USE, USERS, AND BENEFITS OF THE WEST BRANCH OF THE FARMINGTON RIVER

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Abstract

Presented are results of a study of the use, users, and benefits of a designated Wild and Scenic river in west central Connecticut – the West Branch of the Farmington River. Specifically, we compared anglers and floaters on this relatively unique "partnership river." Findings indicated that while there were substantial differences between these two groups, there were striking similarities in terms of their motives for river use and the most important benefits they felt the river generates. The most important implication of this research for management partners and river policymakers is that protecting and conserving the West Branch's natural, scenic, and recreational resources are the most critical contributors to the recreation experiences of users. Therefore (and consistent with the Wild and Scenic Rivers Act of 1968), conserving the quality of the river itself and river corridor resources should remain very high priorities. Other findings, results and implications are discussed.

1.0 Introduction

River conservation and recreation are important in the United States and becoming more so. According to the National Survey on Recreation and the Environment (NSRE), large proportions of Americans participate in river-related recreation. Many river recreation activities are growing rapidly in participation and are forecast to continue growing for decades to come. For example, in 2000-2001 about 10 percent of U.S. adults canoed, 10 percent rafted, 4 percent kayaked, 23 percent warm freshwater fished, and 14 percent cold freshwater fished (Cordell et al. 2004, p. 109-110). Kayaking was the fastest growing of 49 common outdoor recreation activities between 1994 and 2001 (up 186%) (Cordell et al. 2004, p. 71-72) and participation in raft/floating, canoeing, and fishing are all forecast to increase substantially from 1995 to 2050 (Bowker, English & Cordell 1999).

An essential tool for preserving outstanding rivers for future generations and, therefore, helping to meet current and future demand for river recreation is the National Wild and Scenic Rivers Act of 1968 and its amendments, which created the National Wild & Scenic Rivers System. This system now includes 180 river segments in 41 states and protects over 11,300 river miles (National Park Service 2004). To qualify for Wild and Scenic (W&S) designation, river segments must be free-flowing and have at least one "outstandingly remarkable" resource value which can include scenic, recreational, geologic, fish and wildlife, historic, cultural, or similar values. Once designated, W&S rivers are protected from new dams and other impoundments and can be managed by a variety of federal agencies including the National Park Service (NPS), USDA Forest Service, BLM, U.S. Fish & Wildlife Service, or the U.S. Army Corps of Engineers.

This W&S river study was sponsored by the NPS Park Planning and Special Studies & Rivers, Trails and Conservation Assistance Programs and American Rivers, Inc., a nationwide nonprofit river conservation group. Specifically we set out to accomplish three objectives:

1. Understand recreational use and users along a somewhat unique W&S river segment
2. Compare the two primary river user groups of that segment
3. Draw conclusions for river management and policy

What is presented here is actually one part of a larger study involving research at two W&S rivers. The overall study looked at two very different W&S segments in an attempt to begin to represent the diversity of rivers

included in the system. This paper focuses on some of the key social psychological findings related to users and use from the first of these studies. It is primarily descriptive in nature and was carried out to provide information for local river management partners as well as for NPS and river conservation groups.

2.0 Methods

The study site was the West Branch of the Farmington River in Connecticut, a 14-mile long W&S segment about 30 minute drive northwest of Hartford. The West Branch was designated in 1994 and is a classic example of a "partnership river" (once referred to as "private land rivers"). Partnership Rivers have no federal land and no federal land acquisition is authorized, there is a local "council or committee" responsible for developing and implementing the river management plan, land use is governed by local and state statutes, and costs and responsibilities are shared among partners. Only eight of the 180 W&S segments are Partnership Rivers, all of which are located in the eastern part of the country. Each is managed through partnerships of federal, state, local agencies, local river users and nonprofits organizations (NPS 2004b). The "partnership model" used to manage such rivers is in contrast to more typical W&S rivers which flow through public land managed by a federal agency. As such, those rivers are often referred to as "public land rivers." In one sense, of course, all W&S rivers are "partnership rivers," but the Farmington and the seven others noted above are exclusively so.

