



Rocky Mountain Region Office

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October 3, 2008

Ms. Nicole Stickney, Special Uses Forester
Stillwater State Forest
P.O. Box 164
Olney, MT 59927

Dear Ms. Stickney,

Thank you for the opportunity to comment on the proposed helicopter skiing operations on the Stillwater and Coal Creek State Forests. I am writing on behalf of Defenders of Wildlife, a non-profit wildlife conservation organization whose 500,000 members nationwide, including more than 2,000 Montana residents, greatly value grizzly bears, lynx, wolverines, elk, and other rare and/or highly valued wildlife that reside within these two state forests.

The Whitefish Range that includes these two state forests is one of the few areas of the lower-48 states that still supports resident, breeding populations of lynx, wolverines, and grizzly bears. The broader region of the North Fork Valley, the Whitefish Range and adjacent wild country across the Canadian border is referred to as the “transboundary Flathead” area, and a recent report stated that it “may be the single most important basin for carnivores in the Rocky Mountains”¹ (emphasis added). It is because of these outstanding wildlife values that we are commenting on these license applications. We are concerned that the noise and disturbance associated with helicopter skiing may reduce the habitat quality of these areas for these rare and important species, and may result in direct harm to individuals or populations. We are also concerned that helicopter skiing may impair the wildlife and serenity of Glacier National Park east of the proposed operations.

We urge Montana Department of Natural Resources to carefully review the following issues to inform its decision whether or not to grant Special Recreational Use Licenses to the two applicants. Thank you for your consideration of these comments, and please keep us informed of any developments in this process and additional opportunities to comment.

I. DNRC guiding principles and standards

We begin these comments with excerpts from the State Forest Land Management Plan,² which describes the obligation to maintain the natural values of the state trust lands when making decisions concerning their management (p. ROD-2).

¹ “A unique community of carnivore species resides in the transboundary Flathead region that appears unmatched in North America for its variety, completeness, use of valley bottomlands, and density of species which are rare elsewhere. Due to these unique characteristics and its strategic position as a linkage between National Parks in both countries, the transboundary Flathead may be the single most important basin for carnivores in the Rocky Mountains.” (p. 5)

--Weaver, John L. The Transboundary Flathead: A Critical Landscape for Carnivores in the Rocky Mountains. Wildlife Conservation Society Working Papers No. 18, July 2001. Available for download from <http://www.wcs.org/science>

² Montana Department of Natural Resources and Conservation. 1996. State Forest Land Management Plan. Final Environmental Impact Statement, Record of Decision, May 30, 1996, <http://dnrc.mt.gov/trust/pdfs/SFLMP.pdf>

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Our premise is that the best way to produce long-term income for the trust is to manage intensively for healthy and biologically diverse forests. Our understanding is that a diverse forest is a stable forest that will produce the most reliable and highest long-term revenue stream... By promoting biodiversity we will protect the future income-generating capacity of the land by maintaining or restoring healthy and productive ecosystems.

The Management Plan further defines “promoting biodiversity,” explaining that DNRC will use a “coarse filter” approach to provide forest conditions suitable to support a diversity of species. Yet, the Plan says DNRC will also consider the needs of individual species in its management decisions (p. ROD-2):

Because we cannot ensure that the course filter approach will adequately address the full range of biodiversity, we would also employ a “fine filter” approach for threatened, endangered, and sensitive species. The fine filter approach focuses on single species' habitat requirements.

DNRC's Management Plan describes its obligation to help restore threatened and endangered species on its lands, which includes grizzly bears, lynx and wolves (p. ROD-31).

DNRC would participate in recovery efforts of threatened and endangered plant and animal species. We would confer with the U.S. Fish and Wildlife Service to develop habitat mitigation measures.

DNRC's plan also describes its obligation to consider the needs of sensitive species on its lands in the following excerpts, which includes wolverines for example (p. ROD-33).

We recognize that certain plant and animal species, both terrestrial and aquatic, are particularly sensitive to human activities in managed forests. Populations of such species are usually small and/or declining, and thus continued adverse impacts from land management activities may lead to their being Federally listed as threatened or endangered. Further, because sensitive species usually have specific habitat requirements (tending to be ecological specialists rather than generalists), consideration of their needs is recognized as a useful and prudent "fine filter" for ensuring that we meet our primary goal, namely maintenance of diverse and healthy forests. By considering sensitive species in our management actions, we help to ensure that: 1) we are making decisions appropriate to our fundamental philosophy; and 2) additional Federal listings will not be necessary...

We would manage so as to generally support populations of sensitive species on state land. This policy would be pursued by managing for site characteristics generally recognized as important for ensuring long-term persistence...

For sensitive animal species, we would provide habitat characteristics recognized as suitable for individuals to survive and reproduce in situations where land ownership patterns and the underlying biological and geographical conditions allow for them. Our contribution toward conservation of wide-ranging animal species that occur in low densities and require very large areas to support self-sustaining populations would be supportive of, albeit subsidiary to, the principal role played by Federal agencies with larger land holdings.

For sensitive animal species, we would, for all proposed projects, look for opportunities to provide for habitat needs primarily through managing for the range of historically occurring conditions appropriate to the sites. In blocked ownerships, in addition to considering habitat needs generally, we would consider such issues as connectivity and corridors...

DNRC's Management Plan also directs the protection of habitat for big game (p. ROD-35):

To the extent possible, we would manage to provide for big game habitat...

DNRC would consult with MDFWP to determine which big game habitat values are most likely to be affected by proposed management actions and would cooperate with MDFWP to limit detrimental impacts to big game.

Finally, there is direction in the DNRC Plan to manage its lands in cooperation with other landowners, to pursue ecosystem management and other shared goals (pp. ROD-40-41):

- In addition to our current level of cooperation with other land owners, we would attempt cooperative ecosystem management planning.
- We would be actively involved in community-based planning efforts where appropriate...
- We would evaluate cumulative effects and pursue cooperative agreements to share the responsibility of mitigation among landowners...
- We would pursue ecosystem management, and other agreements with adjoining land owners to achieve mutual landscape goals.

II. General information on the effects of winter recreation on wildlife

Fortunately, the effects of winter recreation on wildlife has received some recent attention from the scientific community. The Montana Chapter of The Wildlife Society published a report on this issue in 1999,³ and a team of biologists commissioned by the interagency Greater Yellowstone Coordinating Committee published its own literature review and assessment on the issue also in 1999.⁴ Here we present some general findings from these reports relevant to the helicopter skiing proposals, and in the next section we present species-specific findings from these and other studies.

