River Crossings

Volume 6 January/February 1997 Number 1

Reader Survey Results

We'd like to thank all of our readers who responded to the Readers Survey included with the November/December issue of *River Crossings*. We received a wide array of helpful comments, ranging from those wishing to see more coverage of national level activities to those wishing to see more coverage of local events.

This is not surprising since our readership covers a broad spectrum, ranging from those located "inside the beltway" in Washington, D.C. who would like to see more information from the hinterlands, to field personnel located in the remote corners of the basin who use *River Crossings* as an important, and in some cases their only, source of information to keep up to date with national events and happenings in Washington.

Some of our readers who have ready access to the electronic media pointed out that a portion of the information published in *River Crossings* is also available on the Internet, while others without access to the Internet appreciated the fact that we provide them access to important information that they don't otherwise have access to. Others praised *River Crossings* as a unique, valuable, and concise summary of information related to river issues covering the past two months, whether it's available elsewhere or not.

Responses were received from all types of readers (i.e. those representing local, state and federal governments to those representing the agriculture, power, and navigation industries). As in the past we will try to use all of our reader's comments to improve our publication. For you electronic buffs, we may even have *River Crossings* on the Internet before long. We also hope to include more articles and information from member states and agencies, as well as from our general readers. So please feel free to send us articles and information as often as you'd like, and we'll make every attempt to use it.

Thanks again for your continued support of *River Crossings* and for your continued interest in improving the management and conservation of our Nation's rivers and their aquatic resources!

First Annual Missouri River Conference

The first annual Missouri River conference *"Missouri River Past, Present, & Future"* was held on January 14-16 at the University of Missouri Alumni Center in Columbia, MO. It was sponsored by the Missouri River Natural Resources Committee, the Missouri River Basin Association (MRBA), the Midwest Science Center of the USGS/Biological Resources Division, the Missouri Department of Conservation, and the Missouri Chapter of the American Fisheries Society. The conference was a great success with more than 200 persons in attendance.

A major conference attraction was a panel discussion on Missouri River issues. Moderated by Richard Opper,

INSIDE THIS ISSUE

Executive Director of the MRBA, the discussion included panelists representing Power, Municipal, Agricultural, Navigation, Recreation, and Environmental interests.

Spokespersons for the power industry and municipal utilities interests simply expressed their needs for reliable sources of water and a willingness to cooperate with other interests in order to satisfy the "common good". The hydropower spokesperson even expressed the willingness of his industry to share some of the expenses of fish and wildlife habitat mitigation and protection.

The spokesperson for agricultural interests (Missouri Farm Bureau) spoke of his industry's responsibility to feed the world's growing population, and a concern for the growing encroachment of development onto prime farmland. These concerns he said, justify farming the entire floodplain. His call was for the government to serve the needs of the private sector, and to sponsor the construction of 500 year levees all along the lower Missouri River.

The spokesperson for the navigation industry spoke of the failure of the Missouri River navigation project to reach its full potential (17.5 million tons annually). He went on to state that the current tonnage (1.5 million tons and decreasing) was caused by a lack of public investment in the river's navigation infrastructure. He essentially said that (as in Kevin Costner's movie "Field of Dreams"): "If we spend it (i.e. enough public money to support navigation facilities), they will come".

The spokesperson for recreation and the recreation industry spoke of the failure of upstream reservoirs to support projected recreation potential. He described tremendous losses to marina operators on Ft. Peck Reservoir (MT) during the drought period of the late 1980's, and entered a plea for support in keeping reservoir water levels stable during summer recreation seasons.

The spokesperson for environmental interests (Environmental Defense Fund) described the failure of navigation to meet its potential, and the fallacy of continuing to place navigation as a top priority for the project, even calling for termination of commercial navigation on the Missouri River and restoration of more natural floodplain ecosystems to serve environmental and recreational needs. He argued that if the river is allowed to reach its recreational potential, the benefits received to local communities would far outweigh those being provided by navigation. He presented the following proposal as an approach to satisfying the major needs of most Missouri River interests:

"Main stem reservoir water levels could be held at desired elevations during summer recreation seasons by eliminating commercial navigation on the lower Missouri River. Enough water should be released from the reservoirs, however, to serve the needs of hydropower and municipal and industrial interests -- even during periods of drought. This would provide more flexibility for use of any excess water by hydropower interests, while reserving significant water in the reservoirs to ensure that the fall season needs of Mississippi River navigation are met. During the fall harvest season, Mississippi River water elevations often fall to levels below which maintenance of commercial navigation is threatened, and requires significant dredging at great public and environmental cost. Reserving Missouri River water for fall release would also benefit the agricultural industry by helping to ensure that grain shippers have reliable access to foreign markets. Floodplain lands within the lower Missouri River's historic channels, or meander belt (i.e. floodplain lands having the lowest vertical elevation), would be acquired from willing sellers to satisfy the environmental needs of endangered species and fish and wildlife. Acquisition of these lands for "open space" would provide a measure of local flood protection and enhance the lower river's recreational potential. The latter would serve the needs of

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Mississippi Interstate Cooperative Resource Association
(MICRA)
P.O. Box 774
Bettendorf, IA 52722-0774

MICRA Chairman
Mike Conlin, Illinois Department of Conservation, Springfield

Executive Board
Mike Conlin, Member at Large
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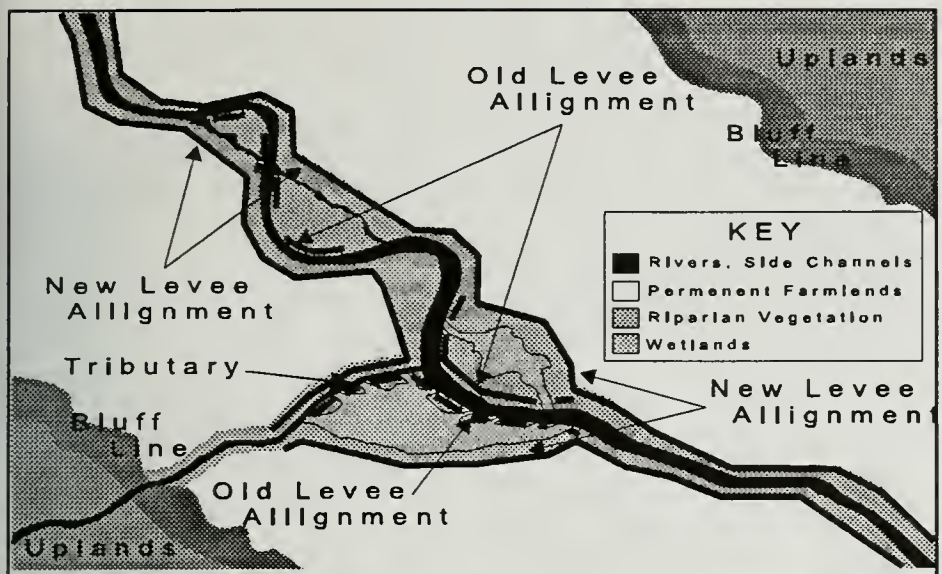
Ron Pasch, Tennessee Valley Authority, Chattanooga, TN

MICRA Coordinator/Executive Secretary and Newsletter Editor
Jerry L. Rasmussen, U.S. Fish & Wildlife Service, Bettendorf, IA (319) 359-3029

River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any



A hypothetical river reach employing "setback" levees to restore a series of habitats. These would function as "habitat beads" or "ecological patches" in a "string of such beads", distributed along an entire river. They would serve to restore ecological integrity, while providing for flood water storage and conveyance, as well as restoration of water quality. Located across an entire basin, such "habitat beads" could go a long way toward reducing flooding and runoff of polluted waters.

local communities by restoring their historic river character, reducing the risk of floods, and attracting recreation related investments. Fair market value, established by local real estate markets, would be paid for floodplain lands. Local, state, and federal units of government who acquired title to floodplain lands would cooperate with neighboring land owners, ensuring that agricultural and municipal flood protection is maintained. Investments would be kept to a minimum on "open space" public lands by allowing them to revert to a more natural character, with minimal structural improvements. Farmlands located adjacent to public lands would enjoy the enhanced flood protection provided by the "open space" of neighboring public lands because these public lands would be allowed to flood first during high water events. Farmlands located outside of the meander belt would not only enjoy the benefits naturally provided by their higher elevation, but would also find their flood protection enhanced by the open space of public lands distributed at various locations along the entire river. Farmlands located away from the river could also improve their existing levee system by participating in the set back levee program originally authorized by the Pick Sloan Plan of the 1940's."

Discussions (including audience participation) which followed produced little common ground, but did reveal the positions of the various interests and their willingness, or lack of willingness, to compromise.

Not surprisingly navigation interests were not interested in giving up the river's commercial navigation project. One argument even went so far as to justify maintaining it on the grounds of its role in "reducing air pollution" (i.e. by keeping trucks off the roads). That argument was countered by the environmental spokesperson's argument that, "How could air pollution be reduced when there is essentially no barges using the river." He facetiously stated said that if barges are there they must either be "stealth barges" or "barges that move only at night", because you rarely, if ever, see one.

Agriculture interests reiterated their call for 500 year agricultural levees, saying that their need was just as great as that of cities and urban areas. They also justified their entitlement to disaster assistance for flooding as long as similar assistance is given to victims of hurricanes, wildfires, etc. They were not opposed to restoring some of the "old river channel" or meander belt for "open space" or wildlife habitats as long as it wasn't done in areas where those in attendance were attempting to farm. Support was also expressed for the "habitat bead" concept as a common sense approach to habitat restoration and flood control.

The "habitat bead" concept was proposed by biologists as a result of formal and informal discussions held at a 1994 international symposium on floodplain rivers in La Crosse, WI. The concept has been promoted for about two years by environmental interests on the lower Missouri River (see figure to the left).

In summary, while nothing was really resolved by the conference, it did a great service in getting people with vastly different interests and views of the world together to discuss some very difficult river management issues. Continued dialog of this nature can only help, and since the entire panel and discussion session which followed was recorded on videotape, it would seem beneficial for this tape to be distributed to the various public television stations across the basin in order to further public discussions and understanding of Missouri River issues.

Our hats go off to the session sponsors, and we look forward to next year's conference, tentatively scheduled for a similar date in Omaha, NE.

Mo River Water Management Recommendations

The Missouri River Basin Association's (MRBA's) board of directors has compiled a list of recommendations for improving water management in the Missouri River Basin. Ultimately, these recommendations will be presented to the U.S. Army Corps of Engineers (COE), probably next spring, after the MRBA consults with interest groups in the basin. Final MRBA recommendations will carry significant weight, because the list will reflect the views of people who live in the basin.

For about seven years, the COE has been working on a revision of its

Master Manual, the overall Missouri River operating plan, but many of the COE's proposed changes have not been well received. In 1995, the COE invited the MRBA, as an organization representing the basin states and Indian tribes, to compile a list of recommendations to help the federal government manage the river more equitably.

The recommendations which follow are intended to promote stability and growth in eight major areas: water supply, navigation, hydropower, fish and wildlife habitat, bank and shoreline integrity, flood control, recreation, and monitoring the river system:

Water Supply - Those who use Missouri River water for municipal, industrial and agricultural purposes need sufficient water flows at intake structures to maintain water quantity and quality. Reservoir levels are key to maintaining access for many users in the upper basin. Adequate supplies of treated water for both rural and urban uses are a priority throughout the basin. **Water Supply Goal**: Throughout the basin, promote measures that ensure the quantity, quality, reliability, and growth of the water supply for municipal, rural, industrial, and irrigation-agricultural uses; and for cooling electric power generators.

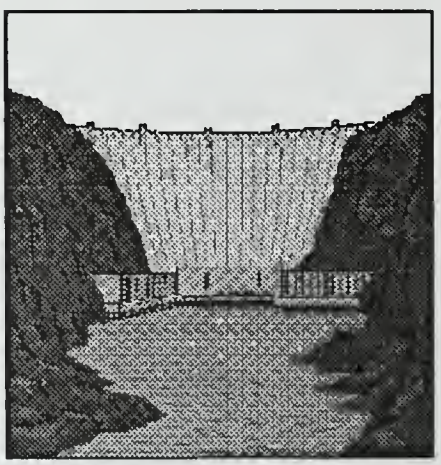
- Establish policies in the Master Manual to ensure adequate flows during winter and drought and to minimize the adverse effects of siltation.
- Where structural limitations restrict the ability to withdraw water from the river or a reservoir during flood or drought, support assistance to local or tribal governments to make needed improvements.
- Ensure that water supply systems continue to operate during floods.
- Initiate discussions on policies regarding water quality discharge permits.
- Encourage the development of regional water supply systems.
- Continue ongoing discussions of future depletions among states and tribes.

Navigation - The drought of the late 1980s and early 1990s severely affected Missouri River navigation, an industry of great importance to the lower basin. It had an adverse impact on the two things that affect tonnage shipped on the lower river: the cost of service and the reliability of that service. At times, flows from the Missouri River are critical to navigation on the Mississippi River. **Navigation Goal**: Promote the stability, reliability and growth of navigation on the Missouri River system through water management, economic assistance and transportation planning.

