# -- **DRAFT** --

July 8, 2010

# PETITION TO AMEND THE 2005 TRAVEL MANAGEMENT RULE BY REMOVING THE OVER-SNOW VEHICLE EXEMPTION AND REMEDYING THE DISCRETIONARY MANAGEMENT OF OVER-SNOW VEHICLES ON NATIONAL FOREST SYSTEM LANDS

Submitted By:

Winter Wildlands Alliance, with

[list of co-signing organizations]

# **TABLE OF CONTENTS**

INTRODUC	ΓΙΟΝ	3
BACKGROU	UND ON OVER-SNOW VEHICLES AND THE TRAVEL	
MANAGEMENT RULE		3
Legal Background and Argument		5
Policy	Background and Argument	8
RELIEF REC	QUESTED	12
IMPACTS FROM OVER-SNOW VEHICLES		15
ENVIRONMENTAL IMPACTS SUMMARY		15
	Air and Water Quality	16
	Soil and Vegetation Damage	16
	Noise Pollution	16
	Wildlife Disturbance	17
TRAVEL PLANNING AND CLIMATE CHANGE		19
PUBLIC SAFETY		20
CONFICTS WITH OTHER RECREATIONISTS		21
CONCLUSION		27
References		28
Appendices:		
= =	List of Petitioners	
	Winter Recreation on Western National Forest Lands Report	
Appendix C	Environmental Impacts from Over-Snow Vehicle Use	
Appendix D	Documentation of User Conflict Due to Over-Snow Vehicle Use	

# **INTRODUCTION**

On behalf of the \_\_\_\_ organizations (hereafter "Petitioners") (See Appendix 1) representing a combined membership of more than \_\_\_\_ million members, we congratulate the United States Department of Agriculture (USDA) and United States Forest Service (USFS) on significant progress in implementing the 2005 Travel Management; Designated Routes and Areas for Motor Vehicle Use Rule (CFR Parts 212, 251 and 261) and in your good faith efforts to protect our National Forest System (NFS) lands and waters from the negative impacts of off-road vehicles (ORV).

In recognizing the progress made through the 2005 Travel Management Rule in managing wheeled ORV use, the Petitioners call upon the USDA and USFS to apply management standards to over-snow vehicle (OSV) use that are consistent with standards for other classes of ORVs and that meet the criteria of the Executive Orders which the 2005 Rule is intended to implement. Petitioners assert that USDA and USFS have a legal obligation to amend the Rule as requested in order to protect America's National Forest resources, including clean air and water, quiet, wildlife, soils, vegetation, and non-motorized recreationists, from the substantial adverse impacts of OSV use.

We hereby petition the U.S. Department of Agriculture to amend the 2005 Travel Management; Designated Routes and Areas for Motor Vehicle Use Rule (CFR Parts 212, 251 and 261) by removing the OSV exemption (36 CFR Part 212.51(a)(3)) and remedying the language making the management of OSVs a discretionary decision of the local responsible official. (36 CFR Part 212.81) This Petition for Rule Change is filed pursuant to 5 U.S.C. § 553(e).

# BACKGROUND ON OVER-SNOW VEHICLES AND THE TRAVEL MANAGEMENT RULE

In 1972 President Nixon issued Executive Order 11644 (later amended by President Jimmy Carter with Executive Order 11989) in order to "establish policies and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands." (E.O. 11644, Sec. 1)

Since that time, the USFS has regulated the use of all ORVs, including snowmobiles and other OSVs, on national forest lands on the basis of a uniform set of standards. However, in December 2005 the USDA repealed the regulations (former 36 CFR Part 295) that, based on E.O. 11644 and E.O. 11989, provided for this uniform system of regulation (70 FR 68264) and published final rulemaking (70 FR 682684) to promulgate revised regulations governing travel management on National Forest System lands (hereinafter referred to as "the 2005 Travel Management Rule" or "Rule." The 2005 Rule requires the USFS to designate NFS roads, trails, and areas that are open to motor vehicle use and to identify such on a Motor Vehicle Use Map. (36 CFR Parts 212.51 and 212.56)

The explanatory discussion that accompanies the publication of the Rule in the Federal Register makes an eloquent case for the need to manage all off-road vehicles on NFS lands, stating,

"...the magnitude and intensity of motor vehicle use have increased to the point that the intent of E.O. 11644 and E.O. 11989 cannot be met while still allowing unrestricted cross-country travel. Soil erosion, water quality, and wildlife habitat are affected. Some National Forest visitors report that their ability to enjoy quiet recreational experiences is affected by visitors using motor vehicles. A designated and managed system of roads, trails, and areas for motor vehicle use is needed." (70 FR 68265)

Furthermore, the background discussion acknowledges,

"[s]nowmobiles are 'off-road vehicles' under E.O. 11644 and subject to the direction to 'provide for administrative designation of the specific areas and trails on public lands on which the use of off-road vehicles may be permitted, and areas in which the use of off-road vehicles may not be permitted' (E.O. 11644, Sec. 3(a)). Moreover, snowmobiles are 'motor vehicles' under this final rule. Since the Rule regulates motor vehicle use, the rule must address snowmobiles." (70 FR 68273)

The Department acknowledges that E.O.s 11644 and 11989 cover all motor vehicles used offroad and do not distinguish between winter and summer and that the Rule must address snowmobiles. However, the rule writers seem to contradict their own logic by concluding:

"...the Department believes that cross-country use of snowmobiles presents a different set of management issues and environmental impacts than cross-country use of other types of motor vehicles.

Therefore, the final rule exempts snowmobiles from the mandatory designation scheme provided for under § 212.81, but retains a manager's ability to allow, restrict, or prohibit snowmobile travel, as appropriate, on a case-by-case basis (§ 212.81). (70 FR 68273)."

Although the Rule summary states that the Rule is "consistent with provisions of Executive Order 11644 and Executive Order 11989 regarding off-road use of motor vehicles on Federal lands," (70 FR 68264) Petitioners assert that the Rule is flawed insofar as it exempts snowmobiles and other OSVs from the mandatory designation scheme provided under Part 212.51 and applies the designation criteria only when over-snow vehicle use is restricted or prohibited. A different set of management issues and environmental impacts does not justify the decision of the Department to repeal standards for the use of snowmobiles that were formerly in 36 CFR Part 295 without establishment of a replacement set of standards.

Importantly, the Rule contains no standards to guide land managers in their decision whether to allow OSV use. In other words, the regulation contains within it a clear preference or bias in favor of continued unrestricted OSV use. *See Nat'l Wildlife Fed'n v. Morton*, 393 F.Supp. 1286, 1292 (holding BLM's implementing regulations invalid because they created a "subtle, but nevertheless real, inertial presumption in favor of ORV use"). This is a clear violation of the ORV Executive Orders, which in fact require that impacts be minimized from **designating** ORV

(which, by definition, includes OSVs) trails and areas, not somehow minimized only when prohibiting their use.

The Rule further directs the responsible official to consider "sound emissions and other factors" including "[s]peed, volume, composition and distribution of traffic on roads;" (36 CFR § 212.55) Petitioners assert that all of these criteria apply equally to OSV use as to other classes of ORVs and should not depend on a discretionary decision by the responsible official to prohibit OSV use before the criteria are considered.

In addition, the Rule introduces an entirely new definition of "over-snow vehicle." The rule-writers, "[I]n order to improve clarity and ensure equitable treatment of over-snow vehicle use," (70 FR 68273) define over-snow vehicles to include not only snowmobiles but also snow-cats, snow groomers and treaded ATVs. While such clarity is warranted, the fact remains that these additional vehicles are now also *excluded* from the mandatory regulatory framework of the Rule.

Petitioners assert that this exclusion of OSV use from the requirements imposed on other motorized uses of NFS lands is in direct contradiction to the Executive Orders which the Rule is intended to implement, as well as the statutory requirements of the National Forest Management Act and other laws mandating the protection and sustainable management of NFS lands and resources, including vegetation, wildlife, water, and air quality, and must be remedied immediately.

# Legal Background and Argument

The Rule summary published in the Federal Register states that the Rule is "consistent with provisions of Executive Order 11644 and Executive Order 11989 regarding off-road use of motor vehicles on Federal lands." (70 FR 68264) However, Petitioners assert that insofar as it exempts snowmobiles and other OSVs from the mandatory designation scheme provided under 36 CFR 212.51 and applies the designation criteria only when over-snow vehicle use is restricted or prohibited, the Rule is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law within the meaning of these terms as they are used in the federal Administrative Procedure Act (APA) (5 U.S.C. §§ 701-706).

The 2005 Rule **requires** the Forest Service to address the issue of motor vehicle use on NFS lands. ("motor vehicle use on National Forest System roads, on National Forest System trails, and in areas on National Forest System lands **shall** be designated." 36 CFR 212.51(a) (emphasis added). Over-snow vehicles were specifically exempted from this provision. (36 CFR 212.51(a)(2)) In contrast to this requirement for a mandatory evaluation of the impacts from summer motor vehicle use, the language that addresses use of over-snow vehicles frames the process as optional and states "**If** the responsible official proposes **restrictions or prohibitions** on use by over-snow vehicles under this subpart, the requirements governing designation of National Forest System roads, National Forest System trails, and National Forest System lands in §§ 212.52, 212.53, 212.54, 212.55, 212.56, and 212.57 shall apply to establishment of those restrictions or prohibitions." (36 CFR 212.81(c) (emphasis added). So, even though over-snow vehicles have an undeniable impact on forest resources and users as described in detail later in

this petition, the 2005 Rule fails to require that the Forest Service ever address this issue: ("the Department is preserving the authority currently in part 295 to allow, restrict, or prohibit use by over-snow vehicles, including snowmobiles, **on a discretionary basis** in part 212, subpart C." (70 FR 68284) emphasis added)) This omission is a clear violation of the ORV Executive Orders that the 2005 Rule was intended to implement, and as such should be remedied immediately.

