River Crossings

Volume 2 January/February 1993 Number 1

Reader Survey

This issue begins the second year of circulation for *River Crossings*. Our mail circulation has now reached 565 copies.

On this first anniversary we thought it was appropriate to check signals and see where the newsletter has been, where it is going, and where we might want it to go in the future.

As part of that effort, we compiled our mailing list into a table showing geographic location and affiliation of our readers. We wanted to see cross-sectionally what types of people and organizations are being reached. That information is summarized for your review later in this issue.

As a second part of our mailing list review we are circulating a mandatory reader survey. It is attached to the mailer of this issue, and will be used to streamline our mailing list by identifying regular readers and those who wish to remain on our mailing list.

In our first year we mailed unsolicited copies to many individuals and groups, and we feel its now time to take a second look at that list. Unless recipients of this issue complete and return our survey, we will assume that *River Crossings* is not being read, and those individuals or groups who do not respond will be removed from our mailing list.

We will continue to mail "*River Crossings*" free of charge to those individuals and groups who respond to the survey.

Interjurisdictional Rivers Bill Update

As the new Congress returned to the 1993 session, efforts are being renewed to introduce and pass what will now be the 1993 version of the "**Cooperative Interjurisdictional Rivers Fisheries Resources Act.**"

As in 1992, the bill will need support from constituents and co-signers. Contacts need to be remade with last year's sponsors and co-signers. It is especially important that a concerted effort be made by MICRA members and supporters to contact their respective Congressmen in order to gain renewed and/or additional support for the bill.

Everyone is also urged to make your support known to Congressman Steve Gunderson in Washington, D.C. (202) 225-5506. If Mr. Gunderson cannot be reached, make your interests known to his staff.

Your contact with Gunderson's office will go a long way toward renewing his efforts and maintaining his enthusiasm. He needs to be made aware, first hand, of the magnitude of support you have for this bill! This is especially important now because (as of this writing) the bill has not yet been reintroduced.

The inside word is that the bill was

looked on very favorably by many members of the last Congress and may be even more widely supported this session. So everyone interested in MICRA needs to get the word out and rally support for the bill as soon as you can!

MICRA Funding

Jack Wingate of Minnesota joined Mike Conlin (IL) and Larry Peterman (MT) in "putting his money" behind MICRA by requesting that his state provide $1500 annual dues.

Wes Sheets has asked the Coordinator to send out a mailing in the near future (as soon as all the bugs are worked out of the joint federal aid project scenario), asking all state Steering Committee members to contribute $1500 annual dues to MICRA, either in the form of a cash contribution or through a joint federal aid project.

The Policy Sub-Committee has not set a dues structure for MICRA, instead the fee is based on willingness and ability of members to pay.

The MICRA treasury is used to fund the printing of "*River Crossings*", and to support various Committee activities and reports, as well as to cover the costs of some of MICRA's promotional activities. The MICRA Paddlefish/Sturgeon Committee (formed last fall) is becoming more active and we can expect to see interest in forming other committees in the not too distant future.

MICRA Paddlefish/Sturgeon Committee

Chairman Kim Graham (MO) has scheduled the second meeting of the Paddlefish/Sturgeon Committee for February 10-12 in Columbia, MO at the Missouri Department of Conservation, Fish and Wildlife Research Center.

The Committee plans to develop a MICRA Strategic Plan for the interjurisdictional management of paddlefish and sturgeon species in

the basin. The Committee will begin that process by developing goals, objectives, and initial tasks for this work.

Pallid Sturgeon Recovery Plan Being Finalized

The official public comment period on the Draft Pallid Sturgeon Recovery Plan ended on October 27, 1992. Of the 48 comment letters received, most were complimentary, but concern was voiced "over plan recommendations to more closely operate main stem dams to simulate the natural hydrograph, to screen industry intakes, to utilize hatcheries as a recovery tool, and to proceed with costly recovery measures until more information is obtained on the

River Crossings

Published by

Mississippi Interstate Cooperative Resource Agreement (MICRA)
608 East Cherry
Columbia, MO 65201

MICRA Chairman
Wes Sheets, Nebraska Game and Parks Commission, Lincoln

MICRA Policy Committee
Wes Sheets, Member at Large
Wayne Pollock, Tennessee Wildlife Resources Agency, Nashville
Jim Fry, Missouri Department of Conservation, Jefferson City
Larry Peterman, Montana Department of Fish, Wildlife and Parks, Helena
Frank Jernejcic, West Virginia Department of Natural Resources, Fairmont
Gary Edwards, U.S. Fish & Wildlife Service, Washington, D.C.