Information from the Montana Chapter of The Wildlife Society's report on recreation and wildlife

The following passage opens the "Carnivores" chapter of The Wildlife Society's report (hereafter "TWS Report," Claar et al. 1999, p. 7.3, emphasis added).⁵

³ Joslin, G., and H. Youmans, coordinators. 1999. Effects of recreation on Rocky Mountain wildlife: A Review for Montana. Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society, 307pp, http://joomla.wildlife.org/Montana/index.php?option=com_content&task=view&id=200&Itemid=349

⁴ Olliff, T., K. Legg, and B. Kaeding, editors. 1999. Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pp. <http://www.nps.gov/yell/parkmgmt/winterusetechnicaldocuments.htm>

⁵ Claar, J. J., N. Anderson, D. Boyd, M. Cherry, B. Conard, R. Hompesch, S. Miller, G. Olson, H. Ihle Pac, J. Waller, T. Wittinger, H. Youmans. 1999. Carnivores. Pages 7.1– 7.63 in Joslin, G. and H. Youmans, coordinators. Effects of recreation on Rocky Mountain wildlife: A Review for Montana. Committee on Effects of Recreation on Wildlife. Montana Chapter of The Wildlife Society. 307pp.

We have observed that year-round use of commercially available recreational vehicles into remote habitats is now common. These areas previously were isolated due to distance, season of year (e.g., winter), and lack of trails and roads; now, there is no season when these areas are "quiet" (from human use). These new and frequent intrusions are of concern, particularly for carnivore species that characteristically seek secluded areas for production and rearing of young.

We considered the following statements integral to the development and context of this document, particularly as they apply to the management guidelines:

1. Management guidelines need to be based on biological parameters (reproductive rates; behavioral characteristics, such as susceptibility to habituation, disturbance, displacement; and specialized habitat requirements, such as denning, rendezvous, and foraging sites) and, the impacts of habitat fragmentation.
2. Interspecific competition among carnivores for limited numbers of prey can be significant, particularly in disturbed, altered, and fragmented habitats.
3. Several species of carnivores have large habitat area requirements, specialized habitat needs, low reproductive potential, and low dispersal/colonizing abilities that result in these animals being especially sensitive to habitat fragmentation and isolation.
4. In many landscapes, occurrence of habitats that fill the specialized habitat requirements of carnivores, particularly ursids and mustelids, have been reduced as a result of human developments (e.g., subdivisions, reservoirs, roads), logging practices (loss of old growth/structurally mature conifer stands with multiple canopies, snags, and downfall), and recreational use/developments in forest habitats and important landforms such as alpine cirques (e.g., ski resorts, snowmobile trails/play areas, heli-skiing, and extreme snowboarding).

The "Carnivores" chapter of the TWS report concludes with the following discussion relevant to all carnivores (Claar et al. 1999, pp. 7.45-7.46)

... Particular species of concern are those such as grizzly bear, wolverine, and lynx that are known to characteristically seek solitude for denning and rearing of young and have wide ranging movements.

Carnivore species differ in their susceptibility to human disturbance. The carnivores least sensitive to human disturbance are the generalists such as coyotes, red fox, raccoons, and skunks. Other species such as Canada lynx that are more specialized in their foraging strategy, may be particularly vulnerable to disturbances that compromise their winter foraging efficiency. More research is needed to document the magnitude of this potential effect. Potential impacts of dispersed and developed recreation projects and activities are variable and complex...

To analyze project effects on medium- to large-sized carnivores, it is particularly important to consider not only direct project impacts, but also potential impacts on a landscape basis in the context of connectivity, refugia, and metapopulations. For example, new groomed snowmobile trails will have immediate area effects; the next level to consider is the impact of all snowmobile trails within a large area (at least the size of a national park or forest) to delineate cumulative effects. Refugia (landscapes, generally wilderness or back-country, that are not readily subject to hunting, trapping, and frequent human disturbance) are recognized

as necessary for persistence of forest carnivore populations by supporting source populations that can repopulate adjacent landscapes via dispersal and emigration...

With increasing human pressures for recreational opportunities, it is imperative to gain more information on carnivores so they can be managed in a context of species requirements, ecosystem (landscape) scale, and socioeconomic values. In summary, these mid- to large-sized carnivores require large home ranges; they characteristically conduct wide-ranging movements, and exhibit specialized biological and habitat requirements. Because of these characteristics, they are particularly vulnerable to habitat fragmentation and alteration. Indicative of these circumstances is the proposed and/or federal listing of several of the mid- to large-sized carnivores under the ESA of 1973, as amended.

Information from the Greater Yellowstone report on winter recreation and wildlife

The Greater Yellowstone report has a chapter focused on helicopter skiing specifically. The chapter describes the “potential problems with helicopter skiing” as follows (Oliff et al. 1999, p. 155).

Numerous studies have shown impacts to wildlife from low-flying aircraft, including helicopters. Studies have been conducted on birds, mountain goats, wild sheep, deer, elk, and wolverines (Knight and Cole 1995). Exposure to helicopters increases energy expenditures, reduces fat accumulation, and/or changes an animal’s physiological condition (MacArthur et al. 1979). These effects may lead to reduced survivability and/or reproduction success.

Other risks associated with helicopter skiing are avalanches, mishaps with the explosives used to set avalanches, and the potential for helicopter accidents. Helicopter accidents could result in wreckage and fuel spills in pristine backcountry areas. Any of these risks could be harmful to wildlife in the wrong place at the wrong time. Impacts from recreation add to the many stresses an animal sustains during the winter and can result in changes in movements and preferred ranges, reduced foraging efficiency, decreased reproductive success, increased chance of accidents, lowered resistance to disease, and increased predation (USFS 1996).

This chapter of the report goes on to describe the impacts of helicopter skiing on individual species, including: bald and golden eagles, mountain goats, elk, bighorn sheep, wolverines, and other wildlife. The chapter concludes with the following “management guidelines” (p. 157).

Heliskiing use should be limited to the minimal amount of area possible, and overflight distances should be more than 1,000 feet above and 2 miles away from sighted wildlife or known wildlife winter habitat. Managers should overfly proposed heliskiing areas to determine locations of wildlife and prohibit skiing where conflicts would occur. The permittee should be required to notify managers of any wildlife sightings as well as the areas that were used. Managers should have the authority to close any area that is in question. There should be no overflights or use of slopes with known wolverine dens. The use of explosives to set off avalanches should be limited, and any wildlife or human presence should be ascertained before use.

