AN ABSTRACT OF THE THESIS OF

Elspeth Gustavson for the degree of Master of Science in Forest Ecosystems and Society presented on December 21, 2015.

Title: Community Perceptions of Recreation Management and Experiences in the Oregon State University Research Forests

Abstract approved:

__________________________
Christine S. Olsen

Strategic planning for forests subjected to multiple uses is important for management that sustains and balances these many uses. In the wildland urban interface where forests are in the backyards of members of the public who avidly recreate in them, it is also important to include the community in the planning process. This thesis utilized elements of participatory action research to achieve the dual goals of a community-informed recreation management plan for the Oregon State University Research Forests, and the contribution of user perspectives regarding recreation management approaches and experiences to the literature. Through focus group discussions regarding recreation in the forest with the community, this research sought an in-depth understanding of recreation users’ interests, experiences, and preferences. First, this thesis considers users’ preferences for a direct or indirect approach to recreation management as indicated by the actions they recommend managers utilize. From this investigation it was found that users preferred an indirect approach to management in the Research Forests. User satisfaction with current social and resource conditions in the forest, familiarity with indirect
management actions, and feasibility of an indirect approach may have contributed to participants’ preferences. Second, in this thesis the users’ experiences of conflict in the Research Forests are considered along with the recommendations they make for a management response. Interpersonal conflicts characterized by resource damage and concerns for safety were most prevalent in participant discussions of conflict experiences. In addition to education and trail building, participants recommended that establishing zones for expected recreation opportunities designed for a primary use may mitigate conflicts in the Research Forests. This descriptive understanding of the preferences and experiences of recreationists in the Research Forests may be beneficial to managers in creating and sustaining satisfactory recreation opportunities for Forest visitors, and will be used as part of the Forests’ strategic planning process.
Community Perceptions of Recreation Management and Experiences in the Oregon State University Research Forests

by
Elspeth Gustavson

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Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Elspeth Gustavson, Author
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CHAPTER ONE – INTRODUCTION

Forests managed for multiple uses can easily be strained by the impacts of diverse use on the ecological system. Strategically planning for management that balances diverse uses and allows the forest to sustainably continue providing its many ecosystem services is paramount. When these forests are located in the wildland-urban interface (WUI), and in the ‘backyard’ of a community of neighbors, it also becomes very important to engage this community in the discussion about forest management. Furthermore, members of the public are increasingly concerned about natural resource protection (Arocena, Nepal, & Rutherford, 2006), and desire involvement in natural resource issues and management decisions (Propst, Jackson, & McDonough, 2003). As trends in recreation use suggest a sustained and increasing demand for recreation opportunities, and new technologies disperse this use and impact over a broader area (Williams, & Shaw, 2009), it is important that managers work with communities to plan for recreational use of this natural resource.

The Oregon State University (OSU) Research Forests are several plots of forested land with the purpose of offering opportunities for research, teaching, and demonstration to the OSU community. In addition, these forests are actively harvested for timber, and open to the public for free day use recreation. Three of the forest tracts are located in the WUI of Corvallis, Oregon and the community avidly uses these forests for recreation with 105,000 recreational visits every year (Needham & Rosenberger, 2011). It is important to consider the potential impacts of this recreational use, as impacts of
recreation can be damaging both to the forests’ ecological system, and to the experiences of recreation users (Lynn, & Brown, 2003). To date, these forests have lacked a strategic plan for recreation use and how it could balance with other forest uses.

Background

For decades, researchers have studied many aspects of recreation management including the perspectives and preferences of users and managers, and the impacts of use on the social and resource conditions in a natural area (Manning, 2011). From this body of research, two types of approaches have emerged that managers use to influence recreation behavior and regulate conditions: direct and indirect. A direct management approach utilizes restrictive actions by which managers attempt to control user behavior. This approach may include regulatory actions such as use prohibitions that limit behavior allowed in the natural area. Alternatively, an indirect approach relies on actions meant to influence and change behaviors through educational messages and site modifications (Manning, 2011). Figure 1.1 demonstrates how these different management actions might influence recreationists’ behavior and in turn change social and resource conditions.

Although an indirect approach attempts to influence the thinking and decision making process motivating behavior, direct management targets the behavior itself. Examples of the types of actions regarded as direct and indirect are shown in Table 1.1. For example, zoning incompatible uses spatially, or hard zoning, excludes certain users from locations in a recreation area to reduce conflicts between users (a social condition), or to protect sensitive areas from particularly damaging types of use (a resource condition). However,
building a wider, more durable trail surface could indirectly achieve the same social and resource protection goals by offering more space for users to navigate and avoid conflicts, while also making the trail more resilient to a broader range of uses.

The optimal place on the continuum from direct to indirect approaches for effective and acceptable management of recreation opportunities is the subject of great debate among researchers (Burgin, & Hardiman, 2012; Cole, 1993; Cole, Watson, Hall, & Spildie, 1997; Guo, Smith, Leung, Seekamp, & Moore, 2015; Hendee, Stankey, & Lucas, 1990; Lucas, 1982; McAvoy, & Dustin, 1983; McCool, & Lime, 1989). However, managers often employ a combination of both direct and indirect management practices to reduce the social and environmental impacts of recreation (Alder, 1996; Manning, Ballinger, Marion, & Roggenbuck, 1996; Reid, & Marion, 2005; von Ruschkowski, Burns, Arnberger, Smaldone, & Meybin, 2013).

Figure 1.1. Management influence on recreation behavior (adapted from Peterson, & Lime, 1979)
Table 1.1. Direct and indirect management actions (adapted from Lucas, 1990; Manning, 2011)

<table>
<thead>
<tr>
<th>TYPE</th>
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<tr>
<td><strong>Direct</strong></td>
<td></td>
</tr>
<tr>
<td>Emphasis on</td>
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<td>regulation of</td>
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<tr>
<td>behavior;</td>
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<tr>
<td>individual</td>
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<tr>
<td>choice</td>
<td></td>
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<td>restricted;</td>
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<td>high degree</td>
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<td>of control.</td>
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<td></td>
<td>Impose fines</td>
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<tr>
<td></td>
<td>Increase surveillance of area</td>
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<tr>
<td></td>
<td>Zone incompatible uses spatially</td>
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<td></td>
<td>Zone uses over time</td>
</tr>
<tr>
<td></td>
<td>Prohibit use at times of high damage potential (seasonal closures)</td>
</tr>
<tr>
<td></td>
<td>Limit camping in some campsites to one night, or some other limit</td>
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<tr>
<td></td>
<td>Rotate use (open or close roads, access points, etc.)</td>
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<tr>
<td></td>
<td>Require reservations</td>
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<tr>
<td></td>
<td>Assign campsites and/or travel routes to each group in backcountry</td>
</tr>
<tr>
<td></td>
<td>Limit usage via access point</td>
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<tr>
<td></td>
<td>Limit size of groups, number of horses, vehicles, etc.</td>
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<tr>
<td></td>
<td>Limit camping to designated campsites only</td>
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<td></td>
<td>Limit length of stay in area (minimum/maximum)</td>
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<td>Restrict building campfires</td>
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<td>Restrict fishing or hunting</td>
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<td><strong>Indirect</strong></td>
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<td>Emphasis on</td>
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<td>choose;</td>
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<tr>
<td>control less</td>
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<tr>
<td>complete,</td>
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<tr>
<td>more variation in use possible.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improve (or not) access roads, trails</td>
</tr>
<tr>
<td></td>
<td>Improve (or not) campsites and other concentrated use areas</td>
</tr>
<tr>
<td></td>
<td>Improve (or not) fish and wildlife populations (stock or depletion)</td>
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<td></td>
<td>Make trails more or less difficult</td>
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<td></td>
<td>Build trails or leave areas trailless</td>
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<td></td>
<td>Advertise specific attributes of the area</td>
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<tr>
<td></td>
<td>Identify the range of recreation opportunities in surrounding area</td>
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<tr>
<td></td>
<td>Educate users to basic concepts of ecology</td>
</tr>
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<td></td>
<td>Advertise underused areas and general patterns of use</td>
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The approach researchers recommend for managing recreation conflict varies according to the goals of the recreation area and the type of conflict recreation users are experiencing (Albritton, Stein, & Thapa, 2009; Manning, 2011; Vaske, Donnelly, Wittmann, & Laidlaw, 1995). Recreation conflict is where the goal of a recreation
participant’s experience is interrupted by another’s behavior. The type of conflict experienced depends if that disruption is based on an actual encounter with another user (interpersonal/goal-interference conflict), or based on a fundamental difference in beliefs (social values conflict; Manning, 2011).

Jacob and Schreyer (1980) identify four factors whose presence may create the potential for conflict to occur. The first of these factors is activity style, or the intensity, expertise, or technology with which one participates in recreation. In support of this factor, McAvoy, Gramann, Burdge, and Absher (1986) found that because of their greater skill and frequency of use, commercial boaters on the Mississippi river perceived conflict with recreational boaters. On the contrary, Ramthun (1995) found no significant relationship between the strength of mountain biker or hiker leisure activity identification and their perception of conflict. Resource specificity, or the importance of the particular recreation place, is Jacob and Schreyer’s (1980) second factor. Increased attachment to the resource has been found to positively influence perceptions of conflict for skiers, snowboarders, and hunters in several different studies (Gibbons & Ruddell, 1995; Vaske, Carothers, Donnelly, & Baird, 2000; Vaske et al., 1995). Third, mode of experience is the degree that the recreation experience focuses on the environment. Similar to the discussion around goal-orientation, those who see the natural environment as an integral part of their experience are more likely to experience conflict (Gibbons & Ruddell, 1995; Ruddell & Gramann, 1994; Vaske et al., 2000). Finally, lifestyle tolerance predicts that
higher tolerance for other lifestyles contributes to lower attributions of conflict. This idea has been supported in research both specifically for people in different user groups (hikers, mountain bikers, etc.) and in general (Ivy, Stewart, & Lue, 1992; Ramthun, 1995; Vaske et al., 2000; Watson, Niccolucci, & Williams, 1993).

When dealing with a social values conflict, researchers generally recommend using indirect management actions such as educating user groups (Carothers, Vaske, & Donnelly, 2001; Mann, & Absher, 2008; Tynon, & Gomez, 2012; Vaske et al., 1995). The intention is that by showing different users how similar they are to each other and instilling in them an understanding of each other’s motivations, the conflict may be mitigated (Albritton et al., 2009). However, interpersonal conflicts may require a more direct approach, such as zoning incompatible user groups to different areas so they do not interfere with each other’s goals (Adams, & McCool, 2009; Gray, Canessa, Rollins, Keller, & Deaden, 2010; Ivy et al., 1992; Shillings, Boggs, & Reed, 2012). Therefore, understanding the type of conflict experienced by recreation users in a natural area is important to setting management direction.

Thesis Purpose & Organization

Through the principles of participatory action research, this thesis sought to engage the recreation community of the OSU Research Forests in a conversation about the management direction for recreation in the forests. In a collaborative planning process, the OSU Research Forests gained valuable information and recommendations for future recreation developments, and the research team gained valuable insights into
users’ recreation experiences and management preferences. The study engaged the recreation community in two series of focus groups, totaling 10 meetings and approximately 19 hours of discussion, with 55 people. The first focus group series brought together separate meetings for each of five different user groups who access the forest for recreation: equestrians, hikers or walkers, hunters, mountain bikers, and runners. Each group discussed their vision for future recreation in the forests, what is important to them and what concerns them about recreation opportunities, and their recommendations for management actions to address these topics. The second focus group series built on the results of the first by bringing together representatives from each user group and underserved populations to consider specific issues further and outline a cohesive set of recommendations for moving forward.

From this effort, each of the following chapters explores an issue from the views and perspectives expressed by the recreation community to the research team. This first chapter provided a broad introduction to the topic, including some basic background information and a description of the components of the thesis. Chapter two then looks specifically at the first series of focus groups and considers the management recommendations the user groups made. By understanding the kinds of actions users recommended, this chapter explores which kind of management approach they prefer and how preferences vary among different user groups. The chapter concludes by discussing
the contextual factors that influenced these preferences and the implications they have for management.

Chapter three examines the results from both series of focus groups to develop an understanding of the recreation conflicts being experienced in the Research Forests. By taking a qualitative approach to a conflict study, this chapter seeks to expand on previous quantitative analysis of recreation conflict to understand how users experience conflict beyond how much they experience. The types of conflict users are experiencing in the forest, and how managers may address these conflicts are also discussed. Finally, chapter four provides a synthesis of the findings of both studies, considers the implications they have for future management, and discusses how the qualitative approach used in this research adds to the literature.
References


Needham, M. D., & Rosenberger, R. S. (2011). *Public support, demand, and potential revenue for recreation at the McDonald-Dunn Forest* (Final project report for Oregon State University College Forests and College of Forestry). Corvallis, OR: Oregon State University, Department of Forest Ecosystems and Society.


CHAPTER TWO: A PREFERRED APPROACH TO OUTDOOR RECREATION MANAGEMENT: VISITOR VIEWS OF DIRECT AND INDIRECT MANAGEMENT PRACTICES IN AN OREGON FOREST

Introduction

Forests in the wildland-urban interface (WUI) are subject to a variety of uses. From timber harvest, to recreation opportunities, and other ecosystem services, humans demand much from this natural resource. In addition, migration trends toward resource amenity-rich communities suggest populations will continue to grow in the WUI (Hammer, Stewart, & Radeloff, 2009) potentially furthering a sustained and increasing demand for recreation opportunities, thus threatening the sustainability of these lands managed for multiple uses (Williams, & Shaw, 2009). Managers face many challenges in mitigating the social and resource impacts of recreation activities especially considering these trends and the growth in public desire to protect natural resources (Arocena, Nepal, & Rutherford, 2006). As Peterson and Lime (1979) stated “need for management arises when something people do, or might do, has unacceptable consequences” (p.343). To mitigate recreation impacts, managers rely on two general approaches to the actions they take: direct and indirect management.

This research sought to understand forest visitor preferences for approaches to mitigate social and resource impacts from recreation. Using elements of participatory action research, this study examined visitor recommendations for management actions as an indicator of their preference for a direct or indirect management approach. Through a collaborative planning process for recreation in the Oregon State University Research
Forests, representatives of different recreation user groups engaged in focus group conversations about future management direction for the forest. As citizens increasingly expect transparent, inclusive, and collaborative management of natural resources, considering their perspectives and preferences for management becomes important (Propst, Jackson, & McDonough, 2003).

Literature Review

The Debate over Best Practices

There is considerable debate over which management approach is best; indirect actions meant to influence and change behavior, or restrictive direct actions that attempt to control user behavior (Figure 2.1; Manning, 2011). One perspective arising from the research of Lucas (1982) argues for the “minimal tool rule,” which gives preference to indirect methods for recreation management before restrictive direct actions are taken (Lucas, 1982). The rationale Lucas provided for this view is that the restrictive nature of direct regulatory action inherently contradicts the definition of recreation that depends on freedom of choice. Hence, regulations should be minimal and used only when absolutely necessary, such as in the case of safety or resource protection (Lucas, 1982; McCool, & Lime, 1989). Although indirect management may preserve recreation freedom in many scenarios, some direct actions that regulate use before entrance to a recreation area, such as trailhead quotas, may also be able to preserve recreation freedom within the area (Shindler, & Shelby, 1993; van Kirk, Martin, Ross, & Douglas, 2014). Hendee, Stankey, and Lucas (1990) suggested that indirect management be used first to minimize impacts
and delay the imposition of regulations that may be necessary should conditions become unacceptable.

