

how ORVs have affected their recreational experience in the Gallatin National Forest. By incorporating this diverse range of voices, we aimed to raise awareness among land management agencies about the broad scope of Americans who are impacted by ORVs.

In addition to public input, we received endless field support and assistance with trail closures, rehabilitation and public education. With simple guidance and training our volunteers brought in thorough results and demonstrated a sincere interest in our work.

During the summer and fall of 2001, we spent hundreds of hours and covered hundreds of miles searching for evidence of wheeled motorized trespass in closed areas and in allegedly secure grizzly bear habitat. We also documented with digital cameras and GPS units, any trail damage, vegetation damage, littering and other impacts we found associated with motorized travel.

Aurora, the ORV database, is designed to allow people to efficiently enter, organize, and report information about environmental damage caused by off-road vehicles in a visually appealing and flexible format. Aurora has multiple fields for entering trail data, photos, GPS waypoints, and trail damage descriptions, along with “error free” time-saving pull down menus. The pull-down menus will be constantly updated by users, so the variety of options (i.e. invasive plants, Ranger Districts) will grow with use. The damage codes come in degrees which can be modified, or expanded, by groups to fit their needs. Reports can be generated in a variety of configurations to isolate information to the user’s preference. The information in Aurora is organized by trail number or road designation. The idea is to produce detailed reports per trail with descriptions, pictures, numbers and nature of incidents over a period of time, etc. for presentation. The GPS

Vegetation Damage	0 none	
Soil Damage	3 severe	
Riparian Damage	1 minor	
Rock Damage	2 moderate	
User Created Trail	Yes	
Illegal Entry	Yes	
Shooting Range	Yes	
Litter/Trash	1 minor	
Live Trees Cut	No	
Fuel Spill	0 none	
Road Kill	No	
Invasive plants	Yag weed	

Trail	RD#125	Way Point	12 T 343917 4925917
Date	7/12/2001	Memo	<p>Observed two ATVs On restricted trail.</p>
Surveyor	Tom Arnold		
Is there a legal violation occurring?	Yes		
Legal Type	Wilderness		
Gate Closure Area	ineffective		
How wide is the trail?			
Is the trail under 48 inches wide?	No		
ATV use during patrol?	No		
How many vehicles?	3		
What type of vehicle?	4-wheeler		
Is noise audible?	Yes		
Are tracks present on trail?	Yes		
What type of tracks?	4-wheeler		
Are the tracks new or old?	new		
How deep are the tracks?	<ul style="list-style-type: none"> 1 - under 2 - 4" to 3 - 5" to 4 - 13" to 5 - 19" to 6 - deeper 		
Ranger District	Bozeman	National Forest	Gallatin
State	Montana		

Findings

Andy Tuller



Owner of Outa Ware clothing, age 38, has lived in Montana since 1983

Recreational interests:
hunting, rafting,
backcountry skiing,
motorcycle riding, hiking,

"As long as you use ORVs to get from point A to point B that's fine. But used inappropriately ORVs can change your whole experience in the backcountry. One time we were 50 yards from a herd of elk when a bunch of ORV riders came along. They took first shots and they chased all of the elk off."



David Ellenberger

Our research confirmed prior observations that ORV use can result in severe erosion both on trail and off, destruction of ground cover plants, widening and multiplication of trails, crowding, littering and trampling at heavily used backcountry sites, harassment of wildlife, and conflict with non-motorized travelers.

Regardless of current regulations, rugged terrain, or distance, we discovered that ORVs have permeated nearly every section of the Gallatin National Forest. We rarely saw Forest Service personnel implementing rules, talking to users, or packing out trash.

We found evidence of motor vehicle trespass in the Absaroka-Beartooth Wilderness near Cooke City, in McAtee Basin, on the Beaverhead National Forest bordering the Gallatin, in the Bear Canyon area near Bozeman, on the Big Sky Snowmobile Trail north of West Yellowstone, and near Battle Ridge in the Bridger Canyon area.

