

**Off-Road Vehicle Policy on USDA National Forests:
Evaluating User Conflicts and Travel Management**

by

Brenda M. Yankoviak

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Approved by:

Co-Chairperson

Co-Chairperson

Dean, Graduate School

Date

ABSTRACT

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Committee Co-Chairs: Norma P. Nickerson and Martin Nie

Since the history of off-road vehicle (ORV) management on National Forest System (NFS) lands was spurred in part by the need to reduce user conflicts between motorized and non-motorized users, one might assume such conflicts to have been diffused after 30 years of management actions. To the contrary, decades of inconsistent management and inadequate enforcement have largely characterized the history of Forest Service ORV management, leading to continued environmental damage and user conflicts. The Forest Service recently released another travel management policy that largely prohibits cross-country off-road vehicle use and restricts motorized travel to designated roads, trails and areas on NFS lands. Many forests across the nation will amend travel plans or undertake travel planning pursuant to the new policy.

In light of this new policy, the purpose of this paper has been to evaluate its potential effectiveness in reducing user conflicts resulting from ORV use. To that end, this paper: 1) Reviews the history of Forest Service travel management policy that has led to the need for this policy change, 2) examines the context within which the conflicts are occurring- e.g. rapidly increasing recreation use of NFS lands, and 3) summarizes the themes common to conflicts between motorized and non-motorized recreationists. This paper then puts forth expectations for the effectiveness of the Forest Service's new policy in minimizing user conflicts and provides concrete suggestions for moving forward.

This paper argues the new policy is not likely to reduce user conflicts resulting from ORV use on NFS lands for several reasons. First, the new regulations are not much different from previous regulations, other than they contain less specific language with respect to closure of areas and trails due to considerable adverse effects and considerations for route designations. Second, the policy neither defines the term "user conflict" nor addresses how to evaluate if such conflicts exist and, if so, how to accommodate competing claims from legitimate uses. Thirdly, the policy ignores noise pollution, one of the most cited complaints of off-road vehicle use. One measure to reduce conflict felt by many users is to impose noise limits on motor vehicles operating on NFS lands.

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INTRODUCTION

For over 30 years, the federal government has recognized the potential incompatibility of off-road vehicle (ORV) use with forest resources and other recreationists. Forest Service regulations have attempted to resolve user conflicts and mitigate resource damage resulting from ORV use; however, inconsistent management between national forests and other land management agencies and inadequate enforcement have characterized the history of Forest Service ORV management. As a result, resource damage and user conflicts have persisted, if not increased, prompting the Forest Service to release a new travel management policy.¹ This policy is intended to better manage and control ORV use through a cross-country ORV travel prohibition and a requirement to stay on designated routes, trails and areas (70 Fed. Reg. 68263 (November 9, 2005)). This paper reviews the history of Forest Service policy and management that has led to the present need for a new travel management policy (three decades after the agency was charged with controlling ORV use), and investigates what is known about the user conflicts purportedly resulting from that use.

This new policy illustrates that the use of Forest Service lands is changing. As logging and other extractive uses have declined, recreational use has increased, putting more pressure on managers to accommodate diverse, and sometimes competing, recreational uses.

Since President Nixon's Executive Order 11644 (February 8, 1972) that directed land management agencies to identify acceptable areas for ORVs and eliminate their use elsewhere, these vehicles have become faster and more powerful, and have become more popular with users of public lands. Consequently, these machines can reach areas once

¹ See 70 Fed. Reg. 68263 (November 9, 2005): *Travel Management; Designated routes and areas for motor vehicle use.*

thought inaccessible. Though recognized as a valid recreation activity on some National Forest System (NFS) lands, motorized use can cause adverse environmental impacts including, among others, soil erosion and compaction, air and noise pollution, increased stream sedimentation, invasive weed spread, damage to native vegetation, and wildlife disturbance (Havlick, 2002; Moore, 1994; National Off-highway Vehicle Conservation Council, 2004; Stowkowski & LaPointe, 2000). While often used in accordance with regulations and in support of other recreation activities, ORVs are sometimes used to create unauthorized trails and trespass in areas closed to their use, like designated wilderness. Illegal usage amplifies the negative view in which ORVs are often held by others, and has increased both the frequency and intensity of “undesirable use conflicts” with other forest visitors (70 Fed. Reg. 68263 (November 9, 2005)).

Given that the Forest Service’s new travel management policy is aimed in part at reducing user conflicts between motorized and non-motorized users, the purpose of this paper is to assess its potential effectiveness in minimizing such conflicts. To that end, Chapter One summarizes the history of policies aimed at reducing conflicts between these groups that have led to the need for a new policy, then examines the Forest Service’s new travel management policy. Chapter Two provides the context in which user conflict is occurring between motorized and non-motorized recreationists by summarizing outdoor recreation participation trends, exploring recreational conflict as defined in the literature, and then discussing the social impacts of noise and displacement that commonly result from motorized use. The third chapter discusses expectations for the new policy, offers suggestions for moving forward, and summarizes ideas for future research. It is hoped that the results of this review will help make well-informed travel management decisions during the designation process pursuant to the new policy.

This paper concludes that the policy may reduce adverse environmental impacts on those forests currently allowing cross-country ORV travel, but the policy's overall effectiveness at minimizing user conflicts is likely to be limited. Efforts to manage the ORV presence on NFS lands will continue to be complicated by certain other factors, like the strongly perceived scarcity of recreation opportunities, the absence of technical remedies against noise and other offensive by-products of motor vehicles, and adequately understanding and accurately assessing the terms of the tradeoffs entailed in user conflicts. Since the intent of this new policy is in part to minimize user conflicts, the Forest Service needs to provide managers with clear guidance on measuring and evaluating such conflict on a given forest, as well as to provide instructions on how to equitably accommodate competing uses. The policy must also address the issue of motor vehicle noise, as noise is one of the most cited complaints of ORV use. Furthermore, managers must consider route and area designations on a wider rather than narrower geographic scale as the relative availabilities of motorized and non-motorized opportunities in one forest may extend to other areas.

Throughout, this paper includes the observations of many Forest Service officials (e.g. Forest-level planners, District Rangers, and Recreation Managers) in the Forest Service's Region One,² gathered through supplemental interviews. These interviews help to ground the discussion of policies and user conflicts by providing present-day examples of how some of these professionals perceive the conflict and manage these competing uses. For the sake of confidentiality, the Forest Service official's name is replaced with the name of the Forest Service unit (e.g. forest or grassland) on which he/she works.

² Region One of the Forest Service consists of Montana, northern Idaho, North Dakota and portions of South Dakota.

Before proceeding, it is necessary to clarify terminology. The Forest Service refers to motorized vehicles that are specifically designed for off-road travel, like all-terrain vehicles (ATVs), go-carts, motorized trail bikes, and snowmobiles, as off-highway vehicles (OHV), but the term “ORV” is also used to describe these vehicles. Whenever possible, this paper will use the term “ORV” to be consistent with the majority of documents and publications; however, the term “OHV” may be used when referring to specific studies or current Forest Service policy. Further, though the Forest Service considers snowmobiles to be OHVs, they are excluded from the designated routes requirement under the new policy because their impacts are different and less severe than those occurring from summer motorized vehicle use (70 Fed. Reg. 68263 (November 15, 2005)). This paper, however, will include snowmobiles in the discussion of user conflicts because the conflicts resulting from the speed, noise, and technology of snowmobiles are remarkably similar to user conflicts resulting from summer motorized vehicle use.

CHAPTER ONE: POLICY DIRECTION

Forest Service policy has much impact on how recreational uses are allocated across National Forest System lands. The current controversy over ORV use is in large part the result of previous Forest Service policy and managerial actions. Inadequate enforcement and inconsistent management between national forests and other land management agencies have enabled continued adverse environmental impacts and user conflicts to occur, and have led to the perceived need for a new travel management policy. The Forest Service's new travel management policy is thus best understood in the context of the history of prior ORV-related decisions. This chapter summarizes the history of ORV management on NFS lands, particularly within Region One, and then discusses the new travel management policy in depth.

History of Forest Service ORV Management

Two Executive Orders provide direction for ORV management on NFS lands (see Appendix A). In 1972, recognizing that the estimated 5 million ORVs on public lands often conflicted with “wise land and resource management practices, environmental values, and other types of recreational activity,” President Nixon signed Executive Order 11644 – *Use of Off-Road Vehicles on the Public Lands* (February 8, 1972). This order directs the Tennessee Valley Authority and the public land agencies within the Departments of the Interior, Agriculture and Defense to develop regulations for administrative designation of specific trails and areas in which ORVs are permitted to operate. The purpose of these designations is to “control and direct” ORV use to “protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.” Section 3(a) requires designated areas and trails to be located in a way that minimizes wildlife and

environmental impacts, and potential user conflicts “between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands.”

The order further requires monitoring of the effects of ORV use on other forest resources, and requires that designated trails and areas be well-marked on the ground.

President Carter’s Executive Order 11989 (*Off-road Vehicles on Public Lands*- May 24, 1977) amended the first Executive Order to strengthen it in two ways (see Appendix A). First, agency officials are to close areas or trails where ORV use is causing “considerable adverse effects” to forest resources and other users, and to reopen areas and trails only after the effects have been eliminated and measures implemented to prevent future occurrence. Second, agency officials are authorized to consider their respective lands as closed to ORV use unless specifically designated as open to them. This travel management strategy is referred to as “closed unless posted open.”

In response to these Executive Orders, the Forest Service drafted regulations to provide direction on allowing, restricting, and prohibiting ORV use on NFS lands (see Table 1). Regulations governing the designation of areas and trails were located in the Code of Federal Regulations (CFR) at 36 CFR 295 (*Use of Motor Vehicles off Forest Service Roads*). For example, Section 295.2(b) reiterated the requirements to locate trails and areas in a way that minimizes resource damage and user conflicts, and Section 295.2(a) required closure of trails and areas to ORV use if “considerable adverse effects” exist. Under 36 CFR 295.6, monitoring requirements in Executive Order 11644 were strengthened to require annual review of ORV management plans.

Regulations at 36 CFR 261 contained prohibitions on motor vehicles traveling off-road, which included creating “unreasonably loud noise” and riding a vehicle “in such a manner that it is an impediment or hazard to the safety or convenience of any person.”

Provisions at 36 CFR 261.50 also provided for the use of Forest Orders to close areas and trails to ORV use if such use is deemed incompatible with other uses in those areas.

Table 1: Previous Regulations and Directives Specific to ORV Management*

Document	Description/ Provisions
E.O. 11644 (Feb. 8, 1972) <i>Use of Off-Road Vehicles on the Public Lands</i>	§ 3(a) directs each agency to develop regulations to provide for designation of areas and trails open and closed to motor vehicle use; § 5 directs that trails are to be well-marked and user maps published to show area and trail designations; § 8(a) requires agencies to monitor the effects of ORV use, and “from time to time” to amend or rescind area and trail designations based on monitoring information.
E.O. 11989 (May 24, 1977)	Amended E.O. 11644 with addition of §9 § 9(a) directs that, if “considerable adverse effects” result from ORV use, the trail or area is to be closed to the type of vehicle causing the effects until those effects are eliminated and measures implemented to prevent future occurrence; § 9(b) authorizes agencies to adopt the strategy of “closed unless posted open.”
36 CFR 295 <i>Use of Motor Vehicles off Forest Roads</i> (July 1, 2005)	Rules for planning and designation of motorized use off of forest roads: § 295.2(a) calls for restricting or prohibiting vehicle use that is likely to cause adverse effects to the resource or other users until the cause of adverse effects can be eliminated; § 295.2 (b) says ORV management plans shall provide for resource protection, public safety and minimizing conflicts between users; § 295.5 directs managers to close areas and trails with considerable adverse effects from ORV use until the cause of those effects is eliminated and measures put in place to prevent reoccurrence; § 295.6 calls for annual review of ORV management plans and designation decisions.
36 CFR 212 <i>Administration of the Forest Transportation System</i> (July 1, 2005)	Authorizes management of NFS roads, including road construction and maintenance (§ 212.4) and regulating use by classes of vehicles and types of traffic (§ 212.5(2)(ii)). § 212.1 defines a road as “a motor vehicle travel way over 50 inches wide unless designated and managed as a trail.”
36 CFR 261 <i>Prohibitions</i> (July 1, 2005)	Details prohibited activities, including: Violating acceptable noise emission standard established by any Federal or State agency (§ 261.13(d)); riding a vehicle “carelessly, recklessly, or without regards for the safety” of others (§ 261.13(g)); and damage or disturbance to forest resources (§ 261.13(h)). Subpart B 261.55(b) allows for special closure orders to close trails and areas to motor vehicle use.

