

Monitoring Wilderness Conditions in the Green Mountain National Forest

BY KEN NORDEN

Six wilderness areas in the Green Mountain National Forest (GMNF) range in size from 3,738 acres (1,514 ha) in the Bristol Cliffs area to 21,480 acres (8,697 ha) in the Breadloaf area (see Figure 1). These six wilderness areas comprise 15% of the GMNF and are managed under the GMNF Land and Resource Management Plan and individual wilderness plans. Additionally, a U.S. Forest Service Ten Year Wilderness Challenge has begun that requires six out of 10 primary input elements to be met in each wilderness to achieve the management standard of that challenge. The 10 elements of the challenge are: ensuring a fire management plan with a full range of response options; implementing invasive plant control; establishing air quality baseline; implementing visitor education plan; protecting conditions for visitor solitude; completing recreation site inventory; providing outfitter and guide operation plans; setting adequate standards to prevent degradation of con-



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Figure 1—The wilderness areas of the GMNF are characteristic of the rolling topography and natural forested landscapes of the Green Mountains. Photo by Ken Norden.

ditions; fulfilling information needs; and providing baseline workforce. Several of these elements involve monitoring conditions.

Monitoring is conducted periodically to measure the social, biological, and managerial conditions over time. The reasons for monitoring conditions include (1) measuring changes and impacts on conditions over time, (2) ensuring that wilderness is managed in accordance with the Wilderness Act and related legislations, and (3) meeting the Ten Year Wilderness Challenge.

The GMNF field level monitoring generally falls into two categories: (1) visitor use and related impacts (see Figure 2), and (2) biological and resource conditions. The eight types of field monitoring and examples of information obtained are shown in Table 1.

Standards and guidelines are included in the GMNF Land and Resource Management Plan and wilderness plans to help implement management actions. The wilderness plans refer to the Limits of Acceptable Change planning process as a means of setting standards for impacts caused by visi-

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 plant 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 Fig-

ure 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.

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Manning, Robert E. 1985. Crowding norms in backcountry settings: A review and synthesis. *Journal of Leisure Research*, 17(2): 75–89.

———. 1999. Studies in outdoor recreation: Search and research for satisfaction (2nd ed.). Corvallis: Oregon State University.

Patterson, M., and W. E. Hammitt. 1990. Backcountry encounter norms, actual reported encounters, and their relationship to wilderness solitude. *Journal of Leisure Research*, 22(3): 259–275.

Stewart, W. P., and C. N. Cole. 2001. Number of encounters and experience quality in Grand Canyon backcountry: Consistently

negative and weak relationships. *Journal of Leisure Research*, 33(1): 106–120.

U.S. Public Law 88-577. 1964. The Wilderness Act.

Watson, Alan E. 1995. Opportunities for solitude in the Boundary Waters Canoe Area Wilderness. *Journal of Applied Forestry*, 12(1): 12–18.

Watson, Alan E., R. Cronin, and N. A. Christensen. 1998. Monitoring Inter-group encounters in wilderness. Res. Paper RMRS-RP-14. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station.

Watson, Alan E., and Joseph W. Roggenbuck. 1995. Selecting human experience indicators for wilderness: Different approaches

provide different results. In D. L. Kulhavy, and M. Legg, eds. *Wilderness and Natural Areas in Eastern North America: Research, Management and Planning*. Nacogdoches, TX: Stephen Austin State University, Arthur Temple College of Forestry, Center for Applied Studies: 264–269.

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