

# Citizen Monitoring and Restoration: Volunteers and Community Involvement in Wilderness Stewardship

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**Abstract**—Citizen monitoring and restoration is increasingly viewed as a means to involve local communities in wilderness stewardship. This paper examines research on volunteers participating in five monitoring and restoration programs in Western Montana. Volunteers reported that they gained valuable skills, felt more connected with local wilderness areas, and made an important contribution to wilderness management as a result of participation in volunteer projects. Volunteers also reported that they are more likely to participate in public involvement processes related to wilderness management because of the volunteer experience, and that they would be more informed participants. Consistent with related research, we found that volunteers tend to be more educated and more involved in their communities prior to participation, when compared with the general public. We conclude that realizing the potential of wilderness volunteer projects to build community capacity and nurture civic engagement in wilderness stewardship decisions depends on involving a broad cross-section of local communities in the development, implementation, and evaluation of volunteer projects.

## Volunteering in America

Nearly 200 years ago, Alexis de Tocqueville (1835) lauded volunteerism as the key to democracy in America. In his wake, generations of scholars have made the same argument, that volunteering is critical to civic life in the United States (Wilson and Musick 1999). Most recently, Putnam (2000), in his book *Bowling Alone*, suggests that without volunteering, civic engagement in America would decline and negatively impact democratic institutions.

Volunteering in America is a widely studied topic, with well-funded annual research on the number of volunteer hours contributed by the populace, detailed estimates of who volunteers and for what types of organizations, and the economic contribution of volunteer activities. Volunteering is defined here as free labor provided by individuals through an organization. In other words, working for free for a church, hospital, or library is considered volunteering; spontaneously helping a neighbor or picking up trash is not considered volunteering. Volunteering is planned, directed

helping behavior. According to the U.S. Department of Labor (2004), 65 million Americans (nearly 29 percent of the population) volunteered in 2004. The median number of hours these individuals spent volunteering was 52.

Researchers in social work, psychology, sociology, and the health sciences have documented the broad benefits of volunteering and how participant well-being is enhanced through volunteer work (see Thoits and Hewitt 2001). Benefits include (1) enhancing mental and physical health, (2) increasing social capital and trust in government, (3) providing opportunities for learning and education, and (4) engaging citizens in critical public policy issues.

## Conservation and Volunteerism: The Rise of Citizen Science

In the realm of conservation, many non-profit organizations have long drawn on a volunteer base. During the last decade, volunteers have been increasingly involved in an enterprise known as citizen science, or citizen environmental monitoring. Citizen science programs involve the public in the collection of field data to monitor a variety of environmental conditions.

The longest standing of such programs involves bird monitoring, with the Audubon Society Christmas Bird Count providing an example of citizen science that spans over 100 years. The Cornell Laboratory of Ornithology also engages the public in a variety of backyard and local bird monitoring programs and uses the data to understand trends in bird migration and populations nationwide (Bonney 2001/2002).

Water quality and more general watershed monitoring also increasingly involve volunteers in data collection. In fact, most states in the United States currently have statewide volunteer water quality monitoring programs, and there are more than 700 citizen watershed monitoring programs nationwide (Flemming 2003). Volunteers also monitor weather conditions, invasive species, fish populations, coastline conditions, and the status of a variety of plants and animals. Many of these programs involve schools and youth in the collection of monitoring data.

Nationwide, 26 percent of these data are utilized by the federal government, in particular the Environmental Protection Agency. Approximately 56 percent is used by state agencies, and 55 percent by local governments or community organizations (Ely and Hamingson 1998). Volunteer programs are believed to provide critical data, and to involve the public in important conservation issues. According to Ely and Hamingson (1998), the primary goal of 84 percent of citizen science programs is environmental education.

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About 67 percent of such programs are seeking to establish baseline conditions.

## Wilderness Volunteers: Proposed Outcomes and Benefits

In the wilderness arena, volunteers are increasingly important to both monitoring and restoration. Wilderness volunteers build and repair trails, monitor flora and fauna, restore riparian areas, and inventory campsites.

There is increasing interest in organizing volunteer opportunities in wilderness, and increasing pressure on wilderness managers to utilize volunteers. As with volunteerism more generally, a variety of benefits have been postulated. Wilderness managing agencies face declining budgets and a growing backlog of on-the-ground needs; volunteers can accomplish some of this work at little cost to the agency. There is an increasing concern that the American public is out of touch with wilderness and public lands; volunteer projects bring people into wilderness and may build a constituency for these lands. Finally, there is growing interest in local community and public involvement in wilderness management; volunteers who are aware of resource conditions may be better equipped to engage in management decisions.

