

Analyzing the Impacts of Collaborative-Based Recreation Management in Oregon's Black Rock Forest

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Abstract

For millions of people, riding a mountain bike is a healthy way to enjoy the outdoors. With a significant amount of mountain biking occurring on Oregon's public lands there are many implications for those who manage these recreation areas.

Current literature states that the most important question in collaborative environmental management remains unanswered and often unasked: To what extent does collaboration lead to improved environmental outcomes? Through the use of a qualitative-based assessment, this research analyzed the environmental outcomes of collaborative-based recreation management in one of northwest Oregon's premier mountain biking destinations, the Black Rock Forest.

Findings indicate that the use of collaborative-based recreation management has led to improved environmental outcomes in Oregon's Black Rock Forest. Findings and recommendations can be used to inform other recreational groups and land management agencies who are currently involved in or looking to initiate a collaborative-based recreation management venture in their local recreation areas.

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Chapter One

Introduction

Defining the Problem

For millions of people riding a mountain bike is a healthy way to enjoy the outdoors. With a significant amount of mountain bike recreation occurring on public lands there are many implications for those who manage the environment in these recreation areas. In 2003, authors of the National Survey on Recreation and the Environment estimated that 45.2 million people, or close to 21% of the American public, mountain biked on backcountry roads, trails, or cross country at least once in the twelve months prior to the Survey. This rapid expansion of mountain biking has led to concerns over the potential for undesirable social and ecological impacts to recreation environments, which include safety of trail users, user conflict, and possible environmental degradation (Foti et al. 2006).

With regards to the various impacts inherent in mountain biking, environmental degradation is one which is often discussed amongst both users and managers. In a sample of trail hikers, Horn (1994) found that a 75% of those surveyed considered environmental damage from biking was a problem. Additionally, similar concern has been found among park managers (Chavez et al. 1993).

To address concerns regarding environmental degradation resulting from mountain biking, recreation managers have used various approaches to manage mountain bike recreation areas; of importance to this research is the use of a collaborative-based recreation management approach. In recent years the use of collaboration, i.e. partnering with user groups to help manage recreation areas has become increasingly popular among local, state and federal agencies involved in recreation management. By the 1990s, collaborative environmental planning approaches permeated those involved in recreation management, both governmental and non-profit initiatives alike.

Recent studies have shown that collaborative-based planning and management presents new opportunities, which may work to improve the sustainability of public lands rich in recreation (Keough and Blahna 2006). For example, Keough and Blahna (2006) found that collaborative-based recreation management has greatly improved sustainability of the Moab Sand Flats, an extremely popular mountain biking destination in Utah.

According to Wondelleck and Yaffee (2000) the increase in use of collaboration in recreation management can be attributed to the many social and environmental benefits inherent in this form of recreation management. However, a bias currently exist towards evaluating the collaborative process and its social outcomes; currently a gap in literature exists regarding the impact collaborative environmental planning and management has on changing environmental conditions (Mandarano 2008). Koontz and Thomas (2006) state that the most crucial question in collaborative environmental management remains unanswered and often unasked: To what extent does collaboration lead to improved environmental outcomes?

In the following this unanswered and often unasked question will be examined to help determine the extent that collaboration can lead to improved environmental outcomes. This research takes the perspective that collaborative-based recreation management leads to improved environmental outcomes when compared to traditional management approaches.

Purpose of the Study

In this study focus is given to the environmental outcomes resulting from collaborative-based recreation management in Oregon's Black Rock Forest. Analysis is based on the perspectives of Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group members. This study compares and contrasts the various perspectives held by participating members of the Collaborative Group to determine if organizational perspectives differ regarding environmental

outcomes. In addition, this research seeks to analyze if certain practices utilized by the Collaborative Group affect their ability to create positive environmental outcomes. In order to determine whether collaborative-based recreation management leads to improved environmental outcomes, the following research questions were examined:

1. Does collaborative-based recreation management lead to improved environmental outcomes in Oregon's Black Rock Forest (in relation to non-collaborative recreation management)?
2. Do perspectives differ between the Oregon Department of Forestry and the Black Rock Mountain Biking Association with regards to environmental outcomes resulting from collaborative-based recreation management in the Black Rock Forest?
3. Do certain practices affect the Collaborative Group's ability to create positive environmental outcomes within local recreation areas?

Gaining a stronger understanding of the environmental outcomes related to collaborative-based recreation management may help shape future recreational management policies. Thus, by sharing the experiences of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group, other user groups and land management agencies interested in collaborative-based recreation management may gain insight. This information may help forward the goals and objectives found in other organized recreation groups.

Because each of the two entities involved in this collaborative venture may vary with regards to how they individually view the outcomes of the collaborative process at hand, focus will also be given to differing perceptions between the two organizations involved in the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group. This will help determine if certain players in this collaborative venture found it to be a success, while others found it to be a failure. Additionally, this will help determine if all players shared the same views regarding collaborative-based recreation management, solidifying whether collaborative-based recreation management in the Black Rock Forest truly results positive environmental outcomes.

Lastly, this research will help note specific practices that should be utilized or avoided during formation and implementation of a collaborative-based recreation management process. Noting these successes and failures will shed light on practices that can be modeled after in other collaborative ventures, as well as practices that should be avoided. In addition, noting significant issues that surfaced during formation and function of the collaborative will give insight into those which should be given attention in hopes of creating successful collaborative ventures with minimal impact on the local environment.

Overview of Methodology

In order to determine whether collaborative-based recreation management results in positive environmental outcomes, whether perspectives differ amongst those involved in the collaborative, and if certain processes utilized during the collaborative are either effective or ineffective in achieving success, a multi-step qualitative procedure was utilized. The procedure involved a survey instrument designed for all members of the collaborative and additional interviews for those deemed to be most involved in the collaborative process. Ultimately, eleven surveys were administered, and eight interviews were carried out.

Defining Collaboration

In earlier times, the process of managing recreation was carried out in a top-down management paradigm. As financial resources have shrunk and public interest has grown, a new style of recreation management has become more and more prevalent. This new form of management is one which involves government agencies, communities, and private groups building bridges between one another that enable them to deal with common problems, working through conflicts and developing forward-thinking strategies for regional protection and development (Wondelleck and Yaffee. 2000).

It is important to note that levels of involvement that user groups can have with a government agency vary. For the purposes of this paper, a 'collaborative' level of involvement shall be the primary focus, as this is the level of involvement taking place in the recreation management process implemented in Oregon's Black Rock Forest. Margerum (2009) writes that collaboration is "an approach to solving complex public problems in which a diverse group of autonomous stakeholders work through a self-governed, deliberative process to build consensus and develop strategies and arrangements for translating consensus into results." Ultimately, this new style of management results in a sense of shared ownership and responsibility for the environment by moderating the top-down style of management that was so prevalent in past decades.

Implications of Research

Gaining insight regarding the environmental outcomes of collaborative-based recreation management helps to fill the current gap in existing literature regarding this topic. Additionally, developing an understanding of the environmental outcomes related to collaborative-based recreation management may help shape future recreational management policies.

Also noted in this study are the various perspectives held by members of the Black Rock Mountain Biking Association and employees from the Oregon Department of Forestry regarding the collaborative processes implemented in the Black Rock Forest. Analyzing these perspectives and whether they differ may help determine if the collaborative-based recreation management process implemented in the Black Rock Forest is viewed as a success by all, or just a select few. Understanding whether perspectives differ presents a complete picture regarding the successes, failures, benefits, downfalls, etc. of collaborative-based recreation management in the Black Rock Forest.

Lastly, this work will note specific practices which should be utilized during formation and implementation of a collaborative-based recreation management venture. Gaining a stronger

understanding of the practices utilized during the collaborative management process found in the Black Rock Forest may help others interested in collaborative-based recreation management be more successful in their endeavors.

Organization of This Report

The remainder of this report consists of four additional Chapters: Chapter Two: Literature Review; Chapter Three: Methodology; Chapter Four: Findings; and, Chapter Five: Conclusions and Recommendations.

The Literature Review Chapter provides an overview of existing literature regarding collaborative-based recreation management. The Methodology Chapter addresses the processes utilized to obtain and analyze the data employed in this research study. Chapter Four notes key findings from the data gathered in this research study. And, Chapter Five presents the conclusions from the research carried out as a result of this study. Additionally, Chapter Five notes a number of recommendations for those looking to carry out a collaborative-based recreation management in their local region.

Chapter Two

Literature Review

Overview

This Chapter discusses existing literature regarding the primary research question of focus in this study: 1) *Does collaborative-based recreation management lead to improved environmental outcomes in Oregon's Black Rock Forest?* Because the concept of collaborative-based recreation management is still relatively new it is important to attain insight into current ventures, which are focused on better understanding how this form of management impacts the environment. Gaining a better understanding through an analysis of existing literature will help to better understand the current state of collaborative-based recreation management, whether it results in positive or negative environmental outcomes, and the means in which success becomes increasingly attainable.

The real challenges for environmental management arise from human use of the recreation resource base (Pigram and Jenkins. 1999). Noted by Koontz and Thomas (2006) is that: "The primary goal of future research on collaborative environmental management should be to demonstrate whether collaboration improves environmental conditions more than traditional processes and newer market-based processes." Additionally, Mandarano (2008) points out that "Given the current widespread implementation of collaborative approaches in environmental policy, planning, and management, scholars are calling for research to document and assess what collaborative partnerships have accomplished thus far." And "In particular, several claim there is a bias toward evaluating the process and its social outcomes, which has led to a gap in our knowledge of the impact of collaborative planning and management on changing environmental conditions". When reviewing current literature regarding

the environmental outcomes of collaborative-based recreation management we find there is very little to be said regarding this topic.

Most literature presented about collaborative recreation/resource management focuses on the many reasons why it is important to involve the public in the decision-making process, which drastically impacts the user group. To help better understand collaborative-based recreation management, and its inherent environmental outcomes, the following topic areas are included in this literature review: defining both collaboration and collaborative-based recreation management, analyzing the environmental impacts of mountain biking, looking at how collaborative-based recreation management can minimize environmental impacts, and lastly, reviewing both the benefits and barriers to collaboration.

Defining Collaboration

First, it is important to further understand what collaboration is and how it is being incorporated into recreation management. Currently, collaboration is defined in a number of ways and at a range of intensities; the terms “networking” and “partnership” are often used interchangeably with the term “collaboration” but it should be made clear that in actuality these terms note different levels of public involvement. Typically, “networking” involves a lower level of groups working together, while the words “collaboration” and “partnership” refer to the idea of expending more time, effort, and resources into working on a joint project to accomplish joint goals of a project (Neff. 2007). More specifically, we find that collaboration implies a joint decision-making approach to management where power is shared, and stakeholders take collective responsibility for their actions and subsequent outcomes from those actions (Selin and Chavez. 1995).

Additionally, it should be noted that collaboration can differ depending on the issues which it is being utilized to address. The authors of *Collaborative Planning on State Land Trusts* write:

What is Collaboration? Collaboration differs depending on the specific context in which it is applied, but it generally is identified as a process whereby individuals or organizations, often with widely varied interests, work together to share knowledge and resources to achieve mutually beneficial goals. This process often involves a variety of stakeholders that together contribute to the final decision-making process. Key elements of collaboration include a commitment to the process by all members, a clear understanding of the means by which decisions will be made, and inclusion of all essential stakeholders in the process (Ecosystem Management Initiative July 2005:2)

Information regarding how collaboration is defined is important to note because of the varying degrees of involvement which take place in the world of “coordination”, “partnerships”, and “collaboration”. The main point is that rather than viewing collaboration as a rigid state, it should be viewed as a dynamic process, which can and most often leads to greater social and environmental outcomes than does working alone. Wondelleck and Yaffee (2000) note, “Since there are numerous reasons to establish relationships, not surprisingly there are many forms that collaboration can take.”

Collaborative-Based Recreation Management

Methods to involve the public in the planning and management of recreation areas are changing rapidly as land management agencies attempt to pursue management objectives within an increasingly turbulent social and political environment (Selin and Chavez. 1995). One means of addressing these issues that is being more commonly implemented by public land management agencies is the use of collaborative-based recreation management. Selin and Chavez (1995) note that collaboration in the environmental management field is increasingly evident as managers supplement centralized decision-making methods by using standing committees, associations, negotiated settlements, and friends groups to assist in setting policy, planning, and managing the resource.

When it comes to managing recreation and public land, no one can go at it alone; especially when it comes to maintaining existing trail systems, and planning, designing, and constructing new ones (IMBA. 2007). This new style of management helps build a sense of shared ownership and responsibility

for natural resources by the moderating top-down style of government agencies that has tended to disempower local interest groups, recognizing that partnerships can provide unique resources, incentives, and opportunities (Wondolleck and Yaffee. 2000). Over the past few decades collaborative solutions have emerged to solve problems in every sector of society-business, government, labor, and the environment, so it makes complete sense that it has entered the world of recreation management (Selin and Chavez. 1995).

The use of collaboration is hypothesized to improve the management process associated with recreation use on public lands. According to Wondolleck and Yaffee (2000) there are four major uses of collaborative processes in recreation management:

- Building understanding by fostering exchange of information and ideas among agencies, organizations, and the public and providing a mechanism for resolving uncertainty;
- Providing a mechanism for effective decision-making through processes that focus on common problems and build support for decisions;
- Generating a means of getting necessary work done by coordinating cross-boundary activities, fostering joint management activities, and mobilizing an expanded set of resources; and
- Developing the capacity of agencies, organizations, and communities to deal with the challenges of the future.

