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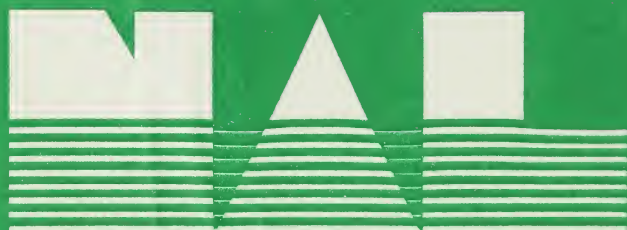


# Off-Road Vehicle Use: A Management Challenge

Edited by  
Richard N. L. Andrews  
and  
Paul F. Nowak

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## CONFERENCE OVERVIEW

*Richard N. L. Andrews*

This conference has four principal purposes. The first is to focus and review and evaluate United States Department of Agriculture (USDA) policies, regulations, programs, and other actions concerning the implementation of the executive orders relative to off-road vehicle management. The second is to provide information and recommendations on how to improve federal implementation of these executive orders. The third is to define the problems and needs and opportunities for technical, educational, and research assistance related to off-road vehicle use on federal and nonfederal lands; and the fourth is to improve communications and cooperation, and to share information among interested groups of off-road vehicle impacts and how they can be minimized and mitigated. Participants in the conference come from diverse backgrounds and experiences and are unusually knowledgeable in many aspects of these problems and issues.

The conference runs for two days and begins with an overview of user and nonuser perspectives of off-road vehicles, followed by a discussion on the general principles of off-road vehicle management. The luncheon speaker is William Johnson, landscape architect/planner and Dean of the School of Natural Resources; following his address, the afternoon agenda is divided into two sessions on off-road vehicle planning and management, first on USDA managed lands, and second on private and state lands. During the evening further informal discussions provide opportunities for more detailed discussion of more specific issues and experiences.

The second day of the conference begins with three concurrent sessions, one on snowmobiles, another on four-wheel-drive vehicles, and a third on two-wheel vehicles. In each, panels of speakers present their views on challenges and solutions to generate further discussion. The three panel presentations are then summarized for a general session, followed by queries to the various USDA policy makers present. The conference concludes with a wrap-up session, an outlook for the future.

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Richard N. L. Andrews is Associate Professor of Natural Resources and Urban and Regional Planning, and Chairman of the Resource Policy and Management Program of the School of Natural Resources of The University of Michigan.

## PERSPECTIVES ON OFF-ROAD VEHICLES

### USDA Overview

*M. Rupert Cutler*

We instigated this conference with four major purposes in mind. First, to evaluate how well the Department of Agriculture is implementing executive orders 11644 and 11989 which direct federal actions in managing off-road vehicles. There have been indications that our implementation might be improved. Second, to tap your expertise for some suggestions on how that implementation might be improved, not only by the Department of Agriculture but by other federal agencies as well. You have a variety of backgrounds and capabilities to help us. Third, we want to find out what the problems are in ORV use and management and discover needs and opportunities for USDA technical, financial, and research assistance to solve them. And fourth, this conference offers us all an opportunity to share the good ideas that have emerged from the various off-road vehicle management programs that are represented here. We have an opportunity to improve our communications, exchange information, and establish a basis for future cooperation.

Let me divulge some of my expectations for this conference. These are the expectations of a backpacking Michigander, educated and experienced in natural resource management and now vested with a policy-making role in a federal department with significant responsibilities for managing off-road vehicle use. Those Department of Agriculture responsibilities are not confined to the 187 million publicly owned acres in the National Forest system. We also are deeply involved in encouraging proper use of some 1.5 billion acres of nonfederal land, and those private lands are the site of some significant ORV problems and opportunities too.

Concerning off-road vehicles on public lands, and the role of government in providing recreational opportunities, we must ask if the government is thereby discouraging private enterprise from assuming this role. Are the government's off-road vehicle management policies and plans adequate and effective? How well is the government implementing the policies on the forests and range lands of the nation?

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M. Rupert Cutler is Assistant Secretary of Agriculture for Natural Resources and Environment.

Let us consider the unique ORV management challenges on private lands, where the USDA role, though indirect, can be influential. Could privately owned ORV parks be profitable? Could the USDA help? Should it? How can federal, state, and local governments and universities work with the land owners and off-road vehicle users to manage ORV use on private lands? We also should take into consideration the relationship between off-road vehicle programs on public and private lands. Does closing public lands prompt trespass on private lands? Should public lands bear the brunt of off-road vehicle impacts? I would like to consider the entire scope of USDA activities in off-road vehicle management, especially the current and potential roles of the Forest Service and the Soil Conservation Service, and also the Cooperative Extension System and other USDA related programs.

The USDA general objective on all lands is to seek optimum use, including recreational use--recreational vehicle use where appropriate--with a bottom line of good land stewardship. Proper off-road vehicle use often may be compatible with that objective. A position of the Society of American Foresters, for example, states that "where properly used, off-road vehicles provide recreation as well as needed transportation for management and other purposes with little damage to the forest ecosystem or conflict with other activities." There are many positive examples of where that is being done. But the SAF position also says that "when improperly used, off-road vehicles can harm ecosystems by causing erosion and compaction of soil, harming plant communities, degrading wildlife habitat, and disturbing and injuring wildlife." ORV use and especially their misuse may conflict with other forest uses. The fact is that the use of off-road vehicles can have serious adverse environmental consequences, particularly when that use is improper or occurs on lands which are not suitable for their use.

I have not heard anyone defend improper ORV use. Where it occurs it is an albatross around the neck on ORV users and nonusers alike. So let us discuss how we can encourage proper ORV use on suitable sites. Can USDA's Soil Conservation Service with its soil survey information help identify suitable areas? What should be the criteria for determining suitability? Should we ban motorized recreation everywhere except where expressly permitted? Or should we permit it everywhere except where it is expressly banned? What combination of information and enforcement is most effective? How can we strengthen the land owners hand in controlling ORV use on private lands? On both private and public lands proper off-road vehicle use is essential if the welcome mat is to be kept out for motorized recreation.

On public lands President Carter has directed federal agency heads to immediately close areas or trails to specific types of



off-road vehicle use where they will cause or are causing considerable adverse effects. That message is quite clear. On lands that it administers directly, the Department of Agriculture will not hesitate to modify or to restrict uses where necessary to protect the land, and neither will it hesitate to restrict off-road vehicles where there is no fair balance of other land uses.

Consider some of the conflicts between off-road vehicles and other uses. Can manufacturers, for example, help reduce the conflicts by further moderating the decible level of the engines? What sort of physical separation exists between areas open to ORV use and those for conflicting uses? What are the rights of other resource users, of backpackers and birdwatchers, hunters, campers and picknickers? And how can the USDA manage the land to protect these rights? Conflicts between ORV users and nonusers will continue. The popularity of motorized recreation is continuing to grow, but demands for other uses are growing as well, all on a finite land base. So we will need to achieve a closer blending of land uses.

Let us explore some of the opportunities to amicably and voluntarily resolve conflicts between ORV users and other outdoor recreationists. Both groups tend to be young, moderately affluent, married, and predominantly male. Their primary difference is the conflict between their recreational preferences. It is my experience that it is far better for them to resolve that conflict between themselves than to let the land managers decide for them. The negotiated solution without government intervention is generally more satisfactory to all concerned.

There are other questions that must be considered. What type of off-road vehicle management policy is most effective? What degree of flexibility is needed to ensure that decisions are consistent among field units, yet reflect the conditions on the ground? What are the problems involved in carrying out an ORV management policy considering the various interests involved and the statutory mandate for land stewardship? I believe that ORV policy implementation should be decentralized, that is, it has to use public participation and public education as its basic tools, rather than heavy-duty dictation from Washington. Let us examine the USDA's ORV management policy in that context and try to determine how well it is being implemented in the field offices of the Forest Service and the Soil Conservation Service.

The Department of Agriculture certainly is not alone in its responsibility for encouraging proper off-road vehicle use. States, counties, and townships have important management and law enforcement roles. The schools and the off-road vehicle industry have an important educational responsibility. And land owners themselves are the critical ingredient in managing off-road vehicle use on private lands. This is a

shared responsibility. There are many ways in which we can co-operate. Could Cooperative Extension specialists give land-owners advice and technical information on off-road vehicle management? Can the motorcycle and four-wheel-drive industries help through their product advertising and informational brochures? Can the schools offer driver education for off-road vehicle owners, or a class that includes a discussion of outdoor ethics, trespass and responsible behavior on public and private lands? Do we need to strengthen and better define federal, state, and local government roles and responsibilities for adopting and enforcing laws and regulations governing ORV use? These are possible ways of cooperating now. We also should consider the needs for better cooperation in the future.

On the National Forests, and elsewhere, adequate provision for off-road vehicles requires coordinated planning with other resource uses. Several questions about the positive ORV programs and planning need to be addressed. How good is the coordination between public and private lands and land managers? How well is provision for off-road vehicles built in to land management plans so that resource damage and conflict with other users are minimized? What types of information, maps, and signs are most effective in informing the public about off-road vehicle opportunities and restrictions? And finally, the bottom line is how do we fund the off-road vehicle programs? Michigan's snowmobile registration fees, for example, are rebated to local governments for improving snowmobile facilities. Is this working? I understand it is and very well. Can it be extended to also fund facilities for motorcycles and four-wheel-drive vehicles? Where are we going to get the money to provide and rehabilitate off-road vehicle facilities? These are the practical matters that we need to talk about.

I have raised many questions for which I have no answers. I hope the participants in this conference will help us find the answer to some of these questions. We need your ideas. It is time to reassess our off-road vehicle programs in the Department of Agriculture and in other agencies. We are asking you to share your experiences, expertise, and thoughts to help the department do that. The issues involving off-road vehicle use are not clear-cut right or wrong. Proper use on one site can be improper for others. Snowmobiles have different environmental impacts than motorcycles or dune buggies. We recognize there are no simple answers to the questions I have raised and to the questions that you will ask as the conference proceeds.

So we have our work cut out for us over the next two days, but it will not be fruitless. This is a learning session for the Department of Agriculture with the conference participants doing most of the talking. The USDA will use the information and ideas presented at this conference to take a long, hard look at the implementation of the USDA off-road vehicle policies.

Questions and Answers

Tom Dustin: Has the Forest Service, USDA, established a firm policy to the effect that off-road vehicle use is a legitimate use of the National Forests?

Rupert Cutler: Yes.

Dustin: They aren't in Indiana.

Cutler: The Hoosier National Forest off-road vehicle plan provides for ORV use.

Dustin: No, I'm sorry it has been closed.

Cutler: Would you explain that?

Dustin: In 1974 the Indiana Lake Shore Development filed a suit in federal court against the particular plan the supervisor had advanced. The court issued a temporary restraining order, and through the appeal process and setting of the file date, the government withdrew the plan. There are no ORV uses at all in the Hoosier National Forest.

Cutler: Let me refer that question to the Regional Forester Steve Yurich.

Yurich: We are in a process of discussions with the ORV planners in the Hoosier National Forest.

Cutler: I'm not sure that clarified matters. The National Forest Management Act of 1976 provides a deadline for the Forest Service to provide new comprehensive land and resource management plans on all 154 national forests and grasslands by 1985, and obviously, one component of every national forest and grassland management plan will be an off-road vehicle management plan as a subplan within that total forest plan. This is being done by an interdisciplinary team which will include recreation specialists, people familiar with ORV management issues and opportunities. I assume what has happened on the Hoosier National Forest is that, given this litigation, the region decided to put that subplan "on ice" until we complete the forest plan. And that will be done within a couple of years.

Question: Will there be some baseline for supervisors to follow so that we do not wind up with a lot of inconsistencies from forest to forest?

Cutler: We have some consistency laid out for us by the President's executive orders and by the Forest Service manual and national policy in that regard. One of the questions we would like you to address is whether areas are closed unless



posted open or open unless posted closed, and need we be consistent on that or should we retain our current flexibility? I do not know what the answer is. I opt for flexibility based on the local situation and what surfaces in each of the National Forest management plans and is discussed in the context of public involvement before a plan is adopted. In addition to the President's executive orders and the Forest Service manual, the other criteria is the ecological or physical bottom line. We have land stewardship responsibility and we need a process where we identify areas suitable or unsuitable for one use or another, whether it is timber management or off-road vehicles. That kind of inventory has to be conducted. And areas that for one reason or another are unsuitable for off-road vehicle use ought to be identified in the land management plan.

Question: In a national perspective, the USDA is involved in research and land grant policy at universities and other places. You spoke of the need for cooperation among universities, state, federal agencies, and others. How much of the present USDA budget is used to research off-road vehicle impacts?

Cutler: You are alluding principally I believe to the recreation research budget of the Forest Service, although there are other relevant kinds of research underway in our Science and Education Administration's soil and water research program. There is research done at land grant and other universities with Hatch and McIntire-Stennis formula funds passed through the Department of Agriculture to the universities. The Forest Service has the nation's leading recreation research program. That is not to say it is adequate. That is not to say it will fair very well in the years ahead as we deal with efforts to balance the budget. But I can tell you that increases in recreation research are high on the priority list of the Deputy Chief for Research in the Forest Service and that these kinds of issues will be continuing to receive attention through the Forest Service research programs, both conducted by Forest Service employees and with special grants to universities and other contractors to the Forest Service.

I hope that we will be able to provide funds for the Renewable Resources Extension Act that was authorized by the Congress two years ago. The Act has the potential of providing earmarked funds from the Congress through USDA to our Extension cooperators at the universities so more informal education programs on off-road vehicle use, as well as on other natural resources programs, can be conducted. But that funding probably will be delayed. The USDA is giving recreation research a very high priority in Forest Service research budgeting.

Question: Who is going to pay for rehabilitation of USDA land, particularly national forests, that you deem severely damaged? Will that be the ORV users or the Forest Service?

Cutler: That's another question we have on our agenda for this conference. I know of no mechanism now whereby the USDA can be reimbursed by the ORV user to carry out restoration of the natural environment caused by excessive or improper ORV use. Dr. Thomas Nelson, Deputy Chief of the Forest Service for the National Forest System, may want to add to that answer.

Nelson: I think that the money would have to come out of the general funds for recreation. I do think that there is an opportunity for working with the users on a cooperative basis for rehabilitation work as we have done in trail development.

Roy Feuchter (Director, Washington Forest Service recreation staff): In California, for example, there is a registration process for off-road vehicles. The Forest Service has applied to the State for use of some of their funds. They've indicated a positive response. So I think there are ways of obtaining state government funds, as well as good cooperation from some of the user groups.

## ORVs—THE NONUSER PERSPECTIVE

*Russell Shay*

From a historical perspective it can be seen that off-road recreation vehicles (ORVs) are but one of a series of unsettling phenomena typical of the past half-century.

Like television, deficit spending, and commercial jet aircraft, ORVs became so successful so fast that before we figured out what they could or would do to our society they had become part and parcel of it. The effects of these phenomena began to shape our lives before we had a chance to become fully aware of them.

In 20 years ORVs have grown from obscurity to mass popularity, from virtually no vehicles to millions of vehicles, from virtually no noticeable environmental impact to unavoidably noticeable and serious impacts on open space of all sorts--from vacant lots in suburbia to the vast expanses of public lands in the western states.

The impact of ORVs on the world of recreation is closely analogous to the impact the automobile has had on transportation. Each opened up new, previously unthinkable worlds of possibilities, many of which have turned out to have serious negative implications.

Thanks to the auto, thousands of acres of farmland, forest, range, and even wetlands have been lost to suburban tract housing made possible by automobile commuting. Thanks to ORVs, millions of acres of recreational lands are now subject to a use that can, at its worst, be just as destructive of resources as building housing on good farmland.

Recreational ORVs, by their nature, represent potentially destructive access to just about everywhere. The intensity and extent of access and its impact has no natural limits—not even those of economics. There are many places where it would not be profitable to build a housing development or construct a road. But there is almost nowhere in the United States so expensive to get to in an ORV that no ORV will ever go there.

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Russell Shay is the California-Nevada Field Representative of the Sierra Club.

Please consider this perspective on ORVs—if an Environmental Impact Statement had been written in 1960 on a potential sales boom of ORVs, and had the authors been able to foresee the negative impacts that have actually come to pass, the general public would have supported an alternative prohibiting the sale of ORVs.

Remember that before the sales boom, ORVs did not have the supporting user constituency they have now. Remember that polls have repeatedly shown that the public supports environmental protection, even when they have to pay for it. And remember that before millions of people had ORVs, no one could have said that ORVs are necessary for our recreational needs--they were but one more possibility.

People who do not use ORVs—the vast majority of Americans—feel that ORVs are a problem. This, too, had shown up repeatedly in polls of the public. And the public is right--ORVs are causing problems, serious problems. Not all ORV uses or users cause problems. But problems do exist and many are easy to see.

ORVs are here, and people are not asking that they be recalled. Instead, people, ORV users and nonusers alike, are looking to public agencies such as the Forest Service to manage ORV use to protect resources and prevent problems.

There is vast public support for action to control ORV use to protect resource values. A recent national poll showed 86 percent of the general public wanted restrictions imposed on ORVs to protect wildlife. A more important finding of the same poll was that 80 percent of ORV users questioned felt the same way, that is, that their recreation should be restricted if it could harm wildlife.

These sentiments for resource protection, and of concern about the impacts of ORVs, were strong enough to be recognized and responded to by two presidents in the form of executive orders 11644 and 11989 which require federal agencies to establish controls on ORV use.

So the public wants better control of ORV use. Most users support better control. Two presidents, including the incumbent, want better control. And they are all looking to the agencies, the Forest Service and the Bureau of Land Management, to provide it. The agencies have not met the demand. They have not stopped ORV use from continuing to cause serious resource problems.

Why not? To a large degree, the agencies have not succeeded because they were slow to respond to the need for ORV management, so slow that by the time they become to do something ORV use had so much inertia it was beyond easy management



measures. In fact, ORV users have been doing the decision making, that is, deciding where and when to go, and in what numbers. The agencies, the supposed managers, have just been trying to keep up.

Is ORV use manageable? I think we all believe it is or we would not be attending this conference. But what is required? I look to the snowmobile community for an example, because I see that they have made the most progress toward becoming a managed sport and toward becoming publicly accepted. They cut the noise levels of their machines drastically. They organized their members and set up to reinforce responsible use. They have controlled their use by promoting the use of planned trials.

I think a lot of the reason they have progressed this far is because they started out in a part of the country where effective controls already existed. They found they had to do these things to survive.

The pre-existing control I have referred to was the private ownership of much of the land they wanted to use. They had to deal with the owners of the land. They not only had to promise those landowners that they would do nothing the owner would disapprove of, but they also had to ensure that all the snowmobilers who did use that land kept that pledge.

The lesson I read into this is that the agencies will get nowhere in ORV management until they impose those same sorts of conditions on all ORV users of public lands, that is, that users are held responsible for their actions, and that if they leave the land worse for its owners (the majority of whom are us nonusers), they cannot come back.

ORV users are not going to like losing what they see as freedom. But we nonusers do not see it as freedom. We see it as lack of responsibility. Recreational ORVs are adult toys. They are fun. But that does not make their users less responsible for the consequences.

I am talking about a large increase in control. Through a variety of means. Licensing, use permits, vigorous enforcement, having a presumption that areas are closed unless posted open, active rather than reactive planning.

That sounds tough. It is. But ORVs are tough to control. That's how they're made.

NATURE AESTHETICS, THE PUBLIC INTEREST,  
AND ORV USERS' PERSPECTIVES

*A. E. Keir Nash*

Six Questions and Four Contentions about the  
Public Interests and ORV Recreation  
on Public Lands

The ecologically simplest, most efficient way of meeting the management challenge posed by ORV recreation and executive orders 11644 and 11989 would be to close federal lands to ORVs. This need not be done all at once. Rather, land managers could proceed piecemeal but with clear intent aforethought. One by one they could measure tire-tracks on such lands and declare that the tracks seriously and adversely affect some aspects of the micro-ecology.

There is much to be said for this policy in terms of simplicity, efficiency, and minimizing ORV's annoyance to other recreationists and to those concerned about our planet's ecological future.

The policy has only three possible difficulties. One, it reduces the management challenge to an unsporting nonchallenge. Two, relative to the larger, "off-forest" interests of society, it may be an unwise policy. Three, it may be an unfair policy solution. It may be unwise or unfair because it fails to address six key questions that should be addressed before any policy implementation is ventured. These questions are:

(1) Who are the ORV users? (2) Why do they, a particular subset of the general public, use "wheels in nature" rather than like the rest of the public either use "feet" or not go at all on public lands? (3) What, if anything, do they derive from mechanized recreation on public lands that they could not derive without machines or by taking the bothersome machines elsewhere? (4) What are their attitudes to the claims and rights of other public lands users and to policies aimed at regulating public lands use? Are they, in other words, a manageable group? (5) What are the attitudes of the rest of the general public toward ORV recreation? (6) What are the net costs and benefits of ORV recreation to American society?

---

A. E. Keir Nash is Professor of Political Science at the University of California-Santa Barbara.



Answers to these questions are important prerequisites of coherent public lands recreational use policy. As a glance at any bibliography of research on ORV recreation will show, however, the answers to these questions are much less well developed than are the answers to some other important questions, especially questions concerning the adverse environmental effects of ORV recreation.<sup>1</sup>

Before venturing any answers, let me advance four propositions about ORV recreation and the public interest.

Contention 1. If the public interest concerning off-road vehicle recreation's place on public lands is primarily to be determined by the evidence of its environmental effects to date, then the range of management aims should be small—from confining ORV recreation drastically to stopping it altogether. Its net ecological effects are plainly adverse to public lands. The only real room for ecological argument lies between, on the one hand, the view that these adverse effects are in some long-run sense genuinely damaging to the human future, and on the other hand, the view that these effects are somewhat less portentous but nonetheless deleterious.

Contention 2. If the public interest respecting ORV recreation is solely or primarily to be determined by the immediate preferences and most obvious self-interests of other users of public lands—be they logging companies and cattle-grazers, or backpackers and ornithologists—the same verdict applies.<sup>2</sup> No matter how much management may seek to "educate" bikers about the improprieties of scaring wild beasts, some will scare wild beasts.<sup>3</sup> Even if management gets all ORVers to comply with, hypothetically, an 80 dBA muffler provision, some backpackers will find the mere presence of machine in nature, not to mention tracks up a hillside, an aesthetic and "recreation-experience" affront.<sup>4</sup>

Contention 3. Although the statement that "ORV recreation is a legitimate use of public lands" is a common one, it often strikes me as an analytic cop-out or as a foil for something else. To say that ORV use is "legitimate" tells us extraordinarily little, beyond assuring us in a de minimus fashion that such use is not always an outright felony. Uttered by an ardent ORVer, the phrase is frequently a prelude to explaining why he should be allowed to travel whither he wills. Uttered by a keen member of the Sierra Club, the phrase can be the prelude either to a long list of exceptions as to where such use is not legitimate or to a law suit against a particular national forest's ORV plan. Uttered by a public lands manager, the phrase often masks unhappiness that the problem is around at all. Uttered by a foreign manufacturer of off-road vehicles, the phrase is frequently a prelude to further unbalancing the United States balance-of-trade or to running an advertisement

implying that masculinity or familial concord will be enhanced by plunking down a few kilobucks for a wilderness-conquering machine.

Contention 4. If the public interest concerning ORV recreation on the nation's lands does not lie in drastic curtailment or in total prohibition, then the propulsion for a different policy conclusion is going to have to come from a locale different from the warnings of ecologists, the preferences of competing users, or nostrums about "legitimacy." It would have to come from some combination of the following four factors: (a) the political "clout" of ORV recreationists, organizations, clubs, dealers, and manufacturers; (b) demonstration by interested lands managers that ORV recreation can be "environmentally sound"; (c) ordered assertions of rights and principles of fairness that dictate an alternate policy conclusion; (d) social-psychological evidence that the ecological and "other-user" costs of ORV recreation in situ are more than off-set by benefits ex situ to users, to nonusers, and to the public at large.

I am not convinced that the "political clout" will be sufficient to evoke an alternate policy conclusion. My sense of the politics of ORV recreation is that the "grass-roots" base of ORV support is, for a complex mix of reasons, quite weak, and that (with the partial exception of the snowmobiling sector—not treated in this essay) elite, especially manufacturer, leadership is politically anemic. ORV recreation conspicuously lacks an adequate counter-ideology to off-set the environmental ideology of its opponents. My impression is that the overwhelming majority of land managers are less than unequivocally sympathetic to the "cause" of ORV recreation and hence unlikely to seek long and hard for the necessary evidence.<sup>5</sup> The minority of sympathetic lands managers often oscillate from attempting too little or attempting the impossible—from quiescence to proving that ORVing is no more damaging than the next public lands recreation bedfellow. Consequently, I am led to think that the future of ORV recreation must depend on ordered rights and fairness assertions and on evidence of social and psychological benefits balanced against environmental costs.

I do not propose in this essay to develop answers to all of the questions I have posed or to buttress my four contentions at equal length. I put them rather to indicate the scope of a completely adequate solution to the issue of ORV recreation on public lands.

Instead, I propose a focus principally on three aspects of the problem: (a) who the ORV users are in relation to the rest of the general public; (b) ORV users' motivations and goals in the recreational use of nature; and (c) policy-relevant differences and similarities in the recreation attitudes of ORV-using and "nonmechanized" outdoor recreationists.

I so focus because there seems to be so considerable in-clarity in the minds of non-ORVers concerning these issues, especially concerning the aesthetics of machine in nature, and as to the reasons why ORV recreationists seem to differ from many other outdoor recreationists in not perceiving an intense conflict between machine and "nature-experience." In discussing these issues I shall draw generally upon the existing ORV-recreation research literature, but particularly on two surveys I directed recently. One is a fairly large survey in Washington State consisting of approximately 1,500 motorcyclists and four-wheelers and just over 500 members of the Washington general public. The other is a smaller survey in the State of California consisting of some 400 individuals—motorcyclists, backpackers, and a small elite subsample of natural scientists engaged in research concerning ORV effects upon public lands. The data concerning California motorcyclists were gathered in 1975 and those concerning backpackers and scientists in 1976.<sup>6</sup>

#### Who the ORV Users Are

Who are the off-road vehicle users—other than a subset of outdoor recreationists clustered high on the "decible-shaped" curve of "Outdoor Recreationists' Customary Noise-Making on Public Lands"? The question is important. Their recreational habits cause some other users and lands managers to characterize those habits as creating an "impairment-suppression-displacement" syndrom,<sup>7</sup> a recurrent pattern wherein the arrival of ORVers at a recreational site first impairs the recreation-experience of other recreationists, next suppresses to a critical extent the benefits derived by these other recreationists, and finally displaces them from the site. Other experts observers of the activity's effects on public lands are yet more concerned. For example, one of the nation's leading herpetologists characterized them as a "menace" to the California desert and a serious threat to fragile ecologies worldwide.<sup>8</sup> Another observer, angered by the sight of a nine-year-old kid gunning a Honda 70 across a sagebrush flat and by his father's refusal when accosted by the observer to agree that walking would be a better pastime than riding for the boy, found the spectacle sufficiently distressing not only to evoke momentary sadistic but even to display them in the *Audubon Magazine*: "Frustrated, I stood thinking of the various sorts of purgatory to which certain people should be subjected: 100-mile motorcycle rides with a prickly-pear cactus fastened to the seat; filling in eroded trail bike ruts with a teaspoon."<sup>9</sup>

It is fair to say that the overwhelming preponderance of scholarly and management opinion on the subject is adverse to ORV recreation on public lands. Yet it is also fair to say that surprisingly little is known about who this putatively "menacing species" of outdoor recreationist is, about the ORV user's distinctive social, economic, and psychological characteristics



(if any), and about his beliefs and attitudes. For a threatening beast, his salient characteristics are remarkably cloudy in the minds of his critics or victims. In part this is because of his relative newness on the scene and because most recreation sociologists (unlike ecologists) have not been much interested in him.<sup>10</sup> But it is also in part because, sometimes, those who have done the asking have asked the wrong questions.

The consequence has been a confusion of three images about who the ORVer is. Is he (1) indistinguishable from the black-leather-jacket Marlon Brando street-rider, as Hollywood and many of my academic colleagues would seemingly have it?<sup>11</sup> Or is he (2) the essence of the red-blooded middle-American, as ORV clubs, industry spokesmen and apologists would have it, as the Council on Environmental Quality and the Sierra Club would not have it, and as the Nixon Administration feared it was?<sup>12</sup> Or is he (3) no less elite, even a tad richer, than the typical backpacker, as the Council on Environmental Quality, the Sierra Club, and the authors of the Idaho Outdoor Recreation study on whom they draw would have it?<sup>13</sup>

Trying to diminish the confusion of these three images is desirable from at least three angles: from the standpoint of the user (who often claims he is unfairly stereotyped);<sup>14</sup> from the standpoint of the ORV opponent (who ought to understand his "enemy" and particularly to ascertain whether the ORVer can legitimately make mileage out of the claim that he is an "average American" oppressed by the "elitist environmentalists");<sup>15</sup> and from the standpoint of the policy maker (who needs to understand the "clientele" in order to minimize damage and maximize "recreation-experience").<sup>16</sup>

Let us try to lessen the confusion of these images by considering first the ORV user's characteristics that the extant literature tells us clearly differentiate him from the rest of the public, second the characteristics that ORV users plainly share in roughly equal proportion with the rest of the public, and finally the characteristics respecting which there is as yet uncertainty.

Clearly differentiating, distinctive, characteristics. There are four demographic characteristics that clearly differentiate ORV recreationists from a random cross section of the American public. These are: (1) sex; (2) ethnic background; (3) location of residence along both regional and rural/urban dimensions; and (4) age. ORV users, especially bikers, are disproportionately younger males. As table 1 shows, studies done in many places across the nation support this conclusion, though to be sure (especially among members of organized motorcycle and four-wheel clubs), the rest of the family often is drawn into off-road recreation as well. The ethnic background is disproportionately white—even Northwest European.

Table 1: Age and Sex Distributions (Representative Studies).

Study	Location	ORV-Type	Mean Age	Median Age	% Male
Bury & Fillmore (1974)	Kentucky & Tennessee	2-wheel		24	
Plumb (1972)	Virginia	4-wheel		28	
Gogebic CC (1974)	Upper Gt. Lakes	snowmobile	26		
Gallup for MIC (1974)	National	2-wheel		24	
Nash (1976)	California	2-wheel		23	86
Nash (1979)	Washington interviews	2-wheel	28	27	87
		4-wheel	32	33	85
		mailed questionnaires	34 38*	34 36*	96 90*

\*The mailed questionnaire technique tends to yield results skewed relative to actual use, because of nonrespondent characteristics peaking in younger adult years (e.g., frequent rates of moving). Also, owners are on the average older than users largely because of title registrations in the parent's name. The same point applies to sex distributions. ORV club-member samples yield higher ages.

Picking up any copy of Cycle News, the bikers' racing weekly, and looking at the photos and names of the local motocrossers will confirm what is more rigorously sustained by observation in the field. There are probably three reasons for this: (1) the relatively high start-up costs for getting into ORV recreation which puts the recreation beyond the reach of a greater fraction of minority groups; (2) a relationship between occupation and attraction to the particular recreation (which we will explore later); and (3) a relationship between rural or small town residence and ORV opportunities, on the one hand, and the geographic dispersion of ethnic groups, on the other. The more rural a state or community the more ORVers there are relative to total population. Thus, according to MIC calculations the Rocky Mountain States of Idaho, Wyoming, Utah, and Montana range from about 6-8 motorcycles per 100 population<sup>17</sup> whereas in Pennsylvania, New Jersey, New York, and Connecticut (at roughly equivalent latitudes and temperatures) the range is from 1 1/2 to 3 motorcycles per 100 population.<sup>18</sup>

Nondifferentiating characteristics. As table 2 suggests, there are six characteristics with respect to which ORVers appear closely to resemble a cross section of the American public. These are: (1) average education; (2) average income; (3) percent employed; (4) marital status; (5) political party affiliation; and (6) political liberalism and conservatism.<sup>19</sup> Especially when one makes allowances for the circumstance that off-road motorcyclists contain larger proportions of teenagers and fewer proportions of the middle-aged and other citizenry than the public at large, these similarities all go to sustain what I have earlier described as the second image—that ORVers are "average Americans."

To say this is to suggest a correlative of the second question that I posed at the outset of this essay. If the ORVers are in many respects like the rest of the public, why don't they behave like the rest of the public in their use of public lands? Why do they destroy the lands so, or at least more than the average recreational user?

There are several possible answers to this question beyond the response most congenial to many ORVers, i.e., that they do not destroy public lands more than the average user. As I have indicated earlier, I do not believe that answer. Let me put forth some other answers.

The first answer is a double one. First, it might be said that their behavior (aside from its noise-and-dust quotient) is not really terribly different from that of the average American to our environment and to our natural resources as a whole considering, that is, both recreational and nonrecreational behavior. Second, it might be said that when the comparison is made between ORVers and other recreationists on public lands,



Table 2: General Public vs. ORVers: Similarities (Washington)

<u>EDUCATION</u>					
	GP	M2Wh	M4Wh	SF2Wh	SF4Wh*
Average education, mean =	13.3	12.8	13.0	12.5	12.7
<u>INCOME</u>					
	<u>Mailed Questionnaire Samples</u>			<u>Interviewees</u>	
	General Public	Bikers	4-wheelers	Original 2-Wh sample	Revised Schedule 2-Wh 4-Wh
Mean	\$19588	\$18953	\$17512	\$20505	\$18497 \$21022
<u>MARITAL STATUS (%)</u>					
	GP	M2Wh	M4Wh	SF2Wh	SF4Wh
Not married	10.4	22.1	11.0	40.7	14.3
Now married	76.9	67.1	79.7	50.6	77.1
Divorced	8.5	7.4	8.0	7.8	7.3
Seperated	1.7	1.3	1.3	0.6	1.3
Widowed	2.5	2.0	0.0	0.3	0.0
<u>POLITICAL PARTY AFFILIATION (%)</u>					
	GP	M2Wh	M4Wh	SF2Wh	SF4Wh
Democratic	35.5	34.6	28.5	31.7	34.7
Republican	20.0	9.8	18.2	13.2	11.1
Independent	44.5	54.9	53.3	55.2	54.2
<u>GENERAL POLITICAL VIEWS (%)</u>					
	GP	M2Wh	M4Wh	SF2Wh	SF4Wh
Liberal	15.3	15.4	13.8	23.0	20.9
Middle-of-the-Road	53.3	63.8	59.0	58.5	66.9
Conservative	31.4	20.8	27.2	18.5	12.2

\*In this and later tables pertaining to the Washington State Study: GP = general public subsample

M2Wh = motorcyclists mailed questionnaire subsample

M4Wh = 4-wheel-drive-ORV-users mailed questionnaire subsample

SF = interviewed motorcyclists (2Wh) and 4-wheelers (4Wh)

the question is wrongly put because of an erroneous assumption. The assumption is that the comparison group we usually have in mind—backpackers, birdwatchers, or other appreciators of nature—is itself typical of the general public. It might be argued, the premise is false. Rather, the broad vague sentiments in response to environmental polls aside, it is the backpacking environmentalists who are atypical in their "use of nature." They are atypical because they dichotomize behaviorally. That is, they use up natural resources and despoil the environment at just about the same profligate rate as most Americans when they are not recreating in nature, when, for example, they are on the job, or traveling to distant conferences, or in the home. Yet, when they get onto public lands as recreators or communicants with nature grandeur, they begin to tiptoe, so to speak. On this showing, it is less the ORVers than it is the "wildernists" and environmentalists who need to be explained, especially those who genuinely believe that preventing tracks up a hillside or waxing irritated over a transitory noise-disturbance is where they should put their time and energy rather than into more serious problems, e.g., population growth in the Third World, capitalism's inhumanity to man, or communism's imprisoning of the human spirit. There is much that is intellectually appealing in this view of the matter. However, rather than embracing it here, I want to continue our focus on explaining who the ORV users are because I think it may also explain why they behave as they do. To anticipate, I shall argue that what they want follows from their distinctive positions in life.

Social class, education, and occupation and group leadership—arguably distinguishing attributes. Can ORVers be differentiated from the rest of the general public, from other outdoor recreationists, or from ORV opponents on the basis of social class, education, or occupation? If they are distinguishable on such a basis, then the differences have potentially complicating consequences for policy. Allocations of public lands for wilderness versus allocations for ORV use may be not merely a matter of encouraging "sound uses" over "unsound ones"—"sound" on an ecological or nature-appreciative dimension. They may be also a matter of taking from one socioeconomic group or class and giving to another. It may be foisting the aesthetic and resource-use preferences of one class on another. Policy makers may not, of course, in consequence change their allocation habits. Nonetheless, they should at least be aware of what they may be doing, that is that they may be enacting the public lands use-equivalent of a regressive income tax. That, I suppose, is not what most policy makers would answer they think they are doing if pressed to analogize, namely, enacting the public lands use-equivalent of an (on its face) neutral sales tax.<sup>20</sup> But is this the case?

An influential advisory arm of the White House, the Council of Environmental Quality, has recently put its imprimatur of approval on a major ORV-policy document that advances what I suspect is the wrong empirical conclusion on the matter. Bound to be widely distributed, the discussion in David Sheridan/CEQ's Off-Road Vehicles on Public Land (GPO, 1979), "Motorized Recreationists--Who Are They?" is likely to result in unwary readers forming the wrong conclusion. In part the problem is one of the discussion's structure and style. It begins by quoting the findings and conclusions of an Idaho study. "The argument that those who prefer to visit the outdoors in a jeep, on a motorcycle, or snowmobile are somehow more 'average,' 'common,' or 'real' American . . . should be recognized for what it is—a bit of political rhetoric. In Idaho, at least, this argument has little basis in fact."<sup>21</sup> It then reports a number of studies before affirming that "the available evidence suggests that the typical ORVer is definitely not a middle-aged wife of a machinist in Dayton, Ohio," i.e., not Scammon and Wattenberg's "average voter."<sup>22</sup> It also suggests that perhaps the profile of the typical ORVer is not important, that what is important is that ORVers are numerous, that they put "a share" of their incomes into ORV recreation, and that their machines "can cause serious land management problems."<sup>23</sup> This is a confusing exposition. Of course the typical ORVer is not a wife of anyone. As even half an hour's observation of an ORV site makes plain, most ORVers are male. It is quite misleading for the CEQ to take two other authors' "symbolic average voter" and press it into such service. Of course ORVers put a share of their income into ORVing, but what share, a significant one, or not? Of course their machines can cause serious land management problems, so too can guns create crime. But to say that it is perhaps unimportant who the ORVers are reminds me of the view that it is perhaps unimportant to analyze the psychological, social, and economic origins of crime, or if you prefer, why blacks in Mississippi felt discriminated against in the 1950s. Coherent policy planners (whether it conceives of the ORVer in favorable or unfavorable terms) need to know what motivates ORVers and who they are.

To reach the particular point that most concerns me here, the unwary reader is likely to be led by the CEQ exposition to think that it is not only in Idaho that the "privileged back-packer/less privileged ORVer" picture may be a "political myth." Two related types of data given in Sheridan's study may so conduce. One pertains to education, the other to occupation. Thirty to 33 percent are said to have attended college. That is quite a high percentage and one may leap to the erroneous conclusion that attending means graduating. Professional/technical occupations are said to be one of the two most common "occupations," the other being students.



But Sheridan's data are curious, to say the least. With respect to one set of educational data, the reason is apparent on the face of the text. The source is a readership survey of a motorcycle enthusiast's magazine. Quite apart from the low response rate obtained in that particular survey, taking the results as representative of anything other than readers who are prone to answer questionnaires is much like estimating the average education or average income of New Yorkers from a survey of readers of the New York Times. The second source appears on its surface a bit more respectable. It is the 1977 Motorcycle Industry Council's Statistical Annual. But if one bothers to go back to that Annual and check the Annual's source, the educational data turns out to come from another motorcycle magazine survey which also fails to distinguish between taking one or two courses in a junior college and obtaining a bachelors degree.<sup>24</sup>

Somewhat similarly, the occupation data (particularly the category "professional/technical") are so broad as to be suspect. Almost certainly, like the Census Bureau Professional-Technical Occupation Series, it includes a grab-bag from judges and physicians to nursing assistants and computer operators. If we add to these data-base oddities the fact that the Idaho study was located in one of the nation's demographically least typical states and that the published analysis that Sheridan quotes omitted all the "duals" or "hybrid recreationists" who engage in both mechanized and nonmechanized forms of public lands recreation, then it is hard to resist the conclusion that from the CEQ report we really know nothing much beyond who reads motorcycle magazines and who rides but does not backpack or vice versa in the State of Idaho. It may be tempting to use these sorts of peculiar statistics to support some political conclusion or other. But it is not a very good way of ascertaining the public interest in the matter of ORVing.

Let us see if we can find any better data or reach any less curious conclusions. In order to do so, I am going to draw on the 1978-79 Washington State ORV survey as well as, to a lesser extent, on the California Los Padres National Forest survey. Let me caution at the outset that these data bases have limits too. They come from single states also. But they are states considerably less atypical than Idaho in terms of degree of urbanization, population density, religious diversity, political attitudes, etc. Moreover, the Washington study, in particular, has three significant advantages. One, it contains both a sample of ORV users and of the general public of the state. Two, it contains two types of ORV samples, those contacted by mail and owners of machines, and those contacted on site and users of machines. Three, the samples are large enough to let us correct for sex-related and age-related differences, e.g., for the circumstance that more high-school graduates go on to complete college these days than did so a generation ago.

Table 3 gives comparative data for the Washington general public and for various types of ORV users with respect to: (1) educational level; (2) membership in professional associations; (3) membership in labor unions. Table 4 gives occupations subdivided into census categories and realigned according to a rough verbal-mechanical continuum, while table 5 further subdivides the professional/technical categories.

Table 6 reproduces somewhat similar, though differently coded, results for the California study's three subsamples—motorcyclists, backpackers, and scientists/land managers concerned with ORV use of the California desert.

Examination of these tables suggests three sets of conclusions:

1. The ORVers rank lower in educational attainment than the Washington general public, the California backpackers, and (of course) the California SCAS subsample. That is particularly true regarding what I take to be the most significant divider—completion of college. It is significant because the category "attending some college" includes both a large fraction of the population and a diverse array of vocational and nonvocational postsecondary educational efforts. The differences are quite marked. They are the more so if one controls for age. ORVers have not shared in the general population's increasing tendency to obtain college educations. The least educated cohort of females among the Washington general public (that born between 1900 and 1932) has a slightly higher percentage of college graduates than the most recent cohort of motorcyclists old enough to have all finished college, 12.9 percent versus 11.68 percent. Among the Californians both the educational attainments and anticipated educational attainments of the sizeable fraction of the younger cohorts are higher among the backpackers than among the motorcyclists.
2. ORVers, especially motorcyclists, are disproportionately weak in professional/business association membership and disproportionately strong in labor union membership. Moreover, and perhaps also indicative of a failure to share equally in the "post-industrialization" of American society, whereas the Washington general public resembles the United States general public in manifesting declining rates of labor union membership amongst the younger generations, the ORVers present, across the generations, a more static picture.
3. Marked differences emerge also with respect to type of occupation. The ORVers are lower than the Washington general public in terms of percentages in higher-status, professional occupations. The effect is particularly marked if



Table 3: Dissimilarities (Washington)

	<u>COLLEGE EDUCATION (%)</u>				
	GP	M2Wh	M4Wh	SF2Wh	SF4Wh
Percent of College Degree or More	23.8	11.6	11.9	6.8	6.7

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	<u>LABOR UNION &amp; BUSINESS OR PROFESSIONAL ASSOCIATION MEMBERSHIP</u>				
	General Public	Mailed		Interviewed	
		2-Wh	4-Wh	2-Wh	4-Wh

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Labor Union Membership					
Gross	28%	40%	37%	27%	32%
Adjusted for Sex					
Male	33	42	39	--	--
Female	13	0	24	--	--
Professional/Business Association Membership					
Gross	24	10	20	10	9
Adjusted for Sex					
Male	26	11	21	--	--
Female	17	n.d.	12	--	--
Labor Union Membership (Controlled for Age—Males Only)					
25-34 years	22	46	33		
35-44 years	30	36	61		
45 and older	39	47	30		

Table 4: Census Categories of Occupations

Census Classification	Brief Description	TYPES OF OCCUPATION				
		General Public	Mailed		Interviewed	
			2-Wh	4-Wh	2-Wh	4-Wh
001-200	Professional & Technical	18%	13%	12%	10%	13%
201-300	Non-farm Man- agers & Admin- istrators & Salesworkers	17	14	14	12	7
301-400	Clerical	8	6	4	5	5
901-986	Service Workers	32	17	21	21	16
801-900	Farm	1	1	1/2	1/2	1
701-800N	Non-farm laborers	6	8	14	17	18
601-700	Operatives (e.g., garage workers, riveters, dry wall installers)	3	7	6	7	8
401-600	Craftsmen	15	33	27	25	33

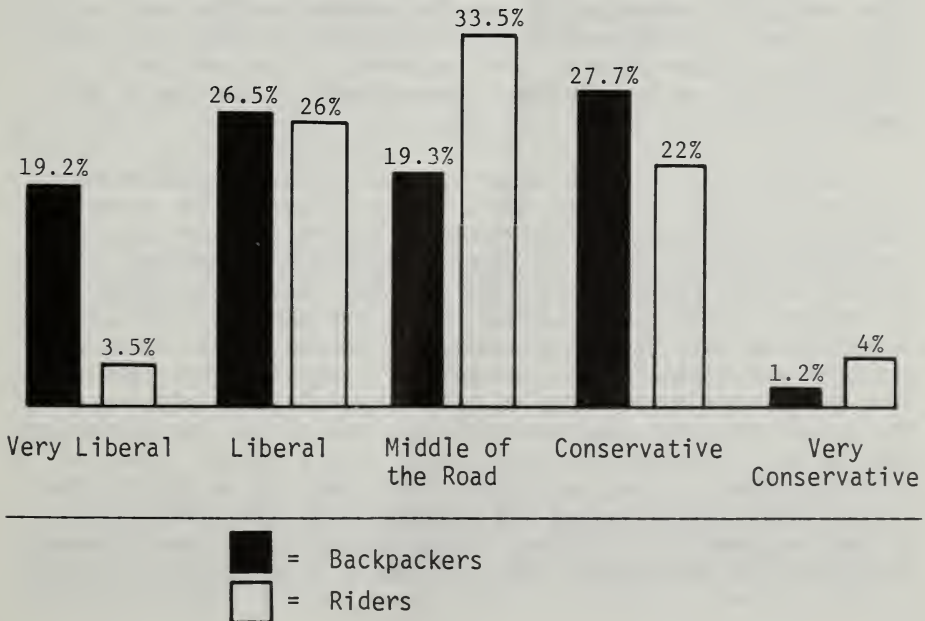
Table 5: Professional/Technical Occupations

Profession	SES Status Rating	General Public Sample	Mailed		Interviewed	
			2-Wh	4-Wh	2-Wh	4-Wh
Physician	82	1				
College Professors:						
Physics/Biology	78	1			1	
Art, Music, Drama	78	1				
Education	78	1				
Industrial	78	1				
Judge				1		
Lawyer	76	2			1	
Dentist	74	1			1	
Bankers & Financial Managers	72	4	1			
Airplain Pilots	70	3		2		
Chemist	69	2			1	1
Aeronautic Engineer	71	2	1		1	
Electrical Engineer	69	2		1	3	2
Civil Engineer	68	1	1			
Chemical Engineer	67					1
Mechanical Engineer	62	2			3	
Other Engineers	67	8		1	2	4
Space Scientists	68	1				
Geologist	67			1		1
Urban Planner	66					1
Social Scientists	66	1				
School teachers (exc. adult ed.)	63*	10*	3*	5*	4*	1*
Clergymen	62			2		
Registered Nurse	62	3			1	1
Including all above(%)		9.4	3.8	5.9	3.9	3.6
less school teachers		7.4	1.9	3.9	2.9	3.1
less engineers		6.4	2.6	5.1	4.7	1.4
less both		4.4	0.6	3.1	0.8	0.9

\*Marginally professional in terms of status.

Table 6: Related California Survey Data

<u>EDUCATIONAL ATTAINMENT OF WILDERNESS USERS &amp; OFF-ROAD RIDERS</u>				
	High School or less	Some College and B.A.	Post-Graduates Work	
Hendee study 1968	36.2%	35.6%	29.0%	
Los Padres Riders: those old enough to have completed their education	49.2%	49.5%	1.8%	
		Some College	B.A. Completed	
Los Padres Backpackers	13.7%	17.6%	37.3%	31.4%

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one separates out two professional groups: one, school teachers, arguably marginal professionals in terms of status; and two, engineers (that most "machine-oriented" and "physical-environment-manipulating" of professions). Just one-half of the ORVers are engaged in craftsmen, operative, or manual occupations as opposed to just under one-fourth of the general public sample. As we shall see later, these differences may be significant in explaining their attitudes to (if you will, their aesthetic systems regarding) the use of machines in nature recreation.

#### ORV Recreation and the Problem of Extraction from vs. Appreciation in Nature

What do ORV recreationists derive from recreation on public lands? And, could they not do their "thing" elsewhere on less ecologically fragile territory where they would not annoy other recreationists?

With a few exceptions,<sup>25</sup> the research literature on recreation is not very informative about these questions. In my judgment there are three main reasons for this circumstance. One, the answers are more complex than the formulations permitted by the content of most outdoor recreation questionnaires. Two, the answers are intimately related to identities and preferences that root outside the relatively tidy confines of the geographic units of public property—national forests, state forests, etc.—that root rather in a mix of innate human capabilities and limitations and of psychological needs induced by the unequal reward structures and value uncertainties of a late capitalist society. Three, the answers and the ways of getting at them may not be altogether congenial to the four chief interested groups—ORVers, their opponents, land managers, and their indirect policy advisers, researchers on the use of public lands.

Getting fully at the answers, would entail psychological probing inherently uncomfortable to many ORVers. The answers would make the lives of land managers and researchers more difficult because, if taken seriously, they would complicate the administrative and policy-advisory tasks. They complicate it by suggesting that public lands policy and management should not take its cue chiefly from planning and recreational future of national and state forests and parks in isolation but rather from perceiving these lands as socio-psychological resources for alleviating the psycho-social problems of the larger society, much as we so conceive of such lands' future timber potential for the economy. They complicate it further by suggesting that public lands policy toward and management of ORVs should not be just a product of studying its ecological costs and annoyance costs to other recreationists, but should also include societal



benefits, directly to the ORVers and indirectly to other citizens. Most fundamentally, the answers suggest the insufficiency of ways of thinking about ORV recreation and about nature that have been widespread among many lands managers, recreation experts, and nonmechanized recreationists since the popularization of what I shall loosely call the John Muir/Aldo Leopold approach to nature.<sup>26</sup> The answers, in other words, may not upset, but at least jostle, the comfy applearcane of environmentalist ideology; however, not with respect to the really serious environmental problems such as pesticides in the food-chain, overpopulation and hunger, or the nuclear threat, but simply with respect to the noise-levels and aesthetic-pleasingness of recreational weekends.

Let me try to frame answers by putting four propositions which I shall then buttress.

Proposition 1: To understand in any psychologically genuine, and not merely formal, sense what ORVers get out of ORV recreation it is necessary to do what T. S. Eliot considered necessary to understanding a poem. It is necessary to "suspend one's disbelief" temporarily. Specifically, it is necessary to try to get outside of our normal or habitual beliefs about recreation and nature on two counts. One is our habit of thinking about some recreations as "nature-appreciative" and about others as "nature-extractive" or "nature-depreciative." The other relates to any assumptions we may have as to whether a "nature-experience" is aided or hindered in some absolute psychological fashion by the absence or presence of machines or noise in nature—as to whether there is, in other words, an inherent imagistic conflict between machine and nature, or whether the conflict is constructed in our minds.

Proposition 2: ORVers vary enormously as to their chief recreational motivations and goals, but for a considerable percentage a "nature-experience" of one sort or another is an important objective.

Proposition 3: The distinctive modes (distinctive relative to "wildernists") of experience sought by ORVers relate to occupation, personality, and social reference groups. There are good social-psychological reasons why most ORVers do not perceive a conflict between machine and nature, or any "inappropriateness" when using "machine in nature" and being fairly noisy and (from the ecologists' standpoint) fairly damaging about it.

Proposition 4: Many land managers and policy makers err in assuming that (to use Badaracco's terminology) if an "impairment-suppression-displacement" syndrome is diagnosed, the policy cure is obvious. That is, they assume that if the recreational habits of one group (ORVers) impair or destroy the

a standard that objects to a particular activity such as mining in a national forest because it pollutes the water supply of a nearby town or Mojave motorcyclists who raise dust storms that carry spores of coccidioidomycosis which settle on Arizona Indians and infect them. Assuming that the advocate of the standard does not live, and has no friends or relatives, in the town or among the Arizona Indians, then it makes sense to think of this as a more objective standard—objection in the sense of not stemming from mere direct personal preference. So too with standards that actually derive from larger ecological concerns, such as the planet's future.

The problem is that in practice it is often hard to keep the two types of standards separate. That is because those who advocate standards often proceed from a mixture of motives, for example, the scientist who is unhappy because jeeps squash some rare species of turtle that he is doing research on, the archaeologist who is distressed by motorcycles obliterating Indian markings in the desert sand which he is writing an article about, the sociologist who, contrariwise, would be distressed if ORVs were driven off the public lands because then he could not study their folkways.

I do not propose to try to solve the problems of these blurrings of policy standards here. All that I want is to caution against making some of the more common errors in analysis.

Let me single out two such errors. One is assuming that what is the most traditional, or oldest, practice on public lands is necessarily more appropriate a use than some activity that is newer. For example, one might assume that because people walked or rode horses in nature before they straddled machines, the former activities are somehow more appropriate uses of nature. They may be. But if so, it is not because they are older or more traditional. Unless public lands are peculiar in some way that I cannot divine, there is no better grounds for so assuming than for assuming that racial segregation is better because it is more traditional, that bleeding and cupping as a cure for influenza is better because it is older than penicillin, that trial by fire is a good method of determining an accused person's guilt because it is very traditional indeed, and so on. Unless there is some amendment about wilderness in the United States Constitution that I am not aware of, there is no good reason for reversing our general preference for the new over the old when it comes to public lands.

A second common error is assuming that there is one true way of conducting a nature-experience and a related fixed and certain aesthetic standard, and that some ways of behaving in

quality of another group's recreational experience (e.g., backpackers), the policy prescription is clear: forbid the displacing group, and reinstate the displaced group's primacy. Most ORVers disagree of course (when they do not deny the syndrome). I suggest that if we are to be really logical about public land policy making no such "restore the displaced" administrative rule of thumb should operate automatically. Finding the public interest in the matter is more complicated than that, and the proper policy outcome may vary from site to site.

To clarify what I am driving at in these propositions, it will be useful to make two distinctions concerning standards, practices, and behavior in the recreational use of nature. Each concerns the way wildernists and many recreation experts usually think and act about public lands. The first distinction pertains to the relationship between, on the one hand, what we think fits or does not fit, is appropriate or inappropriate, "in nature," and on the other hand, two standards of judging "fit" or "appropriateness." The second distinction is between what I shall call wildernis—the actual behavior of wildernists. What I want to do is to separate out several things that are frequently run together. The running together makes it difficult for many non-ORVers to understand what the ORVers are after. Having suggested these distinctions, let us now examine the first and its implications for understanding the ORVers' nature experience. We shall defer exploring the implications of the second distinction to a later section of this essay where our concern will center on the more or less conflictual relationships between mechanized and nonmechanized wildland recreationists.

#### Appropriateness Standards in the Recreational Use of Nature

The first distinction is between a standard or appropriateness that is really just a personal preference standard and a standard of appropriateness that takes as a reference point some future general good or public interest. Let me give an example of each. Liking or disliking the sound of a transistor radio playing the Bee Gees while one contemplates a mountain waterfall is a personal preference standard. If one alters the example slightly and supposes either the radio playing Beethoven's Pastoral symphony or a backpacker guitarist singing Scottish ballads around a campfire, the subjectivity, the "mere personalness" of the preference is highlighted. It is a standard deriving appropriateness in nature simply from one's preference for quiet versus sound, or for certain kinds of sounds (waterfalls) and not for certain others (radios). It is preeminently subjective. To push it as an absolute standard for the disposition of public lands is to perform a political act not necessarily in the common good or public interest. Let us contrast this with another type of standard, for example,



nature are purely "appreciative" whereas others are merely "extractive" or "displacing."

What do we really mean when we say that some recreations (e.g., birdwatching) are appreciative whereas some other recreations are "extractive" (e.g., dunebugging or hunting)? Do we say anything that is on balance meaningful at all? Or do we merely confuse by posing a single dichotomy? Are not all "appreciative" activities in some sense extractive, or displacing? If I climb along a mountain ridge to watch a condor, my footprints are in some sense extractive from the earth? Unless I have a flying carpet, I leave some traces, and even with the carpet, the wind-rush of my passing may knock off a few dandelion heads. It is a question of degree. I appreciate, but I also extract—if markedly less so than my buddy who uses a bulldozer to get to the appointed observation place. Similarly, my appreciativeness may be quite displacing. Assume, if you will, a deaf condor not in the least disturbed by noise but much disturbed by undue proximity. I may displace a great deal more with respect to the condor if I tip-toe in too close (because I am very nearsighted) whereas my farsighted buddy stays two miles further off with his bulldozer (and binoculars). If I insist that he may not come into the forest at all with his bulldozer because I do not like bulldozers at all in nature, because they ruin my birdwatching experience (I like quiet even if the deaf condor does not care), then who is displacing whom? Am I much helped in my displacement claim by arguing either that I dislike noise when I recreate or that my mode of access is more traditional? Suppose that my buddy can show that his need to run the bulldozer into nature is an order of magnitude more important than mine (e.g., that his wife who has a thing about bulldozers has persuaded her uncle to leave them \$10,000,000, or has persuaded Khomeini to release the hostages if he runs the bulldozer in), whereas all I can claim is my preference for getting away from the noise and plastic of the typewriter machines and walls of my law firm for the weekend. Is it obvious that, on balance, my use of nature is less extractive, more appreciative, or should receive priority over his?

Obviously my examples are a bit artificial, but not without two purposes.<sup>27</sup> One is to highlight an often obscured circumstance, that, in fact, the appreciative/extractive nature-using dichotomy is not really a single dichotomy but two continua of more or less important objectives. The other purpose springs from the point about "objectives." Extractive, appreciative, and displacing are all words that require a with-respect-to clause, a modification that gives them literal, and hence policy, meaning. Their policy clout should spring, in other words, from the specific beneficial effects or adverse harms they purport to achieve or forestall. Yet these with-respect-to's are often obscured in the making of recreational use policy in regards to public lands.



The other part of the error is assuming that among the various aesthetic and non-aesthetic objectives, there is only one true aesthetic objective. To say this is to bring us to a point critical enough to warrant detailed attention.

### Aesthetics and Nature in the ORV Recreational Experience

Not long ago a recreational planner remarked to me that he did not see how a motorcyclist could possibly have a "nature experience." The previous week he had been taken out for a trail ride by a state ORV coordinator who was hoping to persuade him to see the "good side" of ORVing. All this time, the planner said, had been taken up with trying to keep the machine upright, with a "mechanical skill" problem. There was no time for contemplating nature. I was tempted to say that if he had never been horseback riding and was loaned a highstrung horse with a habit of bucking for his first trail ride, he might not have seen the possibility for a nature experience either.

Undeniably there is a problem of understanding when it comes to the non-ORVer figuring out what the ORVer could possibly get out of nature, other than the pleasures of devastation. Let me give two instances of this.

Example 1. SCAS scientists' second-guessing of ORVer and backpacker motivations. In the California study, the ORV-concerned backpackers were asked to second-guess the goal priorities of backpackers and ORVers using a national forest. The specific question, shown in table 7, asked about the relative importance of a "nature-appreciation" dimension, a "competitive" dimension, a "combative" or "symbolic-macho-warrior" dimension, and an "ex-metropolitan" dimension.

The results of the scientists' attribution of goals are shown in table 8. The actual responses of the California backpackers and motorcyclists are displayed in table 9.

The scientists were almost clairvoyant in second-guessing the backpackers. Eighty percent guessed that "getting away from . . . urban civilication" would rank first among backpackers' important recreational priorities, and 20 percent placed it second. The figures are almost exactly reversed with respect to the "nature-appreciating item." "Outhiking" is estimated to be a distant third, and the "macho-warrior" item is placed a poor fourth. That is quite close to how the backpackers actually responded--putting the first two items very high (the 70/66 percent difference in table 9 is not statistically significant), and the competitive and macho items very far back in priority.

Table 7: Question Format

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SCIENTISTS' SECOND-GUESSING OF  
BACKPACKER AND RIDER GOALS

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Backpackers and motorcyclists using the Los Padres Forest were asked in an earlier phase of this study to rank the aspects of their recreations most important to them. Please indicate, on the basis of your own observations, the rank-order that each group would give to the following: (Write a '1' after the aspect you would take to be most frequently singled out as important by each group, a '2' after the second most frequently singled out, etc.)

BACKPACKERS

"in my sleeping bag just before  
falling asleep, gazing at the  
great avenues of stars in the  
cold clear sky" \_\_\_\_\_

"outhiking my friends" \_\_\_\_\_

"the warrior-like feeling of  
the gear--knife, pack, axe,  
boots" \_\_\_\_\_

"getting away from a confin-  
ing job and artificial civili-  
zation, and into the wilderness  
and open spaces" \_\_\_\_\_

OFF-ROAD MOTORCYCLISTS

"in my sleeping bag just be-  
fore falling asleep, gazing  
at the great avenues of stars  
in the cold clear sky" \_\_\_\_\_

"outriding my riding buddies"  
\_\_\_\_\_

"the warrior-like feeling of  
the gear--helmet, leathers,  
boots" \_\_\_\_\_

"getting away from a confining  
job and artificial civiliza-  
tion, and into the wilderness  
and open spaces" \_\_\_\_\_

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Table 8: Scientist's "Predictions" (percent assigning it a '1', '2', etc.)

	<u>BACKPACKERS</u>				<u>MOTORCYCLISTS</u>			
	1	2	3	4	1	2	3	4
Sleeping Bag	21	(73)	5	0	3	11	20	[66]
Getting Away	(80)	20	0	0	[57]	16	27	0
Outhiking/ Outriding	5	5	(46)	23	28	[58]	10	5
"Warrior"	0	3	32	(65)	28	23	[31]	18

Table 9: Actual Results (percent liking and strong liking)

<u>BACKPACKERS</u>		<u>MOTORCYCLISTS</u>	
Like	Strong Like	Like	Strong Like
93	70	76	36
84	66	81	54
22	11	49	21
25	4	31	6

In marked contrast, the scientists, though correct in ascribing primacy to the "getting away" motivation among off-road motorcyclists, were quite off target with respect to the other three items. The scientists "predict" a strong second-place for the competitive item, and a fairly strong third-place for the "macho" item (although it should be noted that, in contrast to all their other predictions where the modes are very clear, they display some uncertainty as to this latter item's import). With respect to the nature item the scientists are very sure in their predictions, but wrong. Only 14 percent guess that it would come in top or second position, 20 percent guess it would be third, and fully 66 percent predict it would be last. In fact, it was a strong second among the motorcyclists. Furthermore, priorities reported by the bikers, who put the competitive and macho items well down the scale, closely resemble those of the backpackers. These particular items, it should be understood, were picked from a much larger set of 33 items to which the backpackers and motorcyclists were asked to assign preferences, and which clustered along the dimensions of "nature appreciating," "getting away from the urban environment," "competition," and "macho" behavior.

What is the analytic moral? Seemingly, either the riders were lying or the SCAS scientists (like most of the non-ORVing public?) erred. Though the lying possibility cannot be ruled out, it is not very likely for three reasons. One, as table 10 indicates, the intercorrelations among the 33 items are statistically quite strong, so that lying would have to have been frightfully sophisticated. Two, not one of the ecologically oriented of the ORVing-oriented interviewers in the California study expressed any disbelief on this score.<sup>28</sup> Three, the California responses are astonishingly consistent with those given by Washington motorcyclists and four-wheel-drive users—three years later, in a different state, and using a different question format.<sup>29</sup> If the ORVers lied, they somehow managed to do so in an amazing interstate, cross time, and interformat fashion, all without raising the suspicions of some 20 interviewers, not to mention the projects' director. (See table 11.)

The most plausible conclusion, I think, is that the ORVers' responses are psychologically genuine (even if devil-take-the-hindmost in ecological effect), and that we have truthful claims to a nature-experience, albeit not one identical to the bird-watcher's experience.

To say this is to suggest the second example, which I single out here because it gives the clue to the source of the problem of understanding ORVers motivations. The example is the Sheridan-CEQ Report. The source is the assumptions about aesthetics and nature common to much late twentieth-century American environmentalist literature. The problem, to anticipate, is that the aesthetic assumptions have two unfortunate



Table 10: Cross Tabulation of Vwaterfall\* by Vhawk\*\*

	Vwaterfall				
	Dislike	Don't Care	Milder Liking	Stronger Liking	Row Total
Vhawk	-1	0	1	2	
Dislike -1	2	4	6	0	12
Don't Care 0	0	18	4	9	31
Milder Liking 1	1	2	19	18	40
Stronger Liking 2	0	2	7	61	70
Column Total	3	26	36	88	153

Raw Chi Square = 102.87105 with 9 degrees of freedom. Significance = 0.0

Cramer's V = 0.47341

Kendall's Tau B = 0.57011. Significance = 0.0000

Kendall's Tau C = 0.47754. Significance = 0.0000

Somer's D (asymmetric) = 0.61269 with Hawk dependent, = 0.53050 with Vwaterfall dependent

Somer's D (symmetric) = 0.56864

Gamma = 0.76080

\*"hiking along a trail and coming upon a little mountain waterfall, pausing to watch the water"

\*\*"stopping along the way to watch a hawk or an eagle gliding above a cliff"

Table 11: Washington and California ORV Recreationists Responses to Motivation/Goal Questions

Item	Rank	Washington Riders				California Riders				Washington 4-Wheelers			
		% Like		% Like		% Like		% Like		% Like		% Like	
		Much	Like	Much	Like	Much	Like	Much	Like	Much	Like	Rank	Mean
Confining job	1	72.8	93.5	55	81	69.8	90.1	4	2.83				
Family Outing	2	68.6	87.7	39	67	84.3	93.5	1	3.30				
Waterfall	3	66.9	92.2	53	80	73.2	90.2	3	2.84				
Hawk	4	62.3	92.3	30	74	70.7	90.7	2	2.87				
Getting away from people	5	60.6	89.0	12	47	51.7	82.4	6	2.23				
Grin inside	6	61.1	88.3	42	75	40.5	68.8	8	1.68				
Fixing machine	7	54.9	85.5	22	72	43.7	72.0	7	1.79				
Sleeping bag	8	49.7	83.9	36	76	58.6	86.9	5	2.57				
Releasing aggression	9	48.1	76.0	34	67	25.4	70.8	11	0.76				
Companionship	10	37.6	79.9	27	73	31.0	63.0	9	1.34				
Taking graceful jump	11	40.9	24.0	34	76	14.1	32.4	16	-0.29				
Feel more successful	12	30.7	64.1	--	--	20.7	43.4	14	0.54				
Conquering nature	13	23.4	56.0	13	49	24.1	50.0	12	0.75				
More independent	14	28.6	56.5	12	40	24.2	43.4	14	0.54				
Getting away from family	15	22.7	56.5	20	50	11.2	32.6	15	-0.28				
Outriding my buddies	16	22.6	54.8	21	49	11.2	32.6	17	-0.42				
Beating nature's extremes	17	20.8	49.4	11	49	31.6	62.7	10	1.32				
Getting out and seeing how much punishment I can take	18	12.9	40.0	5	27	14.9	28.2	18	-0.79				
Facing danger	19	4.5	22.6	7	30	13.2	26.6	10	-1.44				
Taking a jump fast	20	3.9	20.6	12	31	15.7	18.6	20	-1.89				

effects: (a) they construct so as to overlook the ORVer's most keen aesthetic experiences in nature; (b) they misdescribe the actual aesthetic experiences of most nonmechanized nature recreationists.