- Prepare a proposal for:
  - Improving the overall efficiency of tow boats and barges operating on the Missouri and Mississippi rivers.
  - Implementing structural, operational and maintenance measures, along with modifications to port facilities, which would improve support to navigation.
- Research the feasibility of:
  - Operating the Missouri River to support flows on the Mississippi River at critical times.
  - Releasing water in a precise, predictable manner during the onset of drought.
- When there is enough water, maintain a 9-foot channel which would provide predictable conditions, including an early spring opening, a full-length season, and no mid-year corrections
- In low water conditions, determine whether to shorten the navigation season or reduce the service levels.
- Improve drought prediction capabilities.

Hydropower - Much of the basin benefits from low-cost hydropower. Hydropower must continue to be a basin priority as long as its production is economically feasible and consistent with other mandates. **Hydropower Goal**: Maintain or enhance the value and reliability of hydropower production at the lowest possible cost while balancing the need for 1) equitable distribution of power among tribes and states, and 2) consideration of all authorized project purposes.

- When consistent with other project purposes, conserve the water head to avoid depleting pools and to ensure peaking capacity.
- When consistent with other project purposes, store all the water possible under high water conditions.
- Encourage power users to conserve energy.
- Sort out the revenue financing issues associated with hydropower.
- Determine how depletions affect the system's hydropower benefits.
- Encourage Improvements to turbines, which would increase their efficiency.



Habitat - The Missouri River is highly modified and controlled. It no longer functions as a natural river in terms of providing and maintaining high quality habitat for many native species of fish and wildlife. Some of these human-made changes are permanent (e.g., mainstem dams and reservoirs), and the intensive development of the river and its floodplain prevents the use of restoration methods that have worked elsewhere. Nevertheless, recovery of threatened and endangered species on the Missouri River, and preventing the further decline of other native river species, depends on restoring natural large river habitats. Support has been expressed for various measures to improve the river system's ability to support native fish and wildlife, but the proposed return of unmanaged and unpredictable high spring flows was not well received. Habitat restoration along the mainstem could be accepted if those who do it are sensitive to the economic value and restoration potential of the project sites, and if landowners are compensated. **Habitat Goal**: Enhance habitat systemize by supporting programs that focus on species maintenance and recovery. These programs should modify the physical structures along the river, restore the river channel and floodplain habitats, and improve water quality.

- Create and restore habitat in specific areas to support native fish and wildlife.
- Identify and pursue off-channel

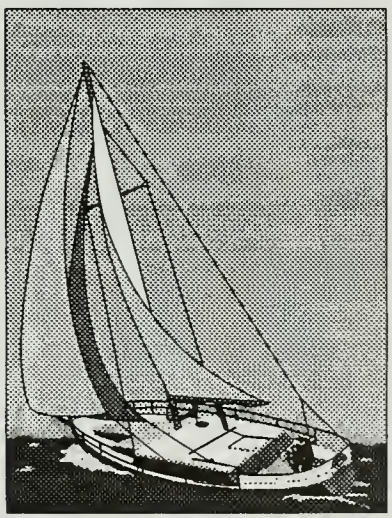
opportunities to create and improve habitat for the least tern and piping plover.
- Assess the economic viability and habitat restoration potential of lands along the river.
- Enhance habitat in selected tributary sites, and study the feasibility of a fish passage at Gavins Point Dam.

- Ensure adequate flows to meet the minimum needs of threatened and endangered species.
- Consider temperature and water quality benefits from multi-level releases from dams.
- Purchase habitat only from willing sellers.
- Promote a substantial increase in funds for creating, restoring and enhancing habitat within the system.

Bank & Shoreline Integrity - Throughout the basin, unprotected shorelines erode in part because of the operation of the system to meet various demands placed upon it. Erosion and sedimentation have affected all river uses. **Bank & Shoreline Integrity Goal**: Throughout the system, maintain the integrity of certain riverbanks and lake shorelines to protect and enhance current and future uses.
- Establish a priority list of riverbank reaches most in need of stabilizing.
- When there's excess water in the reservoirs to evacuate, identify operational and structural measures to support higher winter flows while reducing the damage that ice dams and ice formation cause to Corps' structures.
- Identify areas where acquiring sloughing easements or land from willing sellers would be appropriate, and seek funding to acquire them.
- Combine habitat creation activities with efforts to protect streambanks and to prevent floodway sediment buildup.
- Encourage local shoreline control.
- Support levee maintenance and repair where appropriate.
- Protect cultural resources from erosion damage.
- Study delta formation in the headwaters of the reservoirs and develop some recommendations to address the problems.

Flood Control - Improving flood control is truly a basinwide goal. All members agree that spring discharges from all projects should be carefully managed to limit the potential for flooding to the greatest possible extent. Below the confluence with the Platte River, and throughout much of the basin, higher flows cause higher groundwater, which prevents adequate drainage of prime farmland. This "invisible flood" can prevent crop plantings or, in the best-case scenario, reduce crop yields if a late crop can be planted at all. **Flood Control Goal:** Maintain the high priority of flood control within the basin, and reduce the damage caused by future floods.
- Discourage development in the Missouri River floodplain.
- Enlarge the floodway by acquiring selected floodprone properties from willing sellers. This will allow the landowner to redirect farming operations and resources. The land can then be used to store excess water, to provide habitat and recreation areas, and to connect the river to the floodplain.
- Appraise flood-damaged properties for their natural resource or flood control values, and for their value as flood-damaged agricultural lands, and then pay willing sellers the greater amount.
- Design new critical facilities and modify those which already exist so they're capable of operating even during a flood.
- Improve road and bridge design to minimize flood damages.
- Make levee repairs promptly where repairs are appropriate to protect public safety or are otherwise justified.
- Expend available funds to repair levees and evacuate flood-prone properties where appropriate.

Recreation - Recreation is of great importance to everyone in the basin. In the upper basin, tourism and recreational use of the reservoirs have become a large part of the economy. In the lower basin, recreational opportunities are limited now, but the area has a large population, and recreation could be developed into an important contribution to their economy. **Recreation Goal**: Promote the stability and growth of recreational use of the river and reservoirs through water management, economic assistance, and recreational planning.
- Develop and implement a basinwide recreation plan that considers both on- and off-channel recreation opportunities, the effects low water would have on recreation, and existing assessments such as the corridor studies done in NE and IA.



- Evaluate existing reservoir recreational facilities. Determine which need improved access, and whether relocation or structural modifications would be feasible to reduce the impacts of fluctuating reservoir levels.
- Seek revenues to finance modifications listed above and/or to compensate for losses the recreation industry suffers during drought.
- Assess how poor or declining water quality affects recreation and devise strategies to mitigate the problem.
- Design new recreation facilities to withstand both high and low water.

• Research the feasibility of:
- More stable and higher permanent pools.
- Releasing water in a more conservative manner during drought.
• Evaluate the potential benefits of additional fish hatcheries in the mainstem reservoirs.
• Assess how fluctuating reservoir levels affect fisheries and recreation.

Monitoring - To make informed decisions about how the system will operate under a revised Master Manual, water managers need data that accurately characterizes the existing physical and biological conditions of the river system. It's particularly important to measure the effects of 1) efforts to restore fish and wildlife habitat, and 2) operational modifications to benefit endangered species. Monitoring activities must be focused to provide specific information that experts say is essential. To avoid duplication and minimize costs, any monitoring effort must recognize and incorporate existing data collection efforts. **Monitoring Goal:** Develop a monitoring program to characterize the existing system and to quantify how changes are affecting the system.
• Develop a monitoring program and ask Congress to approve its implementation.

Other Suggestions -
• MRBA should study options for creating a new basin authority with greater responsibility than the association already has.
• MRBA needs to investigate various funding mechanisms to support its recommendations.
• Develop a prior notification process for proposed water use projects.
• Develop an interactive computer program to use as an educational tool for water decision makers and the general public.

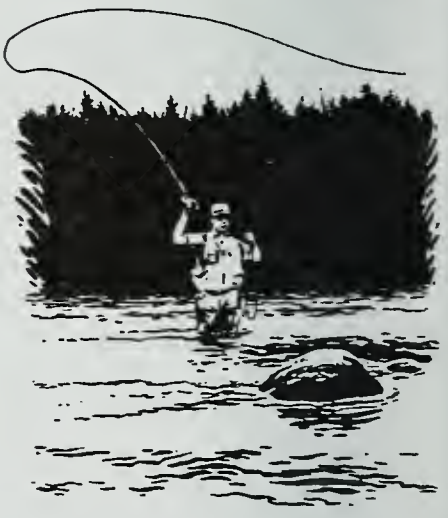
Source: The Missouri River Report, December 1996, Missouri River Basin Association, P.O. Box 301, Lewistown, MT 59457-0301

National Recreational Fisheries Initiative

President Clinton established Executive Order No. 12962 for Recreational Fisheries in June 1995. This Order called upon Federal agencies to collaborate on a national approach to enhance recreational fishery resources nationwide. The President established a National Recreational Fishery Coordination Council comprised of six Federal department representatives and the administrator of the USEPA to oversee development of a National Recreational Fishery Resources Conservation Plan (Conservation Plan). This Conservation Plan was completed in June 1996, with agency-specific strategies to be completed by December 31, 1996. The Sport Fishing and Boating Partnership Council (Partnership Council), a federally chartered advisory group for the Secretary of the Interior, was charged with annually monitoring the status of the nation's fishery resources and evaluating agency efforts to implement the Conservation Plan.

The Partnership Council acknowledges the commitment of the President and the Federal agencies to enhance recreational fishery resources through Executive Order 12962 and the Conservation Plan, but recommends a more comprehensive approach. The Conservation Plan represents the Federal component to this comprehensive approach, but it does not clearly define the role of other stakeholders. In October, 1995, the Partnership Council convened more than 100 recreational fisheries stakeholders in Phoenix, AZ, to identify significant complementary actions needing to be accomplished. Habitat and education were clearly identified as the key elements that stakeholders believe can move the recreational fisheries community toward its goal of enhancing fishery resources. Access to the resource is important but to a lesser degree than the former two. Partnerships are viewed as a means to implement the three strategies. The following top priority approaches to restoring recreational fishery resources nationwide were identified as were the recommended lead entities responsible for each:

Habitat - Cooperation among resource managers and landowners is critical for changing aquatic habitats across the Nation's landscape. Better communication is needed between resource managers, landowners, and stakeholders. Resource managers are able to provide technical expertise, while landowners and other resource users provide practical and local experience and a private land-base. However, cooperation is only the process for accomplishing the goal of habitat restoration on public and private lands. The goal will only be met when land stewards realize benefits from their actions. Benefits could include increased profits through lowered operation and maintenance expenses or increased yield, reduced property taxes, less restrictive regulations for federally listed species recovery, and financial or technical assistance. To this end, all resource stakeholders must collaborate to accomplish specific objectives that will make resource stewardship more profitable or less costly for individual



landowners and for public or tribal land management agencies. Federal and State laws must be enacted that support and promote this collaborative process.
A. The Industry and Conservation groups should work to amend the Clean Water Act in order to accomplish the following:
• Establish watershed councils to develop watershed management strategies...that include minimum standards for fish habitat quantity and quality, water quantity and quality, and methods for achieving those minimum standards. Success of watershed councils would be

determined through systematic monitoring of habitat parameters.

- Create a national monitoring and reporting system for watershed health that incorporates fish habitat quality and quantity parameters.
- Establish challenge grant programs that assist watershed councils in accomplishing their objectives in partnership with private landowners. Allow state agency contributions of technical assistance on private lands to be credited as a non-Federal challenge match toward projects.
- Provide funds to ensure local success, provide guidelines and technical assistance, and engage local stakeholders.
- Establish methods of transferring payments from beneficiaries to landowners.
- Simplify the application process for private land restoration grants.
- Use nonpoint grant funding [Section 319(h)] to establish and maintain recreational fisheries in urban areas.
- Give equal priority and incentives for restoration/protection of urban watersheds as given rural watersheds under the Farm Bill.

B. The States and Conservation Groups should work to establish and enforce Federal and/or State laws to protect aquatic habitats as follows:

- Establish base flow requirements for rivers and streams.
- Revise state water laws to allow water to remain in the stream for fish habitat.
- Purchase water rights in key watersheds to maintain minimum flows.
- Implement existing provisions in the 1995 Farm Bill for aquatic/riparian habitat restoration.
- Abate point and non-point pollution.