Because mountain biking will continue to see expanding participation rates for trail use on public lands, a cooperative effort between mountain bicyclists, other user groups, and the land managing agencies appears to be the most effective approach thus far (Hollenhorst et al. 1995). As Kula (1990) points out, recreation management is not a “win-lose” situation, it is an issue that needs a whole community approach, and one in which land managing agencies can take a lead role.

Benefits of Collaboration

Collaborative-based recreation management is becoming increasingly popular because of its recognized social and organizational benefits. Many agencies, local governments, non-profits, and citizen groups are utilizing collaborative processes because they can lead to better decisions that are

more likely to be implemented and, at the same time, better prepare agencies and communities for future challenges (Wondolleck and Yaffee. 2000). The following discussion further describes many of the observed benefits of implementing a collaborative-based decision-making process.

Extensive literature reveals that a reliance on traditional, command-and-control based management has resulted in inflexible and inefficient policies at the ground level and needs to yield to a more decentralized decision-making approach (Wondolleck and Yaffee. 2000). While this form of management may have worked in the past, it can be easily argued that today's world calls for a more appropriate, enhanced, and more efficient form of decision-making. Utilizing a collaborative decision-making processes helps decentralize the traditional top-down decision-making process, ultimately increasing flexibility and innovation amongst those in management positions. Plummer and Armitage (2007) argue that a decentralized decision-making process is one of the primary benefits resulting from collaboration, noting that it offers a superior means of reaching decisions, because the affected actors are part of the process and because it incorporates multiple types of knowledge systems.

Using collaboration rather than the traditional top-down decision-making process helps land managers acknowledge the expanded set of public values and interest in natural resources and the environment, and actively involves representative of those interests in decision-making and implementation (Wondolleck and Yaffee. 2000). Including interest groups in the decision-making process help improve existing relationships and build new relationships by facilitating face-to-face discussions, which can break down stereotypes and enable participants to interact more effectively, in current and future planning (Neff. 2007). As well, many others (Gray 1989, Wondelleck and Yaffee 200; Margerum 2009) agree that building positive relationships with other entities can help each group address a shared problem, and from shared exchanges of information, a sense of shared ownership and responsibility is created. Fortunately, Singleton (2002) notes that it is difficult to find any recent environmental policy initiatives that did not contain prominent references to the need to move away

from 'top-down' directives and toward, 'consensus-based' processes and community participation in planning, implementing, and monitoring new policies.

Because it is unlikely that budgets will keep up with the magnitude of demands, and because there appears to be little political will for more spending it is important to note that the many land managing agencies are limited in their choices: either less gets done, what gets done is done poorly, agency workers get much more productive, or agencies find alternative ways to access needed capabilities and resources (Wondolleck and Yaffee. 2000). In most cases land management agencies operate on a tight budget, with a constant need to access more resources. While there are transaction costs in the form of staff time and energy that are incurred by the land management agency involved in a collaborative based recreation management venture, as a whole these costs are greatly reduced in comparison to a traditional management approach.

The pooling and ultimate increase in resources, both financial and intellectual, resulting from collaborative-based management is another benefit commonly noted in existing literature. With an increase in resources comes an increase in capacity to reach goals and make positive changes in whatever field a collaborative group is operating in. Building bridges between agencies, organizations, and individuals in environmental management is a means to several ends: building understanding, building support, and building capacity (Wondolleck and Yaffee. 2000). In addition to the increase in capacity at the individual level, collaboration may also enhance the capacity of the collective (Plummer and Armitage. 2007).

Collaboration also promotes greater equity in representation, decision-making and distribution of resource-related costs and benefits (Plummer and Armitage. 2007). Devolving authority to local governments and affected interests allows locals, who are presumed to be better attuned to community needs and capabilities, to fine-tune regulations to the particularities of differently-situated constituencies (Singleton. 2002). Increasing equity in the decision-making process gives the public a

greater sense of shared ownership, and allows various user groups to take responsibility for the decisions made. By involving users and individuals affected by resource management, collaborative arrangements can create a sense of ownership of public resources that may help to protect public lands. In addition to generating better policies, increasing equity in the decision-making process improves the process itself, increasing social trust, and facilitating collective action in other areas of common interest.

Obstacles of Collaboration

After discussing many of the benefits inherent in collaboration a reasonable question is, why doesn't collaborative-based recreation management occur more often? According to Selin and Chavez (1995), despite many of the forces that bring collaborative-based recreation management to the surface, there are many obstacles, institutional and situational, which act as barriers to an effective collaborative process. As we look to the typical top-down centralized decision-making process, which is most common to state and federal agencies involved with recreation management, many institutional and situational barriers become much more evident. An example of this can be found in the results of two studies carried out by Carr and Selin (1998), which note that one of the biggest barriers to effective collaborative efforts noted by USDA Forest Service employees and external partners is overcoming the Service's traditional organizational culture.

Looking closer at institutional barriers, we find that most obstacles result from the institutional structure within which collaboration takes place, the ways the individuals and groups think about collaboration and each other, and the manner in which collaborative processes have been managed (Wondolleck and Yaffee. 2000). Because a top-down centralized decision-making process has been the prominent means of decision-making for decades, we find most recreation managers face a lack of opportunity to implement collaborative practices. Currently, most legislative and judicial decision-making by state and federal land managers' foster "win-lose" outcomes, and the best strategies are

found to be the most competitive ones (Wondolleck and Yaffee. 2000). As a result there are few incentives to include collaboration in the decision-making process. For example, during the forest planning process carried out by the USDA Forest Service, Wondolleck and Yaffee write that “Most forest met the minimum legal requirements for public involvement by using the least confrontational methods possible. The input during most of the planning process was by written or one-way communication, and interactive public involvement was used only when it was safe to do so, or when planners were forced to do so by public controversy.”

Other institutional barriers often relate to inflexible policies and procedures in place by those in charge of land management. One policy often noted as a significant barrier to communication and coordination between federal agencies and other stakeholders is the Federal Advisory Committee Act (FACA). FACA was originally created to regulate inappropriate relationships between federal officials and constituent groups. Unfortunately, this policy has been noted by the Forest Service as being a significant limiting factor, which restricts collaborative efforts to information gathering and mutual learning activities while prohibiting equally valuable efforts like consensus building and developing alternatives (Carr et al. 2000). It is policies like this that frequently act as red tape, becoming burdensome procedures that ultimately become obstacles to collaboration (Wondolleck and Yaffee. 2000).

Institutional barriers often relate to constrained resources and are often cited as being a major constraint to collaborative efforts (Wondolleck and Yaffee. 2000). In a study by Rich Margerum (2002) that focused on identifying common obstacles faced by stakeholder groups involved in collaborative practices, a lack of resources was one of the most commonly cited constraints in both his U.S. and Australian case studies. Line-item budgeting seems to exacerbate this barrier, as this programmatic means of budgeting tends to make it difficult for projects that intentionally blur those lines (Wondolleck and Yaffee. 2000). Resource constraints are not limited solely to the government, as many local citizen

groups and other nonprofit agencies often face even greater constraints on the staff and resources they can devote to partnerships (Wondolleck and Yaffee. 2000).

A number of situational barriers often inhibit implementing collaborative practices into recreation management. Often these barriers include a pervasive lack of trust, stereotyped “us-them” images that lead to polarization, organizational norms and culture that result in conflicts even when formal missions are not in conflict, and fear of committing to a collaborative approach because it requires new and potentially risky behavior (Wondolleck and Yaffee. 2000). When thinking about these situational barriers it is fairly apparent that many of these factors can lead to bitter relationships, which may potentially taint the ability for groups to work together in a collaborative fashion. Organizations that have been bitter adversaries in the past often find it impossible to reach consensus on anything (Selin and Chavez. 1995). According to Gray (1989) there are times when past actions have led to obstacles to collaboration that may be too big to overcome; this is particularly true under the following conditions:

- Conflict is rooted in basic ideological differences,
- One stakeholder has the power to take unilateral action,
- Constitutional issues are at stake or legal precedents are sought,
- Past interventions have been unsuccessful,
- Issues are too threatening because of historical antagonism, and a
- Legitimate convener can't be found.

While we find there are many obstacles that must be overcome to implement a successful collaborative process, we can look to many cases which prove their success, such as Kiowa National Grasslands of New Mexico, the Applegate Partnership here in Oregon, the Chicago Wilderness project in Illinois, and as you will find in the remainder of this research, the Black Rock Mountain Biking Association/ Oregon Department of Forestry Collaborative Group.

Environmental Impacts of Mountain Biking

Unfortunately, when we look at literature regarding the environmental impacts of mountain biking, there are only a few good peer-reviewed studies that have taken place. White and others (2006) and Hendricks (1997) note that the majority of mountain biking research has focused on social issues, such as conflicts between trail users. As a consequence, the ecological effects of mountain biking on trails and natural resources remain poorly understood (IMBA. 2007)

Pigram and Jenkins (1999) note that the primary concern of recreation by resource managers is undesirable change in environmental conditions. Hollenhorst et al. (1995) notes that mountain biking has been criticized by both land managers and environmentalist on the user groups' impact on the resource and socio-psychological incompatibility with existing users. Because mountain biking is the primary recreational activity taking place in Oregon's Black Rock Forest it is important to understand what the environmental impacts of this form of recreation are.

As with all recreational activities, it is clear that mountain biking contributes to some degree of environmental degradation (IMBA. 2007). Because mountain biking does impact the natural environment, there are many implications for those in charge of managing land that include this form of recreation. With careful design, construction, maintenance, and management of these recreation areas, environmental impacts can be greatly reduced.

With an increase in mountain biking in the Black Rock Forest, it is inevitable that some degree of environmental change will occur. Such change is seldom sharp or catastrophic, but more usually, incremental and cumulative; the result of many individual actions (Pigram and Jenkins. 1999). Because these impacts are generally not sudden and direct, assessing the environmental impacts of recreation is often a difficult task. More specifically, Mandarano (2007), notes that there are several major obstacles to evaluating the environmental impacts of collaborative efforts; it is difficult to identify a causal relationship between an action and its outcome because there are many variables (i.e., parties,

processes, parameters, and programs that impact environmental conditions), natural variability in environmental conditions plays a role in creating and abating the problem, and changes in environmental conditions often take years to be realized.

The environmental impacts commonly associated with mountain biking and other forms of recreational trail use are: vegetation loss and compositional changes, soil compaction, erosion, muddiness, degraded water quality and disruption of wildlife (IMBA. 2007). According to Leung and Marion (1996) we can divide these impacts into four ecological components that are either directly or indirectly impacted by trail recreation. In looking at the survey and interview questions utilized as part of this research you will find the impacts of mountain biking on vegetation, soil and water impacts are assessed as part of this research.

Impacts to Vegetation

Creating a formal trail system will undoubtedly impact local vegetation; it is an unavoidable process that is inherent in clearing routes for users. The question being asked as part of this research focuses on whether collaborative-based recreation management reduces the impacts to vegetation beyond what is inherent in creating the trail system itself. With regards to the impacts to vegetation resulting from mountain biking, we find trampling to be of primary focus. Trampling-the action of crushing or treading upon vegetation, either by foot, hoof, or tire-contributes to a wide range of vegetation impacts, including damage to plant leaves, stems, and roots, reduction in vegetation height, change in the composition of species, and loss of plant and vegetation cover (Leung and Marion. 2006).

In searching for literature that addresses the impacts to vegetation resulting from mountain biking only one study was located; Thurston and Reader's (2001) *Impacts of experimentally applied mountain biking and hiking on vegetation and soil of a deciduous tree forest*. Researchers looked at three indicators; plant density, plant diversity, and soil exposure before and after 500 one-way passes by

both hikers and bikers. The authors of this study found that the impacts of hiking and biking were very similar, and that impacts from these two user groups were spatially confined to the center of the trail.

The results of Thurston and Reader's study are intriguing for two primary reasons; 1) because it is often thought that mountain biking impacts the environment to a much greater degree than does hiking, and 2) because it notes that impacts of both mountain biking and hiking were generally confined to the center of the trail, noting a reduction of impacts beyond the confines of the trail itself. The second point made above, is of further importance to this research because it makes evident that an adequate trail system can reduce impacts to the environment resulting from mountain bike related trampling.

Impacts to Soils

The creation of a formal trail system also has unavoidable impacts on local soils. Once again, impacts to soils are an unavoidable process inherent in clearing routes for users. In contrast to impacts related to trail construction, post-construction soil displacement, erosion, and muddiness represent core forms of avoidable trail impacts that require sustained management attention to avoid long-lasting resource degradation (IMBA. 2007). Those who have biked or hiked a trail system in winter months have most likely come to experience trail degradation in the form of rutted trails, mud puddles, and washouts. Ultimately, these unsatisfactory conditions leave trails less usable, and eventually lead to increased opportunity for trampling and associated vegetation loss as visitors seek to circumvent mud holes and wet soils (Marion. 2006).

Unlike the literature available that addresses the impacts of mountain biking on vegetation, there are a number of studies available that focus on the impacts of mountain biking on soils. From these studies the misconception that mountain biking is one of the biggest causes of soil erosion on public trail systems is broken. In fact, in a study by Marion (2006), which examined the relative

contribution of different use types, including horse, hiking, mountain biking, and ATV, found that mountain biking caused the least erosion of the use types investigated.