Example 2. The Sheridan-CEQ Report's discussion of nature, aesthetics, and ORV experiences. Even if the Sheridan-CEQ Report did nothing else (in fact it does do quite a number of good things), it lays bare the intellectual perplexity that takes hold of many non-ORVers when they try to fathom the relationships between ORVing and aesthetic appreciation of nature. When Sheridan describes the ecological effects of ORV recreation, he is quite clear in his narrative direction. He is quite clear, notwithstanding that some ORV-sympathizing experts might dispute some of his assertions and conclusions. Where he is going is plain. ORVing disrupts the environment. Something must be done. The argument might be faulted for quantitative thinness of selectivity. But its direction is certain.

In contrast, when (pages 3-6) he discusses ORV recreation's benefits and especially the ORV experience's "aesthetic" and "nature" components, the discussion is confused.

Having observed that ORVers "also say that the 'sights, sounds, and smells of nature' are important to them," he states: "The nature of the ORV experience seems to be less contemplative, less aesthetic and more gregarious, more visceral."<sup>30</sup> Then he states, "According to a theory at least as old as Immanuel Kant, a purely aesthetic experience is possible only in the presence of something which provokes no reaction other than contemplation. By this measure, ORV riding is not primarily an aesthetic experience—its pleasures lie elsewhere."<sup>31</sup> Next follows a paragraph that begins by conceding that using Kant's aesthetics may be "too narrow a perspective,"<sup>32</sup> goes on somewhat awkwardly to describe possible nature-related ORV experiences, then surprisingly concludes by abandoning any serious analysis of the problem. Thus, he states, "The rewards and motivations of ORV riding or snowmobiling are sufficiently varied that one should be wary of the generalization [sic] of social scientists who seek to pigeonhole the experience."<sup>33</sup>

In the next paragraph, however, he starts up the analysis again, shifting from the pigeonholes of social scientists and from Kant to descriptions by various ORV writers of their experiences. He emphasizes that these descriptions stress the "physical sensations of the experience."<sup>34</sup> There then follow in rapid order: (a) an out of place "social sciency" generalization about ORVers "invariably say"ing they prefer "hilly and rolling terrain."<sup>35</sup> This is not invariably true. Next we get: (b) a declaration that the CEQ Report adopts the 1968 NAS Recreation Conference Report's view that the need for recreation is a basic, rather than marginal, human need; (c) three brief

paragraphs which attempt to encapsulate theories of Jacques Ellul and Karl Marx, the Industrial Revolution, job specialization, American wealth and the need for recreation; and (d) the astonishing declaration that whether "ORV riding is less or more an aesthetic experience than some other form of recreation for people."<sup>36</sup>

The penultimate paragraph of the section concludes with three sentences about (1) income distribution affecting people's recreational "options" (nothing about total wealth?); (2) society being able to intervene "more directly" when certain forms of recreation are deemed to be morally repugnant (we had not been talking about morally repugnant recreations, nor were we under the surface); and (3) the legislation against morally repugnant dog-fighting in Victorian England. (Query, does Sheridan find ORVing "morally repugnant"?)

The last paragraph begins with a doubtful assertion that our society's principal recreational concern is "utilitarian: the greatest good for the greatest number."<sup>37</sup> It goes on to assert that John Rawls has made clear that more than crude arithmetic is involved in applying the principal of utilitarianism. The paragraph then concludes, not by convincing us that the CEQ understands John Rawls or utilitarianism, but instead with the propositions that "society must be concerned" with the allocation of scarce resources, in terms of efficiency and fairness; that a major utilitarian concern with ORV recreation is the destruction of natural resources caused by these vehicles; that another utilitarian concern is the "infringements of other people's rights to recreate"; and that still another is "alternatives available to ORV users."<sup>38</sup> Finally there is a promise that these questions will occupy the bulk of the report.

There are three ways that one could deal with this pot-pourri. One is to describe it as an intellectual embarrassment and let it go at that. But that course is barred by CEQ's acceptance of it as passing logical and evidentiary muster. The second course would be to try to disentangle the entire problem and put it into some kind of respectable analytic order. But that would require more time and space than is available here. The third approach, which I shall take, is to slough off the snippets about utilitarianism with the observation that the remainder of the report never does fulfill the promise of a serious discussion of utilitarianism applied to ORVing.

I shall center our attention on the question of "aesthetics," "contemplation of nature," and the visceral response. I do so: (a) because aesthetic claims bulk large in the politics of the recreational disposition of public lands (rights to use and managers' propensity to agree or disagree about such rights are often legitimated on the basis of aesthetic claims); (b) because this is the core point at which Sheridan's argument goes



awry; and (c) a similar going awry often seems to occur in the perceptions of nonusers and policy makers.

Let us assume *arguendo* that Sheridan had a serious purpose in bringing Immanuel Kant and aesthetics into the report. Let us assume that he was not merely reaching for a respectable authority in order to paper over a looseness in the argument, but was indeed initially trying to solve a problem that genuinely puzzled him. Certain social science data concerning experiences reported by ORVers troubled him because they did not fit with his own assumptions about aesthetics, nature, and recreation. Never mind that he later retreats from the effort at understanding by throwing out first the relevance of social science and second aesthetics as a source of recreational value.

Let us see if we can understand the problem in a way that we will not have to abandon it as impossible of solution or merely annoying. Let me remind you again of the need for "temporally suspending disbelief," for stepping out of the confines of your own aesthetic and nature-related value hierarchy.

There are four problems with what Sheridan does. First, he takes one particular theory of aesthetics among many, Immanuel Kant's, without giving any good reason why he picks it. Second, he gives a very inadequate statement of Kant's aesthetics. Third, he picks and chooses one aspect of Kant's aesthetic theory that he thinks (I would argue mistakenly) helps the case at hand, and ignores other aspects that cut the other way. At the outset, Sheridan seemingly wants to show: (a) that a keen aesthetic experience is a valuable component of the recreational experience that should give a leg up in the disposition of public lands to those recreationists who have such experience; and (b) that ORV recreation is not primarily aesthetic, that is, that its pleasures lie elsewhere.

Implicit in these paragraphs seems to be the notion (though it seems later to be thrown out) that, not having much of an aesthetic component in their recreational experiences, ORVers cannot legitimate their use-claims as providing aesthetic benefits. Why? Because Kant says that an aesthetic experience is purely contemplative, and nonvisceral. Let us beg the question whether that is exactly what Kant says, and turn our attention to some other things that Kant argues. These are: (1) that aesthetic judgments are not cognitive judgments at all; (2) that aesthetic judgments have nothing to do with "the good"; (3) that works of art or natural beauty (and here Kant was departing radically from the history of Western thought) are not properly appraised for their utility of a moral or educative sort; (4) that objective standards of aesthetic taste cannot be rationally derived by reason; and (5) that aesthetic judgments have no utilitarian value.<sup>39</sup> If Sheridan had considered these aspects of Kant's aesthetic theory, he might not have leapt to adopt it.

The fourth problem and the most critical one is that Sheridan chooses not only the wrong specific aesthetic theory but more broadly from the wrong class of aesthetic theories, "wrong" that is relative to making an analytic link to public lands policy. The aesthetic theory is remarkably ill-suited for encompassing the aesthetic experiences reported either by ORVers or by wilderness purists or backpackers. It does not even describe what most nonmechanized recreationists do when they "nature recreate." That is because of the class of theories to which it belongs.

Broadly speaking, one can divide aesthetic theories; naturalistic theories; and formalistic theories. Instrumental theories attach value to works of art or nature insofar as they further some end—education, moral improvement, religious indoctrination, communication of emotions, vicarious expansion of experience. Naturalistic theories can readily cover only a very small part of outdoor recreational use of public lands since naturalistic theories pertain to work of art—attaching value to objects in accordance with how well they reflect the actual or the ideal (e.g., how literally they record a landscape, how truly they show the quality of light, or how well they reveal the ideal beyond the natural).<sup>40</sup> Naturalistic theories could only seemingly cover the use by the artist of public lands, hardly a majority of nonmechanized users. Formalistic theories (of which Kant's theory was in some important ways a precursor) typically place value in works of art as acts of autonomous creation by the artistic talent or as being somehow organic wholes that, contemplated, encourage a discrete and unique aesthetic sense.<sup>41</sup> It is only with considerable wrenching away from their primary purpose of explaining art objects that formalistic theories can be applied to be wilderness nature experience.

#### Instrumental Aesthetic Theory, Displacement, and Interuser Group Reactions

What is needed is a psychologically accurate aesthetic theory capable of at least four things:

1. covering the experiences that recreationists actually report they have and value in nature;
2. distinguishing between what people say they do in nature, or what is imputed to them, and what they actually do or experience;
3. accounting for plainly important divergences that appear among or within groups of recreationists as to what they do, experience, or value;
4. providing some test for aesthetic claims.

Any adequate theory is almost certain to be "instrumentalist." How so?

First, formalistic theory's insistence on a purely contemplative attitude (that of the twentieth-century art critic contemplating a museum painting or statue) not only does not cover most of what are arguable aesthetic claims by motorized recreationists, but also it does not cover most of the claims of wildernists, claims that few of us would dispute as central to their wilderness experience. Sheridan's quasi-Kantian accounting proves too much for his own position. If one uses a dichotomous allocating method (between nonvisceral, purely contemplative and visceral, noncontemplative experiences), if one proportionalizes the wilderness time, plainly not only ORVers but also backpackers spend more of their time in nature acting out and immersed in rather than, like the museum critic, contemplating disinterestedly. Much of what wildernists report they like is not strictly contemplative activity. It is "immersive" and interacting. Let me just take one or two illustrations. Most of you will recall two of the more picturesque scenes from the life of John Muir. One is the occasion when he lashed himself to the high branches of a tree in Yosemite to ride out and experience the full fury of a raging Sierra storm. The other is the occasion when he and Teddy Roosevelt camping, decided to make a bonfire out of a huge and ancient fir tree. "Bully!" proclaimed T. R., "There's a candle that took 500 years to make."<sup>2</sup>

One could dismiss the latter occasion as simply a "depreciative aberration." I suggest, however, that both occasions have a more important common core and illustrate that the nature experience sought, even by a John Muir, can be at least as much interactive between man and nature as purely contemplative.

Let me give one other example from my own experience long before I ever thought of riding a motorcycle across the desert. The time was early September, 1961; the place, the Minnesota-Ontario Boundary Waters; the occasion, a two-week canoeing and, as it turned out, portaging expedition. Two retrospective conclusions about that trip seem to me true. One, the validity of the nature experiences stemmed much less frequently from the "pure contemplative" museum picture watcher's stance and much more from an "in-nature-striving." What is unique about the wildernist experience is not the "snapshot moment," the disembodied formalist aesthetic perception (though that is not precluded). Rather it is the mix of the situation, the immersion, the interaction. What one saw of nature was also related to what one felt, the moments succeeding but also interblended with each other. One perceived the distant purplish hills and the gray rushing clouds as one felt the wind-driven lake waters lapping on the canoe and as paddling before an oncoming storm, one's arm and shoulder ached. It was the mix of perception,



sensation, and doing what constituted the power of the situation, the peak of the wildernist experience. The way one saw four Canada geese flying south (for autumn had come early that year, the night before the temperature had fallen to 16°F) was not the same way one sees geese in the Audubon painting or a photograph.

To generalize it seems to me that much of the wildernist experience, much of what its proponents most fiercely defend, is not encompassed by a disinterested, aesthetic spectator theory of the nature experience. With four exceptions, the motivations, the benefits derived, and the circumstances of that canoeing wildernist experience closely resembled the motivations, benefits, and circumstances of the first time (some 12 years later in 1972) I ever rode and jumped a motorcycle in the Mojave. The exceptions were: (1) the presence of the machine; (2) the noise of the machine; (3) the dust raised behind me; and (4) the sensation of jumping—much more like skiing than like canoeing. The similarities were: (a) the mix of the whole situation—one was both in and acting against nature; (b) the exhilaration (Sheridan would call it visceral, noncontemplative, and hence nonaesthetic; I would call it visceral and aesthetic); and (c) how the desert mountains ringing oneself-in-motion looked before, during, and after the jump, not the same as through a picture postcard, but enormously important in the experience. I would argue that was (in a "Hemingway" sense) a "true" nature experience, and the machine an important and natural part of that experience.

Second, whatever else divides wildlands recreationists, most of them have one thing in common, the sense of doing, not merely observing. Further, what they in common extract from nature is the recollection of sensation and experience. What is important about wildlands is not simply that they are there (though that may enter in), not merely that one has observed them, but that one somehow interacted with nature. The proportions of "conquering" versus "observing" may vary but it is the rare wildernist (the ornithologist subspecies?) for whom spectating is the thing wherein one entirely catches the conscience of the wilderness. A very plain psycho-aesthetic instrumentalism is at work in our conflicts over the use of public wildlands.

Three, incumbent on an adequate aesthetic-in-nature theory is the task of accounting for idiosyncracies and variations in how we view and judge the appropriateness of the man-made items that we want to bring into our wildlands recreation experience and those that we want to keep out. The usual wildernist way of putting the distinction is confused. That is, of course, the doctrine that what one wants or ought to want is to effectuate a clean dichotomy between (1) "things of the profane city and the man-made plastic civilization" and (2) the "purities,



the naturalnesses of nature." Put simply, this doctrine has a three-step experience-legitimizing and experience-maximizing order: one wants to "get away from it all" and "back to nature"; one therefore wants to create a recreational situation without man-made artifacts; and the noises and ecological effects of jeeps and motorcycles detract from the wildlands experience and should be kept out.

There are four things wrong with this. 1. It does not accurately describe what mechanized recreationists do. 2. It does not accurately describe the reactions of wildernists to all machines and traces of machine in nature. 3. It cuts off a number of aesthetic experiences. 4. It does not accurately describe what wildernists do with respect to man-made items, to plastic entities, in nature.

I shan't spend time on number 1, the point is obvious. More important is number 2: the "doctrine" does not explain the reactions of wildernist purists to all machines in the wilderness. Few wildernists demand that traces of 1849 Gold Rush mines be obliterated. On the whole, they rather like coming across abandoned mines in the Sierras. As an interesting aesthetic experiment some years ago showed, the reaction of observers to a photo of an old railway track slicing through the wilderness was quite different from their reaction to a garbage dump, and we can safely guess quite different from the reactions of midnineteenth-century Thoreauians at the time the particular railroad track was built.<sup>43</sup> It is not simply the fact of "mechanicalness" that disturbs. Rather, reactions have also much to do with time and nostalgia.

With respect to number 3, I am at a loss to account for what within the wilderness paradigm legitimates ruling in certain aesthetic experiences and ruling out certain others. Why is it OK for some recreationists to use canoes and others feet, marginally OK for still others to use powerboats, but not at all OK for yet others to use jeeps, snowmobiles, and motorcycles?

Two types of answers are customarily given. One points to the amount of damage done by ORVs. That is fine on the surface, but not beneath. It does not explain either why Rider A should not be permitted to ride on trails in less fragile lands (rather than excluding Rider A altogether because Rider B insists on riding up fragile hills) or why, if riders average 10 times the ecological damage of horseback riders, use of the public lands should not be apportioned so that anyone gets a choice of five days motorcycle riding per year or fifty days horseback riding. With respect to the habits of Riders A and B, we do not analogously prohibit all guns because some people shoot people. Nor do we prohibit automobiles because some people use automobiles to kidnap or get away from bank robberies. With respect to apportioning public lands damage, we seem increasingly

to be following a policy of expanding hikers-only lands and diminishing bikers lands—without any clear apportioning fairness.

The other explanation of legitimate wild lands recreational uses is that most recreational lands users indicate on polls they would prefer not to see machines. However, it is not, unaided by other considerations, obvious that because User Set 1 objects to the habits of User Set 2, User Set 2 ought to be prohibited from using public lands outright unless they abandon their "noxious habits." In most areas of public policy this is not a respectable argument. Thus, we no longer say that because most white Mississippians of the 1950s found the skin color of blacks a badge of inferiority, such white Mississippians had a right to prevent blacks from voting in elections, holding office, or sending their kids to integrated schools. Thus, we do not say that because old people have wrinkled skins and lack teeth, it is okay to send them off to the snows to die as did the Eskimos. What, then, is it about ORVers' greater noisemaking that permits us to say that because the noise irritates us, they should be excluded from public lands? It is not, really, quite so clear as we sometimes think who is displacing whom. One could after all maintain that it is the non-ORVers who want to displace the ORVers, the people who do not like tracks up hillsides and who want to displace, by regulation, those who do.

That is probably why the argument from noise is so often merged with policy arguments about after-effects and the rights of future generations. Such arguments can better purport to be in accordance with public and not merely private interest.

To say this is to suggest a further difficulty. It is not always quite clear just what the public thinks on the subject of ORV recreation. The results one gets depend very much on whom and what one asks. Especially they depend on whether one asks only other recreationists or the general public as a whole, and on whether one asks about the respondents' personal preferences or about their willingness to allow for other persons' rights. It also makes a difference whether one asks about the respondents' personal preferences as to recreation development priorities or about reactions to meeting other types of recreationists while on an outing.

If one asks the general public about preferred priorities for expanding recreational opportunities, ORV recreation, on the average, does poorly. If one asks scientists about attitudes towards ORV users, one gets more adverse reactions than if one asks backpackers. And, if one asks the general public about rights of ORV users, one gets a fairly even break on the subject. These points can be seen by examining the results from the California and Washington studies displayed in table 12.

Table 12: Reactions to Users of Public Lands and Recreationists  
California Backpackers and Scientists

User Group	Mean Backpackers	Mean Scientists
Forest rangers	+3.0	+2.5
Backpackers	+2.7	+3.2
Environmentalists	+2.0	+2.9
Off-road motorcyclists	-1.0	-3.6
Dunebuggyists	-0.7	-2.9
Street motorcyclists	-0.2	-1.2
Surfers	+2.0	+0.6
Hang-gliders	+1.7	-0.3

Thus, the elite scientists, using a -4 . . 0 . . +4 scale, register an average negative or hostile response to off-road motorcyclists of -3.6—just about as negative as one can get. The backpackers, using the same scale, are also negative but much more mildly so. Their mean response is -1.0. It may help to put the difference in perspective if one notes further that the scientists tend fairly consistently to be more negative as to recreational use of even a minimally damaged sort. Thus, the scientists are slightly more negative about hunters and street-motorcycle riders (with respect to whom, if environmental and energy considerations were uppermost rationally to go the other way) than the backpackers are about off-road motorcyclists. The scientists even come in a hair on the negative side with respect to hang-gliders in national forests (at -0.3) and are only mildly approving of those ecological nondangers, surfers (at +0.6). The backpackers in contrast rate the hang-gliders at +1.7 and the surfers at +2.0.

What if one asks about rights rather than preferences, as in the Washington study, and if one asks the general public rather than competing users? The results, as table 13 shows, are somewhat less unfavorable to the off-roaders. Roughly one-quarter of the Washington general public think that motorcyclists should be kept entirely out of Washington forests, another one-quarter lean that way, while the other half are neutral or would admit some rights to motorcyclists. The California backpackers, though asked in a different questionnaire format, produced answers in the same ballpark as the Washington general public. The California scientists split, 34 percent agreeing strongly with the proposition that both noisy and well-muffled bikes should be kept completely out of the forest, 31 percent leaning in that direction, and 35 percent leaning in the other direction or strongly opposed to the proposition.

There are two points worth noting about these data.

One is that, although ORVers are very far from winning popularity contests among other outdoor recreationists or the general public, there is (with a particular exception for the scientists) considerably less than overwhelming support for a "ban-all-ORVs" policy. The statistical results of these surveys lead, rather, toward a zoning or apportionment policy.

The other point leads back into the central inquiry/question of this section of the essay—that for an adequate socio-aesthetic theory to explain reactions to ORV usage. What I hope thus, in the next and concluding section of this essay is to demonstrate that:

- A. reactions of non-ORV users to ORVs are not completely explained by their ecological effects;



Table 13: Samples' Reactions to ORV Policy Regulations and ORV Rights

	General Public	Mailed 4-Wheel	Mailed 2-Wheel	Field 4-Wheel	Field 2-Wheel
Motorcyclists should be kept completely out of Washington forests. They spoil nature.					
Off-road vehicle users should have to defer to the needs of backpackers in the forest.					
Backpackers should be permitted to go where they want in Washington forests.					

- B. different segments of the public and of public lands recreationists are operating with different aesthetic frameworks that lead to different ratings of the desirability of permitting ORV recreations;
- C. these different aesthetic frameworks are class, age, and sex specific, as is the felt impairment-displacement effect of ORVs;
- D. that, once these points are established, there are sufficient other social and psychological benefits received directly by the ORVers and indirectly by nonusers to preclude locating the public interest in a solely ecologically based "ban-all-ORVs" policy;
- E. rather, ORV policy should be a mix of "zoning," "mitigative measures," and strong incentives to manufacturers, dealers, and users toward the production, sale, and use on public lands of "less damaging, less noxious designs."

#### ORV Benefits, Nonuser Attitudes, and ORV Policy

#### The Nonecological Determinants of Attitudes Toward ORVs

The data we have looked at so far suggest that there may be determinants of public attitudes toward ORVs that have little to do with ORVs' damaging environmental effects and much to do with differing aesthetic reactions and/or recreational objectives. Environmental claims are much more plainly public-interest-oriented claims and warrant heavier consideration than personal preference or "association" claims in the formation of public-lands policy. To oversimplify, environmental claims in isolation might argue for a policy of complete prohibition—if the evidence were strong enough. In contrast, personal preference claims argue for a mixed policy of "integration" and "segregation," or, if you prefer, a mixed policy of "nonmechanized recreation areas," "mechanized recreation areas," and "any recreation areas." It is important, in determining which type of recreational policy to pursue, that policy makers spend as much effort trying to keep the two types of claims analytically separate as recreationists spend trying to camouflage the one under the other.

What evidence is there, in fact, that suggests the existence of nonenvironmentally oriented attitudes on the part of non-ORV users? In this section, I shall advance three types of evidence.

The first is an explicit admission to that effect on the part of the scientists and backpackers in the California survey. One of the questions to which both groups were asked to respond was hypothetical.

I would dislike seeing motorcyclists in the forest even if they didn't make any noise or damage the ecology. There's just something irritating about a motorcyclist getting so easily to some remote campsite in an hour or so, while it takes a back-packer a tough day's hike.<sup>44</sup>

The response of these two groups to this question (see table 14) were intriguing. Thus, about half of the two groups concede there is some or much truth in the proposition, while only one in six denies the proposition's truth altogether. In other words, half the respondents concede that the antipathy to bikes in the wilderness is not a question only of ecological concern or of noisesome disturbance of a wilderness weekend. To restate their point, they are really telling us that there is either an aesthetic affront or, and also, a fantasy affront.<sup>45</sup> The illusion of wilderness is destroyed or at least threatened by the appearance of others making it more easily.<sup>46</sup> That is much like the kind of feelings I occasionally had on the canoe expedition, watching power boats. But it is a long way from clear to me that the impression of greater ease (which in the biking instance at least is itself a substantial part illusory), that the impression these mechanized recreationists are not doing an honest wildlands day's struggle against self and nature, constitute strong grounds for restrictive land-use policies.<sup>47</sup>

Whether Two Competing Aesthetic Systems Are in Evidence, or Whether It Is a Case of "Aesthetic Deadbeats" vs. "Nature-Appreciators"

If we grant that part of the argument over the right to use public lands for recreation grounds is an assumption that those who feel something aesthetic about nature have a stronger claim to the nation's scarce remaining wildlands than those who are aesthetic deadbeats, than those who would equally well see McDonald's hamburger stands atop El Capitan or install a funicular into Mineral King, and then those who could equally well "do their recreational thing" in a lot set aside in metropolis, then it is important to understand the aesthetic systems of competing recreational users. Group A (with an aesthetic appreciation) versus Group B (without an aesthetic appreciation) presents a different policy-claiming priority problem than does Group C (with one aesthetic system) versus Group D (with a different but nonetheless perceptible aesthetic system). An important aspect of the ORV/non-ORV problem thus consists in determining whether we have an A-vs-B or a C-vs-D conflict.

The point pertains also to a contention about policy and amelioration of conflict: to the extent that both competing groups have strong aesthetic claims, there is a possible common basis of appeal in the "educative process" of rider (and other user) education.

Table 14: California Survey Question/Response

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<p>"I would dislike seeing motorcycles in the forest even if they didn't make any noise or damage the ecology. There's just something irritating about a motorcyclist getting so easily to some remote campsite."</p>				
	Strongly Agree	Agree Somewhat	Disagree Somewhat	Strongly Disagree
Backpackers	18%	31%	34%	17%
Scientists	28%	28%	30%	14%

---



Tables 15 and 16 report the results of asking backpackers and riders in the California study to react to four photographs of natural scenes using an Osgood semantic differential. Picture A was a semi-arid rolling hills scene with a dirt road, while picture B was a somewhat lush hills scene without a visible road or trail. They were, respectively, details of two larger photos, E and F, that were shown in their entirety after the recreationists had reacted to A and B. E showed a biker jumping on a leanly designed motocross machine. F showed a trailrider, more stodgily, taking a gentle corner on a "fatter" enduro bike. Although considerable care was taken in a pilot stage of testing to determine which among many pictures seemed best to elicit responses from the user groups, some caution is in order in interpreting the results for two reasons. First, budgetary limitations precluded the ideal test, which would have been "whole scenes" without riders, and then with riders. Second, while the major difference in perceptions of pictures E and F almost surely related to the difference between the two riders, their machines, and their activities for the biker respondents, it is possible that, particularly among the backpackers, there was a secondary variable in the appealingness of the two scenes, A and B, without the riders.

The riders present, I think, the easier interpretive case. It centers on the difference between their reactions to imposing the rider in the nature scene in the A/E combination versus the B/F combination. The E rider (the jumper) with only one exception (the peaceful-disruptive semantic pair) "moves" their reactions substantially to the positive end of the scales. The F rider's intrusion produces no such strong positive shift. Indeed, the riders are indifferent on the summing attitudinal pair (like/dislike). Almost certainly, there is a machine-and-activity-related aesthetic reaction going on that slightly favors the B over the A natural scene. In short, there is a favoring of the dynamic rider and lean machine in action—a favoring that suggests, in company with the lesser differences between the two nature scene perspectives, a "dual aesthetics," two "systems"; one focussing on machine-in-nature and the other on nature and ordering preferences. Rider E simply is more attractive to the motorcyclists, whatever nonusers may think.

Interpreting the backpackers' reactions is more difficult but, from a policy standpoint, less important, since almost everyone concedes to them in advance use-claims based on nature-aesthetic responses. But, for the record, two interpretations are possible. The chief problem, of course, is to explain the much greater negative shift in the B/F combination than in the A/E combination. One interpretation would argue that the packers' reactions are "dual" like the bikers' reactions, but with a different balance, a different weighting, of the nature and rider components. On this showing, they too see the jumping motocross rider as more attractive, dynamic, etc., than the

Table 15: Aesthetic-Attitudinal Sheet--Reactions of Outdoor Scenes Without and With Riders

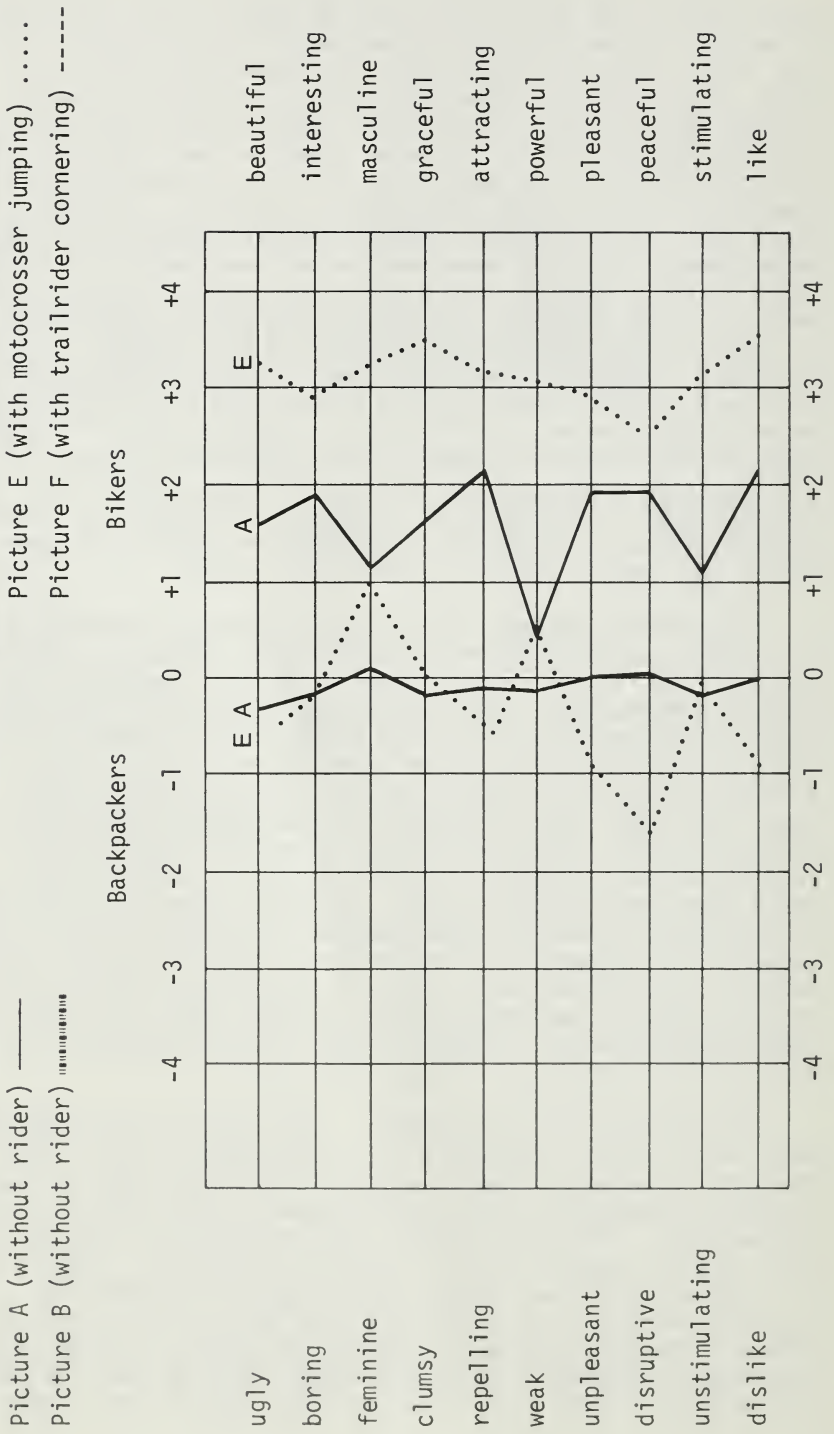
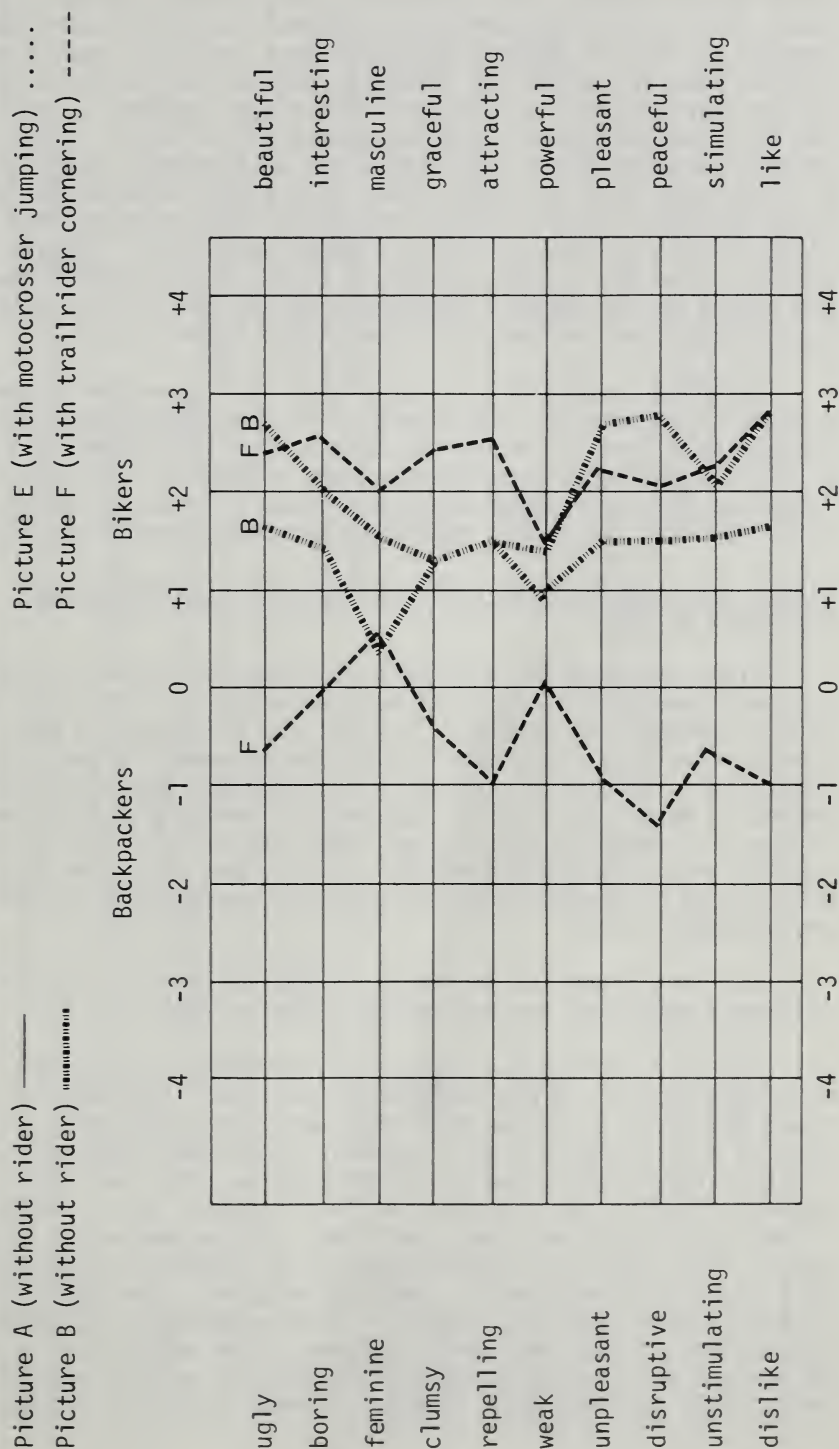


Table 16: Aesthetic-Attitudinal Sheet--Reactions of Outdoor Scenes Without and With Riders



trailrider, and that their greater liking for the former just about cancels out the "affront to nature" in the A/E combination whereas in the B/F combination the riders' positive qualities are too weak to offset the negative reaction to intrusion in nature, particularly in a natural scene they prefer. (Compare the baseline reactions of the backpackers to A and B.) The other interpretation is that they have no aesthetic reactions of a positive sort to either rider that offset adverse intrusion reactions, but rather, valuing the second nature scene more highly resent the second intrusion more powerfully. Possibly they perceive the F rider leaving a trail of dust behind him and almost on the edge of the vegetation by the road as more destructive than the jumping rider on the deserty road.

Be those speculations as they may, the "experiment" does provide sustenance for the view that in the competition over recreational land use we do not have a conflict between a Group A (with an aesthetic appreciation) and a Group B (aesthetic "dead-beats"), but rather we have a Group C versus Group D conflict (between two groups each with aesthetic appreciations).

#### Class, Age, and Sex Specificity of Aesthetic/Psychological Reactions to ORVs

Given the apparent existence of competing aesthetic systems and the nonecological or noise-related reactions, the next question is whether the aesthetic systems and the positive and adverse reactions are randomly distributed among the American population. If they are randomly distributed, then the policy import is much less than if they are not randomly distributed. If they are randomly distributed, then any restrictions bear equally on population subgroups. If they are not, then policy makers need to consider the distributive consequences amongst groups and classes.

The data presented in tables 17 and 18 raise a substantial inference that they are not randomly distributed.

Table 17 records the response of different subgroups of the Washington public to a hypothetical question. The question asked the group to assume that they won in a raffle: (1) a sailboat (a control measure as a putatively socially approved "recreational vehicle"); and (2) a motorcycle. They were next asked to predict the reactions of their spouses and of their friends if, having won these vehicles, they proceeded to use them. (The raffle was hypothesized in an attempt to minimize such side considerations as spending money on a foolish pastime.) As anticipated, the two "vehicles" receive markedly different predictions of peer and family support. The sailboat received 86 percent anticipated approval from spouses, and 85 percent anticipated approval from friends. The motorcycle in contrast



Table 17: Anticipated Reactions of Spouse and Friends to Winning a Sailboat vs. Winning a Motorcycle at a Raffle and Proceeding to Use Them

How would these persons react if, in a raffle or contest, you won and proceeded to use a new:		Percent Anticipating Unfavorable Reaction from Spouse			
		Spouse		Friends	
		Favorable	Unfavorable	Favorable	Unfavorable
SAILBOAT	SPOUSE: favorably / unfavorably				
	MOST OF YOUR FRIENDS: favorably / unfavorably / neither				
MOTORCYCLE	SPOUSE: favorably / unfavorably				
	MOST OF YOUR FRIENDS: favorably / unfavorably / neither				
<i>(Circle likely reactions. AND, if you would sell rather than use it, CROSS IT OUT.)</i>					
<i>Summer Sample</i> Sailboat		89%	11%	81%	13%
		48%	51%	49%	27%
<i>Autumn Sample</i> Sailboat		85%	15%	87%	11%
		49%	51%	52%	19%
		Percent Anticipating Unfavorable Reaction from Spouse			
		Males (under 25)	17%	Females (under 25)	14%
		(25-34)	51%	(25-34)	41%
		(over 35)	72%	(over 35)	44%

Table 18: Anticipated Negative Reactions: Education, Sex, Occupation

Group	Spouse % Negative	Friends % Negative
Males, not college educated	54	
Males, college educated	68	
Females, not college educated	36	21
Females, college educated	58	44
Manual occupations		8
College educated professionals		43

received only 49 percent anticipated approval from spouses, and 50 percent from friends.

As table 17 shows moreover, the different reaction anticipated vary according to age, sex, and education. With respect to age, anticipated spouse disapproval of motorcycle use climbs from 17 percent among male raffle winners under 25 years of age through 51 percent disapproval amongst males 25-44 years of age to 72 percent among the middle-aged and older. Similarly among females under 25 years old anticipated husband disapproval is only 14 percent whereas among those over 35 more than 40 percent anticipate disapproval. With respect to sex, among those over 25 years of age, the males consistently anticipate more disapproval from their spouses, than vice versa.

With respect to educational level, the same difference is manifest. Fifty-four percent of males who did not complete college anticipate negative spouse reactions as opposed to over two-thirds (68 percent) of college educated males. Only 36 percent of the noncollege educated females anticipate negative reactions from their husbands, while 58 percent of the college educated females do. With respect to motorcycles, at least, the noncollege educated females are more "emancipated" than the college-educated.

Clearer differentiations of reaction occur among class lines with respect to the action reactions of extrafamilial peer groups, i.e., friends. As table 18 shows, only 21 percent of noncollege educated females anticipate negative reactions from their friends, as opposed to 44 percent of the college educated. Finally, with respect to occupation, amongst those in manual and skilled occupations, only 8 percent anticipate a negative reaction from their friends. In marked contrast, 43 percent of college educated professionals anticipate a negative friends' reaction.

#### Occupation, "Getting Away from it All," and the Idea of a "Machine-Nature Conflict"—Comparing Ideology and Actual Behavior

To some, the foregoing statistics may provide a basis for solidifying the suspicion that has lurked in these pages, that is, the suspicion that "wildernist behavior" and "wildernist ideology" are not on all counts quite identical. That is to say, while there is strong agreement among all recreationist groups that "getting away from the plastic urban civilization" is important, there may be much less strong agreement about what one can legitimately, and without aesthetic affront, take with one in the course of the weekend escape. The wildernist ideology stipulates, "going back to nature, without machine and modern 'contrivances'." But as table 19 shows there may be a certain confusion relative to actual practice.

Table 19: What It Is/Is Not Okay to Take Along/Use During a Wild Lands Escape from Metropolis

Item/Class	Wildernist Ideology	Wildernist Actual Practice	ORV Ideology
<u>Metropolitan industrial products (new machines)</u>			
Plastics/synthetics	no	yes	yes
Nylon parka	no	yes	yes
Nylon sleeping bag	no	yes	yes
Nylon climbing rope	no	yes	yes
Sterno	no	yes	yes
Wood skis	yes	no	yes
Fiberglass skis	no	yes	yes
Vibramsoled boots	no	yes	yes
Old-fashioned, oil or natural-rubber covered rain slicker	yes	no	yes
New-fangled foldable plastic rain jacket	no	yes	yes
Old-fashioned, heavy tent	yes	no	yes
New-fangled aluminum-framed nylon tent	no	yes	yes
Orlon teeshirt	no	yes	yes
What Daniel Boone & John Muir wore & took	yes	no	yes
What current environmentalist wears & takes	no	yes	yes
Food containers (plastic)	no	yes	yes
<u>Machines</u>			
Motorcycles	no	no	yes
Jeeps	no	no	yes
Cars to get to dropping off point for wildernist trip	yes	yes	yes
Stagecoaches ditto	yes	no	yes
Trains ditto	yes	no	yes
<u>Occupation-related tools/machines</u>			
Paints	yes	yes	yes
Books	yes	yes	yes
Binoculars	yes	yes	yes
Writing pads	yes	yes	yes
Telescopes	yes	yes	yes
ORVs carrying scientific instruments	no?	yes	yes
ORVs not carrying scientific instruments	no	no	yes



The question is: Where is the confusion? Among the ORV-ers? Or among the backpackers and scientists who think it fine to take along paints, orlon tents, ORVs that carry scientific instruments, methods of heating foods that are distinctly late twentieth century and very much products of the metropolis they escape, or the ORVers who would admit almost everything?

Arguably, the inconsistency lies in the fit or lack of it between "wildernist ideology" and "wildernist behavior." There is hardly a wildernist now alive who limits himself as consistency of "antilate-industrial-civilization doctrine" would limit him, to what Daniel Boone, wore and took, i.e., to buckskins, candles, heavy tent, pre-down-bag-era sleeping gear, climbing rope of hemp. The ORVers display no behavioral-ideological inconsistency because they would admit everything, simply because their urban-escaping recreational renewals do not have similar ideological prerequisites. They merely need geographical removals—and damn the eco-damage.

To point to the source and center of the confusion is, however, only to make an identification of a problem of inconsistency. We have to try to explain it. That inconsistency of standard is, I think, traceable back to the occupational specifics of the "position in civilization" that one is trying to get away from.

That can be seen by considering the occupations of ORVers versus the general public and the scientists and lining them up on a rough continuum from "verbal" to "machine-oriented" jobs, and by asking a critical question. Which occupations, in fact, as distinct from ideology, really dichotomize with respect to their admissions of wilderness? Which occupations in fact bar the specific "implements" of their trade, as distinct from some of the general accoutrements of late industrial civilization? The answer is suggested in the data we looked at earlier. As table 4 indicated, a majority of the ORV users in Washington engage in mechanically oriented occupations, in contrast to the general public where the total such is around one fourth. Moreover, a disproportionate number of "the professionals" who were ORVers turned out to be engineers, i.e., that subgroup of professionals most oriented to mechanical and physical-world-manipulating tasks.

What is the moral of all this? While I do not argue that the evidence cannot be rebutted, there seems at least a strong suggestion that there is a very good occupation-related reason why ORVers ORV-recreate. Far from displaying an anomalous or peculiar desire to bring the tools of their trade into nature, they do just what poets do when they bring writing pads and books to poetry, what painters do when they bring easels, what scientists do when they bring binoculars. The mentally or verbally oriented in occupation see no civilization-nature

antinomy with respect to bringing their occupation-related tools. So too, with the "mechanicals" and "physical manipulators." They do not see anything odd or discordant about a machine in nature because they work with machines. Where the typical professional sees no greater aesthetic value in one motorcycle against another, the "mechanical" by profession do. And where the former see a necessary conflict, the latter do not. It is also quite possible, though I have no systematic evidence to prove it, that the ORVers on the whole work in noisier environments and over time develop higher noise tolerances, if they did not have such from the start. Their natural demands, in other words, for "quietness in nature" may simply be less rigorous just as, and quite consistently, they are less on the job. That does not mean necessarily that they are less capable of aesthetic responses in nature. It may simply be that they are less distracted by the noise of machines, that is, that the visual is less likely to be overpowered or diminished by the aural sensation's bulking too large.

To conclude this point, nature-aesthetic frameworks may well be age, sex, and occupation related. Unless we find convincing nonaesthetic grounds, i.e., ecological ones, there is no good reason extractable from democratic theory to make one age's, sex's, or occupation's preferences invariably rule over others'.

#### Other Social and Psychological Benefits of ORV Recreation— and Reinforcing Norms and "Substitutability"

It remains to specify the nonaesthetic benefits that may be derived from ORV recreation and that should be lined up against its costs in setting public-lands policy. These benefits fall into two categories, direct ones to the users and indirect ones to nonusers.

Indirect ones to nonusers may be sociologically important. Claims to this effect are sometimes made. But we really do not know. For example (and to repeat claims I have heard ORV proponents make), it is possible that for every ORV outing in the California desert on the part of an automobile worker there is one less flaw in the Chevrolet or Pinto he puts together the following Wednesday. It is possible that getting teen-agers interested in motocross keeps them off heavy drugs. It is possible that for every 100 backpackers irritated by the sound of a passing jeep-driver there is one less automobile accident on the nation's freeways and turnpikes. It is possible that for every turtle squashed or creosote bush uprooted there are "x-fewer" racial insults hurled on the job or in the street—all because "people" get it out in the desert or in the forest. It is possible, in other words, that the claims of those who take ORV recreation seriously as an outlet for psychological tensions are in fact correct. I cannot give any clear answers

on this score. The actual cathartic effects, as distinct from the responses given on surveys, are extremely difficult to trace. Recreational research is extremely weak in this area. It is an oddity of the conflict over public-lands recreation that the very institutions and businesses who have most to gain from finding out the answers on these questions seem to show the least interest. I am thinking of course of the motorcycle and jeep and snowmobile manufacturers and of their lobbying organizations. Thousands of dollars are spent for off-road workshops, but not a penny for research. It is odd. But perhaps the oddity is explained by the circumstance that these institutions do not really believe the indirect societal benefits claimed in advertisement and newsletter. I am not sure. I wish therefore to urge our attention to direct benefits of which I am somewhat less uncertain.

Some advertisements and some statements by ORV manufacturers and spokesmen strike me as at best exceedingly tame, and at worst off the central mark of motivations behind ORVing. I am thinking of those that stress "family togetherness" benefits. ORV recreation is said to be healthy because it promotes the survival of families and the mores and values of a more stable society than today's.

While I do not want to dismiss this direct benefit altogether, I am not convinced from my own research that it is the major benefit. Further, it is quite true, if we go on the basis of the evidence accumulated so far, that, as Sheridan reports, ORVers in the main are more gregarious than wilderness purists, though and as he does not report, not more gregarious than hunters, picnickers, and Wennebago-campers.

My impression is that at least as important components of, and reinforcers of, the ORV recreation experience may be: (a) resolving psychological conflicts within the family, or temporarily dampening them down, by getting away from the family; (b) resolving feelings of inadequacy on the job or general lack of success in urban life, by testing oneself and displaying skill of machine in nature; (c) gaining friendships and status among peer groups both among other ORVers and among occupational peer groups. It is also possible that for a majority of keen ORV users there are no equally satisfying substitutes.

The Washington and California surveys sought to get at these questions by the means displayed in tables 20-24. These questions asked about: (a) motivations behind taking up ORV recreation (table 20); (b) preferred companions while ORVing (table 21); (c) whether friendship formations had resulted from ORVing (table 22); (d) "feelings of success" resulting from ORVing (table 11); (e) reactions to co-workers to the respondents' chosen recreation, as a potential source of kudos or



status (table 23); and (f) about other equally, or more satisfying recreations (table 24).

Although it is well not simply to take all the results at face-value, the following seem likely candidates for being sustained by future research.

With respect to causes of taking up ORV recreation; three observations seem plain. First, there is a distinct cleavage between four-wheel recreationists and motorcyclists, as to important reasons most frequently mentioned. Among the 4-wheelers a "side motive" ("better way to go hunting or fishing") comes in clear first at 49 percent, whereas amongst the bikers such motive is mentioned as a definite reason by only 26 percent, or seventh most important. The most frequently mentioned reason for getting into ORV recreation amongst the bikers is that "a friend I admired was into it." Second, and suggested by the foregoing comment, the origins of ORV recreation are in terms of interpersonal motivation much more strongly, for both groups, extrafamilial rather than intrafamilial. Among the bikers, only 1 in 10 attributes indicates that a family member's prior participation was a clear reason; and among the 4-wheelers, only 1 in 15 does so. Third, "fascination with power" and with "danger" are clearly important motivations among the bikers, ranking respectively 2nd and 5th. They are less important among 4-wheelers.

With respect to preferred companions while ORVing, among the bikers there is a distinct preference for ORV recreation with friends as favored fellow-participants (63 percent mentioned friends) as opposed to family members (for example, mothers, 13 percent).

With respect to "felt success," 30 percent of the Washington bikers and 21 percent of the Washington 4-wheelers attach great importance to ORV recreating as an activity where they "feel most successful" and "achieve something important," while 64 percent of the bikers and 43 percent of the 4-wheelers attach at least some importance to ORV recreation on this count.

With respect to friendship formations and kudos, forming important firendships in consequence of ORV recreation are reported by 78 percent of the bikers and 90 percent of the 4-wheelers, while a majority of both groups report receiving "prestige-boosts" from co-workers in consequence of their ORV participation. While it is possible that the ORVers are "imagining" resultant prestige, it is more likely (and suggested by our earlier examination of the preponderance of mechanically oriented occupations among ORVers) that these responses reflect reality, that is, peer group norms reinforce, and provide psychological benefits from ORV recreation.



Table 20: Reasons for Taking up ORV Recreation

4-Wheelers				Bikers		
Not a Reason	Perhaps a Reason	Definitely Reason		Not a Reason	Perhaps a Reason	Definitely Reason
84.7	8.2	7.1	"my spouse was already into it"	86.8	4.4	8.8
78.6	12.2	9.2	"my father was into it"	76.9	7.1	15.9
92.3	4.6	3.1	"my kids were into it"	87.9	2.7	9.3
35.7	36.2	28.1	"a friend I admired was into it"	38.5	18.7	42.9
53.1	41.3	5.6	"someone I don't know well but admire was into it"	64.3	18.7	17.0
71.4	19.4	9.2	"I was kind of fascinated by the danger of it"	54.9	14.8	30.2
88.3	10.7	1.0	"I was sort of on the rebound from not doing as well as I wanted to in some other sport" (if this applies, write in sport)	84.1	9.9	6.0
76.5	21.4	2.0	"advertisements on TV or in magazines, and sports-news about the sport fascinated me"	70.9	14.8	14.3

Table 20:--Continued

4-wheelers			Bikers		
Not a Reason	Perhaps a Reason	Definitely Reason	Not a Reason	Perhaps a Reason	Definitely Reason
86.7	9.7	3.6	83.0	7.7	9.3
		"there's a little bit of the Hell's Angles in me—a desire to object to the rote, bureaucratic aspects of our civilization where all is too clam and too smooth, a need to associate with just a touch of violence"			
73.3	20.5	7.2	66.5	12.1	21.4
		"I was already into street-motorcycling, when I got interested in off-road recreation"			
52.0	32.1	15.8	44.5	24.2	31.3
		"it seemed safer than riding a motorcycle on the street"			
76.0	18.4	5.6	66.5	14.3	19.2
		"it was kind of a relief from—something to take my mind away from—being less successful than I'd wanted to be in some area of my work or life"			
18.9	40.3	40.8	36.3	27.5	36.3
		"getting into nature was an important motivation for me"			
51.5	35.2	13.3	31.3	29.7	39.0
		"there's something about the power of the machine that appealed to me"			
28.6	42.9	28.6	30.2	39.0	30.8
		"it seemed like something that would make me feel more free"			

Table 20:--Continued

4-Wheelers			Bikers		
Not a Reason	Perhaps a Reason	Definitely Reason	Not a Reason	Perhaps a Reason	Definitely Reason
79.1	16.8	4.1	"I wanted to prove myself" "there's just something good-looking about a bike and rider. I wanted to be a rider" "there's just something good-looking about a 4WD. I wanted to have one." "I wanted a better way to go hunting or fishing"	69.2	14.3
88.8	9.7	1.5		70.3	16.5
36.9	39.5	23.6		78.0	12.6
22.1	28.7	49.2		61.0	13.2
If something else not mentioned here was one of the main reasons why you got into ORV recreation, please write down what it was*					25.8

\*Very few additional responses were given.

Table 21: Preferred Companions While ORVing

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Friends	63%
Spouse	40%
Children	39%
Fathers	16%
Mothers	14%
Sisters	13%
Brothers	12%

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Table 22: Friendship Formations

Friendship Formations in Consequence of ORV Recreation and ORV Recreation Participation of Co-Workers					
Responses to Questions:	None	One or Two	Several	Quite A Few	Many
Did taking up riding/ 4-wheeling lead to your forming any new friend- ships important to you?					
2-wheelers	22%	19%	32%	27%	--
4-wheelers	10%	5%	19%	66%	--
How many of the people you work with (go to school with) also ride/4-wheel?					
2-wheelers	26%	25%	23%	14%	12%
4-wheelers	21%	24%	24%	19%	12%

Table 23: Reported Reactions of ORV Recreationists' Friends and Job Colleagues to ORV Recreationists' Biking and 4-wheeling

	Neat Thing To Do	Strange Thing To Do	No Reaction
Reaction of:			
Friends, when ORVer first got into ORVing			
2-wheelers	74%	11%	15%
4-wheelers	66%	8%	25%
Job co-workers, now			
2-wheelers	68%	20%	12%
4-wheelers	73%	5%	22%

Table 24: Activity "Substitutability"

Riding versus other sports, respondents' attitudes:

Other sport	Number rank- ing other sport equally	Number rank- ing other sport ahead	Number say- ing "unsub- stitutable"
Any other form of racing (exc. foot)	4	2	171
Racing on foot	1	0	178
Mountain or rock climbing	1	0	178
Skydiving	0	0	179
Hunting	8	4	167
Backpacking	5	2	172
Picnicking	9	0	170
Fishing	3	0	176
Surfing	7	2	170
Scuba diving	3	1	175
Horseback riding	4	0	175
Sailing	0	0	179
Dunebuggying	1	2	176
Canoeing/whitewater kayaking	0	0	179
Crew	1	0	178
Football	12	0	167
Basketball	3	4	167
Ice hockey	1	0	178
Lacrosse	1	0	178
Baseball	2	1	176
Snow skiing	10	6	163
Water skiing	11	4	164
Boxing	0	0	179
Wrestling	0	0	179
Karate or other martial arts	0	0	179
Tennis	4	0	175
Golf	0	0	179
Other contact sports	7	0	172
Other noncontact sports	14	2	159

Finally, with respect to ORV recreation benefits, there is at least provocative evidence that the activity is low on "substitutability."<sup>48</sup>

Conclusion: Nature Aesthetics, Public Interest, and ORVing:  
A Note on the Policy Problem of Comparing Ecological  
Apples and Psychological Oranges

In delivering the foregoing remarks, I do not pretend to have specified precisely where lies the public interest concerning ORV recreation or the limits that should be attached to its practice on public lands. My central purpose, rather, has been to argue that in framing and implementing ORV use policies as much attention should be given to the social-psychological costs and benefits as to the ecological costs. That does not, of course, mean that the former should necessarily outweigh the latter, though, in my judgment, it does suggest that one clear policy line should be drawn. That line separates two types of contra-ORV claims—those based on ecological concerns and those based on competing recreational user claims. The former strikes me as much more deserving of a controlling "trump card" policy import than the latter. The latter—the personal preferences of competing nonmechanized users—should be treated as co-equal, as (to continue the analogy) just another suit of preference cards, not as "trumps" that displace alternate policy preferences among users. To say that, however, is at least to indicate two things.

One, it is to specify where the public interest does not lie. It does not lie in preferring one recreational group's value system over another's. It is to specify that to the extent that the conflict is a matter of competing personal preferences the appropriate policy purpose should be to segregate and provide for both.

Two, it is the issue of prognosis by way of drawing an analogy. Even as I draw your attention to these essentially humanistic and social science-oriented considerations, to the questions of recreational cause, motivation, and goal in late industrial society, I am struck by how weak the data are that I am able to marshall relative to natural science data about ORVing's deleterious effects. It is much like asking you to measure the relative policy-making values of ecological apples and psychological oranges. I am put in mind of the policy-making framework that led us to a deep and unsuccessful commitment in Vietnam. There, you will recall, it was always the "doves" who appealed to, and cautioned from their cognizance of, psychological and societal considerations—the will of the enemy, the basic issues of colonialism vs. nationalism and right—all frightfully difficult to measure. There also, you will recall, it was always the "hawks" who appealed to, and



urged more military action on the basis of, such hard, countable evidence as "body count," "hourly bomb-dropping capacity," "defoliation capacity of chemicals X, Y, Z." The hawks, for many years, always won. Their apples were more measurable than their opponents' oranges. The result was, of course, a policy disaster. To complete the analogy, I am much impressed by the well-measured proofs of the environmentalists most opposed to a generous ORV-recreational policy. I feel humbled on this score of capacity to measure. But I am equally struck by irony.

The irony is this. In Vietnam it was a seeming but illusory capacity precisely to measure the defoliation capacity of chemicals that led us astray. In current ORV policy planning, it appears to be our capacity to measure the defoliating capacity of ORVs that also threatens to lead us astray. Hence my prognosis. As in Vietnam, the difficulty of balancing and measuring ecological apples and psychological oranges is sufficiently great that, should the balancing act succeed, I shall be greatly surprised.

#### Notes

1. See, e.g., the bibliography at the end of David Sheridan, Off-Road Vehicles on Public Lands (Washington, 1979), pp. 70-82. See also (a better bibliographic overview of nonecological aspects), Bury, Wendling, and McCool, Off-Road Recreation Vehicles—A Research Summary, 1969-1975 (Texas Agr. Experiment Station, 1976); and Lime, D. W. and E. Leatherberry, ORRV Bibliography (St. Paul, 1974).
2. I say "immediate preferences" advisedly.
3. Although, to be sure, it is arguable that "education" and "enforcement" could reduce the incidence of such acts significantly, I am uncertain whether such argument is correct. Research on the effects of "education" and "enforcement" (and for that matter on the effects of trail design and layout) is so far insufficient to judge.
4. For a particularly insightful essay on "wildernist" attitudes, see Linda Graber, Wilderness as Sacred Space (Washington, 1977).
5. See the survey results of Pacific Northwest public and private land managers reported in Kent B. Downing and Cynthia M. Moutsinas, "Managers' Views of Dispersed Recreation Along Forest Roads," Journal of Forestry 583-585 (September, 1978).

6. See Nash, Off-Road Riding on Forest Lands as a Public Policy Problem (Los Padres National Forest, Goleta, CA., 1976); Nash, Understanding and Planning for ORV Recreation: The 1978-1979 Washington Off-Road Recreation Survey (Interagency Committee for Outdoor Recreation, 4800 Capitol Blvd., Tumwater, WA., 1979).
7. See R. J. Badaracco, "Conflicts Between Off-Road Vehicle Enthusiasts and Other Outdoor Recreationists—The ISD Syndrome," in K. Berry (ed.), The Physical, Biological, and Social Impacts of Off-Road Vehicles on the California Desert, Southern California Academy of Sciences Special Publication, (in press).
8. See Robert C. Stebbins and Nathan Cohen, "Off-Road Menace," Sierra Club Bulletin (July/August, 1976), pp. 33-36.
9. Jack Hope, "The Invasion of the Awful ORVs," Audubon Magazine, vol. 74 (January 1972) 36-43.
10. For a speculative discussion of why, see Nash (1979), pp. 20-21 and notes 13-17 at pp. 26-27.
11. See Nash (1979), footnote 1 at page 101.
12. See Sheridan, op. cit. at p. 6 and Ralph Maughan and David Duncan, "Feet vs. ORVs," Journal of Forestry (August 1978) 378-80.
13. See *ibid.*, and see the review of Maughan and Duncan in Sierra Club, ORV Monitor (1978).
14. A frequent complaint of ORVers at user meetings held in conjunction with the Washington State Survey.
15. See op. cit. supra at notes 12 and 13.
16. But for the problem of minimizing one and maximizing the other, see *infra*, part V.
17. MIC Statistical Annual calculations have varied substantially from the 1978 to 1979 editions, but the ratios between the Rocky Mountain and Eastern Seaboard States continue to show a disproportion.
18. Climate variations clearly account for some differences in the "motorcycle penetration" across the U.S. as a whole, but not for all differences.
19. For further details see Nash (1979), chapter 10.

20. A sales tax is of course in fact regressive (if applied on all items) because of the greater proportion of income spent by lower-income groups on taxed commodities.

21. Sheridan (1979) at 6 and 7 (the first quoting Maughan and Duncan).

22. Sheridan (1979) at 7.

23. See MIC Statistical Annual (1977), pp. 42-43.

24. See Bury (1976).

25. Or, the "land ethic" approach. For a useful discussion of evolving attitudes towards American wildlands, see Roderick Nash, Wilderness and the American Mind (2nd edition, 1973). Note also with respect to the attitudes of land managers: "As compared with most users who are from urban places, managers have a close personal orientation toward natural environments and have formed more traditional views concerning activities and behaviors appropriate in such settings. To many managers . . . it seems inconsistent that campers who bring along many of their urban conveniences . . . (radio, TV, bicycles, camper vans . . .) may also be seeking more traditional values such as isolation and contact with natural environments. Furthermore, to many managers it is inconceivable that users are able to achieve such values in developed settings . . ." Kent Downing and Roger N. Clark, "Users' and Managers' Perceptions of Dispersed Recreation Impacts: A focus on Roaded Forest Lands," in Ruth Ittner et al., Recreational Impact on Wildlands (Conference Proceedings, October 27-29, 1978, Seattle, Washington, U.S. Forest Service No. R-6-001-1979), at pp. 18-19.

26. And, with respect to the perceptions of land managers, perhaps less remote than first glance might suggest. Thus, Richard F. Buscher in discussing the sources of Forest Service managers' perceptions of recreational impact considers the following important: a strong possessive interest in the ranger for "his" district; the Forest Service's "organizational heritage of a strong mandate to protect the forests;" Congress' legislative provision for multiple use; and "a direct experience of timber management in our career backgrounds." The last, he suggests, may explain "why some 30 Forest Service recreation specialists I once accompanied could walk across a meadow disturbed by a logging tractor without critical comment, to look at the 'impact' of a narrow motorbike trail and find it unacceptable damage. They recognized the track of the tractor as transitory impact but interpreted the bike trail as permanent damage." See his essay, "Wildland Recreational Impact from the U.S. Forest Service Land Manager's Perspective," in Ittner, op. cit. at p. 11.

27. As the results displayed in table 8 suggest, there seems also to be a fifth "socializing" and a sixth "mechanical-skill" dimension.

28. Selection of interviewers to conduct interviews with off-roaders is a problem a bit analagous to selecting interviewers of minority groups. Onthe whole, experience suggests that one is likely to obtain "truer" answers by using sympathetic interviewers themselves familiar with ORVs than by using "detached neutrals." For an extensive discussion of the experience in the California study (which included ecologically oriented interviewers seeking to disguise their feelings as well as sympathetic interviewers and a few neutrals), see Nash 1976 at 14-24. And see Nash (1979), pp. 11-12 and footnote 13, regarding the Washington study interviewing techniques.

29. The California study used a sheet of peel-off lables and a blank matrix. Placement opportunities ranged from -1 to +8. The Washington study used a more orthodox -4/+4 balanced 9-point scale and "writing in the appropriate numbers" technique.

30. Sheridan (1979) at 4.

31. Id.

32. Id.

33. Id.

34. Id.

35. Ibid. at 5.

36. Id.

37. Id.

38. Ibid. at 6.

39. See Immanuel Kant, Critique of Judgment, in Carl J. Friedrich (ed.), The Philosophy of Kant (New York, 1949), at 265ff. See also Harold Osborne, Aesthetics and Art Theory: An Historical Introduction (New York, 1968) at 171-191.

40. See Osborne (1968) at 17-24 and 79ff.

41. See id. at 17-24 and 252-292.

42. See Roderick Nash (1973) 122-152 generally for Muir and the Wilderness Cult, and L. M. Wolfe, Son of the Winderness: The Life of John Muir (New York, 1945) for specifics.



43. See Michael Williams' essay in Outdoor Recreation Vandalism Symposium, Santa Barbara, 1976 (USDA Forest Service Technical Report PSW-17, 1976) at p. 43.

44. Elwood L. Shafer, Jr., and Thomas A. Richards, "A Comparison of Viewer Reactions to Outdoor Scenes and Photographs of Those Scenes," USDA Forest Service Research Paper NE-302, 1974. The main point of the research was different—namely, examining the "fit" between reactions to visiting and seeing an actual natural scene and reactions to photographs and slides of such a scene. But see the discussion at pp. 24-25.

45. By saying "fantasy affront" I do not mean anything pejorative, but merely to underscore that, particularly in a highly industrial late twentieth century society, wilderness is in Roderick Nash's phrase "a state of mind."

46. Unless of course we are to revert to an absolutist "appropriateness" standard for wildlands recreational use and say that some fantasies are more equal than others there.

47. And inherently difficult.

48. For a more detailed discussion, see Nash (1976) at 78-81.

## THE ORV PHENOMENON—MANAGEMENT—IMPACT

### The Ballinger Canyon Designated Motorcycle Trail System

*H. G. Wilshire*

Three thousand hectares in the Ballinger Canyon, California, area were designated as a vehicular open area by the Los Padres National Forest in 1976. This designation was part of the planning process required to implement executive order 11644. Like many national forest ORV plans, it legitimized an existing use which had been intensive since about 1970; the only other open area designation by this plan—Tejon Pass (Hungry Valley)—was also an existing intensive-use area.

It was apparent even before designation that the area was not suitable for unregulated ORV use (USDA, 1972). The forest soils report identified the soil-terrain associations that seemed most suitable for motorcycle use, and made specific recommendations for trail construction at elevations above 4,000 feet, both of which, if observed, would have seriously circumscribed unregulated use of ORVs.

In the meantime it has been shown (Stull and others, 1979; Wilshire, 1977) that even the most resilient soils in the area—those determined by the 1972 forest soils report to be most suitable for motorcycle use—are highly vulnerable to accelerated erosion, and that the more sensitive soils have undergone erosion on a scale greatly exceeding even the high natural rate of erosion in the area. In addition, wildlife habitat that the forest sought to protect by fencing has undergone degradation by erosion resulting from excessive runoff from ORV-denuded slopes and by burial by debris eroded from those slopes.

By August, 1978, the problem of land degradation had become so severe and the public protest so vocal, the area was closed to hillclimbing by directive of Assistant Secretary of Agriculture Rupert Cutler. The closure orders called for ultimate designation of approximately 31 miles of trails for motorcycle use and rehabilitation of lands damaged by hillclimbing.

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In the ensuing 19 months two draft management plans have been issued calling for more than 70 miles of ORV trails, hill-climbing continued in clear violation of signing (for 16 months until enforcement was temporarily increased), and a large motorcycle enduro was run on routes approved by the forest service as part of the trial system to be designated by the final management plan. In this time nothing was accomplished in the way of rehabilitating any of the damaged land, and severe accelerated erosion continued unabated (fig. 1).



Fig. 1. Severely degraded hillslopes of Ballinger Canyon. This area of activity eroding hillclimbs is not mentioned in the rehabilitation plan of the Final Draft Management Plan. Numerous other more isolated hillclimbs are also not specifically scheduled for rehabilitation though the closure order of August, 1978, called for this.