III. Potential specific issues of concern

Effects on grizzly bears

Grizzly bears are listed as a Threatened species in northwestern Montana, and these two state forests are located within the grizzly bear recovery zone for the Northern Continental Divide Ecosystem.

Studies have shown that bears exhibit stress and may abandon their dens due to noise and disturbance. Montana Department of Fish, Wildlife and Parks (“FWP”) recommends protecting denning areas from recreational use. Bears are also vulnerable to disturbance and conflicts when entering their dens in late fall, and emerging from their dens starting in early spring.

Here we provide some relevant excerpts from the Montana FWP Grizzly Bear Management Plan for Northwestern Montana (Dood et al. 2006, emphasis added).⁶

Motorized access also plays a significant role in limiting grizzly bear habitat use... (p. 44)

FWP recognizes the need to minimize negative impacts to bear habitats. Other than on FWP’s own wildlife management areas, FWP does not have decision-making authority on federal, State School Trust, or tribal lands. However, FWP works closely with these land management agencies to minimize negative impacts on fish and wildlife species. (p. 44)

FWP, in cooperation with other agencies, will evaluate snowmobile programs to ensure they avoid impacting grizzly bears during denning periods, including den entrance and emergence. (p. 46)

Avoid human activities, or combinations of activities, on seasonally important wildlife habitats that may result in an adverse impact on the species or reduce the long-term habitat effectiveness. Guidelines for important grizzly bear habitats and seasonal timeframes are as follows: spring emergence dates (April 1 - June 30), alpine feeding sites (July 1 - Sept 15), subalpine fir/whitebark pine habitat types (Aug 1 - Nov 30), and denning habitat (Oct 15 - Apr 15). (pp. 48-49)

FWP supports the USFS and BLM restrictions banning all motorized off-road/trail use. (p. 49)

[Note—Helicopter skiing is clearly different than cross-country motorized recreation, and USFS/BLM restrictions do not apply to state lands, but some of the impacts to wildlife that prompted this policy are similar for “off-trail” helicopter skiing]

The Greater Yellowstone assessment provides a detailed discussion of the effects of winter recreation on grizzly bears in that area and provides the following useful information (Oliff et al. 1999, pp. 37-47). November 9 was the mean date for grizzly bears to enter their dens during a multi-year study, but bears entered their dens as late as December 21. Bears started emerging from their dens in mid-February, with the last groups emerging in early-mid April. Thus, a helicopter skiing operating season from December 1 through April 15 would overlap with bears entering and especially emerging from their dens.

The assessment notes that the effects of human disturbance on denning grizzly bears has not been well studied, but does relate the findings of an Alaskan study where bears exhibited elevated heart rates and increased movements in response to nearby aircraft and seismic explosions.

⁶ Dood, A. R., Atkinson, S. J. and V. J. Boccadori. 2006. Grizzly Bear Management Plan for Western Montana: final programmatic environmental impact statement 2006 - 2016. Montana Department of Fish, Wildlife and Parks, Helena, Montana. 163 pp, <http://fwp.mt.gov/wildthings/tande/grizzlymgmtplan.html>

The Wildlife Society's analysis relates similar information as the Greater Yellowstone assessment, and discussed the following potential effects on bears due to recreational disturbance (Claar et al. 1999, p. 7.25).

Although abandonment of dens was not reported as a frequent result of the winter human uses described, Reynolds and Hechtel (1980), Watts and Jonkel (1989), and Mace and Waller (1997) expressed concern that physiological stresses could result in serious consequences to bears. Mace and Waller (1997) believed the greatest potential for disturbance from snowmobile activity occurs when females with cubs are still confined to the den vicinity during spring and when bears descend to lower elevations and more gentle terrain, which is more suitable for snowmobiling.

The TWS report also discusses that "non-motorized" recreation may cause greater disturbance to individual bears, which may be relevant to helicopter skiers once their helicopter departs (p. 7.26):

McLellan and Shackleton (1989), indicated that grizzly bears reacted more strongly to people on foot in remote areas than to motorized equipment in more developed areas. Grizzly bears that encountered people on foot in remote areas left the creek drainage, while those grizzly bears that encountered logging equipment and motor vehicles in roaded areas moved to cover but remained in the area.

The TWS report has the following management recommendation relevant to winter recreation (p. 7.27):

Important seasonal habitats having limited availability and/or distribution, such as denning areas, early spring ranges, and alpine feeding areas, need a high level of protection from human disturbance. Bears may be exceptionally vulnerable in these areas or during these periods due to lethargic behavior or the inability to locate other suitable habitats.

Effects on black bears

The effects of helicopter skiing in black bear denning habitat are likely to be similar to the effects on grizzly bears described above. There has been some additional research done on winter recreation and black bears, that is likely to be applicable to grizzly bears as well. For example, 41 black bear dens in California and Nevada were studied over a 3-year period. The results of this study are summarized in the abstract as follows (Goodrich and Berger 1994, Abstract).⁷

The increase of recreational activities in winter wildlife habitats is of concern because wildlife populations are under considerable stress during winter... Bears at both sites abandoned dens and cubs in response to investigator disturbance, and all but one bear remained active after abandonment. High overlap between bear denning sites and potential winter recreation areas indicated a high potential for den abandonment due to human disturbance. Bear denning areas should be protected from human disturbance during winter.

Here are some excerpts from The Wildlife Society's report relevant to winter recreation and black bears (Claar et al. 1999, pp. 7.19-7.20).

⁷ Goodrich, John M. and Joel Berger. 1994. Winter recreation and hibernating black bears *Ursus americanus* Biological Conservation 67(1994):105-110.

Effects of Winter Disturbance - Dens are selected away from possible disturbance (Tietje and Ruff 1980), and studies show that bears readily abandon den sites following human disturbance (Lindzey and Meslow 1977, Hamilton and Marchington 1980, LeCount 1983, Manville 1983). Three of 5 dens were abandoned in southwestern Montana following human disturbance (Mack 1990). Carney (1985) reports 3 of 14 females abandoned cubs after researchers disturbed them in Shenandoah National Park. Tietje and Ruff (1980) suggest that den disturbance and subsequent abandonment could adversely affect bears by contributing to excessive overwinter weight loss. Bears may minimize fat loss by denning in more remote, undisturbed areas. Tietje and Ruff (1980) found that following den abandonment, bears lost 25% of their body weight compared to a 16% loss for bears that did not abandon dens. Nursing bears or den abandonment accounted for an additional 9% overwinter weight loss.