Looking specifically at various factors that lead to increased erosion on mountain bike trail systems, Geoft and Alder (2001) found that trail slope, age, and time were significant erosion factors, and that downhill slopes and curves were the most susceptible to erosion. Additionally, Marion (2006) found that erosion rates on trails with a 0-6 percent and 7-15 percent grades were similar, while trails with grades greater than 16 percent resulted in intensified soil degradation. When taking these factors into consideration, soil erosion can be greatly reduced, making management a very important factor in creating sustainable trail systems. These studies demonstrate the importance of proper design, construction, maintenance and management of mountain bike trail systems to reducing the environmental impacts on the natural environment.

Impacts to Water Resources

Unlike the impacts to vegetation and soil, the proper creation of a trail system can avoid most, if not all impacts to water resources (IMBA. 2007). If mountain bike trails are not created properly, the act of mountain biking can greatly impact water resources through the introduction sediment, organisms, and other harmful elements that lead to degradation of local water sources. The International Mountain Bike Association (2007) clearly notes that trails, which are located close to water resources, much like those found in the Black Rock Forest, require special consideration in their design and management to prevent the introduction of suspended sediments into bodies of water.

Poorly designed trails can alter hydrologic functions-for instance, trails can intercept and divert water from seeps or springs, which serve important ecological functions (IMBA. 2007). Looking at the means that the Black Rock Mountain Biking Association sited and designed their trail system, one finds

that a number of interesting tactics have been utilized to minimize water degradation, such as: bridge construction, minimizing stream crossings, use of down logs, siting trails far from water sources, etc.

Managing the Impacts of Mountain Biking

The Southwest Mountain Biking Study

In response to the lack of available literature regarding the environmental impacts of mountain biking, beginning in 2003, the Bureau of Land Management, Arizona State University, Northern Arizona University, and Shimano American Corporation decided to undertake primary research to study the relationships between the environmental impacts of mountain biking on public trail systems. Using Common Ecological Regions (CERs) as a spatial framework, the team conducted a survey of 185 miles of mountain bike trails within five regions in the U.S. Southwest. The team of researchers analyzed physical impacts on mountain bike trails using a “well-accepted, multi-parameter, point-sampling procedure”. The results of the research study indicate that specific impacts to mountain bike trails, width in particular, are similar or smaller than impacts to hiking or multiple-use trails, and appreciably smaller than impacts to equestrian or off-highway vehicle trails. Additionally, the results from the study emphasize the great value of collaboration as a means to resolve issues relating to mountain bike use on public lands, noting: “we suggest that other groups, elected officials and land managers work together for a similar cooperative approach to resolving future issues over public land access, trails and recreational use”.

Management Implications

Because the use of use of mountain bikes in public recreation areas is a rapidly expanding recreational activity, the need for an effective and efficient management process is a pertinent issue. A 1993 telephone survey of 40 recreation officers from the USDA Forest Service and USDI Bureau of Land Management (BLM) indicated that use of mountain bikes on Federal lands was increasing and that

management of such use was a concern (Chavez et al. 1993). In an additional study by Chavez (1996), an assessment of management actions associated with the growth of mountain bike recreation was carried out. The study surveyed Forest Managers from across the United States. Findings from this study recommended interacting personally with user groups either directly or through partnerships.

With more and more people demanding the right to participate in decision-making, public involvement is increasingly seen as necessary and desirable input into recreation management (Pigram and Jenkins. 1999). Understanding user preferences and attitudes can lead to improved recreational opportunities. As a result of including user groups in the decision-making process through collaborative-based recreation management, we find that user satisfaction is increased, while management and maintenance of recreation areas is carried out at a more efficient and effective level.

The benefits of collaborative-based recreation management are somewhat obvious, as no one better understands the needs of a user group better than the group itself; users are more likely to be aware of trends, future needs, and new opportunities (IMBA. 2007). With recreation user groups becoming increasingly interested in managing and maintaining local recreation areas it is no wonder that more and more public entities are implementing collaboration into their planning and management processes. Fortunately, there does appear to be an increase in the use of strategies that involve two-way or multi-way communication, cooperation and resource sharing between individuals or groups and agencies (Chavez. 2006).

From the perspective of some, the reason to develop collaborative partnerships is to improve the state of the environment. According to the research carried out by Yaffee and Wondelleck (2000) in an assessment of over 200 wide ranging cases of collaboration in environmental management we find that collaborative processes are achieving positive ecological results while also improving community-level communication and cooperation.

Minimizing Environmental Impacts

Those managing recreation areas associated with mountain biking can take additional steps to avoid or minimize the impacts to vegetation, soil and water resources through the management of visitor use. The International Mountain Bike Association offers a number of creative recommendations to minimize the impacts of mountain biking on the natural environment in their 2007 publication titled: *Managing Mountain Biking; IMBA's Guide to Providing Great Riding*. Most recommendations offered by the International Mountain Biking Association revolve around careful design, construction, and maintenance of mountain bike trail systems. Below a select few of the most pertinent management tactics presented by the International Mountain Biking Association and implemented by Black Rock Mountain Biking Association are presented.

- Design trails that provide the experience that trail users seek to reduce their desire to venture off-trail.
- Implement an active maintenance program that removes tree falls and maintains a stable and predictable trail. This encourages users to remain on the intended narrow trail therefore minimizing the chances of off-trail trampling of vegetation.
- Install proper drainage on the trail in areas prone to water catchment and muddiness.
- Trails should avoid close proximity to water resources.
- On heavily used trails provide an elevated crossing.

When steps are taken to minimize the environmental impacts of mountain biking we find this form of recreation can become increasingly sustainable. With regards to mountain biking recreation, following the steps noted above in addition to a number of other proactive tactics, the environmental impacts resulting from this form of recreation can be greatly reduced.

When considering the sustainability of a mountain bike trail systems we find that soil erosion is the biggest threat (IMBA. 2007). Taking trail users, water flow, and gravity into consideration during the design, construction, and maintenance of a trail system helps keep water off the trail and riders on it;

this is the key to minimizing soil erosion and increasing trail sustainability (IMBA. 2007). Following the principles of sustainability presented by the International Mountain Bike Association helps to create sustainable trails that are low maintenance, fun to use, and help manage risk, environmental impacts, and user conflict.

Conclusion

Now that we are aware of what literature exists regarding how both collaboration and collaborative-based recreation management is defined, the environmental impacts of mountain biking, how collaborative-based recreation management can minimize environmental impacts, and the benefits and barriers to collaboration we can better understand how collaborative-based recreation management in the Black Rock Forest may impact the environment. Literature shows that collaborative-based recreation management is currently being utilized with positive results, that the environmental impacts of mountain biking are similar to that of hiking, that certain measures can be taken to minimize the impacts of mountain biking on the environment, and that certain benefits and barriers exist when using collaboration to manage a recreation area. Additionally, this Chapter helps identify the gap in existing literature regarding whether collaborative-based recreation management leads to improved environmental outcomes.

As previously noted the most crucial question in collaborative environmental management remains unanswered and often unasked; to what extent does collaboration lead to improved environmental outcomes (Koontz and Thomas. 2006)? Additionally, Koontz and Thomas (2006) state that the primary goal of future research on collaborative environmental management should be to demonstrate whether collaboration improves environmental conditions more than traditional processes. Expanding current collaborative-based research beyond the traditional focus on social outcomes is important for the advancement of all forms of collaborative-based management.

Because little research has been carried that assesses the environmental outcomes of collaborative-based recreation management it is becoming increasingly important to address this topic; especially because collaborative management is generating increasing interest amongst user groups and land management agencies. In the following Chapters the research questions are addressed in detail. Ultimately, evidence is provided for the support of the hypothesis that collaborative-based recreation management results in improved environmental outcomes.

Chapter Three

Methods

This Chapter discusses the methodology utilized to answer the three research questions of focus in this research: 1) Does collaborative-based recreation management lead to improved environmental outcomes in Oregon's Black Rock Forest (in relation to a traditional management approach); 2) Do perspectives differ between the Oregon Department of Forestry and the Black Rock Mountain Biking Association with regards to environmental outcomes resulting from collaborative-based recreation management in the Black Rock Forest; and 3) Do certain practices affect the Collaborative Group's ability to create positive environmental outcomes within local recreation areas?

I choose to focus on the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group for a number of reasons. First, because the Black Rock Trail System has in recent years become known as a nationally and internationally renowned success story. In a publication released by the International Mountain Biking Association titled: *Managing Mountain Biking; IMBA's Guide to Providing Great Riding*, the collaborative process that resulted in the Black Rock Trail System is touted as great success. Second, after contacting both Black Rock Mountain Biking Association members and Oregon Department of Forestry I found a set of individuals who were interested in participating in this research project. Lastly, because this collaborative-based recreation management venture has been in place for the last eight years it is mature enough to analyze the environmental impacts resulting from the use of this form of recreation management.

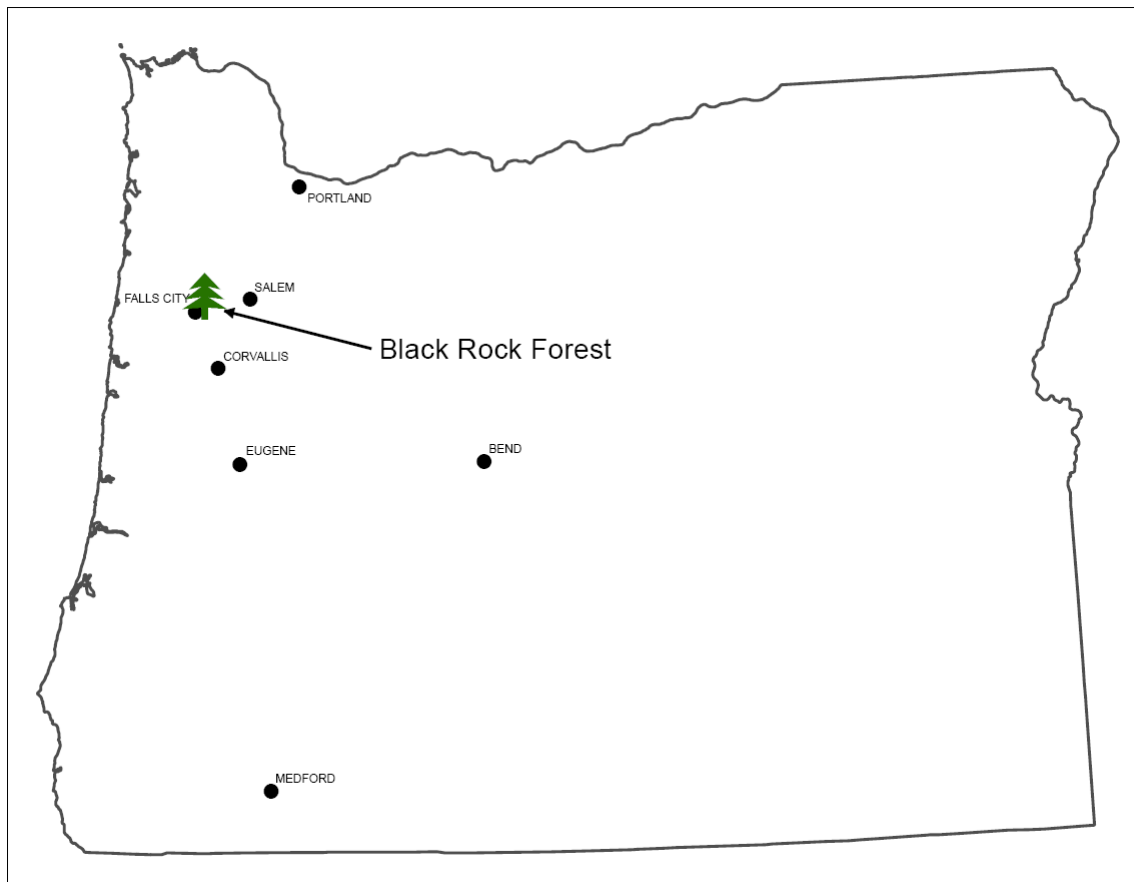
This study's design involved collecting qualitative data from in-person surveys and interviews. The collection of qualitative data was then analyzed and findings, conclusions, and recommendations were formulated. The remainder of this Chapter explains the participant selection process, the means in

which both survey and interview questions were created and administered to members of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group. Following this discussion is an explanation of how data was analyzed and the strengths and weaknesses of the study approach.

Study Area

The Black Rock Trail System exist within the Black Rock Forest; a 1000 acre tract of Oregon Department of Forestry Land in located in Polk County, Oregon, just outside of the rural logging town of Falls City (see Figure 1). The Black Rock Forest was historically used for timber production. Most recently, the Black Rock Mountain Biking Association in conjunction with the Oregon Department of Forestry created the Black Rock Trail System. The Trail System was created out of Oregon's "Adopt-A-Trail" Program, and is specifically designed for mountain biking. What is unique about this Trail System is that is a "mountain bike only" trail system. The trail system itself caters to a specific type of mountain biking called "freeriding", which includes a catalogue of manmade features, such as: wooden bridges, drop offs and dirt-jumps. Funding for Black Rock has come from individual donations and fundraising led in part by nearby Santiam Bicycles, in Salem (OR). Since Black Rock's inception, Santiam has helped raised thousands of dollars through raffles, movie premiers, map sales and cash donations (IMBA. 2007). Both the Oregon Department of Forestry and the Black Rock Mountain Biking Association have systems in place to manage risk and defend against potential lawsuits. Strategies include the legal shelter of Oregon's Recreational Use Statue, written trail building guidelines, detailed record keeping, clear signage, and an easy-to-understand trail difficulty rating system (IMBA. 2007).