As justification for the OSV exemption, the Department offers only that it "believes that cross-country use of snowmobiles presents a different set of management issues and environmental impacts than cross-country use of other types of motor vehicles" and "[t]herefore, the final rule exempts snowmobiles from the mandatory designation scheme provided for under 36 CFR Part 212.81, but retains a manager's ability to allow, restrict, or prohibit snowmobile travel, as appropriate, on a case-by-case basis (36 CFR 212.81)." (70 FR 68273) Petitioners assert that the similarities between OSV management issues and environmental impacts and those presented by other classes of ORVs overwhelmingly outweigh the differences between these factors. Within wheeled ORVs there are many different management issues as well. At any rate, a different set of management issues and environmental impacts does not justify the decision of the Department to repeal in their entirety standards for the use of snowmobiles that were formerly in 36 CFR Part 295, without establishment of a replacement set of standards, thus creating a framework in which OSVs are not subject to any mandatory regulatory standards at all.

For the following reasons, petitioners assert that insofar as the 2005 Rule 1) exempts OSVs from the mandatory designation scheme and 2) puts off the application of the ORV Executive Orders to OSV use until a local responsible official decides in his or her discretion to "restrict or prohibit" OSV use under 36 CFR Part 212.81(c), the 2005 Rule is both a) in direct conflict with the ORV Executive Orders, and b) arbitrary and capricious for purposes of the APA.

# With respect to the ORV Executive Orders:

- (1) OSVs are "off-road vehicles" within the definition in the Executive Orders. Section 2 of Executive Order 11644 states: "off-road vehicle' means any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain." Thus, the E.O.s apply with equal force and to the same extent to OSVs as they do to other classes of ORVs included in the definition.
- (2) The Executive Orders require promulgation of regulations "to provide for administrative designation of the specific areas and trails on public lands on which the use of off-road vehicles may be permitted, and areas in which the use of off-road vehicles may not be permitted..." While the 2005 Rule complies with this requirement of the E.O.s with respect to wheeled ORVs, its exemption at § 212.5(a)(2) of OSVs from the Rule's designation scheme places the 2005 Rule into direct conflict with this requirement with respect to OSVs.
  - (a) In particular, the exemption of OSVs from designation requirements of the 2005 Rule means that under the Rule OSV use on NFS land is and will be

completely free from application of the standards set forth in the E.O.s for permissible ORV use: "Those regulations shall direct that the designation of such areas and trails will be based upon the protection of the resources of the public lands, promotion of the safety of all users of those lands, and minimization of conflicts among the various uses of those lands. The regulations shall further require that the designation of such areas and trails shall be in accordance with the following --

- 1. Areas and trails shall be located to minimize damage to soil, watershed, vegetation, or other resources on public lands.
- 2. Areas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats.
- 3. Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."
- (3) In addition to the mandatory minimization criteria, the E.O.s require public involvement, enforcement, monitoring and immediate closure of areas or trails where a respective agency head "determines that the use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources..." The Department's decision in the 2005 Rule to exempt OSVs from all of these requirements unless a local responsible official makes the discretionary decision to restrict or prohibit OSV use represents a clear violation of the Executive Orders. <sup>1</sup>

For these reasons and the many other reasons described throughout this petition, the Department's repeal of Part 295 combined with its exemption of OSVs from the mandatory

<sup>&</sup>lt;sup>1</sup> The treatment that the 2005 Rule gives to OSVs contains many similarities to the implementing regulations promulgated by the Bureau of Land Management (BLM) that the U.S. District Court for the District of Columbia set aside as in violation of the Executive Orders in the case of Nat'l Wildlife Fed'n v. Morton, 393 F.Supp. 1286 (D.D.C. 1975). First, like the invalid BLM regulations, the OSV exemption in the 2005 Rule creates an "open" until "closed" regulatory framework for OSVs. The court in the NWF case found that such a framework creates an illegal "inertial presumption" in favor of OSV use. See id. at 1292. As described in the NWF case, the Executive Orders "manifestly contemplate[] evaluation of the land not only for purposes of restricting ORV use but also for designation of areas on which the use of off-road vehicles may be permitted." Id. (emphasis in original). The OSV exemption in the 2005 Rule impermissibly restricts evaluation of OSV use to those situations in which the "responsible official proposes restrictions or prohibitions." 36 CFR § 212.81(c). Second, the discretionary nature of whether a responsible official will propose restrictions or prohibitions violates the Executive Orders because "[1] and which the authorized officer does not choose to designate or redesignate as closed or restricted may never be evaluated for designation," failing to ensure that all public lands will be evaluated and designated in accordance with Section 3(a) of the E.O. Id. at 1294. Third, if a responsible official indeed decides, in his or her discretion, to restrict or prohibit OSV use, thereby subjecting the designation to 36 C.F.R. § 212.55(b), the Forest Service has impermissibly "diluted the standards emphatically set forth in Executive Order 11644." See id. at 1295. In fact, because the 2005 Rule excludes an entire class or category of ORVs, namely, OSVs, from its mandatory regulatory standards, the case can convincingly be made that the 2005 Rule violates the E.O.s in respects that greatly exceed in severity the grounds on the basis of which the court in the NWF case felt compelled to invalidate the rules before it.

regulatory standards in the 2005 Rule violate the Executive Orders, necessitating their replacement with legally valid OSV regulations.

With respect to the issue of whether the 2005 Rule is "arbitrary and capricious" within the meaning of those terms as they are used in the APA:

- (1) Appendix D attached to this petition presents abundant, peer-reviewed scientific evidence documenting the adverse effects of snowmobile use on the natural environment. This evidence conclusively demonstrates that, while the effects of OSV use on the natural environment may be somewhat different in kind as compared to the effects of wheeled ORVs, it is no less significant in degree or severity. In light of this evidence there is no rational basis for the Department's conclusion in the 2005 Rule that a repeal of the existing standards for OSV use in Part 295 combined with a total exemption of OSVs from the mandatory standards of the Rule are justified on the basis of a finding that "cross-country [i.e., off-road] use of snowmobiles presents a different set of management issues and impacts than other types of motor vehicles." As a result, the repeal of Part 295 combined with the OSV exemption in the 2005 Rule are "arbitrary and capricious" for purposes of the APA.
- (2) Appendix E attached to this petition presents numerically abundant, first-person accounts of on-the-ground experiences of backcountry and Nordic skiers and other non-motorized winter recreationists that provide extensive documentation of conflicts between such users of National Forest lands and recreational snowmobilers. This evidence conclusively demonstrates that the management issue of conflict between and adverse impact upon various groups of recreational users of NFS Lands is literally *identical* with respect to winter recreationists as compared to their summer counterparts. In light of this evidence there is no rational basis for the Department's conclusion in the 2005 Rule that a repeal of the existing standards for OSV use in Part 295 combined with a total exemption of OSVs from the mandatory standards of the Rule are justified on the basis of a finding that "cross-country [i.e., off-road] use of snowmobiles presents a different set of management issues and impacts than other types of motor vehicles." As a result, for this reason as well, the repeal of Part 295 combined with the OSV exemption in the 2005 Rule are "arbitrary and capricious" for purposes of the APA.

For these reasons and the many other reasons described throughout this petition, the Department's repeal of Part 295 combined with its exemption of OSVs from the mandatory regulatory standards in the 2005 Rule are "arbitrary and capricious" under the APA, necessitating their replacement with legally valid OSV regulations.

# **Policy Background and Argument**

In an effort to determine the rationale for the OSV exemption and discretionary authority regarding management of OSVs in the 2005 Rule, Winter Wildlands Alliance submitted a Freedom of Information Act (FOIA) request in February 2008 asking for "draft documents,"

minutes or notes of all meetings, including the names of those in attendance, interagency and intra-agency memoranda, and any documents you may have, from any source, that contain discussions, instructions or otherwise direct the U.S. Forest Service how to proceed in:

- determining the final language of the following: Part 212—Travel Management:
  - o Subpart A, section 212.1 Definitions: "Over-snow vehicle" (entire definition)
  - o Subpart C (all)
- reasons for including Subpart B, section 212.51(a)(3)
- determining the final language of the following: Part 261—Prohibitions:
  - o Subpart A, section 261.14 (all)
  - o Subpart A, section 261.13(c)"

The USFS response included a Content Analysis Team "Summary of Public Comment" report and a September 2000 General Accounting Office Report to Congressional Requesters titled "Agencies Need to Assess the Impact of Personal Watercraft and Snowmobile Use," but shed little light on the rationale for the OSV exemption. Other than the reports mentioned above, of the 52 pages released, 20 pages were withheld in their entirety and nine more pages withheld in part citing Exemption 5 of the FOIA, the deliberative process privilege. An additional eight pages referred to the Office of General Counsel for the U.S. Department of Agriculture were withheld in their entirety citing attorney work-product privilege. Those pages released pertained almost entirely to the mechanics of the OHV National Policy Team.

Just as the FOIA request yielded no substantive information regarding the rationale behind the OSV exemption, there is no transparency in the rulemaking process. Furthermore, the nominal justification offered for the decision to treat OSVs differently from other classes of ORVs is both contradictory and in violation of the Executive Orders which the 2005 Rule is intended to implement. As a policy matter, the distinction made between summer and winter use for the mandatory designation scheme of roads, trails and areas open to motorized use was arbitrary and against the manifest weight of the evidence.