Figure 2.1. Management influence on recreation behavior (adapted from Peterson, & Lime, 1979)

Alternatively, Cole (1993) argued that managing with direct actions rather than hesitating to regulate until the damage is already done is bandaging rather than fixing the problem. McAvoy and Dustin (1983) agreed that regulations should be employed first and not as a last resort. They claimed that indirect methods are ineffective, as they only influence the behavior of conscientious users. Recreation managers in the U.S. may agree with this position as they were found to rely more on direct management compared to European managers who rely more on an indirect approach (von Ruschkowski, Burns, Arnberger, Smaldone, & Meybin, 2013). However, over time, visitors are perhaps
becoming less supportive of using restrictions and regulations to mitigate recreation impacts (Hall & Davidson, 2013). Although these opposing perspectives suggest approaching management differently, agreement in this scholarly debate does seem to coalesce around the question of implementing direct action to address a specific problem (Cole, Watson, Hall, & Spildie, 1997; van Kirk et al., 2014; van Riper et al., 2011; Williams, & Shaw, 2009). Even Lucas (1983) conceded that direct action may be needed when specific conditions do not meet the objectives for the site, although any regulations should contribute to rather than detract from the recreation experience.

Which Approach Works?

Consideration for the effectiveness of these disparate approaches in bringing about change in user behavior and resource and social conditions is important to a responsive management plan. Select research studies considered the influence of direct actions on visitor behavior. In one study on the measure of regulation effect, Lucas (1983) found users were generally not aware of regulations. He noted that “a poorly enforced regulation that is often violated can undermine the manager’s credibility” (Lucas, 1982, p.150). Furthermore, Cole (1993) found that direct action prohibiting camping near lakeshores actually quadrupled visitation impacts. However, Arocena et al. (2006) observed that regulations may be more effective if managers provide users with the scientific justifications for regulations. Proper monitoring of social and resource conditions then is important to assure that regulations are justified by their effectiveness and not unduly limiting users.
There is a rich body of research that furthers understanding of effects of indirect methods for recreation management. Marion and Reid’s (2007) review of the efficacy of education programs found that many studies have consistently evidenced changes in visitor knowledge, behavior, and resource conditions. Simple, interesting, and consistent messages focusing on the ecological rationales for low impact practices were found to be most effective. Ham (2013) explained that communication that is thematic, organized, relevant, and enjoyable (T.O.R.E.) is most effective. He contended that provoking the visitor to think about the subject will effectively enhance their experience, create appreciate attitudes, and shape behavior. Marion and Reid (2007) pursued a similar line of inquiry noting that most research has focused on the influence of information on visitor knowledge and few have considered actual behavior and condition changes. However, there are some examples that demonstrate support, such as Krumpe and Brown’s (1982) demonstration of the correlation between information and behavior when they found that a trail selection guide influenced user trail choices. However, Guo, Smith, Leung, Seekamp, and Moore (2015) found that injunctive-prescriptive signs encouraging users to stay on the trail had no influence on hiker behavior. Furthermore, two messages or fewer tend to be effectively retained (Cole, Hammond, & McCool, 1997) and are most influential on visitors with low existing knowledge (Manfredo, & Bright, 1991), and less effective at influencing highly experienced or repeat visitors (Hughes, Ham, & Brown, 2009). Although an educational, indirect approach can be effective, research promotes
using a combination of direct and indirect approaches to increase user compliance (Alder, 1996; Guo et al., 2015; Hughes et al., 2009; Reid, & Marion, 2005).

Approach Preferences

User support for a practice is an important influence on whether a direct or indirect management practice is effective at changing behavior and conditions. If recreation users disapprove of a management action, they are not likely to comply with any necessary behavior changes, defeating the intended objectives of the action. In a study of nine wilderness areas, Lucas (1980) found support from recreation users for indirect management techniques that provide information, especially by way of maps and guidebooks. More recently in a motorized study site with less restrictive management criteria than wilderness, Waight and Bath (2014) found agreement among ATV (all-terrain vehicle) users for indirect options for management. Here support for direct intervention increased inversely to increased experience and specialization. In wilderness, on wild rivers, and in natural areas near metropolitan areas, this preference for indirect practices does not seem to change (Anderson, & Manfredo, 1986; Hardiman, & Burgin, 2010; Kil, Holland, & Stein, 2012; Shindler, & Shelby, 1993; Schneider, & Winter, 1998). Bullock and Lawson (2008) also found that in addition to education, visitors prefer the indirect method of natural-looking site enhancements over use regulations in a high use area of a national park. Their participants encouraged management to also be indirect with educational messages that encourage instead of require certain behaviors such as staying on established trails.
Although research suggests that users tend to prefer indirect management tactics, many studies have found users support direct actions when they are necessary to prevent social or resource damage (Anderson, & Manfredo, 1986; Cole, 1993; Hardiman, & Burgin, 2010; Lucas, 1980; McCool, & Lime, 1989; Schneider, & Winter, 1998). As one example, Fazio and Gilbert (1974) found users supported the new permit system at Rocky Mountain National Park because users understood the need to control use. As support can be predicated on need, it is therefore important to communicate why direct actions are employed (Anderson, & Manfredo, 1986; Arocena et al., 2006; Reid, & Marion, 2005). Users not only support, but prefer regulations over the damages that unregulated use might cause to resource or social conditions such as solitude (Lawson, & Manning, 2001; McCool, & Utter, 1981; van Riper, Manning, Monz, & Goonan, 2011). However, users also clearly prefer direct action that approximates the status quo either by using familiar methods, or limitations that preserve current conditions and do not reduce access (Cole, Watson, Hall, & Spildie, 1997; Shindler, & Shelby, 1993; Sorice, Oh, & Ditton, 2009; Waight, & Bath, 2014). It is also important to note that some people’s preferences may not be included in many study samples, as they may already be displaced from visiting an area because they disapprove of management methods (Hall, & Shelby, 2000; Shelby, Bregenzer, & Johnson, 1988).

**Purpose of this Study**

This literature provides context for the preferences and effectiveness of direct and indirect approaches, although because many of these studies were conducted in
wilderness settings, its application in an urban proximate natural area, such as that under study here, is limited. Indeed, as opposed to multiple studies finding user support for use limitations to preserve solitude, Schneider and Winter (1998) found users of a natural area outside a major metropolitan area did not approve of these same regulatory use limitations. In contrast, Lucas (1980) found the management preferences for one non-wilderness area studied did not differ greatly from the nine other wilderness areas.

Furthermore, previous research by Needham and Rosenberger (2011) of visitors to the forest at the WUI under study here found mixed support for direct and indirect management. Although providing more trails restricted for only pedestrian or mountain bike use was supported (53% and 45% of respondents, respectively), trail etiquette education, an indirect approach, also garnered support (47% of respondents). However, unlike this previous research, the study presented here considered support for potential management actions and did not require respondents to decide between potential actions and make trade-offs when expressing preference.

The purpose of the research presented here is to respond to this debate by exploring user recommendations for management actions and how that may indicate preferences for direct and indirect management approaches in the context of a forest managed for multiple uses at the wildland-urban interface (WUI). Much of the research on recreation management has utilized quantitative methods, which Schneider and Winter (1998) argued limits the type and amount of information gathered to the set responses
provided. For example, the Needham and Rosenberger (2011) study of WUI recreation users in the Oregon State University Research Forests only asked respondents about their support for nine specific actions: five different potential trail developments, one etiquette education action, a requirement to leash dogs, an increase to management personnel presence, and a no action alternative. Furthermore, Manning (2011) warns caution in utilizing the results of much previous management preference research as they frequently report averages from survey responses that obscure the diversity of views and preferences actually occurring in a recreation area. On the other hand, qualitative methods seek meanings, rich descriptions, and an understanding of multiple perspectives that can supplement understanding of amount and prevalence of a phenomenon offered by quantitative study (Berg, & Lune, 2012; Denzin, & Lincoln, 2003; Leedy, & Ormrod, 2013). With the principles of participatory action research, this study seeks to complement quantitative work on recreation management preferences with an in-depth exploration of recreationist experiences and recommendations for future management. By engaging users in conversations about their recommendations for management in a forest at the WUI, this study seeks to further the understanding of best practices and answer the following questions: What are the direct and indirect management preferences of user groups recreating at the Oregon State University Research Forests? How do these preferences differ among different user groups? What contextual factors contribute to the preferences user groups have for different management approaches?
Methods

Study Site & Context

Oregon State University’s College of Forestry owns and manages nine plots of forest land equaling 14,488 acres for teaching, research, demonstration, timber harvest, cultural resources, and recreation. This study focuses on three of these forest tracts located along the boundary of Corvallis where Oregon State University’s main campus is located: the Dunn, McDonald, and Cameron forests (Figure 2.2). Free public day use recreation brings 11,500 different visitors (105,000 visits) to this complex of forests each year, with over one-third of users visiting at least twice a week and an average history of visitation of 11 years. Visitors primarily come to these forests to hike or walk (42%), but many users also trail run or jog (21%), walk dogs (17%), mountain bike (15%), and a few ride horses (3%) or hunt (2%). Recreation use of the forest spans the entire year with the most visitation occurring during the summer (Needham, & Rosenberger, 2011).
Despite these significant visitation statistics, historically recreation use has not been a high priority for administrators of the Research Forests (Hall, 2004). Consequently, past recreation planning has been minimal, informal, and not directed by a strategic plan. Although 24 miles of trails and 114 miles of road are open for recreation use, users have also built an additional 25 miles of unauthorized trails in the forest to satisfy needs they feel are not met by the official system. However, the community of recreation users are also active and interested in working with the forest to improve recreation opportunities. They have expressed a desire to support efforts to build more official trails in the forest with voluntary donations of money and time (Needham, & Rosenberger, 2011), and forest administrators have begun investing in offering
sustainable recreation opportunities for the community. These conditions make the Research Forests an ideal location for participatory action research to both initiate a participatory planning effort for recreation, and to expand understanding of recreation users’ concerns and how they view proposed management actions that might address these concerns.

**Participatory Action Research with Focus Groups**

Participatory action research is defined by Berg and Lune (2012) as a “collaborative approach to research that provides people with the means to take systematic action in an effort to resolve specific problems…it encourages people to formulate accounts and explanations of their situation and to develop plans that may resolve these problems” (p.263). This research used some of the principles of participatory action research as it was done with the community (Miskovic, & Hoop, 2006), engaging members of the recreation community in a participatory research and planning process through a series of semi-structured focus groups (Berg, & Lune, 2012). As semi-structured focus groups, all participants were asked a number of predetermined questions around common themes. However, the subsequent conversations were allowed to develop freely and explore new ideas as participants desired.

Participants were selected using a convenience sampling approach (Berg, & Lune, 2012). Recreation users of the Research Forests were asked to volunteer through flyers that were distributed to community groups, passed along through stakeholder networks, and posted on trailhead kiosks and community bulletin boards. The flyers instructed those
who were interested in volunteering to call the research team or sign-up through a web-based form. After three weeks of open recruitment, 96 community members volunteered to participate and up to 12 participants were randomly selected from each of the five self-reported primary recreation use groups. When a selected participant was unable to attend the designated meeting times, a new participant was randomly selected. Some user groups had fewer than 12 volunteers, therefore all volunteers were invited to participate. In total, 46 individuals participated in one of five focus groups: 12 hikers or dog walkers, 10 mountain bikers, 10 horseback riders, nine runners, and five hunters.

Five different focus groups organized by participants’ primary recreation use of the forest (hiking, running, mountain biking, horse riding, hunting), were asked the same set of questions that focused on several topics. Users were asked to discuss their dreams for future recreation in the forest, what they found important about recreation opportunities available, their concerns and barriers to their recreational use, and their goals for learning when visiting the forests. With each of these topics, participants were asked to share their recommendations for what they saw as appropriate management actions to mitigate or promote each of these issues. Participants were not directly asked about their support or opposition for a particular approach to management. Instead, the discussions they had regarding recommended actions were the primary focus of analysis for this study. These comments were the basis for developing an understanding of user management preferences for the Research Forests.
Facilitators allowed participants to drive the conversation flow and attempted not to influence the group dynamics or focus of the discussion (Morgan, 1997). Follow-up questions were asked only as necessary to keep the conversation on the topic at hand. Ground rules were established for each group at the beginning of the meeting that included brainstorming without judging, allowing for balanced contribution from all participants, respecting others’ ideas, avoiding side conversations, and staying on topic. Participants were also each given a piece of paper on which they could write additional thoughts they were unable to share with the group. The groups were also organized by primary use to allow space for participants to brainstorm ideas without the inhibitions of coordinating across user groups.

Data Analysis

All audio from the focus group meetings was digitally recorded and transcribed verbatim. Comments were not attributed to individual participants; rather all discussion was attributed to the user group as a whole. To increase transcript reliability, spot-checks were conducted by listening to a secondary recording while reading the transcript to verify accuracy.

Transcripts were analyzed with directed content analysis (Berg, & Lune, 2012) and the NVivo 10 software program. Directed content analysis is a data coding and interpreting process that derives themes, or nodes, from existing theory. A theme map was created to categorize participant comments regarding potential management actions by the type of approach and their expressed support or disapproval for specific actions.
Comments were first categorized by the specific action they regarded, grouped together with similar types of action, and combined generally by the overall management approach they are attributed. The actions considered, which were derived from previous research studies, are listed in the Table 2.1 theme map. Second, comments were also coded as supporting, opposing, or neutral to the specific action being discussed. On reading the comment within the context of the discussion, the researcher labeled the comment as either supportive or opposing when the participant clearly stated such a judgement. If it was not clear that the participant was making a judgement regarding the management action, the comment was labeled ‘neutral.’

Table 2.1. Content analysis theme map

<table>
<thead>
<tr>
<th>Management Approach</th>
<th>Type of Action</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Action</td>
<td>Fees &amp; fines</td>
<td>Charge fees and fines for access or parking.</td>
</tr>
<tr>
<td></td>
<td>Use Restrictions</td>
<td>Hard zone areas for restricted use.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Seasonal closures</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Limit amount of use allowed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restrict or prohibit certain uses</td>
</tr>
<tr>
<td>Indirect Action</td>
<td>Site Modifications</td>
<td>Improve trails and roads</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase access points</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Build new trails</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide varied difficulty trails</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>Direct to opportunities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soft zoning (non-restrictive special use areas)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trail etiquette education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use impacts education</td>
</tr>
</tbody>
</table>

An inter-coder reliability check, where a second coder analyzes a portion of the transcript, was also conducted and 83% of the codes from the two researchers were
similar. An intra-coder reliability check was also conducted where all comments coded to a theme were re-read to ensure they reflected the concept. As part of the collaborative process, a summary of the management ideas and concerns discussed in the focus groups was provided to participants to verify the researchers’ understanding of their comments.

Results

Theme Prevalence

This research sought to understand preferences for management approaches by using open ended questioning to draw out participants’ recommendations for management actions, instead of restricting responses to choosing from a set list of possibilities. As a result, the degree that certain ideas were discussed, or the number of times they were suggested, may indicate support for the action. In general, participants discussed indirect management actions nearly two and half times more than direct actions (241 vs. 101 references, Table 2.2).

