Of particular concern is Unit C, which has approximately two-thirds of its boundary adjacent to open roads.

Alternative 3 provides un-thinned vegetation strips as part of its design and these only one unit that would increase the risk of mortality. In a subunit with a preponderance of private land and where approximately two thirds of it has recently been burned with a stand replacing wildfire, reducing hiding cover along open roads would not be beneficial.

Each of the alternatives would have the potential for displacement of bears during implementation of activities due to logging and related activities; the potential for displacement is especially high during the spring, after den emergence. Even though there is an A19 assumption that most bears avoid habitats adjacent to roads open to motorized use, there would still be potential for bears to occasionally occur in these areas and, therefore, logging-type activities such as being proposed can further displace bear.

Considering that bears are expected to most likely utilize habitat within or adjacent to thinned units during spring (because this is low elevation) and that it would take an estimated two seasons (July 1 – March 31) to complete project activities, there is potential for displacement of bears. Displacement is lessened by not logging during the spring period which is a design criteria in all alternatives and because most units in each of the alternatives are near or adjacent to open roads where there has been some level of displacement that has already occurred.

In order to avoid continued displacement within this subunit, winter fuels reduction activities should be considered for those units outside of the avoidance zone as displayed in Table 3-30 (unit 4B is already proposed for winter operations due to security core habitat). In addition, proposed unit B though listed in Table 3-30 as being within the avoidance zone, would require the use of a restricted road and re-construction of a historic road in order to treat with a patch seed tree harvest. The use of road restricted Road 5399 and reconstruction of historic road 362214B for use during the non-denning season for treating unit B would be additive to the previous displacement activities associated with the Tepee Salvage sale that operated in the same general area during 2005 and 2006. It is recommended that treatment of unit B occur during the winter, along with units all or parts of D, E, F, and H (Table 3-30), in order to avoid excessive consecutive years of disturbance during the non-denning season.

Table 3-29. Proposed Red Whale Project Vegetation Treatments within Grizzly Bear Subunits.

Proposed Vegetation Treatments ¹	Subunits and # Ac/Units by Alternative								
	Lower Whale			Red Meadow Moose			Hay Creek		
	2	3	4	2	3	4	2	3	4
Patch Seed Tree	61/2	45/2	130/3	93/2	93/2	93/2	45/2	36/2	45/2
Tree Thinning of 70-90 Year Old Trees; Lodgepole Pine; Single Age/Story	108/1	70/1	108/1	0	0	0	42/1	42/1	42/1
Tree Thinning of 70-90 Year Old Trees; Mixed Species; Single Age/Single Story	148/3	72/5	251/5	447/5	167/5	451/7	139/2	21/1	605/6
Remove Understory Trees in Mixed, Multi-aged Stands (70-120+ years)	5/1	0	5/1	87/1	9/1	87/1	37/1	37/1	37/1
Tree Thinning: 20-50 Year Old Trees	176/1	176/1	179/3	289/4	68/2	609/9	110/1	110/1	110/1
Tree Thinning: 18 Year Old Trees	0	0	0	131/7	46/1	549/11	237/10	0	380/13
Total Acres	498	363	673	1,047	383	1,789	610	246	575
Number of Units	8	9	13	19	11	28	17	6	24
Prescribed Fire: Low-Mod Intensity	0	0	0	786/6	614/4	786/6	578/2	578/2	578/2

¹Patch Seed Tree treatments would occur within the dense 70-90 year old, single-storied lodgepole pine stands; prescribed burns would target 30-50% of proposed sites to be burned to produce a mosaic pattern on the landscape.

Table 3-30. Red Whale Proposed Treatment Units and Their Locations Relative to the Avoidance Zone (AZ) Relative to Open Roads.

Subunit	Units In AZ ¹			Out of AZ			Units Adjacent to Open Roads ²
	Alt 2	Alt 3	Alt 4	Alt 2	Alt 3	Alt 4	
Lower Whale	A,B,C,G	B, C, G	A,B,C,G, 4A,4C	D, E, F, H	D,E,F,H	D,E,F,H, 4B	A, C, D, E, G, 4A
Red Meadow Moose	G,K,M,N, O,P,U,W	G,M1,M2, P	4C,4D,4F, 4H,4R,G, K,M,N,O, P,U,W	H,I,J,L,S1, S2,S3,S4, T3,Q,R	H,I,J,L, Q,R,S4	4E,4G,4I, 4J,H,I,J, L,Q,R,S1, S2,S3,S4, T3	G, J, K, L, M, N O, P, Q, R,U,4D, 4F
Hay Creek	DD, FF, GG, X, Z	FF, GG	DD,FF,GG, X,Z, 4N, 4M, 4P, 4Q	BB,CC,EE, HH,T1,T2, T3,T4,V, Y1,Y2,Y3	BB, CC EE, HH	BB,CC,EE, HH,T1,T2, T3,T4,V, Y1,Y2,Y3 4,J,4K,4L	Z, DD, GG, 4M, 4N, 4P, 4Q

¹AZ = Avoidance Zone—at least 2/3 of unit acres were within 0.3 miles of an open NF or County road; private roads not included.

²Some portion of unit borders an open road; includes private roads.

Red Meadow Moose Subunit – Alternatives 2, 3 and 4

Eleven to 30 different sites would be treated within this subunit, depending on alternative (Table 3-29). As discussed for Alternative 2, the proposed treatments within units would commonly result in a reduced density of trees; the exceptions to this are that 2 units that would be patch seed tree cuts and 1-3 units would have a light understory thinning, which would remove smaller understory trees. As discussed in the Lower Whale subunit, the result of the thinning treatments is expected to yield higher production of understory plant biomass; this would be beneficial for grizzly bears.

Table 3-30 shows which units are likely to be avoided and which could potentially be utilized by bears based on their distances from open roads. Less than half of the units within each of the alternatives would be avoided and more than half of the units would potentially be effectively utilized by grizzly bears. Compared to the existing closed-canopied forest situation, there would be a net benefit for grizzly bears by thinning forest stands because of the increased early succession vegetation biomass. If units within the avoidance zone would generally be avoided by grizzly bears anyhow, whether thinned or not, then there appears to be a net gain in habitat use potential with each of the action alternatives in those unit treatments that would not be avoided.

Since there is always a potential for bears to utilize road-adjacent habitats, including managed sites, units that had some portion of their perimeter that bordered an open road were identified for determining the decrease in habitat security and increase in risk of mortality (Table 3-30). Eleven of 19, eight of 11 and fourteen of 30 units for Alternatives 2, 3, and 4 respectively, would result in decreased habitat security and a potential increase in risk of mortality due to a lack of visual screens. Units of particular concern in this regard include: K, L and M1/M2. Also, field

surveys of habitat in and around units M1/M2 indicated the area facilitated wildlife movements in an east/west direction. Alternative 3 provides un-thinned vegetation strips adjacent to some units as part of its design and this would substantially help in decreasing the risk of mortality. The North Fork Road, Red Meadow Road and, to a lesser extent, Moose Creek Road facilitate relatively high motorized traffic.

Each of the alternatives would have the potential for displacement of bears during implementation of activities due to logging and related activities; the potential for displacement is especially high during the spring, after den emergence. Even though there is an A19 assumption that most bears avoid habitats adjacent to roads open to motorized use, there would be some potential for bears to occasionally occur in these areas and logging-type activities can further displace bears.

Considering that bears are expected to most likely utilize habitat within or adjacent to thinned units during spring (because this is low elevation) and that it would take an estimated 3, 1, and 4 operating seasons (July 1 – March 31) for Alternatives 2, 3 and 4, respectively, to accomplish project work activities in this subunit there is potential for displacement of bears. Displacement is lessened by not logging during the spring period which is a design criteria in all alternatives. Since Alternative 4 treats more acres and would take longer to accomplish the fuels work, this alternative would have more displacement than the other alternatives. The area of highest potential for displacement is in the Moose Creek drainage because there is not that much human activity in this area; most activity here occurs during hunting season. In addition, habitats in and adjacent to the units in Moose Creek have higher habitat value than other unit locations to the east and south. An aspect of proposed units in Moose Creek that lowers the displacement potential is that activities would mostly involve thinning of sapling stands and would not require heavy equipment use. Considering that Units J (164 acres) and 4E (80 acres; Alternative 4 only) would be scheduled for winter thinning activities, because of security core, non-denning season displacement impacts would be lessened. Therefore, implementation activities in units in the Moose Creek drainage would be expected to have some displacement potential within this subunit. Considering there have been no major disturbances in the last 10 years and that most Red Whale Project implementation activities would occur in the east end of this subunit, it does not appear that the proposed activities would have adverse effects to grizzly bears in this subunit.

Hay Creek Subunit – Vegetation Treatment Effects - Alternatives 2, 3 and 4

Six to 24 different sites would be treated within this subunit, depending on alternative (Table 3-29). As discussed for Alternative 2, the proposed treatments within units would commonly result in a reduced density of trees. The exception to this is that 2 units that would be patch seed tree. There is a heavy emphasis on treating sapling-sized 18 year old stands in Alternatives 2 and 4; these stands originated from the 1988 Red Bench Fire. Most of these stands are currently so dense as to offer very little in terms of forage value for bears, but they do provide excellent hiding/security cover. Thinning of pole-sized stands would occur and, as discussed in the Lower Whale subunit, the result of the thinning treatments in both sapling and pole stands is expected to yield higher production of understory plant biomass and would be beneficial to grizzly bears.

Table 3-30 shows which units are likely to be avoided and which could potentially be utilized by bears as potential foraging habitat, based on their distances from open roads. A majority of the

units in each of the alternatives, because they are outside of the avoidance zone, could be effectively utilized by grizzly bears. Compared to the existing closed-canopied forest situation, it appears there would likely be a net benefit for grizzly bears by thinning forest stands.

As previously discussed, units that had some portion of their perimeter bordering an open road were identified in order to determine the potential decrease in habitat security and increase in risk of mortality (Table 3-30). Three of 17, one of 6 and seven of 24 units for Alternatives 2, 3 and 4 respectively, would result in decreased habitat security and a potential increase in risk of mortality due to a lack of visual screens along each of the units' common boundaries with open roads. Units of particular concern in this regard include DD and the following units proposed in Alternative 4 only: 4M, 4N, 4P, and 4Q.

Each of the alternatives would have the potential for displacement of bears during implementation of activities due to logging and related activities; the potential for displacement is especially high during the spring, after den emergence. Even though there is an A19 assumption that most bears avoid habitats adjacent to roads open to motorized use, there would be some potential for bears to occasionally occur in these areas and logging-type activities can further displace bears.

Considering that bears are expected to most likely utilize habitat within or adjacent to thinned units during spring (because this is low elevation) and that it would take an estimated 2, 1, and 3 operating seasons (July 1 – March 31) for Alternatives 2, 3 and 4, respectively, to accomplish project work activities in this subunit there is potential for displacement of bears. Displacement is lessened by not logging during the spring period which is a design criteria in all alternatives. Additionally, there are no habitat areas within or adjacent to proposed units that have especially high habitat values. For those units that are away from open roads, most are within the densely stocked area of saplings that originated after the 1988 Red Bench Fire and it is unlikely that bears would be attracted during the summer to this area because of the lack of huckleberry shrubs.

Additionally, considering that there have been no major disturbances in the last 10 years (except a 15 acres salvage in 2000 along an open road) and because nearly half of the treatment acres would occur within densely stocked sapling stands, the proposed activity would not have adverse effects to grizzly bears in this subunit.

Prescribed Burns – Alternatives 2, 3 and 4

The proposed prescribed burns would occur in the Red Meadow Moose and Hay Creek subunits. Approximately 1,364 acres on 8 sites are proposed for burning in Alternative 2; Alternative 4 has one additional unit for a total of 1431 acres; and Alternative 3 includes 6 sites for about 1,200 acres (Table 3-29). The purpose of the proposed burns is to improve the quality of spring forage conditions for species such as grizzly bear, elk, deer and moose by creating more favorable growing conditions for forbs, shrubs and grasses. These sites were specifically selected because they occur on southerly facing slopes and because these aspects are the first to become snow-free during the spring, therefore, opportunities for grizzly bears and other herbivores for forage would be enhanced. In addition to forage enhancement the burns would produce snags on the landscape

and provide habitat for many snag-associated wildlife species. Three of the proposed burn units (4, 5, & 6) could be visible from the Red Meadow Road and it would be possible that risk of mortality could be increased during spring if the mosaic-type openings produced by the expected low-moderate intensity burns are visible from the road. This potential is expected to be low because: 1) straight line distances from the road to the bottom and top edges of the burn units range from 500-1,200 yards; 2) during the spring, the Red Meadow road is closed to motorized use and the closest motorized access would be approximately 1.8 miles to the east; and 3) road-side vegetation screening occurs alongside the Red Meadow Road which would reduce this potential. Therefore, the expected effect of prescribed burning would be enhanced spring range foraging opportunities for grizzly bears under each alternative. An increase in risk of mortality specifically resulting from the proposed burns is not expected.

Helicopters would be used to accomplish the burns and it could take from 1-2 hours per unit, depending on logistics and weather conditions. The use of helicopters can create a substantial amount of disturbance and potential displacement, depending on the intensity and duration of helicopter activity. In this case, with the exception of burn unit #7 and #9, all units are entirely within or partially within grizzly bear security core habitat; motorized use is prohibited in security core habitat. Though helicopter use does not fit the A19 definition of “motorized use” (as in a route on the ground), extended helicopter use (as in days or weeks) within/above security core habitat can certainly have disturbing/displacing effects on grizzly bears in the area. However, with the proposed burns, because helicopter use would not be extended (1-2 hours per unit), adverse displacements effects are not expected.

Cumulative Effects

Alternative 1 – No Action

Maintaining the status quo (not implementing any of the proposed Red Whale Project management actions) would mean that current habitat conditions on Forest Service land within two of the three subunits (Red Meadow Moose and Hay Creek) comprising the cumulative effects area (CEA), would remain the same. Lower Whale is on a trajectory to meet amended A19 standards and this project, under any alternative, would not interfere with that progress. Habitat changes on Forest Service land would be the result of natural processes such as windstorm events, wildland fires, avalanches, insects/diseases, etc. Some relatively minor amount of habitat changes in the Lower Whale subunit would continue. This would be as a result of past decisions on the Robert-Wedge Post-Fire Project EIS, allowing post-fire salvage logging, implementation of new motorized access restrictions and other smaller projects such as reforestation.

Past and ongoing human activities in the CEA, that are part of the environmental baseline, and will continue to affect grizzly bear habitat include:

- **Past Road Building.** Nearly 300 miles of road (includes State/county and private) have been constructed within the CEA over the years. Although many of these roads are restricted or have become historic, these roads have reduced habitat effectiveness and allowed human access deep into the grizzly bear’s domain. Mace and Waller (1997)

demonstrated relationships between roads and grizzly bear habitat use patterns, concluding, after ten years of radio-collared grizzly bear locations, that bears tended to avoid roads, especially those open to motorized traffic.

- Past Timber Harvesting. Most of the approximately 23,000 acres that had some level of timber harvesting within the CEA occurred during the 1960s (23%) and 1970s (50%), and are now providing adequate levels of security cover and production of forage (grasses, forbs and fruit-bearing shrubs);
- Ongoing Maintenance of Open Roads. Periodic blading and brushing of roads will continue to have potential for short-term disturbance and displacement of grizzly bears, especially if done during the spring;
- Human Sites. The Red Meadow Campground, two river access sites, 6 trailheads, 5 cabin rentals, and numerous dispersed campsites are locations that have been mostly avoided by bears; however, these sites have the potential to attract bears if people are not vigilant about storing attractants in a bear resistant manner;
- Spring Black Bear Hunting. This annual, 1 1/2-month Montana Department of Fish, Wildlife and Parks sponsored activity is expected to continue an ongoing risk-of-mortality potential to grizzly bears due to mistaken-identity;
- Access Restrictions. In acknowledgement of wildlife security benefits and A19 requirements, motorized access restrictions have been implemented over the years within the CEA. In particular, the spring closure of the Red Meadow Road has been especially beneficial to grizzly bears; additional road access restrictions and subsequent habitat security benefits are ongoing in response to previous decisions (Hornet Wedge Timber Sale and Robert-Wedge Post-Fire Project);
- Firewood Cutting, Berry Picking, Mountain Biking, Motorcycle Riding, Hiking, Big Game Hunting, Gathering Forest Products and Recreational Driving. All of these activities have the potential to have disturbance effects on grizzly bears, but are activities relatively infrequent and low impact.

