

Off-Road Vehicles and the Environment - Big Impact or Not?

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“Suddenly you understand those behemoth station wagons your parents had. But because we [baby boomers] are, as a group, so very much more clever, we now surround ourselves instead in hulking *tanks* - uglier by far than anything we sat in the back of when we were 5. But this time they have much *cooler names*. Names reeking of adventure: Explorer, Expedition, Outback, Range Rover, Land Cruiser, Four Runner, Trooper, Pathfinder... Where do we think we’re going? We’re picking up diapers and dropping off a video. We’re not bagging a cheetah and lugging it across Kenya.” [*Paul Reiser, Babyhood.*]

These coolly named vehicles - sports utility vehicles and four-wheelers - are impacting our lives and our environment far more than our parents’ station wagons ever did. The rising sale of these vehicles may have more to do with our perception of ourselves than with anything else. We are the baby boomers, the ones who are supposed to be out there changing the world. But things haven’t gone quite the way we thought they would, and so now we’re doing whatever we can to maintain our perception that we are unique, individualistic human beings, blazing new trails. And that may mean that, to escape the stressful realities of our lives, we have to ford streams and climb mountains and go, quite literally, out on the edge. We’re rugged, we’re pioneers, we’re going where no man (with a vehicle) has gone before.

In the Boomers’ heyday, a prevalent philosophy was to “tune in, turn on, drop out.” The automobile industry appears to be encouraging this same group - the members of which are the consumers who can best afford the ticket price on these luxury swampmobiles - to do the same. Witness the ad for Honda where a pinstripe-suited fast-tracker with a cell phone to his ear feasts his eyes upon the sports utility vehicle [SUV] on display. The guy’s expression soon turns to one of desire and longing, his clothes morph to jeans and a rugged plaid flannel jacket while his hair grows to his shoulders and a thick beard appears. He tosses his phone into the trash and walks off....assuredly to purchase the vehicle which will transport him back to his younger, carefree, adventurous days.

Outsized vehicles “connote a certain lifestyle,” says Gilbert Hay, a salesman at Bobby Murry Chevrolet Geo in Raleigh, North Carolina. “It lets people know you have an active life, that you’re not just going to and from work.” (News & Observer) This active

lifestyle takes many of us into pristine forests and onto the shores of remote lakes and streams.

Dodge Transport's television ad informs us, while we watch their 4x4 sports vehicle traverse mountainsides and streambeds, that it's more fun to be in Montana, pleading to that desire to escape into the wilderness. Bill Arnold of Interfluve in Bozeman, Montana, says that it's true there is a lot of fun in Montana, but he doesn't think it has anything to do with off road vehicle use. "Bear Creek is absolutely trashed from offroad vehicles (ORVs)," Bill states. "Mining and forestry roads are shut off to 4x4's ; the ORVs then are funneled into other areas where more damage is done."

The Colorado Four Wheelers Home Page states that this club doesn't want its members to "experience vehicle damage or jeopardize safety factors. We want you to feel comfortable doing a run. On the other hand, it can be a good driving experience to learn more difficult challenges." This club has adopted a trail rating system that indicates the most difficult obstacle to be found on the trail; the number of obstacles is only a minor consideration. Jim Barry, Lands Forester in the Gunnison National Forest, Colorado, says that the rating system is a good benefit for club members because it helps drivers know which roads to use since they are the best judgment of their driving skills and experience.

But skills and experience don't necessarily equate best judgment. As with most other aspects of our lives, we are given choices to make when we are in the backcountry. The choice we must make is between our personal satisfaction and the potential of damage to delicate ecosystems.

Damage?

What kind of damage are we talking about? At first glance, it would seem that having some heavy-tired and strongly-shocked car out on a dirt road can't cause a lot of trouble, right? Wrong. The damage can run the gamut from creating tire tracks in ditches and on steep slopes to destroying an entire stream's salmon population for a year.

Leo Holm, Director/Landscape & Turf Section, Minnesota DOT, says that SUVs typically cause two types of problems in his area: deep tire tracks in ditches and on steep slopes cause erosion; and off-road vehicles tend to run over plants, in many instances damaging them so badly that the plants cannot recover and die. "It's almost impossible to maintain remote, steep areas after four-wheelers have been in there," Leo says, because it's difficult for the MN-DOT crews to get equipment into the area without causing more damage.