Table 2.2. Frequency of references to direct and indirect management actions by user group

<table>
<thead>
<tr>
<th>User Group</th>
<th>Indirect Management</th>
<th>Direct Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># references¹</td>
<td># references¹</td>
</tr>
<tr>
<td>Equestrians</td>
<td>62</td>
<td>15</td>
</tr>
<tr>
<td>Hikers</td>
<td>47</td>
<td>28</td>
</tr>
<tr>
<td>Hunters</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>Mountain Bikers</td>
<td>94</td>
<td>20</td>
</tr>
<tr>
<td>Runners</td>
<td>46</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>265</strong></td>
<td><strong>101</strong></td>
</tr>
</tbody>
</table>

¹Number of times participants mentioned the topic/theme.
More specifically, the number of supporting versus opposing comments made by
participants more clearly indicates their preferences. A majority of comments regarding
indirect management actions were positive (94%), whereas most direct action comments
opposed the approach (57%; Table 2.3). However, not all specific actions within broader
categories were viewed the same. Although generally there was opposition toward use
restrictions, the specific hard zoning and seasonal closure actions actually received more
support than opposition. In fact, nearly all the specific actions were supported
individually, and only three actions, restricting or prohibiting certain uses, limiting the
amount of use, and charging fees and fines, generated more negative discussion than
positive. Furthermore, there was relatively little discussion of education about user
impacts, soft zoning, fees and fines, use limitations, and seasonal closures.
Table 2.3. Frequency of all user references to management actions

<table>
<thead>
<tr>
<th>Management Action</th>
<th># References</th>
<th>Support (%)</th>
<th>Neutral (%)</th>
<th>Oppose (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Restrictions</td>
<td>90</td>
<td>32</td>
<td>8</td>
<td>60</td>
</tr>
<tr>
<td>Restrict types of use</td>
<td>36</td>
<td>3</td>
<td>-</td>
<td>97</td>
</tr>
<tr>
<td>Hard Zoning</td>
<td>23</td>
<td>61</td>
<td>4</td>
<td>35</td>
</tr>
<tr>
<td>Seasonal closures</td>
<td>18</td>
<td>67</td>
<td>6</td>
<td>28</td>
</tr>
<tr>
<td>Limit amount of use</td>
<td>13</td>
<td>14</td>
<td>39</td>
<td>46</td>
</tr>
<tr>
<td>Fees &amp; fines</td>
<td>11</td>
<td>27</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>101</strong></td>
<td><strong>32</strong></td>
<td><strong>11</strong></td>
<td><strong>57</strong></td>
</tr>
<tr>
<td><strong>Indirect Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Modifications</td>
<td>197</td>
<td>94</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Build new trails</td>
<td>70</td>
<td>97</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Improve trails and roads</td>
<td>64</td>
<td>89</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>Increase access points</td>
<td>39</td>
<td>92</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Varied difficulty trails</td>
<td>24</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct to opportunities</td>
<td>68</td>
<td>93</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>Trail etiquette education</td>
<td>29</td>
<td>90</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Soft zoning</td>
<td>24</td>
<td>96</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Use impacts education</td>
<td>8</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>265</strong></td>
<td><strong>94</strong></td>
<td>-</td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>

1Number of times participants mentioned the topic/theme.
2Percent of total references that expressed support, neutrality, or opposition to the action.

Based on the amount of discussion for certain management actions, it is clear that some issues are more important to some user groups than others. Mountain bikers discussed management actions that would modify the recreation site about twice as much as any other user group. However, hunters had relatively little conversation about site modification. Similarly, an educational approach to management was a popular topic among equestrians, whereas runners had relatively little to say on the topic. Furthermore,
although on most subjects user groups had relatively similar amounts of supportive versus oppositional discussions, some management actions, particularly direct action, saw more varied levels of support. Runners expressed some support for user fees, but no other group supported the option. Although runners and equestrians were generally supportive of education, the mountain bikers, hunters, and hikers had some reservations. Finally, use restrictions were strongly opposed by hikers and hunters, whereas half or more of the mountain bikers and equestrians supported this approach (Figure 2.3).
Figure 2.3. User group support for types of management action by number of references made ("Only three of the user groups discussed fees and fines")
Direct Management Approaches

Fees and Fines

Participants expressed a desire to provide financial support for recreation maintenance and development, but not necessarily by way of use fees. There was minimal conversation on this topic, however when fees were brought up it consistently and quickly changed from a discussion of mandatory fees to voluntary donations. This runner provides a clear example of this conversation shift when they said “Well, if they are going to use the money to build trails, okay fine I’ll pay, I’ll buy the pass… you can’t make it mandatory, that would be impossible, but maybe friends of the forest you could call it.” Both runners and hikers independently came up with this idea of establishing some sort of ‘Friend of the Forest’ donation program, an indirect way of providing financial support for recreation development in the forests.

Use Restrictions

Both hikers and hunters expressed desires to retain low-use in the forests, although they did not necessarily support use restrictions. Hunters supported restricting the number of hunting tags issued to keep use low for specific areas. Hikers, however, had an extended conversation about the desire to keep forest use low and local, but then did not support actual use limitation policies. As one hiker shared, “I hate the way Forest Service limits access… you have to have a permit and you have to somehow go to a specific place, I think that’s horrible.” Most participants were opposed to restrictions on types of use. Although one equestrian expressed support for restricting vehicles on roads
in the forest, most users supported lifting many current prohibitions: fishing, swimming, camping, hunting certain species, and use after dusk. Users were particularly against the prohibition on use after dusk and before dawn.

We have a saying, it’s not the 9 to 5 that kills you, it’s what you do from 5 to 9… for some of us that’s only time to orchestrate adventure or recreation into our lives, and so, during the winter it gets hard to do anything. – Hiker

As the sun sets before the end of the workday in the winter, this prohibition can result in many users not being able to legally access recreation in the Forests for a long period of time each year.

Unlike all other direct management actions, hard zoning, where user groups are restricted to using particular areas of the forest, and seasonal closures of additional areas to particular user groups generated more supportive conversations. However, this was inconsistent among user groups. Although hikers were generally against hard zoning, mountain bikers and equestrians were more supportive. This equestrian explained this desire saying, “One thing that would make my dream forest more dreamy would be to have at least one or two trails that were dedicated for equestrians.” Currently, the only hard zoned areas in the forest are restricted to pedestrian use and other user groups would like to see a similar area created for them. Conversely, many still do not want to be restricted from using a given area zoned for other users. As one hunter explained, “I don’t like having restrictions, I wouldn’t like if I couldn’t bike at certain times, if somebody else was riding horses, or hunting.” These mixed sentiments are also apparent in
discussions of seasonal closures. Users were generally concerned about erosion and trail damage from winter horse and bike use. However, they were also concerned about having enough forest trails available to all users year round.

*Indirect Management Approaches*

Participants recommended and discussed indirect management actions much more than direct management actions, with little opposition. When there was opposition to indirect management, it was expressed out of concern for overdevelopment and overuse of the forest, particularly with increasing education and improving trails. Some worried that overzealous trail improvements may result in heavily graveled, wide, uninteresting, and, for many, undesirable trails. For example, one mountain biker stated, “Not only do we not want to contribute to that, that’s also the fear, you know, oh my god please don’t take on more trails because then you’ll take my favorite trail and gravel it.” Others were concerned that expanding the trail system or disseminating more information on available recreation opportunities might result in increased forest use. As one hiker remarked, “My concern is when you start putting too much information on the web, you start attracting people from longer distances,” the hiker group desired to keep forest use limited to locals, preventing overuse from a broader, regional community. Hikers and hunters were particularly concerned about increases in use. Both groups worried that the quiet character of the Dunn section of the forest would be disrupted by expanding the trail network into the region. However, other than these reservations from a few participants, indirect management was largely supported across user groups.
Education

Participants expressed a resounding desire for maps that would direct visitors to opportunities available in the forest. Currently, limited circulation of accurate and official trail maps and the extensive network of unauthorized and unmapped trails leaves many visitors disoriented in the forest. Trail etiquette principles, such as proper trail yielding, may also be unclear to many forest visitors. Participants would like to see this type of educational programming expanded. Most of the trail etiquette discussions focused on issues of yielding procedures and proper dog waste disposal. Although participants recommended signs for the former, additional user-to-user educational programming may be needed for the latter.

We actively had education with horse, equestrians, how to pass a horse, horses on the high side….having that synergy between groups… I think that’s what every user group should have, a shared experience. – Mountain Biker

Beyond informing others about horse safety, participants hoped these educational opportunities would also promote positive relations between users to promote shared use.

Site Modifications

Physical changes to the recreation opportunities in the forest, or site modifications, were by far the most prevalent topic of discussion in general and for almost all user groups. Expanding and improving the trail network was highly supported by participants. Mountain bikers were the biggest proponents of building more trails, spending 18% of their discussion in support of the action (by percent of the source
content coded to the node). For some users, expansion was considered a way to enhance the livability of Corvallis and an opportunity to build community. One mountain biker shared this sentiment, “I mean, you know Corvallis is a place, people love to be here, and to say that I don’t have to drive somewhere else for the trail I want to go to, it’s right here, I’d like to say that.” Participants would like to see trails built with a strategic purpose, including long and looping trails that connect current trail segments and different regions of the forest. There was also support for trails that offer a range of difficulty to visitors. Mountain bikers and equestrians specifically advocated for including technical features such as jumps into the trails. However, trails built for beginner riders were the most sought after.

We don’t really have enough trails that are easy for kids, or people that just get into cycling, so that would be really neat to have….entry level… an easy loop for families… a lot of us have kids and they need their gateway drug. – Mountain Biker

Participants expressed a strong preference for singletrack trail over road opportunities and recommended converting some of the old roads into trail. Recognizing the working nature of the Research Forests, they suggested using harvests as an opportunity for access to build trails.

Another method recommended by participants for expanding the trail network was improving and authorizing current user-created, unauthorized trails. Although some trails may be easily brought up to the Forests’ standards, others would need complete
replacement by reworking some trail sections with switchbacks and water control measures.

There’s already a lot of trails in there that could use some development… you know you wouldn’t have to totally wipe them out and rebuild something totally new. But some stuff, like Dimple Hill has this one trail called face which is just totally fall line and I don’t know many people, once in a while I meet someone who likes the trail, but it’s just a fall line erosion thing. So that’s a really good opportunity to design something new and, get people involved in something really creative. – Mountain Biker

There was also considerable support, particularly from runners and mountain bikers, for reducing the amount of gravel used on trails. For example, one runner stated, “Seems like too much gravel. I’d only put it where you really think you need it. Maybe at steep culverts, some bends or something, don’t overdo it.”

Another potential modification that was raised in the focus groups was improving parking options. Participants made it clear that parking capacity at major access points is a problem in the forest. Many users recommended that the forest improve the efficiency and expand parking. However, others speculated this would increase the number of cars, necessitating even more parking, creating an endless cycle. An alternative recommendation for addressing this issue was to expand the number of developed access points to the trail network. As one hiker recommended, “I think you could deal with overuse in certain areas by giving parking at additional access points where, right now there’s access points but no way to park there.” Diversifying the locations for access to recreation in the forest may not only alleviate parking concerns, but also help disperse
use in the Forests. Finally, another recommended indirect option was to promote alternative transportation access to the Forests, such as directing a city bus line to major access points and installing bike racks at trailheads. This would ensure access would not be limited to those with cars or who live within walking distance of the Forests.

Preference Decision Making

Preferences for indirect management actions seem influenced by their ability to address similar problems without the restrictions that direct actions impose. Through the focus group discussions, participants expressed several preferences as a result of deciding between alternatives. For example, participants often opposed limitations on the amount of use in the Forests, but supported minimizing crowding by increasing trail mileage and access points. “You can increase the actual overall mileage and thus spread out more use,” as one hiker proposed, dispersing use may help retain the low use, uncrowded feeling of the forest even as the population of the nearby community might increase. These indirect management actions may also be effective in dealing with the issue of unauthorized trails in the forest. One hunter recommended that “Once you start putting in official ones [trails] I think you’d in some ways kind of limit the areas where they’re going to put other trails… you know if you kind of got out ahead of it.” Visitors seemed to prefer expanding authorized trails over taking direct action to close existing unauthorized trails.

Although not as explicit in the focus group conversations, participants also seemed to prefer trail design improvements (indirect action) over seasonal trail closures.
(direct action) to protect trails from the damage caused by bike and horse use during the wet winter season. For example, in response to the interviewer inquiring if participants would favor seasonal closures for muddy trails, a runner instead offered a trail design solution as a remedy.

I mean, those are all social trails, so legitimizing them and fixing them, and then figuring out when is appropriate. Because then, if they were designed differently it might not be as much of a problem, but when it just goes straight down a mountain… – Runner

Particular trail design specifications were highly debatable, but users seemed to agree that offering more year-round trail opportunities was desirable. Furthermore, as mentioned by some participants, armoring trails more for winter use may be preferable simply because users may disregard seasonal trail closures.

Discussion

Preferring an Indirect Approach

Research Forests’ recreation participants generally recommended and favored management actions that are indirect in nature. The participants in this study discussed indirect management approaches more in quantity and more positively than direct management approaches, which were met with a mixed review of positive and negative comments related to the practices. Furthermore, when deciding between an indirect and a direct action to mitigate a specific problem, users preferred the indirect action. This finding is consistent with previous work suggesting a user preference for indirect management in a variety of settings and for a diverse base of activities (Anderson, &
Manfredo, 1986; Hardiman, & Burgin, 2010; Kil et al., 2012; Lucas, 1980; McCool, & Lime, 1989; Schneider, & Winter, 1998; Shindler, & Shelby, 1993; Waight, & Bath, 2014). For indirect management actions that received little discussion (use impact education and soft zoning), it is possible either that participants did not recommend these practices because they do not prefer them, or they may be unfamiliar with these practices.

Participants expressed the most opposition to practices that restrict different types of non-motorized recreation use, followed by limiting the amount of use allowed in the Forests, a finding that is supported by prior work in a multi-use, near-urban natural area and in wilderness (Hall, Seekamp, & Cole, 2010; Schneider, & Winter 1998). Although there were some reservations from users based on concerns for overdevelopment and overuse, site modification actions were supported more than any other action in these discussions (Cole et al., 1997; Reichhart, & Arnberger, 2010; Schneider, & Shelby, 1993). Specifically, participants were very supportive of management taking measures to build and improve the trails. Mountain biker participants particularly favored this approach, mentioning it more than twice as often as any other user group. This may be a product of the fact that although mountain biking can require specifically built facilities, other user groups require much less developed infrastructure, particularly hunters who rely on sites with little to no modification.

The fact that increasing trails and access points was well supported by users is understandable, as it would offer users an expanded number of opportunities for
recreation in the forests. Dispersing recreation use over a greater area in forests could provide users the opportunities they desire, but it also may increase the impact of recreation use on the forest environment (Monz, Cole, Leung, & Marion, 2010). However, this increased impact may be mitigated if building new, well-designed trails reduces the proliferation of poorly-designed, illegal, user-created trails (Pickering, Castley, Hill, & Newsome, 2010) that are less sustainable and more damaging to the environment (Wimpey, & Marion, 2011). Educational approaches were also highly favored, particularly those that would teach users about proper trail etiquette and safe recreational behaviors (Schneider, & Winter, 1998; Shindler, & Shelby, 1993; Sorice et al., 2009).