The motorized access density levels in the Red Meadow Moose and Hay Creek subunits would remain at current conditions and achieving A19 standards would not occur. Past incremental degradations in grizzly bear habitat and reductions in habitat security primarily as a result of the road-building program over the past 50 years, has facilitated increased/ongoing human activities in grizzly bear habitat. Recent motorized access restrictions has retrieved some of this lost security/habitat degradation.

Alternatives 2, 3 and 4

Past and Present Actions

The CEA lies on the eastern slopes of the Whitefish Mountain Range and extends to the North Fork Flathead River; it encompasses an area of approximately 85,500 acres. There are approximately 3,500 acres of DNRC (State) and 7,500 acres of private land within the CEA. With regard to State land, grizzly bears have had to deal primarily with two kinds of habitat modifications - road building and timber harvest. With most (63%) of the State land being located in the Hay Creek subunit, this is where most road building and timber harvesting has occurred. None of the roads on State land are open to motorized use, and this has been a good

mitigation for grizzly bears. With regard to timber harvesting on State lands, there probably has been an unknown level of habitat degradation, however, on the whole the early successional habitats created by timber harvesting has probably increased the overall amount of potential foraging habitat available to bears. Although road construction initially had an adverse effect on grizzly bears, because they are currently restricted, this mitigation provides protection and security for bears to utilize habitats on State lands.

Privately owned lands have been a constant in the North Fork since the homesteading days; there are even private lands in Glacier National Park, adjacent to the CEA. Human presence and development of these lands has been ongoing and this has meant that bears have had to respond. Some bears avoid and some are attracted to human sites, those that avoid usually live relatively long lives. Those bears that are attracted to human sites because of garbage, bird feeders and other attractants may eventually end up dead/removed from the population.

Forest Service lands dominate the CEA (Table 3-27) and a variety of activities have historically (and currently) occurred on these multiple-use lands. Fire suppression during the custodial days of the Forest Service, road building and timber harvesting, followed by recreational developments and activities (campgrounds, river access sites, trailheads, rental cabins, snowmobiling), public utilitarian uses of the forest (firewood cutting, hunting, mushroom picking, Christmas tree cutting, huckleberry picking, etc.), special use permits for a variety of private uses of public land, and commercial and institutional outfitting permits constitute the majority of human impacts that have reduced grizzly bear habitat effectiveness. In recent years, the extent to which many of these activities are allowed to occur has been curtailed because of motorized access restrictions. Specifically, A19 has been a habitat management tool that has retrieved some of previous habitat security levels available to grizzly bears prior to human development and this has allowed for more recent effective habitat use by grizzly bears. Recently, Amendment 24 (winter recreation) has been implemented and this would curtail the amount of area and time in which snowmobiling can occur; this will be especially beneficial during spring, after den emergence.

Within the Lower Whale subunit the combined activities of intensive firefighting efforts during the 2003 Wedge Canyon fire, the post-fire Burned Area Emergency Stabilization and Rehabilitation projects in the fall of 2003 (mostly), 2004 commercial and personal mushroom harvesting, and between 2005-2006 post-fire burned-tree salvage sales (Tepee, Hornet and Wedge sales) brought a considerable amount of human presence and activities into the area. Grizzly bear use of the area was probably curtailed in response to this multi-year presence of human activities in the area.

Reasonably Foreseeable Actions

On State lands, there is proposed timber harvesting in a section of land south and immediately adjacent to unit F (Moose Creek; section 36, T.36N, R. 22W). Initial estimates indicate that approximately 400-450 acres of timber harvesting will occur with expected implementation in September 2007. This section of land is in both the Lower Whale and Red Meadow Moose subunits. This level of timber harvesting is expected to have substantial disturbance and displacement effects on grizzly bears. Combined with recent activities (see above) in the Lower

Whale subunit, this proposed State timber sale and proposed Red Whale Project activities may have adverse effects to grizzlies due to prolonged displacement of bears in useable habitats.

As stated above, approximately 7,500 acres of private lands exist within the three subunits in the CEA. The biggest challenge for conservation of grizzly bears in this area may be the presence of and continued development of private lands. This is no small matter and how these lands get developed is the issue. Current Flathead County Zoning Regulations (FCZR) development standards for the North Fork only allow for a minimum lot size of 20 acres. While this is good for maximizing space for grizzly bears and other wildlife, there remains the unknown of how these private lands get developed. The FCZR allow for a variety of permitted and conditional uses in the North Fork such as: public utilities, guest cabins, residential businesses, rental cabins, retreat centers, guest ranches, RV camping, restaurants, public/private schools and others. It seems reasonable to expect that at least some of these uses will materialize over the next 10-20 years.

No major activities are planned on National Forest land. Ongoing activities such as road/trail maintenance, recreational and utilitarian uses, and reforestation of between 500-1000 acres within the Wedge Canyon Fire area (Lower Whale subunit) are expected to continue.

Synthesis of Cumulative Effects

Certain issues/concerns have been raised in this analysis that, in light of the cumulative effects of past, present and ongoing human activities, must be addressed in order to mitigate continued forest management activities in grizzly bear habitat. First, creating forest openings adjacent to open roads that have moderate-high traffic (as roads in the CEA have) would be a concern because of the increased visibility and, therefore, increased risk of mortality of grizzly bears.

Secondly, four consecutive years of major human disturbance activities have occurred within the Lower Whale subunit and if the State implements their project in the September of 2007 this would be 5 consecutive years. Adding to this would be at least another two years worth of activities within the subunit if either Alternative 2 or 4 were selected for implementation. The reduced treatment acreage in Alternative 3 would likely only require one season to complete. Reducing this cumulative impact of displacement to bears could be done by treating those units identified in Table 3-30 as being within the avoidance zone during the non-denning season and treating units outside the avoidance zone during the denning season. Additionally, treating unit B during the denning season would reduce displacement because this would avoid using a restricted road and reconstructing a historic road.

A third concern is that only Alternative 3 proposes to fully achieve A19 standards for grizzly bear security. Alternatives 2 and 4 each would make progress and would only be deficit in OMAD, but would fall short of fully meeting A19. Each of these alternatives would implement a spring motorized closure of the Hay Creek Road and this would be a considerable benefit to grizzly bears which does not show up in A19 calculations. The progress being made within the two subunits affected by the Red Whale Project under Alternatives 2 and 4 would be beneficial for grizzly bear habitat. However, Mace et al (1996) found that most grizzly bears in their study either exhibited neutral or positive selection for 500 meter buffers surrounding closed roads and

roads having >10 vehicles/day but avoided buffers surrounding roads with >10 vehicles/day. This suggests that making progress on A19 standards by closing currently open roads would have more cumulative benefits for grizzly bears than berming a currently restricted road or eliminating motorized use on trails that have not had >10 vehicles/day. The net cumulative effect relative to access would be that habitat availability and security would be improved and progress would be made toward achieving Amendment 19 standards in Alternatives 2 and 4, as compared to the existing situation. Alternative 3 would fully meet A19 standards and the cumulative effect of this would be that in the central portion of the North Fork drainage (west of the river), grizzly bears would have been afforded reasonable opportunity to persist. Each of the alternatives would continue a forest-wide trend of providing more security for bears through motorized access restrictions

NCDE and Forest Scale Assessment

Flathead National Forest lands comprise approximately 40% of the Northern Continental Divide Grizzly Bear Ecosystem (NCDE). Flathead National Forest land ownership occurs within 73 grizzly bear subunits totaling 2,452,410 acres, and the Flathead Forest Plan's Amendment 19 (USDA 1995) applies to 54 subunits totaling 1,662,162 acres.

Of the 19 subunits where Amendment 19 does not apply, 16 are within the Bob Marshall Wilderness where road management is not an issue. Habitat effectiveness is high in all the wilderness subunits with only a few high use trails affecting grizzly bears. The other 3 subunits are in the Stillwater River drainage where National Forest System lands comprise less than 10% of the subunits.

Amendment 19 applies to 54 subunits primarily outside the wilderness and was developed to provide Forest Plan direction concerning levels of open roads, total roads, and secure or core habitat that would contribute to the recovery and conservation of grizzly bears. The standards are described in the Decision Notice for Amendment 19 (USDA Forest Service 1995a).

Fourteen subunits have National Forest System ownership of <75% and all of them met the "no net loss" standard on National Forest System lands in 1995 and still meet it; although the open, total, and core numbers for each of the subunits typically do not meet 19/19/68.

Forty subunits have National Forest System ownership of >75% and 18 of them met the 19/19/68 standard in 1995 when Amendment 19 was signed. As of the end of 2005, 33 units have increased in CORE habitat (US Forest Service 2006), and 7 units have stayed the same, and 2 subunits have decreased by 1% due to corporate lands update and a data base correction. If Alternative 3 were implemented, two more subunits (Red Meadow Moose and Hay Creek) would be brought into full compliance with A19 standards. If either alternatives 2 or 4 were selected, then progress would be made but would not reach full compliance.

Progress in closing and decommissioning roads has been substantial across the FNF portion of the Northern Continental Divide Ecosystem (Glacier View Ranger District, Hungry Horse Ranger District, and parts of the Swan Lake Ranger District) since Amendment 19 was signed in 1995. Available information indicates that on the Glacier View Ranger District, Hungry Horse

Ranger District, and the Swan Lake Ranger District (the roads on the Island Unit of the Swan Lake District couldn't be separated out even though they are not in an area covered by Amendment 19) between 1995 and 1999, total miles decreased by about 210 miles (2816 to 2605), open miles decreased about 145 miles (995 to 850), seasonally open miles decreased about 5 miles (252 to 248), and restricted miles decreased about 60 miles (1569 to 1506). Additional miles of roads have been restricted and decommissioned since 1999, but updated numbers are not available at this time.

On March 8, 2000, the Flathead National Forest requested re-initiation of formal consultation with the US Fish and Wildlife Service (FWS) to consider a revised A19 implementation schedule on the FNF. This consultation process produced a Biological Opinion (BO) on October 25, 2005. The FWS concluded in the BO that the proposed extension of implementation timelines for A19 is not likely to appreciably diminish survival and recovery of grizzly bears.

Food Storage Order. Minimizing the risk of mortality due to conflict with humans and human associated foods is an important facet of grizzly bear management. A food storage special order was signed on April 15, 1998 (revised in 2000) that applies to National Forest System lands within the Northern Continental Divide Ecosystem on the Flathead, Lewis and Clark, Lolo, and Helena National Forests. The purpose of the restrictions is to minimize grizzly bear/human conflicts and thereby provide for visitor safety and the recovery of the grizzly bear. The food storage order contains requirements for storage and handling of bear attractants such as human foods and garbage, livestock feed, and wildlife and livestock carcasses.

Cooperative Access Management. Amendment 19 includes an objective to "improve habitat effectiveness through cooperative management with other land ownerships, land adjustments, or other means." The FNF in cooperation with Plum Creek Timber Company, the Montana Department of Natural Resources and Conservation and the U. S. Fish and Wildlife Service developed and implemented an agreement for access management and timber harvest scheduling in the intermingled ownership lands of the Swan Valley. The Swan Valley Grizzly Bear Conservation Agreement (US Fish and Wildlife Service et al. 1997) established a cooperative management plan to promote grizzly bear habitat use and security on approximately 370,000 acres.

Cooperation with Montana Fish, Wildlife, and Parks. The FNF has cooperated with, and helped fund, a Grizzly Bear Management Specialist position with Montana Fish, Wildlife and Parks since the inception of the position in northwest Montana. The Management Specialist works on both public and private lands to correct problem situations and educate people about how to live with bears and minimize the potential for conflicts. The Management Specialist has pioneered efforts in rapid and complete cleanup of railroad grain spills, the use of aversive conditioning techniques to educate bears (including the use of Karelian bear dogs) and the hazard and necessity of the cleanup of large and small attractants at private residences. The work may lead to an increased ability of grizzly bears to utilize habitats in areas currently having high mortality risk and low use potential.

NCDE Population. Grizzly bear population monitoring using a DNA sampling technique was carried out in 1998 and 2000, in the northern one-third of the NCDE and the Flathead National

Forest was one of the cooperators along with Glacier National Park, the US Geological Survey, the Blackfeet Tribe, the Kootenai and Lewis and Clark National Forests, Montana FWP, and the Montana Department of Resources and Conservation. The sample area included the North Fork Flathead River. A provisional population point estimate of 381 bears was derived from the 1998 work and 273 from the 2000 data.

In 2004 a DNA-based population study led and coordinated by USGS research wildlife biologist Kate Kendall, identified 545 individual grizzly bears roaming the 7.8 million-acre Northern Continental Divide Ecosystem. The Grizzly Bear Recovery Plan (U.S. Fish and Wildlife Service 1993, page 62) identifies a minimum NCDE-wide grizzly bear population of 391.

Conclusion. Continuing progress towards meeting Amendment 19 standards and ongoing consultation with U.S. Fish and Wildlife Service would contribute to recovery and maintenance of long-term viability.

Regulatory Framework and Consistency

Regulatory Framework

The project area lies within grizzly bear Management Situation 1 (MS1), as designated by the Forest Plan. The grizzly bear is listed as "threatened" in Montana and the Grizzly Bear Recovery Plan (1993) provides recovery goals and objectives for the grizzly bear. The Flathead Forest Plan (pages II-38 to II-42) provides management direction and standards and guidelines to guide project planning. The Interagency Grizzly Bear Guidelines (1987) provide additional guidance for habitat management. Amendment 19 to the Forest Plan provides standards for grizzly bear habitat management through motorized access and security core habitat standards and objectives. The Grizzly Bear Compendium (National Wildlife Federation 1987) provides published and unpublished information on most areas of interest regarding grizzly bears. A Special Order is in effect requiring all users of National Forest System lands within the NCDE to store food, garbage and other bear attractants in a bear-resistant manner.

Regulatory Consistency

The environment baseline (the existing condition) does not meet Amendment 19 grizzly bear habitat standards in the Red Meadow Moose or Hay Creek subunits. Lower Whale subunit standards were amended by the Robert Wedge Post-Fire Project Record of Decision (ROD) (2004) these amended standards will be attained in the next few years. The proposed action is consistent with the Interagency Grizzly Bear Guidelines. The Flathead National Forest has informally consulted with the US Fish and Wildlife Service regarding this project. The Endangered Species Act determinations for grizzly bear are also based on an additional analysis at the forest scale (project file, section N).

Gray Wolf (Endangered)

Analysis Area and Information Sources

An area approximately 46,700 acres was used for the direct/indirect effects analysis (Map 3-3) and the following criteria were used to delineate it: 1) the eastern boundary is the North Fork Flathead River; 2) encompass all proposed vegetation treatments; 3) the boundary would be at least ¼ mile from the edge of all proposed units, except along the river; and 4) encompass as many wolf radio locations as possible. A cumulative effects analysis area was used that included a similar sized area east of the North Fork Flathead River in Glacier National Park (Map 3-3).

Data used for the analysis were from existing resource information sources, research literature, aerial photos and field surveys. Arcview geographical information system was used for quantification of various habitat characteristics.