ORV damage was the heaviest in a few backcountry areas: Rock Creek, Ramshorn Lake, Buffalo Horn Creek and Windy Pass in the Gallatin Range; Buck Ridge, Muddy Creek and Cedar Mountain in the Madison Range; the west side of the Bridger Range and the area around Cooke City. Each area had specific problems varying from excessive litter to trail damage, erosion, and vegetation loss. Many of these areas experienced all of these problems.

A hiker struggles to negotiate a trail that has been severely degraded by motorized use. This trail was intentionally widened by the Forest Service to allow for 4 wheel ORV use. It is located in the Hyalite-Porcupine-Buffalo Horn Wilderness Study Area, which the Forest Service is supposed to manage to maintain its wilderness character.

We found that some of the worst and most pervasive damage is caused by people in four wheel drive vehicles who drive off road through wet meadows and mud holes and leave behind large quantities of trash and litter. Most trail-heads have permanent fire rings and piles of trash from people who chose to bring their party into the woods.

In some areas, there was too much trash for us to handle, and an extensive clean up is needed. Nearly all of this is found in road-accessible places, where it would require little effort for people to take away the trash in their cars. This points out one of the major problems with too much road access – it is too easy for people to make a mess and leave it behind.

For detailed, area-by-area information on our findings please visit our website <http://grizzly.sierraclub.org/wild%20trails> or contact Phil Knight at pknight@wildrockies.org.

Pictured here in the Buck Ridge area of the Madison Range is a new trail that has been started as the old trail developed deep ruts from excessive use. This proliferation of trails increases groundcover loss. This trail leads to Muddy Creek and McAtee Basin -- severely abused areas where much ORV use and trespass has occurred.



Phil Knight

Jim Posewitz



Retired biologist with Montana Department of Fish Wildlife and Parks, Executive Director of the Orion Hunters Institute, age 66, has lived in Montana since 1953

Recreational interests:
fishing and hunting

" I've had few encounters with ORVs because I generally select areas where they don't go. I go to road-less areas, Wilderness Study Areas or classified Wilderness simply because I prefer to hunt in those areas. Nevertheless, those places are becoming more difficult to come across primarily because public land managers refuse to accept the responsibility to address the issue of ethical hunting and provide ethical hunting environments or circumstances... Allowing people to pursue animals by machinery violates the most basic ethical perception of what hunting is about and has been for at least 100 years."

The Dirty Dozen

Randy Newberg



CPA, age 37, lived in Montana since 1991

Recreational Interests:
hunting, backpacking

"I make trade offs to find non-motorized places. They are usually farther from my house and more difficult to access. When I go to non-motorized places I expect them to be non-motorized.

Hunting should not be impacted by those who do not abide by the same rules. I have definitely noticed more violations of non-motorized regulations in the ten years that I have lived in Montana".



Phil Knight

Multiple treadways and erosion created by frequent motorcycle passage on the Buffalo Horn Trail.

The Dirty Dozen: ORV Damage Zones on the Gallatin

1) Middle Fork of Brackett Creek and Battle Ridge: Trucks and ORVs were seen off trail in this area, which borders an important wildlife corridor. We found shooting ranges, litter, trash piles and abandoned vehicles here.

2) Corbly Creek and Sypes Canyon: User-created motorcycle trails climb steep ridges on fragile soils to the Bridger Ridge from this area.

3) Bear Canyon: A severely damaged dirt road has been recently repaired in this area, but it is being degraded again by ORVs. We found large mud holes and multiple trails up to eighty feet wide, fragile soils and land slides. Increasing year-round motorized use is spreading into adjacent areas. We also found user-created trails that had been cleared of trees and logs.

4) Hyalite Canyon: This is an extremely popular recreation area where, four-wheel ORVs have violated trail closures and we found evidence of trucks driving off-road, damaging wet meadows. We also found a lot of litter and shooting ranges strewn with debris.

5) Garnet Mountain and Pioneer Lakes: Trails in this area were covered with loose rocks and showed severe soil damage and erosion. Five-foot-deep mud holes have resulted in severe trail widening and user conflicts in the area.