Tyers and Reinhart (1999) suggests 3 stages in the annual cycle of grizzly bears when they are vulnerable to impacts of winter recreation: pre-denning, denning, and post-den emergence. Reynolds et al. (1984) monitored heart rates of grizzly bears subjected to aircraft and seismic activity. Sounds of seismic vehicles passing within 5/8 mile from dens caused an elevated heart rate but not den abandonment. Reynolds and Hechtel (1980) speculated that disturbance of a female with newborn cubs from noise near the den could have negative consequences. Den abandonment and accelerated starvation can be initiated by human disturbance (Watts and Jonkel 1989).

Management can be designed to minimize impacts to bears during pre- and post-denning periods for public-use areas such as campgrounds, hiking and snowmobile trails, ski areas, and visitor centers. Potential for bear-human conflicts are high if recreation is allowed during these periods, especially when food sources are nearby (Mattson et al. 1992).

[Guidelines/Recommendations]

Designate snowmobile-use areas so that they avoid black bear denning habitat prior to, during, and after denning. Other recreational use should be restricted in known use areas during: the pre-denning period, which occurs from 15 October to 1 December; the winter denning period; and the post-denning period, the beginning of which ranges from 15 March for some males to 30 April for some females, and extends to approximately 15 May...

Winter activities, such as snowmobiling and skiing, should not be allowed within 1 km of known den sites...

If possible, avoid line-of-sight activities around den sites. Design trails so that some topographical barrier, (i.e., ridge or hill) separates activities from den sites.

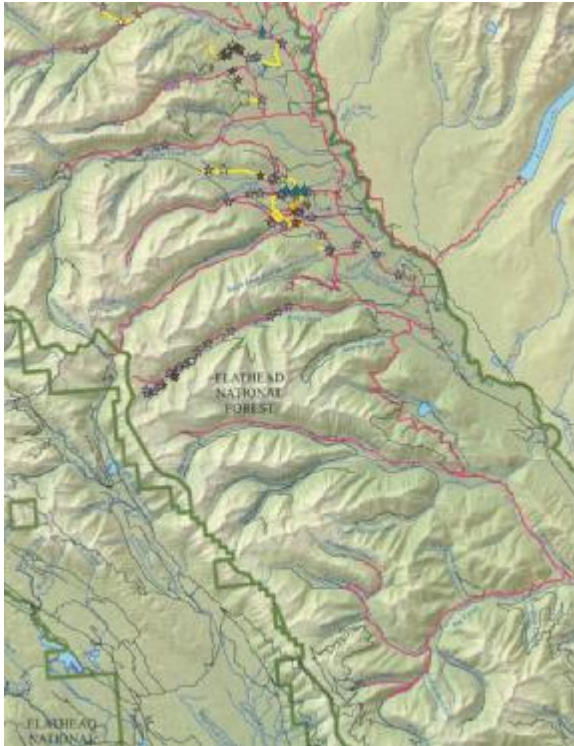
[Information Needs]

Develop and apply habitat models to identify prime denning habitat and then manage human seasonal activity in these areas to avoid and minimize impacts near and during the bear denning season.

Effects on lynx

The lynx was listed as a Threatened species in 2000, and these two state forests are within the portion of northwestern Montana currently proposed as "critical habitat" for lynx. Northwestern Montana is one of the few places left in the lower 48 that still support a resident and breeding lynx population. Lynx need peace and quiet to successfully hunt their main prey, snowshoe hares. Studies have also shown that compacted snow may harm lynx by allowing other predators into lynx habitat.

Lynx have not been intensively studied in the Whitefish Range, unlike the Yaak and Swan River Valleys of northwestern Montana. Yet surveys as recent as 2004 confirmed lynx directly adjacent to the potential operating areas in the Hay Creek drainage (see figure from Gehman et al. 2004;⁸ purple stars indicate lynx tracks and scat).



The TWS report describes research on winter recreation and lynx in some detail as follows and concludes with some recommendations (Claar et al. 1999, pp. 7.41-42).

Opportunities for resource (hares) competition increase among these species when snow compaction occurs into higher elevations due to recreational (or management) activities such as snowmobiling, skiing, snowshoeing, and roads/trails that are plowed or groomed (Koehler and Aubry 1994). Buskirk et al. (1999) concluded that exploitation competition by coyotes, may reduce lynx numbers in the southern parts of lynx range where hare numbers are low. Coyotes and bobcats, and particular mountain lions appear to be effective interference competitors...

Several authors (Bider 1962, Ozoga and Harger 1966, Murray and Boutin 1991, Koehler and Aubry 1994, Lewis and Wenger 1998 and Buskirk et al. 1999) suggested that packed trails created by snowmobiles, cross-country skiing, snowshoeing, snowshoe hares, and other predator trails may serve as travel routes for potential competitors and predators of lynx.

⁸ Gehman, Steve, Amy Edmonds, and Betsy Robinson. 2004. Snow tracking surveys for lynx and other forest carnivores in the North and Middle Forks of the Flathead River System—Glacier National Park and Flathead National Forest, Winter 2003-2004. Unpublished report by Wild Things Unlimited, Bozeman, Montana, December 2004. [Available upon request]

Mowat et al. (1999) reported that lynx seem to be able to tolerate moderate levels of snowmobile activity and human presence. There is very little information on this topic. Human presence at denning time in late May and June may be the time that human disturbance affects lynx by causing den abandonment and potentially affecting kitten survival. It has been observed that human presence at a den site with young kittens can cause the female to move her young to another site (J. Squires, Rocky Mountain Research Station, personal communication).

Developed recreation sites such as resorts, ski areas, and campgrounds cause a direct impact through habitat loss/modification and the addition of various human activities in an area. These types of developments necessitate analyses of on-site impacts as well as a landscape-level view to analyze cumulative effects and whether the development occurs in large blocks of contiguous lynx habitat versus highly fragmented areas of lynx habitat. These broader levels of analysis provide the means to address issues of connectivity, refugia, and metapopulations. For a more detailed discussion of these analyses for dispersed and developed recreation see the draft Canada Lynx Conservation Assessment and Strategy (USDI Bureau of Land Management, et al. 1999)...