Because of the noise and noxious exhaust fumes they emit, as well as their potential to inflict serious injury in the event of a collision, OSVs are indistinguishable from other ORVs in terms of their adverse impacts on non-motorized users of NFS lands. The fact that snowmobile tracks are not "permanent" (because snow melts) is irrelevant if while they exist they have adverse impacts to other recreationists in the form of scarring the visual landscape and creating hazardous ruts and ridges when the snow melts and refreezes. Similarly, as documented in the Environmental Impacts section below and in Appendix D, snowmobiles have adverse impacts on water quality, wildlife and wildlife habitat that are no less severe than those caused by other ORVs. And when snowmobiles are used in areas with inadequate snow cover – a common practice – they *do* have a "direct impact on soil and ground vegetation." In short, the similarities and parallels between snowmobiles and other ORVs in terms of their impacts on the natural resource values far outweigh the differences between them. Certainly, OSV management should not have been made contingent on a discretionary decision by the local responsible official because adverse impacts are occurring now.

While there may be differences in the effects and management needs related to OSVs as opposed to other classes of ORVs, USDA and USFS have never denied that OSVs cause significant environmental impacts, nor could they. Moreover, the Department did not explain the difference in management needs when promulgating the 2005 Rule. Information used to arrive at this decision should have been disclosed to the public. In any event, a difference in management needs should not have resulted in a wholesale abdication of the Agency's duties under the Executive Orders.

The Environmental Protection Agency, in its review of Travel Management Plans in accordance with NEPA and the Clean Air Act, routinely points out the need for including over-snow vehicles in the Travel Planning process. As an example, a June 29, 2007 EPA comment letter on the Environmental Impact Statement for the proposed Designated Route and Motorized Use Plan, Nez Perce National Forest, Idaho states, "EPA's primary concerns are focused on the following topics: exclusion of over-snow vehicles from the planning effort, road maintenance and density, road closure/obliteration procedures, and road impacts to water quality impaired streams and other sensitive areas." (See Appendix B)

The EPA comment letter on the Nez Perce Plan goes on to address specific resource-related concerns with the exclusion of OSVs from the planning effort:

# "Purpose and Need

In identifying the purpose and need for the EIS, the NOI notes that over-snow vehicles will be exempted from the planning process. EPA recognizes that this is consistent with direction in the Final Travel Management Rule at 36 CFR 212.51. We also note, however, that per subpart C of the rule, local Forest Service officials retain authority to manage use by over-snow vehicles to address local situations and concerns and may establish restrictions based on the season of use or local snow conditions that might not make sense nationally. The current planning effort presents a unique opportunity to address over-snow recreation on the Nez Perce National Forest in a holistic way, and we encourage the Forest Service to include over-snow trails and use zones on the motor vehicle use (MVU) maps. Snow compaction often retards the melting of snow, leading to muddy trails and roads which are then susceptible to damage and enlargement. Additionally, compaction can lead to altered melting and discharge regimes, further increasing soil erosion (Montana Fish, Wildlife & Parks 1993). Given the potential for cumulative impacts, motorized wintertime trail use should be considered together with motorized trail use in other seasons, and consideration should be given to whether roads designated for wintertime use have the necessary drainage features or sediment buffering devices to withstand heavy or light spring traffic without delivering sediment to streams.

Other environmental impacts related to over-snow use that should be considered as routes are designated include impacts to air quality, sensitive vegetation, and wildlife. Snowmobile (and ATV) 2-stroke

engines mix the lubricating oil with the fuel and both are expelled as part of the exhaust, and allow up to one third of the fuel delivered to the engine to be passed through the engine and into the environment virtually un-burned. As stated in the U.S. Department of the Interior document, *Air Quality Concerns Related to Snowmobile Usage in National Parks*, Feb. 2000, hydrocarbon emission rates from 2-stroke snowmobile engines are about 80 times greater than those found in a 1995-96 automobile engine. A majority of these hydrocarbons are aromatic hydrocarbons, including polyaromatic hydrocarbons, which are considered to be the most toxic component of petroleum products. Care should be taken to limit the exposure of trail users to these compounds, particularly in areas of mixed use (recreationists on foot, snow shoes, or skis tend to spend more time in a given area than recreationists utilizing motorized vehicles).

In order to protect sensitive alpine vegetation, we recommend consideration of a policy that prohibits off-trail snowmobile use until at least 6 inches of snow has accumulated. Snow in alpine areas is highly susceptible to wind movement which can leave bare or thinly covered areas that would be difficult or impossible to avoid given the speed of snowmobiles. Also, the EIS should disclose areas that contain sensitive vegetation and how the impacts to these plant species will be avoided or minimized.

Finally, the EIS should also disclose potential impacts to wildlife from noise and potential displacement of wildlife from habitat in areas open to motorized use. Special consideration should be given to elk winter range habitat, and to the lynx, which may be outcompeted by the coyote and bobcat when it loses its advantage in deep, uncompacted snow (Koehler and Brittell 1990). "

It should be noted that the OSV impacts and management issues relative to OSV use highlighted in these EPA comments occur on all NFS units where OSV use occurs. The Petitioners concur with EPA's assertion that the development of Travel Management Plans and Motor Vehicle Use Maps present a unique opportunity to address over-snow recreation in a holistic way. Removal of the OSV exemption and the discretionary clause from the Rule will ensure that holistic over-snow recreation management is achieved system wide.

The social conflict dimension with respect to OSV use is well documented. The most telling characteristic of the conflict between motorized and non-motorized recreationists is that the impacts fall disproportionately on one type of forest user. That is, the presence of a few skiers, snowshoers, snowboarders, climbers, winter hikers, hunters or anglers does not diminish the recreational experience of snowmobilers, while the noise, exhaust, tracks and speed of just one snowmobiler may significantly degrade the experience of many quiet recreationists over the many miles traveled by that one snowmobiler in a comparatively short time period.

Furthermore, current management of OSVs on NFS lands is woefully out of balance with actual forest use. A 2006 Winter Wildlands Alliance report, *Winter Recreation on Western National Forest Lands*, analyzes USFS data on winter visitor use and confirms that even though snowmobiles represent 22 percent fewer annual visits than cross-country skiers and snowshoers, OSV use nonetheless dominates 70 percent of national forest lands and 90 percent of groomed winter trails in the 11 Western Snowbelt states (See Appendix C). Though the report focuses on the Western states, available data from other regions confirm that the trend is consistent across the American Snowbelt. The 2005 Travel Management Rule, because of its exemption of OSVs, represents a missed opportunity to correct this imbalance. It also represents a missed opportunity to engage both motorized and non-motorized user groups in arriving at collaborative solutions to winter management. Petitioners urge the USFS to correct this imbalance by removing 36 CFR Part 212.51(a)(3) and remedying the language making the management of OSVs a discretionary decision of the local responsible official. (36 CFR Part 212.81)

#### **RELIEF REQUESTED**

The Petitioners commend the USDA and USFS on implementing the 2005 Travel Management Rule with respect to wheeled ORV use and we assert that the Department and Agency have a legal obligation to apply management standards to over-snow vehicle (OSV) use that are consistent with standards for other classes of ORVs and that meet the criteria of the Executive Orders which the 2005 Rule is intended to implement in order to protect and preserve America's National Forest System resources, including clean air and water, quiet, wildlife, soils, vegetation, and non-motorized recreationists, from the substantial adverse impacts of OSV use. The Petitioners seek the following relief:

**First,** the Petitioners request that the Department remove the over-snow vehicle exemption (36 CFR § 212.51(a)(3)) and all of Subpart C—Use by Over-Snow Vehicles (36 CFR § 212.80 and 212.81) with the exception of the final sentence, which reads "In establishing restrictions or prohibitions on use by over-snow vehicles, the responsible official shall recognize the provisions concerning rights of access in sections 811 (b) and 1110(a) of the Alaska National Interest Lands Conservation Act (16 U.S.C. 3121(b) and 3170(a), respectively)." The Petitioners suggest this sentence could be added as (c) at the end of § 212.51. In accordance with the above changes, Petitioners request the Department also remove references to over-snow vehicles at CFR § 261.13(c) and all of § 261.14 "Use by over-snow vehicles."

**Second,** the Petitioners request that the USFS issue clear directives and guidelines as to how NFS units should implement Winter Travel Management Planning. The Petitioners request that the following issues and recommendations be addressed in the Winter Travel Management Planning guidelines:

a) Criteria for which NFS units must implement winter travel management planning. The USFS should issue guidelines to set criteria for determining which NFS units would be mandated to implement Winter Travel Management

- Planning. The Petitioners suggest that all forests where documented OSV use exists on any part of the unit be directed to implement Winter Travel Management Planning. Travel Management Plans for areas with known sporadic, intermittent, and/or minimal average snowfall but no documented OSV use should nonetheless proactively include direction regarding winter OSV use. Proactive management will avoid creating gaps in TMPs and setting false expectations for OSV use in low snow areas that may occur only during above average snow seasons.
- b) Minimum snow depths and seasonal closures. Regulations requiring minimum snow depths for OSV use should be established and enforced to protect water quality, soil, vegetation, and wildlife habitat. To do so, it may be necessary to analyze and adopt seasonal closure dates and mandatory closure triggers based on snow depths and wildlife factors. All winter plans must state that it is illegal to drive OSVs on any bare ground and across vegetation of any type. Plans must also state that it is the operator's responsibility to make sure their OSV tread does not penetrate through the snow to the point where it touches dirt or vegetation.
- c) Preserving quiet as a landscape characteristic. The background discussion to the 2005 Rule notes that "[n]oise is a particularly important issue affecting OHV use nationally," and that "[t]he Forest Service anticipates developing a national standard for OHV noise levels in future rulemaking." (70 FR 68271) Winter conditions and acoustics exacerbate the noise issue. Preserving quiet as a landscape characteristic should be a centerpiece of Winter Travel Management. It is well documented that sound travels farther in colder temperatures, across snow, and when there is less vegetation cover. All of these conditions are present in the winter months. Acoustic scientists and other researchers are actively developing a greater understanding of the effects of noise on wildlife and the public. NFS lands should provide an opportunity to escape the artificial sounds of everyday life and offer a chance to listen to the natural sounds of nature. Therefore, as a component of Winter Travel Management Planning, the USFS should carry out thorough acoustic and soundscape research and analysis, set OSV noise emission restrictions, and establish quiet zones in order to protect wildlife and the experiences of public land visitors.
- d) **Public Input.** For each winter TMP the USFS should convene and facilitate an initial dialogue among diverse winter recreation groups to bring issues to the table and set an action plan in motion to develop winter recreation management decisions that protect natural resources and are fair to all winter recreationists.
- e) **Quiet Recreation Opportunities:** In addition to providing motorized opportunities, NFS units where OSV use occurs should provide accessible terrain and a variety of high-quality, quiet recreation opportunities for non-motorized snow-based recreation. Under most current management plans, opportunities for OSV use far exceed opportunities for quiet winter recreation. Winter TMPs should correct this imbalance. In addition, wherever possible, parking lots, trailheads and staging areas for motorized use should be separated from those for quiet use (non-motorized). NFS units should seek to designate non-motorized