Affected Environment/Existing Condition

The project area is within habitat that was designated in the FNF Forest Plan as Management Zone 1 (contains key habitat components in sufficient abundance and distribution on an annual basis to sustain a viable wolf population) (Forest Plan page II-43) and is in the Northwest Montana Recovery Area

Gray wolf pack activity has been documented in the North Fork Flathead River drainage since the late 1970s. The project area is closest to and overlaps with the overall territory of the Kintla pack; members of this pack have been documented within the analysis area (Map 3-3). This pack has been a mainstay in the North Fork since 2001 and has produced pups five of the last six years (Table 3-31). The US Fish and Wildlife Service et al. (2006) provided the following brief history:

The Kintla pack was first documented as a pack in 2000 in the old North Camas territory. The North Camas pack had previously existed from 1990 to 1996 and then fell apart as the neighboring South Camas pack grew to 18 animals in 1997. From 1997 to 1999, South Camas appeared to be the only pack in the area until 2000, when the Kintla Pack established itself in the old North Camas territory. The Kintla pack's home range is in the North Fork Flathead River drainage, and spends most of their time within Glacier National Park.

Ungulates (wild and domestic) are the primary prey species for wolves and wolf distribution is generally related to ungulate density. However, other physical habitat attributes can also be used to predict wolf presence. Boyd-Heger (1997) found that wolves she studied (in the North Fork) appeared to select for landscapes with relatively low elevation, flatter terrain, and closer to water and roads at both smaller and larger scales in the central Rocky Mountains.

Moose, elk, mule deer and white-tailed deer all occupy the analysis area on a seasonal basis. White-tailed deer and moose occupy the area yearlong, while elk and mule deer tend to move to

higher elevations during summer. The amount of winter range for these ungulates in the analysis area varies depending on the amount of snow. Moose can make use of most of the area whereas white-tailed deer are mostly restricted to habitat in the lowest of elevations, usually near the river. Most winter range, however, for each of these ungulates is found east of the river, in Glacier National Park.

From 2000 to 2003, 160 locations of radio-collared wolves from the Kintla pack were documented; of these, 13 locations were within the wolf analysis area (Map 3-3), consisting of two different animals. One wolf, from what was once the Apgar pack, was documented twice within the analysis area in 2002. Therefore, it can be concluded that the analysis area has habitat of interest to wolves, although based on the proportion of total locations, it does not appear to be a critical part of the Kintla pack's territory.

Approximately 41% (19,043 acres) of the analysis area consisted of potential denning habitat; of this, 35% (6,694 acres) was in private land ownership. Past timber harvesting within the analysis area has diversified vegetation age classes and has generally been considered beneficial for ungulates, particularly white-tailed deer. Two relatively recent fires (1988 Red Bench and 2003 Wedge Canyon) have provided habitat diversity and are expected to sustain relatively stable populations of ungulates over time. Approximately 55% and 33% of the analysis area was in forested cover and early seral foraging habitat conditions, respectively; forested cover for travel and denning does not appear to be a limiting factor.

Recent fires (1988 Red Bench and 2003 Wedge Canyon) within the analysis area have created conditions favorable to ungulates because of the abundance of forage that will be produced over the next 20 years. Ungulate populations are expected to remain stable, or increase, over the next decade.

Relative to habitat security, the open road density (Forest Service, County and known private roads) within the analysis area was 0.15 miles/per square mile. This suggests that there is a relatively high level of habitat security; primarily on FNF land. The east end of the analysis area is where the highest density of roads exists and, not surprisingly, is where private lands are concentrated; this area probably has the greatest risk of mortality.

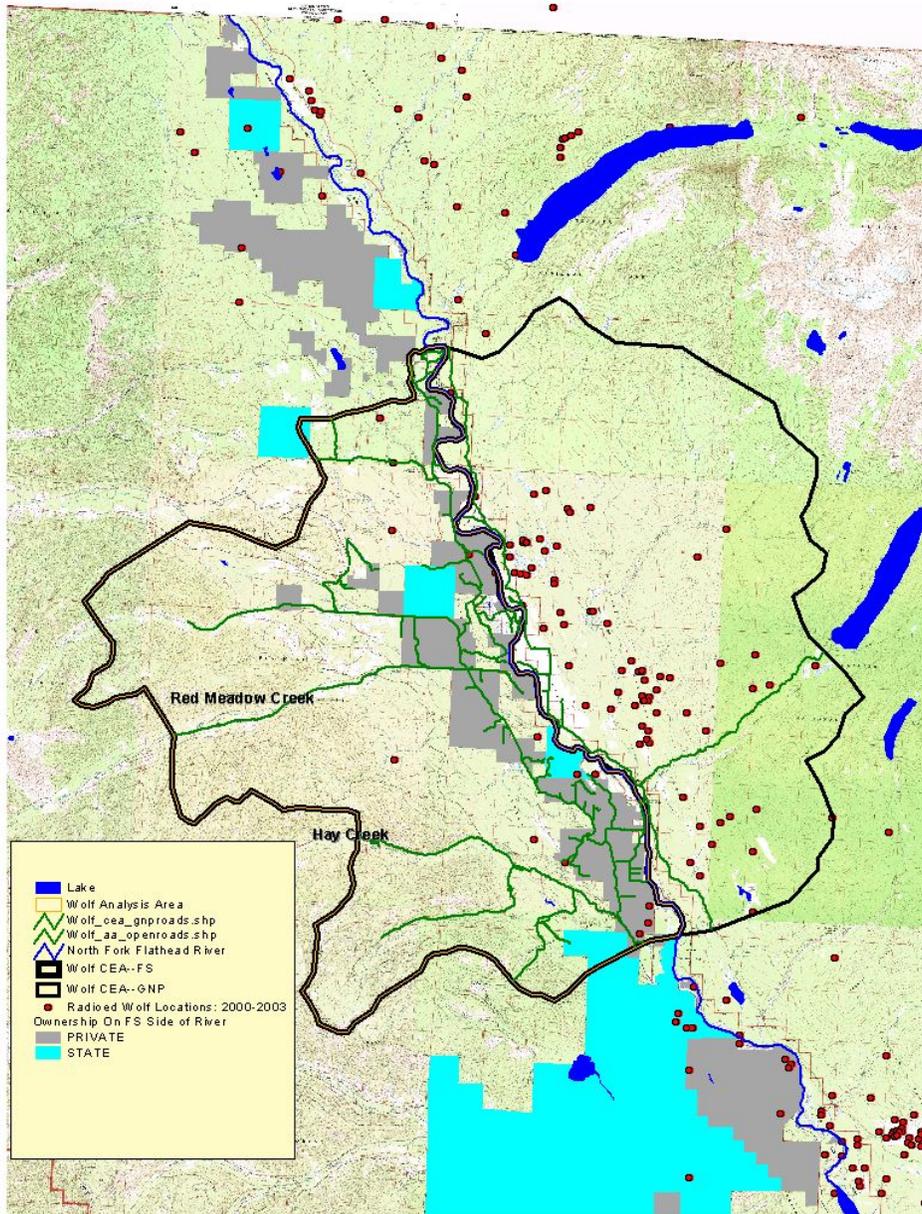
Table 3-31. Population Data for the Kintla Wolf Pack
(Data are from Rocky Mountain Wolf Recovery Interagency Annual Reports Located at:
<http://www.fws.gov/mountain-prairie/species/mammals/wolf/>)

Pack ¹	2000		2001		2002		2003		2004		2005		2006	
	Adult	Pup	Adult	Pup										
A	2	2	-	-	-	-	-	-	-	-	-	-	-	-
B	2	0	-	-	-	-	-	-	-	-	-	-	-	-
C	-	-	4	2	4	2	3	0	3	2	6	3	4 ²	?

¹A = North Camas; B = South Camas; C = Kintla Pack.

²Reproduction was confirmed, but pup survival at the end of the year could not be confirmed

Map 3-3. Wolf Analysis Area .



Environmental Consequences

There are no Forest Plan standards for road density or vegetation cover related to habitat security for gray wolf habitat, therefore, the potential effects of these habitat variables relied on known habitat requirements. The main Forest Plan standard for wolf protection related to logging activities requires there be no activity within one mile of known or suspected denning and/or initial rendezvous sites during denning season.

No significant issues related to the gray wolf were identified (refer to Chapter 2).

The following Effects Indicators were used to focus the gray wolf analysis and disclose relevant environmental effects:

- The effect on ungulate habitat.
- The change in habitat security.

Direct and Indirect Effects

Alternative 1 (No Action)

This alternative would maintain the status quo of overall habitat conditions and only those management actions (mostly access management) that have already undergone NEPA analysis will proceed within the analysis area. Ongoing motorized access restrictions would continue to be implemented as per the ROD for the Robert Wedge Post-Fire Project and this would increase habitat security for wolves. No other vegetation altering management activities are foreseeable within the analysis area. Recent fires in the area would continue to sustain ungulate populations.

Alternatives 2, 3 and 4

Since there are no known dens within the analysis area and all known denning by the Kintla pack has occurred in GNP, it is not likely that potential denning habitat would be affected by either the logging disturbance itself or the expected vegetation condition resulting from the proposed treatments. There are a range of acres proposed for fuels-related treatment in each alternatives; what each of the alternatives has in common is that the units are widely distributed throughout the analysis area. This, unlike wildfire, tends to create micro-sites of early seral ungulate foraging habitat. Therefore, distribution of a new age class (thinning treatments) of foraging habitat would likely benefit ungulates across the analysis area; the prescribed burns would enhance foraging habitat during spring as ungulates return to summer ranges.

In terms of habitat security, during implementation of the project, under any alternative (though much less under Alternative 3), wolves may not feel as secure in using the area. The potential for winter treatments in the alternatives would add some stress to local wintering ungulates and the disturbance associated with logging may cause potential wolf hunting use of the area during winter to either be curtailed, or to occur during evenings or nights. No effect on ungulate potential calving/fawning that may occur in the analysis area in early June because generally no

project activities would be allowed during this time – see exceptions in Chapter 2, Design Criteria .

Each of the alternatives would improve overall habitat security for wolves through A19 related actions and, therefore, at some level each would be beneficial for wolves because each would reduce the risk of mortality as wolves often use roads as travel corridors (Boyd-Heger 1997).

Cumulative Effects

Past forest management activities (e.g. timber harvesting, fire suppression/post-fire salvaging, firewood cutting, recreational activities, etc.) within the cumulative effects analysis area (Forest Service portion) have not been detrimental to wolf recovery, as evidenced by continuing occasional wolf visits by members of the Kintla pack. Past road building and timber harvesting may have initially had negative effects on ungulate populations because of increased, and more effective, access by hunters. However, the conversion of mature forests into early succession habitats has generally provided increased levels of forage and higher population potential for ungulates. An increased emphasis on road closures over the last fifteen years has had a generally positive effect on ungulate survivability during hunting seasons. In addition, for most of the season, hunting regulations for deer and elk only allow males (bucks and bulls) to be harvested. Since they constitute a relatively small proportion of the population, the annual reductions in the wolf prey base due to hunting may not be significant.

In terms of habitat security, the trend of the past (when road building was common), has been reversed. Except for the 0.3 miles of road to be constricted across FNF land, none of the alternatives would add to the past road building trend. Cumulatively, each of the action alternatives would provide improvement when compared to the existing situation.

The proposed timber sale on State land would add increased foraging habitat for ungulates and have the potential for disturbance effects from logging activities, increase open road density during the period of operations, and may cause avoidance by wolves in the areas of activities. However, none of these activities are expected to increase risk of mortality.

Other ongoing and foreseeable management actions (e.g. tree planting, gathering forest products, road maintenance, the vast array of recreational activities, etc.) in the cumulative effects analysis area are not expected to adversely affect wolves, unless they occur near denning or rendezvous sites. Since denning/rendezvous sites occur on the Glacier National Park side of the analysis area, the Kintla pack is not expected to be adversely cumulatively affected.

Forest and Recovery Area Scale Assessment

Wolves have rapidly re-colonized Montana and Idaho. Wolf packs, once established in area, are one of only a very few species that are relatively easy to detect. Consequently, unlike other species where we have to rely on habitat or prey availability to assess whether or not management activities are consistent with maintaining species viability, the question of meeting recovery goals or population viability for wolves can be answered simply by monitoring populations. The recovery goal for wolves in the Tri-State area (Montana, Idaho, and Wyoming) is 30 packs and that goal has been exceeded. Northwestern Montana alone had 31 packs

(<http://www.fws.gov/mountain-prairie/species/mammals/wolf/>; 2006 Annual Report). In 2006, six wolf packs spent all or part their time on the Flathead National Forest. If the 30-pack recovery goal were proportioned evenly across all land management units in the Tri-State area, Western Montana and the Flathead National Forest would exceed the proportionate target.

Wolves are also a species where it can probably be concluded that recovery (to de-listing levels) equals viability. Wolves have an extremely high fecundity rate, are highly mobile, and have sustained some habitat connectivity with populations in Canada. Consequently, there is little concern among wildlife professionals that the 30-pack recovery goal should not be sufficient for long-term species viability. Wolf pack numbers at the Forest, Western Montana, and Tri-State area clearly indicate that cumulative, broad-scale activities are consistent with recovery at all scales.

Regulatory Framework and Consistency

The gray wolf is listed as "endangered" in Montana, and the Northern Rocky Mountain Wolf Recovery Plan (US Fish and Wildlife Service 1987) provides recovery goals and objectives for the gray wolf. The project area lies within gray wolf Management Zone 1 as designated by the FNF Forest Plan and is contained within the Northwest Montana Recovery Area. It contains habitat components, particularly ungulate populations, necessary to support wolves. The FNF Forest Plan provides management direction and standards to guide project planning. The Endangered Species Act determinations for the wolf are also based on an additional analysis at the forest scale (project file, section N).

Bald Eagle (Endangered)

Analysis Area and Information Sources

The area used for direct/indirect effects analysis for the Bear Claw nest was the North Fork Flathead River corridor and adjacent upland area within the nest site and primary use areas (Montana Bald Eagle Management Plan 1994; Map 3-4); for cumulative effects, the home range concentric circle was used. Data used in the analysis were from existing information sources, aerial photos, and field visits during the fall to the nest site (see project file, section N).

Affected Environment/Existing Condition

Approximately one mile of the North Fork Flathead River is within the direct/indirect effects analysis area. The newly discovered Bear Claw nest is at the center of this one-mile stretch of river. This nest was first documented in 2006 by Glacier National Park and nest production results were not determined. However, anecdotal evidence suggests the adults at this nest may have produced two young, as two immature bald eagles were observed in the fall at Sondreson meadows area, not far downstream from the nest.