[Guidelines/Recommendations]

- Within lynx habitat, analyze potential impacts of proposed projects that would increase snow compaction, thereby facilitating travel of predators that are competitors with lynx in and adjacent to the proposed project area.
- Minimize activities that increase current levels of human-induced snow compaction in lynx habitat until more research on this topic is completed.

Since the TWS report, two studies have been published on the effects of snowmobiles on lynx. One study in northwestern Montana concluded that packed trails do not affect the movements of lynx competitors (Kolbe et al. 2007),⁹ yet a second study in Utah found increased access of competitors into lynx habitat due to packed trails, concluding as follows.

Our results suggest that restrictions placed on snowmobiles in lynx conservation areas by land management agencies because of the potential impacts of coyotes may be appropriate. (Bunnell et al., 2006)¹⁰

Effects on wolverines

Wolverines are designated as a Sensitive species by the U.S. Forest Service, and a recent decision not to list them under the federal Endangered Species Act is currently under court challenge. Depending on the timing of the resolution of this legal action, wolverines may become a listed species at the onset of the proposed operations, which may require additional review of their potential impacts on wolverines. Wolverine are known to disperse into this area to and from Glacier National Park. Studies in British Columbia have shown that wolverines are disturbed by helicopter skiing.

⁹ Kolbe, J. A., J. R. Squires, D. H. Pletscher, and L. F. Ruggiero. 2007. The effect of snowmobile trails on coyote movements within lynx home ranges. *Journal of Wildlife Management* 71(5): 1409-1418.

¹⁰ Bunnell, Kevin D., Jerran T. Flinders, and Michael L. Wolfe. 2006. Potential impacts of coyotes and snowmobiles on lynx conservation in the Intermountain West. *Wildlife Society Bulletin* 34(3):828-838

Wolverines have not been intensively studied in the Whitefish Range, but many wolverines have been trapped there during Montana's trapping season (FWP data), and study animals from Glacier National Park are known to have moved through the area (see figure from Copeland and Yates 2006, p. 15).¹¹



Figure 4. Black dots represent the locations of subadult male M5. Black arrows depict his direction of movement from the east side of Glacier National Park subsequent to his capture in February 2004. M5 moved over 200 kilometers to Northwest Montana where he was subsequently taken by a trapper in December, 2004.

Here is a discussion of wolverine denning habitat from the TWS report (Claar et al. 1999, p. 7.35).

The most specific habitat need of wolverine may be for denning. All authors agree that the use of reproductive dens begins in early February to late March (Copeland 1996). Female wolverines in central Idaho preferred secluded subalpine talus sites in cirque basins for natal and kit rearing dens (Copeland and Harris 1994, Copeland 1996) from which they made foraging trips as far away as 15 km. The concave nature of a cirque may enhance longevity of snow depth, thereby ensuring the integrity of den structure into late winter. Large boulder talus provides cavities used as natal and nursery dens. Post-weaning rendezvous sites for kits and adult females included large boulder talus and structurally mature spruce/fir riparian sites with dense understory and forest floor debris for security and hiding cover. Such sites were often associated with subalpine rock/scree. Boulder talus was also associated with foraging during winter and summer months and may be important as thermal cover.

In the spatial and temporal planning of human activities, it is advisable to consider the apparent specific denning needs of wolverine.

Effects on wolverines, fishers and martens

The TWS report combines wolverines, fishers and martens for its discussion of the recreational impacts common to all three species, and its conclusions, including guidelines and recommendations for managers (Claar et al. 1999, pp. 7.36-7.37).

Gabrielsen and Smith (in Knight and Gutzwiller 1995) provide abundant evidence of the physiological response of some wildlife to both natural and human-caused disturbance. These include elevated heart rate, metabolism, blood sugar, body temperature, respiration rate and depth, oxygen consumption, and brain and heart blood flow. When marten, fisher, and wolverine are disturbed by humans, similar physiological responses likely occur and have energetic costs.

¹¹ Copeland, Jeffrey P. and Richard E. Yates. 2006. Wolverine population assessment in Glacier National Park. Progress report 2004-2005. USDA Forest Service, Rocky Mountain Research Station, Missoula, Montana, March 2006.

Animals that learn to avoid areas of human activity do so at the cost of repeated disturbance and ultimately forego the resources available in the avoided area. Even those individuals exhibiting an attraction or habituation response may do so at a cost. For example, animals attracted to human food sources may experience poor nutrition and may be exposed to mortality risks not necessarily encountered in their "wild" environments. These include conflicts with domestic pets and exposure to their diseases, risk of incidental trapping or shooting, and being struck by vehicles. Habituated individuals develop their behavior only after the cost of repeated stimulation, and they too may expose themselves to greater risk of mortality.

[Conclusions]

In many landscapes, occurrence of habitats that fill the specialized habitat requirements of marten, fisher, and wolverine have been reduced as a result of logging practices (loss of old growth/structurally mature conifer stands with multiple canopies and downfall) and recreational use of subalpine cirques (ski resorts, snowmobile trails and play areas, heli-skiing, and extreme snowboarding).

In the absence of a complete knowledge of habitat requirements, consideration of recreational activities on public lands should err on the side of the requirements of the productive female segment of populations, including habitat and energy requirements associated with gestation and lactation...

Human activity may have the effect of altering species composition in local areas or over geographic landscapes. Snowmobile or ski trails may facilitate entry of species (on packed snow paths) that would otherwise be excluded by virtue of snow depth or conditions. Changes in species composition (range extension of coyotes, bobcats, lions, wolves) may result in competition for food (prey species or carrion) and/or predation pressures that otherwise would not occur. Carrion is an important winter food source for wolverine. Therefore, displacement of ungulates or competition for carrion as a result of changes in species composition in an area may negatively effect wolverine.

[Guidelines and Recommendations]

- Planning of recreational developments with consideration for these forest carnivores must, by necessity, be accomplished at the landscape scale (these species have low-density populations with large area and specialized habitat requirements and have been diminished as a result of historic land uses); incorporate the concept of refugia (integrity of landscapes that can support unexploited source populations of species characterized by low reproductive potential and low dispersal abilities); and consider cumulative effects of recreational developments and other land uses within the landscape.
- Recreation should be directed to designated travel routes.
- Locate road or trail routes or other recreational facilities in a manner that does not impact habitats important to wolverine for denning and foraging (subalpine boulder talus sites or structurally mature montane forests associated with subalpine rock/scree habitats). Natal and kit-rearing habitat for wolverine should be protected from disturbance 1 January through 30 May. Female wolverines are sensitive to disturbances in habitats selected for natal dens and kit-rearing den/rendezvous sites. Den desertion has been documented in Idaho by Copeland (1996) and in Finland by Pulliainen (1968).