Education and Outreach - Public educators must instill a conservation ethic nationwide, but must educate people at local levels. In addition to using traditional conservation curricula in public schools, educators must address Federal, state, and local legislators to make them aware of the economic importance of fishing and healthy aquatic systems. Socioeconomic benefits from fishing and healthy aquatic resources needs to be acknowledged and made known at State and Federal legislative and policy levels of government. Changing demographics require that resource agencies and industry remain in tune with changing needs of anglers. Outreach by these agencies is needed to remain in contact with and to mentor new or potential anglers. A phased approach should be implemented by state resource agencies and their non-Federal partners to accomplish the following:

Phase I: The States and the Industry should develop an outreach strategy - A model education and outreach strategy must focus on changing demographics, primarily the population shift toward urban areas and the need to touch this population core. Rural anglers, however, must not be overlooked. This strategy must deliver pertinent information to anglers, legislators, and policy makers. The following actions are recommended:

- Hire professional expertise to create a model outreach strategy that defines the anglers and addresses anglers' changing needs.
- Survey current and prospective anglers.
- Compile socioeconomic data that demonstrates the economic and social value of healthy aquatic systems and productive fisheries.
- Do state by state socioeconomic analyses of fisheries resources that provide maximum net public benefits (compare economic value of commercial harvest versus sport harvest).
- Compile information on cost of environmental cleanup, compare with cost-savings of keeping aquatic systems healthy and productive.
- Compile information on cost of nonindigenous species eradication versus the costs of preventing new introductions.

Phase II: The States and the Industry should implement the outreach strategy and include existing education curricula. The following actions are recommended:

- Implement urban fisheries education and outreach programs in cooperation with state and municipal organizations, youth organizations, and national angling groups. Use existing organizations and aquatic education curricula programs currently used by states.
- Establish aquatic fishing education centers in metropolitan centers using existing criteria and teaching aids.
- Set up Fishing Tackle Loaner Programs in metropolitan centers, expanding on the existing program established by the Sport Fishing Promotion Council in select cities.
- Address women and ethnic groups through existing programs such as "Becoming an Outdoor Woman."
- Equip local school systems with environmental classroom teaching aids such as aquaria and stream modeling tables.
- Empower grass-roots organizations such as watershed councils with the proper outreach and marketing tools.
- Fund local jurisdictions adequately to refine and implement the model strategy.
- Provide cost/benefit information of recreational fishing to Federal and State legislators, local governments, tourism boards, and resource agencies.

Phase III: The States should train resource managers to appreciate, understand, and utilize professionally developed outreach and education strategies. The following actions should be taken:

- Develop graduate-level, continuing education course curricula at public universities that equip public agency employees with the knowledge to implement marketing strategies.
- Establish resource marketing curricula at the U.S. Fish and Wildlife Service's National Education and Training Center in WV.

Phase IV: The States should conduct periodic reviews and evaluations of the effectiveness of national education programs through existing survey data or independently conducted surveys.

Access and Opportunity - Recreational fishing opportunities are affected by proximity to, or availability of, fishable waters, sufficient facilities, and possession of angling equipment. Urban fisheries have great potential because most urban centers are located near fishable waters, have existing local youth and senior mentoring organizations, and have

agency staff capable of organizing recreational fishery programs. Rural areas and private waters offer additional opportunities. Access to all of these potential fisheries could be improved by state-level initiatives that would address various access needs. Initiatives would be developed and championed by local organizations, angling and conservation groups, and state agencies.

A. The States should development partnerships with private landowners to meet the demands for access. The following actions should be taken:

- Provide state tax incentives for private landowners/operators to make operating and maintaining access facilities (including private waters) more profitable.
- Provide resource management assistance by resource agencies to private lake owners or tribes in exchange for public access to private or tribal waters.
- Establish cost-share programs for developing private sites.
- Identify urban fisheries access needs with local municipalities.
- Set up additional point-of-sale fishing permit distribution in states.
- Incorporate public transportation agencies into angler access planning.
- Alleviate private landowner liability for allowing access to ponds.

B. The Industry and Conservation Groups should work to establish state and federal legislation necessary to supply funding or services for access. The following actions are needed:

- Seek state legislation to create a state marine fuel tax program to supply funding.
- Seek continued support for motor boat access through Federal Aid in Sport Fish Restoration (Wallop/Breaux) Program reauthorization.
- Establish a lands acquisition program at state levels to purchase access sites.
- Set aside some portion of tax revenues to enhance access to urban fisheries.

In summary, the Partnership Council stresses that non-Federal stakeholders must commit to implementing these strategies to ensure that the goal for enhancing recreational fisheries nationwide is met. The Partnership Council also recognizes that assistance from other stakeholders, including Federal agencies, will be needed. They point out however that partnerships and cooperation are not the end, nor are they substitutes for good leadership. Resource managers, industry, landowners, and conservation groups must fulfill their respective roles by implementing existing laws and championing new approaches that meet the needs described above. Leadership from every facet, from every stakeholder perspective is necessary to restore this Nation's recreational fishery resources.

Contact: Doug Alcorn, Coordinator, Sport Fishing & Boating Partnership Council, (703) 836-1392, FAX (703) 836-1206.

Fish Hatcheries Caught Between Wisdom and Politics

The following is taken from an article by Tom Kenworthy, Washington Post, 12/1/96:

"...to growing numbers of biologists and conservationists..."catchable" trout production that goes on...at hundreds of...federal and private hatcheries is an anachronism that frequently does more harm than good. Excessive reliance on hatcheries, many researchers have found, often leads to a loss of genetic diversity and the spread of disease. Ultimately, they say, it can cause an overall reduction in the fish population as hatchery-raised stocks initially out-compete their wild cousins but, later succumb to conditions that their coddled upbringing makes them unfit to survive.

'As the evidence piles up, fisheries managers throughout the West are being torn between science and politics, most notably the demands of their recreational fishing constituencies. What's more, their budgets rely on angler license fees and taxes generated by hatchery-fed fisheries.

'Colorado's wildlife bureaucracy shows little sign of kicking its addiction to hatcheries, even though fish-production facilities have played a central role in spreading whirling disease, a stubbornly persistent, parasite-borne ailment that has infected nearly 700 miles of the state's trout streams...in Washington state, the new director of the state's fish and wildlife department has learned a painful lesson about the industry's power in the nation's most hatchery-dependent state. Bernard Shanks came into office determined to reassess Washington's reliance on hatcheries but ran into a buzz saw of opposition in the legislature...in Washington, D.C., the Clinton administration encountered stiff resistance from Congress when it sought to modestly reduce its role by turning over a handful of federal hatcheries to the states.

'In a comprehensive study of the plight of Pacific Northwest salmon published last winter, the National Academy of Sciences concluded that in many cases hatchery fish were contributing to the relentless decline of the region's deeply troubled wild salmon stocks. "It is clear that hatcheries have caused biological and social problems," the report said.

'Two years earlier, in a review of federal efforts, the Conservation Fund recommended a major shift from producing fish for recreation toward protecting fish habitat and declining species. "The majority of the panel felt that the provision of hatchery fish for recreational fishing is not a federal responsibility," said the report, funded by the National Fish and Wildlife Foundation.

'But such studies are bucking many decades of government practice, dating from 1871 when the federal government built its first hatchery at Bucksport, Maine, in an effort to

replenish declining stocks of Atlantic salmon.

'"The mitigation narcosis" is the term used by Charles F. Gauvin, president of the conservation group Trout Unlimited, to describe the notion that building more and more hatcheries can make up for the ecological damage caused by dams, timber cutting, industrial pollution and other man-made insults to fish habitat.

'Yet with the prominent exception of Montana -- which stopped stocking its streams and rivers in the 1970s -- most western states remain heavily dependent on what Colorado State University professor Bob Behnke calls the "religious cult" of hatcheries.

'None more so than Washington state, which operates 90 hatcheries and devotes a quarter of its fish and wildlife staff to producing fish in man-made tanks...But despite the annual hatchery production of almost 300 million salmon and steelhead (an ocean-going rainbow trout), the runs of chinook, coho and sockeye salmon in the Columbia River system continue to decline. Much of that decline is due to dams and the degradation of spawning habitat, but scientists believe hatcheries also play a significant role.

'"Artificial propagation poses a substantial, and perhaps major, threat to the long-term viability of our salmon heritage," wrote Ray Hilborn, a University of Washington professor, in the journal of the American Fisheries Society. "Most evidence suggests that while hatcheries may work initially, their success decreases after a few years."

'Why? Because hatchery fish and wild fish are fundamentally different creatures. Walk along a raceway...and watch how the thousands of young fish react as you cast a shadow across the water. Unlike wild fish, which would scatter to hiding places at the approach of a human, or a predator, these hatchery-bred fish rush to greet the interloper, sure that the shadow means a feeding of fish pellets.

'Natural selection in a hatchery rewards such behavior, unlike in the wild, where stealth and wariness mean survival. Dumped into a stream, hatchery fish also disrupt the natural order of things. Wild fish tend to stay in feeding stations behind rocks and in deep pools, making sure they don't consume more energy in feeding than they receive from aquatic insects floating down the current. Hatchery fish, by contrast, race about in search of food, wasting valuable energy and displacing wild fish from their feeding stations.

'"There is increasing evidence that artificial production produces fish that are not as fit to survive in the natural environment," said Rick Applegate, the West Coast conservation director of Trout Unlimited. "At the same time, hatchery fish can interact with wild fish and through competition and interbreeding can undermine the resilience of wild fish populations."

'Hatcheries also can greatly accelerate the spread of disease. Whirling disease, first discovered in Colorado in 1987, is now found in many of the state's premier trout river drainages, and about half of the state's hatcheries test positive for the disease.

'Though Colorado officials have cut back their stocking rates to prevent the disease from spreading further, they have proposed no fundamental changes in their reliance on hatcheries. Fish reared in hatcheries, said state aquatic wildlife manager Eddie Kochman, provide "the bulk of our recreational fishing."

'Given the extent to which man has polluted fish habitat in the West, national sportfishing advocates say there is no alternative to widespread stocking. "Where wild stocks can be sustained, we totally support that," said Mike Hayden, president of the American Sportfishing Association. "But in many cases man has altered the environment so drastically that native stocks no longer can be self-sustaining."

'Conservationists, while acknowledging that hatcheries will continue to play at least some role in fish management, insist that change is long overdue. "Hatchery reform," said Applegate, "is the issue of the '90s in fisheries management."

Paddlefish Boots and Caviar

A December 29th article in the Bismark Tribune reported on a Williston, MT businessman and bootmaker who has discovered a new source of leather — paddlefish!

Glen Stoner, owner of Western Boot & Leather, is turning paddlefish skins into wallets, checkbook covers and boots. The idea actually came from Nancy Bakewell, president of the Williston Area Chamber of Commerce, which runs the nonprofit Gold Star Caviar company.

Gold Star gets its product from Missouri River paddlefish caught near Williston. With Bakewell's help, Stoner got approval from the ND Game and Fish Department to a create a new type of leather from paddlefish skin. Of the 900 paddlefish brought into Gold Star Caviar this year, Stoner took 55 hides.

"paddlefish"

"What I'm getting here are the females. They're the biggest. The males are not really big enough," Stoner said. He picked up the raw skins in June and got going in September. Stoner scrapes the raw skin, then tans it with his own chemical recipe, dries it, breaks it in, and sands it. He has made 30 billfolds so far, and sold all but one. Now he's starting on his first pair of boots.

Stoner has worked with ostrich, bull frog, camel and kangaroo skins. He says leather can be made from any skin that can be tanned. Once it's tanned, it's leather. "I could take walleye and once I tan it, it's leather", he said.

In the meantime, one of our readers on the West coast noted another use for paddlefish — "Montana Paddlefish Caviar" in the Seabear Specialty Foods catalog. Seabear is headquartered at 605 30th St., P.O. Box 591, Anacortes, WA 98221. The add reads as follows:

"Yellowstone River Caviar is harvested from paddlefish in the Yellowstone River in Montana. Mild and fresh, it possesses a true caviar essence, and is very similar in appearance to the legendary Russian Sevruga caviar. Its subtle flavor will please the palates of connoisseurs and beginners alike. M1004A 4 oz. jar $89.95."

That ought to make the demand for paddlefish go up!

ESA Issues

Two-thirds of the plants and animals protected by the Endangered Species Act (ESA) are either still in decline or their status was unknown, according to a study released on December 5 by the Environmental Defense Fund (EDF). The study, which said that fewer than one in 10 protected species is growing in number, found that protected species are in "particular peril on private land," where 27% are "losing ground." The status of half of the species on private land was not known because of restricted access.

The EDF made several suggestions for making the ESA more effective on private land, including
- more incentives to reward good stewardship,
- earlier action to protect declining species,
- better guidance for landowners on how to protect endangered species, and
- a "scientifically-sound approach for protecting ecosystems and assemblages of species within the overall framework of the act".

A related article recently published in *SCIENCE*, says that populations of most endangered species live in a "relatively few critical 'hot spots' covering a surprisingly minuscule portion" of the U.S. The study -- the first county-by-county analysis of the species' distribution -- found that hot spots are most concentrated in HI, CA and the Southeast, especially FL. Working from government data, scientists from Princeton University and the EDF found that endangered species are typically confined to a small range and are being disturbed by human activities such as urban development and agriculture.

The study determined that 13 counties, accounting for 1.33% of the U.S.'s total area, had populations of more than half of its endangered plant species:
- "More than half" of all populations of endangered mollusk species were found in only 6 counties;
- for arthropods, 9 counties;
- for fish, 14 counties;
- for birds, 4 counties; and
- for mammals, 7 counties.

