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Preface

This document is an abridged version of a report released under the same title in May 2002. The original version was intended primarily for federal land managers in the US Forest Service and other professionals involved in the development and analysis of policy regarding the use of ORVs on public land.

This abridged version has been produced for private citizens, news media, aides to senators and congresspersons, and others involved in ORV issues who have expressed a desire for a condensed, quick-read version of the report that summarizes the primary findings of the original version.

This report contains excerpts from scientific literature presented in the unabridged edition. Please consult the unabridged edtion for the extensive list of sources cited.
The original, unabridged version may be obtained by contacting Kettle Range Conservation Group at 509-775-2667.

Introduction

by Timothy Coleman

On a quiet and cold, sunny March morning several friends and I decided to go for a backcountry ski in the nearby mountains. Like a rainstorm in the midst of a drought, the stillness in the air, the clear sky, and the fresh crystal snow refreshed our spirits, beckoning us deeper into the wilderness. The only human sounds were the swish of our skis and an occasional story mixed with intermittent laughter.

Several miles in, we stopped to rest and soak up the sun.

Suddenly the quiet was shattered by the whining, chainsaw-like scream of snowmobiles racing through the valley below. Our wilderness experience was over. A motorized recreation zone lay directly below us that paralleled our ridgetop route for the next several miles. It was a weekend, and we knew from past experience that there would be another noisy group of snowmobiles behind this one. And another, and another…

Such irreconcilable user-conflicts have risen dramatically in recreational settings across America as motorized “sports” increase in popularity and the motorized “playground” expands beyond private and county roads and trails to state and federal public lands.

The “reach” of ORVs—the ability of the machine to penetrate wilderness—has increased dramatically in the last decade. Modern ORVs can move at speeds in excess of 70 miles per hour, and easily travel more than 100 miles in a single day. ORV clubs—particularly snowmobile clubs—sponsor long-distance rides over routes that cross hundreds of miles per day.

Because of their increased reach, ORVs are increasingly operating illegally on closed or abandoned roads, pastures, alpine meadows and ridges, clear-cut areas, riparian zones and streambeds. Even where their use is prohibited, such as in federally designated parks, monuments and wilderness areas, regular violations occur. Today’s machines are fast and agile, easily overcoming barriers that would have blocked them only a few years ago.

On that March day, my friends and I were once again reminded of the inordinate amount of *soundspace* affected by ORVs—a far greater environmental impact than the physical reach of the machine. Under certain conditions, the noise emitted by a single ORV, particularly a machine equipped with a 2-stroke motor, can affect a 5-10 square mile area surrounding the vehicle.

The stress that noise inflicts on human beings and wildlife, including threatened and endangered species, is well-documented. Yet these effects are rarely, if ever, taken into account during environmental impact analysis, especially at the temporal and spatial levels associated with ORV activities.

As the popularity of off-road motorized recreation continues to grow, more and more ORV enthusiasts are looking to the forests of Eastern Washington for places to operate their machines. Forest monitoring reports attest to the rapid rise in ORV use in the region, the increasing impacts on forest resources, and the need for a consistent, effective forest-wide policy to regulate ORV use and minimize the associated impacts. An increasing number of newspaper articles and letters

to the editor attest to the growing public controversy regarding ORV use on our local national forests.

As the old saying goes, “Possession is nine-tenths of the law.” Once ORV use is established in an area, it is extremely difficult to curtail or prohibit such use. It is far more effective to develop and enforce effective public policy as a means of preventing potential future problems than as a remedial measure to address an existing problem that has run amok.

Whether snowmobiles, dirtbikes and other ORVs have a place in society is not the focus of this report. Rather, this report explores the extent to which motorized vehicles designed for off-road travel and operated on public lands impact the human and non-human environment.

It is our hope that this report will serve as a wake-up call to federal and state agencies to address a problem that, barring immediate action, will only get worse. Eastern Washington has yet to experience the magnitude of ORV problems now facing other parts of the country. Taking immediate action to prevent such problems from occurring will avoid user-outrage and preserve the solitude of Washington’s last wild public forests.

Timothy J. Coleman, Executive Director
Kettle Range Conservation Group

The Impacts of ORVs

compiled and edited by David Heflick

Virtually no one doubts that ORVs have the potential to severely impact wildlife habitat, soil, waterways, and other elements of the environment. The vast majority of Forests in the United States Forest Service (USFS) system have documented natural resource damage stemming from the use of ORVs, two United States Presidents have issued Executive Orders to monitor and control ORV use so as to protect resources on public lands, and the need for management of ORV activity in order to reduce environmental damage is recognized and acknowledged even by the ORV industry.

The off-road vehicle is, in effect, a multiplier of man. An individual equipped with an off-road vehicle may equal the physical and aesthetic impact of many traditional users in an area.

A recent study offers an insightful explanation for the enormous potential of ORVs to disrupt the environment in which it operates:

"The magnitude of the off-road recreational vehicle problem lies in the fact that the off-road vehicle user can extend himself so pervasively into the physical and attitudinal space of virtually all other outdoor recreationists. He does this by his mobility, by the conspicuous sights and sounds he generates, and by the physical impacts or traces his vehicle so often leaves behind. The off-road vehicle is, in effect, a multiplier of man. An individual equipped with an off-road vehicle may equal the physical and aesthetic impact of many traditional users in an area." (Badaracco 1976).

While recognition of the potential of ORVs to impact the environment is universal, there is much less agreement on the precise nature and significance of the impacts, and to what extent the government should seek to control the impacts on public lands. In this section, the focus will be on the nature and significance of the impacts.

Overview of Impacts

ORVs have the potential to adversely impact the environment in a number of ways:

1. pollutants emitted by ORVs affect the quality of the air, soil, snow, and water, and adversely affect human health
2. grasses and shrubs can be destroyed by even moderate ORV use
3. ORVs contribute to the spread of invasive weed species
4. ORVs cause soils to become compacted, which results in erosion, stream sediment, alteration of hydrological flows, and other problems
5. the noise created by ORV motors, particularly the two-cycle variety, can travel for miles in the quiet of the wilderness, stressing wildlife and humans alike

6. persistent ORV use can lead to changes in plant density and species composition and retard forest maturity
7. ORV use amplifies past, present, and future effects, increasing the cumulative impacts on the environment
8. ORV traffic have the potential to harass wildlife, interfering with migration, reproduction, and other life cycles
9. by creating new roads and trails, ORVs are finding their way deeper and deeper into wild areas, reducing suitable habitat for old-growth species and other solitude-dependent species.