A variety of benefits and outcomes related to wilderness volunteering have been proposed in the literature, by non-governmental organizations (NGOs), and by land managers. Wilderness volunteers are believed to:

- Develop a personal connection to the places they work, thereby becoming invested in the future of these lands.
- Gain an understanding of wilderness stewardship, and the challenges wilderness managers face.
- Learn about science and how science contributes to management (in the case of projects where monitoring is a component of volunteer work). In this sense, volunteer projects increase scientific literacy and knowledge of how science improves stewardship.
- Become more involved in public participation processes and wilderness management decisions. Because volunteers are believed to become more invested in the area, and more knowledgeable about management issues, they are presumed more likely to participate in decision-making.
- Increase the capacity of their communities to participate in public land and natural resource management. Through volunteering, citizens learn about stewardship, gain valuable monitoring and restoration skills, and make connections with other community leaders. In this manner, they build the social capacity of their communities to tackle a broad range of natural resource issues.

While these outcomes are widely touted by NGOs and other advocates of volunteering in wilderness, there has been little systematic study of volunteer outcomes for work conducted on public lands and wilderness.

Research to date on citizen science programs provides some insight into the outcomes of volunteerism in the broader conservation arena. Many such studies focus on the learning and educational outcomes of such programs (see Brossard

and others 2005). In many cases researchers are interested in whether or not participants increased their knowledge of the environment and gained a better understanding of science (Trumbell and others 2000). Several studies also examined the reliability and accuracy of data collected by volunteers (see Brandon and others 2003).

In one of the only studies in this arena related to civic engagement, Overdevest and others (2004) examine whether volunteer stream monitoring in Wisconsin increases learning, political participation, and social networks. They found an increase in political participation, personal networks, and feelings of community connectedness. Overdevest and others (2004) claim that citizen science programs have the potential to “improve community environmental and civic capacity” through building skills and social capital.

While we can extrapolate to some extent from the limited number of studies on conservation volunteers in other fields, the benefits of wilderness volunteering need to be specifically documented for a number of reasons. An understanding of actual outcomes and the conditions that foster these outcomes will help wilderness volunteer programs to better achieve their stated goals. Documentation of benefits will further invest agencies managing wilderness in such programs, and assist them in focusing their efforts. Finally, continued funding of and emphasis on volunteer programs can only be justified if at least some of the touted benefits truly exist.

## Research Project

In this study, we examined the experiences of volunteers and the outcomes of volunteer projects through onsite and mail-back surveys. We examined outcomes related to learning and knowledge building, attitudes toward science and science literacy, community involvement and volunteering behavior, and views on the effect of volunteer projects on community capacity and involvement in decision-making. In this paper, we focus on a subset of survey results related to local community involvement and how volunteer projects might influence citizen involvement in wilderness stewardship. We examine the claim that volunteering in wilderness nurtures and builds civic engagement in public lands management, and attempt to measure this potential outcome.

We partnered with four NGOs in Western Montana in order to study a range of volunteers working on a variety of projects with different organizations. We also surveyed volunteers working on a project that we directed.

The participating organizations and projects included:

- Bob Marshall Foundation: Volunteers conduct trail maintenance and construction, and campsite restoration.
- Montana Audubon: Volunteers conduct surveys of cavity nesting birds in recently burned forests.
- Great Burn Study Group: Volunteers monitor recreation, wildlife, and invasive plants, and conduct some restoration work.
- Wildlands CPR: Volunteers monitor a variety of ecological conditions on decommissioned Forest Service roads.
- Wilderness Institute: Volunteers monitor invasive plants, inventory recreation impacts, and conduct some restoration work.

All projects were conducted on National Forest lands in designated Wilderness Areas, recommended wilderness, or other wildland areas.

Surveys were developed in collaboration with each organization, and focused on the proposed outcomes and benefits described above, as well as the individual priorities of participating NGOs. Thus, five similar, but not identical, surveys were developed to allow for comparison between the groups, and to reflect the differences between the projects.

Surveys were either administered in the field at the end of each volunteer trip, or by mail at the end of the field season, depending on the nature of the project. More than 75 percent of the participating volunteers completed the survey (N = 138). Repeat volunteers did not complete the survey more than once (most projects included some repeat volunteers). All study participants were adults 18 years of age or older.