There is considerable variability and flexibility among partnership rivers in terms of how they are protected and managed. However because they are often located close to urban populations, they frequently experience intense pressures from population growth, development, and pollution. Protection of the corridors of land along partnership rivers, in particular, can be complicated and sometimes problematic. For the West Branch, corridor protection is accomplished through municipal zoning by the six towns through which it flows. In the case of the West Branch this and other management functions are coordinated by the Farmington River Coordinating Committee – a coordinating body made up of key public agencies and stakeholder groups.

A unique and important feature of the West Branch of the Farmington is its 3-mile "Trout Management Area" (TMA) managed by the Connecticut Department of Environmental Protection (DEP). This actively managed, high quality fishery is very popular regionally and its creation actually predates the segment's W&S designation by about 6 years. This TMA section of the W&S segment is considered by some to be one of the premier fisheries in the east (Passante 2001).

Study data were gathered through on-site user interviews conducted by paid interviewers from April through September 2001. A systematic interview schedule representing all days of week and daylight hours was developed and employed to make the sample as representative as possible. The schedule consisted of two weekly "passes" of the entire river corridor by car. This approach was possible because nearly the entire segment is visible from nearby roads. Being able to observe the entire segment during these passes enabled interviewers to contact nearly every visitor at all access points and conduct visual counts of users during each pass. The on-site interviews were followed-up with mail questionnaires to willing subjects. A total of 483 interviews were conducted yielding 247 completed mail responses for a 51 percent response rate overall.

3.0 Results

Study results are summarized in four brief sections: user characteristics, trip characteristics, user experiences & attitudes, and benefits of river use & protection. These results are just a sampling of those included in the full study report, which is available from American Rivers at their web page.

Fishing, tubing, and boating were the three most common activities, in that order. Most river users were fishing and the vast majority of the anglers were fly fishing. Extrapolating from the on-site visual counts we estimated that overall river use in 2001 was 77,400 visits comprised of 62 percent fishing, 30 percent tubing, and 8 percent boating. Based on their self-reported primary activities our sample was made up of 77 percent anglers, 15 percent tubers, and 8 percent boaters. For further analyses we combined the tubers and boaters to form a "floaters" category and compared these floaters to the anglers.

Table 1.—Users' characteristics

Characteristic	Anglers	Floaters	Overall	*n*	Difference
% male	93.6	54.9	84.8	223	*p*=.000
Mean age	49.6	41.6	47.7	225	*p*=.000

Table 2.—Users' trip characteristics

Characteristic	Anglers	Floaters	Overall	*n*	Difference
Mean Travel Distance	56.5	47.6	54.5	231	*p*=.516
% With River as Primary Destination	95.0	98.1	95.7	231	*p*=.333
% on Overnight Trips	10.1	7.7	9.6	230	*p*=.602
% on First Visit to River	8.4	34.6	14.3	231	*p*=.000
% Using Commercial Outfitter	1.1	71.2	16.9	231	*p*=.000
Mean Trips in Past 12 months	38.3	3.8	30.5	229	*p*=.000
Mean Hours at River	5.0	3.5	4.7	230	*p*=.000

3.1 User Characteristics

Overall, users tended to be well-educated, middle-aged males on repeat day trips who had traveled 32 miles or less to get to the river. River use was dominated by men overall, with nearly 85 percent of users in the sample being male. This was significantly more the case with the anglers, 94 percent of whom were male. The floaters were much more evenly mixed in terms of gender with 45 percent of them being female. The anglers were also significantly older than the floaters, at nearly 50 years on average compared to an average age of 42 for the floaters (Table 1).

3.2 Trip Characteristics

Table 2 summarizes key trip-related variables and compares anglers to floaters on each. In terms of users' trips, people traveled an average of 55 miles one way to get to the river (median 32), virtually everyone had the river as their primary destination, and only about 10 percent were visiting as part of an overnight trip. There were no differences between anglers and floaters on these variables. Most users were on a repeat visit to the river, with only 14 percent reporting that this was their first visit. There was also a group of long time visitors, however, with over a quarter having first visited more than 25 years earlier. Seventeen percent used the services of a commercial outfitter during their visit. Overall, users had made an average of 31 visits during the past 12 months (median 10) and spent an average of 4.7 hours at the river during their present trip. There were significant differences between anglers and floaters on these last four trip-related variables, however. Floaters were far more likely to be on their first visit and use the services of an outfitter than were anglers and anglers had visited far more often during the past 12 months and spent significantly longer at the river than had floaters. The commercial outfitter use was mainly among the tubers that typically rent tubes and use the shuttle bus service provided by an outfitter on the lower section of the W&S segment.

