Monitoring Outstanding Opportunities For Solitude

BY CHAD P. DAWSON

Introduction

The legislative definition of wilderness in the United States includes the requirement for several specific characteristics or conditions, including "has outstanding opportunities for solitude" (P.L. 88-577, Sec. 2c). Since solitude is a distinguishing characteristic of wilderness, the various interpretations of its meaning have led to a substantial amount of management discussion and research to define or measure its important components. This article's emphasis is on the characteristics or conditions that can be managed in wilderness areas and that are necessary for visitors to achieve solitude. It is also recognized that the visitor's experience of solitude (e.g., psychological-social experiences) and achievement of solitude are important, but they are not the subject of this article.

Solitude in the context of wilderness does not mean complete isolation, nor is solitude at the other end of a continuum from crowded. Rather, it has been construed to mean separation from others and the influences of others. The conditions necessary for solitude often refer to some degree of separation in sight, sound, and distance between visitor groups who are within the wilderness and from outside the wilderness (see Figure 1). The word *solitude* is generally used to refer to a small group of people—sometimes solitary individuals—who are separated from other groups and encounter relatively few other groups of visitors along trails (e.g., away from access points), at hiking destinations (e.g., lakes, vistas, and landscape features), and at campsites for overnight visitors. Crowding and congestion at access points can affect the opportunities for solitude. Solitude is not the only appeal of wilderness, and for many visitors it is not the most important condition; however, it is an expected condition by many visitors.

Research on wilderness visitors supports the importance of solitude as a condition or characteristic of wilderness and as an experience achieved, to some degree, by visitors. Historically, visitor density and group-to-group encounters were considered to be the best guide for determining if there were opportunities for solitude and to use in correlation with visitors' self-reported achievement of solitude (Gramann 1982). Visitor research has shown relatively weak statistical relationships between some wilderness conditions (e.g., visitor density, group-to-group encounters) and visitor experiences (e.g., perceptions of crowding, achievement of solitude and privacy, group-to-group conflicts). However, there exists enough published information to support the concept that certain density and encounter conditions are related to perceptions of crowding or achievement of solitude as an outcome or experience (Manning 1985 and 1999; Patterson and Hammitt 1990; Hollenhorst, Frank, and Watson 1994; Watson 1995; Stewart and Cole 2001).

Privacy is a concept related to solitude and is considered to focus on a group experience; provide freedom of choice in social settings; have an element of reducing vulnerability to others outside the group; and to include some degree of autonomy from other groups (Hammitt and Madden 1989). Privacy includes solitude as one of its dimensions, and Hammitt and Rutlin (1995) argue that privacy may be a better concept to use when studying visitor-to-visitor encounters because it includes aspects of social control, freedom of choice, management of interactions with others, and solitude. Although studies of privacy have provided some insights into the concept of solitude, the Wilderness Act specifically refers to solitude.

Coping mechanisms used by visitors to maintain solitude or privacy have been studied as a way to see how visitors maximize their experiences while in wilderness (Hammitt and Patterson 1991; Johnson and Dawson 2004). Coping mechanisms include changes in physical behavior (e.g., spatial and temporal choices) and changes in social behavior (e.g., avoiding social interaction, cognitive coping). Measuring coping mechanism use is an indirect approach to understand the

conflicts, hassles, and disruptions in solitude that were experienced by visitors. Quantifying these impediments and limitations to solitude may be easier to measure than solitude or privacy achievement and could provide insights into what detracts from outstanding opportunities for solitude (i.e., indicator of the lack of outstanding opportunities for solitude).

Various indicators of the quality of recreation experiences in wilderness have been used and proposed to help managers monitor if they are providing wilderness characteristics through management activities and regulations (Manning and Lime 2000). The use of indicators is well known in the Limits of Acceptable Change planning process; however, selection of indicators and monitoring them is not common. Monitoring activities are increasing across a wide range of wilderness planning and management situations due to the development and use of indicator variables by researchers over the last several decades (Hendee and Dawson 2002).

Monitoring Wilderness Solitude

The conditions in wilderness are of primary concern to managers because they are required to directly manage for solitude opportunities in wilderness. The type of use by visitors, number of encounters with other visitors, visitor density, and location and distribution of use are subject to monitoring and control by managers who may establish visitor use levels to protect wilderness solitude. For example, as one measure of wilderness solitude, managers may monitor users to estimate the number of parties encountered per day by a group while traveling on trails or waterways in wilderness.

Some of examples of the potential indicators that managers can use to measure wilderness conditions related to solitude include three categories of indicators.

1. **Presence of others:**
   - Mean number of group-to-group encounters per day along main and secondary trails (i.e., away from access points).
   - Mean number of group-to-group encounters per day at hiking destinations (e.g., lakes, vistas, and landscape features).
   - Number of nights camped out of sight and sound of others at designated campsites (i.e., for overnight visitors).
   - Percentage occupancy per night at designated campsites.
   - Mean number of visitors per mile each day on main and secondary trails by weekday and weekend day and by season.
2. **Separation from sights and sounds originating outside wilderness and infrastructure within wilderness (see Figure 2):**
   - Percentage of wilderness area that is out of sight and sound of human activities originating from outside the wilderness.
   - Percentage of wilderness area that is more than one-quarter mile from all wilderness facilities and structures (e.g., lean-tos, ranger cabins).
   - Percentage of wilderness area that is more than one-square mile from all wilderness trails.
   - Average number of structures per acre (e.g., campsites, bridges) in the wilderness.
3. **Disruption, conflict, or negative behaviors of others that reduces solitude:**
   - Number of enforcement citations issued per year within an area.
   - Percentage of visitors who changed trip plans due to the behavior of others.
   - Percentage of visitors who changed trip plans due to management actions.