"Sport utility vehicles are more popular now than ever before," says IECA President Ben Northcutt. "Their impact can be significant, especially on wet and muddy roads." One of Ben's concerns is the future of cryptogamic soils, that dark cruddy stuff which covers much of the terrain in untrammled desert areas. Cryptogamic soil is actually alive,

composed of several species of mosses, lichens, fungi, and algae. It protects the soil from erosion, absorbs moisture, and provides nitrogen and other nutrients for plant growth. The cryptogams form a spongy surface covering which absorbs moisture. In freezing temperatures, the spongy mass uplifts and cracks. The cracks, in turn, hold more moisture. The spongy mass and the cracks provide traps for seeds and stabilize the soil so it will stay in place long enough for seeds to sprout and grow. Plant communities develop. A vegetated area results, which, were it not for the cryptogamic soil crust, might very well be barren. While the buckling action of frost merely loosens the surface, trampling by wheels or feet causes destroyed crusts which can take years to restore and even longer to eradicate the scar. (NPS)

When confronted with an especially steep face of rock with a slim chance of cleanly scaling it, Hank Barlow says he looks for another route rather than risk scarring it. 'Sometimes these choices are blurred by the moment's action. For instance, if a 10-inch-wide band of cryptogamic soil lies between me and the sandstone I want to reach, and there's no other route, do I continue or do I stop and walk? The latter means breaking my rhythm and losing momentum while the former involves scarring less than a square foot of soil, a pittance when measured against the desert's scale. Except the cryptogam may be 30 years old and restoring it may take another 20. Are five decades of damage worth the fraction of a second it takes to ride across? Or, more bluntly, does my personal convenience override the cryptogam's need to survive? For if I ride, chances are good others will follow. Human tracks are like cancer cells; they multiply quickly.' (IMBA)

That tendency to multiply is often the problem with native soil roadways. The forest service crews at the Gunnison National Forest say the primary problem with off-road vehicles and four-wheelers is that, after paying tens of thousands of dollars for their vehicles, many owners don't want to get them dirty while trying to reach scenic areas off the primary roads. When these secondary roads are wet, deep ruts soon are dug and the entire roadway can be a quagmire. In an effort to keep their vehicles clean, the weekend wilderness pioneers begin driving just to the left or right of the existing road. Soon the road most traveled is not the original roadway at all, and significant damage has been done to the soil and plants along the original road.

Robbin Sotir, internationally-known bioengineering practitioner, states that motorcycles and dirt bikes as well as 4WD vehicles were the cause of trail erosion her company repaired at a national battlefield park some years ago. "They were running up and down the slopes; going off the trails was a big problem." Robbin also said that her company worked on a drainage ditch in Newport News. "On either side, there were maintenance roads and that was where these vehicles would go up and down. The thing that seemed to be most exciting for them was to go back and forth across the channel. They created a lot of overland flow from that, creating gullies and other problems. That's what we were repairing. Soil bioengineering is highly susceptible to damage of that nature [vehicular traffic] when it's first put in. We've had more problems from having people come in and damage the area than from weather conditions causing the damage."

Erosion is, of course, one of the primary concerns of all those who must protect unpaved roadways and the fragile areas beyond the roads. Some areas are difficult to protect and even more difficult to repair. While erosion is a major concern, the resulting sediment is often of far greater danger to the environment.

Sediment in Idaho's Panhandle National Forest made news recently when vandals - apparently people accustomed to using the roadbeds in the forest to get to favorite hunting and fishing spots - expressed their displeasure about a project intended to help preserve streams and rivers. They slashed bags of seed intended to be used for replanting the roads. "We have roads, going right up to the bottom of a stream, that negatively affect erosion, fisheries, and flooding downstream," said Ed Lider, a fisheries biologist for the US Forest Service. "We propose to remove the road and restore the channel, and the public comes back and demands we keep it open." There are about 16,000 miles of roads in the Panhandle National Forest, but only half of them are maintained, forests spokesman Dave O'Brien said. Most of the millions of tons of dirt and rocks that wash into the streams and rivers come from the crumbling roads that have developed there since miners started driving wagons up creek bottoms in the 1870's. The sediment fills stream and river channels, grinds up fish, destroys the eggs of many aquatic species and reduces the channels capability to handle large volumes of water. That translates into flooding problems downstream in more populated areas. (AP)

The arroyo toad, an endangered species, is at risk because of off-road vehicles impacting stream habitats in California. In Missouri, state officials collected stream data above and below a campground on the Black River in the Ozarks, documenting the effect of a four-wheeler club's annual weekend event. The results were not good [for the stream and its inhabitants], and the attorney general shut down the encampment.