Treasurer
Marion Conover, Iowa Department of Natural Resources, Des Moines

MICRA Coordinator/Executive Secretary and Newsletter Editor
Jerry L. Rasmussen, U.S. Fish & Wildlife Service, Columbia, Missouri

---

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 of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

reasons for species decline".

The Recovery Team is addressing those concerns, and a final plan is proposed for completion early this spring.

Because of concerns about operation of the Pick Sloan power plants, a Midwest Power Producers/ Fish and Wildlife Service communication forum or workshop may be forthcoming.

Contact: Mark Dryer, Recovery Team Leader, (701) 250-4491.

Genetics of Missouri River Pallids Still Unknown

Genetic Analyses, Inc. submitted a quarterly progress report in October to the Corps of Engineers, Omaha, describing the DNA testing to be used on the pallid, shovelnose, and suspected hybrid sturgeon samples collected last season.

Total DNA was extracted from 117 blood samples and quantified. The DNA was extracted using protease digestion, extraction with organic solvents, and ethanol precipitation. Fish erythrocytes contain nuclei and yielded large quantities of DNA. Single Copy Gene Analysis is being utilized because it provides fast, accurate, and unambiguous DNA level markers that are transportable and reproducible. Results should be available next year.

Lack of definitive information from this study is keeping the fate of some 10,000 pallids???, being held at Missouri's Blind Pony fish hatchery, in limbo. This has not been a significant problem over the

winter months, because seasonal cold temperatures caused the fish to quit feeding late last fall. But as temperatures warm, more feed will be required and Missouri will be wanting an answer soon as to whether to stock or bury the fish.

According to informed sources, one offer has been received by Missouri to purchase the fish if they are not pallids for use in commercial markets overseas.

Middle Mississippi River Biologists and Hydrologists Hope to Pursue Cooperative Projects

Missouri and Illinois biologists hope to join forces with St. Louis District Corps of Engineers hydrologists in the next few months to improve fishery habitat on the Middle Mississippi River.

The Middle Mississippi is defined as the 195 mile reach between the confluences of the Missouri River on the north and Ohio River on the south.

This project came as a result of discussions last fall between the MICRA Coordinator, and the St. Louis District's Chief of Planning (Owen Dutt) and Chief Hydrologist (Claude Strauser).

Strauser informed the Coordinator that in recent years, as District hydrologists developed new channel control techniques, they have come to realize that, contrary to previous belief, they do not need to capture all the river's flow in the main channel to maintain the 9-foot navigation channel. Strauser said he has communicated this to some of the state biologists, but has had difficulty getting them to agree on how the river could best be managed to improve fishery habitat while satisfying navigation needs.

The Coordinator suggested that perhaps MICRA could help improve communications and bring biologists and engineers together to develop a mutually satisfactory plan. Dutt and Strauser were interested and meetings are currently being scheduled.

Strauser suggested that he would like to designate the entire 195 mile reach as a research area, and work with biologists to improve fishery habitat, while maintaining the navigation channel. He said that, among other things, it should be possible to create habitat diversity by building islands to create new side channels and slackwater habitats.

He said the obligation of the states and agencies in this venture would be to monitor the biological effects of any habitat/channel management actions. If any project is found to produce undesirable results, modifications could be made until the desired results are obtained.

We applaud Dutt and Strauser on their interest and initiative, and look forward to working with them to improve this important resource.

Corps Navigation Study Gets Underway on the Upper Mississippi and Illinois rivers in the Midst of Controversy

A six-year feasibility study of various navigation improvements on the Upper Mississippi and Illinois rivers unofficially began at a Corps of Engineers Reconnaissance Resolution Conference held in Chicago on December 9th and 10th.

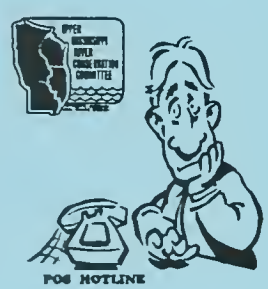
The Chicago meeting had the twofold purpose of (1) gaining Corps' Headquarters approval to proceed to the feasibility phase and (2) soliciting public input into the

proposed feasibility study plan. According to the November/ December UMRCC Newsletter, official approval has not been given, but the three Corps Districts involved have already begun some feasibility phase tasks anyway. Their assumption being that study approval is forthcoming.

The Corps' proposed six-year feasibility study is designed to examine the needs of the entire Upper Mississippi River (UMR) navigation system over the next 50 years and select the best array of navigation improvements. After which a systemic Environmental Impact Statement (EIS) would be completed to determine the environmental effects of recommended improvements. Site specific design work (and a site specific EIS) for each proposed lock and dam would follow.