6) Porcupine Creek, Buffalo Horn Creek, Ramshorn Lake, Windy Pass: This Wilderness Study Area is part of the largest unprotected roadless area in the GYE, functioning as an important wildlife corridor and critical habitat for grizzly, wolf, elk and many other species. The Gallatin Petrified Forest in this area has been impacted by too much access. We also found motorcycle wheel ruts in wet meadows, user-created trails and poorly maintained outfitter camps. Trails were widened and rutted from motorcycles and ORVs climbing steep grades.

7) Rock Creek: There is a wide network of user-created ORV trails in this Wilderness Study Area that functions as critical grizzly bear and elk habitat. Here the Forest Service has failed to restore the wilderness character of the area. The area's petrified forest has been threatened by too much access and theft.

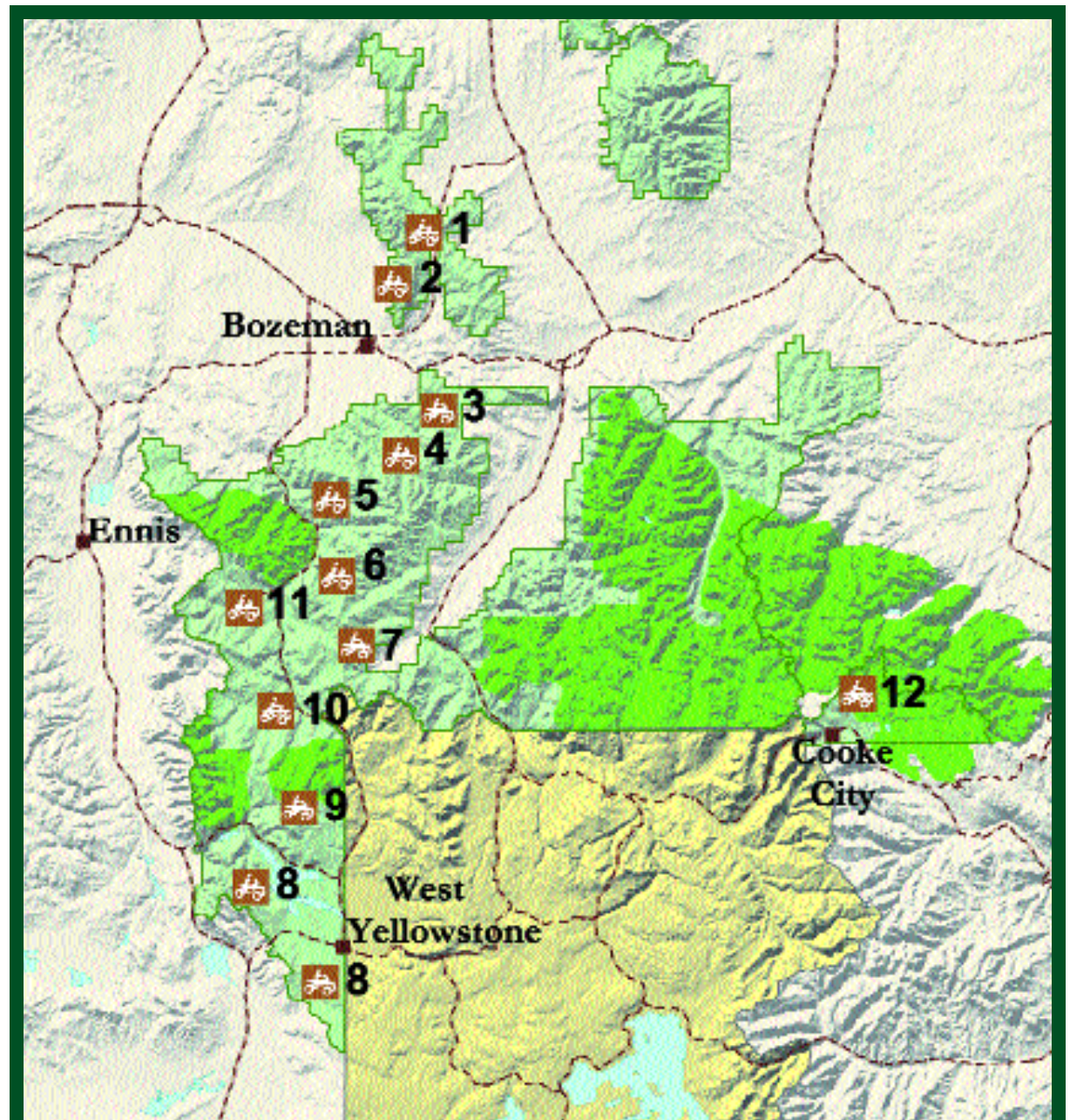
8) Continental Divide Trail and Lionhead area: There is a growing web of user-created trails from heavy year-round motorized use in this area. We saw extensive littering, off trail damage and water quality degradation along the Continental Divide Trail, one of the most heavily motorized trails in the area.