Continued on next page

Document	Description/Provisions
Forest Service Manual (FSM) 2355** <i>ORV Use Management</i>	Further interprets agency regulations to create specific Forest Service policy. For example, FSM 2355.04 outlines responsibilities of the Regional Forester, Forest Supervisor, and District Ranger in managing ORV use. FSM 2355.04(d) charges Forest Supervisors with establishing “monitoring intervals and criteria...and standards against which the effects of off-road vehicle use will be evaluated”; FSM 2355.05 (7) defines “adverse off-road vehicle effect” as a use that does not meet standards for air and water quality, maintenance of other uses of the forest, and cultural and historic resource values, among others; FSM 2355.14 (2) charges managers with providing a range of opportunities for ORV users while recognizing the differences between the types of vehicles that exist and their different impacts on resources, public safety, and conflicts with other users.
Forest Service Handbook (FSH) 7709.59 Chapter 50** <i>Transportation System Operations Handbook</i>	Contains detailed standards and practices for Forest Service specialists and technicians, and often contains Region-wide supplements. FSH 7709.59, 50 § 51.4 provides details of factors to consider in a hazard analysis before designating uses on forest roads, including user speed, visibility, and climatic and surface conditions, among others; FSH 7709.59, 50 § 52.2 is a Region One supplement that advises managers on how to minimize “potential conflicts of mixed use” on Forest Service roads, including temporal and physical separation of users.
<i>FSH 2309.18**</i> <i>Trails Management</i>	Provides very specific instructions for specialists on trail construction and maintenance standards (such as favoring drainage dips over waterbars on motorized trails), methods for monitoring trail use (like trail registers and traffic counters), and most appropriate ways to manage trail use (for example, using advisory techniques before regulations are implemented.)

* This table contains excerpts from each document, not the complete text.

** Retrieved July 30, 2005 from <http://www.fs.fed.us/im/directives>

Through December of 2005, these regulations provided the framework within which Forest Service managers had to manage ORV recreation, with specific direction found in the Forest Service directive system of manuals and handbooks (see Table 1 above). Forest Service Manual (FSM) 2300, Chapter 2350, section 2355.03 reiterated the direction found in the Executive Orders and Code of Federal Regulations regarding ORV management, including provisions for monitoring, providing use maps to the public, signing conventions, and the provision for closing areas and trails until adverse effects are eliminated and steps taken to prevent recurrence. The manual further clarified that recreation is to be managed according to the recreation opportunity system (ROS), taking

into account the spectrum of physical, social, and managerial settings that can affect user experiences. Managers are also to consider seasonal closures as a way to “prevent unacceptable damage and to reduce conflict between recreational users” (FSM 2355.3). Moreover, Regional Foresters are to “achieve consistency in maps, in designating zones of use, and in signing, law enforcement, and monitoring activities between adjacent Forests and Regions and with other Federal, State, or local government agencies” (FSM 2355.04c).

Travel Management Plans

Motorized and non-motorized travel is addressed on each forest through travel management plans (travel plans), which specify the types of recreational activities to be allowed and prohibited on roads and trails within the forest. These plans also specify seasonal closures for resource and wildlife protection, and determine the signing method to be used. Although the objective of travel planning is to implement the ORV policy, specific actions that are selected to implement the policy vary from unit to unit. For example, one forest may adopt the “closed unless posted open” strategy, whereby all roads and trails are only signed for the uses that are allowed, while another may adopt the strategy of “open unless posted closed” in which all activities are considered appropriate unless specifically posted as prohibited on a sign at the trailhead or road.

In creating travel plans, the Forest Service is required to comply with the National Environmental Policy Act by undertaking an environmental impact analysis and public involvement process. Once each forest has decided which uses are allowed and prohibited on all system roads and trails, a travel map illustrating these decisions must be made available to the public.

Travel planning can be undertaken as part of the Forest and Resource Management Plan³ revision process, or accomplished as a separate planning process. Travel plans can also be completed at different scales, with some forests, like the Lewis and Clark National Forest, completing the travel plan incrementally by ranger district, and others, like the Gallatin National Forest, completing the travel plan on a forest level.

Often, a forest undertakes travel planning when types and amount of use, regulations, and resource and safety concerns have changed in ways that make the current travel system less effective. For example, motorized and non-motorized uses have increased on the Lewis and Clark National Forest since the last travel plan was completed in 1988. As motorized use has grown, motorcycles and ATVs have been using trails not built to accommodate such use, creating visible resource damage and conflicts with other users, and ATV drivers have begun riding on single-track motorcycle trails, inciting conflicts with many motorcyclists (Lewis and Clark NF, 2005, personal communication). Moreover, the 1988 plan neither addresses winter travel management nor determines which user-created routes are appropriate or inappropriate (USDA, 2005b).

Currently, many forests in Region One are facing similar issues and are undergoing travel planning in an effort to better manage the varying and increasing recreational uses on the forest. These new travel plans are expected to minimize confusion for forest visitors and add consistency in management. As discussed in the

³ On January 5, 2005, the Forest Service issued new regulations for Forest Planning (70 Fed. Register 1023 (January 5, 2005)). Previously, Forest Resource and Management Plans (Forest Plans) were considered final agency actions that required full-scale NEPA analysis and were to be updated every 15 years. This new rule eliminates the need for an environmental impact statement because Forest Plans are to be strategic in nature, and not make any final agency decisions. The Forest Plan may indicate which areas are appropriate for or closed to motorized use, but the site-specific decisions will be decided in travel management plans. Thus, NEPA analysis will be required throughout the travel management planning process. Many managers are still unclear, however, how travel management plans will interface with non-binding Forest Plans.

next section, this consistency in management (both within and between Forest Service units) has been lacking for some time.

Inconsistency and Non-compliance

At the time the Executive Orders were signed into law, many managers witnessed little or no motorized use on their districts, and underestimated the growing capabilities of motorized vehicles to travel in remote, rugged areas (USDA, 2001a; USDA, 2004b). As a result, many managers created travel plans that left NFS lands open to ORV use and did not look to the future when restrictions may become necessary. This strategy left forests vulnerable to increased resource damage and user conflicts as the capability of motorized vehicles enabled access to trails and areas once thought too remote and difficult to be reached.

The Lewis and Clark National Forest's 1988 Travel Plan, for example, identified specific trails and roads available for motorized recreation, but did not specifically close other trails to their use because, at the time, the machines could not reach those areas. With advances in technology, use is now occurring in areas never intended to support motorized opportunities (Lewis and Clark NF, 2005, personal communication).

As machines improved and use increased, motorized users also "began to assert their traditional 'right' to use those areas, and it became difficult for the Forest Service to close them" (Adams, 1998). Indeed, one recreation manager on the Gallatin National Forest admitted the forest should have implemented a more restrictive travel plan 15 years ago, before motorized use had become so established (Gallatin NF, 2005, personal communication). It is much easier to prohibit a use before it becomes established than to take away recreation opportunities people have come to expect.

Over the years, inconsistencies arose between forests concerning off-road travel prohibitions (allowing cross-country game retrieval, for example), signage of trails and areas,⁴ and enforcement of the regulations. On-the-ground signage was “either not being done at all or being done only after unreasonable delays” and restrictions on ORV use were inconsistently enforced, if at all (Reames, 1980, p. 146). Again, these inconsistencies may have resulted from the different situations (e.g. amounts of ORV use, funding for ORV programs) across NFS units and the failure to plan for changing technology, but the end result is that ORV use has largely been managed “as a result of historic accident rather than as a result of conscious policy” (Adams, 1998, p. 7).

A 1995 General Accounting Office report found not only inconsistencies in management, but mixed compliance with the Executive Orders. An investigation of four BLM resource areas and four Forest Service ranger districts in Utah, California, Arizona, Nevada, and Idaho found that five of the eight locations had “not finished inventorying their lands, mapping their designations, and posting signs to inform the public” (U.S. General Accounting Office (GAO), 1995, p. 8). The review also found that “none of the eight locations ...visited were systematically monitoring and documenting the adverse effects of OHV use” (U.S. GAO, 1995, p. 12). Additionally, the ORV programs were found to be under-funded and under-staffed, and thus unable to fully address user conflicts and environmental impacts (U.S. GAO, 1995).⁵

⁴ For example, two Arkansas forests within 5 miles of each other have different travel management policies: the Ouichita National Forest follows the “open unless posted closed” policy while the Ozark National Forest adheres to the “closed unless posted open” policy (Proceedings of the National OHV Collaboration Summit, (April 11-13, 2005), San Diego, CA. Retrieved September 1, 2005 from <http://www.fs.fed.us/recreation/programs/ohv/index.shtml>).

⁵ It is worth noting that, in 2005, many Forest Service officials still believe they lack the staff and funding to adequately address resource impacts and user conflicts resulting from ORV use.

In 1999, Havlick⁶ used information gathered through a 1998 Freedom of Information Act (FOIA) request to draw conclusions about the Forest Service's level of compliance with the Executive Orders, as well as consistency in ORV management between units. Of the 128 National Forests and Grasslands that responded, 29 percent managed their lands as "closed [to motorized use] unless posted open" while another 29 percent managed just the opposite- "open unless posted closed." As for the remaining 42 percent of the forests, Havlick (1999) could not discern from their responses how ORV use was managed. Only six percent of the responding forests had monitoring records on ORV impacts for each year from 1987-1998, and 66 percent of the forests reported user conflicts resulting from motorized use. The information provided through this FOIA request led the author to conclude that "current trail management is failing to protect the natural resources of the National Forests, that user conflicts abound, that agency monitoring and enforcement lag behind violations, and that nationwide, the Forest Service's policy toward motorized use is characterized by confusion rather than cooperation" (Havlick, 1999, p.3).⁷

Removal of the Forest Service's "40-inch rule" in 1990 further complicated ORV management, and opened the door to increasing use of all-terrain vehicles (ATVs).⁸ This rule was located at 36 CFR Part 261.12, and had prohibited the use of motor vehicles wider than 40 inches from traveling on NFS trails, thereby excluding the use of ATVs

⁶ Associated with the Wildlands Center for the Prevention of Roads (Wildlands CPR), an environmental organization devoted to protecting and reviving "wild places by promoting road removal, preventing new road construction and limiting motorized recreation." Their website is www.wildlandscpr.org.

⁷ Although lawsuits have been brought against the Forest Service for non-compliance with the Executive Orders and the Forest Service's own policy, it is curious that lawsuits are not more common. According to one prominent environmentalist, the court's strong deference to agency discretion makes many lawsuits too costly and time-consuming unless a case is airtight. Further, when the Forest Service does close some areas and trails to ORV use but allows it in other areas, environmental groups are often concerned that a lawsuit for closure of those areas could result in an unfavorable ruling and affect previously made decisions.

⁸ Published in the Federal Register on September 14, 1990, after 5 comments were received on the proposed policy change, and the Forest Service determined the rule change would "produce little or no environmental effects" and therefore did not require an environmental assessment or impact statement.

(which were typically 50 inches wide). Although intended to minimize confusion for visitors (some older vehicles could fit on trails while many newer vehicles could not), removal of this national standard left the decision on the types of vehicles to allow on NFS trails to “more than 130 individual Forest Supervisors scattered from Florida to Alaska” (The Wilderness Society, 2005). As of 1998, just under half of the nation’s forests had changed their trail width standards to accommodate all-terrain vehicles, with the remaining forests maintaining the maximum width of their trails as 40 inches (Havlick, 1999).

These inconsistencies in management are well known, and Region One of the Forest Service has attempted to rectify some of these problems. In 2001, after a large-scale environmental impact statement, the Forest Service’s Region One jointly signed a Record of Decision (ROD) with the Bureau of Land Management (BLM) to prohibit cross-country motorized travel on all Forest Service and BLM lands within Montana, North Dakota and portions of South Dakota.⁹ The purpose of this decision was to “provide timely direction that would minimize further resource damage, user conflicts, and related problems associated with motorized wheeled cross-country travel” (USDA 2001a). This ROD amended travel plans for nine National Forests to prohibit cross-country travel (travel off of existing roads and trails); however, the policy permits travel on user-created routes that existed at the time of the ROD. Despite this effort to be more consistent, there remained situations open to further inconsistency. Many of the units had not inventoried all existing user-created routes, effectively allowing for continued creation of routes. Moreover, ORV use is permitted on existing routes as long as their wheels fit within the existing tread, presenting problems for areas like the Dakota-Prairie

⁹ The analysis area excluded Region One forests in Idaho because they are in another region for the BLM.

National Grasslands. Ranchers, which are common permittees on the grassland, are exempted from the cross-country travel ban, and one pass from their ATV or truck can leave a lasting impression in the fragile prairie soils. As a result, other motorists can legally travel on those existing trails. Also, the Cheyenne District Ranger reports motorcyclists riding (legally, under the 2001 ROD) on cow trails that criss-cross the landscape (Dakota-Prairie National Grassland, 2005, personal communication).