Figure 1: Location of Black Rock Forest



Selection of Subjects

To effectively address the three research questions asked in this study, Black Rock Mountain Biking Association members and Oregon Department of Forestry employees involved in collaborative-based recreation management process taking place in the Black Rock Forest were both surveyed and interviewed. Those questioned via surveys and interviews were those deemed to be active members of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group. More specifically, research subjects were either employed Foresters from the Oregon Department of Forestry or designated Board Members and Trail Managers from the Black Rock Mountain Bike Association.

In order to answer the research questions being asked in this study, a multi-step analysis was utilized beginning with administering eleven in-person surveys specifically designed for stakeholders in

the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group. Representatives from both the Black Rock Mountain Biking Association and the Oregon Department of Forestry's West Oregon District completed in-person surveys. Additional data was gathered through subsequent in-person interviews with two Board Members and three Trail Managers from the Black Rock Mountain Biking Association and three Foresters from the Oregon Department of Forestry. Those interviewed were selected due to increased involvement in the collaborative process.

Because this research focuses on the environmental outcomes resulting from a specific case of collaborative-based recreation management, it made sense to utilize a purposive sampling method to select respondents for the study. Names and contact information were obtained through contact with the President of the Black Rock Mountain Biking Association. Effort was made to attain a 100% response rate, in which every active member of the Collaborative Group was queried via in-person surveys.

Survey and Interview Administration

Initial contact was made with the Black Rock Mountain Bike Association during a bi-monthly board meeting. Initial contact with the Oregon Department of Forestry was made by electronic mail and/or telephone. Members from both the Black Rock Mountain Biking Association and the Oregon Department of Forestry were given a recruitment letter (Appendix A: Recruitment Letter) noting specific requirements inherent in the research and asking him/her to participate in the research study. All participants were asked for consent in-person, prior to administering in-person surveys and interviews. If participants felt that their anonymity could possibly be breached by the information provided in the research documents, they had the option to withdraw from the study.

One week after initiating contact with the Collaborative Group, an email was sent to those who have agreed to participate in the research study. This email thanked those who agreed to participate and re-informed participants of the requirements inherent in this research study. Included in the

second email was a copy of the survey instrument to review in preparation for the in-person surveys to be carried out (Appendix B: Survey Instrument). Those belonging to the Black Rock Mountain Biking Association and the Oregon Department of Forestry were asked for a time and place that was most convenient to be surveyed. Surveys were administered to Black Rock Mountain Biking Association members at a bi-monthly board meeting, which took place at Santiam Bicycle Shop in Salem, Oregon. Surveys were administered to Oregon Department of Forestry employees in two locations; one at a Starbucks in Eugene, Oregon, and two others at the West Oregon District Office in Philomath, Oregon.

Similar to the administration of the survey instrument, in-person interviews were conducted with members of the Black Rock Mountain Biking Association and the Oregon Department of Forestry at a location of the participant's choice (Appendix C: Interview Script). Those interviewed were selected due to increased involvement in the collaborative process. Interviews were conducted with Black Rock Mountain Biking Association members at a board member's place of business, located in Salem, Oregon. Interviews were conducted with Oregon Department of Forestry employees in two locations; one at a Starbucks in Eugene, Oregon, and two others at the West Oregon District Office in Philomath, Oregon.

In total, eleven surveys were completed and eight interviews were conducted. Response rate was 100%, as all who were asked to be surveyed and interviewed willingly participated in the data gathering phase inherent in this research project. Both survey and interview questions were submitted to the University of Oregon's Office for Protection of Human Subjects for clearance prior to implementation of the study.

Instrumentation

Survey Questionnaire

A survey questionnaire was created for in-person administration to both entities involved in the Black Rock Mountain Biking Administration/Oregon Department of Forestry Collaborative Group. In

order to meet the goals of the research study, questions were formulated to answer: 1) if the Collaborative Group was meeting goals stated in their Management Plan, 2) how successful the Collaborative Group was in reducing environmental impacts resulting from mountain bike recreation, 3) which meeting processes were seen as being more or less effective, 4) strengths and weaknesses of collaborative recreation management, 5) the benefits and barriers to utilizing collaborative-based recreation management in the Black Rock Forest, 6) whether collaboration had enhanced management in the Black Rock Forest, and 7) if respondents would recommend the use of collaborative-based recreation management in other recreational areas. The complete survey instrument can be found in Appendix B. In addition to these questions, research subjects were also given the opportunity to provide any additional comments. Both Black Rock Mountain Biking Association members and Oregon Department of Forestry provided information about their first-hand experiences about working in the field of collaborative-based recreation management.

Upon receiving completed surveys from all research subjects, data was recorded to search for themes. After completing data analysis, a number of themes became apparent, which are presented in Chapter Four: Findings.

Interview Questions

In-person interviews were included in this research as a means to attain in-depth perceptions, which were not attainable via the survey instrument. In order to truly meet the objectives of this research study it was crucial that a significant amount of qualitative data based on personal perceptions of the environmental outcomes of collaborative-based recreation management were collected.

Interview questions were written to correspond with the survey instrument, with the ultimate intent of further informing the research. To conduct interviews a structured interview script was created, which worked to follow up on many of the questions asked in the survey. While the survey instrument was

utilized as a base, interview questions allowed participants to elaborate in increased detail when asked questions. The complete interview script can be found in Appendix C. The following is a sample of questions:

1. How has collaborative-based planning and management impacted the environment in the Black Rock Unit of the Oregon Department of Forestry?
2. What does the Black Rock Mountain Biking Association/ Oregon Department of Forestry Collaborative Group do well/not do well with regards to reducing environmental impacts resulting from mountain biking?
3. Do you feel that a collaborative approach to managing recreation areas is more effective/less effective in minimizing environmental impacts resulting from mountain biking than a traditional top down management approach? And why do you feel this way?
4. Are there any meeting processes that you feel positively or negatively impact the work that the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group is carrying out? And how?
5. What is the best project or example of work resulting from collaborative-based recreation planning and management in the Black Rock Unit of the Oregon Department of Forestry? What do you feel led to the project or example of work being a success?

It was recommended that interviews be carried out in-person, as a means to gather qualitative data of greater depth than that which might be attained using the telephone. While conducting in-person interviews this appeared to be the case, as research subjects provided copious amounts of detailed qualitative data, with all interviews lasting between one and three hours. It ultimately appeared that research subjects felt more comfortable providing data in-person, as one-way questions turned into two-way conversations.

Three individual in-person interviews were carried out with employees from the Oregon Department of Forestry and one group interview with five members of the Black Rock Mountain Bike

Association were conducted between February and May of 2009. After conducting interviews, results were transcribed immediately to retain accuracy of data attained.

Data Analysis

Data attained from the survey instrument and interview questions were analyzed by grouping responses by question, respondent affiliation, and similarities between individual responses. During the analysis phase, key words, projects noted, and overall viewpoints (positive or negative) regarding impact of collaborative-based recreation management in the Black Rock Forest were of great focus. After completing the first round of data analysis a number of themes became discernible. These themes will be explained in detail in Chapter Four: Findings.

Analysis was performed first on data attained via the survey instrument as a means to better inform the analysis process that would be utilized on information attained via the interview questionnaire. Because survey questions consisted of mostly closed-ended questions, analysis was much less complicated than that which was carried out on results from the interview process; mostly because respondents were more directed in their responses. This process was particularly helpful as the interview questionnaire included longer answers, which at times were slightly more difficult to interpret.

To further breakdown data attained from both the survey and interview data collection tools, a number of tables were created. Tables created grouped survey and interview responses according to: 1) individual responses, 2) responses from the Black Rock Mountain Biking Association, 3) responses from the Oregon Department of Forestry, and 4) a conglomerate of responses from the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group as a whole. Grouping responses in this manner helped enlighten discovered themes, giving greater insight into the opinions of the research subjects as individuals, by affiliation, and by the Collaborative Group as a whole. Chapter Four provides these findings.

Strengths and Weaknesses of Study Approach

In order to answer the three research questions inherent in this study it was concluded that the most effective research methods would be primarily qualitative. Ultimately, it was determined that an approach which consisted of using both a survey and interviews would be most successful. The design of the interview questions allowed for greater richness in the means that subjects were allowed to respond. All interview questions were open-ended, which presented respondents the opportunity to answer questions freely, in greater detail than that which was attained via the survey instrument.

During the formation of both the survey and interview data gathering instruments attention was given to their design, making sure that questions asked focused specifically on the research questions at hand. The design of both the survey and interview instruments were structured, which helped assure that data attained was relevant to the research questions asked. As a result of thoughtful and innovative survey and interview design, information attained can be used to make clear set of findings and recommendations that other agencies or recreational groups can use to implement successful collaborative-based recreation management projects. Chapters Four and Five discuss these findings, conclusions, and recommendations.

Surveys were administered to all Oregon Department of Forestry employees and Black Rock Mountain Biking Association members who are actively involved in the Collaborative Group. As a result of all active members of the Collaborative Group being queried, results can be supported to the fullest extent, ultimately making the data much more robust.

While I consider the data gathering process robust, there are drawbacks to only including active members of the Collaborative Group. By only including active members of those involved in the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group perspectives of those who were not directly involved in the Collaborative Group were left out. Without time and money being limiting factor in carrying out interviews, it would have been beneficial to have interviewed

members of the Falls City community, adjacent land owners, and other members of the public with connection to this recreation area.

Because this project focused on a single case of collaborative-based recreation management it is limited in its projection. Including multiple cases of collaborative-based recreation management in this research would greatly improve its viability, allowing results to be projected beyond the parameters of the Black Rock Forest. Including an analysis of other collaborative-based recreation management ventures in conjunction with that which is taking place in the Black Rock Forest would have greatly strengthened this research, making it applicable to a much wider range of recreation areas.

Chapter Four

Findings

The main purpose of this research study is to determine whether collaborative-based recreation management leads to improved environmental outcomes when compared to that which may be attained in a more exclusive manner. The study also seeks to determine whether perspectives differ between the Oregon Department of Forestry and the Black Rock Mountain Biking Association with regards to attaining improved environmental outcomes and whether certain practices utilized by the Collaborative Group affect their ability to create positive environmental outcomes. Results from this research study are intended to test the hypothesis that collaborative-based recreation management leads to improved environmental outcomes. The following Chapter discusses the findings resulting from data attained using the survey instrument and interview questionnaire noted in Chapter Three.

This Chapter discusses insight attained through surveys and interviews with active members of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group. Developing an understanding of whether collaborative-based recreation management leads to improved environmental outcomes, whether perspectives differ between the two organizations involved in the Collaborative Group, and whether certain practices affected the Collaborative Group's ability to create positive environmental outcomes was desired. Answering the three research questions inherent in this study was the primary focus during the data gathering phase, therefore it is most effective to break down findings by research question. Following a discussion of findings are recommendations for those looking to carry out a collaborative-based recreation management venture in their local recreation areas. While recreation in the form of mountain biking is of focus in this study, recommendations presented are applicable to all forms of collaborative-based recreation management.

Approaches to Measuring Results

To best evaluate the results from this research study a number of different indicators are used. To evaluate the primary hypothesis inherent in this research study the following indicators are utilized: process indicators, performance indicators, and outcomes measures. According to Margerum (2009) process indicators provide benchmarks for evaluating the planning process and planning steps, performance indicators assess the shorter-term performance of specific plans and policies, and outcomes measures assess the actual changes occurring “on the ground”.

Does Collaborative-Based Recreation Management Lead to Improved Environmental Outcomes?

Members of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group provided detailed feedback regarding whether collaborative-based recreation management in the Black Rock Forest leads to improved environmental outcomes. Responses given by both Oregon Department of Forestry employees and Black Rock Mountain Biking Association members are based on first hand experiences. It is important to point out that much of what is found in existing literature is supported by information attained from respondents.

Process Indicators

Process indicators are commonly used to evaluate whether the practices in place in a given decision-making process lead to improved outputs and outcomes. Margerum (2009) states that the assumption behind measuring process is that better processes of deliberation and decision-making will lead to better outputs and outcomes. In the following, we will look at whether meeting, management, and maintenance practices implemented by the Black Rock Mountain Biking Association/Oregon

Department of Forestry Collaborative Group are effective in achieving positive environmental outcomes in the Black Rock Forest.

Question number one from the survey inquires about the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group's ability to achieve goals noted in the Black Rock Unit Management Plan. Research subjects rated their overall effectiveness to achieve goals noted in the Management Plan on a scale of not effective to very effective (see Table 1). Of importance to this research is whether the Collaborative Group was effective in meeting the following goals noted in the Management Plan:

- 1) Establishing a procedure to ensure that trails and manmade features are built in a manner that is environmentally responsible, and
- 2) That trails are properly marked to ensure sustainability.

Looking at survey responses from eleven individuals, we find that all respondents felt the Collaborative Group was effective or very effective in meeting these two goals (see Table 1). This indicates that practices utilized by the Collaborative group to manage the Black Rock Forest are effective in reducing the environmental impacts resulting from mountain biking. As a result, one may propose that if recreation use in the Black Rock Forest continues to be managed in a collaborative manner the Forest will continue to be a viable source of recreation for years to come.

Table 1. Effectiveness in Achieving Goals Noted in the Black Rock Unit Trail Management Plan as Noted by Respondents

Thinking about the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group how would you rate it overall effectiveness in achieving the following goals noted in the Black Rock Management Plan?					
	Very Effective	Somewhat Effective	Effective	Not Effective	Not Sure
Establishing a procedure to ensure that trails and manmade features are build in a manner that is environmentally responsible	9	2			
That trails are properly marked to ensure sustainability	6	5			

It is important to note certain practices that significantly impact the Collaborative Group’s ability to achieve goals noted in the Black Rock Unit Management Plan. Practices felt to positively impact the work being carried out by the Collaborative Group are: leaving fundamental value differences out of the decision-making process, writing specific agreements and planning for ongoing communication, striving to create an inclusive atmosphere, providing quality leadership, maintaining open communication, holding formal annual meetings, and meeting onsite to review past and present build projects. These practices will be further explained below.