9) Cabin Creek Wildlife Management Area: This large roadless area serves as a buffer for the Lee Metcalf Wilderness and functions as critical habitat for many wildlife species, including lynx, wolverine, grizzly, and wolf. ORVs have traveled across this closed area through illegal trespass on the Big Sky Snowmobile Trail.

10) Taylor Fork: We found the Oil Well Road ORV Route lined with litter and machine parts. On this trail is an ineffective seasonal closure for wildlife protection. The trail leads directly into the Cabin Creek Wildlife Management Area.

11) Buck Ridge, Muddy Creek, McAtee Basin and Cedar Mountain: Heavy year-round motorized use has occurred in this area, which also serves as critical wildlife habitat. Trails were widened as ruts became impassable. We found evidence of motor vehicle trespass in McAtee Basin and there is a rapidly spreading network of illegal user-created trails leading to Lee Metcalf Wilderness boundary.

12) Cooke City Area: There is intense year-round ORV and snowmobile use and uncontrolled off-trail travel in this area, which includes important grizzly bear habitat. There has been motor vehicle trespass in Absaroka-Beartooth Wilderness, which has caused a great deal of riparian zone damage. A sixty five million dollar mine waste cleanup is in process here, while degradation increases from motorized use.



Graphic by Ecology

Impacts

Impacts on Wildlife:

Most wildlife species require places where feeding and reproduction can occur without encountering people. ORVs allow a greater number of people to access remote wild areas, which has a significant impact on species that depend on secluded areas.

The main impacts of ORV use on wildlife are displacement, increased mortality, changes

in behavior, increased stress, reduction of reproductive success, habitat degradation, and increased human encounters.

ORVs destroy essential habitat for a number of wildlife species, including threatened grizzly bears, lynx and wolves and popular game species such as elk, trout, and salmon, by trampling sensitive areas, causing sedimentation and erosion and destroying native vegetation.

Despite decades of scientific data documenting the harmful impacts of motorized activities on wildlife, a severe lack of appropriate ORV regulation and enforcement has put many of these species increasingly at risk.

Grizzly bears, for example, require large expanses of roadless habitat in order to survive. ORVs increase human-bear conflicts by increasing human access to bear habitat, fragmenting already disappearing habitat and chasing bears away from natural food sources. Bears are five times more likely to die in an area with roads or trails, according to a 1991 study by Dave Mattson and R. Knight, entitled the "Effects of Access on Human-Caused Mortality of Yellowstone Grizzly Bears."

As the density of user-created trails increases due to illegal ORV traffic, so does the likelihood that sensitive species like the grizzly will be subdivided into small, isolated populations.

