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Northeastern Recreation Research Symposium Policy Statement

The Northeastern Recreation Research Symposium seeks to foster quality information exchange between recreation, tourism, and resource managers and researchers throughout the Northeast. The forum provides opportunities for recreation and tourism research managers from different agencies, states, and government levels, as well as those in the private sector to discuss current issues, problems, and research applications in the field. Students and all those interested in continuing education in recreation and tourism management are particularly welcome.

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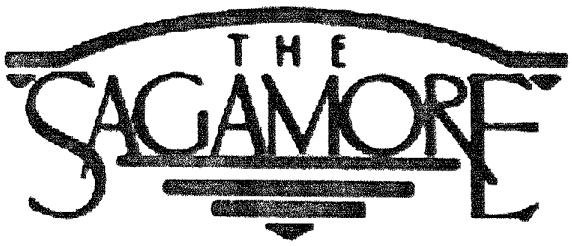

On Lake George in Bolton Landing, New York

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ACHIEVING SUCCESS IN TRAIL RELATED PARTNERSHIPS: THE MICHIGAN STATE FOREST EXPERIENCE

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Abstract: Management of trails has become challenging as funding for their operation and administration has decreased. To contend with shortfalls, resources managers are forming partnerships with stakeholders to meet these challenges. An investigation of two trail programs in Michigan is used to illustrate the benefits of partnerships, key elements related to success, and challenges associated with partnerships.

Introduction

Federal and state lands support an extensive system of trails for hiking, horseback riding, mountain biking, cross country skiing, snowmobling, and off-road vehicle riding. These trails are also used by birdwatchers, photographers, hunters, anglers, and others to access resources. Yet, beyond just facilitating recreational activities, trails provide benefits to both the users and the communities which surround them. For the users, trails offer contact with nature, as well as opportunities for socializing and solitude. Moreover, participation in trail based activities can improve the physical fitness of an individual. Trail users also contribute to local and state economies.

On the whole, trail based recreation activities are among American's most popular outdoor recreational pursuits (Hardt, 1995). Nationwide, participation in trail activities has increased over the past two decades (Hardt, 1995) across all types of settings (Moore and Roberds, 1995). Hiking, walking, and backpacking are considered to be some of the fastest growing outdoor recreational activities nationwide (Cordell et al., 1995). These national trends are mirrored in the northeastern United States. Participation in hiking, backpacking, and cross country skiing has increased from 1979 to 1993 and will likely continue to increase (Warnick, 1995). Mountain biking has also grown in popularity (Ruff and Mellors, 1993) with an increasing number of enthusiasts riding on trails.

With the increased participation in trail based activities, management of trails has become increasingly more challenging. In a 1993 nationwide survey, State Trail Administrators considered adjacent landowners opposition, conflicts among users and uses, and fiscal constraints as some of the most significant trail issues (Moore and Roberds, 1995). In particular, shrinking recreation budgets compound these and other challenges trail managers face such as maintaining adequate safety levels and facilities and protecting resources. As a result, public land managers have increasingly turned to cooperative alliances, referred to as "partnerships," with various stakeholders (Warnick, 1995; Selin and Darrow, 1995).

Partnerships

While the purpose and type of partnerships in natural resource management vary considerably (Selin and Myers, 1994), they are often described as a cooperative arrangements between an agency and group(s) to achieve a collective goal (Uhlik, 1995). The groups may range from profit driven businesses to non-profit organizations and may involve one or more organizations. Partnerships have been formed at national, state, community, and site levels in a wide variety of recreation resource settings (Selin, 1995). The purposes of partnership arrangements in natural resources are extremely broad, including development and maintenance of facilities, fundraising, gathering data, marketing activities, and many others (Selin and Myers, 1994).

Trails have been one of the many recreational programs that have benefited from the development of partnerships (Selin, 1995). The types of trail related partnerships formed range from conflict resolution to construction, development, maintenance, and planning of trails (Moore and Roberds, 1995). As a result of these partnerships, Selin and Darrow (1995) assert that operational efficiency has been greatly improved, services have been expanded to meet constituents' needs, safety standards have been meet, and many other benefits have been realized.

While partnerships have proven to be a beneficial and effective mechanism for improving recreational situations, there are many challenges associated with forming and maintaining successful partnerships. Many researchers have explored the characteristics of a successful partnership and have offered a number of principle elements associated with success. However, few of these studies focus specifically on trail related partnerships. Consequently, the goal of this paper is to illustrate some of the benefits, challenges, and elements of successful trail related partnerships. A recent assessment of the Off-Road Vehicle and Non-Motorized Trail Programs on Michigan's State Forests conducted by the authors will be used to illustrate these points.

Michigan State Forest ORV Trail Programs and Non-Motorized Pathways

The Michigan state forest system encompasses 3.9 million acres. It is also the largest provider of trail based recreational opportunities in the State. Within the state forest system, the Michigan Department of Natural Resources (DNR) Forest Management Division (FMD) maintains 3,600 miles of ORV trails for motorcycles, three and four-wheeled all terrain vehicles (ATV), four-wheeled drive trucks and sport utility vehicles, and specialty vehicles such as dune buggies. There are also 1,100 miles of non-motorized pathways managed for hiking, cross country skiing, horseback riding, and mountain

biking. While not a focus of this paper, the state forests also provide almost 5,000 miles of snowmobile trails.

In 1990, Michigan Public Act 319 of 1976, commonly refered to as the ORV Act, was amended by Public Act 71. This new act required all ORVs to be licensed annually. The revenue collected from the sale of these licenses is deposited in the restricted ORV Trail Improvement Fund (ORV Fund) created by Public Act 17 of 1991. In addition, PA 17 authorized the distribution of funds in the form of grants to public agencies, non-profit clubs, and organizations for environmental restoration, general trail improvements, maintenance, sign replacement, and law enforcement. This ORV Fund and grant process effectively created a partnership between trail stakeholders, environmental interests and the DNR.

Since the initial year of the ORV Fund, 160 grants totaling over $3.6 million have been awarded (personnel communication, Steve Kubisiak, 1997). Of this total, $2.5 million has gone towards maintenance of the ORV system. In addition, $630,000 has been granted to county sheriff departments across the state for local law enforcement patrols on public lands, and $500,000 has been used to restore damage caused by ORVs, mostly in off-trail locations. Since 1991 the ORV Fund and the partnerships between grant receipients and the DNR have considerably improved the ORV trail system.

In contrast, the non-motorized pathways have no similar legislatively-sanctioned partnership to maintain the 1,100 miles of state forest pathways. As a result, managers of that system face many challenges. An inadequate funding base has contributed to deteriorating conditions of the pathway system (Michigan State Forest Advisory Committee, 1995; DNR, Recreation Division, 1992). An investigation of these two program by the authors has shown five principles that have led to a more successful situation for ORV trails and their management.

Key to Elements to Successful Trail Related Partnerships

Program Funding

Funding for the ORV Program is paid directly by the users through an annual $16.25 ORV license fee and a miniscule portion of state gasoline taxes. This results in an annual program budget of $1.5 million, of which an average of 70% is used in the grants program. In its initial year, $350,000 was distributed, while in the most recent year (1996), $870,000 was awarded to public agencies and non-profit organizations for maintenance, degraded site restoration, operation, and law enforcement. The ORV license fees are generally supported by ORV users and trail organizations, because of the direct visible improvements that have been made to the ORV system since the initiation of the ORV Fund. For instance, virtually all trail miles are brushed annually and safety signs checked. Furthermore, maps have also been developed for all trails, and most recently six trailheads are scheduled for construction in 1997/98.

By contrast, the non-motorized pathways currently have no earmarked funds for maintenance or operation and users pay nothing towards the program except in sporadic voluntary contributions mostly related to cross country ski grooming (DNR, Recreation Division, 1992). Nevertheless, the pathways program has expenditures of $0.4 million annually (Lynch and Nelson, 1995). Funding for maintenance and operation has been provided primarily by user fees from state forest campground campers and state general fund dollars (Michigan State Forest Advisory Committee, 1995). In addition, non-profit organizations such as the North Country Trail Association, Michigan Trail Riders (equestrian), Michigan Mountain Biking Association, local cross country ski clubs, and others volunteer time and contribute money in developing and maintaining pathways. Lastly, funding for the pathway program also comes from the Recreation Improvement Fund whose source is the state gasoline tax. Most of the money from this fund, however, is for capital improvements and is devoted to major projects such as pathway and bridge construction. It is rarely used for annual maintenance and operation of the system.

Advisory Committee

One formal link between agency and constituents is a recognized citizen advisory committee. The committees may be constituted by statute or agency policy. Typically, such a committee is an on-going effort to act as a sounding board concerning agency policies and initiatives. Members are generally appointed by the director of the managing agency and the membership makeup is often specified to include representatives of certain user groups or organizations.

The Michigan ORV Advisory Committee has 7 members and was created by PA 71 of 1990. The members represent the major ORV organizations in the state, ORV dealers and environmental interests. Many of these organizations are also the receipients of ORV Fund grants. Their sole focus is on ORV issues and the ORV trail and route system.

The pathway system has no comparable advisory committee. The Michigan Trailways Committee has 5 members and was created by statute in 1994 (PA 451). While the membership is composed of non-motorized trail advocates, it is focused on the conversion of abandoned railroad rights of way to trails. Hence their focus is in a different direction than the pathway system, as very little of that is former railroad right of way. Futher, much of their effort relates to capital improvement, not maintenance and operations. Second, the Michigan State Forest Recreation Advisory Committee was also statutorily created (PA 115 of 1991). The committee's scope includes state forest pathways, but it goes far beyond that to include all 3.9 million acres of state forest and a host of recreation facilities and opportunities. To date it has focused the major share of its energies on the restoration of the state forest campground system and development of a strategic plan for forest recreation entitled Forest Recreation 2000 (State Forest Recreation Advisory Committee, 1995).

Grant Process

The Forest Management Division of the DNR is responsible for the administration of the ORV Fund. Distribution of these funds is accomplished through a grant process. Each

year public agencies and non-profit clubs and organizations submit applications to the DNR to conduct annual maintenance on designated trails, restore areas damaged by ORVs and develop facilities such as trailheads. In addition, public agencies submit applications to conduct law enforcement on trails. The FMD and the ORV Advisory Board review these applications and make recommendations and modifications if necessary. Once approved, the application becomes a legally binding contract. Of all the activities performed by grant cooperators, annual maintenance (involving trail clearing, sign replacement and grading) has been the largest component.

Maintenance activities are guided by established maintenance standards. These specifications also serve as a basis to allow DNR ORV Specialists and field staff to inspect all work conducted by grant cooperators. Areas not complying with standards need to be revisited by the cooperators and brought up to such. Failure to meet standards may result in the organization being placed on probation or the termination of the grant.

In comparison, almost all activities conducted on the non-motorized pathways by an individual or organization are neither legally bound by a contract and accountability is lessened. Additionally, there are no standards of maintenance to guide volunteers. Typically most efforts involve "handshake" agreements. While these individuals and groups have contributed a great deal towards the pathway system, this effort is not consistent across the state, with great efforts occurring on one pathway and nothing on another 20 miles away.

Reimbursement

Presently, organizations conducting work on the non-motorized pathways are not reimbursed for any expenses. On ORV trails, work on restoration, law enforcement, or development projects conducted by the grant recipients is either partially or entirely compensated by the ORV Fund. Cooperators conducting maintenance receive $45 per mile as reimbursement to help defray out of pocket expenses (tools, vehicle operation, telephone, etc.). In addition, each grant sponsor must have their own liability insurance, which is reimbursed up to a maximum of $500 per year.

In November 1996, a workshop involving ORV grant recipients and FMD personnel was conducted to determine typical work procedures, their frequency, and expenses associated with meeting maintenance specifications (Lynch and Nelson, 1997). One objective of this workshop was to estimate average per mile maintenance costs. According to workshop participants, it takes an estimated $128 per mile to maintain at existing specifications all designated motorcycle and ATV trails and $ 77 per mile for truck routes. This per mile expense includes a $6/hour nominal wage for volunteer time as suggested by the cooperating groups in the workshop. This is conservative as employee costs per hour for state employees would be $18-$24 per hour considering wages and benefits. Even at this conservative figure, $45 per mile is a savings for the DNR of $83/mile for motorcycle and ATV trails and $32/mile for truck routes.

From the cooperating groups point of view, a total of $99 of the $128 per mile maintenance cost for motorcycle and ATV trails is attributed to labor ($6/hour volunteer wage), while labor amounted to $55 of the $77 per mile on all truck routes. Hence, $45 per mile appears generous to the cooperators if the labor is considered truly volunteer.