A management plan has not been developed for this nesting territory and, therefore, primary use sites have not been identified. The Montana Bald Eagle Management Plan (1994, pg. 20-32) contains management guidelines that should be applied to nesting territories until a site-specific

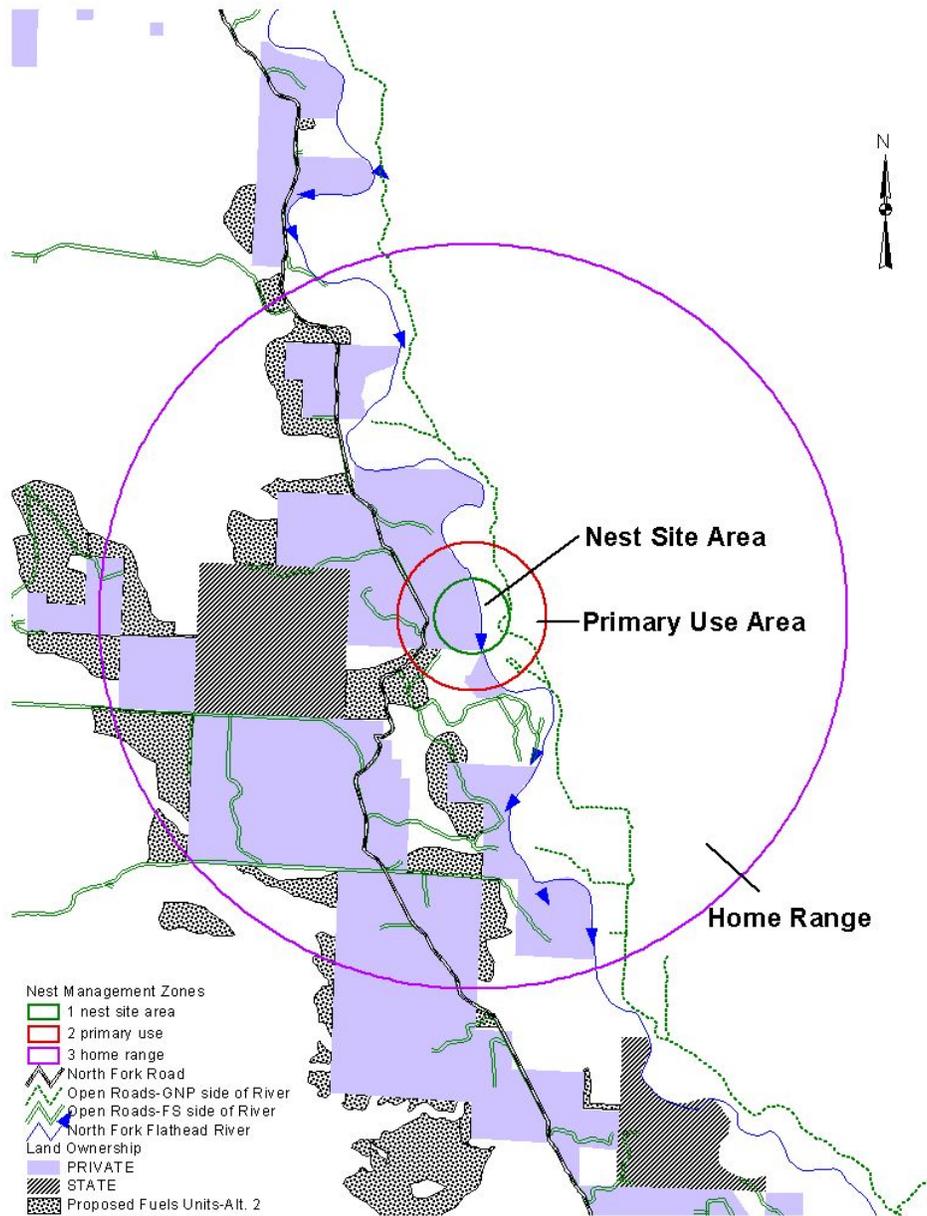
management plan is prepared and implemented. The plan provides habitat management guidelines within three identified management zones (Map 3-4) that include habitat progressively farther away from the nest site:

- 1) Nest Site Area (¼ mile radius from nest site). Objectives are to eliminate disturbance and maintain or enhance nest site habitat suitability.
- 2) Primary Use Area (¼ - ½ mile from the nest). Objectives are to minimize disturbance, maintain the integrity of the breeding area and eliminating hazards.
- 3) Home Range (½ - 2 ½ miles from the nest). Objectives are to maintain suitability of foraging habitat, minimize disturbance within key areas, minimize hazards and maintain integrity of the breeding area.

The main food source of bald eagles during the breeding season is fish. The habitat of most interest to bald eagles are areas near large bodies of water (lakes and reservoirs) and major river systems where they can use large-diameter, mature trees and snags for perching/foraging, nesting and resting/roosting. During the fall, opportunistic foraging in upland habitats of the project area's drainages from hunter kills of big game provides an additional food source.

Human use of the North Fork Flathead River occurs annually and there has been an observed increasing trend in use. Of importance to bald eagles is the amount of river use that occurs (rafts, kayaks, etc.) that may be a source of disturbance. Given that this pair chose a nest site adjacent to a river with human presence and may have reproduced young in its first known season, could suggest a certain level of tolerance for human presence by this particular pair. Ongoing monitoring will allow for a better understanding of this relationship.

Map 3-4. Eagle Nest Management Zones



Environmental Consequences

No significant issues related to the bald eagle were identified (refer to Chapter 2).

The following Effects Indicators were used to focus the bald eagle analysis and disclose relevant environmental effects:

- The amount of habitat alteration within the habitat zone adjacent to the North Fork Flathead River.
- The probability that management activity would disturb nesting bald eagles and cause disruption of natural behavior.
- Adherence to Montana Bald Eagle Management Plan nest territory guidelines.

Direct and Indirect Effects

Alternative 1 (No Action)

This alternative allows mostly natural processes to occur within the eagle habitat management zones. Habitat changes would occur as nature would dictate and nesting success (i.e. fledging of young eagles) would mostly be predicated on the ability of this eagle pair being able to tolerate human presence on the river.

Since management activities from the Red Whale Project would not occur, habitat alterations and activity disturbances would not be issues to nesting bald eagles. Nest site area (NSA), primary use area (PUA), and home range areas would be unaffected.

Alternative 2, 3 and 4

None of the alternatives would treat vegetation within the nest site area. However, each alternative would treat a portion of one unit within the primary use area and a range of 14-19 units (or portion of units) within the home range, depending on alternative (Table 3-32). The objectives of eliminating or minimizing disturbance within the NSA and PUA would generally be met due to the following: 1) project activities in Unit M (the portion of the unit in the PUA) would not begin until after August 1, well after the egg laying, incubation, egg hatching and rearing periods have been completed and the nesting cycle is in the least sensitive fledging period; 2) there is a buffer of trees between the nest tree and Unit M that is expected to reduce the amount of noise from disturbance-producing machinery; and 3) Unit M is not within foraging habitat, being $\geq \frac{1}{4}$ mile from the river. Disturbance from implementation of Alternative 3 is expected to be even more benign as only three acres would be treated. None of the alternatives would adversely affect this bald eagle nest territory and NSA/PUA objectives would be met.

The proposed State access road would not occur within the NSA, PUA or home range of the Bear Claw nest, therefore, this part of the Red Whale Project would have no effect on bald eagle habitat.

Since no fuels treatment would occur within one half mile of the Bear Claw nest, the FNF Forest Plan standard which prohibits disturbance within this distance during the breeding and rearing season (February 1 – August 1) would not be an issue.

Table 3-32. Bald Eagle Management Zones and Proposed Red Whale Fuels Reduction Treatments.

Management Zone	Alternative 2		Alternative 3		Alternative 4	
	#Units ¹	Acres	#Units ¹	Acres	#Units ¹	Acres
Nest Site Area	0	0	0	0	0	0
Primary Use Area	1	13	1	3	1	3
Home Range	15	808	14	376	19	901

¹Only portions of some units were within indicated Management Zone.

Cumulative Effects

Alternative 1

The North Fork Flathead River has been a designated Wild and Scenic River since 1976 and vegetative management activities within the river corridor are/have been restricted and can only occur if the values for the designation can be preserved. Consequently, there has been very limited human-caused physical alteration of habitat within the habitat zone important to bald eagles. This alternative would allow the generally unmanaged and relatively wild nature of the river corridor to continue with no human-induced physical habitat changes.

The North Fork Flathead River is a relatively popular river for a variety of river-related recreational pursuits, including fishing, floating (using a variety of crafts), and camping; because of this, there may be disturbance-related impacts that may affect bald eagle behavior and use of the river. This alternative would not cumulatively add or detract from the generally increasing trend of human recreational uses of the North Fork river corridor. Also, no other management actions are reasonably foreseeable that would occur within the river corridor that would be likely to affect eagle ecology and use of the Bear Claw nest site.

Alternatives 2, 3 and 4

The North Fork corridor (i.e. within ¼ of a mile of either side of the river) within the Bear Claw home range is mostly undeveloped and is mainly in federal land ownership (Flathead National Forest or Glacier National Park) and has experienced relatively few habitat changes induced by humans. Approximately 29% of the corridor is in private land ownership and this is where most habitat human-induced habitat alterations have occurred; most of this has been in the form of construction of residences. Other than this, the river corridor has pretty much undergone natural processes in terms of physical habitat changes.

A wide variety of forest management activities have occurred within the home range area, on the Forest Service side of the North Fork Flathead River. These have included road construction/maintenance, timber harvesting, recreation facilities/activities, forest products

gathering and others. Because most of these activities occurred outside the primary interest area of bald eagles (rivers or lakes) and not during the breeding season, it is unlikely that they have had any discernible cumulative effects on bald eagle presence in potential nesting habitat.

Since this project would be neutral in terms of adding to or taking away from the current recreational uses humans make of the river, none of the action alternatives would cumulatively be additive to this not well understood potential impact on Bear Claw bald eagles.

The Montana DNRC is proposing a timber sale that would occur within home range area. The location of the area proposed for timber harvesting is approximately a mile from the river and it is unlikely that any aspect of the Bear Claw eagle pair nesting ecology would be disrupted due to this activity. Other reasonably foreseeable and/or ongoing actions that are proposed to occur within the home range include sapling thinning, cabin rentals, road maintenance, and recreational activities. These activities have little potential for impacting river resources. River associated recreational activities such as floating (canoeing/kayaking, rafting) or angling have the potential to disturb nesting bald eagles. The Red Whale Project is not expected to cumulatively add to river-dependent recreational activities. Therefore, considering the estimated potential direct/indirect and cumulative effects from any of the alternatives analyzed, it is unlikely that any kind of a threshold would be crossed that would produce adverse effects on bald eagles or their use of the Bear Claw nest due to implementation of any of the alternatives. A requirement of this project, under any alternative is that the portion of Unit M that is within the PUA must be treated after August 1.

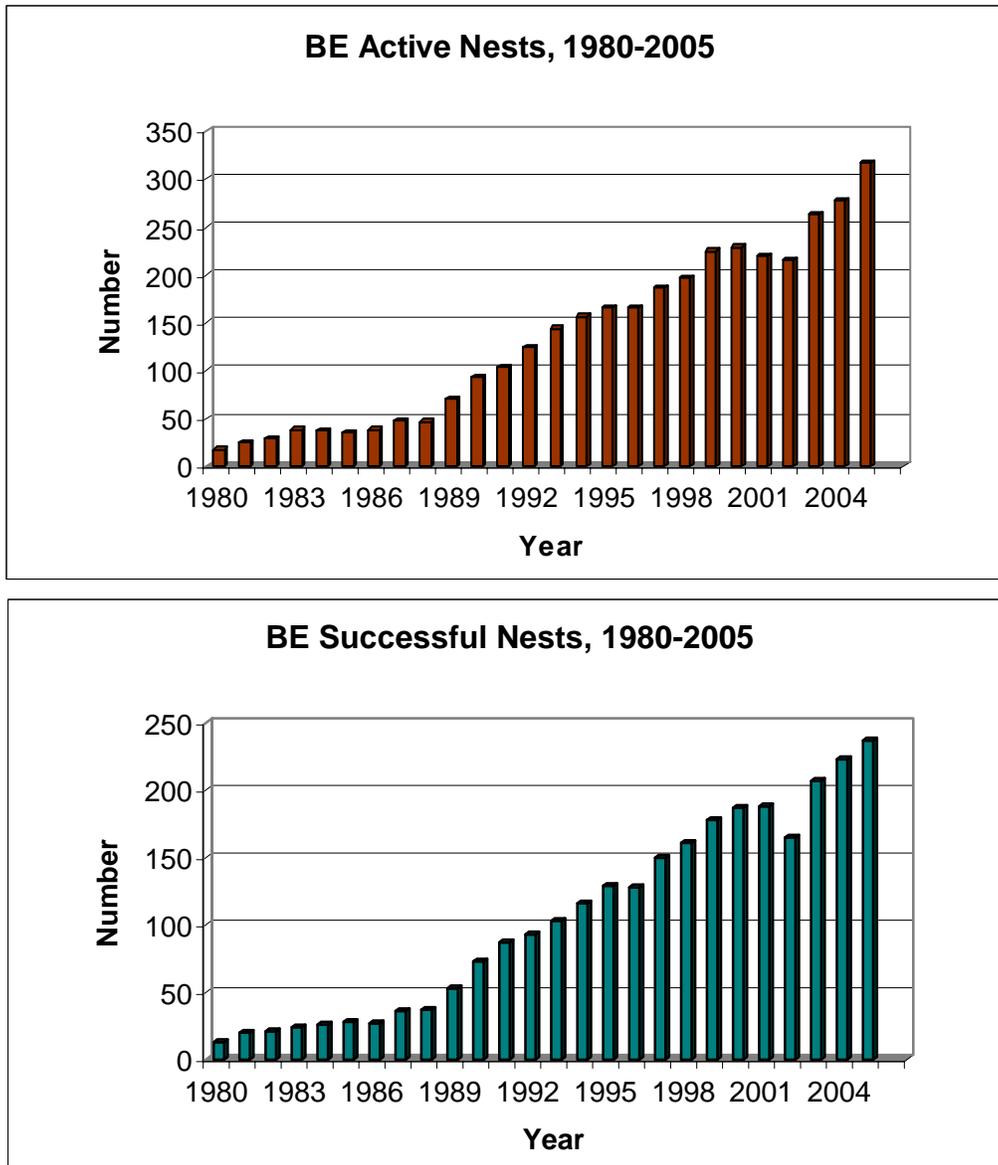
State and Forest Scale Assessment

Like wolves, bald eagles have been increasing in Region One of the Forest Service. The Recovery Goal for de-listing eagles in Montana (1986 Recovery Plan) was 99 active nests (USDI 1986). That has since been amended to 800 pairs in the 7-Western State Area (Montana Bald Eagle Working Group 1994). The Montana Bald Eagle Management Plan (MBEWG 1994) has developed specific direction for recovery to non-listed status. Determining whether or not recovery direction is being met involves monitoring nesting pairs and nest production to ensure that populations are increasing consistent with recovery goals and ensuring that Montana Bald Eagle Management Plan nest protection direction is applied consistently to all active nests.

There were 149 active nests in western Montana and 317 active nests statewide after the 2005 nesting season (Figure 3-1); within western Montana 108 of those active nests produced 189 fledglings (Dubois 2006). The recovery goal has been exceeded at all scales. Proportionately, the Flathead National Forest (with 10 pairs) and western Montana have many more nests than the rest of the State. Montana alone has more than 1/3 of the nests needed to meet the 7-State recovery goal of 800 nests. Consequently, actions described in the Red Whale Project are consistent with continuing to recover bald eagles to non-listed status at all scales.

Figure 3-1. Historical Bald Eagle Active and Nesting Success in Montana

(Data are from 2005 Bald Eagle Nesting Season Summary, K.Dubois 2006).



Regulatory Framework and Consistency

Regulatory Framework

The bald eagle is listed as "threatened" in Montana and the Pacific Bald Eagle Recovery Plan (1986) provides recovery goals and objectives. The Montana Bald Eagle Management Plan (1994) provides management guidelines to help conserve the species and its habitat. Critical habitat was never designated for bald eagles. The Forest Plan prohibits disturbance-causing activities such as road construction and logging within one half mile of active bald eagle nests during the nesting period from February 1 – August 1. The Flathead Forest Plan (page II-36) provides additional management direction and standards to guide project planning. The Red Whale Project is consistent with the FNF Forest Plan relative to active bald eagle nests.

Regulatory Consistency

The Red Whale Project action alternatives are consistent the FNF Forest Plan (which prohibits disturbance-causing activities such as road construction and logging within one half mile of active bald eagle nests during the nesting period from February 1 – August 1) and with the Endangered Species Act with regard to bald eagles. The Endangered Species Act determinations for bald eagles are also based on an additional analysis at the forest scale (project file, section N).

