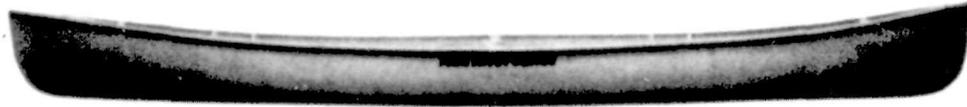


TRENDS

Volume 31, Number 4, 1994

Grassroots River Conservation





LOOK WHAT PEOPLE ARE



Throwing



INTO THE CHICAGO RIVER



THESE DAYS.

One of series of Public Education Posters by Friends of The Chicago River

Art Director/Designer, Timothy Delaney
Writer, Patrick Hanlon
Creative Director, Jonathan Harries
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TRENDS

Volume 31, Number 4, 1994

A Park Practice Program publication

The Park Practice Program is a cooperative effort of the National Park Service and the National Recreation and Park Association.

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Why Conserve Rivers? An Introduction

by John J. Reynolds

"Every river has its influence over people who pass their lives within sight of its waters."

— H.S. Merriman

Cultural Heritage

After many years on the road, commentator Charles Kuralt observed, "Most of what I love about this country is a gift of rivers... If you are in search of the authentic America, seek out the little river that runs under the bridge at Concord... Spend an afternoon waist-deep in the Henry's Fork with a fly rod in your hand... Walk the Oregon Trail alongside the Sweetbriar... America is a great story. And there is a river on every page of it."

Like Mr. Kuralt, many parks and recreation professionals have an intuitive sense of the importance of preserving the cultural heritage embodied in our rivers. However, aesthetic considerations are not guaranteed to persuade property owners and natural resource developers of the importance of conserving



^{NPS} rivers. Those with a direct financial stake in river areas are more likely to understand the value of river conservation if it can be expressed in economic terms.

Economic Development

Fortunately, a strong case can be made for the economics of river conservation which includes both increased income and cost avoidance. Polls have shown that 80 percent of Americans prefer to recreate near water, and water-based recreation has been growing at the rate of 10 percent per year during this decade. Nationwide tourism is a \$200 billion per year industry and is the first, second or third highest source of income in virtually every state. River protection improves the quality of life, which in turn draws families and



businesses to locate in such areas — whether they be metropolitan or rural. Predictably, case studies show that river protection has resulted in significant increases in property values. In addition, the self-regulating, self-cleansing action of free flowing rivers helps communities avoid the high cost of flood control and water purification facilities that are required when natural systems are impaired.

Biological Health

While cultural and economic considerations are important, by far the most compelling argument for river conservation is biological health — the rivers' and our own. The National Academy of Sciences concluded in a recent report that the biological health of our rivers is in decline in almost every watershed. Evidence is mounting that the ecological balance in our rivers

may be nearing a state of collapse. For example, nearly three-quarters of the freshwater mussels, two-thirds of the crayfish, one-third of our native fish and one-third of the amphibians like frogs, are imperiled — their populations ranging from rare to extinct. As for our own health, the Environmental Protection Agency recently reported that fully 40 percent of our nation's rivers and lakes are not suitable for drinking, fishing or swimming.

Trends in River Conservation

The National Park Service's river conservation activities range from preparing studies and management plans for state and federally administered National Wild and Scenic Rivers to protecting and restoring natural and recreational values on rivers in metropolitan areas and those controlled by

hydropower dams. In this issue, guest editor Dan Meyer, the Service's state rivers program leader, captures the broad scope of river conservation today. The trends are:

- Bottom-up, grassroots efforts that make maximum use of volunteers and build alliances between public and private interests.
- A new focus on metropolitan and "community rivers."
- A view of rivers as whole systems with increasing attention given to what is happening upstream, downstream and in the watershed.

John Reynolds is Deputy Director of the National Park Service. He was a keynote speaker at the national conference on the Future of America's Rivers held in Alexandria, Virginia, in November 1993. 

The State Route to National Wild and Scenic Designation

by Christopher Curtis

"A civilization which destroys what little remains of the wild, the spare, the original, is cutting itself off from its origins and betraying the principle of civilization itself."

— Edward Abbey



Alagash... St. Croix... Loxahatchee... Big Darby... their names echo the rich diversity of our nation. They are among the 15 rivers that have been

designated and maintained as National Wild and Scenic Rivers as a result of *state* action.

Traditionally, the National Wild and Scenic Rivers Act has been used to protect rivers which flow mostly on remote federal lands. But some of the Nation's most beautiful rivers are part of working landscapes of farm fields and barns, homes and historic communities.

Flowing mostly through private lands located within a couple of hours' drive of a metropolitan area, such rivers are often under siege from unrestrained development for hydropower, metropolitan water supply, suburban expansion and vacation homes. History suggests that without some kind of local protective efforts, the health and beauty of these rivers will be sacrificed in the pursuit of short-term gains.

Seeking Designation

Seeking protection for a river under the National Wild and Scenic Rivers Act may seem a daunting task for a local conservation group or a committee of concerned residents. However, a seldom-used section of the National Wild and Scenic Rivers Act provides a way for grassroots groups to protect rivers through effective local or state land use actions, while simultaneously achieving the benefits of National Wild and Scenic Rivers designation.

There are two routes to National designation:

(1) **Congressional**—90 percent of designations have used this route (about 135 rivers); requires Act of Congress; federal government usually assumes primary management responsibility as most rivers lie wholly or partially on federal lands, but that is changing—see article following; and

(2) **State-administered**—also known as 2(a)(ii) from the authorizing section of the Act; the Secretary of the Interior has authority to designate rivers nominated

by the states; the rivers usually flow across private and public lands; state government assumes management responsibility as *no federal funds may be expended either for acquiring land or managing land use along the river.*

State-administered National Wild and Scenic Rivers receive the full protection from federal water resources projects, such as dams or diversions, which threaten to degrade the river's scenic qualities. At the same time the federal government is prohibited from acquiring or managing land along the river, making this approach popular with local landowners fearful of federal intervention.

The Process

The following are the steps in the process for obtaining state-administered designation:

1. Develop Local Support
2. Prepare Management Plan
3. Implement Plan
4. State Designation
5. Governor Requests National Designation

6. Interior Department Initiates Review
7. National Park Service Completes Review
8. Federal Comment Period
9. National Park Service Recommendation
10. Secretary's Final Action

rare wilderness areas and beautiful working landscapes of maple-lined farms and historic villages. In the spring, the river attracts hundreds of canoeists and kayakers from throughout the eastern United States for the excellent whitewater boating and annual river races; in the fall, the hills explode with bril-

Planning Process: The planning process was initiated by local groups, led by the Pioneer Valley Planning Commission with support from the Westfield River Watershed Association, based on local interest in protecting the river's scenic qualities. Technical support was provided by the

Pioneer Valley Planning Commission



One of the ten magnificent keystone arch bridges that span the Westfield River.

A Model Strategy

The model offered here is the process used to protect the Westfield River in western Massachusetts. The approach used on the Westfield is particularly appropriate for rivers with significant privately-owned land holdings, which is typical of most rivers in the eastern two-thirds of the United States.

Description of River: With its headwaters in the rolling Berkshire Hills, the Westfield River traverses

liant reds, yellows and oranges.

Among the scenic treasures found in the river corridor are:

- A scenic gorge
- State's highest waterfall
- Fifty miles of whitewater canoeing and kayaking
- One of the state's best coldwater fisheries
- Habitat for several rare and endangered species
- Five historic villages
- Ten magnificent keystone arch railroad bridges

National Park Service and Massachusetts Department of Environmental Management.

As a first step in the planning process, a 17-member Westfield River Advisory Committee was formed. It was made up *entirely* of local residents appointed by the Boards of Selectmen in each of the communities along the river, as well as local businesses and sportsmen's interests. This Advisory Committee played a key role in formulating the Westfield River Greenway Plan, which was funded



Rafters celebrate after good run on the river.

with state and federal planning grants. The Committee also played a key role in keeping town officials and others informed on the process.

Public Awareness and Involvement: Before any planning was done, public input was sought from residents and town officials about river protection priorities and problems. A series of outreach activities helped to increase public awareness of the need to protect the river and of the ongoing greenway planning process.

In 1986, the Draft Westfield River Greenway Plan was released to the public at a series of public meetings. While public reaction to the draft plan was generally favorable, there was some opposition to certain elements of the plan.

The Greenway Plan proponents responded to the controversy by holding a series of informational meetings in river communities. The purpose of these meetings was to listen to residents' concerns and

questions, to provide factual information about the plan's recommendations and their effect on communities and landowners, and to consider possible changes to the draft plan. These meetings were often emotional and heated, but ultimately were very important in building support for the subsequent, revised version of the Greenway Plan.

The Management Plan: The final plan was issued in 1990 and included the recommended management strategies for the entire river system. Only the river's upper branches, involving six of the 11 river communities, were recommended for national designation. The following protection strategies were used:

1. Adopt an Intergovernmental River Compact
2. Seek Wild and Scenic River Designation
3. Establish Local River Protection Bylaws

4. Promote Voluntary Conservation Restrictions
5. Increase Maintenance and Policing at River Access Sites
6. Obtain Grants for Selected Land Acquisitions or Improvements

Plan Implementation: The key local and state-administered components of the Westfield River protection plan were largely implemented *prior* to application for National Wild and Scenic Rivers designation. An important mechanism for obtaining commitments from participating communities and organizations to implement the Greenway Plan was the development of the intergovernmental compact. By 1990, the intergovernmental compact had been formally approved by *all* participants: by votes of the Boards of Selectmen in all six river communities, by all three state environmental and natural resource agencies and by two grassroots organizations that initiated the process.

It should be noted that even in an intergovernmental protection plan, it is often preferable for local governments to continue to play the lead role in adopting and enforcing river protection strategies or regulations. The intergovernmental plan helps to assure that the state and federal actions will be consistent with the goals of the riverfront communities.

Probably the most important river protection mechanism was the adoption of river zoning bylaws which were adopted by five riverine communities (floodplain zoning was adopted in the sixth).

Designations

The Massachusetts Department of Environmental Management formally designated the Westfield River under the State Scenic Rivers Act in 1990. The application for federal designation was supported by Massachusetts Congressmen, and by national environmental and sportsmen's groups such as American Rivers, Trout Unlimited and Appalachian Mountain Club. In 1991, Governor Weld petitioned the Secretary of the Interior to designate the Westfield as a state-administered river. The river was added to the National system by Secretary Babbitt in October 1993.

From beginning to end the process to designate the Westfield

River took eight years. If this seems like a long time and a lot of effort, take a moment to re-read the description of this river corridor. Think how long it took to create such magnificent and irreplaceable resources. Then consider how many generations will experience these wonders as a result of the protection afforded by the National Wild and Scenic Rivers designation and the vision of two small grass-roots groups. I believe that you, as they, will conclude that it was worth it.

Christopher Curtis is Principal Planner for the Pioneer Valley Planning Commission in West Springfield, Massachusetts. 

What is the Nationwide Rivers Inventory?

The Nationwide Rivers Inventory (NRI) is a listing of the Nation's remaining naturally free flowing rivers that have at least one "outstandingly remarkable" natural or cultural feature. The Inventory was developed and is maintained by the National Park Service as part of the National Wild and Scenic Rivers Act.

An update of the NRI was initiated in 1993. The federal lands portion has been completed and each state has recently been asked to review and provide an update for its state. The biggest advantage to listing on the NRI is that all federal agencies are required to avoid or mitigate adverse effects on NRI rivers and to consult with the National Park Service prior to taking action that could remove any possibility of the river ever becoming part of the National Wild and Scenic Rivers System. The prior notice allows time for all viewpoints to be heard before decisions are made on these increasingly rare river resources. Listing on the NRI provides national recognition and some protection for outstanding rivers.

The NRI may have even broader significance and use in the near future. Being relatively undisturbed, NRI rivers represent intact, naturally functioning river ecosystems. They will be increasingly important for research purposes and as genetic sources for the restoration of degraded rivers.

A New Model for Congressional Wild and Scenic Designation

by Phil Huffman

"Any river is really the summation of a whole valley. To think of it as nothing but water is to ignore the greater part."

— Hal Borland



The Congressional route to obtaining wild and scenic rivers designation offers two major benefits that are not available when using the state route described in the previous article: (1) federal funding and staff support is provided throughout the study period for technical, administrative and planning assistance and (2) the river is protected from new dams and other major water resource projects for the duration of the study.

However, the traditional approach to Congressional designation has had two major drawbacks when applied to rivers flowing primarily through private lands: (1) it empowered the federal government to acquire land by condemnation if necessary to protect a designated river and (2) it required waiting after designation to prepare a comprehensive river management plan. In virtually every private land river study until the mid 1980s, these two factors generated sufficient fears to erode community support for designation, leaving many worthy rivers undesignated and unprotected.

Because of that history of controversy and missed opportunities, river conservationists recognized that a different approach was needed. Beginning with the study and designation of New Hampshire's Wildcat River in 1988, an innovative strategy began to emerge that focused on a grassroots effort to develop a river protection plan during the study period and a reliance on local communities to assume primary management responsibility. This non-traditional approach continued to evolve with the studies and designations of New Jersey's Great Egg Harbor (1992) and Maurice (1993) Rivers. The new strategy has recently been developed to its fullest extent in the most complicated private land setting yet attempted: Connecticut's upper Farmington River.