Interviewees were asked whether an effective communication process was in place between the Black Rock Mountain Biking Association and the Oregon Department of Forestry. Respondents agreed that an effective communication process is in place, and that open communication was one of the main factors leading to the success of the Collaborative Group. During an interview with Oregon Department of Forestry employees, it was noted that the Black Rock Mountain Biking Association does a great job communicating about pertinent environmental issues. Specifically noted was that communication most often occurs between those in leadership positions. Those in leadership position keep regular contact, discussing any pressing issues on a monthly basis.

During interviews with both Oregon Department of Forestry employees and the Black Rock Mountain Biking Association members it was commonly noted that on-site meetings seemed to be the most effective venue for communication to take place between the two entities involved in the Collaborative Group. On-site meetings were felt to offer opportunities for the Collaborative Group to discuss the means to minimize the impacts of the development of the Black Rock Trail System. On-site meetings were viewed by respondents as an effective practice that has ultimately led to improved environmental outcomes.

Those placed in leadership positions were found to be of added importance to facilitating an effective communication process. Respondents commonly noted leadership as being integral to maintaining an open, responsive and professional communication process. Organizational leadership, as found in the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group provides a great model for other user groups and land management agencies interested in collaborative-based recreation management.

The Trail Management Plan and the collaborative process in place in the Black Rock Forest is a result of Oregon's "Adopt-A-Trail" Program. Creating and abiding by a jointly created Management Plan was touted as a great means of establishing an effective and efficient process to design, create and maintain the Black Rock Trail System. The Trail Management Plan is reviewed annually by both the Black Rock Mountain Biking Association the Oregon Department of Forestry. Review of the Plan takes place at an annual joint meeting between the two entities involved in the Collaborative Group.

Jointly creating the Black Rock Unit Trail Management Plan was noted by respondents as being a vital "piece of the puzzle" that greatly helped the Collaborative Group achieve success. Because the Trail Management Plan lays out specific guidelines, the Black Rock Mountain Biking Association knows the exact specifications to follow when designing, constructing, and maintaining the Black Rock Trail System. This was viewed as essential to reducing the environmental impacts resulting from mountain

bike recreation in the Black Rock Forest, as any complications that may result from miscommunication or misunderstanding were greatly reduced.

Lastly, it must be noted that all who participated in the data gathering process felt that practices utilized by the Collaborative Group to manage recreation in the Black Rock Forest were replicable in other recreation areas. All respondents were supportive of collaborative-based recreation management, noting that it is an effective means of managing recreation that should be implemented in other areas (see Table 2). Black Rock Mountain Bike Association members felt that practices in place allowed them to create a trail system that suited their needs while minimizing their impacts on the environment. Oregon Department of Forestry employees noted that current decision-making processes in place are successful, yet could have been improved given access to better resources, such as funding to support a full time recreation manager.

Table 2. Support for Collaborative-Based Recreation Management in Other Recreation Areas as Noted by Respondents

As a result of your experience in the Black Rock Mountain Biking Association/Oregon Department of Forestry do you support the use of collaborative planning in other recreation areas?				
Strongly Supportive	Supportive	Neither Supportive or Unsupportive	Unsupportive	Strongly Unsupportive
9	2			

Performance Indicators

Performance indicators are used to assess whether the policies and procedures put in place by a given plan are effective in achieving their purpose. Using performance as an indicator is very useful, as it can provide a focused look on the impacts of practices utilized, giving insight into the how effective certain practices are in achieving goals, objectives and policies set in place by a given management plan. Evaluations of performances are some of the most common approaches to evaluation in natural resource management approaches (Margerum. 2009).

Members of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group were asked whether special maintenance of trails reduced the environmental impacts resulting from mountain biking within the Black Rock Forest. Survey results show that all respondents felt that special maintenance reduced the environmental impacts resulting from mountain biking within the Black Rock Forest (see Table 3). Special maintenance is carried out by members of the Black Rock Mountain Biking Association as specified in the Black Rock Unit Trail Management Plan. Carrying out annual and special maintenance of the Black Rock Trail System was felt to be a very important process that helped reduce the environmental impacts resulting from mountain biking.

Table 3. Environmental Impacts of Annual and Special Maintenance of Trails in the Black Rock Forest as Noted by Respondents

In your opinion, have annual and special maintenance of trails reduce the environmental impacts resulting from mountain biking within the Black Rock Unit of the Oregon Department of Forestry?			
Yes	To Some Extent	No	Not Sure
8	3		

While interviewing employees of the Oregon Department of Forestry, voluntary maintenance was noted as a great benefit of collaborating with the Black Rock Mountain Biking Association. Because Black Rock Mountain Biking Association members want to maintain access to the Black Rock Forest, maintenance is carried out regularly, with thousands of hours being dedicated to maintaining the Black Rock Trail System since the initiation of the Collaborative Group. Members of the Black Rock Mountain Biking Association realize that a collaborative process is the only way a trail system such as that found in the Black Rock Forest can exist, and are therefore are willing to dedicate time, money, and effort to keep this recreation area active. Providing increased maintenance is just one of the many benefits that collaborative-based recreation management can bring to any given recreation area.

One of the big successes noted during the interview process was that collaborative-based recreation management in the Black Rock Forest has kept recreationalist from degrading a local water source that is utilized by land owners adjacent to the Black Rock Forest. Both the Black Rock Mountain Biking Association and the Oregon Department of Forestry felt that their ability to keep riders from damaging this water source was only capable through a collaborative venture. Maintaining the quality of this water source is linked to trail creation only being allowed in non-sensitive habitat areas, and self-policing that the Black Rock Mountain Biking Association carries out on a regular basis. It was also mentioned during an interview with an Oregon Department of Forestry employee that the Black Rock Mountain Biking Association regularly clears culverts of any debris, which has further helped improve water quality in the Black Rock Forest.

The Black Rock Unit Trail Management Plan requires each trail in the Black Rock Forest to be designed, built, and maintained under the guidance of a Trail Manager. Because all trails are built under the guidance of a Trail Manager, off trail impacts are greatly reduced, as volunteers are well guided in their actions by Trail Managers. Utilizing a system in which a user group assumes trail management responsibility was viewed by the Oregon Department of Forestry as greatly reducing the environmental impacts which can potentially result from mountain biking. Involving a user group in the design, construction, and management of a given recreation area gives those involved a sense of ownership, which ultimately results in the user group taking responsibility for their actions. Existing literature notes that people will take better care of what they consider to be theirs; when people feel this sense of ownership they put more effort into maintaining a given resources' existence, protecting and nurturing it to a greater extent. Wondellock and Yaffee (2000) note that fostering a sense of shared ownership was critical to the success of the many collaborative ventures they had studied. As a result of sharing ownership, the Black Rock Mountain Biking Association constantly works to maintain a positive

relationship with the Oregon Department of Forestry by minimizing their impacts to lands under ownership of this land management agency.

Because the Black Rock Mountain Biking Association makes their presence known with daily visits to the Black Rock Forest, they have eliminated the construction of illegal trails that may potentially damage sensitive habitat areas. Currently, the Oregon Department of Forestry does not have funding to carry out this type of monitoring. Without the Black Rock Mountain Biking Association's help in managing the Black Rock Forest the creation of illegal trails would increase, therefore increasing the potential for damage to sensitive habitat areas. It was specifically noted during interviews with Black Rock Mountain Bike Association members that their heavy presence onsite results in increased respect from those using the trails.

In addition to trail monitoring, Black Rock Mountain Biking Association members also considered themselves effective in policing the Black Rock Forest. It was noted that self-policing has helped reduce environmental impacts resulting from mountain biking by keeping people on existing trails and eliminating unsanctioned trail creation. Self-policing by the Black Rock Mountain Biking Association also greatly reduces vandalism on and around the Black Rock Trail System. It was specifically noted during the Black Rock Mountain Biking Association group interview that vandalism had been basically eliminated, with only one minor occurrence since the Trail System has gained popularity. This is viewed a great service to both the Oregon Department of Forestry and the Falls City community.

Interviewees were asked whether they felt a collaborative approach to managing recreation areas is more effective/less effective in minimizing environmental impacts resulting from mountain biking in comparison to a traditional management approach. Results indicate that both Black Rock Mountain Biking Association members and Oregon Department of Forestry employees felt that a collaborative approach was effective in minimizing environmental impacts resulting from mountain biking in the Black Rock Forest.

Looking at performance indicators may be the strongest means of proving that collaborative-based recreation management leads to improved environmental outcomes. Utilizing a collaborative approach to planning and managing recreation in the Black Rock Forest has basically eliminated impacts to sensitive habitat areas, reduced vandalism, and increased responsible trail behavior. In addition, including a user group that is directly familiar with the means and knowhow to design, build and maintain a trail system creates a “win-win” situation where the Oregon Department of Forestry can offer a mountain bike recreationalist a great place to ride at a minimum cost to the Agency. As mentioned by a Board Member of the Black Rock Mountain Bike Association: “The collaborative approach to building trails is the only way sports like this can exist”. Ultimately, collaborative-based recreation has not only helped reduce the environmental impacts resulting from mountain biking in the Black Rock Forest, it also brings in added revenue, work hours, rider knowledge, maintenance, and self-policing to the Black Rock Forest Recreation Area.

Utilizing a collaborative process to plan and manage the Black Rock Trail System has resulted in the creation of an efficiently managed recreation area that sees thousands of users each year. With this amount of use, environmental impacts are inevitable. Yet, through the use of innovative strategies to minimize environmental impacts, which those who are deeply familiar with mountain bike recreation greatly understand, these impacts can be significantly reduced. Noted as key components to reducing environmental impacts were the use of innovative design, construction and management methods, such as: using the topography to guide where they place their trails, following trail construction guidelines published by the International Mountain Biking Association, transplanting trees, ferns and other vegetation, not allowing illegal trails to be built/decommissioned as soon as they are found, monitoring and managing trails, and self-policing. While environmental impacts are inherent in any form of recreation, results from both surveys and interviews help show that these impacts can be greatly reduced by utilizing a collaborative-based recreation management process.

Outcome Indicators

Looking to measure the physical outcomes of collaborative-based recreation management in the Black Rock Forest is a very important step in any evaluation process. Margerum (2009) states that measuring outcomes is sometimes considered the “holy grail” of monitoring and evaluation, because it asks the basic question of whether collaborative processes are producing better environmental and social outcomes. For environmental settings, this monitoring is best carried out in a scientific manner, using variables which are measurable with the use of various technical methodologies.

It is important to mention that all eleven respondents felt that collaborative-based recreation management reduces the impacts of mountain biking on the environment within the Black Rock Forest. Question number two in the survey asked respondents whether collaborative-based recreation management in the Black Rock Forest reduced: trail degradation, creation of illegal trails in environmentally sensitive areas, impacts to off trail vegetation, and impacts to water quality. All respondents felt that collaborative-based recreation management was effective-very effective in reducing impacts to these four environmental factors (see Table 4). Looking that Table 4, it is reasonable to believe that collaborative-based recreation management does lead to improved environmental outcomes. This was seen as being partly due to the operative practices utilized by the Collaborative Group, as well as the Black Rock Mountain Bike Association’s desire to maintain a quality recreation area with minimal impacts to the local environment.

Table 4. Ability to Reduce the Following Environmental Impacts as Noted by Respondents

Thinking about the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group how would you rate it overall ability to reduce the following environmental impacts?					
	Very Effective	Somewhat Effective	Effective	Not Effective	Not Sure
Trail degradation/erosion	6*	4*	2		
Creation of illegal trails in environmental sensitive areas	7	4			
Impacts to off-trail vegetation	3	7	1		
Impacts to water quality (e.g. damage resulting from unestablished stream crossings)	6	3	2		

*Denotes a respondent checking more than one box under a single question

While scientific data was not attained, a significant amount of insight can be gained from analyzing qualitative data resulting from this research study. The qualitative data attained supports the hypothesis that collaborative-based recreation management leads to improved environmental outcomes. Looking at both the process and performance indicators noted in the subsections above, we see that members of both Black Rock Mountain Biking Association and Oregon Department of Forestry felt that collaborative processes implemented in the Black Rock Forest have led to improved environmental outcomes. This point is further supported by the fact that all survey and interview respondents were either supportive/strongly supportive of using collaborative-based recreation planning and management in other recreational areas (see Table 5).

Table 5. Support for the Use of Collaborative-Based Recreation Management in Other Recreation Areas

As a result of your experience in the Black Rock Mountain Biking Association/Oregon Department of Forestry do you support the use of collaborative planning in other recreation areas?				
Strongly Supportive	Supportive	Neither Supportive or Unsupportive	Unsupportive	Strongly Unsupportive
9	2			

Discussion

Information presented in this Chapter supports the hypothesis that collaborative-based recreation management leads to improved environmental outcomes. While information presented is specific to the Black Rock Forest, it is reasonable to conclude that collaborative-based recreation management is likely to result in improved environmental outcomes in other regions. Following the practices utilized by the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group to manage the Black Rock Forest is likely to increase the chances of success of other collaborative-based recreation management ventures.