The trail system approved by the forest service was examined by forest staff who based their recommendations for closure, acceptable-with-mitigation, and acceptable-as-is on existing state of the trail, potential for erosion control, and potential for "rehabilitation." These criteria were said to represent modifications of the soil conservation service guidelines for rating soil limitations for off-road vehicle trails that were sufficient to substitute completely for the soil conservation service guidelines.

Table 1: Guide for Rating Soil Limitations for Off-Road Vehicle Trails, National Soils Handbook, Part II, Section 403.6(b), U.S. Department of Agriculture, Soil Conservation Service, 1979.

Property	-----Limits-----			Restrictive Feature
	Slight	Moderate	Severe	
1. USDA texture	--	--	Ice	Permafrost
2. Fraction >3 in (wt pt) (surface layer)	<10	10-25	>25	Large stones
3. Depth to high water table (ft)	>2 --	1-2 --	0-1 +	Wetness Ponding
4. Erosion factor (N) X percent slope	<2	2-4	>4	Erodes
5. <sup>26</sup> USDA texture (surface layer)	--	--	SC, SIC, C	Too clayey
6. USDA texture (surface layer)	--	LCOS, VFS	COS, S FS	Too sandy
7. Unified (surface layer)	--	--	OL, OH, PT	Excess Humus
8. Slope (pct)	0-25	25-40	>40	Slope
9. <sup>11</sup> Coarse fragments (wt pct) (surface layer)	<40	40-65	>65	Small stones
10. USDA testure (surface layer)	--	SIL, SI VFS, L	--	Dusty
11. Flooding	None, Rare, Occas.	Frequent	--	Floods
12. <sup>40</sup> Other	--	--	--	Fragile

<sup>26</sup>Soils in UST, TOR, ARID, BOR or XER suborders, great groups, or subgroups rate one class better.

<sup>11</sup>100 - percentage passing no. 10 sieve.

<sup>40</sup>If the soil is easily damaged by use or disturbance, rate "severe-fragile."

(b) Off-road motorcycle trails are those used primarily for recreational use with trail type motorcycles. Little or no trail preparation is done and the surface will not be vegetated or surfaced. Considerable soil compaction on the trail is expected. Soils are rated on the properties that influence erodibility, trafficability, dustiness, and safety to the operator. Soil properties considered are stoniness, slope



In fact, the title of the table of ratings provided by Los Padres National Forest indicated that the ratings were for trails on steep slopes, i.e., slopes steeper than 30 percent, thereby abdicating a principal factor in the SCS guides for erosion hazard. As a consequence, trails approved by the forest service and already signed as designated routes in advance of approval of a final management plan commonly have lengthy segments with slopes of 40 to 55 percent and more. Moreover, the approved trails run randomly across all principal soil types of the area without regard to the findings of the 1972 Los Padres National Forest soils report.

The effects of ignoring the slope factor on the sensitive soils of the area are everywhere apparent in the approved trail system (figs. 2 and 3). Some of these problem areas were cited as acceptable with no mitigation, others in apparently no worse condition were cited as requiring permanent closure (fig. 4). Still others were cited as acceptable with mitigation, mainly water bars or open top drains. Trails in the designated system with gullies from about 1/2 m to more than 2 m deep were variously tagged for water bars, gully plugs, and fill (fig. 5); water bars only (fig. 6); and no mitigation at all. The problem of gullying off existing trails as a consequence of accelerated runoff was not addressed, although the mitigation measures themselves could cause such problems.

The most commonly recommended mitigation, water bars, installed and maintained either by the ORV users or the Forest Service, have been demonstrated in both Los Padres N.F. (La Panza-Poso motorcycle trail system) and in the adjacent Angeles N.F. (Texas Canyon-Rowher Flats) to be ineffective in active ORV areas (figs. 7-9).

The potential for rehabilitation, a useful criterion for any ORV area, has not been demonstrated for any soil-vegetation association present in Ballinger Canyon. No data have been adduced by the Forest Service to support the belief that rehabilitation is possible or feasible. No standards have been established for what rehabilitation is expected to achieve because no long-range plans for use of the land after rehabilitation have been made (see National Academy of Science, 1974).

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wetness, texture of the surface layer, and flooding. Slope affects the soil erodibility and safety to the operator. Large stones affect configuration of the trail and possibility of collision. Small stones thrown from wheels may endanger riders that follow. Wetness and flooding affects frequency of use. Surface texture affects erodibility, trafficability, and probability of dust. If the soil is observed to be easily damaged by use or disturbance, rate "severe-fragile."



Fig. 2. Trails 1 and 1a of the designated trail system, Ballinger Canyon are on opposite sides of the gullies on the right hand slope in the photograph. The gullies are caused by excessive runoff from higher parts of the trail. The gullied trails on the left hand slope are called hillclimbs and are closed to vehicles.



Fig. 3. Trail 15E, designated open with water bars or open top drains and debris basins as mitigations.





Fig. 4. Trail 9D, scheduled for permanent closure.





Fig. 5. Trail 150A, designated open with water bars, gully plugs, and fill as mitigations.



Fig. 6. Trail 7, designated open with water bars as mitigation.

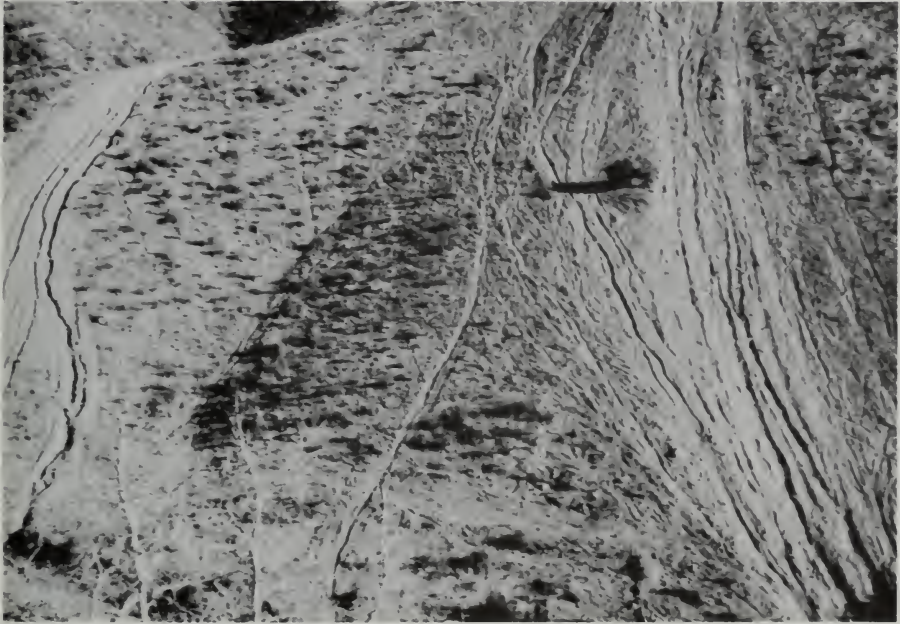


Fig. 7. Texas Canyon, Angeles National Forest. This sequence of 3 photographs (figs. 7-9) illustrate the ineffectiveness of water bars or earth blockades in active ORV areas. Photographs taken January, 1976.

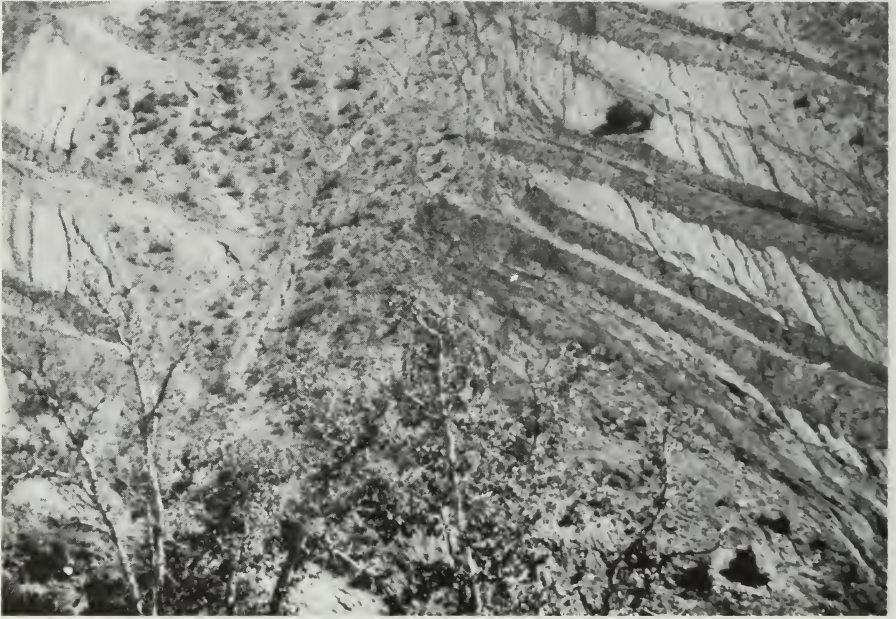


Fig. 8. Same scene as in fig. 7, photographed September, 1976. Huge bars have been bulldozed across the gullied hillclimbs.





Fig. 9. Same scene as in fig. 7, photographed March, 1980. New, deeply gullied hillclimbs have been cut between the old barred ones. Runoff from the newer hillclimbs diverted behind the bars has caused deep gullying there as well. ORV use throughout Texas Canyon and Rowher Flats has increased greatly in the four years since 1976. All efforts to control erosion by water bars have failed because the vehicles notch the bars or bypass them.

For these reasons, the designated trail system proposed for Ballinger Canyon has no sound foundation for protection of the natural resources of the area and is thus inconsistent with the resource protection provisions of executive order 11644. The present state of erosion of many segments of the approved trail system, and the likely future state of others, is inconsistent with the mandatory management procedures of executive order 11989 which require their closure until the problems have been corrected and steps taken to assure that they will not recur.

The basic management problems in Ballinger Canyon stem from lack of initial planning and research which would have shown the inappropriateness of this site for ORV use. The soils and vegetation are too sensitive to the impacts of vehicles to sustain unregulated use, and the slopes are too steep for adequate erosion control in the proposed trail system. The costs of adequate restoration of already damaged land will be high, and future high costs of maintenance and restoration will be perpetuated by the proposed management plan.

#### References

- Stull, Robert; Shipley, Susan; Hovanitz, Eric; Thompson, Scott; and Hovanitz, Karen. 1979. "Effects of Off-Road Vehicles in Ballinger Canyon, California." Geology, vol. 7, pp. 19-21.
- National Academy of Sciences. 1974. Rehabilitation Potential of Western Coal Lands. (Cambridge, Mass.: Ballinger Publishing Co., 198 p.).
- U.S. Forest Service. 1972. Soil Management Survey of the Ballinger Canyon and Quatal Canyon Areas, Los Padres National Forest, with Special Emphasis on Impacts from Recreational Use by motorcyclists (U.S. Dept. of Agriculture, 38 p.).
- Wilshire, H. G. 1977. Study Results of 9 Sites Used by Off-Road Vehicles that Illustrate Land Modifications (U.S. Geol. Survey open-file report 77-601, 22 p.).

TURKEY BAY OFF-ROAD VEHICLE AREA:  
ITS USE AND MONITORING SYSTEM

*Philip K. McKnelly*

Land Between The Lakes (LBL) is a 170,000-acre national demonstration in outdoor recreation, environmental/energy education, and resource management. The area, located between Lake Barkley and Kentucky Lake in western Kentucky and Tennessee, is managed by the Tennessee Valley Authority (TVA).

Prior to the establishment of the Turkey Bay off-road vehicle area, cyclists were allowed to ride throughout the project with few restrictions. By 1968 few areas in LBL were not showing signs of off-road vehicle (ORV) use. The impact ultimately reached a degree that a proposal was developed to ban all ORV activities from LBL. Some staff members, however, recognized such riding as a legitimate recreational pursuit and recommended that land be set aside specifically for ORV use. The controversy continued until February 8, 1972, when executive order 11644 prompted LBL to establish Turkey Bay as the first federally managed ORV area.

The 2,350 acres north of Turkey Creek was selected for two major reasons. First, the area had received more ORV use than any other area within LBL, a situation that would later create problems in measuring the impact of ORVs on land and wildlife. Second, the soils in the area were relatively stable. The soil was mainly composed of shallow loess over gravel and chert beads with alluvial deposits of clay, silt, and gravel along higher elevations. The bedrock was of Mississippian origin. The area vegetation consisted primarily of oak-hickory forest with approximately 75 acres of open land.

In planning the Turkey Bay ORV area contacts were made with the American Motorcycle Association (AMA) and local trail bike clubs. The assistance of these organizations proved extremely helpful in developing the area and its subsequent management policies. Developed facilities included two camping-picnicking areas (chemical toilets, picnic tables and garbage cans) and two parking lot staging areas.

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The following policies were established:

- a. TVA would sanction no events.
- b. The area would be open to all off-road vehicles.
- c. The area would not be restricted to ORVs.
- d. Riding would be restricted to daylight hours.
- e. All vehicles had to have approved spark arresters.
- f. Participants could build their own trails and/or ride where they wished within the designated boundaries.

Prior to opening the ORV area, TVA was required to establish a monitoring plan designed to measure the environmental impact of the vehicles. As mentioned earlier this task was extremely difficult due to the previous use of the area by ORVs. The plan was developed and put into use for the first time in 1973 (see Appendix A). It was not a highly scientific study but rather a modest attempt to identify the impact of vehicles on soils, woody vegetation, and wildlife within funding and manpower limitations.

#### Estimate of Number of Users

Since the area is open on a nonexclusive use basis, visitors other than ORV enthusiasts use it. This has made an estimate of the number of users very difficult. Sign-in boards, electric eye counters, and direct observation have been tried; but none of these was very satisfactory. In the future a traffic counter will be used on the entrance road to determine the number of vehicles entering the area. Since we know the average number of occupants per car and that 41 percent of these occupants are ORV riders, a reasonably good estimate can be made. The area attracts around 300 riders on a good weekend with a weekly average throughout the year of 70 to 80 users.

#### Impact on Vegetation, Soil, and Water

Trails in the ORV area have been surveyed and mapped four times (1973, 1975, 1977, 1979). The total acreage actually receiving wheel-to-ground impact has increased from 13.6 acres in 1973 to 35.66 acres in 1979. The percentage of the total area actually receiving direct ORV impact has increased from 0.58 percent in 1973 to 1.36 percent in 1979. There are still large blocks of land in the area that are not being ridden over by ORVs.



Twenty trail sections, each 25 feet long, distributed throughout the area were established as monitoring sites. Twenty control sections were designated nearby. The study sites, which are unknown to the riders, yield information on impact on woody vegetation, changes in trail width, and erosion. Impact on vegetation actually growing on the trail is heavy; but so far, plants that are not actually being ridden over do not show significant damage. Large trees beside the trail show no significant deterioration at this time. Erosion has increased during the study period, particularly on sites with slopes of 15 percent or greater. Corrective maintenance (reshaping, sloping for drainage, water bars) has been required on some of these sites. Potholing is common in the low, flat areas. When the potholes get more than 10 to 12 inches deep, riders usually form a new trail slightly to one side. There is no substantial distant movement of soil under these lowland conditions. There is some root damage to trees at creek crossings. Average trail width has increased approximately 31 percent since 1973. Pictures, for comparative purposes, are made of each trail section each time the survey is conducted.

In addition to the trail sections, 16 photo points were established. These were located at sites thought to be sensitive to damage (pond banks, creek crossings, steep slopes). Again, sites with slopes of 15 percent or more show significant erosion damage. Pond banks and most other sites either have not been used by the riders or show no significant change.

#### Impact of ORV Use of the Area on Wildlife

The original monitoring plan included a comparison of snow track counts between the ORV area and nearby areas. Through December, 1977, there were no snows suitable for making track counts. Two turkey gobbler censusing stations are located in the area. No gobblers were heard at either of the stations from 1972 through 1979. In fact, there has not been a gobbler reported at the stations since they were established in 1967, nor has there been a turkey brood recorded in the area since LBL was established. Adult turkeys have been seen in the ORV area on a few occasions since 1972.

Harvest data provides some of the best information we have available on impact on wildlife. Harvest of deer in the area since its establishment compares quite favorably with nearby similar areas of comparable size. For example, 11 bucks were taken in the ORV area during the 1972 season; 16 and 18 deer (any deer hunt) were taken in 1974 and 1975, respectively. Forty-eight species of birds, including turkey vultures, red-tailed hawks, bald eagles, various woodpeckers, and other small birds, have been observed in the area since its establishment. Numerous mammals inhabit the area.

About all we can say from the various wildlife observations is there is some significance to the fact that these species still inhabit and/or venture into the area. Any other conclusions would be premature at this time. Just because an animal inhabits an area does not mean it is reproducing and doing well. On the other hand, because it is scared by an ORV does not necessarily mean it is detrimentally affected, other than the use of sufficient energy needed to get out of the way. Without a doubt, wildlife monitoring is the weakest link in the system. In my opinion, regardless of what you may read or hear, there has not been sufficient research conducted to shed much light on the impact on wildlife.

### Conclusion

The ideal monitoring plan would be more scientific with more detailed censuses and surveys. Nevertheless, the monitoring system presently in use at LBL provides a great deal of insight into the impact of ORV use on the area and a good basis for making management decisions, particularly as related to maintenance needs. Perhaps the major element in the whole matter of environmental impact by ORV's is the amount of use. Various other things such as type of soil are very important, but whether an area gets sparse use or is literally overrun by users is a very important consideration when trying to compare impact among different areas. What is high use in LBL may be low or moderate use in California or some other area.

The level of use by ORVs in relation to impact on wildlife is extremely difficult to assess. Obviously, at some point in time with increasing use of an area the wildlife will begin to be affected, some species quicker than others. Definitely, more studies are needed throughout the country in this area of interest.

Overall, I feel the establishment of an ORV area in LBL was a step in the right direction. Although there are still some minor boundary violations, indiscriminate riding throughout the area is no longer a problem of great concern. Until a few years ago the area was used primarily by trail bike riders. The relatively recent influx of 4-wheel-drive vehicles is causing us some concern. We feel they are potentially far more damaging to the environment.

## Appendix A: Monitoring Plan for the Off-Road Vehicle Area in Land Between The Lakes

### I. Estimate of use of area by both ORV users and nonusers

- A. Daily survey of Turkey Bay area to determine approximate use by both types of users. This is being done at the present time by the Land Between The Lakes patrol.
- B. Traffic counter on one or more of the main ORV trails leading out of the Turkey Bay area. This will not give a total count of users but will give data that can be compared from one period of time to another.
- C. Provide a sign-in sheet on the bulletin boards in Turkey Bay for users to list their name, address, length of stay, and the date.
- D. Obtain monthly reports from "concessionnaires" renting bikes for use in the area.

### II. Impact of ORV use on vegetation, soil, and water

- A. Determine the land area that actually receives use by off-road vehicles. This will require mapping of the trail system and computing the area used from mileage and average width data. Trails can be rated according to light, medium, or heavy use based upon trail width and lack of vegetation. This survey should be conducted at intervals of 0, 1, 3, and 5 years.
- B. Determination of impact through use of selected sections of trails compared to parallel nonuse "trails." Select 20 or more different 25-foot sections of trail covering all different terrain conditions. A parallel "trail" of the same length is located approximately 50 feet from the test section for comparison. This survey should be conducted at intervals of 0, 1, 3, and 5 years, or as experience indicates the need. Test sections will be permanently marked (inconspicuously) and a picture made of each section during the initial survey. Pictures can be made in subsequent years for comparison if desired to show changing conditions. The following can be determined from these test sections:
  - a. impact on young growth;
  - b. impact on larger trees and shrubs (compaction, direct damage);

- c. impact on soil from erosion standpoint;
- d. changes in trail width from year to year;
- e. extent of impact as one moves 15 feet from center of trail on either side, and changes from one period to the next.

This information can be used in conjunction with information obtained in number 1 to determine to some extent the overall impact of ORV use and its significance.

- C. Spot checks of vulnerable areas such as pond banks, shoreline of the lake, steep slopes, and creek banks should be made annually. It is estimated that about 20 sites will be involved. Each area will be numbered and described (on paper only). Before and after pictures can be used as desired. Measurement of ruts, etc., if present, can also be recorded. Random spot checks from trails, ponds, etc., should be set up as mil-acre plots if other surveys indicate significant use of the area away from defined trails.

### III. Impact of ORV use of the area on wildlife

- A. Compile deer track counts during snow for comparison in tracks along roads and trails in other parts of Land Between The Lakes.
- B. Conduct turkey gobble counts and brood survey in the area. Gobble count stations are already set up in the area and data has been collected for the past 3 years. No turkeys have been heard in the area to date (October 15, 1972) and there have been no broods seen in the area. There has never been a live turkey reported in the area since the beginning of Land Between The Lakes. However, the skeleton and feathers of a dead turkey were found beside highway 453 near 6H4 in 1968.
- C. Compare wildlife harvest data, particularly deer, to nearby areas.
- D. Record sightings or sign of wildlife (songbirds, beaver, squirrel, pileated woodpecker, turkey, rabbit, raccoon, opossum, woodchuck, red-tailed hawk, etc.). A routine field trip will be made to the area each spring for the purpose of conducting this casual survey. Notes and records will also be kept on observations made at other times during the year. This



survey should be conducted for at least 5 years. Its purpose is simply to determine if certain key species continue to use the area.

#### Procedure for Measuring Impact of ORV use on Vegetation, Soil, and Water

1. Map as accurately as possible the existing trails in the ORV area that receive use.
2. Determine length and average width of different trail sections.
3. Rate trails according to:
  - light - lack of ground cover, crushed leaves and other organic materials evident
  - medium - ground base of living or dead material
  - heavy - exposure of tree roots and existence of ruts.

NOTE: Specifically identify on maps trails over old logging roads, fire trails, etc.

#### Procedure for Monitoring Trail Sections and Photo Points in the ORV Area

1. Select 20 trail sections of 25 feet distributed randomly over area.
  - a. Mark witness tree with metal tag and record distance and direction to middle of trail where trail section starts.
  - b. Number and record on map.
2. Select equal number of 25 feet control sections by rotating at about 90° angle to the right of trail azimuth for a distance of 40 to 60 feet from the trail center to a suitable tree or other marker.
  - a. Mark tree at starting point of control section with metal tag and record direction and distance.
  - b. Number and record on map.
3. Make a picture (good sunlight) of each trail section by standing in the center and shooting picture toward north or south.

4. Measurements on trail and control sections (where appropriate) as follows:

#### Mapping

- a. Show position of holes, eroded areas, and any other pertinent characteristics on a sheet of graph paper scaled to show dimensions of trail section.
- b. Code with different color pencil for each year.
- c. Total trail width, width of bare portion for each trail section, and position of dead trees and shrubs can be delineated on this same sheet of graph paper if desired.

#### Width

- a. Average width (feet) of trail (i.e., area showing evidence of impact); 6 measurements (0, 5, 10, 15, 20, and 25 feet).
- b. Average width of bare portion of trail; 6 measurements (0, 5, 10, 15, 20, and 25 feet).

#### Erosion

- a. Place an 8 foot straight pole across trail with center point of pole in center of trail. Measure from bottom of pole to bottom of deepest rut and record depth. There will be 3 measurements, one at each end of trail section and one in the middle.
- b. Note and record general observations on erosion (trail and control sections).

#### Slope

- a. Measure and record percent slope on trail and control sections.

#### Tree and Shrub Mortality (trail and control sections)

- a. Inventory an area 25 feet by 30 feet by measuring 15 feet from center on each side of trail and counting dead trees within this rectangle.
- b. Count only dead woody plants that are 1/2 inch in diameter or larger.

- c. Spray dead trees and shrubs with spot of paint about one foot above base. Use different colors of paint each year.
  - d. Record species of dead tree, diameter from center of trail, and its location along trail section.
  - e. Count only standing dead stems and record mortality since previous year.
  - f. In general, make notes on damage to tree roots, direct damage to stems, and other pertinent observations.
5. Set up around 20 additional photo points (pond banks, steep slopes, creek banks, etc.)
- a. Number and record on map.
  - b. Describe direction, location, and other information to insure pictures will be made in exactly same way each year.
  - c. Record pertinent observations.

## PROTECTING AND REHABILITATING ORV USE AREAS

*Calvin W. Dunnell*

ORV use has been identified as one of the most controversial recreation issues on the Wenatchee National Forest. ORV use started on the Wenatchee National Forest over 30 years ago when war surplus jeeps crossed the Cascades on the old Naches Pass Wagon Road. When motor bikes became popular in the 1960s, many of the 2,500 miles of trail on the forest were open and used by the machines. During the 1960s, some new trails were built for ORV to improve hunter access, while others were being closed off by laws such as the Wilderness Act, National Scenic Trails Act, and by administrative decisions based on soil erosion and other perceived conflicts. This went on until the forest ORV plan was developed in response to executive order 11644.

We had 24 public meetings in developing our ORV plan and, in the end, we agreed with users to take a more positive role in management rather than react by closing areas. We had not really looked at the statement in section I of executive order 11644 that states ORV use will be controlled and directed. We also came to the conclusion that most trail damage was caused by improper trail location and construction rather than improper use. At this same time, funds became available through the counties and the State Interagency for Outdoor Recreation to provide opportunities for ORVs. We started in an area called the Taenum-Menastash area close to Seattle with about 200 miles of trail.

Now, after three years, we have an active program that:

1. Has an educational/enforcement program in all three counties. Our deputies are on bikes in the summer and in educational efforts in the winter;
2. Provides for long-range planning (class of trail, trail heads, camp areas, wildlife areas, cultural resources, soils, etc.);

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3. Has a program of relocation and rehabilitation of sub-standard trails;
4. Provides for rehabilitation of areas damaged.

We are starting to monitor areas where we might expect resource damage. Some of these efforts include:

1. Bridging streams to protect water quality and stop stream-bank erosion;
2. Hardening sites with concrete blocks and asphalt, these include switchbacks and stream banks;
3. Turnpikes through wet areas;
4. Relocation to avoid problem areas such as steep grades—perhaps our biggest job on a trail system that was developed for administration rather than recreation use.

Rehabilitation has been through the old reliable ones of:

1. Construction of barriers and signing to restrict use while providing an alternate route;
2. Seeding, fertilization, and water bars on areas where we discourage use;
3. Maintaining the signs and areas to stop vandalism.

Some steps we have taken to prevent problems before they start include:

1. Seasonal closures to provide for early season hiker use, to protect critical wildlife areas, to prevent excessive soil erosion during wet seasons;
2. Closing roads near popular campgrounds to conventional traffic to provide areas for juvenile riders;
3. Utilizing rock pits for juvenile play areas or trail areas.

We did want to have some challenge areas where soils are resistant to erosion. Users have a fear of making trails too easy through our standards. In our planning, we define the degree of difficulty planned for a trail; easier, more difficult, or most difficult.

The results of our efforts have been good and we now have increasing support for the program. We still have a lot of work to do, but it is much easier with the excellent cooperation from Burlington Northern, the county, IAC, and others. There still are some who wish to banish all ORVs; but many more see the benefits from a positive program of management.

## A FOUNDATION FOR PROBLEM SOLUTIONS

*Garrell E. Nicholes*

Mohondas Ghandi had a slogan that went like this: "Harmony in adversity and love despite differences." It is my hope that this statement can ring in the ears of both those who are enthusiasts and those who are representing environmental interests.

In over 500,000 miles of travel, planning for and involvement with off-road vehicles as a business responsibility, I have realized the lack of valid quantity and quality ORV problem/solution information. There is a continued call for more problem-oriented research without thought or concern for the land manager in developing solution methodologies for already existing research. This drouth of implementation oriented information has been one factor contributing to the current emotionalism, false concepts, and gross misunderstanding of this sport.

To set the stage for what I am going to say, let me bring to your attention some thoughts expressed to me about ORVs by public officials. Generalized as simply as possible, they are:

The subject is controversial.

ORV recreation legitimacy is still debated.

Noise is a serious problem.

ORV resource damage is evident.

Illegal and unmanaged use is a major cause of damage to public and private lands.

Planning to accommodate this recreation is necessary and a need exists for providing opportunities.

The enthusiasts' needs must be identified and evaluated.

Few public agencies are providing opportunities which encourage users to illegally trespass and operate their machines in unmanaged ways.

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Garrell E. Nicholes is President of Garrell E. Nicholes Associates "The People Planners."

It has been observed that there are many who profess understanding in planning for this recreation because they have some specialized knowledge that merely relates to the off-road vehicle. This knowledge is often used in decisions without reference to the whole, similar to the way horse handlers apply blinders to their animals for the purpose of eliminating outside distractions. Unlike horses, human contributors to ORV knowledge using this method often take the wrong path because they do not have the broad sight and miss the real opportunity to contribute their true worth. Today, most of us as public and private planners and land managers, academic types and others, throughout the United States, do not have a broad enough working understanding of the vehicle, the land base, and the enthusiast to be credible ORV problem solvers. Problem-solving efforts have been crippled by a mass of beside-the-point analysis. The information adds little to the communication process because individual perception promotes a detouring effect for developing problem/solution models. The resulting confusion, misunderstanding, and distrust has prompted special interest groups to resort in their frustrations to political in-fighting which only creates bigger and more complicated problems.

Dr. Keir Nash, in his research for the State of Washington, 1979, summarized participant communication of problem perceptions of the activity this way: "An important feature of the off-road recreation policy debate is the frequency with which participants starting from different premises talk past each other. Perceiving the problems quite differently, they interpret their relevant data differently."

Attending to the needs and solving the problems of the motorized vehicle enthusiast would best be accomplished by, first, understanding the multidimensional activity itself.

Anyone who conscientiously wants to become a part of the solutions of this sport rather than a promoter of its problems needs to understand that it is a many-faceted extension of the individual. His involvement in it rewards him physically, mentally, and socially. I think we can sum up this important concept by saying that this recreation is different things to different people at different times. Unfortunately, the misunderstanding of this basic concept coupled with clouded research information and the emotional reaction that it produces has compounded the problems we see today in environmental and social conflicts by: (1) promoting a generalized negative image of the sport which leads to unrealistic attitudes and actions toward the vehicle and its operator; (2) stifling the opportunity and enthusiasm of those who wish to solve the existing problems; (3) making it impossible to establish realistic standard definitions; and (4) prolonging an already existing poor inter/intra-communication to problem/solution opportunities.



John D. Peine, Ph.D., in an article entitled, "Land Management for Recreational Use of Off-road Vehicles," said, "ORV owners are as diverse as their vehicle designs. Personal interests and use may influence land travel patterns and attitudes toward the landscape. . . . These attitudes are important to the land manager developing a plan to provide quality experiences for the various types of vehicle users. It appears doubtful that one management procedure would be adequate for all types of vehicle users."

For us to discuss this phenomenon more effectively, I feel it important at this point in my presentation to suggest information for us to consider in order to communicate on a common level of understanding. ORVs are specifically designed and used in many activities, such as play, pseudo-competition, structured competition and recreational trail riding. The most common definition today of ORV activity implies only unstructured use of the equipment following no path or corridor way on a resource. Knowledgeable reviewers of the sport would expand the definition to acknowledge a substantial additional activity or activities that use lineal corridors, such as an unpaved, graded or ungraded road, or a single wheel pathway taking the enthusiast from point A to point B, yet allowing the participant to incorporate into this activity a multidimensional experience.

The expanded definitions that I am about to describe for you relate to both the design capabilities of the vehicle as well as to how the enthusiast uses the machine. We can then ask, "Who is the enthusiast?" He is (1) one who is learning to operate the vehicle; (2) one who is engaged in a play or unstructured competition experience allowing him to use the machine to produce the recreation in and of itself; or (3) one who is involved in structured competition which enables him, after he masters the physical and mental requirements of the sport, to commit totally to the activity for a tangible or intangible reward of some kind; and (4) one who uses the vehicle also as a tool of transportation to participate in multidimensional activities, such as camping, picnicking, fishing, photography, cultural sightseeing, riding for pleasure, and many, many more opportunities.

May I emphasize that each of the definitions above relate to a vehicle experience and can be overlapping at any one time within that experience. It falls upon the researcher, planner, and land manager's professionalism to understand these aspects of the sport. They then can provide an experience opportunity that will utilize their knowledge of the activity as it further relates to a specific resource environment and its social climate.

The uninformed often emotionally criticize motorized vehicle activity saying it has no place in the environment. From their perspective, they seriously question it as a legitimate form of recreation. Even though alive and flourishing today, this thinking is academic and after the fact. In his April 14, 1971, press release announcing the establishment of an Interior Department task force to study the use of off-road recreation vehicles (ORV), Secretary of the Interior Roger C. B. Morton said, "We recognize that off-road recreational vehicle use is one of the many legitimate uses of federally owned lands." To my knowledge this statement and philosophy has never been changed and, in fact, other agencies, executive orders, and public statements have reinforced this fact.

Gerald Jacob stated in his writing, "Conflict and Outdoor Recreation," that, "while theories of conflict are varied, many do share the perception of incompatibility as a common concept. In outdoor recreation this concept suggests two factors at work: the perception of differences among people's lifestyles, and the evaluation that encountering such differences is undesirable.

Stereotypes of ORVs have emerged over the years and persist in the minds of a large portion of the people in the United States. Responsible thinking people often lose their credibility when they make emotional, ineffective statements that the vehicles "eat land," "create environmental havoc," "initiate devastating affects," "disrupt animal life," "impact moose," "conflict with other human uses of the land," etc. The vehicles may in specific circumstances be what the above stereotype depicts them to be; however, reliable sources collectively feel that such references could be eliminated with more knowledgeable and responsible implementation research, planning, facility construction, and management.

Stephen McCool, Ph.D., in a talk before the 43rd North American Wildlife Conference said, "ORV use appears to be more a function of intuitive managerial expertise and judgment and political pressure rather than a direct result of systematic problem driven research."

The ORVers generally identify their problems and needs to be these:

Federal, state, county or community governments are developing no visible ORV programs or facilities.

Existing facilities and programs are poorly maintained and crowded.

Former riding areas have been closed with no new alternatives being provided.

Public agency ORV policies are either inconsistent or non-existent.

Few researchers, planners and managers involved in ORV programs have adequate knowledge or training to do so.

Major communication gaps exist between ORVers and federal and local land planning and management agencies.

Few educational programs are in existence to objectively teach users, nonusers, legislators, administrators, land planners and managers about ORVs.

Users believe that nonparticipants inaccurately perceive ORV impacts and that their perceptions are more emotional than knowledgeable.

In summary, a vast amount of negative emotionalism and stereotyping of the sport exists today. Some is justified, but most is brought about by those who do not see the total scope of the activity. The ORV enthusiast is looking for a multi-dimensional social, physical, psychological recreational experience. Basic definition information is inadequate to solve problems. The off-road vehicle enthusiast, by policy, is participating in a legitimate recreation activity. Past and current research has not provided valid information for adequate problem/solution models. A lack of communication exists among those planning and managing this sport, as well as between users and nonusers.

My counsel to those who sincerely want to be a part of the solutions rather than a bigger part of the problems for this form of outdoor recreation would be that they get to know the vehicle, enthusiast, and resource from the seat of the vehicle. They should be professional enough not to let negative emotionalism and personal bias stand in their way to becoming effective problem solvers. These people should, within the realm of good communicative and technical skills, help to formulate credible and viable alternatives for existing environmental and social conflicts, as well as help design and provide educational and safety opportunities for those who prefer to participate in this recreation.

I realize to some my statements and recommendations may appear as a promotion of this activity. It is not! In fact, my recommendations are only directed to the need for providing solutions for those who sincerely desire to accomplish that

end. Our belief coincides with many planners and managers for ORVs, that there are answers to the current motorized vehicle problems we see throughout the United States today. There are answers if people are willing to constructively share their knowledge, coordinate their expertise, define the problems, and "do it."

### MOTORCYCLE MYSTERIES

Robert L. Wilder

The man he worked from dawn to dusk  
     Until the weekend came,  
 He wheeled out his pride and joy,  
     He'd play the leisure game.

His choice was riding far as could  
     Away from man and strive,  
 His cycle make it possible  
     For him to live good life;

He didn't race or roar around,  
     But used it with great care,  
 To find a place of solitude,  
     A place alone unshared.

He'd fish and camp and rest awhile,  
     Until the weekend's done  
 His motorcycle, faithful still,  
     Had carried him to the sun;

The track it left was very soft,  
     It soon did fade away,  
 So, when he tried the trail again,  
     He'd find the same that day.

His love for nature and the land,  
     Fulfilled again for him  
 Should prove to all who read this tale,  
     His cycle's not a whim.

But just a tool, to serve him well,  
     To carry him far away,  
 To place remote and full of hope  
     Where man can have his day.



## References

- Bury, Richard L., Stephen McCool, Robert C. Wendling, "Off-Road Recreation Vehicles." A research summary 1969-75 (Texas A & M, July, 1976).
- 1978 Nationwide Outdoor Recreation Plan, Taskforce Report Phase #7, issue compendium (U.S. Department of the Interior HCRS)
- Jacob, Gerald, "Conflict in Outdoor Recreation—The Search for Understanding," Utah Tourism and Recreation Review, vol. 6, no. 4 (Utah State University Press, 1979).
- Morton, Rogers C. B., "OPRV Off-Road Recreation Vehicles," Taskforce Study, Department of the Interior (Washington: U.S. Government Printing Office, 1971).
- McCool, Stephen, "Impacts of ORVs: Snowmobiles, Animals and Man." Forty-third North American Wildlife Conference.
- Nash, A. E. Keir, "Understanding and Planning for ORV Recreation." The 1978-79 Washington Off-Road Recreation Survey (Washington: IAC, 1979).
- "Off-Road Vehicles on Public Lands," Council on Environmental Quality (Washington: U.S. Government Printing Office, 1978).
- Peine, John D. "Land Management for Recreational Use of Off-Road Vehicles," Tuscon, Arizona study paper submitted to the University of Arizona, Department of Watershed, 1972.
- Wilder, Robert L., Personal correspondence with author. Inter-agency Committee for Outdoor Recreation, State of Washington.

WHAT WE KNOW AND DO NOT KNOW ABOUT  
OFF-ROAD VEHICLE IMPACTS ON WILDLIFE

*R. Bruce Bury*

The present off-road vehicle (ORV) situation was succinctly stated in Sheridan's (1979) report to the Council on Environmental Quality.

"Overall, the Council on Environmental Quality sees the off-road vehicle problems as one of the most serious public land use problems that we face. . . .

"The two major federal land management agencies—the Bureau of Land Management and the U.S. Forest Service—have been slow to grapple with the off-road vehicle problem. . . . Land management agencies responsible for areas of intensive off-road vehicle use will need to make new efforts to monitor impacts and enforce necessary restrictions. . . .

"Off-road vehicles are here to stay. The reason is simple: they provide recreation to millions of Americans. But off-road vehicles also damage natural resources—soils, vegetation, wildlife, and watersheds."

The severity of ORV impact on wildlife is discussed in several reports or publications in various regions. This paper will briefly review this research to provide an overview of the problem. My objectives are to illustrate the level of impact on wildlife caused by ORVs in different habitats and to provide guidance for more effective protection of wildlife in areas used for ORV activities. I purposefully emphasize the southwestern United States where most ORV use is concentrated and where most research on its effects has been conducted, but the results and trends are applicable to many other regions.

What Information Is Available?

Awareness of the problems caused by ORV use is relatively recent. Watkins (1969) and Grant (1973) outlined the dilemma created by the then burgeoning increase in ORV use. In the

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California desert, Bennett (1973), Carter (1974), Luckenbach (1975), Stebbins (1974), Stebbins and Cohen (1976), and Sheridan (1979) provide general assessments of ORV impacts on the biota.

Quantitative, published documentation of ORV impact on the wildlife in western arid lands is scant. A team of scientists surveyed the heavy ORV damage at Dove Springs in the western Mojave Desert, an area mostly used for hillclimbs (Berry, 1973). Vollmer, et al. (1976) conducted experimental studies of ORV effects on the biota at Rock Valley, Nevada (eastern Mojave Desert), while Bury, et al. (1977) studied the changes in vegetation and small vertebrates on several paired plots (ORV-used compared to controls) in the central Mojave Desert. These studies showed clearly the negative effects of ORV usage on biota in creosote shrubland, the predominate community of the California Desert. ORV effects on grassland and forested regions of cismontane areas of the western United States are discussed by Stebbins and Cohen (1976), Wilshire and Nakata (1976), and Wilshire, et al. (1978). A few other specific studies are available.

Literature reviews of ORV impacts (including effects on wildlife) are provided by the U.S. Department of the Interior (1971), Lodico (1973), Bury, et al. (1976), Webb and Wilshire (1978), Sheridan (1979), and Luckenbach and Bury (in press). Although there seems to be a wealth of information on ORV effects on wildlife, in fact, we know very little given the magnitude of the problem.

#### How Do ORVs Affect Wildlife?

ORVs have greatly increased access to, and human use of, desert lands and other areas. Direct damage to vegetation is the most obvious effect of ORV activity. After one large desert race more than 160 km in length, an estimated 143,201 creosote bushes (*Larrea tridentata*) 64,630 burroweed (*Ambrosia dumosa*), and 1,609 yuccas (*Yucca schidigera*) were severely damaged (Gibson, 1973). In another study, the number of creosote bushes per ha averaged 240 on control plots, 236 with moderate ORV use, 145 with heavy ORV use, and 84 in pit areas of concentrated activity (Bury, et al., 1977). ORVs caused damage to over half of the foliage of the bushes in the moderate use area. Most of the creosote bushes were dead or nearly obliterated in the heavy use and pit areas. The severity of damage to vegetation is directly correlated with the intensity of ORV use in an area (Vollmer, et al., 1976; Bury, et al., 1977). A recent analysis of vegetation at over 400 sites in seven western states (Wilshire, et al., 1978) clearly demonstrates a disruptive effect from ORV activities in a variety of habitats. Loss of and damage to vegetation affects the food and cover needs of wildlife, resulting in decreased populations.

Disturbance of the soil, resulting from even a single pass by a dirt bike, also favors the establishment of weedy vegetation, such as tumbleweed (*Salsola tenuifolia*) (H. Wilshire, personal communication). The spread of weeds along ORV routes, together with overgrazing and other factors, is changing the native vegetation of many parts of the southwestern United States (Wilshire, et al., 1978).

Many desert soils have a mantle composed of cemented salts and carbonates, algae, or the hyphae of lichens and soil fungus (Friedman and Galun, 1974; Wilshire and Nakata, 1976) or a rock crust called desert pavement (Cooke and Warren, 1973). When the mantle or pavement is broken by the passage of ORVs, the friable soil beneath is subject to drying and erosion by wind and water (Berry, 1973; Wilshire and Nakata, 1976; Wilshire, et al., 1978). Destruction of soil crusts exposes plant roots to desiccation and damage due to physical injury (Snyder, et al., 1976; Wilshire and Nakata, 1976; Wilshire, et al., 1978). Another serious problem is compaction of soils that increases soil density and inhibits regeneration of plant life (Wilshire, et al., 1978). Loss of stabilized soil surfaces and vegetation reduces habitat available to animals.

ORV activity produces loud, high volume and piercing noise levels that represent a form of harassment to many desert animals. Rennison and Wallace (1976) found that ORVs are perceived as loudest in the 500-2000 Hertz range and that the radius of noticeable detection of ORV noise from a single ORV was from 2 to 4 km. Decible levles are even damagingly high in underground retreats and burrows (Bondello, 1976). Noise from ORVs can disrupt territoriality, courtship, and breeding by desert birds (Bury, et al., 1977; Luckenbach and Bury, in press). Finally, animals may actually be maimed or crushed by the passage of ORVs. Much of the mortality is not evident because it affects animals that are underground, near the surface, or small and inconspicuous.

There are several principal ways ORVs affect population of wildlife. Operation of an ORV apparently has multiple effects on wildlife, including direct mortality, damage to vegetation, disruption of soil, and noise harassment.

#### Impacts On Different Animals

##### Aquatic

Advertisements for ORVs often illustrate machines churning up streambeds or splashing across waterways. Such promotion encourages the kinds of ORV operation which undoubtedly are disruptive to aquatic and riparian habitats.



Wildlife are often dependent or attracted to aquatic areas for water and food, and to adjacent riparian vegetation for cover and food. People congregate at aquatic habitats where there is water for drinking, swimming, and boating, and where preferred camping sites are located. ORVs frequent such areas and may adversely affect wildlife resources in several ways. Operation of ORVs through streams or shallow pools destroys aquatic plants and disrupts the habitat of invertebrates, fish and amphibians, and some reptiles (e.g., turtles, garter snakes), mammals (e.g., river otter), and birds (e.g., dipper). There is danger of gas and oil pollution from ORVs by leaks, spillage, or accidents and a high potential for damage to riparian vegetation. Intensive camping activities by large groups of ORV enthusiasts can lead to cutting of vegetation for fuel, erosion of heavily used campsites, litter, and water pollution. These are problems in remote areas accessible to ORVs, not 2-wheel-drive vehicles.

These effects are hypothetical because we lack the pertinent data, but the frequent observation of large numbers of ORV campers near streams and lakes indicates this scenario is likely to be occurring in many areas.

Habitats around water sources are critical to resident and migratory wildlife of the southwest. Disturbance and pollution at these sites can severely affect the well-being of animals that rely on the scarce water. For example, bighorn sheep visits to a water source decreased to nearly 50 percent on days when vehicles were used in the area (Jorgensen, 1974). The animals may also have been stressed by escape behavior when they fled as vehicles approached. Camping near water sources also potentially disrupts adjacent vegetation and restricts use of these areas by wildlife.

### Terrestrial

Studies in the Mojave Desert indicate that ORVs severely reduce reptile numbers, diversity, and biomass. The total number of species present in the given study plot is inversely related to the level of ORV use (Bury, et al., 1977). Control sites averaged 1.6 more species of reptiles than ORV-used plots, and also had averages of 17 more individuals and 1.4 times the biomass per ha than ORV-used sites. In the Algodones Dunes along the California-Arizona border, we found 10 times the number of lizards in natural areas than in the ORV-used sites (Luckenbach and Bury, in press).

One 25 ha plot with frequent ORV use had only 15 desert tortoises whereas in a similar sized unused area there were 34 individuals (Bury, 1978). Tortoises on the ORV plot had a biomass of 0.5 kg/ha while the control had 3.4 kg/ha. There

were only 62 tortoise burrows in the ORV area, but 171 on the unaffected plot.

These studies show appreciable declines of reptiles in ORV used areas. Loss of structural variability in desert vegetation due to ORV use could affect long-term trends in desert reptile communities (Luckenbach and Bury, in press). If ORV use is stopped in ORV modified areas, recolonization by reptiles would be expected. But ORV disruptions reduce native plant heterogeneity and volume for long periods of time, and the natural vegetation may be replaced by uniform ruderal forms.

ORV use reduces vegetation (Bury, et al., 1977) and low shrub cover or shrub removal in the Mojave Desert has a detrimental effect on desert rodents (Beatley, 1976). Small mammals are expected to be negatively affected by the operation of ORVs, and results of several studies support this prediction.

About one-third the number of species and individuals of small mammals occurred in creosote and Joshua tree habitats exposed to moderate or heavy ORV use, as compared to nearby control areas (Byrne, 1973). Biomass of mammal populations was lower on disturbed areas than on control sites. Byrne (1973) attributed these effects to destruction of the vegetation upon which these animals depend for food and shelter.

Hicks, et al. (1976) found that ORVs running in a large race had a significant effect on the density of small mammal populations in desert habitats. The estimated densities on undisturbed sites were about 8 times higher than those on the sites impacted by the race. Not only were a large number of individuals lost, but recovery of populations was slowed by the destruction of habitats that may take decades to regenerate.

In another study, small mammal populations in creosote shrubland were less dense on ORV-use areas than on control areas (Bury, et al., 1977). Heavy use and pit areas were particularly depauperate of mammals. Control sites had an average of 1.25 more species, 14.3 more individuals, and 298.8 g more biomass of mammals per ha than ORV-used sites.

In the Algodones Dunes of southeastern California, mammal populations were depressed in areas frequented by dune buggies (Luckenbach and Bury, in press). Tracks recorded on swept sand indicated that control areas had 6 times more kangaroo rat, 10 times more rabbit, and twice as much kit fox activity than did the ORV-used sites. Small mammal trapping revealed 1.3 times the number of species and 4 times the number of individuals on control plots as on impacted areas. ORV usage apparently collapsed the burrows of kangaroo rats and disrupted the limited vegetation employed as cover and food for small mammals.

## Aerial (Birds)

Much of the migrant avifauna of the western United States crosses arid lands during migrations. Springs, marshes, and riparian habitats offer food, shelter, and water to migrants on their long flights. Because of increased accessibility due to ORVs, these stopover sites are being destroyed by direct damage to plants and the cutting of firewood (Luckenbach and Bury, in press). Both migrant and resident birds may lose vegetation crucial to their survival or be harassed by noise from ORVs or shot by campers. ORV penetration into remote areas compounds the problem of raptor protection because mortality due to shooting can be significant in desert areas (Ellis, et al., 1969).

Birds apparently are the vertebrates most sensitive to ORV influence. In creosote shrubland, control plots had 1.5 times the numbers of birds and twice the biomass and species as ORV-used areas (Bury, et al., 1977). Along two desert washes (used and unused), each 1.5 km long, in and adjacent to Anza-Borrego Desert State Park (east of San Diego), only one species (one pair) of birds bred in the ORV area each year compared to 8 or 9 species (18 to 22 pairs) in the unused wash (Luckenbach and Bury, in press). There were 5-6 species (12-21 individuals) of migrants and breeding birds in the ORV wash each year, but 25-26 species (236-254 individuals) in the control. Even in parts of the ORV wash with little physical damage to vegetation, birds were scarce, suggesting that noise may be a disruptive factor for these species.

Impact of ORVs on game birds occurs through loss of food and cover, destruction of nesting and bedding areas, and harassment. For example, canyons south of Barstow, California, supported large populations of California quail until ORV use became heavy. Also, some of the "gallinaceous guzzlers" (covered cisterns accessible to birds) installed throughout the southwest to supply water to upland game, particularly quail, have been vandalized by ORV riders and the surrounding vegetation has been damaged or destroyed (Luckenbach, 1978).

Existing information clearly indicates that ORVs are destructive to arid land wildlife communities. Negative impacts of ORVs on other ecosystems is provided by Sheridan (1979). There is little question that ORVs disrupt habitats and cause significant declines in the nation's wildlife resources. We cannot afford to ignore these findings.

### What Don't We Know?

The previous section presents some of the available data on ORV impacts on animals in the southwestern deserts, and reveals certain deficiencies in research on this topic. A good



start has been made, but we know relatively little about the effects of ORVs compared to other types of habitat uses, e.g., grazing, fire management, and timber harvesting. To my knowledge, not one government archaeologist, geologist, or biologist is assigned full time to study ORV problems. This is surprising because there are about 16.5 million ORVs in the United States (Sheridan, 1979), and much of their activity is on public lands.

Presumably, there will be intensified research and action to solve ORV problems. The following recommendations are urged:

1. Expand the scope of research. We lack measurements of ORV impacts in several natural communities, particularly in the riparian habitat critical to many wildlife populations. Investigations are needed in the Sonoran Desert, Great Basin, forested and mountainous regions, among others, to form a basis for more precise management guidelines based on localized conditions.
2. Intensify studies on wildlife. We ought to better understand the sensitivity of wildlife (especially birds) to noise produced by ORVs, stresses caused by harassment or frightening of animals by ORVs, and tolerance of vertebrates to habitat disruption. We need research on the effects of ORVs on snakes, nocturnal species, raptors, and game, as well as threatened or endangered species.
3. Consider multiple negative factors on wildlife. ORVs do not operate in a vacuum nor in areas unused for other purposes. For example, wildlife populations on public lands are subject to hunting or control activities (certain predators), and are in competition with livestock for food, water, and cover. Often wildlife are restricted in range or carrying capacity due to agriculture, roadways, and habitat alteration. Thus ORV disruption of habitat is an additional factor interacting with several other forces detrimental to wildlife.
4. Determine the diffuse effects of ORVs. Operation of ORVs is often depicted as a concentrated recreational activity, which is partly true. But some areas are subject to infrequent or low levels of ORV usage. This diffuse impact is poorly studied.
5. Evaluate the reinvasion or recovery rates of wildlife populations in ORV-used areas. Will rehabilitation efforts (mostly vegetation enhancement) be effective for the native fauna? After drastic resource alteration are we knowledgeable enough to reconstruct ecosystems that have evolved over thousands of years?



### Where Are We Today?

Some university and state government research projects relate to ORV impacts, but these have been few (see Webb and Wilshire, 1978). Federal government involvement is variable. The U.S. Geological Survey has undertaken several important studies on ORV impact on soils and vegetation (see Wilshire, et al., 1978). A management plan for the California desert (BLM 1980), based on extensive surveys of resources and related planning, is being implemented. This program has generated considerable information for management of that region. But research to determine ORV impacts was not funded directly, given high priority nor full consideration, and many questions remain as to how intensive ORV activities can be accommodated with other uses and the preservation of California desert areas.

A Fish and Wildlife Service program to study ORV impact was initiated in 1974 as part of our mandate to conserve and protect the nation's wildlife, and because of continuing research interest in desert ecosystems. But Fish and Wildlife Service funds earmarked for studies of ORVs are limited. There is growing interest by the U.S. Department of Agriculture in desert research and management, but to date there is no visible program.

This is where we stand today: a fragmented, underfunded effort to assess the effects of one of our most serious land-use problems.

In several areas we need both more and better biological information upon which to make decisions. Planning and management designs should recognize the severity of the ORV problem and its conflicts with the multiple use concept. Professional biologists and managers have the responsibility to protect natural resources over the long term, and to base decisions about ORVs on facts.

Protection of natural resources should follow the recent federal guidelines (U.S. Dept. Int., 1979) that state, "No person shall operate an off-road vehicle on public lands in a manner causing, or likely to cause significant, undue damage to or disturbance of the soil, wildlife, wildlife habit, improvements, cultural, or vegetative resources. . . ." Do we have the conviction to implement this mandate? Do we dare risk the alternative? Do we accept this management challenge?

## References

- Beatley, J. C. 1976. Rainfall and fluctuating plant populations in relation to distributions and numbers of desert rodents in southern Nevada. *Oecologia* 24:21-42.
- Bennett, S. 1973. A trail rider's guide to the environment. Am. Motorcycle Assoc., Westerville, Ohio. 60 pp.
- Berry, K. (ed.). 1973. Preliminary studies on the effects of off-road vehicles on the northwestern Mojave Desert: A collection of papers. Privately Printed. Ridgecrest, California. 100 pp.
- Bondello, M. S. 1976. The effects of high-intensity motorcycle sounds on the acoustical sensitivity of the desert iguana, *Dipsosaurus dorsalis*. Unpub. M.A. Thesis. Calif. State Univ. Fullerton. 38 pp.
- Bureau of Land Management. 1980. The California Desert Conservation Area: Plan alternatives and environmental impact statement. Draft. U.S. Dept. Int. 436 pp. Available from BLM, 1610 Central Ave., Ste. 402, Riverside, CA 92596.
- Bury, R. B. 1978. Desert tortoises and off-road vehicles: Do they mix? *Proc. Desert Tortoise Council* 1978:126. (Abst.).
- \_\_\_\_\_, R. A. Luckenbach, and S. D. Busack. 1977. The effects of off-road vehicles on vertebrates in the California desert. U.S. Fish and Wildl. Serv. Spec. Sci. Rep. 8. 32 pp.
- Bury, R. L., R. L. Wendling, and S. F. McCool. 1976. Off-road vehicles: A research summary, 1969-1975. Texas A & M University, Texas Agric. Exp. St., MP-1277. 84 pp.
- Byrne, S. 1973. The effects of off-road vehicle use in the Mojave Desert on small mammal populations. Pp. 64-72 In Berry, K. (ed.). Preliminary studies on the effects of off-road vehicles on the northwestern Mojave Desert: A collection of papers. Privately printed. Ridgecrest, California. 100 pp.
- Carter, L. J. 1974. Off-road vehicles: A compromise plan for the California Desert. *Science* 183:396-399.
- Cooke, R. U., and A. Warren. 1973. Geomorphology in Deserts. Univ. Calif. Press. Berkeley, California.
- Ellis, D. H., D. G. Smith and J. R. Murphy. 1969. Studies on raptor mortality in western Utah. *Gr. Basin Nat.* 29:165-167.

- Friedman, E. I., and M. Galun. 1974. Desert algae, lichens, and fungi. Pp. 166-212. In Brown, G. W. (ed.). Desert Biology. vol. II, Academic Press, New York.
- Gibson, J. 1973. An initial study of the impact of desert motorcycle racing in the Mojave Desert. Dept. of Biology, Calif. State Univ. Fullerton. Unpubl. Research Paper.
- Grant, R. A., Jr. 1973. The fight for the California Desert. Cry California, Winter 1972-83. 9 pp.
- Hicks, P., A. Sanders, and A. Cooperrider. 1976. Impacts of Barstow-Las Vegas motorcycle race on wildlife habitat. Bur. Land Manage., U.S. Dept. Int., Riverside, CA. 46 pp.
- Jorgensen, P. 1974. Vehicle use at a desert bighorn watering area. Trans. Desert Bighorn Council, 1974:18-24.
- Lodico, N. J. 1973. Environmental effects of off-road vehicles: A review of the literature. U.S. Dept. Int., Biblio. Ser. 29. 109 pp.
- Luckenbach, R. A. 1975. What the ORVs are doing to the desert. Fremontia 2(4):3-11.
- \_\_\_\_\_. 1978. An analysis of off-road vehicle use on desert avifaunas. Trans. North Am. Wildl. Natr. Res. Conf. 43: 157-162.
- \_\_\_\_\_, and R. B. Bury. In press. Off-road vehicle impact on desert vertebrates: a review. In Berry, K. H. (ed.), The physical, biological and social impacts of off-road vehicles on the California Desert. So. Calif. Acad. Sci., Spec. Publ.
- Rennison, D. C., and A. Wallace. 1976. The extent of acoustic influence of off-road vehicles in wilderness areas. Dept. Mech. Eng., Univ. Adelaide, Australia. 19 pp.
- Sheridan, D. 1979. Off-road vehicles on public lands. Council on Environmental Quality, Washington, D.C. 84 pp.
- Snyder, C. T., D. G. Frickel, R. F. Hadley, and R. F. Miller. 1976. Effects of off-road vehicle use on the hydrology and landscape of arid environments in central and southern California. U.S. Geol. Survey, Water-Resources Investigations 76-99. 45 pp.
- Stebbins, R. C. 1974. Off-road vehicles and the fragile desert. Am. Biol. Teacher 36:203-208, 220, 294-304.

- Stebbins, R. C. and N. W. Cohen. 1976. Off-road menace. Sierra Club Bul. July/August:33-37.
- U.S. Dept. Interior. 1971. ORRV: off road recreation vehicles. Task Force Study. U.S. Dept. Int., Washington, D.C. 123 pp.
- \_\_\_\_\_. 1979. Off-road vehicles, use of public lands. Rules and regulations. 15 June 1979, Federal Register 44 (117): 34834-838.
- Vollmer, A. T., B. G. Maza, P. A. Medica, F. B. Turner, and S. A. Bamberg. 1976. The impact of off-road vehicles on a desert ecosystem. J. Environ. Manage. 1:115-129.
- Watkins, T. H. 1969. Infernal machines on public lands. Cry California 4:6-19.
- Webb, R. H., and H. G. Wilshire. 1978. A bibliography of the effects of off-road vehicles on the environment. U.S. Geol. Sur., Open File Rep. 15 pp.
- Wilshire, H. G., and J. K. Nakata. 1976. Off-road vehicle effects on California's Mojave Desert. Calif. Geol. 29: 123-132.
- \_\_\_\_\_, S. Shipley, and J. K. Nakata. 1978. Impacts of off-road vehicles on vegetation. Trans. 43rd No. Am. Wildl. Natr. Res. Conf.:131-139.



Questions and Answers

Mark Anderson: I am with the Motorcycle Industry Council, and I think you're seeing two kinds of motorcycling here. One is in a forest environment as shown by Mr. Dunnell and another is in an open environment as you just saw in the southwestern desert. I am curious as to how some of the information regarding management could be used in a forest environment.

R. Bruce Bury: I think you can extend quite a few of the principles from southwestern deserts to other regions. I have worked in forests as well as in deserts. There are some slightly different situations, and for some reason a lot of the research got started in the southwestern deserts. One of our big problems is we have not looked at forest systems, especially at the impact of noise on birds that are nesting in forests. As far as I know, nobody has looked at that yet. I still think there will be problems of erosion, and in a lot of systems in northern California the soils slip down the hill just as easily as they do in the California deserts. In some areas there are 100-150 inches of rainfall. It does not take that much of a slice on the landscape to start causing the erosion. I think it is primarily a matter of our going out and trying to gather some more facts. But if you are a manager and you have to make a decision today, then I would recommend that you be on the cautious side because I do not see too many beneficial things coming out of off-road vehicle use in the natural environment. I think that it is pretty much a degradating type of a recreation.

H. G. Wilshire: My comments are based on having studied probably over 500 sites and eight western states. There is no question that the problems are very significant where there are no natural barriers to vehicular entry. It is very simple to set up a trail system in an area where you have severe natural barriers to vehicular entry and keep people on trails. Where there is ORV use on designated trails but the land does not have natural barriers to vehicular entry, then there are problems, very severe problems of use off trails. And as I pointed out in our control studies, the initial uses are extremely damaging.

Philip I. McKnelly: I would simply like to add that, at least for our purposes, the control has been the major factor. We have a single entrance to our ORV area and we are able to monitor the number of vehicles going in and coming out, and we know how many of them are actual ORV users. We have also tried to look at the impacts on species in the forest environment with the cooperation of our wildlife folks and some volunteer riders. Now as I said these have not been highly scientific, but we have, for example, monitored through use of radio devices the reaction of deer to ORVs and the noise. We have found that when the

motorcycles approached, the deer left. When the motorcycle left, the deer came back. We did not see any evidence of running the deer off the habitat. The turkey was very much the same way. This is a very isolated case and I hesitate to use it because I would hate to generalize from it. But on one instance a radio device was put on a tom turkey in his area. This was out of the ORV area. We found that the ORV hardly ever got within a hundred yards of that turkey. They did that for three days and the turkey just stayed away from the motorcycle and never did leave its habitat. We think that control and knowing where the motorcycles are and giving them enough variety for a challenge and freedom to exercise their skills is the important part.

Russell Shay: I'd like just to bring out an interesting point. The practical point of this gathering is that some sort of controls are needed, and where natural barriers are not providing the control that makes management possible, then something else is needed. It is interesting that Mr. Dunnell indicated that they were handing out \$250.00 fines to people who were on closed trails in the Wenatchee National Forest—a place where there is a very limited ability for people to get off the trails. However, in the California desert, with its 12.5 million acres of largely open landscape—where some other sort of control is needed—I am not aware of any fine for off-road vehicle use violation being levied by the governing agencies.

Gordon Sevowski: I think we need to be extremely careful when generalizing about certain vehicles that seem to disperse wildlife. Noise is also an entrapment. For example, there are certain conditions and at certain times of the year when a chain saw starts up and the deer come in. They do not leave. On our farm we have wild turkey which the Department of Natural Resources planted and they winter with our cattle. When the feeders crank up and start making noise the turkeys come in to eat behind the cows. So I think we need to be very careful in our example selections. Why is this noise causing a problem?

Robert Garrison (U.S. Forest Service): I'd first like to comment on the noise. There is a good body of literature that exists on the effects of noise, particularly on song birds. Too complicated to do in thirty seconds, but briefly what has been found is that the bird population in a given block of land—almost any species—does not change by the noise. Sometimes they will relocate; but sometimes they will not. I've been looking at the effects of noise on wildlife for fifteen years now and my conclusion is that there is no conclusion that can be drawn about the effects of noise on wildlife.

## NEW PATHS TO CONFLICT RESOLUTION

*William J. Johnson*

I appreciate the opportunity to spend some time thinking about this difficult problem with you. I can imagine that in this room, as throughout the country, there are as many different opinions as there are people about the use and problems caused by off-road vehicles. I have some strong feelings about how we discuss issues of this kind and how we move from discussion into the arena of implementation.

This particular issue of off-road vehicles is like so many others. It is made up of so many questions such as: What are they? Who uses them? How do we accommodate them? If there is any one bright prospect on the horizon it is the way in which we resolve this issue in a way which is much more effective than in the past. What we need to figure out is some way of effectively representing the interests of all the participants represented here today. How do we communicate? Not advocate or market or sell or promote, but communicate to develop a common ground where the ideas can be truly represented from the strongest point of view and still be listened to.

In my experience, the myths about an issue are much more powerful than are the facts. For example, there was a question some years ago in Chicago of whether or not an eight-lane freeway could proceed through Jackson Park, a two-mile long waterfront park on the south side of Chicago. There were some who assumed the freeway could be built through the park because the people did not use it. It could solve a lot of problems if this freeway went through the park rather than through town. Then there were those who said no, there is no room in the two miles of park for an eight-lane freeway because the park is so valuable. In fact, they will add, there should never be another lineal foot of highway ever built, period. Those two views, plus many shades in between, were trying to resolve Chicago's traffic problems, and at the same time trying to think about recreation.

My view is that there are ways to work through almost any situation that you can possibly imagine if you have the right attitude, if you have the right facts and information, and if you can buy enough time prior to the time to decide, to really work the problem through in a new and creative way.

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Now most people call mediation work compromising. Nobody likes to compromise. Compromise is not a good term. I do not like to use the word compromise in mediation work but rather use the term problem resolution. I like to think of building a new idea not making a compromise. It is a very different notion, a very different attitude, a very different way of going about things.

In the Chicago scene some interesting things happened. On the City of Chicago's side and on the State of Illinois' side, the need for the road was well represented, and the ability to build anything anywhere was well represented by top flight engineers. On the other side, the communities concerned about that kind of interruption to the park were not as well geared up in terms of their interests. It was an uneven situation. Some information was very well articulated and highly oriented to a given interest. Other interests, however, were hardly represented. The information was very uneven. There were a lot of myths at work.

The community said that the park was valuable, but in thirty years there was not one significant community movement to upgrade the park. But when the highway showed up to take a piece of it, they said "Wait a minute, that's a valuable park." The evidence, however, did not show that it was valuable to the residents. It was only valuable in view of the road issue.

So as the myths were replaced with greater understanding, there was a new notion that emerged. An idea that neither of the combatants were considering. There was never a notion of a new kind of park before the road issue existed. After the road plan was presented there emerged a plan for a new park. And if one thinks of a new park along with a new road, one can begin to work on the problem.

In this case one side, those who wanted to build roads made all kinds of assumptions that they thought were fine. They did not communicate. They just assumed that the roadway could be built through the edge of the park. They were wrong. They did not know any better. On the other hand, those who objected to the roadway never thought about a new park. Put those two things together, break up the myths, build up some facts, and an amazing solution occurred. The solution in Chicago was dramatic.

There are two basic assumptions, it seems to me, that are important in this work. The first assumption is that others do not understand my efforts. We assume they do too often. A point of view is best expressed in an advocacy way, because that tends to be the clearest expression of a particular interest. We should never diminish the clear solid positions of one interest group. We should make sure that the positions are as clear as possible, as self-interested as possible because that is the clearest expression of it. Once you know where people are, what



they are doing, where they are coming from, you have made a great deal of progress with the problem.

The second assumption is that we understand the circumstances at hand. Generally speaking, none of us knows the whole set of circumstances that have to be understood in order to deal with a problem. If you come from a particular area of expertise, such as the management of land, you will understand your area better than anyone else. But you will not understand those aspects with which you are not as familiar such as how other people live and economics that do not relate to your resource. So the second assumption is that we assume we understand the situation but generally do not. These two assumptions are communication-oriented. Can you tell people effectively where you are coming from and why? And vice versa, can you ask the kinds of questions that will allow you to become aware of the full set of circumstances that must be understood?

One other point. We rarely take the initiative to become a change agent. Most of us will make a lot of effort to change other people's minds to fit our own. But I am talking about the kind of change agent that can make others understand. This is a role that we must assume. I do not think it is a named role. It is bringing people together so they can communicate with each other. It even occurs at times when you have your own advocacy point of view. Very few of us know how to manage this type of situation, but I think some professionals can and probably will be doing more of it.