- winter recreation areas with a variety of terrain that are easily accessible (generally within three to five miles of adequate parking) by human-powered users
- f) **Designated areas and cross-country OSV travel.** By directing each NFS unit to designate "roads, trails and areas" for motor vehicle use, the 2005 Rule includes a tool for allowing cross-country OSV travel in appropriate areas. The Rule defines "area" as "[a] discrete, specifically delineated space that is smaller, and in most cases much smaller, than a Ranger District." (§ 212.1) Areas designated for OSV use on Winter Motor Vehicle Use Maps should be clearly defined using existing and easily enforceable physical boundaries such as ridges, creeks, fences, roads, etc. in order to facilitate adherence and enforcement. The 2009 Lewis and Clark National Forest Little Belt, Castle and Crazy Mtn Over-The-Snow Motor Vehicle Use Map provides an excellent example of how to designate these areas.
- g) Monitoring and Enforcement: When OSV routes, trails and areas are designated, the NFS unit should include in the implementation plan an adaptive monitoring and enforcement plan with specific thresholds that once met or surpassed trigger automatic mitigation efforts, including closure to OSV use and/or adjustments to boundaries of open areas and designated routes and season of use designations. Changes in resource needs, such as newly listed species or changes in habitat use by listed species or species of concern should also be considered in monitoring ongoing effects of winter recreation. The NFS unit should also demonstrate that there are adequate resources to implement all aspects of a plan prior to designating areas or routes open to OSV use. Resource-intensive activities like OSV use should be realistically tailored to the current and foreseeable budgets for designation, implementation, and enforcement.
- h) Consistent standards for managing agency-recommended wilderness. All NFS units should apply consistent standards in managing agency-recommended wilderness areas. In order to preserve wilderness character, no OSV use should be authorized in recommended wilderness areas or wilderness study areas. For those few exceptions where existing snowmobile use is grandfathered in to recommended wilderness or wilderness study areas through legislation (e.g., the 1984 Wyoming Wilderness Act stipulates that "snowmobiling will continue in the same manner and degree" in the Palisades Wilderness Study Area), NFS units should restrict OSV use in both scope and volume to the level at the time such legislation is enacted and should not simply open these areas to unlimited OSV use
- i) **Future Trends.** The USFS should take proactive measures to anticipate future trends and technological innovations in OSVs and other vehicles in order to avoid new and greater impacts and costly reactive responses. For example, agencies should only open areas up to specific uses. If new uses evolve, before they are allowed, the agencies must evaluate their impacts in context of all the ongoing uses and the potential impacts to forest resources.

j) Adapting to Climate Change. Climate change will amplify the fundamental need for comprehensive winter travel planning. The continued shrinking of the winter landscape and snowpack from which to delineate winter recreation uses will only intensify natural resource impacts and increase user conflicts. Climate change will likely bring changes to snow elevations and snow lines, snow extents, snowpack densities and snow moisture content. Climate change is also likely to be a significant stressor on wildlife, especially those species dependent on snow-covered winter habitat. Climate science and snowpack forecasting should be considered by the USFS when prescribing where OSV use is appropriate and where quiet recreation should be retained or restored. These prescriptions should also take into account the importance of winter wildlands as wildlife refugia and important habitat cores in the face of climate change.

Third, the Petitioners request that the USFS issue a timeline for completion of Winter Travel Management Plans and Over-Snow Motor Vehicle Use Maps on applicable NFS units similar to the timeline issued with the original 2005 Rule. We suggest a target deadline of five years from the time the Rule Change is issued for applicable NFS units to complete Winter Travel Planning. Petitioners also suggest that each Region where OSV use exists establish a prioritized list and timeline of those NFS units to initiate winter Travel Management and that each Region identify at least one forest where winter Travel Management will be initiated no later than within one year of the Rule Change. The Petitioners assert that the broad cross section of USFS employees and contractors who will have recently completed Summer TMPs and MVUMs will be a great asset in expediting Winter Travel Planning.

**Fourth,** adequately fund Winter Travel Management planning and implementation so as not to detract from other important ongoing USFS planning and implementation.

**Time is of the Essence.** Petitioners respectfully request a response from USDA and USFS within 90 days of receipt of this petition.

# IMPACTS FROM OVER-SNOW VEHICLES

# ENVIRONMENTAL IMPACTS OF OVER-SNOW VEHICLES

A growing body of scientific evidence indicates significant OSV impacts on animals, plants, soils, air and water quality, and the ecology of entire winter ecosystems. While the severity of OSV impacts will differ depending on the site-specific characteristics of an area, OSV use clearly impacts any winter ecosystem on which it occurs. Appendix D, Environmental Impacts from Over-Snow Vehicle Use, provides a detailed analysis of these impacts. Following is a brief summary.

#### Air and Water Quality

The exhaust from OSVs is known to degrade both air and water quality. Two-stroke engines, which represent the vast majority of OSV use on NFS lands, are particularly onerous. A two-stroke snowmobile can emit hydrocarbons and nitrogen oxides equivalent to 100 cars and can create up to 1,000 times more carbon monoxide (EPA, 2002). Two-stroke snowmobile engines emit dangerous levels of other toxins including nitrogen oxides, carbon monoxide, ozone, aldehydes, butadiene, benzenes, and extremely persistent polycyclic aromatic hydrocarbons. Several of these compounds are listed as "known" or "probable" human carcinogens by the EPA. Winter recreationists are especially at risk because the concentration of these emissions increases with elevation and cold (Janssen and Schettler, 2003).

Many of these pollutants from snowmobile emissions are stored within the snowpack (Ingersoll, 1998). During spring snowmelt, these accumulated pollutants are released causing elevated acidity levels in surrounding waterways and resulting in higher death rates for aquatic insects, amphibians and fish (Charette *et al.*, 1990). The associated acidity fluctuations can disable a watershed's ability to regulate its own pH level, which can trigger system-wide problems and result in a long-term alteration of an entire ecosystem (Shaver *et al.*, 1998).

# Soil and Vegetation Damage

Over-Snow Vehicles cause significant damage to both soils and vegetation. Documented impacts to vegetation from OSVs and the associated snow compaction includes delayed flowering in plants in spring (Rongstad, 1980), lower soil bacteria (Wanek, 1973), elimination of some plant species (Rongstad, 1980), inhibited seed germination, dispersal, and growth (Keddy *et al.* 1979), abrasion and breakage of seedlings, shrubs, and other exposed vegetation (Stangl, 1999), as well as treetop damage (WWA, 2009). This degradation of both soil and vegetation often leads to increased soil runoff resulting in decreased water quality in nearby water bodies (Stangl, 1999).

#### **Noise Pollution**

Natural soundscapes are intrinsic elements of the environment and are necessary for natural ecological functioning (Burson, 2008). Noise from snowmobiles severely affects the winter soundscape and impacts both wildlife and other visitors. The problem of ORV noise including OSVs was recognized in Executive Order 11644, which mandates that land management agencies consider the noise impact on other recreational users when opening areas to ORVs. As documented in Appendix E, non-motorized winter recreationists report that OSV noise greatly reduces their enjoyment of recreating on NFS lands and is a leading cause of visitor use conflict.

Animals exposed to high-intensity sounds suffer both anatomical and physiological damage, including both auditory and non-auditory damage (Brattstrom and Bondello1983). Indirectly, the noise generated by OSVs can adversely impact animals impairing feeding, breeding, courting, social behaviors, territory establishment and maintenance, increasing stress, and/or by making animals or their young more susceptible to predation (Janssen 1978, Weinstein 1978, EPA 1971, Bury 1978 Jeske 1985, and Vos *et al.* 1985,).

#### Wildlife Disturbance

Over-Snow Vehicles can cause mortality, habitat loss, and harassment of wildlife (Boyle and Samson, 1985; Oliff *et al.*, 1999). While most animals are well adapted to survival in winter conditions, the season creates added stress to wildlife due to harsher climate and limited foraging opportunities (Reinhart, 1999). Disturbance and stress to wildlife from snowmobile activities during this highly vulnerable time is dire. Studies of observable wildlife responses to snowmobiles have documented elevated heart rates, elevated glucocoritcoid stress levels, increased flight distance, habitat fragmentation as well as community and population disturbance (Baker and Bithmann, 2005).

In addition to the direct physiological stress of snowmobiles, evidence suggests that popular winter trails can fragment habitat and wildlife populations. Winter trails through surrounding wild areas or other core areas create more "edge effect" (the negative influence of the periphery of a habitat on the interior conditions of a habitat) and thereby marginalize the vitality of some species (Baker and Bithmann, 2005).