The Greater Yellowstone report contains some additional recommendations for these small-medium carnivores (Oliff et al. 1999, p. 69)

Existing winter trail systems/play areas and the development of new trails or designation of new play areas, particularly new areas, should be considered a negative impact on mid-sized carnivores. To avoid impacts, public land managers should exclude recreational activities from important areas that are used by carnivores during the winter.

Copeland (1996) recommends that management exclude human recreational activities within a five-mile buffer of predicted wolverine denning habitat from January 1 to May 31. Recreational activities outside the restricted time period should be managed for minimal intensity (e.g., institute skier/snowmobile quotas and/or weekend closures).

Some additional findings from research on human disturbance of wolverines were published in a special supplement to the *Journal of Wildlife Management* last summer, including research in British Columbia in areas used by helicopter skiing operations. Here are some relevant excerpts from these studies.

Resource extraction (including timber harvesting), backcountry skiing and snowmobiling, roads, and other forms of human disturbance merit careful consideration by those concerned about wolverine conservation. Researchers in British Columbia found a consistent negative association between wolverine occurrence and areas where helicopter and backcountry skiing occur. (Ruggiero et al. 2007, p. 2146)¹²

Habitat use by male wolverines in winter was... negatively associated with helicopter skiing areas in the Columbia Mountains... In the Columbia Mountains, where winter recreation was widespread, females were negatively associated with helicopter and backcountry skiing... Our analysis suggests wolverines were negatively responding to human disturbance within occupied habitat. (Krebs et al. 2007, Abstract)¹³

Human use and predation risk-related variables were also strong predictors in all female seasonal models... Helicopter skiing and backcountry skiing were negatively associated with Columbia Mountain females' use in winter. In summer, females were positively associated with roadless areas and negatively associated with recently logged areas. Taken together, these results suggest that wolverines, particularly females, are responding negatively to human activities within their home ranges. (*Ibid*, pp. 2188-2189)

Human use, including winter recreation and the presence of roads, reduced habitat value for wolverines in our studies. (*Ibid*, p. 2190)

Wolverine field work in the Greater Yellowstone area also indicates that wolverines are displaced by motorized use, as indicated in the following excerpts from a progress report published in May 2007 (Inman et al. 2007).¹⁴

Three of 5 natal dens were located in designated wilderness. One den was in a wilderness study area where motorized use was allowed during winter but was most likely absent due to difficult access. One den was located in an open area open to motorized use during winter and we documented a small amount of snowmobile use near the natal den... (p. 69)

¹² Ruggiero, L. F., K. S. McKelvey, et al. 2007. Wolverine Conservation and Management. *Journal of Wildlife Management* 71(7): 2145–2146.

¹³ Krebs, J. E. C. LoFroth and Ian Parfitt. 2007. Multiscale Habitat Use by Wolverines in British Columbia, Canada. *Journal of Wildlife Management* 71(7): 2180–2192.

¹⁴ Inman, Robert M., Kristine H. Inman, Mark L. Packila, and Anthony J. McCue. 2007. Wolverine reproductive rates and maternal habitat in Greater Yellowstone. *Chapter 4, Pp. 65-84 In Greater Yellowstone Wolverine Program Cumulative Report*. May 2007. Wildlife Conservation Society, Ennis, Montana.

Females did not abandon natal dens in Alaska or Scandinavia when researchers approached... However, 6 of 7 natal dens from this study occurred in areas without motorized use... (p. 71)

Effects on wolves

Wolves recolonized the North Fork Valley from Canada more than 20 years ago, their first foothold that has led to their restoration across the Northern Rockies region. Wolves may make use of the elk winter range that has been identified in the Coal Creek State Forest during the winter months and use of this area by helicopters, snowmobiles and/or skiers is likely to displace or harm wolves and their prey.

The following excerpt from The Wildlife Society's report is relevant to the potential effects of the proposed heli-skiing operations on wolves and ungulates (Claar et al. 1999, p. 7.6).

Snowmobiles in Canada made well-used trails to elk wintering areas that wolves had previously not utilized, causing increased wolf depredation (P. Paquet, University of Calgary, Alberta, personal communication)...

Effects on mountain lions

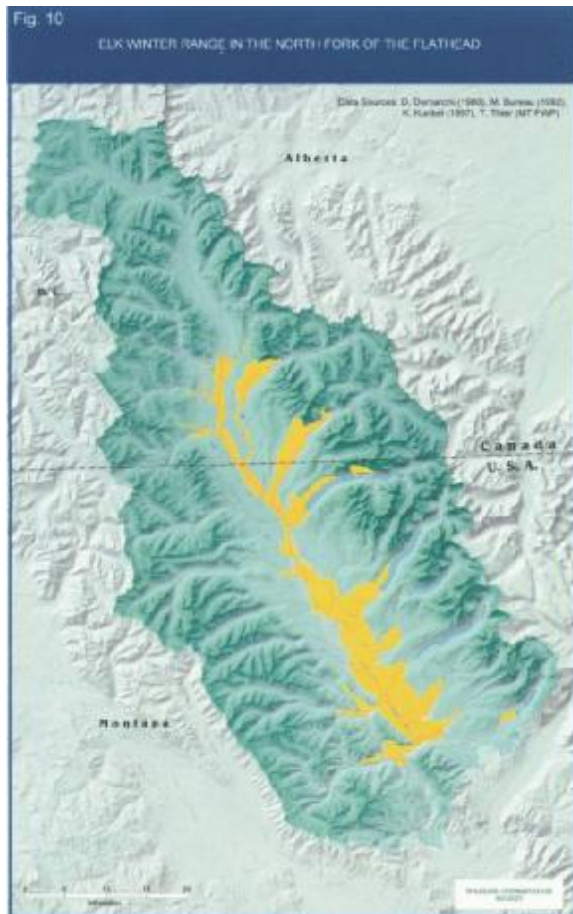
The Wildlife Society's report recommendations for reducing recreation impacts on mountain lions include the following points relevant to this decision (Claar et al. 1999, p. 7.45).

- Avoid human encroachment into ungulate seasonal ranges so that mountain lions are able to sustain themselves without contact/conflict with humans...
- Restrict snowmobiles to designated routes and designated play areas; minimize snowmobile activity in and near big game winter ranges (mountain lion habitat) on public lands.