"In no case did the counties account for more than 2% of the nation's total area." Further, some 48% of individual plant species were restricted to a single county. The researchers found that generally "the territory of the endangered species did not overlap.

Conservationists have long believed that by protecting birds, for example, they would be protecting other kinds of organisms, too." Although the study found endangered birds and arthropods do indicate the presence of other species, "groups in general overlap 'only weakly.'" The "major exceptions" were Santa Cruz and San Diego counties in CA, which were both particularly rich in endangered species.

EDF's David Wilcove, a study co-author, said regarding the findings, "That's the formula for extinction these days: small range plus development pressure." Princeton's Andrew Dobson, the study's chief author, said that since most of the critical tracts were on private land, the federal government should offer private property owners tax incentives to protect endangered species.

Dobson said by focusing conservation efforts on hot spots, "you could get a big bang for your buck." But Wilcove added that all resources shouldn't be devoted to endangered species. "Many experts now believe it is essential to protect broad areas of the landscape to prevent species from reaching the endangered species list in the first place".

In an accompanying article in *SCIENCE*, Interior Secretary Bruce Babbitt and his science advisor H. Ronald Pulliam said the study should "help maximize the protection of species at the least cost and inconvenience to the public". Wilcove said that the study shows that large parts of the country will likely never face an endangered species problem. Dennis Murphy of Stanford University said, "The ESA is not something that leaves a huge footprint across the United States".

Meanwhile, in a response to President Clinton's weekly radio address, Sen. Dirk Kempthorne (R/ID) said the Republican controlled Congress is ready to work with Clinton on environmental issues, especially the ESA. "Kempthorne pledged bipartisanship in revising the act," and added that he is "determined to write a new law that protects endangered species without putting communities and people at economic risk".

However, a recent report by the U.S. Public Interest Research Group (PIRG) and the Environmental Working Group (EWG) revealed that political action committees (PACs) that seek to "weaken" the ESA gave more than $74 million to congressional candidates between 1989 and 1996. The donors included mining, petrochemical, agribusiness, timber and real estate interests. The top five PACs in total contributions to congressional candidates were the Realtors PAC, the Carpenters Legislative Improvement Committee., the Build PAC of the National Assn. of Homebuilders, the Union Pacific Fund for Effective Gov't and the Action Committee. for Rural Electrification. The PIRG/EWG report also listed recipients of these donations.

Sources: Greenwire Vol. 6, No. 151, 158, 168, and 178

Water Projects Debated

Environmental interests and conservation groups recently recommended that President Clinton reject 30 proposed and on-going water and flood control projects to save money and preserve wetlands for wildlife. The memo, sent to the White House Office of Management and Budget was signed by a coalition of some 90 groups. It recommended

that the Corps of Engineers (COE) phase out navigation on some waterways and focus instead on Mississippi River navigation, flood control projects in developed areas and environmental restoration on the Missouri River and elsewhere.

Some of the projects targeted included the Yazoo and Big Sunflower rivers in MS, the Red River in OK, the Los Angeles River in CA and the lower Mississippi River. The groups also advocated an end to shipping on the Missouri River and the Tennessee-Tombigbee Waterway in AL and MS, which they said carry relatively little cargo.

They said more jobs and revenue would be generated if the funds used for dredging and maintenance were used to develop recreation. "While the rest of the country must expect less from the federal government, a few wealthy landowners and their lobbyists in Washington continue to bring home the bacon," said Scott Faber, director of floodplain programs for American Rivers. The groups urged Clinton to use his new line-item veto authority on these COE projects.

In the meantime, defenders of river navigation fought back. Milt Moravek, projects director for the Central Platte Natural Resources District in NE, "said the river groups probably know little" about the proposed projects in his region. He said the Wood River project, estimated to cost $11.8 million, would remove 1,800 structures from the floodplain, create some wetlands and protect wet meadows, and produce $2.30 of benefits for every $1 invested. Don Waldon, administrator of the Tennessee-Tombigbee Waterway which serves AL, MS, TN and KY, said that the Tenn-Tom has since 1988 helped to create more than 44,000 jobs, $2.5 billion in industrial expansions and $170 million a year in recreational spending.

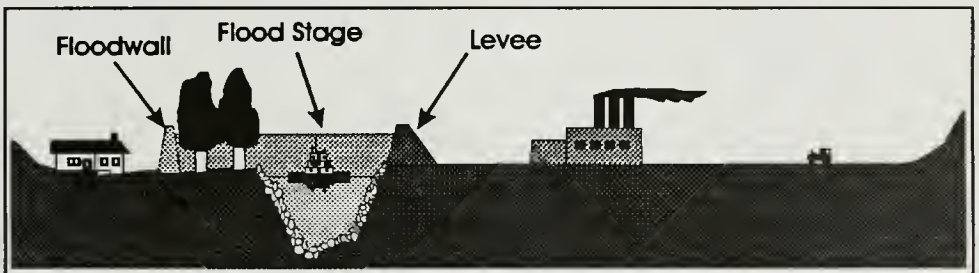
However, a recent Associated Press article reporting on a study released on December 7 by the D.C.-based Worldwatch Institute supports the conservation groups' opposition to "boondoggle projects". That report says that government subsidies, many of which damage the environment, cost government and consumers more than $500 billion a year.

Sources: Source: USA TODAY, 1/3/97 and Greenwire Vol. 6, No. 152 and 168, and Reuters, Washington, D.C.

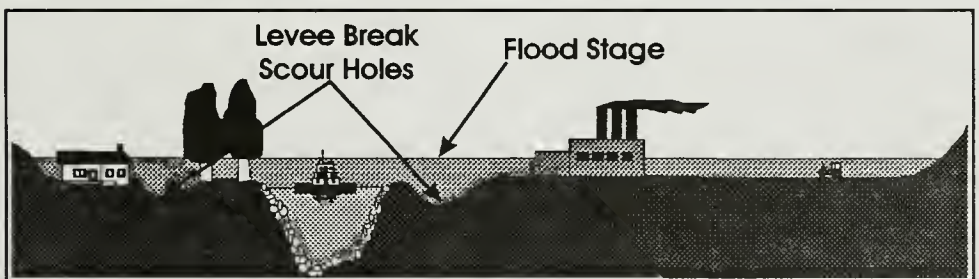
Flooding, Problems, Solutions

The heavy rains, snow and ice that have been overwhelming the West Coast in recent weeks have led to a variety of disaster and environmental problems, not unlike those faced by the Midwestern states in 1993, and by residents along the lower Missouri River again in 1995 and 1996. The heavy flooding in CA are putting levees and water systems of the Sacramento- San Joaquin delta "to the test." If the levees "continue to fail," salt water could threaten the drinking water for millions of Californians, damage the state's irrigation supply and flood 55 islands dotted with homes and farms.

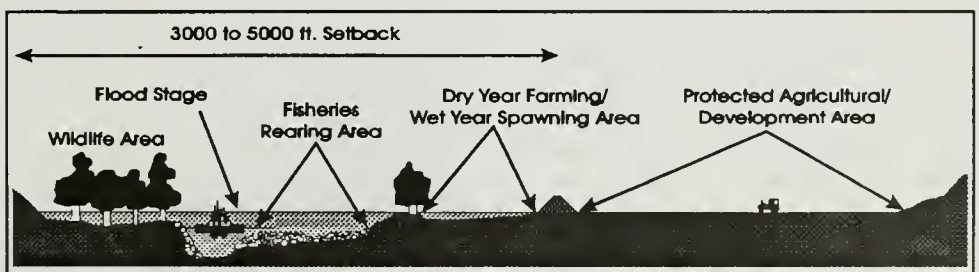
State Senate President Pro Tem Bill Lockyer (D) suggested the legislature should consider strengthening the levees and expand dams and reservoirs, while environmental interests, some engineers and federal emergency officials say it would be better to move residents out of flood plains and restore them to a natural state. These are the same debates that followed the 1993 Midwest flood and continue to this date (see figures



Flood control levees and floodwalls constrict river channels and cause flood elevations to rise. Persons living and operating businesses behind these levees think they are safe from flooding and therefore do not flood proof their homes or buy flood insurance. They thus set themselves and the taxpayer up for disaster!



When flood control levees and floodwalls break, floodplain scour and damage to floodplain lands is increased because of the increased flood heights created by the levees. Induced developments and homes behind the levees incur significant damage because they are unprepared for the catostrophe, and not protected from flooding.



Levees set back away from river banks create a more natural, larger area for flood water storage and conveyance. Flood heights, and thus flood damages, are reduced and lands behind these levees enjoy greater margins of flood protection. Wildlife, open space, and recreational lands are also enhanced.

on the previous page). The Midwest flood cost the American taxpayer between $14 and $16 billion in disaster assistance spending.

An *L.A. TIMES* (1/6/97) editorial notes that "the current flooding is likely to resurrect old concerns and proposed solutions, none of which come easy or cheap." The price of strengthening all the old Sacramento Delta levees is estimated at $1 billion, and Congress's defeat of the Auburn Dam proposal in June 1996 suggests "there will be no more big dam projects".

In the meantime, what could become the year's first test of the Endangered Species Act (ESA), with far reaching implications across the Nation, northern CA House members on January 21 introduced a measure to waive environmental rules to facilitate the rebuilding of flood-damaged levees in CA's Central Valley. The state has suffered $155 million in agricultural loses after flooding inundated 150,000 acres and damaged levees "up and down the valley".

The bill calls for waiving the ESA when parties want to build, operate, maintain or repair flood-control devices following "catastrophic natural events" or to protect public health. It was sought by the CA Farm Bureau Federation and leaders of the valley's flood-control districts. This same cry followed the 1993 Midwest floods, where today it takes the form of calls for 500 year levees to protect floodplain farmland.

Rep. Richard Pombo (R/CA) complained that the current environmental permitting process can take years. But Clinton administration officials said they are already sensitive to the region's need for timely repairs; on January 17 the Army Corps of Engineers and the U.S. Fish and Wildlife Service signed an agreement to expedite repairs. The ESA already allows exemptions for presidentially designated disaster areas; 46 of CA's 58 counties have been so designated.

At Yosemite National Park, which last year played host to 4.1 million visitors, management may have been permanently altered by the Merced River's New Year's floods. Yosemite withstood as much as $50 million in damages and is not scheduled to reopen before March 1997. As part of its rebuilding process, park superintendent B. J. Griffin says she would like to move campgrounds and outdoor facilities away from the river and worker accommodations and offices out of the valley. She will try to vacate more than 100 acres of riverfront and meadows, letting them "revert to nature."

If she succeeds, Griffin will set a precedent for the national park system, said National Park Service Dir. Roger Kennedy. "She will be showing her peers that the job can be done right, and that will be especially encouraging to the big parks where we are struggling hardest with the impacts of huge crowds and traffic," he said.

In the San Francisco Bay area, the past three wet winters, along with creek restoration projects and pollution abatement, have produced the best conditions for chinook salmon, steelhead trout and other fish in two decades, according to state and federal officials. Scientists say the rains have sent freshwater plumes into the bay, attracting more fish to the region's streams. However, Jim Lecky of the National Marine Fisheries Service said the recent deluge is probably too much water, as swift currents in the Sacramento-San Joaquin Delta have likely killed eggs and newly hatched salmon. Lecky said the floods are not a "total disaster" for the fish, but that several species could be "adversely affected".

According to some, climate change may be responsible for the "relentless barrage" of rainfall and floods that continues to drench the Pacific Northwest. University of Oregon geography professor Patrick Bartlein said the area's record rainfall last year is "not inconsistent" with the global warming effects predicted by some climate studies. "As it gets warmer in winter, the hydrologic cycle will be getting more vigorous," he said. But "other scientists are skeptical." Oregon state climatologist George Taylor says he believes human activities "will" influence global climate, "but I also believe that there is a natural [fluctuation] to global temperatures." Taylor thinks that OR is "on the threshold of a 20-year, cold-wet cycle".

Source: Greenwire Vol. 6, Nos. 166, 168, 175, 177

Climate Change - Implications for Water Managers

Records spanning the past 95 years indicate that more rain has been falling in hard one-day rainfalls in the past 25 years, and the U.S. has averaged about 5% more rainfall since 1970. In addition, increased precipitation has been occurring in cold weather, especially in the fall. Local increases of nearly 20% are not uncommon, although annual precipitation has decreased in some states, including CA,MT,WY,ND,ME,NH,VT, and parts of the southeast and central U.S.

Are these changes due to human-induced "global climate change"? Scientist don't all agree, but if these changes are indications of long term trends, then they pose challenges to water resources managers seeking to control nonpoint source pollution. Increased rainfall could change flow patterns and perhaps lead to increased flooding, streambank erosion, and changes in vegetation. On the other hand, some areas could experience decreased rainfall which could affect water supply or change irrigation patterns.

For example, a study for the city of Boston projects that the supply of water in its watershed will vary by location and season. Some areas may get rain increases that they need to serve the growing population. Other areas, however, may need to develop additional resources.