Cooperative Organizations

While, the majority of ORV and pathway users are not members of organized trail/pathway clubs (State Forest Recreation Advisory Committee, 1995), it is the membership and leadership of these organizations that promote the cause of users in the executive and legislative branches of state government. For ORV users, the Michigan Cycle Conservation Club (CCC) has been instrumental in both initiating the ORV Fund as well as in maintaining and improving the ORV trail system. The CCC is the largest trail related organization in Michigan and is relatively well organized with many chapters and a sizeable membership. The assessment of ORV trails found that over 75% of the designated ORV trails were maintained by this organization (Lynch and Nelson, 1997). In contrast, non-motorized pathway users are more diverse and less organized, with the exception of mountain bikers (Michigan Mountain Biking Association) and equestrian (Michigan Trail Riders) users. Hikers, backpackers and cross country skiers lack a strong statewide organization.

Pitfall of Partnerships

The benefits that the ORV partnership has created for the DNR and trail system are certainly notable. However, there are still pitfalls. For example, different ORV organizations have different objectives for the trails they maintain. Those oriented to a two-wheel cycle membership want to keep trails challenging, narrow, and twisting for skilled cycle riders. Those with ties to ATV enthusiasts want trails that are wider, straighter and suitable for lower skill, family riders. A second challenge is that coordination with diverse groups is time consuming for DNR program managers.

Lastly, the grant administration is an involved and detailed process that can also be time consuming. However, even with these challenges, the formal structure of the ORV program has resulted in a trail system in better condition and with broader based user support and satisfaction than the pathway system. This is especially important for an activity that does not enjoy broad based public acceptance, but does have a committed constituency. Non-motorized pathway users, especially those that enjoy the widest range of public acceptance (hikers, cross county skiers and backpackers), have been unable to convert that favorable but unorganized public opinion into the program funds necessary to have a higher quality, better maintained pathway system.

Conclusions

The success of the ORV trail program can be traced to the partnership arrangement between the DNR/FMD and various ORV stakeholders. The ORV Fund was legislatively mandated and is a restricted fund, solely dedicated to the operation and maintenance of the ORV system. Funding for

the ORV Program is paid directly by the users through ORV licenses and state gasoline taxes. This money is then used via grants to financially support ORV stakeholders in their maintenance of designated trails, restoration of areas damaged by ORVs and development of facilities such as trailheads. In addition, it allows other empowered governmental agencies to conduct law enforcement on trails. Essentially, this support amounts to generously covering the out-of-pocket expenses in most cases and full reimbursement in the case of law enforcement. The stakeholder partners supply the labor, on a voluntary basis, necessary to accomplish the work. The grant process legally binds cooperators to proposed work which is guided by established maintenance standards that promote accountability through inspections. The Michigan Cycle Conservation Club is the largest statewide trail user organizations in Michigan. It was instrumental in the establishment of the ORV fund and continues to play an important part in the operation and maintenance of the ORV trail system.

In comparison, no similar legislatively-sanctioned partnership program exists in the non-motorized pathways program. However, a proposed Forest Recreation Act, which would establish a user fee for state forest pathwyas and deposit the money in a restricted Forest Recreation Fund, was introduced in the Michigan legislature in 1996 at the behest of the State Forest Recreation Advisory Committee. While it received favorable consideration in the House, amendments in the Senate so drastically altered the bill that it was withdrawn. Its reintroduction with modifications to garner the needed legislative and gubinatorial support is currently under consideration.

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RURAL WATERSHED PARTNERSHIPS: LESSONS FROM WEST VIRGINIA

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Abstract: The goal of this study is to examine the efforts by one state government (West Virginia) to facilitate collaborative, watershed-based planning. This paper provides an overview of the state watershed planning process and includes a summary of a baseline study of rural watershed partnerships operating within West Virginia. Implication of the study for state policies and programs, community-based support, and future research are presented. Three main lessons learned from experience with the WVWAP include: (1) the need to assist local communities with the principles of inclusiveness and conflict resolution in development of watershed associations; (2) the importance of local leadership; and (3) the emphasis of process over plan.

Introduction

Over the last two decades, water quality improvement has become a national priority. There is growing recognition that the unintended, dispersed, and cumulative impacts on watersheds--affecting water quality, fisheries, soil loss, and agricultural productivity-- may be the single most limiting factor to economic health and well-being in the next century (Myers 1993). Historically, the protection of water quality has been addressed by command-and-control regulation authorized by federal and state laws. While progress has been made in controlling point source pollution, nonpoint source pollution continues to be a major problem (Brown et al. 1993).

Historically, efforts to restore the integrity of Appalachian watersheds have relied on an overlapping set of federal and state laws regulating land use. Federal efforts to improve water quality stem from the 1972, 1977, and 1987 amendments to the federal Water Pollution Control Act (Haines et al. 1988). Section 319 of the 1987 Amendment requires each state to prepare detailed water quality plans for watersheds affected by pollution, identify sources, and develop control mechanisms (Hawkes et al. 1993). Many observers have noted the inherent limitations of a strictly regulatory approach to watershed revitalization. Marsh and Lallas (1995), in a review of federal and state water quality regulations, concluded that reliance on command-and-control regulations have led to a confusing, fragmented set of laws that are increasingly expensive for states to apply and for landowners to comply with. There is a growing backlash among landowners who feel they are being asked to shoulder an unfair share of the cost of restoring watersheds (Marsh and Lallas 1995).

There is a growing consensus that local solutions are needed to supplement regulatory approaches to watershed restoration. The emergence of local watershed partnerships initiated to resolve conflicts, problem solve, coordinate, build coalitions, and leverage resources illustrate the growing interest of communities, state and federal government, and academics in this subject. However, successful rural watershed partnerships are unlikely to occur unless all relevant actors and organizations possess the capacity to work together for the common good. New ways of organizing are needed to mobilize the human, technical, and financial resources needed to effectively restore watersheds degraded by a century of neglect. Partnerships require new types of leadership, purposes, agreements, and organizational structures in order to be successful. The ability to network people and money becomes increasingly important.

State governments can play pivotal roles in supporting of collaborative, watershed-based planning. Many states have implemented statewide watershed management frameworks (Clements et al. 1996). In addition, the states of Oregon and Washington have encouraged formation of cooperative partnerships at the watershed level by enacting legislation and providing funding (Horton et al. 1996; Pinkerton 1991). The goal of this study is to examine the efforts by one state government (West Virginia) to facilitate collaborative, watershed-based planning. We believe that the West Virginia initiative is unique because it involves direct facilitation of a network of inclusive watershed associations engaged in collaborative planning. This paper provides an overview of the state watershed planning process and includes a summary of a baseline study of rural watershed partnerships operating within West Virginia. Implication of the study for state policies and programs, community-based support, and future research are presented.

West Virginia Watershed Assessment Program

Initially established in 1993, the WVWAP was developed to address interagency concern about the ability of any one state agency to protect water quality in the state. The first step in this program was to develop a comprehensive statewide plan. An interagency task force obtained input from 90 statewide stakeholder groups representing the complete spectrum of political interests. This planning process exposed individuals and organizations around the state to thinking about water quality on a watershed basis. Eighty-four percent of responding stakeholder representatives found the statewide plan to be generally acceptable. Working in consultation with these

stakeholders, two strategies from this plan were elevated for implementation: (1) Using geographical information systems (GIS), assess the ecological health of West Virginia=s watersheds; and (2) assist local people in restoring their streams through the work of watershed associations. The practical reasons for assigning high priority to watershed associations included: (1) recognizing that some local people know more about their local streams than government regulators; (2) a dwindling state government budget combined with expectations of improved water quality could be reconciled only through the creation of partnerships between state and local interests; and (3) realizing that collaborative efforts might yield better, more widely accepted solutions than conventional top-down management.

In 1994, the WVWAP began to facilitate the birth and growth of local watershed associations. Initially, someone or organization must contact the program director expressing an interest in developing a watershed association. This invitation indicates some local leadership and avoids the impression of Abig government@ intrusiveness. Public knowledge about the existence of the WVWAP was created through the media, public presentations, and the initial statewide planning process. To date, about 25 inquires have been made, with some contacts coming from pre-existing river conservation groups.

Based on these initial contacts, the program director has been invited to meetings of nuclear stakeholders in about 20 watersheds. Nuclear groups are typically four to six people in size. The focus of these meetings has been: Do the people of this watershed want to participate in an inclusive, consensus-building watershed association? If there is an expression of interest, then a larger exploratory meeting is held where the nuclear group members have invited all major stakeholders which use the river resource or whose activities may impact water quality. These exploratory meetings have averaged about ten people in attendance with a range from three to twenty. At this exploratory meeting, the program director gives a presentation on the WVWAP. Facilitation services being offered are outlined, literature is provided, and some preliminary discussion of water issues is encouraged. Again, the program director leaves attendees with a question: Do the people of this watershed want to participate in the WVWAP by forming a watershed association?

A positive response to the above question starts WVWAP facilitation to develop a watershed association. However, a negative response does not imply that no organization forms in this watershed, some groups have chosen to form outside of the WVWAP. Since 1994, a total of nine watershed associations have developed under WVWAP facilitation. Facilitation services have included identifying stakeholders, maintaining membership lists, mailing organizational materials, arranging meetings, and assistance in conflict resolution and strategic planning.

Watershed associations formed under WVWAP facilitation are encouraged to practice transactional planning by employing inclusiveness of stakeholders, conflict resolution among parties involved with water issues, and consensus building. These principles are followed to enhance the credibility of an association to address water issues and to maximize acceptance of strategies developed by association. In order to solve problems associated with surface water and watersheds, all of the watershed=s stakeholders should be represented during the planning process. Given past experiences among stakeholders, however, they often need assistance from an independent facilitator to grapple with the principles of inclusiveness and consensus building. To encourage inclusiveness, all stakeholders are: invited to attend meetings; sent minutes from meetings; and provided opportunities to comment on plans drafted by the association. These practices allow for a continuous flow of information between watershed associations and those parties affected by their plans.

Once association officers and a board of directors have been selected, the program director typically leads the association through a strategic planning process conducted over a series of meetings where all the stakeholders identified earlier are invited to participate. This process includes the following steps:

- In a brainstorming session, attendees are invited to provide a vision for the watershed 50 years into the future. A group consensus is developed for this vision.
- A creative thinking exercise is conducted where problems and opportunities associated with the river and its watershed are listed.
- These problems and opportunities are consolidated into a manageable list of issues. The group then reaches a consensus on the top priority issue.
- Another creative thinking exercise is conducted to solicit strategies to deal with these issues.
- These strategies are consolidated and prioritized.
- The single most important strategy is identified and agreed upon by consensus. Consensus may be pure (zero dissent) or simply a substantial majority (i.e., at least 75-80% agreement).
- The identified strategy may be large (e.g. construct a sewage treatment plant) so that the program director focuses the association on breaking up a large strategy into "bite-size" projects which incrementally contribute to accomplishing the larger strategy. These small projects are prioritized and one doable project is them implemented. Initial success, regardless of size, is crucial for community visibility of the association.
- After the initial project is completed, the entire strategic planning process is repeated to assess changing perspectives and priorities.

The program director conducts "process checks" periodically throughout the strategic planning process. Participants are asked to fill out surveys about the process

and the facilitation. Participation by diverse stakeholders is critical. The WVWAP will not facilitate the work of groups intent on becoming single-position advocacy groups. As a rule of thumb, at least 75% of the stakeholder categories should be represented during the process to maintain the principle of inclusiveness. Depending upon the degree of local leadership available, the program director may or may not conduct the meetings during the strategic planning process, although he attends most meetings.

Many of the doable projects conducted so far have involved on-the-ground activities. Examples include litter cleanups, stabilization of failing streambanks, or creation of recreational access to streams. Association strategic plans also have involved education to encourage voluntary changes in landowner behavior. Most stakeholders reflect the prevailing attitude that enough government regulation exists already. However, stronger enforcement of current laws (e.g., litter) has been sought by several watershed associations.

The ultimate goal of the WVWAP is to create inclusive, sustainable, and consensus-building watershed associations. A strategic planning process is emphasized where: (1) diverse interests are represented; (2) strategies are identified by consensus and action taken; and (3) the organization continues to exist after developing a watershed plan. The following section profiles watershed associations now operating within West Virginia.

A Survey of Rural Watershed Partnerships in West Virginia

During the summer of 1996, a mail survey was conducted to profile and to assess the needs of watershed associations in West Virginia. A sample population of 67 river, community, watershed, and related environmental organizations was developed. A total of 40 responses were obtained for a response rate of 59 percent, of which 17 organizations were identified as watershed associations who had received assistance from the WVWAP. We define watershed association as an organization whose membership is voluntary and whose primary focus is water issues related to a specific area as determined by the group. Those watershed associations receiving assistance included those which developed under the WVWAP as well as associations which developed outside the WVWAP yet received assistance from the program director. The mail-out questionnaire probed a number of specific issues related to watershed association planning and management including: purpose, composition, participation in state program, watershed problems, activities, barriers, and technical assistance needs.