The Forest Service acknowledges that previous nation-wide ORV management has “led to a patchwork of travel plans and direction that is confusing to managers and the public,” and that “some OHV use has caused undesirable use conflicts and natural and cultural resource impacts” (USDA, 2004b). The next section discusses the agency’s attempt to provide a more consistent travel management policy that the Forest Service expects will facilitate management of ORV use nationwide.

New Forest Service Travel Management Policy

Concern with increasing ORV use and the potential for ongoing and increasing adverse environmental and social impacts has led Forest Service Chief Dale Bosworth to name unmanaged recreation, particularly ORV recreation, one of the “Four Key Threats” facing NFS lands today (USDA, 2004a). As a result, the Forest Service recently released a new travel management policy that revises travel management regulations to provide more focus on management of all types of motor vehicles, particularly ORVs, on NFS lands. The new policy (see Table 2) authorizes the Forest Service to regulate the use of different classes of motor vehicles both on and off roads, and by time of year, if necessary. Provisions previously found at 36 CFR 295 that guided planning and management of ORV use off forest roads and trails have been revised and incorporated into Subpart B of 36 CFR 212, which is renamed “Travel Management.”

Table 2: New Regulations for Forest Service Travel Management*

CFR	Description	Proposed Regulations
36 CFR 212 (renamed as <i>Travel Management</i>)	Provisions contained in 36 CFR 295 were incorporated here in Subpart B. Provisions for snowmobile use regulation are in Subpart C.	§212.1 Defines ‘designated’ routes and areas as those indicated on a use map and in a travel management atlas. §212.51 NFS roads, trails, and areas shall be designated by vehicle class and, if appropriate, time of year. §212.51(b) Allows for travel off routes for dispersed camping and game retrieval. §212.52(b) Allows implementation of emergency closures of trails and roads. §212.55(b) In designating trails and areas, the responsible official <i>shall consider effects to</i> forest resources, wildlife, and conflicts with other users. §212.57 Responsible official shall monitor the effects of ORV use on designated roads, trails, and areas. §212.81 Provides for allowing, restricting, and prohibiting snowmobile use on NFS roads, trails, and areas.
36 CFR 261	Prohibitions	§261.13 Travel off of the designated system of routes once roads, trails, and areas are designated. §261.14 Possession or operation of snowmobile in violation of a restriction.

*This table contains excerpts of some of the regulations, not the complete text of the policy.

Nationally, the Forest Service allows motorized use on approximately 300,000 miles of roads and about one-quarter of the 123,000 miles of trails in the National Forest System. The agency estimates that there exists another 60,000 miles of illegally created routes across NFS lands as well. Currently, 20-30 forests require motorized recreationists to stay on a designated system of trails, roads and areas, another 40-50 forests restrict use to existing roads and trails, and between 50 and 60 national forests allow unrestricted cross-country motorized use (e.g. travel off of roads and trails) on about 67 million acres out of 192 million total acres in the National Forest System (Ingersoll, J., 2005, personal communication). The new policy is expected to substantially decrease the amount of land open to unrestricted motorized use.

These new regulations essentially prohibit cross-country ORV travel on all NFS lands, and require motorized use to occur only on specifically designated roads, trails, and areas. The new policy defines a road as a motor vehicle route over 50 inches wide “unless identified and managed as a trail.” A trail is defined as a motor vehicle route less than or equal to 50 inches wide “unless identified and managed as a road” (70 Fed. Reg. 68263 (November 9, 2005)), and an area is defined as any “discrete, specifically delineated space that is smaller, and in most cases much smaller, than a ranger district” (70 Fed. Reg. 68263 (November 9, 2005)).

Although cross-country travel will largely be prohibited, individual forests will be allowed to make exceptions for game retrieval and dispersed camping. Exemptions from the designated routes requirement for Forest Service permittees (such as ranchers and individuals with inholdings) will be carried over from the previous regulation 36 CFR 295.2(b)(4). Snowmobile use is also exempt from the designated routes requirement because snowmobile impacts are different in nature from other ORVs (USDA, 2004b); however, a new regulation in 36 CFR 212.81 will authorize Forest Supervisors to allow, restrict, or prohibit snowmobile use as they deem necessary.

The designation process must take place either at the forest or ranger district level, and must include: 1) public notice that the forest or district will begin the designation process, 2) public involvement and environmental analysis to determine which routes and areas are appropriate for designation, and, once determined 3) a use map made available to the public and routes entered into a Forest Service travel atlas. Once these steps are concluded, a Forest Order will no longer be necessary to prohibit motorized use on roads, trails and areas not specifically made part of the designated route system. Managers do

not have to inventory all existing user-created routes; only those they wish to include in the designated system.

In the preamble to the proposed regulation change, the Forest Service said it expects the new travel management policy will “enhance public enjoyment of the National Forests while maintaining other important values and uses on National Forest System lands” (69 Fed. Reg. 42381 (July 15, 2004)). As the next section illustrates, not everyone shares this optimism.

Concerns with the New Travel Management Policy

This policy is precedent-setting in that it moves towards more restrictive, more directed management of a recreational use on NFS lands. Not surprisingly, the Forest Service received over 81,000 comments on the proposed regulations, published in the Federal Register on July 15, 2004. While most comments were supportive of the need to designate routes for motorized use, disagreement exists as to whether the policy provides enough direction, and many comments expressed concern over lack of funding accompanying the proposed regulations, and the ability to adequately monitor the effects of OHV use and enforce regulations (USDA, 2005c).

Many environmental groups, like Western Resource Advocates,¹⁰ charge the policy is too broad and will allow for continued mismanagement, while proponents, like motorized access groups, applaud the inherent flexibility of the new policy. Indeed, the intent of this new policy is not to provide procedural, on-the-ground direction, but rather broad guidance that allows for much local discretion. For example, the Forest Service's direction on monitoring at 36 CFR 212.57 does not address how often and by what method monitoring is to be done. The regulation simply states “the Forest Supervisor or

¹⁰ Made up of Red Rock Forests, High Uintas Preservation Council, and Southern Utah Wilderness Alliance.

other responsible official shall monitor the effects of motor vehicle use on designated roads and trails and in designated areas.” The agency avoids specific direction because monitoring requirements “may vary depending on the circumstances and ... some discretion is needed in the context of monitoring these routes and areas” (36 CFR 212.57). Importantly, the Forest Service’s ability to monitor is closely tied to the funding provided by Congress. Typically, the Forest Service has little, if any, money available for monitoring, so loosening the monitoring requirement under the new travel management policy may reflect the reality of tight budgets.

A problem is likely to occur, however, when responsible officials are to issue emergency closures based on monitoring done pursuant to 36 CFR 212.57. In the absence of a definitive monitoring protocol covering time-lines and procedural initiatives, it will be difficult for local officials to determine when an emergency closure may be necessary. Further, the new policy removed the requirement for annual review of ORV management plans previously found at 36 CFR 295.6. Motorized access groups, like the Blue Ribbon Coalition based in Pocatello, ID, worry that potential recreation opportunities will be ignored, and environmental groups are concerned environmental and social impacts may go unnoticed or unmitigated.

There are other concerns with this new policy. Some conservation groups charge that the new regulations do not comply with the full intent of the Executive Orders (Western Resource Advocates, 2005). Whereas Executive Order 11989 calls for closure of trails and areas until adverse effects on resources are *eliminated*, the new 36 CFR 212.52 states adverse effects need only be *mitigated* before areas and trails can be reopened to motorized use (69 Fed. Reg. 42386 (July 15, 2004)). Further, new 36 CFR 212.55 will change the criteria for designation of routes and areas. Previously, 36 CFR

295.2(b) said ORV plans “shall provide vehicle direction aimed at resource protection, public safety of all users, and minimizing impacts among users.” The new 36 CFR 212.55 changes these criteria from “required outcomes,” as stated in Executive Order 11644, to “objectives” during the designation process. This less specific language may create suspicion on the part of environmentalists who want stronger national provisions, could lead to lawsuits from interest groups trying to clarify the intent of the policy, and could lead to continued inconsistency between units, as much discretion is left to local officials.

The new policy is also vague. For example, the definition of an “area” as a “delineated space that is smaller, and in most cases much smaller, than a ranger district” (36 CFR 212.1) allows for wide latitude in determining the amount and type of land to be open to cross-country motorized use. The policy does not list specific criteria for determining appropriate area boundaries, which could lead to controversy over an official’s determination of an area open to motorized use.

Further, there is no timeline for implementation of route and area designations. The Forest Service hopes the designation process will be completed within four years, but there is no mandate to do so, and no extra funding is expected. Lastly, designations can be made either at the ranger district level or forest-wide. This could lead to continued inconsistency (and user confusion) as one ranger district may complete route and area designations while a neighboring district on the same forest has not.

Summary

Since the early 1970’s, the federal government has acknowledged the need to better manage motorized recreation; however, the Forest Service has not consistently complied with requirements set forth in the original Executive Orders. History has

shown inconsistent implementation of ORV policy, which has led to user confusion, increasing environmental damage and exacerbated user conflicts. The agency, recognizing the continued and pressing need to control and minimize the negative effects of motorized use, recently released a new travel management policy that largely restricts use to designated roads, trails and areas on NFS lands.

As with many public land management decisions, there exists disagreement over the potential effectiveness of this new policy. Those favoring environmental protection are largely calling for a stricter policy while motorized access groups applaud its inherent flexibility. Importantly, for the purposes of this paper, the term “user conflict” remains undefined throughout the new travel management policy even though mitigation of user conflicts is one reason for this policy change. How often and in what way is this purported conflict expressed between motorized and non-motorized users? Since managers can influence the presence and intensity of user conflicts through the decisions they make, it is important to understand how these users typically interact with one another. Chapter Two discusses the topic of user conflicts in depth.

CHAPTER TWO: PARTICIPATION TRENDS AND USER CONFLICTS

A multitude of policies, regulations, and reports reflect the growth in motorized recreation participation and the increasing importance assigned the matter of managing these vehicles to minimize and prevent user conflicts. There has, however, been no serious, systematic attempt to chart such conflicts across NFS lands; nor has there been any attempt to properly study and document the performance of the policies intended to discourage or mitigate them. In light of the Forest Service's new travel management policy that restricts motor vehicle use to designated routes and areas, it is important to understand both the user conflicts that may result from motorized use and the context - i.e., rapidly increasing recreational use- within which these conflicts are occurring. Consequently, this chapter reviews recreation participation trends and then examines the types of user conflicts that are purported to exist between those who travel by self-propelled means and those who choose motorized transportation.

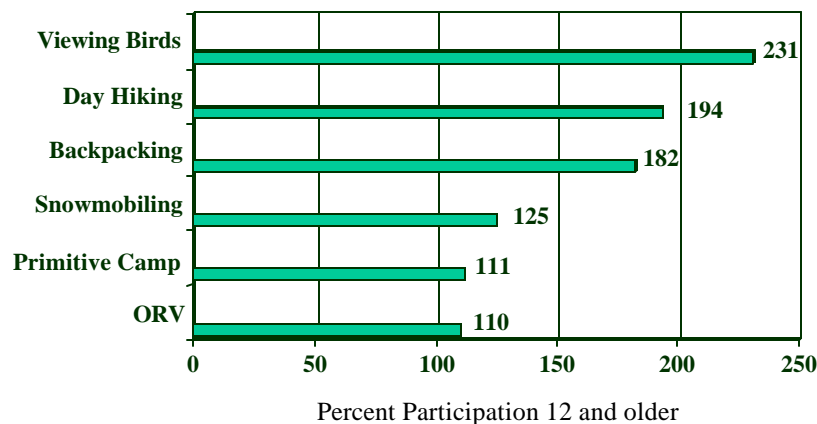
Participation Trends

The noise, intimidating aspects and adverse environmental impacts associated with motorized use have been a concern for federal land managers and recreationists for decades, and are more pressing today as the range and intensity of outdoor recreation activities continue to increase on a finite land base. According to the National Survey on Recreation and the Environment (NSRE),¹¹ the number of people age 12 or older who participate in outdoor recreation activities at least once a year has increased 75 percent from 1960 to year 2001, totaling 229 million people (Cordell, 2004). Current

¹¹ The NSRE survey does not distinguish recreation activities by land type (private, state, or federal); however, the activities summarized below require large tracts of land and natural landscapes and are popular on NFS lands.

participation rates indicate the popularity of non-motorized forms of outdoor recreation. Bicycling, fishing, day hiking, birdwatching and developed camping are all popular outdoor recreation activities nationwide, with more than 60-100 million people ages 12 and older engaging in these activities in the 12 months prior to the 2000-2001 survey (Cordell, 2004). Many of these activities are the fastest growing since the 1982-1983 study, and all are popular on NFS lands (see Figure 1). Birdwatching increased 231 percent from 1983, growing from 22 million to nearly 73 million participants by 2001. Day hiking increased over 193 percent during the same period, totaling 76 million participants. Backpacking and primitive camping also grew more than 100 percent during the 18 years between surveys (Cordell, 2004).