The results reported in this paper include descriptive statistics for those items common to all five surveys. Percentages cited in parentheses after survey responses indicate the percentage of survey respondents who selected that answer. Differences between the groups are not presented in this paper.

## Research Results

**Volunteer Demographics, Motivations, and Community Involvement.** We found that 73 percent of the volunteers were local community members living within a few hours of the project sites. Volunteers were very well educated, and the average age was 34. About half of the volunteers were students, and half were employed. (Only a handful were full-time parents and only 9 percent were retirees. However, there were substantial differences in retiree participation between projects, with two projects involving 17 percent and 27 percent retirees respectively and the other three involving no retirees.). Most volunteers were experienced hikers and backpackers, and roughly half had previous experience with monitoring and restoration work. Volunteers cited a number of reasons for participating in these projects, including:

- To visit that particular Wilderness or National Forest (62 percent)
- To give back to the Wilderness or National Forest (51 percent)
- To learn new skills (41 percent)
- To meet people with similar interests (28 percent)
- To help the Forest Service (20 percent)

Volunteers were very involved in their communities. More than 76 percent volunteered for other organizations, and they volunteered an average of 23 days per year (compared to the national average of 52 hours per year). Nation-wide, the majority of volunteer work is performed for religious organizations, but we found that wilderness volunteers tended to volunteer most often for conservation organizations (while also putting in time for schools and youth programs, civic groups, and religious organizations). Participants in this study volunteered for the following organizations:

- Conservation organizations (46 percent)
- Schools and youth programs (23 percent)
- Civic groups (19 percent)
- Religious organizations (16 percent)

Consistent with previous research (U.S. Department of Labor 2004), study participants cited lack of free time as the biggest barrier to volunteering.

**Project Contribution to Wilderness Stewardship.** Volunteers reported that the projects in which they participated made valuable contributions, and that such projects were important for conservation. When respondents were asked if they agreed or disagreed with the following statements on a scale of 1-5 (with 1 labeled as strongly disagree and 5 labeled as strongly agree), more than half of the volunteers reported that they agreed or strongly agreed by circling a 4 or 5. Reporting on their own experience with the volunteer project, the vast majority of respondents agreed with these statements:

- I feel more connected to \_\_\_\_ Wilderness/National Forest as a result of this trip. (89 percent)
- I made a valuable contribution to \_\_\_\_ Wilderness/National Forest. (78 percent)
- The information collected through this project will be helpful to wilderness management. (79 percent)

When answering about volunteer projects more generally, the vast majority of respondents agreed with these statements:

- Volunteer projects foster an important sense of stewardship (88 percent)
- Volunteers provide valuable information for wilderness/public land management (89 percent)
- Volunteering is critical to conservation of wilderness/National Forests (82 percent)

Volunteers felt more connected to the area where they volunteered, and believed they made a valuable contribution to the area and its future management. Furthermore, they believed that volunteer projects fostered a sense of stewardship, provided valuable information for management, and were critical to conservation. That respondents agreed with these claims at levels well over 75 percent indicates strong, widespread agreement among the volunteers about the value and benefits of such projects.

**Volunteer Involvement in Wilderness Issues and Public Land Management.** We were particularly interested in the involvement of volunteers in wilderness issues and public land management prior to their participation in the study. We also wanted to assess how participation in the volunteer project might affect their future involvement in wilderness management.

To better understand level and frequency of involvement prior to participation in the volunteer project, we adapted a scale from the Overdevest and others (2004) survey of volunteer stream monitors in Wisconsin. We asked each volunteer if they had participated in a variety of activities during the last 12 months. These activities were categorized as passive or active engagement in public land management based on the level of effort and investment required. The percentage of volunteers who reported that they had participated in the following activities during the last year is reported in parentheses.

### Passive Engagement in Public Land Management

- Talked with friends and family about wilderness or public lands issues (91 percent)

- Engaged in personal reading or research about wilderness or public lands issues (73 percent)
- Volunteered for local wilderness or conservation groups (48 percent)
- Joined (or renewed your membership in) a group focusing on wilderness or public land management (47 percent)

#### **Active Engagement in Public Land Management**

- Attended a public meeting to discuss wilderness or public land management (32 percent)
- Wrote a letter to a land management agency about wilderness or public land management (23 percent)
- Contacted a public land manager to discuss wilderness or public land management (12 percent)
- Wrote a letter to the editor of your local paper about wilderness or public land management (12 percent)

While most volunteers were not actively engaged in public land management or public involvement processes related to public lands decision-making, we suspect that reported levels of participation far exceed the general population, indicating that individuals who volunteer for wilderness are already active in wilderness and public land management issues.