Canada Lynx (Threatened)

Analysis Area and Information Sources

Previously established analysis units, in accordance with the Lynx Conservation and Assessment Strategy (Ruediger *et al.* 2000), were used to assess the effects of proposed actions on lynx/habitat. These lynx analysis units (LAU) approximate the size of an area used by an individual lynx and may encompass both habitat and non-habitat. Proposed Red Whale treatment units occurred within five LAUs (Map 3-5) and these formed the analysis area of direct/indirect effects; because of their relatively large sizes, the combined area of all of these LAUs also formed the cumulative effects analysis area. In addition, a multi-scale assessment was conducted to compare LAU-scale findings against findings at larger scales (project file, section N).

Data used in the analysis were from existing resource information sources, research literature, aerial photos and field surveys of existing conditions of proposed units. The Region's Vegetation Mapping Project (R1-VMP), which is a geo-spatial database of vegetation and land cover, was used to quantify lynx habitat components (forage and potential denning). In addition, the FNF "forest structure" coverage, which is a LANDSAT vegetation layer recoded to structure classes, was used to help determine lynx habitat components (project file, section N). Although this data source has not been updated since 1994, for Amendment 19 analysis, the 12-year difference was acknowledged and updates were made based on known vegetation changes due to recent fire or timber harvest. Arcview geographical information system was used for quantification of various habitat characteristics.

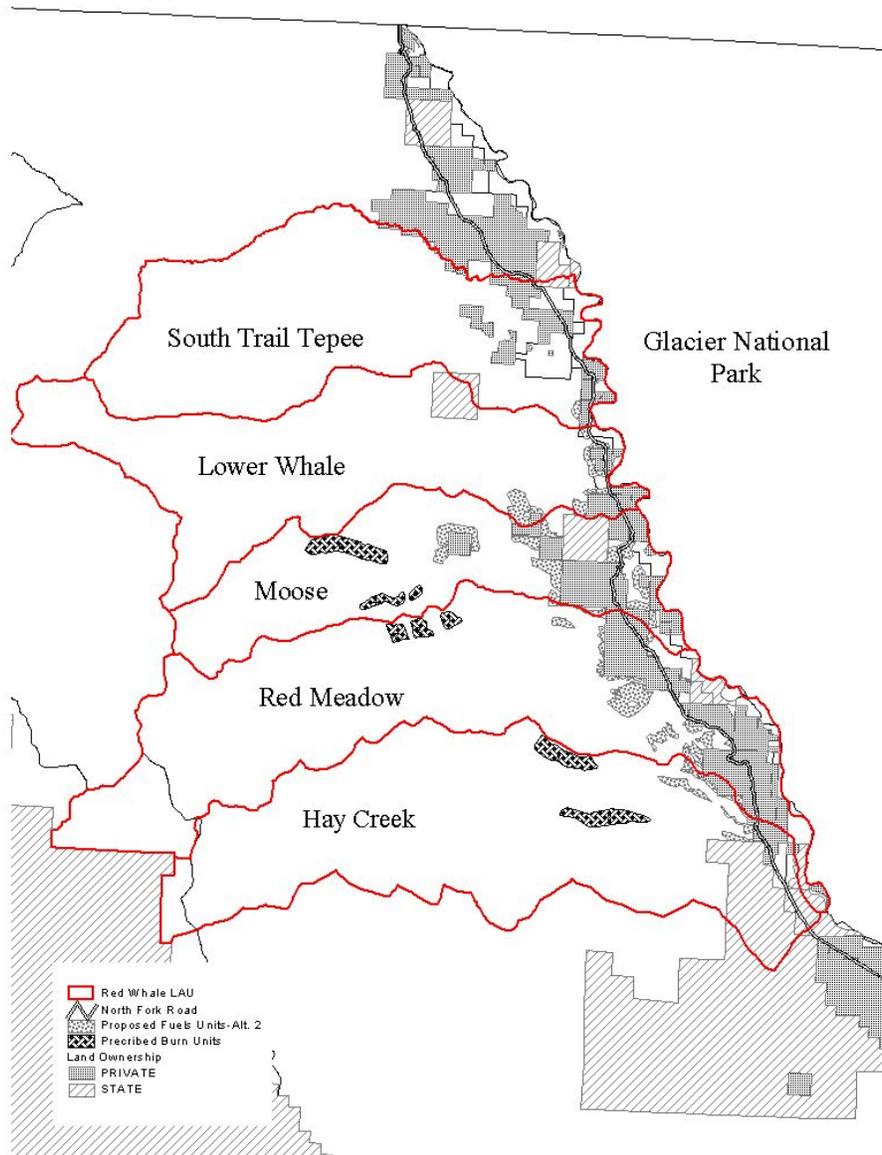
Affected Environment/Existing Condition

Depending on ecological conditions, a landscape can either be non-habitat or habitat for lynx. By definition, non-habitat will never be lynx habitat. However, typically lynx habitat can either be unsuitable or suitable. Unsuitable habitat conditions are those forested sites that are not used by lynx for either foraging and/or denning, and suitable lynx habitat can be used for either foraging and/or denning purposes. Examples of unsuitable lynx habitat include forest land that has not fully regenerated 5-10 years after a stand replacing burn, recent clearcut timber harvest (or similar type harvest such as seed tree), older sapling stands (typically 25+ years that no longer provide snowshoe hare foraging opportunities) and pole-sized forest stands with little to no coniferous understory. Generally, forest openings are avoided by lynx and pole-sized forests may be used to travel/maneuver through the landscape to reach foraging and/or denning sites. Examples of suitable habitat include: land that has regenerated with conifers, typically 7-10 years after a stand replacing fire; timber harvests that have been regenerated with conifers, have not been thinned, are densely stocked, and can provide winter snowshoe hare cover/feeding habitat; mature forests that have sufficient forest floor woody concentrations that can provide denning opportunities; and multi-storied forest stands that have relatively dense understory conifer regeneration and woody concentrations such that both foraging and/or denning habitat potential exists.

Primary vegetation that provides lynx habitat in the Rocky Mountains and on the Flathead National Forest includes lodgepole pine, subalpine fir, and Engelmann spruce forest types. Secondary vegetation, when interspersed within subalpine forests, may also contribute to lynx habitat including cool, moist Douglas-fir, grand fir, western larch and aspen forests (Ruediger et al 2000). Moist Douglas-fir types are considered secondary habitat that can provide red squirrels, an alternate prey species for lynx during periods when snowshoe hare (primary lynx prey species) densities are low. In Montana west of the Continental Divide, lynx habitat is contained in subalpine fir habitat types, generally between 4000 and 7000 feet. Cover types can be mixed species composition (subalpine fir, lodgepole pine, Douglas-fir, grand fir, western larch and hardwoods) and pure lodgepole pine stands (Ibid).

Lynx prefer to move through continuous live forest and frequently use forested saddles, ridges and riparian areas (Ibid) during travels. Lynx prefer to forage in areas that support its primary prey, the snowshoe hare. Vegetation characteristics that provide snowshoe hare habitat include dense stands of saplings that have regenerated 7-10 years after a disturbance (e.g. timber harvest or stand replacing fire) and dense, multi-layered older aged forest stands with an understory that maximizes cover and browse at both the ground level and at varying snow depths throughout the winter (crown cover within the lower 15 feet in order to provide cover and food for hares to 6 feet high at maximum snow depths).

Map 3-5. Lynx Analysis Units and Red Whale Project Proposed Treatments.



The status and trend of lynx in the Flathead National Forest is not known. However, track surveys along the North Fork Road during the winters of 2000-01 and 2001-02, documented lynx to the north of Polebridge, but none south of Polebridge (Edmonds et al. 2002). Track surveys during the winter of 2002-2003 north of Coal Creek, documented tracks (63 sets) of lynx in all the drainages surveyed and several observations of lynx (Edmonds et al. 2003). Winter track surveys in 2002-2003 detected only three sets of tracks on the east side of the North Fork (Edmonds et al. 2003) with the remainder on the west side; lands managed primarily by the Flathead National Forest. They proposed three possible reasons for the increased activity on the west side of the North Fork: 1) habitat on the Forest may support higher densities of snowshoe hares because of its diverse age and structure of the forest; 2) the availability of compacted travel routes; and 3) avoidance of wolves, whose core territory is in Glacier National Park. The majority of these observations were from the Trail Creek, Whale Creek (in the project area) and Tepee Creek (in the project area) drainages.

Each of the Red Whale LAUs contained significant amounts of lynx habitat (Table 3-33). Foraging habitat seemed to be limiting in each of the LAUs, except in Red Meadow and Lower Whale. Conversely, unsuitable habitat conditions were relatively low in these same two LAUs and high in the others. Unsuitable habitat conditions were modeled as those forest stands that did not meet snowshoe hare habitat and consisted of mostly older sapling (>20-25 years) and pole stands. Lynx can use these type stands as they maneuver/travel through the landscape, but are not the habitat conditions known to hold lynx for foraging or denning. Unsuitable habitat conditions can function again as either foraging or denning, depending on their growth trajectory. Red Whale LAU habitat conditions are further described below.

Table 3-33. Habitat Components and Proportions within Red Whale LAUs Not Analyzed in the Robert Wedge Post-Fire EIS (US Forest Service 2004).

LAU	% Habitat Components ¹				
	Forage	Den/Forage	Denning	Unsuitable	Non-Habitat
Moose	9	13	28	40	10
Red Meadow	31	11	18	21	16
Hay	8	22	29	32	8

¹Forage = stand initiation stage, i.e. post-disturbance regeneration with dense sapling sized conifers; Den/Forage = multi-storied stands with sufficient overstory trees/down logs and understory saplings to function as both; Denning = Mature stands with forest floor log accumulations to facilitate denning only; Unsuitable = does not meet criteria for forage or denning; can be used for travel/movement; Non-Habitat = permanent non-forest types such as bare ground, rock, water, etc.

South Trail Tepee & Lower Whale LAUs

Both of these LAUs were affected by the 2003 Wedge Canyon Fire and habitat conditions were analyzed during the Robert Wedge Post-Fire Environmental Impact Statement process (US Forest Service 2004). The assessment of lynx habitat conditions is still current, given how recent that project was documented. Therefore, information from that project relative to the South Trail Tepee and Lower Whale LAUs is incorporated by reference and the following was used for this analysis and assessment:

“The South Trail Tepee LAU is currently unsuitable over 59% of the area, with around 17% potential foraging habitat, about 22% travel habitat and about 11% potential denning habitat. Currently unsuitable areas within the fire perimeter are expected to receive more use after 10-15 years when shrubs and small trees become reestablished and provide cover and foraging habitat.”

The Lower Whale LAU is currently unsuitable over 23% of the area, with around 52% potential foraging habitat, about 24% travel habitat and about 33% potential denning habitat. Currently unsuitable areas within the fire perimeter are expected to receive more use after 10-15 years when shrubs and small trees become reestablished and provide cover and foraging habitat.”

Moose LAU

Approximately 3,550 acres of timber harvesting has occurred within this LAU since 1952 when vegetation management activities first began. A variety of techniques were used including salvage, overstory removal and regeneration. The most recent vegetation management was in 1999, when four units totaling approximately 47 acres were timber harvested by the regeneration method. Most (97%) of the past harvest areas are over 25 years old and have gone thru the lynx forage suitability phase and are now in unsuitable conditions (i.e. mostly just traveled thru). Given enough time, most of these past harvests would become potential denning sites and possibly, if allowed to achieve multi-storied conditions, could also provide forage. One reason for the relatively high amount of unsuitable lynx habitat condition in this LAU (Table 3-93) is that a portion of it was affected and/or burned by the 2003 Wedge Canyon Fire; much of this burned area will become lynx foraging habitat in 5-10 years.

Snowmobiles are allowed on three roads within this LAU; however, a significant amount of this LAU does not allow this type of snow compacting activity.

Red Meadow LAU

Approximately 6,150 acres of timber harvesting has occurred within this LAU since 1952 when vegetation management activities first began. A variety of techniques were used including salvage, overstory removal and regeneration. The most recent vegetation management was in 1995 and 1996, when approximately 66 acres were salvage timber harvested in the Red Bench fire area. Most (75%) of the past harvest areas are over 25 years old and have gone thru the lynx forage suitability phase and are now in unsuitable conditions. Given enough time, most of these past harvest would become potential denning sites and possibly, if allowed to achieve multi-storied conditions, could also provide forage.

GIS Habitat Modeling data (project file, section N) showed that this LAU contained a relatively high amount of foraging habitat (Table 3-33) and most of this was due to the 1988 Red Bench Fire and is currently in the latter stage of functioning as foraging habitat. Actually, from a lynx habitat perspective much of this post-fire regenerated area is predicted to phase out of functioning as lynx foraging habitat because lower horizontal branches of these stands of older saplings are beginning to get out of reach for snowshoe hares. In addition, some of these stands

contain densities of 50,000-100,000 trees per acre, providing excellent cover for snowshoe hare but are not penetrable for hunting by lynx or most other larger-than-hare wildlife. Therefore, the amount of foraging habitat is currently at a high level but will be reduced within five years due to continued growth/competition of the dense stands of 18-year-old saplings and the eventual loss of hare-reachable branches.

Snowmobiles are allowed on four roads within this LAU and a play area, approximately seven square miles in size, occurs in the Red Meadow and Chain Lakes areas; however, there is still a significant amount of this LAU that does not allow this type of snow compacting activity.

Hay LAU

Approximately 4,850 acres of timber harvesting has occurred within this LAU since 1954 when vegetation management activities first began. A variety of techniques were used including salvage, overstory removal and regeneration. The most recent vegetation management was in 2000, when 15 acres were salvage timber harvested in the Red Bench Fire area. Most (93%) of the past harvest areas are over 25 years old and have gone thru the lynx forage suitability phase and are now in unsuitable conditions. Given enough time, most of these past harvests will become potential denning sites and possibly, if allowed to achieve multi-storied conditions, could provide forage. One reason for the relatively high amount of unsuitable lynx habitat condition in this LAU (Table 3-33) is that portions burned in 1910 and 1926 and most of these post-fire stands are in pole stand conditions.

Snowmobiles are allowed on four roads within this LAU and two play areas exist: one at the head end of Moran Creek (~1.5 mi²) and one at the head end of Hay Creek (~3.0 mi²). There is a significant amount of this LAU that does not allow this type of snow compacting activity.

Environmental Consequences

An issue related to the Canada lynx was identified (see Chapter 2): Lynx habitat should not be impacted by the fuels reduction treatments. Some of the mechanical treatments that are proposed in the sapling stands affected by the Red Bench Fire of 1988 are considered as suitable lynx foraging habitat. There are some concerns that thinning in these sites may affect the availability of the area to lynx.

The following Effects Indicators were used to focus the lynx analysis and disclose relevant environmental effects:

- The effects on foraging and/or potential denning habitat.

Direct and Indirect Effects

Alternative 1 (No Action)

Under this alternative there would be no fuels reduction (primarily forest thinning), prescribed burning or improvements in wildlife security via motorized access restrictions. All existing

suitable lynx habitat components would undergo natural processes and continue to function as they are now until changes occur that would render them unsuitable. The relatively expansive area of dense sapling-sized conifers that originated after the 1988 Red Bench Fire will continue to function as foraging habitat for about another five years; then this area will transition into an unsuitable condition because the lower branches of horizontal cover/forage will be out of reach of snowshoe hares. The area will then continue to function as excellent hiding cover, but likely will not hold the density of snowshoe hares as it did when it provided forage.

All applicable lynx conservation standards would be met; there would be no direct or indirect effects to lynx under this alternative.

Effects Common to All Action Alternatives

Selective tree harvest that leaves coarse woody debris and snags at FNF Forest Plan standard levels is predicted to be adequate to retain woody material to supply denning habitat features for lynx across harvest units in suitable burned lynx habitat.