Distinguishing Features of the Farmington River Study

The upper Farmington is a classic example of a "community river." Flowing through a heavily wooded, rural landscape interspersed with small historic towns, the river supports an impressive variety of

natural and cultural resources including outstanding fisheries, wildlife, recreational and historic values. But the Farmington has been increasingly affected by pressures from human use including development along the river corridor, water withdrawals to supply metropolitan Hartford and discharges of wastewater from adjacent communities. The challenge was to find a balance between reasonable use and conservation — while working within established jurisdictions and long-standing patterns of land use and ownership.

The Farmington Study incorporated a number of key features that were instrumental to its success. The most important of these were:

Bottom-Up Planning Guided by Representative Advisory Group

Rather than having federal representatives lead the study team, an advisory committee representing key local, state and private groups served as the primary decision-maker. This committee also led an extensive effort aimed at obtaining the broadest possible public

involvement in the study. The National Park Service (NPS) staff played a background role, providing technical assistance, facilitation and administrative support.

Condemning/Managing Land by Federal Government Not an Option

Because it had derailed so many earlier private land river studies, the possibility of federal land acquisition or management was

communities and the state to take the actions needed to ensure the compatible management of lands adjacent to the river.

Implementing Protective Actions During the Study

Unlike traditional Congressional studies, the Farmington Study focused on getting landowners, the local communities, state agencies and others to take actions to protect the river during the study, rather

ests — with no one entity dominating. The group agreed that if the river were designated, the federal government would have an important role as a member of the partnership. However, it was recognized that the federal role could not, and should not dominate other partners.

Developing a Comprehensive Plan During the Study

In sharp contrast to typical

Farmington River Watershed Association



Enjoying some of the finest trout fishing in New England on The Farmington River.

taken off the table from the beginning of the Farmington Study. Congressional sponsors of the project gave clear guidance on this issue during legislative hearings, providing critical reassurance to local residents that there would be no unwanted federal presence in their valley. The Farmington Study focused instead on encouraging the riverfront landowners, the local

than waiting until after designation.

Managing Through a Cooperative Partnership

The Advisory Committee recognized that effective, long-term management of the river could only be achieved through a cooperative partnership of all major inter-

Congressional studies, the Farmington Study concentrated on developing a comprehensive management plan during the study and prior to a final decision on whether to pursue wild and scenic designation. The number of interests and jurisdictions involved and the opposition to a major federal presence made it essential to clearly define the roles, responsibilities



Farmington River Study Committee in the field.

and authorities of the various parties, including the federal government should the river be designated. Without such an understanding up front, the study participants realized it would be difficult, if not impossible, to reach consensus. The group also recognized that a comprehensive management plan was needed whether or not the river was ever made part of the National System.

Final Recommendation Locally Controlled

One of the greatest concerns among riverfront communities is that the wild and scenic study process will inevitably lead to designation, even if the local people are opposed to that outcome. To alleviate this concern, it was made clear from the outset that each of the affected towns would be asked to make a formal decision about designation, and that designation would be recommended to

Congress only if the communities supported it. That unwavering commitment was crucial to establishing and maintaining credibility with the communities.

Achievements

Using this non-traditional approach, the parties involved in the Farmington Study made remarkable progress in resolving controversial river management issues and achieving tangible conservation results. Key achievements include:

Adoption of Strong Local Shoreland Zoning Ordinances

All four towns abutting the study segment developed and adopted "river protection overlay districts," which prohibit new structures, new septic systems, and sand and gravel extraction within 100 feet of the

river and establish strict limits on vegetation removal in that area.

State Land Acquisition

The Connecticut Department of Environmental Protection purchased two critical parcels of riverfront land encompassing 122 acres and 3,400 feet of river frontage, at a cost of \$325,000. This action was taken at a time of severe budget limitations.

Resolution of Controversial Water Allocation Issues

The advisory committee commissioned an independent study to determine whether limited water withdrawals could be made without harming the river's outstanding resources. This cooperative effort resulted in a remarkable reduction in tensions and increased cooperation between several major river interests.

Completion of a Comprehensive Management Plan

For the first time in the history of the National Wild and Scenic Rivers System, a comprehensive plan was completed during the study period. This plan establishes specific standards that will ensure protection of the Farmington's outstanding resources and identifies a range of actions that will be used to achieve those standards.

Unanimous Support for Designation

The four towns along the upper Farmington, as well as another town that abuts the primary tributary, voted overwhelmingly in favor of wild and scenic designation at official town meetings. Also, by unanimous vote, the advisory

committee recommended that Congress designate the Farmington as a wild and scenic river based on the spirit and provisions contained in the Management Plan. The degree of local support reflected in these votes has set a new mark for private land river studies.

Conclusion

Customized legislation to designate the Farmington was introduced in Congress in July 1993. The bill incorporated the grassroots principles upon which the Farmington Study was founded and ensured that the interests of riverfront landowners and the local communities would be fully integrated with the protection of one of the nation's outstanding rivers. The legislation passed the House in March 1994 and the Senate in June

1994. Presidential approval and addition to the National Wild and Scenic Rivers System occurred in August 1994.

Now there are two proven grassroots models for securing the protection of outstanding rivers flowing through private lands: the state approach, previously described, and the new Congressional approach, exemplified by the Farmington study. The local circumstances will determine which model is more suitable. Either way, grassroots groups can use the National Wild and Scenic Rivers Act to protect important "community rivers" across the United States.

Phil Huffman is Project Manager for the Farmington Wild and Scenic Rivers Study in the National Park Service's North Atlantic Regional Office in Boston, Massachusetts. 

Rail Trails and Heritage on a National Wild and Scenic River

by David Wood and Lionel Lemery

"Rivers are ribbons that tie us to the spirit of the land."

— Jeff Rennie



West Virginia's Gauley, Pennsylvania's Youghiogheny and Colorado's Colorado rivers are a few of the outstanding recreational

ivers that are paralleled by railroad corridors. When America's railroads were being built, river valleys usually provided the least-arduous routes, especially in mountainous areas. With the development of the interstate highway system, railroad use has declined and many corridors have been abandoned. What remains are continuous rights-of-way that provide ready-made opportunities for trails and access to relatively undeveloped rivers. For most Eastern rivers, which are bordered by private lands, railroad rights-of-way may be the primary, or only public access to the river.

The Win-Win of Railbanking

Railbanking allows an abandoned rail line to be preserved

intact for future rail use, while permitting the corridor to be used as a trail in the meantime. It applies to commercial railroads that cross state lines and are under the juris-



The Samuel Justus Trail along the Allegheny River.

diction of the Interstate Commerce Commission (ICC). Under railbanking, the ICC retains jurisdiction over the line while allowing the railroad to discontinue its operation and salvage the rails and ties. The line is legally and technically not abandoned and is allowed to be used as a trail until such time a railroad wants to reinstate rail use. Railbanking, which is authorized

by the National Trail Systems Act, preempts state laws and the reversion of easements to adjacent landowners. The U.S. Supreme Court has upheld the constitutionality of railbanking by unanimous decision.

David Wood

However, the window of opportunity for a railbanking request is relatively narrow. A potential trail owner/manager must file a request with the ICC within a specified period after a railroad formally proposes abandonment. The time period varies with the type of abandonment, but generally ranges from a few days to a few months.

If the railroad has been abandoned for some time, the rights-of-way may or may not be intact depending on whether the company owned the land or merely had easements that reverted to adjacent landowners. It is also possible that the railroad retained the continuous right-of-way and would be interested in selling or donating it to a worthy non-profit organization.

Practical Partnerships

Most existing rail-trail corridors are no longer owned by the railroad. The new owner may be a government agency, private nonprofit organization or a public-private partnership. Different entities may have different roles: a local government may acquire the right-of-way, businesses may volunteer time and equipment to construct the trail, state and federal agencies and foundations may provide funding, and a local trail club may maintain the trail.

The Allegheny National Recreational River

Congress designated 85 miles of the upper Allegheny River as a National Recreational River in 1992. The northern segment is bordered by a mix of private and public lands (National Forest and State Game Lands). The southern segment is entirely separated from the National Forest and surrounded primarily by private land, with one tract of state forest. Overall, 80 percent of the designated corridor is in private ownership.

The legislation directs the Allegheny National Forest, the Pennsylvania Scenic Rivers Program and the citizen advisory council for each river segment to develop a management plan for the two designated segments. The Councils are drawing on the experience of the Upper Delaware National Scenic River, which is also bordered by extensive stretches of private land. The Councils also recognize the rail-trail potential as a significant attribute of the Allegheny National Recreational River. The Allegheny River region is a stronghold for "property rights" groups such as the Pennsylvania Landowners



David Wood

*Opening Day on The Allegheny River Trail
(river can be seen in background).*

Association, but due to the full and open communication of the planning process, there has been little polarization and completion of the management plan is anticipated in 1995.

Rail-Trail Development Along the Allegheny River

The entire length of the Allegheny National Recreational River is closely paralleled by an abandoned rail grade. Trail development is completed or underway on several segments from Allegheny National Forest to the mouth of the river in Pittsburgh. The Tidioute Area Development Association, in cooperation with the Allegheny National Forest, has established 4 miles of rail-trail and plans are underway to study the remaining grade for trail development.

The Armstrong Trail

In Armstrong County, over 50 miles of right-of-way have been

acquired by the nonprofit Allegheny Valley Land Trust for \$250,000, financed by a bank loan. The property generates steady income, from leases of summer cabins built within the right-of-way and payments from utility line crossings.

Samuel Justus Trail

In Venango County, a 6-mile segment was completed and links the municipalities of Franklin and Oil City. The trail was made possible through land donations and purchases, shared rights-of-way agreements with corporate landowners and major funding assistance from a local foundation—the Samuel Justus Trust.

Allegheny River Trail

Just downstream from Franklin, on the southern segment of the National Recreational River, the Scrubgrass Generating Company donated 15 miles of right-of-way to the nonprofit Allegheny Valley Trails Association (AVTA). The

donation produced considerable goodwill in the community and the parent, U.S. Generating Company, features the trail prominently in its publicity. AVTA raised \$75,000 in grants from local foundations, and enlisted technical assistance from the NPS Rivers, Trails and Conservation Assistance Program. After establishment of a multi-interest task force and completion of a trail plan, AVTA and the county applied for and received over \$600,000 through the Transportation Enhancements provision of the 1991 Intermodal Surface Transportation Efficiency Act. Transportation Enhancement categories which relate to rivers include bicycle-pedestrian facilities, acquisition of scenic or historic easements or sites, rail-trails and mitigation of pollution from highway runoff. AVTA is now seeking additional transportation enhancement funds to acquire another right-of-way segment.

Oil Region Heritage Park

Pennsylvania's Heritage Park program was organized to preserve and promote the Commonwealth's rich industrial heritage. The program's goals are economic development, intergovernmental cooper-

ation, cultural conservation, recreation and education. Unlike traditional parks that are contained within a continuous boundary and owned by a government entity, heritage parks encompass extensive, county size or larger areas which are mostly privately owned. Within these regions, linear features like rivers and trails are used to link significant cultural, recreational and natural sites.

The Allegheny River area is the birthplace of the petroleum industry; the world's first oil well was drilled here in 1859. The region was crowded with oil derricks and largely deforested during the boom years. The forest has since grown back and the boom towns and oil apparatus have disappeared from view. The Management Action Plan for the Oil Region Heritage Park recognizes the Allegheny and its tributary Oil Creek as the central recreational corridor tying the oil region together. The plan recommends developing additional canoe access points along the river and completing the Allegheny River Trail. With the Heritage Park formally designated by the Governor, the rail-trail project has received early funding from the state.

Conclusion

Railroad rights-of-way are common along rivers and can fill a critical need for access and trails along these streams. Rail-trails are eligible for substantial federal funding through the Transportation Enhancements provision of the Intermodal Surface Transportation Efficiency Act of 1991. The rich history, cultural heritage and natural beauty make river valleys excellent candidates for Heritage Parks as well. Carefully managed recreation and cultural tourism along nationally designated rivers like the Allegheny is an example of how a balance between economic growth and resource protection might be achieved and sustained. Far from "locking up" resources, National River designation is "opening up" new opportunities for Americans to tour, learn about and enjoy their natural and cultural heritage while contributing to the local economies.

David Wood is Outdoor Recreation Planner with the National Park Service's Rivers, Trails and Conservation Assistance Program, Philadelphia. Lionel Lemery is Wild and Scenic River Planner for the USDA Forest Service's Allegheny National Forest. 

North American Water Trails: A Beginning

by Lelia R. Mellen, Franz K. Gimmmler and Russell A. Cohen

"Someday our rivers will be equally important as pleasureways as our roadways are at present. . . especially if they are kept in this primitive way."
— Jens Jenson



Recently, some 40 modern day pilgrims gathered on the shore of the historic Hudson River. A common vision had drawn them from across

North America to this first-ever meeting. Their vision was a network of water trails dotted here and there with canoes, kayaks, sailboats and other muscle- and wind-powered craft following well-mapped and well-marked routes; they saw people enjoying long days of wind, waves, weather and one another; healthy people building their strength and skill; adventurous people seeking the distant horizon or the view around the next bend; nature lovers with binoculars and cameras; conservationists who left the beautiful campsites and shorelines even better than they found them; and they saw the waterside communities welcoming all these sojourners because of the economic vitality being provided by these respectful guests to their home.