In addition to environmental effects, ORVs also have enormous potential for adverse impacts on non-motorized recreation such as cross-country skiing, hiking, showshoeing, wildlife photography and other forms of recreation where solitude or at least a low level of human disturbance is a prerequisite to the experience.

These impacts increase with each passing year, not only because of the cumulative impact of several years of ORV operation in the same areas, but because the sales and use of ORVs increases every year.

More powerful engines, wider tires, and other advances in ORV technology have increased ORVs' capability to travel off road and into the wilderness, exponentially adding to the impact of increased use.

In addition to the increase in the number of machines operating on public lands, the machines themselves have become a greater threat to the environment. More powerful engines, wider tires, and other advances in ORV technology have increased ORVs' capability to travel off road and into the wilderness, exponentially adding to the impact of increased use.

Selected Findings of Scientific Research

Soil Compaction and Erosion

Many researchers believe that the greatest impact of ORVs is soil compaction and erosion. Compaction occurs in nearly any context where heavy vehicles are repeatedly driven over the same area of ground. Over time, soils can become compacted to the point where they cannot absorb water, seedlings cannot take root, and the growth of existing plants is stunted. The compaction of soil can also lead to changes in plant species, including proliferation of exotic species, and alteration of hydrological cycles.Erosion follows compaction.

When the affected soil can no longer absorb water, the water simply flows over the surface of the soil, builds momentum and volume until it reaches an unaffected area of soil downstream. Depending on the extent of the compacted soil, the water can become a virtual torrent by the time it reaches the uncompacted soil downstream.

The force of the water then tears away at the uncompacted soil, often forming ruts, which carry the torrent of muddy water into wetlands, lakes, streams and rivers,

increasing the sediment levels in these water bodies and significantly degrading fish habitat. Erosion is also caused by severe rutting of trails by ORVs, turning trails into creeks during spring runoff and heavy rains. Illegal cutting of switchbacks by ORV operators exacerbates the problem.

ORV damage to soil and vegetation
Photo courtesy of Phil Knight /NFN

While the compaction of soils by ORVs can take place over a short period of time, recovery of an affected area can take many years.

Vegetation Damage and Species Alteration

ORVs have the potential to damage existing vegetation and introduce noxious, non-native plants in the affected area. This problem increases in areas where ORVs operate off existing trails or roads. At the same time the vehicles are damaging the existing, native vegetation, they are often introducing seeds of noxious weeds embedded in their running gear and tires. In many cases, such as with knapweed, the disturbance of the soil serves to facilitate the establishment of the undesired plant species.

Such alteration of plant species can have profound impacts on forage for wildlife, which in turn alters species composition and distribution of wildlife in the area.

According to Lacey et al (1997):

> "Knapweed plants are often caught in the undercarriage of recreational vehicles, ranch machinery, trains and logging equipment. Vehicles driven several feet through a knapweed site can pick up nearly two thousand seeds, 10 percent of which may still be attached to the vehicle after 10 miles of driving. Thus, seed can spread rapidly over hundreds of miles. Off-road vehicles also damage existing vegetation and disturb the soil surface, making it easier for knapweed to invade ... Spotted knapweed is adapted to a wide variety of environmental conditions in Montana. Plants have been observed from 1,900 feet to over 10,000 feet in elevation.
>
> "The colonization of disturbed areas by weedy and non-native species facilitated by ORV use and disturbance can severely impact the quality of winter and summer forage for wildlife, potentially resulting in long-term impacts to wildlife populations."

Effects of Snow Compaction on Wildlife

Compaction of snow by snowmobiles affects wildlife in several ways. Deer and elk digging for forage in compacted snow have greater difficulty and have to expend more energy to break through the crust to the vegetation below. Smaller animals that live on the ground are affected by destruction of habitat in the logs and rocks in meadows and on the forest floor. Very small mammals, such as mice and voles are affected by the restriction of movement and decrease in air in the subnivean environment (the layer between the ground and the

snow). The decrease in viability of such mammals affects, in turn, the distribution and population of hawks, owls, and other mammals that depend on the subnivean species for food.

Compaction of snow can also lead to increased predator access to higher elevation habitats where deep snow typically restricts access. This is of particular concern in the forests of Northeastern Washington where lynx (currently listed as "threatened") depend heavily on the abundance of snowshoe hares for winter survival. The increased access to their high-elevation winter habitat brings greater competition for food from carnivores previously unable to access high-elevation lynx habitat in winter.

Effects of ORV Noise on Wildlife

Many ORVs produce high sound pressure levels. Such noise is the source of much of the user conflict that exists between motorized recreationists and non-motorized recreationists. However, the threshold of acceptable noise levels for wildlife is thought to be considerably lower than that of humans. The noise generated by ORVs can have a profound effect on wildlife, impacting not only stress levels in the animals, but also impairing the ability of species that depend upon auditory cues to hunt for food, care for their young, and perform other functions critical to their survival.

While we do not know as much about the impacts of noise on wildlife as we do about the impacts on humans, a growing body of research is filling the void:

- Animal exposed to high-intensity sounds suffer both anatomical and physiological damage, including both auditory and nonauditory damage (Brattstrom and Bondello 1983).
- According to the Environmental Protection Agency, noise acts as a physiological stressor producing changes similar to those brought about by exposure to extreme heat, cold, pain, etc. (EPA 1971). The EPA states, "Clearly, the animals that will be directly affected by noise are those capable of responding to sound energy and especially the animals that rely on auditory signals to find mates, stake out territories, recognize young, detect and locate prey and evade predators.

Effects of ORV Traffic on Wildlife

The increasing popularity of ORVs magnifies the impact of roads on wildlife in several ways. Driving system roads purely

Snowmobiles in pursuit of bison
Photo courtesy of Jeff Henry

for recreation increases traffic on existing roads. Traffic on secondary and marginal roads also increases, as these roads offer greater "challenges" to experienced ORV operators. The increasing ability of ORVs to travel in areas previously impassable to motorized travel is resulting in an ever-increasing network of "non-system" (illegal) roads. In many cases these new roads are reaching into roadless areas and other wildlands—the last remaining refuges for wildlife species most affected by roads and the noise they bring—increasing "edge affected" habitat to the detriment of "interior" habitat.