Alternatives 2 and 4 - Vegetation

Under these two alternatives, management activities would be implemented as per the descriptions of each as detailed in Chapter 2. These two alternatives differ mainly in the amount of lynx habitat that would be treated and Table 3-34 shows what this amount would be, including the prescribed burns. Both alternatives would reduce the amount of useable lynx habitat as per the amounts shown for each treatment unit in Table 3-34. Prescribed burns would be allowed to undergo natural processes and would be suitable again 5-10 years post treatments. Both suitable and unsuitable lynx habitat currently exist within proposed units (Table 3-35).

An important part of each of these alternatives is the proposed treatment/thinning of currently suitable lynx foraging habitat in an area that was burned during the 1988 Red Bench Fire. Much of this area has regenerated to very high densities of lodgepole pine (see Vegetation section) and provides good snowshoe hare habitat. However, sapling densities of 30,000 – 100,000+ per acre appear to be excessive in terms of lynx being able to effectively hunt for hares. Prior to the lynx being Federally listed, some of these dense stands were thinned (1998) in relatively small sized units (5-10 acres) and monitoring (project file, section N) has indicated that hares use the edges of thinned/un-thinned saplings extensively. In addition, due to the normal competition of plants for both nutrients and sunlight, observations of these stands indicate that understory branches are dying out and winter forage availability for hares has a relatively short horizon. It is likely that within five years, much of the Red Bench Fire area will begin its decline in terms of forage value for snowshoe hare. However, implementation of proposed treatments would still constitute a reduction in foraging habitat but thinning some of these stands would introduce diversity and edge habitat.

Alternative 3 - Vegetation

Alternative 3 would treat lynx habitat; however, this alternative was designed to avoid existing suitable habitat (sapling-sized foraging and multi-storied foraging/denning habitat). The

prescribed burn units would affect lynx habitat; however natural succession would occur and they would be suitable again approximately 5-10 years after the burning.

Table 3-34. Sizes and Percent Lynx Habitat and Acres of Proposed Vegetation Treatments within LAUs Affected by the Red Whale Project.

LAU	LAU Size (ac)	% Habitat ¹	Alternatives and # Acres of Lynx Habitat in Proposed Treatments								
			Alternative 2			Alternative 3			Alternative 4		
			Unit	PB ²	% ³	Unit	PB	%	Unit	PB	%
South Trail Tepee	22,544	94	45	0	0.2	16	0	0.1	70	0	0.3
Lower Whale	20,702	98	434	0	2.1	322	0	1.6	555	0	2.7
Moose	15,107	88	905	491	10.5	337	491	6.2	1,216	491	12.8
Red Meadow	28,820	85	778	226	4.1	475	55	2.2	1,064	226	5.3
Hay	28,019	90	267	225	2.0	130	225	1.4	714	277	4.0

¹This is the proportion of the LAU capable of providing lynx habitat regardless of whether current condition is suitable or unsuitable.

²PB = Prescribed Burn treatments.

³% = combined acreage of proposed treatment units and prescribed burns as a proportion of lynx habitat within the LAU.

Table 3-35. Acres of Existing Unsuitable and Suitable Lynx Habitat that would be Affected by the Red Whale Project (for mechanical fuels treatments only).

LAU	Unsuitable		Suitable	
	Alt 2	Alt 4	Alt 2	Alt 4
South Trail Tepee	40	87	5	5
Lower Whale	434	559	0	0
Moose	534	861	371	371
Red Meadow	153	667	625	397
Hay	168	149	98	565

Alternative 2, 3 and 4 - Access

The motorized access proposals in response to A19/grizzly bear under each of these alternatives are not expected to affect lynx in any meaningful way because there would be no new road closures that would preclude winter snow compacting activities, and the proposed closure of 18-25 miles of trail (depending on alternative; see Chapter 2) would not be closed during the winter. In addition, trails generally do not receive winter use.

Relative to the proposal to permit a new road to State (DNRC) access across National Forest System land, this would have a couple of different effects on lynx/habitat. First, the proposed road would traverse through currently suitable sapling-sized foraging habitat. This patch of habitat would be permanently reduced by the clearing width (40 feet) and length of the road (0.3 miles); the total area affected is estimated to be 1.5 acres. During a field survey in 2006, lynx

tracks were detected on the proposed road location, verifying that the area is foraging habitat. However, because the area to be cleared for the new road is: a) relatively small; b) next to the North Fork Road, which gets relatively heavy motorized traffic; c) would not be open to the public; d) is not located on a ridge-top or saddle; and e) would not affect lynx habitat connectivity, this State access proposal would not cause adverse impacts to lynx.

Cumulative Effects

Cumulative effects on lynx/habitat have been varied and have had spatial and temporal bounds within the analysis area. Relative to past timber harvesting activities that predominantly used clearcutting methods, they initially changed what is presumed to have been suitable lynx habitat into unsuitable conditions; however, these very same sites became lynx hunting habitat once dense sapling stands became dense and tall enough to provide for winter snowshoe hare foraging. Similarly, past fires (e.g. 1910 and 1926) produced lynx foraging habitat once sapling-sized conifer regeneration occurred. However, a fundamental difference between these two kinds of forage habitat producing disturbances was that, while past burned areas naturally regenerated, past timber harvested sites historically were manually re-forested, speeding the recovery period of the site being dominated by conifers. In addition, the common practice (until the recent Federal listing of Canada lynx as “threatened”), was to apply the pre-commercial thinning forest management practice to regenerated stands to maximize growth of the young developing forest; this, as is now understood (Ruediger et al 2000), was adversely affecting lynx forage habitat suitability. The State DNRC is proposing a timber sale within the Moose LAU portion of the analysis area and, in the absence of details, would be cumulatively altering lynx habitat. Since it is unknown whether the State’s proposed timber harvest would alter suitable lynx habitat conditions, it cannot be stated whether there would be a cumulative decrease. Whether the State would employ pre-commercial thinning on post-harvested reforested sites is unknown. Regardless, existing forested conditions would be regenerated and new road access would be likely, therefore, some level of lynx habitat degradation would be expected.

The past timber-harvesting era (1952 –1995) also included extensive road building, which facilitated unprecedented human access into the drainages in the analysis area. Roads provided easier access for trapping/killing of lynx when it was legal. In more recent times, these roads have facilitated widespread snowmobiling. This snow-compacting activity is suspected to reduce the competitive advantage that lynx have over other predators such as coyote, wolf and cougar in deep snow conditions and thus lynx have apparently faced a higher level of competition for snowshoe hare, it’s main food source (Ruediger et al 2000). Therefore, cumulatively, past road building has contributed to overall lynx habitat degradation. However, Amendments 19 and 24 (winter recreation) have been recently acquired management tools that have, and are expected to be, beneficial in lynx conservation.

Past, and current, fire suppression effort have prevented portions of the analysis area from burning and producing the kind of mosaic-like landscapes that lynx evolved with. Timber harvesting has replaced, for the most part, fire as the major disturbance providing landscape diversity. As discussed above, the early successional benefits in past timber harvesting were, until recently, curtailed by the pre-commercial thinning program that was standard practice. Therefore, fire suppression has not been beneficial in sustaining lynx habitat over time.

Recent wildland fire activity and past timber harvesting initially created unsuitable lynx habitat conditions. However, the 1988 Red Bench Fire has been providing lynx foraging habitat for at least the last 10 years and will continue to do so for about another five years. The 2003 Wedge Canyon Fire, which primarily affected the South Trail Tepee LAU, is currently unsuitable and will continue to be for another five years or so, depending on how well regeneration of conifers progresses. Overall, both of these fire occurrences within the analysis area are considered beneficial for lynx habitat.

Human activities and their potential effects on lynx can depend on a variety of factors including: time of day/time of year, type of activity, pattern of activity, intensity/frequency of activity and type/quality of lynx habitat in which an activity occurs (Ruediger et al 2000). In general, where a human activity can adversely affect lynx is probably near a den site, which are usually located in concentrations of woody debris/downed logs. To date, most investigations of lynx have not shown human presence influence lynx behavior (Ruediger et al 2000). It is unlikely that past human activities such as huckleberry picking, river use, hiking/biking, firewood cutting, camping, etc. have had a significant effect on how lynx use the landscape.

Finally, if the stands to be treated in this project are maintained in the future as relatively open forest conditions they would not provide winter foraging habitat over the long term; however, these sites would still provide potential travel and summer foraging habitat.

Multi-Scale Assessment

The Regional, multi-scale lynx habitat assessment (Hillis et al. 2002) was used to compare LAU-scale findings against the findings at increasingly larger scales including the North Fork Flathead River 4th Code Hydrologic Unit, Flathead National Forest, Planning Zone (Flathead, Lolo, and Bitterroot National Forests) and Region One scales.

In summary, lynx are a disturbance-dependent species (Ruggiero et al. 2000). Disturbed forest stands that have not yet regenerated to suitable hare forage conditions, while unsuitable to lynx in the short run, are needed to provide foraging habitat in the future. Fortunately, the fires of 2001 (Moose) and 2003 (Robert and Wedge Canyon) have provided a substantial “pulse” of currently unsuitable habitat that would provide abundant foraging habitat in 5-10 years. Denning habitat appears surplus at the scales evaluated. While other factors outside of the FNF’s control (non-target trapping mortality, high competing predator populations, global warming, etc.) may impede lynx recovery, the actions proposed in the Red Whale Project are compatible with recovering lynx to non-listed status and consistent with maintaining habitat for viable populations of lynx at the Regional scale.

Regulatory Framework and Consistency

The project meets FNF Forest Plan management direction and standards. Additionally, the project is consistent with all of the alternatives identified in the Draft Environmental Impact Statement for the Northern Rockies Lynx Amendment. The Endangered Species Act determinations for lynx are also based on an additional analysis at the forest scale (project file, section N).

Sensitive Wildlife

Introduction

Sensitive wildlife species are those species identified by the Regional Forester for which population viability is a concern. Of the 12 Sensitive wildlife species on the Flathead National Forest (March 12, 1999), seven are not discussed further in this document because of a lack of habitat or lack of effects to their habitats (see Tables 3-25 and 3-26). None of the alternatives would have direct, indirect, or cumulative effects on riparian and wetland wildlife species, and therefore there would be no impacts on the following species: common loon, harlequin duck, northern bog lemming, northern leopard frog, or Townsend's big-eared bat. Habitat for other sensitive species is not present within the Red Whale Project area. Therefore, there would be no impacts on the peregrine falcon or flammulated owl. The following sensitive species will be analyzed because they may be affected by management activities proposed in the Red Whale Project, black-backed woodpecker, fisher, northern goshawk and boreal toad. The Biological Evaluation for Sensitive Wildlife Species has been incorporated into the text of this document.

Black-backed Woodpecker (Sensitive)

Analysis Area and Information Sources

The Red Whale Project does not involve affecting primary black-backed woodpecker (BBW) habitats, which are post-fire landscapes. Therefore, the analysis of direct/indirect effects used the area inside proposed treatment sites within each of the alternatives. For cumulative effects, a larger watershed-based area was delineated (Map 3-6).

Data used in the analysis were from existing information sources, aerial photos, and field surveys of proposed treatment sites. A larger-scale assessment was also conducted to address population viability concerns (project file, section M).

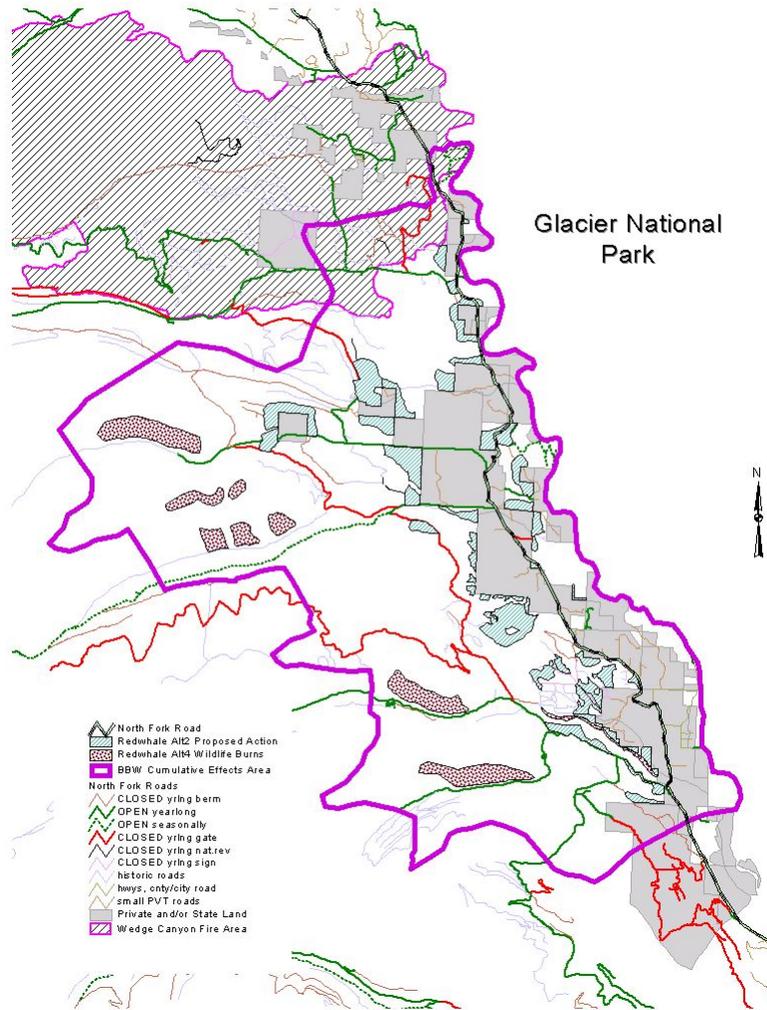
Affected Environment/Existing Condition

The black-backed woodpecker lives in boreal and montane conifer forests in Alaska, Canada, and the northern lower 48 states. It is a rare to uncommon permanent resident of the region. In western Montana, black-backed woodpeckers appear to be strongly dependent upon one- to six-year-old burns (Hejl and McFadzen 2000; Hitchcox 1996; Caton 1996; Hutto 1995a). Black-backed woodpeckers apparently only exploit fires that burned at moderate or high severities, and that support high densities of bark beetles and borers (Hejl and McFadzen 2000). In the Northern Rockies, black-backed woodpecker abundance correlates not to burn size but to the number snags remaining (Hutto 1995b). It is possible that black-back populations reach source levels in recent burns, but may drop to sink levels in the time between large burns (Hutto 1995b). Annual variability of fires is high, both in occurrence and size, and large fires are generally less frequent since the advent of effective fire suppression.

Existing potential black-backed woodpecker habitat in the Red Whale Project area is mainly confined to that portion of the cumulative effects analysis area containing the 2003 Wedge Canyon fire area (Map 3-6). Although there was salvage logging that occurred on the Forest Service portion of this wildland fire, there was no salvage within Glacier National Park, therefore, most of this 50,000 + acres fire area was available to black-backed woodpeckers. None of the proposed treatments in the Red Whale Project involve salvage of post-fire burned tree habitat.

The only aspect of the Red Whale Project that could affect black-backed woodpeckers or their habitat is the vegetation treatments, which includes fuels reduction and prescribed burning. The State access and wildlife security A19 related motorized access proposals would not have any bearing on black-backed woodpeckers or their population viability.

Map 3-6. Black-backed Woodpecker Cumulative Effects Analysis Area.



Environmental Consequences

No significant issues related to the black-backed woodpecker were identified (refer to Chapter 2).

The following Effects Indicators were used to focus the black-backed woodpecker analysis and disclose relevant environmental effects:

- Number of acres of primary black-backed woodpecker habitat affected.

Direct and Indirect Effects

Alternative 1 (No Action)

This alternative would have no impact in any way on black-backed woodpecker habitat or populations. Forested stands targeted for treatment in the action alternatives would undergo natural processes and may be subjected to insect and disease outbreaks or would be susceptible to fire. This alternative would have a high probability that primary black-backed woodpecker habitat (i.e. burned or insect/disease killed forest) would be created sometime in the future. There would be no direct/indirect effects to black-backed woodpecker habitat and no implications to population viability.