Results from this research prove that collaborative-based recreation management in the Black Rock Forest is effective in achieving improved environmental outcomes. It is important to note that all eleven respondents felt that the practices in place are effective in achieving positive environmental outcomes in the Black Rock Forest. Practices utilized to manage the Black Rock Forest have helped the Collaborative Group help meet goals pertaining to environmental sustainability noted in the Black Rock Unit Trail Management Plan. Of the practices utilized by the Collaborative Group, leadership was found to be of significant importance. Making sure those in leadership positions are good communicators, responsive to other entities involved in a collaborative, and that communication is carried out in a professional manner was noted as key to the success of the Collaborative Group.

A number of other management actions were felt to significantly impact the ability to reduce environmental impacts resulting from mountain bike recreation. All respondents felt that controlling location of trails, self-policing, creating and abiding by a trail management plan, and utilizing a collaborative process reduced: trail degradation, creation of illegal trails in environmentally sensitive areas, impacts to off trail vegetation, and impacts to water quality.

Utilizing a collaborative-based recreation management process was noted by all respondents as an effective means of managing recreation areas. All respondents recommended the use collaborative-

based recreation management in other regions. Implementing a collaborative-based recreation management process is viewed as beneficial to both the user group and the land management agency for a number of reasons; increased management, monitoring, and funding to be utilized in the recreation area, improved environmental and social outcomes, and the ability to develop recreation areas which suit the needs of a user group are factors that were commonly noted.

Do perspectives differ between the Oregon Department of Forestry and the Black Rock Mountain Biking Association?

Understanding whether perspectives differ between the two organizations involved in the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group is an important factor to consider. It is often the case that one organization involved in a collaborative venture is far more supportive of the work being carried out than their counterpart. This often can be tied to years of using a traditional decision-making process, which is competitive in nature. As Selin and Chavez (1995) note, "Organizations that have been bitter adversaries in the past often find it impossible to reach consensus on anything".

Collaborative processes occasionally consist of a single entity that attempts to dominate the decision-making process. In this case, the dominant entity often attempts to control the collaborative group by running the process, and managing the group to meet individual needs rather than that of the collective. Meetings and processes are often dominated by certain individuals or groups of individuals as a result of self-interest. Self-interest can hamper the use of collaborative-based management processes, as those involved become unwilling to cooperate. Wondolleck and Yaffee (2000) note that human behavior often involves self-interest pursued through competition, and when self-interest becomes too prevalent there is little reason for rational people to cooperate. Differences, when based

on fundamental values can become so prevalent that collaborative processes ultimately become ineffective.

When perspectives differ as a result of fundamental values, compromising in a collaborative format may not be appropriate. Yet, most often is the case that what appears to be a disagreement over fundamental values often is revealed to be differences over preferences, and room for mutually acceptable agreements is found to exist (Wondellock and Yaffee. 2000). Organizationally, the Black Rock Mountain Biking Association and the Oregon Department of Forestry have different fundamental values with regards to desired uses of the Black Rock Forest. The Black Rock Mountain Biking Association desires to utilize the Black Rock Forest as a mountain bike recreation area, while the Oregon Department of Forestry may prefer utilizing the Black Rock Forest for resource development and extraction. Yet, as this research has shown, both organizations have overcome fundamental value differences, ultimately coming to mutually acceptable agreements. As a result, we can see that willingness to come to common grounds, leaving fundamental value differences behind leads to success. This point is illustrated by Black Rock Mountain Biking Association members and Oregon Department of Forestry employees who specifically noted being satisfied with the outcomes of the collaborative-based recreation management. Looking at Table 6, we see that all respondents felt using a collaborative-based process enhanced recreation management in the Black Rock Forest.

Table 6. Opinions Regarding Whether Collaboration has Enhanced the Management of the Black Rock Forest as Determined by Respondents.

In your opinion, has collaboration enhanced the management of the Black Rock Unit of the Oregon Department of Forestry?			
Yes	To Some Extent	No	Not Sure
10	1		

There is a plethora of literature indicating that human interaction can be divided into two sets of behaviors: competition and cooperation. For collaborative processes to be successful cooperation must

take the forefront, while competition is left behind. Fortunately, for those involved in the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group competition has yet to become an issue. This point is further illustrated by comparing and contrasting the results attained from the data gathering processes. Looking at the process, performance, and outcome indicators, it becomes apparent that the views and perspectives of both entities involved in the Collaborative Group are closely aligned. As a result, it can be concluded that both groups looked past the “us versus them” mentality to operate in a cooperative manner. Operating in this manner has ultimately allowed the Collaborative Group to focus on recreation management, rather competing for how to use or what to do with the Black Rock Forest.

Results also show that all respondents agreed that the ability to meet the goals and objectives noted in the Black Rock Unit Trail Management Plan was enhanced by utilizing a collaborative process. As noted by the Wonellock and Yaffee (2000) developing vision statements and common goals provide a guiding mission and focus to a group and help facilitate the problem solving process. All respondents felt that working together to help establish a procedure to ensure that trails and manmade features are built in a manner that is environmentally responsible and that trails are marked to ensure sustainability is a significant outcome of utilizing a collaborative-based recreation management process.

Both organizations involved in the Collaborative Group felt that having dedicated, energetic, professional individuals in leadership positions was the key to their success. The literature on collaboration and cooperation also highlights the importance of a strong leader “whose energy and vision mobilizes others to participate” (Selin and Chavez. 1995). Bennis and Biederman (1998) write in their study of successful collaborative efforts: “Every great group has a strong leader. This is one of the paradoxes of creative collaboration.” Mentioned during an interview with an employee from the Oregon Department of Forestry employee was “make sure that user groups have strong leadership; leadership is one of the most critical factors”.

Finally, the success of the Black Rock Mountain Biking Association/Oregon Department of Forestry may be best illustrated through an analysis of survey question eleven and interview question nine, which asks research subjects whether they would recommend the use of collaborative-based recreation management in other recreation areas. As we see in Table 5, both entities were in complete support of utilizing collaborative-based recreation management in other recreation areas, with two respondents being supportive, and nine respondents being strongly supportive. The support for utilizing collaborative-based recreation management was reiterated during interviews with employees from the Oregon Department of Forestry and the Black Rock Mountain Biking Association. One member from the Black Rock Mountain Bike Association mentioned that “the collaborative approach to building trails is the only way a sport like this can exist”. As mentioned above, collaborative-based recreation management is seen as a means of enhancing the management process as a whole, making it easily understandable why both entities would recommend the use of collaborative-based recreation management in other recreation areas.

Discussion

Noting that perspectives from both the Black Rock Mountain Biking Association and the Oregon Department of Forestry were closely correlated is of great significance to this research. Because the views and perspectives of both the Black Rock Mountain Biking Association and the Oregon Department of Forestry are in such close alignment results presented in this research are robust. As a result, it is reasonable to speculate that collaborative-based recreation management does lead to improved environmental outcomes in the Black Rock Forest; the primary hypothesis is supported by gathered data to the fullest extent possible. While information presented is specific to the Black Rock Forest, it is likely that utilizing collaborative-based recreation management under similar circumstances will result in similar environmental outcomes. Based on the views and perceptions of the Collaborative Group, the

use of collaborative-based recreation management is recommended as a means of both improving environmental outcomes and enhancing recreation management as a whole.

Do certain practices affect the Collaborative Group's ability to create positive environmental outcomes within local recreation areas?

To secure the success of a collaborative-based recreation management venture there are many lessons learned from the practices that the Black Rock Mountain Biking Association/Oregon Department Forestry Collaborative Group utilized to manage the Black Rock Forest. Many of the practices implemented by this Collaborative Group are essential to increasing the ability to attain improved environmental outcomes and to ultimately attain success. Practices deemed to be vital to the success of collaborative-based recreation management can be used to guide other user groups interested in establishing a similar venture. In the following, a number of the most successful practices utilized by the Collaborative Group are presented. The practices noted in the following are those found to be successful by both Black Rock Mountain biking Association members and Oregon Department of Forestry employees.

As noted earlier in this Chapter, the first step in initiating a successful collaborative-based recreation management venture is to leave fundamental value differences out of the decision-making process. Once this step is taken there are a number of practices that can be utilized to help any given collaborative group meet their goals and objectives. The International Mountain Bike Association (2007) offers ten principles that can be utilized to increase the success of any given collaborative or partnership, some of which were utilized by the Collaborative Group, such as, writing specific agreements and planning for ongoing communication. In the following these practices will be further

explained, as will: providing quality leadership, maintaining open communication, holding formal annual meetings, and meeting onsite to review past and present build projects.

The Black Rock Mountain Biking Association in conjunction with the Oregon Department of Forestry has developed the Black Rock Unit Trail Management Plan. This Management Plan details the working arrangements and trail standards set forth in an “Adopt-A-Trail” Agreement between the two entities involved in the Collaborative Group. Writing an agreement such as the Black Rock Unit Trail Management Plan is one of the first recommendations given by the International Mountain Biking Association to those looking to develop collaborative and partnership type projects. The International Mountain Bike Association (2007) notes that “The key to a successful partnership is a specific written agreement that lays out the goals and roles of all parties”. The Black Rock Unit Trail Management Plan follows this notion, noting specific roles, design and construction standards, approval processes, the hierarchy of authority, as well as means to communicate with one another.

Looking at responses from research subjects, we find that developing and abiding by an established management plan was vital to the success of the Collaborative Group’s ability to minimize the environmental impacts of mountain biking in the Black Rock Forest. All eleven respondents felt the Collaborative Group was effective to very effective in meeting the goals stated in the Black Rock Unit Management Plan (see Table 1). Providing an established set of goals not only helped the Collaborative Group reach success, they also helped develop and build trusting relationships, assess development in the Black Rock Forest, remedy problems, and adapt to future needs. Because two of the four goals noted in the Management Plan focused on reducing environmental impacts, this document played a significant role in helping the Collaborative Group achieve improved environmental outcomes.

Planning for ongoing communication is well established by the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group. When subjects were asked whether an effective communication process was in place between the Black Rock Mountain Biking Association

and the Oregon Department of Forestry, the response was consistently “yes”. Respondents felt that establishing an open communication process, in which both organizations involved in the Collaborative Group could regularly communicate about any management issues, was one of the main factors leading to the success of the Collaborative Group. For an open communication process to be successful, respondents noted that group leaders must be responsive to the various players in a collaborative venture.

During interviews with both Black Rock Mountain Biking Association members and Oregon Department of Forestry employees, leadership was noted as a very important factor in attaining success. Without certain individuals being involved, respondents felt that the Collaborative Group may have dissolved long ago. It was most commonly noted that placing individuals in leadership positions that are great communicators, responsive, and professional in their actions was the biggest factor in developing a successful collaborative. Such individuals serve as a source of motivation for change and foster stakeholder trust and support for project goals; the roles they play include cheerleader-energizer, diplomat, process facilitator, leader, convener, catalyst, and promoter (Wondellock and Yaffee. 2000)

The formal annual meeting that occurs between the Black Rock Mountain Biking Association and the Oregon Department of Forestry was also commonly noted as being vital to the success of the Collaborative Group. Annual meetings usually consist of about fifteen board members and trail managers from the Black Rock Mountain Biking Association, and at least one employee from Oregon Department of Forestry. This formal meeting is primarily utilized to reaffirm the collaborative arrangements in place in the “Adopt-a-Trail” Agreement and the Black Rock Unit Trail Management Plan. The annual meeting also offers opportunities to review progress, speak of any management issues, update the projects list, speak of any funding or personal changes, etc.

While annual meetings are the only formally established joint meetings held by the Collaborative Group, it is important to note that a process exists to call for emergency meetings. Setting

up a process in which emergency meetings can be called is an important procedure that other collaborative groups should follow, as certain funding, management issues, user conflicts, etc. require immediate attention from those in charge of managing a given recreation area.

Meetings between the Black Rock Mountain Biking Association and the Oregon Department of Forestry occasionally occur onsite; primarily these meetings are used to review trail design and construction. As noted in the Black Rock Unit Trail Management Plan, construction of certain Man Made Technical Features requires approval from an Oregon Department of Forestry representative. The Black Rock Unit Trail Management Plan utilizes what are called Whistler Trail Standards for rating Man Made Technical Features. All Technical Features rated as “Level 4-Advanced” require approval from the Oregon Department of Forestry. Providing an approval process that requires onsite meetings was viewed as a very effective means of making sure trails are built to standards desired of the land management agency. It was said during an interview with an Oregon Department of Forestry employee that onsite visits are where the “rubber hits the road”.

Discussion

Results from this study show that: leaving fundamental values differences out of the decision-making process, writing specific agreements, planning for ongoing communication, striving to create an inclusive atmosphere, providing quality leadership, maintaining open communication, holding formal annual meetings, and meeting onsite to review past and present build projects greatly influenced the ability of the Collaborative Group to attain improved environmental outcomes. The practices utilized by the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group are recommended for use by other collaborative groups looking to achieve success.

Commonly Noted Benefits/Barriers and Strengths/Weaknesses to Collaborative-Based Recreation Management

The survey instrument includes a section focused on perceived benefits/barriers and strengths/weaknesses to effective collaborative-based recreation management. A benefit commonly noted by both entities involved in the Collaborative Group was that improved communication and networking resulted from utilizing a collaborative approach. It was felt that improving communication and networking resulted in improved opportunities for recreationalist to enjoy the Black Rock Forest.

Another benefit noted was that utilizing a collaborative approach helped pool resources. Pooling resources was noted as vital to creating improved recreation opportunities at the least cost to the land management agency with jurisdiction over a given recreation area. Utilizing a collaborative-based recreation management process helps increase finances, in-kind work, understanding of user group needs, diverse views and knowledge, etc. A survey respondent specifically noted that collaborating with the Black Rock Mountain Bike Association allowed the Oregon Department of Forestry to get a lot of work done with minimal financial investment and staff time.