Effects on elk

Elk winter range has been identified on the Coal Creek State Forest and Montana FWP recommends protecting winter range from recreational activities. Even if skiers are not using the winter range directly, providing access for the skiers in or out of the Coal Creek State Forest by helicopter or snowmobile may require traveling through this winter range and disturb dependent wildlife.

This figure from the 2001 Wildlife Conservation Society report mentioned above shows elk winter range in the Flathead Basin, which includes one of the possible heli-skiing operation areas on the Coal Creek State Forest (Weaver 2001, p.36)



The Montana Chapter of The Wildlife Society’s report has an extensive section devoted to the importance of protecting ungulate winter range from disturbance by human recreation. It concludes with the following recommendations and guidelines, which it describes as, “minimum acceptable considerations for protecting ungulates on Montana winter ranges” (Canfield et al. 1999, pp. 6.8-6.9).¹⁵

Management techniques that reduce human disturbances on ungulate winter range include the following, by priority:

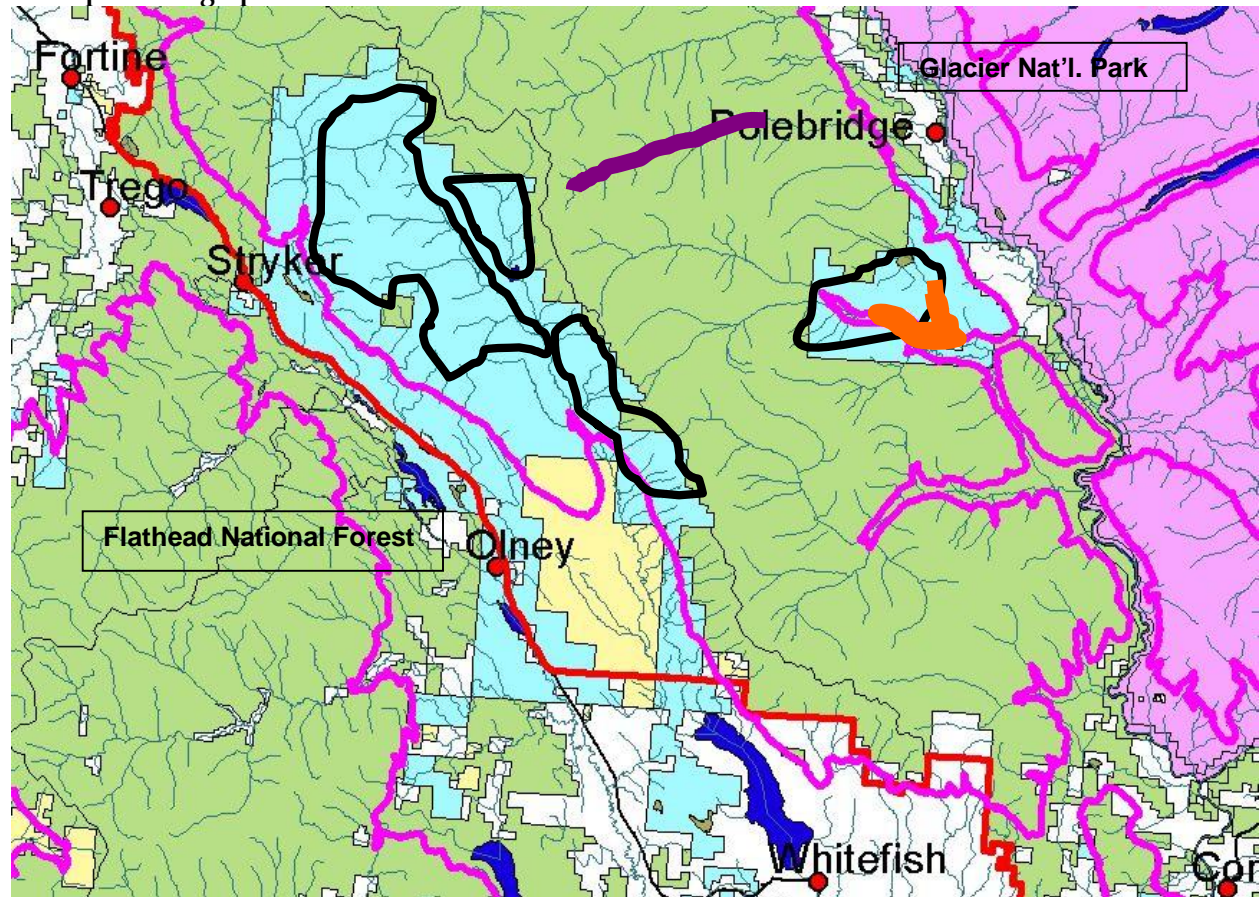
1. Route winter-use facilities, trails, and/or roads away from ungulate wintering areas (this may include high-elevation areas used by some sex and age classes or during mild conditions).
2. Establish designated travel routes within area closures where recreation occurs on or across winter ranges (no off-road/trail use) to make human use of wintering areas as predictable as possible (if needed, use could be restricted to mid-day time frames, dogs could be restricted or excluded, and low speed limits could be imposed on snowmachines). Examine routes to ensure that bedding and feeding areas are not separated, that open ridges are avoided, and that topography serves to buffer noise and disturbance.

¹⁵ Canfield, J. E., L. J. Lyon, J. M. Hillis, and M. J. Thompson. 1999. Ungulates. Pages 6.1-6.25 in G. Joslin and H. Youmans, coordinators. Effects of recreation on Rocky Mountain wildlife: A Review for Montana. Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society. 307pp.

3. Monitor ungulate use of areas that receive high-impact winter use by snowmobiles and/or skiers and identify and mitigate any potential conflicts.
4. Actively enforce travel restrictions on ungulate winter ranges.
5. Use interpretive signing to inform users of the importance of ungulate winter range and that they should not approach wildlife closer than 150 m.
6. Restrict antler collection and other recreational activities with potential to displace ungulates during spring green-up until at least May 15th (preferably leaving some flexibility, based on snow conditions, to allow animals to disperse naturally from their traditional winter concentration areas).

Cumulative effects on wildlife

The following figure displays a variety of outstanding wildlife values in and adjacent to the proposed helicopter skiing operations.