Other examples come from a study for the EPA's Office of Policy, Planning and Evaluation, Climate Change Division. EPA Region 6, with offices in Dallas, TX, is experiencing severe drought and has named a "Drought Czar" to cope with the problem; Region 5, headquartered in Chicago, has found that larger retention basins are needed to handle excessive rainfall; and Region 7 with offices in Kansas City, KS, is experiencing

alternating drought and flooding.

Finally, the Intergovernmental Panel on Climate Change finds that the demand for irrigation may increase in areas that presently do not use extensive irrigation. This demand could exacerbate current water shortages and irrigation-related pollution problems.

Statistically, a long-term change in climate appears to be the most likely explanation for the differences in rainfall. However, 20-25 years is too short a time to say with certainty that the change is not a normal fluctuation such as often occurs over decades. Even so, it is a situation that calls for careful monitoring. Climate and rainfall changes, whether temporary or permanent, are contingencies that test the practices water managers are using to protect quality.

Contact: Research Customer Service Group, National Climatic Data Center, 151 Patton Avenue, Asheville, NC 28801, (704) 271-4994; e-mail: research@ncdc.noaa.gov

Source: Nonpoint Source News Notes, Issue #46, October/November 1996

Water Detention/Water Quality

Stormwater retention in naturally functioning floodplain wetlands historically provided for flood control and water quality improvement. These wetlands essentially served as the kidneys of the Nation's landscape, and would do so again if restored.

The Southwest Florida Water Management District (SFWMD) conducted a study from 1990-1994 to answer the question: "What effect does residence time have on a wet-detention pond's ability to treat polluted runoff?". Such man-made wet-detention ponds play a similar role to floodplain wetlands in treating polluted runoff.

The SFWMD reshaped a wet-detention pond built to treat runoff from one of its field service offices in Tampa, FL to compare three different residence times. Of the three variations tested (2-, 5-, and 14-days) the 14-day residence time showed the greatest improvement in water quality. The SFWMD has regulated stormwater systems under state law since 1984. Part of their role is to research how well these systems meet state water quality objectives. Detention ponds are the most commonly used method of stormwater management in FL, making them a likely candidate for study.

Supported, in part, by 205(j) grant funding from EPA, the district reshaped the wet-detention pond at its Tampa service office to compare the pollutant removal effectiveness of the three residence times. Wet-detention ponds consist of a permanent pool of water; an overlying fluctuating pool; and a shallow, vegetated shelf called the littoral zone that serves as a biological filter. In many ways they appear and function very similar to the way a river's natural floodplain backwater might in providing space for flood water retention and nutrient cycling.

In 1986, when the Tampa site was developed, regulations required that the pond treat a minimum 0.5" of runoff from the contributing area, restrict the fluctuating pool to no more than 8" above the control elevation, and include a planted littoral zone that extended no further than 3.5' below the control elevation. As a result, a 0.35 acre wet-detention pond was constructed to a depth of 1' below the control elevation (the lowest point where water can be released through the outfall structure) to treat runoff from the 6.5 acre drainage basin. The pond was sized to discharge water within 5 days, with no more than half of the total volume being discharged in the first 2.5 days. However, calculations revealed that this pond actually had an average residence time of 2 days.

In 1993, the district reshaped the pond according to changes in stormwater design criteria that increased treatment volume requirements from 0.5" to 1.0" of the contributing area and raised the permitted height of the fluctuating pool from 8" to 18". To meet these requirements, the district increased the depth of the permanent pool from 1' to a maximum of 5', while leaving the surface area the same. This increased residence time to five days, but the pond was not quite large enough to meet the 1.0" runoff treatment requirement.

The district then reshaped the pond one last time in 1994. To achieve a 14-day residence time, the area of the pond had to be increased to 0.5 acre while maintaining the depth of the pond at 5'. The district originally planned to excavate the pond to 9', the maximum depth allowed in the 14-day design, however a shallow confining layer at the site prevented this, forcing the district to increase land area instead. This design lowered treatment requirements from 1.0" to 0.5"; reduced the height of the fluctuating pool from 18" to 10"; and limited the depth of the littoral zone to 2', as opposed to 3.5', below the control elevation.

For each of the three pond designs, the district collected composite water quality samples using automated sampling equipment placed at the pond's inflow and outflow. Water quality parameters included nitrate-nitrite, phosphorus, metals, and total suspended solids. By analyzing data collected between June and January for the 2-day, 5-day, and 14-day residence times, the district determined that the longest residence time produced the most significant improvement in water quality. In fact, the 14-day design was so effective that it was able to reduce pollutant levels (of most constituents) from the inflow to the outflow enough to regularly achieve the 80% state pollutant reduction goal for these systems.

The major change implemented with the 14-day design is that it allows stormwater to be detained in the permanent pool, rather than limiting detention to the fluctuating pool. By allowing credit for treatment in the permanent pool, the design eliminates the need for deep stormwater ponds designed to stack stormwater above the permanent pool. In general, this shallower pond design results in higher dissolved oxygen concentrations, providing better pollutant removal efficiencies and more desirable aquatic

habitat. In addition, by limiting the range of fluctuation in the fluctuating pool to 10", the design provides a more stable environment that promotes the establishment of diverse vegetation in the littoral zone.

The 14-day detention design also benefits developers. By reducing the requirement for detention in the fluctuating pool from 1.0" inch to 0.5", the design reduces flood stage, allowing building elevations to be lowered and minimizing the need and expense of bringing in fill material. Allowing treatment in the permanent pool can also reduce the amount of land area needed for stormwater ponds from almost 6% to 5% (site conditions permitting).

The Tampa pond, with its 14-day detention design, continues to treat stormwater from the district's service office. Meanwhile, the district is pursuing future studies for this site and others focusing on the effectiveness and maintenance of these systems.

Restoration of floodplain wetlands to serve as wet-detention ponds would go a long way toward:
- reducing pollution levels in our rivers and streams,
- reducing flood damages and disaster payments,
- addressing the hypoxia problem of the Gulf of Mexico,
- providing important habitats for threatened and endangered wildlife,
- providing habitats for forage and game species, and
- providing recreational opportunities and investments for river communities.

For more details on the Tampa study contact: Betty T Rushton, Ph.D., Resource Projects Department, SFWMD, 2379 Broad Street, Brooksville, FL 34609-6899, (352) 796-7211; Fax (352) 754-6885.

Source: Nonpoint Source News Notes, Issue #46, October/November 1996

The Water-Wise Gardener

The Water-wise Gardener is a multi-faceted Extension program targeted to reduce homeowner contributions to nonpoint source pollution through their participation in a progression of educational experiences focused on proper landscape management. This program brings traditional Extension teaching methods of field days, volunteer and demonstration sites, and one-on-one interactions with volunteers to the urban/suburban clientele to make them equal participants in the protection of our natural resources. This approach, developed under the direction of Extension Agent Marc Aveni, Extension Technician Ludwig Hartung, Extension Specialist Diane Relf, and Water Quality Program Coordinator Waldon Kerns, will provide a valuable model to others who work in public education.

The Water-wise Gardener handbook includes sections on planning, implementation, data evaluation and reporting, as well as examples of surveys, impact sheets, and marketing materials that have been successfully used in public education. The 52-page guide comes in a sturdy, three-ring binder and includes an extensive listing of the Cooperative Extension and other water-quality related resources from across the U.S.

The Water-wise Gardener was developed in response to the needs of Extension agents who work on a daily basis with residential homeowners and renters. Most homeowners have a high level of interest in establishing and maintaining attractive landscapes. In recent years, many agents have expressed concern over the impact such activities can have on our ground and surface water as a result of contamination from pollutants carried by water percolating through the soil to the water table or washed into lakes and streams via storm and surface water runoff. Home lawns and landscapes contribute to such nonpoint source pollution when improper water management or chemical applications allow fertilizer- or pesticide-laden water to reach water sources. Our streams, lakes, rivers, and ultimately the Gulf of Mexico are threatened by overuse and abuse of fertilizers and chemicals by agricultural as well domestic applications.

Recognizing that attractive lawns and landscapes play a vital part in our communities by increasing property values, improving community appearance, and providing a critical link in the water cycle, a program was designed for the public with accurate, unbiased, university-based research and information. With special funding through the Cooperative State Research, Education, and Extension Service at the U.S. Department of Agriculture, the *Water-wise Gardener* program was developed over a five-year time frame.

To order copies of *The Water-Wise Gardener Handbook*, send check or money order for $15, payable to Treasurer, VA Tech at: The Water-Wise Gardener, Office of Consumer Horticulture, 407 Saunders Hall, Blacksburg, VA 24061-0327; (540) 231-6254.

Toxic Spills

Toxic chemical spills or accidents occur in the U.S. more than 20 times a day, or almost once an hour, according to a study released on December 4 by the U.S. Public Interest Research Group and the National Environmental Law Center. The study, which used data from the Federal Emergency Response Notification System, found that more half of the 23,000 toxic chemical accidents reported between 1993 and 1995 occurred in only eight states -- TX,CA,LA,PA,OH,IL,GA and AK. While most of the accidents were "small scale", about 5% resulted in injuries, evacuations or deaths. The toxics most commonly released according to the study were ethylene

glycol, anhydrous ammonia, sulfur dioxide, sulfuric acid and PCBs.

The groups released the report on the 12th anniversary of the Bhopal chemical accident, calling on Congress to expand the Community Right to Know Act and on federal, state and local governments to promote accident-prevention policies.

In the meantime, a decision by the 5th U.S. Circuit Court of Appeals in New Orleans has U.S. prosecutors and environmentalists "fuming." The 5th Circuit recently ruled that prosecutors must show that alleged polluters knowingly discharged dangerous substances, reversing the federal Clean Water Act conviction of Attique Ahmad, a convenience-store owner who dumped 4,700 gallons of gasoline into the sewers of Conroe, TX, in 1994. One attorney familiar with the case said, "It's kind of hard to see how the guy didn't know he had done it." But Ahmad maintained it was an innocent error, and in his appeal said he was denied the chance to present two defense witnesses who would have testified that he was unaware he had dumped the gasoline.

In overturning the conviction, the 5th Circuit "acknowledged that in the environmental field, other courts had taken a more pro government approach." But the 5th Circuit pointed to two recent Supreme Court rulings which it said "undermined" the trial judge's reasoning, and it said the defense witnesses should have been allowed to testify.

Prosecutors "have been stepping up criminal enforcement of pollution laws" in recent years, arguing that they don't have to prove criminal intent in every aspect of the crime. Defense lawyers "cheered" the decision, with some saying they will use the ruling to gain more leverage on behalf of clients accused of "inadvertent" violations. Thomas Bartman of Vinson & Elkins, a Houston-based law firm that represents manufacturers and oil companies said, "We're sending out letters to lots of clients."

The Justice Dept. hasn't decided whether it will seek a Supreme Court review of the ruling. But Michael Shelby, an assistant U.S. attorney in the case, vowed he would prosecute Ahmad again.

Sources: Greenwire Vol. 6, No. 151 and 164

Deformed Frogs

MN environmental officials have scaled back their research on frog deformities and asked federal authorities to take the lead. Deformed frogs have been found in as many as a dozen states, including AL,MI,MN,MO, OH,SD,WI,VT; as well as in Quebec, Canada and Japan, raising concerns about possible environmental causes.

According to Duane Anderson, water-quality section manager for the MN Pollution Control Agency, "For us to come out with some kind of answer on why frogs are deformed will take far more time and effort than is the mission of this agency." The state has provided $151,000 for frog research to date. Anderson said his agency is interested in knowing whether the deformities are caused by a pollutant, but "If the determination was that the cause was pesticides, the pesticide industry would expect us to have [that conclusion] nailed nine ways from Sunday. We're not in a position to do that". State legislators and environmental interests expressed disappointment with the decision.

The USEPA has responded by establishing a reporting center that will begin analyzing the distribution and extent of deformed frogs nationwide. This spring, at least three of the EPA's 10 regional offices will start field investigations, while the agency will also monitor amphibian and reptile populations in several national parks.

Meanwhile, preliminary findings at the National Wildlife Health Center (NWHC) in Madison, WI, suggest that parasites, "a leading early theory," do not provide a full explanation of the deformities. Kathryn Converse of NWHC said the center has found no evidence of either viral or bacterial disease, but that viral infection has not been ruled out (William Souder, WASH. POST, 1/29).

Sources: Greenwire Vol. 6, Nos. 174 and 181.