"Here in western North Carolina sedimentation is the number one threat to water quality," says Phillip Gibson, Natural Resource Program Manager of Western NC Tomorrow. "Tourism is steadily becoming our number one industry. Trout fishing is a highlighted activity which is also being impacted by sedimentation." Wards Automotive Yearbook shows North Carolina and Texas as the top two states in purchases of 4WDs and other off-road vehicles.

The Great Basin in Nevada has an abundance of both mountains and unpaved roads according to Gary Vinyard of the University of Nevada. "Many of these do cross streams of various sizes and damage does occur from [off-road vehicle] crossings. Of particular concern is damage which increases local erosion and subsequent siltation downstream. This can have substantial negative impacts on stream water quality and the capacity of the stream to support trout populations. Our native trout, the Lahontan cutthroat trout, is federally listed as threatened, and I am aware of several cases where stream crossings do adversely affect their habitat. I know of cases where the U. S. Bureau of Land Management has installed culverts and cattle guards in an effort to reduce damage at stream crossings. This work has in some cases been undertaken to simply prevent idiots from getting stuck; in other cases there has been an attempt to improve downstream habitat quality. The 4WD problem is probably less severe than that which results from

livestock grazing in the riparian zone, but the qualitative results of both are quite similar and neither is insignificant.”

The impact of 4x4s on the environment is not just a U. S. problem. Dr. Fausto Sarmiento tells of the damage that 4WDs did to the Cotopaxi National Park highland plateau in central Ecuador, at the lakeshores of Limpiopungo, where a robust colony of Andean lapwings used to live. His research of three years yielded data on all the negative impacts of the 4x4s running freely on the open lands, trampling the land and everything living on it, but his primary concern is the killing of *Vanellus resplendens* eggs and yearlings.

While toads, birds, and soils are certainly at risk, some larger life forms of our environment are equally in danger. A British four-wheelers club stated, “It was nice to see so many club members at the last driving day at Devil’s Pit. There was more contact made by some new members with what has become known as “Ken’s Tree,” so named as it was first hit two years ago by member Ken, who was then known for a while as ‘tree basher.’ This tree sits slightly off the track and has since been bashed by a few more vehicles. It is nice to see a four by four club tradition being held up with such enthusiasm.”

What is the enormity of the threat?

The US Environmental Protection Agency reports that 40 percent of the cars sold today are trucks, which include sports utility vehicles, of which there are more than 40 models on the market. (News & Observer,) From 1980 - 1996, the number of trucks sold in the United States has tripled. In states where “off-roading” is prevalent, truck and sports utility sales are nearly double that of auto sales. (US Dept. of Commerce)

A 22.1% rise in calendar year 1996 sport/utility vehicle (SUV) sales heavily contributed to the growth in the US car and truck market last year. Truck sales set a fourth consecutive sales record, rising to 6,929,000 from 1995’s 6,481,000 deliveries, or 42% of new vehicle sales. However, the majority of sports utility vehicles and 4x4s are used as Paul Riser described: to pick up diapers and transport kids to the soccer game. According to Steve Whisnant, a Ford salesman in North Carolina, “It’s the in-thing, the trend. They’ve just got to have an Explorer, even if they’ll never drive it off the pavement. In fact, I’d say 70 percent of our sales don’t even have four-wheel drive.” That sentiment is repeated at sales dealerships across the nation, so the actual number of four-wheeled vehicles sold every year is considerably lower than the number of trucks and SUVs sold. Still, the number of vehicles heading into the backcountry every weekend is staggering.

Jim Barry says The Gunnison National Forest consists of over a million acres and includes more than 2400 miles of roads that are accessible to off-road vehicles. There are some paved roads and a few gravel roads, but the majority of the road system is ‘native surface’ - dirt. The United States boasts 54 national parks, 155 national forests, and 1792 state parks, each of which has anywhere from 20 to nearly 10,000 miles of roads that can be used by four-wheelers. Says Barry, “We don’t get enough maintenance on these roads, so we close some of the ones that aren’t in good enough shape to use. Our major

goal, since we are stewards of the land, is to care for the land and prevent damage, whether it's used a lot or a little. Maintenance funds are used wherever there is damage."