Figure 1: Fastest Growing Activities Nationally
 (% Increase 1982-1983 to 2000-2001)



Source: Cordell, 2004

Two forms of motorized recreation have also seen significant growth (see Figure 1 above). Between 1983 and 2001, snowmobiling increased 125 percent to total 13.5 million snowmobilers. Off-road driving, which includes all-terrain vehicles, motorcycles, sport utility vehicles and other 4-wheel drive vehicles saw 109 percent

growth in participation during that same period, from 20 million drivers in 1983 to more than 42 million by year 2001, totaling 18.3 percent of the U.S. population (Cordell 2004).

While the above activities are increasingly popular nationwide, they are also increasing on National Forest System (NFS) lands, which hosted more than 214 million visits (the entry of one person to the National Forest to recreate) in 2001. Of those visits, the Forest Service estimates that ORV use accounted for 11 million visits, or 5 percent of all visits (USDA, 2004b). Comparatively, ORV use accounted for an estimated 5.3 million visits in 1979 (Feuchter, 1980). Forest visitation is expected to rise with national population growth and rapid development near public lands (USDA, 2002), and many recreation managers in Region One, particularly those near growing urban centers like the Helena, Gallatin, and Lolo National Forests report rapidly increasing numbers of recreationists (USDA, 2002). The overall number of motorized recreationists is relatively low compared to non-motorized groups; however, their rates of growth are significant and highlight potential future trends.

Sales and Registration Trends

Trends in sales and registration of all-terrain vehicles and off-highway motorcycles provide further evidence of their increasing popularity. All-terrain vehicle (ATV) sales in the United States increased more than 500 percent from 1990 to 2004, totaling nearly 813,000 vehicles sold in 2004 (Van Kleeck, K., Motorcycle Industry Council, 2005, personal communication). Off-highway motorcycle sales also increased nearly 250 percent during that same period (Van Kleeck, K., Motorcycle Industry Council, 2005, personal communication).

In Montana alone, annual sales of ATVs and motocross bikes increased nearly seven percent from 1990 to 1998, totaling more than 4,500 new off-highway machines

sold (USDA, 2001a). A portion of those sales could be to repeat customers, but registrations in Montana increased 156 percent during that same period, from 7,399 registrations in 1990 to 18,953 in year 1998 (Montana Department of Fish, Wildlife, and Parks, 2003). Off-highway motorcycle and ATV registration in Idaho also increased nearly 88 percent in the five-year period from 1999-2003, totaling more than 82,000 registered machines (Idaho State Parks and Recreation, 2005).

Interestingly, a Helena National Forest official observed that, though numbers of motorized users are increasing, the membership in motorized clubs that work with the forest is remaining steady (Helena NF, 2005, personal communication). Recreation clubs are very important for performing volunteer trail maintenance and promoting responsible recreation among members, as well as providing a medium through which managers can distribute regulation and educational information. As user numbers increase, managers may have a more difficult time reaching individual motorists to emphasize responsible recreation and reinforce regulations.

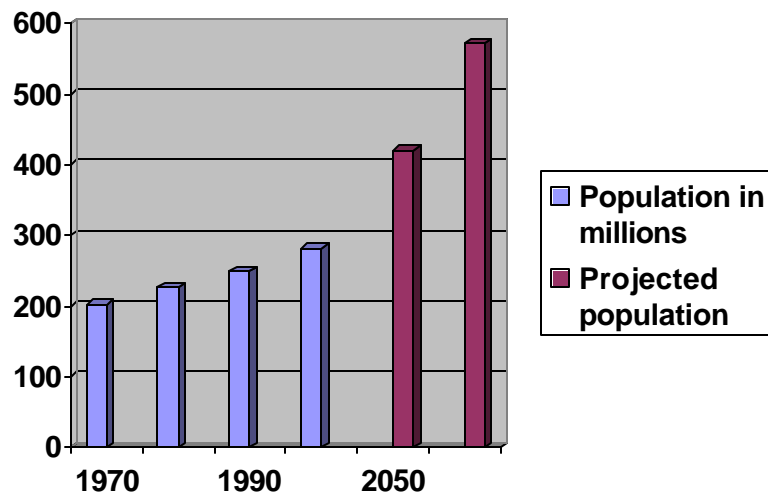
Other Important Trends

Clearly, motorized and non-motorized outdoor recreation activities are becoming more popular. The increasing popularity of these activities is in large part the result of new recreation technology, which alters recreation patterns and enables more people to participate. Lighter gear enables hikers to travel farther and stay out longer in the backcountry. New equipment enables entirely new activities, and new forms of transportation, both motorized and non-motorized, facilitate access to backcountry areas once thought too distant or inhospitable to be reached. For example, ORVs introduced in the 1960's and 1970's were heavy, unstable, and mechanically unreliable, limiting their use to skillful riders and relatively easy-to-reach areas (Havlick, 2002). Today's ORVs

are much more powerful, reliable, and easier to ride, leading to an explosion in popularity.

Population growth is also a major factor driving outdoor recreation participation (see Figure 2). The U.S. population now totals more than 295 million people and is expected to grow twice that amount by year 2100 (U.S. Census Bureau, 2005a, 2005b). Consequently, an activity with steady participation rates over time will still result in a substantial increase in numbers of participants.

Figure 2: U.S. Population Growth 1970-2100 (projected)



Source: U.S. Census Bureau, 2005

This growth is largely occurring in the 13 western states (Mountain and Pacific states, including Alaska and Hawaii). Throughout the 1990's, the West's population grew six percent faster (15.2 percent growth) than the national average (9.3 percent growth), and the Mountain Division states (Wyoming, Montana, Colorado, Utah, Idaho, New Mexico, Arizona, and Nevada) grew nearly twice as fast as the average for the west during that same period (Masnick, 2001). In other words, many forests in Region One can expect to see rising numbers of recreationists.

At the same time, recreation pressure may increase in certain areas due to the diminishing amount of private land open to public use and continuing development along National Forest boundaries. For example, the 2000 Renewable Resources Planning Act reported that “the proportion of privately owned forest land open to the public and free of charge has declined from 29 percent in 1979 to 23 percent in 1989 and 15 percent in 1996” (USDA, 2001b). According to the General Accounting Office in 1992, “of the 465 million acres of public land managed by the Forest Service and Bureau of Land Management, about 50.4 million acres (roughly 14 percent) lack adequate public access” (Peterson, 1999). One can expect this access to have diminished over the last decade due to increasing population pressure and consequent development near public lands.

The above trends- e.g. population growth, private land development and recreation participation- all point to an increasing scarcity of recreation opportunities. For example, groups seeking to preserve natural areas for quiet recreation are likely to perceive those areas as diminishing, while motorists perceive their access to public lands as increasingly threatened. Scarcity is a known driver of natural resource conflicts, which leads to the formation of interest groups vying to secure their interests and maintain their “piece of the pie” in light of increasing demands on a finite resource (Nie, 2003). The rest of this chapter illuminates the themes to conflict on an individual level, but the importance of scarcity as a driver of conflict is a constant undercurrent. If these groups had ample places to recreate without having to interact or see the effects of their use (environmental damage, for example), the conflict would likely be lessened. Chapter Three discusses the importance of perceived scarcity in more depth.

User Conflicts

The previous section sets the context within which the Forest Service's travel management policy will be put in place- more people than ever recreating on National Forest System lands, and an expected increase in use due to technological advances and population growth. As more recreationists share a finite land base, there is more opportunity for interaction between different groups. The more managers understand the types of interactions that occur between motorized and non-motorized recreationists, the better equipped they are to make well-informed decisions during the route designation process under the new travel management policy. If trails currently closed to motorized use are designated as open for such use through the travel management process, are non-motorized users still likely to be present on those trails? Is there a threshold for noise tolerance by non-motorized users beyond which they will avoid the trail? In an effort to increase understanding, this section reviews recreational conflict literature to define conflict in general and the conflict between motorized and non-motorized users¹² specifically, then discusses the social impacts of noise and displacement that may result from motorized recreation. This literature review includes research on conflict between different types of motorized recreationists (for example, ATV's, snowmobiles, motorboats) and non-motorized recreationists because the interactions between those who choose self-powered forms of travel and those who travel via motorized means are remarkably consistent. The last section of this chapter includes excerpts from supplemental interviews with Forest Service recreation managers in Region One to illuminate current managers' perceptions of the conflict.

¹² It is important to note that much of the research investigating conflict between motorists and non-motorists is dated. There was a flurry of research on motorized use in the 1970's and 1980's, with a relative dearth of information on the user conflicts between these two groups since then. The focus of recent research has been the environmental impacts resulting from ORV use and motorized user recreational preferences and demographics.

Foundation of Recreational Conflict

Jacob and Schreyer (1980, p. 369) provide the theoretical foundation for recreational conflict, which they define as “goal interference attributed to another’s behavior.” When one party perceives the actions of another as interfering with their recreational goal, the party is likely to experience conflict. For example, a hiker seeking a quiet, natural experience could experience conflict after encountering an off-highway motorcyclist on the same trail because the motorcyclist could preclude the hiker’s ability to achieve her desired goal of a quiet, natural experience.

Conflict, then, is an emotional state of annoyance with another group that results in dissatisfaction with the experience. Once established, conflict becomes an “enduring psychological state” that may remain an emotional experience or may manifest itself through direct confrontation or the adoption of coping mechanisms to avoid the source of conflict (Owens, 1985).

Jacob and Schreyer (1980) posit that four classes of factors contribute to recreational conflict:

1. *Activity style* refers to how specialized the users are and the personal meaning attached to the activity. The more experienced a recreationist, the narrower the acceptability of other people’s behaviors and activities, and the more likely those users are to perceive conflict.
2. *Resource specificity* refers to the personal meaning attached to the particular setting. The more attached someone is to a particular place, the more sensitive he/she is likely to be to changes to that place, including other types of activities and behaviors.
3. *Mode of experience* is the extent to which the activity is focused on the environment, and is correlated with the level of recreation technology employed. Those most focused on the environment will most likely be engaged in self-propelled, quiet activities, and will be vulnerable to the intrusion of faster, more technologically advanced activities.

4. *Tolerance for lifestyle diversity* influences how accepting individuals are of other lifestyles and recreational activities. It is thought that the more tolerant individuals are of others, the less likely they are to engage in stereotyping of others based on type of equipment used and behavior exhibited.

Incompatible recreational goals are not a necessary precursor for goal interference to occur. For example, two separate hikers entering a remote backcountry area to camp alone could interfere with each other's goals just by being present. Those who seek the same goals through different, incompatible technologies can also lead to conflict. Direct interaction between parties is not necessary either, as the mere indication of another party's presence could interfere with the first party's experience. For example, motorcycle tracks through a meadow could interfere with a hiker's ability to enjoy a natural experience.

Subsequent research supports the relevance of Jacob and Schreyer's four-factor model (Moore, 1994) and has expanded this model to include the importance of competition for shared resources (Fitzhugh, 1985), differing values¹³ (Watson, 2001), the concern for safety (Gambill, 1998; Vaske, Carothers, Donnelly & Baird, 2000), and place attachment (Gibbons & Ruddell, 1995; Vaske et al., 2000). Further, Watson, Niccolucci, and Williams (1994) renamed Jacob and Schreyer's original four factors as recreation specialization, definition of place, focus of trip/expectations, and lifestyle tolerance, and Manning (1999) suggests these factors are more predictors of *sensitivity* to conflict than they are indications that conflict already exists.

It is important to note that some researchers, like Schneider (2000) and Watson (2001), argue recreational conflict research suffers problems in consistency of measurement, as well as the definition of "conflict." For example, some conflict studies

¹³ Value differences can be "represented by differences in meanings attached to a resource or differences in attitudes toward management policy" (Watson, 2001, p. 63). Such differences are common in motorized versus non-motorized conflicts.

measure the extent to which individuals dislike meeting others on trails, while others inquire about the acceptability of certain activities and behaviors in a given setting. Other studies try to directly measure goal interference by asking the extent to which another's activity interfered with the respondent's experience. In spite of these inconsistencies, recreational conflict research has revealed common themes to the conflict between motorized and non-motorized recreationists, which are discussed in this chapter.

Common Themes in Conflict Research

How widespread is conflict between recreationists? In his comprehensive review of recreation conflict literature in 1994, Moore stated that conflict is overestimated due to studies specifically designed to find differences between recreationists and that most recreationists are satisfied with their experiences; however, he acknowledges conflict is a major problem on some multi-use trails. Indeed, nearly 50 percent of multiple-use trail managers in northeastern Illinois and 35 percent of trail managers surveyed in other states noted conflicts on at least a “moderately frequent basis” (Gambill, 1996). In 1998, 66 percent of National Forests¹⁴ reported conflicts between motorized and non-motorized users (Havlick, 1999).