The Contribution of Context

From the conversations study participants had about management actions, it is clear that their preferences for indirect management may be influenced by a few contextual factors. First, participants seem cognizant that many direct actions may not be feasible for the Research Forests. Without proper enforcement, regulations can be ineffective and undermine the credibility of the resource managers (Lucas, 1982). Even though the group ground rules asked participants to brainstorm and not be concerned with feasibility, this factor was still apparent in context of the recommendations made. Feasibility was explicitly referenced in conversations regarding fees and fines, as well as hard zoning for particular uses. Participant aversion to direct management may be motivated by a perception that the Research Forests does not have the capacity for
enforcement, a perception that was supported by the presence of Forest management in the research team.

Second, participants were supportive of conditions and techniques that were already in use on the Forests. Similarly, Needham and Rosenberger’s (2011) study also conducted in the Research Forests found the most support for “do not change anything,” over a list of potential management actions. Previous research on management preferences found users may prefer management techniques which they are familiar with or are already in use in the recreation area (McCool, & Utter, 1981; McCool, & Lime, 1989; Sorice et al., 2009; Stankey, & Schreyer, 1987). This factor seems to be influential in the preferences found for Research Forests’ visitors, particularly in opposition to direct management actions. Visitors were highly opposed to restrictions on non-motorized use in the Forests, a practice not currently in use. However, other practices involving use restriction such as hard zoning and seasonal closures are moderately used in the Forests. These more familiar restrictions were met with a mixture of support and opposition from users. Furthermore, divergent views of use limitations between user groups seems to indicate the influence of the status quo on preferences. Although hikers strongly opposed limitation on use, hunters were rather supportive of the practice. This could reflect the fact that hunters are already subjected to use limitations by the tag selection process, and hikers face almost no limitations on their forest use. Considering the Research Forests
does not currently utilize many direct management techniques, this status quo could be contributing to the apparent preference of forest participants for indirect management.

Third, the environmental and social conditions of a recreation area are often cited as reasonable indicators of when different management approaches should be utilized. The ‘don’t fix what isn’t broken’ mentality is apparent in the literature (Arocena et al., 2006; Lucas, 1982, & 1983; Cole, 1993; Cole et al., 1997) and in visitor management preferences (Adams, & McCool, 2009; Hardiman, & Burgin, 2010; Lawson, & Manning, 2001; von Ruschkowski et al., 2013). Although some disagree (Cole, 1993; Hunt, Lemelin, & Saunders, 2009; McAvoy, & Dustin, 1983; Williams, & Shaw, 2009), many argue that direct management actions should be reserved for when conditions become unacceptable. This study seems to support this notion as visitors may prefer indirect action as their overall satisfaction is high. Previous research in the Research Forests found high rates of overall satisfaction with recreation opportunities in the Forests with visitors most satisfied with experiencing nature, escaping crowds, not paying a fee, the amount of litter, and trail maintenance (Needham, & Rosenberger, 2011). In addition, participants in this current study often mentioned that they did not observe social or resource problems in the Forests. It seems that the limit for acceptable levels of impact may not have been reached yet. Furthermore, Bullock and Lawson (2007) found that the threshold for conditions where management is determined necessary by visitors was higher in more developed recreation areas than in wilderness. As wildland-urban
interface forests, it is possible Research Forest visitors may have a higher threshold for conditions and therefore prefer indirect management.

**Study Limitations**

As a collaborative and applied process, the findings of this study are limited to recreation management for Oregon State University’s Research Forests. Although general lessons gleaned from the research may be applied to recreation planning for similar multiple use forests, the findings are not generalizable to a larger population. Due to the format of the discussion, it is also not possible to link all management recommendations made to specific user concerns. Although some comments addressed both the issue and proposed a solution, not all recommendations were made in reference to a specific problem. Also, it is possible these findings may be biased toward positive responses because the discussion was framed to consider possibilities for the forests’ future.

Though the questions for management recommendations were specifically targeted at methods for promoting important aspects of recreation, and mitigating concerns, participants may have offered recommendations that further their personal interests and motivations instead of offering a preferred solution for improving Forest conditions.

The presence of the recreation manager for the Research Forests as part of the research team may have limited discussion around particular management actions. Specifically, the Forest manager discouraged discussion of fees and fines as a practice that management was not interested in establishing. Finally, the convenience sampling method where community members volunteered to participate does not capture the views
of all Research Forests users. Instead, active and vocal recreation users of the College Forests were more likely to participate in the study and share their views. Users who have been disenfranchised by past conflicts with Research Forests’ management may not be represented because they would not likely desire to participate in the process. However, many of the participants expressed knowing some of these users well and attempted to represent their views. Participation in this study could also have been limited for a variety of other factors such as work and family obligations.

Conclusion

Three influential trends have created a need to work with stakeholders in shaping forest management practices in forests at the WUI: the expanding wildland-urban interface (Hammer et al., 2009), increasing recreation demands creating pressure on multiple use lands (Williams, & Shaw, 2009), and rising expectations from public stakeholders for collaborative management (Propst et al., 2003). Recreationists of the OSU Research Forests demonstrated preference for an indirect approach to recreation management. They specifically discussed and supported site modification actions the most of any potential management action, followed by education methods. Nevertheless, conversation regarding all possible indirect actions was largely positive. On the other hand, direct management had a mixed reception among participants, with almost equal support and opposition to many of these practices. Underlying the focus group conversations with participants were several contextual factors that may have driven these preferences. Feasibility and familiarity of indirect actions, in addition to the
acceptability of current social and environmental conditions in the Forests may have influenced participants’ views.

The findings of this research along with the many ideas participants proposed during this collaborative planning process will be instrumental to the Research Forests’ recreation planning process. Understanding what visitors want from their experiences in the forests, and how they would recommend promoting those values and experiences is important as managers make decisions that seek to balance recreation experiences with other forest goals: teaching, research, demonstration, and timber harvest. Managers of other forests along the wildland-urban interface with similar kinds of visitation may also consider how the lessons derived here may relate to the land they manage. Where managers find themselves in a similar context, they may also find better reception for indirect management actions from their recreation users. Moreover, this research may create an effective starting point for new collaborative efforts as managers begin conversations with their own stakeholders over what is best for the opportunities they provide in their forests and natural areas.
References


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CHAPTER THREE: EXPERIENCING CONFLICT IN AN OREGON FOREST: USER PERCEPTIONS OF RECREATION CONFLICT AND MANAGEMENT RESPONSES

Technology and demographic changes have influenced how recreation participation occurs and impacts natural places, making the balance of protecting resources, maintaining user safety, and providing outstanding recreation experience more challenging for managers (Aroncena, Nepal, & Rutherford, 2006; Burgin, & Hardiman, 2012; Williams, & Shaw, 2009). This is particularly true in natural areas managed for multiple purposes (e.g., commercial, recreational, ecological). Furthermore, when users increasingly identify with their recreational pursuits, they may demand more of the opportunities provided (Schreyer, 1990), and conflict can occur when expectations are not met and the diversity of use types and technology increase (Adams, & McCool, 2009; Albritton, Stein, & Thapa, 2009; Hendricks, 1995; Schreyer, 1990; Williams, & Shaw, 2009).

Generally, conflict is “a condition that exists when one person, or a group of people, experience or perceive an interference of goals or the likelihood of incompatible goals, as the result of another person’s…actions, threat of action, or personal attributes” (Ewert, Dieser, & Voight, 1999 p. 337). Several studies have concluded that experiences of conflict and their effect on satisfaction may be low, but a sizable minority are experiencing problems (Albritton et al., 2009; Confer, Thapa, & Mendelsohn, 2005; Moore, Scott, & Graefe, 1998; Schreyer, 1990). Considering that users may respond to the stressful experience of conflict by displacement, or ceasing to visit an area
(Schneider, Earing, & Martinson, 2013; Schneider, & Hammitt, 1995; Tynon, & Gomez, 2012), managers may want to engage in planning and actions that could alleviate this stressor to maintain enjoyable recreation experiences for a diverse user base, without disrupting recreation’s balance with ecological and economic needs. This research seeks to complement previous quantitative research by developing a nuanced qualitative understanding of the nature and extent of recreation conflict occurring in the Oregon State University Research Forests. By engaging users in a discussion of their experiences, this research seeks to understand the meaning of conflict experiences and identify acceptable management strategies to mitigate conflicts in collaboration with the users these actions seek to benefit.

Literature Review

Theoretical Approaches to Conflict

Two primary types of recreation conflict are identified by researchers: interpersonal (i.e., goal-interference) and social values. The most prominent and empirically tested theoretical model for examining drivers of interpersonal recreation conflict comes from Jacob and Schreyer (1980) who defined this conflict as “goal-interference attributed to another’s behavior” (p. 369). For example, a hiker’s goal for solitude on a trail may be interfered with by a mountain biker speeding down the same trail. This model is rooted in expectancy-value theory that suggests conflict arises when conditions of the experience do not meet user expectations (Stankey, & Schreyer, 1987). This discrepancy becomes more acute as user expectations for a quality experience
become more specific (Jacob, & Schreyer, 1980). Several studies have found that varied goal orientations influenced perceptions of this type of conflict (Confer et al., 2005; Gibbons, & Ruddell, 1995; Hunt, Lemelin, & Saunders, 2009; Ruddell, & Gramann, 1994). However, goal-interference or interpersonal conflict does not necessarily result from incompatible goals. For example, two hikers both seeking solitude may still experience goal-interference conflict when encountering each other (Jacob, & Schreyer, 1980). Jacob and Schreyer (1980) and Walker and Shafer (2011) further posited that some conflicts may occur when an encounter results in a disruption of a user’s focus or mode of experience, particularly when these encounters come as a surprise, such as from behind them on the trail. Furthermore, behaviors that are not central to the activity (e.g., litter, noise, rudeness) can also interfere with recreation goals as much or more than encountering others actively engaging in a recreation activity (Confer et al., 2005; Graefe, & Thapa, 2004; Gray, Canessa, Rollins, Keller, & Dearden, 2009; Ruddell, & Gramann, 1994).

Social values conflict, on the other hand, is where an individual perceives conflict with another not because they feel their goal was interrupted from direct or indirect contact, but because of perceived differences in the appropriateness of an activity or behavior (Manning, 2011). A classic example of social values conflict would be the disapproval of hunting on public lands by non-hunting recreation groups, regardless of actual contact with a hunter (Vaske, Donnelly, Wittmann, & Laïdlaw, 1995). A conflict
of social values could also occur should a user group oppose another because of the perceived impact their activity has on the environment (Gray et al., 2010). There are a few studies that differentiate between these two types of conflict (Carothers, Vaske, & Donnelly, 2001; Gray et al., 2010; Vaske et al., 1995). Many of these studies consider any conflict with an actual encounter to be goal-interference conflict regardless of underlying social values differences that may be contributing to that perceived conflict. However, Vaske, Needham, and Cline (2007) established a model for conflict that demonstrates how both types of conflict could be operating at the same time in a user’s conflict experience. Figure 3.1 presents an adaptation of that model for determining which type of conflict is involved; it demonstrates how experiencing an encounter that interferes with the goal of the recreationist without problematic differing social values is an interpersonal (i.e., goal-interference) conflict.
Another way to view conflict is whether it is between users or groups doing the same type of recreation activity or different types of activities, termed in-group conflict and out-group conflict, respectively (Manning, 2011). For example, skiers have experienced goal-interference attributed to other skiers (in-group) and to snowboarders (out-group) (Vaske, Carothers, Donnelly, & Baird, 2000). Conflict within and between different groups can also be classified as asymmetrical (one-way) or symmetrical (two-way). Out-group conflict can be asymmetrical, or one-way, meaning one group perceives conflict with another to a greater degree than is reciprocated (Manning, 2011). Often, asymmetry is found among more traditional recreation users toward newer uses and
technologies, implying a lack of tolerance for lifestyle diversity or a form of the ‘last settlers syndrome’ resentment toward newcomers (Jacob, and Schreyer, 1980; Moore, 1994; Shilling, Boggs, & Reed, 2012). Alternatively, Ruddell and Gramann (1994) speculated that different goal orientations for varied user groups may motivate asymmetry in out-group conflict. Research supports the existence of asymmetrical conflict in many different locations and with various user groups (Albritton et al., 2009; Gibbons, & Ruddell, 1995; Heer, Rusterholz, & Baur, 2003; Moore et al., 1998; Ramthun, 1995; Shilling et al., 2012; Watson, Williams, & Daigle, 1991). However, two-way conflict, where conflict is perceived relatively equally between two groups also occurs (Graefe, & Thapa, 2004). In a study of five ski resorts in Colorado, two-way conflict was found between skiers and snowboarders who described each other’s behavior as equally unacceptable (Vaske et al., 2000).

Identifying Conflict

Out-group one-way conflict has been found in a number of studies between sailboaters or canoeists and motor-boaters (Gray et al., 2010; Ivy, Steward, & Lue, 1992), non-motorized backcountry skiers and helicopter skiers (Gibbons, & Ruddell, 1995), anglers and other river users (Confer et al., 2005), cross-country skiers and snowmobilers (Vaske et al., 2007), local recreationists and tour operators (Hunt et al., 2009), llama packers and horseback riders (Blahna, Smith, & Anderson, 1995), and skiers and snowboarders (Vaske et al., 2000) to name a few. Of particular interest to the study at hand are potential conflicts between hikers, mountain bikers, hunters, runners, and
horseback riders, and there are few studies to date that consider all of these user groups in the same space. Asymmetrical, out-group conflict between pairs of these user groups has been found in many research studies. This is particularly true for hikers who attribute some conflict to mountain bikers with little reciprocation (Carothers et al., 2001; Cessford, 2003; Ramthun, 1995; Watson et al., 1991), an issue on managers’ minds as mountain bike use continues increasing (Burgin, & Hardiman, 2012; Pickering et al., 2010; Watson, 1995). This conflict may be interpersonal as well as a conflict of social values, as hikers may oppose mountain bikers without experiencing direct encounters (Watson et al., 1991). Cessford (2003) found walkers who had actual encounters with mountain bikers had more positive views of them than those who had not. Riding too fast, discourteous behavior, and safety are often cited as the most common concerns with mountain bikers (Heer et al., 2003; Moore et al., 1998; Watson et al., 1991). Runners, on the other hand, have been found to be least disruptive to others on multi-use trails (Moore et al., 1998). For horseback riders, the ecological trail impacts of the animals can drive other users’ perceptions of conflict, in addition to their social disturbance (Blahna et al., 1995; Stankey, 1980). However, with limited research on all of these user groups in the same space, there is little understanding of how user interactions with multiple types of recreation use could influence the experience of conflict.