Water trails are not new. For centuries before and even after the arrival of Europeans to North

America, rivers, lakeshores and coastlines served as major corridors for long distances. Native Americans developed a system of water-based routes for hunting seasonal migrations and commerce. Many of the early settlers and explorers, such as Lewis and Clark, used these same transportation corridors.

Today, from Maine's islands to Washington's Puget Sound, from the California coast to the Florida Keys, the beauty and simplicity of water trails are being re-discovered (see map). Some examples:

The *Maine Island Trail* is a 325-mile long coastal waterway designed specifically for sea kayaks and small sailboats. The trail winds its way along the coast over protected salt rivers and quiet bays, around magnificent and exposed capes, and between islands. Primitive campsites are currently available on 73 islands along the trail. The Maine Island Trail organization (MITA) is respected around the continent for its stewardship ethic which has ensured the access to pristine coastal islands, many of which are private-

ly owned. For example MITA requests users to boat in small parties and use clothing and equipment that harmonizes with the landscape. MITA volunteers maintain the islands' campsites and work closely with the Maine Department of Conservation.

Minnesota established its system of river-based canoe and boating routes in 1967. It now covers 19 rivers and hundreds of miles. The state legislature gave the Department of Natural Resources the authority to purchase parcels of land, 40-acres maximum size, to be used for campsites and/or river access. The state legislature recently passed a law establishing the Lake Superior Water Trail along Lake Superior between Duluth and the Canadian border. Wisconsin, Michigan and Ontario are working on similar protection.

Washington's *Cascadia Marine Trail* stretches over 140 miles from Olympia to the Canadian border. The Cascadia Marine Trail organization, in cooperation with Washington State Parks, has established 19 campsites among the densely developed shores of Puget



Taking some time to reflect on the primitive beauty of Maine's waters.

Sound. They have the vision of extending their trail throughout the San Juan islands, and they hope to be a catalyst for water trails in British Columbia and Alaska. If the dream materializes the trail would extend up the northwest coast for over 1000 miles to Skagway.

Establishing a Water Trail

Step 1. The first and most important ingredient for a successful water trail is the water resource. Shorelines that are extensively developed may lack sufficient scenic value, access points and campsites. Waterways with hazardous currents, seasonal or chronic unnavigable conditions or heavy motorized boat use may also render them unsuitable for human-powered paddle craft, the primary users of water trails.

Step 2. Secure public and private partners to join and support your effort. Potential users such as canoe and kayak clubs are likely to be the best source of volunteer labor. Canoe/kayak liveries and sporting/outdoor stores may be a good source of seed money and in-kind contributions of materials. Don't forget to contact national groups like the American Canoe Association (ACA), National Association of Canoe Liveries and Outfitters (NACLO), America Outdoors and American River Management Society (ARMS). If a significant portion of your waterway is under public ownership, it is wise to begin informal discussions with state and federal park superintendents and field personnel to address their concerns before high-level contact with agency heads. A problem confronted frequently by water trails with suitable campsites or access points

owned by government agencies is that the agencies are already understaffed and can't properly maintain what they've got, or they perceive water trail advocates as just another special interest group seeking to use public lands for their own esoteric ends. In such cases the water trail group can offer to assume the primary responsibility for maintaining and monitoring the trail facilities.

Step 3. Evaluate potential campsites and access points. In addition to user needs such as ease of access from the water, factors involved in campsite selection include likelihood of landowner cooperation and ecological and archaeological sensitivity. It is likely that suitable water trail campsites may be the same areas that were used by Native Americans, explorers and settlers for similar purposes. Trail planners seek to establish campsites about a day's paddle apart, to

North American Water Trails 1993



accommodate longer-distance trips. For water trails passing through urban areas where security is an issue, some groups are exploring the development of kayak stations, a shed with locked racks so kayakers can secure their boats and go into town. Also for urban areas where camping opportunities are limited, or to appeal to water trail users seeking plusher accommodations, some water trail groups are forging partnerships with local bed and breakfasts.

Step 4. Establish a mechanism for periodic monitoring and maintenance of campsites and access points. A recent Appalachian

Mountain Club publication entitled "Organizing Outdoor Volunteers" is a good guide for putting together a trail facilities maintenance program.

Step 5. Secure access and/or camping privileges from the site owners. MITA enters into "handshake" agreements with private island owners that are revocable by the owners at any time. Nearly half the Maine Island Trail sites are privately owned, indicating the success of the arrangement. Many groups have found they had to assuage private landowner concerns of liability exposure if their land is opened up to public camping. Most

states have laws limiting the liability of landowners who open their land for public use without charge; and organizations carrying their own liability insurance can usually get their carrier to amend the policy to add campsite owners to the list of covered parties.

Step 6. Prepare Guidebook. Water trail groups vary considerably in the degree of publicity they seek for their particular trail. For example, one has to become a member of MITA in order to receive a copy of the Guidebook which contains information on island campsite locations as well as guidelines for low-impact camping. This is in part



Snow geese on Delaware Bay.

to reassure private landowners that campsites on their islands will be used responsibly. The privately owned campsites on their islands are available for use by MITA members only, while no such restriction exists for the public islands. Other water trails such as Minnesota's river routes are state-managed and the necessary information on campsites and access points is readily available.

Conclusion

Water trails strike a spark of excitement. Users can be modern adventurers, reliving the explo-

ration of the Chesapeake Bay, or the voyagers through the Quetico-Superior Wilderness. They also can see and be part of the revitalization of North America's waterways. Who would have imagined 20 years ago that anyone would be spending enjoyable days paddling on the Potomac or Hudson Rivers?

The group that gathered on the Hudson certainly enjoyed being there. As they camped, paddled, cooked and sang together; as they got to know, enjoy and learn from one another, they realized they had experienced their vision. They had experienced water trails as instruments promoting the enjoyment and protection of our natural and

cultural heritage, as instruments developing the recreational and economic potentials of different regions of the continent and as instruments helping to unite people from different parts of the North American community.

Lelia Mellen is an Outdoor Recreation Planner with the National Park Service's Rivers, Trails and Conservation Assistance Program. Franz Gimmler is a Water Trails Advocate with the Chesapeake Paddlers Association. Russell Cohen is the Rivers Advocate with the Massachusetts Riverways Program. 

Grassroots Watershed Activism

by Peter Lavigne

"Conservation can't be imposed from above; it must have the support of the people."

— Michael Werikhe



Watershed is the environmental buzz word. Debates on what watershed approaches mean politically and geographically echo through the halls of

Congress, offices of national conservation organizations and on the pages of the nation's leading journals. It's a timely debate worthy of the issues accompanying the closing of the Western frontier. The time is the 1880s! Now, 100 years later, the debate is renewed—albeit improved, refocused and re-energized. The time for watersheds—comprehensive, integrated environmental and political approaches to our river ecosystems, has come again.

Building a Grassroots Watershed Movement

The framework for a grassroots movement exists in the more than 2,500 river guardian groups across the country and in an ever-expanding number of volunteer monitoring programs. These local grassroots efforts will be supplemented by lobbying, legal work and media attention provided by river conservation organizations working on a national level.

Many citizen-based river protection organizations have long advocated and implemented programs addressing the fundamental interconnections between water quality,

to spend more time on obtaining the political changes necessary to develop comprehensive approaches to resolve the over-arching issues affecting the watershed. And

Maria Stenzel



The success of river and watershed conservation will depend on how well the issues are presented and understood by the community.

water supply, wetlands, air quality and wildlife habitat. What does this mean on a day-to-day basis? It means stepping back a little, trying to figure out the critical issues for the watershed. It means spending less time on localized mitigation and permitting problems in order

it means effectively counteracting the anti-environment "backlash," such as the property rights movement, that is well organized and often well funded by extractive industry groups.

Ultimately, the watershed group and the public it serves must

understand that protecting a river will mean addressing broader issues such as development, air quality, waste disposal and a myriad of other activities in the watershed that impact the health of the river.

People relate best to what they can taste, touch and feel. Recycling is popular and easy to understand because we have to deal with waste products every day as part of living. Educating the public on the relationship between river health and human health has the potential of improving both the physical and social health of the community. Two education issues offer possible starting points: The first is drinking water—some 85 percent of Americans depend on rivers for some part of their drinking water; the second is environmental justice—rivers are so interwoven into the fabric of our society that they affect both the urban and the rural, the wealthy and the poor (albeit not equally).

A Beginning

The success of river and watershed protection and restoration will depend on the ability of river conservation groups at all levels to work closely together, to mobilize existing river guardian organizations, and to reach out to new constituencies in

the inner cities, business, the federal government, environmental organizations and the states.

A small start has been made with the effort of River Network, the Pacific Rivers Council, American Rivers, the American Whitewater Affiliation and a number of other state and regional organizations including the Cahaba River Society, the Merrimack River Watershed Council, New York Rivers United and others who have informally banded together to support the River and Watershed Protection

Act and several Urban River Restoration bills now before Congress.

Other possible initiatives include a Strategic National Watershed Restoration Initiative, improvements in the Clean Water Act, a comprehensive ecosystem-based watershed restoration program, a moratorium on new dam construction, periodic "State of the Nation's Rivers" reports and stable long-term funding and sufficient financial and tax incentives for river restoration.

Some of these efforts are already underway. Federal agencies including the Environmental Protection Agency, USDA Forest Service, Fish and Wildlife Service, National Park Service and Bureau of Land Management have all adopted new programs for ecosystem and watershed restoration and management. The immediate challenge for River Network and the river conservation movement is to coordinate, connect and expand the grassroots constituency and to keep abreast of the fast moving developments in river science and public policy.

Pete Lavigne is River Leadership Program Director for River Network, a national, non-profit organization dedicated to grassroots river conservation. 

Creative effort by F. J. Reilly Communications

***"We Locals Can't Vote...
But You Can."***



Juvenile Osprey (State Threatened Species)

***"Protect the Future of Our Rivers
For ALL of Us!"***

Keep Millville's Local River Plan Intact.

Vote YES Questions #1 & #2

One of series of successful posters and ads produced by Citizens United to Protect the Maurice River and its tributaries.

Volunteer River Monitors

by Michael Linde

"Water is the one substance from which the earth can conceal nothing; it sucks out its innermost secrets and brings them to our very lips."

— Jean Giraudoux



Whether motivated by self-interest, a sense of responsibility or scientific curiosity, hundreds of thousands of people—from school-children to retirees—are volunteering their time, energy and talents to water monitoring programs all across the country.

According to Eleanor Ely, editor of *Volunteer Monitor*, the national newsletter covering this rapidly expanding activity: "...monitoring is almost unique in being value-neutral; a project can cut across not only barriers of age, race and class, but differences in opinion and political leaning. It engages...in an active, constructive, immediately satisfying way...people aren't just asked to send in a check or write a letter. By drawing a wide variety of people into active participation, increasing their knowledge about their local environment and giving citizens a meaningful voice in government processes, monitoring works to democratize environmentally-related decision-making."

What Exactly Is Being Monitored?

Whether small or large, flowing or still, fresh, brackish or saline, waterbodies are complex systems having physical, chemical and biological characteristics. Water quality reflects the sum of these characteristics and it is customary to select a number of indicators that are practical to measure and reveal what is most needed to know. Some commonly used indicators are:

Physical: temperature, depth, flow, bottom composition, water clarity, suspended solids;

Chemical: dissolved oxygen, acidity and alkalinity (pH), nutrients, conductivity, salinity;

Biological: benthic macroinvertebrates (aquatic insect larvae and other small bottom-dwellers), fish, bacteria, algae, plankton, rooted aquatic plants.

Often, volunteer river monitors also observe and record other char-

acteristics such as adjacent land use, bank vegetation and erosion, degree of river shading, and presence of outflow pipes emptying into the waterway.

According to Geoff Dates of River Watch Network (RWN), the indicators selected will depend on the questions you are asking and the amount of human and financial resources available. For example, if you want to know whether water is safe for swimming, you would analyze for bacteria; to determine farm impact, suspended solids and water clarity would indicate the extent of soil erosion; bacteria and nutrient counts could tell you the extent to which manure and fertilizers were entering the water. Increasingly, benthic invertebrates are being used as indicators of the general health of the aquatic biological community and the impact of various human activities.

How Extensive Is the Sampling?

River Watch Network identifies three types of studies that determine the extent and location of sampling:

Wayne Thompson



River Watch Network volunteer collects aquatic insect sample to determine general health of stream.

and different elevations.

2. An *Impact Assessment Survey* is more localized and measures the impact of human alteration on a river. Generally, three sampling sites are chosen to “bracket” the impact area: a control or reference site immediately upstream of the impact, a site where the water is fully impacted and a site sufficiently downstream where the waterway would be at least partially recovered from the impact.
3. A *Water Quality Standards Survey* is used to determine whether a waterbody meets state or federal quality standards for its designated uses and values. Sampling sites are located where those uses and values occur.

How Does One Begin a Water Monitoring Project?

1. A *Characterization Survey* establishes a baseline to overall health and sampling sites represent a range of conditions in the watershed including waters

associated with different land uses, waters receiving discharges from outflow pipes, waters receiving polluted runoff, waters of different sizes

River Watch Network is a non-profit organization assisting volunteer monitoring programs across the country. They advise start-up groups to begin with a series of workshops, involve

a broad range of river interests and prepare a written plan.

The plan should define the reasons for monitoring. What are the values and uses of the waterbody? What are the threats facing it? What are the short-term and long-term goals, and what information is needed to achieve those goals? What information is already known and where are the gaps that volunteer monitoring can fill? Who will use the information that is collected?