Moore (1994) summarizes some common themes to recreational conflicts, including asymmetrical perceptions of conflict, different levels of technology, different attitudes toward the environment, and violation of social norms, among others. These themes are common to conflicts between motorized and non-motorized recreationists, which often consist of “the impact of mechanized recreationists upon those who prefer non-mechanized activities” (Jackson & Wong, 1982, p. 59). Such conflicts commonly

¹⁴ Responding to the Wildlands CPR 1998 Freedom of Information Act request.

result from motor vehicle noise and visible environmental damage, and may result in displacement of non-motorized recreationists (Stokowski & LaPointe, 2000).

While the motorized user's perception of conflict with non-motorized users is important, it has not been well-represented in recreational conflict research because the conflict has historically been asymmetrically perceived by non-motorized users. Increasingly, however, the conflict for motorized users may stem from off-site interactions when other user groups seek to restrict motorized access and issue complaints about ORV use to land management agencies. Forest Service recreation managers in Region One report many motorized users are feeling disenfranchised and frustrated that they keep "losing trails and areas" to ride. Many Region One forests are undergoing travel planning, which will inevitably restrict motorized use as the forests move from a system of "open unless posted closed" to considering all areas off limits except those explicitly designated as open. In addition, the Gallatin National Forest is proposing to close nearly 90 percent of its trails to motorized use during hunting season to minimize resource damage and conflicts with stock hunters (Gallatin NF, 2005, personal communication). After decades of relatively unrestricted use, many motorized users are beginning to feel squeezed.

It is important to note that, though grouped together for discussion, these groups are neither mutually exclusive nor completely homogeneous. For example, motor vehicles are sometimes used to facilitate participation in non-motorized activities like hunting, cross-country skiing or hiking (see, for example, Fisher, Blahna & Bahr, 2001; USDA, 2004b) and conflict can exist within recreational groups, like llama packers in conflict with horse-users (Blahna et al., 1995), and off-highway motorcyclists in conflict with ATV riders (ID OHV Recreation and Travel Management Workshop, 2005). Also,

those who engage in the same activities, like off-road driving, can range from family groups to expert racers and adventure seekers, and thus can have different desired experiences and perceptions of their experiences. Moreover, there have not been shown to be consistent socioeconomic or demographic differences between motorized and non-motorized recreationists, other than non-motorized recreationists tending to have higher levels of education (Havlick, 2002). On the other hand, important differences have been shown to exist between these groups related to susceptibility to intrusive behavior, desired experiences, and value orientations.

Asymmetry of Conflict

In general, conflict research has found recreationists prefer to meet users similar to themselves (in-group) rather than those perceived to be dissimilar (out-group), and those using the least technology are the least tolerant of others while those using the most technology are the most tolerant of others. For example, in 1976, McCay and Moeller found that hikers, bikers, horse-users, and motorcyclists each preferred to meet their own group on trails, and. Of the four user groups, hikers were the least tolerant of meeting all other groups, and the motorcyclists were the most tolerant of meeting all other groups. More recent studies have found similar results, with those who are engaged in slower, less mechanized activities perceiving faster, more mechanized activities negatively (Andereck, Vogt, Larkin & Freye, 2001). These different levels of tolerance for other users can lead to asymmetrical impacts in which the less mechanized users are disproportionately affected by the presence of more mechanized users.

A 1982 study of conflict between motorcraft users and paddlers in the Boundary Waters Canoe Area Wilderness (BWCAW) illustrates the asymmetrical nature of conflict between these groups (Adelman, Heberlein & Bonnicksen, 1982). While 57 percent of

the motorcraft users felt they never disturbed paddling canoeists they met in the BWCAW, more than 80 percent of the canoeists felt at least occasionally disturbed by motorcraft presence (p. 53). Seventy-one percent of the paddlers “disliked meeting and/or seeing motorcraft users, while only 8 percent of the motorcraft users disliked meeting and/or seeing paddlers” (p. 58). The motorboaters were also much more likely to perceive themselves as more similar to the paddlers than were the paddlers likely to identify with the motorboaters. Over thirty years of conflict studies support these asymmetrical perceptions of motorized and non-motorized users (Adelman et al, 1982; Andereck et al, 2001; Badaracco, 1976; Ivanko, 1996; Jackson, Haider & Eliot, 2003; Jackson & Wong, 1982; Knopp & Tyger, 1973; Lucas, 1964; McCay & Moeller, 1976; Noe, Wellman, Buhyoff, 1982; Stapleton, 1981). Recreation managers also report this asymmetry exists between motorized and non-motorized users. For example, on the Lewis and Clark National Forest, motorcyclists do not mind sharing trails with hikers and stock users, but hikers and stock users often avoid trails that receive much motorcycle use, citing the noise, speed, and environmental damage as negatively affecting their experiences (Lewis and Clark NF, 2005, personal communication).

Different Levels of Technology

Different levels of technology used can in large part explain this asymmetry. People tend to recreate in “technological clusters” in that those who hike are most likely to prefer other self-propelled forms of recreation, while those who ride ATV’s are more likely to prefer other motorized activities (Andereck et al., 2001; Devall & Harry, 1981; Jackson & Wong, 1982). Each technology results in recreationists with distinct expectations, motivations and attitudes (Shultis, 2001), and these different technological groups have been found to differ in their level of “sensation-seekingness” (Devall &

Harry, 1981). Where many motorists seek excitement, adventure, and socialization, self-propelled recreationists often seek quiet, solitude, and closeness with nature (Knopp & Tyger, 1973). A study of cross-country skiers and snowmobilers in Alberta, Canada, found cross-country skiers predominantly chose their activity for exercise, solitude, and experiencing nature, while snowmobilers mostly chose theirs for “socialization, adventurousness, and escapism” (Jackson & Wong, 1982). In Arizona, most non-motorized users sought solitude and the aesthetics of the forest while ORV riders largely sought challenge, adventure and socialization when recreating (Stapleton, 1981).

Even when groups share the same primary recreational goal, the technology used and the other reasons for recreating may be incompatible (Gramman & Burge, 1981; Watson, 2001). The different technology employed leads to uneven vulnerability to interference from “physically or socially obtrusive behaviors” between the groups (Ruddell & Gramman, 1994, p. 103). For example, motorists and non-motorists may both visit an area to enjoy nature and experience solitude,¹⁵ but the speed, noise, and high-tech appearance of motor vehicles can significantly interfere with self-propelled recreationists’ ability to achieve their goals.

Those seeking quiet and solitude through non-motorized means are more likely to be disturbed by engine noise from an ATV than are those traveling by motor vehicle. Consequently, non-motorized users can be disproportionately affected by the presence of motor vehicles, which consume large amounts of space, create visible damage to the environment, and can be quite loud (Badarraco, 1976; Webber, 1995). The presence of motorized vehicles, therefore, can often preclude non-motorized users from achieving

¹⁵ According to a study of Tennessee OHV user preferences, “The most frequently reported motivations for OHV driving included: enjoying natural scenery, being with other people with similar interests, and getting away from crowds of people” (Fly, Stephens, Askins & Hodges, 2002, p. 8). These are often the same goals for self-propelled recreationists.

their recreational goals, leading to feelings of conflict.

Value Orientations

While different levels of technology help to explain what has been described as “one of the most bitter forms of conflict” (Jackson & Wong, 1982, p.59), Knopp and Tyger (1973, p.7) noted the “emotion generated in this confrontation is much more intense than a simple difference in choice of outdoor pursuit would seem to warrant.” In fact, the emotionality of this conflict can in part be attributed to larger value differences that influence beliefs about the appropriate management and uses of public lands and the appropriateness of certain activities in a given setting (Blahna, Smith & Anderson, 1995). Havlick (2002, p. 123) explains, “Regardless of how lengthy a list you can put together about the adverse impacts of ORVs or their economic benefits to local coffers, your ultimate views on these machines will depend upon values and ethics, not numbers on the page. What difference does it make, after all, if ORVs are harmful to elk if you don’t care about elk?”

The way these groups characterize one another reveals these different perceptions of what are appropriate (or inappropriate) uses of public lands. Motorized recreationists sometimes refer to opponents as “elitist,” “granola-eating” urbanites trying to “lock them out” of public lands (Adams, 1998), and label some opponents to motorized use as “enviro-wackos.” Some hikers and non-motorized recreationists, in contrast, view many motorized users as a “beer guzzling, NASCAR subset” polluting the backcountry (Ripley, 2001) with “ear-splitting, air-polluting, and trail-mangling” machines (Wilkinson, 2000). Other vivid descriptions like “mechanized onslaught” and “piston-powered invasion” are also common (Smith, 2000). These are certainly strong stereotypes, and are more reflective of differing values than they are of reality. As stated

earlier, no consistent demographic or socioeconomic differences between these groups have been shown to exist, other than non-motorized recreationists having more formal education (Havlick, 2002).

Motorized and non-motorized groups have been found to differ in their beliefs about land management, with non-motorized users more willing to support environmental actions and accept restrictions on use than motorized users. Pedestrian visitors to Cape Hatteras National Seashore who participated in a 1982 study by Noe, Wellman and Buhyoff largely supported restrictions on pedestrian and ORV use along the seashore to minimize environmental damage. In contrast, the ORV users neither perceived the same amount of damage as the pedestrians, nor supported restrictions on use to curtail the damage they did perceive.

Knopp and Tyger (1973) also noted cross-country skiers in Minnesota were consistently in favor of protecting the environment over preserving access for their activity, while snowmobilers were largely reluctant to curtail use in light of environmental damage. This difference in perceptions of damage and willingness to accept restrictions on use suggests differing beliefs about appropriate activities on public lands that stem from larger value orientations.

A unique study by Vitterso, Chipeniuk, Skar and Vistad (2004) documented that the presence of just one snowmobile significantly detracted from the experiences of cross-country skiers who encountered it, even though it was traveling slowly and at a distance. Those who actually encountered the vehicle evaluated its presence more negatively than those who did not encounter the vehicle.¹⁶ This example illustrates the

¹⁶ Interestingly, Cessford (2003) discovered the opposite. Hikers with actual encounters with bikes were less likely to evaluate other bikers negatively than were those who did not directly encounter bikes. While these results seem contradictory, the difference can perhaps be explained by recognizing that there is a

importance of broad philosophical values in influencing perceptions of what are appropriate recreational activities in a given setting. Those involved in travel planning on the Gallatin National Forest are also involved in philosophical debates regarding motorized use in Wilderness Study Areas and backcountry areas (Gallatin NF, 2005, personal communication).

The Importance of Social Norms

Value orientations can also influence social norms that guide acceptable behavior, equipment and activities in a given setting. Shared norms are increasingly important when recreationists share a setting, and conflict is likely as different groups hold differing views of an area (Ruddell & Gramman, 1994). Trail managers and users commonly report that noise, speed, smell of exhaust, reckless behavior, and visible trail damage are sources of conflict between users on multiple-use trails (Gambill, 1996; Moore, 1994). These complaints illustrate a difference in perceptions of what is appropriate, fueled in part by larger value differences. One of the most common complaints of non-motorized recreationists, motor vehicle noise, is an important social norm that, when violated, can actually lead to displacement of visitors. Noise and displacement are both discussed in the next section.

Social Impacts

The asymmetrical nature of conflict between motorized and non-motorized users means non-motorized users are often disproportionately affected by the presence and use of ORVs. For example, one person driving an all-terrain vehicle on a trail in a canyon can have a negative impact on numerous hikers recreating in that same canyon, yet the

difference between mountain bikes, which are quiet, and motor vehicles. As mentioned, noise is the most common complaint of ORV use.

hikers may not negatively affect the motorist's experience. This disproportional effect may result from visual effects, like the high-tech look from brightly colored suits and full face helmets (Keller, 1990), as well as the visible environmental damage resulting from their use. For example, ORV use has long been associated with soil compaction and erosion, stream bank destabilization and increased sedimentation, damage to wetlands, vegetation loss, wildlife disturbance, and a host of other adverse impacts (Havlick, 2002). For those who value natural landscapes and favor preservation, this environmental damage can significantly detract from their experience. The noise emitted from these machines is also a common complaint of non-motorized recreationists.

Noise

Noise is a subjective determination, defined as any unwanted sound (Mace, Bell & Loomis, 2004). The louder, less predictable and less controllable a sound, the more likely it is to be perceived as noise, and the perceiver's annoyance will increase if the noise is thought to be unnecessary (Mace et. al, 2004). Off-road vehicle noise encompasses all of these characteristics as engine noise carries great distances, is intermittent, out of the perceiver's control, and, for many, is perceived as an unnecessary intrusion. For many recreationists, the noise from such use can significantly detract from their experience (Harrison, 1974), and motor vehicle groups are starting to acknowledge that ORV noise is the biggest source of user conflicts (Dolesh, 2004).