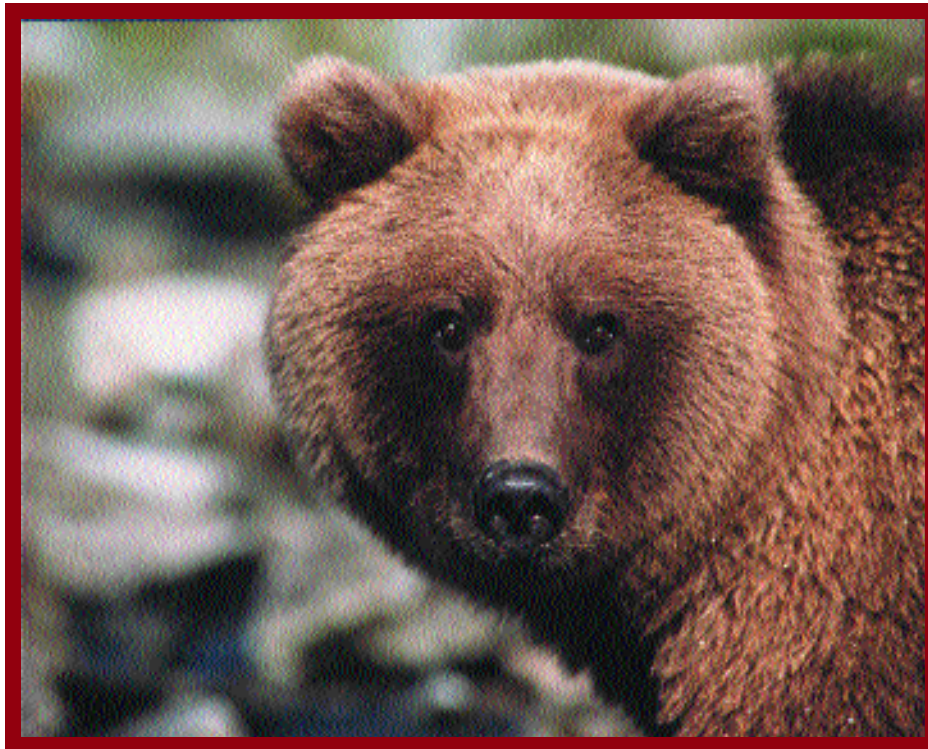
According to a study in the August 2000 issue of Conservation Biology, roads can genetically isolate populations of mammals, especially carnivores. User-created trails can also limit the genetic exchange between local populations. When landscapes become more and more fragmented, animals living in this remaining viable habitat become isolated and inbreeding can lead to extinction.

M.R. James

Founder/Editor in Chief of Bowhunter Magazine, March 2000 editorial

"ORV use is an increasingly emotionally charged issue with most hunters I know. And while some folks obviously love the modern-go-almost anywhere four stroke machines, many more people - myself included - admittedly hate 'em when used by mindless clods who zip around the backcountry, damaging existing trails or creating new roadways across fragile terrain while thumbing their nose at regulatory laws and fellow hunters who still prefer to use legs and lungpower to get to and from remote hunting areas without polluting their surroundings with motorized flatulence, offensive fumes and torn up topography."

Grizzly Bears are five times more likely to die in an area with roads or trails, according to a 1991 study.



courtesy of National Park

Much ORV activity occurs in the fall during hunting season when the bears are in the especially vulnerable hyperphagia stage, a caloric race against the clock when bears consume as much protein and fat as possible to endure the cold Rocky Mountain winter hibernation. Fleeing from the roar of an ORV can waste precious energy that the bears rely on for reproduction and survival.

ORVs fragment and reduce elk habitat, disrupt migration patterns and isolate elk populations. By allowing easy access for hunters, motorized trails can result in a disproportionate loss of bull elk. According to a 1984 study by Jack Lyon, published in the *Journal of Forestry*, motorized trails reduce elk habitat effectiveness by twenty five percent with trail densities of only 1 mile per square mile. With two miles of trail per square mile, elk habitat was reduced by fifty percent and with 6 miles of trail per square mile elk were displaced entirely.