The mediation field as it is emerging tends to be a model of labor mediation, that is where a third party becomes involved largely as an adversary setting to help two warring parties solve a problem. I think that in the most formal mode, that model is the least creative. It is not a very creative setting and it is generally precedence-oriented rather than idea-oriented. So where are the working units? Where are the people using this? Where are the people trying to manage it? Where are the people trying to make decisions on budget? These are the people who should come together to work out these issues in creative ways.

Some of you are deeply involved in this type of mediation already. You are, in fact, practicing this kind of decision making by sharing ideas at this conference.

I have six particular points that I would like to emphasize in my concluding remarks. First, decision making must become more efficient. We cannot afford tactics that cause delays in decision making. Second, there should be attention to follow through. So many times a decision is almost made and then the years go by. We should have the ability to take a decision that is starting to be made in the public arena, spot it as a decision that is starting to form, be an initiator in reaching

out and making that decision happen, and follow it through to completion. That is a special skill. Most of us in the public arena, it seems, are afraid to do that. I think we are going to see much more pressure to make effective decisions and then follow them through.

Third, I think we must all face the fact that we are involved in the difficult work because of our need to help others be accommodated. We are here to accommodate others but also ourselves. There must be a balance between being other-oriented and being me-oriented. I think we are going to see increasing pressure to know how to handle that balance professionally.

Forth, we must become more articulate. We must speak in a common language. We cannot fuss around with words that others do not understand. I think the common sense rule is crucial. I believe in citizens being involved. I believe in the nonprofessional having an idea. Most of the good ideas come from where people are, where they work and plan and from the things they do. That is where the good ideas are and if we listen we will hear some amazing things. They do not have to be experts to have good ideas. We need to know how to listen.

Fifth, to be successful working on these kinds of problems we must have enormous quantities of deliberate energy expenditure, patience, sensitivity and balance. Those are not common characteristics. We have to work at these things in order to keep our concentration, to work them out over an appropriate time period, and to take things one at a time.

And last, you must be willing to be creative change agents. Not always to change others, but also to change yourself.

I realize that given these points, I am talking directly to the problem. I did not lay out my plan for dealing with off-road vehicles. I realize that we all work with natural environments. Those who advocate no disruption of the environment represent an important viewpoint. On the other hand, I have experienced, in twenty years of professional practice, the fact that there is a lot of room for a lot of people without excessively damaging that environment. I think that it is a question of carefully finding the balance between these two seemingly opposing views.

PROGRESS IN ORV PLANNING AND MANAGEMENT  
ON USDA MANAGED LANDS

Down the Beaten Path: A Second  
Decade of Dilemma

*Jane H. Yarn*

I appreciate the opportunity to join with you in assessing one of the most pressing land-use issues we face. Environmental damage caused by the use of off-road vehicles on public lands became an issue of concern to the Council on Environmental Quality early in the 1970s. It is now 10 years later, a different Council, a different administration, but the concerns are still the same. More than 30 years ago Aldo Leopold suggested why it is that public controversies over the use of public lands are not easily resolved; he wrote:

Public policies for outdoor recreation are controversial. Equally conscientious citizens hold opposite views on what it is and what should be done to conserve its resource-base. Thus the Wilderness Society seeks to exclude roads from the hinterlands, and the Chamber of Commerce to extend them, both in the name of recreation. The game-farmer kills hawks and the bird-lover protects them in the name of shotgun and field-glass hunting respectively. Such factions commonly label each other with short and ugly names, when, in fact, each is considering a different component of the recreational process.

Public land controversies of today are no easier to solve than they were in Leopold's time—and the ORV issue is no exception.

Federal agencies began to control off-road vehicles on the public lands almost eight years ago in response to growing concerns about their adverse effects. To date Congress has enacted the Forest and Rangeland Renewable Resources Planning Act, which establishes long-range management goals and planning procedures for the Forest Service; the Federal Land Planning and Management Act, which is BLM's Organic Act; and two presidents have issued executive orders to improve the control of ORVs on public lands. The legislation and guidelines are in place, but the solutions have been slow to follow.

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Jane H. Yarn is a Member of the President's Council on Environmental Quality.



We now possess a much firmer scientific base of facts for understanding the long-term consequences of off-road vehicle use than we did seven years ago, thanks to the research efforts of several federal agencies, especially the U.S. Forest Service, the U.S. Geological Survey, and the Fish and Wildlife Service.

In a 1979 report to the council, Mr. David Sheridan summarized these findings and confirmed our premise—that ORV use on public lands is a serious public land use problem, along with grazing, surface mining, water diversion, timber cutting, and wilderness designation.

The conclusion of his research in the publication, Off-Road Vehicles on the Public Land, what that, "to few federal land managers are effectively representing the interests of the land and the plants and creatures who live upon it."

The Department of Agriculture has been aware of this fact for a good many years; I commend the USDA officials present for their willingness to address the ORV issue through this conference.

For the purpose of this panel discussion, I think the ORV issue can be summarized in the form of a question: How and where may the use of off-road vehicles be accommodated in a manner that will protect the public's natural resources and minimize conflicts with other public land users?

The challenge we face is to arrive at answers to this question that are acceptable to ORV users, to the environmental community, and to government officials charged with the responsibility for making hard decisions concerning ORV use. If the collective wisdom of the experts on this panel and those of you in the audience can be integrated into a common effort, I am convinced that practical solutions will evolve in due time.

The high degree of interest in and controversy over ORV use on public lands perhaps has been partially responsible for agencies moving more slowly under the executive order than we would like. In fact, the lassitude with which the federal establishment was dealing with this relatively new phenomenon in the early 1970s led to the first executive order on ORVs which was signed by President Nixon on February 8, 1972. The purpose of the 1972 executive order was to ". . . establish policies and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all the users of those lands, and to minimize conflicts among the various uses of those lands." This executive order also directed selected federal departments in custody and control of public lands to identify zones of use within six months and to designate the specific areas and trails of



public lands on which the use of off-road vehicles may be permitted. In addition, the executive order required that a date be set by which such designation of all public lands would be completed. The Forest Service published on March 20, 1974, their regulations for the operating conditions for ORVs. The Forest Service also reported to CEQ in September, 1974, that designation of both areas open and closed to ORVs was to be completed by December 31, 1976.

Despite such good initial efforts, between 1972 and 1977, some federal agencies were slow to implement the executive order. For this reason, in 1977 CEQ recommended that executive order 11644 be amended to provide more specific direction to federal land managers.

CEQ got a vivid demonstration of just how controversial the management of ORVs can be when this second executive order was in its preliminary drafting stage. During that time word was spread through the ORV community that CEQ was attempting to ban the use of off-road vehicles on all federal lands. The allegation had no factual basis; nevertheless, alarmed ORV users sent 80,000 letters to CEQ and the White House protesting an action that had never been proposed. When this action failed to occur some groups proclaimed that they had won a victory against CEQ—a good example of self-fulfilling prophecy which contributed nothing to solving the problem.

Federal land managing agencies have also experienced similar reactions to their efforts to establish management programs. On the other hand, a large number of nonmotorized recreationists have accused federal agencies of not effectively controlling ORV use on the public lands. This highly charged atmosphere has made it difficult for agencies to develop cooperative working relationships among the various interest groups. On May 24, 1977, President Carter issued executive order 11989, which directed federal land managers, "whenever . . . the use of off-road vehicles will cause or is causing considerable effects on the soil, vegetation, wildlife, wildlife habitat, or cultural or historic resources of particular areas . . . to immediately close such areas or trails to the type of off-road vehicles causing such effects until such time . . . such adverse effects have been eliminated and that measures have been implemented to prevent future reoccurrence." We hoped that this more specific order from the President would finally move the agencies to develop effective ORV management programs. Despite the problem of initially determining what constituted a "considerable effect," the Forest Service is now implementing a management program.

It was after the issuance of this second executive order that a study of ORVs on public lands was undertaken for CEQ by Mr. Sheridan. Among other things, he found that the Forest

Service was not doing sufficient analytic work to determine the actual impact ORVs were having on natural ecosystems. The environmental analysis reports generally failed to present scientific data on the degree of slope, the hydrology, the type of soils found, the type of vegetation, and the species of wildlife affected. Instead, most of the decisions seemed to be based on subjective management experience which tended to legitimize the status quo. For example, the Sequoia National Forest Plan, which covers 1.1 million acres, designated 42 percent of the forest as open to ORVs. Of the 58 percent closed, 18 percent is prohibited from such use by law.

We are all well aware that public perception of how well an agency is managing its resources is often shaped by one or two major controversies which gain national attention. Clearcutting practices on the Monongahela National Forest in West Virginia in the early 1970s was one such example. The public controversy over the Monongahela was the catalyst that caused the Congress to begin drafting the National Forest Management Act of 1976.

Similarly, Ballinger Canyon in the Los Padres National Forest in California became, perhaps unfairly, a symbol of deficiencies in the Forest Service's ORV management program.

I understand that the Forest Service is attempting to eliminate these symbols by integrating ORV planning with its land management planning process as outlined in the department's integrated planning regulations issued under the National Forest Management Act of 1976. I have been told that forest supervisors have now prepared travel management maps for their areas. These maps are designed to help forest users avoid areas closed to ORV use so environmental damage will not continue to result from user ignorance.

In addition, enforcement, education, and monitoring plans are being developed in some Forest Service regions. Roy Foikter will discuss specific Forest Service implementing activities in more detail during his presentation.

We believe that successful implementation of an ORV program is dependent on active and cooperative participation by the various public interest groups working with federal agency personnel. Federal, state, and local agency coordination of policies, procedures, and practices will be necessary to carry out effective programs within specific geographical areas.

Two areas covered in the executive order and in the Sheridan report—enforcement and monitoring of effects—need more specific attention by USDA. Without effective implementation in both of these areas, the success of any management program is in jeopardy. Implementation of an effective ORV enforcement program is necessary to assure that the ORV planning by each

national forest will be observed by all, including those who do not find such restrictions to their liking. An adequate monitoring program is equally important so that land managing agencies can know the effects of their planning decisions on the land.

Another area not specifically mentioned in the executive order is the reclamation of damaged areas. We also need some success stories. I hope they will be forthcoming.

The question I posed earlier asked, "How and where may the use of off-road vehicles be accommodated in a manner that will protect the public's natural resources and minimize conflicts with other land users?" This question addressed the how and where. My immediate concern is when?

We appear to be several years behind schedule. Each of us needs to heed the advice of Aldo Leopold to consider the other users' concerns as well as our own. I will personally assure that the council members and staff continue to give priority to this issue, and to work together with other federal agency officials and with representatives of all interested parties.

Not too long ago, when President Johnson faced a matter requiring compromise on difficult issues, he said, "Let us reason together." I hope we can do just that, while keeping in mind that our obligation to maintain the public lands for the use and enjoyment of future generations must be a fundamental land management principle.

### Questions and Answers

Kevin Kierney: I represent the American Motorcyclists Association. Mr. Sheridan's report that you referred to in your speech questions the monitoring of restoration damaged properties, but you went so far as to identify what needed to be done when a question's raised by the audience today about the Forest Service, how much money is being spent on looking at some of the research topics that we have to address in order to manage this problem. The last page of Mr. Sheridan's report identified how much fuel is used by off-road vehicles. Now the snowmobile industry, the State of Washington, the State of California have had great success in using these unrefunded fuel-tax revenues in the development, maintenance, and restoration of ORV areas. The report stopped short just after it identified how much fuel we use, stating a key facet in implementing any management program, which is money. Where are we going to get the money? Why did the council stop short of suggesting a way of implementing what the report was about? I do not think it has effected the question about the council and why did they make a report that could not be implemented?



Yarn: In the first place, as I pointed out, the report was done by Mr. Sheridan, and as was suggested earlier, I think that question should be addressed to him as to why his report did not explore that possibility. However, the executive order did not spell out the implementation. That is to be worked out by the individual department and agency.

Kierney: What we do with that type of report when it does not discuss where we are to go from here is just a fester of wounds. Let us talk about implementation and if implementation means dollars. It has already been proved successful in many states that the unrefunded fuel-tax revenue can be used for implementation of good programs. I feel that is a policy issue that the council has failed to address after they issued the report. It could be taken care of now in recommendation form from the council, in the form of legislation to direct the unrefunded fuel-tax revenues to ORV development and restoration.

Yarn: I am glad you made that point. We will certainly take that into consideration.

Kier Nash: Let me take you back just a bit earlier when you discussed 11989, was there any serious consideration given in CEQ to establishing a policy which would permit national forests to have a smaller sacrifice areas and then have the general standard as you did for the rest. This seems to be one of the difficulties with the way 11989 was formulated. It does not give very much digression to forest management to say well we would have less total damage if we try to concentrate ORV uses here instead of there and say come in over here. The case in point is Ballinger. I do not know whether there may be other ecological considerations. But it also seems to me that one could say well let's let this one-half of one percent of this forest go to hell and try to work the other 99 1/2 percent all-right. Was there ever any consideration given to that?

Yarn: Yes, the thought has occurred to us and I am sure to the agency too. But you know that is really up to them to make those decisions. It is very difficult to sacrifice any area, you know just write it off. I think that is what we are trying to avoid in all our reclamation projects now. Even in your mining, in your worst mining operations, the effort now is being made to reclaim them and restore them. So it is a big question and one that we have discussed and you know it is really up to the agencies.

Agency Representative: I guess as a natural resource manager though, I would have to say that we really would not favor sacrificing any area. That is sort of an unfortunate term that crept into the usage along the lines. The difficulty with the executive order, of course, is that when you try to define a word like minimize, then it really gets to a point of where you



really want to end up. If you really want to end up at the position of eliminating off-road vehicle use, you will define minimize very tightly and say that means eliminate. And if you want to recognize off-road vehicle use as a legitimate use, then you will look for some other definition for the word minimize. I think that is the difficulty in writing an executive order. If you do not have room, there are not enough words to get all that philosophy in it. If there were, you would not need management. I hope that we can all decide that we do want to find good ways to allow ORV use to continue, and not start our discussions from the point that we are going to limit this.

David Sanderson (Executive Director of the New England Trail Riders): I was very pleased to see that the council recognizes the fact that, to some extent, controversy has been generated by the atypical rather than typical sort of situations. That is certainly my experience in the east. I was very pleased to see you recognize the need for reserve, etc., and I am curious as to the involvement the council has in the budgetary process and, in particular, if you have made specific budgetary recommendations for increasing the resource budget so that it would give us a reasonable research program, particularly in the northeast. Can you do that? Will you do that?

Yarn: We have recommended that we increase budgeting and that the agencies increase budgeting and staffing for these matters. However, as you know, we have just approached an emergency budget cut. We have a week to deal with the OMB on budget cuts. It is not only the council's budget that is being presented before the House, but also other budget matters which we are involved in—the research budget being, of course, one of them. Unfortunately, the first cut was in new programs and we do not know how severely that has cut into what the different agencies were doing on ORV programs. So, as of today, I really do not know.

Sanderson: My particular interest is the budget that would be especially relevant to me, that is, the Forest Service research budget. Is there any way that I, as a representative of a private group, can get involved in this process at this point?

Yarn: Have you tried to work with the Forest Service on this?

Sanderson: No, I have not.

Thomas Nelson: There are a couple of questions asked here. First, what is the effect of proposed budget cuts upon the research programs in recreation research? There was no indication that our recreation research item would be affected by the budget cuts. There were some rather great reductions in other items, but not in this particular one. Second, there is an opportunity to make yourself heard. There are public hearings for public witnesses before both of the appropriations

committees, and this is an opportunity to be heard on this particular subject.

Question: I have a question. Does what you are saying now mean that I might have a fighting chance to get even a very minimal program going in my area?

Nelson: That is a loaded question. I think Mrs. Yarn has given the most complete answer to that question in her statement—that new programs, especially, may have an extremely difficult time in this coming budget year.

Response: But you just said your budget probably was not being cut.

Nelson: Right, in that particular area.

William Carson (New York State Motorcycle Trail Riders Association): How does the CEQ agency get set? How did we decide that the environmental impact of off-road vehicles was greater than the environmental impact of professional baseball per se?

Yarn: We have units that address all the areas that we deal with. We have to cover the waterfront in governments, so we have these units set up with a senior staff person. Then a specialist in each of the fields, together with us, sit down and work very hard on setting priorities as recommended by the people that are literally on the ground working with these issues everyday. The council has been in existence for ten years and the ORV problem has been and continues to be a problem. The council members, along with the staff, set priorities each year, and of course, our first priority always is the statutes that we are responsible for, NEPA being the big one and we are still working on implementation of NEPA. There are some agencies that have not complied fully yet. Also of top priority are the directives and the executive orders. In addition, we have our annual report every year, and then, if there is any time left, we pick up a few other things.

## TWO-WHEEL VEHICLE USER'S PERSPECTIVE

*Robert Rasor*

The American Motorcyclists Association is a national organization of motorcycle enthusiasts which has been in existence for about 56 years. We have grown from a small organization of racing enthusiasts to a broad-based group, providing a full spectrum of membership services. The composition of our membership has expanded from a single purpose of competition to a multi-purpose group which encompasses motorcyclists with interests in all aspects of motorcycling. We feel that well-established in our membership is the recreation motorcyclists or what we call the trail rider or the ORV user as he appears in most government agency regulations or manuals.

The issuance of executive order 11644 by President Nixon was greeted with an air of cautious optimism by the two-wheel recreational community. While concern over the possible impacts on recreational opportunities were high, the order was generally perceived as an opportunity to lend order and management stability to future recreation opportunities on public land. It was with similarly mixed emotions that this opportunity for a national off-road vehicle conference was received.

A colleague of mine once remarked, in reference to a federal employee's comment that recreation motorcyclists were paranoid, that you are really only paranoid when they are not after you. This conference which I believe can provide the opportunity to contribute a great deal to the positive management of recreation motorcycling, also has all the earmarks of ending our era of paranoia by demonstrating to the Department of Agriculture that it really is after us. Our immediate response to Nixon's executive order was reflected in a public information campaign that ultimately resulted in petitions containing over a quarter of a million signatures and thousands of letters being delivered to the White House. The object of the campaign was to alert the users of the possible consequences of the order, and simultaneously, to express feelings that it could have positive results if implemented properly.

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Robert Rasor is Associate Director of the Government Relations Department of the American Motorcyclists Association.



Following our public information efforts, the association's reaction to regulatory proposals offered by the effective agencies was largely determined by what we perceived their legislative mandate to be. Realistically, among the departments or agencies identified by the order, only two, the Forest Service and the Bureau of Land Management, could be legitimately called upon to accommodate our recreation. Of the remaining departments in related agencies, Defense, other interior agencies, such as the Parks Service, Bureau of Reclamation, Fish and Wildlife, all had specific limitations within their mandates to legitimately preclude viable programs that would include recreational motorcycling. We believed that it was not in the best interest of our recreation or the environment to pursue opportunities that were within these agencies of their land holders. Only the Forest Service and Bureau of Land Management had the land base and the legislative flexibility to accommodate our recreation. We believed then, as we believe now, that these attributes, combined with the proximity of their holdings to the American people, make them the agencies most able to host our recreational activity. It is this view that has led us to seek maximum accommodation understanding management from the Forest Service and the Bureau of Land Management.

Our efforts to seek positive programs and to accommodate and cooperate with these agencies have been met frequently by frustration, disappointment, and sometimes resentment. In many cases these emotions were caused by legitimate necessary management decisions; however more frequently than we would like to admit, they were brought about by what we perceived as inconsistencies in the decision-making process, emotionalism, or easily detected biases on the part of the agency, the region, or the individual manager.

To a large extent, this conference reflects characteristics which we believe are symptomatic of the problems and concerns we have with the interpretation, implementation, and overall philosophy of ORV management as it exists in the Department of Agriculture. The conference, like the response to the executive order, has not taken the time to address issues specific to each category of ORV, but has sought to address our recreations in terms of a single shotgun blast designed to give minimal attention to each, and it fails to address questions of how a legitimate recreation use can be integrated into Department of Agriculture programs. The conference approach, like the departmental one, will in all likelihood fail to provide the positive management input or user-management interaction that is needed to solve these problems. The conference might also be expected to add further fuel to the controversial fires that surround ORV recreation. Instead, it should have sought an exchange of workable programs, management techniques, and ideas that address user needs as well as management concerns.



The regulations published by USDA following the executive order required that national forests develop off-road vehicle plans. We had hoped that such plans would take positive approaches and reflect user needs as well as management concerns. We do not feel that this was the case. Few efforts were made to develop any management tools or expertise that would assist in accommodating off-road vehicle use. Even after eight years there are national forests which have never issued an ORV plan, and there is little consistency among those that do exist.

Among the hopes that we harbored with the issuance of the executive order was that the required monitoring of ORV use would provide the necessary baseline data to develop management skills needed to properly manage further ORV recreation. Eight years after the executive order only one agency has accumulated any monitoring data which reflect their experience with off-road vehicle recreation. This agency is the Tennessee Valley Authority Land Between The Lakes. The principal agency charged with the overall implementation of Nixon's executive order is the Council on Environmental Quality. It has failed miserably in seeing that this basic step in providing the information base for long-term management decision was taken. Rather than requiring implementation or real monitoring programs in our national forests, the council relied almost exclusively on a single report, the Sheridan report. This report was issued seven years after the order. Mr. Sheridan, by his own admission, has limited knowledge of ORV use and has dismissed the only program that has continued monitoring since its conception. The council's investigations in the Land Between The Lakes were limited to a single telephone conversation with a staff member who admits he is not as familiar with the area as other members of TVA staff. Instead, CEQ, through the Sheridan report, passed over the Land Between The Lakes and similar experiences in favor of the more dramatic Southern California experience.

The association does not blame the Department of Agriculture for failing to objectively assess the real effects of recreation motorcycling in our national forests, but we do blame it for taking the same approach in developing this conference that it has in developing programs in response to the executive order. We resent a planning effort which is designed to address the concerns and programs of off-road vehicle education and provides as much program time for nonusers as it provides for actual discussion between ORV users and managers. As a representative of a national organization with a keen interest in national forest decisions, I have yet to be invited to my first conference on wilderness, backpacking trails, or wildlife programs.

To alleviate what the association sees as a number of inequities in the USDA's approach to ORV recreation, I would like

to offer several recommendations. Among the first—and probably the one that even our detractors would agree with—is additional research. Research that will provide baseline information on ORV impacts, comparative impacts of other forest users, and would place real or imagined ORV impacts into some kind of perspective. If it is desired by the USDA to have the results of ORV research accepted by the ORV community, be it good or bad, it would be well to seek objective research. Continued utilization of the data base gathered from a predetermined bias will do little to resolve the problems with the acceptability of the results by the user. Secondly, we would urge the Department of Agriculture to accept motorcycling as a legitimate recreation, not to continue token lip service to its existence. This acceptance should be demonstrated in programs and management tools and innovation, not just in maps which serve as declarations of where you can and cannot ride. To its credit the Forest Service has perhaps the most professional staff among all resource agencies. However, the nature of the training required for employment emphasizes expertise in many areas that philosophically conflict with off-road vehicle recreation. Staff must have a real interest and expertise in off-road vehicle equipment. Such staff should be actively sought within each region, but at the very least, should be present at the national level. Individual forests must pursue a course that will continue to provide ORV recreation in the future.

As programs continue to compete for resources, users will be displaced by management and by congressional priorities. In the case of recreational trailbikes, I would urge the identification of alternate locations before such displacement occurs. Recreationists should be informed of the availability of alternate sites and scheduled closures. This would go a long way toward eliminating encroachment on Rare II or wilderness areas and eradicating users general distrust of management.

The ORV has become the illegitimate child of recreation. Managers prefer to ignore or prohibit ORVs rather than deal with them in a professional and challenging manner. If there is management responsibility mandated by the two existing executive orders, the association believes that it is to legitimize ORV recreation by developing innovative management approaches that accommodate our use. As in the past our association stands ready to cooperate with the Department of Agriculture and other agencies prepared to meet this challenge. For the challenge must be met, because there is one thing that we can all be certain of, and that is that the recreation trail-biker is not going to disappear.

## FOUR-WHEEL VEHICLE USER'S PERSPECTIVE

*George A. Schade, Jr.*

I wish to thank Peter F. Smith and the Office of Environmental Quality for inviting the United Four-Wheel-Drive Association to participate in this significant conference. United is an international organization composed of fourteen state, regional, and Canadian associations of four-wheel-drive clubs.

I own a four-wheel-drive vehicle, which I enjoy as often as I can; I am a concerned and trained environmentalist; and I have one mind which is committed to quality recreational management of our public lands. My views are fundamentally shared by all of United's members.

I disagree with the conclusion of Mr. Sheridan, in his report to the Council on Environmental Quality, that "the history of the Forest Service management of ORV use of the public lands is largely one of failure." Considering the personnel, financial, and information resources available to the agency, and more importantly, in light of the morass of statutes and administrative directives, my opinion is that the Forest Service has performed more than admirably. Today, there are so many environmental laws on the books that every time a responsible public land manager makes a decision, he violates some law. Every forest supervisor must possess the wisdom of Solomon to meet RPA objectives, protect endangered biology, and ensure multiple use of his domain.

But as the mythical balance of nature does not exist, so likewise we do not have perfect ORV management. We must, however, continue to strive for it.

Certain policy parameters must be outlined. First, there must be absolute acceptance of the premise that off-road vehicle use is a legitimate outdoor recreational activity on state and federal public lands. This legitimacy flows from status, administrative policy and regulations, and political reality. Yet, again and again there is a shrill voice that demands that ORVs be eliminated as a proper use. This illusory contention must be forever rejected, and the sooner it is discarded, the earlier we will begin our task.

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George A. Schade, Jr., is General Counsel for the United Four-Wheel-Drive Association.



Second, we must recognize the different classes of ORV operators. The literature on the subject consistently divides ORV uses among two-wheel and four-wheel vehicles or snowmobiles or identifies users by superficial census type categories. These classifications offer little help. A more accurate way to understand ORVs is to recognize the three distinct types of users, namely, those who use their vehicles for transportation, those who use their vehicles for play, and those who use their vehicles for competition.

The substantial majority of off roaders use their vehicles for transportation from their home to the back country and back. These are the sportsmen, campers, bird watchers, hikers, and recreational users. Their vested interest out there is the same as that of the backpacker—the enjoyment of the beauty, solace, and comfort of nature. Many times I have asserted that there is very little difference, if any, between the largest proportion of ORV users and their traditional adversaries.

My second group consists of those who seek the play experience. They enjoy the unstructured challenge of man vs. machine in the outdoors. Unfortunately, these are the activities whose endproduct, at times, we may have the right to condemn. But this is not a substantial segment, and, their activities are usually limited to a particular area.

Thirdly, is structured competition. Competition activities are already well regulated and controlled, and therefore, do not merit extended discussion. Most, if not all, of these events occur in closed circuits or under tightly administered restrictions.

These three groups present particular problems which can only be solved with special policies and programs geared for each. The ORV user, when in the transportation mode, wants to drive into the back country to enjoy its beauty or to participate in a recreational endeavor of his choosing. He may drive to a rock hounding mine, hiking area, bird watching pond, or ghost town. This user holds a deep concern for the preservation of this environment. He or she could well be a member of a preservation organization, but prefers to belong to a four-wheelers club. This user has a community of interest with our environmentalist foes. This user is today a most maligned outdoor recreationist.

We must maintain free and open access to public lands for this user. Existing roads and trails, traditionally used for years, must remain open. The construction of facilities and trails may be required. A maintenance program for roads, trails, and facilities should be established.



The next major concept I submit is that local communities must be guaranteed special consideration in land-planning activities. I do not mean to raise the Sagebrush Rebellion issue, but the plain political facts today, especially in the western United States, are that state and local communities are demanding bigger control of the policy and planning action. There is a progress impeding resentment of bureaucrats, even well-meaning bureaucrats, promulgating regulations on a national basis which cannot be rationally implemented at the local level due to unique local conditions. ORV planners must recognize that many communities depend on tourism and recreational economics, and, of course, there is the need to satisfy growing local recreational demands. While it may be environmentally preferable to close an area, the land manager must also decide if it would be economically and socially detrimental to close that area. The local residents must be assured a dispositive position of influence.

In other words, the oft-stated ideal that all public lands must be managed for all Americans, not just those who happen to live in the vicinity of the area, but for everyone, is under severe attack today, which attack may result in the death of this ideal.

It follows, therefore, that for ORV planning to be successful, a very high degree of discretion and authority must be given to the on-the-ground land manager. ORV opponents have for years advocated the establishment of a unified federal ORV policy based on strict and rigid environmental guidelines. The underlying message is that the local forest supervisor and district ranger are not qualified or competent to do a good job of managing ORVs. While it may be commendable to have a single policy, I submit that successful ORV management will never be accomplished through the creation of a narrow unified policy. Quality ORV management depends primarily on local conditions. What is good in Florida swamps may not work in Arizona's deserts, and what succeeds there will probably not work in the Minnesota lakes. A unified federal policy is a dream which will never lead to excellent or even satisfactory ORV management.

I would like to offer some specific recommendations. First, the land manager must assure an alternative for ORV use if he closes a previously used area. Closing areas which have been historically used by ORVs without providing other areas for similar use will lead to serious enforcement problems, public resentment, and lack of respect for the agency.

Second, if an area is closed because of environmental damage caused by ORVs, the land manager must be compelled to cure the damage, if possible. Simply closing an area and letting it stand to rehabilitate itself is not good enough. Such a policy

is one of nonmanagement, which will also lead to the just mentioned results.

Third, the Department of Agriculture, Forest Service and the local forest office should engage in user-education programs. In recent years, due to budget cuts, public education programs have been abandoned. They should be brought back.

Fourth, there should be a planned allocation of certain lands to ORV use. Every year, the land agencies allocate thousands of acres to irreversible uses, like highways, transmission lines, and water projects. There would be nothing improper with allocation of a specific area or trail strictly for ORVs. These areas would be used by the play experience people who look to test their machines in the environment. I would not call these areas "sacrifice areas," as Mr. Sheridan has called them. Instead, I believe that they represent a planned allocation of land resources to a multiple use.

The majority of people who travel into the back country are there to enjoy its uniqueness. They are not consciously either modifying or destroying its character. Organized four-wheelers have a long tradition of a conservation ethic. It has been recently that user organizations have been recognized as being a powerful source of developing quality management. I hope this recognition continues.

Editors Note: David Sheridan, Consultant and Author of the Council on Environmental Quality's "Off-Road Vehicle" made no presentation but was available to answer questions.

## OFF-ROAD VEHICLE USE AS A MANAGEMENT CHALLENGE

*Deborah S. Reames*

Off-road vehicle use of the public lands has increased over the last decade at a phenomenal rate. Unfortunately, this form of recreation has caused and continues to cause considerable damage to the resources of those lands. The Sierra Club Legal Defense Fund believes that this damage is in many instances unacceptable. Because of this concern, we have for some time been monitoring the regulation of ORV activity on public lands by such agencies as the Forest Service and the Bureau of Land Management.

There are two executive orders governing the management of off-road vehicles on federal lands. Executive order 11644, issued by President Nixon in 1972, sets forth specific criteria for federal regulation of ORV activity. It was amended in 1977 by President Carter to ensure immediate protection of public land resources endangered by ORV use.

I have been asked to discuss our view of the Forest Service's implementation of these executive orders. In short, our opinion is that the Forest Service is not currently in compliance with the executive orders. This is evident in three aspects of Forest Service ORV management: (1) its planning policy, as incorporated in the Forest Service manual, (2) its actual forest ORV planning efforts, and (3) its failure to implement existing forest ORV management plans.

### Policy

The first and primary problem, in our view, is with the Forest Service's national ORV policy and directives. For the last year and a half, the Forest Service has been engaged in revision of its manual chapter on ORV management. We were extensively involved in the revision process, together with other nonuser and user groups. Last fall, we were sent a copy of the "first draft" of the new manual chapter, which was a great improvement over previous Forest Service policy. This draft policy was basically responsive to the executive order and did address many of the practical problems the Forest Service was experiencing in its ORV management efforts.

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Unfortunately, the chapter as issued in final form last month bears little resemblance to the "final draft" (FSM, chapter 2355). The final manual chapter incorporates few of the proposed draft policy improvements. It is characterized by many legal and practical inadequacies. It contains no direction specific enough to be meaningful to the local forest line officers who are responsible for the actual on-the-ground application of the executive orders.

One of the most serious problems with the final ORV management manual chapter is its misinterpretation of executive order 11644's planning criteria. This order is very specific in its direction that areas and trails be designed as either open or closed to ORV use based on the minimization of resource damage and user conflicts. Yet the manual's definition of "minimize ORV effects" is "to reduce ORV effects to the smallest degree feasible short of elimination. . . ." (§ 2355.05-9, emphasis added). This interpretation is not legally acceptable. The executive order specifically speaks of minimizing damage in terms of choosing which areas and trails are to be open to ORV use and which are not. It is quite clear from 11644—especially as amended in 1977—that ORV use must be eliminated in any area or on any trail where such use would cause more than minimal resource damage.

The manual's interpretation of the executive order criteria is indicative of the Forest Service's apparent policy not to reduce or substantially restrict ORV activity. The manual chapter is characterized by a pervasive bias toward the maintenance and promotion of ORV activity. This bias obscures the Forest Service's legal duty, pursuant to the executive order, to ensure the protection of natural resources from ORV damage. In fact, the manual lists as the first of its mandatory ORV planning criteria the "promotion of user enjoyment"—before listing even the legally mandated criteria of the executive order which require protection of the resources of the public lands.

Nothing in the executive order even implies that the Forest Service should be involved in the promotion of ORV activity. The executive order emphasizes that its requirements are necessary expressly because ORVs are in "frequent conflict with wise land and resource management practices." In fact, its stated purpose is to "ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands. . . ." The Forest Service manual's direction to promote user enjoyment and to maximize ORV use opportunities is totally inappropriate in terms of its purported purpose of implementing the executive order.

Another critical problem with the manual chapter involves its ORV management planning criteria (§ 2355.1). The criteria



are legally flawed in that "promotion of user enjoyment," listed as a "mandatory" criterion, is actually discretionary, while "minimization of user conflicts," listed as "discretionary," is a mandatory criterion under the executive order. And because the criteria is so very vague, generally only paraphrasing the requirements of the order or other authority, they provide no meaningful interpretation of the executive order for use by local forest managers.

This problem is greatly exacerbated by the fact that the manual provides no standards for the application of these criteria. To be at all useful, the Forest Service manual must include standards for determining whether predicted ORV impacts on natural resources are acceptable or not acceptable under the executive order. Such standards do exist. For example, the Soil Conservation Service has developed a "Guide for Rating Soil Limitations of Off-Road Motorcycle Trails," which it has been using for some time now. Where these quantitative standards are available, they should be incorporated into the Forest Service manual. Where they are not, detailed qualitative standards for determining acceptable versus unacceptable ORV impacts should be substituted.

Such specific direction for the application of the executive order planning criteria must be provided by the Forest Service at a national level. It is the only way to ensure consistent interpretation and application of the executive orders throughout the national forest system, which is essential to fair ORV management. Strong national direction is also critical in providing support to local forest line officers, who must occasionally make unpopular ORV use restrictions to protect resources—sometimes in the face of considerable user pressure. They should have the backing of clear, unambiguous manual language detailing their duties under the executive orders.

#### Forest ORV Plans

My comments thus far have addressed some of the legal inadequacies of Forest Service national policy for off-road vehicle management. The Forest Service's failure to comply with executive order 11644 is, however, perhaps best illustrated by the ORV management plans which were developed and adopted for each national forest in 1976 and 1977. With few exceptions, these plans are not adequately responsive to the executive order's resource protection mandates. In most cases, this is because the resource data and impact analysis on which the plans are founded were far too superficial to provide a basis for determining the existing or potential degree of ORV impacts.

Unfortunately, even when the plans did incorporate good resource impact information, that information was generally ignored

or contradicted by the Forest Service line officers in making ORV use designation decisions. For example, the Shasta-Trinity Forest supervisor designated as open to unrestricted ORV use areas which had been given high erosion hazard ratings by the soil scientist involved in developing impact information for the forest's ORV plan. Similarly, in Modoc National Forest, a team of geologists and other resource experts developed a scheme for classifying areas and trails as either suitable, unsuitable, or seasonably suitable for ORV use. Yet the Modoc Forest supervisor designated as "open without restriction" 340,000 acres of land which had been classified by the resource team as unsuitable or only seasonably suitable for ORV use. These legally unacceptable inconsistencies are examples of what can be expected to occur when there is no clear national Forest Service ORV management definition and guidance.

### Implementation of ORV Plans

A final major problem with Forest Service ORV management is its failure to implement the ORV planning decisions it does make. Implementation involves two phases: (1) on-the-ground signing, mapping, and other methods of informing ORV recreationists of local use restrictions; and (2) enforcement of those restrictions. Both of these aspects of ORV plan implementation are specifically required by the executive order.

Yet in many national forest areas, on-the-ground signing of ORV restrictions is either not being done at all or being done only after unreasonable delays. For example, in the Ballinger Canyon area of Los Padres National Forest, signing of hill-climbing prohibitions announced a year and a half ago is only now being accomplished. Another example of this is Lassen National Forest, where the forest supervisor still has not posted signs of ORV use restrictions adopted in his 1976 ORV management plan. On-the-ground signing is required not only by the executive order, but also by the Forest Service manual and the ORV plans themselves. The Forest Service's failure to accomplish signing within a reasonable time after the adoption of ORV use restrictions is inexcusable.

The Forest Service also falls far short of meeting the executive order mandate that it ensure enforcement of all ORV restrictions. The Forest Service manual policy on enforcement emphasizes the goal of seeking voluntary user compliance with ORV restrictions (§ 2355.26). This is fine; voluntary compliance is always ideal. However, both the Forest Service and the ORV users must recognize that user violations of use restrictions are common and sometimes extreme. I can cite many examples of refusal on the part of users to comply with use restrictions in region 5 forests. Perhaps these situations could be improved through public education and involvement, as suggested by the Forest

Service manual. But until voluntary user compliance is accomplished, the Forest Service has the legal duty to actively enforce adopted use restrictions, at the very least to the extent of consistently issuing citations and fines for user violations.

#### Executive Order 11989

This discussion has primarily related to Forest Service implementation of the ORV planning requirements of executive order 11644. However, many of the problems I have discussed are also applicable to the Forest Service's implementation of President Carter's amending executive order 11989. That order requires "immediate" vehicular closure of any area or trail where ORV use is causing or could cause considerable adverse effects. But again, the Forest Service manual provides no specific direction and no standards for determining when this mandatory provision of executive order 11989 is applicable.

It is obvious from observation of various ORV use areas on Forest Service lands that this executive order is not being implemented. The classic example of this is Ballinger Canyon. ORV damage to the soils and vegetation of this area are extreme, and has been well documented for many years. Yet the Forest Service waited nearly a year and a half before responding to the issuance of executive order 11989. When it did finally respond, the ORV use restrictions imposed were inadequate. And furthermore, it was another year and a half before even those restrictions began to be implemented. This is clearly not the immediate protective action required by the executive order. It is also not much of an example for land managers in other national forests.

Finally, I do want to emphasize that we are well aware that implementation of executive order 11644 and 11989 is no easy task. However, it is a necessary and a legally required one. We can only conclude that the Forest Service is inadequately complying with the executive orders, despite the mandatory nature of their provisions. It is imperative that implementation improve. We will certainly continue to exert every effort to ensure that such improvement does occur.



## OFF-ROAD VEHICLE USE: THE U.S. FOREST SERVICE PERSPECTIVE

*Roy Fuechter*

Off-road vehicle use has been a part of the national forest scene almost since the formation of the national forest system. Millions of visitors have enjoyed ORV-based recreation on the national forests, from early-day hunters and fishermen, to latter-day trail, four-wheelers, and snowmobilers.

Our charter under the law is to protect national forest lands while providing a wide range of recreation opportunities. One of these opportunities that we recognize as a legitimate use of national forest land is ORV use.

Wheeled ORVs provided about 5.3 million visitor days of recreation in 1979. Snowmobiles were used in conjunction with another 3.3 million recreation visitor days that same year. In winter months, the use of snowmobiles constitutes a significant portion of the dispersed recreation on snowbelt forests. The largest portion of this use occurs on roadways where snowcover prevents travel by wheeled vehicles. Overall, the level of ORV use has increased more than 100 percent over the last ten years, illustrating the tremendous growth in this form of recreation.

ORV use has attracted Americans of all ages and backgrounds, though most users are young, fairly affluent people looking for the same kinds of things that attract nonmotorized visitors to the national forests. We expect ORV use to continue in popularity, although the high cost of energy has raised the price. It is difficult to predict the future effects of the energy situation on the sport, but it is clear that people are not willing to sacrifice the benefits of outdoor recreation. Instead, they will adjust their activities to match available energy resources. Our survey last summer of approximately one-third of our national forests showed that people took fewer trips and stayed longer, and that recreation vehicle use showed a larger prorata drop. But more significantly, we also found that availability of fuel was a far more significant factor than cost. We also know that machines like trail bikes and snowmobiles are not highly consumptive of fuel. Federally funded studies show that

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most of the vehicles use less than one gallon of fuel per hour, for example.

The continuing need to provide more recreation and at the same time consider energy and environmental impacts require land managers to continue to sharpen their techniques for recreation management and resource protection. We have been working with both ORV users and nonusers to improve and refine recreation management as it affects all users. This symposium provides an opportunity to continue that work with an exchange of ideas, so all of us can improve and expand our expertise.

Forest Service efforts to direct the use of ORVs have a long history. Our actions have been guided by many laws, from the Forest Service Organic Act to the recent National Forest Management Act. The Forest Service mission has long been one of management of the resources in such ways as to yield products both commodities and experiences and also to protect the resources for future use. Our management plans and practices are necessarily broad in scope. They must be highly coordinated to consider all the resources such as timber, range, fish, and wildlife and watershed in addition to outdoor recreation.

I made this point so that we all understand that the basic guidance for our management of ORVs is drawn from the same legal foundations for the management of all activities on national forest lands. Thus ORV program planning is an integral part of our broad planning, including RPA and national forest land management planning.

Beyond that, because of the rapid growth in use of motorcycles, four-wheel drives, and snowmobiles in the late 1960s and early 1970s, all federal land managing agencies were provided with additional guidance in 1972 by executive order 11644. The Forest Service took an active role in implementing the executive order 11644, which was amended in 1977 through executive order 11989. The Forest Service took an active role in implementing the executive order, devoting significant resources to identifying user needs, critical ecosystems requiring special protection, sources of user conflict and the like. This activity was directed at the development of specialized ORV plans for each forest, plans which are now being integrated into the new broader land management planning.

In the course of our planning and management we have come to realize that the term "ORV" can be misleading since it implies cross-country travel, while in fact the vast majority of the use is confined to roads and trails. Further, in many states, the term "ORV" has a different meaning than at the federal level. For example, few states include snowmobiles in the definition of ORV. There is some logic in such separation since the impacts of snowmobiles on the physical resource are generally different,

and less significant, than those of other vehicles, because use takes place on a blanket of snow. At the same time, use during winter necessitates special planning since safety, access, and wildlife considerations must generally be different.

Our specialized ORV plans take into account a variety of factors, including:

- soil disturbance;
- wildlife protection;
- vegetative impact;
- mitigation of human conflicts;
- mitigation of commodity production conflicts;
- user safety;
- season of use, and its implications; and
- vehicle type, and the implications.

The plans vary substantially from forest to forest. This is both appropriate and necessary because of differences in the resource base, the types of demands upon it and the intensity of those demands. For example, Forest Service policies permit an individual forest to elect use of either a "closed unless opened" arrangement for managing ORVs, or the reverse "open except where closed." This flexibility is essential in a system which includes both heavily used small forests and vast isolated forests.

Our plans include widespread use of seasonal and vehicle-specific restrictions or closures, as well as strict controls on organized, competitive use.

This planning represents a major effort—probably well over a million dollars and has resolved a myriad of management situations on approximately 150 million acres. We are quite proud of these efforts. Still, there have been and continue to be a few problem areas which seem to receive all the publicity. Two areas that have received widespread comment are the San Francisco River Canyon on the Gila National Forest, New Mexico, and Ballinger Canyon on the Los Padres National Forest, California. They illustrate quite well the complexities of the situations that can be involved with ORV management. In the case of the San Francisco Canyon, nonmotorized proponents feel that ORVs are contributing to erosion of the riparian benches and degrading the wilderness of the area. On the other hand, ORV people feel that the area is exceptionally well suited for ORV use.

An environmental assessment of ORV use on the San Francisco Canyon was approved by the forest supervisor on November 30, 1979. This assessment did not find a basis for either of the polarized positions nor for a total closure of the canyon to ORV use; it did, however, identify a new concern related to wildlife

which requires a partial closure for all recreation use of the canyon during the nesting period for sensitive bird species such as the black hawk. Unfortunately, this decision, based on professional analysis, has left both factions dissatisfied. It has been appealed under our administrative review process, and is presently being reviewed by the regional forester, who has granted a request for oral hearing on April 22.

In Ballinger Canyon the situation is considerably different. In August, 1978, the Forest Service decision was to restrict ORV use to designated routes and hill climbing was prohibited. Initially, compliance with this decision was largely ignored by users, and the forest did not have adequate staffing to police the situation. However, they have now placed increased personnel on the area in an intensified public contact and law enforcement effort. Signing which prohibits hill climbing has been completed and primary travel routes determined. Interim route designations for secondary routes, pending approval of an implementation plan and environmental analysis, are also complete. Final determinations are to be made by April 21. Part of the area has historically been used to run the Red Garter Enduro. Again, as with San Francisco Canyon, this decision was appealed. The decision was sustained, however, by the regional forester, the chief and the district court of California. The event was held yesterday.

Because of the concern that was developing on some of these problem areas, and in an effort to measure our own performance under executive orders 11989 and 11644, the Forest Service conducted an ORV and trail activity review during 1978. The review indicated that performance was not uniform throughout the national forest system. However, we did find many good things being accomplished. For instance, each national forest has completed an ORV plan which has a map identifying areas open, restricted, or closed to ORV use. These plans are prepared with the help of the public and subject to yearly revision. Some forests have done a very good job of providing information on areas available for ORV use. Areas are being signed and identified on the ground. ORV use monitoring plans are being developed and monitoring is being implemented. Research is being planned and proceeding on monitoring techniques and rehabilitation methods.

Even with all this good work, it was obvious that additional action was necessary to attain the "last 10 percent" needed for uniformity. Therefore, a comprehensive action plan was developed, which outlines steps for the Washington office and field units to undertake on:

- A. Enforcement to ensure that personnel and funding are available to carry out public information and enforcement provisions of ORV plans as part of our HOST program, and



to insure public information as a means of preventing violations.

- B. Public involvement to involve major ORV manufacturers and user groups in developing programs to integrate planning for ORVs and trails into land management planning and with interest group efforts; and to encourage the use of volunteers for ORV signing, maintenance, patrol, and public information.
- C. Studies to determine public demand.
- D. Rehabilitation where needed.
- E. Monitoring of use and determination of research needs.

We need to have good practicable approaches to monitoring to prevent recreation areas from becoming problem areas. Needed are techniques that are easily implemented at the field level.

Probably, the biggest remaining impediment to the optimization of ORV management is the high degree of emotion that is often involved. We need to reduce the emotional aspects of this issue and we believe that can best be done through cooperative efforts among all interested parties. We have made considerable progress with ORV user groups who have cooperated with the Forest Service on projects such as: litter clean up, public relations maintenance, and construction and rehabilitation, signing and the like. Where ORV groups are well organized, members are able to channel their efforts into many worthwhile projects. We intend to continue to promote this cooperation.

But now we must also look to cooperation among the various user groups who historically have been at odds. We are committed to providing high-quality recreation experiences for all users, and there is a common need among us all for natural resource based outdoor recreation. With cooperation, coordination, and planning we can reduce conflicts and provide an environment to satisfy that common need. Again there is some real progress. The Forest Service suggested and co-sponsored a winter trails conference in New England last month with the International Snowmobile Industries Association and the Nordic Ski Conference. That program, and the new spirit it generated of voluntary actions to allow a variety of winter users to share the forests, has led us to map out three similar regional conferences for the 1980-81 season. We now want to promote some similar conferences for summer users.

With cooperation, coordination, and planning, we can reduce the conflicts between users and provide an environment where all can satisfy our need for outdoor recreation. We hope that this symposium will provide a basis for such cooperative effort.



Questions and Answers

Question: This morning we heard Dr. Cutler say that one of the policy questions that needed to be decided is, should areas be open unless closed or should areas be closed unless open? And I heard Feuchter repeat that question. I would like to direct this question to all of you. Would you please back off and take a look at that question and see how meaningless it is. It seems to me that it is a subconscious way for bureaucracy to avoid coming to a decision, case by case, national forest by national forest.

Answer: I guess the only reason that we keep coming back to that question is that it is brought to us so many times. Really we would like to address the whole issue from the standpoint of planning and what is really the proper use on the land.

Chuck Wells: I would like to respond to Deborah Reames's comment and then to Mr. Sheridan. First of all, by saying that the Forest Service is not doing its job, I think you really do not have your eyes open. Look at some of the western states, specifically Idaho. Presently, we have 2.3 million acres in consideration in Congress for wilderness, and we have another 1.8 million acres still left in the Rare II study area, and we have over 3.2 million acres that are being inventoried at this time for wilderness potential. I think that maybe the Forest Service and the BLM in some areas must be doing some type of decent job out there or we would not be able to have these resources available or considered as potential wilderness. Now my question to Dr. Sheridan. In arriving at the thing that you did in your study, I have to take issue with this because being one of the leaders in the states as far as off-road vehicle recreation programs we have spent over a million dollars on our ORV program with the Forest Service, and I am wondering why myself and people like Joe Warners in Washington were not contacted about this when you were doing this study? I realize that maybe you have a lot more critical issues in southern California, but don't get the rest of the United States tied up in that problem by making broad generalizations about the rest of the United States and the Forest Service and the BLM. I work for State Parks and Recreation in Idaho. I am not with the users, and I am not with the federal government, and I do think that they deserve some credit.

David Sheridan: I tend to agree with you. I did not have time to look at a lot of state programs. When I did take a quick look at various states, what I found was an enormous variety from state to state on how they dealt with off-road vehicle recreation. So I tried to look at the sort of extremes. The State of Indiana outlaws off-road vehicles on its state lands. And then I looked at the State of Washington, and in fact, my report has a brief summation of the evidence I could gather. As far as the Forest Service goes, I do not agree with you. A couple of

the panelists have been laying bouquets at the Forest Service's feet. I have to think that the Forest Service and BLM have a lot to answer for. It seems to me that when they put out a plan in North Carolina, for example, and they say about 600,000 acres are going to be open to ORVs but there is no evidence whatsoever that the Forest Service has done a thorough soil survey or soil susceptibility in those 600,000 acres, then that's a serious matter. They did do a soil survey in Medoc Forest in California. Three hundred thousand acres are left open to ORVs, and those 300,000 acres, which their own soil surveys said were susceptible to erosion, are left wide open to ORVs. That would be then my answer. I think that if I had to do the report over again, I would like to look more at state programs. I think, however, the Forest Service and the BLM has a whole lot to answer for.

M. B. Doyle: I have just one comment I would like to make. The general feeling—you have heard it expressed through several speakers today—that out of this ethereal groaning about Forest Service problems, lack of management, it comes across as a blur to an awful lot of people. It is about time we begin to look at the problems that are caused by the shrill pounding away at the inadequacies of the professional people. In the known records of our association and the motorcycle association, stated here by Mr. Razor today, never once by the initiative of the CEQ, has it tried to come to those organizations of off-road vehicle problems and said let's sit down and find out what the answers are. The initiative has to come from government, not just from the people in the field. You have to withdraw from this constant attacking of people in the field who are trying to do a pretty good job with a lot of problems. So what I am trying to say is, let's reason together.

Sheridan: I agree and I use the example of North Carolina. In that case at least one of the district rangers in North Carolina was very much opposed to the ORV plan that was hoisted on him at the regional and national headquarters level. He made that point clear in his dissent to the plan. And I happen to know that there were other rangers in the area who had a better idea of how ORVs in those four national forests should be regulated. There are numerous cases where regional and national headquarters Forest Service directives have interfered with the implementation of some pretty good ORV plans.

Kier Nash: This is more an observation than a question. I just want to note that a number of us have been having some fun attacking Mr. Sheridan's report, but there is one point, and it applies equally well to Mr. Doyle's comments about the Forest Service. If the budgeting had been more generous, would the Sheridan research have been more rigorous?

Sheridan: Yes, the idea was to survey the available literature in the field and attempt to synthesize it and that's what we did.

Overall, as far as CEQ's budget goes, I think their annual budget is about three million dollars. And with that, they have to put out an annual report and they try to generate other kinds of reports on special issues. I think the Sierra Club has a bigger budget. Mr. Tierny made the point earlier, and I thought it was a good one although I am not necessarily ready to jump on his bandwagon about how to implement it. If the federal government was going to promulgate executive orders, then it is up to the federal government to provide the funds to implement those orders. But in the push and shove of the federal budgeting process, it does not always work that way. I came away with the unmistakable conclusion that in certain areas, either the BLM or the Forest Service did not have the tools at times to do the job when they knew what the job was.

Comment: I'd like to make this observation about the Sheridan report. One of the biggest problems we had in accepting the document was the minimal budget that went into developing it. We do not believe that the budget provided you with the time to do the investigations that were necessary to make the type of policy decisions that we see or anticipate coming from that document. There is a broad base of the American public and industry that operates within this environment that has been affected by the Sheridan report, and it concerns me greatly that the type of impacts that we see as a result of that report stem from a ten or sixteen thousand dollar investment in the project. I think those are some of the major concerns that we have with the report.



PROGRESS IN ORV PLANNING AND MANAGEMENT  
ON PRIVATE AND STATE LANDS

Overview of State Programs

*Alan O'Neill*

The purpose of this session is to look at progress being made in ORV planning and management on private and state lands. There are a number of states and localities that are attacking ORV problems head on and solving them to the general satisfaction of all the users of the resource. We will be hearing from three states that have approached the issue from different perspectives and two speakers talking to the private sector perspective.

I have several comments to make of an overview nature. As has been touched on earlier today, participation in ORV recreation is no longer limited to a small segment of society. Whether one interprets this form of recreation as legitimate or not, the reality of the situation is that participation is rapidly on the increase. National trends from our recent nationwide plan survey have ORVs and snowmobiles ranked in the top one-third of all activities. In light of the significant growth of the sport and decisions in resource use that planners and land managers must make today, valid information on effective planning processes is vitally needed.

I believe that, of all the recreation activities, none is more misunderstood or emotionally charged than the subject of the "off-road" vehicle. We are all aware of the emotionalism that has surrounded the off-road vehicle issue. This emotionalism has helped to build psychological "people barriers" that have slowed progress toward resolving some of the problems.

I have been encouraged the last several years by the trend away from shouting, finger-pointing, and name-calling toward a more effective process of discussions, education, and cooperation. This kind of conference is indicative of the improvement in human relations and a movement toward positive results. I commend the Department of Agriculture for these efforts.

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Alan O'Neill is Assistant Regional Director of the Mid Continental Region of the Heritage Conservation and Recreation Service.



The answers to the ORV problems lie in helping planners and resource managers become aware of who the "off-road" user is, what his/her needs and expectations are, and in proper planning for controlled use where controls are necessary.

It is my opinion that the most important part of the educational process is changing peoples' "attitudes" on how they deal with an issue. I have worked as a planner and administrator now for 15 years and am appalled at times with the biases that planners and land managers at all levels bring to their jobs. All of us, of course, are products of our own programming and upbringing. The danger is bringing these biases into our jobs. I've seen it in my agency on occasion, in other federal, state, and local governmental agencies as well as in environmental organizations and in user groups.

On the government side, we are in the position of having to represent a balanced, supposedly informed, point of view. We must advocate both sides, or all sides, of an issue. Therefore, we must go through the process of becoming informed, objective, and knowledgeable—the same process that we hope will take place in other areas of the political arena, with the environmental community, with the off-road vehicle user, and with the decision makers.

It is along these lines where I would say HCRS, especially in our regional office, has put its emphasis the last several years. We are trying to promote responsive actions by state and local governments to plan properly for this use. Our primary means of accomplishing this is through the State Comprehensive Outdoor Recreation Planning (SCORP) program under the Land and Water Conservation Fund and through our technical services programs.

First, I will address the State Comprehensive Outdoor Recreation Planning program. Under the Land and Water Conservation Fund Act, each state must prepare a SCORP in order to be eligible to receive acquisition and development grants. Over the years, this program has funded many of the state ORV planning efforts, and several of the good state ORV programs have the planning done under the SCORP planning program as their base.

I say candidly, however, that the SCORP program in the past has had only mixed success. Our original guidelines, because they required states to cover everything, made it virtually impossible for states to effectively deal with any particular issue. State staffs and dollars just did not allow this since resources were primarily pumped into preparing the SCORP document. This was the old cookbook approach to planning.

In the last three or four years, these rigid requirements have been gradually relaxed in favor of more issue-oriented

planning where emphasis has been placed on problem/solution planning. This process is now formalized in a new manual change due to be released in several weeks. During this period, we have picked up our efforts to work with the states in planning for the ORV issue.

The new vintage of special ORV studies under the SCOPE program is developing credible information to problem-solve those areas where solutions are needed, and they are generally more credible problem/solution research and implementation efforts. Utah's snowmobiling and ORV efforts, South Dakota's snowmobile study, and Colorado's ORV and snowmobile efforts are examples of this new vintage of special studies.

They are starting to address pragmatic legislative and funding programs, ways to coordinate agency ORV policies and management plans at all government levels, ways to minimize and inter-relate ORV regulations, looking at assistance programs to help governments develop ORV areas that are well designed and carefully monitored in their respective communities, and endeavoring to see that positive approaches are taken rather than only closures. These studies have helped establish important communication relationships between planners, land managers, and user groups. Our new SCORP regulations are requiring effective public involvement, and implementation is being emphasized through the development of Annual State Action Programs with governors' sign-offs. The implications of this process to the Department of Agriculture should be clear.

I believe the new SCORP process can be an effective means to tackle the ORV issue. Since the issues selected for work rest with the states, it is incumbent on all those interested in ORVs to let their respective state know their interest in having this issue addressed. There are still many states which have not addressed this issue at all in their planning programs.

Just briefly, we have been involved in a number of technical assistance activities. For example, we recently published, in cooperation with the Motorcycle Industry Council (MIC), a booklet entitled *Planning for Trailbike Recreation*. The booklet was developed to provide current information to planners, managers, and others who deal with off-highway recreation. The 28 presentations in the booklet were selected from eight of the trailbike workshops co-sponsored by the MIC, HCRS, and others which were held throughout the country during the last several years.

Speaking of the trailbike seminars, I think you would be interested in the concept. These workshops were started in 1977 by the Motorcycle Industry Council as a means to bridge the communications gaps between land planners and managers and users and to impart to those managers the known skills and techniques that could result in solutions to ORV management

problems. HCRS, as well as state agencies, has assisted the MIC in co-sponsoring these workshops. Eleven seminars have been held and have been very successful. Professional planners have had an opportunity to learn and have been given a forum through which new ideas and techniques have developed.

PROGRESS IN ORV PLANNING AND MANAGEMENT  
ON STATE LANDS: A MICHIGAN VIEW

*Michael D. Moore*

It is my intent to briefly relate management activities in the State of Michigan in regards to off-road vehicles (including snowmobiles) with a primary emphasis on federal-state cooperation. Michigan has separated ORVs from snowmobiles by legal definition. Therefore, I will try to cover these two recreational interests individually.

First a little background on land base, population, and users. Michigan is blessed with the largest state forest system in the conterminous United States—some 3.8 million acres. This large northern public land base draws recreationalists not only from southern Michigan but from Illinois, Ohio, Indiana, Wisconsin, and other midwestern states. The majority of Michigan ORV and snowmobile owners obviously live in southern Michigan with practically no available public lands. Approximately 90 percent of the ten million residents of Michigan live in southern Michigan.

Although state wildlife areas, state game areas, state parks, national wildlife refuges, and national parks are also located in Michigan, these remarks will be confined to the federal and state forest systems.

Latest figures for registered snowmobiles in Michigan show 331,000 currently registered machines as of February, 1980. However, over 450,000 machines have been registered since the Michigan snowmobile law was passed in 1968. Interestingly when looking at all machines registered (by year of manufacture) a steady climb occurred until the year 1972. This figure of 88,000 fell off to 78,000 1973 machines, 40,000 1974 machines and has remained somewhat less than 20,000 in each succeeding year. Although this leveling indicates a steady annual sales of between 15,000 and 20,000, it should be noted that 62,000 of the 88,000 machines with a 1972 year of manufacture are currently registered.

Some 57,000 wheeled ORVs are presently registered in Michigan under the 1975 ORV act. Approximately 58 percent are two-wheeled, 3 percent three-wheeled, and 39 percent four-wheeled.

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Michael D. Moore is Section Leader, Administration, Forest Management Division of the Michigan Department of Natural Resources.



Unlike snowmobiles where compliance is considered high, wheeled ORVs registration is low, perhaps less than 20 percent of eligible machines. There are many reasons for this difference in compliance.

The legal separation of snowmobiles from inclusion in the term "ORVs" has given land managers both problems and opportunities. The state forest system recognized the need for providing for snowmobiles before the registration act was signed into law and well before much attention was paid to the rest of the ORVs. Hence, when monies became available for trail development, acquisition, and maintenance in the late 1960s, plans for trails were well along. The relative solid state ownership pattern in many parts of the state forest made original layouts easy. Our objectives were to protect natural resources and ecosystems, to separate conflicting uses, and to promote user safety. All lands have been left open to snowmobiling, but primary emphasis was on marking, mapping, and grooming trails. Local governmental units and the private sectors were encouraged and assisted in developing trail systems.

A major coordination effort between state and federal forest administrators occurred in the snowmobile program. Cooperative use agreements were worked out on local levels for connecting trail systems, occasionally including a local snowmobile club or local unit of government. Similar signing, mapping, and trail construction specifications were used. The state forestry organization had available funds for purchasing and operating large grooming machines. By agreement these were used on federal lands. The state also uses contracting and grants-in-aid dollars for maintenance of trails regardless of ownership.

Coordinating meetings between representatives of the state forest system and the federal forest system are held annually prior to and following each use season. Heavy input from sister agencies is solicited and received in planning efforts. Although some differences exist in regulations generally public demand has been satisfied, resources have been protected, and conflicting uses have been separated.

The existing legislation was amended in 1978 to provide for greater cooperation with local units of government through an expanded grants-in-aid program. This program is presently in effect but the lowest snowfall in several years prevents an adequate evaluation of the program.

Moving on to wheeled ORVs, I would like to deal primarily with two-wheeled vehicles. In 1968 the southern Michigan state game areas were closed to ORV use. This led to the formation of the Cycle Conservation Club of Michigan. This club focused its efforts on legislation and on a trail development program. Because of their efforts and cooperation with the Department of

Natural Resources and the Huron-Manistee National Forest, Michigan had a 750-mile designated motorcycle trail by 1973 primarily on local roads. During this time, rules for ORV use were also receiving much attention by the Department of Natural Resources, users groups, and citizens. The end result was Act 319 of 1975 which provides for registration, regulation, and facility development of off-road recreational vehicles.

The act mandated the Department of Natural Resources to develop a comprehensive plan for management of ORV use on lands under the jurisdiction of the department. This plan, now in final form, was completed with the assistance of expertise from several technical areas (including a representative from the U.S. Forest Service) and with advice of the Trails Advisory Council of the Department of Natural Resources.

This plan proposes the development of new facilities. These facilities will be provided within six program objectives as follows:

1. Protect natural resources and ecosystems.
2. Separate conflicting uses.
3. Promote user safety.
4. Within the above constraints, provide optimum opportunity for recreation on state-owned lands by off-road-vehicle users.
5. Encourage and assist to the extent possible local government unit and private sector ORV facility development.
6. Continue reevaluation of ORV needs, programs, and planning on a systematic basis.

The plan focuses primarily on state forest lands. It is here that resolution of conflicting uses is currently critical. As the legislature directed, this plan identifies the manner in which use by ORVs can be fitted into the state forest system with minimum practical conflict with other uses and users. It does this after careful consideration of alternatives. The selected alternative would close all state forest lands to ORV use except for forest roads and designated trails, routes, and areas. This pattern provides separation of conflicting uses while developing areas specifically for ORV use.

During the course of planning, many user groups expressed interest in assisting in trail development. To take advantage of this, foresters met with these groups to discuss the possibilities of contracting trail development. Subsequent meetings

led to contract formulation, implementation procedures, trail locations, and costs.

Area foresters in the field identify corridors where ORV trails may be safely located on state forests. Contractors, who are user groups, flag potential trail locations within the corridors. After inspection by foresters, the contractor is given the go ahead to construct the trail. Presently 250 miles of single track trail have been completed, 170 miles are under contract and new contracts are about to be let to cover an additional 200 miles by the end of 1980. Many loop trails will eventually have staging areas associated with them where camping will be encouraged.

These facilities are in addition to the 750 miles designated motorcycle trails and the more than 10,000 miles of existing forest roads. Rules proposed in the plan are similar to those already in force in Michigan on the Huron-Manistee National Forest. These rules restrict ORV use to forest roads, designated trails, and designated areas. Present state land use rules allow vehicles on all existing trails unless they are posted closed.

The public does not recognize the difference in state and national forests. It is vitally important that we work together as land administering agencies to compromise positions to cause the least confusion in the public's eye.

An example of this cooperative is ORV events. Michigan's public lands host quite a number of ORV activities. These include trail tours, poker runs, enduros, rallies, and trials. On state and national forest lands these events are held under permit. State and national forests worked closely together to revise their permit requirements so that the organizers of events could expect the same conditions from each agency. Both the federal Forest Service and the state forest system changed hide-bound time-honored conditions in the interest of public understanding. Not only did users appreciate the effort, but land managers became more aware of how to deal with special interest groups on a joint basis.

The plan cannot and does not focus solely on state forest lands. It is clear from recreation-user information that some of the most urgent needs for suitable areas for ORVs occur in the southern lower peninsula. There are relatively few public lands in this part of the state. The plan identifies ways in which the Department of Natural Resources can assist local governments and organizations to develop ORV areas, particularly in this southern one-third of the state. Both technical expertise and financial grants can be part of this assistance.

Information used in developing this plan has been drawn from several principal sources. Information on ORV use and



users has been taken from a 1976 telephone survey of all recreational uses, from a survey of gasoline consumption by registered ORVs, registered data, and from past contacts with users and user groups. Information on existing ORV use areas was drawn from meetings with user organizations and contacts through administration of organized events permits on state and federal lands. Information on potential ORV use areas on the state forests and the relationship of such use to other values on the same areas has been obtained from the state forest operations inventory.

The plan does not, and cannot, meet the full desires of either motorized or nonmotorized forest users. It is recognized that user demand for trails, routes, and areas of unrestricted use will not be completely met by this plan. Neither will the plan fully meet the desires of others for areas of quiet and tranquility in the forests. But better separation of conflicting uses provided by this plan is a step toward greater achievement of goals of both these user groups. In the specific area of ORV facilities, citizen cooperation in carrying out surveys, in submitting areas for consideration, and in working with local units of government in developing facilities is encouraged. Coordination with federal administrators will continue at its present high level.



ORVs: WASHINGTON STATE'S RESPONSE  
TO THE CHALLENGE

*Gregory W. Lovelady*

In the State of Washington we are faced by similar, if not the same, off-road vehicle (ORV) challenges seen throughout the rest of the nation. The phenomenal growth of this recreational activity, as well as its potential for impact on the land, is, of course, gaining more and more attention. In light of this situation, the discussion which follows summarizes two pertinent items: First, a unique grant-in-aid program which provides funding support for ORV projects; and second, a way to cope with the so-called ORV threat.

In spite of the seriousness of this challenge, some of us like to think we have hit upon a solution. What I am referring to is really a course of action which seems to be leading to an answer in dealing with this relatively new recreational activity.