Alternatives 2, 3 and 4

Since there would be no salvaging of post-fire burned dead trees, there would be no direct effects on black-backed woodpeckers from fuels reduction vegetation treatments. Indirectly, treatment of forest stands in such a way as to minimize the potential for stand replacing fires means that these stands would have a low probability of functioning as black-backed woodpecker habitat in the future.

The prescribed burning aspect of the Red Whale Project has the potential to create primary black-backed woodpecker habitat. Although the intent would be to create a mosaic pattern within the proposed burn polygons, it would be expected that there would be small patches of forest stand replacements where snags would be created from existing live trees. In addition, when trees are only partially burned and not killed these become prime candidates for insect and disease attacks, setting the stage for exploitation of this valuable food source by black-backed woodpeckers. Each of these alternatives has the potential to beneficially affect black-backed woodpeckers with prescribed burning. From a black-backed woodpecker perspective, the more snags and bark beetle infestations the better, which means the alternative that proposes the highest amount of prescribed burning is the most beneficial. In this context, Alternative 4 has the highest probability of creating the most amount of black-backed woodpecker habitat.

Cumulative Effects

Alternatives 2, 3 and 4

The natural pattern of beetle (black-backed woodpecker food source) outbreaks have been altered through silvicultural and fire management practices. Silvicultural practices directed at maximizing wood production by harvesting trees before they are susceptible to bark beetle attacks, and the salvage logging of beetle-infested, fire-killed and wind-killed trees reduced the occurrence of beetles in some areas. Across the Flathead National Forest in recent years, large acreages of black-backed woodpecker habitat have been created by wildfires such as in the South Fork and North Fork of the Flathead River drainages. In addition, extensive acreages of trees exist on the landscape that have been killed by insects or disease. Within the cumulative effects analysis area, two relatively recent fires have created primary black-backed woodpecker habitat, the 1988 Red Bench and 2003 Wedge Canyon fires. The Red Bench fire has already passed its peak contribution to black-backed woodpeckers because it is an 18-year-old burn. However, the Wedge Canyon fire is relatively recent and is likely in its peak potential for providing a forage base (beetles) for black-backed woodpeckers. Both the Red Bench and Wedge Canyon fires began on Flathead National Forest land and burned eastward onto Glacier National Park. Salvage logging occurred in both burned areas on National Forest land; therefore, the full benefits for black-backed woodpeckers only occurred within the Park's portion of those fire-affected landscapes.

Fire suppression will continue to occur and the fuels reduction portion of the Red Whale Project would add to the probability that burned forests would be reduced in size and frequency within the cumulative effects analysis area. However, the proposed prescribed burns would add to the recent fire events that have occurred. Alternative 4 proposes approximately 3,600 acres of fuels reduction treatments and all of these acres are adjacent to private and/or State lands; this represents approximately 8% of the cumulative effects analysis area. This suggests that approximately 92% of the area would have to depend on normal fires suppression tactics to prevent a potential fire from burning forestlands. Both the Red Bench and Wedge Canyon fires depended on normal tactics and they created large amounts of habitat for black-backed woodpeckers. Therefore, considering the above discussion the Red Whale Project "may impact individuals or potential habitat from being created by fire but will not likely contribute to a trend towards federal listing or reduced viability for the population or species."

Regional and Forest Scale Assessment

Fire suppression has had adverse effects on black-backed woodpeckers, by substantially reducing the amount of burned forests (Hillis et al. 2002b). Salvage logging, especially during extended low fire periods, can further reduce the amount of fire-killed forest habitat available to black-backed woodpeckers (Ibid). At the Region One scale, Hillis et al (2002b) concluded that historically, burned forests 1 to 6 years old averaged ~2% of the landmass of forests in Region One. They also found that between 1940 and 1987, black-backed woodpecker habitat declined to only 18.8% of that historic level because of very successful fire suppression. Large fires in 1988, 2000 and 2001 brought the average for the 1940 to 2001 period up to 75.4% of the historic level. When Hillis and others looked just at the period from 1988 to 2001, the level of available black-backed woodpecker habitat was 284.4% of average historic levels. This 284.4% level of

habitat, measured for the 1988 to 2001 periods, might suggest black-backed woodpeckers are not at risk and don't justify their sensitive status. Hillis and others (2002b) concluded otherwise. They felt that the 47-year interval from 1940 to 1987, in which available habitat was only at 18.8% of normal, not counting losses from salvage logging, may have substantially impacted black-backed woodpecker populations.

Several researchers including Hitchcox (1996), Caton (1996), Hejl and McFadzen (2000) and Powell (2000) found numerous nesting pairs of black-backed woodpeckers on fires that burned in 1991, 1988, and 1998 respectively. National Forest monitoring crews (O'Connor and Hillis 2000, Monson and Boniecki 2002) found numerous nesting pairs on fires that burned in 1998 and 2000 respectively.

While the black-backed woodpecker may have been put at risk by past fire suppression activities, the current amount of habitat is above what occurred historically. Research and monitoring indicates black-backed woodpeckers are present and nesting in high densities in burned forests. Consequently, fuels reduction projects, including the proposed Red Whale Project, on the Flathead National Forest are consistent with the direction to maintain viable populations of black-backed woodpeckers.

Regulatory Framework and Consistency

The black-backed woodpecker is listed as a Region 1 Sensitive species for which population viability may be a concern. Forest Service policy is to insure that actions do not contribute to a loss of population viability or to trend for a need for listing under the Endangered Species Act. The effects analysis concluded that the Red Whale Project would not contribute to a loss of population viability.

Additionally, the Red Whale Project is consistent with the Forest Plan.

Fisher (Sensitive)

Analysis Area and Information Sources

The analysis of direct/indirect effects on fisher/ habitat used the area inside proposed treatment sites within each of the alternatives. For cumulative effects, an area was delineated that encompassed streams (perennial and intermittent) that drained into the area where proposed vegetation treatments were located. Each side of all streams within the area was then buffered by 300 feet and this was defined as fisher habitat (Map 3-7).

Data used in the analysis were from existing information sources, aerial photos, and field surveys of proposed treatment sites. A larger-scale assessment was also conducted to address population viability concerns (project file, section M).

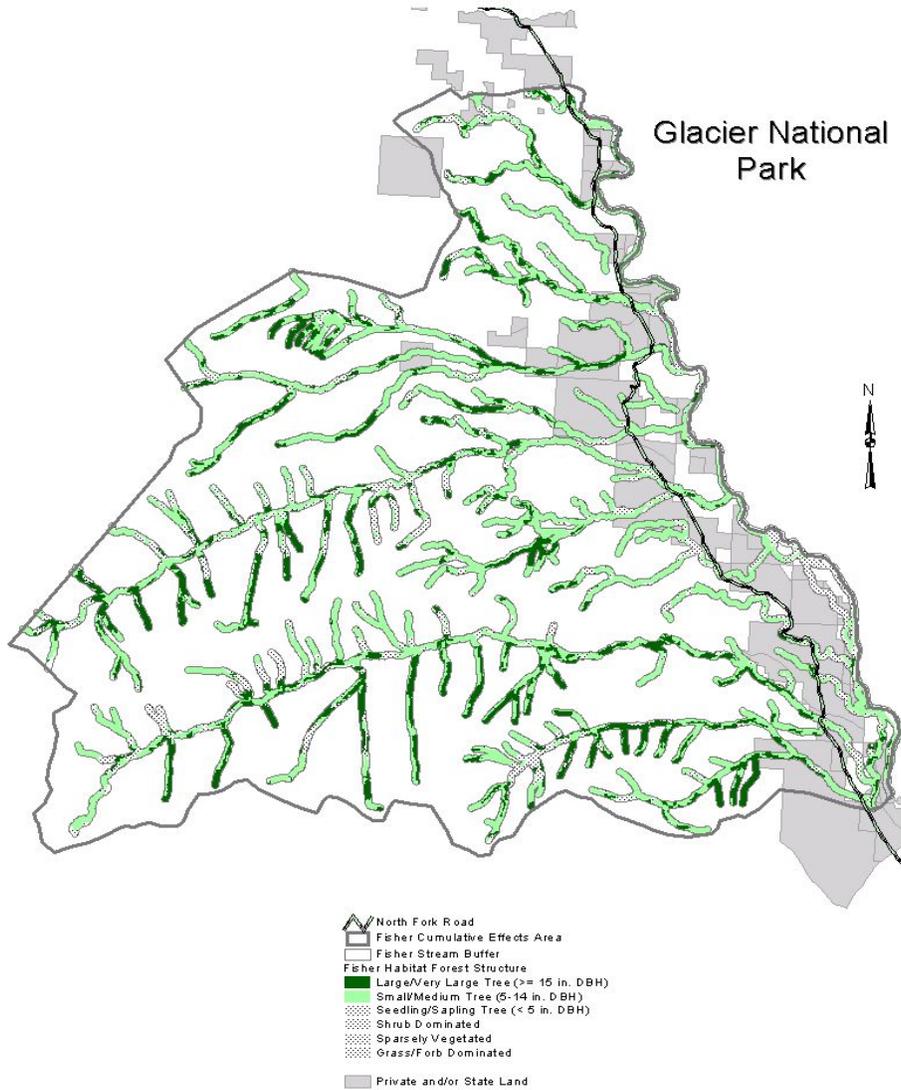
Affected Environment/Existing Condition

The fisher has a strong affinity for forested riparian habitats (Witmer et al. 1998). Such areas are vulnerable to habitat fragmentation due to factors such as fire, timber harvest and timber salvage (Powell and Zielinski 1994). Fishers avoid insular patches of forested habitat and may require forested riparian travel-ways between feeding and denning sites (Heinemeyer and Jones 1994, Witmer et al. 1998). They rarely stray far from streams or other wet sites. Areas of otherwise suitable habitat can be isolated when cover in travel-ways between home ranges is removed leaving gaps 150 feet or wider.

In the Northern Rockies, fishers evolved under a disturbance regime that created numerous openings in a matrix of mature forested habitats. The conversion of some percentage of older age classes to younger age classes can promote a diversity of prey species and thus have long-term benefits for fisher populations (Jones 1991). A pulse of large logs on the ground due to fire or insect epidemics can provide denning structures and cover for fisher and several prey species, but these areas are likely to be avoided until the living canopy cover again exceeds 40 percent. Fishers would likely avoid stands up to 50 years old and probably not select them until 80 to 100 years for lodgepole pine or 120 to 160 years for mixed conifers (Jones 1991). Fishers are apparently tolerant of human activity, but the ease of human access into an area is correlated with fisher mortality through direct or incidental trapping (Claar et al. 1999).

Potential fisher habitat for this analysis was defined as intermediate (pole-sized and immature) and older forests (mature and old growth) within 300 feet of streams. The intermediate sized forests conservatively approximate winter habitat, while the older forests are likely summer habitat. Of approximately 257 miles of streams in the cumulative effects area, 146 miles were perennial. Habitat modeling indicates that approximately 17,120 acres of potential habitat existed adjacent to both intermittent and perennial streams within the cumulative effects area. Of this, approximately 79% was in a pole sized or larger forested condition. With the exception of intermittent streams associated with avalanche chutes, connectivity of fisher habitat appeared good (Map 3-7).

Map 3-7. Fisher Habitat Within Stream-adjacent Buffer.



Environmental Consequences

No significant issues related to the fisher were identified (refer to Chapter 2).

The following Effects Indicator was used to focus the fisher analysis and disclose relevant environmental effects:

- Number of acres of potential low-mid elevation stream-adjacent fisher habitat; although the larger landscape is important to fishers, of special concern is stream-adjacent habitat.

Direct and Indirect Effects

Alternative 1 – No Action

This alternative would have no impact in any way on existing fisher habitat or populations. Forested stands targeted for treatment in the action alternatives would undergo natural processes and if they escape fire and/or insect and disease outbreaks would progress to mature and old growth forest condition, which could allow expansion of fisher foraging habitat further than 300 feet from riparian areas. However, this alternative would have no direct/indirect effects to fisher/habitat and would have no implications on population viability.

Alternatives 2, 3 and 4

The comparison of proposed treatment units and fisher stream-adjacent habitat showed that only units J, K and P would affect stream adjacent habitat. Each of these units is dominated by small/medium tree forest structure, which suggests that winter habitat would be affected. However, as a minimum, normal riparian buffers are afforded all streams to meet Montana Stream Management Zone laws and Native Fish Strategy (INFISH) direction. Therefore, it appears that although there would be some level of interruption of fisher habitat connectivity with fuels reduction treatment, there would be at least a minimum of 50 feet of stream-adjacent habitat that would not be managed in any way; this should provide some level of connectivity for fisher to move back and forth through the area. In the larger context, fisher habitat away from streams would also be affected because forested stands, especially those in Stand Groups 1, 2 and 3 (see Chapter 2), would be targeted to open up canopies and this would not be advantageous for fisher as all habitats used by fisher have high canopy closure (Powell and Zielinski 1994). In addition, all proposed units are in lower elevation habitats where fisher predominantly exist.

Relative to the prescribed burns, all units are on southerly facing slopes where forest stands contain naturally open canopies and probably do not provide the kind of habitat that fisher prefer; and these units are in the mid to higher elevations where fisher do not generally live (Powell and Zielinski 1994). However, Prescribed Burn Units 4 and 5 are older aged forest stands and may provide some level of fisher habitat.

The access management aspect of this project, under any alternative is not expected affect fisher in any meaningful way because 1) winter access for trapping purposes has already been determined by Amendment 24; 2) only decommissioning of roads, where road surfaces would be

allowed to get reforested, would be meaningful in terms of increasing forest continuity; and 3) proposed seasonal road closures and trail closures to motorized use are inconsequential to fishers.

Cumulative Effects

The fisher's status in the Western United States is thought to be "precarious and declining" (Witmer et al. 1998), apparently due to habitat alteration and overexploitation (trapping). They identified four issues of conservation concern in the interior Columbia River basin: 1) conservation of late successional forests at mid to lower elevations; 2) maintenance of links between populations; 3) maintenance of riparian corridors for use by individuals and populations; and 4) trapping pressure and human disturbance. Past forest management activities on FNF, State DNRC and private lands have been varied and extensive and have had implications on fisher conservation. Intensive past timber harvesting of mature and old growth forests at mid to low elevations caused habitat fragmentation, produced barriers to fisher movement, reduced riparian prey patches, and resulted in loss of critical maternal and natal denning habitat features such as large diameter logs and snags. The extensive road building effort of the past provided relatively easy access into fisher habitat and facilitated efficient trapping pressure on fisher populations.

Recreational activities that have and will continue to occur within the analysis area such as hiking, camping, hunting, river-related activities, etc. do not appear to affect fishers. However, activities such as firewood cutting of large diameter snags, especially if they occur in riparian areas, can reduce fisher denning opportunities. Past and ongoing fire suppression actions may initially delay habitat fragmentation caused by wildland fires, but in the longer term, may actually cause more severe/larger fires to occur on the landscape. This could have the unintended consequence of increasing the amount of fragmentation and reducing the availability of large snags.

Although no highways exist in the analysis area, past and ongoing maintenance/improvement of all roads (especially the North Fork Road), may cause roads to function as barriers to fisher movement, but probably not to a significant degree in the foreseeable future.

Considering the above brief synopsis of the factors that have influenced what the status of fisher and fisher habitat is within the analysis area, the need to factor in how the Red Whale Project may contribute to fisher conservation exists. Relative to the forest management aspect of the project, potential cumulative effects include:

- 1) Fuels reduction via the method of thinning of Stand Groups 1, 2 and 3 (see Chapter 2 and Vegetation sections) would create open forest canopies and would produce more open forest canopy structures that fishers are known to avoid (Powell and Zielinski 1994). If these stands are maintained in a similar open character into the future this avoidance could continue over a longer period of time.
- 2) Thinning of Stand Groups 4 and 5 would produce forest stand growth trajectories that would have open canopies and may be areas avoided by fisher.