Volunteer monitoring groups must establish credibility with government agencies and others who will be using their data. Washington State's Kit Paulsen offers these tips to those considering starting a monitoring project:

- Have an established written protocol for sampling.
- Use the same or comparable format as agency databases.
- Use proper chemical notations, terminology and measurement units.

- Use reliable equipment and keep it calibrated.
- Plan for the health and safety of volunteers (and consider liability coverage for the organization).

A Success Story

The Hoosic River Watershed Association needed to improve the river's water quality but knew little about starting a monitoring program. A major complication was that its watershed was nearly equally divided among the states of Massachusetts, Vermont and New York. With assistance from River Watch Network, Rivers, Trails and Conservation Assistance Program and other public and private cooperators they designed a tri-state monitoring project. A recreational map/guide helped spark public interest in the watershed and in the project which continues to this day. In 1991, noticing his association was not the only river group needing assistance with monitoring,

Hoosic's president Jerry Schoen and the cooperating organizations established the Massachusetts Waterwatch Partnership. The partnership now provides a statewide training and support system for volunteer water monitoring groups.

The Hoosic River story illustrates how water monitoring projects are natural supplements to the work of river and watershed conservation groups. Water monitoring gives group members and their supporters a chance to literally get their feet wet and provides them opportunities to learn while enjoying their river and working with one another.

Michael Linde is project manager for the National Park Service's Rivers, Trails and Conservation Assistance Program in the Mid-Atlantic Region and wishes to thank River Watch Network for their contribution to this article. 

The Tennessee Rivers Information System

by David Duhl, Elizabeth Bunting, Gina Murphy and Larry Whitson

"Conservation is sometimes perceived as stopping everything cold... the choice is not between wild places or people — it is between a rich or impoverished existence for man."

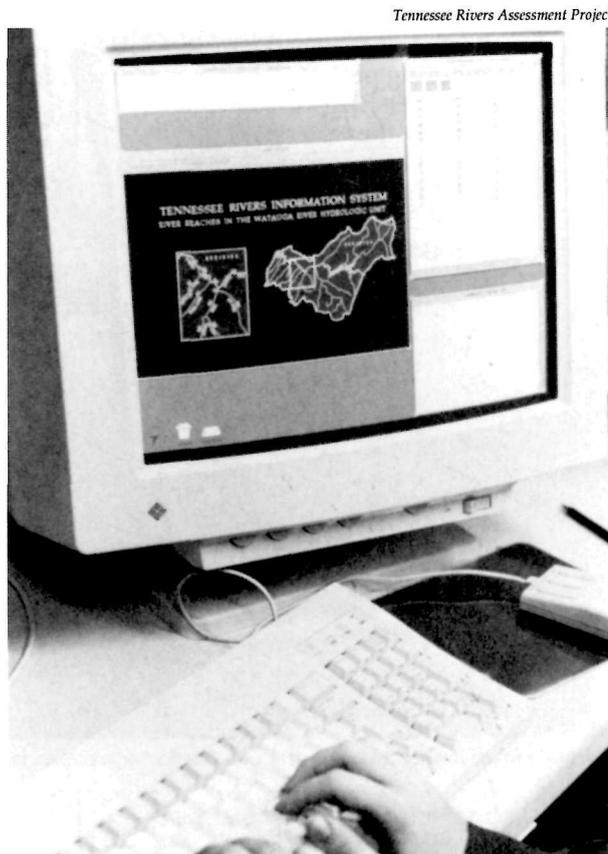
— Thomas E. Lovejoy



Federal agencies, state agencies, local governments, conservation groups and citizens across

Tennessee all have an interest in, and views on ensuring that the state's rivers and streams are well cared for. Rather than use rhetoric as a weapon to defend positions, dialogue was used as a tool to forge a partnership based on common interest. Those discussions led to the formation of a true partnership of three federal, four state and five private non-profit organizations. The partners help to define goals, share responsibilities, support costs, offer guidance and provide leadership where needed. As users of the information, partners also provide valuable feedback regarding product value.

The partners believe information collected is useful



Tennessee Rivers Assessment Project

The Tennessee Rivers Information System combines geographic and resource assessment information (including river bank vegetation and land use from recent satellite photography).

only if it is maintained and updated regularly. One of the strengths of the statewide rivers assessment process is that it integrates and consolidates knowledge and information that is currently housed in various agencies across the state. As the partners began discussing their individual needs, it became apparent that this consolidated database—offering a kind of one-stop shopping—must continue to be available after the initial assessment product is produced. Indeed, the commitment of the partners to maintain the database—and not let it get out-of-date—is what underpins the support for the assessment process.

The utilitarian perspective defines the Tennessee Rivers Information System. That is, the system must be able to provide current, relevant, comprehensive information to the federal, state and local planners who need it most. Some examples:

- Tennessee formulates a State Recreation Plan every 5 years. The information on the recreational uses of Tennessee's rivers and streams collected in the assessment will be useful to the Department of Environment and Conservation recreation administration, which is guided by the State Recreation Plan. The assessment's tracking of where, and how, Tennesseans are taking advantage of river recreation resources will provide valuable information such as where access points need to be developed by local, state or federal recreation providers.
- The Department of Environment and Conservation has an initiative to define Outstanding Natural Resource Waters. The assessment's comprehensive database describes unique fishing experiences, boating opportunities, natural and scenic qualities and some characterization of riparian zones. As the Department's Division of Water Pollution Control develops and implements the criteria for inclusion in this program, the River Assessment database will be available to support this exciting new initiative.
- The Division of Ecological Services has need for information to support mitigation banking for wetlands. Assessment data can help to identify river reaches that meet a specific set of criteria: e.g., adjacent to protected lands, associated with an existing wetland, riparian zone intact and harbors plant communities of special concern.
- The Department of Environment and Conservation is interested in watershed

What is a Statewide River and Watershed Assessment?

Objective

A statewide river and watershed assessment is a cooperative effort to combine and consolidate all existing information regarding the state's river resources. Reported outcomes from some 20 states who have used the process include an informational database that supports river conservation efforts throughout the state; improved cooperation between federal, state and local resource agencies and private interest groups; and an informed, broad-based constituency for conserving the state's river resources.

Process

The assessment is typically coordinated by a *Study Team* comprised of one or more state resource agencies with technical assistance provided by the National Park Service's Rivers, Trails and Conservation Assistance program. An Advisory Committee consisting of representatives from government, private sector, academic, conservation and other interest groups provides guidance and assures that all river interests are given full consideration.

The first tasks are to (1) define the scope of the study (e.g., all rivers appearing on a 1:100,000 scale map or major rivers in each watershed) and (2) identify resource categories to be studied (e.g., water quality, fish, riparian

area, recreation, cultural, agriculture, industry) .

Resource Teams of subject experts are formed for each resource category to be studied. Each Resource Team establishes the minimum standards a river must meet for inclusion in the assessment and determines the rivers it will study. After a period of Public Review in which additional rivers or watersheds may be proposed, the list of the rivers in the statewide assessment is finalized.

Each Resource Team develops the method for systematic evaluation of all study rivers within its resource category. The evaluations are based on verifiable information from a variety of sources. Following the evaluation, the team may assign each study river a numerical ranking (i.e., "1" for outstanding, "2" for excellent, etc.). These rankings can be useful in preparing summary maps and charts which show "Outstanding Water Quality" or "Outstanding Recreation." The numerical rankings can also be used to identify the state's most significant rivers (e.g., rivers having the most number of "outstanding" resource ratings).

Assessments typically take several years to complete—the greater number the rivers and river categories, the greater the time required. River Assessment results are usually published, but increasingly the primary product is a GIS database that can be easily updated and easily accessed by all river interests.

restoration initiatives. Assessment information can be retrieved for any watershed and river reach. The database contains information on aquatic and riparian species, water quality, recreational fishing and boating opportunities, and a description of the watershed. The information can be used to describe the watershed and even used to estimate recreational losses as a result of ecological damage.

- Tennessee is actively pursuing a multi-agency Biodiversity Project that combines terrestrial gap analysis with studies of neotropical migratory birds. An important aspect of this statewide project is the use of satellite photography information to describe current land

use. By converting the assessment's digital coverage of rivers and streams to a scale similar to that used by the Biodiversity Project, a hybrid map was created. The assessment information contributed to the map included the base coverage for rivers, recreational use, water quality - from 305(b) reports and a modified IBI (Index of Biological Integrity) for fish. In return, the Biodiversity Project contributed land use in the riparian zone and range maps of riparian animals.

Conclusion

Watershed restoration and river conservation programs are more

easily achieved through a coalition of concerned interests. The Tennessee Rivers Information System provides centralized information collection and distribution to the planners at the state and local level who need it most. Over time, the system will be increasingly important in protecting Tennessee's major liquid asset which includes more than 15,000 miles of free-flowing rivers.

David Duhl is Information Coordinator, Elizabeth Bunting is Project Manager, Gina Murphy is GIS Database Manager and Larry Whitson is Field Researcher with the Tennessee Rivers Assessment Program. 

A Renaissance for Kentucky's Rivers: Outcomes from Statewide Assessment

by Scott Hankla and Wink Hastings

"There is no math you can do to resolve these issues. Ultimately, conservation is all a question of philosophy and ethics."

— Mollie Beattie



What began as an inventory and assessment project, inspired many far-reaching initiatives that are forming the basis of a balanced and comprehensive program for conserving Kentucky's rivers. Like other statewide assessments, Kentucky's was a cooperative venture involving the full spectrum of river interests and river resource categories. Completed in 1992, the assessment comprised some 550 rivers—totaling more than 38,500 miles. The initiatives highlighted below are the kinds of *outcomes* that might be expected of an inclusive, statewide assessment process.

- The Kentucky Environmental Quality Commission sponsored a Working Forum to "explore and promote a positive and effective change in restoring and preserving river resources." Recommendations included the development of watershed preservation plans, improved enforcement of statutes and regulations—including coordination

between state and local clean-up efforts, emphasis on education and greater involvement by citizen groups in river management.

- A River Policy Task Force was established as a result of the Forum and prepared the *River Policy Action Agenda for Kentucky*. The agenda addressed watershed protection, nonpoint source pollution, interagency coordination, information-gathering, local action and public outreach. It was adopted by the Legislative Water Management Task Force.
- Environmental Quality Commission assisted by the National Park Service sponsored a working conference entitled, "A National River Policy Symposium: The Kentucky Model." A direct outcome was the *Concurrent Resolution Relating to River and Watershed Resource Management*, which was introduced in the 1992 Kentucky General Assembly.

- The Kentucky Legislature created the "Community Rivers and Stream Grants" program to restore, maintain and enhance local and regional streams and rivers and their accompanying riparian areas and watersheds. The program has been highly successful, and it's likely to be continued at the \$100,000 level in the 1994-96 biennium.
- The Kentucky Waterways Alliance, launched at a citizen's forum, is an alliance of numerous grassroots watershed groups being formed across the state. The focus of the Alliance is project support, education and advocacy. Grassroots groups are concentrating on education, monitoring water quality and quantity, and protection of riparian habitat.
- The Kentucky Division of Water uses assessment data for identifying "high quality" streams requiring a higher level of protection. The assessment is also used to determine



Cover of Kentucky Rivers Assessment featuring all of the river-related resources that were evaluated.

priority funding for nonpoint source demonstration grants. The division oversees four demonstration watershed studies funded by the U.S. Environmental Protection Agency. The objective is to develop the best management practices for agricultural and mining in order to protect stream quality. The assessment database identifies outstanding streams that would be most susceptible to nonpoint runoff.

- The Kentucky Department of Fish and Wildlife Resources uses the assessment database in reviewing coal mining permit applications. Mining activities that threaten important fisheries and riparian habitat are prohibited.
- The Kentucky State Legislature considered two of the outstanding undeveloped streams

identified in the Assessment for inclusion in the Kentucky Wild Rivers System. Although the measure did not pass, the action brought statewide attention to these outstanding streams. The USDA Forest Service recently completed detailed studies of four rivers identified in the assessment and will be proposing them for designation as National Wild and Scenic Rivers. One river identified in the assessment has been proposed by the National Park Service as a candidate for study under the National Wild and Scenic Rivers Act.

- The Kentucky Heritage Land Conservation Fund has recently been established for the acquisition of natural areas. This new program will be funded from unmined minerals taxes, fines levied by the

Natural Resources and Environmental Cabinet and natural areas license plates. Ten percent of this fund—an estimated \$500,000 per year—will be earmarked for state wild river corridors.

Conclusion

Through the dedicated and cooperative efforts of many individuals and organizations, what began as an inventory is resulting in a renaissance for Kentucky's rivers.

Scott Hankla is an Environmental Program Coordinator with the Kentucky Division of Water, Frankfort, Kentucky. Wink Hastings is a Landscape Architect with the National Park Service, Rivers, Trails and Conservation Assistance Program, Milwaukee, Wisconsin. 🏠

New Directions after the Great Flood of 1993

by Scott Faber

*"Water its living strength first shows
When obstacles its course oppose."*

— Goethe

The Great Flood of 1993 sent us a powerful message—no amount of levees, dams and dikes can fully protect people from rampaging rivers. We seem to be getting it. For the first time in our Nation's history, we are starting to give rivers the room they need. More than 5,000 homes, businesses and farms are being relocat-

ed to higher ground. More than 100,000 acres of farmland will be voluntarily enrolled into federal wetland restoration programs.