Volunteers were also asked how participation in the volunteer project would affect their future involvement in wilderness stewardship. The vast majority of study participants agreed or strongly agreed with the following statements:

- As a result of this trip, I am more likely to participate in public involvement processes about wilderness/public land management (66 percent)
- I will be a more informed participant in wilderness/public land management as a result of this project (72 percent)

Volunteers believed that they would become more involved and be more informed participants as a result of volunteering. Interestingly, only 25 percent reported that their participation in the volunteer project meant that they would have an increased ability to influence decision-making.

In reporting their views on wilderness volunteering more generally, study participants agreed that volunteer projects built community capacity. More specifically, they reported that:

- Volunteer projects build community capacity to work on wilderness and public land management (81 percent)

Volunteers not only imagined they would be more involved as individuals, they also saw benefits to broader communities.

## **The Federal Agency Role in Wilderness Volunteer Projects**

If we are interested in how volunteer projects change community-agency relationships, then the role of federal land management agencies in volunteer projects should be examined. Wilderness volunteers are usually organized in one of two ways. One, a non-governmental organization (NGO) works with wilderness managers to determine the projects and scope of work. That NGO then recruits, trains, and supervises volunteers, ensuring the completion and

quality of the work. Alternatively, wilderness managers can develop volunteer opportunities and work directly with interested citizens. In this case, the agency trains and supervises volunteers, and they are responsible for the completion and quality of the work. In our experience, most projects involving volunteers in substantial monitoring or restoration are directed by an NGO, in close collaboration with agency staff.

In this study, we asked volunteers what the Forest Service could do to facilitate such projects. Respondents cited the following types of agency involvement as important:

- Organize more opportunities for volunteers (72 percent)
- Continue with current efforts (58 percent)
- Visit more with volunteers in the field (41 percent)
- Provide more feedback to volunteers in the field (33 percent)
- Provide rewards and incentives for volunteers (29 percent)
- Specifically thank each volunteer for their effort (21 percent)

Interestingly, while interaction with and appreciation from Forest Service staff was desirable, providing additional volunteer opportunities was far more important to respondents. When asked how important Forest Service involvement is in a project like the one in which they participated, volunteers answered an average of 8 on a scale of 1 to 10, with 10 labeled as very important. Only 1 percent of respondents thought that the Forest Service should simply stay out of the way with regard to volunteer projects.

Volunteers also expressed an understanding of how their work related to broader financial constraints within the Forest Service. More than 86 percent of the volunteers agreed or strongly agreed that, "because Forest Service budgets are declining, volunteer work is particularly important." However, 64 percent disagreed or strongly disagreed that "volunteers let the Forest Service off the hook for work that the agency should be doing." Volunteers view their work as filling an important gap in an era of declining budgets, but do not believe that volunteer projects result in an agency that is not held directly accountable for required work.

While volunteers want the Forest Service to provide additional volunteer opportunities, research and anecdotal reports indicate that many Forest Service staff resist these efforts. Grinnell (2005) identifies several reasons why Forest Service staff hesitate to take advantage of volunteer opportunities. Many required tasks are believed to be too complex for volunteers. Agency staff often have doubts about volunteers' commitment to complete the project. Agency staff are also concerned about gathering consistent and unbiased data. Furthermore, it is clear that many agency employees lack training in and time for working directly with volunteers, which requires substantial investment to ensure quality work and quality experiences for participants.

NGOs and the federal land management agencies need to work together to determine the most appropriate role for agency managers, which may differ project by project. Federal agencies also need to provide training for staff on how to work effectively with volunteers. Additionally, agency staff need to be rewarded for involving volunteers in agency work. Perhaps specific targets should be set for each National

Forest regarding volunteer involvement, so that Forests are required to invest in providing volunteer opportunities.

## **Influence of Volunteer Projects on Community Involvement in Wilderness Stewardship**

### **Self-Selecting Participants: The Challenge of Studying Volunteer Outcomes**

In this paper, we examine a subset of research results related to the influence of volunteer projects on individual and community involvement in wilderness and public land management. We ask whether or not and how volunteer projects increase civic engagement in the wilderness arena. Of all the benefits touted by advocates of wilderness volunteer programs, claims related to civic engagement are perhaps the most difficult to document, primarily because participants self-select.