More than anything else, this solution involves an attitude, a way of thinking. It is an approach which is not new to land managers, except possibly in its application to the ORV situation. The key to the action to which I am referring is "management," and the concept was probably best summarized by a motorcyclist acquaintance of mine in a recent correspondence. He said, simply: "When was the last time you [managers] responded to a user conflict situation by closing a trail facility to hikers?"

His point was simple. Both hikers and ORV users, normally, have the same right to use these facilities. Generally, trail facilities are not, or have not been, constructed for any one type of recreation user, as is emphasized by their "multiple-use" categorization, especially in the case of the Forest Service. But yet we often see what amounts to trail user discrimination as these facilities always seem to be closed to ORV users in response to conflicts or demands. This is where the attitude to which I referred comes into play. In response to an ORV problem, more and more we are seeing managers exploring alternative solutions instead of merely canceling the activity. An example of this thinking is found in the Wenatchee National Forest in Washington State, where it is recognized that good foot trails do not necessarily make good ORV trails; they often

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deteriorate at an accelerated pace when used by these machines. In answer, the service has initiated an aggressive program of re-engineering the inadequate trails to suit both types of users, as funds become available.

Here it is recognized that all recreational pursuits have impacts. Horses can erode trails and trample meadows, hikers vandalize trees and steal signs, hunters cut fences and camp in inappropriate places, and ORV recreationists have been known to entertain themselves by doing the same things. So, where is the difference? It lies in the fact that our normal reaction is to do what we know how to do: For hiker, horses, and hunters, we "manage" the use. For others, we are at a loss, so we often try to halt it at the source and ignore why it exists, while focusing only on the negative aspects.

Another example has been exhibited in Washington's Thurston County, where a conscientious effort is underway to reduce the quasi-legal and illegal motorbike activity occurring locally. Here, instead of stepping up strict enforcement activities, the county has entered into a cooperative agreement with the state, which has, to date, led to the acquisition and development of an intensive use ORV facility. Here the objective is to provide an ORV experience which varies from one of obstacle courses and hill climbs, to an extensive and diffused network of over 70 miles of maintained motorcycle trail. This is accomplished through the efforts of our separate agencies, the combined maintenance and operation budget of which amounts to some \$150,000 per year. The intensive use portion of this ORV facility lies along a major four-lane thoroughfare and covers about 175 acres. The trail portion lies over approximately 35,000 acres. This area is actively managed for timber values, and motorcycles must stay on the trails. Many of these trails must be closed during the winter months to prevent damage. Maintenance and operation costs are currently supported through the State ORV Funding Program; however, it is expected that within two years, most of this amount will be supported by users of the intensive use facility. To help ensure this, a system of food concessionaire, user and event fees has been developed.

In addition, a safety/education program is also underway, designed to approach school age children with the facts about such things as sensible and protective operating gear, legal places to ride, and the techniques involved in operating ORVs so as to impact the environment as little as possible. We feel that most problems occur due to ignorance, and not maliciousness. That is why we expect to see this, as well as four similar programs in the state, begin paying dividends soon.

The catalyst that makes all of this possible is the 1972 state statute which recognizes a fundamental logic. ORV recreationists pay a gasoline tax for the privilege of using safe

and efficient highways. The problem is that the fuel is also used off those highways. Shouldn't that portion not related to highway use somehow be refunded to users? This is a standard practice for airplane and boat fuel users. A 1974 fuel-use study revealed that over 4.6 percent of the gasoline consumed in Washington State is expended off the road (not including farm, logging, military, or enforcement vehicles).

It is this persuasive argument which annually makes over \$1.5 million dollars of user-generated funds available for the management of ORV recreation in Washington State. The funds are administered by a state agency, the Interagency Committee for Outdoor Recreation (IAC), a twelve-member body composed of seven directors of those state agencies most directly concerned with outdoor recreation\*, and five citizens-at-large, appointed by the governor. Supporting the committee is a staff of 19, divided into three divisions (project services, planning services, and management services).

The IAC has administered similar funds for outdoor recreational purposes since 1965, and today continues to distribute over \$15 million annually to public agencies for many outdoor recreational needs.

The state ORV program operates somewhat differently today than it did when the first funds were distributed in 1972. At present, the program is oriented toward individual projects. That is, eligible sponsors may submit applications to the IAC for a specific purpose, requesting that up to 100 percent of an ORV project's costs be paid. To date, over \$8 million has been granted to Washington's county, state, and federal agencies for ORV purposes.

These purposes range from program and site planning, and management activities, such as the Wenatchee National Forest Program noted earlier, to land acquisitions and facility developments, such as the referenced Thurston County Sports Park. In the recent past, funds have also been granted for operation and maintenance, and education and law enforcement programs.

Applications are accepted once each year for projects. For several months, until final consideration is given to funding a project, sponsors will work closely with IAC staff in an effort to render a final proposal of the highest possible quality. During this period, IAC staff will be counseled by the off-road vehicle advisory committee, a group of ORV recreationists and professional planners representing trail bike, four-wheel-drive, county, state, and federal agency perspectives relevant to ORVs.

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\*Public Lands Commissioner, Directors of the Department of Transportation, Ecology, Game, Fisheries, Commerce and Economic Development, and the Parks and Recreation Commission.



In the autumn of each year, a recommendation will be provided to the twelve-member IAC, who will then determine which projects will be granted funds.

Soon after this decision has been made, in an open public meeting, contracts detailing the terms and conditions of the grants are executed between the IAC and the project sponsors. After this has been accomplished, sponsors may begin to incur costs. All grants are made solely on a reimbursement basis, which necessitates that sponsors pay project costs from their own sources before billing the IAC. Although these billings are handled on an individual basis, the IAC can generally reimburse an agency upon presentation of appropriate documents for costs incurred, within two to three weeks.

In conclusion, it is important to remember that what makes this possible is an attitude which recognizes that ORV recreation needs to be considered in the same manner as the installation of a winter ski facility or an equestrian trail. Each can impact the land and can consume our energies in devising ways to make them work. And work they will, if all management tools are brought into use and we remain willing to learn. It is also significant that much of the funding used to support this program is generated by ORV recreationists, and that they play a large role in determining how the money is used. To be sure, we do have a challenge facing us, but it is one that can be met and dealt with.



ORVs AND THE CALIFORNIA DEPARTMENT OF PARKS  
AND RECREATION RESOURCE MANAGEMENT  
EFFORTS: A SUMMARY

*Theodore C. Smith*

In 1972, in recognition of the growing popularity of off-road vehicles, the state legislature passed the Chappie-Z'berg Off-Highway Vehicle Act\* which directed the Department of Parks and Recreation (DPR) to establish State Vehicular Recreation Areas (SVRAs). Section 501956 c of the Public Resources Code describes SVRAs as:

. . . consisting of areas where topographic features and associated recreational vehicle opportunities are the primary values. Such areas shall be chosen to insure that no substantial natural values are lost and that no adjoining properties incur adverse effects from the operation and maintenance of vehicular recreation areas. When important natural, scenic, or cultural values are found to be present within the boundaries of a state vehicular recreation area they shall be defined within a natural or cultural preserve. The development of facilities shall be aimed at making full public use of the recreational opportunities present, and the natural and cultural elements of the environment may be managed or modified to enhance the recreation experiences. Under all circumstances, conditions of accelerated and unnatural erosion shall be anticipated and prevented to the extent possible. Where the occurrence of such erosion is unanticipated, every measure shall be taken to restore the area.

In addition, the off-highway vehicle fund was established to pay for the acquisition, development, maintenance, and operation of SVRAs. These funds are provided from OHV gasoline tax monies, OHV registration fees, and SVRA user fees. At present, the off-highway vehicle fund income is about \$10 million annually.

\*The term "off-highway vehicle" is synonymous with "off-road vehicle." "Off-highway vehicle" will be used in reference with the OHV Act, only; and "off-road vehicle" to the vehicles themselves.

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The language of the ORV Act, in itself, has given DPR the mandated responsibility to assume an aggressive role in controlling the impacts of ORVs.

At the present time, the department has five existing SVRAs: Hollister Hills (San Benito County), Pismo Dunes (San Luis Obispo County), Ocotillo Wells (San Diego County), Hungry Valley (Los Angeles and Ventura Counties), and Clay Pit (Butte County). In addition, the Carnegie Cycle Park Project (Alameda and San Joaquin Counties) has been acquired. These areas serve primarily motorcycles and four-wheel vehicles. To date, no snowmobile use areas have been designated as SVRAs by the state. Therefore, this report is limited to nonsnowmobile off-road vehicles.

The department has acquired one abandoned borrow pit for use as an SVRA. However, the remainder of the areas have been used by ORVs, either legally or illegally, prior to acquisition. Preexisting ORV-user patterns have created some resource management problems, as have other activities such as overgrazing.

At Hollister Hills SVRA, over 90 miles of ORV trails exist within a six square mile area. Most trails were installed as firebreaks (at the direction of the California Division (now Department) of Forestry or hunting-access roads prior to being acquired as an SVRA. Operating costs exceed \$300,000 per year; about 37,000 vehicle users visited the SVRA during 1978 (the peak year). In addition, in excess of \$250,000 over and above the normal operation costs is budgeted for trail reclamation and rehabilitation in fiscal year 1981-82.

Two vastly different soil types exist in the SVRA. Northeast of the San Andreas Fault are marine sediments that yield clayey soils. Staff have been reclaiming some of these use areas simply by hand seeding or covering the slopes with hay or straw, after minor grading. Several of the trails are in fairly good condition, and few problems develop except on hill climbs (trails steeper than 20 percent grade).

Southwest of the San Andreas Fault is weathered granite, highly erodible and prone to gully formation. Many long, steep, deeply eroded trails (no longer in use) exist. Ruts created by the ORVs frequently tend to act as collectors for runoff, and gullies as deep as 10 feet have been created. Of course, the sediment derived from such areas can severely impact the streams below.

As a result, the department has taken several steps to deal with these problems—with varying degrees of success. Trails are graded frequently enough so that serious ruts are obliterated. Unfortunately, this also sometimes has increased

sedimentation, decreased stability of slopes above some trails, and reduced the amount of vegetation below the trail through plastering. Debris basins were installed (at least two more are to be constructed), but initially these were under-engineered. As a result, three such basins washed out in early 1978, and one more washed out in December, 1979. Most have been replaced with properly engineered structures and some new basins have been added.

As a result of these and other highly visible problems and complaints from individuals and other agencies such as the Department of Fish and Game, several studies have been or are being conducted. These vary widely in scope and degree of complexity.

In part of Pismo Dunes SVRA, a sequence of aerial photographs have been compared. Such analyses clearly demonstrate that less vegetation now exists than existed on the site in 1973 and that the dunes are on the move. These sand dunes are now encroaching on Oso Flaco Lake and threaten to encroach on valuable farmland adjacent to the SVRA. The department has done little, if anything, to try to correct the problem.

At three SVRAs, water flow has been measured both by hand and with continuous recorders. Streams have also been sampled both above and below debris basins, as well as upstream and downstream from the SVRAs. Data clearly indicate the basins at Hollister Hills are doing their job—with effectiveness ranging from about 50 percent suspended sediment trapped on site to 100 percent water and sediment trapped.

The state has also realized that trails cannot necessarily be used in perpetuity. Part of the erosion control studies have been directed toward determining the most effective ways of reclaiming or rehabilitating trails that can no longer be used safely, along which adverse impacts are occurring of the site, or both. Our preliminary results show that clayey soils can frequently be more easily reclaimed (and at lower cost) than can granular soils such as decomposed granite. Also, apparently less sediment is being produced from clayey soils than granular soils, all other factors being equal. The decomposed granite of Hollister Hills, for example, requires application of fertilizer, seeds, mulch, and jute net, along with closely spaced water bars for optimum recovery. Scrimping on any of these items, except perhaps the jute net installation in a few cases, substantially decreases the effectiveness of the effort.

Another technique used for monitoring is sequential photographs. Numerous photographic benchmarks are being established and can be reoccupied at any appropriate time. Such photos are then filed as part of the resource management information for

that particular SVRA and are also frequently used for budget justifications as well.

All of these techniques, as well as others, are yielding data that are now being used to prepare resource management plans for the two newest SVRA projects—Hungry Valley and Carnegie. Such plans cover topics such as under what conditions trails should be closed (because of soil moisture conditions, depth of soil, etc.); which specific areas can be reclaimed or revegetated and what the cost of such efforts is expected to be; what maintenance activities will be required; and what widely accepted maintenance activities should not be used. We hope to keep close watch on the implementation and the effectiveness of these recommendations so that they can be further refined.

Finally, the data will come full circle. Our findings will be used in the selection of new SVRAs. Potential sites will hopefully be studied sufficiently that sites requiring expensive mitigation measures in order to comply with the Public Resources Code can be avoided and the most suitable sites selected.



## A PRIVATE LANDOWNER'S VIEWPOINT

*Warren Suchovsky*

I am a dairy farmer in Michigan's Upper Peninsula. When I am not busy planting or harvesting, I work in the woods. I own two 4-wheel-drive vehicles; a Chevy Blazer, which is our family car; and a Ford pick-up truck. I have never had a motorbike or snowmobile.

Neither of these vehicles are used for recreation in the sense that many 4-WD owners use them. They are beasts of burden which have become almost indispensable in my line of work.

Many people enjoy free recreational use of our farmland throughout much of the year. Hunting is the major activity, but we also have people with various ORVs, cross-country skiers, hikers, etc.

A few personal feelings I have about 4-WDs are that I do not like their inflated cost due to having become someone's toy, and secondly, they go about 100 feet farther in the mud than a 2-WD. Finally, it is difficult for a private landowner to protest very much when an ORVer is a neighbor, friend, and sometimes even a relative, and not some "bad guy" from far away.

The effect of ORVs on the environment has been quite well documented. As a soil conservationist, the main concern I have with ORVs is their influence as a cause of accelerated erosion. They are a direct cause of erosion when they are operated in such a manner that they physically dislodge soil particles. It seems that ORV users particularly enjoy operating their vehicles on steep slopes, unstable soils, and other areas which are particularly subject to wind and water erosion.

Indiscriminate use of ORVs can also set the stage for potential problems due to affecting vegetation, compacting soil and causing other changes which make the environment inhospitable for plant growth. It is the loss of vegetation which leads to more serious problems in the future. Problems such as floods, dust storms, desertification, filling in of our waterways with sediments, etc.

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Warren Suchovsky is a farmer from Stephenson, Michigan, in the Upper Peninsula and is Chair of the Menominee Soil Conservation District and Chairs the Forestry Committee of the Michigan Association of Conservation Districts.

Of the various best management practices which are applied to the nation's lands in an attempt to keep soil stabilized, ORVs probably have their greatest effect on vegetative cover practices. Sometimes the cover is a permanent practice which has been prescribed to protect soil in certain critical areas, such as steep slopes, shorelands, stream banks, and sand dunes. Other times, the vegetation is intended for a shorter time period such as over winter or for a few years' duration as in a crop rotation practice. Intensive operation of ORVs, or operation at the wrong time can destroy this vegetation to the point where its value is lost.

ORVs can also cause damage to many kinds of structural practices. This damage occurs when rutting, compaction, etc., results in a weak spot in the structure. Some of the structures which can be affected are dikes, earthen dams, terraces, and diversion ditches.

Some ORV operators create conflict situations with private owners in two basic ways. The first is the result of physical activity. This activity may be accidental or it may be an act of vandalism.

Activities such as unknowingly driving across a farmer's hay field shortly after a period of heavy rain, several vehicles packing down snow cover on an alfalfa field, crushing down strips of tall vegetative matter which were left to hold snow and soil from blowing, driving over plantations of small trees, fording streams, or driving through and crushing fragile, sensitive vegetation in boggy wetlands. How could such an innocent action as using an ORV to enjoy the pleasures of our environment lead to conflict?

A more serious matter is that of vandalism. Deliberate acts of vandalism have led to serious confrontations. Vandalistic activity such as packs of ORVs ploughing through muddy roads until they get stuck, ransacking and destroying remote cabins, knocking over corner posts so fence lines fall down, seeing how many fence posts one can knock over before the vehicle becomes entangled in wire, going into forested areas and trying to see how big a tree they can push over, cutting fences, and driving through row crops during various stages of growth occur all too regularly throughout the country.

The second conflict situation ORVs create is what I would term cognitive, or perceived, conflict. Occasionally, this conflict does not ever occur in reality but does nevertheless cause a mental stress to the private landowner. Activity such as innocent operation of an ORV on a person's fields or through his front yard late at night can cause such anguish.

Conflict also arises due to conceptions of what multiple land uses can co-exist. In reality, in my opinion, various activities can co-exist, but people are convinced they cannot.

Liability for injury to persons using one's property for recreation with or without permission also adds fuel to the conflicts between ORV operators and landowners. Very liberal court decisions of late give great concern for private individuals.

There is an urgent need to develop a symbiotic relationship between ORVs, the environment, and society. Perhaps the first thing to be done is to create a more desirable attitude toward the respect of property, both private and public. People have to learn that they can have fun without having to destroy something or disturb someone else. Attitude development is what education is all about. Conservation attitude development should be an integral part of an individual's total educational experience, not just an isolated course called snowmobile safety or whatever.

Secondly, I feel that owners and operators of ORVs need to pay for the opportunity to use them on private land and on public land too. They must also be willing to pay for the cost of repairing the damage they do. I do not understand why so many people feel that recreation in "wild lands," public or private, should be free. They do not hesitate to pay for golfing, bowling, movies, concerts, etc., so why not pay for the right to use certain trails and roads for ORV use? Recreation is a salable commodity, just as is any other land or water-based resource. The landowner has a right to expect an income from it.

The issue of paying for repair work is serious. Road building and repair is expensive, regrading and reseeding of critical areas are costly. Reestablishing field crops and loss of produce are definite economical losses to the landowners.

This leads me to my final thought, namely, that we must carefully review our various state laws regarding trespass and liability. The National Association of Conservation Districts has recently co-sponsored a model trespass and liability act ("Private Lands and Public Recreation," NACD, 1980), which is on the agenda of the Council of State Governments for Action. Dr. Church of the University of Wisconsin did much of the preparation of this act.

At the recent annual meeting of NACD, part of a forum session was devoted to ORVs. The NACD council also adopted a resolution which would encourage and support state actions addressing the problems of environmental damage, vandalism, theft, and irresponsible advertising caused by certain elements of the ORV community.



OFF-ROAD VEHICLES' (ORV) IMPACT ON SOIL AND  
WATER CONSERVATION MEASURES INSTALLED BY  
THE SOIL CONSERVATION SERVICE (SCS)  
AND ITS COOPERATORS

*Galen S. Bridge*

The impact of ORVs on soil and water conservation measures installed by SCS and its cooperators is a very broad area of concern. Erosion, devegetation, and trail littering are typical effects of the growing use of ORVs. As we are aware, SCS is in business to do the following:

1. Reduce waste and environmental damage in the use of soil, water, and related natural resources;
2. Protect, develop, and maintain the productive capability of the nation's agriculture;
3. Reduce flood hazards and silting of rivers, harbors, and reservoirs;
4. Prevent pollution and otherwise protect and develop water supplies for industry, agriculture, recreation, and municipalities;
5. Strengthen the economic capability of rural America and thereby contribute to the total economy.

Many conservation measures are being installed on primarily private lands to accomplish these missions. For my purposes today, I will be discussing primarily those private lands. These comments in general cover all types of ORVs. As would be expected, most impacts on soils, vegetation, and water will be the same as the impacts on public lands. The main impacts involve tracking over the same areas either too often or when the soil conditions are unfavorable for such traffic. This may occur on ponds, terraces, or other structures where ORVs try to hill climb on the dry side of the structure. It may also occur on steep sloping areas which may or may not be protected by vegetative cover.

The answer to this problem is twofold. First, every effort should be made to prevent damages by proper planning for and proper use of ORVs. The second portion is that of reclaiming

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Galen S. Bridge is Director, Conservation Operations Division, Soil Conservation Service.



high-use areas that become damaged by neglect or improper use. To quote Dr. Harold Heady of the University of California:

What really concerned me is that the same mistakes are not made in recreation as were made in range management. In the history of range management, control of livestock numbers or intensity of use came after vegetation and soil destruction. I suspect you will agree that a history of range land use is already repeating itself in modern recreational problems.

We must keep in mind when traffic destroys the vegetation on an area, we expose the soil to erosion. There is also a good possibility that the tracks will concentrate the water and create a more severe situation than would exist without the tracks. This applies to snow machines as well as others.

This U.S. Geological Survey points out:

The interaction of vehicles and soils is a physical phenomenon that does not distinguish lawful from unlawful or proper from improper use. In the San Francisco Bay area, more than 80 ORV sites are being monitored of which about 75 are used in trespass. The condition of the land is no different in the lawfully used areas than in the areas used in trespass. The adverse impacts, therefore, will generally reflect only the vehicle load and cannot be predicted to be light merely because the use is not sanctioned.

On the shallower, less productive soils, this damage will occur sooner than it will on highly productive soils.

Your local conservation district office, assisted by SCS, can provide information on soil limitations for ORV trails and assistance in planning ORV use areas and trails as well as provide technical assistance for reclamation of damaged areas. Trails should follow the contour as much as practical.

Among the criteria considered in designating ORV areas and trails are the ability of the land and its resources to withstand and sustain off-road vehicle impacts; scenic qualities of the land, plus its cultural, ecological, and environmental values; and the need to minimize harassment of wildlife and disruption of wildlife habitat. Further, areas and trails open to ORV use must be located so as to minimize the potential hazards to public health and safety; minimize conflicts between ORV use and other existing or proposed recreational uses of the same or neighboring lands; and ensure compatibility of uses with existing conditions in populated areas, taking into account noise and other factors.

In addition to the damages mentioned previously, the following damages may occur either directly or indirectly as a result of ORV activities on private lands:

- Terrace systems may be damaged;
- Fences may be taken down, cut, or otherwise made ineffective;
- Gates may be left open or broken;
- Roads and trails may be left so deeply tracked that the co-operator will need to grade or otherwise repair them;
- Young plantations of trees may be damaged;
- Wildlife harassment may occur;
- Ruts and other damages to fields may damage farm equipment;
- Noise;
- Vandalism-thefts;
- Aesthetics of the community may be marred.

Other problems such as stream siltation and filling of reservoirs are a result of water moving downhill carrying soil particles with it. Water quality may also be impaired by ORV activity in the stream itself.

Some considerations for relieving these problems may be:

- A good education program for ORV users so they realize the potential impact of their equipment;
- Groups of ORV users working with land owners and operators to establish trails, etc., in proper locations that will keep damages to a minimum;
- ORV organizations should promote proper use of equipment;
- Consider multiple use of lands which may include only seasonal ORV use;
- ORV users should always get permission of the landowner;
- Community trails, etc.;
- Lease private lands for ORV use;
- Recreation zoning;

ORV sales campaigns should stress some of the same information that their handout material does regarding getting permission to use the land and promoting conservation of resources.

While we have few documented cases of severe damage to soil and water conservation measures on private lands, their remains a potential. Cooperation, education, and good-will on the part of all concerned can improve the relationships for all concerned —ORV users and the landowners.

NACD and others have worked to develop a model access law which is being proposed to state legislatures for their use in developing legislation for landowner protection.

### Questions and Answers

Robert Raser: I just wanted to explore briefly a comment you made about basically the user pay and liability and I'll rectify one more thing. I had no problem with user pay and I recognize the difficulty. But you suggested to me, as I understood it, that you prefer to see the user pay as one of the few protections for the private landowner in existing statutes.

Warren Suchovsky: This is a real good point. In the past I think it has been held that if somebody is on your property without permission, it creates a whole different relationship of legal responsibility. Maybe there are some lawyers in the group that know more about this than I do. The feeling that I'm getting simply in Michigan is that it doesn't make much difference what somebody is doing on your property. It could be some guy who is there for the express purpose of robbing you blind and if he gets injured, look out. So it seems to be a change in legal philosophy of this country. Paying for someone or not paying for it is immaterial as far as being responsible for somebody else. There is a problem with paying for this and like I said we have a lot of recreationists that use our farm. You know we only use a little tiny bit of it everyday. It's kind of silly for the other 900 acres to be left idle. But I am not going to run back to collect a fee. I don't have time to do that.

Response: I'd just like to respond to that. We have a recreational trespass act in Michigan that if you do not charge a fee, and if you are not guilty of willful or wanton misconduct, you are not liable. That is a state law. But the courts for some reason do not interpret it the way it reads. It is a very clear law.

Derick Crandall (International Snowmobile Industry Association): We are particularly mindful of the role that private landowners play in the snowmobile industry. The largest single portion of public trail system used by snowmobilers comes under private lands. We are extremely sensitive to the liability problem, very supportive of the open space and the other kinds of centers that we might be able to identify with the private landowners. I want to share with this group two ideas that strike me as being very creative. In the first case in New Hampshire, the State of New Hampshire has negotiated a single insurance policy identifying every single landowner, private landowner who allows use of his lands for the public snowmobile trail network. Like Michigan, New Hampshire has a landowner liability limitation act. Like Michigan and most other states, the facts have



to be defended in court so that the initial cost of the defense, even to have the action thrown out of court rests with the landowner. We would think that that would be an unjustifiable burden upon the landowner. Therefore, we think the New Hampshire master insurance policy is very creative. We address it. Incidentally, the insurance policy is extremely reasonable in our way of thinking. A cost of something like five to eight thousand dollars a year on a three-year insurance policy. The second thing that I think is reasonable are appreciation banquets. It is our way of recognizing the important role the landowners play in providing for public recreational experiences. We are very mindful of the fact that we cannot pay on a per acre basis. We think the least we can do is publicly thank the landowners for making our activities joyful and safe. I am sure that legislation is needed on access, liability, active and afraid of private landowners.

David Sanderson (New England Trail Riders Association): We depend very heavily on private landowners and we work with hundreds of private landowners throughout New England, with very few problems. I may be able to clarify the liability. There is a very excellent study which was done by the State of Vermont called "Outdoor Recreation and the Law." It addresses the same issues that people have been addressing today. Once the landowner takes money from the user he has a very serious responsibility toward that user and it is important to recognize whether one is in fact talking about that sort of situation. I have a question for Mr. Smith from California. I was a little bit confused by your presentation. It seems to me that the policy of the State of California is something that permits the riders to do whatever they want wherever they want and then tries to clean up the mess afterwards. I do not understand that.

Smith: The law says that we must select sites where we can confine the impacts and where erosion problems won't occur, but the law also recognizes that sometimes we make mistakes. We may allow a trail in an area where we shouldn't have. We now have to fix those problems. Let's say you have a user group of 700 or 1,000 motorcyclists coming in. If you have a 100 lineal miles of trail and you close down 50 of them, that in effect doubles the number of users using any given trail segment. So, that means you are going to have to dump more money into those trails to keep them open so that hazards do not develop and erosion problems do not intensify. This is something that Los Padres National Forest is dealing with at Ballinger Canyon now.

Mark Anderson (Motorcycle Industry Council): I am pursuing Mr. Sanderson's question to Mr. Smith and possibly Mr. O'Neill, in regard to Hollister Hills. I talked with Ray Jenkins, also with the Department of Parks and Recreation, and he informed me that they now have at Hollister Hills a lesser amount of siltation going out of the park than is actually coming into



the park. I was wondering if the Department of Parks and Recreation of California would plan to make this kind of planning information available to other states and other people that might be able to use the information to solve some of the problems that they've been having in similar situations.

Smith: Right now I have three projects that are ongoing. One is the Hollister Hills erosion control study and then there are two planning efforts: one in Hungry Valley and one in the Carnegie site, both include erosion control study. We believe that we should put the results of these studies in a form where maybe like the USGS open file report series so that an individual can pay for the cost of reproduction and obtain a copy. All the results of the erosion control plots and descriptions of the kinds of problems that we have found, the kinds of solutions that we have come up with, and how effective they are will be included in the final reports. We expect to have them available in draft form by July 1.

Alan O'Neill: We now have a HCRS information exchange. It is a system set up to exchange information based on these types of issues. It started out as a means for us to get our publications to our constituency groups, but it was meant to try to find some of the exemplary ideas going on in planning for all activities throughout the country and to have a formalized basis for exchanging that. So those of you who have not heard of the HCRS exchange, I do have some membership cards. There is no cost. Publication of the information is free.

Tom Wells (North Carolina Department of Natural Resources): Mr. Smith talked about the YFCC and YCC and user-fee charges for the outdoor vehicle program and I wondered what are the other funding sources that you use to conduct this?

Smith: I think I heard you say YCC and all, we do not get any money from them. There have been some instances where we have been able to use personnel who have been employed by YCC or YFCC at no cost to state parks. But for the most part, all of our operations are funded out of the off-highway vehicle fund. Many of the gate fees go back into the off-highway vehicle fund to be allocated in subsequent years.

Question: Where do those funds in the off-highway vehicle fund come from?

Smith: Where do they come from? They come from the registration fees that the users pay. All off-highway vehicles in California have to be registered. They come from gas tax money but I am not certain exactly what percentage of gas tax goes into the fund, and they come from the user fees collected at the gates. Those monies total up to about \$11 million annually.

Question: To what extent is your department using criteria that enable you to select sites vs. legislative action that requires you to find certain sites?

Smith: I took a critical look at the department's program last year and found that, at that time, they were not meeting the law as far as doing studies before they acquired a site. There was such a cry to spend the money that was in the off-highway vehicle fund and the pressures were such that people were suggesting sites and suddenly we had a list of 10 sites. Well, they got together a blue-ribbon committee and quickly went around and looked at the sites. The site selection was Hungry Valley and the previous owner said that that was number 10 on the list as far as suitability goes. We were precluded from buying the other sites because of noise impacts on adjacent residential developments. Perhaps in a couple cases environmentalist groups got together and said, hold it, we do not want to give the land over to off-road vehicle use. But basically, I think we got a bunch of albatrosses there in California. We got some in the SVRAs. Carnegie is probably the best site that we have acquired and I think that was by accident.

PROGRESS IN ORV PLANNING AND MANAGEMENT  
OF USDA MANAGED LANDS: SNOWMOBILE  
USER'S PERSPECTIVE

*M. B. Doyle*

I am pleased to speak on behalf of the nation's 14 million snowmobilers and the \$1.8 billion this industry produces in goods and services to serve the needs of these people. Let me say at the outset that I believe that land management policy and implementation should be decentralized. It has to use public participation and public education as its basic tools rather than heavy-duty dictation from Washington. Secondly, the popularity of motorized recreation continues to grow, but demands for other uses are growing as well on a finite land base. When you talk in terms of the finite land base, you also have to talk in terms of the finite land-use base and that is forever changing.

Snowmobilers are one of the user groups to share that land. There are 14 million Americans participating in snowmobiling each winter or roughly the same number of Americans who downhill ski. Snowmobile enthusiasts include those from a wide range of economic backgrounds, and because it is very much a family activity, they are from a very wide range of ages. The State of New York has over 500 registered snowmobilers over 70 years of age. The principal attributes of snowmobilers which differentiate them from the nation's population as a whole are: snowmobilers are less likely to live in urban areas, snowmobilers are more likely to be active outdoors, not just in winter but the year around; snowmobilers are from households which have an above average family income; significant snowmobile activity takes place in 34 states, and those snowmobile clubs are active with a number of additional states. In the short space of 20 years, participation in snowmobiling has expanded from nearly zero to today's level.

Snowmobiling has come to play an interesting and important role in lifestyles. For millions, snowmobiling offers an outlet for a family to have fun together. Adults have rediscovered the childlike fun and excitement, which disappears all too often as we grow older and view snow only as a cause for disruption to our busy schedule. In countless snowmobile communities, snowmobiling has brought economic vitality during winter months, which were once characterized by economic hibernation for

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M. B. Doyle is Chairman of the International Snowmobile Industry Association.

Americans and Canadians who have long been victims of winter. Seventy-eight percent of all U.S. snowmobilers live east of the Dakotas.

As of August, 1978, the North American Snowmobile Association posted over 90,000 marked and maintained public snowmobile trails. Of the 40 thousand acres in the U.S., the largest single portion of tracks (43 1/2 percent) was on private lands, mostly farm lands, the next largest share of snowmobile trails in the U.S. (21 percent) is on federal lands. Of the federal lands, the largest majority were on lands of the Forest Service, and remaining trails were on state-owned lands (19 percent) and on lands owned by local units of government (11 1/2 percent). In addition to that immense trail network, snowmobile clubs today administer some 200,000 miles of private snowmobile trails, approximately half of which are readily available to the public for its use. Creation and operation of these trails are the results of volunteer labor by snowmobile club members cutting trails across privately owned lands with the owners' permission, building bridges with materials bought or salvaged, posting signs and installing gates and fences. The snowmobile community is justifiably proud of the role it has played in integration and maintenance of this system of winter trails. Beyond the actual volunteer labor on the trails, organized snowmobilers have worked with government officials at the local, state, provincial and federal levels in a variety of ways. They have been instrumental in the passing of legislation which create and fund recreational trail programs, often securing a portion of large sums that they paid in retribution of these fuel taxes and other fees—some \$90 million each year to the state, provincial and federal governments to the public trail program. In many cases, the resulted trails are used year around, by snowmobilers in winter and by hikers, bicyclists, and others during warmer weather. Organized snowmobilers have widely institutionalized a system to stretch government funds in providing public recreational facilities. In fact, the snowmobilers just might be one of the best organized groups of North America's outdoor recreations. Millions belong to local snowmobile clubs and some one and one half million are dues-paying members of 50 state and provincial organizations which constitute the international snowmobile council.

Here is what snowmobilers seek. The caption of the sport of snowmobiling is the scenic nature of the winter season. To reach this end, snowmobilers seek trails which begin close to home and offer a variety of destination opportunities from nocturnal areas to overnight accommodations. They seek safe plowed parking facilities for trail heads and trail maps showing special points of interest, snowmobile service facilities, and places to eat and obtain fuel. They seek winterized restroom facilities and well-signed and well-groomed trails. And,



perhaps most of all, they seek access to information on the availability of these features.

All of this information is essential to understanding the role of the national forest in meeting snowmobiler needs. Parks must recognize that a primary function of the national forests is to meet the recreational needs of America. Second, let us recognize the public lands, and in the case of the U.S. snowbelt, especially national forest lands, are of special importance to the sport for a number of reasons: (1) public lands are often especially scenic and offer large undeveloped tracks for the natural experience of a snowmobiler to see; (2) public lands constitute large tracks under single professional management. Thus, finding and developing a trail in a national forest can be much easier than developing a trail of identical length across a patchwork quilt of other lands, where permission is required from hundreds of individual land owners. Moreover, the expertise of the public land management can assure a higher degree of safety to both humans and the resource itself. The public lands office opens some permanence. Those who work with trails on private lands know only too well the frequency of trail changes resulting from private property sales, new development uses of the land, and even landowner attitude changes.

The Centerville community has been actively involved in the national forest planning for many years. With work on those plans, unit plans, ORV plans, forest plans, both RARE programs, and the RPA program, as well as a myriad of less formal opportunities to work hand in hand with personnel of the Forest Service, we have developed, and I want to make a very strong point of this, respect for the constant interest and talented land managers across the snowbelt in North America. We have seen instances where government officials and snowmobilers have formed partnerships and are able to respond to the problems of land use. I feel we must say this publicly, that it is an injustice of the highest order with the results of this partnership and particularly the efforts of countless federal land managers to have been labeled "largely one of failure" as the CEQ report is stating. The report can be dismissed perhaps as one man's opinion, as in fact, the wipeout did in a letter to me dated August 10, 1979. But, in fact, we presented to the CEQ and to the White House 42 instances of errors in the report along with evidence that the final report ignored these suggestions of differences. I am disturbed by the preface to the report which states that "the Council on Environmental Quality sees the all-terrain vehicle problem as one of the most serious public land use problems that we face." We believe that this statement causes doubts within all of us who have a responsibility in the nation's environment.

As one looks from an airplane at this nation's network of highways, man-made water empirements, and agriculture, it

becomes clear that the use of land by all trail vehicles is an issue of not so great a magnitude as it was stated in the CEQ statement. We feel that the issue of all land management can be addressed meaningfully only when it is seen to involve a variety of different vehicles used for different purposes with different environmental conditions. Even the CEQ report, in its final form, acknowledges this reality, defining the term ORV to exclude some of this. Long before the executive order 11989 was issued in May, 1977, encouraging seasonal restrictions, Forest Service officials had made widespread use of this concept. National forest officials have achieved notable successes in managing motorized recreation, particularly snowmobiles. Trained biologists have identified key wildlife habitats and conducted primary research on the impact of snowmobile on wintering deer. This study was used to establish snowmobile use guidelines endorsed and honored voluntarily by the snowmobiling community.

We call upon federal policy makers to recognize the problems that the local and federal land managers face in heeding the needs of snowmobilers and nordic skiers. These decision makers have not responded adequately to the resolution of this first snow based recreation. We have been forcing local officials to reduce warm weather recreational programs to satisfy snow activity needs. We call for planning which considers the snowmobiler's impact on its environment of use. And we offer some advice. We feel that people of this nation are tired of shrill voices. They want problem solvers. They are tired of red tape and of experts who deny what they know to be of reality. I do not think they want this nation run by well-meaning people unexposed to life outside of the big cities.

We hear every once in a while a statement made that certain off-road vehicles are gas guzzlers and that they should be restricted during the energy crisis. But you never hear it coming out of Washington, D.C. Utmost contact with people living in such places tells us that there is a deep frustration out there and it has been much-to-do as we see it with a poor image of the legislative and executive branches of our federal government. To lighten it up, when an individual connected with the federal government collects only data spoiling his or her bias and excludes any non-support of data, it raises questions in the minds of everyone. Certainly there are problems caused by people from all walks of life, including ORV users. Government is not the end-all of all problems in the nation. There is no demonstrative need for drastic new ORV policies. We want to work to make snowmobiling and the use of other motorized off-road vehicles an intrical and permanent part of recreation of our nation. Our community has proven beyond a doubt that this can be done with the aid and cooperation of those in government. Our country is fortunate to have a large and talented network of natural resource management in the Forest Service. And this

network is closely tied to the reality of life in America. They have proven themselves by coming up with compromises which protect the resource and serve the human needs. If the government land management checks, let them show what he can do working with the people at the local level and you will find an answer to the ORV problem.

## OUTLOOK FOR IMPROVING THE MANAGEMENT FOR SNOWMOBILES

*William Jobe, Jr.*

Today, I am going to give you a brief overview as to where the sport of snowmobiling is going from our perspective. The International Snowmobile Industry Association (ISIA) has seven members. Seven companies produce 100 percent of the snowmobiles offered for sale in North America. These same seven companies produce about 98 percent of the world's snowmobiles. There are a few made in the Scandinavian countries, but they tend to be more of the work type vehicle, more of the alpine type vehicle and not the recreation vehicle to which we are accustomed. The newest company in the association is the Chrysler Corporation. Its "Snowrunner," which as you know is like a snowped or a little device that does not stand up by itself, is a new kind of snow vehicle. Chrysler introduced its product in a year when snow conditions did not make for a good sales year.

Consumers bought 268,000 snowmobiles last year, which represented an increase of about 18 percent over the previous year. In the U.S. the increase was 24 percent over the prior year—a substantial jump. And two years ago, there had been a 16 percent increase over the previous year. So the snowmobile manufacturers have experienced two good years. This year the number of sales will be substantially fewer—probably in the vicinity of 200,000 units.

When I first came into the snowmobile association back in 1973, there was an estimate that the machines would last three or four years. Each year following, the estimate has increased. ISIA conducted a major examination of snowmobiling in 1977 and uses the findings to estimate the number of snowmobilers and how much they spend in each state. For example, the snowmobilers in Michigan spend \$324 million. The estimate is that in any given year something on the order of a million persons snowmobiled in Michigan. I point out these figures to show that what we need to focus on is the level of participation in snowmobiling. The ISIA is trying to quit talking about machines as though machines are terribly significant, and to focus its attention on the people involved.

I mentioned tourism because we see that as a growing edge in snowmobiling. We try to live in a world of total involvement

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William Jobe, Jr., is President of the International Snowmobile Industry Association.



with the reality, discussing snowmobiling on national forests, but out of context with budget constraints brought about by the general economic situation. Discussing our own activity without thinking in terms of the total economic problems that we confront would be rather silly. Therefore, we see one of our strongest allies in the resource development field—the field of recreation—coming from the tourism industry. It is a major contributor to the U.S. economy. It has, in fact, been able to put together a caucus in the United States House of Representatives, 231 members out of 435 have identified themselves with a caucus. They pattern themselves after the black caucus. Their focus is to emphasize the contribution being made by tourism to the general welfare of the United States. Tourism is the end of an equation that starts with travel: travel plus recreation equals tourism. In that equation recreation becomes a terribly significant part of tourism, and that is where we are in our activity called snowmobiling.

The recreation community suffers in the public eye from being considered a kind of nonessential activity. You have all heard it. You pick your own activity and somebody does not like it. I do not care whether it is boating, sailing or hang-gliding, hiking, or reading, or watching television, or going to plays, whatever it is, somebody thinks it is frivolous. And in the public decision-making process, anything that is generally perceived to be frivolous is just about the last thing on the line of getting appropriations for programming.

The American Recreation Coalition was formed about a year ago. This year we have been able to staff it with a full-time person. It is supported by those national associations concerned with recreation, broad range of interests, hikers, campers, boaters, motorcyclists, snowmobilers, campground owners. There are 50 organizations that are part of the organization. The purpose is to evaluate in the minds of the public the importance of recreation.

I would not argue that recreation is more important than food or shelter or clothing, but I would argue that in our society recreation is as important to many people in terms of their mental health as well as their physical health. Communicating this point shows up in two areas. One relates to the one we are talking about in this session, that is, the allocation of land resources. And generally speaking, where this group will come down is that nonmanagement is the great sin; nonmanagement of resources is a real waste. The hard job is managing resources to accommodate all of the interests. So that this group, this recreation coalition, and through it the tourism caucus in the United States Congress will come down on the side of management.

The second area in which this group has an interest is one in which we believe everybody has an interest, and that has to do with allocating a shortage in liquid fuels. The energy problem is not really an energy problem; it is a petroleum problem. Nothing is new in this. We believe very firmly that the individual freedom that we enjoy in this country and in Canada is based on our ability to move around, our personal mobility. Our society is built on this personal mobility. Therefore, we believe that the last drop of liquid fuel available in this universe ought to go into something that moves. And that great sin that we see is that so much of the liquid fuel is going up chimneys for stationary heating activity. Our long-term effort is to persuade those who make the decisions to focus on preserving for transportation the liquid fuels available.

That is basically where we are in terms of our issues. We believe that the support that has been evident in this session for snowmobiling is simply a reflection of the reality of a maturing activity participated in by responsible people. If you have not seen it, take a look at the colloquy on the floor of the Senate last summer where 15 senators of all political stripes and notice that you are in pretty good company when this kind of credibility is being given to your activity.

## SNOWMOBILE IMPACTS ON THE NATURAL ENVIRONMENT

*Ronald Aasheim*

As the State of Montana's project coordinator for snowmobile grants program, I work with projects calling for snowmobile parking lot development and plowing, trail development, marking, and grooming. I work directly for the Montana Department of Fish, Wildlife and Parks, an agency that is conservation oriented. As a result of the department's orientation, I have the responsibility for accommodating recreational use of the snowmobile with special sensitivity for our natural environment.

Undoubtedly, one of the keys to success is credibility. The department learned very quickly that before making decisions, it was imperative that it had all of the facts. Personal biases must be eliminated and a negative approach is unacceptable. In other words, it is unfair to stereotype the snowmobile or the snowmobiler.

It is my opinion that snowmobiling is a legitimate recreational pursuit and is an activity that is here to stay. Therefore, I believe that it is imperative that managers not only make a commitment to careful evaluation of snowmobile-induced impacts but also a commitment to the accommodation of the snowmobile. In order for the manager to accomplish this, he must have the facts.

I have been asked to discuss snowmobiling and its impacts on our natural environment. In addition to discussing impacts, I will touch briefly on mitigating those impacts.

Impacts of snowmobiles on wildlife have now been studied in some depth. In regard to big game, such as deer and elk, there have been conflicting findings. There is, however, no doubt among researchers and professionals that due to the condition of animals late in winter, additional stress is very undesirable (1, 14, 21, 42). Additionally, there is a consensus of opinion that the frequency of human or machine contact that an animal experiences during its normal existence has a great deal to do with the way it reacts to the snowmobile in winter (42, 43).

Home range, habitat types, and activity levels of animals that are accustomed to human activity typically show little

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impact from the snowmobile (14, 16). On the other hand, animals that have had little contact with humans should be expected to show more of a reaction (42).

In Montana we have attempted to minimize impacts on wintering wildlife by keeping in mind the two above factors. Where we have identified winter ranges, we discourage or prohibit snowmobile use unless the animals have traditionally been exposed to considerable human activity. If animals are accustomed to human activity, we have permitted snowmobiling but usually require snowmobilers to stay on designated trails.

There are conflicting reports concerning the benefits of packed snowmobile trails to wintering wildlife. Some claim increased predator mobility, while other studies have shown less stress on wildlife in moving to and from feeding areas (10, 21, 35, 45).

We read of concerns that fish and wildlife populations are much more available to the ice fisherman and hunter due to the advent of the snowmobile and thus are susceptible to over-harvest. This problem, if it exists, can and should be handled by managers just as other pressures on fish and game populations are handled, that is, through season and bag limits or reassessment of laws governing the carrying of guns on snowmobiles.

In Montana during the regular big game season, we allow snowmobilers to carry rifles but do not allow herding, harassing, or shooting from a machine. In most late season hunts when animals are more concentrated, rifles are not allowed on snowmobiles but snowmobiles may be used after noon to retrieve downed game.

Small mammals (moles and shrews, for example) can be impacted by snowmobile traffic (10, 33, 50, 53). Passage of a snowmobile over the snow compacts the snow (46, 56). This compaction has been shown to reduce the temperature of the subnivean space, the interface between the snow and soil (56). This reduction in temperature can impact metabolic rates, and thus the survival of small animals (33, 53). In addition, compaction has been shown in some cases to limit movement of small mammals or to trap them, resulting in suffocation (33, 53).

There is a concern voiced by some that impacts on small mammals could eventually impact other species (predators) dependent upon these animals for food. In western states, it would appear that due to the small percentage of area that is impacted by snowmobile traffic and the small mammal's ability to reproduce quickly and migrate into areas with existing voids, that although some small animals may perish as a result of snowmobile traffic, predator populations would not usually



be affected. If there are areas where intense use by snowmobiles is suspected of reducing small mammal populations and consequently affecting other animals, the management alternative of restricting snowmobile traffic in specified areas or restricting use to trails is available.

Several studies have been undertaken to determine the impacts of snowmobiling on vegetation. There is no doubt that snowmobiles colliding with trees can cause deformities, result in disease, and in some cases, kill trees (38, 55, 56). Smaller trees with less than three feet of growth above the snow are the most susceptible to damage. Snowmobiles have considerably less impact on larger trees since most people typically avoid these kinds of obstacles. In the West, several young evergreen tree plantations are off-limits to snowmobilers. This appears to be a logical solution. However, in the spring of the year when trails begin to break up, our managers notice more riding in plantations next to trails. Extending grooming efforts might help.

If snow cover is inadequate to protect above ground structures, shrubs and trees that reproduce by vegetative propagation may increase in areas receiving snowmobile use (56). Intensive snowmobile use can cause a succession of shrubbery rather than trees if trees are eliminated and competition for sunlight is decreased (56).

In the case of agronomic crops, there are conflicting reports. It is apparent that the depth of snow, intensity of snowmobile use, species of crop and severity of winter affect impacts (55). Perennial crops with fibrous root systems, such as alfalfa, seem to be most susceptible to snowmobile impacts (3, 46, 56, 58). With lowered soil temperatures induced by snow compaction, fibrous root systems of perennials are susceptible to freezing (56). Some studies show that growth of spring flowers may be retarded or reduced as a result of the snow compaction (56). Grasses do not appear to be susceptible to these kinds of impacts (3, 46). Grasses may experience a slowing of growth early in the spring, but complete recovery is reported later in the growing season (3, 46).

I found no documentation of reduced winter wheat yields resulting from snowmobile traffic. However, results from a Utah study showed that snow mold was reduced and wheat yields increased 40 percent with increased snowmobile use (17).

There are varying opinions as to whether or not snowmobile traffic on lakes impacts vegetation under the ice. One study has shown that with snow compaction, winter kills of fish can be reduced as a result of increased light penetration and photosynthesis (32); but the opposite is suspected by some researchers (47, 50).

Several questions have been answered about the impact of snowmobiling on soils. Soil temperatures beneath snow compacted by snowmobiles are significantly colder than those under undisturbed snow. The soil is also typically frozen to greater depths (46, 57). Colder soil temperatures retard soil microbe activity in the spring (15, 56). There is doubt whether this is biologically significant as these decay organisms rebound very quickly once the soil warms (56).

Soil bulk densities have not been found to be impacted (46), and in contrast to what many people think, soil erosion in some instances may be reduced. The reason for the reduced erosion is that compaction by snowmobiles results in slower melting of the compacted track (29). The slower melting leaves the compacted area covered with ice or snow longer, protecting the area from spring runoff, and due to slower release of water, a reduction in peak runoffs (29). There are even suggestions to use the snowmobiles as a management tool in manipulating spring runoff (29).

Erosion can be increased particularly if snowmobiles use slopes with little snow and if the vegetative cover is affected (37). South-facing slopes in the spring of the year are particularly susceptible.

Impacts to air quality appear to be fairly insignificant because the area of impact is so vast and the amount of emission small (50).

Whether or not increased subsnow CO<sub>2</sub> concentrations are impacting small mammals and plants and whether or not increased concentrations of snowmobile emissions, such as lead in lakes traversed by snowmobiles, are significant are questions without conclusive answers at this time.

As I have discussed, there is considerable contradiction as to the impact the snowmobile has on our environment. Several variables affect how snowmobiles should be managed in different areas. Snow conditions, severity of winter, intensity of use, types of vegetation and wildlife that will be encountered all affect the degree of the snowmobiler's impact.

Aside from the environmental question, there is another factor that many overlook in attempting to manage the snowmobile, that is an understanding of the snowmobiler. We have found that understanding the user is just as useful and important to the manager as understanding the effects on a particular ecosystem.

In Montana in 1977, we completed a winter survey in conjunction with our SCORP. We discovered several useful facts—one especially pertinent to this discussion—Montana's snowmobilers

prefer outings in remote, wilderness types of settings. This finding makes it important to work with and make snowmobilers aware of impacts to prevent a deterioration of the environment they enjoy.

We continually ask snowmobilers questions to determine preferred terrain and destinations. We have found that in some cases snowmobilers are impacting the environment or other recreators when another access route to a preferred area could be provided. Knowing this, we can limit snowmobile use or route snowmobilers around fragile areas or other winter recreators without compromising the snowmobilers' desires.

In summary, although there are several questions still to be answered, there is no doubt that the snowmobile can impact our natural environment.

It is the manager's responsibility to keep these impacts to an acceptable minimum. The key is understanding both the environment and the snowmobiler. Where restrictions are necessary, they should be imposed—but only when they are necessary.

In Montana when we have identified or suspected impacts and have made snowmobilers aware of them, we have typically received a positive response. As mentioned earlier, credibility is the key to success.

#### Bibliography

1. Allen, Eugene. 1980. Personal Conference. Administrator, Wildlife Div., Montana Dept. of Fish, Wildlife and Parks, Helena.
2. Baldwin, M. F. and D. H. Stoddard, Jr. 1973. The Off-Road Vehicle and Environmental Quality, Second edition. Washington, D.C.: The Conservation Foundation.
3. Bendickson, O. 1973. "The Effects of Snowmobile Compaction on Nonwoody Vegetation." Northland Community College. 6 pp.
4. Bollinger, J. G., O. J. Rongstad, and A. Soom. 1972. Studying the Effects of Snowmobile Noise on Wildlife. Washington, D.C.: Inter-Noise 72 Proceedings, pp. 236-241.
5. Bollinger, J. G., O. J. Rongstad, A. Soom, and R. G. Eckstein. 1973. "Snowmobile Noise Effects on Wildlife." Rept. 1972-73. 85 pp.



6. Bollinger, J. G., O. J. Rongstad, A. Soom, and T. Larson. 1972. "Snowmobile Noise Effects on Wildlife." Prog. Rept., Univ. of Wisconsin, Madison. 42 pp.
7. \_\_\_\_\_. 1972a. "Snowmobile Noise Effects on Wildlife." Final Rept. 89 pp.
8. British Columbia Snowmobile Policy. 1978. Canada Environment and Land Use Committee.
9. Bureau of Outdoor Recreation. Selected Bibliography - Research Pertaining to Use of Off-Road Vehicles. U.S. Dept. of the Interior.
10. Bury, R. L. 1979. Research Reports on Off-Road Vehicles: Abstracts of Findings as Catalogued in the National Technical Information Service. Dept. of Recreation and Parks, Texas A&M Univ.
11. \_\_\_\_\_. 1978a. Impacts of Snowmobiles on Wildlife. The Wildlife Management Institute. 20 pp.
12. Bury, R. L., R. C. Wendling, and S. F. McCool. 1976. Off-Road Recreation Vehicles, A Research Summary 1969-75. Texas A&M University System.
13. Department of Park and Recreation Resources, Michigan State Univ. 1971. Proceedings of the 1971 Snowmobile and Off the Road Vehicle Research Symposium. U.S. Dept. of the Interior. 196 pp.
14. Dorrance, M. J., P. J. Savage, and D. E. Huff. 1973. "Effects of Snowmobiles on White-tailed Deer." Prog. Rept., Univ. of Minnesota, Minneapolis.
15. Draplein, D. B. 1972. The Environmental Impact of Snowmobile Usage. Yale Law School. 34 pp.
16. Eckstein, R. G., T. F. O'Brien, O. J. Rongstad, and J. G. Bollinger. 1979. "Snowmobile Effects on Movements of White-tailed Deer: A Case Study." Environmental Conservation 6(1): 45-52.
17. Fletcher, J. E. 1976. "Some Effects of Compacting Snow Under Dry Farm Wheat Cropping System (1975-1976 season)." Utah Water Research Laboratory. Utah State University, Logan.
18. Foresman, C. L., D. K. Ryerson, R. F. Johannes, W. H. Paulson, R. E. Rand, G. H. Tenpas, D. A. Schlough, and J. W. Pendleton. 1973. "Effect of Snowmobile



- Traffic on Non-Forest Vegetation." Second Rept., University of Wisconsin, Madison. 47 pp.
19. Foresman, C. L., D. K. Ryerson, R. N. Walejko, W. H. Paulson, and J. W. Pendleton. 1976. "Effect of Snowmobile Traffic on Bluegrass (*Poa pratensis*)."  
Journal of Environmental Quality 5(2): 129-131.
  20. Gleason, G. 1972. "Snowmobile Impact Statement." Lake Superior State College, Michigan. 5 pp.
  21. Greer, T. 1979. "Environmental Impact on Snowmobiles: A Review of the Literature, Masters Project." University of Oregon. 60 pp.
  22. Hare, C. T. and K. J. Springer. 1974. "Exhaust Emissions from Uncontrolled Vehicles and Related Equipment Using Internal Combustion Engines." Final Rept. Part 7 Snowmobiles. Off. of Air and Water Programs, Environmental Protection Agency.
  23. Harris, D. and Z. Miskin. 1979. "Land Use War . . . Are Snowmobilers Winning or Losing?" Snowmobile West (Nov.: 6-8).
  24. \_\_\_\_\_. 1979a. "National Parks Still Open to Snowmobiles." Snowmobile West (Nov.: 9).
  25. \_\_\_\_\_. 1979b. "The Wilderness Question: How Much Is Enough?" Snowmobile West (Nov.: 14-16).
  26. \_\_\_\_\_. 1979c. "Environmental Quality Report." Snowmobile West (Nov.: 18-19).
  27. \_\_\_\_\_. 1979d. "Snowmobiling as Recreation: Is It Justified?" Snowmobile West (Nov.: 19).
  28. \_\_\_\_\_. 1979e. "The Energy Consideration: Is It Moral for Snowmobiles to Use Gasoline?" Snowmobile West (Nov.: 20-21).
  29. Hogan, A. W. 1972. "Snowmelt Delay by Oversnow Travel." Water Resources Research 8(1): 174.
  30. Hollenbaugh, W. C. 1974. Snowmobiles and Off-Road Vehicles in Montana - A Review of Literature. Mont. Dept. of Fish and Game. 39 pp.
  31. ISIA. 1976. Sounds of Snowmobiling in Winter. International Snowmobile Industry Association. 46 pp.

32. ISIA. 1976a. Snowmobiling and Our Environment - Facts, Fantasies. International Snowmobile Industry Association. 32 pp.
33. Jarvinen, J. A., W. D. Schmid. 1971. Snowmobile Use and Winter Mortality of Small Mammals. Proceedings of the 1971 Snowmobile and Off the Road Vehicle Research Symposium. U.S. Dept. of the Interior. 196 pp.
34. Lanier, J. W. 1976. "Snow Machine Use and Deer in Rob Brook." Unpub. 4 pp.
35. Lavigne, G. R. 1976. "Winter Response of Deer to Snowmobiles and Selected Natural Factors." M.S. Thesis, Univ. of Main, Orono. 68 pp.
36. Lodico, J. J. 1973. Environmental Effects of Off-Road Vehicles, A Review of the Literature. U.S. Dept. of the Interior, Library Services. 109 pp.
37. Masyk, W. J. 1973. The Snowmobile, A Recreational Technology in Banff National Park: Environmental Impact and Decision Making. The University of Western Ontario, London. 143 pp.
38. Meyer, Ralph. 1980. Personal Conference. Ranger, Hebgen Lake Ranger District, U.S. Forest Service, West Yellowstone, Mt.
39. McCool, S. F. 1978. Snowmobiles, Animals and Man, Interactions and Management Issues. The Wildlife Management Institute. 23 pp.
40. Michigan State University, Dept. of Park and Recreation Resources. 1974. Proceedings of the 1973 Snowmobile and Off the Road Vehicle Research Symposium. Tech. Rept., no. 9, Michigan State University. 202 pp.
41. Morache, M. 1979. "Wildlife in Winter: Why It's Important to Enjoy and Not Harass." Snowmobile West (Nov.: 12-13).
42. \_\_\_\_\_. 1980. Personal Conference. Ecological Program Coordinator, Idaho Department of Fish and Game.
43. Phillips, J. 1980. Personal Conference. Acting Chief, Resource Management Specialist, Yellowstone National Park.
44. Popular Science. 1972. "The Ecological Impact of Snowmobiles on Our Public Lands." New York: Popular Science Publishing Co. 40 pp.

45. Richens, V. B. and G. R. Lavigne. 1978. "Response of White-tailed Deer to Snowmobiles and Snowmobile Trails in Maine." The Canadian Field-Naturalist (92: 335-344).
46. Ryerson, D. K., D. A. Schlough, C. L. Foresman, G. H. Tenpas, and J. W. Pendleton. 1977. "Effects of Snowmobile Traffic on Several Forage Species and Winter Wheat." Agronomy Journal (69: 769-772).
47. Sheridan, D. 1979. Off-Road Vehicles on Public Land. Council on Environmental Quality. 84 pp.
48. Shuldiner, H. "New Light on the Effect of Your Snowmobile on the Environment." Snowmobile Handbook. pp. 30-35.
49. Soom, A. 1976. Emission, Propagation and Environmental Impact of Noise from Snowmobiling Operations. Univ. Microfilms International, Ann Arbor, Michigan. 248 pp.
50. United States Department of the Interior. 1978. "Environmental Statement on the Use of Off-Road Vehicles on Public Lands." Int. Fes. 78-5.
51. United States Environmental Protection Agency. 1972. Report on the Symposium on Snowmobiles and the Environment. Environ. Protection Agency. 31 pp.
52. University of Montana and USDA Forest Service. 1975. Proceedings: First International Conference on Noise from Recreational Off-Road Vehicles. University of Montana and U.S. Dept. of Agriculture. 185 pp.
53. University of Western Ontario. 1972. Proceedings: Conference on Snowmobiles and All-Terrain Vehicles. Faculty of Law, University of Western Ontario. 237 pp.
54. University of Wisconsin. 1972. "Effects of Snowmobile Traffic on Nonforest Vegetation." Prog. Rept. University of Wisconsin, Madison. 25 pp.
55. Wanek, W. J. 1971. A Study of the Impact of Snowmobiling on Northern Minnesota Ecology. Bemidji State College, Bemidji, Minnesota. 24 pp.
56. Wanek, W. J. and L. H. Schumacher. 1975. "A Continuing Study of the Ecological Impact of Snowmobiling in Northern Minnesota." (Final Research Rept. for 1974-75) Bemidji State College, Bemidji, Minnesota. 34 pp.

57. Whittaker, J. C. 1973. "Snowmobiling and the Environment." The Northern Logger and Timber Processor 21(8): 24, 31-32.
58. Whittaker, J. C. and D. S. Wentworth. 1972. "Snowmobile Compaction and Forage Grass Yields in Maine." University of Maine, Orono. Rpet. 143.



## CONFLICTS IN IMPROVING THE MANAGEMENT FOR SNOWMOBILES

*Gary Wakefield*

I would like to say that I agree with some of the statements Mr. Jobe made about the value of recreation. Being a recreation professional I find that recreation is highly needed, and whether we are dealing with the diverse forms of recreation that people do in their leisure time or the industrial recreation, we find that all phases of recreation are needed. Recreation has quite an impact on an individual's performance and state of mind.

Ski touring (cross-country skiing, nordic skiing) is one of the oldest forms of transportation for man. I always like to take a little time to develop the background of the sport to show you where it is going. We view cross-country skiing as an increasing wave of recreation because it is sweeping out of the northeast and across the country in the snowbelt states with a tremendous amount of momentum and impetus. I would like to present some of the reasons for the growth of cross-country skiing.

Cross-country skiing has evolved over the last decade into one of America's fastest growing winter sports. Recent studies indicate that it is second only to racquet sports in its total overall growth throughout the country. For a lot of people, when they think of skiing they think of alpine or downhill skiing. It is a shock to many to discover that alpine skiing is an offshoot of cross-country skiing.

Alpine skiing did not exist in this country until the middle of the 1930s. Whereas cross-country skiing is over two thousand years old. Cross-country threatens to become the most prominent winter sport activity in the northern tier states because of these five reasons. First, trends in recreation and recreational activities that involve contact with and appreciation of nature and the outdoors (resource-oriented recreation) have become very popular to Americans over the past decade or so. Activities, such as backpacking and nature walks, have increased remarkably since the beginning of the 1960s, reflecting the back-to-nature philosophy of the youth of this country. Consistent with these attitudes is cross-country skiing. It is a

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back-to-nature type of activity, an activity of low environmental impact which allows the participant to feel closer to his environment. Second and equally important to those interested in resource-oriented recreation is a promotion of types of involvement which will serve an individual's needs for activity throughout life. Ski touring has the potential for what we call a lifetime leisure activity—something somebody can do from the time they are old enough to walk until they are confined to a wheel chair. Like cycling, ski touring gives the family the opportunity to participate as a unit which enhances its appeal. Lifetime leisure activities are becoming a vital part of the physical education programs throughout the country.

In some colleges, for example at Slippery Rock State College, the physical education people have begun to emphasize the value of lifetime leisure activities. They realize that adults of advanced years cannot realistically participate in such activities as football or soccer, and they look to lifetime sports as a more beneficial way of equipping people with the tools to stay active and healthier throughout life. A person is not going to play football when he is sixty, but he can still ski. An example of this is a comparison between my own three-year-old son who skis and 104-year-old Hermann Smith Johanssen of Canada, one of the most well-known cross-country skiers in North America. When you have those kinds of parameters, 3 to 104, you have a lifetime leisure activity.

Since the sport itself is a healthy activity, it follows naturally that it has value as a physical exercise and thus the third reason for the growth of the sport. You see people wanting to be in good physical shape. We have seen tremendous physical efforts put into cross-country skiing by Olympic athletes. There is no question that a tremendous amount of physical effort is put into the sport in competition. Kinesiologists have determined that cross-country skiing involves virtually every muscle group in the body. As a result, one gets a very uniform physical involvement and a very uniform exercise. It requires a cardiovascular system development of a jogger, legs of a sprinter, and the upper body strength of a weight lifter. Although the average weekend skier is not going to compete in the Olympics, he or she will still reap the benefits of this uniform physical activity.

The fourth reason behind the growth of the sport is more tangible, that is, ski touring requires a low initial investment when compared to other winter sports activities. The novice can get into the sport for as little as a \$100 investment in equipment. Compared with the average alpine skier's investment of \$500, and put in perspective to outfit an entire family, it is easily understood why cross-country has some appeal. Besides the initial economic consideration, the alpine skier has to travel, using gas at a cost of over \$1.00 a gallon,

to a developed ski resort. He is going to have to buy a lift ticket which averages between \$10 and \$12, and he is going to have to spend that amount every time he wants to ski. Whereas a ski tourer can go out his back door, or he can go into a national forest, or a local state game area, or a county park, or on a pipeline; he can go anywhere he wants, besides a touring center. The ski tourer can go anywhere there is a minimum snow condition and he can experience a freedom of choice and solitude that is unknown to the alpine enthusiast. This is the fifth reason.

It is important to remember that all winter recreation is striving for the same general goals. It is our intent to foster cooperation among all advocates of winter recreation. Although some recreation resource managers may maintain that snow trails for combined use are more cost-effective, combined trails certainly would not be safety-effective. Well-planned trail systems for the snowmobiler and the ski tourer would ensure adequate recreation opportunities for both.

#### Questions and Answers

Chuck Wells from the State of Idaho: Gary, I'm interested in your comments about the effects of the exhaust fumes. The other three areas that you talked about I can identify with very easily. But I'm wondering that maybe the fumes bother people because we expect not to have the fumes out there?

Gary Wakefield: I think that you are right. People expect to be in a pristine environment, and encountering something they thought they left at home seems to be in conflict with that. I think the actual biological effects are either nil or non-existent. It's a question of aesthetics. My guess is that the typical snowmobiler simply doesn't recognize that exhaust fumes are a concern. My guess is that if he were made aware of it, he might go a little slower and not kick up quite the same amount of exhaust when passing. It's just a matter of sensitivity. I know when I'm skiing and I encounter a snowmobiler I take the time to wave at him. If you see them on the trail again you'll find that he goes past just a little slower than he did the first time. I've also found that when the cross-country skier ignores the snowmobiler, the snowmobiler responds with a little zip on the engine as they roar past to kind of show the power. We had a group of novice skiers in the Alleghany National Forest in Pennsylvania. These people were taking a skiing clinic and this was the third day of the clinic. They were skiing along this road when some snowmobilers came down the road. There were about 20 of them and they alternated one on either side; one to the right, one to the left. And the novice skier that was in the lead was just terrified when she saw them coming. The snowmobilers knew what they were doing and they knew that they were under control, but she didn't. These



types of occurrences, although there's nothing belligerent about them, really leaves a bad taste in your mouth. The skier goes back and says "well, we had a good time except when we encountered some snowmobilers." We've got to somehow minimize those influences and those contacts by speed controls on shared corridors and restrictions on both types of users.

William Jobe: I think some of the most effective management has occurred in national forests where the spokespersons for the nordic ski community and the snowmobile community have been brought into planning. There's spatial zoning. There's also time zoning. There's all kinds of ways of dealing with particular problems. Some of the best work has been done with people brought in to help solve the problem.

Wakefield: Snowmobilers and skiers like snowmobilers that run through the snow first. I've heard the comment that the only good snowmobile is the one that pulls a tractor sled to break it for cross-country skiing. You've got a cross-country skier following a snowmobile if he's setting track, but outside of that, the tolerance for snowmobilers by skiers is pretty low. A lot of people have a tendency to justify the means. The deal is that you can generally ski where a snowmobile goes.

Jobe: I guess that if you took a poll of the snowmobilers, there would be very few times in their lives when they've ridden under optimum conditions. Snowmobilers also relate to what you say.

Wakefield: One of the things that influences development of conditions is trail design. We find skiers prefer our area because the trails are designed with the skier in mind and it's designed from the skiers standpoint. Consequently, they enjoy the trail more because little things have been added.