A commonly noted barrier mentioned by both the Black Rock Mountain Biking Association and the Oregon Department of Forestry was that inadequate resources and time limited the work that could be carried out in the Black Rock Forest. Both the Black Rock Mountain Biking Association and the Oregon Department of Forestry felt that funding for a District Recreation Manager could greatly improve the outcomes resulting from collaborative-based recreation management in the Black Rock Forest.

The survey instrument also included a section focused on perceived strengths and weaknesses to effective collaborative-based recreation management. A strength commonly noted by the Collaborative Group was that collaboration promoted open communication and open mindedness of all

parties. Creating an open communication process which directly includes user groups is felt as imperative to the planning and management of a mountain bike trail system. The benefits of collaborative-based recreation management are somewhat obvious, as no one better understands the needs of a user group better than the group itself; users are more likely to be aware of trends, future needs, and new opportunities (IMBA. 2007).

A commonly noted weakness of the collaborative-based recreation management approach was that unacceptable behaviors are still occurring in the Black Rock Forest. While the Black Rock Mountain Biking Association members make their presence known, they can't be onsite during all occasions. As a result, there have been a minor number of instances where trail users have come into conflict with an adjacent land owner; typically as a result of trespassing, bicycles exceeding the speed limit on the access road, changing in the parking lot, and unleashed dogs. While conflict with adjacent landowners is uncommon, this is a weakness noted by both entities involved in the Collaborative Group.

Summary of Findings

The findings presented above focus primarily on the proposed hypothesis that collaborative-based recreation management leads to improved environmental outcomes. Noted are certain performance, process and outcome indicators. These indicators are used as a means to establish whether the primary hypothesis of focus in this research is true or false. Looking at information attained through surveys and interviews with members from both the Black Rock Mountain Biking Group and the Oregon Department of Forestry, it can be determined that collaborative-based recreation management leads to improved environmental outcomes in the Black Rock Forest. While this information is specific to the Black Rock Forest, information presented in this Chapter is applicable in other recreation areas, especially those which include mountain biking recreation.

Focus is given to whether perspectives differ between the Black Rock Mountain Biking Association and the Oregon Department of Forestry regarding the proposed hypothesis. Findings resulting from this research show that views and perceptions from both organizations involved in the Collaborative Group are in close alignment. Additionally, views and perceptions were similar with regards to effective practices, strengths and weaknesses, benefits and barriers, management implications, and the support of utilizing collaborative-based recreation management in other recreation areas. Because the views and perceptions from both the user group and the land management agency are in such close alignment, the results pertaining to this research are much more robust than if perspectives had differed. As a result, the primary hypothesis can be supported to a much greater extent.

Findings also emphasize whether certain practices were felt to significantly affect the Collaborative Group's ability to create positive environmental outcomes within the Black Rock Forest. This research study indicates that a number of practices significantly affected the Collaborative Group's ability to create positive environmental outcomes. As previously noted, processes and practices, such as: leaving fundamental value differences out of the decision-making process, writing specific agreements and planning for ongoing communication, striving to create an inclusive atmosphere, providing quality leadership, maintaining open communication, holding formal annual meetings, and meeting onsite to review past and present projects were felt to greatly influence the ability to achieve improved environmental outcomes.

Chapter Five

Conclusions and Recommendations

The results of this research study help contribute to the existing body of literature regarding the environmental outcomes that result from collaborative-based recreation management. Through a review of literature, the collection of qualitative data via surveys and interviews, and the analysis of gathered data the three following questions are answered:

1. Does collaborative-based recreation management lead to improved environmental outcomes in Oregon's Black Rock Forest (in relation to non-collaborative recreation management)?
2. Do perspectives differ between the Oregon Department of Forestry and the Black Rock Mountain Biking Association with regards to environmental outcomes resulting from collaborative-based recreation management in the Black Rock Forest?
3. Do certain practices affect the Collaborative Group's ability to create positive environmental outcomes within local recreation areas?

Using the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group's recreation management practices in the Black Rock Forest as a case study, research was carried out in order to answer the questions noted above. This research helps interested parties gain valuable insight regarding whether collaborative-based recreation management leads to improved environmental outcomes, and what processes and practices may improve the ability to attain positive environmental outcomes.

Conclusions

Conclusions presented below are based on the first hand experience of active members of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group.

Conclusions made as a result of this study are based solely on perceived environmental outcomes, which

have occurred as a result of utilizing collaborative-based recreation management in the Black Rock Forest. While information presented is specific to Black Rock Forest, it offers insight that is likely to be useful to other user groups and land management agencies interested in collaborative-based recreation management.

Before moving on, it is important to reiterate that much of what is found in existing literature is supported by respondents. Ultimately, the creation of a mountain bike trail system, if carried out under the guidelines of the International Mountain Bike Association, can be a great form of recreation with minimal impacts to the local environment. Additionally, this research supports much of what is found in the literature regarding both the social and environmental outcomes of collaboration. Using collaboration in most cases will lead to improved social and environmental outcomes, and because of this is a recommended means of decision-making.

Using the process, performance and outcomes indicators noted in Chapter Four, insight is gained regarding the environmental outcomes of collaborative-based recreation management in the Black Rock Forest. In response to the primary hypothesis of focus in this research study, we find that collaborative-based recreation management enhances management in the Black Rock Forest, and improved environmental outcomes have been achieved as a result. Collaborative Group members overwhelmingly felt that collaborative-based recreation management in the Black Rock Forest reduced: trail degradation, creation of illegal trails in environmentally sensitive areas, impacts to off trail vegetation, and impacts to water quality. Following up on information attained from the survey, interviewees were asked a series of questions which focused purely on the environmental outcomes resulting from collaborative-based recreation management in the Black Rock Forest. After interviewing both entities involved in the Collaborative Group, it was found that all respondents felt that positive environmental outcomes had resulted from using a collaborative-based recreation management process

in the Black Rock Forest. The information attained from the interview process fully supported that which was found using surveys.

This hypothesis is further strengthened by the overwhelming support for the use of collaborative-based recreation management from all active members of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group. Many respondents felt that using a collaborative-based recreation management process was the only way that a recreation area which includes a mountain biking trail system like that found in the Black Rock Forest could be developed and managed.

In carrying out the data gathering phase of this research study it was amazing to see how closely aligned the views of both the Black Rock Mountain Biking Association and the Oregon Department of Forestry were regarding all survey and interview questions. Looking at all of the tables presented in this research paper, you will find that results from all respondents were closely aligned. In carrying out interviews it was found that responses were in just as close alignment as those which resulted from the survey process, further supporting the hypothesis of focus in this research study.

Lastly, this research study asked whether certain practices affect the Collaborative Group's ability to create positive environmental outcomes within the Black Rock Forest. Looking at the results from both survey and interview responses, we find a number of practices implemented by the Collaborative Group were viewed as significantly affecting their ability to achieve positive environmental outcomes. As mentioned in Chapter Four, some of the successful practices noted by respondents were: leaving fundamental values differences out of the decision-making process, writing specific agreements and planning for ongoing communication, striving to create an inclusive atmosphere, providing quality leadership, maintaining open communication, holding formal annual meetings, and meeting onsite to review past and present build projects.

Ensuring that the environmental impacts resulting from recreation are minimized is a very important consideration that all user groups and land management agencies should take into consideration. Practices felt to greatly influence the ability to create positive environmental outcomes are potentially useful to other user groups and land management agencies looking to carry out a collaborative-based recreation management venture. As a result, it is important to share these practices with those looking to initiate a collaborative-based recreation management venture. A number of the practices implemented by the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group are included in the following recommendations.

Seven Recommendations and Outcomes for Those Interested in Implementing a Collaborative-Based Recreation Management Venture

The results of this research study offer information that may be very useful for those looking to initiate a collaborative-based recreation management venture. As determined by existing literature and the results of this research, utilizing a collaborative-based decision-making process when managing a recreation leads to improved environmental outcomes. With this being the case, the use of a collaborative-based decision-making processes in any form of environmental management is highly recommended. Presented below are list of seven recommendations, which are based on successful practices implemented by the Black Rock Mountain Biking/Oregon Department of Forestry Collaborative Group. Using the recommendations presented below will help those interested in collaborative-based recreation management achieve success in meeting their goals and objectives as well as increase their ability to attain improved environmental outcomes.

Recommendation #1: *Look to place those who are great communicators, responsive, and professional in their actions in leadership positions.*

Potential Outcome: Providing leaders who are great communicators, responsive, and professional in their actions helps gain trust and respect between the various entities involved in any given collaborative venture. Without placing individuals with these traits in leadership position collaborative ventures of any nature are likely to fail. During interviews with both Oregon Department of Forestry employees and Black Rock Mountain Biking Association members the importance of leadership was noted over and over again. Both entities felt that the Black Rock Mountain Biking/Oregon Department of Forestry Collaborative Group would have dissolved long ago had it not been for those in leadership positions. Upon asking an Oregon Department of Forestry employee whether there were suggestions to give other collaborative groups, which would improve their ability to carry out successful collaborative-based recreation management it was said that “make sure that user groups have strong leadership; leadership is one of the most critical factors”. Existing literature supports this notion of including a strong leader “whose energy and vision mobilizes other to participate” (Selin and Chavez. 1995). Additionally, Wondellock and Yaffee (2000) note that many projects succeed solely because they rely of the efforts of a small set of dedicated, energetic individuals who catalyze an activity and drive it forward. Mentioned by the Black Rock Mountain Bike Association’s President was that without the presence of one individual from the Oregon Department of Forestry who has took on the leadership role that “this trail system would have never been created”.

Recommendation #2: *Establish a trusting relationship between all entities involved in a collaborative-based recreation management venture.*

Potential Outcome: A “lack of trust” is one reason commonly cited for the failure of strategic alliances (Wondellock and Yaffee. 2000). Because most collaborative-based recreation management ventures include at least one land management agency this recommendation is extremely pertinent. In general, trust between the public and government is already an issue; as noted by Wondellock and Yaffee (2000) “It is clear that the public does not trust government agencies”. Working to establish a trusting relationship between all entities involved in a collaborative-based recreation management venture is one of the first steps that should be taken during the formation of a collaborative group. If a trusting relationship is not established early in the process many problems are likely to occur, such as: skepticism, fear, and opposition to joint efforts. These problems may potentially lead a collaborative group to dissolve. Ultimately, the sense of distrust feeds into conflict and is likely to make those involved focus on trust issues rather than the issues being faced. A starting point for building trust that was used by the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group was to jointly create the Black Rock Unit Trail Management Plan. Creating the Black Rock Unit Trail Management Plan with all Collaborative Group members involved ensured that all entities understood the guidelines which must be followed; this reduced the chances of misunderstanding that could have ultimately led to a “lack of trust” between those involved in the Collaborative Group.

Recommendation #3: *Strive to keep communication open, responsive and professional in nature.*

Potential Outcome: Keeping communication open, responsive and professional in nature can help build a sense of trust by those partnering in any given collaborative. As just noted, building trust is a vital to the success of any given collaborative venture. Using open communication that is responsive and professional helps build trust from both the user group and the land management agency with jurisdiction over a given recreation area. Without implementing this recommendation success cannot

be achieved, as collaboration is reliant on open communication. Without open communication that is professional and responsive in nature, land management agencies may quickly lose confidence in working with a user group, which may ultimately lead the collaborative group to disband. Additionally, open communication helps keep the various entities aware of the needs and desires of those involved in a collaborative venture, and allows for any pertinent issues to be immediately addressed. The Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group strive to keep communication open, responsive and professional in nature through the use of onsite meetings where any pressing issues can be discussed on a regular basis. Making sure that communication is strong between those in leadership positions was seen as being of great importance to the success of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group Collaborative Group. When interviewing an employee from the Oregon Department of Forestry the ability of the Black Rock Mountain Biking Association to be responsive was noted as a very important factor which led to the Collaborative Group's success. Mentioned was "if we call the President of the Black Rock Mountain Biking Association and leave a message on his phone he always get back to us within two or three hours." It is this type of communication, which is open, responsive and professional in nature that all user groups interested in collaborative based recreation management must strive for.

Recommendation #4: *Develop a management plan that includes specific requirements for design, construction and maintenance.*

Potential Outcome: Developing a management plan helps establish mutually agreed upon design guidelines and maintenance schedules that help inform the means which a given collaborative group may utilize to develop, manage and maintain a given recreation area. Using a management plan helps set clear expectations for all who are involved in a collaborative-based recreation management venture.

Creating a management plan reduces the chances for misunderstanding that may ultimately result in conflict and the dissolution of a collaborative venture. Furthermore establishing a set of predetermined guidelines that are based on successful practices helps reduce the impacts of trail construction, as development of a given recreation area adheres to practices deemed successful. Creating a management plan which includes a regular maintenance schedule helps ensure that trails will remain free of obstruction, which keeps people on existing trails, eliminating the chances of off-trail trampling and further environmental degradation. Upon asking an Oregon Department of Forestry employee whether there were suggestions to give other collaborative groups, which would improve their ability to carry out successful collaborative based recreation management it was said that “having a management plan specific to the recreation area is a very importance step that must be taken in order to carry out a successful collaborative-based recreation management venture”.