Indeed, a study of visitor perceptions of noise at campgrounds in Canadian national parks found the noise from chainsaws, motor bikes, and cars to be the most annoying to visitors (Kariel, 1990). Dellora, Martin, and Saunders (1984) also found motorcycle noise to be the main cause of recreational conflict among four-wheel drive users, bushwalkers, picnickers, and others in Victoria, Australia.

A 1992 Massachusetts Department of Environmental Management study (Webber, 1995) of ORV noise in 13 forests and parks throughout the state revealed “there are no real ‘quiet zones’ where visitors could be assured of not hearing ORVs.” The author concludes the noise and environmental impacts associated with ORV use creates a disproportional level of impact as compared to other recreational activities.

The annoyance resulting from ORV noise differs with the area and resultant visitor expectations. Harrison, Clark and Stankey (1980) suggest that tolerance of vehicle noise will be greater in more urban areas, and lessen as visitors move into less developed areas where they increasingly seek natural experiences. In other words, those who visit backcountry areas to engage in non-motorized activities will be more sensitive to motor vehicle noise than those recreating at busy campgrounds or trailheads.

Social impacts caused by technological noise are a serious issue, leading Kockelman (1983) to declare ORV use as inconsistent with a multiple-use concept because of the disproportionate impacts on other recreationists resulting from their use. It is not uncommon for non-motorized recreationists to be displaced to another setting or leave the area altogether where motorized use is common (Adelman, Helberlein, & Bonnicksen, 1982; Manning & Valliere, 2001; Moore, 1994; Stokowski & LaPointe, 2000). The following section examines this occurrence in more detail.

Displacement

As noted throughout this chapter, ORV recreation can negatively affect the experiences of many non-motorized users seeking quiet, natural experiences. This dissatisfaction with the experience can lead to feelings of conflict, which in turn can lead to stress. Often, recreationists adopt coping mechanisms to reduce stress and align their

expectations with their actual experiences (Manning & Valliere, 2001; Schneider & Hammitt, 1995).

Recreationists typically engage in three primary coping behaviors to reduce stress from annoyance and conflicts with other users (Manning & Valliere, 2001):

1. *Rationalization*-The user changes his/her perception of the experience to essentially convince him/herself that the experience was pleasurable.
2. *Product shift*- The user adapts his/her expectations to meet the actual experience.
3. *Displacement*- The user decides to alter travel patterns to avoid significant dissatisfaction. Displacement can be either temporal (by day of week or season of use) or spatial (going to another location within the same area or going to an entirely new area).

The coping strategy that is adopted depends on “perceived level of dissatisfaction, ...degree of commitment to the present alternative despite its dissatisfying aspects, and willingness (motivation) and ability to bear the costs of time, energy, and other resources that accompany a decision to select and pursue another alternative” (Gleason, 1980, p. 37). In other words, those who have invested significant time and effort into an activity, and experienced only mild dissatisfaction, will likely rationalize (convince themselves) that the experience met their expectations. Product shift is likely to be employed by those who feel strongly attached to a particular place, or are unable to fulfill their recreational needs elsewhere.

It is important to point out that satisfaction with experiences does not necessarily mean the experiences provided are preferable. For example, novice hikers in the Bob Marshall Wilderness reported more dissatisfaction with horse-users than did experienced hikers (Fitzhugh, 1985). This suggests experienced hikers had adjusted their expectations to accommodate horse-users into their experience. Is it possible that non-motorized users who travel on routes open to motorized use have adjusted their expectations? At an

individual level, coping can be beneficial; however, at the societal level coping can be illustrative of a general reduction in low use, quiet recreation opportunities (Manning and Valliere, 2001).

Displacement often results from significant dissatisfaction, and occurs when someone *moves away from* an undesirable setting, rather than simply *seeking out* a more desirable setting. Given the often one-way nature of the conflict between motorized and non-motorized users, it is not surprising that non-motorized groups may experience dissatisfaction with the visible environmental impacts, noise, and perceived safety hazards of ORV use. Much anecdotal evidence of displacement exists. For example, managers of a Massachusetts State Forest note that 90 percent of users on one trail are motorized even though the trail winds through “the most scenic hiking areas in the Commonwealth” (Webber, 1995, p. 5). Region One Forest Service managers report anecdotal evidence of displacement as well, though they do not know the number of visitors displaced. Through written public comments during travel planning, phone calls from recreationists, and editorials in local newspapers, recreation managers on the Gallatin, Lewis and Clark, and Helena National Forests hear of non-motorized recreationists avoiding trails that receive motorized use (Gallatin NF, 2005; Helena NF, 2005; Gallatin NF, 2005; Lewis and Clark NF, 2005, personal communications). While the managers largely estimate that a small percentage of users are displaced, they admit they have no data to back up these assertions.

Indeed, lack of data is a problem for understanding how common displacement really is. Bleich (1988) argues managers too often mistake *displacement* of non-motorized recreationists for a *reduction in demand* for non-motorized recreation opportunities. For example, he argues that studies investigating ORV conflict under-

represent the level of impact on other users because those who truly dislike ORVs have already left the area. This is likely the case with Ivanko's (1996) study of rail-trail users in Wisconsin in which he found asymmetry in conflict between motorized and non-motorized users, but "overall not much conflict." Nearly 70 percent of the trail users were motorized, however, and it would make sense that those who did not like motorized vehicles simply avoided the trail.

Displacement has also been documented empirically, although displacement studies are difficult because the desired study participants are often no longer present. Anderson and Brown (1984) noted both temporal and spatial displacement of visitors to the Boundary Waters Canoe Area Wilderness, which allows motorboat use on some lakes. Visitors altered their entry points into the Wilderness and visited on a different day of the week to avoid noise, high use levels, litter, and environmental impacts.

Manager Perceptions of Conflict

Supplemental interviews with Forest Service officials in Region One provide insight into the nature and extent of user conflicts as seen on the ground, from the manager's perspective. All of the officials interviewed were aware of user conflict, largely asymmetrical, between motorized and non-motorized users. Editorials in local newspapers, angry phone calls and comment letters submitted during travel planning are ripe with complaints of motor vehicle noise, environmental damage, and excessive speed. On the Lewis and Clark National Forest, many non-motorized users have "no tolerance" for meeting motorcycles on trails, and prefer to have separate areas in which to recreate (Lewis and Clark NF, 2005, personal communication). Managers on the Gallatin National Forest have heard from non-motorized users who feel that winter motorized users (e.g. snowmobilers) take a disproportionate amount of space for their activity as compared to

hikers and cross-country skiers, and ask that snowmobile use be more restricted (Gallatin NF, 2005, personal communication).

On many Region One forests, an emerging issue is that between ATV riders and stock users during hunting season. Stock users are complaining that ATV noise disrupts their ability to find game, and are resentful of ATV riders reaching the best hunting spots first. In summary, Forest Service recreation managers have received enough indication that non-motorized users prefer to be separated from motorized users that they are generally trying to separate these users through travel plans (Helena NF, 2005; Gallatin NF., 2005; Lewis and Clark NF, 2005, personal communications).

Summary

Outdoor recreation is an increasingly popular activity, spurred by technological advances and population growth. At the same time, access to public lands is becoming a greater issue as development grows along Forest Service boundaries and private lands are increasingly closed to the public. In light of these trends, the Forest Service's new travel management policy will need to be able to address increasing recreation demands and expectations from both motorized and non-motorized users.

This literature review revealed several common themes to conflict between motorized and non-motorized users, including asymmetrical perceptions of conflict, uneven vulnerability to intrusive behavior, and different beliefs about the nature and purpose of public lands. Also, the number of recreationists in a given area does not predict conflict as much as the presence of different types of recreationists, like motorized and non-motorized users. Many recreation managers in Region One have witnessed these same themes, with non-motorized users complaining about sharing trails with motorized users, due to the speed, noise and environmental damage resulting from

ORV use, while motorized users are largely unaffected by the presence of other recreationists and are willing to share trails.

CHAPTER THREE: SUMMARY AND RECOMMENDATIONS

Thus far, this paper has: (a) Discussed the history of Forest Service ORV management leading to the need for a new travel management policy, (b) Provided a summary of important trends- e.g. population increase and participation rates- that may affect the environment in which managers make decisions, and (c) Reviewed common themes to recreational conflict between motorized and non-motorized recreationists. This final chapter applies information from the first two to discuss expectations of the new travel management policy. It also introduces several new issues related to travel planning, and thereafter offers some concrete suggestions for moving forward. It then concludes with a summary of suggestions for future research efforts that might help managers in the travel planning process.

Though the proposed system of designated routes has the potential to improve ORV management, the effect on user conflicts is likely to be rather minor. For one thing, the proposed regulations are not very different from the ones already in place (and inconsistently applied and enforced), except that they contain less specific language. Secondly, the move to designated routes will likely reduce environmental damage, but user conflicts are not likely to be minimized through designation of routes because efforts to manage ORV use on NFS lands will continue to be complicated by certain other factors. These include the strongly perceived scarcity of recreation opportunities, the absence of technical remedies against noise and other offensive byproducts of motor vehicles, and adequately understanding and accurately assessing the terms of the tradeoffs entailed in user conflicts.

Expectations for Travel Management Under the New policy

Chapter One attempted to show that, though equipped with clear orders to direct and manage ORV use on NFS lands, the Forest Service has a history of inconsistent management and non-compliance with the Executive Orders and subsequent Forest Service policy. Environmental damage and user conflicts, in addition to increasing recreational use, have spurred the Forest Service to release a new policy that largely eliminates cross-country ORV travel and restricts use to a designated system of roads, trails and areas (70 Fed Reg. 68263 (November 9, 2005)); however the history of Forest Service ORV management raises certain questions about the results this new policy is likely to produce. Today, ORV management is more complicated as use has increased, technology has advanced, and interest groups have formed around the issue of motorized use on public lands.

The Forest Service expects the new policy to streamline management by moving most regulations governing ORV use to 36 CFR Part 212, which will be renamed *Travel Management* (USDA 2004b). Whereas previous regulations at 36 CFR Parts 295 and 212 focused more on maintenance and management of the transportation system (NFS roads and trails), the new regulations provide managers more authority to manage different classes of motor vehicles both on and off roads and by time of year, if necessary (USDA, 2004b).

Assuming that increased consistency in management will help to minimize user conflicts resulting from ORV use, (making it easier for users to understand and comply with regulations, thereby reducing illegal use and better meeting user expectations) this new policy contains some positive changes from previous regulations. The *designated routes* requirement has the potential to simplify management in several ways. Firstly,

once designations are made, managers do not need to post Forest Orders to close specific routes and areas, and law enforcement officers can write a ticket for anyone traveling off the designated system. Secondly, the new policy is likely to lead to more consistent management between forests, as all forests are to manage lands as “closed unless posted open.” This national requirement should make it easier for users to know travel management regulations on any given forest. Lastly, managers can focus on maintaining the “open” signs on roads and trails, without spending time replacing stolen or vandalized “closed” signs. Essentially, this policy places the onus of responsibility on users to know where they are allowed to ride (based on the use map provided by the Forest Service), whether or not the route is marked on the ground.

For the 50-60 forests that currently allow unrestricted cross-country motorized use on approximately 67 million acres of NFS lands, this new policy can indeed be expected to substantially improve the results of ORV management efforts; this, in turn, should reduce both the frequency and severity of ORV-related adverse environmental impacts and user conflicts.

On the other hand, some aspects of the new policy could limit its effectiveness in reducing user conflicts. Many of the positive aspects described above are contingent upon the designations being made and the regulations enforced; however, there is no timeline for beginning or completing implementation of designated routes and areas. Furthermore, a large reason for illegal use and persistent user conflicts is the inability to adequately enforce regulations already in place, and this policy does not emphasize the need to allocate funding to this issue. Often, one law enforcement officer is charged with patrolling one million acres of land (Dakota-Prairie National Grassland 2005, personal communication). With inadequate budgets available for ORV management and

insufficient numbers of field personnel, how much enforcement-related interaction with visitors can reasonably be expected?

Moreover, although the Forest Service has had the authority -the mandate, in fact- to control and direct motorized use for decades, it has not met the intent of the laws. Executive Order 11644 *already* requires land management agencies to provide visitor information in the form of travel maps and trail signage, and to identify appropriate areas for motorized use and eliminate their use elsewhere. Managers were *already* required to annually review ORV travel planning decisions (36 CFR part 295.6), and to close trails and areas to motor vehicle use in light of “considerable adverse effects” (36 CFR 295.5). Managers were also *already* charged with developing travel plans that minimize conflicts between users (36 CFR 295.2(b)).