Survey respondents were asked to identify serious water problems in their watershed (Table 1). Non- point sources of pollution were the most commonly identified problems. If possible, non-point responses were categorized as agriculture (e.g., logging, poultry industry) and non agriculture (e.g., abandoned coal mines, residential development). Non-point pollution from non agricultural sources and sewage were pollution sources of greatest concern. Many rural areas of West Virginia continue to lack proper wastewater treatment facilities. Water flow problems consisted of flooding and stream blockage while the Aother@ category included mainly land use and management issues which impact water quality.

Many of the watershed associations surveyed are young, 11 of the 17 associations have been formed since 1994. The average membership size of watershed associations was 35 with a range of 8 to 250. Most groups had representatives from local government, businesses and industry, landowners, environmental groups, and recreational groups. Federal government and agricultural organizations were represented in only about half of the watershed associations.

The mission(s) of these watershed associations were categorized into: general cleanup or improvement of surface water resource (53%); watershed level planning (35%); promotion of tourism (18%); public education(12%); habitat protection (12%); and flood control (6%). The activities undertaken by the 17 watershed associations to fulfill these missions are listed Table 2. Over half of the associations were involved in an initial study of the problems of their watershed. These studies included water quality sampling and monitoring of pollution sources. As the associations tended to be young organizations, almost half were engaged in organizational development activities such as strategic planning and fund raising. The remaining activities primarily were action projects of: clean-ups of river litter; public education programs (float trips, holding river festivals, newsletters, arranging meetings with landowners, etc.); public meetings; buying land for river access; restoring wetlands (listed under AOther@ category in Table 2); and training volunteers for stream quality monitoring.

When respondents were asked to rate how effective their organization has been in fulfilling its mission, 62% thought their organization was very to somewhat effective, 30% were neutral, and 8% thought somewhat ineffective. Respondents then were asked their opinion on barriers to organizational effectiveness. As expected, manpower and financial resources were the most important barriers (Table 3). Other top barriers included internal problems of inadequate planning for meetings, a failure to define the group=s focus, and working across multiple government jurisdictions. As about one-half of the associations were engaged in watershed studies, knowledge of the watershed resource was identified by only half the respondents as being a barrier, yet was regarded as moderately important by those respondents who identified it as a barrier. Existence of biases, distrust among members, and unwillingness to compromise were not viewed, for the most part, as barriers by respondents.

Results

Table 1 outlines the general missions of the watershed associations participating in the study. While considerable

diversity of missions is evident, watershed associations could be grouped into those whose focus is foremost economic development and those associations whose primary focus was habitat protection. Most groups, however, indicated that both economic development and habitat protection are important objectives of their organization.

Table 1. Mission of Participating Watershed Associations

Mission Statement	%
Tourism	23
General Cleanup	20
Planning	14
Education	11
Safety	11
Habitat Protection	9

Many of the watershed associations surveyed are young; 27 or 73%of associations have been formed since 1994. Most indicated they were currently in the process of developing their organization. The average membership size of watershed associations was 35 with a range of 8 to 250. Table 2 provides an overview of the sectors represented in participating watershed associations. Most groups had representatives from local government, businesses and industry, landowners, environmental groups, and recreational groups. Federal government and agricultural organizations were represented in only about half of the watershed associations. The high level of business sector involvement reflects the economic development mission of many associations as well as the willingness of businesses to participate in local environmental initiatives.

Table 2. Sectors Represented by Association Members

Sectors Represented	%
Business	94.1
Local Govt.	87.9
Landowners	86.5
Civic Organizations	76.5
Recreation Groups	74.2
Environmental Groups	72.7
State Govt.	71.0
Agri Organizations	50.0
Fed Govt.	41.9

Overall, 17 or 42.5% of participating watershed associations had received some level of assistance from the West Virginia Watershed Assessment Program. Some groups pre-dated the state program while others either chose not to participate or were unaware of the watershed program. Types of assistance received included having a facilitator attend startup meetings, grant application assistance, and provision of watershed data. A number of watershed associations have been recipients of Stream Partner Grants, administered by the West Virginia Department of Environmental Protection, which has supported watershed-based projects.

Survey respondents were asked to identify serious water problems in their watershed (Table 3). Non- point sources of pollution were the most commonly identified problems. If possible, non-point responses were categorized as agriculture (e.g., logging, poultry industry) and non agriculture (e.g., abandoned coal mines, residential development). Non-point pollution from non agricultural sources and sewage were pollution sources of greatest concern. Many rural areas of West Virginia continue to lack proper wastewater treatment facilities. Water flow problems consisted of flooding and stream blockage which still plagues many rural part of West Virginia. Finally, the Aother@ category included mainly land use and management issues which impact water quality.

Table 3. Watershed Problems Identified

Watershed Problems Identified	%
Non-point Pollution	52.9
Sewage	23.5
Water Flow	17.6
Other Land Management	5.9

Table 4 outlines the wide range of activities undertaken by watershed associations participating in this study. Because of the young age of most associations, many were engaged in organizational development activities such as fund-raising and strategic planning. The remaining activities primarily were action projects such as: clean-ups of river litter; public education programs (float trips, holding river festivals, newsletters, arranging meetings with landowners, etc.); public meetings; buying land for river access; restoring wetlands; and training volunteers for stream quality monitoring. Watershed associations facilitated by the West Virginia Watershed Assessment Program were encouraged to develop Abite-sized projects@ to encourage early success and foster volunteer recruitment efforts.

Table 4. Activities of Participating Watershed Associations

Activities	%
River Cleanups	17.6
Education	14.7
Fund-raising	11.8
Organizing Activities	11.8
Strategic Planning	8.8
Monitoring	5.9

Respondents were also asked what factors acted as barriers to organizational effectiveness. These responses are summarized in Table 5. As expected, organizational development issues such as the lack of financial and human resources were identified as major barriers by many associations. To a lesser extent, respondents mentioned problems such as the lack of and enforcement of regulations governing water quality in West Virginia.

Table 5. Barriers to Organizational Effectiveness

Barriers	*Mean
Lack of Financial Resources	3.8
Lack of Manpower	3.6
Enforcement of Existing Regulations	2.6
Lack of State Regulations	2.5
Inadequate Info on Watersheds	2.2

*On a 1 (not at all important) to 5 (extremely important) scale

Finally, Table 6 presents some of the technical assistance needs identified by respondents. Assistance with on-the-ground-projects such as habitat restoration was identified as the top technical assistance need. A majority of respondents requested help in identifying sources of assistance for watershed restoration projects. Other needs identified included: legal help, volunteer recruitment, and resource identification and mapping.

Table 6. Technical Assistance Needs

Technical Assistance Need	%
Habitat Restoration	64.7
Resources Available	61.8
Legal Issues	55.9
Volunteer Recruitment	50.0
Resource Identification and Mapping	41.2

Lessons and Future Directions

Three main lessons learned from experience with the WVWAP include: (1) the need to assist local communities with the principles of inclusiveness and conflict resolution in development of watershed associations; (2) the importance of local leadership; and (3) the emphasis of process over plan. Some stakeholders tend to be well represented within watershed associations (e.g. environmental and recreation groups, downstream and riparian landowners) while others are less likely to participate (e.g. agricultural organizations, headwater and upland landowners). Also, inclusiveness is difficult in highly polarized communities. For example, serious flooding problems have resulted in tremendous conflict within one West Virginia watershed over flood control alternatives. Thus, facilitation efforts must stress the potential benefits of inclusive watershed partnerships. Potential benefits include the involvement of more organizations from which resources can be obtained to accomplish the association=s mission, validation of the association within the community, and enhanced credibility among legislators and regulatory agencies for association requests.

The second lesson emphasizes the importance of organizing the association and preventing any impression that state agency facilitation equates to control of the association. As an example, a well organized association will often possess a single good leader with a vision, who follows through with projects, and possesses good organizing skills.

The third lesson emphasizes process over plans because a sustainable watershed association must be responsive to changing conditions over the long term. Associations must be able to respond to changes in watershed conditions as projects are completed and as time passes. This responsive ability depends upon an association being able to revise its priorities rather than simple following a written planning document.

Given its brief existence, it is premature to assess the water quality impacts of the WVWAP. Significant improvements in water quality may take a decade or more to achieve. However, these community-based partnerships provides a forum for cooperation between state and federal agencies through association meetings and partnership opportunities. The associations also have involved local people in designing more effective stream monitoring by the WV Division of Environmental Protection by identifying pollution Ahot spots@ in their watershed.

One result of the WVWAP has been the development of two additional statewide institutions designed to assist watershed associations. First, the state legislature enacted, by an unanimous vote, the West Virginia Stream Partners Act of 1996. This law authorizes state agencies to collaborate in overseeing the Stream Partners Program. The main purpose of this program is to provide up to twenty, $5,000 grants to watershed associations. These competitive grants are awarded on the bases of an association=s commitment to developing a watershed strategic plan; merit of a proposed water quality improvement project; and the group=s commitment to the principles of inclusiveness, conflict resolution, and consensus building. During the initial round (1996) of funding, 19 grants were awards from a total of 66 applicants. Financial assistance was provided for projects such as restoring riparian corridors, improving trout habitat, public education, and a workshop on conservation easements.

The second institution is the West Virginia Watershed Network. This network is a collaboration by various groups (West Virginia Rivers Coalition, River Network, and Canaan Valley Institute) and the WV Division of Environmental Protection that support local watershed associations. The network was initially formed to avoid duplication of effort among these groups. In addition to coordination, the network has provided training for watershed association leaders through workshops and newsletters.

The WVWAP is unique in its objective of developing local capacity of watershed communities to resolve longstanding watershed problems. This program recognizes the limits of government regulation to solve the ecological problems of West Virginia watersheds. In an era of fiscal uncertainty and government downsizing, the WVWAP appears to be an appropriate response to enhance watershed planning and management. Research has begun at West Virginia University to identify and to analyze those social, economic, political, and environmental factors which explain local watershed participation in the WVWAP program. Future questions to be explored include: (1) what factors explain the degree of inclusiveness in watershed organizations; and (2) how effective in resource acquisition (funds, volunteer labor and equipment, etc) are watershed associations developed under the WVWAP compared to other watershed organizations.

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Recreation and Natural Resource Planning

MEASURING THE BENEFITS OF PROTECTED AREAS: A CRITICAL PERSPECTIVE ON THE IUCN GUIDELINES

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The International Union for the Conservation of Nature has drafted guidelines to help managers of protected natural areas to develop economic arguments in defence of those areas. The guidelines identify a series of benefits which protected areas might produce and which all have real markets in the outside world, and recommend that managers focus their arguments on these benefits. One of the benefits, tourism spending, cannot be treated as a benefit like the others, however, and there are additional benefits which the authors believe should be included in the guidelines.

In February of 1996, Lee Thomas, convenor of the Economic Task Force of the International Union for the Conservation of Nature's (IUCN) Commission for National Parks and Protected Areas released for review a draft of guidelines for the economic assessment of protected natural areas (IUCN, 1996). He was seeking critical comment from the economic community and protected area managers and planners. He also hoped to encourage managers to undertake pilot studies to test the methodologies described in the guidelines. The authors were asked by Parks Canada to review the guidelines and offer comments to Lee Thomas, as part of Parks Canada's contribution to the guidelines development. This paper describes the conclusions of that review.

The purpose of the Guidelines was to help managers and planners of protected areas throughout the world to develop credible arguments to justify spending on those protected areas, in the face of opposition from industries wanting to exploit the protected areas for their resources. The guidelines therefore identified a number of economic benefits that protected areas might produce which would be particularly credible in making such arguments.

The benefits they identify are:

1. Tourism and recreation. Protected areas attract visitors who wish to experience the outdoors and the flora and fauna of a place. These visitors spend money on food, transportation and accommodations and so create beneficial economic activity around the protected area.

2. Natural services. This is the benefit produced by various natural phenomena which occur thanks to the protected area. An example is pollination of crops by bees who live in the protected area. If they did not exist, farmers would have to pay pollination services to bring bees in to pollinate plants. There is a private market for this, and so the value that the protected area generates can be evaluated credibly.

3. Water production is an important benefit that protected areas provide in many places in the world. A protected area can act as a natural reservoir holding water from a rainy season for slow release through the rest of the year when needed. It also acts a filtration plant, purifying the water. Dams and filtration plants have clear costs, so if downstream cities are saved from having to invest in such things because of the existence of a protected area, then the protected area is clearly providing substantial benefit.