Katie Bowman (Michigan International Snowmobile Association): I've skied all over or snowed all over the state and have come out in areas where you don't expect to see a cross-country skier because it is a designated snowmobile trail and all of a sudden I've come around a turn and there are three skiers standing there. Well, my concept as snowmobiler is that they can see us, but we can't see them. I think the safety factor has to work both ways. If they hear us coming and they know that they are on a designated snowmobile trail, then I feel they should have as much courtesy as us to move off of that trail because we don't know that they are there and something could happen. I am curious, how many accidents are there between cross-country skiers and snowmobilers?

Wakefield: I tend to agree with you. A lot of the people that are skiing today have only been skiing two or three years. And a lot of them entered into this sport this year or last year;



they're novices or intermediate skiers. A lot of them haven't learned etiquette, trail manners. A lot of them don't possess the skills to take quick evasive action whether it's a snowmobile coming at them or another skier. Now I've experienced some very close calls on trails with other skiers that just froze because they weren't comfortable enough on skis to be able to move quickly and nimbly enough to get out of my way. And I think this is something that's going to come as the participants begin to mature and know what proper trail manners and etiquette are. We can hear you coming and when I'm out with a group I say, "Hey, snowmobile coming, move to the side." But there are people out there, you know, that have their heads in the sand. And you could have Ticall M coming down the trail gunning his engine and they wouldn't move till they ran over the back of their skis.

Bowman: I think this is one of the biggest conflicts standing on one of the two forks. What about classes for cross-country skiers?

Wakefield: There's no way to force people to take lessons and that's the frustrating part. We try to make them economically attractive, but we can't force them to take them. Another comment you raised was ski tours pay for their trails. I think it might be headed that way. But it's going to take a couple of years to develop.

Paul Weingart: As far as using the public lands, and paying a tax, it will be a long time in coming because the philosophy is that it is open for use. I don't think we'll be into licensing cross-country skiers in the open space for some time. I think I'm correct in saying that in the Scandinavian countries most of the cross-country skiers go on the set tracks that are provided for them. And I think as the sport progresses it will be more like that in the United States but you're always going to find those who want to get out away from everything so they'll go out and break new track.

Wakefield: We find that a lot of these conflicts have been minimized in areas where there has developed, through somebody's own initiative or ours, a cooperation between the snowmobilers and the skiers. The thing is you can't ignore each other. It's got to be cooperation and working together and once snowmobilers understand how much trouble it is to make those tracks and the skier understands how dangerous it is for him to go on the snowmobile trail then they'll stay in their own areas and appreciate each form of recreation. One of the biggest conflicts existing in our area is not with snowmobilers per se, but with the management decisions that have been made in one of the state parks. There is a 15,000 acre state park near where I live. They have a seven-mile bike trail which would be perfect for cross-country skiing. The park superintendent decided to

designate it as snowmobile trail, and it is the cross-country skiers who are just stark-raving mad because there are park roads all over that park which could be used for snowmobiles and they figured this bike trail would be ideal for cross-country skiing. Why not designate that cross-country skiing and let the snowmobilers have the rest of the area? They're mad at the park director and not the snowmobilers because the decision was made in management.

Roland Emetaz (Forest Service, Portland, Oregon): Ron Aasheim mentioned conflicting research, but I don't think the research conflicts that much. I think it depends on where the research was done in the United States. For example, you really can't compare the snow compaction situation in Northern Minnesota where there is maybe a foot of snow and 40° below zero temperatures to the slope situation in the Cascades or Sierras where you have 30 feet of snow and relatively mild temperatures. And in your comment about fuel use by cross-country skiers, maybe in this country or in northern Pennsylvania you can ski out from your back door into the woods, but there is no way you can do this on the West Coast, at least on the west side of the Cascades, the Sierras. You must drive two or three hours to the mountains where there is snow and then you drive just as long and just as far as the alpine skier. So there are differences depending on where you are in the U.S.

## USER EDUCATION

*Charles Wells*

We have identified through the planning process and our SCORP documents that user education is one of our biggest needs. We will be trying to present this program to the schools, to snowmobile clubs, and other organizations that will have snowmobilers among them.

I am with the Idaho State Parks and Recreation Department, and in Idaho we are grooming almost five thousand miles of snowmobile trail. We have the third largest snowmobile trail system in the United States. Over the last five years we have spent almost a million dollars on the snowmobile program. In Idaho, there are four major environments. First of all, Idaho has a forest environment. There is usually medium to heavy snowfall, and the wintering animals move out of these areas. There can be anywhere from four to thirty feet of snow in these areas. Now, there's pretty good shelter for the animals that are there, but the mobility of these animals is very limited due to the snow. Also the recreational mobility is very limited in this type of an environment.

On the other extreme we have the desert environment. A lot of people do not realize we do a lot of snowmobiling in Idaho in the deserts. These areas provide real good snow conditions. Usually there is medium to minimum depth and it is a good area for the game to winter, a lot of food is usually uncovered in these areas. And the recreational mobility increases quite a bit in these areas. So our potential for problems here increases also.

The next environment we are dealing with is the juniper environment. We have a lot of areas in Idaho that are strictly covered with junipers. It provides some shelter for the animals, fairly good food and some restriction on the mobility for the recreation user, but not that much. Next is what we consider the mixed environment. We have a lot of this also between our desert and our mountain areas. We have anywhere from medium to heavy snowfall in these areas, and there is usually good food, good shelter for the animals. They usually connect with the desert and you have increased recreational mobility in these areas. Now, who is drawn as users of these areas, these environments?

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First of all we have the animals. Then we have the guests to the environment. We have the snowmobilers, the cross-country skiers, and the snowshoers (we still have a few of the die-hard snowshoers in Idaho that have not converted over to the cross-country skis or the snowmobile). We have another element out there, the four-wheelers. Whether we like it or not, they are there, and we do have to, as land managers, provide something for them. You will encounter in Idaho roads that are designated during the winter time for the four-wheelers to find out how good their four-wheelers work in the snow. This is something we have to consider, i.e., why do these users come to these environments?

Most of these natural users don't have any choice. And the one thing that puts them in kind of a bad position is the fact that for every hundred acres that are available to these animals during the summer, they are reduced to about five acres during the winter time. The animals move from their summer environment to these environments because feed is provided in these areas for them. Shelter, this is another thing that is a big need for these animals during the winter time. The mature forest provides not only a summer habitat for the big game, but is very critical for them during the winter as protection from the elements. Living space is one of the other things for which they are in this environment. They require a certain amount of living space just to move for food, shelter, water.

Why are the guests there? A lot of them are there because of the scenery, the beauty. Some of them are out there just to play, climb hills, jump off the cornices, fly over the snow drifts. Others are just traveling through the area.

What relationships exist out here among the users? First of all I will touch on the natural relationships—and first of all animal-plant relationships. For a lot of the animals out there, the only way they survive is at the expense of the plants. We have an animal to animal relationship that exists out there. And sometimes the animals that survive do so solely upon the other animals or at their expense. Some of the other animals during the winter provide what we consider a balance of nature. These are things that make up the whole life of the animal and they have to deal with this on a day-to-day basis.

Next is the relationship between the guests and nature itself. First of all, some of the tree plantations in the West are susceptible to damage. Normally, the snowmobilers will not run over a tree if they can avoid it. The man-to-animal relationship is something that can be very critical at this time of the year. Anytime man encounters these animals there is usually some stress factor put upon the animals, unless you have a conditioning of these animals. In Yellowstone and some of our areas we do have this conditioning effect. Then



we have dogs that run loose on the ski trails. These can be one of the most detrimental things that we have on wildlife. This is something you have to consider when you go out there, you can always tell whether it has been a wild animal that has killed or if it has been dogs. The coyotes, for example, are more efficient than the feral dogs.

We have another relationship that exists out there, and that is our man-to-man relationship. Our cross-country skiers versus the snowmobilers, and there are other users out there as well. A conflict does not have to happen if we, as land managers, take this problem in hand and spend some time with it and come up with some solutions.

Why are there potentials for problems out here? The animals have to make a living out here. Winter, itself, provides a stress factor. Another potential for problems is the food for the animals is not nearly efficient or as high-energy content. As an example, willows that have been chewed off down to the point where they are as big as the end of your thumb have very little nutritional value. The animals are getting very little energy out of this. There is very little fuel value to this. Another thing that exists as a potential problem is the snow depth. These animals have to fight the cold out there. They have to keep their energy reserves up just to maintain the body heat so that they can survive; they are burning the energy that they have stored. How do these animals come up with this energy they use and need throughout the winter so that they can survive? First of all it usually starts in the late summer and early fall. The vegetation, the browse that they are eating at that time of year builds up into what we call fat reserves. This is stored externally on the animal's body. It is also stored internally in the organs, around the heart, around some of the intestines, and stomach area, and on the kidneys. These fat reserves help provide extra energy when the food sources do not provide the energy during the winter.

There are several ways to take care of the problems that exist.

Closure: maybe some people consider that one of the most easiest of all. We don't like that term, it's a nonmanagement tool. We do have closures in some areas and some areas we've had the help of the snowmobile clubs to post these areas to keep snowmobilers out of these critical winter areas. In some cases we also have closures to protect some of the trees. Now we do not have a blanket closure, but there are certain areas that need protection.

Education: the program that I am presenting here today represents another effective way that we have to minimize the

problems that exist in the relationships in the natural environment.

Management: that is what we feel is the key to our success to minimize the problems with the relationships that exist in the environment. This can be done through the trail system, various types of trail systems.

Location of facilities: you can put the users into areas or move them from one area to another by providing something positive for them, rather than just a negative closure.

Grooming trails: this is another way to provide a positive approach to this. If you provide groomed trails, the snowmobilers are going to stay on those trails rather than get out into the deep snow.

Take a positive approach to help solve the problems. No matter how much you, as managers, would like to ignore a problem, it won't go away. In Idaho, for example, even if you did not have snow, you would still have snowmobiles.

## MANAGEMENT--THE SOLUTION TO THE PROBLEM

*Roland V. Emetaz*

Over the past few years, I have had a good opportunity to look at other managers' views of dispersed recreation. Most managers think that backpackers are "Ok." Some managers at one time or another have ridden horses, so horseback riders are "Ok." In recent years, though, there has been a tendency for managers to think horseback riders are not as "Ok" as they used to be. Most of us think that cross-country skiers are "Ok." While some of us think that mountaineers are an odd bunch, we generally think they are "Ok" too. Snowmobilers at one time were not so "Ok" but generally, today they are "Ok." And so it goes. We have many "Ok" folks and then we have these two groups, motorcyclists and 4-wheelers, that are not "Ok."

Why do we have different feelings about different people that participate in outdoor recreation? I guess it has something to do with our backgrounds. Most managers seem to have a background in biological sciences. We participated or became managers because we had special interests in hunting, fishing, hiking, and liked to communicate with nature. Or maybe it is because we have never participated in a motorized sport. Or maybe we were introduced to the sport improperly. As a result, we have developed various types of "cop-outs." Some of the "cop-outs" that we talk about are resource damage, conflicts between users, safety and one of the favorites is no money. Let us look at some of these.

Resource Damage. Possibly a better word for resource damage is lack of management. Recreational use of wildlands affects the land differently. For example, in the Florida Everglades, "half-track" vehicles almost totally destroy all the vegetation that they pass over, but four months later the track has totally re-vegetated itself naturally. While in the higher elevations of the Colorado Rockies, one print from a vibram boot may remain forever. Resource damage from snowmobile use in recent years has been generally played down because of the protective covering of snow. Nonetheless, some managers report damage to young trees under the snow and above the snow by snowmobile users. Snow compaction in the colder, shallower snow climates of the nation has resulted in loss of insulation values of the snow and according to some researchers, damage has resulted to wildlife

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and vegetation beneath the snow. Pilot research projects, such as these, have been used as a basis for legislation or by special interest groups to initiate closures. Such studies could easily be reversed by another similar study at another location. Research efforts must be fully developed.

Conflict Between Users. Another concern or "cop-out" is conflict between users. Noise is one stimulus of conflict. Some users are bothered by seeing the vehicle even if it was totally silent --others are angered by the machine's track destroying set ski tracks. Other "snowfoot" users are neither bothered by seeing nor hearing machines. Some even appreciate the packed track left by machines. They find snowshoeing or cross-country skiing easier after new deep snowfalls.

Safety. Some managers have overreacted and closed trails to snowledders because they felt it was not "safe," or it was too steep, or too difficult. I believe that the manager has some obligation to identify the degree of difficulty on a trail but not to close a trail because he feels it is too difficult and thus hazardous. Managers must offer a range of trail opportunities--easy to most difficulty. A manager's goal should be to provide users with graded steps through which a trail user may progressively educate himself from a very easy snow trail experience to those that require greater skill, experience, self-reliance, and challenge.

No Money. No money is a real "cop-out." Where there is a will, there is a way. Cooperation with other agencies, volunteerism, user group participation, and changing internal priorities for funding have all worked for us.

What is the solution? Management is the solution and there are various tools available to today's manager. They are:

## I. Opportunities

Provide a variety of opportunities and tell users where they are. The primary opportunity is a trail system. The trails must be planned, designed, funded, built, maintained, and advertised.

A. Definition. A snow trail is a trail that is operated for recreation purposes during the snow season. Snow trails may occupy the same rights-of-way as summer recreation trails, roads, other corridors marked for that purpose, or combinations.



## B. General Planning Objectives

1. Recreation planning should address five objectives:
  - a. Satisfaction of user needs.
  - b. Protection of the resource.
  - c. Minimizing user conflicts.
  - d. Minimizing resource conflicts.
  - e. Cost effectiveness both in development maintenance and operation.
2. The snow trail system should be designed to:
  - a. Provide a full range of activities encompassing a diversity of experiences consistent with the constraints of location, topography, and land management objectives.
  - b. Provide snow trail recreationists the opportunity to renew self and spirit and to escape the confines of a structured environment through participation in wildland trail experiences.
  - c. Provide opportunity for "camping along" a trail. These camps should direct use away from potential heavy use, high impact areas such as lakes, mountain passes, etc.
  - d. Provide opportunities for a groomed trail tread. This is a key management technique. A groomed trail is more fun, safer and users will stay on it.
3. Plans should be made to inform and educate trail visitors and the general public about snow trail opportunities.
  - a. This effort will include visitor information service at offices, equipment dealers, industry publications, radio, TV, newspapers, signs, and other appropriate media.
  - b. Information will be made available as to:
    - (1) Where and what type of opportunities exist.
    - (2) What can be expected from a given trail or set of trails in terms of satisfying the visitor's recreation expectations.
    - (3) Types of trail trips (length, duration, features of interest, towns, difficulty, classes, etc.).
    - (4) Actions that can be taken to avoid user conflicts and an explanation of trail courtesy.

### C. The Planning Process

1. Management objectives are the reference point from which trail planning location and design is developed. The adequacy of a trail to serve management objectives is measured by how well its location, and design elements (tread design, clearing, drainage, etc.) will serve these objectives with an economical maintenance program.
2. Locate suitable area for trails, taking into consideration population proximity, energy, amount of use, adjacent facilities and services, elevation (snow and snow-free season), and general desirability of area by users.
3. Use existing trail maps and topographic or aerial photos to plan rough trail layout. User groups should be involved early in this planning process.
4. Consider existing trails, roads, firebreaks, scenic, historical, or cultural features, and possible areas of conflicting use with other recreationists.
5. Identify important points of interest (i.e., waterfall, scenic vistas, mountain lakes, etc.) and route trails to include these features.
6. Develop a balanced trail system which provides opportunity for travel over trails ranging from easy to difficult and through the widest possible variety of environments.
7. New trails and facilities should be carefully monitored for the first two years. Problems that develop should be quickly resolved. In extreme cases, relocation may be necessary.

### D. Trail Head Planning and Design

The trail head is one of the keys to proper utilization of a snow trail system; its planning and design are critical to the success of the forest trails plan.

#### 1. Access

- a. Should be obvious so visitors do not have to search for it.
- b. Safe--deceleration and acceleration lanes. Right angle turnoff on gentle grade so cars do not get stuck. Consider snow depth and plowing for sight distance.
- c. Well-signed approach as well as entrance.
- d. Entrance roads on less than 6 percent grade.

## 2. General

- a. Rectangular lots most practical. Maximum width 80 feet with a minimum snow storage island of 60 feet.
- b. Slope for drainage 2 to 4 percent.
- c. On sloping lot, enter at top exit at bottom.
- d. Consider needs for vehicles with trailers, motor homes with trailers, and single vehicles.
- e. Consider additional and possibly conflicting recreation users who may be attracted to the area by availability of parking.
- f. Consider need for sanitary facilities and trail information at all trail heads. Use recreation symbol signs at trail head to inform user what activity the trail was designed for.
- g. The length and capacity of the trail system must be considered when designing trail head facilities.
- h. Consider places for loading and unloading snow-mobiles in order to access the trails.

## 3. Snow Removal

- a. On sidehill bench or gully, snow can be pushed over the side.
- b. Lots should be so designed that snow does not have to be handled more than once.
- c. Consider sno-park laws to establish user source of revenue for snow removal at trail head parking lots. Oregon, Washington, and Idaho now require sno-park permits at designated lots.
- d. Lots must be paved where rotary plows are to be used.
- e. Paved black top will aid in melting shallow snow depths.

## E. Trail Location Criteria

### 1. General

- a. Locate trails to provide for maximum diversity of the trail experience in terms of trail type and the variety of environments encountered.
- b. Locate trails to avoid new conflicts and to reduce existing conflicts.

- c. Nearly all terrain types are desirable, but in varying amounts depending upon the experience provided, the trail class, cost of development and operation, and user demand.
- d. Nonloop trails may be considered for access to outstanding features or other special purposes.
- e. Avoid critical wildlife habitat where possible or consider seasonal closures to protect critical periods such as calving time.
- f. Provide trails where user need presently exists. Consult with user groups for best locations.
- g. Allow for expansion of system by determining growth of activity in terms of number of users and amount of trail they require.

## 2. Route Selection

- a. Loop trails are highly desirable. Loop trails should be laid out with cutoffs to provide loops of varying length and degree of difficulty.
- b. Some one-way trails should be used to provide opportunity for solitude by separating parties and reducing encounters. One-way trails may be used for specific heavy use areas.
- c. Seek out scenic vistas, meadows, lakes, geologic features, etc. Include them in the route where possible.
- d. Variety is a principal consideration in route selection, and conscious effort should be made to include a variety of terrain although it may result in high-cost construction.
- e. Generally select routes that minimize construction and particularly maintenance costs (within constraints of "d").
- f. Avoid, where possible, avalanche runout zones for summer trails and for snow trails avoid avalanche starting zones, tracks, and runout zones.
- g. Identify environmental problems and devise cost effective solutions while maintaining natural, unstructured appearance of the facility.

## F. Design Criteria

Three levels or types of trails are proposed to meet the desires of users within the constraints of management direction and resource protection mentioned earlier. The three levels are intended to provide recreationists with facilities that cover a full range of experiences. They



can, therefore, choose which level they would like and be assured that their expectations will be realized.

The three levels are rated by difficulty: easiest, more difficult, and most difficult. Although this is a relative rating for the area, trails designated easiest should always be designed for the less-experienced user under normal conditions.

Easiest Trails: These trails usually require standards and maintenance levels that will accommodate moderate to heavy traffic for the planned use period. Users should not expect solitude during the heavy use season. Socializing with others may be a part of the recreation experience and contact with others may be frequent. It will be obvious to the user that he is on a safe and well-marked trail. Comfort and convenience may be provided for users. About 20 percent of the trail system should be in this level and they shall be groomed.

More Difficult Trails: These will require a combination of standards, maintenance, and management that would accommodate moderate use for the majority of the use period. The route will only modify natural conditions to the extent necessary to protect the environment and provide for safe use by a user with some backcountry experience, and good physical ability. Users should expect to find a blending of opportunities to both socialize and have a moderate degree of solitude during low use periods. About 60 percent of the trail system should be in this level and most should be groomed.

Most Difficult Trails: These trails will be maintained only for resource protection and to provide safe use by individuals seeking an experience in rugged mountain terrain. The route, particularly at the start, should appear as a primitive facility. The modification of natural environment should be kept to an absolute minimum. The user should expect moderate contact with others only during peak use periods. The route should provide the user with an opportunity for testing skills and require good physical conditioning. About 20 percent of the trail system should be in this level; grooming will be infrequent.

In conclusion, well-designed, signed, and maintained (groomed) snow trails not only provide enjoyable recreational snowmobiling opportunities, but also significantly reduce the likelihood of user injury and conflicts between users.

## II. Education

A number of states have operator safety training programs. These safety education programs usually include both

classroom and field instruction. In most cases, instruction is by users and/or club members. In addition to covering such topics as maintenance and machine operation, proper riding positions, proper clothing, terrain, weather, avalanche conditions, the programs stress environmental awareness, skill, courtesy, judgment, and common sense.

Other techniques include educational materials on trail maps, at trail head bulletin boards, formal presentations at club meetings, and informally on the trail.

### III. Self-Regulation

Good rapport between managers and users leads to a successful user self-regulating program. User groups and industry in various parts of the country have worked hard to resolve conflicts, educate their peers, assist managers in providing trail opportunities, and develop state laws.

Expanding on this concept, users (motorized as well as non-motorized) have developed self-regulating organizations. For example, in the northwest national forests there is a Backcountry Horseman's Patrol, a Nordic Patrol, and on national forests in Texas some years ago a motorcycle patrol was formed and modeled after the National Ski Patrol System. If at all possible, it would be well for managers to first encourage conflicting user groups to work out their differences internally, thus negating the need for formal restrictions. We have in the northwest several examples where skiers and snowmobilers are sharing expertise. For example, snowmobilers help groom ski trails and race courses, and assist in search and rescue while the skiers provide avalanche awareness and winter survival talks at snowmobile club meetings. The bottom line was communication, cooperation and self-regulation. Users seem to dress better from their peers than from managers or law enforcement people.

### IV. Enforcement

A good, positive program of law enforcement that develops rapport between users and enforcement personnel will lead to self-policing by the users themselves. Law enforcement is another educational technique. The task of enforcement of state and local laws in the field of snowmobile recreation is a task involving education of many distinctly separate and opposing groups. The cross-country skier, snowshoer, or winter mountaineer does not understand snowmobiling and he does not want to understand. The snowmobiler, on the other hand, is so involved in his activity that he often loses track of the fact that the music of a motorized sled is not really appreciated by snow footers. Both groups will never get to any realistic mutual toleration without a dose of information and education. The law

enforcement officer often becomes somewhat of a mediator. It is important that the law enforcement officer be able to relate to both groups on a logical and reasonable level. An important goal of a positive program is not to arrest violators but to educate the user. One cannot go from zero enforcement to 100 percent enforcement without alienating the very people that we want compliance from. An enforcement program that allows for personal contacts and exchange of information will build rapport and create a great deal of self-policing by the users themselves.

#### V. Restrictions

In some situations, restrictions are necessary. For example, during low snow depths, damage may occur to ground vegetation from snowmobile use or during severe winters, wildlife may be more susceptible to disturbance or, for one reason or another, conflict between users develops.

Seasonal restrictions only during the snow season have worked out well in the northwest. For example, in one area, use of snowmobiles is restricted until there is a two foot snow cover on the ground. In another case, an area suitable for both snowmobiling and cross-country skiing is open to both activities for half the snow season and then closed to snowmobilers for the other half of the season. In most cases, these restrictions were developed by user groups (snowmobile and Nordic) working with the land manager.

#### VI. Closure

Though immediate closure may be necessary in some cases, this management tool should only be used when other techniques have failed. When closures are used, managers must make users aware where opportunities exist for their particular type of recreation.

In conclusion, I feel that managers must figure out ways to positively manage the recreation resource to provide a wide range of recreational experiences for people commensurate with land suitability and public need. The few good examples and guides in this paper are a beginning, but we managers must do a lot more if we are going to positively manage the recreation resource for people. All of us must collaborate to figure out the puzzle, and we must remember the users. They may hold the missing piece.



## RESEARCH NEEDS ON ENVIRONMENTAL IMPACTS OF SNOWMOBILES

*Orrin J. Rongstad*

Environmental impacts of snowmobiles can be broken down into three categories: vegetation, lakes, and wildlife. Prior to going into research needs I will give background information on studies that have been conducted on the environmental effects of snowmobiles.

Vegetation: Extensive studies have been done on the effects of snowmobiles on vegetation. In forest vegetation, the main conclusions are that snowmobiles running on woody vegetation (seedlings and shrubs) do extensive mechanical damage to these plants. It has also been found that snowmobiles compact the snow and cause deeper frost penetration which affects other environment factors such as delayed flowering in some plants in spring, lower soil bacteria, and elimination of some plants.

Studies on nonforest vegetation have had variable results but a minimum amount of damage. At the University of Wisconsin, studies were conducted to determine the effects of snowmobile traffic on bluegrass, alfalfa, birdsfoot treefoil, red clover, brome grass, orchard grass, and winter wheat. The main conclusions were that stands of alfalfa, birdsfoot treefoil, and alfalfa/brome grass combination treated for two winters with snowmobile traffic showed no detrimental effects on forage yield. Grain yields from winter wheat stands exposed to snowmobile traffic were not reduced below that of check areas. Red clover and birdsfoot treefoil/orchard grass yields were decreased during one year of the trails but were unaffected during the other year. The snow was found to be more compacted by snowmobile traffic and soil temperatures were colder and more erratic under the trail than other areas. Frost penetration was deeper under the snowmobile trail but soil compaction was not affected. In bluegrass, early spring recovery and growth was slower but by early summer there were no differences detected in the bluegrass where the snowmobiles had been used and where they had not been.

Lakes: The environmental impact of snowmobiles on lakes can be divided into two categories: (1) the physical impact of the snowmobile on the land and (2) the environmental effects of the

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humans that the snowmobile brings to this lake. Information on the effects of snowmobiles on the lake is inconclusive. One study suggested that snowmobiling increased light transmission through the ice and therefore decreased the chances of winter kill. Another study suggested that the compacted snow allowed less light penetration and therefore increased the probability of winter kill. These varying results are probably the result of different wind, snow, and water conditions.

Snowmobiles allow fishermen to get to remote lakes that are almost inaccessible at other times of the year. Intensive use of these lakes by ice fishermen can greatly reduce fish populations.

### Wildlife

White-tailed deer: The effects of snowmobiles on white-tailed deer have been studied in Minnesota, Wisconsin, Maine, and New York. In general the snowmobiles have not caused extensive changes in movements of deer; although studies in New York suggest that even though deer do not move, there may be detrimental effects by increasing heart rate and increasing metabolism which would increase food demands during winter. A study in Maine has shown that snowmobiles may be used to an advantage in deer yard management during the winter by a combination of tree cutting and snowmobile trails to move deer to areas of greater food.

Medium sized animals: Two different studies have counted the number of mammal tracks crossing a snowmobile trail and compared them to an area away from the snowmobile trail. One of these studies determined that snowshoe hares avoided the snowmobile trail, red fox seemed to be attracted to them. Another study found that red fox avoided the trails. These results suggest that animals reactions may be variable on snow conditions and location.

Study on cottontail rabbits found that activity patterns of cottontails did not change significantly during periods of snowmobile traffic; however, their home ranges did increase significantly during days when snowmobiles were present vs. days when snowmobiles were not present.

Ring-necked pheasants in Iowa did not react significantly to snowmobiles, however, intensive snowmobile traffic on areas of good nesting and roosting cover would effectively destroy this cover.

Small mammals: A study in Minnesota found that intensive snowmobiling on an old field eliminated the small mammal population in the layer between the ground and the snow.

In summary, the environmental impacts of snowmobiles could be greatly reduced by keeping snowmobiles on marked trails. The area that is physically affected by the snowmobile will be relatively small in proportion to the total area and environmental impacts on an ecosystem would be reduced.

### Research Needs

A summary of the areas that I feel need clarification or need additional research are:

1. Information should be gathered on the effects of snowmobiles on early nesting birds such as great-horned owls and possibly eagles. Since eagles often nest along water areas, lakes and so on and these areas are used by snowmobiles, observations could be obtained on the reaction of eagles to snowmobiles.
2. Even though white-tailed deer have been fairly extensively studied, added information should be obtained on the physiological changes caused by snowmobiles on deer even though deer do not move. This information may already be in press. Information that is needed are such things as (1) distance between the deer and the snowmobile in which the deer will react, (2) the duration of the reaction (do they become acclimated).
3. Lakes—since lakes are being used extensively for snowmobiling in many areas there should be some added information on the effects of snowmobiles on fish movements, light penetration and possibly gas and oil fumes in the snow and ice.
4. Predators—there is little knowledge as to the effects of snowmobiles on the larger predators such as timber wolves, coyotes, red fox, gray fox, and bobcat. Of these predators, the timber wolf because it is a rare species, should be looked at. Since the coyotes are not well adapted for deep snow, it is possible that snowmobile trails benefit coyote movements.

A major problem with any environmental research on the effects of snowmobiles is the great variability in the winter conditions. For example, this winter of little snow would have been a disaster to try to determine the effects of snowmobiles in many areas. Likewise the results obtained during winters of little snow may be entirely different than the results during a period of deep snow and frequent snows.

Because of this variability, it is better to have conservation recommendations. Keep snowmobiles and snowmobile trails away from deer yards, away from known eagle nests, and off critical lakes.

Strict laws requiring snowmobiles to stay on marked, authorized trails would eliminate or greatly reduce detrimental environmental impact.

### Questions and Answers

Gary Crandall (International Snowmobile Industries Association): We heard Mike Moore with the Michigan Department of Natural Resources call upon the federal government to look uniquely upon some vehicles as opposed to other kinds of off-road vehicles. Does land management have to take into consideration the different vehicle types and different seasons during which they are being used?

Orrin Rongstad: I feel environmentally that snowmobiles are far less troublesome than the others. Not necessarily from a wildlife standpoint, but mainly from the soil and vegetation standpoint. One summer we used an old "Carrot Tiger" (it was one of the noisiest machines I have ever heard) trying to find out how deer reacted to the noise. We just could not get the deer to move unless we tried to run over it. If it were concealed by vegetation we could have driven by the deer all day and it would not have moved. So I do not worry too much about noise or the other aspects; but the effect on vegetation and soil erosion are problems but not due to the snowmobiles.

Roland Emetaz: I really do not feel that there should be any difference. I think that the management techniques we use are the same. Management techniques I have talked about are the same whether it is for a trail bike, four-wheel-drive vehicle, or snowmobile. I agree that there are different effects, but we still use the same management techniques.

Charles Wells: I think that we need to use the same criteria for all of these. When managers start evaluating the criteria they have to look at the problems that are created by wildlife, problems created with the vegetation, with other users, with the soils, the snowmobiles. In some areas, you are going to have trouble with the vegetation. In some areas you are going to have trouble with the wildlife. We have seasonal closures that we have instigated in areas to protect the deer and elk that are wintering, protect them in the desert environments from the snowmobiles. We also have seasonal closures for the motorcycles to protect the deer and elk during their calving and fawning areas during the spring. But I think you use the same criteria.

James Wicks: I am the trail coordinator for the State of Michigan. I think there is one important element that you did not touch on, and that is public accessibility. In our state we have a tremendous difference between a snowmobiler and an ORVer,



a person other than a snowmobiler. Do you have that problem in your state?

Wells: I would say that a snowmobile is more acceptable. I am not sure exactly why. Maybe it is because it operates on the snow. In Idaho we do not have as many machines as you have in some other states, but it is the second recreation expenditure in the state, i.e., \$23.4 million.

Emetaz: I think acceptability depends upon the experience of the manager. In our case the manager has more experience providing opportunities for managing four-wheel opportunities than trail bike opportunities.

Paul Weingart: I think in some parts of the country too, we have more potential for conflict in the summer. There are more people out in the hills, so to speak, and also in other parts of the country. I think that the impact from summer ORVs—and I am disregarding snowmobiles can be used in the summer—is more obvious to the lay person. Not as obvious to the lay person is the impact of snowmobiles, and in fact, the impact is probably less. I'd say also that the efforts of snowmobile organizations have been more intense trying to work together with other users.

Michelle Grimes: You mentioned poaching by man, and I was curious to know if snowmobilers use their tool to take advantage of the herding that you have and approach the wildlife that you have?

Wells: The problem that we have is not so much with the poaching because in the areas where these animals are congregated we do have the conservation officers out there quite a bit, but with the wildlife viewers. We have another problem, and that is the fact that coyotes and bobcat pelts over the past few years have become valuable. And these animals move among the herds and around the herds. The snowmobilers—they are not really what we consider a recreational snowmobiler—uses his machine to hunt that bobcat. As soon as he moves in, the bobcat runs for cover or the coyote heads toward the herd. But the snowmobiler does not back off. He is after that animal because it is worth \$75-\$300 for him.

Question: I'll ask Chuck Wells another question, I think we have a similar situation state to state. You showed us some budget figures, Chuck, when you first started. I work commissioning budget and I calculated your dollars and your number of machines and it sounds like you had a big ratio of dollars to machines. Can you give me a little more dollars/machine and where your dollars are coming from per year. Do you see a million dollars and \$20,000 per machine?



Wells: We have spent a million dollars in our program, our capital improvement program over the past five years. And this is for purchased groomers, built warming huts, shelters, parking lots. About \$800,000 of this went into the snowmobile program, about \$300,000 into the motorcycle program. Out of the snowmobile registration fee, which is five dollars, four dollars stayed right in the county. And out of 20,000 machines, that's \$80,000 for the county. If you have a thousand machines you have \$4,000 to maintain and operate that machine. We buy the machine, 100 percent and give it to the county. It's their maintenance and operation problem at that time. Our costs have been ranging anywhere from three dollars to seven dollars per hour to operate these somewhere from 75¢ a mile up to \$3 a mile for the maintenance and operation of these machines.

Question: Does all your money for the program just come out of your registration?

Wells: No, we have one percent of the gasoline tax, up to \$300,000 each year.

Katie Bowman (International Snowmobile Association): I have a comment for Orrin and a question. The comment is, we have three boys who traveled from Fairbanks, Alaska, to Michigan, over two thousand miles. One of the stories they told us was as they were coming from the Yukon and found a pack of wolves on the trail and I asked what was the reaction. One said that they were as suspicious as we were. They didn't move off the trail. The boys had to go around them and they didn't stop to see what they were going to do, but he said the wolves never did move. They didn't seem to be scared of the machines. They were just more curious than anything. The question I want to ask is that when the deer are in the process of dying they won't eat anything. Could we be hurting the deer more than helping them by feeding them?

Rongstad: About your first comment on the wolves, I don't know the reaction of wolves, but I would suspect that the wolves are pretty independent. I spent a spring up on the Hudson's Bay and there are polar bears there. And polar bears look at people just as they do a seal. So when a polar bear sees you, he's stalking you. And you get a very funny feeling when you think there is a polar bear behind the next hill. So, I would stay away from the polar bears too. I don't think we are going to have environmental effects with polar bears. The deer, if you start feeding deer early and feed them good quality hay, they can use it. In southern Wisconsin, the deer live on alfalfa and corn. When we trap deer in northern Wisconsin we took corn and alfalfa up there and the deer wouldn't eat it. We cut down a cedar tree and put cedar boughs in our trap and we could catch them as fast as you could put the traps out. So, it's what the

deer are used to. Plus, there's apparently a micro-fauna in there and digestive system that just won't allow it to digest it. But usually what you do is concentrate deer when you start feeding them like this, and they still eat all the natural vegetation, so you're creating a problem that is going to be worse next year. Plus, you have to make sure you can keep feeding. A lot of resorts in northern Wisconsin will start feeding deer and they may get 100 to 150 deer in their back yard and then some of these people will lock their doors and go to Florida. And this is why they are quite strict against this feeding, because if you are not going to keep it up, you are really creating a problem.

Bowman: So it doesn't hurt the deer as far as the digestive system . . . ?

Rongstad: No, in fact Michigan people at one time were trying to look at the best commercial pellets you could make for deer, because a lot of people in Michigan were feeding Bismarcks, Long Johns, unbelievable things to the deer.

Weingart: One comment before I go to the next question and that is that the deer depends on its natural diet during the winter. I do know that deer die with full stomachs sometimes. So there is a relationship that depends on what the deer's diet is, what you feed them in a particular circumstance.

Wakefield: We've got studies that were conducted in Pennsylvania on white-tails that had died from winter starvation. It said the majority of the ones that were found in the early spring died with full stomachs, either with grass they had picked up along highway edges or on meadows, or from the tank. They do have micro-fauna and enzyme contents in their rumens which are developed because deer are primarily browsers. They're developed through the fall and winter in digesting the complex cellulose that they get when browsing. All of a sudden you give them a bunch of dried grass and they'll fill up their rumen and then can't digest it. And once they've filled up their rumen, they can't take anything else in. And they'll die with a full stomach because the enzymes have not changed. When it happens all at once, like in the late winter, that is when you see starvation conditions and you try to give them hay, but it doesn't work.

Comment: Taking about conflicts, we're experiencing a new one that is really kind of interesting and we haven't heard about it, but loggers are starting to give us a little bit of flack in certain areas because their roads due to the grooming are closed longer in the spring. And they're wondering what they are going to have to do to convince the foresters in some areas to open those up earlier. Kind of interesting area. They're

concerned that it's not that they can't remove the snow, but it's just the fact that they're not letting them remove it as soon as they'd like to. But we're getting some people concerned about that.

## OUTLOOK FOR FOUR-WHEEL-DRIVE VEHICLES

*Donald W. Jones*

Public lands are owned by the American people and maintained by the government. American Motors Corporation supports the designation of portions of this land as wilderness, while giving careful consideration to the wishes and needs of the American public with regard to the use of these lands. Surveys should take into account the needs of all groups concerned with lands and conservation, and the decisions must be based on the considered needs of all sectors of the American public and then tempered with sound judgment. American Motors Corporation believes that public lands should be protected for use and enjoyment of present and future generations. However, it does not believe that land areas need to be closed to the public in order to protect them. Protection requires reasonable decision making by land managers in response to use of the land by the American people. Within the context of that position I would like to discuss American Motor's view of the outlook for four-wheel-drives in the 1980s.

The last year for which we have accurate figures of off-road four wheeling is 1978. This is a forest service number, nearly 25 percent of the entire American public participated in some type of off-road experience on Forest Service lands in 1978. It is an incredibly large number in terms of recreation and that number is growing. I think that we have the numbers of 1979, we will see them. The popularity of the form of recreation is increasing. I think that is reflected in our market analysis. The anticipated growth of sales of vehicles which we expect will grow over 1.3 million additional units per year by 1987. That's per year! The growth is phenomenal. This form of recreation, I think, is well established and here to stay. The American people have chosen this form of recreation and they will pursue it.

In conversations outside the formal meetings, people have asked me about the cost of gasoline and its effect on four wheeling. I would go to give you a bit of our crystal ball, that is, that we anticipate the cost of gasoline in 1985 at \$3.00 per gallon or more. Taking into account the rate of inflation, \$3.00 in 1985 is not unreasonable. That makes the cost of four wheeling considerably more than it is today. When

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you look at the facts and the way the American people recreate, it really is not a great deal of money. It is no more expensive to pursue recreation off-road than it is to take the family to the beach or to get in a vehicle and drive to the movies—pay for the movies and drive both ways. The cost to the recreationist is, in our opinion, not prohibitive. The greatest deterrent is not the price of gasoline, but the price of the vehicle. It really is the access to off-road areas that will provide the kind of recreation and solitude that most four wheelers are seeking. People need to get somewhere to find solitude or to pursue an additional hobby, fishing, hunting, birdwatching, whatever. Closure of lands without regard to the opinions and wishes of all of the public concerned can cause a decrease in this form of recreation. Because without access to the proper lands people will not pursue this form of recreation.

The greatest problem caused by four wheeling or four wheels is very simple. It is that a few four wheelers, a few off-road citizens abuse the land. I stress a few. For the number of days spent on public land by four wheelers, the impact is relatively small. This indicates that a few people are abusing the land by not properly driving their vehicles and by forgetting the simple rules of the road once they are on the public land. In terms of a solution, I would like to break this comment into two parts. One, things that we, American Motors, are trying to do in manufacturing four-wheel vehicles; and two, things that could be done by users or manufacturers and by organized groups.

The solution, in general, is a matter of education. And this education must be given to the user groups, the recreationist, the four wheeler, and also land managers. As we were saying in an earlier session, no one has all the answers or understands all of the problems involved in land management. The problem itself is far too complex. The educational process passes both ways, for the user group and for the land manager. To this end, American Motors Corporation last year conducted with the Forest Service a program called Weeding of the Tracks. This program consisted of taking Forest Service personnel and four-wheel-drive media on a trail drive after instructing them on the proper use of the four-wheel drive. In other words, how to get the most out of your machine and thereby abuse the land the least. The Forest Service surveyed the proposed trail before the ride. Everybody who went on the trail ride took instruction on the proper use of the vehicle. At the end of the trail ride, the Forest Service went back out to try to find the tracks or anything that would show that the caravan had followed this trail. With a couple of exceptions, somewhere along the creek crossing, we found absolutely no trace that this caravan had been through the area. We think that our instruction, careful attention to the correct use of the vehicle, and with a constant reminder that people must have

a respect for the land, four-wheel-drive vehicles can be used in recreational settings without harming the land or the environment.

AMC Jeep has, for a number of years, included with each Jeep purchase a booklet on the proper use and care of four-wheel drives. And included in that book is some controls on four-wheel-drive environmental protocol. In essence it says that you must have respect for the land in which you are going to drive and treat it with care. It goes into a number of details as to how you can do that. AMC is also supporting educational projects for four-wheel-drive clubs and specifically for the United Four-Wheel-Drive Association by providing materials, films, and speakers for its educational program. Jeep Corporation has just completed and is now getting the distribution of a driver education film. It is going out to driver education teachers throughout the U.S., telling them about the availability of the film. The film really tells the student how to properly care for his four-wheel-drive vehicle. More and more student drivers are involved in four wheeling.

In addition I think the four-wheel-drive club, the manufacturers, the foresters, and other land managers still have a great deal to do in terms of educating the user public, and in turn, educating themselves vis-à-vis the four-wheel-drive as a form of recreation. AMC meets frequently with the Forest Service and with the Bureau of Land Management (BLM) to try to develop cooperative areas of education and training. I think that more manufacturers and four-wheel-drive clubs and organized groups will be seeking cooperative efforts with the Forest Service and the BLM.

I have sat through this conference, listening to the speakers. I feel the one thing is pointedly missing and that is to call for caution. That if the conservationists and recreationists cannot arrive at a reasonable solution to the problems that are facing both groups, we really run a much greater risk than the ones we now see, and that is land closure. And that if we cannot find the solution, it may be found for us and in the long run, it may be more destructive than the problem, and that solution is that the federal government will make decisions regarding the land which you recreate on or land that you manage. And they will make decisions based upon knowledge that is far short of the knowledge you have about the land. Recreationists take one point of view. Conservationists take another point of view. If those two bodies cannot meet somewhere in the middle ground, then the federal government and its mandate under the executive orders will make the decision for you. It will not necessarily be based upon the facts that you possess as a user or manager of that specific parcel of land.

## THE EFFECTS OF FOUR-WHEEL VEHICLES ON BIOLOGICAL RESOURCES

*Kristin H. Berry*

This presentation focuses on three basic areas: the effects of four-wheel vehicles on habitat (soils and vegetation) and small animals; impacts on specific species or groups of species using examples from new, unpublished Bureau of Land Management-sponsored studies; and special management problems related to biological resources.

### Impacts on Habitat and Small Animals in General

There is a growing body of knowledge of the effects of off-road vehicles, particularly four-wheel vehicles and motorcycles, on the environment. Most of the recent studies, many of which are unpublished, were undertaken in the southwest. In general, findings on studies of impacts on soils indicates that four-wheel vehicles increase compaction, accelerate erosion, alter infiltration rates, and change normal temperature variations in soils. Impacts on soils also affect growth and germination of vegetation. Vehicles have negative impacts on vegetation through loss of cover, loss of diversity, and through proliferation of weeds. The degree of impact depends on a number of factors, such as frequency and degree of use, soil type, and vegetation type.

Impacts on animals can be divided into direct and indirect effects. There can be direct losses of animals due to crushing both above and below the substratum, and indirect impacts from noise and from damage to or loss of habitat. Several studies provide documentation of negative impacts; there is generally a reduction in biomass, numbers, and diversity of animals.

### Examples of Impacts on Specific Species and/or Groups of Species

*Impacts of Noise.* Dr. Bayard Brattstrom and Michael Bondello of California State University, Fullerton, have recently undertaken studies on the effects of vehicle noise on three species of vertebrates: an amphibian, Couch's spadefoot toad; a reptile, the Mojave fringe-toed lizard; and a mammal, the desert kangaroo rat. The study on the desert kangaroo rat, a highly specialized animal with a limited distribution and habitat, will

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be discussed here. The desert kangaroo rat lives in sand dunes and areas of windblown sand. It has a highly developed sense of hearing and can hear and respond to sounds such as the movement of rattlesnake scales across sand and the wing beats of owls (both rattlesnakes and owls are predators). Desert kangaroo rats are deafened by 500 seconds of intermittent dune buggy sounds and then can be approached and eaten by the snakes. The rats show recovery of hearing sensitivity after 21 days.

*Riparian Habitats.* Michael Weinstein undertook a Bureau of Land Management-sponsored study on the Mojave River in the central Mojave Desert. The site is one of a few riparian areas in the California deserts. There are a number of distinct habitats ranging from ponds and marshes to mesquite thickets and tamarisk. A campground placed here by the Bureau of Land Management in 1968 has become a focus for off-road vehicle activity. The campground itself has been heavily impacted. There are four-wheel vehicles, dune buggies, and motorcycles here, often in heavy concentrations during several weekends of the year. Rules for the campground and surrounding areas, such as no shooting within one-half mile of the campground and restrictions on vehicle use to established roads, are repeatedly broken. New roads and trails are regularly created and mesquite trees are commonly cut for firewood.

The purpose of the bureau-sponsored study was to determine the effects of recreation use in general on the birds of a riparian community. The area was divided into two plots, one with high recreation use and the second with low use. Each was 105 acres. Each plot was visited for an average of nine days per month for a year. Data were recorded on numbers of birds, the species present, activities of the birds (whether perched or in flight), and the location and types of recreation vehicles and users.

The findings are of importance not only for management of vehicles in riparian areas but elsewhere. There were significant differences in abundance and variety of birds between the high- and low-use plots. The low-use plot had greater abundance and diversity. Within each plot, there were significant differences in variety and abundance of birds when vehicles were present and when they were not. The high-use plot had significantly fewer birds and the low-use plot had more birds on days when off-road vehicle use was heavy in the high-use plot. Of the birds studied in depth, most moved away from the area of vehicle use, most flushed more readily, and when disturbed most would fly to dense, thorny bushes like mesquite.

*Prairie Falcons and Other Raptors.* In other bureau-sponsored studies, the effects of vehicles on Prairie Falcons have been documented. Prairie Falcons avoided parts of their foraging areas that were used by weekend recreationists and returned



only after visitors had left. Pairs at two nest sites, disturbed regularly by off-road vehicle recreationists for the past several years, have had nesting failures on an almost yearly basis.

#### Management Problems Related to Biological Resources

Several management problems have arisen with regard to vehicle use, both for four-wheel vehicles and motorcycles. These include: containment of activity within specified areas; spillover of unauthorized use far beyond the authorized activity area, usually into sensitive riparian habitats; widening of trails; fragmentation of wildlife habitats through unauthorized proliferation of trails; increased access to sensitive habitats and resources; and increased vandalism associated with increased visitor use.

## ORV USER CONFLICTS

*William Kemsley*

This is a tough subject for me to be objective about. I am both a hiker and a four-wheel-drive vehicle user. In February I four-wheeled and hiked in the Death Valley back country for four days. In May I will four-wheel and hike for ten days in the four-corners section of Utah. I love both hiking and four-wheeling. I own a four-wheel vehicle. In fact, my hiking opportunities are increased by having four-wheel access to back country areas.

While I enjoy four-wheeling I have also had some unpleasant experiences with four wheelers when I have been hiking. I would like to tell you about some of my experiences—both the good and the bad.

In preparing for this conference I tried to find some hard facts about conflicts of users. The research in this area of concern is sparse. Most of what has been written seems to be fairly impressionistic. In fact, there is even some research which I think is specious. One study, for example, glosses over "conflicts of use" as "merely psychological." To me that is a failure to understand human nature. Most social unrest is caused by psychological factors. Wars are fought over conflicting psychological perceptions of reality. As a matter of fact, "conflicts" are usually psychological in nature. That does not make them less volatile.

My own observations come from a rather extensive base. Over the past four years, I have tried to spend at least one week each month in some different public land—BLM, Forest Service, or national park. This has provided me with some significant comparisons of varying recreation land management practices. Let me tell you about some problem areas.

My first example is Cape Hatteras, a place that I first visited in 1964, the year after the Herbert C. Bonner Bridge was opened. I walked literally for miles along the beaches without ever seeing another person. I returned a year later on my honeymoon. My bride and I spent four days walking the beaches. This time we did see a few other people who were surf fishing.

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William Kemsley is the editor of Backpacker magazine which he founded in 1973. Backpacker has a circulation of 180,000. He also is the chairperson of the American Hiking Society, a national organization of hikers and cross-country skiers.

We have returned to Cape Hatteras once a year for the past 15 years. Now you cannot walk the beaches in solitude. There are four-wheelers everywhere.

This came about gradually. First four-wheelers were allowed only at the inlets. A couple of years later they were permitted at other areas of the beach. Finally they were allowed anywhere on the beach.

There are two aspects of the problem. First, there is the terrible intrusion of a machine. When you walk several miles along a deserted beach, it is disturbing to have to look out for vehicles. You cannot lay down to sunbathe without fear of being run over by a vehicle. This is not only a competition of space problem. I believe there is a definite safety problem involved.

The second aspect of the problem is an environmental one. When you walk these beaches now, you do not see windswept expanses any more. You see tire tracks criss-crossing the sands. I am sure that by objective environmental impact standards, these tire marks have not disturbed the ecology of the area. But, there is a violent psychological damage to other users, like myself when I am on foot. In no way can you confront a wide expanse of beach, no matter how many miles it runs on, and think of it as wild, if there are tire marks on it. The psychology of wilderness is destroyed.

In the past year or two, it seems that Cape Hatteras park management has been reigning in the four-wheelers somewhat, barring them from areas that are heavily used by swimmers and surfers. But, it is my impression that otherwise ORVs have the free reign of the beaches. I think this is poor management.

Sure, ORVs should have large sections of the beach to roam. But, so should there be some large areas of beach that are off limits to them, where someone can go birding, walking, swimming, fishing, surfing, and be away from all vehicles.

I think the Oregon Dunes National Recreational Area is suffering the same type of problems, though I have no first-hand observations of this area.

I hope that the new Cape Lookout National Seashore will have learned lessons from the awful mistake at Cape Hatteras.

But there is also good news.

There are some places where four-wheeling has been managed well, and where conflict with other users seems to be at a minimum.

One of the best places that I can think of for four-wheeling is in Big Bend National Park. It has a rather natural way of keeping its back country roads in poor enough condition that they can only be traveled by four-wheelers or trail bikes. Frequent flooding washes out big sections of the jeep trails. If the Park Service does not attempt to improve these trails in the future—which I hope they will not—the park will continue to be great for ORVs. People on foot or animals can also use the roads, of course. And do. But, if you travel on the roads on foot, you know that you are likely to see vehicles. That is OK. Because you expect that. And further, if you want to really get away from all vehicles, you have that choice as well. Just take off cross-country. No vehicle could ever follow you. The terrain is just too rough.

So, at Big Bend, what you have is a certain number of miles of paved roads for all vehicles, a certain number of miles of jeep trails, a certain number of miles of foot trails, and a lot of open country that is available only to foot or pack stock. The rules for ORV camping are nice and loose, permitting you to get out in the back country away by yourself to camp. And the rules for hiking provide the same wilderness opportunities.

Another great place for four-wheeling and hiking is Death Valley. You have pretty much the same kind of management philosophy here that you do in Big Bend. You have roads for auto traffic. Jeep trails for four-wheelers and trail bikes. Foot trails for pack stock and hikers. And the opportunity to go just about anywhere you would like, cross-country, on foot. The rules for ORV camping are liberal enough to provide a good wilderness camping experience. And the hiking rules are similarly liberal. I know of no user conflict in Death Valley or Big Bend.

These are just two examples. There are other well-managed federal lands with respect to minimizing conflicts among users. Lake Powell Recreation Area, Canyonlands, Arches and Joshua Tree National Monument come immediately to mind. And there are many others.

Another big problem is with illegal use of ORVs. I will give you two examples from my recent experience.

One was in the Catskills, my favorite mountain range, only three hours from New York City. We were on a long backpacking trip into one of the largest stretches of roadless country in the East. After four days without seeing a single person, our solitude was shattered by a four-wheeler laboring up the trail toward us. The driver was having a great time trying to negotiate that trail. But, it was a hiking trail. And it was posted off limits to motorized vehicles. What can you say at that point? You feel kind of sick in your stomach. And, maybe



you decide to do what we did. Nothing. We did not want to get ourselves any more riled up than we were already.

Another example was even more sickening. While at Death Valley last February we visited the famous mud flats called the Race Track. The mud flat is huge. It covers several square miles. The moving rocks are a curious phenomenon that are being studied by scientists as to why they seem to move and leave their long trails in the mud.

Well, the whole scene had been vandalized by some drunken four-wheeler who had made wheelies all over the mud flats. This environmental damage will have a long-term psychological affect on all sightseers to that area—not just to hikers.

One way of minimizing the destructive use of ORVs is the education and self-policing by ORV organizations. I think the ORV organizations are doing an excellent job in this area. I think industry could take a more active role on this end of things, though. Industry has a greater responsibility than it has exercised up to this point in time.

In the area of land management to minimize conflicts of users, at least one of the answers is the separation of ORV use as much as possible from nonmotorized users.

In considering this solution, I would like to make just one more point. The opportunities are currently quite limited for both types of uses of the backcountry—ORV and nonmotorized. Let me give some statistics.

In 1945 there were 150,000 miles of trails in the national forests. Most hiking takes place in national forests. Today that mileage has dwindled to just over 60,000 miles of useable trails. And now the hiker must compete with ORVs for use of 92 percent of this trail mileage.

So, while there are at least fifteen times more hikers using trails today than there were in 1945, there is one-third as many miles of trails to use. And hikers are competing for use of over 90 percent of these trails with ORVs. Projections by Forest Service scientists indicate an increasing number of hikers and ORVers using trails in the coming decades, with hikers growing at a greater percentage than ORVers.

These are facts that must be taken into consideration in determining future land management policies.

### Questions and Answers

Charles Callison (Public Lands Institute): Don Jones started out with an assertion that so astounded me I had a hard time

listening to the rest of what he had to say and he attributed this astounding statistic to the Forest Service and that was that one-fourth of the population of the United States got into the national forests by way of four-wheels. Is there anybody from the Forest Service that can verify that statistic?

Don Jones: In 1978 one-fourth of the population of the United States had an off-road experience in the national forests.

Callison: In the first place I do not think that one-fourth of the population of the United States got into the national forests, and in the second place I absolutely cannot believe that one-fourth of the people that visit the national forests did it on four-wheels. I know the four-wheel business has boomed but I do not believe that one-fourth of the population of the United States even has access to four-wheels. So I suggest, Mr. Jones, that maybe you ought to research that statement.

Dick Gray (Forest Service in the Southwestern Region): I have a question for Dr. Berry. You referred to dune buggy noise and statistics that I assume you rounded off. Does the published research give those figures in decibels or some other measurable terms?

Kristin Berry: Yes. It is unpublished, but it is in print, and if you would like to have a copy I would be glad to provide you with one.

## NEED FOR FUTURE MANAGEMENT OF FOUR-WHEEL-DRIVE VEHICLES

*Roy Rustem*

Motorized versus nonmotorized recreation is one of the most controversial and emotional land use issues we face today. Emotions run high and often unchecked when this subject is discussed. As example of the diverse views, witness the following quotes:

The off-road vehicle mania would be pitiable if its adherents were not so skillful at ravaging landscapes. Try as we might, we cannot think of a single function these diabolical creations serve beyond a kind of noisy restlessness.

—Editorial, The Washington Star, 1977

I have often felt that these vehicles (ORVs) have been Japan's way of getting even with us.

—Senator Barry Goldwater

We object to the continual enhancement of non-ORV recreation at the expense of the off-road vehicle enthusiast. We do not feel that all compromises should be made at the expense of off-road motorcyclists.

—Robert Rasor, AMA, 1976

Over the last two decades, land managers have witnessed an explosion of interest in off-road vehicles. Even into the mid-1960s little consideration was given to the impacts this group of recreationists would have in the coming years. Between 1973 and 1977, four-wheel-drive vehicle sales increased by 96 percent. Registered motorcycles jumped from less than 400,000 in the early 60s to over 8.3 million in 1976. It is interesting to note that 66 percent of these were used off road at some time.

This boom in ORV recreation has left land managers baffled and confused as how to cope with this situation. Even today the problem has not been solved. Perhaps the best evidence for this is this conference on "future" management needs.

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Roy Rustem is with the Michigan United Conservation Clubs.

During this entire period of chaos it has been the land resources that have suffered the most. The history of abuse has been frequent and oftentimes appalling. Some examples may help to bring this point to light:

Back Bay National Wildlife Refuge, North Carolina: When ORVs entered the scene in the mid-1960s, they caused so much disturbance that they eliminated the tern nesting colonies and ghost crab populations plummeted.

Panoche Hills, San Francisco: This area was closed to ORVs in 1970, yet four years after, erosion continued at 1,580 metric tons per square kilometer on areas disturbed by ORVs. On other areas undisturbed it remained too small to measure.

Dove Springs Canyon, northwest Mojave Desert: During the 1970s, over 543 acres have been decimated, stripped of vegetation and another 960 acres have been extensively injured.

Huron-Manistee National Forest, Michigan: Last November, speaking before the West Michigan Environment Action Council board, Wayne Mann, the Huron-Manistee supervisor stated that more forceful regulation of ORVs can be expected to counter the many problems they are causing.

Ballinger Canyon, California; Rouge River National Forest, Oregon; Absaroka Bear Tooth Wilderness, Wyoming: the list is long.

The soil resources have not been the only victims. Many important archeological, historical, and wildlife resources have been threatened by those who irresponsibly pursue their sport.

Obviously, the management of the motorized four-wheel-drive vehicles needs to be updated. There are several areas in which off-road vehicle management can be improved. They are: purchasing or setting aside areas specifically for four-wheel-drive use, a system of funding for land acquisition, enforcement, and standardization of existing ORV regulations, offering recreational opportunities near home.

There is one aspect of motorized recreation management which I did not mention and I would like to bring up now. The most important aspect of four-wheel-drive management does not rest with the professional land manager, policing agencies nor the private land owner. The most important aspect of present and future four-wheel-drive management lies with the individual. It is his/her own set of values that determines what they will do with the machine that they control. No amount of regulation



or enforcement can dictate where the motorized recreationist will steer his vehicle or how far he will push the peddle.

Effective management must begin with self-policy efforts among the four-wheel drivers themselves. If they are not willing to change themselves or their peers, how can the land managers be expected to do it for them?

Secondly, as I stated earlier, we need to purchase or set aside areas specifically for ORV use. Action such as this will help to accomplish two goals. First, it will help to concentrate impacts caused by four-wheel-drive vehicles. It will also have the effect of alleviating many of the conflicts occurring now by separating motorized from nonmotorized enthusiasts.

The State of Washington has been successful in forming a program of this nature which has accomplished these very goals. Under the Washington program nearly 13,000 miles of roads, including logging roads, have been opened and developed for four-wheel-drive and other motorized recreationists. Numerous abandoned gravel pits have also been turned into hill climbs and scramble areas.

This leads to the next consideration of future management for four-wheel-drive vehicles and that is funding of programs. We have seen how the State of Washington has accomplished this but there are other options also available. Special taxes like those established through Pittman-Robertson and Dingell-Johnson acts have done much to support wildlife and boating projects. Acts, such as these, place a tax on equipment which is used during those activities.

One thing that should be stressed in obtaining funding is that motorized recreationists cannot and should not expect to be supported by nonmotorized recreationists. The user pay concept is the only equitable method for funding motorized recreation activities.

Another area of management that needs to be addressed is standardization of current regulations and stricter enforcement. One of the major problems is that there are very few four-wheel-drive enthusiasts who can comprehend the hodge podge of regulations concerning ORVs and use on different public lands.

Michigan is one state which is currently attempting to bring some order out of the confusion. In its ORV plan the Department of Natural Resources chose to support the alternative that would "close all state forest lands to unrestricted ORV use except forest roads, designated trails, designated routes and designated areas." If this policy is accepted, it will bring the state's land policy in line with the current policy on Forest Service lands in Michigan.

Hand in hand with this is a need for stricter enforcement of present regulations. Here again, is an area where the motorized recreationists can offer substantial assistance by policing their own ranks and reporting violators.

The final area of need for future management is one the State of Michigan is sorely lacking in. This is the need for motorized recreation opportunities near population centers. A report published by the Michigan DNR Office of Survey and Statistical Services in 1977 showed that, whereas a large percentage of the registered motorized recreationists lived in south and southeastern Michigan, 64 percent of the use occurred in the northern Lower and Upper Peninsula of Michigan.

The greatest untapped source for providing these opportunities is through the private sector. Unfortunately, encouragement of private facility development at present is difficult considering that the private sector is competing with free use of public land. Yet, increased cost of fuel prices may soon make this feasible.

I would like to borrow my conclusion from the last paragraph of the Council on Environmental Quality's report "Off-Road Vehicles on Public Lands." It expresses what I hoped to convey today.

The Jeep Corporation, in cooperation with members of the Outdoor Writers Association of America, developed a "Code of Environmental Ethics for Drivers of Off-Road Vehicles," which includes the following:

"I will appreciate the solitude and beauty of our natural environment, and respect the feelings of others toward it . . . .

I will not drive where I cannot leave the land essentially the same as before I drive across it."

If these two principles guided ORV manufacturers when they advertised their product, off-road vehicles on public lands would not be the issue it is today.

## EDUCATION AS A SOLUTION TO FOUR-WHEEL-DRIVE RECREATIONAL PROBLEMS

*Lee Chauvet*

Education must be a positive and cooperative program between the agencies, industry, and the user organizations. The program can be broken down into two categories, one general and the other site specific.

With regard to the general, all users of motorized vehicles (MV) on both private and public lands must be knowledgeable of the following:

1. Safety—safe operation and practices in accordance with all regulations, procedures and recommended organizational rules.
2. Environmental awareness—all users of MV on nonmaintained roads should have a good basic knowledge of water quality and erosion, what causes it and the end results. This subject should also address the effects MV could have on fish and wildlife.
3. Volunteerism—volunteer driver education programs should be conducted in high intensity use areas by use of checkpoint operations and organized clubs. Once a driver is oriented and briefed on his responsibilities in the operation of his MV, give him a windshield sticker to let other people know he cares. Use of large local maps showing areas of concern and site specific information would be valuable.

Implementation of the general program should include the following:

1. State/federal agencies, industry representatives, and responsible user groups should sit down and develop a task force program. Use of TV, radio, news media, and writers can be used to publicize the program. Well-prepared articles with a positive ring can be used to attract reader interest. This program needs to be

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manifested at every opportunity, the same as the anti-ORV groups have been doing. Learn how to reach the young minds in school and gain the confidence of all users.

2. Develop brochures with educational material to handout to users. Organizations can provide free vehicle safety inspections and driver education programs at vehicle meets, fairs and agency offices. Develop short quiz for "know it all" drivers.
3. Encourage conservation projects with various agencies and enlist help of nonmember owners of MV. When a vehicle operator works on a good soil conservation or wildlife project, he develops a healthy attitude toward care of the environment.
4. Local user organizations should work closely with BLM, FS, and recreation agencies. Learn to understand each others' needs and objectives. Arrange for annual or more often meetings to develop work projects and discuss problem areas. Develop a program to turn in violators of ORV regulations and the vandals or outdoor slobbers. The responsible user is going to have to learn that unless he does this, the bad guys will continue to do what they want at the expense of all concerned.
5. Encourage industry to promote responsible and positive publicity and advertising in lieu of past practices. This includes the news media which have capitalized on the ORV issues. Let them donate money for this effort, they can sell just as many MV and magazines telling the people how to enjoy them in a safe, sane, and enjoyable manner.
6. If the public knows where he can use his vehicle in an approved location, then he will stop going to the places where he should not go. Established trails and areas should be publicized so the user will know where to go. If you close Ballinger Canyon to the MV, where are they going to go? The preservationists miss this point completely. They are against developing suitable roads and trails for MV, but they seem to overlook the fact that ORV is going to be around for a long time.



## RESEARCH ROLES AND PRIORITIES FOR EFFECTIVE MANAGEMENT OF OFF-ROAD RECREATION VEHICLES

### Introduction

*Roger N. Clark*

The problem of defining environmental damage in recreation settings, and of understanding impact perceptions by visitors and managers is sorely in need of more research. The definition of acceptable impacts needs a clear conceptual framework. It appears to be a complex, multi-faceted concept. For example, the amount of ecological change resulting from recreation impacts and the kinds of changes visitors notice and dislike may not be closely correlated (Lucas 1979).

Use of motor vehicles for recreational purposes has increased rapidly in recent years as has been the case for most forms of outdoor recreation. Off-road vehicles (ORVs) in particular have been growing in popularity in many areas of the country. And with this growth in the use of motorcycles, four-wheel drives, and snowmobiles, controversy about appropriateness of their use abounds. Opponents argue that such vehicles are inappropriate anywhere, whether on or off roads. At the other extreme, proponents contend that public lands must be available to all forms of outdoor recreation, including the off-road use of motorized vehicles for recreational purposes. Many compromise positions are found in between these two polar views.

At the center of this controversy is the issue of impacts from ORV use (Sheridan 1979). Resource impacts are a concern for all forms of recreation (Ittner, et al. 1979), but seem of particular concern related to ORVs. Opponents of ORV use cite noise, erosion, water and air pollution, and many other impacts that occur when ORVs are allowed to enter urban open areas, rural grasslands, forests, and deserts.

Caught in the middle of this controversy are public policy makers and land managers. They must decide whether or not such use will be allowed at all and, if so, in what form, when, where, and with what restrictions. A major problem facing public

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officials is the determination of what is acceptable environmental impact or "resource damage" (Tobin 1979). This is indeed the major theme of this conference.<sup>1</sup>

The purpose of this paper is to examine information needs related to effective ORV planning and management. I will not review in depth the growing literature on ORVs and their use. Other papers will focus on various aspects of the ORV issue. Readers interested in specific papers on ORVs, their use, users, and impacts are referred to Bury, et al. (1976) and a bibliography compiled by the USDA Forest Service, North Central Forest Experiment Station.<sup>2</sup>

Before I discuss some of the major areas requiring further study, I want to describe what I believe the proper role of research is in this matter, and briefly discuss the Recreation Opportunity Spectrum (ROS) framework. The ROS concept has been around for many years but has only recently been developed sufficiently to provide guidance for recreation planning, management, and research. The ROS framework is useful in providing insights (if not answers) to many issues associated with ORV use and its impacts.

### The Role of Research

What then is the role of research in ORV management? As for any resource, effective management of recreation resources requires objective information. Such information takes many forms and comes from several sources, including public involvement, administrative monitoring and evaluation efforts, and formal research studies. I make a distinction here between research needs and information needs. This distinction recognizes that not all information is generated through formal research. To be most timely and effective, the gathering of useful information should involve the manager, the user, and the researcher.

By definition, research must provide objective inputs into the decision-making process. The researcher's basic charge is to provide information to help policy makers and managers evaluate alternative actions. Research does not provide answers about what should be done. It is the research role to provide information, not to advocate one position or solution over another. Determining appropriate answers is a management responsibility (Stankey 1979).<sup>3</sup>

I make these, what may seem obvious to many of you, assertions because of the difficulty inherent in doing an evaluating research in an area where most of us have personal values and preferences that make objectivity difficult. The issues under discussion at this conference touch most of us in one way or another. And, we all enter the debate on the appropriateness

of ORV use with certain preconceptions based on our personal values and experiences. For the researcher (as well as the public policy maker and manager), it is particularly important that personal values not get in the way of objective analysis.