Many forests and recreation areas have multiple recreation activities occurring in the same spaces, particularly in the WUI. This leaves many managers with the task of
balancing the needs and experiences of multiple groups who frequently interact with each other. To provide quality opportunities for recreation in these circumstances, it is important for managers to understand the unique influence of several interacting groups on the recreation experience, and particularly its interplay with conflict. There is one study that considered conflicts among three user groups on the multi-use trails of the Oregon State University Research Forests: mountain bikers, horseback riders, and people on foot (Needham, & Rosenberger, 2011). Similar to other research (e.g., Confer et al., 2005; Moore et al., 1998; Schreyer, 1990), a sizable minority of users (up to 33%) experienced conflict even though satisfaction with recreation in these forests was generally high. Mountain bikers were found to perpetuate the most conflict, whereas equestrian users reported experiencing the most conflict. Two-way conflict was found between horseback riders and mountain bikers, as well as mountain bikers and people on foot. Horseback riders also experienced one-way conflict with people on foot. Significant in-group conflicts were only reported within the mountain biker population. Most of the conflict was interpersonal, although some was based on differences in social values. This prior study provided an important baseline of recreationists’ opinions and quantified the degree of conflict in the Research Forests, but did not differentiate runners or consider hunters who have unique needs for and experiences of recreation.

Methods for Managing Conflict

Educating users on how to deal with social values conflict, and spatial or temporal separation (i.e., zoning) of user groups for interpersonal conflict are the two most
recommended methods for managing conflict (Adams, & McCool, 2009; Albritton et al., 2009; Carothers et al., 2001; Hunt et al., 2009; Manning, 2011; Tynon, & Gomez, 2012). Given that catering management to the type of conflict is recommended, it is important to discern what type of conflict is occurring in a natural area before assuming it is interpersonal and simply zoning user groups apart (Vaske et al., 1995). By communicating with users about the types of encounters they can expect, and the standards for etiquette and safety for navigating those encounters, managers may be able to reduce depreciative behaviors causing conflict (e.g., Carothers et al., 2001; Cessford, 2003; Hendricks, Ramthun, & Chavez, 2001; Schneider et al., 2013; Vaske et al., 2000). For reducing social values conflict specifically, teaching users about what they have in common with other user groups to help mitigate stereotypes and promote understanding may be influential (Albritton et al., 2009; Ramthun, 1995; Watson et al., 1991).

When zoning is necessary, the recreation opportunity spectrum (ROS) may be a useful framework (Adams, & McCool, 2009; Daniels, & Krannich, 1990). This framework establishes an array of opportunity settings that vary in physical, biological, social, and managerial conditions as a function of diverse user preferences (Clark, & Stankey, 1979). Addressing the expectancy-value roots of conflict, ROS may reduce conflict by standardizing visitor expectations for an area to minimize any discrepancy with what they actually experience (Daniels, & Krannich, 1990; Kim, & Shelby, 2011). This may help to address in-group conflict as well if opportunity settings are created for
specific kinds of experiences, regardless of use type. Furthermore, pairing zoning with purposive trail design could create spaces where shared use is accommodated by a wider trail tread or directional use, and tighter, more intimate trail sections are zoned for a single use. These design techniques may reduce conflicts driven by the disruption of focus (Walker, & Shafer, 2011). Other potential management techniques include use quotas, access limitations, speed regulations, and engaging with users during the planning process (Albritton et al., 2009; Ewert et al., 1999; Hunt et al., 2009; Manning, Ballinger, Marion, & Roggenbuck, 1996; Moore, 1994; Moore et al., 1998; Vaske et al., 2007; Watson et al., 1991).

Study Purpose

Progress has been made in techniques for measuring conflict, particularly with Vaske, et al.’s (2007) research clarifying differences between social values and interpersonal conflict. However, research still often relies on quantitative approaches such as surveys to measure the extent and type of conflicts in natural areas. Watson (2001) called for more holistic studies of conflict as a process for which considers its driving values, meanings, and expectations. Furthermore, Ewert et al. (1999) asked researchers to consider the influence of culture and individual schemata or perceptions in the way conflict operates. Whereas these research criticisms are now over a decade old, there are still few conflict studies utilizing qualitative methods (Gray et al., 2010; Walker, & Shafer, 2011).
Using qualitative research methods, this study seeks to expand on previous quantification of conflict to understand the types of conflict found among multiple user groups in a wildland-urban interface forest that is managed for diverse values. Three research questions are examined: (a) how are recreation users of the Research Forests experiencing conflict, (b) what type(s) of conflict is occurring and what are the factors driving the experience, and (c) how would recreationists want managers to respond and mitigate conflicts? This research supplements Needham and Rosenberger’s (2011) study in the same location by considering a broader number of user groups and their interactions by adding hunters to the study population and separating runners from hikers. Anecdotal evidence suggests that runners versus hikers although both pedestrian groups have unique needs and expectations of recreation opportunities that warrant further investigation. Obtaining a deep understanding of how multiple user groups interact in a recreation area may inform proper management. By engaging in a conversation with this forests’ users, this study explores the reasons and perceptions underlying conflict experiences, and the methods users find acceptable to create better recreation experiences for multiple types of users to share.

Methods

Study Site and Context

Oregon State University’s College of Forestry owns and manages 14,488 acres of forestland for teaching, research, demonstration, timber harvest, cultural resources, and recreation. The focus of this study is three of the eight forest tracts that are situated along
the boundary of Corvallis where Oregon State University’s main campus is located: the Dunn, McDonald, and Cameron forests (Figure 3.2). Free public access brings 11,500 different visitors annually to this complex of forests on foot, bikes, and horses. Repeat visitation is the norm for these forests with over one-third of users visiting at least twice a week, and the average visitor reporting that they have been coming to these forests for 11 years. Visitors primarily come to the forest to hike or walk (42%), but many users also trail run or jog (21%), walk dogs (17%), ride mountain bikes (15%), and a few ride horses (3%) or hunt (2%). Recreation use of the forest spans the entire year with the most visitation occurring in the summer (Needham & Rosenberger, 2011).

Figure 3.2. Study site location in Oregon relative to Corvallis

Recreation use has historically not been a high priority for administrators throughout the history of the Research Forests (Hall, 2004), which has resulted in
minimal and informal recreation planning. Although 24 miles of official trails and 114 miles of road are open for recreation use, an additional 25 miles of unauthorized trails have been built in the forest by users who feel the official system does not satisfy their needs and desires. As volunteer labor and shrinking funds allow, new trails are added to the official system, but without the support of a strategic plan. Furthermore, there is a desire from the recreation community to build more official trails in the forest, and do so with voluntary donations of money and time (Needham, & Rosenberger, 2011), and forest administrators have become more invested in fostering sustainable recreation opportunities for the Forests. These conditions made the Research Forests an ideal location for participatory action research to both initiate a participatory planning effort for recreation and to expand our understanding of recreationist concerns and how they view proposed management actions that might address these concerns.

Participatory Action Research with Focus Groups

Participatory action research is a “collaborative approach to research that provides people with the means to take systematic action in an effort to resolve specific problems…it encourages people to formulate accounts and explanations of their situation and to develop plans that may resolve these problems” (Berg and Lune, 2012, p.263). As a study designed with elements of participatory action research, this research was done with the recreation community (Miskovic, & Hoop, 2006) by engaging in a participatory research and planning process through two series of semi-structured focus groups. As semi-structured focus groups, all participants were asked a number of predetermined
questions around common themes, although subsequent conversations were allowed to develop freely and explore new ideas as participants desired.

The first series of focus groups occurred in April and May 2013, and included one meeting for each of the five primary recreation uses in the forests: hiking, running, mountain biking, horseback riding, and hunting. The groups were organized by primary use to allow space for participants to brainstorm ideas without the inhibitions of coordinating across user groups, which may result in trade-offs. Each group was asked the same set of questions. Topics included: participants’ dream forest of the future, aspects that are important to recreating in the forest, concerns about recreation in the forests, recommended management actions, purpose for visiting the forests, and topics that visitors want more information about and preferred methods for obtaining information. However, participants were not directly asked about their conflict experiences. Instead, without specific prompting, participants shared conflict experiences as part of the discussion of concerns in the Forests; the topic emerged from the research. Mitigations for conflict were recommended in general discussions of how management can address their concerns. Facilitators allowed participants to drive the conversation flow and attempted not to influence the group dynamics or focus of discussion. Follow-up questions were asked only as necessary to keep the conversation focused. Ground rules were established for each group at the beginning of the meeting that included brainstorming and not evaluating, allowing for balanced contribution from all
participants, respecting others’ opinions, avoiding side conversations, and staying on topic.

The following fall, the second focus group series brought together select individuals to represent each sector of the recreation community. Four meetings with the same individuals were held in November and December 2013. In these meetings, the group focused on several topics, including a review of the results from the first focus group series and which results merited further discussion by the collaborative group, and a discussion of how forest trails should be managed and designed. In the final meetings of this group, a proposed opportunity class structure was completed and mapped for the Research Forests. Although the overall process and questions for this research were decided by the research team beforehand, participants modified meeting agendas as part of the participatory action research design elements (Miskovic, & Hoop, 2006). This allowed research questions to emerge from the findings and recommendations made by participants. Conflict mitigation was identified early in the process as a topic worth further discussion and questions regarding it were asked specifically during discussions of trail and opportunity class designs and management. Participants of both series of meetings were considered collaborators in the project, informed of results as they were analyzed, and offered multiple opportunities for feedback and review (Berg, & Lune, 2012).
Participant Recruitment and Sampling

For the first series of focus groups, we employed a convenience sample of volunteers from recreation users of the Research Forests (Berg, & Lune, 2012). A flyer describing the project was distributed to community groups and stakeholder networks, and was posted on trailhead kiosks and community bulletin boards. For the hiking, running, horseback riding, and mountain biking groups, 96 community members volunteered and twelve participants were randomly selected for each group, a good number for successful discussion that accommodates for no-shows (Morgan, 1997), and confirmed for the scheduled meetings. The hunting group did not have 12 volunteers, so all interested individuals were invited to participate. Some community members invited did not attend and a total of 46 individuals participated: 12 hikers or dog walkers, 10 mountain bikers, 10 horseback riders, 9 runners, and 5 hunters.

Participants for the second series of focus groups were selected purposively. First, participants from the first series of focus groups who expressed interest in further participation and shared constructive ideas and a cooperative attitude were selectively invited. Additional participants were invited from the Research Forests’ Forest Recreation Advisory Committee and new participants from potential and underrepresented user groups (Oregon State University students, and people with disabilities). The goal of the purposive sampling for the second series was for each user group to have equal representation in the collaborative, for members to be connected through recreation community groups to other users, and for underrepresented
community groups to be included. The collaborative included a total of 14 members in addition to the research team with a maximum meeting attendance of 86% and minimum of 43%.

Data Analysis

All focus group meeting audio was recorded by at least two digital recording devices and transcribed verbatim. Attribution for any given comment was not recorded at the individual level; rather, all discussion was attributed to the group as a whole. To increase the reliability of the transcriptions, spot-checks were conducted by listening to the secondary recording while reading the transcript to verify accuracy.

Transcripts were analyzed with directed content analysis (Berg, & Lune, 2012) using the NVivo 10 software program. Directed content analysis is a data coding and interpreting process that derives themes, or nodes, from existing theory. For these data, participant comments about their experiences were categorized as instances of interpersonal conflict or social values conflict when the participant clearly felt that the occurrence, experience, or behavior reported was a problem or concern. These comments were also categorized according to which type of use the participant identified as the source of the conflict experience (dogs, hikers, horseback riders, hunters, mountain bikers, other users, runners). In addition to the five user groups we studied, other users were included as participants specifically named “other users” generally as the source of some conflicts instead of a specific group. Dogs were also added to the analysis as they caused a unique conflict experience from hikers in general. Comments expressing that the
participant did not experience conflict were coded as ‘no conflict.’ Finally, a list of potential management actions that may be utilized to mitigate conflict was derived from previous research and used for categorizing participant comments regarding these potential management approaches (access limitations, education, engaged planning, spatial zoning, temporal zoning, trail building or design). Results are reported as a result of considering how prevalent a topic was in discussions by tabulating how frequently comments regarding a subject were made (Leedy, & Ormrod, 2013), and by a close reading of the content of the comments to consider their meaning (Berg, & Lune, 2012).

An intra-coder reliability check was conducted where the researcher re-read all of the comments coded to the same theme to assure each indeed reflected the theoretical idea. An inter-coder reliability check was also conducted where a colleague coded two five page transcript excerpts, one from each series of focus groups, with instructions to follow the same process. The codes identified by the primary and secondary coders were similar 85% of the time. Finally, as part of the collaborative process, summaries of the management ideas and concerns discussed in the focus groups were provided to participants throughout the process to verify the research team’s understanding of their feedback. A summary of recommendations developed by the user groups and collaborative was also provided to the general public for feedback and then to the Research Forests administration for future forest planning.
Results

*Prevalence of Conflict*

Considering the number of times each user group mentioned experiences of conflict may indicate how prevalent of a concern it is to each user groups in the Research Forests. As seen in Table 3.1, equestrians and hunters referenced experiencing conflict more often than the other groups, closely followed by hikers and mountain bikers. Among the user groups, equestrians made the most references to methods for managing conflict, followed by mountain bikers, hikers, hunters, and then runners. The collaborative group participants had a targeted discussion of conflict management, which resulted in the high number of conflict management references seen in Table 3.1.

Table 3.1. Frequency of references to conflict discussions by user group

<table>
<thead>
<tr>
<th>User Group</th>
<th>Conflict experienced # References¹</th>
<th>Conflict management # References¹</th>
<th>No conflict # References¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equestrians</td>
<td>17</td>
<td>36</td>
<td>4</td>
</tr>
<tr>
<td>Hunters</td>
<td>17</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>Hikers</td>
<td>14</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>Mountain Bikers</td>
<td>14</td>
<td>33</td>
<td>1</td>
</tr>
<tr>
<td>Runners</td>
<td>10</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Collaborative Participants</td>
<td>15</td>
<td>167²</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>87</strong></td>
<td><strong>272</strong></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>

¹Number of times participants mentioned the topic/theme.
²Collaborative participants were directed to discuss conflict management.

Although mention of experiencing conflicts was apparent in user group discussions of concerns in the forest, there were also a number of explicit remarks stating that conflict was not a problem (Table 3.1). “I love the forest, I like the camaraderie that I
feel. I have yet to run into a hostile mountain biker actually. It’s just beautiful up there,” said one equestrian focus group participant. Regardless, participants described interactions with mountain bikers as the most common source of conflicts, followed by dogs and equestrians (Table 3.2). All other user groups - hikers, runners, and hunters - were mentioned rarely, however mountain biker participants often mentioned other users generally as the cause of conflicts. For example, one mountain biker shared concern for their “uncertainty of which trails are best suited for bikers as to not conflict with other users.” One collaborative participant shared an understanding of this concern in stating “I would think that as a mountain biker it’s a bummer to come up against somebody and have to slow down when you’re screamin’ along down a trail, and I can sympathize with that.” Taken together, these conflicts with other users were still mentioned less than mountain bikers, dogs, and equestrians were individually, however more frequently than hikers, hunters, and runners combined (Table 3.2).

Table 3.2. Frequency of references to conflict by the identified source of the experience

<table>
<thead>
<tr>
<th>Source of conflict</th>
<th>Interpersonal conflict</th>
<th>Social Values conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># references$^1$</td>
<td># references$^1$</td>
</tr>
<tr>
<td>Mountain Bikers</td>
<td>29</td>
<td>2</td>
</tr>
<tr>
<td>Dogs</td>
<td>20</td>
<td>-</td>
</tr>
<tr>
<td>Equestrians</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td>Other users</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Hikers</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Hunters</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Runners</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

$^1$Number of times participants mentioned the topic/theme
Character of Conflicts

Interpersonal conflicts, rather than social values conflicts, were reported most often among participants (Table 3.3). These conflict experiences were often characterized by damage to the trails, the speed of other users, personal safety, and waste from animals. One hiker expressed a common sentiment of study participants, “There are a couple of areas that, boy I tell you what, when they come down off some of these hills, they’re going 30, 40 miles an hour and they don’t even pay attention to anybody who might be on the road.” Other safety concerns reported by participants included off-leash dogs, trail hazards created by other users (e.g., logs dragged across the trail), and horses being disturbed by unfamiliar interactions on the trail.