4. Protected areas can mitigate natural disasters. Protected areas retain water to prevent flooding. We only have to consider the millions of dollars spent every year by the US Army Corps of Engineers to control flooding in the Mississippi basin to realise that some forested protected area s in the place of the cultivated prairie grasslands would mitigate flooding and save money.

5. The guidelines identify fish breeding and spawning as a benefit. Protecting shorelines and rivers preserves the breeding grounds of fish, which can support a fishing industry. Failure to protect these areas can lead to destruction of the fishing industry. The classic example of this is the Aswan Dam. When it was built on the upper Nile, ostensibly to bring economic benefits to Egyptian agriculture, the shrimp fishery on the eastern Mediterranean was wiped out.

6. The next benefit identified is food and fibre hunting and gathering. This is the sustenance that, for example, native peoples draw from the protected area. It is not commercial (or the area would not be considered protected) and it is typically not intensive. In Canada's National Parks, hunting and gathering must generally have been a traditional activity of native peoples to be permitted. It is nonetheless real, and, in its absence, the hunters and gatherers could well be obliged to purchase equivalents in a market.

7. The next benefit, commercial activities in protected areas, has to be understood properly. Obviously, a mine or logging operation which takes place in a protected area produces economic benefits. However, in most cases, it is no thanks to the protected area that it takes place. In fact, commercial activities are generally

considered to be antithetical to protected area s. If the commercial activity is to be considered a benefit, it must itself benefit from the protected area. For example, only if the protected area=s conservation programs or effects permit a sustained yield of forest products could the benefits created by forestry be in any way attributed to the protected area.

The guidelines also identify three areas of economic activity which represent costs of protected areas, and which the guidelines suggest should also be measured and accounted for against the benefits, in order to present an honest picture of the protected area.

8. The financial costs of protected area development and operations are correctly identified by the guidelines as being a cost, and not a benefit. These expenditures are what are usually considered as creating an impact in the area local to the protected area (see, for example, Coopers and Lybrand, 1992) and this impact can often be incorrectly taken as a benefit. The guidelines rightly do not make this common error. The guidelines point out, however, that when the funding for development and operation of the protected area come from outside of the economy, as is the case when the protected area is a foreign aid project, then the recipient country can consider the administrative costs as a benefit, and hence include it and the resulting impact in the benefit account.

9. The guidelines identify natural phenomena causing damage as another cost of protected area s. Wild animals who are sheltered by the protected areas and prey on neighbouring livestock are an example. The guidelines point out however, that careful study of the situation often reveals that the natural phenomena cause more damage in the imagination than in fact.

10. The last item which has to be included in the cost-benefit balance is the opportunity cost of the protected area, or the benefit foregone because economic activities such as natural resource exploitation are prohibited in a protected area. The loss of the opportunity to exploit resources in the protected area should always be taken into account as a cost.

Of course, it is unlikely that any one protected area will have all of the benefits or even the costs which the guidelines identify. The guidelines suggest that each type of benefit should be examined to determine which the protected area in question has it. This, says the guidelines, is a task for the park manager or biologist/naturalist and the economist combined. Both knowledge of the natural processes of the park and the knowledge of the functioning of the market place are needed to identify and assess the benefit.

Why are these particular benefits identified? For each of the benefits identified, a real market can be found somewhere, trading in that benefit. Real prices exist for the benefit that the protected area is providing. Therefore, it will be possible to determine the real value of the benefit, without resort to surrogate or artificial methods such as contingent valuation or revealed preference . As a result, industry and politicians will perceive the benefits as credible.

The authors are aware of a number of other benefits such as those identified by Walsh (1992) but did not mention them because they believe that managers and planners will not gain much by advancing these benefits at the table when face to face with logging and mining interests. The guideline is, after all, supposed to help people advocate for protected areas in public fora, against sometimes hostile interests, where credibility is everything.

There are two major problems with the guidelines. The first is that they incorrectly claim that tourism spending is a benefit, when in fact most tourism spending is merely redistribution. Secondly, they ignore a large number of benefits which could be used in justification, and by ignoring them, deny the guidelines user the full array of choices available for making arguments.

To understand the problem of tourism spending as it is treated in the guidelines, it is useful to start with a fundamental question: why do we want to measure economically the benefits of protected areas anyway? The reason is that if entrepreneurs and managers are to make rational decisions about whether to invest in or continue to maintain a protected area, they must compare the costs and benefits. In this way they can ensure that they only invest in those projects where the benefits exceed the costs. It is fairly easy to estimate the costs, both direct costs, and the economic value foregone because various forms of natural resources can no longer be exploited. The calculation of benefits, many of which are indirect or even intangible, is much more problematic. Hence, the guidelines.

For example, if an entrepreneur sees that the cost of some undertaking is $12 million, and the revenue (the entrepreneurs benefits) to be expected is $ 15 million, then it makes sense to proceed. If cost is $12 million and revenue is only $6, then it makes no sense to do it. Of course, this simple example ignores the many complicating factors such as the duration of the investment and the wait for revenues, and the risk. However, the basic decision criterion used is that benefit must exceed cost.

When a public agency decides to protect an area, it generally does not expect enough revenue (from users, concession fees, etc.) to equal or exceed costs. That is, in fact, why it is usually public agencies which protect natural areas. But the investment criterion with public money should be the same as with private money: the benefit must exceed the cost. If there is not enough revenue to counterbalance costs then, the question becomes: where else can we look for benefits to justify the public cost of the protected area?

Usually the first thing to come to mind is economic impact (see, among numerous examples, Coopers and Lybrand, 1992). Whenever a public agency spends money to operate a protected area, employees are hired and paid, and suppliers of goods and services in the local area receive the money as income. They, in turn, re-spend some of that money to pay their employees and purchase more stock from other suppliers to replace what they have just sold to the public agency. These other suppliers also spend some of the money they receive on their own employees and on additional goods and services. The original expenditure can thus go through many rounds of re-spending, creating beneficial economic activity in the local economy which would not have been created without the public agency spending on the protected area. The sum of this spending and re-spending is called economic impact.

But all expenditures, no matter what they are for or who makes them, have this impact. If it can be used to justify the investment in a public project that has insufficient revenue to make it profitable, why did the private sector entrepreneur not use it to justify his investment in the project that was not expected to bring in sufficient revenue? The obvious answer is that the private entrepreneur does not receive any of the impact; it accrues only to third parties: the local suppliers of goods and services and their employees, for example. The reason that the government (public agency) can claim the impact as a benefit is that the recipients of the spending are the constituents of the public agency, so any benefits accruing to the recipients accrue in some sense to the public agency that represents them and is supposed to be promoting their interests.

If, for example, the federal government of Canada spends money in Newfoundland to develop and operate a national park, then the citizens of Newfoundland obviously benefit. Since it is the mandate of the federal government to create benefits for its citizens, the benefits it creates for the citizens of Newfoundland can be put against the costs of developing the park.

But the money spent in Newfoundland came from somewhere! It came from taxes on the citizens of the rest of Canada. When the taxes were taken from somewhere else in Canada, a reverse impact took place in that somewhere else. Dollars removed from the taxpayers were not spent in their local economy, so local suppliers of goods and services received less revenue than they would have. They hired fewer workers and bought less stock in trade. The suppliers similarly received less revenue and bought less in their turn. Therefore, for every dollar of impact gained by Newfoundland, there is a dollar of impact lost somewhere else in Canada. The agency is merely redistributing economic activity, not creating any net increase in benefit. This is why the impact cannot count to balance against the cost, at least in the view of the public sector manager. Paradoxically, the expenditures are a benefit from the point of view of the people living in the area that receives the expenditure. The advocacy of the people in the receiving area frequently confuses the argument to the point that the public agency comes to believe that it is in fact creating a benefit, and not merely redistributing economic activity among its many constituents.

The IUCN guidelines correctly identify the costs for developing a protected area and operating it as costs and not benefits. Nor do they advocate applying impact analysis to these costs to multiply up the economic activity. However, they also do not warn against doing this. Since presenting government spending as a benefit to justify the creation of a protected area is such a common mistake, I believe that the guidelines should have mentioned this practice, and pointed out why it is an error. The use of government spending as a benefit does a great deal to undercut the credibility of economic benefit arguments generally, and the IUCN guidelines miss an important opportunity to correct the error and thus strengthen credibility.

Although the guidelines do not make the error of considering government expenditure a benefit, they do make that very error when considering tourism expenditure.

The protected area will draw visitors (or what we loosely call tourists, lumping local visitors in with those who come from long distances away, because it makes a bigger number and makes the argument look better) who will spend in the local area and bring the kind of Impact benefits that we thought government spending would bring. They, at least, are spending their own money and not taxes.

Unfortunately, tourists come from somewhere too. If they are from other parts of Newfoundland, the spending they do in the protected area is merely spending redistributed from somewhere else in Newfoundland. It they are visiting Newfoundland from somewhere else and spending money, they are not spending it visiting somewhere else, or not spending it on entertainment at home. So again, Newfoundland's gain is someone else's loss. Since most tourism in Canada is domestic, and indeed most of it is from within the same province (Statistics Canada, 1995 a,b), most tourism spending is merely redistribution.

The word "most" is important here. Not all tourists to our fictitious protected area in Newfoundland come from other parts of Canada. Some come from other countries, and some would have left Canada to travel to other countries in the absence of the attractive protected area. So it is valid to count as benefits the expenditures produced by some of those tourists, that is, those tourists who would not otherwise have come to Canada, but who came because of the protected area, and it is also permissible to count those who stayed in Newfoundland (or the rest of Canada) but would otherwise have left the country had it not been for the existence of the protected area.

In practice, of course, it is quite difficult (although not impossible) to determine which tourism spending is legitimate to count and which not. However, if we are trying to make rational and informed decisions about major

Table 1 Economic Benefits of Protected Areas

	Economic Effects of Protected Areas	
	True Incremental Benefits	***Redistributed Economic Effects***
Benefits to individuals using the area for activities compatible with its primary purpose	**Direct paid use benefit** (= revenue) Direct unpaid use benefit (= consumer surplus)	
Benefits to individuals through the knowledge of the area in the awareness of its primary purpose	Indirect use benefits (books, TV) Existence benefits Option benefits Bequest benefits	
Benefits to individuals using the area for collateral purposes	***Natural services** ***Water production** ***Mitigation of natural disasters** ***Fish breeding** ***Hunting/Gathering** ***Commercial activities** Ecological functions Health effects ***[Displaced activities]** ***[Natural disasters]**	***Tourism spending and impact** ***Protected areas development and operations and impact** [can be considered a cost under certain circumstances]
Benefits to society at large (exterrnalities)	Worker productivity Biodiversity Scientific, educational benefits Amenity benefits	

Notes: **bold** denotes those benefits for which a market exists and which can therefore be quantified with reference to market equivalents; * denotes those benefits and impacts identified by the IUCN guidelines; [ ] denotes those benefits which are negative, that is, a cost.

investments, it is irresponsible not to make the effort to get the true benefits, and instead to fool ourselves by not acknowledging that many of the benefits claimed are merely a redistribution of economic activity that would have taken place anyway.

The IUCN guidelines ignore the redistribution problem and incorrectly recommend that all visitor spending be counted as a benefit.

The second problem with the guidelines is the lack of mention of large classes of benefits which in recent years have become more credible. These are the benefits which the user of the protected area gets but which he or she does not pay for, and the benefits which non-users get from the mere existence of the protected area. They represent the hard to quantify well-being that is created by the protected area: the psychological, or spiritual benefits, and the enjoyment which the Protected area creates. These benefits are often the real justification for the Protected area.

The benefits include:

1. Consumer surplus: benefit the direct user gets from his or her experience of the protected area above and beyond what is paid for. This is often captured through the question How much more would you have paid to have the experience you had today?

2. Indirect use benefits: the benefits the non-user obtains by such activities as reading about the protected area or viewing it on television.

3. Existence benefits: the benefits obtained by knowing that the area is protected, for example, the pride in knowing that the nation's natural heritage, or the environment are being protected. This is closely related to bequest benefit, the benefit a citizen gets from knowing that future generations will still have the protected area to enjoy.

4. Option benefits. These are the benefits the non-user gets from maintaining the options for future

use of the protected area. For example, the non-user may someday visit the protected area, or society could someday benefit from the future discovery of a use of genetic or other material in the protected area. This potential would be lost if the protected area were to be exploited for its resources.

5. There are a whole variety of further benefits to society at large which can loosely be called externalities, which include biodiversity, scientific and educational benefits, increased worker productivity and sense of social cohesion, and amenity benefits.