The excerpts from research cited in the unabridged version of this report offer insights into the effects of avoidance behavior and stress on specific species groups:

- Rost and Bailey (1979) concluded that deer and elk may avoid roads to an extent that is detrimental to their welfare as a result of displacement or avoidance from important habitat to lower quality habitat and the concomitant decrease in nutrition.
- Moen et al. (1982), demonstrated an increase in the heart rate of deer of at least 250 percent over baseline levels as a result of snowmobile activity even when the animals did not stand up or move away. Such increases have the potential to affect the productivity of individuals and, ultimately, of the population.
- Snowmobile trails and roads that are maintained for winter recreation and forest management activities enable coyotes and bobcats to access lynx winter habitat (Koehler and Aubry 1994). Consequently, the presence of snowmobiles and snowmobile roads on public lands occupied by lynx are likely to adversely impact the survival and viability of such populations.

The presence of snowmobiles and snowmobile roads on public lands occupied by lynx are likely to adversely impact the survival and viability of such populations

Stalmaster and Kaiser (1998) documented that increased recreational activities adversely impacted the number, feeding activity, and habitat use of bald eagles. High recreational use on the weekends, for example, resulted in

- Fewer eagles using the river (Skagit River in Washington) and a reduction in feeding activities. This corresponded with an increase in use of lower quality off-river habitat and perches. Eagles needed nearly 4 hours to resume feeding after disturbance by foot traffic compared to only 36 minutes after boat traffic. With each disturbance, however, the time to the resumption of feeding was slower suggesting a cumulative impact from disturbance events.
- James Bergdahl, who wrote an extended chapter for the unabridged version of this report, noted the following impacts of ORVs on woodland caribou:

"When ORV activity and caribou spatially overlap, caribou are physically displaced from key habitats and congregate in areas without ORV activity. Avoidance of areas with ORV activity increases caribou density and predictability of distribution, and therefore increased susceptibility to predation. ORV activity also pushes predator species into the same remote areas occupied by caribou.

"Snowmobiling on caribou winter range is especially problematic. During winter, caribou maintain a tenuous physiological energetic balance. In addition to normal winter stress factors, physiological conditions may be further degraded by movement to avoid disturbance from snowmobile activity or reduced food intake caused by displacement from preferred habitats.

"Linear corridors such as logging roads and ORV trails may also affect caribou population dynamics by altering the movements and distribution of predators and other prey species by increasing predation pressure on caribou. Caribou, other ungulates, and omnivorous predators

such as bears may be attracted to the early-succession vegetation adjacent to roads and trails…As ORV activity increases, wolves and cougars are displaced into the same roadless areas further exacerbating spatial overlap of caribou and their predators."

In regards to the impacts of ORVs on grizzlies, Bergdahl noted the following:

"The general effects of roads and ORV activity on grizzly bears are: 1) destruction of bear habitat, 2) ecological, behavioral and physical fragmentation and alienation of habitat, 3) avoidance by many bears, for whatever reason, of an ecological *zone-of-influence* in the vicinity of roads and areas of activity, generally considered to be approximately 500 meters…Motorized activity also displaces or alienates bears from using key habitats adjacent to roads in or near riparian zones...One of the major causes of cub mortality is starvation, a problem that is exasperated when lactating females are displaced from key riparian habitats."

User Conflicts

There is one last species upon which ORVs can have a tremendous impact—humans. In recent history, motorized recreation has all but taken over certain areas of our public lands. The incessant noise, air pollution, and inherent dangers to non-users, as well as unsightly and unhealthy impacts to vegetation and the displacement of wildlife has ignited a national controversy over the management of ORVs on public lands.

"shared use is no longer a viable option."
- Jim Furnish
former Deputy Chief of the National Forest System

Recently, Jim Furnish, the former Deputy Chief of the National Forest System, stated that "shared use is no longer a viable option." The motorized user prevails in any "multiple use" arena. Hikers, cross country skiers, and mountain bikers simply avoid multiple-use trails. The noise emitted by ORVs and the oily petroleum smell from packs of ORVs that can be carried on the wind for miles effectively precludes any potential for the peace and quiet the non-motorized user seeks.

Pollution

ORVs expel 20 to 30 percent of their oil and gasoline unburned into air and water, significantly reducing air quality in the vicinity of their use.

According to the California Air Resources Board, off-road motorcycles and ATVs with two-stroke and four-stroke engines produce 118 times as many smog-forming pollutants as modern automobiles on a per-miles basis and produce over 4,000 times more carbon monoxide emission than are produced by modern cars.

A study conducted for the National Park Service in 1997 concluded that a single snowmobile produces 500-1000 times more carbon monoxide than a 1988 passenger car (Fussell-Snook 1997).

Refueling spills in riparian areas pollute wetlands, ponds, streams and other waterways, increasing fish and wildlife mortality.

Summary

ORVs have the potential to significantly impact both the specific environment in which they operate as well as the larger "human environment" in which we all live. The impacts are recognized by scientists, because of these impacts that two presidents have signed executive orders calling for the development and implementation of unified,

effective management standards on public lands. These Executive Orders were followed by the codification of rules in the Code of Federal Regulations, which are applicable to all public lands, and local USFS Land and Resource Management Plans.

More than two decades after the signing of these orders, we find ourselves with no unified national policy, a 13-fold increase in the use of ORVs, a well-organized industry lobby exerting increasing influence on federal land policy, little or no monitoring of ORV impacts on public lands, and a growing list of endangered species that depend upon large chunks of remote wildlands, protected from the intrusion of man and his machines.

Keeping our heads in the sand until the conflict between nature and machine reaches the point where it can no longer be ignored will exact a much higher price on society than developing and implementing effective management strategies right now.

The Recreation Industry

by David Heflick

The recreation industry plays a significant role in the ever increasing use of ORVs on public lands in three key ways: manufacturing ORVs, promoting and advertising their use on public lands, lobbying for public policy favorable to the industry and its customers, and by directly participating in the development of recreation policy on public lands.

Speed is a selling point in much industry advertising. Photo courtesy of E. Kootenay Environmental Society

During the last three decades, the sale and use of ORVs has skyrocketed:

- between 1991 and 1997, annual sales of ATVs climbed from 150,000 to 343,000, while snowmobile sales more than doubled, increasing from 80,000 to 174,000
- the estimate of the number of ORVs in use rose from 5 million in 1972 to over 38 million in 1993
- snowmobile registrations in Washington State have increased 10-fold since 1972

Industry Attitudes

Advertising campaigns for snowmobiles, ATVs, and jet skis often promote aggressive riding and thrill-seeking adventure. For example, the following sentiments regarding scenery were excerpted from recent advertisements for ORVs:

> "See those blurred colors streaming by you? That's called scenery"
>
> "Scenery is for saps."
>
> "If you are considering a ride on a Daytona, forget about scenery, you should concentrate on holding on."