Ending A Destructive Cycle

By retreating from the river's edge, the people of the Midwest

are reversing a destructive cycle that began long ago. Historically, federal engineers have sought to control flooding with practices designed to drain watersheds quickly, and to compensate for the rapid rise in mainstem rivers by constructing levees that would contain the high water in the river channel. These impressive federal levees offered a sense of security that drew farms, homes and busi-

From Report of The Interagency Floodplain Management Review Committee, June 1994



Part of the \$12 billion damage caused by the Great Flood of '93.



Jefferson City, MO, during Great Flood of '93. Note state capitol building at top right.

nesses into former floodplain and low-lying areas. Soon the levees were protecting sizeable economic investment, not to mention lives, and it was easy to justify strengthening, elevating, replacing or building new levees because the economic benefits outweighed the costs. Each improvement added security, which drew development, which justified more protection, which added security...

The floods, of course, continued. Surprisingly, per capita *flood losses more than doubled*, despite (because of?) the multibillion dollar investment in levees.

In the 1960s, Congress began to redefine federal policy to use floodplain management — zoning and land-use regulation, flood forecasting, flood insurance, relocation and alternative water storage techniques — to reduce flood losses. The National Flood Insurance Act of 1968 offered subsidized insurance to communities that adopted good floodplain management practices. Some non-structural measures such as wetlands restoration were developed and implemented. But old habits have proved hard to break. Indeed, the vast majority of flood control projects continue to include structural alterations of rivers and their watersheds and are designed to accelerate drainage and flows. The projects continue to be justified by economic cost-benefit in the project area; no consideration is given to the biologic cost-benefits or the hydrologic cost-benefit beyond the project area.

Environmental Consequences

Scientists increasingly tell us that the main threat to America's rivers today is not pollution but the physical and biological transformation of rivers and their watersheds. As

our rivers are altered to provide navigable channels, generate power, reduce flood hazards and provide water for our farms, cities and industries, their natural physical, chemical and biological processes have been damaged or destroyed. This loss of riparian and aquatic habitat has led to the decline or extinction of more than one-third of North America's fish species.

Healthy river systems are incredibly complex and dynamic. As nutrients, sediments and organisms are transported downstream, water and organic materials are constantly added to the mix. Most of these materials come from the surrounding land, with the land-water boundary, known as the "riparian zone," acting as a buffer and filter that regulates the exchange. Riparian zones and their associated wetlands also act as natural sponges, absorbing and filtering polluted floodwaters over time. When stream banks are cleared, straightened and replaced with rocks or concrete to reduce flood hazards, the natural values of associated wetlands and floodplains — controlling and filtering runoff, providing habitat and adding nutrients — are eliminated. A living river is then quickly transformed to little more than a drainage ditch.

Although river flow is highly variable over the course of a year, the seasonal timing of high and low flows is fairly predictable. When rivers flood, they alter the shape of the stream, scouring new channels and inundating riverside land, depositing sediments and building new banks and beaches. This periodic flooding is as important to healthy river ecosystems as fire is to maintaining fertile prairies. For many fish species, this flood "pulse" (or "natural hydrograph" to scientists) not only trig-

gers spawning and migration but also allows fish to reach the seasonally flooded floodplains that are needed for spawning and nursing of the small fry.

A New Approach

As the floodwaters receded, American Rivers and a coalition of national and local conservation groups adopted a three-part strategy to reform our nation's flood control policies. First, we urged Congress and the Administration to increase funds to move vulnerable homes, businesses and farms out of harm's way. Congress responded by increasing funds for such moves from \$39 to more than \$600 million, representing a major shift from the traditional Congressional response to floods. Floodplains would again be able to provide many natural and beneficial uses such as floodwater retention, water purification, wildlife habitat, park and open space for human use and enjoyment.

The groups then called for an independent White House Task Force, led by General Gerald Galloway, which recently called for increased floodplain management and less reliance on structural solutions like levees. The report also concluded that restoration of "uplands" wetland, much of which had been drained for agricultural and other economic development, can be effective for smaller floods.

On the anniversary of the flood, American Rivers announced its strategy to reduce future flood losses: (1) adoption of a watershed approach that controls flooding through the protection and restoration of vegetation, soils, wetlands and other natural features that retard run-off throughout our watersheds; (2) use of future disaster relief to encourage increased

state and local responsibility; and (3) creation of an ongoing, full-time relocation and acquisition program that identifies most vulnerable homes and businesses through state and local floodplain and watershed management plans.

The watershed approach is based in part on findings that where lakes and wetlands are preserved or restored, water is released at different rates and reaches the channel at different times. One Midwestern study suggests that for every 1 percent increase in watershed wetlands peak flood flows are decreased nearly 4 percent.

Applying that ratio to the estimated 10 percent of wetland area that originally existed in the Great Flood area suggests that those wetland areas could have accounted for a 40 percent reduction in peak flows. Of course, most of these wetlands, close to 20 million acres, have now been drained or filled

which undoubtedly contributed significantly to the flood's size and destructiveness.

Consider the "pothole" as a case in point. To many, these surface depressions common to the northern part of the Great Flood area surely complicate farming and other land development. However, these depressions serve a very useful flood control purpose. When these depressions fill with rain, surface waters flow from pothole to pothole through an ill-defined drainage network, eventually finding an outlet to a surface stream. This intricate network of depressions slows runoff. In the watershed approach to river management, natural flood control mechanisms like potholes would be recognized and used wherever possible.

Conclusion

The lesson from the Great Flood is that we can't straightjacket our rivers and hope to occupy their floodplains—at least not over the long term and not without considerable risk and high expenditures in the interim. A less costly and more environmentally responsible approach is to ensure that all the natural flood control mechanisms such as floodplains, riparian and uplands wetland, are fully functioning.

One year after the Great Flood, Congress and the Administration are poised to not only redefine federal flood policies, but in a larger sense redefine our Nation's relationship with its rivers.

Scott Faber is Director of Floodplain Programs for American Rivers, a national river conservation group based in Washington, DC. 

Recreational Instream Flow

by William L. Jackson, Ph.D.

"Separating consideration of the resource base from recreation is like trying to make a glove function without a hand inside it."

— Sally A. Ranney



With a few notable exceptions, such as the Yellowstone in Montana, nearly all major rivers in the 48 contiguous states have their flows altered by

human activities. Although not always evident to the casual observer, when streamflows are altered there are corresponding changes in the character of river ecosystems. The purpose of this article is to describe how human activities alter stream flows and to discuss how changes in flows affect the types and qualities of recreational amenities provided by river ecosystems. In addition, general concepts applied in quantifying flow requirements for maintaining or enhancing recreational amenities are described.

Changes in Flows Caused By Ground Water Pumping and Land Use

Not all changes in river flows are dramatic. Some are very subtle. For example, ground water may be pumped from aquifers which would otherwise discharge their water to streams and help maintain base flows during periods of little

or no runoff. Ground water pumping, for the city of Sierra Vista and nearby agricultural lands threaten to lower water tables enough to eliminate the San Pedro River's baseflow, and to de-water its nationally recognized riparian resources.

Subtle flow alterations also stem from changes in watersheds which influence the amount of rainfall or snowmelt runoff delivered to stream channels. For example, urban developments create impervious surfaces which cause rainwater to flow quickly into local drainage conveyances, rather than to soak into soils. The town of Hot Springs, Arkansas, and Hot Springs National Park now experience dramatically increased frequencies of flooding, in part because of the large amount of urban development in the watershed.

Changes in watershed vegetation affect river flows. Timber harvesting in Oregon's Alsea Experimental Watersheds resulted in increases in annual stream flows, largely because of the reductions in water use by vegetation. Livestock grazing in Western riparian areas has also been shown to cause streams to lose flow in the summer.

Changes Caused By Dams and Diversions

Water diversions for agricultural, domestic and industrial uses reduce streamflow in the amount equal to the diversion. Flows in Colorado's Cache La Poudre River are literally turned off and on by the upstream diversion of water for agricultural irrigation. At times, the only flow in the Cache La Poudre River in Fort Collins is from discharge from the city's two sewage treatment plants.

The typical function of dams is to reallocate streamflows from periods of high natural flow to periods of low flow. This ability to control flows makes dams useful, helping to mitigate floods and droughts. When dams are fitted with hydroelectric generating capabilities, they may control flows on an hourly schedule in response to demand for electricity.

Society has long viewed the water storage and flow reallocation that dams provide as an overall economic benefit. And, in fact, some recreation amenities have benefited by impounding rivers and reallocating streamflows between seasons. Rivers such as the

Chama in New Mexico, the Dolores in Colorado and the Green in Utah now provide a prolonged season for river-running, clear water and enhanced sport fishing opportunities because of the existence and operation of dams.

However, the elimination of natural flooding often means that sediments are no longer redeposited on upper floodplains, leading to a corresponding gradual loss of camping beaches. Impounded rivers such as the Colorado, Missouri and Columbia also have experienced elimination of, or dramatic declines in native fishes because of dams. In the Green River, the Colorado razorback sucker is in decline, largely because spring flows are no longer high enough to permit flooding of spawning and rearing habitats. In the Grand Canyon, the endangered humpback chub is impacted not only by the cold water releases from Glen Canyon Dam, but also by daily flow fluctuations stemming from hydropower operations which impact backwater rearing habitats.

Recreation Attributes Related to Instream Flows

The type and quality of many river recreation activities are flow-dependent. For example, navigability by canoe, raft or kayak is often dependent on water depth or the hydraulic conditions of rapids—both of which are flow-dependent. Travel times for river trips are keyed to flow velocities, which in turn are related to flow quantities. River features such as sand bars, riffles and pools which are important to such recreational pursuits as fishing, swimming and camping are established and maintained by instream flows of varying magnitudes.

Aquatic and riparian habitat conditions also are keyed to flows and impact the quality of the recreation experience. For example, streambeds are greatly affected by the interactions of flows and sediment transport which can affect fish spawning and feeding. The composition of riparian vegetation is flow dependent and has major impact on scenic beauty, wildlife, river and corridor temperatures.

Developing Recreation Instream Flow Objectives

To a large extent, the advantages and disadvantages of protecting or managing stream flows are in the eyes of the beholder. While one set of public interests may place high value on protecting or enhancing native river ecosystems, another set may prefer the benefits associated with dam-dependent rivers.

Nowhere is the challenge of conflicting flow management objectives more striking than on the Colorado River in Grand Canyon. Here, optimum flow conditions for native fish, sport fish, white-water rafting and riparian habitat all are in conflict with each other. And, for the most part, recreational interests are in conflict with water use and hydropower interests.

Thus, the overriding challenge in the management of instream flows is to define the river resource amenities to be managed for, and to develop a clear statement of objectives which will produce the desired resource conditions. In developing flow management objectives, it is important to consider not only the effect on recreation amenities but on the river ecosystem as a whole.

Quantifying Recreational Instream Flows

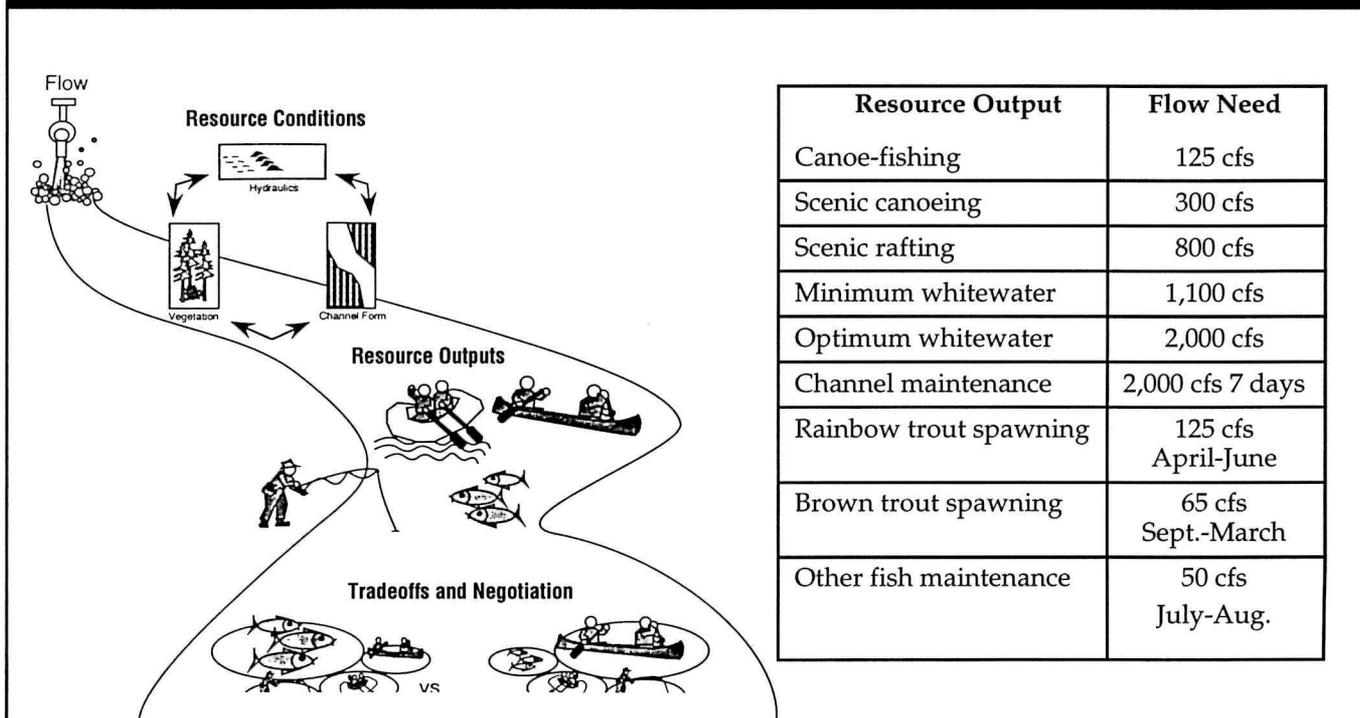
Given some level of consensus, and a clear set of flow management objectives, the next challenge is to understand, scientifically, the relationships between flows and the river resource conditions. Developing these flow-recreation relationships is at the heart of the instream flow quantification process, but it is not a simple exercise.