It is beyond the scope of this paper to explore all these benefits exhaustively. However, Table 1 attempts to put these types of benefits into an overall framework.
The main importance of this table is in the distinctions it makes in the columns and rows.

The columns make the distinction between benefits that are true incremental benefits and those which are benefits only to a limited group of people with a particular geographic perspective. The benefits listed in the first column represent a net increase in society=s well being which would not have occurred at all if the protected area had not come into existence. Not all are additions to gross domestic product, of course. Some cannot even be quantified or must be estimated indirectly, but they are all true benefits of protected areas. The second column lists economic activity which the existence of the protected area redistributes to the local area, but which would have taken place somewhere in any case. It is only a benefit if the evaluator takes the narrow geographic perspective of those who are receiving the economic activity and is willing to ignore the perspective of those who are loosing the economic activity. This narrow perspective is frequently adopted, quite rationally, by those who are promoting the development of a protected area for their region, but should not be accepted by those who are funding the protected area, since it inevitably means redistributing economic activity from some other part of the funding agency=s jurisdiction.

The rows distinguish between the different types of use. The first row identifies the benefits that accrue to the direct users of the protected area who enjoy its resources in a way compatible with its objectives, for example by hiking. The second row identifies the benefits that accrue to those who do not use the area directly at all, but benefit from the knowledge of its existence at second hand, say by reading about it. The third row identifies the benefits that accrue to those who actually use the resources or the effects of those resources in a consumptive way, although the uses may be sustainable. Finally, the fourth row identifies the benefits that accrue to society at large from the existence of the protected area, whether they use it or not. An example here is the benefits we all gain from the increased productivity of workers who use the protected areas to vacation in.
The guidelines do not address these benefits that are not marked with an asterisk, reasoning that they do not have market equivalents, so they are not as credible as the ones the guidelines identify. In recent years, however, great strides have been made in their measurement, through the development of contingent valuation and revealed preference techniques. Although these values may not be as credible to all observers as benefits for which a direct market equivalent can be found, they are nonetheless gaining credibility in North America, following the findings of the NOAA panel of experts in the USA (NOAA, 1993).

Although not all benefits are useful for all arguments in support of protected areas, it is useful to be aware of the complete range of benefits. This enables protected area managers and advocates to frame more coherent and thoughtful arguments, and to put what quantitative measurements of benefits that exist in to the correct perspective

The conclusion that can be drawn about the IUCN guidelines is therefore that they highlight an important set of real benefits which protected area managers should examine when seeking to justify their protected areas. The guidelines are however very misleading about tourism: what groups of visitors to count and which group to leave out because they do not represent an incremental benefit to the economy. Nor do the guidelines do anything to correct the major error in benefit assessment, confusing impacts and benefits. In the guidelines, even the language is somewhat confusing.

Furthermore, the guidelines are not comprehensive, in that they do not put the important benefits they do treat in the context of the complete set of benefits. While this is not a fatal criticism, there is sufficient confusion in the field of benefits measurement that any guideline aiming at a general audience ought to put the subject matter into a general context. The guidelines however are a useful addition to the debate about creating and maintaining protected areas.

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Emergent Issues in Forest Plan Revision: A Dialogue

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Abstract: Working with National Forest planners can raise many questions for social scientists regarding their role in planning or plan revision. Social scientists from the North Central Forest Experiment Station and the National Forest System Eastern Region debate 3 questions that continue to surface in their work with Forest Service managers on plan revision: first, what is the role of social scientists in the critical venue of public involvement? Second, the costly and time consuming task of social assessment is considered: what are the merits of full versus partial social assessments? And third, along more philosophical lines, do social scientists play the same role in plan revision that all other scientists play, or do social scientists play a potentially more sensitive role? Because there are no simple right and wrong answers, this paper explores the questions in point-counterpoint style.

Introduction

For the past year, a team of five social scientists at the North Central Forest Experiment and the have been working with two National Forest planning teams in the Eastern Region of the U.S. Forest Service. The goal of our project is to develop recommendations for incorporating various social science perspectives, methods, and models into forest plan revision.

A Forest Plan for each National Forest is required by the National Forest Management Act (NFMA), which amended the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA). The purpose of the Forest Plan is to provide strategic direction for all natural resource management activities on the Forest. Most National Forests in the Eastern Region completed their Forest Plans in 1986. Many are currently updating and revising those plans in accordance with the NFMA regulations which state that the plan shall ordinarily be revised on a 10-year cycle or at least every 15 years.

Following many of our work sessions with National Forest System (NFS) staff we found that we were repeatedly asking each other three questions:

1. Do social scientists have a role in assisting National Forest managers with the public involvement aspects of forest plan revision?

2. Is a full social assessment necessary for plan revision?

3. Do all scientists play the same role in plan revision, or do social scientists have a potentially more sensitive role?

Although debating such questions may appear to be of interest only to academics, these questions are at the root of many of the challenges faced by social scientists when they try to work with managers to update forest plans. In an effort to better develop our thinking and to encourage others to share their ideas, we present the pros and cons, or opposing viewpoints, in answer to each question.

Question 1. Do social scientists have a role in assisting the forests with the public involvement aspects of forest plan revision?

Background

The political argument for public involvement in government activities is based on the real or imagined belief that government has failed to respond appropriately to the needs and demands of its citizens (Riedel 1972). Public involvement is vital to the activities of any governmental agency in that it is a mechanism for exchanging information, provides information on the value context for decisions, and is a source of credibility (Creighton et al. 1983).

The Administrative Procedures Act (APA) was passed in 1946 in order to provided public access to federal agencies. Under the APA, agencies were required to (1) inform the public of how they were going to interpret and implement congressional mandates, and (2) solicit comments from the public regarding any pending rules. However, the courts ruled that the APA did not apply to land management agencies because these agencies were acting as land owners when managing the federal lands, not as governmental rule-making bodies. The National Environmental Policy Act of 1970 (NEPA) was the first law to give land management agencies direction regarding public involvement. In the Forest Service, the need for public involvement was reinforced by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) and the National Forest Management Act of 1976 (NFMA). These laws direct forest managers to use public involvement activities early and often throughout the revision of Forest Plans. In this context, public involvement can help evaluate community needs and expectations, develop Forest Plan alternatives, provide input for the projection and assessment of impacts, and monitor the impacts of plan implementation.

Social scientists may have a variety of motives for participating in public involvement activities related to

National Forest planning--(1) it may be part of the individual's job description, (2) it is an opportunity to test hypotheses related to public involvement in land management and planning in the closest thing a social scientist has to a laboratory, or (3) the individual feel that they have a role to play in the development of public involvement activities related to planning and management. In 1992, Gericke and his colleagues posed four questions that would provide the nucleus for a social science research program in public involvement (or what Gericke referred to as public participation):

1. What forms of public participation are constructive and what forms are destructive in particular situations?

2. How much public participation is enough?

3. How does trust in the Forest Service, as well as the desires of the public, change through the planning process?

4. How does public participation influence management decisions? (p. 38)

But public participation is a well-established component of National Forest management that has traditionally been accomplished without input from social scientists. Why should NFS managers risk increasing the complexity of their public involvement tasks by involving social scientists? What role might scientists play in this broadly-accepted, established activity?

Scientists provide valuable insights in designing public involvement plans.

Agency experience with public involvement is not an argument for continuing to leave it in NFS hands. In an evaluation of National Forest planning conducted in the late 1980s, critics found that:

"... planning is not the exclusive domain of experts.... Planning must access issues about which people deeply care. Rather than being isolated and insulated, planning is immersed in our country's social and political milieu." And, "Where plans have been successful, the attention to people's needs (emotional, symbolic, and organizational, as well as economic and community needs) were given consideration along with the resource capabilities and commodity schedules." (USDA Forest Service 1990a, pp. 3, 13).

The only way to reveal "issues about which people deeply care" or "people's needs" is through public involvement.

It would be easier to argue against the role of social scientists in public involvement if the process were working well. In fact, the process appears to be badly broken. In a recent evaluation of resource management, Cortner (1996) observes that "past efforts at resource management have not adequately dealt with the public's desires to be heard and listened to" (p. 165). She goes on to critique early public participation efforts specifically, and finds that:

"... these efforts failed to achieve participation by all affected segments of the public; failed to accommodate those segments of the public that did participate; occurred too late in the process, or if it occurred early was not sustained throughout the process; and separated the planning and public involvement processes thereby making it hard to integrate citizen input." (p.168)

Scientists have much to offer to the practice of public involvement in National Forest planning and management. First, through their participation in public involvement activities, scientists can share various disciplinary answers to or perspectives on Gericke et al.'s questions listed above and the concerns of Cortner. More to the point, social scientists can (1) assist the planning team in identifying tasks where public involvement is required, (2) identify places in the planning process where public involvement can improve decisionmaking, (3) suggest additional types of information that could be obtained through public involvement activities, and (4) match the correct or appropriate public involvement tool with the planning task.

The second area in which social scientists can make a contribution is in the analysis and integration of qualitative data into the planning process. The pages of comments that forests receive from letters and transcripts of public meetings, although not necessarily quantifiable, are still vital to forest planning and decisionmaking. Scientists can help managers develop ways to systematically interpret and display this data so that it is useful information for decisionmakers and their partners. The goal in analyzing public input is to have a process that is "not only visible and traceable but also objective and reliable" (Hendee et al. 1974). Finally, social scientists can help NFS personnel define the goals of their public involvement process and establish criteria for evaluating its effectiveness.

Scientists should leave public involvement to Forest Service staff and public affairs officers.

Involving scientists in the design of NFS public involvement strategies is sure to disappoint both managers and scientists. First, managers simply don't have much latitude in designing their public involvement processes. The same legislation and regulations that mandate the use of public involvement leave managers a very small decision space within which to work (Krannich et al. 1994). Forest Service planning is not a good laboratory for trying out the latest social science model, because many aspects of the participation process are pre-determined. In addition, planning situations vary so much that there is a lack of generalizability from one planning situation to the next (Day 1997), limiting the usefulness of research.

In a recent review of planning literature, Day (1997) found that public involvement studies often emphasize how to maintain or shift the balance of political power by manipulating the public involvement process. Much of the difference across research studies can be traced to the ideological stance of the scientist. Those who believe in pluralism tend to see the best results from those methods that involve listening to all who come forward. Those who are revisionist see a great and unjust disparity between those who are involved and those who are not. The blending of political philosophy with social science has a

long tradition in public involvement research (Day 1997), which suggests planners might be wise to turn down scientists' offers of help.

Few scientists active in human dimension of natural resources research have qualifications in planning, policy studies, communication or political science, where much of the relevant theoretical work in participation can be found. The expertise they bring to public involvement in forest planning is in the area of understanding the context in which the NFS participation process unfolds, not in their mastery of its theoretical bases. As such, their advice should be given and received with due caution.

Question 2. Is a full social assessment necessary for plan revision?

Background

The Forest Service manual defines a social assessment as a "broad level or programmatic data collection and analysis process used to generate information about the social environment." It is not a decision document, but is meant to be used by national forest managers as background information for decisionmaking--providing them a description of past, present, and potential social conditions.

There are few examples of forest-level social assessments in the literature, although they ubdoubtably exist on the shelves and in the files of individual forests. One example of a forest-level social assessment is the assessment prepared for the Kootenai National Forest (Impact Assessment, Incorporated 1995). The objective of this report was to describe public perceptions regarding forest management issues and the social, cultural, and economic factors that influence public perceptions. In a similar document looking at Ravalli County, Montana, and prepared for the Northern Region of the Forest Service (Bitterroot Social Research Institute 1994) the authors argue that "attempts to manage ecosystems must carefully consider the human dimension; without this factor, there would be no reason to manage anything. The best method to gather and assess information concerning the human dimension of ecosystems is a process called social assessment." (p.1)

Recently the focus of social assessments have shifted from a national forest or individual county to a multi-county or multi-state region. Large area social assessments have been popping up like spring mushrooms - witness FEMAT (1993), the Southern Appalachian Assessment (Southern Appalachian Man and the Biosphere Cooperative, 1996), and the on-going Ozark-Ouachita Highlands Assessment. But regardless of their geographic coverage, social assessments are time consuming and costly, and the jury is still out on the value of these assessments for planning and decision making. In the absence of evaluations of the success or applicability of the social assessments that have been undertaken, is a full social assessment advisable for forest plan revision?

A full social assessment in conjunction with plan revision is overkill.

Forests are not required to undertake a full social assessment in conjunction with planning or plan revision. The NEPA requires disclosure of the social impacts that are associated with Forest Plan revision. When, based on the decision maker's judgement, social impacts are expected, they need to be determined and disclosed to the public. This amounts to a full *social impact analysis* - quantifying and describing all impacts of specific management actions - not a full *social assessment* covering all aspects of community life and health, whether impacted by proposed plan changes or not.