The Forest Service’s new policy largely rolls these requirements into 36 CFR Part 212, but with some notable changes. Under the new policy, the requirement for annual review of ORV management plans is removed, and officials are charged with *considering* effects on other users when designating routes, trails, and areas as opposed to *minimizing* those effects. Moreover, the causes of considerable adverse effects need only be *mitigated*, not *eliminated*, before areas and trails can be reopened to the type of use that caused the damage. Given the litigious age in which we live, the less specific language in which the policy is cast is likely to invite a raft of lawsuits over Forest Service interpretation and application of the regulations.¹⁷

¹⁷ The language change between the previous and current regulations is most likely a reflection of the executive influence of the time in which the policies were written. The new policy’s less specific language and emphasis on local discretion (as well as the addition of “access needs” as a designation criteria in the new 36 CFR 212.55) are consistent with the current administration’s favoring of local control of national resources and motorized-friendly management.¹⁷ In contrast, the previous regulations stemmed from the environmental era of the 1970’s that was characterized by environmental protection through national standards and less local discretion.

Further, exceptions to the designated routes and areas requirement (e.g. dispersed camping and game retrieval) could lead to continued inconsistencies between units. For example, one forest may allow travel up to 300 feet off roads and trails to find camping spots, while an adjacent forest may prohibit such activity.

Factors Complicating Travel Management

As stated above, the new policy has the potential to reduce environmental damage as a result of the ban on cross-country travel. Conflicts resulting from ORV use, however, are not likely to be minimized through the designation process unless careful attention is given to other complicating factors, including perceptions of scarcity, noise pollution, and an understanding of the nature and extent of user conflicts and how to accommodate competing claims.

Scarcity

Participation and population trends summarized in Chapter Two indicate that travel planning will increasingly be undertaken in an environment of scarcity, with more groups vying to protect their interests on a finite land base. Perceived scarcity of quiet, natural landscapes, and, contrarily, of places to ride motor vehicles, raises the stakes for groups on both sides of the debate over the appropriate place of motor vehicles on public lands. As perceived scarcity increases, non-motorized users may increasingly see each motorized trail that is built as one more intrusion into the last (and diminishing) vestiges of natural and quiet landscapes. Contrarily, many ORV riders may perceive trail or area closures as another step on the way to excluding their use altogether and infringing upon their “equal rights” to access.

Driven by this perception of scarcity, increasingly aggressive advocacy groups have formed on each side of the debate about the appropriate place of motorized use on public lands. Both the Blue Ribbon Coalition and the Wildlands CPR web pages contain “action alerts” and briefings of important recent court cases that could affect their interests. Groups are mobilized into action, with non-motorized users pairing with environmentalists to litigate decisions allowing motorized use in light of environmental damage, and motorized groups suing to maintain access to historically used areas being closed to their use. In *Washington Trails Association v. US Forest Service* (935 F. Supp. 1117 (1996)), for example, the court sided with environmental groups that challenged the Forest Service’s proposal to relocate a motorized trail under a categorical exclusion, not taking into account the potential for increased motorized use and associated impacts on mountain goat habitat and other users. On the other hand, *Ohio Valley Trail Riders v. Worthington* (111 F. Supp. 2d 878 (2000)), involved a motorized group suing the Forest Service for what they charged as arbitrary and capricious closure of ORV riding areas and trail miles. The court upheld the route closures, citing the Forest Service’s broad discretion in implementing closures to protect forest resources.

According to Laitos and Reiss (2004) the courts most often rule against motorized users when legal disputes arise over motorized access, reflecting the primacy that societal sentiment places on natural versus mechanized recreation opportunities and access to unspoiled landscapes.

Essentially, the litigation over motorized access to public lands provides evidence that 30 years of management (since the first Executive Order) has done little to diffuse conflict as use has increased. Further, this practice of letting common law decide Forest Service ORV policy is not likely to help abate acrimonious interchanges, particularly as

groups become increasingly ready to take recourse to the courts to protect or further their interests.¹⁸ Both environmental groups and motorized access groups are searching for new methods by which agency travel planning decisions can be challenged. For example, an article on an environmental group's website raises the possibility of blocking motorized access through use of the Clean Water Act if there are indications of reduced water quality resulting from ORV use (Wildlands CPR, 2005a). The Blue Ribbon Coalition, on the other hand, is publicly supporting a bill to re-write the Endangered Species Act (ESA) to make it more difficult to close areas to ORV use (Blue Ribbon Coalition, 2005a). The organization contends that motorized access rights have been too long "sacrificed on the altar of unjustified land closures" by "green extremists" misusing the ESA's critical habitat designations to eliminate motorized use (Blue Ribbon Coalition, 2005a).

It is true that more recreation pressure is put on public lands. But it is also true that the Forest Service can influence perceptions of scarcity through certain managerial actions. Following upon a history of relatively unrestricted motorized use, any reduction in trails and roads open to ORVs may be taken as a significant blow by the owners and commercial supporters. Managers must be cognizant of the effect that large-scale restrictions may have on the ORV community as they are likely to incite resentment among motorized recreationists towards other users as well as the Forest Service itself. Indeed, many such groups are de facto disenfranchised by the travel planning process, spending countless hours in working groups only to have the outcome result in their

¹⁸ Though outside the scope of this paper, the importance of state and county government rights-of-way on federal land under Revised Statute 2477 merits some attention, as these rights-of-way may play an increasing role in the fight for access to public lands. Since these rights-of-way are not under the jurisdiction of the Forest Service, state and county governments will determine which uses are allowed on these routes. It is possible that those who favor access could use rights-of-way claims to secure motorized access to public lands without beings subject to Forest Service designations.

losing more places to ride (Idaho OHV Recreation and Travel Management Workshop, 2005; Helena NF, 2005, personal communication). Managers might, however, look to dampen resentment by attempting to provide particularly high-quality recreation experiences for the motorized visitors. Providing for a few, high-quality loop trails would satisfy their needs more than numerous and lengthy but uninteresting roads, and may also help to concentrate use in specific areas, thereby minimizing possibly unpleasant interactions with other users.

Managers could use the Recreational Opportunity Spectrum as a planning tool to identify desired recreational opportunities across the landscape and ensure that opportunities for both motorized and quiet recreation opportunities are provided. Indeed, designating routes and areas for motor vehicle use without adequate consideration of the needs of motorized users is likely to lead to continued violations and consequent conflicts with other users.

Noise

Noise is one of the most cited complaints of ORV use by non-motorized users (Stokowski & LaPointe, 2000). The importance of noise contributing to this conflict reflects the perception that quiet landscapes are highly valued. Even when motorized users are physically separated from self-propelled recreationists, vehicle noise carries long distances and can negatively affect non-motorized users' experiences (Webber, 1995). Fortunately, this is one of the most readily fixable sources of conflict, although it must be acknowledged that, for many, the issue extends beyond noise. Advancing technology is leading to quieter engines and after-market modifications that can substantially reduce noise emissions and consequently reduce user conflicts resulting from ORV noise.

In fact, some states are beginning to impose limits on ORV noise. In 2003, California implemented a 96-decibel limit¹⁹ on ORV noise on all public lands in the state (California State Parks, 2005). Oregon and Washington have also imposed noise limits, of 99 decibels and 105 decibels, respectively, on ORV use within their borders. Some citizens are starting to push for ORV noise limits on private lands as well. For example, residents of Thurston County, WA recently imposed a noise ordinance of 55 decibels for ORV noise from private lands, leaving off-road motorists scrambling to figure out how to minimize noise from their machines used on their own property (Latson, 2005).

Some forests and National Parks, like Siuslaw National Forest's Oregon Dunes National Recreation Area and Yellowstone National Park, respectively, have imposed their own noise limits for ORVs. Ideally, Congress should set this limit for all public lands nationally, but that is unlikely to happen given pressure from the ORV manufacturing industry. However, if individual forests made ORVs comply with set noise limits, the industry would have to comply through time due to consumer pressure. If the Forest Service mandated that ORVs register no more than 75 decibels in 4 years, for example, the industry would have time to adapt. Even though the Forest Service does not have the resources to fully enforce noise limits, merely imposing noise limits should eventually have the effect of discouraging the ownership of (and hence the manufacture of) the loudest sorts of machines.

User Conflicts

Though travel planning in general, and the new travel management policy

¹⁹ When measured by a decibel meter at a 45 degree angle and 20 inches from the exhaust pipe. For comparison, average office noise registers about 50 decibels, restaurants register about 70 decibels, rock concerts register 120 decibels, and ear damage can occur at about 85 decibels.

specifically, is designed to diffuse conflicts between users, the Forest Service policy neither defines conflict nor explains how to measure it and make management decisions in a way that diffuses it. This is not surprising in that the Forest Service has historically managed resources, and is only recently learning to manage people. The literature review in Chapter Two revealed common themes to recreational conflict between motorized and non-motorized users, but also exposed a gap in the knowledge of how conflict is defined and how widespread these conflicts really are. It is possible that the presence of recreational conflict is overly represented through the array of studies designed to find conflict (Moore, 1994). In Region One, many of the managers interviewed said they estimate the level of conflict between users to be fairly low (about one percent of all users) (Helena NF, 2005; Beaverhead-Deerlodge NF, 2005; Dakota-Prairie National Grassland, 2005, personal communications). However, there is no data to back up these assertions, and they unanimously agreed that travel planning is a very controversial topic between those who want access for motorized use and those who oppose motorized use. The Lewis and Clark National Forest, for example, recently tried, largely in vain as it turned out, to reach travel management decisions collaboratively with ATV riders and wilderness advocates and hikers, but the groups could not reach an agreement (Lewis and Clark NF, 2005, personal communication).

Not only is it not known how widespread conflict is, many managers cannot agree on what is causing conflicts between recreationists on multiple-use trails (Dolesh, 2004). Some managers blame the presence of both motorized and non-motorized users on the same trail, others blame poor trail design, and still others point to overuse, or crowding, of an area.

One court case has illuminated the importance of user comments in evaluating travel planning options. In 1994, when the Northwest Motorcycle Association filed suit against the Wenatchee National Forest, claiming the forest illegally closed an ORV route based on negative comments from hikers regarding motorized use, the 9th circuit Court of Appeals ruled against the motorized group. The court held that, given the absence of a definition of user conflict in Forest Service policy, it “can envision no better way to determine the existence of actual past or likely future conflict between two user groups than to hear from members of those groups” (*Northwest Motorcycle Association v USDA*, 18 F. 3d 1468 (1994)). In fact, the court argued, the Forest Service legally had to close the trail pursuant to Executive Order 11644, which requires the agency to minimize user conflict. For many managers lacking specific use data or monitoring results, user comments may be the only method by which to gauge the level of user conflict.

There lies a danger in relying solely on user comments as a gauge for user conflict, however. It is possible that managers hear only from the most ardent supporters or opponents of a particular use, and therefore base decisions on the opinions of a small minority. On the other hand, assuming conflict is not widespread for lack of user comments holds its own risk. Research shows that recreationists commonly use coping mechanisms, like adjusting expectations or leaving an area altogether, to reduce stress from annoyance and conflicts with other users (Manning and Valliere, 2001). While coping mechanisms can be helpful on an individual level, coping at a societal level may result in a gradual decline of satisfying and desirable natural experiences.

Clearly, a system is needed for measuring and evaluating the level and extent of user conflict on a given forest. Before deciding which trails to designate as motorized routes, managers must be able “to describe the level of conflict, who is expressing that

conflict, why they are expressing that conflict, and how these conflict factors have changed in the recent past” (Watson & Kulla, 1997). This paper has attempted to clarify some components to conflict between motorized and non-motorized users and summarize the context within which those conflicts are occurring, but there are many gaps in knowledge.

Accommodating Competitive Claims

An important purpose of a travel management plan is to provide for an equitable balance among legitimate usage claims on NFS lands. The Forest Service states that the new policy will enhance motorized and non-motorized recreation opportunities while at the same time protecting the resource (USDA, 2004b). However, opinions differ as to what the intent of this new policy is or should be. For example, the Blue Ribbon Coalition, a motorized access group, believes the “rule says ORVs are an important- and growing- use of our public lands” (Blue Ribbon Coalition, 2005b). The Wildlands Center for the Prevention of Roads, on the other hand, charges that the new rule “fail[s] to adequately address urgent threats” posed by ORV use to public lands (Wildlands CPR, 2005b). Many Region One managers foresee diminished opportunities for motorized recreation on their respective forests once travel planning is completed, as they intend to restrict use to minimize user conflicts and environmental damage (Helena NF, 2005; Beaverhead-Deerlodge NF, 2005; Gallatin NF, 2005; Dakota-Prairie National Grassland, 2005, personal communications). The broad discretion afforded to local managers means that the policy will be implemented differently based on the value orientations of those making travel management decisions.

Indeed, the policy’s emphasis on providing a national framework but leaving most decisions to local officials (for example, no monitoring protocol, implementation

timeline, or criteria for determining appropriate areas), leaves the tough decisions as to how to equitably accommodate competing uses to local units. Unfortunately, without national guidance as to which uses should take precedent under which cases, managers can expect to continue to be in the middle of a contentious debate about the proper place of motorized vehicles.