What is being done to protect and repair?

Ed Lider of the U. S. Forest Service is addressing problem roads a mile at a time. He and Wade Jerome are removing culverts that tend to plug up and wash out roads. They dig out dirt and rock that was packed into narrow valleys to support roads across stream channels. Such fills are mudslides waiting to happen. "We are not going to shut the forest down," Lider said. "We just don't want you to drive up the bottom of the creek anymore." Almost 70 miles of road and 50 stream crossings were removed during Lider's first project in 1992, along the East Fork of Steamboat Creek. Elsewhere, he and Jerome have pulled an estimated 3 million cubic yards of sediment out of stream channels. (AP)

Dr. Sarmiento states that new regulations from the Park authorities about using designated roads and areas other than the lake shore have helped to bring the numbers (of destroyed *Vanellus resplendens*) back down nearly to where they were 13 years ago - prior to the influx of 4x4s.

Kelly Shea, a Botanist at Wrangell-St. Elias National Park in Alaska is currently finishing up a project that looked at experimenting with various materials to actively mitigate impacts from off-road vehicles by hardening the trail. Kelly says, "Natural and geosynthetic materials were tested for their ability to mitigate impacts on all-terrain vehicle trails in mixed shrub-sedge tussock bogs underlain by permafrost in south-central Alaska. Hardening treatments were tested on heavily and moderately impacted trails. Experimental hardening materials included 1) corduroy; 2) wood matrix [frame of 2x4s]; 3) Geoblock 2"; 4) Geoblock 1-1/4"; 5) Safety Deck; and 6) Polynet. Flotation and separation geosynthetics underlaid treatment materials. Pre-installation monitoring began in 1996 and will continue for several years. Initial post-installation monitoring shows all treatments able to withstand ATV traffic while allowing regrowth of vegetation."

Several manufacturers are currently developing product groups that are designed to both prevent and repair damage done by off-road and all-terrain vehicles. Lee Pierce, Synthetic Industries, says that this subject will become even more of an issue in the future. Only a few manufacturers have products that can create and/or remediate roadways, streambanks, and channels.

North American Green's President, Jim Neimeier, says that his company sees more remediation work [due to 4WDs] being required in the dunes of Indiana and Michigan than anywhere else. One landowner's strategy along the lakeshores is to revegetate bald dunes; strongly vegetated sites clear signage tends to keep the four-wheelers and dirt bikes out of the areas.

Who's involved in the protection and repair?

Peer pressure is noted by many as the reason the actual amount of damage is not as great as might be expected. The theory is that when the parks and trails are crowded, people

tend to obey the signs and locked gates. Prevention and repair is being promoted from a variety of resources, from four-wheeler clubs to non-profit organizations to concerned individuals.

“Hunting and fishing clubs, such as Ducks Unlimited, are restoration allies and spend a lot of money restoring habitats; they’re interested in maintaining animal populations for their continued sporting,” says Sven Hoeger of Creative Habitat Corporation.

Leave No Trace, a non-profit organization based in Boulder, CO, states their mission as: “to create a nationally recognized educational system that promotes land stewardship, minimum-impact skills, and wilderness ethics.” Their website says, “Before traveling into the backcountry, we recommend that you check with local officials of the Forest Service, Park Service, Fish and Wildlife Service, Bureau of Land Management or other managing agency for advice and regulations specific to the area. Leaving no trace depends more on attitude and awareness than on rules and regulations. Consider the variables of each place - soil, vegetation, wildlife, moisture level, the amount and type of use the area receives and the overall effect of prior use - then use these observations to determine which practices to apply. Minimize your impact on the land and on other visitors, but be sure to enjoy your visit as well.”