The first step is to establish the background (normal) hydrology of the river. The next step is to determine the possible ranges of flow alterations which could be achieved if desired. Once the hydrologic, physical and legal management constraints are defined, the optimum flow levels to meet the objectives for the desired recreation activities are identified. The final step is to assess the trade-offs between alternative instream flows and the recreational amenities being considered.

Flow-recreation resource relationships can be developed directly by observing and evaluating the response of river recreation conditions to alternative flows. For example, user surveys can quantify a user's perception of recreation quality with the flow which existed at the time of the recreation experience.

It may be possible to develop generic relationships between certain hydraulic attributes (such as depth, velocity and turbulence) and the quality of certain recreation experiences. Knowing the hydraulic attributes, the recreation potentials could be estimated by comparisons with the generic information.

Flows Required for Various Resource Outputs: Dolores River, Colorado



Naturally, relationships of flow to recreation quality are most easily developed for recreational amenities directly related to river hydraulic conditions, such as those between boating quality and the amount of water discharged in the river. However, much of the character of river ecosystems stems not only from the "optimal" flow for immediate recreational pursuits but from longer term and more subtle processes. These indirect instream flow effects are more difficult to quantify, but may be very important to the long-term management of river ecosystems. For example, river flows (especially floods) function to sculpt river landscapes and induce important river processes such as sediment transport, meandering and braiding. These processes, in turn, result in important river recreation fea-

tures such as beaches, riffles and pools, riparian vegetation, fish and wildlife.

Conclusion

We are just beginning the exploration of the relationships between flows and recreation amenities. This year the U. S. Supreme Court ruled that states may require a minimum instream flow in rivers for recreation purposes. It will become increasingly important that river recreation advocates develop an awareness of instream flow issues and a more scientific basis for their instream flow recommendations.

There are a number of things we can and should be doing now. By maintaining watershed and riparian vegetation and containing

runoff from development sites, we can temper much of the adverse effect of poor land use practices. We can seek to limit the withdrawal of river and ground water by making full use of state and federal water laws and permitting regulations. And, through cooperative planning during the federal hydropower licensing process, we can help ensure sufficient instream flows to conserve the resource.

Dr. Jackson is Chief of the National Park Service's Water Operations Branch in Ft. Collins, Colorado. He is a co-author of a handbook on "Instream Flows for Recreation," from which the information and figures for this article were drawn. 

A Brighter Future for Harnessed Rivers

by Kevin Mendik and Angie Tornes

"In our family, there was no clear line between religion and fly-fishing."

— Norman MacLean



A raft careens wildly through Penobscot's whitewater, a dry fly floats above a quiet pool on the North Umpqua, a family watches the setting sun from its evergreen-lined campsite near the Au Sable. World-renowned rivers, world-class beauty and recreation. What people often overlook is that these rivers are dammed to produce hydroelectricity.

Across the country, agencies and private citizens are working to ensure that as the dams on these and other rivers are relicensed for another 30 or more years, the production of electricity will not be at the expense of the river's natural, cultural and recreational values. All such rivers are benefitting from new and positive trends in licensing and regulating hydropower projects: more consideration is being given to ecological, recreation and aesthetic values; there is an increased willingness to consider and remedy adverse impacts beyond the immediate dam project boundaries; disputes are increasingly resolved through negotiated settlement agreements rather than protracted legal battling; and there is a greater emphasis on basin-

wide impacts including the impacts of multiple-dam projects.

As hundreds of major, long-term hydropower projects are coming due for relicensing, the National Park Service (NPS) has been working with recreation and environmental organizations, interested citizens, power companies, the Federal Energy Regulatory Commission (FERC) and other agencies to ensure the public will be able to enjoy the outstanding recreational values these rivers still offer.

The Time for Change

The FERC was taken by surprise when shortly after the license applications were due in 1992, it received upwards of a thousand requests asking that license applicants be required to conduct additional studies or provide more information. Several months later, it was the power companies' turn to be surprised as the FERC directed them to respond to over 300 "Additional Information Requests." The requests require considerable work which explains why the vast majority of the 150 licenses that expired in 1993 are currently operating under "Annual

Licenses." It gets worse—or better—depending on where you sit; well over 200 additional major licenses will expire in the next few years, adding to the backlog. At the same time, it provides river conservationists an opportunity to negotiate positive changes in hydropower operations that will be in effect for the next 30 years.

Examples of Recreation/Conservation Mitigation

NPS staff have helped bring about significant changes in how natural and recreation resources are viewed by the FERC and the power companies. Specific changes include recreational instream flow determinations, developed by NPS, which are now routinely requested of operators by the FERC and increasingly being incorporated in initial plans submitted by new applicants. Other initiatives by NPS staff that are part of many pending applications are: dedicated aesthetic flows, enhanced public access, land protection and the establishment of an "Enhancement Fund" to provide for environmental education and mitigation of impacts that take years to surface.



A well-timed draw stroke positions canoe for perfect entry.

McKenzie River, OR — Beginning high in the Cascade Mountains, the McKenzie River offers something for everyone — whitewater, flatwater, picturesque parks and wildlife viewing, and buying fresh produce from river-front farms. But it is driftboat fishing for steelhead that made McKenzie famous. Unfortunately, many of these recreational opportunities are under threat from the growth of nearby cities of Eugene and Springfield.

When the two dams on the McKenzie River came up for relicensing, there was an opportunity to relieve some pressure from the rapid development. It was apparent that protecting the land base

was more important than providing new parks, access or trails. Working in cooperation with the Eugene Water and Electric Board, state and local groups and the U.S. Fish and Wildlife Service and others, an agreement is being made to channel mitigation funds into a land conservancy instead. While the details are still to be worked out, the concept has been approved.

Salmon River, NY — In Western New York, the Salmon River flows into Lake Ontario, past two dams operated by Niagara Mohawk and through some of the most productive landlocked salmon habitat in the eastern United States. Following numerous negotiating

sessions, field studies and extensive data analysis over an 18-month period, a comprehensive settlement was reached. That agreement provides for significant land protection, dedicated aesthetic flows over one of the state's highest waterfalls, enhanced flows for the nationally renowned fishery, scheduled releases for whitewater boating special events, and the creation and maintenance of a 20-mile riverfront trail. The agreement represents a shift in the way power is to be generated and in the approach of the power company to the licensing process. Although the company has several dozen other projects pending, the Salmon is on the "fast track." The formula used

is not new or complicated: sit down with all sides early in the process, determine each party's needs and what each will be responsible for and maintain the dialogue until differences are worked out. The results are amiable relationships, speedier licensing and the promise of better resource protection.

Au Sable River, MI — Early in the relicensing process, the parties involved in the relicensing of 11 hydropower projects on the Au Sable, Manistee and Muskegon Rivers had already settled into their accustomed modes of communicating with their opposite numbers — which is to say formal, legalistic and with evident mistrust. Seating arrangements, with each side facing the other across a long table, did little to ease the tensions. Progress in resolving the many contested issues eluded the group, and the final application was submitted to the FERC with unresolved issues.

Anticipating that FERC staff would require more information on the contested issues, Consumers Power changed the representatives handling the relicensing. This time it was different. There was an underlying commitment to listen closely to the concerns of agency staff and the public, and to resolve conflicts. The result was a Settlement Agreement signed by Consumers Power and the agencies and used by the FERC as a basis for their environmental review of the projects. Agreed upon enhancements, totalling \$3.5 million, include a Consumers Power commitment to land management plans, additional recreation facili-

ties and implementation of cultural resource management plans. In addition, hydropower operations will be modified to minimize impacts on fish and riverbanks, and 200-foot buffer strips will protect riparian vegetation on project lands. In the end, the company, the public and the resources all benefited immensely from the cooperative venture.

In addition to the projects highlighted above, NPS staff are working on a number of other precedent setting measures to ensure hydropower rivers continue to provide long-term, ecological and public use benefits. Two are particularly noteworthy: (1) a proposed agreement between New England Power and the states of Massachusetts and Vermont will establish an "enhancement fund" which would be used to remedy adverse impacts on the Deerfield River as they become apparent in future years; and (2) an attempt is being made to regain a natural flow regime by alternating peaking operations of hydropower companies along Wisconsin's Menominee

NPS, North Atlantic Region River—a byproduct of this effort, led by Wisconsin Electric Power Company, will be the development of a canoe trail.



City dwellers get a new view of their river.

Conclusion

The hydropower licensing process is changing. FERC representatives are attending more public meetings to hear the concerns first hand. Public input has been requested in formulating key elements of the hydropower licensing process, including the

decommissioning of dams. The basin-wide and multiple-project impact statements that are now routinely required were nearly unheard of just two years ago. Major utilities and environmental organizations are beginning to appreciate each other's concerns. What this means is that even a process as daunting as hydropower licensing can be changed by local citizens and conservation interests. Now, and for the next few years, we have an opportunity to ensure that the flows of hydropower rivers will support our natural and cultural resources for decades to come.

Kevin Mendik is the Hydropower Coordinator for the North Atlantic office of the National Park Service. Angie Tornes is the National Program coordinator for the NPS Midwest office. The authors thank their NPS colleague, Dan Haas, of the Pacific Northwest office for his contributions to this article. 🏡

River Conservation—The Hard Way

by Ron Hyra

"For all their breathtaking immensity, dams are oddly vulnerable things... every reservoir eventually silts up."

— Marc Reisner



At first glance, it looks like any other study on the environmental impact of a proposed

dam project. But this one is different. What is being assessed in this study is the *removal*—not construction—of two hydropower dams!

The study was ordered by Congress in 1992 as part of Public Law 102-495. The law states that the Glines Canyon Dam, within the Olympic National Park and the Elwha Dam, outside and downstream of the park, can be acquired by the Department of the Interior if it is determined that the removal of the dams are "... necessary for the full

restoration of the Elwha River ecosystem and native anadromous fisheries and that funds for that purpose will be available for such

removal within two years after acquisition."



Glines Canyon Dam on the Elwha River—will it make history?

the legendary 100-pound chinook salmon. Despite this, all anadromous fish, including salmon, were blocked from

William Jackson

reaching their historic spawning grounds when the Elwha Dam was constructed in 1911. The lack of anadromous fish in the upper Elwha basin has resulted in lower wildlife populations than in other park drainages which support anadromous fish. Studies have shown that there are at least 22 species of terrestrial and avian wildlife that depend on various life stages of anadromous fish as an important part of their diet. The degradation of the upper Elwha ecosystem is all the more sig-

nificant because it is the largest watershed in an area identified as an International Biosphere Reserve and a World Heritage Site.

Background

The Elwha River is one of the few rivers that originally had all five species of Pacific Salmon, including

Some 35 studies, totalling \$3 million by government agencies, tribes and dam owners, have convinced the Interior Department that the ecosystem cannot be restored by the expedient of adding fish passage facilities to the existing dams. Moreover, the Department has become increasingly convinced that it cannot meet its obligations to protect tribal and park resources without removing the dams.

The Act

The legislation passed in 1992 offers benefits to each of the principal parties involved. While the law provides for the possible removal of two dams and their generating capability, it also requires replacement power be provided to the local mill. The resource agencies and the environmental groups get a restored fishery and ecosystem, which in turn will be of benefit to the tribe. Users of Elwha river water will also have assurance of continuous, high quality water.

The legislation is an example of how diverse interests and points of view can work together. It has been supported by the Lower Elwha S'Klallam Tribe, the dam owner, the power user, the Interior Department, the National Marine Fisheries Service, the state of Washington and the environmental groups who intervened in the proposed relicensing when the original hydropower licenses expired. The legislation was co-sponsored by the Washington delegation and has not been opposed by city and county elected officials.

There are few rivers in the United States where the restoration of a fishery holds such economic and environmental promise. Since the river headwaters and flows through a wilderness area, the distinctive characteristics which originally made the Elwha a top salmon-producing river are still present.

The process of dam removal and the removal and stabilization of the silt accumulation behind the dams are no small feats. The Glines Canyon Dam is 210 feet high and 270 feet long and backs up a reservoir of 415 acres; the Elwha is 105 feet high and 450 feet long and backs up a 267-acre reservoir. While some legal hurdles remain, serious planning for dam removal is underway.

Conclusion

The removal of the Elwha and Glines Canyon Dams is not just about restoring the ecology of a river, or a premier National Park or even an International Biosphere Reserve. It is about reversing that which seemed irreversible; it is about recognizing the incomparable worth of the natural world; and it is about restoring and broadening our sense of the possible.

Ron Hyra is an Outdoor Recreation Planner in the National Park Service's Planning and Environmental Compliance Division, Seattle, Washington. 