On this topic, it is important to mention how the Forest Service's multiple-use mandate contributes to this conflict. Under the Multiple-Use Sustained Yield Act of 1960 (MUSYA), NFS lands are to accommodate an array of uses; however, the act leaves considerable discretion to local Forest Service officials to determine the spatial scale at which multiple-use is to be applied (i.e. across each unit, within a given acreage, or on a regional or national scale) and fuels the notion that a multitude of uses can and should be accommodated. Consequently, Forest Service officials often work in an adversarial environment in which a multitude of interest groups fight to maintain or expand their legitimate claim to public land access, and local officials are subject to the lobbying of local interest groups without any guidance on how to equitably allocate such uses (Blumm, 1994).

The multiple-use mandate also makes it difficult for Forest Service officials to deem a given recreational activity as illegal, as there is no clear vision as to the dominant purpose of NFS lands. For example, as off-road vehicle technology changes, new demands will be made to accommodate new types of motorized vehicles. Without clear guidance on a national scale as to the overriding purpose(s) of NFS lands and the types of activities that are appropriate, technology will continue to drive Forest Service policy. Local Forest Service officials are not in a place to create wide-sweeping changes in use-

that is Congress's role to implement legislation that reflects the overriding national sentiment.

Geographic Scale of Travel Planning

In terms of meeting the needs of a wide variety of recreationists, it is important for managers to evaluate ORV opportunities at a larger geographic scale. If nothing else, the relative availabilities of motorized and non-motorized opportunities in one forest may extend to other areas. For example, the Cheyenne District of the Dakota-Prairie National Grassland, North Dakota, is receiving increasing ORV use from out-of-state riders, not from the open landscape and array of roads and trails, but because they are one of the only places that offers motorized recreation opportunities in the region (Dakota-Prairie National Grasslands. 2005, personal communication). It may seem beneficial for managers to close down many riding opportunities on their units and thereby reduce impacts from motorized vehicles, but ORV riders will still want -and may well be thought to deserve- places to ride. This puts increasing pressure on those places that do provide such opportunities, and can fuel animosity towards both those Forest Service officials who impose ORV-directed restrictions and other classes of users enjoying unrestricted access to NFS lands.

Consequently, ORV planning should be done across jurisdictional boundaries within a defined geographic area. At the very least, such arrangements would discourage situations where decisions made for the benefit of one party have equally harmful consequences for another (as, for example, when the closure of one area to ORVs aggravates the loading on another area). If nothing else, local Forest Service officials should be cognizant of how user-friendly the travel management plans are, as the average visitor is not going to be as familiar with regional, forest, or district boundaries as are

Forest Service personnel. As things now stand, management plans too often seem to rely too heavily on boundaries that visitors are unlikely to be able to recognize.

Recommendations

Motorized recreation is a legitimate use of NFS lands, so managers should be encouraged to consider creating recreational opportunities tailored specifically to ORV enthusiasts. So long as the Forest Service merely manages access as the only alternative for dealing with the ORV issue, motorized recreationists are likely to see lawsuits and aggressive lobbying exercises as their only alternative to protect or enhance their ability to enjoy their activity on NFS lands.

In the absence of agency-wide protocol on how to equitably allocate use across their respective units, managers are left to decide how to allocate use based on casual user comments, their own values, or pressure from local lobby groups. At the least, each region should provide managers with the guidance on how to decide between competing uses (e.g. which use takes precedence when multiple uses come into conflict).

Currently, empirical knowledge on the number of different kinds of recreationists on NFS trails and the degree to which they experience conflict with other users is lacking. Each region, or, at the least, each unit, should engage in a study of user conflict between motorized and non-motorized users to determine the extent of its existence and what management actions may best reduce such conflict.

One somewhat surprising conclusion of this study is that the issue of noise has not gained more attention through this new policy, as motor vehicle noise is one of the most cited complaints of ORV use. Many motorized groups already recognize that noisy machines threaten their continued and future access to public lands, and are encouraging

their members to minimize noise emissions. The Forest Service could capitalize on this by encouraging voluntary noise reductions or imposing noise limits at the regional level.

Managers should approach travel planning in a regional perspective, considering what opportunities exist for both motorized and non-motorized recreation activities across the landscape. The Recreational Opportunity Spectrum may prove helpful as a planning tool in this capacity. It is possible that many forests will restrict motorized use believing other forests will allow for more opportunities, leading to a dramatic reduction in a legitimate use. Further, managers must keep in mind that the average visitor is not as well informed about agency and unit boundaries, so agencies must work together to present a unified management strategy and make it easy for users to understand and follow regulations on any given public land.

Recommendations for Further Study

There is, currently, considerable scarcity of empirical evidence (or empirically validated knowledge) related to the extent and nature of user conflicts between motorized and non-motorized recreationists. Hence this list of prospectively useful future research:

- Motorized users take up more space than non-motorized users as a result of speed at which they travel but also due to noise that carries great distances. It would be beneficial if forests developed noise maps (ideally generated as dynamic GIS-type displays) that would denote how far a given decibel level would travel in a given area to help inform travel management designation decisions.
- While research has focused on people's perceptions of ORV-inspired conflicts, how their reactions to such conflicts might be mediated or moderated merits more attention. A better awareness in this area may give managers some insights about how to soften, if not avert, user conflicts.

- A better understanding of how place attachment influences support for management actions would also be beneficial. Studies have found that, in general, motorized users are not as supportive of management actions to control use as are non-motorized users. To what extent might this be a result of place dependence (because there are few substitutions or other areas where motorized users enjoy riding)?
- Do non-motorized recreationists consistently dislike meeting motorists, regardless of front-country or backcountry settings? Is there a threshold of encounters with motorized recreationists that recreationists will tolerate seeing in a given setting? Do levels of tolerance vary with setting? If machines were quieter, would some of the conflict be assuaged? Is there a threshold for noise tolerance by non-motorized users beyond which they will avoid the trail?
- How widespread are the conflicts between users? It is quite likely that managers will hear only from the most ardent supporters or opponents, and not the people in between, thus skewing real demand. A systematic study should be done that reaches all types of visitors throughout the year to determine the extent and scope of actual conflict.
- Though displacement is a difficult thing to measure, it would be informative to do a study on non-motorized users' experiences and use numbers on a trail when it is closed to motorized use, and compare the results after the trail is opened to motorized travel. Since displacement is a potential result of designating trails for motorized use, studies must be done now, before designation of new trails, to determine the types of users and the amount of use before and after a trail becomes designated. Is there, for example, a number at which people will no

longer hike the trail? Is one too many? The Limits of Acceptable Change may be a helpful tool.

- Fitzhugh's (1985) study found that experienced hikers had adjusted their expectations of their experience in the Bob Marshall Wilderness to include encounters with horse riders. Could this be the case with non-motorized users on trails open to motorized use? A study could investigate this.
- Finally, through supplemental interviews, it appears as though managers have remarkably similar perceptions of the conflict between users as were revealed in the array of recreational conflict studies. A more systematic study investigating how managers perceive the issue as opposed to how the users themselves see the problem would be beneficial.

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APPENDIX A: Executive Order 11644 (as amended by E.O. 11989)

Executive Order 11644--Use of off-road vehicles on the public lands

Source: The provisions of Executive Order 11644 of Feb. 8, 1972, appear at 37 FR 2877, 3 CFR, 1971-1975 Comp., p. 666, unless otherwise noted.

An estimated 5 million off-road recreational vehicles--motorcycles, minibikes, trial bikes, snowmobiles, dune-buggies, all-terrain vehicles, and others--are in use in the United States today, and their popularity continues to increase rapidly. The widespread use of such vehicles on the public lands--often for legitimate purposes but also in frequent conflict with wise land and resource management practices, environmental values, and other types of recreational activity--has demonstrated the need for a unified Federal policy toward the use of such vehicles on the public lands.

NOW, THEREFORE, by virtue of the authority vested in me as President of the United States by the Constitution of the United States and in furtherance of the purpose and policy of the National Environmental Policy Act of 1969 (42 U.S.C. 4321), it is hereby ordered as follows:

Section 1. Purpose. It is the purpose of this order to establish policies and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.

Sec. 2. Definitions. As used in this order, the term:

- (1) "public lands" means (A) all lands under the custody and control of the Secretary of the Interior and the Secretary of Agriculture, except Indian lands, (B) lands under the custody and control of the Tennessee Valley Authority that are situated in western Kentucky and Tennessee and are designated as "Land Between the Lakes," and (C) lands under the custody and control of the Secretary of Defense;
- (2) "respective agency head" means the Secretary of the Interior, the Secretary of Defense, the Secretary of Agriculture, and the Board of Directors of the Tennessee Valley Authority, with respect to public lands under the custody and control of each;
- (3) "off-road vehicle" means any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain; except that such term excludes (A) any registered motorboat, (B) any fire, military, emergency or law enforcement vehicle when used for emergency purposes, and any combat or combat support vehicle when used for national defense purposes, and (C) any vehicle whose use is expressly authorized by the respective agency head under a permit, lease, license, or contract; and
- (4) "official use" means use by an employee, agent, or designated representative of the Federal Government or one of its contractors in the course of his employment, agency, or representation.

[Sec. 2 amended by Executive Order 11989 of May 24, 1977, 42 FR 26959, 3 CFR, 1977 Comp., p. 120]

Sec. 3. Zones of Use. (a) Each respective agency head shall develop and issue regulations and administrative instructions, within six months of the date of this order, to provide for administrative designation of the specific areas and trails on public lands on which the use of off-road vehicles may be permitted, and areas in which the use of off-road vehicles may not be permitted, and set a date by which such designation of all public lands shall be completed. Those regulations shall direct that the designation of such areas and trails

will be based upon the protection of the resources of the public lands, promotion of the safety of all users of those lands, and minimization of conflicts among the various uses of those lands. The regulations shall further require that the designation of such areas and trails shall be in accordance with the following--

(1) Areas and trails shall be located to minimize damage to soil, watershed, vegetation, or other resources of the public lands.

(2) Areas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats.

(3) Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.

(4) Areas and trails shall not be located in officially designated Wilderness Areas or Primitive Areas. Areas and trails shall be located in areas of the National Park system, Natural Areas, or National Wildlife Refuges and Game Ranges only if the respective agency head determines that off-road vehicle use in such locations will not adversely affect their natural, aesthetic, or scenic values.

(b) The respective agency head shall ensure adequate opportunity for public participation in the promulgation of such regulations and in the designation of areas and trails under this section.

(c) The limitations on off-road vehicle use imposed under this section shall not apply to official use.

Sec. 4. *Operating Conditions.* Each respective agency head shall develop and publish, within one year of the date of this order, regulations prescribing operating conditions for off-road vehicles on the public lands. These regulations shall be directed at protecting resource values, preserving public health, safety, and welfare, and minimizing use conflicts.

Sec. 5. *Public Information.* The respective agency head shall ensure that areas and trails where off-road vehicle use is permitted are well marked and shall provide for the publication and distribution of information, including maps, describing such areas and trails and explaining the conditions on vehicle use. He shall seek cooperation of relevant State agencies in the dissemination of this information.

Sec. 6. *Enforcement.* The respective agency head shall, where authorized by law, prescribe appropriate penalties for violation of regulations adopted pursuant to this order, and shall establish procedures for the enforcement of those regulations. To the extent permitted by law, he may enter into agreements with State or local governmental agencies for cooperative enforcement of laws and regulations relating to off-road vehicle use.

Sec. 7. *Consultation.* Before issuing the regulations or administrative instructions required by this order or designating areas or trails as required by this order and those regulations and administrative instructions, the Secretary of the Interior shall, as appropriate, consult with the Secretary of Energy and the Nuclear Regulatory Commission.

[Sec. 7 amended by Executive Order 12608 of Sept. 9, 1987, 52 FR 34617, 3 CFR, 1987 Comp., p. 245]

Sec. 8. *Monitoring of Effects and Review.* (a) The respective agency head shall monitor the effects of the use of off-road vehicles on lands under their jurisdictions. On the basis of the information gathered, they shall from time to time amend or rescind designations

of areas or other actions taken pursuant to this order as necessary to further the policy of this order.

(b) The Council on Environmental Quality shall maintain a continuing review of the implementation of this order.

Sec. 9. *Special Protection of the Public Lands.* (a) Notwithstanding the provisions of Section 3 of this Order, the respective agency head shall, whenever he determines that the use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands, immediately close such areas or trails to the type of off-road vehicle causing such effects, until such time as he determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence.

(b) Each respective agency head is authorized to adopt the policy that portions of the public lands within his jurisdiction shall be closed to use by off-road vehicles except those areas or trails which are suitable and specifically designated as open to such use pursuant to Section 3 of this Order.

[Sec. 9 added by Executive Order 11989 of May 24, 1977, 42 FR 26959, 3 CFR, 1977 Comp., p. 120]