3.3 User Experiences & Attitudes

Overall, users were quite satisfied with their river experiences regardless of the particular activities they were engaged in during their visits. Respondents' mean satisfaction rating was 7.5 on a 10-point scale with 10 being "the best possible trip" (Table 3). There was no significant difference between the two groups in terms of satisfaction. Crowding ratings for the river conditions during their visits that day were relatively low, but in this case the floaters reported significantly higher levels of crowding than did the anglers. This appeared to be

Table 3.—Users' experiences

Variable	Anglers	Floaters	Overall	*n*	Difference
Mean Satisfaction Rating[1]	7.5	7.8	7.5	230	*p*=.236
Mean Crowding Rating[2]	3.2	4.4	3.4	228	*p*=.000

[1]Satisfaction measured on 10-point scale with 10 being "the best possible trip."
[2]Crowding measured on 9-point scale with 9 being "extremely crowded."

mainly among the tubers that are almost all concentrated on the last 2.5 miles of the segment, well below the TMA popular with anglers.

West Branch users were next asked to rate the importance of 22 different possible motives for visiting the river that day. Table 4 summarizes the results of these questions with the reasons presented in rank order from the most to the least important overall. The five most important reasons overall were: "To enjoy the view along the river", "To experience the Farmington River", "To be close to nature", "To relax physically", and "To help reduce built-up tension". Both anglers and floaters had the same three most important reasons for visiting, all of which had to do with the quality of the natural resources available at or along the river. Five of the motives were significantly more important to the anglers than they were to the floaters. They were: "To use my equipment", "To experience solitude", "To think about my personal values", "To be on my own", and "To be away from the family for a while". And two others ("To do something with my family" and "To take risks") were significantly more important to the floaters than the anglers.

An important purpose of the overall study was to gauge users' attitudes and perceptions of river conditions and management, particularly for this relatively unique "partnership river" (as opposed to the more typical "public land rivers"). Before asking those questions, however, it was important to check the assumptions of some planners and managers that most users were aware that the West Branch of the Farmington was in fact designated Wild and Scenic. Interestingly, most respondents reported that before receiving the study survey they were not aware of this, in spite of the fact that there are signs at various points along the river indicating that the West Branch is a designated W&S river. Overall, only 49.6 percent of users were aware of the river's W&S designation. There was also a significant difference between anglers and floaters in this regard, with 50.3 percent of anglers, but only 32.7 percent of floaters, respectively, being aware of the river's W&S designation (p=.025).

After a brief description of W&S designation and its intended protections, a series of questions was asked related to users' attitudes regarding river resources and management. Table 5 presents a summary of the results of these six questions organized from the one with the highest overall score to that with the lowest. Most respondents felt that W&S designation was extremely important for the river and, likewise, most were quite satisfied with the river. Of the six attitude questions these were the only two where there were significant differences between the anglers and the floaters. The anglers were both more satisfied with the river than were the floaters and felt W&S designation was more important than did the floaters. Overall, users felt the current "partnership model" was both appropriate and effective for the West Branch. There was also fairly high satisfaction overall with the corridor of land along the river and general agreement that the current protection efforts for the lands within 100 feet of the river were being effective. However, both of these attitudes related to the corridor of land were less supportive and optimistic than were the related responses regarding the river itself. There were no differences between anglers and floaters in these regards.