Comments by Industry spokesmen often create concerns among non-motorized recreationists and conservationists. Clark Collins, Executive Director of the Blue Ribbon Coalition (an Idaho based recreation industry group) had this to say about the issue of user conflicts on trails:

> "There are nearly 100 million acres of designated wilderness in this country, and if those folks desire that type of non-motorized experience, that's where they should go."

The relegation of non-motorized recreationists seeking trails free of motorized users to wilderness areas is not as alarming as his view on wilderness itself:

"Wilderness designation is not a user-friendly designation...it prohibits all types of improvements to better accommodate recreation."

Industry Organizations

The recreation industry has achieved a high level of organization and cooperation through the American Recreation Coalition (ARC). The ARC is comprised of nearly 200 industry organizations, including motor boat, jet-ski, RV, motorcycle, ORV, and snowmobile manufacturers and associations; ski area associations; public land concessionaires and campground associations; sporting equipment manufacturers; tour associations; and petroleum companies. Some of the more notable members of the ARC include:

- National Hotrod Association
- International Snowmobile Manufacturers Association
- American Motorcycle Association
- Personal Watercraft Industry Association
- American Powerboat Association

The ARC has lobbied Congress extensively for rights to develop and operate recreational facilities on national forest land and has provided funding for the development, implementation, and evaluation of a program to test the public's willingness to pay a fee to recreate in national forests. In addition, the ARC and it's industry members have made substantial contributions to numerous members of Congress.

The ARC also opposes and lobbies against proposals to designate federal land as wilderness as well as public policies that restrict the use of motorized vehicles on public lands, or reduce pollutants emitted from ORVs.

The ARC makes no bones about its involvement in national policy decision-making, stating that the ARC "provides a unified voice for recreation interests to ensure their full and active participation in government policy making." Furthermore, the federal government sees no problem with ARC's role in such policy making.

Recently the US Forest Service raised the eyebrows of environmentalists across the nation when it entered into an "agreement of cooperation" with the *Blue Ribbon Coalition* (BRC), a national recreation industry group based in Pocatello, Idaho.

The BRC is perhaps best known for its recent lawsuit to keep Yellowstone National Park open to snowmobiles. Like the ARC, the BRC has opposed recent EPA proposals to adopt tougher standards that would more significantly reduce air pollution and better protect public health, arguing that

In the agreement, the USFS pledges to "include and utilize BRC's…expertise in developing (Forest Service) programs and management as they relate to recreation use."

pollution from ORVs does not adversely affect public lands.

In the agreement, the USFS pledges to "include and utilize BRC's and its affiliates' technical expertise in developing (Forest Service) programs and management as they relate to recreation use." The agreement also pledges efforts to "develop and expand a framework of cooperation" between the Forest Service and the coalition and to make national forest lands "available for recreation-related activities" within the law.

Overview of ORV Impacts: Colville Nat'l Forest

by Timothy Coleman

The growing population of Washington's fourth largest urban area and second largest city, Spokane, compels action to protect one of the most biologically diverse forests in Washington State: the Colville National Forest. Most reaches of the Colville Forest are within a 1-2 hour drive of Spokane. Citizens of northeast Washington are outdoor recreation enthusiasts, enjoying hiking, wildlife viewing, fishing, hunting and camping, primarily in their national forest and wildlife refuges. Increasing off-road vehicle (ORV) use in the Forest is reducing seclusion of threatened and endangered species even while it curtails or eliminates the peaceful, serene qualities often associated with our National Forest.

Over 4,000 miles of roads and trails on the Colville Forest are open to ORVs, while just 300 miles of trails exist for backcountry recreation and solitude. Even as trails fall into disrepair for lack of attention and funding, miles of ORV-accessible trails are increasing.

Field observation of semi-primitive, non-motorized trails in the Kettle River Range (and southern Selkirk Mountains) demonstrates the weakness in the Colville management strategy. This weakness manifests primarily in two areas of high significance: 1) impact to non-motorized, solitude-seeking backcountry recreation, and 2) impact to sensitive, threatened and endangered species. As Washington's human population grows to a projected 11 million people by 2045, the public will increasingly seek solitude and outdoor recreation in the Colville National Forest. Meeting the needs of future generations, fish, wildlife and plants requires advanced planning. Planning for the future requires the collection of baseline data. Lacking such information, informed decision-making will ultimately be based on the lowest common denominator action.

As Washington's human population grows to a projected 11 million people by 2045, the public will increasingly seek solitude and outdoor recreation in the Colville National Forest.

KETTLE RIVER RANGE: A CASE ANALYSIS

In the Kettle River Range, non-motorized and motorized recreation areas are highly interspersed: valley bottoms are mostly roaded and open to motorized use while high alpine ridgelines are restricted to non-motorized use. The CNF has prohibited ORV use of the Kettle Crest National Recreation Trail and associated trails since the early 1980's.

This situation, along with the capability of today's machines to climb higher and go faster in greater comfort than ever before creates an enormous temptation for snowmobilers to make illegal excursions into large, open, alpine snowbowls in adjacent restricted areas and engage in the sport of "high marking"—taking turns speeding up the steep faces of the snowbowl to see who can reach the highest point before loosing power and turning back down the slope.

There are eight officially recognized national forest roadless areas in the Kettle Range, comprising approximately 104,600 acres. Roadless areas in the Kettle Range closed to motorized vehicles are narrow in width, with most just 3-4 miles wide at their widest point. Travel from the unpopulated eastern sections of the Kettle Crest along FS Roads 2020 and 2030 to the populated Curlew Valley is an alluring challenge to ORV riders in all seasons. Illegal entry into these closed areas is

easily accomplished with little risk of arrest or fine.

The cumulative impacts of motorized recreation, non-motorized recreation and development

Snowmobiles travel far beyond designated routes. Photo courtesy of National Park Service

activities such as logging, mining, road building and livestock grazing is currently out of compliance with legal restrictions set forth by NEPA, NFMA or Colville LRMP. Even default Forest Plan management recommendations—repeatedly pointed to by former Forest Supervisor Edward Schultz as part of a "working document"—have not been implemented 14 years after issuance of the LRMP. As such, needed changes to the Recreation Opportunity Spectrum (ROS) and Travel Plan have not been made.