Participants also expressed concern for the ecological and social impacts of recreation use such as damage to the trail and animal waste left by users who bring their dogs and horses to the forest. In fact, most of the statements regarding conflict referred to perceived damages other users cause to the resource. In fact, more than half of comments regarding conflict specifically referred to forest impacts and trail damages caused by user groups, particularly mountain bikers and equestrians. For example, one hiker stated “I mean the [trails] that are gravel roads, you know the surfaces and in the dry time, like this year is a great year for the bikes, they don’t disturb, when you’re leaving ruts, you shouldn’t be on the trail.” Erosion, trail rutting, animal waste, and other perceived damages caused by other users were the primary drivers behind conflicts found in the Research Forests.
Table 3.3. Frequency of references to social values versus interpersonal conflict by user groups

<table>
<thead>
<tr>
<th>User group</th>
<th>Interpersonal Conflict</th>
<th>Social Values Conflict</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># references¹</td>
<td># References¹</td>
</tr>
<tr>
<td>Equestrians</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Hunters</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>Mountain Bikers</td>
<td>14</td>
<td>-</td>
</tr>
<tr>
<td>Hikers</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Runners</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Collaborative</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>Participants</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>79</td>
<td>8</td>
</tr>
<tr>
<td>% of Total References</td>
<td>91%</td>
<td>9%</td>
</tr>
</tbody>
</table>

¹Number of times participants mentioned the topic/theme

Although much less prevalent than interpersonal conflicts, social values conflicts were also apparent in the Research Forests. Equestrian and hunter users speculated that others opposed their use of the Forests, such as one equestrian participant who expressed feeling resented by other users: “There is animosity with some mountain bikers or maybe hikers….the horse marker [on trail signs] has been scratched out. So, it’s been defaced by somebody who didn’t want horseback riders on their path.” Whereas study participants agreed that mountain bikes and horses were inappropriate on certain trails and certain at times of year, few were generally opposed to the use itself and saw the forest as a welcoming place for all types of recreation.

Managing Conflicts

Effective management strategies may be characterized by their alignment with the type of conflict(s) that users are experiencing, and the support they receive from users (Manning, 2011). In conversations about strategies for recreation management in the
Research Forests, users spoke most frequently about spatial zoning techniques that separate types of use into different areas of the forest (Table 3.4). Following that, users discussed how building trails designed to suit different types of users would be effective. This method was greatly preferred over temporal or seasonally zoning trails to restrict or limit use. Educating users about proper trail etiquette and collaboration among different user groups were also discussed as methods that would allow users to work together and understand each other’s needs and motivations to reduce conflicts.

Table 3.4. Frequency of references to conflict management strategies

<table>
<thead>
<tr>
<th>Management Strategy</th>
<th># References¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatial Zoning</td>
<td>88</td>
</tr>
<tr>
<td>Trail Building &amp; Design</td>
<td>39</td>
</tr>
<tr>
<td>Education</td>
<td>36</td>
</tr>
<tr>
<td>Temporal Zoning</td>
<td>14</td>
</tr>
<tr>
<td>Collaborative Planning</td>
<td>12</td>
</tr>
<tr>
<td>Limit Access</td>
<td>1</td>
</tr>
</tbody>
</table>

¹Number of times participants mentioned the topic/theme

Although the most prevalent management strategy discussed by participants was spatial zoning, not all of these references were supportive of the practice. Some participants, particularly among the mountain biking and equestrian users, were proponents of traditional hard zoning where trails are designated for specific user groups, restricting use by others. In particular, mountain bikers mentioned examples of other recreation areas nearby that were purposely constructed for riding only as locations where they can recreate without disruptive conflicts.
Peavy [an area within the McDonald Forest] has that advantage because it’s hiker only…. they have their own unique experience. So, I think as somebody that’s been in this area for 20 years, I want that same unique experience [for mountain bikers] that people in that area can get. – Mountain Biker

This mountain biker shared a desire and respect for hard zoning, but there was some skepticism among most participants that these rules would be effective. Hikers were particularly against the idea, and many participants suspected users would ignore the restrictive zoning rules and use a trail anyway.

An alternative idea that study participants developed, particularly in the second series of focus groups, was a soft zoning management approach with “primary use” zones where trails were designed for a type of use or experience. A metaphor using horse trails was provided by one hiker: “[if you are hiking on a] special use trail for horses you know not [to] be too disturbed about big piles of horse manure, in the trail as you’re going along.” In comparison, when in a multiuse area, a user should expect to encounter many types of users and should behave appropriately by, for example, not speeding down the trail on a bicycle.

Soft zones might also be created based on skill level. One participant explained, “A great example is like, a resort ski area, so if you roll up on like a double black diamond, that doesn’t mean, it’s not telling certain types of skiers to stay off, it’s just sort of like giving them a heads up.” Participants proposed this ROS-like strategy be implemented by designing trail signs that communicate what type of user or the level of
skill the trail was designed to accommodate. A proposed example of what these signs may look like was developed by the collaborative group and designed by the research team (Figure 3.3). This strategy could be a compromise between users such as hikers who desire access to all trails, and mountain bikers who seek an area designed for their desired experience. Participants expressed that for this strategy to be effective, these soft zoned areas would need to maintain regular right-of-way rules, they should only apply to new trails to not change use patterns on current trails, and spur trails around any technical sections or obstacles built for a particular user group would be needed.

A possible complication that participants identified was that soft zoning may be perceived like hard zoning and members of the primary user group may feel ownership of the trail and be upset by other user groups. As one collaborative participant explained, “I think that would give a particular user at least that idea that they, that is their trail solely, and they’d rather not have any other types of users on it.” This perception could result in increasing instead of decreasing conflict by setting potentially unrealistic expectations for users. Should this strategy be implemented, participants felt strongly that it would require careful and clear communication of its intentions so that it is not misinterpreted, defeating its own purpose.
Another version of zoning, temporal zoning, was discussed much less by study participants and with mixed sentiments. Seasonal restrictions for particular users to protect the trail from damage during vulnerable times of year, such as the wet winter months, is currently practiced on the forests. Although this was favored by some users, it was not considered an effective strategy by many others:

I’m okay with closing things…for the winter, but it seems to be kind of an excuse for having relatively poor trail builds. I mean there’s places that are muddy… after April 15th, … just trail design in general, it sloughs off the water… it’s something I think, needs to be looked at, just throwing gravel on it doesn’t solve the problem. So, overall trail design I think, and that might open trails up for longer periods of time. - Collaborative Participant

Similar to this person, participants suggested building and designing trails to withstand year-round use instead of temporal zoning or seasonal closures.
Just as designing trails to withstand winter use could reduce conflicts caused by visible damage to the trail tread, participants suggested trail design techniques may be able to alleviate speed and safety issues associated with conflicts as well.

Most of those trails… are not very interesting… there’s so much gravel down and it’s so easy… that as a mountain biker you can go crazy fast down that, but then that’s less safe… purpose built trail kind of manages speed, it’s not made to just go crazy fast, it’s made to kind of… flow at a certain kind of reasonable speed so they’re not having to hit their brakes. – Collaborative Participant

As this participant expressed, designing trails to control bike speed and provide sight distances for all users to be aware of who is coming down the trail could make the trails safer and reduce potential conflicts.

A trail that was specifically a technical or semi-technical mountain biking trail that was only for mountain bikes… does it relieve mountain bike use from the multiuser trails, and …all of us who don’t mountain bike would be happier if there weren’t so many mountain bikes on the trails we use. – Collaborative Participant

Furthermore, as this participant suggested, building additional trails providing experiences that mountain bikers and equestrians are seeking could remove the concentration of users causing conflicts and alleviate pressure on existing trails.

Finally, participants suggested that utilizing opportunities to teach users about trail etiquette and safety may help users recreate in ways that do not disturb other users’ experiences. Equestrian users had a particular affinity for an educational approach to managing conflicts, as 22 of the 35 references to this approach were from equestrians.
For example, one equestrian stated, “My dream forest would include on the kiosks, it would have a little section devoted to education for mountain bikers and pedestrians with dogs about what is safe behavior around horses. Just because I think a lot of people don’t know.” Other users also advocated for education, particularly teaching proper yielding techniques and how to behave safely around horses.

Well, education too… we actively had education with equestrians, how to pass a horse, horses on the high side, don’t want to dominate a horse, you know make them freak out, how to pass properly… having that synergy between groups because I do think that we can set a lot of tone for the way, good sight lines, I mean we’re coming in, we understand, I mean we want people to have their experience, I think that’s what every user group should have a shared experience, and share an experience in their own individual ways. – Mountain Biker

In addition to bringing the community of recreation users together to learn about etiquette on the trail, as this mountain biker suggested, participants also supported collaboration among groups as an opportunity to reduce conflicts by allowing users to understand one another.

Discussion

The purpose of this study was to enhance understanding of user experiences of recreation conflict and preferences for management responses in a multiuse forest at the wildland-urban interface through the context and rich descriptions offered by qualitative study. From these findings, there are four emergent themes worthy of further discussion.
First, although this research found many consistencies with prior literature, it also identified several deviations. Consistent with previous research at this (Needham, & Rosenberger, 2011) and other locations (Cessford, 2003; Watson et al., 1991), social values and interpersonal conflicts both exist in the Research Forests, but interpersonal conflicts are more prevalent. In the previous survey of recreation experiences in the Research Forests, Needham and Rosenberger (2011) found that equestrian users experienced the most conflict, followed by mountain bikers, then people on foot. Although this research similarly found that equestrian users experienced conflict the most, by including hunters it also found that they experienced similar amounts of conflict to equestrians.

Seemingly dissimilar to the previous survey research, this study found that mountain bikers and hikers here shared equal amounts of conflict experiences. However, mountain bikers spent more time than hikers and runners discussing appropriate management responses to conflict, which could indicate a greater concern for the issue, indicating parallel results as the previous survey study. Furthermore, identical to the results presented here, Needham and Rosenberger’s (2011) survey of these forests found that mountain bikers caused the most problematic conflict events in this forest, though they found that people on foot and horseback generated relatively equal amounts of conflict as reported by all users in total. In contrast, participants in this research identified equestrians as a much more frequent cause of conflict on the trail than those on foot. This
could be explained by this research’s separately considering conflicts attributed to dogs. Dogs are most often brought to the forest by people on foot, and dogs were found to generate a relatively high amount of the conflict experiences shared, which in the Needham and Rosenberger (2011) survey may have contributed to the conflicts attributed to “people on foot.”

Previous research has made hunters the classic example of social values conflict in recreation areas (Vaske et al., 1995), and in this study, conflicts with hunters were the most reported social values conflict. However, only one mention of disapproval of the activity came from someone who was not a hunter. The other two comments were hunters themselves speculating that others did not want to encounter them in the forest. This may be explained by the fact that, although hunting does occur in these Forests, it is relatively minimal, occurs off-trail, and is restricted to the Dunn section of the forests that sees little visitation from other user groups (Needham, & Rosenberger, 2011). In fact, some focus group participants were surprised to find out there was a hunting focus group in this study, as they did not know hunting occurred in the forests.

Second, the asymmetrical, out-group conflict relationship between walkers and mountain bikers seems reversed in this research compared to previous research. Generally, previous studies have found walkers have more conflict with mountain bikers than vice versa (Carothers et al., 2001; Heer et al., 2003; Moore et al., 1998; Ramthun, 1995; Watson et al., 1991), however, in the meaning behind the reports of conflict found
here, the opposite seems true. Although mountain bikers and people on foot reported relatively equal amounts of conflict, from the discourse of this qualitative research, mountain bikers seemed much more concerned about these conflict experiences than walkers. This finding is consistent with Needham and Rosenberger’s (2011) quantitative research in the area, that also found mountain bikers experienced more conflict overall compared to people on foot.

Mountain bikers also generally reported that other users disrupted the flow of their recreation experience and interfered with their ability to fulfill their desired recreation goals. This could be partially due to the way Research Forest trails were designed and the caution that mountain bikers must exercise on these trails to avoid other users: slowing, braking, and yielding on the trails (Reichhart, & Arnberger, 2010). Jacob and Schreyer’s (1980) theory may also help explain this divergence when they reported that “experiences formerly defined as high quality become seen as commonplace…. therefore, part of being a higher status participant [who are more prone to conflict] also involves behaving in accordance with a specific, accepted definition of the quality experience” (p. 373). The mountain bikers in this research mentioned other recreation areas that were designed for, or are limited to, mountain bike use. These high quality experiences they have in other locations may be creating goal expectations for what they want their experiences in the Research Forests to be, but currently are not.
At the same time, in the Research Forests, walkers and runners are the only current user group with trails dedicated to their use alone. Although hikers were most opposed to regulations that hard zone trails for specific user groups, the availability of an out-group conflict free zone for them could be minimizing the degree of their concern for the conflicts they do experience. Furthermore, people on foot may be more supportive of sharing all trails, as they may experience conflict less as a result of sharing (Adams, & McCool, 2009). On the other hand, the interference mountain bikers’ experience as a result of sharing the trails may be strong enough that mountain bikers have been willing to illegally construct their own trails in the Forests for the possibility of an area where they might fulfill their goals (Pickering et al., 2010; Ryan, 2005).

Third, another finding regarding the user groups’ experiences of conflict was that although many users expressed concern for the classic disruptive behaviors of recreation conflict, they also explicitly stated they did not feel that conflict was a ‘problem’ in these forests. This conundrum is consistent with Needham and Rosenberger’s (2011) research as they found that although a majority of users said they observed events and behaviors that could cause conflict, such as riding too fast or failing to give warnings, few identified them as an ongoing problem in the forest. Although some participants in this study may simply not experience conflict, there was a significant and vocal minority who shared concern. One explanation for this contradiction comes from Jacob and Schreyer (1980) who postulated that the “desire to maximize personal satisfaction can result in a tendency
to reevaluate the goal affected in response to the conflict,” that users may have a
“tendency to downplay conflict” (p. 370). Participants in the study may be attempting to
downplay the existence of conflicts in the forest to preserve their feeling of satisfaction
with their local recreation opportunities, and to minimize potentially undesirable
traditional management responses to problematic conflicts such as use limitations or new
hard zoning regulations. Furthermore, the presence of managers in the research team
could have influenced participants’ willingness to share their dissatisfaction with
recreation opportunities.