ORVs impact native fish by increasing erosion and sedimentation, which in turn damages riparian habitat. ORVs decrease the reproductive success of aquatic life by altering and interrupting watercourses and blocking the movement of fish into tributaries and upstream spawning areas. A 1975 study by D.L. Leedy found that sedimentation caused by ORV traffic can decrease the number of large game fish by more than 90 percent by destroying the invertebrate food supply for young fish, interfering with the deposition of eggs, decreasing oxygen supply and increasing embryo mortality.

The Endangered Species Act requires that the Forest Service and the Fish and Wildlife Service assess how ORVs in ever-greater numbers and in ever-larger areas affect endangered species. Unfortunately, many impacts have yet to be examined thoroughly by government agencies.

Impacts on Native Vegetation:

ORVs carry large quantities of weed seeds a substantial distance across the landscape. One scientific study found that a vehicle picked up an average of about 1,700 knapweed seeds after backing only 40 feet through an infested patch. Eight percent of those seeds were still attached to the vehicle after ten miles. The random nature of motorized cross-country travel makes invasion patterns not only difficult to predict, but also allows the weeds enough time to become firmly established before they are detected.

The potential for ORVs to spread noxious weeds is well documented in the recently completed Off-Highway Vehicle Environmental Impact Statement and Proposed Plan Amendment. In the EIS, the Bureau of Land Management and U.S. Forest Service found that as a result of the “use of (ORVs) in a concentrated area, such as a trail, vegetation is reduced and the soil exposed, which creates favorable conditions for weeds to become established.” The EIS went on to note that “a review of weed

ORVs fragment and reduce elk habitat.



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Tom Arnold



Former special reconnaissance officer of the U.S. Marines, founder of Ecological Reconnaissance, contributor to this report. age 25, seasonal resident of Montana.

Recreational interests:
climbing, solitude, hiking

“Grizzly bears residing on the Gallatin National Forest are being harassed and their ecosystems are being destroyed by human recreation, especially motorized. Motorized recreation has invaded the wilderness and replaced wild experiences with technology and tourism. These high-powered machines alter natural habitat with excessive noise, pollution, vegetation damage, and littering. The more advanced motorized recreation technology becomes, the more wild places will be breached and disturbed.”

inventory maps demonstrates the strong association of weeds with roads and trails” and that “these roads and trails serve as the invasion corridors for many weeds, which then spread away from those locations. Due to the random nature of motorized wheeled cross-country travel, the spread of weeds to new locations is not easily detected.”

Many scientists believe that if the rapid distribution of noxious weeds continues at its cur-

ORVs can modify the wilderness experience of people that seek quiet and solitude outdoors. Pictured here a backpacker examines a four wheel drive trail, during a Wild Trails Campaign field trip.



Tom Arnold

rent pace, the invader weeds will dominate much of our rangelands and forests within a few decades.

Impacts on Other Forest Users:

The presence of ORVs on public land makes escaping from mechanized society increasingly difficult for hikers, hunters, anglers and backpackers. Motorized use on public land impairs the recreational opportunities of other people by creating air and noise pollution, tearing up trails, and crowding the backcountry.

A peaceful walk in the woods can be easily disrupted by the piercing noise of a nearby ORV. A familiar hiking trail can become a confusing spider web of user created trails that are less safe to travel on. Hours spent secretly tracking a herd of elk can be useless if the elk are alarmed by the sudden intrusion of an ORV. A trusty fishing hole may be polluted by a gas leak or oil spill. A favorite place to watch the sunset may lose its charm if it also becomes a popular spot for motorized recreation.

Although self-powered recreationists, including skiers, climbers, bikers and hikers greatly outnumber motorized recreationists, the number of trails open to motorized use greatly favors motorized users. A recent survey conducted by the Montana Department of Fish Wildlife and Parks found that 90 percent of Montana trail users are on foot, while only two percent ride ORVs.

According to a 1991 Forest Service Survey of adult residents in the vicinity of the Gallatin National Forest, 78 percent of the population disagreed with the statement “more areas of the Gallatin National Forest should be available to motorized recreation such as snowmobiling, motorcycling and other off-road vehicles.” Yet more and more quiet areas are being lost because of a lack of Forest Service management.