And this way, I am suggesting that the "reader beware." It is my impression that there is an abundance of material related to ORV use which, while labeled research, is in many ways subjective, value-laden rhetoric mixed with data. This problem exists on both sides of the ORV issue. For future research to be useful for making decisions about ORV use (or any recreation use for that matter), extreme care must be taken to ensure that decision makers have information that represents an objective appraisal of the issues and not the values of the researcher or sponsoring organization.

#### THE ROS and ORV Impacts<sup>4</sup>

The task of assessing potential consequences of a variety of recreational impacts, including those from ORVs, begins with a definition of recreational opportunities. When considering outdoor recreational opportunities, people must make choices about the types of settings in which to recreate, the sorts of activities in which to engage, and the kinds of recreational experiences to seek (Clark and Stankey 1979a and 1979b, Brown, et al. 1978, Driver and Brown 1978). Each of the decisions reflect the values individuals deem important.

The role of values is critical to understanding recreation. Different values producing different tastes, interests, and preferences lead to diverse demands for recreational opportunities that array themselves along a continuum or range. This continuum is useful for dealing with a wide range of value-related management issues such as carrying capacity, depreciative behavior, and recreation impacts. The continuum is what we have labeled as the ROS. It is distinguished by varying conditions ranging from urban-modern and developed to primitive and undeveloped. The ROS is not a "quality" continuum. Quality recreation experiences can be derived from along the entire spectrum; they are not restricted to those which conform to values traditionally embraced by professionals in resource management or any one interest group. Quality is a value judgment; a quality experience for one person may not be that for another.

A recreation opportunity is the result of a specific combination of manageable factors (access, other nonrecreation resource uses, on-site management, social interaction, level of acceptable visitor impacts) in a particular location. Each of these factors is characterized by a range of conditions. These conditions are not defined by any single or absolute standard of appropriateness; rather the appropriateness varies along the spectrum. (A detailed description of these factors and use of



the ROS is found in Clark and Stankey 1979a). The recreation opportunity may occur across a variety of settings, varying in scenic attractiveness, landscape type, wildlife, etc. Alternative combinations of the factors lead to different types of opportunity settings giving recreationists many options from which to choose, in keeping with the experience they desire. Considerations about appropriate standards to apply for any one of the factors are largely judgmental; there are seldom any absolute standards. But, use of the ROS in making decisions about opportunity settings, forces one to make all conditions explicit, which should maximize the possibility for all recreationists (whether on foot, horse, or ORV) to find the types of opportunities they desire.

### Defining Acceptable Visitor Impacts

The visitor impact factor of the ROS is especially critical in recreation management. Recreation, such as ORV use, can disturb soil stability, vegetation, wildlife, water, scenery, and the natural quietness of many outdoor environments. In many cases in the past, the management response has been to regulate, restrict, or prohibit use (or the type of equipment), harden sites, or install protective facilities. But the meaning of these management changes is often unclear to recreationists. Such actions may have consequences as disruptive of recreational opportunities and recreationists' experiences as are the impacts they are meant to control.

The assumption implicit in management actions to minimize or eliminate impacts from recreational activities is that the impacts are unacceptable. Any resource use creates change (Buscher 1979). The problem is defining acceptable limits, when change becomes damage (Lucas 1979). What has not been adequately resolved is what, in fact, defines acceptable and to whom. It often appears that while impacts of varying degrees are expected and acceptable in other resource users (for example, timber management, mining, grazing), a "no-impact" standard has been prescribed for the management of many outdoor recreational opportunities (Burch 1970). But a no-impact philosophy is important, short of total closure of an area to recreational use.

In considering what constitutes appropriate or inappropriate impact, it is helpful to distinguish between the magnitude of the impact and its importance. Magnitude refers to the quantitative aspects of the phenomenon under study, such as its frequency and extent. Magnitude can be measured reliably by independent observers, and typically there will be little disagreement about these measurements. Often however, measures of magnitude that are made after the fact, are less reliable, and more debatable.



Importance, on the other hand, reflects the value one assigns to some phenomenon such as sound from ORVs, water pollution, or soil compaction. Importance will vary among individuals as well as over space and time. For example, two individuals observing the same impact with predetermined magnitude can differ greatly in the importance they assign to the impact, a difference reflecting their personal value system and expectations. The role which values and expectations play in defining the importance of recreational impacts (or any other type of impact for that matter) is described below.

Our view of the world around us is shaped by deeply imbedded orientations that we call values. Values provide an estimation of the worth of some object to an individual or in a particular situation (Andrews and Waits 1978). Although values often are not explicitly recognized, they form the base from which we develop our concepts of what is right and wrong, appropriate and inappropriate, acceptable and unacceptable. Many of these notions are taken for granted; that is, we do not really stop and think about them, where they come from, or what they imply. Because they are general and, in some sense, vague, they are difficult to change. We tend to seek out and accept those things that we perceive as consistent with our particular values.

In addition, we choose to do things and go to places likely to meet our expectations. These expectations are a function not only of our values but also our experience and knowledge. These expectations will influence what people define as acceptable or unacceptable actions on the part of others. Expectations are formed by many factors which are either internal or external to the individual (Boulding 1980). These include the influence of family and/or friends, the media, schools, available information, personal values, personal experience in similar situations, and the norms (informal rules) which govern appropriate actions in a particular place.

People have expectations regarding what they will find in any particular location. And, in a specific situation, people will judge the importance of impacts based on those expectations. The judgment had two possible outcomes: Either the impact in this context is acceptable and does not detract from their satisfaction; or the impact in this context is unacceptable and may lead to a decline in satisfaction and, perhaps, a decision not to return to that location in the future. (Outcomes between these two extremes are also possible.) Two individuals observing the same measured impact can differ greatly in the importance they assign to that impact, a difference reflecting their personal value system and expectations. And a given individual may judge the same impact acceptable in one situation but unacceptable in another—the judgment depends on the context within which the impact occurs (Deans 1979). For example, the sound of a motorcycle may be totally in keeping with the experience of

other motorcyclists, mildly bothersome to someone camping along a road in the area, and total anathema to a cross-country hiker. And, because any one individual may participate in each of these activities, the judgment will be made on desired experience at a particular time.

People's expectations may vary also according to how realistic they are. Realistic expectations are based on familiarity with an area and the informal rules (norms) there. Expectations may change as one gains new information and experience. Generally, we might expect to find that people with greater experience in an area would have more realistic and strongly held expectations than the novice.

Fortunately, the relative importance people attach to impacts does not vary randomly along the ROS. That is, people who choose a particular type of opportunity setting probably hold somewhat similar notions of what is appropriate and in keeping with these kinds of places. Some of these notions become widely and strongly held norms that govern behavior and set standards of appropriateness and acceptability in a specific opportunity setting far more effectively than any agency rule. In other cases, it is less clear what is appropriate, acceptable, or expected. Here our estimates must be tentative and open to revision.

The challenges then are to (1) set standards delimiting the acceptable impact level for specific recreational opportunities, taking recreationists' expectations into account along with other spectrum factors, as well as concerns such as other resource values and long-term goals for the area; (2) provide adequate information about the nature of the opportunity setting so that users can make choices about places to go that better reflect their preferences and expectations; and (3) manage and monitor the activities and impacts to ensure that the situation does not change inadvertently, i.e., change to conditions in excess of the standards specifically in point (1), thereby adversely affecting the quality of the recreational environment. A hypothetical application of this approach for managing noise is discussed in Clark and Stankey (1979b).

The preceeding discussion is relevant to all forms of recreation including ORV use. The ROS framework is based on state-of-the-art evaluation of management experience and past research. The ROS will not give an answer as to what is acceptable, to whom, at what level, and where. But it does allow the planner and manager to consider the appropriateness of recreation impacts from diverse user perspectives along with other important factors when making decisions about the use of public lands.

## Research Needs

Applied recreation research has already influenced management of recreational opportunities, but more effort is necessary to ensure that findings from past research are put in a useful form for management purposes. Furthermore, additional research seems warranted in some key areas especially related to ORV impacts. Some research has already been conducted in these areas or is currently underway; but that does not lessen the importance of additional studies to fill in the gaps in information.

### General Research Concerns

The basic problem under consideration at this conference is how to provide diverse options for motorized and nonmotorized forms of outdoor recreation in a way that maximizes recreationists' benefits while minimizing impacts on the physical and social environment. It is important that any research be tailored to the appropriate decision-making level. Although there are many ways to categorize the range of questions that might be asked by policy makers, planners, and managers, the following list of questions is helpful when considering research priorities, and more particularly, study design.

1. Basic allocation issues are general in nature. What are appropriate and inappropriate uses? What will be provided? How much? Under what conditions? Where?
2. Planning and design concerns are more specific and flow from the above. Where can certain appropriate options (defined above) be provided? What alternatives exist to provide desired results? How can potential incompatible uses be managed?
3. Management focuses on specific actions. How can plans be implemented to achieve desired outcomes? Monitoring and evaluation is required to achieve desired long-term results.

Research results can be used at all these levels. But research results that focus on one level may not be useful at another. For example, a study of basic allocation and policy, such as determining public support for ORV use, is not very useful at the site planning and management level. The reverse is also true. Consequently, it is important that the researcher in conjunction with policy makers and managers clearly define the necessary level of resolution early in the research planning process and design the study accordingly. In this light, it is my observation that far too often studies are conducted at a site specific level; and later an attempt is made to generalize findings to a more basic level. Conversely, many examples exist



where broadly defined, general studies have been used to support specific on-the-ground design and/or management. Neither approach is completely appropriate; there is a need for studies at all levels.

Future research on ORV use (as well as any other form of recreation use) should adopt a more system-oriented perspective. When one reviews the recreation literature, it is difficult to synthesize the results into a cogent picture because of the varying levels of study, alternative methodologies, and various locations of the research. This is not to say that the focus of past research has been unnecessary or unproductive, rather, that we take a look at how to generate the additional information needed to effectively manage ORV use. This suggests that the research should focus on the social, physical, and biological system within which recreation in general, and ORV use in particular, occurs (Wise 1979). We need a more complete understanding of the interrelationships between recreation and other resource uses, for example. Studies that describe the system of human/nonhuman interactions and dynamics seem particularly important. This will require not only looking at the negative aspects of certain uses but also the positive aspects to gain a complete understanding of the phenomena in question.

Particular care must be taken not to dwell on mythical average users (Shafer 1969) and stereotypes. Recreational activities are characterized by diversity both in terms of why people participate in them as well as the style in which they participate (Clark and Stankey 1979a; Bryan 1979). Past research has demonstrated the multiple reasons for and style of hunting, for example (Potter, et al. 1973). It is not likely that ORV use and users are any less diverse (Nicholes 1979). Research must determine the entire range of motives for ORV use, desirable and undesirable conditions associated with their use, and the types of people who use them for whatever purposes on or off roads. Whether or not ORV use is classified by types of users (socio-economic characteristics), type of use made of the ORV (transportation, play, competition), or types of vehicles (various styles of four-wheel drives, cycles, or snowmobiles, research must describe and report the diversity inherent in each.

### Specific Areas Needing Study

Following is a list of specific topics and questions which are particularly important for future research on ORVs. The list is suggestive rather than exhaustive. And I have taken a broader focus than just four-wheel-drive vehicles as was my assigned area. To understand the desires, needs, and problems associated with four-wheel-drive use, we must put them in context of alternative uses. Recreation use that involves motorcycles, four-wheel-drive vehicles, or snowmobiles may have special needs or problems, but research should look at all of



them and nonmotorized use as well. Research on the following topics would help us understand all of these uses and how one may affect the others.

1. Baseline studies are particularly important as a first step to understanding the ORV phenomenon and its implications for other forms of outdoor recreation and nonrecreation resource uses. Basic description of various forms of recreation use, uses (including their numbers and distribution), desires, knowledge, social and economic benefits, and physical and social impacts will be necessary to evaluate the consequences of management decisions. Such studies should be conducted in a variety of locations so potential regional differences can be evaluated.

2. More information on the basic values and expectations of diverse users is necessary. We know that preferences are difficult to interpret (Driver and Bassett 1977), particularly when considering complex topics, such as the level of acceptability of social and environmental impacts. More information is required about how recreational choices are made in keeping with values and expectations. Substitutability and displacement must also be studied. Nonusers must be studied as well as ORV users to understand the relationship between them (for an example, see Nash 1979).

3. An assessment about the magnitude and prevalence of different impacts from various forms of ORV use is necessary. What types of impacts result from various forms of ORV use? How do these impacts vary in time and location? How extensive are they? To what extent is site productivity reduced by these impacts? Where are the conflicts as well as the compatibilities between ORVs, other recreation, and other resource uses?

4. We need better information on how various recreation clientele groups and managers view the importance of impacts at different magnitudes. We need to know what impacts are most disruptive to various recreational experiences across the Recreation Opportunity Spectrum (ROS). Under what social and environmental conditions can different impacts from ORV use be tolerated? At what magnitude?

5. Finally, research is needed to evaluate alternative management standards and procedures which are appropriate across the ROS for offsetting or mitigating various ORV impacts. How can recreationists be involved in controlling or reducing undesirable impacts?

### Conclusions

There are no panaceas in research for resolving the controversy surrounding ORV use on public lands. Research can help

describe what is occurring at the present time and what will likely happen in the future given alternative management actions. But, deciding if ORV use is appropriate at all, or in what form, under what conditions or where, is largely a political-policy decision. We all recognize the inherent conflicts in values surrounding such decisions.

Research is inherently a long-term proposition. Many of the questions being asked today at conferences such as this cannot be answered completely with present information. Considerable effort and time will be required to answer the questions posed above. And, researchers will have to work closely with planners and managers to ensure the most effective use of research results in the shortest time to solve the problems discussed at this conference.

Recent experience with the ROS suggests that it is a useful way to view the conflict surrounding ORV use. In working with the ROS, several concepts seem to have particular relevance. First, it is important to understand that impacts from recreational activities such as ORVs are only one of many factors that define recreational settings. In some instances, recreational impacts may be the limiting factor in determining what recreational activities are possible and in what amount for certain places. In other cases, other factors may take precedence.

Second, when evaluating the meaning of impacts, we must determine their importance as well as their magnitude. Although an objective method can be used to determine the magnitude of impacts, for example, the decibel level for sound, and the coliform count for water quality, estimating the importance of the impact is more complex. Here, value judgments enter into the question, and considerable differences of opinion can occur between managers and recreationists as to what constitutes unacceptable impacts (Downing and Clark 1979; Clark, et al. 1971; Lucas 1970; Hendee and Harris 1970). When we make these judgments, ROS is useful because it recognizes that impact is a relative rather than an absolute concept, and that what constitutes unacceptable impact in one opportunity setting may be acceptable and appropriate elsewhere along the spectrum.

#### Notes

1. A recent conference in Seattle, Washington, also had as a focus the impacts from recreation activities. In that conference, however, impacts from all types of outdoor recreation were examined (Ittner, et al., 1979).

2. Off-road recreation vehicle (ORRV) bibliography by David W. Lime and Earl C. Leatherberry. North Central Forest Experiment Station. USDA Forest Service. Folwell Avenue, St. Paul, Minnesota. 17 p. mimeo.
3. See George H. Stankey, Integrating wildland recreation research into decision making: pitfalls and promises. Presentation to the conference on Applied Research in the 1980s for Parks and Outdoor Recreation. March 26, 1980, Victoria, B.C.
4. Most of this section is adapted from Clark and Stankey, 1979b.

#### References

- Andrews, Richard N. L., and Mary Jo Waits. 1978. Environmental values in public decisions, a research agenda. Sch. Nat. Res., Univ. Mich., Ann Arbor, 90 p.
- Boulding, Kenneth E. 1980. "Science: Our Common Heritage." Science 207(4433):831-836.
- Brown, P. J.; B. L. Driver; and C. McConnell. 1978. "The opportunity spectrum concept and behavioral information in outdoor recreation resource supply inventories: Background and application." In Integrated Inventories of Renewable Natural Resources: Proceedings of the Workshop. Gyde H. Lund, Vernon J. LaBau, Peter F. Ffolliott, and David W. Robinson, etc. coords. USDA For. Serv. Gen. Tech. Rept. RM-55, pp. 73-84. Rocky Mt. For. and Range Exp. Stn., Fort Collins, Colo.
- Bryan, Hobson. 1979. "Conflict in the Great Outdoors: Toward Understanding and Managing for Diverse Sportsmen Preferences." Sociol. Stu. 4, 98 p. Bur. Public Admin., Univ. of Ala. University, Ala.
- Burch, William R. 1970. "Recreation Preferences as Culturally Determined Phenomena." In Elements of Outdoor Recreation Planning. B. L. Driver, Ed. (Ann Arbor: Univ. of Mich. Press.) Pp. 61-87.
- Bury, Richard L.; Robert C. Wendling; and Stephen F. McCool. 1976. Off-road recreation vehicles—A research summary, 1967-1975. Texas Agricultural Experiment Station, Texas A&M University, College Station. 84 p.
- Buscher, Richard F. 1979. "Wildland Recreational Impact from the U.S. Forest Service Land Manager's Perspective." In Proceedings of the Wildland Recreation Impacts Conference, October 27-29, 1978, Seattle, Wash. Ruth Ittner, Dale R. Potter, James K. Agee, and Susie Anschell, eds. USDA For. Serv. and Natl. Park Serv., Pac. Northwest Reg.



- Clark, Roger N.; John C. Hendee; and Frederick L. Campbell. 1971. "Values, Behaviors, and Conflict in Modern Camping Culture." J. Leisure Res. 3(3):143-159.
- Clark, Roger N.; and George H. Stankey. 1979a. The recreation opportunity spectrum: A framework for planning, management and research. USDA For. Serv. Gen. Tech. Rep. PNW098, 32 p., illus. Pacific Northwest For. and Range Exp. Stn., Portland, Oreg.
- Clark, Roger N.; and George N. Stankey. 1979b. "Determining the Acceptability of Recreation Impacts: An Application of the Outdoor Recreation Opportunity Spectrum." In Proceedings of the Wildland Recreation Impacts Conference, October 27-29, 1978, Seattle, Wash. Ruth Ittner, Dale R. Potter, James K. Agee, and Susie Anschell, eds. USDA For. Serv. and Natl. Park Serv., Pac. Northwest Reg.
- Deans, Thomas R. 1979. "Recreational Impact on Wildlands—The User's Perspective." In Proceedings of the Wildland Recreation Impacts Conference, October 27-29, 1978, Seattle, Wash. Ruth Ittner, Dale R. Potter, James K. Agee, and Susie Anschell, eds. USDA For. Serv. and Natl. Park Serv., Pac. Northwest Reg.
- Downing, Kent; and Roger N. Clark. 1979. User's and Manager's Perceptions and Dispersed Recreation Impacts: A Focus on Roaded Forest Lands." In Proceedings of the Wildland Recreation Impacts Conference, October 27-29, 1978, Seattle, Wash. Ruth Ittner, Dale R. Potter, James K. Agee, and Susie Anschell, eds. USDA For. Serv. and Natl. Park Serv., Pac. Northwest Reg.
- Driver, B. L.; and John R. Bassett. 1977. "Problems of Defining and Measuring the Preferences of River Recreationists." In Proceedings: River Recreation Management and Research Symposium. USDA For. Serv. Gen. Tech. Rep. NC-28. Pp. 267-272. North Central For. Exp. Stn., St. Paul, Minn.
- Driver, B. L.; and Perry L. Brown. 1978. "The Opportunity Spectrum Concept and Behavior Information in Outdoor Recreation Resource Supply Inventories: A Rationale." In Integrated Inventories of Renewable Natural Resources: Proceedings of the Workshop. Gyde H. Lund, Vernon L. LaBau, Peter F. Ffolliott, and David W. Robinson, tech. coords. USDA For. Serv. Gen. Tech. Rep. RM-55, p. 24-31. Rocky Mt. For. and Range Exp. Stn., Fort Collins, Colo.
- Hendee, John C.; and Robert W. Harris. 1970. "Foresters' perception of Wilderness-User Attitudes and Preferences." J. For. 68(12):759-762.



- Ittner, Ruth; Dale R. Potter; and James K. Agee (eds.). 1979. Proceedings of the Wildland Recreation Impacts Conference, October 27-29, 1978, Seattle, Wash. Ruth Ittner, Dale R. Potter, James K. Agee, and Susie Anschell, eds. USDA For. Serv. and Natl. Park Serv., Pac. Northwest Reg.
- Lucas, Robert C. 1979. "Perceptions of Nonmotorized Recreational Impacts: A Review of Research Findings." In Proceedings of the Wildland Recreation Impacts Conference, October 27-29, 1978, Seattle, Wash. Ruth Ittner, Dale R. Potter, James K. Agee, and Susie Anschell, eds. USDA For. Serv. and Natl. Park Serv., Pac. Northwest Reg.
- Lucas, Robert C. 1970. User evaluation of campgrounds on two Michigan National Forests. USDA Forest Serv. Res. Pap. NC-44. 15 p. North Cent. For. Exp. Stn., St. Paul, Minn.
- Nash, A. E. Keir with Marguerite Bou-Raas Nash. 1979. "Understanding and Planning for ORV Recreation." The 1978-79 Washington Off-road Recreation Survey. Interagency Committee for Outdoor Recreation. State of Washington. Tumwater, Wash.
- Nicholes, Garrell E. 1979. "Responsible Off-Road/Off-Highway Vehicle User Impact on Wildlands." In Proceedings of the Wildland Recreation Impacts Conference, October 27-29, 1978, Seattle, Wash. Ruth Ittner, Dale R. Potter, James K. Agee, and Susie Anschell, eds. USDA For. Serv. and Natl. Park Serv., Pac. Northwest Reg.
- Potter, Dale R.; John C. Hendee; and Roger C. Clark. 1973. "Hunting Satisfaction: Game, Guns, or Nature?" Proceedings 39th North Am. Wildl. Conf. Pp. 220-229. Washington, D.C.
- Shafer, Elwood L. 1969. The average camper who doesn't exist. USDA For. Serv. Res. Pap. NE-142, 27 p., illus. Northeast For. Exp. Stn., Upper Darby, Penn.
- Sheridan, David. 1979. Off-road vehicles on public lands. Council on Environmental Quality. 84 p., illus. Washington, D.C.
- Stankey, George H. 1979. "A Framework for Social-Behavioral Research—Applied Issues." In Long Distance Trails: The Appalachian Trail as a Guide to Future Research and Management Needs. William R. Burch, Jr., ed., pp. 43-53. School of Forestry and Environmental Studies, Yale University. New Haven, Conn.

Tobin, Daniel J. 1979. "Wildland Recreation Impact from the National Park Service Land Manager's Perspective." In Proceedings of the Wildland Recreation Impacts Conference, October 27-29, 1978, Seattle, Wash. Ruth Ittner, Dale R. Potter, James K. Agee, and Susie Anschell, eds. USDA For. Serv. and Natl. Park Serv., Pac. Northwest Reg.

Wise, James A. 1979. "Creating the Future of Impact Management." In Proceedings of the Wildland Recreation Impacts Conference, October 27-29, 1978, Seattle, Wash. Ruth Ittner, Dale R. Potter, James K. Agee, and Susie Anschell, eds. USDA For. Serv. and Natl. Park Serv., Pac. Northwest Reg.

## METHODS OF IMPROVING THE MANAGEMENT OF FOUR-WHEEL VEHICLES

*Michael F. Dolfay*

In the late 1940s, World War II surplus jeeps were available to the public, and in the Wenatchee National Forest, they were associated with hunting, primarily elk and deer. In the mid-50s the jeeps were used more for pleasure and the challenge of where you can go, see what mudholes or hill climbs you could conquer. Fragile areas, such as meadows, and alpine meadows were of no concern. By the mid-60s, there was starting a change in attitude and in the early 70s was the start of user controls. Clubs and four-wheel association became active in management and working with agencies. The last two or three years there has been another change, that of the pick-ups and the 4x4 trucks using 4x4 trails, making the existing trails wider and consequently taking the challenge away from small rigs forcing the smaller four-wheeler to look for other challenging areas. There have been problems, and problems still exist today.

My objective is to show you methods of management in a forest environment that have been developed for four-wheel vehicles.

The Wenatchee National Forest has made great strides in solving some of its problems. Hence, some of the things the Forest Service, state, county, game department, and users have accomplished by working together. The Forest Service and Washington State Interagency Commission in June, 1979, signed an agreement whereby the Forest Service can spend dollars on ORV projects that have been approved by both agencies. The Forest Service primarily submits resource protection projects, e.g., turnpikes, stream bank protection, log waterbars, bridges, etc.

### Law Enforcement

Law enforcement and education programs in Washington State are new and have so far been successful. Washington State Interagency Commission finances six counties and Washington State Parks and Recreation with \$260,000. In addition to this, some counties add additional dollars.

The country's programs are twofold, patrolling ORV trails, and most importantly, education, that of making contacts with user groups, local associations, and schools.

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## Monitoring

Development of a monitoring plan is essential. Problems that develop must be quickly resolved through use of special protection measures—tread armor, puncheon, turnpikes, seasonal closures and, in many cases relocation may be necessary. "The Off-Road Vehicle Monitoring Guidelines" developed by Dr. Steve McCool of the University of Montana, is worthy of adoption.

## Seasonal Closures

Seasonal closures are a useful tool in managing 4x4 trails. The Wenatchee National Forest has accomplished this by working with the Washington State Game Department in determining the time of season to open or close particular areas. Wet soils are a concern. Spring and fall closures are recommended.

The Wenatchee National Forest feels that it has a successful four-wheel-trail program due to the interest of user groups in helping develop and install resources protection devices, seasonal closures, law enforcement education program, and a useable monitoring plan.

## Questions and Answers

Warren Hopkey: With regard to state land, 50,000 more acres of wilderness are left in the Upper Peninsula. Got so much up there now that should be in agriculture, why can't it be sold to the public?

Roy Rustem: Currently there is a policy against selling public lands.

Frank Gilbert (Forest Service, Utah): You mentioned a coordination problem between state and various federal conflicting or confusing regulations. I would suggest a couple of alternative solutions. One is to try to coordinate some of the differences. See which is best, the best of the group. Another is to provide better information on what are the restrictions in the different places so the user could better choose which place to go, which restrictions bother them least, and so forth. There has been the same kind of problem in the West particularly white-water boating, because there are several agencies involved in management with a lot of different permit requirements and restrictions and use levels and so forth. But the agencies got together informally and are coming out with a river information digest to help the public.

Rustem: One of the problems that I mentioned is that in Michigan we have some areas that are partially state land, partially Forest Service, partially federal. Someone can drive across



that area and drive through several sets of regulations because the boundary lines are not marked.

Question: My question is, that from your experience can the ORVs be accommodated on state and federal lands in Michigan without doing permanent damage?

Rustem: I think we can accommodate ORVs in Michigan through some of the things we have suggested and by picking up some areas in southern Michigan. We have a lot of Forest Service land in the Upper Peninsula that is probably not used as much for ORVs. That land is too far for somebody for a weekend to drive to and use it. Here in Michigan we have an extensive amount of public land but it is too far from the population areas.

Roger Clark: I think what's important is that, given a statement like that, you need to identify what information you need to resolve the issues inherent in that executive order. And the issues inherent in that order are the considerable effects. How big they are, and then how important they are. That's how the researchers measure the conflict in conjunction with the management objectives.

## OFF-ROAD MOTORCYCLING IN THE 1980s: WHAT DOES IT LOOK LIKE?

*Mark W. Anderson*

For those unfamiliar with the Motorcycle Industry Council (MIC), we are a national nonprofit trade organization which represents manufacturers of motorcycles, motorcycle parts and accessories, and members of allied trades. We maintain a government relations office in Washington, D.C., and an administrative office in Newport Beach, California.

Part of the function of the MIC is to encourage responsible off-highway motorcycling. We have done a lot of work with local, state, and federal agencies to put on educational trailbike workshops and to develop noncommercial, educational slide presentations and publications.

In order to discuss the outlook for off-highway motorcycling through the 1980s, I need to briefly define the types of vehicles we are discussing. When the off-highway trend started in the early 1960s, a real dirt bike was nothing more than a stripped down 400 pound street motorcycle, but user demand has now affected the design of motorcycles into these three general categories:

1. On-highway—Street bikes limited mainly to paved roads.
2. Dual-purpose—The most popular type in the early 1970s and is now the least popular, but will probably at least stay even with its present sales through the 1980s. It is also street legal, but is known as the compromise bike because it performs acceptably in the dirt and on the street.
3. Off-highway—These machines are not designed to be used on the road and have more suspension, knobby tires and no instruments, horn or turn signals. There are many specialized subtypes of off-highway machines like the motocrosser, enduro and trail bikes, but all have a very minimum amount of weight and extras.

The dual-purpose market has declined in the last five years as a result of two things: (1) the EPA emissions standards becoming too difficult to meet by the two-stroke engine design

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which was the most popular until recently, and (2) an increasing desire for motorcyclists to purchase more specialized motorcycles as their second bike. Now, however, most of the major manufacturers have introduced emission controlled four-stroke engine dual-purpose motorcycles, which may be an incentive for this market to grow again.

These two factors of engine design and user specialization have led to an increasing market for the off-highway only motorcycle, which went from 127,000 units sold in 1969 to 330,000 units in 1979, the highest ever. Our statistical analysis at the MIC indicates that this off-highway market level, will at least remain constant in the near future. Since 77 percent of motorcyclists are repeat owners, we can expect these owners to buy bigger and better motorcycles with each purchase.

Each of the above types of motorcycles may be used for many different things. Sometimes a street bike is used off the highway and sometimes an enduro bike can be used in a motocross, while the dual-purpose bike is made to be used both on and off highway. This is an important concept to consider in the planning process.

Following the path of a typical user, who starts with a dual-purpose motorcycle, we can usually see that as his skills develop to a point where he wants to become more specialized, he will often purchase another motorcycle to fit this special need. This type of motorcyclist will often keep his dual-purpose motorcycle to make short trips and to commute to work.

Another foreseeable market in the 1980s is the new owners of street motorcycles who purchased their machines as a fuel efficient alternative to an automobile. Sales of street only motorcycles went up 23 percent in 1979, and now that these motorcyclists have been exposed to the sport, MIC predicts that some of these riders will become interested in, and purchase more specialized off-highway machines.

The point here is that as time continues, the motorcyclist becomes more and more specialized in the kind of motorcycle he rides and the equipment he needs. Along these same lines he will need more specially designed and maintained facilities to suit his needs in the 1980s. With the maturation of the motorcycle buyer and the motorcycle market, we can count on it.

Each of these users for the various motorcycle types must be planned for accordingly in order to keep enthusiasts happy and to control the usage. Owners for the specific bike types need specific facilities, and efforts in the future must be made to accommodate these needs.

We have seen that off-highway-only motorcycle sales have continually gone up in recent years despite the fact that federal land has become more restricted or withdrawn from off-highway vehicle (OHV) use. This is the concern that we need to address. Off-highway riders really want legal, legitimate places to ride, and would be cooperative in assisting any government agency in developing these facilities. We need properly controlled and managed trails, competition and use areas to satisfy both rider and environmental concerns.

In the 1980s, all recreationists will be looking for opportunities as close to home as possible and motorcyclists are no exception. They will need trails and dirt roads for distinction touring, as well as competition facilities including motocross tracks and enduro trails. The free play or unrestricted use areas where riders are not restricted to roads and trails will probably only exist in a very few places since they are more difficult to manage. Proper management of such facilities have been shown to be successful in many places around the country, but we need to share this "how to" information with our co-workers.

Privately owned and managed facilities have generally not been successful in terms of making a profit for the owner. Even in southern California—the hot bed of off-highway motorcycling—the private parks are in financial straits. Motorcyclists do not want to be constructed into small "parks" where they have "overpopulated" trail riding; it is not enough of a feeling of relief from regimentation of everyday life. They want destination trails or enduro courses with scenic overlooks, not confinement in a 300-acre park.

For the occasional trail rider, the beginner, or the motocross racer who rides on a closed course anyway, the park concept remains the most advisable. We can expect this type of use to continue; therefore, facilities need to be provided, but possibly in conjunction with other use facilities, especially in or near urban areas.

The most often asked questions usually are "how do we get the money?" or "how do we get the land?" to open a motorcycle use facility. These problems are being solved in at least two western states by the cooperation of state and federal agencies. In California, for example, the state has money from its OHV registration and fuel tax program, but has no land; the Forest Service has a great deal of land, but has little money. So the California region of the Forest Service has just recently put in proposals to the state for \$3 million in grants for 67 separate OHV projects for 1979-80, a good percentage of which will probably be approved.



In the last few years, federal agencies have increased restrictions on OHV use on federal lands which have, in turn, put an increasing burden on state and local governments. Some states are registering their OHVs and recouping the gas tax spent by their owners and putting this money in a special OHV fund from which state facilities can be built or grants issued to local and federal agencies. I see this as a strong trend in the 1980s.

Another incentive which is attractive to today's recreationist is that motorcycles do not use much gas. A 1979 Department of Transportation survey shows that off-highway motorcycling consumes only 1/10 of 1 percent of all gasoline consumed by all transportation vehicles.

The gasoline price hikes of 1979 have made it obvious that there will be a trend toward more fuel efficient recreation in the 1980s. For even greater fuel efficiency we need to locate our use areas as close to the population centers as possible because even though motorcycling does not use much gas, the transportation of the bikes to the use areas could.

To look into a crystal ball, it is apparent that OHV use will be more restricted or controlled in the 1980s. More than anything, this means that management will be even more important to ensure user satisfaction and protection of the environment. Adequate provision of facilities is important to minimize any problems. The answer is not "banning," but rather, it is "planning."

## ENVIRONMENTAL IMPACT OF OFF-ROAD MOTORCYCLES

*Robin T. Harrison*

The environmental impacts of off-road motorcycling vary in extent and severity as a function of the particular motorcycle involved, the rider, and the characteristics of the ecosystem in which it is operated. In outlining these impacts, this talk will concentrate on physical characteristics of the machines and deal only briefly with the rider and the characteristics of the environment in which the bike is operated.

There are three rider characteristics which affect the environmental impact of any given bike, under any given environmental situation. First, the knowledge of the rider: Does the rider know what actions on his part can cause damage, and what actions can avoid such damage? Secondly, his ability: Is he able to take the action necessary to avoid damage? Does he have the skill to apply proper throttle control, use of momentum, body English, etc., to put his motorcycle where it will be least damaging? Finally, his attitude: Does the rider choose to take the positive actions and avoid the negative ones, thus minimizing damage? Modifications of rider knowledge, ability, and attitude can be affected through formal or informal education, peer pressure, etc., and are really outside the scope of this presentation.

Likewise, where the motorcycle is operated is critical. It could be perfectly environmentally acceptable to operate a motorcycle on a trail system, or in certain designated areas, but environmentally devastating to operate the same motorcycle under the same conditions five feet off the trail. In other ecotypes, areas such as sand dunes and some meadows and swamps, a great deal more environmental damage is caused by restricting motorcycle use to trails than allowing broad area use.

### Specific Machine-Related Environmental Impacts

#### Sound

The sound of off-road motorcycles is one of the most often mentioned negative factors of off-road motorcycle operation. There are several deleterious effects of excess motorcycle sound.

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Some specialty racing motorcycles are loud enough to cause permanent hearing damage to the operator over a long enough exposure. Interference with the sleep, or speech communications of bystanders is possible, from improperly muffled motorcycles. The most important effect of off-road motorcycle sound is the annoyance that it causes nonmotorcycling recreationalists using the same area. What could be more annoying than a young teenager going around and around and around a campground on an unmuffled motorcycle at 6 o'clock in the morning? This particular scenario illustrates the two considerations mentioned above, rider attitude, and use in an inappropriate area, as well as the problem of the unmuffled motorcycle.

New off-road bikes, at least those sold in California, produce no more than 86 dBA at 50 foot under wide-open throttle acceleration procedures. It is unlikely that such a motorcycle under normal trail-riding conditions would be even acoustically detectable for distances of much greater than a quarter of a mile. However, we know that many off-road motorcycles are much louder than this because of modification to the exhaust system, or inappropriate use of motocross racing machines in an off-road recreation setting.

The way to reduce annoyance caused by off-road motorcycles, therefore, is not for legislators of agencies to demand limits lower than the current 86 dBA at 50 foot regulation, but rather for local enforcement of existing noise limits which would eliminate most problems. The Motorcycle Industry Council has developed an enforcement test method which correlates well with the Society of Automotive Engineers (SAE) procedure used by regulatory agencies to limit new motorcycle sound. The test can be run in about 10 seconds by two experienced testers and can eliminate unduly loud motorcycles from recreation areas. National forests are using this test method to check all off-road bikes used in popular play areas.

### Fire-Starting Potential

Motorcycles, along with any other internal combustion engine-powered device, can cause fires by the emission of glowing carbon particles from the exhaust pipe. However, at least for use on all national forests, and on all public land in California, a Forest Service approved spark arrester is required on all motorcycles. The major manufacturers of off-road bikes provide spark arresters as a stock item. To my knowledge, there has never been a single fire started by a motorcycle equipped with a properly functioning spark arrester. Checking for spark arresters is easy. Most approved arresters have a distinctive marking on them. For those not so marked, the Forest Service publishes a Spark Arrester Guide to assist enforcement officials. So this potential environmental problem has been solved.



## Air Pollution

Since off-road motorcycles are used only illegally, and therefore seldom, in urban areas, the impact on overall air quality is infinitesimal. However, some concerns have been expressed that off-road vehicles used on trails can cause a concentration of lead in the area around the trail, and furthermore, that the localized concentration of visible emissions and heavy hydrocarbons from two-stroke engines can constitute a localized air pollution problem. Although I have never seen well-controlled experiments that indicate off-road vehicle causes any measurable increase in lead, if such an increase were found, it could be answered by the use of lead free gasoline, which is now widely available. Many riders use lead free gasoline anyhow because of the lower combustion chamber and spark plug deposits that result. With regard to hydrocarbon and visible emissions, this problem also is well on its way to being solved. The introduction of synthetic lubricants, favored by many two-stroke motorcycle riders, has done much to reduce visible emissions, as has the introduction of oil injection on many of the off-road bikes. Before oil injection, the fuel and oil were mixed for two-stroke motorcycles. Oil had to be present in a rich enough mixture to ensure adequate lubrication during wide open throttle operation, which resulted in a greatly excessive amount of oil for part throttle operation, which the majority of trail bike riding is. However, with the oil injection, a small pump meters lubricating oil into the fuel system. The pump is regulated by throttle opening. Under light load, a much leaner oil mixture results, with a corresponding reduction of visible emissions and hydrocarbons.

## Water Pollution

Water pollution by emissions from motorcycles is certainly well below the measurable range; however, the runoff from areas where erosion has been initiated or enhanced by off-road motorcycle operation certainly can cause pollution.

## Soil Impact

Impact on soils and resulting erosion is probably the most significant environmental impact of off-road motorcycle misuse, not amenable to quick solution by modification of the machine. Because it is such a difficult problem, much less work has been done in identifying the soils impact, and its possible solutions, than has for the other major impact, sound. Leonard Della-Moretta, of the U.S. Forest Service Equipment Development Center, has reported in a project record entitled, "Vehicular Classification of Forest Soils and Slopes," that vehicular ground damage on both level ground and slopes is of two types, compaction and shear. Compaction from motorcycles is less likely to be important on level ground, but can lead to rutting and decreased



permeability which can cause channeling of ground water and erosion on slopes. Della-Moretta's work has shown that the ultimate rut depth is a function of the bearing strength of the soil and the ground pressure exerted by the vehicle. Soil strength in turn obviously varies with the ecosystem involved, and is affected by subsoil and surface soil types, ground temperature, debris, water content, and permeability. Vehicle operations spread out over a slope are much less likely to result in rutting which can cause channeling and thus erosion than concentrated vehicle use.

Shear damage occurs because of wheel-slip, both on level and sloping ground. Since some wheel-slip is essential for forward propulsion, shear of the soil is a necessary adjunct of all off-road travel. Also, as the toroidal tire deforms to meet the flat ground surface, tread-squirm causes squirm-shear. Although ultimate rut depth is not affected by the wheel-slip, immediate rut depth is. Shear impact can be limited by limiting tire-slip. Indeed, runaway tire-slip, or wheel-spin, is to be avoided if at all possible except perhaps on very loose soils such as sand. According to Della-Moretta, it is impossible to classify the impact potential in any but a very general way of various off-road vehicles unless detailed information about the soil is known.

### Current Activities

Currently, the Forest Service is engaged in a project to develop methods to quantify the environmental impact of various types of off-road vehicles, and how this impact varies as a function of the recreational opportunity presented. In other words, we hypothesize that the trail biker whose primary purpose is travel to a prospecting site, for instance, is quite different from the environmental impact of a motorcyclist whose primary purpose is riding the motorcycle as fast as he can over the terrain. The Forest Service is cooperating with the SAE motorcycle committee in this effort, and a task force has been formed with representatives of the Forest Service and motorcycle manufacturers.

## IMPROVING THE MANAGEMENT OF TWO-WHEELED VEHICLES: EDUCATION

*David W. Sanderson*

I would like to begin with a premise: if we had responsible, properly educated trail bike users with publicly acceptable vehicles, then many of the management problems that have preoccupied us for the past ten years or so would be reduced or even eliminated.

A crucial weakness in most approaches to managing trail bike use has been the tendency to focus exclusively on management of the resource and the vehicle, and to ignore management of the user. There has been an implicit assumption that user behavior and attitude had to be accepted, no matter how unacceptable they actually were, and as a result we have seen land managers rely on regulations and enforcement to control user behavior, and on land closure or unnecessarily expensive trail construction and maintenance to protect the resource, rather than working to modify user behavior in ways that would make the land manager's task easier. There has been a further assumption that trail bike users are basically insensitive to management concerns, such as user conflict and adverse environmental effects. There is plenty of evidence of behavior that appears insensitive, but the fact is that no one has ever tried to teach trail riders responsible behavior on the large scale that we need if we are ever to solve our problems.

And it seems to me to be high time that all of us who are concerned with trail bike activity make a commitment to such an effort as a key step in meeting the management challenges we face. Such an effort should involve everyone who is concerned with using trail bikes or managing them--riders, dealers, manufacturers, the motorcycle press, land managers, enforcement agencies, and conservation organizations. A wealth of opportunities exists. User attitudes and behavior are shaped by many factors, and we should be using every tool at our disposal to ensure that these influences operate in our favor.

Organized trail bike users can have substantial effects on rider behavior, and should be working to encourage responsible attitudes and to educate new riders, especially youngsters. The New England Trail Rider Association has used this approach

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successfully to promote trail bike noise control. Using a combination of enforcement through sound testing at events, continual emphasis on the need for acceptably quiet motorcycles, and active assistance in quieting members' machines, we have been able to create a situation in which responsible attitudes and behavior are perceived as the norm, and members work hard to make their motorcycles quiet and to encourage others to do the same. Riders entering the sport learn these attitudes as part of their introduction to trail riding, a kind of socialization process during which we hope they will internalize standards or responsible behavior that will become a permanent part of their trail riding habits.

Land managers who are prepared to use information and education programs as a major management tool can alleviate problems that sometimes seem insurmountable. One of the most outstanding examples I have seen of solving serious problems created by heavy recreational trail use involves pedestrians, not vehicle users. The White Mountain National Forest, in New Hampshire and Maine, is a relatively small unit. Yet it is within a day's drive of something like 18 million people, and sees some of the heaviest recreational use of any national forest in the country.

When the hiking fad of the early 1970s hit, results were predictable. Overuse combined with irresponsible use to create massive problems of littering, erosion, water pollution, and general environmental degradation. Trail bikes had no part in this destruction—most of the forest is closed to wheeled vehicles, a closure which we have supported.

The response of the Forest Service to this crisis is instructive not only for its substance, but also for its approach. Had the problems been caused by trail bikes, it is safe to say that they would have generated considerable emotionalism, discussion of widespread land closure if not actual closure, and in general very little in the way of constructive approaches to the problems. Closure was never considered as an option in this case; this is symptomatic of the difference between land managers' attitudes toward pedestrian use and vehicular use, and as a result the Forest Service and the users were forced to develop solutions based on constructive management.

A three-pronged approach evolved, based very heavily on active user involvement in the management process and on user information and education programs--indeed, it is fair to say that without the support of organized hikers, the Forest Service would have been unable even to begin to meet the needs that existed. Trail maintenance was substantially expanded, making extensive use of volunteers working under cooperative agreements. Regardless of user attitudes, a trail which may be



used by 35,000 people in the course of a summer needs special care. Regulation was increased, especially to control camping.

Most importantly, these actions were accompanied by one of the most massive user information and education programs that I know of. It was designed to make people aware of the problems and teach them about using the national forest responsibly. Even enforcement activities were oriented in this way--the forest continues to make extensive use of what are called "back-country patrolmen" during heavy-use seasons. These are almost all seasonal employees who spend most of their time out on the trails helping to teach people how to hike and camp, using the regulations in a positive way, not a negative one.

And these efforts have worked. The White Mountain National Forest offers the same recreational opportunities to hikers today that it did five years ago. Yet the trails and the environment generally are in better condition now than they were then, and problems created by user irresponsibility have been substantially reduced. This kind of creative, activist approach by land managers working closely with organized users could help a great deal in alleviating problems associated with trail bike use as well.

In the case of trail bikes, the need for informing and educating users transcends the boundaries of any particular area of public land. This is why it is crucial that we have assistance not only from individual land managers, but from public agencies which have as a specific responsibility the fostering of responsible trail bike use. In those states which have off-highway vehicle registration programs, agencies often have educational responsibilities, but few have really done much to meet them. When the New England Trail Rider Association set out several years ago to make a series of public-service TV spots designed to educate trail riders, we were the first people in the United States to do it, and we were in effect filling the gap left by public agencies.

Similarly, our work with the State of New Hampshire over the past two years or so on a safety education course for trail bike users is also one of the first such efforts we have seen. It is a cooperative project between trail bike users and the state, and we are only just now ready to start holding classes. However, we have high hopes that by directing this effort especially at younger riders, we will help to reduce some of our problems.

Still another approach to the task of developing responsible riders is to look at their primary source of information about the sport, and to develop the educational potential of these sources. Besides their fellow users, trail riders get information from three important sources: manufacturers,



motorcycle dealers, and the motorcycle press. None of these three groups has made the kind of commitment to rider education that seems to me to be needed.

Manufacturers, especially through the Motorcycle Industry Council, have made some limited gestures toward encouraging responsible riding. But the industry has never taken a firm, public position that would give it the kind of effectiveness that could have significant influence. It is time they did.

Industry attitudes should in turn influence dealers. Retail motorcycle dealers are an essential contact point with trail bike users; yet far too many of them remain insensitive to the problems and needs that exist, and are unable or unwilling to transmit necessary information to their customers. This is an area where cooperative action between the industry, land managers, and organized users should make a difference.

A major effort needs to be made to involve the motorcycle press in educational efforts. Based almost exclusively in California, nationally distributed monthly magazines are a major source of information for motorcyclists. Yet the editorial staff of these publications are generally insensitive to responsible trail bike use as an issue, and either poorly informed or actively misinformed about management and regulations. They have little interest in resource management, and are often suspicious of or hostile to land managers. At least some of these attitudes can be attributed to their isolation in California, combined with the unique environment and trail bike problems with which that part of the country has been afflicted. Efforts need to be made to correct these attitudes, and to encourage motorcycle journalism that helps the sport by promoting responsible behavior by properly informed users.

All I have been able to do here is to note some of the major actors in the trail bike education picture, and to suggest ways in which they are helping or could be helpful. I hope I have made it clear that the need is not simply for individual actions, but rather for communication and cooperation in programs and activities that draw on all the available resources and cut across traditional separations between land managers, users, and industry. We need to use these resources in ways that are creative, and not be inhibited by old habits of thought or action. And finally, we need to approach this collective enterprise with a clear understanding that we must all be willing to take responsibility for the problems, and to share the responsibility for finding solutions to them.

## TWO-WHEEL VEHICLES

*William L. Kickbusch*

Motorcycle riding is a popular outdoor recreation. Like any type of recreation, it has an impact on the natural environment. How the use is planned for, laid upon the land, and administered is important if motorcycle use is to be accommodated on any area.

Most of my remarks relate to an actual experience, associated with a motorcycle area in Missouri. The area is known as Chadwick, located in southwest Missouri, approximately 25 miles southeast of Springfield, in the Mark Twain National Forest.

The area was used for many years by the local people. This use was totally unregulated and for the most part unnoticed. As the popularity of motorcycle riding increased, and with large numbers of foreign-made bikes finding their way into the American markets, use in the area increased. By the late 1960s, over 100 miles of trails had been established through unrestricted use. Other uses such as hill climbing, challenge areas, steep trails, and a general overuse of the area were common. It was apparent that unrestricted use could no longer be tolerated.

During the late 1960s, several attempts were made to restrict use in the area. Twenty-five miles of trail were designated for use by motorcycles. Several hill climb areas were repeatedly closed and rehabilitated. Efforts were made to close many miles of poorly located and steep trails. All attempts at regulating use seemed to be in vain. At that time, there was no "off-road vehicle" policy in the forest, and no federal regulations to assist the administrators. Efforts to regulate use continued, but progress was slow.

During the summer of 1971, the first of many meetings was held by the Forest Service, attempting to find out how the public felt about off-road vehicle use on national forest land. All sides were heard from at these early meetings and all types of off-road vehicles were discussed. On February 9, 1972, President Nixon issued executive order 11644, which stated, "It is the purpose of this order to establish policies and provide for procedures that will ensure that the use of off-road

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vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various users of those lands." This executive order and the Secretary of Agriculture regulations that followed resulted in another round of public meetings, workshops, and listening sessions.

By 1975, the Forest Service felt there had been sufficient public involvement to make a concentrated effort to gain control of the area. An area of approximately 7,000 acres was designated as the Chadwick Motorcycle Area. Several meetings were held with the user and the nonuser groups, getting their input into the planning for the area. Basic understanding and commitment to the rules and regulations that were established were accomplished. The 7,000-acre Chadwick Motorcycle Area was closed to off-trail vehicle use with the exception of the five-acre area known as the "Trail Ride Area," and a two-acre area known as the "Sawdust Pile." Seventy-five miles of trails were designated for use within the area. Today, very few violations of the regulations occur.

On May 24, 1977, President Carter issued executive order 11989, which added an important section to executive order 11644. It gave special emphasis to the protection of public land from adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails, of the public lands, from off-road vehicle use. The two executive orders are the basis for the administration of the Chadwick Area.

Also, in 1977, construction was started on two camping areas. These campgrounds are basic in nature: toilet facilities, tables, and fire rings. There are no water nor are there garbage facilities. There is a plan to provide water some time in the future, but the challenge-camping (take home everything you come with) concept is used and has been very successful.

In 1979, there were as many as 800 visitors at one time, with 26,000 visitor day-use reported for the season. Use has continued to grow each season. Riders come from as far away as New Jersey and New York. The majority of the users come for a weekend; however, it is not uncommon to find users who have driven four hours, one way, to spend two hours riding the trails. They then load up their bikes and drive four hours back home. Chadwick is a popular spot for motorcycle trail riding.

The Chadwick story cannot be told without mentioning the lessons learned. Some of the most important lessons were:

1. Planning: Public input is a must in the planning of such an area. Users and nonusers both must understand what is to be accomplished. Total agreement is not necessary, but desirable.
2. Design: The setting is important. In the case of Chadwick it is a forest setting in the beautiful rolling Ozark mountains. Design of the trails and facilities should accommodate the user whenever possible to accomplish the objective of the trail. Challenge is important to the motorcycle rider, but discretion must be used. Proper location of the trails is important. Soil suitability is a high priority consideration in the location of any trail. Lay out and construct sufficient trails to accommodate the use allowed. Too few trails lead to difficult administration problems.
3. Administration: Post all regulations—federal, state, and local—so the user is aware of them. These should be posted where everyone will see them. Signing is important. Distinguishable trail markers and reassurance markers are necessary, but can be easily overdone. Maintenance is of utmost importance. There is no denying motorcycle use has an impact on an area. However, timely and proper maintenance helps to minimize this impact. Having a good administrator on the area during heavy-use times is important. The majority of the users will cooperate with the administering agency if they know what is expected. A good deal of the success at Chadwick can be given to one man who is interested, knowledgeable, understanding, and available to talk with the users.

Motorcycle riding is but one of the many outdoor recreation uses. Like any other recreation use, proper planning and design assist in the administration. The enforcement of all regulations is very important. How these regulations are enforced can spell the success or failure of accommodating motorcycle use on any area.



## RESEARCH NEEDS FOR MANAGING OFF-ROAD MOTORCYCLES

*Ray E. Leonard*

The use of motorcycles in off-road conditions has become increasingly popular. The off-highway motorcycle trend began in the 1960s with the use of street motorcycles. By the early 1970s a dual-purpose bike was developed for both back-country trails and paved streets. In 1972, trail bike riders were officially recognized by the federal government as legitimate users of public land. Advances in technology produced a lightweight, low-priced trail bike especially suited to the wear and tear of the back-country use; and this resulted in a surge of popularity for this type of recreation.

As this activity has increased, the need for positive management has become evident. Because of the extremely large number of riders, trail bike research must be approached in a rational manner. Negative practices such as blanket land closures, graveling every mile of trail, or confining bikes to one unmanaged area must be avoided.

To facilitate discussion of the research program to support management decisions on off-road motorcycle use, the following assumptions must be made:

1. The use of off-road vehicles (ORV)—in this case trail bikes—is a bona-fide dispersed recreational activity.
2. Planners with the U.S. Department of Agriculture and other agencies are concerned with managing land for a spectrum of activities.

Decision making requires research data, but the role of research in this process may be misunderstood. A good research program will provide information on the consequences of an event. In other words, research on trail bike use will not tell a manager or planner how many, where, or when. Rather, it will state what will happen when 500 trail bikes travel on a given slope, or cross a stream of given dimensions. Managers must then use this information to determine the appropriate level of use.

Although there is still a need for preliminary research on trail bike impacts, a considerable body of information has been

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collected from research on other activities, such as logging road stabilization and growth, and growth of plants under stress. This includes studies of both social and biological issues pertaining to trail bike use. Research findings are available that deal with various aspects of trail bike impacts, such as noise, pollution of water and air, fire hazard, soil and vegetation degradation, and conflicts between different types of back-country users. I believe there is a critical need at this time for a series of guidelines for managers that outline the consequences of different levels of trail bike use for given characteristics of a particular geographic area.

As a prerequisite for making decisions on where, how much, and when various dispersed recreation activities should take place, inventory information is required on the following:

1. Traffic patterns of current use in and adjacent to the area where management decisions are to be made.
2. Needs/requirements of user group.
3. Available land, funding, management personnel, resources.

This decision should be made on a site-by-site basis and should encompass other preplanned uses of the area in keeping with the proposed spectrum of activities to be offered. The geographic area, slope, elevation, etc., must be considered for each particular site along with soil and vegetative characteristics. The level and type of use and the general attitude of the users in the area are also important in management decisions. For example, managers need to know whether the majority of trail bike riders travel to a destination, such as a scenic viewpoint, or whether they are more interested in the challenge of the trail and riding fast. The attitudes of riders in different areas may range from indifference due to ignorance of the damage that can result from trail bikes, to respect for the environment, to remaining immune to the degradation although aware of it.

An approach to determining how much, where, and when trail bike activity on public land is to set or design a capacity and manage for it. This "design-capacity" system should assume that forest managers/planners will select their own management objectives for a piece of land. Objectives would probably include the type of recreational experiences that both managers and the public believe would be desirable for the area. Once objectives are selected, management costs of constructing and maintaining facilities for the selected recreational experience levels would be computed. If the costs exceeded the available budget, different objectives would have to be selected, alternative sources of funding obtained, or other sources of maintenance work found. To design a capacity, information will

be needed on the physical resource, management resource, and social constraints. Information is available at some level for the consequence of trail bike use under each of the following constraints.

Physical resource constraints. An understanding of the physical durability of land for recreational use requires a knowledge of the types, locations, and intensities of physical impacts by recreationists as well as the natural processes acting on the ecosystems. To quantify the physical impacts on a site, e.g., to express trail erosion as a function of physical-site characteristics and trail bike use, it is necessary to know: (1) the physical characteristics of the ecological land types; (2) the number of trail bikes that have been used or that are being used on the site; and (3) the types of physical change and the amount of change that has occurred with recreational use.

Initial development of the design-capacity system probably will measure only the primary impacts of recreationists on various ecological land types. Critical areas requiring intensive maintenance will be identified. With continuing use, some kind of monitoring system will have to be developed under the design-capacity system to ensure continued environmental protection.

As a result of our research in pedestrian use, some information is available on the physical resource. It is known that heavy use of any type will have severe consequences on some ecosystems. Also available, though not used widely, are techniques for monitoring changes in soil and vegetation from trail use.

Trail bike use can be allowed in two different forms in the back-country—along trails, or on a broad area basis. Use in a broad area basis means that although trail bikers may be confined to one large area, they are not confined to trails and are free to go where they wish. It seems that the best management practice in the east is to confine use to existing trails. This avoids unsightly areas of use on a broad area basis that offend other types of recreationists; and on a route system there are more scenic opportunities for the riders. Environmental advantages include the fact that the existing trails have already been compacted so they can be maintained and stabilized for further use without the added impact of establishing new trails.

Management resource constraints. To develop a system for determining management investment in time and costs, it will be necessary to determine the techniques that can be used to harden recreational sites to withstand increased recreational pressure. Inventories of time and costs resulting from past and current management procedures are needed.



Management methods may also be used to alter visitor use patterns. The time and cost required to implement these control techniques must be learned, and the effectiveness of techniques to regulate use must be tested.

Social constraints. Design guidelines must recognize the social desires of the back-country/wilderness visitors. A system for defining acceptable use levels and appropriate man-made facilities for a variety of recreational experiences should be developed. Current research findings on back-country/wilderness visitors' desires, environmental attitudes, and back-country use behavior can be used to help establish a variety of recreational experiences.

If trails and other recreational areas are managed in ways that do not meet user desires, they will not be used. Apart from the spectrum of recreational opportunities required for other types of users, trail bikers need a diversity of opportunities to satisfy various desires. Riders range from the casual visitor who finds the back-country an aesthetic place to ride in, to the competitive rider interested mainly in the challenge provided by the back-country. Thus, trails should have a varied terrain, from smooth, improved trails, to trails with rough and challenging terrain. The objective is to satisfy as many trail riders as possible while managing the area so that little environmental impact ensues and conflicts among different types of users are avoided.

Conflicts between citizens and the prejudice and emotionalism that surrounds trail bike use play a major role in resolving problems related to ORV use. The need of the traditional recreationist and the trail biker for space in which to realize particular goals creates a conflict that is even more difficult to resolve than that resulting from adverse effects on the land. Nonusers show hostility toward ORV users because trail bikes destroy the peace and solitude of the back-country for hikers and others, while the presence of nonusers does not seem to impair the experience of the trail bikers.

A body of knowledge on pedestrian user needs and desires has been developed by Forest Service scientists. Also, both university and Forest Service researchers have conducted studies on conflicts between dispersed recreation users. Some information is available on conflicts between those engaged in motorized and nonmotorized activities.

Initial research should be directed toward gathering current information and presenting it in a management guideline format. These guidelines could be used by managers to initiate trail bike management programs with rational decision making based on recreationists' desires, environmental protection needs, and budget limitations. The following are some planning



guidelines that could be developed from the design-capacity system.

1. Erosion control on trail bike trails.
2. Man-made facilities required to allow trail bike activities without irreversible degradation.
3. Facility cost for constructing and maintaining trail bike trails for different use levels.
4. Unobtrusive methods for managing trail bike activities.
5. Relative durability of different land types with regard to trail bike use.
6. Variety of recreational opportunities for trail bikers, indicating use levels and facilities needed to create the desired experiences.

In most cases, these guidelines would at the very least be applicable to back-country areas in the eastern and western United States.

It is important that decision making on ORV management include public involvement. The guidelines cited should be developed by task forces composed of public-land managers, user club managers, and researchers. The cooperation of industry, land managers, and trail bike clubs can lead to an effective education program, a prime tool for improving ORV management. Teaching riders to be aware of actions that cause environmental damage and those that impair the enjoyment of other back-country users can lead to a greater respect of trail bikers for others and for the environment.

Public involvement in decision making and educating the public about ORV management, namely design-capacity guidelines, will enable environmentalists, ORV users, and the general public to better understand the management constraints that accompany ORV planning. In using the design-capacity system as the basis for making decisions, managers will be able to generate the trust of both users and nonusers that is needed to convince them that decisions are being made not only to relieve public pressure, but also to ensure that trail biking does not degrade the environment or offend other types of users.

## SUMMARY AND CONCLUSION

### Snowmobiles

*Patrick West*

Our ultimate goal is to focus on solutions not the problems. I would like to narrow this summary by talking primarily about the solutions and interesting ideas that were presented in the snowmobiling session. Secondly, I want to restrict this even further to a major theme that came out of the snowmobiling session. And I would like to label that theme as the priority importance on behavioral change. I guess I may have picked that out because I am a sociologist and I selectively perceive what I wish; but I think it is a fair statement vis-à-vis the kinds of constructive solutions presented. Whatever the problems, it comes down to a behavioral change if we are going to achieve accommodation in the conflicts over these issues.

With that great theme, let me just run through a few items. I think we can categorize the two types of conflicts in terms of the biological impacts and in terms of the conflict between the snowmobilers and particularly the cross-country skiers. There was a lot of data presented in the snowmobile session about the biological impacts. First, the impact of snowmobiles on the environment is less than we often presume. When we look at the research carefully, the impact on soils and vegetation is generally quite minimal. The impact on water systems is pretty well unknown at this point but probably not too tremendous. The impact is probably greatest on wildlife. But even here, we have to notice that the degree of adaptation of the wildlife depends on the previous exposure they had to noise. This sort of thing is extremely important. A lot of wildlife are very adapted to this noise such that they do not pay much attention. There is less impact than we might suspect on first glance; however, there is an impact particularly when talking about the wildlife that are not adapted to these noise-making systems in the area.

One of the more interesting observations is that cross-country skiers have a more biological impact than the snowmobilers on the deer because the deer can predict where the enemy (snowmobile) is at all times because of the noise; where with the cross-country skier, they cannot. And so, the cross-country-ski impact on some of the wildlife may be more than it

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is with the snowmobilers. When it comes down to solutions—even when we are talking about a given range of biological impacts—the key solution presented was the need for behavioral change and behavioral control. In the Midwest and East where there are more trail systems for the snowmobilers, it is very important for the snowmobilers to stay on the trails. But how do we get the folks to stay on the trails?

Several important points were brought out in the discussion: First, the importance of grooming the trails. If a trail is groomed, folks are more likely to stay on them and not go off them as often. Second, there was a lot of emphasis on the importance of education concerning the impact on the ecosystems. These are not malicious folks. They are just folks who are doing it because they do not realize the impacts. We need to recognize more about the motivation of the snowmobiler and what he's really after. We have a stereotyped image that he's out there to just tool around, but as we are discovering a lot of snowmobilers are out there because they appreciate the natural environment. There is an appreciation of the natural world, and we can build upon that appreciation to link their appreciation with educational programs to help them realize that they can minimize the impacts on nature which they themselves wish to protect.

The third point that was brought out by several of the speakers was the need for policing the trails. This can be done, of course, through formal police enforcement but it also can be done through more internal social control processes whereby, for example, the snowmobile associations police themselves. And that is perhaps the most effective means of internal control.

Let us now turn our attention to examining the conflicts between the cross-country skiers and snowmobilers. The first thing that we notice from the presentation is the level of the rhetorical conflict between the two groups, rather than the intrinsic conflict over the noise. And one of the speakers was saying that a lot of this rhetorical-level conflict, which had been very characteristic in the early days of the conflict, is now declining; that the two groups are starting to understand one another quite well now. They are starting to realize that the cross-country skiers are realizing that the snowmobilers are indeed human and vice versa. This level of conflict on the rhetorical plane, the symbolic plane is declining and is not much of a problem anymore. But to the extent that it is still a problem, the importance of getting the two groups together to discuss the real issues of the conflict, which were listed as noise, fumes, and safety. The safety issue is considered the most important. We might have thought that noise would have been the most significant. Also, we might not have thought about the fumes as much of a problem; but as was brought out



by the gentlemen from the snowmobile agency, most snowmobilers are not aware of fumes being a problem. Again, educational efforts could have an effect on that aspect of the situation. Basically, there is a lack of awareness between the two groups as to what is bothering whom about what. If we can just get to the basic issues, then we can move toward solutions through educational programs. For example, if the snowmobilers were aware of this issue, they might be more willing to slow down as they passed the skier and kick out less fumes. If ways could be devised to get the folks to just be more sensitive to the other group through normal social etiquette, then a lot of the conflict on the trails would tend to diminish. I thought that was a very interesting point.

Sometimes you need to have both groups in the same corridors, sometimes on the same trail. If it is going to be in the same corridor, then at least separate the trails. If you can not do that, then it is important that both groups of users be aware that the other type of user is going to be there. And if they can have the expectation that they are going to meet the other type of user ahead of time, then this will help. It will help in terms of their watching out for the other and they will expect to see the other and hence will not be as shocked and annoyed by it. The importance of getting the groups together, whether we are talking about the land use planning issue, who gets what lands for what trails, or whether we are talking about zoning; whether we are talking about the biological impacts, the importance of getting the groups together to interact is of primary importance.

Bringing the groups together will first of all reduce the level of rhetorical conflict between the groups, and second, it will get each side to realize that they cannot have everything and that they have to start compromising. Getting the groups together is the key and it is critical. Some interesting variations on that were brought out by several of the speakers. One variation was not to bring the groups together in just a negotiating type situation, but to get them to work together on cooperative projects, such as eliciting the participation of the snowmobile association in an area to help prepare the track for a cross-country ski race. It is an excellent example of getting folks to work together in creative ways and going beyond the discussion stage.

Another major concern, as I mentioned before, is the importance of informal social control. I mentioned it before in terms of protecting the environment, but it is also important in terms of maintaining any kind of zoning system that exists. It is one thing to set it up; it is another thing to police it and enforce it. How do we get the groups to police themselves? An example of doing this was brought out by one of the speakers. A private cross-country ski club hired the head of the snowmobile



association to groom the trails. That lead to a sense of pride whereby he wanted to protect the groomed trails and therefore asked the snowmobile club members to help maintain the trails for the skiers. Again, through sort of an informal mechanism within the groups and getting them to work together, solutions appear and are much more effective than sort of imposing police-type enforcements.

There needs to be more of an understanding of what the different users need. One of the speakers mentioned that surveys were done in the West as part of their SCOPE planning process and it was found that user preferences were quite different. This helped in terms of designing trail systems that could be segregated in ways that were useful to each user group. There is a lot of concern about the possibility of closing the lands. And if we want to avoid closing lands, then we need to be more and more concerned about this behavioral change component. And if we can do some of the things that I mentioned, then we can minimize and ultimately perhaps avoid closure in many instances.

## FOUR-WHEEL VEHICLES: SUMMARY

*S. Ross Tocher*

It is rather obvious that with the engineering and computerized innovative industrial complex in the Western world, many things will be invented that will have great appeal to people. And one of them already in existence is four-wheel-drive vehicles. It was mentioned several times that there is a great diversity in these vehicles, evolving to a large extent out of World War II and the Jeep and moving on up to what we think of now as the Suburban. And that each of these has capabilities, but they all have specific appeals to people. It seems obvious to me that this kind of innovative, computerized industry is not going to stop producing these vehicles as long as they have appeal to people and as long as people will allocate funds for them. And as such, from a management standpoint, it is kind of an endless procedure that will go on for a long time in terms of responding to how these vehicles are handled.

Four-wheel-drives do fulfill that sense of adding a little bit of spice to one's life. It is one thing to ignore your social responsibilities by tooling down the highway at 80 miles an hour to get your kicks; so perhaps it is better for the public interest to do these things where there is less likelihood of hurting someone else.