The contradiction of participants stating that ‘conflict is not a problem’ while also
expressing concerns for conflict may also be explained by the meaning underlying these
‘no conflict’ comments. When participants shared their feeling that conflict was not a
problem in the Forests, they usually mentioned that other users were friendly or kind;
they did not experience rude or discourteous behaviors. Needham and Rosenberger’s
(2011) survey verified this user experience as they found “rude or discourteous behavior”
the least overall problematic conflict event in the Forests. Only 13% of all users in total
considered this conflict event a problem (20% considered mountain bikers being rude or
discourteous a problem, 8% for horseback riders, and 10% for people on foot). Although
rude behavior may be central to ‘conflict’ as generally defined in public discourse, this
public perception is not the same as how it is defined in recreation theory. Participants
may not be considering other behaviors that are considered conflict in recreation theory.
when they made these statements. For example, users shared much concern for the influence that trail damages and speeding mountain bikers had on their experience, which may not fit their definition of conflict. Of course, equestrians in Needham and Rosenberger’s (2011) survey did consider the rude and discourteous behavior of mountain bikers and people on foot problematic in the forest (45%, and 31% of equestrian respondents respectively). However, similarly in this study’s focus group, equestrians also expressed the most concern for and experience of conflict.

A fourth point is that together the participants and the research team developed an interesting “primary use” management solution that could address conflict at its theoretical core: goal interference. Without stopping the behaviors that may perpetuate conflicts, or separating user groups who may conflict with one another, participants suggested setting a realistic expectation for users before they embark on the trail. From this suggestion, the research team proposed “primary use” trails that inform visitors what type of use the trail is designed for. Participants supported this strategy as it might align user goals with the experience they should expect to have on the trail, or direct users to areas designed to fulfill their recreation goal. Just as researchers have suggested utilizing the recreation opportunity spectrum, or otherwise designating areas for a level of difficulty, as a tool for managing conflict (Adams, & McCool, 2009; Albritton et al., 2009; Daniels, & Kranich, 1990), the participants in this research suggested standardizing expectations for the recreation opportunity they might experience.
The potential for this method to succeed is supported by Cessford’s (2003) research that found walkers experiencing the most conflict with mountain bikers were those who did not expect to see them on the trail. Furthermore, Kim and Shelby (2011) found that providing information on the type of setting the user is visiting had a profound effect on their crowding evaluations and encounter norms. However, Jacob and Schreyer’s (1980) work questions whether this approach would be effective, as they stated that “people with specific expectations are more conflict-prone than those with undefined or very general expectations” (p. 373). This possibility is supported by research where users with distinct expectations were more sensitive to conflict (Mann, & Absher, 2008). Should managers establish a specific expectation for user experiences, a greater degree of conflict may be experienced should this specific expectation not be met. Whether this approach recommended by study participants could mitigate or exacerbate conflict merits further research.

General lessons gleaned from this research may be applied to recreation planning for similar multiple use forests, particularly by managers facing similar challenges. However, the findings of this research are specifically limited in application to recreation experiences and management practices for the Oregon State University Research Forests. There were many similarities found between this research and the survey work of Needham and Rosenberger (2011) in both the way users are experiencing conflict, and the way they recommend addressing this concern. Just as focus group participants
recommended spatial zoning, building and improving trails, and education, Needham and Rosenberger’s (2011) respondents supported providing more trails designated for specific uses and informing visitors about appropriate behaviors. These and other similarities previously discussed between the two studies are a strength of this work; the studies validate each other across time (5 years between data collection of each study), varied sample sizes (1,068 survey respondents, 55 individual focus group participants), and research methods (survey vs. focus groups). This research has added depth and narrative to the similar quantitative findings of Needham and Rosenberger (2011) regarding conflict experiences and management in the Research Forests.

Some limitations to this research were that framing the discussion around possibilities for the forests’ future may have elicited more positive responses than negative. This could have limited the degree that participants shared their concerns, as they were seeking proactive solutions that could be recommended as part of the strategic planning process. Furthermore, the presence of the recreation manager for the Research Forests as part of the research team may have limited discussion. Specifically, participants may not have expressed experiencing social values conflicts to avoid sounding intolerant. The research team attempted to mitigate this limitation in two ways: by holding separate meetings for each user group allowed space for sharing experiences without the judgement of other types of users, and setting the ground rule to respect others opinions, especially when they are different.
Finally, although purposive sampling sought to gather a representative group of recreationists, this methodology does not promise to capture the views of all Research Forests users. Active and vocal recreation users of the College Forests were more likely to participate in the study and share their views. Specifically, users who have been disenfranchised by past conflicts with Research Forests’ management may not be represented because they would not desire to participate in the process. However, many of the user representatives expressed knowing some of these users well and attempted to represent their views. Furthermore, the purposive sampling of the second series of focus groups specifically intended to recruit participants with connections in the community so that they might represent the perspective of those not present.

Conclusion

Natural areas managed for multiple uses require strategic management that balances many needs and uses in a way that protects the ecological, social, and economic values of the resource. Including recreation users in the planning process is vital as technology disperses and changes the way people explore the natural environment (Burgin, & Hardiman, 2012; Propst, Jackson, & McDonough, 2003; Williams, & Shaw, 2009). Particularly in the case of addressing recreation conflict, working among divergent user groups could provide cooperative solutions that mitigate conflict’s deleterious effect on the user experience (Chavez, 1996; Walker, & Shafer, 2011). This research was conducted with elements of participatory action research to engage Research Forest recreation users in the process of planning the opportunities available for recreation. In
doing so, this study sought an understanding of the participants’ concerns and how managers may respond to address these concerns. From these discussions, participants shared concern for the occurrences and experiences of recreation conflict. Through qualitative study, this research gained a nuanced understanding of their concerns around navigating the multiuse trail system and how users are experiencing conflict. This study gained the user perspective on how forest management can more effectively mitigate these concerns that depreciate experiences in the Research Forests.

This research was an important part of the Research Forests management planning process, seeking public engagement from users about how they envision future recreation opportunities in the forest. Understanding this vision may be instrumental in developing opportunities and experiences that visitors to the Forests seek, alleviating the undesirable impacts of conflict such as displacement and the creation of illegal trails. The findings of this research and the broader recommendations that came out of this effort will be considered by managers as they proceed in strategic planning for the forests. Although these findings cannot be generalized to other locations, where managers of other recreation areas find themselves in a similar situation and context as the site studied in this research, they may also find the concepts learned from this research useful in their own planning efforts.
References


Needham, M. D., & Rosenberger, R. S. (2011). *Public support, demand, and potential revenue for recreation at the McDonald-Dunn Forest* (Final project report for Oregon State University College Forests and College of Forestry). Corvallis, OR: Oregon State University, Department of Forest Ecosystems and Society.


CHAPTER FOUR: CONCLUSION

Public funding for recreation resource management is shrinking while at the same time the public increasingly desires to protect natural resources and be involved in the decision making process for managing them (Arocena, Nepal, & Rutherford, 2006; Propst, Jackson, & McDonough, 2003). The way people recreate in natural areas is also changing, as technological developments bring participants further into the forest, extending their impact on the ecological resource (Burgin, & Hardiman, 2012; Williams, & Shaw, 2009). Understanding the recreation community’s perspective regarding recreation resource management may be useful in this environment. Furthermore, it may be important to understand more than just what recreation users want, but what their underlying interests are and the contextual reasons that drive their decisions. A more in-depth, nuanced understanding of what users’ interests, experiences, and preferences are may better inform manager decisions, especially where recreation use must be balanced with other forests uses. Working collaboratively with recreation users to develop strategic management plans may help managers of recreation areas achieve a deeper understanding of the recreation community, and find mutually beneficial strategies. This research sought to achieve these goals by studying what is important to the recreation community of the Oregon State University Research Forests, what their issues are, and how they recommend management addresses these issues.

The first manuscript in this thesis (chapter two) investigated user preference for direct or indirect approaches to recreation management by understanding their
recommendations for management action. Users of this WUI forest demonstrated preference for an indirect approach to recreation management. They recommended site modifications that expand and improve the trail system the most of any potential management action, with education methods taking a close second, both indirect actions used to influence a change in user behavior which demonstrates this approach preference. Furthermore, conversations regarding all possible indirect actions was largely positive, though direct actions received a mixed reception with almost equal support and opposition to many of these practices with much variation across different user groups. While users seemed to support the purpose behind a direct management approach, they did not generally support direct actions themselves. For example, user groups would like to maintain low-use rates within the forest, but generally did not wish for the imposition of use limitations. It may be that given the choice, indirect actions which may achieve similar goals would be preferred. Users were in fact most opposed to ideas that would restrict the type or limit the amount of recreation use in the Forests. Recreational forest users clearly appreciate the opportunities for diverse recreation experiences in the Research Forests, and seek indirect management to preserve them.

These findings and this preference for an indirect approach is similar to previous quantitative research (Anderson, & Manfredo, 1986; Shindler, & Shelby, 1993; Kil, Holland, & Stein, 2012; Lucas, 1980; Waight, & Bath, 2014). However, the qualitative approach used in this study allowed us to develop a rich understanding of the contextual
factors involved in the decisions and preferences users shared. This and previous research (Needham & Rosenberger, 2011) has found that visitors are largely satisfied with current conditions in the Forests. Previous researchers have supported the notion that direct management should be reserved for times when impacts become unacceptable and must be mitigated (Cole, Watson, Hall & Spildie, 1997; Hardiman & Burgin, 2010), and the Research Forests’ users seem to agree. With current conditions, they would rather see more miles of trails and access points instead of use limitations, and trail improvements over seasonal closures. Besides taking user recommendations at face value, this study offers managers more information on why these preferences exist. With this deeper understanding, they may be better equipped to consider how recreation use might be offered in balance with other forest uses and to select a management direction, approaches and actions that are acceptable or embraced by the community that recreates in the Forests.

Working alongside the recreation community, the third chapter of this thesis sought to understand the user experience of recreation conflict in the forests. With this understanding it is hoped that managers can craft a plan to mitigate these concerns and offer fulfilling opportunities for recreation that the community seeks. Interpersonal conflict was most apparent from this study, with mountain bikers causing goal-interferences most, followed by equestrians, dogs and ‘everyone else.’ Many of the conflict experiences were based on concerns for speed, safety, waste, and resource
damages. Equestrians experienced conflict the most of any user group in this study, and they sought a mainly educational approach to mitigating this concern. They wanted to teach others the reasons for yielding rules and how to behave safely around their large flight response companions. Although many of the conflict dynamics in this research were very similar to experiences documented in previous studies (Carothers, Vaske, & Donnelly, 2001; Heer, Rusterholz, & Baur, 2003; Moore, Scott, & Graefe, 1998; Needham, & Rosenberger, 2011), there was one interesting reversal in the asymmetry between hikers and bikers where bikers expressed greater concern about conflicts on the trail. Though they may share an equal amount of problematic encounters in the forest that cause conflict, it is apparent from the qualitative study of this experience that mountain bikers are more concerned than these other user groups about the disruption of their experience. This may be exacerbated by the fact that there are few opportunities in the forest created with a mountain biking experience in mind. Walkers who already have a sanctuary away from the disturbances other types of use may still have an equivalent amount of conflict, they may not be as concerned about the issue because of the opportunities they have available to them for refuge.

One unique recommendation out of this study was the users’ suggestion to use an approach much like the recreational opportunity spectrum (ROS) to zone areas in the forest with a more indirect approach. They recommended defining zones for expected recreation opportunities and with the research team proposed a system of designing trails
in those zones for a particular primary use (such as mountain biking). Similar to the
difficulty levels of a ski resort or cross-country ski trails, but also with the influence of
the concept behind ROS of offering diversity, this would help visitors have expectations
about their visit on that trail that will match what they are likely to encounter. However,
there is reason to doubt if this approach could mitigate or exacerbate conflict occurrences
in the forest. It is possible that setting expectations clearly could increase the disruptive
effect on an experience that does not match that expectation. More general expectations
may allow for a broader array of acceptable experiences. However, despite managers’
best efforts to create a zone where specific goals can be fulfilled, an otherwise acceptable
experience could become an interference in these defined spaces. Therefore, effectiveness
of this approach should be studied further.

It is clear from this research that users in the OSU Research Forests seek more
diverse opportunities than the current official recreation program offers. With the
recommendations and rich understanding of their preferences and experiences uncovered
in this research, managers may continue to strategically grow programs in a way that
offers the satisfactory opportunities users seek in the forest. This may also help mitigate
some of the forest managers’ concerns for the resource. For example, it may reduce
unauthorized trail building which crisscrosses the forest and disrupts important other
functions of the forest such as the research, teaching, demonstration, and harvest goals for
the forests. Managers in other natural areas may want to similarly engage their own
recreation community in a process to study and understand the experiences, preferences, and concerns of their own recreation community. Should they be in a similar context, they may also learn from the findings of this research study. In a WUI forest with an engaged population of regular visitors who appreciate and enjoy hiking, biking, riding, running, and hunting in their own backyards, managers may also find their users prefer strategically crafted recreation opportunities which indirectly manage for diverse experiences in the forests that minimize their impacts on the environment.
References


Needham, M. D., & Rosenberger, R. S. (2011). Public support, demand, and potential revenue for recreation at the McDonald-Dunn Forest (Final project report for Oregon State University College Forests and College of Forestry). Corvallis, OR: Oregon State University, Department of Forest Ecosystems and Society.


APPENDICES
Appendix A – Questions for Series One Focus Groups by Recreation User Group

1) Imagine the ultimate College Forest of your dreams in 20 years – what does it look like and how is that different from today?

2) What is most important to you about recreating in the College Forests?
   a. What management actions would you recommend to promote these important aspects?

3) Do you have issues, concerns or barriers regarding your recreational use of the College Forests?
   a. What management actions would you recommend to address these concerns?

4) When you visit the College Forests, do you come wanting to learn something or solely for the purpose of recreation?
   a. What do you want to learn about?
   b. How would you like to receive this information?

5) Mapping exercise: using maps to spatially represent the topics discussed. Mark areas in the forest with the following colors to represent this discussion.
   a. Green – What locations, if any, would you like to be able to access? Write in the margins or nearby what type of access, if any, you desire for the locations of interest.
   b. Blue – Identify any areas or zones that exemplify what you feel is important to you about recreating in the College Forests. Please add notes in the margins regarding why it’s important.
   c. Red – Identify any areas or zones where your concerns, issues or barriers occur most frequently.
Appendix B – Focus Group Ground Rules

1) Brainstorm, don’t evaluate feasibility.

2) Balanced contribution from all.

3) Listen more than you speak.

4) Respect other’s opinions, especially when they differ from your own.

5) Avoid side conversations.

6) Stay on topic, use ‘the parking lot’ (place to write down topics that warrant discussion but are currently off topic to come back to later).
Appendix C – Meeting Agendas for Series Two Focus Groups, College Forests Recreation Collaborative

Meeting One Agenda

Introductions:
1) Who you are, your preferred recreation activity in the forests, and your affiliations with community groups
2) What brings you here today?
3) What do you hope we can get out of this project?