#### **Ungulates**

It has been widely documented that snowmobile activity disturbs wintering ungulates through physiological stress (Canfield *et al.*, 1999) resulting in increased movements (Dorrance *et al.*, 1975; Eckstein *et al.*, 1979; Aune 1981, Freddy *et al.*, 1986; Colescott and Gillingham 1998) and higher energy expenditures (Canfield *et al.*, 1999). The physiological stress from snowmobile noise produces changes similar to those brought about by exposure to extreme heat, cold, or pain (EPA, 1971). During winter, when efficient energy expenditure is extremely important to an animal's survival, an additional stressor such as noise can throw off an animal's energy balance and is a serious threat to predator-prey relationships, mating, and reproduction, raising young, and staking out territories (EPA, 1971). Animal flight and evasive maneuvers resulting in significant energy loss from elk, mule deer and other ungulates in response to snowmobiles are well documented (Aune, 1981).

# **Indigenous Fish**

The most diverse trout species in North America, native cutthroat trout are found along the Pacific Northwest coast, in the Cascade Range, the Great Basin, and throughout the Rocky Mountains – all areas of high OSV use. Similarly, bull trout, a threatened species protected under the Endangered Species Act, depend on cold, clear water and are excellent indicators of water quality. Many of the high-elevation streams and lakes in the proposed bull trout critical habitat designation correspond closely with areas of high snowmobile use. These same waterways provide important habitat for salmon and other native fish species.

A study on the impact of two-stroke emissions on trout, *Balk et al.*, (1994) determined that hydrocarbons disrupt normal biological functions (e.g. DNA adduct levels, enzyme activity), including cellular and sub-cellular processes, and physiological functions (e.g. carbohydrate metabolism, immune system). Serious disruption of trout reproduction and fry survival also seems likely. (See also, Tjarnlund *et al.*, 1995, 1996). Adams (1975) also found that the influence of lead and hydrocarbon on stamina, measured by ability to swim against a current,

was significantly less in trout exposed to snowmobile exhaust than in control trout; the exposed trout made fewer tries to swim against the current, and swam for shorter lengths of time before resting.

Trout can be directly impacted by snowmobile traffic across ice. Snowmobiles riding on top of ice can disturb trout concentrations in over-wintering areas. These disturbances place high energy demands on trout, and can be serious in oxygen depleted water (NPS, 2003).

#### **Subnivian Mammals**

Many small mammal species depend on the space between the frozen ground and the snow to live. When snow compaction from snowmobiles occurs, the subnivean (below snow) space temperatures decrease, which can lead to increased metabolic rates in these small mammal species. Compaction can also create barriers that restrict movement of these small species that travel through tunnels in the subnivean space. As the subnivean trails are cut off these small mammals are forced up to the surface where they are venerable to predation (Canadian Wildlife Federation, 1998). Compaction can also restrict subnivian mammal movement to the point of causing asphyxiation, as oxygen flow is restricted and carbon dioxide builds up to deadly levels (Canadian Wildlife Federation, 1998). A decline in small mammal populations may impact the many prey species that rely on them resulting in ecosystem level disturbance.

# White-Tailed Ptarmigan

White-tailed Ptarmigan reside in alpine areas at or above timberline. They do not migrate and remain in the alpine tundra above treeline during the winter (Braun *et al.* 1993). Human disturbance including snowmobile activity can reduce the availability of winter forage for white-tailed ptarmigan (Anrews and Righter 1992). In order to protect White-tailed Ptarmigan Braun (1980) recommends the total exclusion of off-road vehicles from their habitat.

# Threatened, Endangered and Rare Species

Over-snow vehicle use has been documented to directly, indirectly, and cumulatively impact federally protected species. For imperiled species like the grizzly bear, gray wolf, lynx, and wolverine OSV use can cause disturbance, adversely impact animal energetics, negatively impact prey/carrion availability, cause habitat abandonment, and can otherwise impact predator/prey interactions to the detriment of the species.

Canada Lynx: In 2000 the Canada lynx (*Lynx canadensis*) was listed as a Threatened Species under the endangered Species Act for the lower 48 states. OSV trails that are created by winter recreation and forest management activities enable coyotes to access lynx habitat not normally accessible to them (Koehler and Aubry 1994, Buskirk *et al.*, 2000, Brunnel, *et.al.*, 2006). Coyotes aggressively compete with, or prey upon, a number of different vertebrate species, including Canada lynx, that are adapted and limited to deep snow (Buskirk *et al.*, 2000). Consequently, the presence of OSVs and compacted snow roads on public lands occupied by lynx are likely to adversely impact the survival and viability of such populations. In an effort to mediate competition with coyotes, Brunnel *et al.* (2006) recommends restrictions are placed on snowmobiles in lynx conservation areas.

Wolverine: Wolverines occur naturally in low densities and are believed to be territorial (WCS, 2007). Wolverine parturition primarily occurs mid-winter during the month of February (WCS, 2007). Six of the seven natal dens located in the Greater Yellowstone Ecosystem by the Wildlife Conservation Society (2007) were in areas without motorized use, i.e., designated wilderness, areas inaccessible by vehicle, or national park. Other wolverine biologists have suggested refuge from human activity is important for wolverine reproduction (Banci, 1994; Magoun and Copland, 1996). Female wolverines appear to be quite sensitive to human disturbance in the vicinity of natal and maternal dens, and may abandon dens and move their kits a considerable distance if they detect human presence in the area (Copeland 1996, Magoun and Copeland 1998). In a study of wolverines in Idaho, Copeland (1996) concluded that "technological advances in over-snow vehicles and increased interest in winter recreation has likely displaced wolverines from potential denning habitat and will continue to threaten what may be a limited resource."

**Wolves:** Since wolf survival and production is affected by winter food intake, the availability and accessibility of prey in winter affects wolf numbers (Nelson and Mech 1986). OSV trails, whether created by snowmobiles or grooming equipment, may adversely alter predator-prey dynamics, habitat use, predator and ungulate movement and distribution patterns, thereby affecting the availability and accessibility of prey to predators, and also affecting community structure and composition (Paquet *et al.*, 1997). These trails can also facilitate predator expansion into areas where they are more likely to have negative interactions with humans, livestock and pets.

**Grizzly Bear:** The adverse impacts of OSV use, namely snowmobile use and trail grooming, on grizzly bears are often overlooked. While most direct snowmobile impacts on grizzlies are limited due to grizzly denning during the peak period of snowmobile use, scientific studies have made it clear that other indirect impacts are adversely affecting grizzlies. Indirect impacts result from the altered distribution and movement patterns of large ungulates, particularly bison and elk, caused by snowmobile trail use (Knight *et al.*, 1984; Mattson, 1997). This leads to a subsequent decrease in the availability and accessibility of critical grizzly food sources, namely carrion. In May 2008 U.S. District Judge Donald Malloy ruled that late-season snowmobiling on the Flathead National Forest negatively impacts grizzly bear habitat when bears are emerging from their dens and instructed the Forest to curtail spring OSV use (Woody, 2009). This may also be relevant to other National Forests that provide potential habitat for the future reintroduction of grizzlies.

#### TRAVEL PLANNING AND CLIMATE CHANGE

As noted above, Climate change will amplify the fundamental need for comprehensive winter travel planning. The continued shrinking of the winter landscape and snowpack from which to delineate winter recreation uses will only intensify natural resource impacts and increase user conflicts. Climate change will likely bring changes to snow elevations and snow lines, snow extents, snowpack densities and snow moisture content. Climate change is also likely to be a significant stressor on wildlife, especially those species dependent on snow-covered winter habitat.

The Council on Environmental Quality (CEQ) has issued a draft guidance memorandum that lays out direction for federal agencies to consider climate change impacts under NEPA. The February 18, 2010 memo from Nancy Sutley, CEQ chair, states that "for Federal actions that require an EA or EIS, the direct and indirect GHG emissions from the action should be considered in scoping and, to the extent that scoping indicates that GHG emissions warrant consideration by the decision maker, quantified and disclosed in the environmental document (Sutley, 2010)."

Furthermore the December 18, 2009 Notice of Intent for the proposed National Forest System Land Management Planning Rule lists as one of its Substantive Principles that "Plans could proactively address climate change through monitoring, mitigation, and adaptation, and could allow flexibility to adapt to changing conditions and incorporate new information." (USDA, 2009). Petitioners hold that the same principals should apply to Travel Management Planning, particularly with respect to OSV use.

Petitioners assert that, under the guidelines above, USFS should consider the effects of and to climate change in OSV planning efforts or other decisions involving winter uses and that climate science and snowpack forecasting should be applied when prescribing where OSV use is appropriate and where quiet recreation should be retained or restored. These prescriptions should also take into account the importance of winter wildlands as wildlife refugia and important habitat cores in the face of climate change.

#### **PUBLIC SAFETY**

Snowmobiles are extremely powerful, fast machines that have significant impacts on the safety of other winter recreationists. Many stock snowmobiles today are built with 120- to 150-horsepower engines, weigh up to 600 pounds, and can travel at speeds in excess of 100 miles per hour. At such speeds, a snowmobile will travel 200 feet before being able to come to a stop (National AG Safety Database). Horsepower and acceleration exceed that of many automobiles and snowmobile horsepower to weight ratios are equal to or higher than any other class of motorized vehicles manufactured today.

Excessive speed is responsible for many snowmobile accidents. Snowmobile operators are often observed traveling dangerously fast on narrow trails despite numerous obstructions and obstructed visibility.

A study in Alaska by Dr. Michael G. Landen of the New Mexico Department of Health found that for 1993-1994, the injury death and hospitalization rates were greater for snowmobiles than for on-road motor vehicles (Landen *et al.*, 1999). During this period, 26 snowmobile injury deaths were reported in Alaska (16 in northern Alaska alone) for a rate of 27 deaths per 100,000 snowmobiles compared with 176 on-road motor vehicle injury deaths or 17 deaths per 100,000 on-road motor vehicles per year. This corresponded to a rate of 17 snowmobile injury deaths per 100 million miles driven, compared with two on-road motor vehicle injury deaths per 100

million miles driven. During this same time period, 238 snowmobile injury hospitalizations also occurred for a rate of 248 hospitalizations per 100,000 snowmobiles compared to 108 hospitalizations per 100,000 on-road motor vehicles in use.