- 3) Prescribed burning of identified stands may not have much of an effect on fisher because these sites are in the mid-higher elevations (generally 5000-6000 feet), and are on south facing, containing naturally open canopied forests.
- 4) The access management aspect of this project is not expected to measurably affect fisher/fisher habitat because the existing status of roads will not change in ways that matter to fisher. If decommissioning were part of the proposal then the concept of habitat fragmentation could be expected to decrease due to expected re-vegetation of road surfaces. Even the proposed spring seasonal road closures would not necessarily be a benefit to fisher because trapping efforts occur in the winter.
- 5) The proposed easement to allow the State DNRC to construct approximately 0.3 miles would not be long to be meaningful in terms of effects, other than it may incrementally increase potential road-related habitat fragmentation.

The State DNRC is proposing to harvest timber within the analysis area and this would exacerbate habitat fragmentation, movement/dispersal and potential loss of denning habitat features. However, to the extent that riparian forests are maintained may minimize the impacts on fisher/habitat. Private land development is likely to continue both in terms of residential developments and habitat alterations disfavoring fisher.

Considering the analysis of direct/indirect/cumulative effects and the precarious status of fisher populations (Powell and Zielinski 1994), it is likely that implementation of Red Whale Project, under any action alternative “may impact individuals and/or habitat” but is not likely to contribute to a trend towards federal listing or loss of viability to the population or species. This determination was deemed appropriate for the following rationale: 1) no low elevation mature or old growth forests would be thinned; 2) riparian forest buffers for the protection of streams/fish via INFISH guidelines would help protect these important fisher habitats; 3) Amendment 24 has reduced the amount of area that snowmobiling can occur in the North Fork and this may reduce the amount of incidental fisher trapping that may be occurring; and 4) it is likely that with carefully regulated trapping seasons, that fisher populations may slowly expand in Montana (Powell and Zielinski 1994).

Northern Goshawk (Sensitive)

Affected Environment/Existing Condition

The goshawk is a top avian predator of coniferous and deciduous forests that has a circumpolar distribution, mainly north of latitude 30° north; it is not numerous but occurs in many forest and forest edge communities. The goshawk feeds on both birds and small mammals. In western Montana and northern Idaho, nesting habitat generally is found on lower to mid-elevation Douglas fir and mixed conifer forests on moist habitat types (Hayward and Escano 1989). In Oregon, goshawks nested in Douglas fir or white fir, pure stands of lodgepole pine or lodgepole mixed with small ponderosa pine, mixed stands of firs and pines, and aspen. Other tree species in Oregon with documented nests included grand fir, western larch, Englemann spruce, ponderosa pine and subalpine fir (Moore and Henny 1983). In south central Wyoming, goshawks nested in lodgepole pine forests. These nest stands were not classic old growth

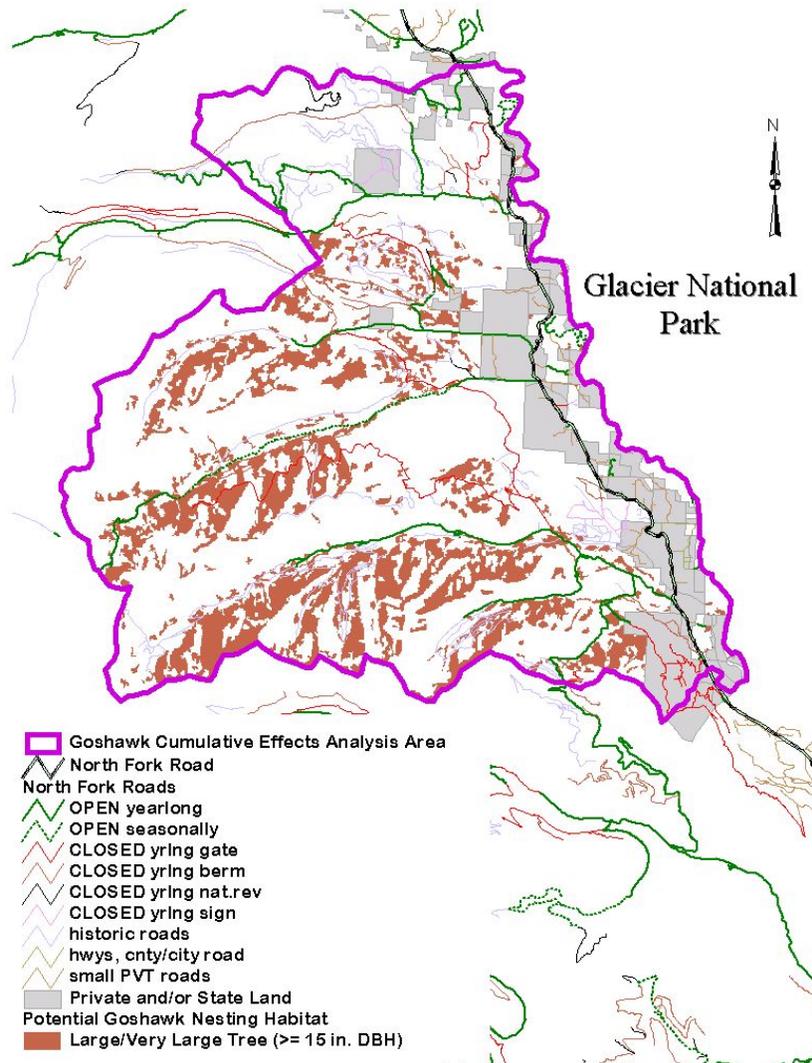
structure, but are even-aged, single storied, mature forests with high canopy closure and clear forest floor (Squires and Ruggiero 1996).

The size of the typical home range for the goshawk varies considerable (1,400 ac to 8,600 ac) depending on age and sex of the bird, habitat and methodology used in collecting and analyzing the data (Kennedy 2003). Across the range of the species, goshawk home range size is generally about 6,000 acres in size (Reynolds *et al.* 1992). Primary prey for northern goshawk tends to be ground or near ground dwellers and therefore open understory in forested stands facilitate foraging. Ideally, foraging habitat should consist of mature to late-seral stands with at least 40 percent canopy closure in dominant trees with an open understory. High tree canopy closure is characteristic of all goshawk nest stands. Goshawk nests are generally found on gentle to moderate slopes (less than 25 percent). Aspect is another important component in the choice of a nest stand. Nest stands with a north to east aspect are considered optimal. North to northwest and east to southeast are considered suitable; all other aspects are considered marginal (Reynolds *et al.* 1992).). In general, the nest area vegetation is described by a narrower range of characteristics; mature forests with large trees, relatively closed canopies [60-90%; see McGrath *et al.* (2003)—a canopy closure of >50% in the Pacific Northwest], and open understories.

Although goshawk surveys were not conducted within proposed units, there was an observation of a goshawk on the Moose Creek road in the vicinity of Units J and K; indicating that there is some level of habitat suitability within the larger landscape. Proposed units in Stand Groups (SG) 1 and 2 are in the 70-90 year old age category and SG 3 contains overstory trees ranging from 70-120 years old. Forest stand conditions in units in SG 3 have the potential to function as goshawk nesting habitat; proposed units in SG 1 and 2 have potential as goshawk foraging habitat. SG 4 (past timber harvesting) and 5 (1988 Red Bench fire) are stands that have originated from recent disturbances and probably do not currently contribute much as goshawk habitat.

In the larger landscape, i.e. cumulative effects analysis area scale, there were approximately 15,000 forested acres containing trees \geq 15 inches in diameter (Map 3-8). Whether this can be translated into potential goshawk territories would not be likely. However, it does show that there would be potential nesting habitat distributed across the analysis area.

Map 3-8. Potential Northern Goshawk Nesting Habitat in the Cumulative Effects Analysis Area.



Environmental Consequences

No significant issues related to the northern goshawk were identified (refer to Chapter 2).

The following Effects Indicator was used to focus the goshawk analysis and disclose relevant environmental effects:

- Number of acres of potential goshawk nesting habitat affected.

Direct and Indirect Effects

Alternative 1 (No Action)

Since the No Action Alternative has no proposed actions, this alternative would have no direct, indirect or cumulative effects on northern goshawks.

Alternatives 2, 3 and 4

Proposed treatment units in SG 1 and 2 consist of forested stands containing canopy closures >40% and typically small diameter trees (6-12 inches DBH); in general, these fit the profile of what would function as goshawk foraging habitat. Each of the alternatives with units in these Stand Groups would create habitat conditions that may allow these stands to continue to function as foraging habitat and provide the kind of habitat diversity emphasized by Hargis et al (1994). Thus, treatment units in SG 1 and 2 are not expected to reduce the potential for these sites to function as goshawk foraging habitat.

SG 3 consists of multi-aged stands with overstory trees in the 70-12- years of age category, having large diameter trees and may have the potential to function as nesting habitat. Fuels reduction treatments in this SG may affect their potential to function as nesting habitat; but not necessarily in a negative way. The proposed treatment in this SG would be to conduct an understory thins with most of the overstory retained. This would actually create a less vegetated understory that would fit the profile of single-story, older aged mature forest with high canopy closure. Each of these sites was examined in the field and no evidence of goshawk presence was detected. Although no nest sites have been located within proposed treatment units in SG 3 it does not mean that goshawks would not potentially occur there; however, usually goshawks defend their nest areas intensely and intruders usually find out if there is a nest nearby.

SG 4 and 5 consist of early seral forest conditions that contain dense sapling-sized or young trees that originated from recent disturbances (fire and timber harvest). Proposed treatments in these stand groups would create vegetative diversity as emphasized by Hargis et al (1994) and could actually enhance foraging opportunities, especially treatments in SG 5 (Red Bench Fire area dense saplings).

The prescribed burning treatments are located on relatively steep, south-facing slopes that do not fit the profiles of either goshawk nesting (cool, mesic sites, northerly facing slopes) or post-fledging habitat (area of concentrated use by the goshawk family after the young leave the nest) areas.

However, it is possible that these sites could function as foraging habitat, which are heterogeneous and may include some mature forest components (Squires and Kennedy 2006) as well as a mix of other forest and non-forest components. The composition of vegetative types (including tree canopy closures and size class distributions located outside the nest area) blend into the surrounding landscape beyond the PFA scale, such that, no difference in habitat composition in occupied versus random foraging areas can be detected (McGrath et al. 2003). Therefore, prescribed burning of proposed sites under any of the alternatives would not be expected to have negative impacts on potential goshawk nest territories.

Cumulative Effects

The northern goshawk, being found throughout most of the mountainous portions of North America, occupies a variety of habitat conditions. This forest bird of prey has persisted with significant habitat modifications (natural and human induced) throughout its range. Within the Red Whale cumulative effects area (CEA) the major habitat modifications the goshawk has had to respond to have been wildland fires, timber management/road building (on all land ownerships) and fire suppression. Wildland fires generally eliminated habitat for long periods of time, while past timber management and roading lessened habitat quality by reducing canopy closure and removing larger size class trees (in smaller patches than fires) that goshawks tend to prefer for nesting and for the post fledging area. Since goshawks tend to prefer open understories for foraging, past fire suppression/exclusion may have reduced habitat quality due to the in-growth of shade-tolerant species that generally occurs in the absence of disturbance.

Most other kinds of forest management activities such as gathering forest products, reforestation, road maintenance and the many recreational activities that occur within the CEA are generally compatible and do not impact goshawk nesting performance unless they happen to occur near an active nest.

The proposed timber harvest on State DNRC land within the CEA would likely be a cumulative reduction in suitable goshawk habitat, though it is not known whether any of the proposed timber harvest sites are suitable as nesting habitat.

The cumulative effect of the 1988 Red Bench and 2003 Wedge Canyon Fires substantially reduced the number of acres of suitable habitat for goshawk, because total canopy coverage was removed by these fires. The proposed Red Whale Project is not expected to eliminate potential nesting habitat but would create forest stands with relatively open canopies. Sites treated would likely not be capable of functioning as goshawk nesting habitat, but would become foraging habitat for any nesting territories. Considering all of these things, it is concluded that implementation of any action alternative “may impact individual northern goshawk or their habitat, but would not likely contribute to a trend towards Federal listing or loss of viability to the population or species.” Rationale for this determination:

- No formal goshawk surveys were conducted in or adjacent to proposed treatment sites, therefore, it is possible that a goshawk nest territory could be present. As mentioned in the Affected Environment discussion (above) an adult goshawk was observed relatively close to units J and K.

- If there was a nest near one of the proposed units, human related noises during the implementation phase of the project could disrupt goshawk-nesting performance.
- Proposed treatment units in Stand Group 3 could alter potential suitable nesting habitat.

It is recommended that if a goshawk nest is found within ¼ mile of any project activities associated, a limited operating period (LOP), from March 1 to August 31 within ¼ mile of any known goshawk nest would be implemented.

Regulatory Framework and Consistency

Regulatory Framework Common to all Sensitive Wildlife Species

Federal laws and direction applicable to sensitive species include the National Forest Management Act (NFMA, 1976) and Forest Service Manual 2670. Amendment 21 to the Flathead's Forest Plan has standards to conduct analyses to review programs and activities, to determine their potential effect on sensitive species, and to prepare a biological evaluation. It also states "adverse impacts to sensitive species or their habitats should be avoided. If impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole would be analyzed. Project decisions would not result in loss of species viability or create significant trends towards federal listing." Future conservation strategies for each species would present direction on maintaining habitat diversity and managing for population viability, as required by the NFMA and Forest Plan Amendment 21. The USDA Forest Service is bound by federal statutes (Endangered Species Act, National Forest Management Act), regulation (USDA 9500-4), and agency policy (FSM 2670) to conserve biological diversity on national forest system lands. A goal in Forest Plan Amendment 21 is to "ensure that Forest Service actions do not contribute to the loss of viability of native species."

Regulatory Consistency Common to all Sensitive Wildlife Species

In accordance with FSM 2673.42, determinations have been made as to the degree of impact the proposed activities may have on sensitive species (Table 3-36 and project file, section M). Along with Chapter 1, Chapter 2 and the sub-section above on each species, these determination statements meet the requirements of the Biological Evaluation for Sensitive Wildlife Species. These statements are based on available information on the distribution, presence/absence from the project area, habitat requirements, and management strategies for these species, as well as the project design and location. These determination statements are for the segment of the population using the Affected Area, not the entire population; they are also based on an additional analysis that assessed viability at the forest scale (project file, section M). All alternatives would comply with NFMA direction that wildlife habitat be managed to maintain viable populations of existing native and desired non-native species well distributed across the planning area. In addition, the analysis for FNF Forest Plan Amendment 21 assessed the forest-level viability of sensitive wildlife species (project file).

Table 3-36. Biological Evaluation Determinations for Sensitive Wildlife Species.

Sensitive Wildlife Species	Alternatives and Determinations ¹			
	1	2	3	4
Black-backed Woodpecker	NI	MIIH	MIIH	MIIH
Boreal Toad	NI	MIIH	MIIH	MIIH
Common Loon	NI	NI	NI	NI
Fisher	NI	NI	NI	NI
Flammulated Owl	NI	NI	NI	NI
Harlequin Duck	NI	NI	NI	NI
Northern Bog Lemming	NI	NI	NI	NI
Northern Goshawk	NI	MIIH	MIIH	MIIH
Northern Leopard Frog	NI	NI	NI	NI
Peregrine Falcon	NI	NI	NI	NI
Western Big-eared Bat	NI	NI	NI	NI
Wolverine	NI	NI	NI	NI

¹NI = "No Impact"; MIIH = "May Impact Individuals or Habitat but would not likely result in a trend toward federal listing or reduced viability for the population or species".

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