3.4 Benefits of River Use & Protection

The National Park Service was quite interested in understanding and documenting the benefits of W&S Rivers in general and along a "Partnership River" like the Farmington, in particular. We examined river benefits in two ways—objectively in terms of consumer surplus

Table 4.—Users' motivations for visiting the river

Reason	Anglers[1]	Floaters	Overall	*n*	Difference
To enjoy the view along the river	4.2	4.2	4.2	217	*p*=.623
To experience the Farmington River	4.2	4.0	4.2	219	*p*=.197
To be close to nature	4.2	3.9	4.1	208	*p*=.102
To relax physically	3.9	3.8	3.9	220	*p*=.594
To help reduce built-up tension	3.8	3.6	3.7	217	*p*=.368
To use my equipment	3.9	2.3	3.6	216	*p*=.000
To experience solitude	3.6	2.7	3.4	215	*p*=.000
To get exercise	2.9	3.1	2.9	214	*p*=.267
To think about my personal values	3.0	2.5	2.9	210	*p*=.024
To bring back pleasant memories of a prior visit	3.0	2.7	2.9	210	*p*=.281
To be on my own	3.1	1.9	2.8	216	*p*=.000
To be with the members of my group	2.4	3.8	2.7	200	*p*=.000
To do something with my family	2.2	4.3	2.7	201	*p*=.000
To reach a specific destination	2.6	2.1	2.5	208	*p*=.063
To learn about the countryside	2.4	2.5	2.4	203	*p*=.558
To share my skills and knowledge with others	2.4	2.1	2.3	209	*p*=.179
To be away from the family for a while	2.1	1.3	1.9	214	*p*=.000
To meet new people	1.7	1.6	1.7	212	*p*=.489
To test my endurance	1.6	1.9	1.6	208	*p*=.073
To take risks	1.4	2.1	1.6	209	*p*=.000
To show others I can do it	1.5	1.7	1.6	208	*p*=.296
To be creative (sketching, painting, taking pictures, etc.)	1.4	1.4	1.4	204	*p*=.909

[1]All means are based on 5-point scales with 1 being "not at all important" and 5 "extremely important"

and the economic impacts of river recreation use, and then based on users' perceptions of various potential river benefits.

As noted above, the total annual use of the W&S segment of the West Branch was estimated to be 77,400 visits in 2001. This estimate was extrapolated from our on-site counts and is consistent with NPS estimates from the earlier W&S Study Report for the segment (U.S. Department of Interior 1995). The river's recreation use generated an estimated local economic impact of $3.63 million for the five river towns and supported 63 jobs. These results were based on detailed expenditure data supplied by respondents in the mail survey and analyses of those data using the MGM2 model software (Stynes et al. 2000). A 2001 consumer surplus of $9.45 million was estimated for recreation using a travel cost model (TCM). Consumer surplus is essentially a measure of total social value and represents the aggregate value to users over and above what they actually have to pay for their trips.

In addition to the objective measures of river benefits just noted, users were also asked to rate the importance of 10 broader benefits the West Branch might have for its surrounding communities. Table 6 summarizes these results by presenting the 10 benefits in rank order from the ones considered to be the most important to respondents overall to those considered to be least

Table 5.—Users' attitudes regarding river resources and management

Variable	Anglers[1]	Floaters	Overall	*n*	Difference
Importance of wild and scenic river designation for the Farmington?	6.5	5.9	6.4	230	*p*=.005
Overall satisfaction with the Farmington River?	5.8	5.4	5.7	224	*p*=.025
Appropriateness of the "partnership model" for managing the Farmington River and the lands along it?	5.5	5.3	5.4	225	*p*=.416
Effectiveness of current wild and scenic river protection efforts?	5.3	5.4	5.3	224	*p*=.727
Overall satisfaction with the corridor of land along the Farmington River?	5.2	5.1	5.2	224	*p*=.582
Effectiveness of current protection efforts on the lands within 100 feet of the river?	4.9	5.3	5.1	223	*p*=.139

[1]All means are based on 7-point scales with 1 being "not at all" and 5 "extremely" important, appropriate, or effective depending on the question. Satisfaction means are based on 7-point scales with 1 being "very unsatisfied" and 5 "very satisfied"

important. The top three benefits (each having very high overall rankings of greater than 6 on the 7-point scale) were all related to the natural resources of the river and its corridor. They were the importance of "fish and wildlife habitat," "aesthetic beauty," and "preserving undeveloped open space." These were the most important benefits for both the anglers and floaters, although the order of their top three varied slightly for the two groups. The overall benefit rankings were consistent with what people told us in an open-ended question were the things they liked best about the Farmington River and the corridor of land along it. These were: high quality water, beauty, scenery, and good fishing.