Between 1990 and 1994 there were 479 snowmobile deaths recorded in the United States with the majority reported in Alaska (63), Wisconsin (86), Minnesota (76), North Dakota (7), and Maine (15) (Landen *et al.*, 1999). A number of studies have been published documenting the significant safety risks associated with snowmobile use (CDC 1995, CDC 1997, James *et al.*, 1991, Gabert and Stueland 1993, Waller and Lamborn 1975, Rowe *et al.*, 1992, Eriksson and Bjornstig 1982, Soininen and Hantula 1992, Rowe *et al.*, 1994, Bjornstig *et al.*, 1994).

The tremendous power, weight and traction of snowmobiles are incompatible with skiers, snowshoers and other pedestrian users of winter trails and backcountry terrain.

#### CONFICTS WITH OTHER RECREATIONISTS

Until the early 1990s the conflict that existed between motorized and non-motorized winter recreation uses was localized; non-motorized forest visitors could still readily find places where they could get away from the negative effects of snowmobile use. However, by the 1990s snowmobiles were changing rapidly. More powerful machines and more skilled riders made almost no area off limit to their use. These technological advances in snowmobiles have dramatically altered winter use on NFS lands. Improvements in horsepower, weight, traction, and fuel tank capacities enable snowmobiles to access places previously reachable only by backcountry skiers or snowshoers.

As documented repeatedly and extensively in Appendix E, "Documentation of User Conflict Due to Over-Snow Vehicle Use," snowmobiles are incompatible with other forms of winter recreation such as snowshoeing, cross-country and backcountry skiing, wildlife observation, and winter hiking. Non-motorized winter recreationists report that the noise and smell of snowmobiles greatly reduces their level of enjoyment in the peaceful winter environment (Vitterso, *et. all*, 2004). The high speed of snowmobiles presents the danger of collision with slower cross-country skiers and snowshoers (Blue Water Network, 1999). Many skiers report that snowmobiles ruin ski trails (Baker and Bithmann, 2005).

Following are a few excerpts from letters to USFS to illustrate the scope of the issue.

# Alaska

In Chugach National Forest conflicts between skiers and snowmobiles are common:

"Over the years that I have lived and skied in Alaska I have had numerous unpleasant encounters with snowmachiners on the Chugach National Forest. The worst episode occurred in 2008 in the Turnagain Pass area north of the Seward Highway when I was surrounded by six snowmachines that deliberately circled my skiing partner and I,

repeatedly highmarking the slope that we were attempting to ski. The clear message was that we were not welcome in "their" terrain. I no longer ski on the "snowmachine side" of Turnagain Pass because backcountry skiing and snowmachining are incompatible uses." - Brad Meiklejohn, Eagle River, AK

#### California

In the Sierras, cross-country skiers have been forced out of their traditional use areas:

"Both as a public visitor to the Van Vleck area and as a long time volunteer (over 21 years) for the Eldorado National Forest I have been concerned about maintaining the special non-motorized status that was protected by various Forest Orders for this area. After the review in 2007 I became concerned when I heard that the Forest Orders had not been reinstated. I have been told repeatedly by many Forest personnel that the reason was the Travel Management/Route Designation process. The thought was that if no routes were designated in the Van Vleck area there would be no need for Forest Orders. Travel Management only covers wheeled vehicles and does not cover snowmobiles or other specialized over the snow vehicles. Non-motorized recreationists are now paying the price for this hole in management policy. This past winter I witnessed increasing snowmobile use in the Van Vleck Area that will only escalate without enforceable Forest Orders in place." – Monte Hendrix, Pollock Pines, CA

"I no longer visit the Mt. Watson Road area because the high volume of snowmobiles, of which commercial snowmobiles are the largest component, have robbed me of the natural setting that the area once offered. It simply comes down to the fact that the noise, smell, safety issue and a host of other negative impacts of the snowmobiles have ruined the area for me and have driven me away." - Marcus Libkind, Livermore, CA

"I am a cross-country skier who has enjoyed skiing in this area for over 20 years. This popular area offers easy access and skiing opportunities for all level of skier. However, to my dismay, I have noticed a sharp increase in snowmobile activity in the area over the past several years, much of it in places where snowmobiles are allegedly prohibited. As a person who enjoys the outdoors, I am offended by the presence of these snowmobiles for several reasons, including potential safety hazards, excessive noise, and air pollution. Nothing can destroy a winter wilderness experience like the presence of these machines ripping up and down the mountainside, imprinting the pristine backcountry snowpack with their track marks, punctuating the silence of the backcountry with their loud, obnoxious roar, and fouling the pure alpine air with their noxious smell." - Ken Condreva, Livermore, CA

#### Colorado

On San Juan, White River, and Routt National Forests increasing snowmobile activity has negatively impacted traditional non-motorized winter recreation:

"In the past several years (and most recently in late December/early January, 2010), we have witnessed a marked increase in the number of snowmobiles that blatantly disregard posted signage that explicitly prohibits snowmobile use in the area in question. This results in a degradation of the environment as well as in the cross-country/snow shoeing experience. The snowmobilers often drive very aggressively which poses safety concerns. As well, the snowmobiles are extremely noisy and emit an offensive blue pall of smoke/pollution that frankly ruins the backcountry experience." — Dave and Michele Harris, Superior, CO

"Trails, much less whole areas, where snowmobiles are restricted are few and far between. Even when such a trail exists, it will often be in the same area as trails used by snowmobiles so we have to listen to their noise anyway. Skiing in their ruts is dangerous. Their fun ruins our fun." - D. J. Inman, Centennial, CO

"If I could plead I would, but if I were to lose the opportunity to escape to the few bastions where there is almost no conflict with the associated nuisance of noise and pollution from snowmobiles I would be broken hearted. Those many of us who enjoy the winter outdoor experience where the quiet observation of our natural environment exists, desperately need an area protected from motorized use, especially when so many, many miles of groomed trails already exist for snowmobile use." - Leslie Lovejoy, Steamboat Springs, CO

#### Idaho

Idaho skiers and snowshoers find their groomed trails destroyed and backcountry areas overrun by OSV use:

"As an experienced Cross Country Ski Trail Groomer Operator, I have had many of the groomed trails destroyed by snowmobiles, which is essentially destruction of expensive property. Also as a Nordic skier I have seen many other machine groomed ski trails trashed by snowmobiles. On the Targhee National Forest we have very few areas where skiers can enjoy their sport without interference from snowmobiles and keeping these few small snowmobile free areas is very necessary to prevent conflicts." – Norman Kramer, Idaho Falls, ID

"As citizens of a community that relies on a tourist-driven economy, we are sensitive to user groups being excluded from certain areas, and believe that there is room for all of us. However, motorized recreation is intrusive, disruptive, and often dangerous to other users and should be limited, especially in the winter. Snowmachines need to be excluded from many backcountry ski destinations to provide opportunities for muscle-powered travelers. This is because, more than any other motorized vehicles, snowmobiles are loud, pollute the air, and are frequently operated in dangerous and illegal ways." — Sarah Lynch, McCall, ID

#### Montana

On the Gallatin National Forest unregulated snowmobile use is endangering backcountry skiers:

"However, we were concerned about avalanche danger, and while skiing a line from Sheep Mountains N summit to the E, one at a time to avoid triggering a slide and offering rescue in the event of a slide, a group of four snowmobilers came up the slope while a member of our party skied it. They high marked the slope, with complete disregard for the potential to trigger an avalanche while a skier was on it." - Ryan Jordan, Bozeman, MT

#### Nevada

On the eastern side of the Sierra's and the Toiyabe-Humboldt National Forest, increasing snowmobile use and a corresponding lack of oversight are endangering the safety of winter recreationists:

"On that day, like the other days I have been there lately, it was deserted before 8 a.m., but the noise of the snowmobiles was so loud that I was concerned that they were on "my side" (the no-snowmobile side), and had to keep watching my back, so I wouldn't be caught by surprise. It would have been a qualitatively different experience to ski in true tranquility. Instead, my 'quality time in the woods' was threatened by loud noises, so loud that I thought the vehicles were nearby." - Lisa Foley, Zephyr Cove, NV

"The forest service has no ability to enforce speed limit or noise control measures. This is not within their code to enforce. Additionally, the use of tethering behind snowmobilers has increased in this congested area, causing great concern for other users as well as presenting extreme danger to those being tethered behind the snowmobile. Again, the forest service has no authority to control this behavior." - Gail Ferrell, Reno NV

# **New Hampshire**

Snowmobiles disrupt the peace and tranquility of New England trails in winter:

"I write to offer my comments about my experience in the northeast (and, in the past, in the northwest) on trails that allow snowmobiles. It's easily summed up: as soon as I know there are snowmobiles either allowed or (as all-too-frequently-happens) illegally using a trail (as has happened on University of New Hampshire land in Durham, NH and along the railroad tracks which lead to these trails, which those undertaking illegal RR-bed use soon access) I depart with great sadness. The risk of snowmobiler-skier, walker, or dog collision is far too great and the noise and uncertainty (about when and where the noisy machines are) too great and uncomfortable for my dog and I to risk continuing." — Diane P. Freedman, Ph.D., Durham, NH

#### Oregon

Tumalo Mountain, near Bend, has been the site of ongoing controversy:

"In the mid-1990s while skiing with my young sons down a nordic trail on Dutchman Flat, a pack of snowmobilers came barreling down the slopes of Tumalo Mountain. They burst through the trees and passed between my children and me, as well as immediately in front of the boys. A minuscule variation in time, distance, velocity, or path of travel would have been catastrophic. The cause of this near miss cannot be blamed on the snowmobilers. The Forest Service was at fault, for it had failed to recognize the obvious limitations of 'shared use.'" - Dale Neubauer, Bend, OR

#### Utah

The current management plan for Logan Canyon has unfairly favored motorized use to the detriment of non-motorized activity:

"I also would like to point out that a skier cannot escape the continual high pitched noise of snowmobiles even when located in the center of the non-motorized designated area(s). By decreasing the size of the motorized closure area, the proximity of the snowmachines is even closer to the folks trying to find some peace and quiet in the mountains." - Jim Herrick, Logan, UT

"After our third run we were putting skins back on at the base of the hill when two snowmobiles entered the hill at the top of the slope. One stopped next to my backpack, the other down the slope a little distance. Both got off their machines and turned them off. Our backpacks, new tracks, and me in my bright yellow parka were clearly visible to both, and I shouted up to them in hopes they would stay off the slope. They were then joined by one or two other snowmobiles and proceeded to track up the entire hillside, using long traverses to cover the hill, they even erased our up-track. Within 5 minutes, the hill had no untracked snow left on it, and they left the area. In addition to the inconsiderate behavior in entering the same slope we were on, given the abundant and deserted terrain up there, their behavior was extremely dangerous. During the time that they were riding the slope directly above us (while we were trying to get skins on and get out of the way), they crossed a convex, heavily wind-loaded slope (>30 degrees) several times, thereby placing us in danger of being overtaken by any avalanche they triggered." – Bradley Ritts, River Heights, UT

#### Washington

The Alpine Lakes Area of Wenatchee National Forest has become a hot spot for conflicts between user groups:

"During winter time, it is becoming increasingly difficult to visit the Alpine Lakes area without experiencing levels of noise, smelly air and hazard from speeding machines that exceed allowed or actual conditions in cities or towns." - Donald Parks, Seattle, WA

# Wyoming

Because of the OSV exemption in the 2005 Travel Management Rule, officials on the Bridger-Teton and Shoshone National Forests refuse to undertake winter Travel Planning, resulting in conflict on Togwotee Pass and within the Palisades Wilderness Study Area:

"All the way up, we heard the incessant whine of snowmobile engines coming from below, as they were working their way up along a different route. Once over the top, we enjoyed great powder skiing down a NE facing ridge covered with trees. For awhile, we were not even bothered by engine noise, and were able to hear three-toed woodpeckers drumming. That didn't last long: soon we heard the whine of engines coming from the Breccia Pass area (most likely from inside the wilderness boundary). On the way back, the ravine was tracked out by snowmobiles, and we were forced to pick our way down through foot-deep tracks. Near the bench we encountered hip-deep tracks, which we needed to carefully circumnavigate, and which probably explained the revving of engines we had heard on the way up. For the remainder of the descent it was always necessary to watch out for deep ruts caused by snowmobiles." - Peter and Eva Crane, Lander, WY

"Some are friendly and talk; others scream by at full throttle, shattering the solace, sending what wildlife persists scurrying and devouring whatever powder they encounter, the same powder that is one of my goals. In minutes they consume what takes me a day to achieve. My heart sinks, my day is altered, the powder is dismembered, the experience less exhilarating and the impact painful. My only refuge is tiny pockets of tightly spaced trees that are currently un-navigable by them. Wilderness boundaries this time of year are often just invisible barriers as meaningless as my presence." - Ken Doer, Riverton, WY

"Snowmobilers using this area, however, must go straight up or down the gullies, exposing themselves and everyone below to avalanche danger. While this was fairly uncommon even 5 years ago, the practice of "high-marking" using more powerful snowmobiles has increased substantially over the past few years. Due to the engine noise and the fact that we are often ascending in the trees, snowmobilers are likely to be unaware that there are even skiers in the area." - Darran Wells, Riverton, WY

"For over eighty years skiers have been touring and turning on Togwotee Pass. Recently, we have come together for a common goal: the preservation of backcountry skiing on Togwotee Pass. Motorized use, including snowmobiles and snowcats, near Togwotee Pass has reached a level that conflicts with our values of quiet, solitude, and pristine air and snow. These values were once available at Togwotee, but now are greatly threatened."- Jeramie Prine, Lander, WY

The disparity in opportunities for snowmobiles versus cross-country skiers and snowshoers is large within NFS lands. Of the 116 million acres of NFS land within the 11 Western Snow Belt states, approximately 81 million acres, or 70 percent, is open to snowmobiles. As for winter trails, out of an estimated 20,389 miles of groomed trails in these same national forests, just

1,681 miles, or eight percent, of those groomed trails are designated as non-motorized (Rivers and Menlove, 2006).

Significantly, of the approximately 35 million acres officially designated as non-motorized, more than two-thirds of the acreage lies within designated wilderness areas. Motorized proponents often point out that non-motorized users have exclusive use of wilderness areas. However, in winter, the distances from plowed parking areas and trailheads make the vast majority of designated wilderness areas inaccessible to skiers and snowshoers.

Despite the fact that the National Visitor Use Monitoring surveys on NFS lands in the 11 Western Snowbelt states show 28 percent more annual cross-country skier and snowshoer visits than snowmobile visits, more than twice as many "backcountry" forest acres are open to snowmobiles as are closed (Rivers and Menlove, 2006). When difficult-to-access wilderness areas are taken out of the equation the disparity becomes more severe, with designated motorized acreage outnumbering non-motorized, non-wilderness acreage by more than seven times.

Even more striking, there are 11 times more groomed trails open to snowmobiles than there are groomed trails designated as non-motorized (Rivers and Menlove, 2006). This results in a ratio of 14 times more skier and snowshoer visits per non-motorized mile than snowmobile visits per motorized mile. This disparity between motorized and non-motorized opportunity and access is repeated on a forest-by-forest and state-by state basis across the system. The result is dwindling opportunity for skiers and snowshoers to find a quality recreation experience and escalating conflict between motorized and non-motorized users on NFS lands.

The Petitioners contend that in most cases the designation "multi-use" is a misnomer and is de facto single use: motorized. In other words, while skiers and snowshoers have access to multi-use areas, because of the negative motorized impacts of OSV use, the opportunity for a quality human-powered recreation experience is lost on NFS lands designated as multi-use because those lands are in fact dominated by OSV use.

# **CONCLUSION**

As clearly documented in the foregoing evidence, the exemption of OSV use from the requirements imposed on other motorized use on NFS lands by the 2005 Travel Management; Designated Routes and Areas for Motor Vehicle Use Rule (CFR Parts 212, 251 and 281) is in direct contradiction to Executive Orders 11644 and 11989 which the Rule is intended to implement. Furthermore, because of adverse impacts on water and air quality, wildlife, wildlife habitat and winter ecosystems, and because of the noise and the potential to inflict serious injury on other forest users, OSVs are indistinguishable from other classes of ORVs in terms of impacts on natural resources and other recreational uses. Therefore, the USDA and USFS have a legal and ethical obligation to apply the same set of management standards to OSVs as to other classes of ORVs in order to protect and preserve America's National Forest System resources, including clean air and water, quiet, wildlife, soils, vegetation, and non-motorized recreationists, from the substantial adverse impacts of OSV use. Given this evidence, the USDA must amend the 2005

Rule by removing 36 CFR Part 212.51(a)(3) and remedying the language making the management of OSVs a discretionary decision of the local responsible official (36 CFR Part 212.81) as requested by the Petitioners.

# **References**

Andrews, R., and R. Righter, 1992. Colorado Birds: a reference to their distribution and habitat. Denver Museum of Natural History, Denver, CO.

Aune, K.E., 1981. Impacts of Winter Recreationists on Wildlife in a Portion of Yellowstone National Park, Wyoming. Master's thesis. Montana State University.

Baker, E. and Bithmann, E., 2005. Snowmobiling in the Adirondack Park: Environmental and Social Impacts. St. Lawrence University, Department of Biology.

Baker, J.P., and Christensen, S.W. 1991. Effects of Acidification on Biological Communities in Aquatic Systems. In D.F. Charles, ed., Acidic Deposition and Aquatic Ecosystems -- Regional Case Studies. Springer Verlag. New York, New York, USA.

Balk, L., Ericson, G., Lindesjoo, E., Petterson, I. Tjarnlund, U. and Akerman, G., 1994. Effects of Exhaust from Two-Stroke Outboard Engines on Fish. Institute of Applied Environmental Research, Laboratory for Aquatic Ecotoxicology, Stockholm University.

Banci, V. 1994. Wolverine. Pages 99-127 in L. F. Ruggiero et al. (eds.) The Scientific Basis for Conserving Forest Carnivores—American Marten, Fisher, Lynx, and Wolverine in the Western United States. General Technical Report RM-254. Rocky Mountain Forest and Range Experiment Station. Fort Collins, Colorado.

Bjornstig, U., Ostrom, M., and Eriksson, A., 1994. Would a helmet law for snowmobile riders reduce head injuries? Arctic Med. Res. 53:196-199.

Bluewater Network. 1999. Petition to prohibit snowmobiling and road grooming in National Parks. Submitted to the National Park Service.

Boyle, S. A. and Samson F,B., 1985. Effects of Non-consumptive Recreation on Wildlife: A Review. Wildlife Society Bulletin 13: 110-116.

Burson, S., 2008. Natural Soundscape Monitoring in Yellowstone National Park December 2007-March 2008. Yellowstone Center for Resources. USGS.

Bury, R.L. 1978. Impacts of Snowmobiles on Wildlife. Transcript. 43rd North American Wildlife and Natural Resource Conference. WMI.

Buskirk, S.W., Romme, W.H., Smith, F.W., and Knight, R.L., 2000. An overview of forest fragmentation in the southern Rocky Mountains. Pp. 3-14 in Forest fragmentation in the southern Rocky Mountains, Boulder: University Press of Colorado.

Braun, C. E., Martin, K., and Robb, L. A., 1993. White-tailed Ptarmigan (Lagopus leucurus). In The Birds of North America, No. 68 (A. Poole and F. Gill, Eds.). Philadelphia, PA: The Academy of Natural Sciences; Washington, D.C.: The American Ornithologists' Union.