In the Forest Service, the decision to conduct a social assessment and the contents of such a document are left to the discretion of the line officer responsible for that forest. If the line officer is convinced a sufficient understanding of the social conditions in their area exists, why would they undertake a lengthy and expensive exercise that will produce little or no new useful information? Rather than spend their time and money gathering new information about the people and institutions important to the National Forests, managers should develop a framework for incorporating the wealth of knowledge they and their staff already hold about social conditions so that it is of use in forest planning and decisionmaking.

A second alternative to a full social assessment is a more narrow assessment of just the social components of the issues identified in the Notice Of Intent (one of the first summaries of plan revision issues). Many of these forest planning issues are defined in terms of biological or physical resources, and by focusing social analysis on these problems, their biological, physical and social dimensions can be tied together and the interactions and linkages among the dimensions made more apparent.

A full social assessment is a well worth the time and money .

Although not required by law or regulation, social assessments set the stage on which National Forests perform. The Forest Service's own NEPA training courses highlight the need for evaluating current conditions in implementing forest planning. A social assessment provides such an evaluation. Following the first round of planning on the National Forests, a critique of that process found that forest planning, as practiced by the Forest Service, lacked any means of incorporating social issues into decision making (USDA Forest Service 1990a):

"We apparently provided the decisionmakers with reams of FORPLAN results and resource data but with very little information on the demographics, culture, or lifestyle of constituents. As a result, decisions often were not acceptable in social and political spheres." (USDA Forest Service 1990b, p.14)

Information describing the demographics, culture, and lifestyle are the essence of a standard social assessment.

The National Forests are being managed under an ecosystem management paradigm, which has been defined by the Agency as: "A concept of natural resources management wherein National Forest activities are

considered with the context of economic, ecological, and social interactions within a defined area or region over both the short- and long-term." There is no way that the "context of economic, ecological, and social interactions" can be understood without a broad analysis of the ways in which people are part of and interact with forest ecosystems. Social assessments provide such an analysis.

Question 3. Do all scientists play the same role in plan revision, or do social scientists play a potentially more sensitive role?

Background

NFS relies on scientists from a wide range of disciplines to lend expertise on resource management issues, and to help predict the effects of management decisions. Ecosystem management depends on scientists to support an adaptive management approach, where managers are encouraged to treat policies as experiments, learn from them, and refine their management practices (USDA 1995). Any scientist involved in NFS planning will judge the outcomes (i.e., proposed alternatives and their consequences) of the planning process. Yet social scientists' expertise may also extend to the process by which decisions are made, or the reasons for disagreements about resource management and use. Does the broad scope and political nature of social science create unique responsibilities for social scientists working in plan revision, or do all scientists face essentially the same kind of task?

All scientists face the same kind of challenges.

All scientists share the fundamental goal of improving our understanding of the world. The knowledge they generate sometimes has widespread, unanticipated consequences. Intentionally or otherwise, scientists often challenge popular ideas, redistribute power, raise concerns where none existed before, or change relations between people or groups of people. These effects will be felt most acutely when new knowledge is being added rapidly - which is also justification for addressing an issue in plan revision. Any scientist involved in plan revision will be dealing with potentially sensitive issues.

Forest management policy is often based on scientific findings, and scientists in the Forest Service have been caught up in the politics of natural resource management for years, despite the best efforts of the agency to insulate them (USDA Forest Service, 1995). The spotted owl controversy provides the perfect example of how inflamed a "strictly biological" debate can get. Even something that appears simple and straightforward, like the definition of "old growth forest", has political ramifications and can make an ecologists' work the focus of controversy.

The political sensitivity of any scientist's work stems in part from their personal world view and style. Just as there are social scientists who aim to change the balance of power between social groups through their research (Rosenau 1992), there are biologists whose mission is changing the priorities of land managers (Lautenschlager 1996). Post-modern philosophies of science call for more honesty about the scientist's personal agenda, and as a result, there is more discussion and declaration of agendas than ever before (Rosenau 1992). Its effects are evident in the criticism and dialogue that surrounds debates over natural resource, ecosystem management, and ecology (e.g., Kellert and Wilson 1993; Cronon 1995).

The idea that social scientists have a more delicate mission is just a symptom of being relatively new to resource management, still lacking institutional knowledge of how to anticipate and deal with controversy. There is no reason for social scientists to approach plan revision differently than the rest of the scientific community does.

Social scientists have a different role in plan revision.

When biologists and physical scientists comment on the consequences of management actions, their criticism usually applies to recommendations made by a resource specialist or interdisciplinary team. Social scientists more often apply their expertise to judgements made at a higher level of the agency. For example, when a social scientist comments on the method the forest has used to involve its publics, or the process by which issues are screened, or the relationship a forest has with its Friends of the Forest group, their criticism applies to the judgement of line officers, the Regional Forester, national leadership, or Congress.

Because social scientists study the needs and values that drive the political processes bearing on forest planning, the focus of their research is different from that of biological or physical scientists. Managers rarely ask scientists for input on many aspects of the plan revision process; in fact, the questions many social scientists find most fascinating are likely to be the same ones managers are least likely to ask them to study. For example, from the perspective of a social scientist, the question of how best to reach a decision is a potential research question. To most managers, it is a policy question, and they rightly see themselves as the experts where agency policy is concerned. NFS managers simply may not see scientific expertise as relevant to what they are doing. The same is true of research on the ways in which NFS personnel engage with or respond to the public, how NFS staff judge the public and how the public judges them. When social scientists offer to analyze a difficult management situation, there is a natural hesitancy on the part of the manager to submit to scrutiny, and few managers will be comfortable initiating a study of their actions.

Although research carried out in conjunction with plan revision does not necessarily have to originate from or even please NFS managers, it does have to relevant and useable. Without a long track record of previous research to point to, social scientists face a greater challenge convincing managers that their research will be helpful. If managers do not use social science research results, social scientists will have difficulty establishing the relevance and worth of their work, the ultimate test of their success.

Conclusion

There are no right or wrong answers to these questions. Rather, answers vary by National Forest and by individual

scientist. The important point is that social scientists and forest managers work together to insure that the best possible planning process is implemented on each forest, and that adaptive management represents a true partnership between scientists and manager.

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NATIONAL RECREATION TRAILS: AN OVERVIEW

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Abstract: Since the establishment of the National Trails System in 1968, 822 trails have been designated as National Recreation Trails (NRT). These trails support a wide range of activities, including but not limited to hiking, mountain biking, cross country skiing and horseback riding. In short, NRTs can be found across a diversity of geographic settings and are frequent destinations for a wide variety of people looking for natural resource-based recreation experiences. Most NRTs are federally managed with the balance managed by state, municipal, or private entities. To date, NRT management concerns and strategies, especially successful strategies, have not been identified. While some studies have focused on National Scenic Trails or National Historic Trails, this study is the first comprehensive survey of National Recreation Trails since the NRT organic Act. It is clear, however, that many NRT managers do not use their special trail designations to any advantage.

Introduction

Almost 30 years ago, Congress passed the National Trails System Act. That legislation gave us National Scenic Trails like the Appalachian Trail and the Pacific Crest Trail, National Historic Trails like the Iditarod and the Lewis & Clark Trail, and National Recreation Trails - perhaps the least familiar of the three designation types. The rationale for NRT designation offered back in 1968 was that it conveyed some level of prestige resulting in favorable publicity, community benefits, and added protection for trails. Today there are 822 NRTs across the US, supporting a wide range of activities, including but not limited to, hiking, mountain biking, XC skiing, and horseback riding. Trail lengths vary in range from 0.1 mile (in Florida) to 410 miles (in Pennsylvania). Trail surface types range from concrete (2%) and asphalt (12%) to natural surfaces (86%).

Methods

The main objectives of the study were to: (1) describe NRTs; (2) determine allowable uses; (3) determine which issues are important to managers, and (4) determine which management techniques/tools are being used. Of the 822 NRTs, 64.8% are federally managed, and the rest (35.2%) are managed by a variety of nonfederal public and private entities, ranging from state governments to private foundations. Given the relatively small population size, we attempted a census survey. While our response rate of 63.4% fell far short of a census, we nevertheless achieved a sample that closely mimics the population. When we compared the sample to the population on key variables, we found no meaningful differences. Follow-up phone calls support a lack of nonresponse bias; that is, we feel the data are representative of the population studied. With or without a complete census, our results are limited to a discussion based on descriptive statistics, including bivariate and multivariate analyses. To our knowledge this is the first study of NRTs; it is exploratory and descriptive. The results reported here are for mailback questionnaire responses from 521 NRT managers, 67.9% of them federally managed and 32.1% managed by nonfederal entities.

Results

The US Forest Service manages 45% of all NRTs. Table 1 shows the rank order comparison of all NRTs, to only those that responded, by administering agency. Federally managed NRTs are shaded. This table clearly shows that the distribution of responses mimics the population distribution.

Table 1. Rank order comparison of all NRTs to only those that responded, by administering agency.

Administering Agency	All NRTs	NRTs in Sample
USFS	45.5%	44.3%
City P&R	10.6%	9.4%
States	7.6%	8.5%
National Parks	6.6%	6.5%
Other[1]	6.3%	5.7%
USACOE	6.0%	8.3%
Local Board	3.7%	3.1%
County Parks	3.5%	3.0%
BLM	3.0%	3.7%
Other Federal[2]	2.6%	3.7%
State Park	1.7%	2.2%
USFWS	1.5%	1.2%
TVA	1.1%	0.2%
State Board	0.4%	0.2%

[1] Includes private companies/utilities, universities, and foundations (e.g. Univ. of Northern Florida, Audubon).

[2] Includes National Recreation Areas, National battlefields, National Memorial/Historic sites.

We compared NRTs by their designation year to determine if we could discount overrepresentation by more recently designated NRTs. Table 2 shows the rank order comparison of those who responded, to all NRTs, by their designation year. Again, we found no meaningful

differences. It is interesting to note that 70% of all NRTs were designated in the late 1970s and early 1980s.

Table 2. Comparison of all NRTs to only those that responded, by the year of NRT designation.

Year Designated	All NRTs	NRTs in Sample
1969	0.1%	0.2%
1970	0.1%	0
1971	3.5%	3.7%
1972	0.4%	0.6%
1973	0.9%	0.8%
1974	1.5%	1.2%
1975	2.7%	1.5%
1976	3.5%	3.1%
1977	3.5%	4.4%
1978	10.0%	9.8%
1979	25.8%	24.9%
1980	11.6%	10.8%
1981	16.5%	17.4%
1982	7.0%	7.5%
1983	2.1%	2.1%
1984	2.2%	2.1%
1985	1.1%	0.8%
1986	0.7%	0.8%
1987	0.7%	1.0%
1988	0.4%	0.4%
1989	0.5%	0.6%
1990	1.1%	1.2%
1991	0.4%	0.6%
1992	1.8%	2.3%
1993	0.5%	0.8%
1994	0.9%	1.0%
1995	0.5%	0.6%

Only about 10% of NRTs support motorized vehicle use of any kind. The balance of NRTs accommodate nonmotorized use by a single recreation user type (49.3%) such as only pedestrians or only cross-country skiers, or they support diverse nonmotorized use (40.4%) by, for example, bicyclists, pedestrians, and in-line skaters. Given these use characteristics, it is nevertheless surprising that NRT managers report seldom encountering user conflicts.

We asked managers to rank order their most important management challenges (safety, resource damage, accidents, user conflicts). Over half of respondents ranked safety as their most critical challenge (Figure 1). But, when asked how frequently they encountered those same management challenges (and collapsing the *frequently* and *often* response categories), safety dropped to second place (Figure 2). User conflicts, again, do not seem to be a serious problem on NRTs. Likewise, conflicts between a variety of specifc user groups, from walkers and runners to XC skiers and snowmobilers, are low. The most frequently encountered problem was between pedestrians and runners/joggers (by only 6.8% of all NRT managers who responded), followed by pedestrians and mountain bicyclists (only 5.2% of all NRT managers who responded).