The rank orders of the importance of the 10 benefits were nearly identical for the two groups. There were only three of the 10 benefits where the anglers' and floaters' importance scores were significantly different. The anglers felt the fish and wildlife and aesthetic benefits of the river were significantly more important than did the floaters, while the floaters felt the public recreation opportunities provided by the river were more important than did the anglers.

Although none of the ratings were below the scale midpoint of 4 overall, there were two that were considerable less important to both groups. "Tourism and business development" and "traffic reduction and transportation alternatives" were the two least important overall and with each of the two groups separately.

4.0 Conclusions

The West Branch of the Farmington is a popular destination for river-based recreation in Connecticut and the region. This 14-mile Wild and Scenic segment is used for a wide range of activities and experiences, most commonly fishing, tubing, and boating. And although the Farmington's anglers and floaters are quite different in terms of many of their user characteristics, trip characteristics, and experiences, there are a number of things that these two different user groups have in common. These similarities are most striking in terms of their motives for taking their river trips and the benefits they feel the river generates for its surrounding communities. The common element in these similarities seems to be the importance of the river's high quality protected natural resources. This applies to both the river itself as well as the corridor of land through which it flows.

National Wild & Scenic Rivers are designated to protect and enhance "outstandingly remarkable" resource values

Table 6.—Users' perceptions of possible river benefits

Potential Benefit	Anglers[1]	Floaters	Overall	*n*	Difference
Fish and wildlife habitat	6.7	6.1	6.5	228	*p*=.002
Aesthetic beauty	6.4	6.2	6.4	229	*p*=.257
Preserving undeveloped open space	6.4	6.1	6.3	230	*p*=.046
Community pride	5.6	5.7	5.6	223	*p*=.670
Public education about nature	5.4	5.5	5.4	225	*p*=.641
Public recreation opportunities	5.2	5.8	5.3	227	*p*=.011
Health and Fitness	4.9	5.4	5.0	223	*p*=.062
Access for persons with disabilities	5.0	4.8	4.9	225	*p*=.669
Tourism and business development	4.4	4.4	4.4	224	*p*=.860
Traffic reduction and transportation alternatives	4.3	4.4	4.4	222	*p*=.776

[1]All means are based on 7-point scales with 1 being "not at all important" and 7 "extremely important"

including their free-flowing conditions. Apparently these values are, in fact, important to Farmington users. In general, the anglers and floaters are both visiting because of things that depend on high quality protected natural resources. The most important reasons that both the anglers and the floaters report for coming to the river, overall, are enjoying the views, experiencing the river itself, and being close to nature. Similarly, when asked to rate the importance of 10 broader public benefits the West Branch might have for surrounding communities, three benefits were rated as extremely important overall: fish and wildlife habitat, preserving undeveloped open space, and aesthetic beauty. These were the highest rated benefits regardless of whether the users were fishing or floating. Based on users' high levels of satisfaction and the fact that so many are returning to the river frequently, many users are apparently getting what they come for including these natural resource-based river experiences and benefits.

We were able to confirm the importance of high quality natural resource to Farmington users by examining users' actual current and intended trip demand under different hypothetical trip cost and river quality conditions. Analyses showed that average trip demand (as well as economic benefits) would be more adversely impacted by a natural or a man-made disaster that would impair the quality of the West Branch of the Farmington than they would be by trip cost increases. Our conclusion is that protecting and conserving the West Branch's natural, scenic, and recreational resources are the most critical contributors to the recreation experiences of users.

The more objective results regarding river benefits were also enlightening. The economic impact of $3.63 million for the five river towns with 63 jobs supported by West Branch recreation is actually quite large considering its rural nature and that only about 10 percent of visits involve overnight stays. The total economic benefit (consumer surplus) to recreational users of $9.45 million was also quite substantial. Both of these estimates should be encouraging and useful for local river managers and supporters.