Brattstrom, B.H., and Bondello, M.C., 1983. Effects of off-road vehicle noise on desert Vertebrates in R.H. Webb and H.G Wilshire, editors. Environmental effects of off- road vehicles: Impacts and management in arid regions. Springer-Verlag. New, York, New York, USA.

Brunnel, K.D., Fliners, J.T., and Wolfe M.L., 2006. Potential Impacts of Coyotes and Snowmobiles on Lynx Conservation in the Intermountain West. Wildlife Society Bulletin, 34(3): 828-838.

Canadian Wildlife Federation, 1998. Below Zero Activities: Snowmobile Savvy. Wild Education: Wild Programs www.wildeducation.org

Canfield, J.E., Lyon, J., Hillis, J.M. and Thompson, M.J., 1999. Effects of recreation on Rocky Mountain wildlife: A review for Montana. Montana Chapter of the Wildlife Society, pp 307.

Center for Disease Control. 1995. Injuries associated with the use of snowmobiles- New Hampshire, 1989-1992. Morb. Mortal. Wkly. Rep. 44: 1-3.

Center for Disease Control. 1997. Injuries and deaths associated with use of snowmobiles-Maine, 1991-1996. Morb. Mortal. Wkly. Rep. 46:1-4.

Charette, J.Y., Hammerli, J., and Papineau, M., 1990. Tech. Sci. Methods. 87(2):85-90.

Colescott, J.H., and M.P. Gillingham. 1998. Reaction of Moose (Alces alces) to Snowmobile Traffic in the Greys River Valley, Wyoming. Alces 34(2):329-338.

Copeland, J.P., 1996. Biology of the wolverine in central Idaho. Thesis. University of Idaho, Moscow, Idaho, USA.

Department of Agriculture, Forest Service. National Forest System Land Management Planning, Notice of intent to prepare an environmental impact statement. 74 Fed. Reg. 67165, Dec. 18, 2009

Dorrance, M.J., Savage, P.J., and Huff, D.E., 1975. Effects Of Snowmobiles On White-Tailed Deer. Journal of Wildlife Management 39 (3): 563-569.

Eckstein, R.G., O'Brien, T.F., Rongstad, O.R. and Bollinger. J.G., 1979. Snowmobile effects on movements of white-tailed deer: A case study. Environmental Conservation. 6:45-51.

Environmental Protection Agency (EPA), 1971. Effects of Noise on Wildlife and Other Animals. Prepared by Memphis State University

Environmental Protection Agency (EPA), 2002. Environmental Impacts of Newly Regulated Non-road Engines: Frequently Asked Questions. Environmental Protection Agency, Office of Transportation and Air Quality, Washington, D.C.

Eriksson, A., and U. Bjornstig. Fatal snowmobile accidents in northern Sweden. J. Trauma. 22: 977-982.

Freddy, D.J., Bronaugh, W.M., and Fowler, M.C., 1986. Responses of Mule Deer to Disturbance by Persons Afoot and Snowmobiles. Wildlife Society Bulletin 14: 63-68.

Gabert, T., and Stueland, D.T., 1993. Recreational injuries and deaths in northern Wisconsin: analysis of injuries and fatalities from snowmobiles over three years. WI Med. Jnl. 92: 671-675.

Ingersol, G.P., 1998. Effects of Snowmobile Use on Snowpack Chemistry in Yellowstone National Park.

James, E.C., Lenz, J.O., Swenson, W.M., Clooney, A.M., and Gomez, Y.L., 1991. Snowmobile trauma: An eleven year experience. Am. Surg. 57: 349-353.

Janssen, R. 1978. Effects of noise on wildlife -- noise and animals: Perspective of government and public policy. Office of Noise Abatement and Control, U.S. Environmental Protection Agency, Washington, DC.

Janssen, S. and Schettler, T., 2003. Health Implications of Snowmobile Use in Yellowstone National Park.

Jeske, C.W. 1985. Time and energy budgets of wintering ring-necked ducks Ayatha collaris (L.) in north-central Florida. Thesis. University of Florida, Gainesville, FL, USA.

Keddy, P.A., Spavold, A.J., and Keddy, C.J., 1979. Snowmobile Impact on Old Field and March Vegetation in Nova Scotia, Canada: An Experimental Study. Environmental Management. 3(5):409-415.

Knight, R.R., Mattson, D.J. and Blanchard B.M., 1984. Movements and Habitat Use of the Yellowstone Grizzly Bear. U.S.D.I. natl. Park Service., Interagency Grizzly Bear Study Team.

Koehler, G.M., and Aubry, K.B., 1994. Lynx. Pages 74-98 in L.F. Ruggiero, K.B. Aubrey, S.W. Buskirk, L.J. Lyon, and W.J. Zielinski, editors. The Scientific Basis for Conserving Forest Carnivores: American Marten, Fisher, Lynx and Wolverine in the Western United States.

Landen, M.G., Middaugh, J., and Dannenberg, A., 1999. Injuries associate with snowmobiles, Alaska, 1993-1994. Pub. Health Rep. V. 114, No. 1, pp. 48-52.

Magoun, A. J. and Copeland, J. P., 1998. Characteristics of wolverine reproductive den sites. J. Wildl. Manage. 62(4):1313-1320.

Mattson, D.J. Use of Ungulates by Yellowstone Grizzly Bears Ursus arctos. Biological Conservation. 81:161-177. 1997.

National AG Safety Database, Snowmobiles and Youth Safety Packet, Injury Fact sheet, at www.cdc.gov/nasd/docs/d000901-d001000/d000977/2.html

Nelson, M.E., and Mech, L.D., 1986. Relationship between snow depth and gray wolf predation on white-tailed deer. Journal of Wildlife Management, 50(3):471-474.

Oliff, T.K., Legg, K., and Kaeding, B. 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.

Paquet, P.C., Poll, D., and Callaghan, C. 1997. The influence of snow cover on movements of gray wolves.

Reinhart, D., 1999. Effects of Winter Recreation on Habituated Wildlife. National Park Service: Effects of Winter Recreation on Wildlife: 151-153.

Rongstad, O.J., 1980. Research needs on environmental impacts of snowmobiles. In R.N.L. Andrews and P. Nowak, editors. Off-road vehicle use: A management challenge. U.S. Department of Agriculture, Office of Environmental Quality, Washington, D.C.

Rowe, B., Milner, R. Johnson, C., and Bota, G., 1992. Snowmobile-related deaths in Ontario: a five year review. Can. Med. Assoc. J. 146: 147-152.

Rowe, B., Milner, R. Johnson, C., and Bota, G., 1994. The association of alcohol and night driving with fatal snowmobile trauma: a case control study. Annual Emergency Medacine 24: 842-848.

Ruzycki, J., and Lutch J., 1999. Impacts of Two-Stroke Engines on Aquatic Resources. National Park Service: Effects of Winter Recreation on Wildlife: 145-147. Available: www.nps.gov/yell/publications/pdfs/wildlifewinter/issuesimpacts.pdf

Shaver, C., Morse, D., and O'Leary, D., 1998. Air Quality In the National Parks. U.S. Department of the Interior, National Park Service, Air Quality Division. Report prepared by Energy and Resource Consultants, Inc., NPS Contract No. CX-0001-4-0054.

Soininen, L., and Hantula, L., 1992. Snowmobile accidents in Lapland. Arctic Med. Res. 51: 564-570.

Stangl, J.T., 1999. Effects of Winter Recreation on Vegetation. National Park Service: Effects of Winter Recreation on Wildlife:119-121.

Sutley, N.H., 2010. Draft NEPA Guidance On Consideration Of The Effects Of Climate Change And Greenhouse Gas Emissions. Council on Environmental Quality, Washington D.C. Available:

http://ceq.hss.doe.gov/nepa/regs/Consideration\_of\_Effects\_of\_GHG\_Draft\_NEPA\_Guidance\_FI NAL 02182010.pdf.

Tjärnlund, U., Ericson, G., Lindesjöö, E., Petterson, I., and Balk, L., 1995. Investigation of the biological effects of 2-cycle outboard engines' exhaust on fish. Marine Environmental Research. 39:313-316.

Tjarnlund, U., Ericson, G., Lindesjoo, E., Petterson, I., Akerman, G., and Balk, L., 1996. Further studies of the effects of exhaust from two-stroke outboard motors on fish. Marine Environmental Research 42(1):267-271.

U.S. Department of the Interior/National Park Service, 2003. Draft Backcountry Management Plan: Denali National Park and Preserve, Alaska. Chapter 4: Environmental Consequences.

Vitterso, J., Chipeniuk, R., Skar, M., and Vistad, O., 2004. Recreational Conflict Is Affective: The Case of Cross-Country Skiers and Snowmobiles. Leisure Sciences. 26:227-243.

Vos, D.K., Ryder, R.A., and Graul, W.D.,1985. Response of breeding great blue herons (Ardea herodias) to human disturbance in north central Colorado. Colonial Waterbirds 8(1):13-22.

Waller, J.A., and Lamborn, K. R., 1975. Snowmobiling: characteristics of owners, patterns of uses and injuries. Accid. Anal. Rev. 7: 213-223.

Wanek, W. J., 1973. The Ecological Impact of Snowmobiling in Northern Minnesota. The Center for Environmental Studies. Bemidji State College, Bemidji, MN. Pp.57-76.

Weinstein, M., 1978. Impact of Off-Road Vehicles on the Avifauna of Afton Canyon, California. Bureau of Land Management. Department of the Interior. Final Report #CA-060-CT7-2734.

Wildlife Conservation Society, 2007. Greater Yellowstone Wolverine Program: Cumulative Report. Wildlife Conservation Society, Ennis Montana.

Woody, R., 2009. Montana Wilderness Association v. McAllister. National Forest Law Newsletter, National Forest Law Blog, pp 4.

Available: www.nationalforestlawblog.com/October%2009%20Newsletter.pdf