Miscellaneous River Issues

Florida: The multibillion-dollar "replumbing" of south FL has begun with the launching of two South Dade County projects to revitalize Everglades National Park and northeast Florida Bay. The projects are being "hailed as the official start" of a "massive ecosystem restoration" that will stretch from the Kissimmee River south of Orlando to Florida Bay. Officials hope the $275 million initiative will restore water flows to the Taylor and Shark River sloughs and bring "booming" populations of wading birds, crocodiles and fish to the area by early next century. But enviros and officials are also concerned the project may flood some area farms, destroy a colony of endangered Cape Sable seaside sparrows and pump pesticide- and fertilizer-contaminated water from defunct farms into the park. Stuart Applebaum of the Army Corps of Engineers said that "given the magnitude of the restoration," such worries are to be expected. But the Corps and the South Florida Water Management District are prepared to "fine-tune" the project as it progresses. Source: Greenwire Vol. 6, No. 169

Georgia: In what could become "one of the most contentious issues" of the GA legislative session, the state must decide whether to join interstate water compacts with AL and FL or settle water-allocation disputes in court. The issue "could set the course of development" in north GA for decades to come. One proposed compact with AL and FL would divide the waters of the Chattahoochee, Flint

and Apalachicola rivers, while another would share with AL the waters of the Alabama, Coosa and Tallapoosa rivers. Under the compacts, which must be approved by Congress and the states, governor-appointed representatives would work out the allocation of water for drinking, navigation, power generation, recreation and industry. Each state's portion of water would be determined after a $15 million federal and state study of the river basins. Critics of the compacts say they do not mention environmental protection, do not require public input on water allocations, would allow governors to waive conflicting laws and may conflict with the federal Clean Water Act. Source: Greenwire Vol. 6, No. 171

Idaho: Breaching federal dams along ID's lower Snake River "promises the most benefits to dwindling salmon runs," according to a report released on December 10 by the Army Corps of Engineers (COE). The report narrowed down the COE's options to focus on breaching the dams or keeping the reservoirs behind them full. An earlier report by consulting engineers had led some to believe that the decision to breach the dams had been made. But Mike Mason, COE project leader, said that neither the first report nor the latest study means the decision has been made. Mason said the agency will spend the next three years studying the pros and cons of the various options. Source: Greenwire Vol. 6, No. 155

Idaho/Montana/Oregon/Washington: The governors of ID, MT, OR and WA on December 11 received an advisory panel's recommendations for changes in the region's electricity-supply system, including a number of environmental commitments. The main goals are to ensure customers can choose their electricity supplier by July 1999 and to clarify the role of federally owned power agencies in the new order. But the advisory panel also called for "broad-based" discussions to resolve fish and wildlife issues and for investments of about $210 million for energy conservation and renewable energy. Upon receiving the report, the governors appointed a four-member panel to produce an action plan by February 1997. Source: Greenwire Vol. 6, No. 156

Illinois: Illinois officials on January 28 announced 34 recommendations for reducing pollution and siltation in the Illinois River Valley, saying "they finally understand" what fishers, hunters and enviros have been "sounding the alarms" about for four decades. The unfunded proposals include plans to increase tax incentives for landowners who improve water quality, encourage local governments to adopt ordinances reducing the amount of stormwater runoff, and create and restore wetlands. Lt. Gov. Bob Kustra (R), who headed a two-year study of the river "said he is hopeful" that the watershed will qualify as a national priority area and be eligible for U.S. Fish and Wildlife Service grants (Wes Smith, CHICAGO TRIBUNE, 1/29). Source: Greenwire Vol. 6, No. 182

Minnesota: The Irving, TX-based Darling International Inc. has agreed to pay a $4 million penalty -- the largest ever assessed in Minnesota for an environmental crime -- illegally dumping animal wastes from a rendering plant into the Blue Earth River. U.S. Attorney David Lillehaug said the company will plead guilty under the federal Clean Water Act to "five counts of discharging pollution and submitting false water-sample reports." The discharges, which occurred between late 1991 and late 1992, allegedly included blood, animal entrails, and high concentrations of ammonia and total suspended solids. Former wastewater-treatment plant operator Gary Keck and two other employees allegedly doctored water samples and submitted false reports to "conceal" the pollution. "Of equal concern besides the environmental crime of pollution is the charge that the company covered up these violations," Lillehaug said. Darling Chairman and CEO Dennis Longmire denied that animal entrails were dumped. But he said that some of the other charges were correct and resulted from the company "blowing the whistle on itself". Source: Greenwire Vol. 6, No. 159

Montana: One third of MT's streams don't meet federal water quality standards, according to a coalition of environmental groups that is threatening to sue the state over the issue. If the suit is filed and is successful, "it could have ... big implications for the logging, mining, agriculture and housing construction industries," reports the *BOZEMAN DAILY CHRONICLE*. The coalition, including American Wildlands, the Alliance for the Wild Rockies and Friends of the Wild Swan, says MT is violating federal law by not placing "impaired" bodies of water on strict monitoring and cleanup schedules. In a release, the coalition said it wants to "jump start a lagging state effort" to control water pollution. Chris Levine of the MT Dept. of Environmental Quality acknowledges that all or part of some 9,000 streams and lakes in the state fail to support at least one of several uses, including fishing, drinking water, recreation, and industrial and agricultural operations. But Levine says currently he alone is responsible for monitoring and listing water bodies, and he can donate no more than a third of his working time to the program. Source: Greenwire Vol. 6, No. 151

Nebraska: The U.S. Fish and Wildlife Service (USFWS) on December 3 rejected a proposal to relicense the Kingsley Dam and related hydropower projects on the Platte River in NE unless more water and land are reserved for "rare" animals downstream. In its decision, the USFWS found that the Federal Energy Regulatory Commission's relicensing proposal would not ensure better stream flows and habitat for the whooping crane, least tern, piping plover or pallid sturgeon. The rejection "adds new urgency to negotiations" between CO, WY and NE to develop a water conservation and habitat improvement agreement for endangered birds and fishes within the North and South Platte River basins in the three states. The USFWS said the dam's owners and users -- the Central Nebraska Public Power and Irrigation District and the Nebraska Public Power District -- could implement a series of "costly" fixes to protect the species or transform the license into basinwide restrictions that the three states can work out. Source: Greenwire Vol. 6, No. 151

New Hampshire/Vermont: Despite six years of falling sulfur-dioxide (SO_2) emissions from coal-fired power plants, the Northeast's lakes, streams and forests have shown little to no improvement in acidity levels, according to NH-based researcher Gene Likens. Likens's research shows that decades of acid rain have robbed surface waters of minerals such as calcium, weakening their natural defenses against acid precipitation. His findings are supported by VT biologists who say that 25 of VT's most acidic lakes "have seen no improvement." Likens and other scientists at NH's Hubbard Brook Experimental Forest, "one of the nation's oldest and most respected acid rain research stations," also estimate that the contribution of nitrogen-oxide (NOx) emissions to acid rain has increased from 25% to 50%. Meanwhile, research by the U.S. Forest Service (USFS) and USGS "suggests" that acid rain is releasing toxic aluminum from the soil, putting stress on red spruce trees that may slow their growth. According to USFS scientist Walter Shortle, "This new problem is more subtle and could even be more damaging in the long run." But other researchers have not found the same trend. Likens suggests another 30% cut in acid-rain-causing emissions beyond current standards. But both the USEPA and the electric power industry are urging patience while new pollution-control equipment continues to be phased in under existing requirements. Source: Greenwire Vol. 6, No. 164

Ohio: Business leaders, environmentalists and government planners are weighing plans to increase oxygen levels in Ohio's Cuyahoga River, including the possibility of installing mechanical aerators along the waterway. The aerators would pump dissolved oxygen into the river along a 5.5-mile navigation channel that has consistently fallen below regulated oxygen levels. Although the plan is technically feasible, no one has broached the subject of who would fund the project, which could run up to $30 million. Meanwhile, a new report from a panel of fisheries scientists suggests that aeration alone, while perhaps sufficient to meet oxygenation standards, would not be enough to restore the channel's ecology unless the river underwent habitat restoration. With this in mind, Roger Thoma of the OH EPA has suggested widening bulkheading along the banks of the river to create a "habitat highway" for spawning fish and their fry. Scientists have "cheered" Thoma's plan, but Joe Mazzola of the Flats Oxbow Assn., a regional business group, called it "tremendously impractical". Source: Greenwire Vol. 6, No. 154

Meanwhile the agency that takes legal action against OH's worst polluters is burdened with a backlog of environmental enforcement cases, some dating back to 1984, reports the *DAYTON DAILY NEWS*. State records show 272 cases pending in the state attorney general's office, not including administrative appeals, current criminal enforcement cases and legislative action. The backlog exists at a time when the USEPA and environmental groups "are questioning whether several states are lax in their enforcement of the nation's environmental laws." The USEPA may review OH's enforcement efforts based on recent reports that 40% of OH's industrial facilities regularly violate their discharge permit limits. OH ranks fourth in the nation for carcinogen releases to air, water and land, and fifth for total releases of toxic chemicals. Attorney General Betty Montgomery said she would rather spend money on cleanup and enforcement than costly litigation. Source: Greenwire Vol. 6, No. 177

Pennsylvania: Environmental fines imposed by PA fell 25% to $7.7 million in FY 1995-1996, "the first full year of an administration philosophy that emphasized partnership instead of penalties." According to a December 1996 special report by the state Dept. of Environmental Protection (DEP), the decline in fines reflects improved compliance with environmental laws and has not affected pollution cleanup efforts. The DEP report was requested by the state House in June 1996 after newspaper reports said reduced fine totals could threaten pollution cleanup. Phil Coleman, chair of the Sierra Club PA Chapter, questioned the credibility of the report and said he doubted there has been greater compliance with environmental laws in the state. Source: Greenwire Vol. 6, No. 165

Tennessee/North Carolina: Tennessee environmental officials on December 16 said they would continue their efforts to clean up the Pigeon River despite the USEPA's recent approval of a permit variance allowing Champion International to continue dumping waste water into the river. The USEPA approved the permit revisions for Champion's paper mill in Canton, NC, about 40 miles upriver from TN, over the objections of TN officials and TN Gov. Don Sundquist. The USEPA said the permit meets TN water quality standards and is one of the most stringent permits ever issued to a pulp and paper mill. But TN Dept. of Environment and Conservation Commissioner Justin Wilson disagreed. Source: Greenwire Vol. 6, No. 161

Virginia: The VA attorney general should have the power to prosecute polluters as criminals, and money from fines paid by polluters should be used to help businesses cut pollution, according to a report just released by the VA Governor's Commission on Environmental Stewardship. The report, which explores ways to improve VA's environment, contains 53 suggestions for Gov. George Allen, including expanding current environmental policies, developing brownfields and using prisoners to maintain parks. Allen said he was "very glad" the report "reinforced many initiatives" already being worked on by his administration. But some observers noted that the report did not examine the recent findings by the General Assembly's Joint Legislative Audit and Review Commission that characterized Allen's administration as lax on pollution enforcement. Political observers said the governor's commission, headed by Attorney General James Gilmore, was formed in part to strengthen the environmental credentials of Gilmore, the presumed GOP candidate for governor next year. Source: Greenwire Vol. 6, No. 160

West Virginia: Parsons & Whittemore Inc. on January 17 announced that it had put on hold its controversial plans

to build a $1.1 billion pulp mill in Mason County, WV. The company said it would reconsider the project if it obtains all the necessary permits. The state Division of Environmental Protection will keep working on permits for the facility unless the company formally withdraws its applications. Environmentalists -- who say emissions from the mill would damage forests in WV, KY and OH -- have asked the state to void the proposed facility's air pollution permit because of the company's postponement. Opponents of the plant also argue that its chlorine bleaching process would release dioxin into the Ohio River. Pulp mill supporters have argued that the mill would not significantly damage WV forests and streams. But according to a document released on January 22 under the Freedom of Information Act, a Parsons & Whittemore study concluded the logging necessary to feed the plant would create environmental problems. Source: Greenwire Vol. 6, No. 179

EPA Says Some State Enforcement Laxed

"Worried that some state governments are neglecting federal environmental laws," the Clinton administration plans to closely investigate enforcement practices in about a dozen states, according to senior USEPA officials. The officials say the environmental agencies in PA and some other large industrial states are reporting "only a handful" of major pollution violations to the USEPA, "suggesting that inspectors in those states may be turning a blind eye to pollution problems."

After the USEPA's Inspector General's office found that PA should have reported at least 10 times as many serious air pollution violations as it did in 1995, the USEPA decided to investigate other states' records. However, officials would not reveal which states were likely targets.

USEPA Administrator Carol Browner said, "Unfortunately, lately we have seen a number of states that are emboldened by the anti-environmental sentiment that began here in Congress, and they are retreating from their commitment to enforce the laws." PA Environmental Protection Secretary James Seif accused the USEPA of using a "bean-counting approach" and making public attacks on one state after another.

The USEPA is also "stepping up its campaign" against states that have adopted laws protecting companies from punishment or public disclosure when they voluntarily report violations of pollution rules. The agency has warned ID,MI and TX that their recent passage of such laws may jeopardize their authority to issue some Clean Air Act permits. A similar, so-called enviro-auditing law was signed into law by OH Gov. George Voinovich on December 13.

Environmental and labor groups are pushing the USEPA to take over other regulatory functions from several states, "like the enforcement of regulations controlling pollution of drinking water supplies." The Environmental Defense Fund and the Oil, Chemical and Atomic Workers International Union has petitioned the agency to withdraw TX's authority to regulate the injection of waste deep into the ground.
Source: Greenwire Vol. 6, No. 157

Clinch River Partners, Pearlymussels, and Patience

Community-based conservation requires vision, perseverance, imagination, humor, and knowledge about a great number of topics, ranging from forage budgets to good salesmanship, says Leslie Colley, who for 18 months has participated in such a project in Tennessee's Hancock County.