Albian Hill Road (FS 2030), Sherman Creek Road (FS 2020), Hall Creek Road (FS 2054-100 and Twin Sisters semi-primitive motorized recreation-use zones are located downhill and within direct line-of-sight and earshot of semi-primitive non-motorized zones. The approximate distance between the motorized zones and non-motorized recreation along the Kettle Crest Trail zones varies from _ to 2 miles.

Monitoring of this conflict by the Forest Service is completely absent, despite complaints registered by Kettle Range Conservation Group and others. To make matters worse, the Forest Service refuses to even discuss the problem caused by the conflicting uses.

Case Studies: Okanogan National Forest

HELICOPTER-SKIING AND MOUNTAIN GOATS

by Susan Crampton

Helicopter-skiing in the Okanogan National Forest reaches deep into secluded backcountry, including areas otherwise closed to motorized vehicles year round. Helicopter-skiing was begun and has continued without attention to—and in part perhaps without knowledge of—the complexities of winter ecology and survival patterns for mountain and forest wildlife and native plants.

Paperwork to permit the first uses of helicopter-skiing in the Okanogan National Forest, included wildlife assessments that stated, "During the winter months, most wildlife migrate out of the area." (Okanogan and Wenatchee NF 1980).

This is a surprising assessment considering the marmot, ptarmigan, pika, wolverine, grizzly bear, black bear, lynx, snowshoe hare, pine marten, Clark's nutcracker, boreal owls, Columbian ground squirrel, and many other species that remain in the area throughout the winter.

Helicopter-skiing has now operated for 20 years in the North Cascades and the Okanogan National Forest has no good monitoring record on the interim or current status of the mountain goat population

Since helicopter-skiing uses were first proposed on the Okanogan National Forest, impacts to mountain goats and mountain goat habitat have been a significant concern. The 1984 Decision Notice and Finding of
No Significant Impact for Supplement to the Helicopter Skiing Environmental Assessment specifically includes "Mitigating Measures, Management Constraints and Monitoring Requirements [to] monitor goat use in selected areas with representatives of Washington Department of Game." (Note*: Washington Department of Game* is now the *Washington Department of Fish and Wildlife*).

Monitoring the mountain goat population was a good idea—but unfortunately helicopter-skiing has now operated for 20 years in the North Cascades and the Okanogan National Forest has no good monitoring record on the interim or current status of the mountain goat population.

Helicopter-skiing use occurs in mountain goat habitat that was designated "to optimize habitat condition and perpetuate a healthy mountain goat population."

Besides the initial concerns about mountain goats during permitting in the 1980's, and besides the assignment of a special Management Area in the Okanogan Forest Plan, additional disturbances and negative impacts to mountain goats from helicopters have been documented. The Montana Chapter of the Wildlife Society included references in their Ungulates, September, 1999 publication:

> "Joslin (1986b) reported a decline in mountain goat reproduction and/or recruitment of kids in response to disturbance by helicopters in Montana, and Cote (1996) reported that mountain goats were disturbed by 85% of flights within 500 meters. Responses to helicopter traffic resulted in one case of severe injury to an adult female.
>
> "Based on these observations restrictions of helicopter flights within 2 kilometers of alpine areas and cliffs that support mountain goat populations is recommended."

These particular references were included in the helicopter-skiing analysis file for the October, 2001 decision by the Okanogan National Forest to reissue—and even to increase—the special use permit for helicopter-skiing.

The reissuance of the helicopter-skiing special use permit—and its increase—was administratively challenged by Kettle Range Conservation Group and Methow Forest Watch for multiple reasons, including known adverse impacts to mountain goats from helicopters, operation of helicopter-skiing in habitat specifically designated in the Okanogan Forest Plan "to optimize habitat condition and perpetuate a healthy mountain goat

Without monitoring and inventory data, the Okanogan National Forest cannot possibly make informed decisions about the effects of the helicopter-skiing

population," and lack of monitoring information on the status of the mountain goat population.

Without monitoring and inventory data, the Okanogan National Forest cannot possibly make informed decisions about the effects of the helicopter-skiing, nor can the Forest Service meet its legal requirements and responsibilities under environmental law and Forest Service regulations. The Okanogan Forest Plan requires that management of MA 37:

> "optimize habitat condition and perpetuate a healthy mountain goat population."

The Okanogan Forest Plan Standard and Guideline 10-8E states:

> "Recreation special use authorizations for helicopter flights over or landing in areas where goats will be adversely disturbed shall not be issued."

At 36 CFR 219.12(d), the National Forest Management Act states:

"Each Forest Supervisor shall obtain and keep current inventory data appropriate for planning and managing the resources under his or her administrative jurisdiction"

Again, without monitoring and inventory data, it is not possible to determine if there has been adverse disturbance to this unique indicator species for mountain habitat.

Helicopter-skiing occurs during the most critical and vulnerable time of year for mountain goats—winter and in particular, late season winter when the animals are in a weakened condition. (Chadwick 1983).

The November, 2001 *Decision Notice for the New Gold Hill* mine from the Okanogan and Wenatchee National Forest acknowledges seasonal vulnerability of the mountain goat population and makes note that helicopter use for the mine would avoid "kidding and winter range seasons of mountain goats" (p.7). Yet helicopter-skiing occurs during this most vulnerable winter season.

Increases in helicopter-skiing levels have been proposed by the Okanogan National Forest in the absence of analysis of the environmental impacts of existing activity levels. If and when such analysis is completed, it may be determined that existing levels are already causing unacceptable impacts on wildlife and other forest resources and therefore must, by law, be curtailed to reduce the impacts. Under no circumstances should levels of heli-skiing, or any other form of motorized recreation be increased comprehensive analysis is completed, baselines have been established, and a long-term monitoring program has been developed and implemented.

ORV Destruction of Riparian Habitat

by George Wooten

The Chewuch River in north-central Washington provides habitat for several species of threatened and endangered fish including bull trout, Spring Chinook and Methow steelhead. Along the river, previous logging operations left skid trails providing access to over 200 dispersed campsites (Winthrop Ranger District, 1994, p. 169). Forty-two of the dispersed camping areas are located in the first 15 miles above the Forest boundary, where over 90% of the spring Chinook spawning occurs.

Poorly designed trail degrades water quality. Wild Trails file photo

According to the Forest Service, this situation compounds habitat problems by compacting soils, damaging riparian vegetation, eroding river banks, and impeding the recruitment of large woody debris necessary for productive fish habitat.