Unexpectedly, over half of all users were unaware that the West Branch was a federally designated Wild and Scenic river. This in spite of the fact that the river has been part of the National Wild & Scenic Rivers System since 1994 and that there are occasional signs near the river indicating that the West Branch is designated Wild and Scenic. It may be that users are not seeing these signs or hearing about designation at all. It may also be that the information about designation does not seem relevant or important to them at the time and does not, therefore, make any lasting impression. What is interesting is that respondents felt W&S designation was quite important

overall once they were provided with the survey's brief description of W&S designation and its intended protections. This lack of awareness among users seems to be a missed opportunity for managers and river advocates to build support for the Farmington and other existing and potential W&S river segments.

5.0 Implications for Wild & Scenic River Management & Policy

The results of this research have a number of potentially important implications for local as well as national river managers and advocates. Foremost among these is the confirmation that conserving, and in some cases enhancing, the quality of free flowing rivers and their river corridor resources should be the highest priority for river authorities. The most important reasons people visited the West Branch were enjoying the views, experiencing the river itself, and being close to nature and the most important benefits they felt the river has for surrounding communities were fish and wildlife habitat, aesthetic beauty, and preserving undeveloped open space. All of these, to varying degrees, relate to the natural resource conditions of the rivers and their corridors. National Wild & Scenic Rivers are designated to protect and enhance "outstandingly remarkable" resource values including their free-flowing conditions. Apparently these values are in fact important to users. They are visiting because to things related to the high quality protected natural resources and are appreciating these values. From the perspective of river users, it is clear that river managers and planners should boldly emphasize protection of high quality resource values and diligently monitor the quality of natural resources and user experiences.

The findings that natural resource values are so important to users of a "partnership river" might be surprising to some who are most familiar with more remote public land rivers that flow through more pristine environments. It might be that the natural resources of the Farmington were so important to users because the Farmington is the most natural river available in a relatively developed region. It might also be that the fly fishing in the Trout Management Area and tubing experiences available along the lower end of the segment are unique in other ways not captured by this research. Regardless, it does seem important that a diversity of rivers be considered and, where appropriate, added to the National Wild and Scenic Rivers System.

It is worth noting too, that in the opinions of river users themselves, "tourism and business development" and "traffic reduction and transportation alternatives" were the two least important benefits the river has for surrounding communities. This was the case for our entire sample overall and as well as for both the anglers and the floaters separately. This is not to say that the river does not generate these benefits. It is simply that the tourism and transportation related benefits are much less important to users than are other benefits, such as those natural resource related ones noted above. Generating increased local economic impacts and other tangible benefits are often very important to local chambers of commerce and government officials and, hence, frequently touted by planners, advocates, and managers. This study suggests that we all need to keep in mind that such benefits are often very unimportant to the users themselves, however. This implies that river advocates and managers need to consider the perspectives of their various audiences and that this is especially important to remember when attempting to build support for river protection among river users themselves.

The finding that so many river users overall were unaware that the West Branch was designated Wild and Scenic was surprising and somewhat troubling. The W&S designation for the West Branch appears to be very beneficial and once users understand what designation is and what it is for, they are quite supportive and agree that it is important. The river attracts users who are seeking experiences consistent with the purposes of the National Wild and Scenic Rivers Act and appears to be generating benefits consistent with the Act as well. Yet less than half of the users there knew the river was designated as Wild and Scenic. This indicates that everyone involved needs to do a better job of informing users about Wild and Scenic River designations. This is true not only related to whether or not a particular segment is designated, but also regarding what W&S designation is and what it is intended to accomplish. This need to better inform users is a responsibility not only for the National Park Service, but for all local and national river partners.

The finding that there is a core of frequent visitors who have been visiting for many years, and that most users are highly satisfied with their river experiences, may also offer opportunities for river managers and advocates. There is likely a group of very committed users who feel strongly enough about these rivers that they would be willing to become active volunteers or partners in other ways. Either directly or through nonprofit partners, river managers and advocates should be able to tap some of this enthusiasm for ongoing volunteer efforts ranging from peer education, resource monitoring, and resource management.

And finally, further research should directly compare "partnership rivers" with more traditional "public land rivers." This study began to explore the differences and similarities between these two types of resources and their associated management approaches, but more attention is needed. This is particularly true because of the many river segments that are potential additions to the National Wild and Scenic Rivers System that are not located in large areas of public land and would require a partnership approach if designated.

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