The Nature Conservancy's (TNC) Clinch River Community Project provides area farmers with technical and financial support for pasture renovation, livestock exclusion fencing, alternate water sources, and streambank stabilization. The ultimate goal is to protect and preserve some of the richest freshwater mussel shoals in the world.

The county has minimal industry and little development, and agricultural runoff from tobacco and beef operations pose a significant problem for both aquatic fauna and farmers. Farm size averages 80 acres, and farming practices are passed from generation to generation. The narrow Clinch River valley is surrounded by steep ridges, a beautiful, wild landscape with fertile alluvial soils along the river.

Hancock County is geographically isolated, sparsely populated (6,700 residents), one of the most financially strapped counties in the nation, and outsiders are viewed with suspicion. Building acceptance and the community's trust isn't easy, but it is the foundation of the Clinch River Community Project. According to Colley the work would be impossible without the confidence of the community.

Trust also depends on the willingness of program sponsors to be committed to, and involved in, the community. TNC understood early on that it would have a difficult time gaining entry into the area without a partner who already enjoyed a presence here. Lindy Turner, the Clinch-Powell Resource Conservation and Development Council's infinitely capable coordinator, was an indispensable contact and has provided invaluable guidance and expertise. She understands agriculture, and she knows how to move the project along gently and deliberately.

Colley maintains office space in the Hancock County courthouse and lives in the project area. She spent her first three months just becoming familiar

with the people and their way of life. The process, though logical, is complicated and slow, but she managed to meet a broad cross-section of people in the county, including respected farmers, local leaders, woman's club members, and the high school's Future Farmers of America.

At the forefront of TNC's work is the importance of balancing science and people. Input from landowners regarding land use, future plans, concerns, and new ideas is paramount, and Colley approaches each one from the standpoint of "What can she do to help you?" Farmers especially must believe that the work makes sense and that the land and their herds will benefit. The rarity of the birdwing pearlymussel (*Lemiox remosus*) or the spiny riversnail (*Io fluvialis*) is generally not a priority for them.

Whether it's moving six hogs out of the headwaters of a stream or providing pedestrian gates in a fence for river baptisms, dialog is frank, and individual history is respected. TNC participates in every aspect of the work on each farm, thus freeing the farmers from having to fill out ag program applications, hire subcontractors, or perform all the legwork. Landowners are encouraged, however, to contribute as much time, labor, and equipment as they choose. In other words, the program is voluntary, nonthreatening, easy, and beneficial for landowners; and it works! The finished product generates pride not only for farmers, but for the surrounding community as well.

During her first year in Hancock County, TNC helped build two miles of fence along the river, plant 5,000 trees, relocate a small hog lot, install two alternate water troughs, host four successful community meetings, publish articles in the local newspaper, and made a lot of friends. Over the next three years, with the support of EPA section 319 funding, TNC plans to continue to work with landowners to implement BMPs. They also hope to expand the effort beyond building fences and planting trees to finding alternatives to beef cattle and tobacco farming (e.g., blueberry farming) that will improve the economic health of the community while protecting its resources.

The only way to protect some places, especially river systems with a history of small-scale agriculture like the Clinch, is to work with local landowners to get the job done. A local presence is the best investment. It engenders trust within the community and connects us to the people we are helping and the place we are trying to protect.

Contact: Leslie Colley, Clinch River Community Project, Hancock County Courthouse, P.O. Box 347, Sneedville, TN 37869, (423) 733-2100; FAX (423) 733-4348.

Source: Nonpoint Source News Notes, Issue #46, October/November 1996

WI Water Quality Demonstration Project

Dairy farmers in Green Bay, WI, are reducing surface and groundwater contamination while saving money. Helped by the East River Water Quality Demonstration Project (WQDP); more than 50 producers have reduced their use of commercial fertilizers and pesticides without decreasing crop yields. Their tool -- Integrated Crop Management, or ICM.

WQDP staff and consultants work with the farmers to help them plan fertilizer and pest control strategies -- usually a mix of chemical and nonchemical tools. First, the producer uses soil tests and an inventory of on-site nutrient sources such as manure to calculate the amount of commercial fertilizer needed to sustain crop yields. Then consultants help calibrate manure spreaders and make recommendations for crop rotations. In the last three years, participating farmers have reduced fertilizer applications by nearly 2,500 tons and pesticide applications by 24 tons. At the same time each farmer saved, on average, $5,000/year.

Fertilizer suppliers have also adapted their operations to support ICM. They have replaced lost fertilizer sales with services such as soil testing, pest scouting, and nutrient management planning. In Brown County, for example, the number of crop consultants has grown from six to nine in recent years.

The 50 or so farmers who benefit from their participation in the project are quick to point out the lessons they have learned. One of the keys to their success, they say, is good record keeping -- of crops, pest management techniques, and fertilizer and manure applications. Another is frequent field monitoring by a professional crop consultant, who recommends treatment only if crop losses will exceed the cost of control. For example, if the cost/acre of spraying for an insect is $10 and the insect is causing only $8 in damage, the farmer saves money by not using pesticides.

The East River WQDP began in 1990. The goal of this five-year project was to encourage farmers to adopt research-based practices that protect and improve groundwater and surface water quality while maintaining or increasing farm profitability.

The Project is located in the Fox River Basin of the lower Green Bay, in Brown County, WI. The East River contributes more than 10% of the phosphorus that reaches lower Green Bay and an equal amount of suspended solids. Overall land use in the lower Fox River watershed is 69% agricultural, 13% urban, and 18% wooded/natural.

Now that the demonstration project has completed its activities, its impacts can be seen throughout northeastern WI. A number of the practices initially cost-shared or demonstrated by the East River WQDP, including ICM, have become widely accepted. For example, farmers in seven counties have adopted a manure bartering program modeled after the East River WQDP, and information from its research projects has been requested nationally and internationally.

Clearly, ICM is improving the economic and environmental vitality of the East River rural community. According to Kevin Erb, nutrient management specialist, "ICM represents a philosophical shift on the part of farmers and farm suppliers. Through ICM, they're taking a stake in the future of the family farm and the rural community with an understanding that ICM heralds the future of agricultural technology in Wisconsin."

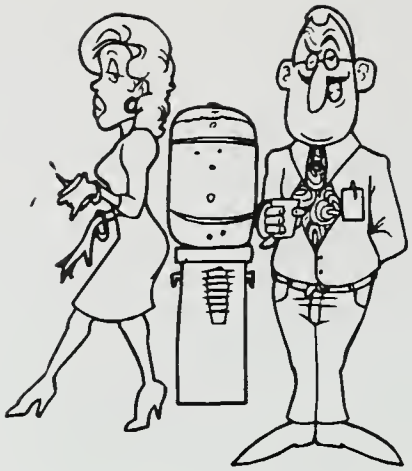
Contact: Kevin Erb, University of Wisconsin-Extension, 1150 Bellevue Street, Green Bay, WI 54302, (414) 391-4610, e-mail: kevin.erb@ces.uwex.edu.

Source: Nonpoint Source News Notes, Issue #46, October/November 1996

Male vs Female Views on the Environment

According to an early December *Roper Starch* poll women are more concerned than men about protecting the environment. Fifty-one percent of women think environmental laws and regulations have not gone far enough, compared to 38% of men; and only 14% of women say the laws and regulations have gone too far, while 23% of men believe they have. Also, 82% of women would be willing to pay $0.25 more per gallon for gasoline that reduces pollution from their cars by 50%, compared to 68% of men.

In other findings, 62% of survey respondents believe that technology will find a way of solving environmental problems, and 58% percent believe that federal



government spending should be shifted to environmental programs from other areas.

The survey, now in its fifth year, was commissioned by the National Environmental Education and Training Foundation and funded by a number of ski resorts, private foundations and companies, including Phillips Petroleum. Times Mirror Magazines commissioned the survey for each of its first four years.

Roper Starch surveyed by telephone 1,004 adult Americans in May 1996; margin of error is +/-3%. Results of combined survey follow:

1. Do you think enviro protection laws and regulations have:

	1996	1992
- Not gone far enough	45%	63%
- Struck about the right balance	28	17
- Gone too far	19	10
- Don't know	9	10

2. Should all endangered species be saved regardless of the costs, or should policy take cost into consideration?

- Policy should consider cost	60%
- All species should be saved regardless of the costs	32
- Depends on species	4

3. Should government be required to compensate landowners for land devalued by endangered species or wetland restrictions?

- Yes	72%
- No	20
- Depends upon how much	3
- Don't know	4

4. How willing would you be to pay $0.25 more per gallon for a gasoline that reduced auto pollution by 50%?

- Very willing	36%
- Somewhat willing	39
- Not too willing	12
- Not willing at all	11

5. Can enviro protection and economic development go hand in hand, or must we choose between them?

- Hand in hand	63%
- Choose between	26
- Depends/don't know	11

6. When it's impossible to find a reasonable compromise between economic development and enviro protection, which is usually more important?

- enviro protection	63%
- Economic development	21
- Depends	10
- Don't know	6

7. How well do the media inform you about environmental issues?

- Excellent job	2%
- Good job	23
- Fair job	49
- Poor job	24

8. Do you think of yourself as:

- An active environmentalist	21%
- Sympathetic but not active	53
- Neutral	20
- Unsympathetic	2

Source: Greenwire Vol. 6, No. 150

BASINS Software

A new breed of desktop mapping and modeling software designed for water quality analysts and watershed managers is helping resource managers access large amounts of point and nonpoint source data. EPA's BASINS is one such system.

Developers of the program envision BASINS as an invaluable tool for watershed planning and for developing cost-effective approaches to environmental protection. Because many factors affect water quality in a watershed, and because each watershed is different, BASINS users will be able to review large amounts

of pollutant source information, chemical discharge data, and streamflow information for every watershed in the continental U.S. They will also be able to add to the data contained in the BASINS software, thus ensuring that it will remain a source of current and reliable data for each watershed.

BASINS software, designed to be used on a personal computer, will bring together information collected by many federal, state, and local government and private agencies. This makes it possible for users to locate potential sources of pollutants and estimate the effects of pollutants on drinking water supplies, recreational waters, aquatic life, wildlife habitat, and other critical uses of waters in a watershed. Users can focus on selected stream sites or an entire watershed, evaluating a number of "what if" scenarios and predicting how discharges of pollutants from industrial and municipal point sources and agricultural, urban, and other nonpoint sources impact downstream water quality, aquatic communities, and wildlife.

The software contains two water quality models. One model combines nonpoint source discharges with facility discharges and calculates changes in pollutant concentrations as they are diluted and flow downstream. The other model uses the weather data that is stored in the software to calculate runoff of sediment, nutrients, bacteria, and toxic substances from mixed land use areas and also calculates how this runoff affects water quality.

BASINS requires a 486 (or better) IBM compatible PC with a CD-ROM and ArcView 2.1 software; as well as 16 MB of RAM. A user's guide contains background information on the supporting databases and instructions on how to install, navigate. and use the various BASINS modules.
EPA is currently involved in training regional and state staff to use the program effectively. The program was expected to be released to others in late 1996.

Contact: Jerry LaVeck, Office of Science and Technology, Standards and Applied Science Division (4305), U.S. EPA, 401 M Street, SW, Washington, DC 20460, (202) 260-7771; FAX (202) 260-9830; e-mail: laveck.jerry~epamail.epa.gov]
Source: Nonpoint News Notes, Issue #46, August/September 1996

Water Quality Indicators Guide (2nd Edition)

Originally published in 1989, the second edition (1996) of the Water Quality Indicators Guide: Surface Waters, by C.R. Ternell and P.B. Perfetti is now available. Produced by the Terrene Institute in cooperation with Kendall/Hunt Publishing Company, this edition has been completely updated by Ternell, coauthor of the first edition, and Perfetti, NRCS's national environmental coordinator.

Designed as an inexpensive screening tool for use by USDA field personnel, the guide immediately appeals as well to educators, water quality monitors, environmental professionals, and local governments, because it recommends observing environmental conditions rather than complicated chemical testing to assess the potential for agricultural nonpoint source pollution.

Essentially a method to quickly identify and remedy water quality problems, this book identifies the five major sources of agricultural pollution (sediment, nutrients, pesticides, animal wastes, and salts); discusses the ecology of freshwater systems; and provides field sheets for observers to use on land and receiving waters.

Observations are recorded, weighted, and ranked on the field sheets to assess conditions; then, when a particular nonpoint source pollutant is identified, it can be correlated with conservation and best management practices to determine-and enact-possible solutions. The method is suitable for neighborhood streams and larger areas, and the accuracy of the method improves with use. Cost is $29.95 plus $5.50 shipping and handling.

Contact: Terrene Institute, Attn. Order Department, PO. Box 605, Herndon, VA 20172-0605, (703) 661- 1582; FAX (703) 661- 1501.
Source: Nonpoint News Notes Issue #46, October/November 1996

Guidelines for Excellence in Environmental Education

Developers of activity guides, lesson plans, and other instructional materials, and the teachers who use them will soon have a tool for evaluating the wide array of products available for environmental education," says Bora Simmons, a professor at Northern Illinois University.