In one area, a site had been developed from a road pullout which had been widened by ORV use. A route was cleared several hundred feet beyond the point where the road had previously ended, providing access to several campsites on the river bank. Protective vegetation had been cut away to open the site up to ORV access, and a large sandbar along the edge of the water was eroding under heavy ORV usage.

In 1992, the Winthrop Ranger District began modifying the campsites in order to restore riparian habitat and provide a better recreational experience for dispersed-site users. An agreement with local users restricted parking to stable sites located away from the fragile river banks while allowing continued use of the campsites. The plan also included measures to block unsuitable roads, construct marked foot trails down to the water's edge, and restore damaged areas. A dozen large boulders were positioned to block vehicle access to the sandbar, which was then planted with 600 riparian shrubs.

By the following year, a new road had been constructed through dense timber by the ORV users to circumvent streambank protection measures. Boulders were rolled aside to reclaim access to the sandbar, which was once again severely rutted by ORV's. The new shrubs were all dead or dying.

Restoration crews moved the boulders back into place, installed signs politely asking visitors to respect the river and refrain from driving onto the sandbar, and replanted the shrubs. By the next year, the boulders had again been pushed aside and the sand bar severely damaged. Large trees had been logged out and still another new road leading to the river had been constructed.

Later that year, a Forest Service worker spotted a large, surly crowd of ORV users at the site, approached them, and asked that they keep off the blocked riparian areas. Several individuals acknowledged they had used this site in the past and were responsible for some of the damage, complaining that the Forest Service had taken away their "right" to access the river. The next day, the Forest Service worker returned with a law-enforcement officer, but the visitors had left the area.

In a subsequent review of the matter, the Forest Service determined that the Code of Federal Regulations did not provide them with the legal authority to enforce ORV restrictions on the sandbar and that it was perfectly legal for someone to build their own road across Forest Service land and drive vehicles over sandbars along the edge of the Chewuch River.

Legal Requirements

by David Heflick

A number of legal statues and regulations guide the development and management of ORV policy on National Forests, ranging from Executive Orders signed by presidents to Land and Resource Management Plans developed by each individual National Forest.

Executive Orders

In 1972, President Nixon issued Executive Order 11644. In 1977, President Carter signed EO 11989, which amends Executive Order 11644, adding additional requirements. These amendments address the use of ORVs on public lands and require the establishment of policies and procedures to monitor and control ORV use in order to protect resources, promote safety among users and minimize user conflicts.

Together, these executive orders require all agencies managing federal public lands (in the case of USFS land, the agency is the USDA) to do the following:

- **establish a unified federal policy** toward the use of ORVs on public lands.
- **ensure adequate opportunity for public participation** in the promulgation of regulations and in the designation of areas and trails.
- **designate 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, 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, and located so as to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses. In designation of routes, damage to soils, watershed, vegetation, and other land resources; wildlife harassment and impacts to wildlife habitat; and conflicts between ORV use and other uses of the land must be minimized.
- **ensure that areas and trails where off-road vehicle use is permitted are well marked.**
- **prescribe appropriate penalties** for violation of regulations and establish procedures for the enforcement of those regulations.

ORV restrictions are poorly enforced. Photo courtesy of Phil Knight/NFN

- **monitor ORV use and its impacts.** If it is determined that ORV use "will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands," land managers must "immediately close such areas or trails to the type of off-road vehicle causing such effects, until such time as he determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence."
- **immediately close ORV areas or trails whenever it is determined that ORVs are causing considerable adverse effects** on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails.

In addition, Executive Order 11989, which amends Executive Order 11644, authorizes agency heads to:

> "adopt a policy that area and trails shall be closed to use by off-road vehicles except those areas or trails which are suitable and specifically designated as open."

It should be noted that agencies are **not** authorized to adopt an "open unless marked closed" policy.

Code of Federal Regulations

Section 295 of Title 36 of the Code, which addresses the use of motorized vehicles off Forest Service Roads, largely echoes the requirements of the Executive Orders, often using precisely the same wording as the Executive Orders. However, Section 295.6 makes specific requirements regarding review of ORV management plans, stating:

> Forest Supervisors will annually review off-road vehicle management plans and temporary designations implemented since the last annual review. If the plan needs revision, the public will be given the opportunity to participate in the review as stated in Sec. 295.3.

While much of the substantive requirements of Executive Order 11644 is included in the Code of Federal Regulations, there is one notable exception: the requirement that "[e]ach respective agency head shall ensure that areas and trails where off-road vehicle use is permitted are well marked" is not included. This is a notable omission, which will be discussed later this report.

Local Forest Plans

Each National Forest has its own *Land and Resource Management Plan* (LRMP), which guides all natural resource management activities within the forest boundaries. The LRMP "[e]mbodies the provisions and implementing regulations of the *National Forest Management Act of 1976* and other guiding documents." In addition, the LRMP contains detailed planning and management specific to the local forest, and may contain specific requirements not included in federal law and policy.
The Colville National Forest LRMP makes the following requirements of ORV policy:

- Update the existing situation ROS map in the Forest Database or GIS every five years (4-35).
- Designate areas for ORV use through the Forest Travel Implementation Schedule and in conformance with the ROS designations for specific areas.
- Effects of ORV use will be monitored on an annual basis to determine when ORV use is causing unacceptable effects on resources, public safety, or forest users. When ORV use shows unacceptable effects, appropriate action will be taken. Suggested methods for monitoring are photo transects of heavy use ORV areas, field observations, and photopoints (comparative photographs taken at specified time intervals).

The Okanogan National Forest LRMP requires the following:

- Monitoring of the effects of ORV use will be "continuous throughout the heavy use season." Monitoring methods include *implementation monitoring* and *effectiveness monitoring* (described below).
- Sample field contacts with non-motorized users in areas open to ORV use [will be] continuous throughout the heavy use season.
- Monitoring reports will be issued on a 5-year basis and will identify acres and/or miles of roads and trails receiving unacceptable impacts.
- When use is resulting in unacceptable resource impacts or numerous reports of conflicts are reported, appropriate action will be taken.

The ONF uses *implementation monitoring* "to determine if plans, prescriptions, projects, and activities are implemented as designed and in compliance with Forest Plan objectives and Standards and Guidelines."