Figure 1. Critical Management Challenges

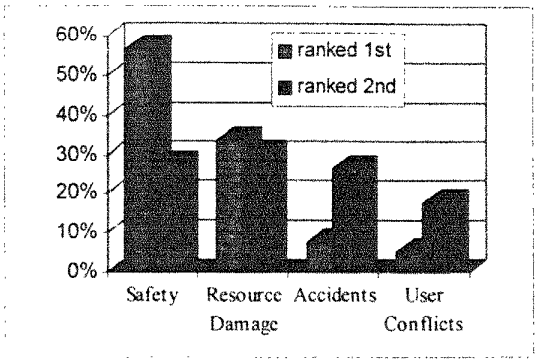
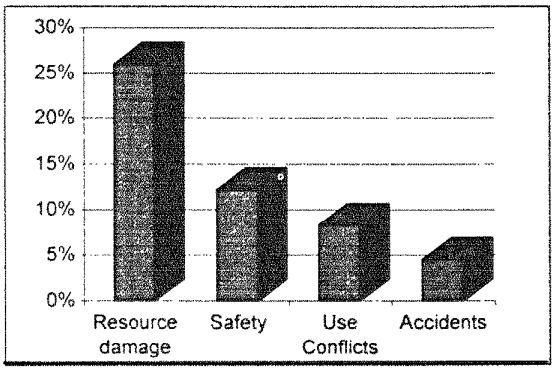


Figure 2. Frequency of Management Challenges



When we examined NRT trails by allowable use categories that didn't cater to only single uses, we found slightly higher reports of user conflicts. For NRTs that allow nonmotorized diverse use (40.4% of all NRTs), managers report user conflicts between pedestrians and mountain bicyclists (8.9%), pedestrians and tour bicyclists (7.4%), tour bicyclists and in-line skaters (6.9%), pedestrians and runners or joggers (6.3%), mountain bicyclists and equestrians or in-line skaters (5.3% each). For NRTs that allow diversified motorized and nonmotorized use (7.4%), managers report user conflicts between cross country skiers and snowmobilers (8.3%) and between snowshoers and snowmobilers (5.6%). Managers of NRTs that allow motorized diverse use (1.6%) did not report any user conflicts. These results are not indicative of serious user conflict problems.

To ascertain what tools and techniques NRT managers use to deal with the problems of safety, accidents, user conflicts, and resource damage, we used a five point scale, collapsing the frequently and often categories for Tables 3 and 4. The tools and techniques used are divided into 4 main groups: indirect, resource hardening, direct tools, and bridge building techniques.

Most managers rely on indirect management methods. In rank order, the tools and techniques used most often are informative or educational, such as maps (60%), trailhead (58.2%) & trailside signs (36.3%), bulletin boards (47.4%), brochures (46.8%), and a staffed information desk (38.9%). Two resource hardening, or physical, tools that ranked

within the top ten are monitoring the trail (38.7%) and installing water bars (33.4%). We know that while visitors are attracted to maps, they are not an effective strategy for communicating messages (Cole et al. 1997). It has also been reported that sign-based messages (such as trailside signs) and bulletin boards can be effective ways of communicating information, at least for hikers, if you can get them to stop and read the messages, and at the same time avoid message overload (*ibid.*).

Table 3. Management tools and techniques used on the NRT to deal with the problems of SAFETY, ACCIDENTS, USER CONFLICTS, and RESOURCE DAMAGE.

Percent	Rank	Tool/Technique
Indirect tools/techniques		
60.0%	1	Maps
58.2%	2	Trailhead signs
47.4%	3	Bulletin board(s)
46.8%	4	Brochures
38.9%	5	A staffed information desk
36.3%	7	Trailside signs
34.7%	8	Informational posters
29.7%	10	User ethics information
21.6%		Exhibits/displays
16.0%		A self-serve info. desk
9.4%		Local newspaper articles
7.5%		Public service announcements
Resource Hardening tools/techniques		
38.7%	6	Monitor trail
33.4%	9	Water bars
20.3%		Drain dips
17.9%		Harden trail surface(s)
17.1%		Trail reconstruction
13.3%		Low bridges
9.8%		Small culverts
7.4%		Boardwalks
5.2%		Turnpiking
4.7%		Wide turnouts
4.6%		Trail relocation
3.8%		Re-design trail

Finally, we asked whether NRT management is the only priority of those who responded, or if it is a top priority. Only 11% of managers listed NRT management as their only priority, while 43.8% said it is a top priority.

Recommendations

We have several recommendations for further study. First, it seems that the next logical step is to survey NRT users. Are users even aware of the NRT designation? Do they recognize NRTs as distinct from other trails? Does the designation carry any status or prestige for NRT users? And, does NRT designation affect behavior in any way? How might we explain the low incidence of user conflicts? Is it an indication of the effectiveness of NRT management tools and techniques? Another line of inquiry is to compare the management issues given by NRT managers to those of other trail managers. Do NRTs really exhibit fewer problems? Of particular interest is the apparent success of NRTs in regard to user conflicts. What is different, if anything?

Table 4. Management tools and techniques used on the NRT to deal with the problems of SAFETY, ACCIDENTS, USER CONFLICTS, and/or RESOURCE DAMAGE.

Percent	Tools/Techniques
Direct tools/techniques	
15.2%	Law enforcement
8.9%	Separate trail users
7.4%	Seasonal closures
6.6%	Limit organized group use
5.0%	Limit use
2.5%	Close area
Bridge building tools/techniques	
28.9%	Volunteer association groups
28.5%	Personal contacts - but not law enforcement
25.2%	Maintain trail with local users
17.9%	Local club contacts
14.7%	Volunteer patrols
10.2%	Committees with user group reps.
8.5%	State club contacts
5.4%	Partnerships with businesses
4.7%	National club contacts
2.3%	Workshops

As mentioned above, the rationale for NRT designation offered in 1968 was that it conveyed some level of prestige resulting in favorable publicity, community benefits, and added protection for trails. By way of responding to that, below are some of the comments we received from NRT managers:

"I apologize for taking so long [to return the questionnaire] - with downsizing and funding levels there is not much time except for crises management and top priority projects."

"We haven't been able to locate this trail."

"We've talked to a lot of people, and they didn't know anything about [the trail.]"

"I must tell you up front that while a good portion of the trail is improved and easily accessible by the public, in the overall scheme of things in our parks system it is a relatively small trail. We do not program even the maintenance of this trail on a regular basis, other than roadside weed abatement. We do not monitor its use. You should be aware that due to budget erosion over the last 10 years, [we have] had no formal budget for trail maintenance."

"The trails at [this park] are no longer available to the general public."

"Plans are to remove these trails in the near future. These have not been managed to NRT standards."

And lastly, "No one has heard of this trail."

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DEMONSTRATING THE VALUE OF A SOCIAL SCIENCE RESEARCH PROGRAM TO A NATURAL RESOURCE MANAGEMENT AGENCY

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Abstract: With ever tightening resources to address an increased number of diverse and complex issues, it has become common for scientists and managers to be called upon to demonstrate the value of their programs. In the spring of 1995, social scientists at the USDA Forest Service North Central Forest Experiment Station we so called upon. This paper discusses an effort to demonstrate the value of a social science research program for the Agency and the Station. We describe our experiences to share our perspectives on the value of a social science research program to public land management, and as an aid to others likely to face similar challenges in the future.

Introduction

In this time of declining budgets and re-evaluation of priorities for funding public programs, many of us have been called upon to demonstrate the value of our program's continued existence; others may face this challenge in the years ahead. In the USDA Forest Service, we have been going through a number of critical evaluations of our research program. One impetus for these evaluations is the National Performance Review's recommendations to federal agencies regarding improving services to the public by eliminating obsolete programs and restructuring others (National Performance Review 1993). Through a strategic planning process currently underway within the Agency, we are working to clearly identify the role and focus of the Forest Service's research program.

In May 1995, social scientists at the North Central Forest Experiment Station (NCFES) were asked by the Forest Service Research staff to clarify the role and value to the Forest Service of social science research. We were subsequently asked to build on that effort and outline the focus of a social science research program at NCFES that contributes to the Agency's mission of "Caring for the Land and Serving the People". In this paper we discuss the process we used to develop a justification for social science research for both the Agency and the Station, as well as some lessons we learned in undertaking the process. We present this process in the hope that it will help others who will evaluate the importance of their programs to their agencies.

Demonstrating the Value of a National Social Science Research Program in a Public Resource Management Agency

In justifying a social science research program for the USDA Forest Service we focused on five tasks that should be completed in order for decisionmakers to have the information they need to evaluate a program. Although the tasks are framed within the context of Forest Service social science research, they are applicable to any program:

1. Identify how social science research supports the Forest Service's mission.
2. Demonstrate support for an Agency social science research program.
3. Highlight benefits of the social science research program to the Agency.
4. Describe the unique role of the Forest Service's social science research program.
5. Identify emerging social issues with potential impacts on natural resource management and use, and how social science research can help the Agency meet these challenges.

Identify How the Program Supports the Agency's Mission—It is critical in justifying any program that the program be tied to major areas that the agency expects to emphasize in the years ahead. At the time we were tackling this assignment, broad guidance for Forest Service operations came from two sources—the Agency's statement of a mission, vision, and guiding principles; and a document called "The Forest Service Ethics and Course to the Future." We felt it was critical that we link a national program of social science research to these two documents. You may have similar documents for your organizations.

Regarding the Agency's mission, "Caring for the land and serving the people." Obviously we cannot effectively "serve the people" without a clear understanding of their values, expectations, and behaviors. In "caring for the land," the Agency has considerable expertise in the biological and physical sciences, but its implementation of management strategies is often hampered because of conflicts resulting from competing uses and changing values and expectations associated with public lands. Information developed by social science research is critical to successful implementation of these strategies.

"The Forest Service Ethics and Course to the Future," broadly described the management context and the Agency's focus in providing sustainable benefits to U.S. citizens and to the world. Priorities established in the document included:

1. protect ecosystems,
2. restore deteriorated ecosystems,
3. provide multiple benefits to people within the capabilities of ecosystems, and
4. ensure organizational effectiveness.

Information from social science research figures prominently in supporting all four priorities. We cannot hope to protect or restore ecosystems (items 1 and 2 above) without public understanding and support for these goals and the steps necessary to reach them. The tie of social science research to the third item is clear given research on resource benefits. Regarding the fourth item, there is a significant body of social science literature on improving organizational effectiveness. Although much of this research has been conducted outside the Agency, we need to test some of these findings within the Forest Service, and to conduct research that focuses on how we might implement our mission and vision and apply our guiding principles. Additionally, as discussed earlier, the conflict engendered by trying to implement land management strategies without adequate understanding of or support from the Agency's publics substantially impacts organizational effectiveness.

Demonstrate Support for a Forest Service Social Science Research Program—Identifying internal and external constituencies or supporters for the research being done by Forest Service social scientists makes a powerful statement on the value of this work. With respect to constituents internal to the Agency, a survey of Forest Service employees (Gregersen et al. 1989) showed strong support for social science research. When asked to identify the single greatest challenge facing the Forest Service today, the most common responses by Agency personnel focused on identifying and responding to what the public wants, as well as dealing with changing values and perceptions. Social science research can help the Agency meet these challenges. A more recent study (Mohai et al. 1994) found that Forest Service employees support giving the public more say in Forest Service policymaking. Finding ways to effectively give the public a greater say falls within the realm of social science research.

The need for social science research was also identified in a review of the Agency's first round of National Forest planning (USDA Forest Service 1990a and 1990b). Critique findings that support the need for social science research include the observation that "We must first recognize and accept that planning has important social and political dimensions. We learned the hard way that if we ignore these aspects, the planning process breaks down, and plans cannot be completed or implemented." (USDA Forest Service 1990a p.13) And that to be successful, forest plans need to recognize "other values with less emphasis on receipts and economics." (USDA Forest Service 1990b p.7) "We apparently provided the decisionmakers... very little information on the demographics, culture, or lifestyle of constituents. As a result, decisions often were not acceptable in the social and political spheres." (USDA Forest Service 1990b p.14). Social science research offers solutions to the problems of incorporating "other values" into decisionmaking, including the incorporation of demographics, and information on culture or lifestyle. Social science research can help insure that forest plans are more socially acceptable and politically feasible.

Further support for Forest Service social science research comes from the Agency's long-term strategic plan, as outlined in the draft 1995 Resources Planning Act (RPA) Program (USDA Forest Service 1995). That document highlights the need to understand "the relationship between people and forest and range ecosystems," and promises that research "will contribute by taking a scientific approach to understanding people's needs and values with regard to ecosystems, thereby providing information which will be necessary in the development of management options that better meet people's needs." (p. III-48). The RPA Program also talks about the need to "incorporate social sciences into policy-related analyses and studies." (p. III-48)

We also had the results of external evaluations of Forest Service Research in which the need to incorporate more social science information into the Agency's land management efforts was highlighted. One of the most often cited studies highlighting the need for more social science research is the National Research Council's *Forestry Research: Mandate for Change*. The Council recommends increased funding in five major areas, including human-forest interactions. The authors observe: "Our efforts to understand how people think about and act on forests have been minimal, and yet most controversies and shortages ultimately arise from human activity... The opportunity to increase knowledge and solve problems is great if research on human-forest interactions is accelerated and if the social ecology of forests is better understood." (National Research Council 1990 pp. 37-38)

Highlight Benefits of the Social Science Research Program to the Agency—Because research is such a small portion of the total Forest Service program, and social science research is relatively small within the research effort itself, we felt it was important to highlighted some past accomplishments of the Agency's program, including (but not limited to):

1. developed tools for management decisionmaking such as Limits to Acceptable Change, Recreational Opportunity Spectrum, Visual Resource Management System, and Benefits-Based Management;
2. developed analyses and recommendations regarding forestry incentives programs;
3. developed analyses and recommendations regarding impacts of log exports and imports on employment by geographic region and sector;
4. helped the urban national forests better serve their diverse recreation customers;
5. developed methods for collecting recreation area visitor information and estimating use; and
6. estimated the economic value of noncommodity resources, and the affects of various approaches to investment.