Presentation of background, objectives & results from first series focus groups
- Background: Paired goals
  1) Planning – community recreation recommendations
  2) Research study:
     a. What are the direct and indirect environmental, social, and facility preferences of College Forests Recreation stakeholders?
     b. What management strategies do College Forests Recreation stakeholders prefer utilizing to address user conflict?
- Background: Location
  o 8 Forest plots, 14,488 acres total.
  o McDonald & Dunn Forests: 11,510 acres, 11,500 visitors annually, 150-200,000 visits
  o Recreation uses: hiking & dog walking, trail running, mountain biking, equestrian, and hunting (Dunn)
- Background: Management history, Forest uses
  o Research & demonstration
  o Teaching: Oregon State University’s living classroom
  o Free daytime public access recreation
  o Timber harvest
- Background: Need for action
  o Minimal trail system
  o Frequency of user-conflicts
  o Presence of unauthorized, user-created trails
  o Strategic planning lacking, vs. opportunistic planning
- Process: Spring Focus Groups
  o Stage One: Brainstorm
  o 5 groups by use type: mountain bikers, hikers & dog walkers, equestrians, trail runners, and hunters
  o 2 hour sessions
  o April – June 2013
- Process: Collaborative and beyond
  - Our goals: Recommendations for planning by priority, cross-user solutions, and how we move forward from the ideas we heard.
  - Your role: represent the interests of your community.
  - Reviewed future forest planning process.
  - Today’s meeting task: generate “top topics,” what topics are the most important for us to discuss?
  - Reviewed ground rules for meetings
    - Balanced contribution from all.
    - Listen more than you speak.
    - Respect other’s opinions, especially when they differ from your own.
    - Avoid side conversations.
    - Stay on topic
- Results of First Series Focus Groups: Major Themes
  - Trails
  - University Relations & Management
  - User Conflict
  - Access
  - Use Types and Extent
  - Ecology
  - Information & Education
- Results of First Series Focus Groups: Most prevalent topics
  - Trail surfacing
  - Parking access expansion
  - Conflict
  - Zoning
  - Maps
  - Poop
  - Unauthorized trails
  - Trail design
- Results of First Series Focus Groups: Very prevalent topics
  - Funding & volunteerism
  - Access hours
  - University teaching & research
  - More on trail design
  - Pests & invasive species
- Results of First Series Focus Groups: Somewhat prevalent topics
- Signage
- Difficulty rated trails
- Building recreation community
- Connecting trails
- Viewpoints
- Decision-making process
- Expansion, increase use
- Harvest thinning practices
- Increasing access point

- Time for questions

**Sticky note brainstorming exercise and discussion of future topics**
- First, finish writing and post topics you find important to continue discussing.
- Next, as a group work on categorizing the topics into categories.
- Finally, sort those categories into one of four groups: one of next three meetings (1,2,3) and the fourth “parking lot” group of topics we will answer should we have time.

**Meeting Two Agenda**

**Introduction**
- Goal for today: Discuss the kinds of recreational opportunities we want to offer in the forest.
- Goal of future meetings: Define the specific characteristics of these opportunities.
- Goal of group: come up with cross-user recommendations to feed into recreation planning process
- Review Limits of Acceptable Change framework
- Review ground rules for the group
- Conduct introductions for group members

**Review Limits of Acceptable Change framework & how we’re applying it to this process**
- Looking back at the LAC process, we are using this framework for planning because of the degree of flexibility it gives us in defining what we want to achieve.
- With this collaborative we are focusing on step 2, “Define & Describe Opportunity Classes.”
- So what do we mean “opportunity class”….
For example: an opportunity class might be “urban park” and the opportunity offered there might include picnicking, places for children to play, that sort of thing.

Or, an example of a zone suggested by a focus group participant:

“Could you even have special usage areas, for instance, like, parks for people that have little kids and want to take them out in the woods but for those of us who want to be further out in the woods, the park would be kind of like a buffer for those people that want to bring their kids initially out in the woods but …we could be past that park…As more people start to come out there and don’t want to go that far, into the woods, those areas would be there for them.” Hiker

- A definition we get from the Forest Service is that an opportunity class is…
Definition (Stankey et. al., 1985, p. 6): “a qualitative description of the kinds of resource and social conditions acceptable for that class [or type of experience] and the type of management activity considered appropriate. Opportunity classes are not on-the-ground allocations [or zones as we have been discussing already], nor are they derived from specific conditions found within the area. They are, instead, [this is the important part] hypothetical descriptions of the range of conditions….”
- They are “setting descriptions,” or to put it most explicitly, they are descriptions of the type of recreational opportunities we desire to have in the forest.
- The key advantage of using “opportunity classes” is that we can shape and define what they are and how they are applied ourselves. While it is a common recreation planning framework, it has enough flexibility that we can fit needs and concerns we heard in our focus groups.
- With it, we get to define our own structure of opportunities we offer.
- One version of an “opportunity class” structure that we can use as a base for creating our own is the Recreational Opportunity Spectrum.
This spectrum defines opportunities as ranging from “Primitive”
*write on left side of white board*
This means an area where the environment is modified very little, where evidence of use is minimal and management is essentially free from human-induced control and restrictions.
*big arrow across board*
The other end of the spectrum we have “Urban”
*Write on right side of board*
In between there are a few other categories:
*Write-in from right to left: Rural, Roaded Natural, (skipped semiprimitive motorized) Semiprimitive non-motorized*
What we want to do today is to think about the type of opportunities we want to offer on the College Forests, or the features that might define those opportunities, and place them onto this spectrum.

From that we hope to find potential groupings of opportunities that might fit together into a “class” together, our goal being up to 5 “classes” that we define.

In our future meetings we will take some time to define the specific features of each of these classes. Ideally next meeting we will look at trail design and in our last meeting talk about access. We will also cover maps and outreach in these meetings.

We are, however, figuring this out with you as we go along, so be patient with us and know our process with this group is flexible if we need to make changes.

Review quickly the results of the first focus group series
- Before we start making opportunity classes, let’s review what we learned from our focus groups to give us ideas of what opportunities the community wants.
- Break up into 3/4 groups of 3/4…
- Each group will get one of our broad themes, and your job over the next 10(?) minutes is to look over your summaries and pick out key ideas brought up for your theme.
- Whoever in your group has the best, big handwriting should scribe for your group because we will post these on the walls so as we move onto our spectrum we can look around at what sort of things we might include.
- We have fresh copies of the results summary here for you to use, or if you happened to bring yours, you can take those out.
- To start us off, the research team made flip charts for the topic of Conflict as an example and because that is a tough topic to parse out.

Opportunity Class Discussion
- What kinds of opportunities do we want to see based on these results?
- Begin putting together a structure based on conversation.

Meeting Three Agenda

Agenda Review
- Past meetings…reviewed results and selected topics important for us to discuss, placed us into a framework and talked about opportunities we want to offer in the forest…
- Goal for today: Define our opportunity classes and begin discussion what designed uses we want for trails and the types of trails we want
- **Goal of future meetings**: Where these trails are appropriate, map out what we have and discuss any additional topics.
- **Goal of group**: come up with cross-user recommendations to feed into recreation planning process
- **Framework**: Tying to the LAC, going back to this as a potential framework for our planning process, we are really focusing on the first two stages of the LAC (refer to the poster)

**Results Review**
- Hopefully our activity last week to try and understand better what we heard in the focus groups was helpful in some way, even though it didn’t achieve exactly what we were hoping for. So instead, I took some time over these last two weeks to put together some summaries on these flip charts. The idea is that we have this information, quite literally, in the background of our conversations so we can use it to guide our thinking.
- Quick overview.
- In our last meeting, we discussed the types of opportunities we would like to offer in the forest, and from our discussion we were able to put this possible classification system together.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities</td>
<td></td>
<td></td>
<td>Dog bags</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Trailheads</td>
</tr>
<tr>
<td>Managerial presence</td>
<td>Indirect methods</td>
<td>On-site management actions</td>
<td></td>
</tr>
<tr>
<td>Experience</td>
<td>Exploration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpretation</td>
<td>Non-signage methods</td>
<td>Interpretive signs appropriate</td>
<td>Interpretive signs appropriate</td>
</tr>
<tr>
<td>Directional Signage</td>
<td>None</td>
<td>Some</td>
<td>Lots</td>
</tr>
<tr>
<td>Messages</td>
<td>Interp</td>
<td>Interp Etiquette?</td>
<td>Interp Introduction Direct to experiences</td>
</tr>
<tr>
<td>Night use</td>
<td>Mountain bike</td>
<td>Other uses</td>
<td></td>
</tr>
<tr>
<td>Access points</td>
<td>Remote</td>
<td></td>
<td>On-site</td>
</tr>
<tr>
<td>Unauthorized trails</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trails</td>
<td>Difficult</td>
<td>Small, intimate</td>
<td>Use roads Easy Accessible</td>
</tr>
</tbody>
</table>
Opportunity Class Discussion
- Working from where we started last week, let’s fill in the gaps.
- Remember the possibility of a 4th class, and more topic considerations.

Designed Use Discussion
The Opportunity Classes help us define what we want on the landscape, and we will place them on our map next week. However, it does not specifically address how we want to manage our trails for the type of use they receive and how we manage the various uses. We want the group can talk about this more and come up with some recommendations.

From what we have heard in the last Collaborative meeting, we propose that we develop some recommendations around the idea of “managed use” and “designed use.” So what do we mean?

*write definitions on board*
- Managed Use: a mode of travel that is actively managed and appropriate on a trail, based on its design and management. A trail can have multiple managed uses.
- The Managed Uses for a trail are usually a small subset of all the allowed uses on the trail, that is, uses that are allowed unless specifically prohibited. For example, on a trail that is closed to all motorized use but open to all non-motorized use, the Managed Uses could be Hiker/Pedestrian and Pack and Saddle. The allowed uses, however, would also include bicycles and all other non-motorized uses.
- Designed Use: the managed use of a trail that requires the most demanding design, construction, and maintenance parameters and that, in conjunction with the applicable trail class, determines which Design Parameters will apply to a trail.
- In other words, it’s the use for which the trail was primarily designed.
- Specific trail design parameters (trail width, grade, appropriate structures, etc.) for each designed use are well established (FS, IMBA, etc.) and we can draw on them when we pull our plan together.
- What we propose as a possible structure; each trail will have
  - 1 designed use which drives the trail design
  - 1 to many managed uses, or who can use the trail
- What do you all think about that?
- What does that mean on the ground?
- So the trail is designed for a specific use…
- How is that communicated?
- How do we manage expectations of visitors?
- How do we provide for safety and reduce potential conflicts?
- Use an example: a trail was designed for equestrian use. Is it appropriate to allow other uses? How do we communicate that it is an equestrian focused trail? How do we inform other uses of specific needs of that trail?

Goal of this conversation is to define how we would manage designed uses on the ground.

To further this conversation, we want to get at the sort of trails we want for each type of user in the forest, what are our designed uses?

- From our discussions so far we put together this worksheet. We tried to identify what we think those trail types might be which are the subjects for each section, but there may be others and you have space to define those.
- To fill these in let’s take our last 10-15 minutes before we wrap up to individually, or in groups of primary use, to fill these in. Please take note of the notes section and use this. As we won’t be able to hear each of your comments regarding why you chose what you did in the recording, its important you make a few notes about what those considerations are.
- At the end, once you’ve finished, if you still have time please make note also of any key details of trail design we want to be sure the trail type. Remember, we don’t have to go too far in depth because there are trail standards already established that we can use.

<table>
<thead>
<tr>
<th>User Type</th>
<th>Backcountry</th>
<th>Technically Difficult</th>
<th>Long Distance</th>
<th>Beginner/Park/Accessible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equestrian</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Mountain Bike</td>
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<td></td>
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<tr>
<td>Running</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Hunting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with disabilities</td>
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</tbody>
</table>

*Meeting Four Agenda*

**Agenda Review**

- Today we are going to wrap things up and discuss what role you want to have in the future planning process. Start with…
- Reviewing & mapping our opportunity classes
- Discussion around trail types, clarify some important questions there
- Map in some ideas for trails, where our trail types fit on the landscape
- Wrap up – look back at our topics from first meeting, parking lot issues, & discuss how you want to be involved

Opportunity Class Mapping

Show opportunity class structure created in previous meeting: Are there any major issues with the opportunity classes that you want to voice before we start mapping them? Any critical things we missed?

For our first mapping exercise, we are going to put these classes on our forest maps to guide the decision around where these type of opportunities should be offered.

We have four maps, different colored markers, and we’ve divided you into four groups with the intention of having diverse users in each.

Circle areas in the forest you would like designated for each opportunity class.

- Yellow: Developed
- Green: Semi-remote
- Blue: Remote

Then, you can use Red to circle any areas that maybe don’t fit in our existing opportunity classes. If you do this, make notes on the map of what characteristics might describe this area, why doesn’t it fit?

In the end we’ll have 4 different maps, but that will give us different options when it comes to later planning to work around other constraints, some flexibility. So, they don’t have to be perfect. Your opportunity class allocations could even overlap if needed.

Trail Types: primary use & exclusion

- You may have noticed in the trail type definitions that Ryan & I switched it a little bit and changed the language from “designed use” to “primary use.” With the confusion we saw last week we think this term reflects better what we mean and what we are trying to get at.
- So, what do we mean “primary use.”
  - For example: there may be a technical trail built primarily for equestrians, but managed for other uses also. So, primarily designed for technical equestrian, but with other uses allowed.
  - We talked about this a little last week, with the idea of having some signage where the primary use for the trail might be at the top of the sign, in a different color, with other allowed or managed uses identified below that. Maybe with some explanation of this in our developed areas.
or on our park trails and online, and integrated into our maps and brochures.

- Before we go ahead with this sort of plan, we want to know more about what you think about this idea. We are hoping to hear more from people who haven’t spoken as much particularly.
- How do you feel about having some designated primary use trails in addition to multi-use trails?
- Where is the balance point between primary use and multi-use?
  - *write on board*
    - Primary |-------------------| 50/50 |-------------------| Multiuse
  - If each of you can come up here, take a marker and mark where you would place the balance. *research team try to gauge a point of central tendency*
- Also important to primary use is the issue of exclusionary use.
- For example, currently in the forest we have a few trails like this. In the Peavy arboretum we have some Park like trail which are only for pedestrian use. Or there is the Section 36 loop trail, more of a Forest trail, which is only for pedestrian use, and other trails such as Calloway Creek which is closed seasonally to bikes and year round to horses. Current reasons for prohibiting some users is to protect the trail tread and reduce maintenance needs, and to provide some trail opportunities on the forest for pedestrians only (reduce conflicts with other users)
- What reasons do you see as valid for precluding some types of use from some primary use trails?

Trail Mapping
- For our last activity together, we want to get on the maps the trails you think are most important for us to focus on. So, we have 5 more maps and we are going to divide into user groups for this one. For your user group, identify new and existing trails, whether you want them as primary use for your group, or as multi-use, and what type of trail from our list. You won’t have time to make decisions on every trail as a group, so focus on primary use first. If you have extra time, then identify trails for managed use.
  - Green: Primary Use
  - Blue: Multi use
  - Write along the trail what type you think it should be.

Wrap-Up & Moving forward
- Review the important topics you wanted to talk about from our first meeting together.
- Review each category (“I think we have what we need on this topic to move forward” and you will have another opportunity to weigh in as we synthesize the information) for:

- Access & Parking:
  We need better parking & some trouble spots have been identified. Still a question of whether it should expand or not which is highly tied to use level, an indicator of social conditions, appropriate for stage 3 of the LAC process. We recognize more work needs to happen here, but hope this can be considered later in the process. You will have another chance to weigh in on this later in the process.

- Opportunities for People with Disabilities:
  made some ground here, but will need to consult more later about the specific trail design needs, Gabe, Ryan will be contact with you?

- What’s next? Process moving forward:
  o Synthesize the results of these meetings into a product
  o Review by this team and the public
  o Start internal planning process; resource side
  o Public input on final product

- How would you like to be involved in that process? What role should this group serve? Another group? The public? Or not?