About five years ago the Bishop Resource areas, together with the Inyo National Forest, City of Los Angeles Department of Water and Power, Eastern Sierra Audubon Society Chapter, Sneakers Motorcycle Club and the California Association of Four-Wheel Drive Clubs began working together to manage Semi-Primitive status public lands using language from both the Leave No Trace and Tread Lightly! land ethic programs. Since the new management strategy was implemented, user conflicts and degradation of the resource has been greatly reduced. In fact, local groups volunteer to reclaim over-used sites and help with signing and monitoring of the resource. (LNT)

The *Tread Lightly!* concept originated from a task force created by the US Forest Service in 1985. The task force was created due to concerns with the increase of visitors to public lands for recreational purposes. It was concluded that a long term informative program was needed to increase public awareness, that special care of the land must be exercised by recreationalists if opportunities are to continue. *Tread Lightly!* emphasizes low impact principles, applicable to all forms of recreational activities. In October of 1990, approximately 50 companies and organizations founded the non-profit organization.

Degree of success of these efforts?

Jackson County, North Carolina, has become a popular destination for folks from North Georgia, South Carolina, and Tennessee. High traffic usually means greater wear on the trails, but the Smokey Mountain ORV Club took great pains to protect the environment when they designed the Wayehutta Trail System. Techniques from the Joe Warnex trail building manual were used as a guide to build water bars throughout the system. The precautions club members had taken to preserve the environment included culverts, silt fences, and bridges at every water crossing. Strategically placed dirt mounds were

designed to minimize erosion. Nancy Minard, Secretary and Editor for the club, says, “In 1989 the original members got together and formed the club. With the help of the Highlands Ranger District, we developed the Wayehutta area. The area was known locally as “the Pines,” and it was a local hangout for people who were primarily concerned with partying. There were always unattended fires left to burn after the parties and illegal activities took place. We formed a partnership with the Forest Service to eliminate this type of use and develop a family-oriented ORV recreation area.” Nancy says seven truckloads of trash were removed from what is now the parking area and from the native trout stream which, at that time, had no signs of any fish. The ORV club took steps to protect the stream, and today the trout have returned. “We have done maintenance on 18 miles of established trails and built four new trails, adding eight more miles to the system.” Club members spend many hours talking with the general public, educating them about the responsible use of the forest and their ORVs.

Education may very well be the key to the issue of preventing damage by ORVs. The Indiana DNR is one of few states that publishes a booklet of rules and regulations regarding the use of four-wheelers and other off-road vehicles within state boundaries. Most ORV clubs have a list of do’s and don’ts that appear to be honored by club members. Organizations such as Tread Lightly! and Leave No Trace have made significant impact on awareness of potential environmental damage done by visitors to the wilderness. Promoting these non-profit organizations, and others such as the Sierra Club, will go far toward reducing the impact our vehicles leave behind as we pursue active lifestyles.

Educational efforts aimed toward 4WD, off-road, and sports utility vehicle manufacturers may be in order, too. As Mike Meyer of Minnesota says, “It is exceedingly frustrating to see automotive companies continually advertising 4x4’s use off-road in wilderness areas. Imagine the lack of environmental awareness with a phrase like ‘You don’t Chevy a stream, you Ford it.’ ” Individuals and non-profit organizations can encourage manufacturers to create more environmentally-aware commercials that will not hinder the sales of these vehicles, but which will at the very least encourage responsible use of their products.

Wilderness, wildness, and the seventh generation

Hank Barlow offers these thoughts: ‘Passing softly through the backcountry creates a fascinating tension. On one hand is the environment, generating powerful swells of energy that course through our psyches. There’s something about mountains, deserts, and woods that excites us, and when we’re in their midst we want to run and jump and shout. Yet on the other hand, the awesomeness of it all diminishes our importance in the the Earth’s affairs. Surrounded by wildness, I feel as if I’m in the greatest cathedral ever built, one so immense and powerful that I’m speechless.’”

We have the opportunity and the ability to romp and play in the vast wilderness, gaze in wonder at the rushing stream and the creatures that live within it. We are able to travel in comfort to places others before us could only witness from afar. We also have the responsibility to protect that which cannot protect itself. We must use our common sense

when entering the backcountry, just as in all other aspects of our lives. Our common sense tells us that crossing a clear stream in a 4WD pickup truck cannot be good for the shoreline nor for the turtle that may be crossing when we do. Our good judgment tells us that running our sports utility vehicle up a muddy embankment cannot be good for the land nor for the plantlife beneath the tires. While we may not be bagging a Cheetah, we can still take advantage of today's technical and vehicular advances and visit 'the road less traveled.' Using our best judgment and our common sense, we can both enjoy our environment and protect it so that the very things we love will remain a part of our lives, our childrens' lives, and "for the seventh generation."