Recommendation #5: *Utilize established techniques to create sustainable recreation areas, such as the guidelines for creating sustainable trails noted by the International Mountain Biking Association.*

Potential Outcome: Utilizing an established set of techniques known to create sustainable recreation areas is a great way to improve the environmental outcomes resulting from collaborative-based recreation management. Using guidelines for creating sustainable trails, such as the 11 essential principles of sustainable trails noted by the International Mountain Biking Association in their publication *Managing Mountain Biking: IMBA’s Guide to Creating Great Trails* helped the Collaborative Group reduce the impacts resulting from mountain biking in the Black Rock Forest. Using a set of techniques that have been developed by professionals and tested in the field helps ensure success for those looking to create design, develop and maintain sustainable recreation areas.

Recommendation #6: *Develop a meeting schedule for various entities involved in a collaborative-based recreation management venture to discuss pertinent issues, upcoming projects, maintenance schedules, etc.*

Potential Outcome: Developing a regular meeting schedule helps ensure open communication occurs, which is a vital step to building trust, and one that must be taken in order to form a successful collaborative venture. Providing a regular meeting schedule for those involved in collaborative-based recreation management helps keep members fully aware of pressing issues that may negatively impact the local environment. Both the Black Rock Mountain Biking Association and the Oregon Department of Forestry reiterated this point while being interviewed. A member from the Black Rock Mountain Biking Association noted that both annual and onsite meetings are “extremely important to the success of this trail system”. Creating a regular schedule to discuss strategies to avoid or minimize environmental impacts is best done when all who are involved in a collaborative are present; developing a regular meeting schedule ensures this occurs. Additionally, meetings allow collaborative group members to share resources and knowledge about the best means to address pressing environmental issues. Sharing resources is a great way to come up with the most efficient and effective means to address a pressing environmental issue. Because environmental issues should be addressed as soon as possible in order to reduce the extent of environmental degradation it is truly important to develop a regular meeting schedule.

Recommendation #7: *Strive to develop regular onsite meetings between various entities involved in a collaborative-based recreation management venture in order to assess project design, development, and potential environmental impacts.*

Potential Outcome: Meeting onsite to assess project design, development, and potential environmental impacts allows those involved in a collaborative-based recreation management venture to visually understand how a given project will impact the environment. Visually assessing the means that a project is designed and developed improves the chances that a project will be implemented successfully and with minimal impacts to the local environment. Additionally, meeting onsite allows those involved to assess the potential environmental impacts resulting from a given project to a much greater extent than does talking about it at an offsite location. Mentioned by an Oregon Department of Forestry Employee was that “onsite meetings are where the rubber hits the road”. Both the Oregon Department of Forestry and the Black Rock Mountain Biking Association felt that onsite meetings are “vital to the success of the collaborative-based recreation management venture taking place in the Black Rock Forest” and that “onsite meetings are the most effective communication process which takes place between the Oregon Department of Forestry and the Black Rock Mountain Biking Association”. Working to develop a meeting schedule that includes onsite visits helps those developing a recreation area understand the needs and desires of a given land management agency. Doing so reduces the chances for misunderstanding that may potentially lead to conflict, the loss of trust, and the potential for disbanding of a collaborative group.

Further Research

While this research attempts to fill an existing gap in literature regarding the environmental outcomes of collaborative-based recreation management, still further research is needed. Because this research is based solely on the views and perceptions of one single collaborative group its projection is limited to that of the Black Rock Forest. Supporting this research with a follow up study that includes an analysis of multiple cases of collaborative-based recreation management would be helpful to further determine whether the use of collaboration in recreation management truly leads to improved

environmental outcomes. Supporting this research with a follow up study that includes multiple cases would also increase the scope of projection beyond that of one single recreation area.

Understanding the practices that lead collaborative-based recreation management ventures to attain improved environmental outcomes would be advantageous to those looking to implement such a management process. Carrying out a study that includes an analysis of multiple collaborative-based recreation management ventures would help further identify commonalities and differences in practices utilized to achieve improved environmental outcomes. While a valid set of recommendations has resulted from this research it could be strengthened by an additional study that includes multiple cases of collaborative-based recreation management. Doing so may help further the use of collaboration in the field of recreation management. Beyond determining the outcomes of collaborative-based recreation management, it is increasingly important to understand practices that increase the ability of a collaborative group to achieve improved environmental outcomes.

Furthermore, a common point made by members of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group is that funding was a major barrier. Both entities involved in the Collaborative Group felt that funding limitations severely impacted the work being carried out by the Collaborative Group. It would be valuable to understand the extent to which funding limits or enables a collaborative group to achieve improved environmental outcomes. Including an analysis which compares the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group with another that operates with increased funding would help gain insight into the extent which funding impacts the ability to attain improved environmental outcomes.

Lastly, and possibly most importantly, it would be useful to further inform this research with a scientific analysis that compares the impacts of collaborative-based recreation management before and after its implementation. As mentioned by Margerum (2009), measuring the environmental outcomes of collaboration usually requires a substantial investment in long-term and extensive monitoring, which

may include variables like changes in land cover, changes in biological diversity, and changes in biophysical parameters. Using methodologies such as these would allow one to quantitatively assess whether collaborative-based recreation management truly leads to improved environmental outcomes. Once determined as fact, the value of carrying out a collaborative-based recreation management venture would be greatly enhanced, leaving few to question the ability of this form of recreation management to attain improved environmental outcomes.

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Appendix A.

Recruitment Letter

Dear *[insert name]*,

My name is Titus Tomlinson and I am a Graduate Student from the Department of Planning, Public Policy and Management at the University of Oregon. I am writing to invite you to participate in my research study, which focuses on the environmental outcomes resulting from collaborative-based recreation management. You're eligible to be in this study because you have participated in the collaborative management of Oregon's Black Rock Forest. I obtained your contact information from the President of the Black Rock Mountain Biking Association, Rich Bontrager.

If you decide to participate in this study, you will be required to complete a short survey and may potentially be asked to participate in a brief in-person interview. Individuals participating in this interview will be anonymous, meaning that I will not attribute comments to specific individuals. Instead, the data will be reported in aggregate form. At the conclusion of the research, a final report will be written which analyzes the environmental outcomes resulting from the collaborative management of the Black Rock Forest. The final report will be made available to all participants.

Your participation is voluntary. If you have any questions, please feel free to contact me at (541) 513-9989 or ttomlins@uoregon.edu, or Dr. Richard Margerum at (541) 346-2526 or rdm@uoregon.edu. Any questions regarding your rights as a research participant should be directed to the Office for the Protection of Human Subjects, University of Oregon, Eugene, OR 97403, (541) 346-2510.

Thank you very much.

Sincerely,

Titus Tomlinson

Appendix B.

Survey Instrument

Introduction

This survey is being conducted as part of a larger research project focused on the impacts of collaborative-based recreation management on local environments. The research project is being conducted by Titus Tomlinson out of the University of Oregon's Planning, Public Policy and Management Department.

The research project has three objectives: (1) to determine if collaborative-based recreation management leads to improved environmental outcomes in Oregon's Black Rock Forest (in relation to non-collaborative recreation management); (2) to determine if perspectives differ between the Oregon Department of Forestry and the Black Rock Mountain Biking Association with regards to environmental outcomes resulting from collaborative-based recreation management in the Black Rock Forest; (3) to research meeting processes determined to affect the Collaborative Group's ability to create positive environmental outcomes within the Black Rock Forest.

Please take a few minutes to fill out the survey. The survey will provide us with information that will help us better understand how collaborative-based recreation management impacts local environments. Results from the survey will not be attributed to specific individuals. At the conclusion of the survey process, a summary report of the themes and issues without any attribution will be created. This will become part of the final report on the research project. The survey should take no more than 10 minutes to complete.

Your participation is voluntary. If you have any questions regarding the survey, please contact Titus Tomlinson (541-513-9989). If you have questions regarding your rights as a research participant, please contact the University Of Oregon Office for Protection of Human Subjects at (541) 346-2510.

- 1) Thinking about the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group, how would you rate its overall effectiveness in achieving the following goals noted in the Black Rock Management Plan?

	Very Effective	Somewhat Effective	Effective	Not Effective	Not Sure
A. Establishing a procedure to ensure that trails and manmade features are built in a manner that is environmentally responsible					
B. That trails create no hazards not inherent and understood as common to the sport of mountain biking					
C. That trails are properly marked to ensure safety					
D. That trails are properly marked to ensure sustainability					

- 2) Thinking about the Black Rock Mountain Biking Association/ Oregon Department of Forestry Collaborative Group, how would you rate its overall ability to reduce the following environmental impacts?

	Very Effective	Somewhat Effective	Effective	Not Effective	Not Sure
A. Trail degradation/erosion					
B. Creation of illegal trails in environmentally sensitive areas					
C. Impacts to off-trail vegetation					
D. Impacts to water quality (e.g. damage resulting from unestablished stream crossings)					

- 3) Please note any meeting processes you feel significantly affect the Collaborative Group's ability to achieve its purpose/goals? (e.g. voting structure, public involvement, clear agenda, setting time limits)

- 4) Please list three greatest strengths of the Black Rock Mountain Biking Association/ Oregon Department of Forestry Collaborative Group.

- 1.
- 2.
- 3.

5) Please list three greatest weaknesses of the Black Rock Mountain Biking Association/ Oregon Department of Forestry Collaborative Group.

- 1.
- 2.
- 3.

6) In your opinion, have annual and special maintenance of trails reduced the environmental impacts resulting from mountain biking within the Black Rock Unit of the Oregon Department of Forestry?

- Yes
- To Some Extent
- No
- Not Sure

7) In your opinion, what are three of the most pertinent barriers to effective collaborative-based recreation management? (e.g. Personal agendas sidetracking the process, lack of support, inadequate resources, organizational mindset, minimal incentives, too time consuming, etc.)

- 1.
- 2.
- 3.

8) In your opinion, what are three of the greatest benefits of effective collaborative-based recreation management? (e.g. Building relationships and networks, sharing information, improved communication, gaining trust, enhanced and more effective decision-making, etc.)

- 1.
- 2.
- 3.

9) In your opinion, has collaboration enhanced management of the Black Rock Unit of the Oregon Department of Forestry?

- Yes

To Some Extent

No

Not Sure

10) As a result of your experience in the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group do you support the use of collaborative planning in other recreational areas?

Strongly Supportive

Supportive

Neither Supportive or Unsupportive

Unsupportive

Strongly Unsupportive

11) Please share any additional comments below:

Appendix C.

Interview Questionnaire

BRMBA/ODF RESEARCH PROJECT

INTERVIEW GUIDE

Introduction

Thank you for taking the time to participate in this interview. The interviews are being conducted as part of a research project focused on collaborative-based recreation management and its environmental impacts within the Black Rock Unit of the Oregon Department of Forestry.

Goal/Purpose

The research study has three objectives: (1) to determine if collaborative-based recreation management leads to improved environmental outcomes in Oregon's Black Rock Forest (in relation to non-collaborative recreation management); (2) to determine if perspectives differ between the Oregon Department of Forestry and the Black Rock Mountain Biking Association with regards to environmental outcomes resulting from collaborative-based recreation management in the Black Rock Forest; (3) to research meeting processes determined to affect the Collaborative Groups ability to create positive environmental outcomes within local recreation areas.

One of the early tasks in the research project is to interview a variety of individuals (ODF forest managers, BRMBA volunteers, community members, etc.) to identify perspectives held by members of the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group. Information from these interviews will be used to help inform other parts of the research project including a survey, case studies and options for the future.

Individuals participating in this interview remain anonymous, meaning that I will not attribute comments to specific individuals. Instead, the data will be reported in aggregate form. At the conclusion of the interview process, a summary report of the themes and issues without any attribution will be created. This will become part of the final report on the research project.

I am planning for the conversation to last approximately 20-30 minutes and would be glad to provide additional time if you desire. Do you have any questions as we begin?

Your participation is voluntary. If you have any questions, please feel free to contact me at (541) 513-9989 or ttomlins@uoregon.edu, or Dr. Richard Margerum at (541) 346-2526 or rdm@uoregon.edu. Any questions regarding your rights as a research participant should be directed to the Office for the Protection of Human Subjects, University of Oregon, Eugene, OR 97403, (541) 346-2510.

1. How has collaborative-based planning and management impacted the environment in the Black Rock Unit of the Oregon Department of Forestry?
2. What does the Black Rock Mountain Biking Association/ Oregon Department of Forestry Collaborative Group do well/not do well with regards to reducing environmental impacts resulting from mountain biking?
3. What do you feel are some of the primary environmental benefits of collaborative-based recreation planning and management?
4. Do you feel that a collaborative approach to managing recreation areas is more effective/less effective in minimizing environmental impacts resulting from mountain biking than a traditional top down management approach? And why do you feel this way?
5. Are there any meeting processes that you feel positively or negatively impact the work that the Black Rock Mountain Biking Association/Oregon Department of Forestry Collaborative Group is carrying out? And how?
6. Is there an effective communication process in place between the Oregon Department of Forestry and the Black Rock Mountain Biking Association? What do you feel makes communication effective/ineffective?
7. What is the best project or example of work resulting from collaborative-based recreation planning and management in the Black Rock Unit of the Oregon Department of Forestry? What do you feel led to the project or example of work being a success?
8. Are there any barriers that you feel limit the work being carried out by the Black Rock Mountain Biking Association/ Oregon Department of Forestry Collaborative Group? And what do you feel can be done to address those barriers?
9. Do you feel the work carried out by Black Rock Mountain Biking Association/ Oregon Department of Forestry Collaborative Group can be used as a model in other mountain bike recreation areas? And why?
10. Are there any suggestions you would give to other collaborative groups, which would improve their ability to carry out successful collaborative-based recreation management?
11. Is there anything else we did not cover that you would like to discuss?