The North American Association for Environmental Education (NAAEE) founded the National Environmental Education Standards Project to propose a set of voluntary guidelines for developing and selecting quality environmental materials. The outcome, Environmental Education Materials: Guidelines for Excellence, which Simmons says, "is grounded in a common understanding of effective environmental education," was to be published in October 1996.

Guidelines recommends that environmental materials be judged on six key characteristics: fairness and accuracy, depth, emphasis on skills building, action orientation, instructional soundness, and usability. Several "indicators" will accompany the various guidelines listed for each characteristic. The indicators are clusters of attributes that can help educators determine whether one or more of the six characteristics are embodied in the materials being reviewed.

A second objective of the Guidelines is to help teachers of environmental

education meet standards set by traditional disciplines. Quality environmental education can provide students with opportunities for synthesizing knowledge and experience across disciplines and facilitate the learning of science, civics, social studies, mathematics, geography, and the language arts. By using the Guidelines, educators can develop meaningful environmental education programs that build on and integrate traditional subjects.

The National Environmental Education Standards Project is also developing a teacher's resource guide to quality environmental education materials. The resource guide will include a broad range of education materials, including curriculum guides, CD-ROMs, laser disks, and videos.

Panels of classroom teachers, environmental educators, curriculum developers, and environmental specialists will review all material in the resource guide according to criteria drawn from Environmental Education Materials: Guidelines for Excellence. The first volume of the teacher's resource guide was to be published in late 1996. Contact: Bora Simmons, Northern Illinois University RO. Box 299, Oregon, IL 61061, (815) 753-0205 x113, FAX (815J 732-4242.

Source: Nonpoint Source News-Notes, Issue #46, October/November 1996

Posters/Electronic Game Boards

Three posters: Wetlands are Wonderlands!, River Environment, and Creek Critters produced by the Tennessee Valley Authority can be converted to electronic game boards to teach identification of water plants, animals and macroinvertebrates. The posters are free of charge, but the conversion kits are $10.00 to $12.50 each.

Contact: Ray Norris, 4021 Sunnybrook Drive, Nashville, TN 37205-3834.

Minnows as Canaries

The Ft. Worth Department of Environmental Management has produced a video and manual explaining how to construct and use the Stream Sentinel, a low cost, long-term method of monitoring storm drainage outfalls using six fathead minnows in a two-liter soda bottle.

Both are available at no cost from Charles Howell, EPA Region 6, First Interstate Bank Tower at Fountain Place, 1445 Ross Avenue, 12th Floor, Suite 1200, Dallas, TX 75202-2733, (214) 665-8354. Or contact Brian Camp, Ft. Worth DEM, 5000 Martin Luther King Highway, Ft. Worth, TX 76119, (817) 871-5450.

Meetings of Interest

February 25-March 1: 1997 International Symposium on Human Dimensions of Natural Resource Management in the Americas, Colorado State University, Ft. Collins, CO. Contact: Jennifer Pate, Symposium Coordinator, Human Dimensions in Natural Resources Unit, Colorado State University, Ft. Collins, CO 80523, (970) 491-7729, FAX (970) 491-2255, e-mail: jpate@cnr. colostate.eud, WWW address http://www.cnr. colostate. edu/~hd-nru/ hdsympo.html

March 8-11: Sixth International Symposium on the Ecology of Fluvial Fishes, Univ. of Lodz, Lodz, Poland. Contact: Tadeusz Penczak, Dept. of Ecology and Vertebrate Zoology, Univ. of Lodz, 12/16 Banacha St., 90-237 Lodz, Poland, 011/048-42-781364.

March 11-13: 53rd Annual Meeting of the Upper Mississippi River Conservation Committee, Riverport Inn, Winona, MN. Contact: Jon Duyvejonck, UMRCC, 2269-48th Ave. Court, Rock Island, IL 61201

March 3-14: 13th Annual International Program for Port Planning and Management, New Orleans, LA. Sponsored by Board of Commissioners of the Port of New Orleans, World Trade Center of New Orleans, Louisiana State University National Ports and Waterways Institute, and University of New Orleans. Contact: Timothy E. Joder, CUPA/LUTAC, University of New Orleans, New Orleans, LA 70148, (504) 280-6519, FAX (504) 280-6272. Telex: 58-7496.

March 10-13: 13th Annual Meeting of the Association of State Wetland Managers, Wyndham Garden Hotel in Annapolis, MD. Contact: ASWM, P.O. Box 269, Berne, NY 12023-9746; (518) 872-1804, FAX (518) 872-2171, WWW: http://members. aol.com/ASWMI/homepage.html

March 14-18: 62nd North American Wildlife and Natural Resources Conference, Omni Shoreham Hotel, Washington, D.C. Contact: Richard McCabe, Wildlife Management Institute, 1101 14th Street, NW, Suite 801, Washington, D.C. 20005, (202) 371-1808, FAX (202) 408-5059.

March 17-21: Ninth Conference on Research and Resource Management in Parks and Public Lands, Albuquerque, NM. Contact: The George Wright Society, P.O. Box 65, Hancock, MI 49930-0065 , (906) 487-9722, e-mail: gws@mail.portup. com, WWW: http://www.portup. com/~gws/gws97.html

April 24-25: 29th Annual Meeting of the Mississippi River Research Consortium, Holiday Inn, La Crosse, WI. Contact: Mark Steingraeber, U.S. Fish and Wildlife Service, Fishery Resources Office, 555 Lester Avenue, Onalaska, WI 54650.

April 28-May 2: 21st Annual Conference of the Association of

State Floodplain Managers, Little Rock, AR. Contact: Executive Office of ASFM, (608) 274-0123.

May 7-8: A Conference on Restoration of Lost Human Uses of the Environment, Washington, DC. Contact: Cecil Consulting, 1300 Two Allen Center, 1200 Smith St., Houston, TX 77002, (713) 646-5589.

May 7-9: An American Wetlands Month Celebration: Communities Working for Wetlands, Alexandria, VA. Sponsored by U.S. Army Corps of Engineers; Bureau of Reclamation and Office of Surface Mining, U.S. Dept. of Interior; USEPA, Wetlands Division, Headquarters and Region 5; Federal Highway Admin., U.S. Dept. of Transportation; NOAA, U.S. Dept. of Commerce; Natural Resources Conservation Service, U.S. Dept. of Agriculture; TVA; Terrene Institute; Wildlife Habitat Council; World Wildlife Fund; and other co-sponsors. Contact Stacey Satagaj, Terrene Institute, 4 Herbert Street, Alexandria, VA 22305. (703) 548-5473. Fax (703) 548-6299. E-Mail: terrene@gnn.com

May 15-16: 24th Annual Conference on Ecosystems Restoration and Creation, Sheraton Grand Hotel in Tampa, FL. Contact: Frederick J. Webb, Dean of Environmental Programs, Hillsborough Community College, Plant City Campus, 1206 N. Park Rd., Plant City, FL 33566, (813) 757-2104.

May 18-21: National Watershed Coalitions Fifth National Watershed Conference, Nugget Hotel, Reno, NV. Contact the NWC at (703) 455-4387.

May 19-20: Wildlife Habitat Council's 1997 Wildlands Conference, Atlanta, GA. Contact: WHC, 1010 Wayne Avenue, Suite 920, Silver Spring, MD 20910, (301) 588-8994, FAX (301) 588-4629, e-mail: whc@cais.com.

May 25-28: GWS, the Eighth Global Warming International Conference and Expo, in New York City. Hosted by Columbia University and the Global Warming International Center USA. Contact: Global Warming International Center, PO. Box 5275, Woodridge, IL 60517,(630) 910-1551; FAX (630) 910-1561.

June 1-6; Society of Wetland Scientists 18th Annual Meeting, Montana State University, Bozeman, Mt. Contact: SWS, P.O. Box 1897, Lawrence, KS 66044, (913) 843-1221, FAX (913) 843-1274.

June 3-4: Pathogens and Diseases of Fish in Aquatic Ecosystems: Implications in Fisheries Management, Portland, OR. Contact: Ray Brunson, Olympia Fish Health Center, U.S. Fish and Wildlife Service, 3704 Griffin Lane, Suite 101, Olympia, WA 98501, (360) 753-9046, FAX (360) 753-9403.

June 3-5: Fisheries Management under Uncertainty - International Symposium, Bergen, Norway. Contact: Ann Gro Vea Salvanes, Dept. of Fisheries and Marine Biology, Univ. of Bergen, Bergen, Norway, Anne.Salvanes@ifm.uib. no.

June 6-9: Society for Conservation Biology 1997 Annual Meeting, University of Victoria, Victoria, B.C., Canada. Contact: Pat McGuire, Conference Management, Div. of Continuing Studies, University of Victoria, Box 3050, Victoria, BC, Canada VOW 3P5, (604) 721-8774, e-mail:SCB97@ uvcs.uvic.ca.

June 29-July 3: Annual Symposium of the American Water Resources Association and the Universities Council on Water Resources, Keystone Resort, Summit County, CO. Contact: AWRA, 950 Herndon Parkway, Suite 300, Herndon, VA 22070-5531, (703) 904-1228; or UCOWR, 4543 Faner Hall, Mailcode 4526, Southern Illinois University - Carbondale, Carbondale, IL 62901-4526, (618) 536-7571

July 14-15: 1997 Rocky Mountain Symposium on Environmental Issues in Oil and Gas Operations, Colorado School of Mines, Golden, CO. Contact: Ms. Sherri Thompson, U.S. BLM, Lakewood, CO 80215, (303) 239-3758, FAX (303) 239-3799, e-mail: sthompso@co0261wp. coso.co.blm.gov

July: III International Symposium on Sturgeon, ENEL Training Centre, Piacenza, Italy. Contact: Dr. P. Bronzi, ENEL spa - CRAM via Monfalcone, 15-20132 Milan (Italy) phone: + +39-2-72243412 or 3452, FAX: + +39-2-72243496, E-mail:bronzi@cram.enel.it.

August 18-20: Wild Trout VI, "Putting the Native Back in Wild Trout", Montana State Univ., Bozeman, MT. Contact: Robert Gresswell, U.S. Forest Service, Pacific Northwest Research Station, 3200 SW Jefferson Way, Corvallis OR 97456, (541) 750-7410, gresswer@ccmail.orst.edu

August 24-28: 127th Annual Meeting of the American Fisheries Society, Monterey, CA. Contact: Paul Brouha, (302) 897-8617, Ext. 209.

Early November 1997: Ecological Restoration as a Key Element of Regional Conservation Strategies - 9th Annual Society for Ecological Restoration Conference , Ft. Lauderdale, FL. Contact: SER, 1207 Seminole Highway, Suite B, Madison, WI 53711, (608) 262-9547

May 23-28, 1998: First International Ictalurid Symposium - Catfish 2000, Davenport, IA. Contact Steve Eder, Missouri Dept. of Conservation, P.O. Box 180, Jefferson City, MO 65109-0180. (573) 751-4115, FAX (573) 526-4047.

Congressional Action Pertinent to the Mississippi River Basin

Agriculture

H.R. 246 (Peterson, D/MN) to restore the authority of the Agriculture Secretary to extend existing and expiring contracts under the **Conservation Reserve Program.**

H.R. 247 (Peterson, D/MN) to allow for a one-year extension on **Conservation Reserve Program** contracts expiring in 1997.

Fish and Wildlife

H.R. 374 (Young, R/AK) amends the **Sikes Act** to enhance fish and wildlife conservation and natural resources management programs.

Flood Insurance

H.R. 230 (McCollum, R/FL) to ensure that insurance against the risk of catastrophic natural disasters, such as hurricanes, earthquakes, floods, and volcanic eruptions, is available and affordable, and to provide for expanded hazard mitigation and relief.

Forests

H.R. 101 (Baker, R/LA) amends the National Forest Foundation Act to extend and increase the matching funds authorization for the foundation, to provide additional administrative support to the foundation, to authorize the use of investment income, and to permit the foundation to license the use of **trademarks, tradenames, and other such devices** to advertise that a person is an official sponsor or supporter of the Forest Service or the National Forest System

Parks

H.R. 104 (Bartlett, R/MD) authorizes the **private ownership and use** of National Park System lands.

H.R. 302 (Skaggs, D/CO) a bill entitled the **"Rocky Mountain National Park Wilderness Act of 1997".**

Takings

H.R. 95 (Solomon, R/NY) to ensure that federal agencies establish the appropriate procedures for assessing whether federal regulations might result in the taking of private property, and to direct the Agriculture Secretary to report to the Congress with respect to such takings under programs of the Department of Agriculture.

Water and Wetlands

H.R. 128 (Crapo, R/ID) to preserve the authority of the states over waters within their boundaries, to delegate the authority of the Congress to the states to regulate water.

H.R. 227 (McCollum, R/FL) directs the Secretary of the Army to conduct a study of mitigation banks.

Source: Land Letter, STATUS REPORT, Vol.16, No.2

River Crossings

Mississippi Interstate Cooperative Resource Association
P.O. Box 774
Bettendorf, IA 52722-0774

Address Correction Requested