Map Key

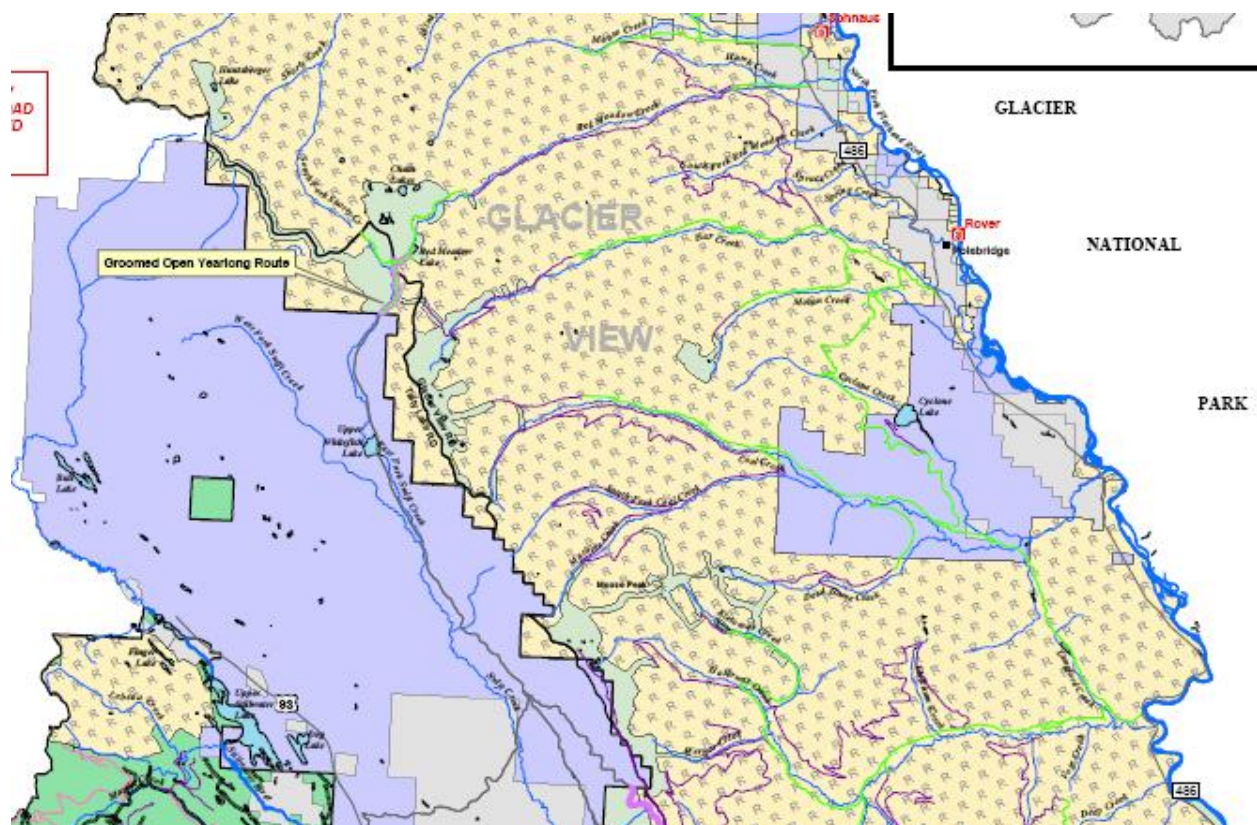
- Light Blue = Stillwater and Coal Creek State Forests
- Red Line = Western boundary of grizzly bear recovery zone
- Light Purple Line = Lynx Critical Habitat proposed boundary (73 Fed Reg at 10890)
- Dark Purple Line = 2003-2004 Lynx observations (Gehman et al. 2004)
- Orange = Approximate area of elk winter range (Weaver 2001)
- Possible Operating Areas are outlined in Black (approximate)

Effects on Glacier National Park

Glacier's management plan calls for maintaining its wilderness qualities, and developments outside the park should not impair its outstanding wilderness and wildlife values. Helicopter skiing may not be compatible with this. We remind DNRC of its commitment to work with adjacent landowners toward ecosystem management and other shared goals.

Effects on Flathead National Forest

The Flathead National Forest recently completed a management plan regarding winter recreation. We remind DNRC of its obligation to cooperate with adjacent landowners, and we urge DNRC to consider the cumulative effects of helicopter skiing in addition to winter recreation on the Flathead National Forest, and other potential stressors on wildlife in the area during the winter season and year-round. The following map from the Flathead National Forest Winter Motorized Recreation Plan displays yearlong restrictions of winter motorized use across the vast majority of its lands bordering the two state forests.



Over Snow Vehicle Use Map - Glacier View & Tally Lake Ranger Districts, Flathead NF

Effects on other recreationists—Helicopters are not compatible with quiet winter recreation, and can disturb people seeking the serenity of nature from miles away. Again, DNRC should ensure its management is compatible with objectives for the general area of adjacent landowners and the surrounding communities.

Effects on area residents—Many people live in the Whitefish and North Fork areas for the quality of life, which includes peace and quiet. Helicopters disrupt this. DNRC should consider the effects of the proposals on local and country plans and objectives for this area, now and into the future.

Safety and public expense—Helicopters are notoriously dangerous, especially in the mountains, as is backcountry skiing in avalanche terrain with unknown and unmarked hazards. Potential costs to the state, emergency personnel, not to mention the potential for human injuries and loss of life should be carefully considered before ever approving this proposal. DNRC should be sure to consult with all parties likely to be affected by the heliski operations, and weigh the projected economic returns against potential costs from search and rescue services, medical personnel and services, avalanche control officials, environmental cleanup services, and potential liability of state and local governments.

IV. Request for an Environmental Impact Statement

This letter has described the complex and varied potential effects of the proposed helicopter skiing operations. In order to completely and carefully examine these effects, we believe the preparation of an environmental impact statement is justified and required. We are also concerned that many interested members of the public may not be aware of these proposals. If it were not for an article in the Kalispell newspaper, we would not know about it ourselves. We found no mention of it on the NDRC website, for example. For these reasons, we look forward to participating in the public review component of an EIS process.

Thank you for your consideration of these comments and please keep us informed of any developments.

Sincerely,

David Gaillard
Rocky Mountain Region Representative

Cc: Field Supervisor, U.S. Fish and Wildlife Service, Helena
Supervisor, Flathead National Forest, Kalispell
Superintendent, Glacier National Park, West Glacier
Region One Manager, Montana Department of Fish, Wildlife and Parks, Kalispell