Figure 1—Hikers approaching South Sister in the Three Sisters Wilderness managed by the U.S. Forest Service (OR). Photo by Chad Dawson.

   - Average time spent within sight and sound of others during wilderness travel.

Measurement of some indicators, like encounters, may require complex monitoring protocols (Watson, Cronin, and Christensen 1998) due to different types of use, users, and equipment that may be mixed together in some locations and situations (e.g., pack-stock users and day hikers, wilderness experience adventure program boaters and fly-fishing trout anglers). Since access points and the associated congestion are not typical of interior wilderness areas and are not representative of encounter conditions for the area, monitoring the uneven distribution within wilderness is necessary. Other complexities include the fact that recognizing and defining groups traveling together may not be the same as how the group defines itself (e.g., a larger backpacking group may be made up of

Figure 2—Looking over Dillion Reservoir to the Eagle's Nest Wilderness managed by the U.S. Forest Service (CO). Photo by Chad Dawson.

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a fast-moving sub group and a slow-moving subgroup of hikers and only recombine at the campsite), and such a distinction is fundamental to measuring separation in sight, sound, and distance between unrelated individuals and groups.

There are numerous challenges and barriers to monitoring the indicators. For example, it cannot be assumed that all encounters are similar in type, because some group-to-group encounters may include conflicts in goals or activities whereas others may not. Also, the perceptions reported by visitors in surveys and interviews are not easy to interpret for monitoring wilderness conditions as these are visitor experiences and not wilderness conditions; visitor experiences are influenced by a wide variety of intervening psychological, social, experience use history, and environmental factors. The wilderness condition indicators monitored by managers need to be quantifiable variables like actual group-to-group encounter level for a specific wilderness area.

Potential Research Questions

One concern is that managers may choose indicators based on other management plans or the variables developed by researchers, and they do not conduct an analysis of the appropriateness of an indicator for their management situation (Watson, Cronin, and Christensen 1998). The technical aspects of implementing a protocol to use a particular indicator is more complex than it may seem at first; for example, whether an encounter indicator is measured per hour or per day or at the most heavily used times of the day, week, or month all require different interpretation. Monitoring of visitor-to-visitor encounters on trails and destinations is best conducted accurately and reliably by different methods (e.g., trained observers, time-lapse photography) under different circumstances. This example is further complicated by the fact that there may be different types of use, users, and equipment mixed together in some locations and situations (i.e., encounters between similar users may be more tolerated than encounters with different types of users).

Although there are many studies that have identified potential indicators (Manning and Lime 2000), better understanding is needed about how to select appropriate indicators in different situations and how to assess the best method for measurement of the selected indicator. In addition, better information is needed about the differences between actual wilderness conditions for solitude and self-reported measures of solitude and privacy achievement from visitor experiences. For example, monitoring the solitude experiences of visitors in wilderness depends on the approach used, since different approaches provide different information (Watson and Roggenbuck 1995).

Substantial progress has been made in identifying potential indicators of solitude and privacy in wilderness; however, the selection of specific data collection protocols that can be implemented across a series of similar areas has yet to be developed. Furthermore, comparisons between various data collection techniques under different situational factors have not been conducted to assist managers in understanding the various ways that an indicator can be appropriately used. It seems that while the conversations about indicators and the apparent need for their use has been widely engaged, the utilization of the indicators has been limited by the development of practical and tested data collection techniques.

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Table 1—Field monitoring of conditions in the six wilderness areas of the GMNF	
Type of Field Monitoring	**Examples of Information**
Visitor Use and Impacts	
Trail self-registrations	Day vs. overnight users, group size, and residence area
Trail counters	Visitor spatial and temporal distribution of use
Trail condition inventory	Tread erosion, blowdown on trail
Campsite condition inventory	Vegetation and soil loss, compaction
Field document sheets	Visitor contacts, trail work needed
Biological and Resource Conditions	
Invasive species	Aquatic and terrestrial plan introduction
Air quality	Acid deposition, haze and ozone
Boundary checks	Boundary marker and sign inventory and regulation postings

tor use. The ongoing planning uses the preliminary monitoring results, and subsequent monitoring results will be used to measure compliance with the standards being developed.

Although staff and funding are limited, we have begun to meet the elements that require monitoring. For example, noxious and invasive plants like Japanese barberry are being hand pulled in these relatively small wilderness areas. Studies of visitor impacts on trails and campsites are being measured as wilderness visitor education programs are implemented (see Figure 3). Changes in visibility determined by measurements of air quality range of view help compile information on impacts from downwind pollution sources.

This is the beginning of what will be a long-term monitoring effort to ensure wilderness qualities for present and future generations. The decision was made to start these monitoring processes on the wilderness areas of the GMNF under the assumption that these modest beginnings were a positive step toward the information database needed to steward these valued resources.

Figure 2—Visitor impacts accumulate around attractive features like lean-tos in wilderness. Photo by Ken Norden.

Figure 3—Boundary signs on the Lye Brook Wilderness, GMNF. Photo by Ken Norden.

KEN NORDEN is the wilderness ranger on the Middlebury Ranger District for the Green Mountain National Forest. He can be contacted at 1007 Route 7 South, Middlebury, VT 05753, USA. E-mail: knorden@fs.fed.us.

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CHAD P. DAWSON is a professor at the State University of New York, College of Environmental Science and Forestry, Syracuse, and the managing editor of *IJW.* E-mail: cpdawson@esf.edu.