This list illustrates an important characteristic of Forest Service social science research—it is diverse. This diversity is expressed in three ways. First, the social scientists in the Forest Service come from diverse disciplinary backgrounds. Our social science workforce offers perspectives from geography, economics, sociology, landscape architecture, psychology, parks and recreation, planning, policy, and archeology. Each of these perspectives offers unique ways of defining and addressing

natural resource issues. Second, our client base is diverse. We serve groups from large public land managers to small individual private landowners, from wilderness campers to inner-city urban park day users, from small resource-dependent rural communities to large metropolitan areas. Finally, our research covers a diverse array of topics. We've analyzed the impacts of a log export embargo on employment in the Pacific Northwest, identified perceptions of safety in urban parks, and developed computer software for managing small woodlots. The questions and needs of forest managers and users are diverse—our program has, and will continue to reflect this diversity.

Describe the Unique Role of the Forest Service's Social Science Research Program—Looking back over our accomplishments we felt that there are four characteristics that help describe how the Agency's social science research program operates. First, we are client focused. We work with managers and policy makers to enhance the well-being of people through more effective resource management. Our research agenda reflects the needs of our clients. Second, we are problem oriented. We work in the context of actual resource management problems and time frames. We provide managers with the information necessary to develop plans and make decisions for specific resources and places in a timely fashion. Third, we work in teams. We bring together managers, university colleagues, people from other agencies, technology transfer specialists, policy makers, and others to solve specific problems. Increasingly these teams include researchers from a wide range of biological, physical, and social sciences. Finally, we emphasize high quality science in pursuit of generating information to meet the needs of our clients. Although many highlight the differences between the social sciences and the biological and physical sciences, we are similar in that we follow established scientific methods that produce results that are scientifically rigorous and defensible.

Another question related to the role of the Agency's social science research program is "How does the Forest Service social science research program relate to social science research at universities?" It is vital for any public program to be able to distinguish itself from other similar programs, and to be able to place its efforts or mission within a larger context that extends beyond the government sector. Although there are significant differences in the way social science research is conducted in the Forest Service and at universities, the Agency's social scientists work closely with their university partners in ways that capitalize on the strengths of both. When we provide funding for cooperative research projects or work with our university partners in other ways, it helps direct university research toward areas useful to the Forest Service. In instances where we are able to cooperate, our leadership and sensitivity to Agency concerns assure that the research effort stays focused on critical issues, is completed within management-relevant time frames, and is delivered to managers in a useful form.

Identifying Emerging Social Issues—NCFES social scientists have worked to identify critical and/or emerging social issues that have important implications for natural resource management and use. In identifying these issues we started with a clean slate. Many times when agencies are called upon to justify or develop a research program, they start with what they have and use that as a foundation for future work. However, rather than beginning our process by focusing inward on the Agency, we felt that we needed to look outward, at the broader issues affecting society. We could then identify the societal issues with strong natural resource components and finally develop some critical questions related to each issue that Forest Service social science research should address. The list is based not just on our own interpretation of events, but on issues and concerns expressed by our partners as we cooperate or consult with them about research needs and priorities. We identified seven major issues:

1. The values that people place on forests are changing dramatically—the future of the nation's forests hinges on our ability to keep pace with social change, to understand the forces that drive it, and to integrate these changing values into forest management strategies.
2. Effective communication between the Forest Service and its publics is increasingly important—in the absence of effective communication between the Forest Service and its publics about management of their forest ecosystems, people resort to extreme and contentious ways to make their voices heard.
3. Changing population demographics have wide-ranging implications for forest management—without a better understanding of demographic shifts and their implications, any agency is severely limited in its ability to develop responsive and pro-active management strategies for the years ahead.
4. A growing realization that social systems are intertwined with biological and physical systems raises new questions about the management and use of forest ecosystems—if we don't understand people and natural resource relationships, we simply cannot understand or sustain ecosystems.
5. Social change has and will continue to be a driving force in shaping landscape uses and conditions—attempting to protect, manage, and restore forest ecosystems by focusing solely on the physical and biological dimensions of these systems is socially and politically naive, imperiling the ecosystems we are charged with caring for, the people who depend on these ecosystems for their quality of life, and resource management agencies themselves.
6. Changes in the way we manage forest ecosystems affect the health and sustainability of communities—until we fully understand impacts to communities from forest management policies, natural resource management agencies will continue to find themselves vulnerable to accusations of weakening community character and viability, threatening traditional lifestyles, and ignoring environmental justice.
7. Transition to a global economy and changing land use patterns are transforming forest landscapes and affecting resource markets—local managers may miss significant opportunities for development or blunder into serious conflicts without a good understanding of how these broader social and economic changes affect them.

Moving From an Agency to Station Perspective—Operationalizing the Agency Vision

After making the case for social science research in the Forest Service, we were asked by Station management to develop a social science research program for NCFES. In moving from an Agency to a Station focus, we thought it was critical to accomplish five tasks—clearly define our goals and expected research outcomes; highlight our strengths as a Station; tie our program to where the Station is headed; define the regional contribution to national trends; and take an ecosystem approach.

Define Goals—The goal of the NCFES social science research program is to identify the linkages between the health and productivity of our forests and grasslands and the health and productivity of individuals, communities, and social institutions. The outcome of this research will be forest management decisions that are not only more scientifically feasible but also more politically justifiable. This research has the potential to reduced conflict over natural resource management and use. Reduced conflict would be an outcome of research that decreases or eliminates discrepancies between public values and managers' perceptions of those values; and between the biological, physical, and legal limits to sustainable management and public perceptions of these limits.

Highlight Strengths—We felt that a social science research program is appropriate for NCFES because we have a critical mass of social scientists with diverse backgrounds who already operate effectively as a team. This team consists of 15 scientists from five research work units, as well as numerous research cooperators in colleges and universities and other organizations. Members of the social science team have a broad range of expertise that includes geography, psychology, sociology, economics, parks and recreation, landscape architecture, planning, public policy, forestry, and biology. NCFES social scientists have also begun conducting integrated, interdisciplinary research with Station biological and physical scientists. These efforts have been enhanced by social scientists with backgrounds in forestry and biology, as well as in integrating disciplines such as landscape architecture, parks and recreation, and planning. As we'll discuss later, we see the integration of the social sciences with the biological and physical sciences as critical to answering many of the challenges facing natural resource managers.

Tie to Station Strategic Direction—The focus of the NCFES social science research program is on people-forest interactions—on how forests influence people and how people influence forests. These interactions are a critical component of many significant natural resource issues. As mentioned earlier, this area of research has been highlighted in a number of important strategic planing documents at the national level. It has also been a critical component of NCFES planning documents such as the North Central Forest Experiment Station Strategic Plan and the North Central Forest Experiment Station Ecosystem Management Research Plan. We have participated in Station committees on organizational structures, and will provide assistance with the Station's upcoming strategic planning process.

Define the Regional Context of National Trends—We listed earlier some broad social trends occurring across the country that influence natural resource management and use. At the North Central Station we chose to highlight the regional significance of six of the national trends mentioned earlier:

1. The values that people place on forests are changing dramatically—the large metropolitan areas in the North Central region place millions of people within a few hours of national forests, state parks, and other forested land. While the values of some of these people have been changing, immigrants and people new to forest use have brought greater and more diverse demands on the region's forests.
2. Effective communication between the Forest Service and the public is increasingly important—the number of people interested in and or impacted by forest management decisions is increasing. The large population centers in the North Central region provide greater opportunities and demands for collaborative partnerships which require more effective communication between forest managers and their partners.
3. Changing population demographics have wide-ranging implications for forest management—demographic changes such as increasing age, greater racial and ethnic diversity, and urbanization will have significant impacts on the forests in the North Central region and throughout the U.S.
4. A growing realization that social systems are intertwined with biological and physical systems raises new questions about the management and use of forest ecosystems—in the North Central region, these impacts are especially evident in riparian ecosystems. Riparian areas are a defining characteristics of the North Central region, and it is in the management and use of these areas where tension is often evident between competing users at a site and between users far removed geographically but joined by a ribbon of lakes, rivers, and wetlands.
5. Social change has and will continue to be a driving force in shaping landscape uses and conditions—in the North Central region we have a long history of urbanites summering in forested areas. We are also experiencing increased suburbanization and net immigration in some rural areas. Both these seasonal and new residents have significant impacts on the landscape.
6. Changes in the way we manage forest ecosystems affect the health and sustainability of communities—in the North Central region we have a relatively long history of logging and mining, both of which have played a major role in the establishment and sustainability of rural communities. Changes in the way we manage forests, particularly in the way they impact these two uses of the forest, can have significant impacts on the health of rural communities.

Take an Ecosystem Approach—Two of the tenets of ecosystem management are that ecosystems include people, and that the health and productivity of social systems are

linked to the health and productivity of natural systems. The NCFES social science research program has already been exploring the interactions between forests and communities across the regional landscape—from our large metropolitan areas to isolated rural communities (for example research in urban forestry and rural development). While recognizing special needs in particular areas, we can be most effective in using our scarce resources by focusing on ties between forest management and communities across the urban to wilderness landscape. In urban centers, we address the linkages between the quality of urban life and trees, parks, and open areas. In rural communities the focus shifts to linkages between forest landscapes, forest outputs, and community prosperity and stability. At the interface between these two segments of the landscape we can conduct research related to partnerships and collaborative planning.

There are also critical linkages in people-forest interactions across the landscape. Values formed in urban areas often influence perceptions of how forests should be managed elsewhere. Experiences in rural areas often shape the values of urban residents; urban residents are important users of rural environments; and individuals often move their residences between urban and rural areas.

An important component of ecosystem management that the NCFES social science research program has begun to address is the integration of the biological, physical, and social sciences to help solve complex ecosystem management problems. NCFES scientists have already initiated some research that begins this integration. In one research effort, biological and physical scientists work to identify and quantify the ecological impacts of different disturbances in central hardwood ecosystems, while social scientists (1) model the influence of these disturbances on visual quality, (2) estimate the impacts of these disturbances on noncommodity values, and (3) calculate the impact of ecosystem management on timber sale costs and revenues. In another critical effort, NCFES scientists are taking the first steps in linking people's perceptions of riparian system health to actual biological and physical measurements of riparian system functions. A final example of integrated research is the Station's project comparing people's perceptions of climatological events and trends against actual events and trends to assess how people understand climate change phenomenon.

A guiding principle related to ecosystem management is that scientists and forest managers work closely together to facilitate adaptive management. Social scientists at NCFES are conducting a wide range of studies in support of sub-regional assessments, adaptive management, collaborative planning, and forest plan revision. Many of the issues relevant to forest planning have a significant social component. Improved understanding of the current social context of forest management as well as social trends that are likely to influence management in the years ahead are essential to effective forest planning.

Conclusions

Throughout the process of outlining a program in social science research for the Forest Service and the North Central Forest Experiment Station we found ourselves returning to three critical tasks:

1. Identify the key resource management issues where social science can make an important contribution.
2. Specify the outputs that will be the products of this research.
3. Identify the outcomes, in terms of changed conditions, that will be the true measure of the benefits of this research—answer the "So what?" question that all scientists should answer regarding the relevance of their research to their clients.

We believe that social science research can help managers work more effectively with their clients and partners to increase "customer" satisfaction, increase support for resource management programs and policies, reduce controversy and conflict, reduce the need for restrictive rules, laws, and regulations relating to resource management and use, and reduce management costs. The entire effort to assess the contributions of social science research at the national and regional levels has been a relevance and reality check that generated a lot of healthy discussion among the social scientists who participated in the process. It has enabled us as individuals and as a team to be more effective in our research, development and technology transfer efforts. We expect that it will also help us work more effectively with other research teams at the regional and national levels. The effort has, thus far, withstood the test of time. Two years later we are comfortable with what we have developed and are making only minor adjustments in our emphases. We encourage others to undertake similar efforts and share their results with the social science community.

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