Decommissioning Older Hydropower Dams

Current discussions at the Federal Energy Regulatory Commission (FERC) and elsewhere are focusing on what to do with older dams whose operations may no longer be in the public interest. The FERC wants to develop a policy for "decommissioning" such dams and provide guidelines for the long-term management of the site, dam removal and river restoration. At issue is not whether such dams have adverse impacts on river ecosystems, but rather who should pay for the sizable costs associated with decommissioning. Should it be the company that has profited from the project? The ratepayers who have benefited from inexpensive or subsidized electricity? The state or federal taxpayers who have indirectly benefited? Should the costs of decommissioning be incorporated into the license and re-licenses? Should it be added to existing agreements? Whatever the outcome, the FERC's exploration and formulation of a decommissioning policy is a significant and positive trend.

Reconnecting a City to Its River

by Jamie Fosburgh

"Water attracts us on every scale from sea to garden pools. In any landscape it is a magnet which draws us."

— Nan Fairbrother



Two powerful concepts merged when a team of design specialists spent 3 days listening to local folks, visiting sites and presenting their ideas on how to reconnect the city of Concord, New Hampshire, to its river. Combining the "interactive design charrette" and "riverfront revitalization" offers an effective model to any city interested in recapturing the magic of its river.

Riverfront revitalization is an outgrowth of two decades of costly clean-up of the nation's rivers. Once considered a community's "back door"—used for utility and waste disposal—urban and suburban rivers are increasingly becoming the "front door"—emblematic of a community's quality of life. This turnaround was even featured in *The Wall Street Journal* recently.

Before going further, let me say that I am neither a charrette guru nor a waterfront expert. I write this article as an environmental professional who saw an opportunity, did a little research, recruited some supporters and swung into action—with no small degree of trepidation, I might add. The results were excellent and my purpose in writing this article is to relate how the charrette process can be used by others faced with riverfront revitalization on a shoe-

string budget.

Any riverfront revitalization effort begins with a vision. The "design charrette" is a visioning process long used by landscape and building architects and planners. It refers to a group of design professionals working intensively, under very tight time constraints, to develop a solution(s) for a given design problem. As commonly practiced, the charrette generally incorporates frequent interaction with the public. The interactive element is what makes the design charrette effective in exploring the spectrum of complex issues, opportunities and constraints surrounding any riverfront revitalization effort.

Planning the Event

The up-front planning is the most important phase of a successful design event. A core group of enthusiastic organizers was formed to spearhead the event. Several weeks were spent developing and revising an initial concept for the charrette, including basic objectives, geographic scope, a statement of rationale and need, a proposed 3-day format and dates.

It was critical that the charrette objectives be broad enough to appeal to all interested parties and not alienate any important players,

yet narrow enough to be clearly understood and achievable. The objectives agreed upon were (1) to focus public attention on the urban riverfront as a valuable public resource, (2) to identify a range of design alternatives for the future development and conservation of the urban river area and (3) to identify opportunities for enhancing public enjoyment of, and linkage to, the river area.

A one-page concept paper was drafted and circulated for broader input. The revised draft became a "Proposal to Conduct an Intensive Design Workshop," and was used to obtain official sponsors within the city. The following City Council groups were approached and agreed to be sponsors: Planning Board, Downtown Concord Revitalization Corporation, Conservation Commission, Economic Development Advisory Committee and Merrimack River Corridor Coordinating Committee. The principal duty of the sponsors was to provide input and feedback to the design team, and each agreed to appoint at least one member to this task.

The sponsors represented a balance of diverse civic, conservation and economic development perspectives. As an outsider, the National Park Service served as a facilitator to help reconcile conflict-

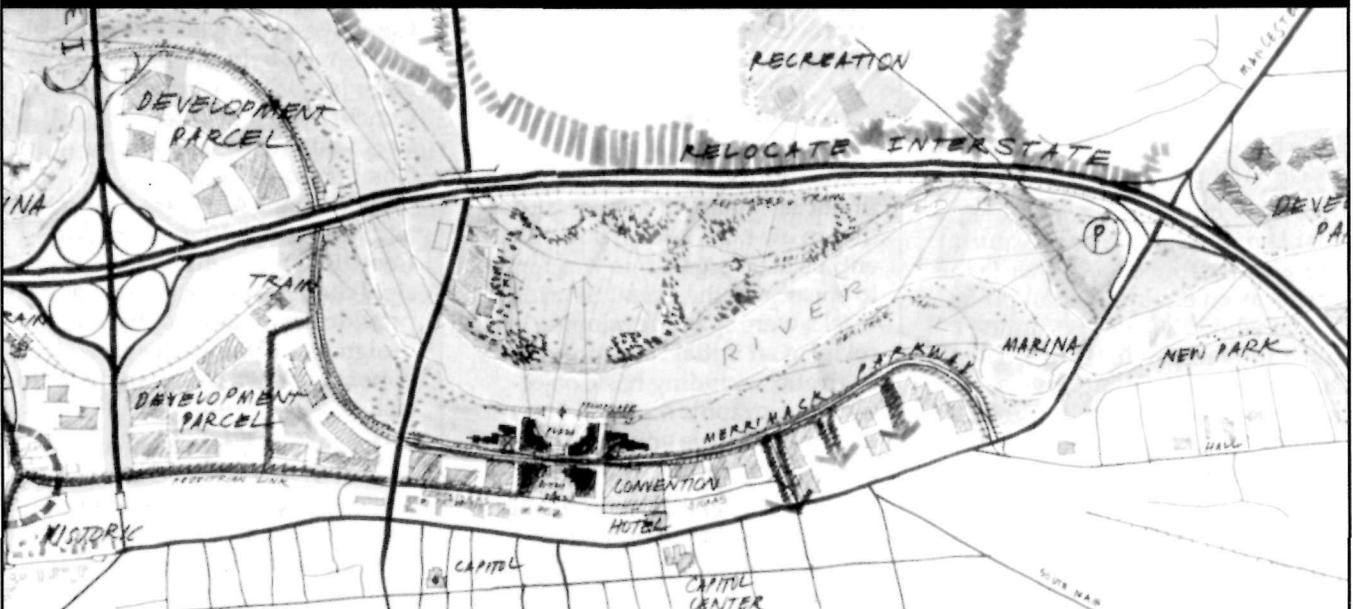
FIGURE 1

Drawing showing existing conditions. Note how interstate separates the city from the river.



FIGURE 2

Drawing of one of three options developed at the charrette. Note relocation of the interstate, and creation of park along the near shore.



ing interests and views. To reinforce the neutral forum it was decided that the design team would be composed of three to four outside professionals and an equal number of local professionals who would have intimate knowledge of the issues of concern.

The Boston Society of Landscape Architects was contacted to find the outside designers who were willing to donate three full days of time to such an endeavor. The local team members were two landscape architects, a building architect and a planning consultant. Although not a team member, the city's Planning Director would provide perspective and technical information, especially GIS map layers, throughout the charrette.

The Schedule

The design team developed the following schedule after several rounds of circulating and commenting on drafts:

I. Site Visit

The design team, local sponsors and local officials tour the study area.

II. Framing the Challenge

The mayor challenges the group to "Find a way to reconnect our city with its river." Sponsors and the public speak briefly of their hopes and suggestions for overcoming obstacles.

III. Synthesis of Issues, Goals and Site Analysis

Design team works up its site analysis and documents the key issues, observations and goals that will guide its response.

IV. Feedback on Analyses

Sponsors review design team's preliminary analyses and provide suggestions. Team refines work in response to feedback.

V. First Design Response

Design Team produces initial design response, highlighting two options to meet the challenge.

VI. Feedback on First Response

Following a "mini presentation" by the Design Team, sponsors, other involved parties and the public provide feedback on first design response. The design team then reconvenes to discuss issues and coalesce feedback.

VII. Synthesized Design Response

The Design Team works to produce final solutions, sketches and presentation materials.

VIII. Final Presentation

Formal presentation of design solutions made by sponsors and the Design Team to the City Council, the press and the public.

With the exception of the initial site visits and tour, the entire charrette took place in a large conference-type room. The public was always welcome, and there were generally a handful of observers and casual participants on hand. During the advertised, formal input and feedback sessions, the room was rearranged with the 4-ft. x 8-ft. trace drawings taped to the walls to serve as visual aids. (Having plenty of wall space is a must!)

The Design Team was responsible for organizing themselves, meeting deadlines, planning each work and presentation session. Sponsors and other officials, the public and the press attended the well-advertised final presentation at which the Design Team offered three alternative design scenarios in response to the goals and issues identified in the site analysis and subsequent public input sessions.

To ensure the enthusiasm generated by the charrette would continue, the original core organizers,

joined by the local members of the Design Team, immediately began work on a concise, "coffee table" type report and slide show. The National Park Service provided technical support, preparing the text accompanying the full-color drawings and developing the slide show. Several organizations, including the City Council and the National Fish and Wildlife Foundation, paid to have copies of the report produced and distributed. The total out-of-pocket cost for the three-day charrette, materials and a full-color report was \$5,000.

Epilogue

Following up on the charrette report's recommendations, the City Planning Director distributed a list of 22 separate actions that the City could and should take right away. The City Council passed a resolution endorsing the overall direction, and one of the design alternatives proposed. The original core group has grown, adopted the name "The River Connection" and continued to develop the charrette's vision of a city vitally reconnected to its river.

The lessons and process of the Merrimack River Charrette has proven applicable beyond the City of Concord. The model was replicated in the city of Haverhill, Massachusetts, several months later with equally good results. The charrette model described offers communities a practical means of generating ideas, enthusiasm and the vision needed to revitalize both the river and the community.

Jamie Fosburgh is Project Manager for the Merrimack Wild and Scenic Rivers Study in the National Park Service's North Atlantic office. He was co-author of the first edition of the national Outstanding Rivers List. 

Urban Waterway Restoration: A New Direction for River Conservation

by Andrew O. Moore

"The life of every river sings its own song, but in most the song is long since marred by the discords of misuse."

— Aldo Leopold



Take a debris-choked stream, one that hikers can hear better than they can see. Add spice in the form of barren, eroding banks. Mix in native plants.

Separate out any exotic elements, including crumbling concrete. Thicken the nearby trail bed with local materials. Add a healthy dose of volunteer labor from youth conservation corps, community groups and Scout troops. Leaven with some seed money. Allow to rise for at least one growing season and observe the return of local people, plants and animals.

Voilà! You have just restored an urban stream. This simple recipe is also your ticket to board the restoration train rolling through the resource management world—one that makes it possible for streams and other habitats to approximate their original condition. Rather than relying upon human-built structures, artificial conditions or mitigation, restoration establishes and achieves the noble goal of bringing back natural forms and processes, while encour-

aging human use and enjoyment.

River restoration is a growing trend because river users and neighbors prefer free-flowing rivers and streams, and because it is so consistent with and reinforcing of other river conservation efforts focused on re-creating healthy habitats for fish and migratory birds.

Restorationists and their allies have set out to remind the 80 percent of the U.S. population who live in urban areas—and urban dwellers in other countries as well—that we all can live in an environment that embraces the natural next to the human-built. Restorationists also frequently point out that alternatives do exist to the expensive maintenance required on the failing concrete structures of yesteryear. For example, natural channel banks and plantings help control floods and provide many other ecosystem and human benefits as well.

Perhaps you, along with many others, were unaware that streams flow through, or under, the urban neighborhood you know well! Restorationists are here to remind

you that streams, rivers, gullies and washes once cut through even the most arid urban and suburban landscapes, and flowed down to larger rivers and the ocean—all this before bulldozers, sewers, asphalt and housing developments arrived on the scene. Many of yesterday's creeks and wetlands are today's culverts, concrete channels and stormwater basins. Hence the newest stream restoration term — daylighting — used to describe the process of liberating culverted, buried streams and bringing them above ground into the public view and consciousness.

In noting the importance of urban streams, Michael Houck, Director of the Urban Streams Council in Portland, Oregon, has written that:

Urban streams are critical to maintaining the quality of life in our cities. They provide fish and wildlife habitat and open space where they are needed most—where the people live. They offer unparalleled recreational opportunities, add to adjacent property values and provide a natural, low-cost alternative for filtering polluted stormwater runoff.

Dave Smith



Michigan Youth Corps uses native materials to stabilize stream banks.

Houck also points to the role restored urban streams can serve as the centerpiece of recreational greenways and as connectors and common ground for the affluent and poor. In short, restored streams become a vital part of a living "greeninfrastructure" to complement the city's built infrastructure of streets and sewers.

From Idea to Reality

Just how do cities and suburbs get started on the task of waterway restoration? In the planning phases, landscape architects, ecologists and concerned citizens comprise the recipe's ingredients. Restoration requires their expertise and input because, to succeed, the project requires a well-informed

vision of how an urban stream ought to look and flow. In addition to helping envision the future, these community-based experts can also help gain access to native plantings and materials needed for crib walls. Furthermore, the restoration's success hinges on a comprehensive approach that covers the status quo, project implementation and ongoing maintenance. Only through significant community involvement will restoration projects retain their character over the long term.

The labor-intensive portion of the project is often assigned to the youth corps, which marshal the energy and idealism of the young to carry out a wide range of community service projects while providing participants with a pay-

check, further education and job training. Crews of corpsmembers, including many disadvantaged youth drawn from nearby communities, are closely supervised and trained to undertake the labor-intensive work of restoration. Soil stabilization, tree and shrub planting, trail building and other activities all require sweat, muscle and teamwork, which youth corps can supply in ample quantities.