Effectiveness monitoring is used to determine "if plans, prescriptions, projects and activities are effective in meeting management direction, objectives, and the standards and guidelines. This level of monitoring is conducted by resources and/or technical specialists on a limited basis as determined by resource values and risks, and public issues." The ONF Forest Plan further states that "effectiveness monitoring" will accomplish the following NFMA monitoring requirements:

- quantitatively compare planned vs. actual outputs and services
- measure effectiveness of prescriptions
- identify research needs to support of [sic] improve NF management."

NFMA Monitoring Criteria

The definition of "monitoring" is often debated in the context of evaluating whether or not monitoring requirements are being met. While there is no precise legal definition of this term, the National Forest Management Act of 1976 offers significant guidance as to what it means to monitor the effectiveness of LRMP'S. Clearly, NFMA requires that monitoring and evaluation of forest management be substantive and meaningful and serve as a process by which LRMPs may be adapted to ever-changing conditions and trends. (See the unabridged version of this report for more information on NFMA guidelines for monitoring.)

Compliance with Law and Policy

by David Heflick

The unabridged version of this report contains detailed analysis of the Okanogan and Colville National Forests compliance with the legal requirements outlined in the previous chapter. In the interest of brevity, tables are used in this version of the report to summarize compliance with each of the requirements.

COLVILLE NATIONAL FOREST

Requirement #1: Establish a unified federal policy toward the use of ORVs on public lands. (EO 11644).	Out of compliance. No unified policy exists even within the CNF itself. "Promulgation of regulations," as required in the development of policy has not occurred. The *guidelines* included on the Forest Travel Map do not constitute "regulations."
Requirement #2: Ensure adequate opportunity for public participation in the promulgation of regulations and in the designation of areas and trails (EO 11644).	Partial compliance. A public comment period was conducted in 1990 when the Forest Travel Plan Map was first developed. Subsequent trail development projects have undergone NEPA assessment.
Requirement #3: Plan for and designate usage to allow, restrict, or prohibit use by specific vehicle types off roads. Make such designations based on analysis of current and potential impacts arising from operation of specific vehicle types on soil, water, vegetation, fish and wildlife, forest visitors and cultural and historic resources. Also take into account public safety of all users and the compatibility of such uses with existing conditions in populated areas (EO 11644 and 36 CFR Sec. 295.2).	Out of compliance. While the LRMP indicates that user-trend analysis was used in determining trail designations, there is no mention of analysis of impacts and user compatibility as stipulated by 36 CFR Sec. 295.2. In response to FOIA inquiry, CNF indicates a no-records response to requests for documents evidencing such analysis.

Requirement #4: Ensure that areas and trails where off-road vehicle use is permitted are well-marked (EO 11644).	Out of compliance. ORV designations are made on the Travel Map, but in most cases, the designated areas and trails are not marked on the ground. It is left up to users to determine whether they are operating in a legally designated area. The use of an "open unless marked closed" policy, which CNF uses, is a direct contradiction of this requirement.
Requirement #5: Prescribe appropriate penalties for violation of regulations and establish procedures for the enforcement of those regulations (EO 11644).	Minimal compliance. A very small number of citations have been issued. The reported number of violations in 1997 pales in comparison to the evidence of user violations reported in the monitoring report for the same year.
Requirement #6: Monitor ORV use and its impacts (36 CFR Sec. 295.2). The CNF LRMP adds to this requirement by stipulating that the "effects of ORV use will be monitored on an annual basis." The LRMP goes on to say, "[s]uggested methods for monitoring are photo transects of heavy use ORV areas, field observations, and photopoints." (Photopoints are fixed locations where photographs are taken at regular intervals over an extended period of time.)	Out of compliance. Based on the definition of *monitoring* as provided in NFMA and codified in the CFR (outlined in the previous chapter) the CNF is seriously out of compliance with this requirement. Monitoring is scattered, sporadic, and unscientific. In many districts and in many years, no monitoring was performed at all. No records of utilization of recommended monitoring techniques.
Requirement #7: Immediately close ORV areas or trails whenever it is determined that ORVs are causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails (36 CFR Sec. 295.5).	Out of compliance While there have been some closures, they have been ineffective. Monitoring reports indicate several instances where user-safety was at great risk, yet no closure action was taken.
Requirement #8: Update the existing situation ROS map in the Forest Database or GIS every five years (LRMP).	Out of compliance. According to an email from Jann Bodie (3-11-2002), the ROS map has not been updated since it was first issued in 1986.
Requirement #9: Designate areas for ORV use through the Forest Travel Implementation Schedule and in conformance with the ROS designations for specific areas (LRMP).	Questionable compliance. Designation is now done through the Forest Travel Map, which is based on the ROS map. The ROS map is based on MA designation, the criteria for which differs significantly from the requirements of EO 11644 and 36 CFR Sec. 295.2. The CNF has been unable to demonstrate that designation of ORV-use areas on the Travel Map complies with the analysis requirements of EO 11644 and 36 CFR Sec. 295.2.

Okanogan National Forest

Requirement #1: Establish a unified federal policy toward the use of ORVs on public lands. (EO 11644)	Out of compliance. "Promulgation of regulations," as in the development of policy has not occurred. The *guidelines* included on the Forest Travel Map do not constitute "regulations".
Requirement #2: Ensure adequate opportunity for public participation in the promulgation of regulations and in the designation of areas and trails (EO 11644)	Partial compliance. A public comment period was conducted in 1990 when the Forest Travel Plan Map was first developed. Subsequent trail development projects have undergone NEPA assessment; however, the adequacy of recreation-related EA's and EIS's has been repeatedly challenged both through administrative appeals and lawsuits.
Requirement #3: Plan for and designate usage to allow, restrict, or prohibit use by specific vehicle types off roads. Make such designations based on analysis of current and potential impacts arising from operation of specific vehicle types on soil, water, vegetation, fish and wildlife, forest visitors and cultural and historic resources. Also take into account public safety of all users and the compatibility of such uses with existing conditions in populated areas (EO 11644 and 36 CFR 295.2).	Out of compliance. In response to FOIA inquiry, ONF has been unable to produce documents evidencing that analysis of impacts to all forest resources forms the foundation of ORV use designations on the Travel Map. User conflicts abound on the ONF.
Requirement #4: Ensure that areas and trails where off-road vehicle use is permitted are well-marked (EO 11644**).**	Out of compliance. ORV designations are made on the Travel Map, but in most cases, the designated areas and trails are not marked on the ground. It is left up to users to determine whether or not they are operating in a legally designated area. The use of an "open unless marked closed" policy, which ONF uses, is a direct contradiction of this requirement.
Requirement #5: Prescribe appropriate penalties for violation of regulations and establish procedures for the enforcement of those regulations (EO 11644)	Compliance unknown. At time of Press, the ONF response to our FOIA request for enforcement records was still pending.