Social science researchers have documented that people who volunteer share certain qualities. Volunteers self-select for participation and tend to be individuals with a greater sense of personal well-being. Volunteers are also more affluent and educated compared to the general public (Thoits and Hewitt 2001). While the study described in this paper did not measure income, it is clear that wilderness volunteers studied here are more educated and more involved in their communities and public land management, compared to the general public.

How then do we assess claims that volunteer projects nurture engaged citizens and increase community capacity? In other words, how do we isolate the influence of specific volunteer experiences on longer-term civic engagement? Since volunteers are already highly involved in their communities, how do you know what difference participation in a specific project makes? In this study, we used self-report measures requiring that volunteers assess and predict the impact of their participation on their future involvement (similar to the methods employed by Overdevest and others [2004] in their study of such outcomes). While most social science survey research relies on such self-report measures, as researchers we cannot definitively conclude that participants' beliefs that they will be more involved as a result of volunteering will actually result in increased involvement.

Research on volunteerism in general claims that volunteer characteristics such as community involvement, are enhanced by volunteering (Thoits and Hewitt 2001). Some researchers have followed volunteers over time and attempted to assess the impacts of specific volunteer experiences. However, even when volunteers are followed over time, it is difficult to determine what changes are due to general maturation versus the effect of volunteering (Wilson and Musick 1999).

On one hand, there are important claims being made about the effect of volunteering on civic engagement and democratic participation. These outcomes have important implications for wilderness volunteering. However, the measurement challenges described here cannot be ignored, and do not seem to be easily resolved.

## **Do Volunteers Represent and Engage Their Communities?**

A related dilemma exists when we consider how to involve communities in wilderness and public land management. If volunteers do not represent a cross-section of their communities, how does their participation build community capacity and increase community involvement in public land management? Research indicates that citizens who participate in natural resource issues are not usually representative of the communities impacted by management decisions (Marshall and Jones 2005). Participants tend to be wealthier, older, more male, more educated, and have a greater sense of political efficacy compared to the general population. Do these individuals engage their broader communities in natural resource management issues, thus creating a bridge between participants and the community as a whole? Community leaders may have an important impact on the overall social capital and capacity of the community as a whole. Furthermore, desires for broader participation may be unrealistic, given widespread constraints of work, family, and time. On the other hand, we should continue to critically examine claims that individual participation in volunteer projects lead to broader community outcomes.

## **Lessons From Abroad: New Models of Participatory and Community-Based Monitoring**

Internationally, we find numerous examples of citizen monitoring of protected areas. In October 2005, the journal *Biodiversity and Conservation* dedicated an entire issue to participatory, locally based, and community-based monitoring programs that span the globe. These programs involve local harvesters, hunters, tourism operators, livestock producers, and many other residents in the monitoring of a broad range of ecological indicators (see Danielsen and others 2005 for a review). In some cases, these monitoring programs are part of larger co-management projects. Moller and others (2004) claim that community monitoring programs can combine traditional ecological knowledge and traditional science in ways that build community capacity and relationships with managers. Protected areas can build on the traditional knowledge, experience, and monitoring methods of community members, while community members learn about traditional science and gain access to scientific tools and information.

To realize these benefits, volunteers must be much more than free labor. For projects to truly build community capacity and influence involvement in wilderness stewardship, volunteers must be engaged in the development, implementation, and evaluation of volunteer projects. In the case of monitoring, volunteers also need to be involved in the process of "using and interpreting the data" (Lewenstein 2004, unpublished material, on file with author). Only through this sort of volunteer engagement will we realize the goals of building community capacity and empowering communities to become more involved in management decisions.

## Conclusion

In the United States, and abroad, we see a growing movement to involve local communities in wilderness stewardship. Community members are increasingly recognized as having an important stake in wilderness management decisions, and contributing critical local knowledge to stewardship efforts. Volunteer monitoring and restoration efforts provide one important avenue for community involvement in wilderness stewardship.

The outcomes of volunteer projects depend, in large part, on the type of volunteer work, the quality of that work, and who is volunteering (Wilson and Musick 1999). For volunteer projects to realize their potential to nurture civic engagement and meaningful community involvement in wilderness stewardship, such projects need to focus on involving a greater diversity of community members, enhancing those aspects of the project that provide broader community benefits, and continually evaluating proposed outcomes.

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