Youth corps now operate in 35 states and the District of Columbia and continually seek new partners and work project opportunities to enrich the lives of corpsmembers and the community. In the East San Francisco Bay area, a particularly fruitful partnership has developed between youth corps and restoration groups — so much so that corpsmembers become restorationists and vice versa. The East Bay Conservation Corps (EBCC), a large and successful urban corps that runs as a business and provides job opportunities for young adults from some of Oakland's poorest areas, recently worked with citizen groups and African-American community volunteers to build crib walls and trails on the steep, previously eroding canyon sides of several East Bay creeks.

In another work project that illustrates the many uses of restoration, EBCC joined forces with East Bay Citizens for Creek Restoration following 1991 wildfires that damaged several watersheds. Along Vicente Creek, community volunteers, former residents and corpsmembers cleared burned-out trees and shrubs and then planted thousands of acorns as a first step toward bringing back the native oak forest. Creek restoration forces recruited members of community and neighborhood groups to assist in watering, fertilizing and maintaining the newly planted areas. The restorationist commented at

Chris Brown



Family recreation on a restored urban river.

the time that "this is not only an attempt to reestablish the plant community. It will hopefully play an important role among the people who live in the community as well. They can get excited about working to help the land they inhabit."

Similarly, in Portland, Oregon, The Wetlands Conservancy, Oregon Youth Conservation Corps, Roosevelt High School and several foundations collaborated to launch a youth corps crew to undertake waterway restoration projects throughout the Metropolitan Portland area. In less than two months, while dodging blackberry brambles, mosquitoes, wasps and rain showers, the crew constructed a trail that will provide access to and protect the ecology of a 2,100-acre natural wetland area. Building upon this experience, corpsmembers have devoted significant after-school and weekend time to

design—from scratch—a stream-bank restoration project for a segment of land along the Columbia Slough owned by Wagner Mining Equipment. The crew, drawn from North Portland neighborhoods with the city's highest rates of school drop-outs, substance abuse and teen pregnancy, will now implement the project in conjunction with volunteers from the Wagner staff.

Taking Restoration Nationwide

In order to spread the energy and experience of previously isolated urban waterway restoration efforts, a new national coalition of grassroots citizens groups, educational institutions, creek and watershed councils and conservation corps—the Coalition to Restore Urban Waters (CRUW)—took shape in

1993 with the encouragement of key Congressman George Miller, Chair of the House Natural Resources Committee. The first national urban waters restoration conference, held in September 1993, drew over 300 public and private river conservationists. The second national conference in New York City, September 1994, was also well attended.

At the conference and through the new networks that have resulted, CRUW members have assisted each other and also established an ambitious legislative agenda aimed at steering federal watershed protection funds toward urban waterway restoration projects, in a user-friendly way that builds upon the successful work of citizen groups and conservation corps to date. CRUW will also monitor implementation of the National and Community Service Act to ensure that the energies of youth corps funded under the Act are applied to waterway restoration projects.

Clearly, waterway restoration is increasing because it provides many tangible benefits like improving recreation and wildlife habitat, controlling pollution and flooding — while doing an equally important job of building citizens and communities. Restoration projects put people to work, enhancing their self-esteem. The work they do provides all residents a better sense of place. The promise of restoration then is twofold: in the short term it can help revive a debris-choked stream; in the long term, it can help revive the health and quality of life of our urban communities.

Andrew Moore is Director of Special Projects for the National Association of Service and Conservation Corps in Washington, DC. 🏠

Who Can You Turn To?

"What [the river] hasn't got isn't worth having, and what it doesn't know isn't worth knowing."

— Water Rat, *The Wind in the Willows*

Citizen Action Guides

Economic Impacts of Protecting Rivers, Trails and Greenway Corridors, RTCA, National Park Service (available from Western RTCA office: 600 Harrison Street, Suite 600, San Francisco, CA 94107-1372).

How to Save a River: A Handbook for Citizen Action, David M. Bolling, River Network 1994, 266p. (available through Island Press and River Network).

Riverwork Book, National Park Service, 1988, 97p. (available from RTCA, Mid-Atlantic Office, 143 S. 3rd. Street, Philadelphia, PA 19106).

Hydropower and Dam Projects

Federal Energy Regulatory Commission (FERC)
825 North Capitol Street
Washington, DC 20462
202-219-2769

Hydropower Reform Coalition
c/o American Rivers
801 Pennsylvania Ave., Suite 400
Washington, DC 20003
202-547-6900

Rivers, Trails and Conservation Assistance Program (RTCA)
National Park Service (782)
PO Box 37127
Washington, DC 20013-7127
202-343-3780

Maintenance, Operation and Safety of Dams Program
National Park Service (610)
P.O. Box 37127
Washington, DC 20013-7127
202-343-7027

The NPS dams program includes technical assistance and funding for de-activation of non-essential, non-approved, seriously deficient or unfunded dams that are on or affect park lands.

National River Conservation Organizations

American Rivers
(address above)

American River Management Society
P.O. Box 621911
Littleton, CO 80162
303-973-4212

American Whitewater Affiliation
8630 Fenton Street, Suite 910
Silver Spring, MD 20910
301-589-9460

River Federation
c/o Land & Water Division,
Michigan DNR
P.O. Box 30028
Lansing, MI 48906
517-373-1170

River Network
P.O. Box 8787
Portland, OR 97207
503-241-3506

1994 River Conservation Directory, by American Rivers and RTCA, 1994. 180p. (one free copy available from RTCA while supply lasts; also available from: GPO, Superintendent of Documents, Mail Stop SSOP, Washington DC 20402-9328; Price: \$12.00)

National Wild and Scenic Rivers Studies (State and Private Lands)

Congressional Route:
Park Planning and Protection
National Park Service (773)
P.O. Box 37127
Washington, DC 20013-37127
202-208-4290

State Route:
RTCA, National Park Service
(address above)

Grassroots River Protection, Christopher Curtis, American Rivers 1992, 147p. (available from American Rivers).

Nationwide Rivers Inventory

RTCA, National Park Service
(address above)

Non-Structural Flood Control Approaches

American Rivers
Floodplain Program
(address above)

Association of State Floodplain Managers
P.O. Box 2051
Madison, WI 53701
608-266-1926

Association of Wetland Managers
P.O. Box 2463
Berne, NY 12023
518-872-1804

A Casebook in Managing Rivers for Multiple Uses, RTCA and the Associations of State Floodplain and Wetland Managers, 1991, 79p. (RTCA has limited supply).

How Greenways Work: A Handbook on Ecology, RTCA and the Quebec-Labrador Foundation's Atlantic Center for the Environment, 1993, 50p. (RTCA has limited supply).

Rail Trails and Heritage Areas

RTCA Program (address above)

Rails-to-Trails Conservancy
1400 16th Street, NW, #300
Washington, DC 20036
202-797-5400

National Coalition for Heritage Areas
P.O. Box 33011
Washington, DC 20033-0011
202-673-4204

Recreational Instream Flow

National Park Service
Water Resources Division
1201 Oak Ridge Drive, Suite 250
Ft. Collins, CO 80525
303-225-3501

Instream Flows for Recreation: A Handbook on the Concepts and Research Methods, Whittaker, D. B. Shelby, W. Jackson, R. Beschta. 1993. 103p. (one free copy available from RTCA while supply lasts).

River Restoration

Coalition to Restore Urban Waters (CRUW)
National Clearinghouse
c/o Save Our Streams/
Izaak Walton League
1401 Wilson Boulevard, Level B
Arlington, VA 22209
703-528-1818

Friends of the Chicago River
5050 N. Ravenwood
Chicago, IL 60640
312-939-0490

Merrimack River Charrette
NPS RTCA
15 State Street
Boston, MA 02109
617-223-5131

National Association of Service and Conservation Corps
666 11th Street, NW, Suite 500
Washington, DC 20001
202-737-6272

The Waterfront Center
1536 44th Street, NW
Washington, DC 20007
202-337-0356

Entering The Watershed: An Action Plan to Protect and Restore America's River Ecosystems and Biodiversity, A Report to Congress by the Pacific Rivers Council, March 1993. PO Box 309, Eugene, OR 97440 (available from Island Press, Washington, DC or Covelo, CA).

Restoration of Aquatic Ecosystems, Cairns, John Jr. et al., National Academy Press (DC), 1992.

Saving Nature's Legacy: Protecting and Restoring Biodiversity, Noss, Reed F., and A.Y. Cooperrider (available from Island Press).

Statewide River and Watershed Assessments

RTCA, National Park Service
(address above)

Volunteer River Monitoring

Adopt-A-Stream Foundation
P.O. Box 5558
Everett, WA 98206
206-388-3313.

Project GREEN (Global Rivers Environmental Education Network)
721 East Huron Street
Ann Arbor, MI 48104
313-761-8142.

River Watch Network
153 State Street
Montpelier, VT 05602
802-223-3840

Save Our Streams/Izaak Walton League of America
(address above)

Volunteer Monitor newsletter (subscription free by writing the Editor, 1318 Masonic Avenue, San Francisco, CA 94117; or calling 415-255-8049).

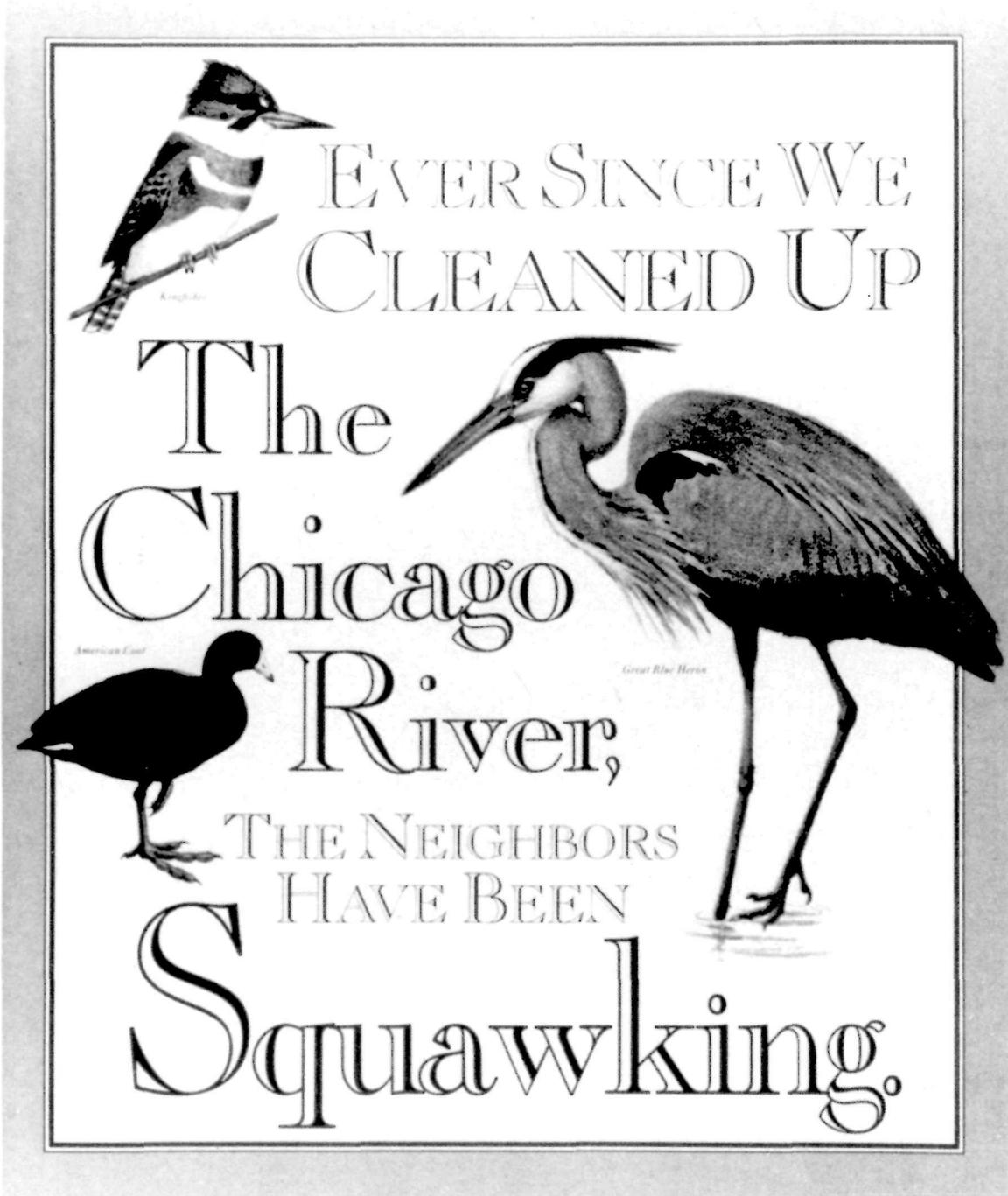
Water Trails

NPS RTCA Field Office
The King Farm, 5 Thomas Hill
Woodstock, VT 05091
802-457-4323

Maine Island Trail Association
PO Box 83
Rockland, ME 04841
207-596-6456

Hudson River Waterway Association
241 Grove Street
Jersey City, NJ 07302
201-333-5857

Massachusetts Riverways Programs
Department of Fisheries, Wildlife and Law Enforcement
100 Cambridge Street
Boston, MA 02202
617-727-1614



Public Education Poster from Series by Friends of The Chicago River

Art Director/Designer, Timothy Delaney
Writer, Patrick Hanlon
Creative Director, Jonathan Harries
Agency, Hal Riney & Partners