Requirement #6: Monitor ORV use and its impacts (36 CFR Sec. 295.2). The ONF LRMP adds to this requirement by stipulating that observations for "effects [of ORVs] on land and other resources" will be "continuous through the heavy-use season." The LRMP indicates that the unit of measure for the reporting of ORV impacts will be "acres and/or miles of roads and trails receiving unacceptable impacts."	Out of compliance. Based on the definition of *monitoring* as provided in NFMA and codified in the CFR (outlined in the previous chapter), the ONF is seriously out of compliance with this requirement. Monitoring is scattered, sporadic, and unscientific. In many districts and in many years, there is no record of any monitoring at all No records of utilization of recommended monitoring techniques. Reporting does not indicate the acres and/or miles of roads and trails receiving unacceptable impacts.
Requirement #7: Immediately close ORV areas or trails whenever it is determined that ORVs are causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails (36 CFR Sec. 295.5).	Out of Compliance. Scattered monitoring reports describe water quality and sanitation problems due to ORV related activities, yet no closure action was taken.
Requirement #8: (unlike the CNF, the ONF LRMP does not contain requirements for updating of the ROS map.)	N/A
Requirement #9: Provide recreation and trail opportunities for a variety of recreation activities while maintaining consistency with the goals and recreation opportunity setting for the Management area.	Questionable compliance. Designation of trails and areas open to ORVs is now done through the Forest Travel Map, which is based on the ROS map. The ROS map is based on MA designation, the criteria for which differs significantly from the criteria included in EO 11644 and 36 CFR Sec. 295.2 for the designation of ORV use areas. The ONF has been unable to demonstrate that designation of ORV-use areas on the Travel Map complies with the analysis requirements of EO 11644 and 36 CFR Sec. 295.2.

Conclusion

Both the CNF and the ONF are out of compliance with the requirements of Executive Orders 11644 and 11989, the Code of Federal Regulations, and their own Land and Resource Management Plans.

Conclusions and Recommendations

by David Heflick

The known effects of ORVs on natural resources, wildlife, threatened and endangered species, non-motorized recreation, water quality and air quality are substantial. Over two decades ago, Executive Orders were signed by two presidents demanding that these effects be taken into account in the management of public lands. Numerous sections of the Code of Federal Regulations make specific requirements of land managers in meeting the objectives of the Executive Orders.

Since these laws went into effect, the population of Eastern Washington has grown considerably. Use of ORVs for recreational purposes has risen dramatically. ORVs are more powerful and user-friendly, rendering them far more capable of reaching into the rugged wildlands than their counterparts of the 1970's. Native species especially sensitive to the impacts of ORVs have been added to the threatened and endangered lists.

Roadless wildlands have grown increasingly rare. The importance of compliance with federal law and policy regarding ORVs is much greater today than it was twenty-five years ago. Likewise, compliance with the requirements of local Forest Plans to effectively manage recreation is more critical today than ever before. And yet these legal requirements have been largely ignored. The Federal government itself has repeatedly come to this conclusion in Government Accounting Office reports and other documents that monitor the performance of government. Monitoring reports from the local Forests evidence the lack of compliance with Forest Plans.

Areas Vulnerable to ORV Impacts

The accompanying maps illustrate the enormous percentage of the Colville and Okanogan National Forests that are vulnerable to the impacts of ORVs during at least some portion of the year. These maps are derived from the Forest Service Travel maps currently distributed by the two Forests, which designate areas as either open or closed to ORVs.

It is important to remember that ORV use in open areas is not limited to roads and trails. Under current policy, unless otherwise posted, ORV operators are allowed to travel off road and cross country—through creeks and meadows, along ridgetops, up steep slopes, and anywhere else their machines are capable of traveling.

It is also important to recognize that many areas which are designated as closed are, in reality, illegally used by ORV operators.

The maps make it immediately apparent how little land is protected year-round from the impacts of ORVs.

Consistent Forest-wide Policy Needed

Many National Forests in more populated areas waited too long to take the ORV situation seriously and have discovered that after an area becomes a major attraction for ORV operators, it is very difficult to restrict or regulate use. The old saying, "possession is nine-tenths of the law," seems particularly applicable to ORV-use areas. Whenever restrictions are imposed in a specific area, the primary complaint from the motorized-recreation community is that federal land managers are denying users access to areas in which they have traditionally operated for years. The fact that the intensity of the use, and therefore the impact of the use, has increased exponentially over those same years is almost never acknowledged.

We ask that the Colville and Okanogan National Forests immediately begin a process of developing a comprehensive, consistent, forest-wide policy regarding the use of ORVs that is compliant with federal laws written over twenty years ago. As required by law, the plan must take into account impacts on all forest resources, including habitat for sensitive, threatened and endangered species. The policy must address and minimize user

In short, we are asking nothing more than what the laws and regulations written and promulgated twenty-five years ago promised us.

conflicts between motorized and non-motorized recreation and "ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."

To be compliant with Executive Order 11644, both Forests must adopt a "closed unless marked open" policy, and all trails designated for ORV use must be clearly marked. A public education campaign must be developed to inform users of this policy, underscoring the fact that if an area is not marked as open, ORV use is illegal, and the law will be enforced.

Rules and regulations must be promulgated and strictly enforced. An educational outreach program must be implemented to inform the public of the regulations and associated penalties for breaking the law.

A meaningful monitoring program must be established. The program must use scientific means to determine if impacts not predicted during planning and designation of ORV areas have reached the threshold of "significance". The monitoring program must consist of more than incidental observations made in conjunction with field trips related to other projects and activities. Baselines need to be established to which future conditions can be compared. The Terms "unacceptable", "significant", "considerable", or any other terms must be defined in such a manner that Forest Service personnel can more readily determine when thresholds have been reached.

When such thresholds have been reached, standards and guidelines must include provisions to immediately and effectively close roads, trails, and off-road areas affected by the impacts and to enforce such closure. Closures must be permanent unless meaningful mitigation measures can be employed to reduce impacts to an acceptable level.

In short, we are asking nothing more than what the laws and regulations written and promulgated twenty-five years ago promised us: a consistent, forest-wide policy regarding the use of ORVs on the National Forests, based on scientific analysis of the potential and existing impacts to forest resources form ORVs, enforced by law, and monitored for its effectiveness in preventing adverse effects from ORVs.