There has not been much discussion about the absorptive effect on society to let some people get some of these things out of their system. Four-wheel-drives have the ability to do that. They have the ability to enable the person not only to seek a momentary peak experience, but also to let off a little bit of steam. And I do not think there is anybody here that does not get a kind of sensual jolt out of going over a little pump 60 miles an hour because your whole body responds and you feel a little bit different than you did when you started. More and more people are going to acquire these vehicles and they are going to look for places, particularly on public land, where they can engage in their use.

There seems to be a variety of explicit motivations when people engage in the use of four-wheel-drive vehicles on public land. The most obvious one is to test their own skills against the terrain; of finding that they can make the vehicle perform for them. Much of our discussion included ways in which trails

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could be designed to provide some opportunities for the person to test themselves in this way. There are other users, however, that do not necessarily fall into that motivation. There are individuals that use four-wheel-drive vehicles much more as a means to an end. They are the individuals that come closer in a value scale to the backpacker themselves. Many of you who have a responsibility to protect the national forests and public lands said that you enjoy four-wheel-drive vehicles. The editor of Backpacker Magazine, for example, said that he was both a four-wheel-drive owner and a backpacker. And I think this is very common throughout society that many people are using a four-wheel-drive vehicle to get closer to the environmental situation that they want to be in. And I suspect that if we were to look across society as a whole, the use of public lands as a place of providing an alternative escape for people will increase; and the four-wheel-drive vehicle is one means by which people will be able to go farther than they would otherwise.

The next point that I would like to present is that change is occurring in natural landscapes virtually constantly. It is a constant evolution, but the four-wheel-drive vehicle introduces an element which tends to speed up change. And I want to summarize for you the fact that there seems to be a considerable difference in the management strategies that had to be developed between looking at the physical changes that are introduced by the four-wheel-drive vehicle into that environment and looking at the diverse population of users that introduce a lot of what we might call depreciative behavior in that environment, such as vandalism, or garbage, etc. The impact of the physical change many times takes a long time to really understand in an ecosystem. Ecosystems are so complex, as was pointed out by Dr. Bury's discussion of the small kangaroo rat which when experiencing more than one decible of sound became semideaf for 21 or more days, making it susceptible to predators. This is information that is extremely difficult to gain. It is gained only after intensive research by someone who is very highly trained and it tends to lag behind (1) the innovative process of creating new vehicles; (2) the population's response to advertising; and (3) the appeal that the vehicle will give them. So, there is a time lag not only in management of the area, but also in terms of the research that is needed to study the implications of these things on the environment. And this becomes very apparent when you look at a fragile environment like the desert. Change occurs at such a fast rate that you do not even have time to do the research to find answers before the change becomes permanent. The lesson that I learned this morning is that it is very crucial when you are dealing with anything that can introduce change very rapidly for the manager to avoid any irreversible decision. I have much less concern about things that can be remedied by management practices, such as stopping erosion patterns or putting in water bars, because that is a different level.



There are many other questions and problems that were presented in terms of this biological (physical) change, but there are answers that we do not know and probably will not know for a long time.

The second point I would like to discuss is that people should not be stereotyped. I was impressed with Roger Clark's paper of the great diversity of four-wheel-drive vehicle users. There are always a few "bad apples" in any group. The point I want to make is that vandalism is a different management problem altogether. That is what was referred to as a people-management problem. It is not a vehicle-management problem. It is a fact that when there are a lot of people introduced into an environment, they tend to be gregarious and they tend to cluster into their own subgroups, and they follow the norms of that subgroup.

A few solutions to the people-management problems are to increase the environmental education programs, to increase the amount of contact with all the users, and to work out cooperative agreements with the agencies so that there are ways in which people begin to understand the different impacts that they are causing on an environment. I do not think that the problems derived from four-wheel-drive vehicles are much different from the problems derived from any other part of the recreational public. There is a lot of vandalism by backpackers, and for that matter, there is a lot of vandalism around any city park. I think the basic causes of vandalism are the same. There needs to be some type of enforcement.

Another point was brought up by the editor of Backpacker Magazine and it intrigued me as a major problem area in land management, that is, that there is a tendency to downgrade the psychological impact. It is very easy to emotionalize erosion on a hillside. It is very easy to emotionalize vandalism. And there is a tendency, particularly of advocates of four-wheel-drive vehicles and by agency personnel, to tend to brush aside the psychological impacts. It is much more difficult to manage the psychological impacts than it is for these first two. An example of the psychological impact is returning to what was a pristine windswept beach and finding nothing but plowed furrows from four-wheel-drive vehicles. I had that same experience at Cape Hatteras and it had a very negative psychological impact on me. It is very difficult to erase all those cues. But if I went back to Cape Hatteras now, I would not be as upset because I know what I am going to find. Therefore, if people know what to expect when they hit some of these areas, their expectations are met and the psychological impact is lessened. This seems to be a very important consideration in four-wheel-drive management, i.e., how can an agency manage the psychological impact from four-wheel-drives? One way would be through behavioral change.



Let me summarize briefly some of the suggestions that were made in terms of management techniques. One of the things that kept coming out again and again was that a national forest manager or public land manager or state forest manager has an extremely difficult job. They are subjected to a diverse set of expectations, and it is becoming even more difficult as management becomes more intensive. And as such, under the National Forest Planning Act any of you that are interested in a local area should attempt to take part in the public listening sessions and in the planning input that is going on now, because this will set the pattern in the trade offs that are going to be made. It is extremely important for those managers to have the input from all sides. Specifically mentioned, particularly from the four-wheel-drive-user groups, as being helpful were: (1) that there be an attempt to increase the information and education programs both by the agencies and by the clubs themselves; (2) that there be attempts to respond to problems in specifics, i.e., if there is a specific problem, then take an agency person to the site for confirmation and then cooperatively see what can be done to resolve the problem.

There was some discussion on the desirability of trading lands for two purposes. One, to make some lands more accessible near the metropolitan area, and the other was to coordinate as much as possible the use of trails that cross a track of land that has a diversity of rules and regulations, or establish an interagency task force to decide which rules and regulations were most appropriate and make them uniform. Where this is not possible, to try to make these rules and regulations available to the public, and to make sure that the boundaries are well marked. Relatively minor things, such as trying to provide better maps, would all increase the ability of the user to conform to what he probably wants to do anyway, and that is to enjoy his wildland experience and have the least impact on the environment. The long-term responsibility of the federal agency is to maintain the environmental integrity over a long period of time, and I think my own assessment of what this whole conference is all about is the beginning of some degree of cooperation between the users, the manufacturers, and the managing agency to do this.

## TWO-WHEEL VEHICLES: SUMMARY

*Kenneth J. Polakowski*

What I will do is reinforce some of the comments of Pat West and Ross Tocher because it is quite apparent to all of us that we are talking about all ORVs and that perhaps there is not that much of a difference among them.

I would like to organize my comments around four basic areas that seem to be the general organizational theme of our session. One is to look at the rider. The next area is to look at the machine itself, and the resource that the machine uses, and finally, a couple comments about management and planning.

I am quite impressed with the sessions and I come away from them optimistically, not pessimistically. I thought that I would hear a lot about the environmental impacts, but I suspect that there was less talk about environmental impact in the two-wheel session than in the snowmobiling session or in the four-wheel session. The comments related to the resources was this, there were a few statements about erosion, about the impacts on soils, and about soil compaction. Apparently there was a gentleman from the U.S. Geological Survey who made a presentation and one of the speakers in the session used this opportunity to rebut some of his statements. Once there was a counter-rebuttal, then there was a sense of agreement. There was a recommendation in the discussion period that there should be some leadership when looking at the resources on how to determine carrying capacities and standards. And that the criteria for what is being used by the planners throughout the U.S. lacks credibility, and what is used to predict impacts to the resources needs some leadership. That leadership could come from the DOA. It was also mentioned that this leadership should relate to regional characteristics, and not to make it so broad and general that it cannot be used in specific regions.

People from the MIC predicted that we are looking for private lands to become more available in the future thereby decreasing the pressure on public lands, that this will not happen. That the pressure on public lands is likely to increase and that private enterprise does not see this as an opportunity to make any profit. A few people indicated that the pressure for public lands is likely to continue at a greater rate near the urban

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areas or closer to our metropolitan regions. And it may not be in the boon docks, but in the forgotten kind of land between the center city and some of the suburban satellites in that zone.

There was a lot of discussion about the rider, and I think this is similar to what we have heard from Pat and Ross. In fact I think every speaker explicitly or implicitly said this is where some of the solutions must come from; they must come from the user. The manufacturers indicate that they are trying to develop a responsible user of the two-wheel vehicle through educational programs. In fact, responsibility as a term came up again and again. We need a responsible user. We need to develop a user that is knowledgeable. We have to develop a user that has a correct or proper attitude toward the resource and we have to develop a user that has the ability to handle the machine in the way that it was meant to be used, because knowledge, attitude, and ability determine impact on the resource. When you think of change of behavior and attitudes you are surely thinking of education—education of the user. A term that can be used is the creative-activist approach, where the user must become part of the planning and managing of the resource. This can take place at the organization level of the rider groups. It was suggested that the cooperative extension agency could play a greater role in the training and education of ORV users. I would like to see that suggestion carried out, but carried out at the local level. A member of the DNR from Michigan suggested that no matter what kind of educational programs you have, you need to have designated areas where one can train, one can educate, and one can use the ORV property, because it is very difficult to get the user out to some of these programs.

Let me present a few comments about the machine. Apparently predictions are that use of the off-road vehicles will continue to increase much more. In fact, one comment was that off-road technology is providing changes for on-road vehicles and it is being used as a model for on-road changes. So we see a shift to the outdoors, to off-road vehicles and that means that there is going to be more and more pressure for land. I came away from the meeting believing that it is very difficult to have multi-user trails and that we are going to see more of a specialization in trails to meet the specialization of these vehicles.

There appears to be a need for discussions among agency personnel and the manufacturers of ORVs. Some of the speakers said that the retailers and the manufacturers have no sensitivity whatsoever to the resource issues and problems. From what I gathered in the meeting, I do not agree with that statement. I think there is a sensitivity, but they have a different kind of approach and a different kind of role to handle that. I think that if the sensitivity is going to increase, then there must be cooperation among the agencies and manufacturers.



Questions and Answers

Russell Shay (Sierra Club): How much of a commitment is the USDA going to give to dealing with off-road vehicles as a part of its recreational program?

Rupert Cutler: I might as well get this off my chest now and spend the next hour or so defending it. As the person who asked that this conference be held and implicitly made the decision that USDA resources should be devoted to this effort, I believe it represents public resources well-spent. I would especially like to thank Barry Flamm and Peter Smith of our USDA Office of Environmental Quality, Pete Andrews of the School of Natural Resources, The University of Michigan faculty for their leadership in coordinating this conference, and of course, we are indebted to all of you for your essential contributions to its success. Those of us responsible for distilling the useful essence of the wisdom from these presentations will meet again soon after we have had some time to reflect on what has been said here and to explore in a more reflective way how the USDA can put it into use. But I am not sure we can and in many ways. The accomplishments of this conference include the identification of a community of interest, some 50 or 60 people with widely varying perspectives and concerns, but with a common interest in the management of off-road vehicles and snowmobiles. A community of interest to whom we can turn in the future for advice. And I assure you we will turn to you again. I assume you will pursue also, on a one-to-one basis, communication with persons you have met for the first time here. And if we have only served as a catalyst to initiate such communication across groups and interests and among individuals, then this conference has had a useful payoff.

By now everyone here is well aware of the fact that the USDA Forest Service cannot meet every demand on the national forests and that its bottom-line duty is to protect the long-term productivity of the land resource as a trustee of present and future generations of Americans. And you know we have presidential executive orders on this subject to implement, and there is no question but that we are less than perfect today with respect to our implementation of those orders.

Summarizers Pat West, Ross Tocher, and Ken Polakowski have done an excellent job of pulling together the threads of our conversations over the past two days and I will not try to rehash that. We will in the days ahead compare the questions I posed in my keynote address with the answers you have provided and I expect that we will be able to fill in most of the blanks. A few words can say a lot: "They're going to use their machine somewhere because they bought it." That kind of stopped me for a while. It seems to be pretty true. Plan for them, don't ban them. That is reasonably good advice. From another group we heard: "We are



guests of the environment. Use of public lands is a privilege, not a right." We did find many areas of agreement, including the conclusion that we have enough statutes, and executive orders, and regulations now and that what is needed is totally satisfactory implementation of that policy direction. Some include sound forest service manual instructions to the field; thorough analysis of off-road vehicle impacts and environmental impact statements, particularly the EISs we will be doing on the new generation of national forest land management plans, rehabilitation of areas that have been harmed by improper ORV use in the past.

We have also heard over and over again about the need for education or behavioral modification of the ORV user. One approach discussed involved the use of cooperative extension systems and especially the opportunity offered by the new Renewable Resources Extension Act—a source of earmarked federal funds for recreation extension-education programs by land-grant-university-extension specialists.

What should the USDA do now. It already urges everyone to participate in the national forest planning process and, as was pointed out, speak now or forever hold your peace, at least for ten years. You will not have standing to appeal the draft, you will not have standing to appeal the final national forest management plan if you do not participate in the planning process, if you are not on record as a participant early on. USDA offers the output of its recreation research experts. It provides soil conservation service soil-survey data, interpreted for use in determining the suitability of sites for ORV use. It offers the cooperative-extension system as an educational medium, but obviously more must be done. Most of it will be done on a decentralized basis. That is the way the USDA operates—cooperation between agencies and user groups as the need arises; consistency, for example, between jurisdictions with respect to sign posting of off-road-vehicle opportunities and boundary marking. But some additional centralized attention should be given to the USDA's responsibilities in this area until we are sure all is well in this field. Therefore, I am asking Tom Nelson of the Forest Service, Paul Howard of the Soil Conservation Service, and Barry Flamm to work together to establish immediately an ORV site-review team made up of specialists in ORV recreation, soil capabilities, ecological impacts, mined land rehabilitation, and other relevant expertise. Perhaps it will be a short-lived group. I hope it is. But I want it to take to the field soon and study those relatively few sites where serious adverse ORV impact is alleged and to prescribe the remedies; then we will remedy those bad situations. Beyond that we will support whatever continued cooperation and communication is felt needed among all of us in the years ahead.

I want to sincerely thank all of you for your help in this conference. Let us proceed now to additional questions, answers, and suggestions and we will continue to take notes and take them back to Washington.

A. E. Kier Nash: I get the impression, perhaps it's wrong, that you were still saying, in effect, that executive order 11989 requires you to consider solely the ecological cost and not to proceed which we do with most forest resources and consider them as a balance benefit to cost. I think I detect that in your suggestion for the formation of a committee and the type of person you think should be on it. And so my query is whether such a committee should not include people that are inclined to look at the nonecological impact?

Cutler: I think we are talking about two different committees. I think we have a job out there to do in a fairly short-term way and in a fairly narrow set of sideboards with respect to its responsibility. We have some sites that I am talking about right now. What you are talking about is the essential responsibilities of the interdisciplinary team, national forest to national forest, to look at the benefits to society as well as the environmental situation in which these kinds of activities will be pursued. Obviously, the recreational benefits of these programs will be part of the equation.

Nash: I have heard throughout this conference a lot of calling for educational activities, and having worked in that field for the last twenty-five years, I hope that at some point in time we bring together some educators to be with you. There are some ideas that could be derived from a group like that which would be very beneficial. I have heard several things here that would be excellent in my estimation, such as the introduction of some materials available for driver training and all the off-road-vehicle ideas; and I think some educators could carry new views and vistas on this even in dealing with particular sites. You can get educators from the local areas to deal with you on how the education might best be dealt with.

Cutler: Thank you. I agree, and we are all aware of the educational programs conducted by state agencies and small boat handling and gun safety. There is no reason why that nucleus of training officers, if you will, in the state agencies as well as the driver-training people in public education could not be included in this program. I think we need to do that.

Comment from audience: I think ORV probably would relate most closely to science teachers. But there has been a new movement in environmental education to be concerned about multidisciplinary material. And I think if some of these materials are well-done, teachers are hungry for creative current materials, and I think they could be effective in reaching a large number of

students. I do not think that we should overlook the mass media either. Perhaps that is a place for cooperation between the education agencies and the manufacturers and user groups. I think that could be effective.

Cutler: Let me tell you how this conference really began. I happened to sit next to a vice-president of the American Motors Corporation at the AMC conservation awards program in Washington about a year ago. I was talking to him about their television ads showing jeeps leaping off cliffs and you know a hell of a long way off-roads. And I said why don't you tame those vehicles a bit and don't encourage people to do that. It is dangerous as well as harmful to the environment. He said, well we pulled those ads and we have more appropriate commercials today. We went on to talk about the need for a meeting like this and that is why we are here today.

Kevin Keirney (American Motorcycle Association): In regards to the committee that you are setting up to review certain ORV sites, and I am the first to admit that there are areas in this country that are over-used, under-managed, improperly designed, I ask you what type of management are you going to apply; either you have the money to fix the site or you have the ability to close it, and planning, not banning is the only reasonable alternative and closures are not acceptable. So if you are talking about fixing the sites, then the question is where is the money going to come from? If there is no money, some of them will have to be closed.

Cutler: Well, I think we are talking about both. We have a responsibility to prevent a situation and to rehabilitate and revegetate sites on the national forest regardless of the causes of the degradation, whether it was overuse by horses, or hikers, or bad timber sale operation, or whatever was the cause, we have an obligation to restore that site. So in this case the answer to your question is probably both. There may be some that should be closed for whatever reason, but I would assume that most of them might stay open. They might be hardened in some way or more resources might be devoted to their management, such as in the case of Ballinger Canyon—an obvious example where hill climbing was improper but enduros may be appropriate. So it is just a matter of getting a better fix on what is appropriate and what is not and a more responsible, more intensive look at the opportunity. We are not going into it assuming that they will all be closed or that they will all stay open. But that is why we will have the mix of expertise on the team.

Phil McNally (Tennessee Valley Authority): The committee that you are setting up, will that be strictly an internal committee or will you include folks like Russ Shay from the Sierra Club and David Sanderson from the motorcycle group?



Cutler: Let's talk about that. We have some real problems in the federal government in setting up an advisory committee that falls immediately under the purview of the advisory committee act. That act requires all kinds of bureaucratic, excuse the expression, nonsense in terms of White House clearance on all advisory committee personnel. We really do not want to get that complicated with this committee. Obviously, we would call on people with expertise in the local area and the industries' expertise; but I think what you are referring to is the need for some continuing liaison with a committee with a broader mission. And if some of my colleagues would like to take that idea further and suggest what would be the most appropriate way, federal, state, local, industry, conservation group, committee, or USDA, USDI committee, I think it is the kind of thing that we will want to explore in the days ahead and not rush into something right now.

Bob Rasor (American Motorcyclist Association): I would like to explore Dr. McNally's query a little more. You know I have the greatest confidence in the Forest Service's ability to bring the type of personnel together that is necessary to do that job. However, the observation that I made yesterday and the question I ask now is, does the Forest Service have on their staff the personnel that are familiar with the vehicle or use it themselves?

Thomas Nelson: I do not know just how many people we have in the outfit that fit your category, but I am sure that we have some. I think that we have some that are acquainted both with the resources and the user aspects and from participating in the sport. But I am not sure that we can find those types; some of those type of people internally.

Rasor: They would be on the team then?

Nelson: I think that, as Dr. Cutler stated, it is going to take a little thought as to the composition of the team to try to get the necessary disciplines together and the proper mix.

Cutler: If we have those people on the staff, then we will use them.

David Sanderson (New England Trailriders Association): When you mention advisory committees, the group that immediately springs to mind is the National Forest System Advisory committee which is a national official existing advisory committee. I wonder if you have had any thoughts of involving them in this total process?

Cutler: I had not, but it is a valid suggestion. Their next meeting is in about a month and it could very well be on their agenda. Incidentally, I am apologetic about the administration's decision to abolish all the advisory committees, including the



White Mountain national forest advisory committee which continues to meet despite the fact that the president said it was dissolved.

Mr. Shafer (Four-Wheel-Drive Association): In your statement you imply that we may have enough statutes, executive orders, and other directives. I would like to pursue that point. Do you foresee anymore executive orders, any significant legislation aimed directly at off-road vehicles and their management?

Cutler: No I do not. I tended to suggest that we need to get about implementing what we have. Making sure that multiple use act and national forest management act, national environmental policy act, and the executive orders are appropriately followed. And any further direction from on high in that regard, in my opinion, would be overkill. We have enough of that. I said the other day, that the 70s were the decade for planning, the 80s ought to be the decade for action.

Derrick Crandall (International Snowmobile Industry Association): I would like to make a comment first of all because you may not have been here when we expressed very strongly for more testimony. Now we believe the Forest Service has done an admirable job in implementing the executive orders as they pertain to snowmobiles and perhaps we have been deaf in our listening over the past two days. We certainly have not heard any evidence that would suggest that snowmobile use on Department of Agriculture lands would qualify as one of the most significant issues facing the Forest Service. We do have two suggestions that we would like to have you entertain. The first would be that in February of this year, the Forest Service joined with the National Nordic Conference and our organization in cosponsoring a winter-trails workshop, and we brought together from throughout New England a wide variety of people who had an interest in winter trails. We would like to suggest that that series of suggestions that was envisioned at that time be given the full support of the Department of Agriculture and Office of Environmental Quality. The second suggestion involves a project that is related to that. We think that in the upcoming decade there will be an increased need for the Department of Agriculture to provide an umbrella to coordinate the actions of state, of counties, of local municipalities as well as organized recreation groups. We feel that there is a tremendous need to pursue and develop a winter-trail development manual, an operation manual that will be a natural outgrowth of a series of these in which the cross-country ski community and the snowmobile community would plan cooperatively. We would like to solicit your support and your help in carrying this out.

Cutler: Pending my review of your proposed budget for your conferences, I accept cosponsorship of the trail conferences. I would like to expand upon your suggestion with respect to manuals for trail design, construction, and maintenance and suggest that that is needed not only for winter activities, but also for bikes

and four-wheel-drive vehicles. It seems to me one of the great frustrations of the users must be inconsistency across jurisdictions with respect to trail locations, construction signs, and appropriate uses, and I think we need to work with all of the associations on more specific guidance to the field and do that in cooperation with state agencies so that there is federal-state consistency.

Question: Are you indicating that there is some commonality among the various winter trails that are used?

Crandall: I think we have heard this morning in our session, and of course having gone through a process of evolution in the last two years when the myth of skier-snowmobiler warfare has been exploded by reality at the grass-roots level and at the national level as well, that there is a great deal of commonality not necessarily in terms of the shared tread way, but in terms of the access to the forest lands, the parking lot, the trail heads, and the planning and the administration. What we have also found is that interest in nordic skiing and snowmobiling has increased greatly over the last decade. A decade in which perhaps the budgetary process has not provided additional recreational resources at the grass-roots level to account and to provide for this increase in utilization. So I think that I can say that the National Nordic Conference which is an umbrella structure representing a large variety of nordic ski enthusiasts shares our concerns and many of our goals and therefore is an active cosponsor in the conferences and would be an active cosponsor and coauthor of the winter-trails manuals that we are suggesting.

Cutler: It might be logical to suggest that there must be a dozen to twenty different associations represented in this room—manufacturers, associations, conservation groups, and so forth—and as you schedule future national meetings you may want to follow up this conference by inviting people from other associations that you have met at this conference to talk with you at your particular association meeting so that the communication across associations continues. For example, at the Range Management Conference that we sponsored a year ago, we got the ball rolling with respect to communication across a variety of groups interested in range. A year later when the Professional Society of Range Management convened, they asked me and others who were involved in the ad hoc meeting a year earlier to report on what progress had been made in the year that had lapsed since the initial conference. It seems to me that in the months ahead we might want to continue to reflect on the suggestions made at this conference and on how well all of us are going about responding to them.

Mary Alice Bivens (State Liaison Officer [SLO] for the State of Arizona): I would like to echo a couple things that you said

and also what I hear from user groups or users of the resources. Being responsible for the Statewide Conference on Outdoor Recreational Plans in various states, the SLOs have the responsibility and I think would like to take on the greater responsibility of being a liaison between these kinds of things. There are many aspects of what I have heard in the last two days that need to be incorporated into statewide comprehensive outdoor recreational plans. I would pledge to the Forest Service that we, particularly in Arizona—and I think I can say for all of the SLOs—that we would want to do a better job of coordinating the kinds of things that you are talking about here, so that the things that are mentioned in the SCORP, the things that are important to us as we go about planning for all recreation on a statewide basis include the various kinds of things that you have articulated here in the last two days.

Mr. Leach (California Association of Four-Wheel-Drive Clubs): How long do you expect before the summarization of the meeting is out? And would it be possible to include the names and addresses of all the panel members in the publication?

Cutler: I cannot give you a precise date on the proceedings, but we will see to it that everybody soon gets a copy of the list of participants.

Allen Isley (Motorcycle Industry Council): The team that you are going to assemble to look at these seriously impacted sites, I wonder if you should perhaps expand that team's exposure to some sites that are working well; perhaps have them look at areas in the Forest Service or some other demonstration projects that might give that team a little bit more balanced knowledge of places that do not work and places that do work, so that then that team could provide an on-going source of information about ORV activity, bad and good. Right now it looks like they are going to see just the bad.

Cutler: I would like to very much and we might start with good. Let us assign a photographer to the team and produce something by way of a publication at the end that will provide our experience. We will do it.

Bruce Bury (Fish and Wildlife Service): One of the most serious things that we lack is a continual monitoring program. If people are going to set up real ORV areas, it would be really nice if somebody would go in there and do the wildlife survey first, not last which seems to happen all too often. I think that should be part of your long-range monitoring system because a lot of wildlife populations fluctuate every year and you are going to have to have long-term analysis of these population decreases.

Cutler: I agree and that is a piece of baseline data that is essential.



Question: I wonder perhaps if it might not be useful for the group if some of the materials that we have talked about in the two-wheel session could be reiterated, regarding the National Forest Management Act and the very extensive and detailed inventory and planning process that is going on under the act? When that first phase of planning is completed we will have more information on the national forest land base and wildlife and everything else that we have ever had before.

Cutler: The key ingredient in that important statement is that each forest supervisor from the 154 national forest and grasslands is now also an interdisciplinary team leader responsible for pulling together eight or ten disciplines backed up by other staff at the regional level, possibly at the national level, to produce a truly comprehensive and sophisticated integrated land and resource management plan for his national forest. The opportunity exists now and for not very much longer to get in at the beginning of that planning process because all of those plans have to be completed by statutorily mandated date of 1985. We hope to have most of them done by 1983. Some of the plans are practically done now, the so-called pilot forests, one in each region, and many will be completed in 1981 and 1982. So please get on board.

I apologize to you in advance about what will begin to appear to be a telescope time frame for this planning process, but it is mandated by Congress to get this done by 1985 and so we work backward from that date. There are only a certain number of forests that can be done at one time because there is a need for some kinds of expertise and we only have a few individuals who are qualified so they have to go from one forest to the next to the next. So these plans are really going to begin to pile up on us here and in the regions that you are particularly concerned about. Get the time table from the regional forester as to the sequence of plan deadlines and please contribute as much as you can to that process.

Question: I really hate to ask this question, but do you have any Congressional updates and how you perceive or the agency perceives the Congress is likely to go in the next month or two or three or whatever?

Cutler: In the State of California vs. Burgland lawsuit that was filed in the eastern district of California federal district court, alleging violations of NEPO, the National Forest Management Act, and the Multiple Use Sustained Yield Act by the RARE II process, the judge did not get beyond NEPO. The federal district court judge found three violations of NEPO. He determined that we had not provided an adequate array of alternatives in the draft environmental statement, that is to say that we went from 100 percent of those 3,000 areas to 37 percent without any intermediate proportion. The judge determined that we had not



provided adequate public involvement. That really stopped us, because we had 360,000 comments for the record. But it is a fact that we did not distribute widely the final environmental statement which gave the proposed action, that is, the final allocation of areas to wilderness, further planning, and non-wilderness. It was distributed to governors and members of Congress and forwarded to the interagency review process to the president. Despite the fact that we took explicit cognizance of every one of those 360,000 recommendations as to which of those three categories each of those 3,000 roadless areas should be allocated and we can give you the proper trail on everyone of them—the judge found that we should have produced a supplemental draft environmental statement with our proposed action embodied in it and distributed that again for another round of broad public comment before we went to the final environmental statement. Some people have suggested that this opinion sounds the death knell to the programmatic EIS. Be that as it may. The third problem with what we did was, he felt, we did not provide enough information on the wilderness values of the areas we allocated to nonwilderness. Well, that was something like 2,000 areas or more. And if we provided a couple of pages of data on each one of those, for the most part, was in the forest supervisors' files, what kind of environmental statement would we have had? We have appealed that decision, that is to say, that department recommended that it be appealed to the Department of Justice. The assistant attorney general has recommended to the solicitor that it be appealed.

Have we heard what the justices final decision was? I expect that decision to be appealed. We have filed notice with the 9th Circuit Court. We expect to appeal. So we filed a notice of intent to appeal, and I expect that that will proceed and that will take a year, or two, or three to go through the courts. Meanwhile, I hope that the Congress moots the impact of that legislation by proceeding to pass, on a state-by-state basis, legislation that both designates wilderness areas out of the set we recommended—perhaps minus some that Congress disagrees with—plus some that others want to add, which gives us direction as to what to do with the wilderness areas we propose. We cannot do it without Congressional direction, but we can turn them into other uses after a planning process identifies their best alternative use.

As of last week, when I testified before the Senate Energy and Natural Resources Committee on the Colorado RARE II Wilderness Bill, I said that I personally favored an additional section of language in this wilderness bill that indicates that the Congress believes that our RARE II EIS was sufficient from the standpoint of the requirements of the National Environmental Policy Act so that we will no longer find ourselves subject to being overturned by litigation alleging a breach of duty. This is a big argument that is between all the typical camps on this sort of

thing, that is, whether there should be so-called release language or not. I do not like that terminology. I insist that if we adopt some language that, in effect, returns us to the status quo before that California decision, that it contains a provision that the land that will be used for purposes other than wilderness now will, to the extent that it is still suitable for wilderness review, be available for wilderness review again upon revision of the National Forest Management Plan. The reason I feel this is important is because much of this land that we have recommended for wilderness, whether it is designated wilderness or not, will be found upon economic analysis, not to be worth developing, not to be worth the cost of investing to improve it. It is, for the most part, non-productive land in many respects, and therefore, much of this land may be still suitable for wilderness review a decade hence, so I object to permanent nonwilderness release.

I believe that in order to permit the Forest Service to proceed with its nonwilderness allocations and to permit industry to count on the availability of the raw materials from those nonwilderness areas, that we do need a very brief language, very narrowly constructed, that indicates that those nonwilderness decisions of the president cannot be overturned in court on the basis of alleged NEPO violations. As far as the progress of the RARE III legislation is concerned, we have a central Idaho bill that establishes a 2.2 million-acre central river of no return wilderness and a large bitterroot wilderness, and that has passed the Senate and reported by the House committee. We have a Colorado RARE II Wilderness bill that has passed the House and has been heard by the Senate committee. We have an Oregon RARE II bill that has passed the Senate, and I think House hearings have been heard. There are other bills having to do with Florida, Mississippi, Pennsylvania, North Carolina, and Georgia, that are pending. I think we are going to see some bills passed in this Congress and quite a number passed in the next Congress. But it is a tedious process and I expect it will take four to six years just to work its way out through the Congress.

I think you all understand that RARE II was begun not as a wilderness program alone, but as an attempt to allocate 62 million acres of roadless land to its best use, and that is to say that, until we knew the relative value of wilderness of each of these 3,000 roadless areas from one to three thousand, it was hard for us to react to proposals that came to us from the outside that said these areas ought to be wilderness. We did not know how they rated among the universe of wilderness potential areas in the national forest system. Now we know. Now we can act appropriately and now the 36 million acres of nonwilderness can be used for a variety of purposes, ranging from very extensive research areas, wildlife habitats, range improvement, a little bit

of improvement for facility-oriented recreation, timber management, mining, whatever is ecological on that piece of landscape. But it does not mean the polarized contrast between wilderness and intensive development. It means between wilderness and the other 95 percent of the spectrum of uses from extensive to intensive on a national forest system. It is not a ruse to cut big and drill, as Business Week described it one time.

Thank you all for coming, and I think it has been a very worthwhile conference.

## APPENDICES



OFF-ROAD VEHICLE USE AS A  
MANAGEMENT CHALLENGE

March 16-18, 1980

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Clearwater	Orofino
Idaho Panhandle National Forests	Coeur d'Alene
Coeur d'Alene	
Kaniksu	
St. Joe	
Nezperce	Grangeville

Montana

Beaverhead	Dillon
Bitterroot	Hamilton
Custer	Billings
Deerlodge	Butte
Flathead	Kalispell
Gallatin	Bozeman
Helena	Helena
Kootenai	Libby
Lewis and Clark	Great Falls
Lolo	Missoula

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National forests included in this region are:

Colorado

Arapaho-Roosevelt	Ft. Collins
Grand Mesa-Uncompahgre	Delta
Gunnison	Delta
Pike-San Isabel	Pueblo
Rio Grande	Monte Vista
Routt	Steamboat Springs
San Juan	Durango
White River	Glenwood Springs



## Rocky Mountain Region (continued)

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Samuel R. McKelvie

Chadron

South Dakota

Black Hills

Custer

WyomingBighorn  
Medicine Bow  
ShoshoneSheridan  
Laramie  
CodySouthwestern Region  
517 Gold Avenue, SW  
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National forests included in this region are:

ArizonaApache-Sitgreaves  
Coconino  
Coronado  
Kaibab  
Prescott  
TontoSpringerville  
Flagstaff  
Tucson  
Williams  
Prescott  
PhoenixNew MexicoCarson  
Cibola  
Gila  
Lincoln  
Santa FeTaos  
Albuquerque  
Silver City  
Alamogordo  
Santa FeIntermountain Region  
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IdahoBoise  
Caribou  
Challis  
Payette  
Salmon  
Sawtooth  
TargheeBoise  
Pocatello  
Challis  
McCall  
Salmon  
Twin Falls  
St. Anthony

## Intermountain Region (continued)

Nevada

Humboldt	Elko
Toiyabe	Reno

Utah

Ashley	Vernal
Dixie	Cedar City
Fishlake	Richfield
Manti-La Sal	Price
Uinta	Provo
Wasatch-Cache	Salt Lake City

Wyoming

Bridger-Teton	Jackson
---------------	---------

California Region  
 639 Sansome Street  
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National forests included in this region are:

California

Angeles	Pasadena
Cleveland	San Diego
Eldorado	Placerville
Inyo	Bishop
Klamath	Yreka
Lassen	Susanville
Los Padres	Goleta
Mendocino	Willows
Modoc	Alturas
Plumas	Quincy
San Bernardino	San Bernardino
Sequoia	Porterville
Shasta-Trinity	Redding
Sierra	Fresno
Six Rivers	Eureka
Stanislaus-Calaveras	Sonora
Big Tree	Nevada City
Tahoe	

Pacific Northwest Region  
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National forests included in this region are:

Oregon

Deschutes	Bend
Fremont	Lakeview
Malheur	John Day
Mt. Hood	Portland
Ochoco	Prineville
Rouge River	Medford
Siskiyou	Grants Pass
Siuslaw	Corvallis
Umatilla	Pendleton
Umpqua	Roseburg
Wallowa-Whitman	Baker
Willamette	Eugene
Winema	Klamath Falls

Washington

Colville	Colville
Gifford Pinchot	Vancouver
Mt. Baker-Snoqualmie	Seattle
Okanogan	Okanogan
Olympic	Olympic
Wenatchee	Wenatchee

Eastern Region  
 633 West Wisconsin Avenue  
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National forests included in this region are:

Illinois

Shawnee	Harrisburg
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Indiana and Ohio

Wayne-Hoosier	Bedford
---------------	---------

Michigan

Hiawatha	Escanaba
Huron-Manistee	Cadillac
Ottawa	Ironwood

## Eastern Region (continued)

MinnesotaChippewa  
SuperiorCass Lake  
DuluthMissouri

Mark Twain

Rolla

New Hampshire and Maine

White Mountain

Laconia

Pennsylvania

Allegheney

Warren

Vermont

Green Mountain

Rutland

West Virgin

Monongahela

Elkins

WisconsinChequamegon  
NicoletPark Falls  
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AlabamaAlabama  
William B. Bankhead  
Conecuh  
Talladega  
Tuskegee

Montgomery

ArkansasOuachita  
Ozark-St. FrancisHot Springs  
RussellvilleFloridaApalachicola  
Ocala  
Osceola

Tallahassee



## Southern Region (continued)

Georgia

Chatahoochee-Oconee

Gainesville

Kentucky

Daniel Boone

Winchester

Louisiana

Kisatchie

Pineville

Mississippi

Bienville

Jackson

Delta

DeSoto

Holly Springs

Homochitto

Tombigbee

North Carolina

Croatan

Asheville

Nantahala

Pisgah

Uwharrie

South Carolina

Francis Marion-Sumpter

Columbia

Tennessee

Cherokee

Cleveland

Texas

Angelina

Lafkin

Davy Crockett

Sabine

Sam Houston

Virginia

George Washington

Harrisburg

Jefferson

Roanoke

Alaska Region  
Federal Office Building  
P.O. Box 1628  
Juneau, Alaska 99801

National forests included in this region are:

Alaska

Chugach  
Tongass-Chatham  
Tongass-Ketchikan  
Tongass-Stikine

Anchorage  
Sitka  
Ketchikan  
Peterson

Mailing Address for Bureau of  
Land Management

State Offices

Bureau of Land Management  
555 Cordova Street  
Anchorage, Alaska 99501  
(907) 277-1561  
FTS 399-0150

Bureau of Land Management  
Federal Building  
2400 Valley Bank Center  
Phoenix, Arizona 85073  
(602) 261-3873

Bureau of Land Management  
Federal Office Building  
Room E-2841  
2800 Cottage Way  
Sacramento, California 95825  
(916) 484-4676  
FTS 468-4676

Bureau of Land Management  
Room 700  
Colorado State Bank Building  
1600 Broadway  
Denver, Colorado 80202  
(303) 837-4325

Bureau of Land Management  
Denver Service Center  
Building 50  
Denver, Colorado 80225  
(303) 234-2329

Bureau of Land Management  
Federal Building, Room 398  
550 W. Fort Street  
P.O. Box 042  
Boise, Idaho 83724  
(208) 384-1401  
FTS 554-1401

Bureau of Land Management  
Eastern States Office  
7981 Eastern Avenue  
Silver Spring, Maryland 20910  
(301) 427-7500

Bureau of Land Management  
Federal Building and  
U.S. Courthouse  
222 N. 32nd Street  
Billings, Montana 59107  
(406) 657-6461  
FTS (406) 585-6462

Bureau of Land Management  
Federal Building, Room 3008  
300 Booth Street  
Reno, Nevada 98509  
(702) 784-5451  
FTS 470-5451

Bureau of Land Management  
U.S. Post Office and  
Federal Building  
South Federal Place  
P.O. Box 1449  
Santa Fe, New Mexico 87501  
(505) 988-1217  
FTS 474-2455

Bureau of Land Management  
729 N.E. Oregon Street  
P.O. Box 2965  
Portland, Oregon 97208  
(503) 234-4001  
FTS 429-4001

Bureau of Land Management  
Federal Building  
125 S. State  
P.O. Box 11505  
Salt Lake City, Utah 84111  
(801) 524-5311  
FTS 588-5311

Bureau of Land Management  
Joseph C. O'Mahoney Federal  
Center  
2120 Capitol Avenue  
P.O. Box 1828  
Cheyenne, Wyoming 82001  
(307) 778-2326  
FTS 328-2326

Bureau of Land Management  
Washington Office  
18th & E Streets, NW  
Washington, DC 20240  
(202) 343-3801

Note: Correspondence to State BLM offices regarding off-road vehicle opportunities should be directed to Recreation Resources Manager.



## State Laws Related to Trail Bike Use

When looking for places to ride your recreational trail bike, it is helpful to know the laws and regulations in other states. Frequently, trail riders decide where to vacation or spend a long weekend based on the availability of riding opportunities. This publication is an attempt by the American Motorcyclists Association to provide information on the variety of laws and regulations governing trail bikes. It is written to be easily understood and it tries to indicate the "climate" for recreational trail biking in each of the fifty states.

This summary of state off-road motorcycle legislation and regulations was compiled as of July 1, 1979. Every attempt has been made to ensure the accuracy of the information. However, it is important to understand that the legislative process is dynamic and that these laws and regulations are subject to change.

As in any summary of fifty separate governmental units, some generalizations have been made to avoid the duplication of entire statutes. Certain "common sense" universally acknowledged factors have also been omitted. These include prohibitions against driving while intoxicated, harassment of wildlife, and reckless driving. It should be assumed that these activities are prohibited in all areas.

A distinction has also been made between legislation and regulation. Some state agencies with land management responsibilities have administrative authority to open state properties to motorcycles without specific legislative authorization. While all properties within a particular state would not be suitable for motorized use or local conditions might limit seasons of use or require special equipment, separate rules or regulations may be established for those specific areas. Therefore, those states identified as having "some regulations" would require direct inquiries with the agency responsible for the area's management; i.e., State Department of Conservation, Department of Natural Resources, Department of Parks, etc.

For the purpose of selecting a riding area within a given state, the absence of regulations does not necessarily mean that use is permitted on state managed lands. In most cases, it will

mean that use is prohibited, and riding opportunities should be sought on federal lands within the state or elsewhere.

States identified as having an "off-road motorcycle program" are those that have enacted legislation which provides for trail bike use, funding, maintenance, and development of trail bike facilities. In most cases, these programs require registration of off-road vehicles as a funding source.

The final column of the summary matrix indicates whether federal properties are located in a particular state with a policy permitting motorized trail use. As a general rule, lands managed by the National Forest Service and Bureau of Land Management (BLM) will permit ORV use within the boundaries of a management area. The National Park Service specifically prohibits motorized use off of designated roads and trails. Inquiries about specific areas in which you desire to ride should be made locally either through the forest supervisor's office or through the BLM area manager's office.

All national forests have what is known as an "ORV Plan" which usually includes a map of the forest and those areas available for use. Maps of the forest you are interested in can be obtained through the Regional Forester responsible for that state.

Should specific questions arise, the AMA will make every effort to get appropriate answers. Please contact the Government Relations Department of the AMA at P.O. Box 141, Westerville, Ohio 43081.

#### Summary by State

Alabama	No off-road motorcycle program; no regulations.
Alaska	No off-road motorcycle program; no regulations.
Arizona	No off-road motorcycle programs; no regulations.
Arkansas	No off-road motorcycle programs; trail system plan including motorcycling, trail user council, some regulations in state parks.
California	Off-road motorcycle registration required for two years at \$15 fee, fee from registration used for trail development, out-of-state registrations not necessary, muffler required, noise limit 86 d(b)A, lights required after dusk.

Colorado	Requires registration for off-road recreation vehicles, registration fees used for trail development, state trails system plan mechanism established, trail council of users established, competition bikes excluded from registration, out-of-state off-road motorcycle 30-day grace period, spark arrester, muffler required, head and tail-lights required at dusk, report accidents over \$200 damage, violations are a misdemeanor.
Connecticut	No state program, trail riding by permit in some state forests.
Delaware	Three year registration at \$6.00 required for off-road recreation vehicles, registration fees put into state's general fund, competition bikes excluded from registration, out-of-state bikes must register unless registered already by their state, must have consent of private property owner, noise limit 88 d(b)A, spark arrester and muffler required, head and taillights required at dusk, must report all accidents, operator must wear helmet, operator must be 18 to register bike, operator under 12 must be supervised, violations \$10-30 fine, possible impoundment, 30 days in jail.
Florida	Trail system program including motorcycles, trail system council of users, requires annual registration of off-road vehicles, registration fees directed to State Game Trust fund.
Georgia	No state program; off-road motorcycles required to have muffler, written permission from landowner required, violation is a misdemeanor, \$25 maximum fine.
Hawaii	No state program; state lands under permit with regulations.
Idaho	Annual registration of \$3.00 required for off-highway recreation vehicles, registration fees used for trail and site development, provides for advisory committee of trail users, out-of-state off-road vehicles 30-day grace period, violation of regulations \$200 maximum fine.
Illinois	No off-road motorcycle program; some state properties have motorcycle trails and their use requires specific permission.

Indiana	No off-road motorcycle program; no regulations.
Iowa	No off-road motorcycle program; no regulations.
Kansas	No off-road motorcycle program; no regulations.
Kentucky	No off-road motorcycle program; public trail riding areas open in the state, some with regulations.
Louisiana	No off-road motorcycle program; no regulations.
Maine	No off-road motorcycle program; no regulations.
Maryland	No off-road motorcycle program; some regulations for state park operation.
Massachusetts	Two-year registration of \$10.00 required for off-highway recreation vehicles, trails provided in some state parks, ORVs must be equipped with head-lights, taillights, muffler, and spark arrester, suitable and lawful head protection must be worn, accidents over \$50.00 must be reported, out-of-state 15-day grace period required, operators under 14 years must be supervised, operation curfew between 11 p.m. and 6 a.m., private property permission necessary.
Michigan	Three-year registration of \$9.00 required for off-highway recreation vehicles, registration fees used for trail development, private property permission required, 88 d(b)A noise limit, equipment requirements, report accidents with damages exceeding \$100.00, must be over 16 years old to operate vehicle without supervision.
Minnesota	No off-road motorcycle program; some state properties open for trailcycle use.
Mississippi	No off-road motorcycle program; some regulations for state land operation.
Missouri	No off-road motorcycle program; some state parks with motorcycle trails and regulations.
Montana	No off-road motorcycle program; no regulations.
Nebraska	No off-road motorcycle program; no regulations.
Nevada	No off-road motorcycle program; no regulations.



New Hampshire	Annual \$11.00 fee for registration required, registration funds used for enforcement, safety training, and trail development, out-of-state reciprocity for Vermont, Maine, and Quebec residents only when registered as an OHRV, landowner permission required, noise limit 86 d(b)A, spark arrester, muffler required off-highway and no exhaust system modification which increases or amplifies noise emitted by original muffler, headlight, taillights, and brakes capable of stopping within 40 feet at 20 mph or locking wheels to a standstill, license required for crossing highway, under 12 must have 18 year old or older supervision, report accidents over \$50.00 damage or involving personal injury, violations fines \$10-100 and operator held responsible for any damage to landowner property.
New Jersey	No off-road motorcycle program; no regulations.
New Mexico	No off-road motorcycle program; no regulations.
New York	No off-road motorcycle program; no regulations.
North Carolina	No off-road motorcycle program; no regulations.
North Dakota	No off-road motorcycle program; no regulations.
Ohio	Annual registration fee of \$5.00 required, consent of landowner necessary, equipment requirements, 16 years of age necessary to operate vehicle without supervision, registration fees used for trail development.
Oklahoma	No off-road motorcycle program; some state parks with motorcycle trails and regulations.
Oregon	No off-road motorcycle program; some regulations for motorcycle use on state forest lands.
Pennsylvania	No off-road motorcycle program; some regulations on designated state lands for off-road motorcycle use.
Rhode Island	Off-road motorcycle registration of \$10.00 required, consent of landowner necessary, muffler required, report accidents over \$100 damages, violation maximum fine of \$100, maximum jail up to 90 days, noise limit 82 d(b)A, out-of-state grace period 30 days.

- South Carolina No off-road motorcycle program; some state parks with motorcycle trails and regulations.
- South Dakota No off-road motorcycle program; trail council/trail use plan, no regulations.
- Tennessee No off-road motorcycle program; state parks with motorcycle trails and regulations.
- Utah Off-road motorcycle registration required, registration revenues used for trail development, annual registration \$5.00 fee, 30-day out-of-state grace period, 16 years and younger must be supervised by adult, head and taillight required after dusk, 92 d(b)A noise limit, ORV advisory council, report accidents over \$100, competition bikes excluded from registration.
- Vermont No off-road motorcycle program; no regulations.
- Virginia No off-road motorcycle program; no regulations.
- Washington Off-road motorcycle registration required, fund for trail development from registration fees, out-of-state visitors must get temporary registration, requires spark arrester, muffler, lights at dusk, noise limit 86 d(b)A, fuel tax utilized for trail development, violations misdemeanor fine not less than \$25, trail committee, trail plan, annual registration \$5.00 fee.
- West Virginia No off-road motorcycle program; some state parks have motorcycle trails and regulations.
- Wisconsin Surtax from road motorcycle registrations utilized for off-road motorcycle park development, motorcycle off-road trail council.
- Wyoming No off-road motorcycle program; some state organized trailbiking programs.

State	No Off-Road Program	No Regulations	ORV Registration	Fees Used For Trail Development	State Trail Plan	Trail Council	Out of State Grace Period	Closed Course Competition Bikes Excluded from Regs.	Equipment Requirement	Report Accidents	Private Property Owner Consent	Noise Limit	Minors Supervised	Regulations on State Properties	Federal Properties in State
Alabama	X	X													X
Alaska	X	X													X
Arizona	X	X													X
Arkansas	X				X	X								X	X
California			X	X			X		X			X		X	X
Colorado			X	X	X	X	X	X	X	X					X
Connecticut	X													X	
Delaware			X				X	X	X	X	X	X	X		X
Florida			X	X	X	X									X
Georgia	X								X		X				X
Hawaii	X													X	X
Idaho			X	X		X	X								X









State	Wisconsin	Wyoming
No Off-Road Program		X
No Regulations		
ORV Registration		
Fees Used For Trail Development	X	
State Trail Plan		
Trail Council		
Out of State Grace Period		
Closed Course Competition Bikes Excluded from Regs.		
Equipment Requirement		
Report Accidents		
Private Property Owner Consent		
Noise Limit		
Minors Supervised		
Regulations on State Properties		X
Federal Properties in State	X	X

## OFF-ROAD MOTORCYCLING: A DIAGRAMMATIC ANALYSIS OF VALUE CONFLICTS

*Douglas McEwen, Kenneth Chilman  
and Richard Bury*

The explosive growth of off-road motorcycling during the last decade has created new difficulties for recreation managers. Over five million off-road motorcycles may now be in circulation (Basaracco, 1976). Use of these machines on public and private lands has caused a volatile and well-documented conflict between motorcyclists and assorted nonmotorcyclists (Bury, *et al.*, 1976). This conflict has resulted in numerous problems for recreation managers attempting to protect public land while mediating the needs of both motorcyclists and nonmotorcyclists.

In this article, we provide a simple scheme for estimating the probability of conflicts between motorcyclists and nonmotorcyclists. The resulting awareness of conflict potential should permit managers to plan for resource uses in ways that can avoid or minimize conflicts.

### Stereotyped Conflict

Unfortunately, the available literature on off-road riding gives few clear insights on the conflict surrounding this activity. Much that has been written is unavailable for general circulation being either correspondence or managerial reports. Available material forms a rather disjointed collection of unrelated site-specific studies or emotional over-generalizations.

Stereotyping the values of various user groups has not helped in understanding the conflict. Motorcyclists are normally characterized as noisy and aggressive. Supposedly unconcerned about environmental impacts or social impacts on fellow outdoor recreationists, they are labeled as crude, thoughtless, and unintelligent. On the other hand, hiker-campers are characterized as quiet and compatible. Possessing a deep interest in appreciating and protecting nature, they are alleged to pursue camping, hiking, and nature study activities in an unobtrusive manner that rarely disturbs the natural environment or fellow outdoor recreationists. Such activities supposedly represent a response to the higher needs of mankind and indicate intelligence and refined tastes.

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Being of a usually quiter nature, it is believed that the hiker-camper rarely antagonizes the motorcyclist but the reverse frequently occurs (Badaracco, 1976). This one-way antagonistic effort tends to further embitter the views of those who see motorcycles as an intrusion on their activities with no concomitant intrusion on those of the motorcyclist. Lack of communication causes a build-up of uncompromising positions by both hiker-campers and motorcyclists. The values held by each of these two groups are so dissident that territorial separation is thought the only means managers have to accommodate both groups without serious conflicts.

To be sure, most managers have suffered the complaint of outspoken hiker-campers and motorcyclists. Conflict obviously exists; more importantly, managers should know how many outdoor recreationists are actively involved in the conflict. Are complaints mainly from a small voice core of motorcycle haters? Are all nonmotorcyclists equally antagonized by these machines even if they do not speak out? Are there large numbers of outdoor recreationists who share moderate views and cannot be classified as motorcyclist or anti-motorcyclist?

In short, much has been heard from outspoken groups and then extrapolated to characterize the views of all. Casting all outdoor recreationists as either pro-motorcyclist or anti-motorcyclist seems very naive. What does the majority feel toward motorcycles?

A careful search of available articles on off-road vehicles, including two major review bulletins (Lodico, 1973; Bury *et al.*, 1976) and a computerized search of four relevant data bases, yielded little insight into the above questions. The debate over conflicts has been generally described but not rigorously investigated. A stand-off exists between interests of motorcyclists and anti-motorcyclists; we need a new view of this conflict.

### A New Perspective

It is proposed that the debate over off-road motorcycling has ignored several groups. Some nonmotorcycle outdoor recreationists camp, hike, and relax without being irritated by these machines. Others enjoy watching motorcyclists and are attracted to their antics. There are also some families or other groups who own and use small motorcycles in a moderate manner that causes little dust, disturbance, or environmental impact. A great variety exists in outdoor recreationist types and values toward off-road motorcycles. The authors suggest, in this case, the existence of a value continuum ranging from hostile to very compatible. Unfortunately, an intensive literature search revealed no specific sociopsychological studies to support or refute this contention.

In the absence of collected data, we may examine values through a conceptual model. The method involves selecting two or three value issues and placing them along principal axes. The resulting grid produces a spatial arrangement which, upon inspection, helps define value relationships between various groups (see fig. 1). Obviously, each person holds a complex of values and in that sense our model grossly oversimplifies; however, some value issues can be isolated because of their special importance. In our model we have selected two such value issues that are of utmost importance to outdoor recreation resource managers dealing with off-road motorcycling: dominance over the environment and affinity for modern technology.

### Environmental Dominance

Litter, erosion, or social disturbance in themselves do not usually bring direct satisfaction to recreationists, but may indicate a deeper drive for dominance (Driver, 1976). This is a root need of some individuals who derive great satisfaction from being in complete control of events during a definite time-space domain. These individuals may be motorcyclists or they may be mountain climbers. Many outdoor pursuits are expressions of dominance; common to all these is freedom to prove oneself by selecting an environmental setting that permits maximum individual control. Such freedom many times causes individuals to ignore, or at least minimize, the environmental harm caused by their activities. It is not the case that they have negative attitudes toward environmental stewardship, but that the drive for dominance is greater and takes priority in their actions. Motorcyclists are not alone in their drive for dominance, as evidenced by famous mountain peaks pitted and rusted from thousands of pitons left by assulting mountain climbers.

In contrast, many others wish to retain environments as natural as possible, regarding nature as a treasure to be guarded and enjoyed by themselves and generations to come. Rather than wishing to dominate nature, these individuals wish to protect it from man's influences.

### Modern Technology

Machines were invented to be mankind's slaves but many people feel modern man has instead been enslaved by machines. They feel oppressed by city life with its associated smells, noises, and artificial landscapes. For these individuals, the out-of-doors offers an escape into a natural environment free from signs of modern technology. Such escape provides refreshment psychologically. The air is cleaner, the visual stimuli are more natural and there is a sense of pride and strength in being able to live independently of modern technology, even if it is only temporary.

HIGH

ENVIRONMENTAL DOMINANCE

Orienteering or Strenuous Hiking		Mountain Climbing	River Rafting		Cross Country Scramble Motorcycling
			Safari Cross Country Motorcycling With Tent		RV Camping With Large Motorcycle
			Tent Camping With Small Motorcycle		RV Camping With Small Motorcycle
	Backcountry Tent Camping, Hiking	Campground Tent Camping		RV Camping	
Nature Study					Touring Motorcycling

LOW

HIGH

AFFINITY TO MODERN TECHNOLOGY

Fig.1--Conceptual Model of the Motorcycle Conflict.



Others feel the machine is indeed our slave, and embrace modern technology as a means to extend their recreational excursions. This technology transports them into rugged territory with relative ease. It also mitigates the discomforts of living outdoors. But most importantly, there is pride in ownership and skillful use of machines. The attraction to a motorcycle, or a motorhome, or a four-wheel-drive vehicle can be more important than the change from the city routine, a new territory to explore. Such people think it foolish not to use machines and modern conveniences to enhance fun in the outdoors.

### The Conceptual Model

The conceptual model may now be constructed. First a large square is drawn taking the two value-issues, environmental dominance and affinity for modern technology, as the principal axes. Each of these axes is then arbitrarily graded into six sectors that range from low technology to high technology and from low environmental dominance to high environmental dominance. The result is a grid of squares depicting combinations of the two value-issues (fig. 1).

Some of the squares can then be tentatively associated with various activity groups. For example, low technology and low environmental dominance is most likely associated with amateur nature study. Orienteering or strenuous hiking, while low in technology, are very high in environmental dominance because both involve competing with natural obstacles. Camping in an expensive recreation vehicle is high in value of technology, but could be very low in environmental dominance, especially if the individuals simply lounge around the campsite. Recreational vehicle camping combined with a motorcycle will rate higher on the technology and environmental dominance scales. Individuals who enjoy cross-country motorcycle scrambles probably rate the highest in technology values, great attachment to their machines, and environmental dominance. However, a touring cyclist who camps for economy will rate low in environmental dominance but still maintain a high attachment to technology. Tent campers are usually moderate in their affinity to technology but can vary considerably in environmental dominance ratings. Family tent campers who enjoy socializing and other campground-associated activities will be low in environmental dominance. Family tent campers with a small motorcycle for exploring and quiet riding would be higher in technology and environmental dominance. Other individuals may load their motorcycles with lightweight back-packing tents, stoves and sleeping bags, and extra tanks of gasoline. When striking off for two- or three-day backcountry exploring, such persons would rate moderate in technology but rather high in environmental dominance.

Placement of activity groups on the grid is somewhat arbitrary. Accurate placement would require more thorough knowledge



of user values then managers may have. One must also recognize the variety of values held by participants in a single type of recreation activity. However, managers' estimates of user values, and subsequent placement of activities on the grid, can be instructive for identifying constituents within the motorcycle/anti-motorcycle conflict.

The spatial arrangement achieved within the model also has significance. It is proposed that the linear distance between activities is a measure of their compatibility. Closely aligned groups share more commonality of values and thus are more tolerant of each others activities. Groups more distant share little commonality of values and thus are less tolerant of each others activities.

### Is the Model Practical?

In the absence of substantial proof, the validity of this model could certainly be questioned. However, we have attempted to offer a new perspective on the motorcycle/anti-motorcycle conflict. Managers who use the model will soon recognize the diversity of group values involved. The conflict has no clear alignment of values with motorcyclists on one side and nonmotorcyclists on the other. Many motorcyclists and nonmotorcyclists can pursue their outdoor recreation interests compatibly within the same area. Could it be that the controversy surrounding motorcycles is overblown, the result of an outspoken but relatively small number?

The model suggests a need for more investigation not only by lengthy formal research, but also by administrative surveys and observations. It further suggests that cases exist where groups may be compatibly placed in the same area, and cases where groups need to be separated by time and space.

The groups described in this model will vary in type from one region of the country to another. It is possible to vary the value-issues axis depending on the region. For example, a seacoast region might wish to substitute need of visual stimulation instead of affinity to modern technology, because of the desire to view the seascape. A third axis such as social affiliation could be added, generating a cube and the possibility of identifying an even wider diversity of groups within the three dimensional space. The authors recommend that each manager construct his or her own model and fill in the respective groups. Building the model with staff persons should produce interesting results. Involving everyone in reexamining the off-road motorcycle controversy will surely add new perspective to old positions and raise the possibility of new managerial alternatives.

## References

- Badaracco, Robert J. 1976. "ORV's: Often Rough on Visitors." Parks and Recreation, 11(9):31-35
- Bury, Richard L., Robert C. Wendling, and Stephen F. McCool. 1977. Off-Road Vehicles—A Research Summary, 1969-1975. Texas A&M University Agri. Expt. Sta. Report, MP-1277, p. 84.
- Driver, B. L. 1976. "Identification of Outdoor Recreationists Preference. In Research: Camping and Environmental Education. Penn. State H.P.E.R. series II, pp. 165-187.
- Lodico, Norma Jean. 1973. Environmental Effects of Off-Road Vehicles. U.S. Department of Interior, Office of Library Services. Bibliography series no. 29, p. 112.

## OFF-ROAD VEHICLE USE AS A MANAGEMENT CHALLENGE

ProgramPurpose and Objectives

The general purposes of the conference are to review USDA policies and programs regarding ORVs and to share information on ORV issues, especially as they relate to agricultural and forestry concerns.

With these general purposes in mind, the objectives of the conference are as follows:

1. To review and evaluate USDA policies, regulations, programs and other actions concerning the implementation of Executive Orders 11644 and 11989 (as they apply to USDA managed lands);
2. To provide information and recommendations on how to improve USDA and general federal agency implementation of these Executive Orders;
3. To define ORV-related problems, needs, and opportunities for USDA technical, education, and research assistance related to ORV use on federal and non-federal lands (private, state, and local); and
4. To improve communications, cooperation, and share information among interested groups on ORV impacts and how they can be minimized and mitigated.

Program

March 17, 1980 (Hussey Room, 2nd floor Michigan League)

8:30 a.m.      Conference Review: Users and Nonusers Perspectives on Off-Road Vehicles (ORVs)

Moderator - Dr. Richard N. L. Andrews, University of Michigan  
Welcome -

USDA Overview - M. Rupert Cutler - Discussion on purpose of the conference, what USDA intends that it accomplish, concerns and interests of the USDA.

Nonusers' Perspective - Russell Shay, Sierra Club - Brief overview of nature of the environmental issues and user/non-user conflicts, effects on land and other resources.

ORVs Users' Perspective - A. Kier Nash, University of California, Santa Barbara - Brief overview of the utility, the recreation benefits received by ORVs and growth, the who, where, what, when, and how of ORV use.

Questions and Answers

10:00-10:30      Break

10:30      The ORV Phenomenon - General Principles of ORV Management - What We Know About ORV Impacts

- Moderator - Charles Callison, Public Lands Institute
- Speaker - Howard Wilshire, U.S. Geological Survey - Overview of ORV impacts on the environment.
- Panelists - Phillip McKneely, Tennessee Valley Authority - Monitoring techniques and standards.
- Cal Dunnell, Recreation Staff, Wenatchee National Forest - Protecting and rehabilitatint ORV use areas.
- Garrell Nicholes, Garrell Nicholes Associates, Inc.- Site selection.
- R. Bruce Bury, U.S. Fish and Wildlife Service - Wildlife impacts.

Questions and Answers

12:00      Luncheon (League Ballroom, 2nd floor)

- Speaker - William J. Johnson, Dean, School of Natural Resources, "New Paths of Conflict Resolution."

1:30 p.m.      Progress in ORV Planning and Management on USDA Managed Lands

- Moderator - Peter F. Smith, Office of Environmental Quality, USDA.
- Speaker - Jane Yarn, Member, Council on Environmental Quality - CEQ's perspective.
- Panelists - M. B. Doyle, Chairman, International Snowmobile Industry Association - Snowmobile users' perspective.
- Robert Rasor, American Motorcyclist Association - Two-wheeled vehicle users' perspective.
- George Schade, General Counsel, United 4-Wheel Drive Association - 4-wheeled vehicle users' perspective.
- David Sheridan, Consultant - Author of CEQ Report on ORVs.
- Deborah Reames, Sierra Club Legal Defense Fund - Environmentalists' perspective.
- Roy Feuchter, U.S. Forest Service - Forest Service perspective.

Questions and Answers

3:30-4:00      Break



4:00                    Progress in ORV Planning and Management on Private and State Lands

Moderator - William Shands, Conservation Foundation

Speaker - Allan O'Niell, Heritage Conservation and Recreation Service, Denver - Overview of state programs.

Panelists - Michael Moore, Michigan Department of Natural Resources Michigan program.

- Gregory W. Lovelady, ORV Coordinator, State of Washington - Washington program.

- Ted Smith, California Department of Parks and Recreation - California program.

- Warren Suchowsky, Secreatry, Michigan Association of Conservation Districts - Private landowner's view.

- Galen Bridge, Director, Conservation Operation Division, Soil Conservation Service - Soil Conservation Service view.

Questions and Answers

5:30                    End of Session

8:00-10:00          Informal evening session. Topics and locations to be announced.

March 18, 1980      Improving The Management Of Specific Types of ORVs

8:30 - Noon          Three Concurrent Sessions

Session A: Snowmobiles (Hussey Room)

Challenges

Moderator - Paul Weingart, U.S. Forest Service, Lakewood, CO.

Panelists - William T. Jobe, Jr., President, International Snowmobile Industry Association - Outlook.

- Ronald A. Aasheim, State of Montana - Impacts.

- Gary Wakefield, Director, Ski Touring Operators Association - Conflicts.

Questions and Answers

10:00-10:30        Break

Solutions

- Panelists - Peter McNiff, Carmichael, McNiff and Patton - Policy and program needs.
- Charles Wells, State of Idaho - Education.
  - Roland Emetaz, U.S. Forest Service, Portland, OR - Management.
  - Orrin Rongstad, University of Wisconsin - Research needs.

## Questions and Answers

Session B: Four-Wheel Vehicles (Vandenburg Room, Michigan League)

Challenges

- Moderator - Mary Alice Bivens, State of Arizona
- Panelists - John Meixner, American Motors Corp. - Outlook.
- Kristin Berry, Bureau of Land Management - Impacts.
  - William Kemsley, Backpacker Magazine - Conflicts.

## Questions and Answers

10:00-10:30 Break

Solutions

- Panelists - Ray Rustem, Michigan United Conservation Clubs - Policy and program needs.
- Lee Chauvet, California Association of 4WD Clubs, Inc. - Education.
  - Roger Clark, U.S. Forest Service, Pacific Northwest Experiment Station - Research.
  - Mike Dolfay, U.S. Forest Service, Wenatchee National Forest - Management.

## Questions and Answers

Session C: Two-Wheel Vehicles (Library, Michigan League)

Challenges

- Moderator - John Peine, Heritage Conservation and Recreation Service, Ann Arbor, Michigan
- Panelists - Mark Anderson, Motorcycle Industry Association - Outlook.
- Rob Harrison, U.S. Forest Service, San Dimas - Impacts.
  - Alex Bigler, Land Use Committee, American House Council - Conflicts.

## Questions and Answers

10:00-10:30 Break

Solutions

- Panelists - Deborah Sease, Consultant to the Friends of the Earth, Sierra Club & Wilderness Society - Policy and program needs.
- David Sanderson, New England Trailrider Association - Education.
- William Kickbush, U.S. Forest Service, Mark Twain National Forest - Management.
- Ray Leonard, U.S. Forest Service, Durham, New Hampshire - Research.

## Questions and Answers

12:00-1:00 Lunch (on your own)

1:00 Summaries From the Three Vehicles - Specific Sessions and General Questions and Answers Session (Hussey Room)

Moderator - Barry R. Flamm, Director, Office of Environmental Quality, USDA

## Snowmobile

-- Summarizer: Patrick West, Associate Professor of Outdoor Recreation, University of Michigan.

## Four-Wheel Vehicle

-- Summarizer: S. Ross Tocher, Professor of Outdoor Recreation, University of Michigan.

## Two-Wheel Vehicle

-- Summarizer: Kenneth J. Polakowski, Professor of Landscape Architecture-Regional Planning, University of Michigan.

General question and answer session with a group of USDA policy-makers; Assistant Secretary for Natural Resources and Conservation, Chief of Forest Service, Administrator of the Soil Conservation Service, Director of the Office of Environmental Quality, Regional and State Forest Service and Soil Conservation Service officials.

3:00-3:30 Break

- 3:30      Wrap-Up Session: M. Rupert Cutler, USDA - Outlook for the future - How we can work together towards environmental compatibility - focus will be on roles of involved groups (users, nonusers, states, manufacturers, USDA).
- 4:00      END OF CONFERENCE





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