According to the UMRCC Newsletter, the Corps was strongly criticized by environmental proponents. The UMRCC also noted that even..."Some of the navigation proponents recognized certain environmental insufficiencies in the study plan."

One of the more universal criticisms levied against the Corps was their failure to coordinate with state and federal resource agencies in preparing the environmental agenda of the proposed six- year study. The UMRCC reported in their September/October Newsletter that several elements of the L/D 26 Navigation Effects Plan of Study (POS) were either eliminated or reduced in scope without input from the agencies who originally participated in its development.



The UMRCC, U.S. Fish and Wildlife Service, state natural resource agencies, and others insisted at the Chicago meeting that the environmental study plan, as proposed in the September 1992 Initial Project Management Plan (IPMP), is insufficient to quantify the systemic impacts of increased navigation. In addition to inadequate funding of POS tasks, concerns were raised regarding the ability to complete certain scientific and planning investigations within the proposed study time frame.

In light of the River's tendency to act anything but "normal" for a given investigation, some short-term study results could be based on abnormal data just to meet study schedules. In the past, UMRCC biologists have maintained that at least 3-5 years of study are needed for any research effort to capture what might be considered to be some semblance of "normal" river conditions.

Another common deficiency recognized, by the UMRCC in particular, was the fact that the Corps' study purpose is predominantly the investigation of system-wide navigation improvements, while environmental protection and enhancement are discussed only as subordinate elements. The UMRCC sent the Corps a strong message that the UMR ecosystem should be a co-equal partner with navigation in any long-term planning effort.

According to the UMRCC Newsletter, the current feasibility study is attempting to justify, in one step, a major expansion and renovation of the UMR's nine-foot navigation project. Construction costs resulting from this authorization will most certainly be in the multi-billion dollar range.

Construction cost of the single new, recently completed, Lock and Dam 26 (L/D 26) project at Alton, IL exceeded $1 billion. It should be noted that 1978 estimates for the cost of L/D 26 were around $500 million, but by project completion these costs had escalated to over $1 billion.

With this kind public investment at stake, it shouldn't be difficult, from a cost-benefit perspective, to justify the inclusion of long-range ecosystem management and planning.

The Water Resources Development Act (WRDA) of 1986 recognized the UMR as both a nationally significant ecosystem and transportation system. The UMR environmental community believed then and now that, enhancement aside, it is critical to initiate long range planning for the protection of existing fish and wildlife resources. Because the Corps is the "action agency" proposing development plans that could drastically alter existing environmental conditions, the responsibility to ensure that this planning is funded and completed is largely theirs.

The WRDA, also authorized a 10-year $200 million UMR System Environmental Management Program (EMP), as a compromise to allow for expansion of navigation capacity, and this seems to make inclusion of environmental measures in current efforts mandatory.

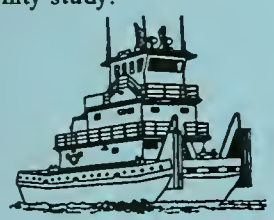
More than 10 years after the construction start for L/D 26, mitigation for systemic impacts has not been addressed. The lack of specific details regarding how mitigation planning would be implemented was also noted by

reviewers as a major study plan deficiency.

According to the UMRCC Newsletter, a Corps' Lower Mississippi Valley Division official has stated that mitigation planning for L/D 26 would not begin until after the limited POS investigations, included in the proposed six-year feasibility study, are completed. So, in effect, the Corps is going to attempt to quantify the systemic impacts of possibly seven expanded locks and dams before they complete the planning for the one 600 foot lock in question at L/D 26. That will be a minimum of sixteen years after construction of L/D 26 was begun and more than six years after construction was completed!

The need to perform an independent (non-Corps of Engineers) transportation needs analysis was also identified. Such an analysis should answer questions such as whether or not an expanded nine-foot channel project is the most economical and practical way to accommodate future transportation needs (i.e. are railroads or other transportation modes more practical when all costs are considered). This was also an issue in the 1960's and 70's when L/D 26 was first proposed, but was not adequately addressed.

Some prominent towing industry representatives called for speeding up project development by authorizing site specific design work before completion of the six year system feasibility study! Proponents argued that unless the planning schedule was speeded up, major traffic congestion would occur that would cost the towing industry millions of dollars annually, not to mention the increased likelihood of accidents, etc.



This was the same argument industry leaders made in the 1970s when the L/D 26 issue was being addressed by development of a major Master Plan. They used this argument to bring political pressure on the Master Plan's Environmental Work Team and caused environmental studies to be short-circuited in order to speed lock construction. Consequently, environmental impacts could not be adequately addressed, and this created the need for the political compromise which produced the 10-year, $200 million EMP, authorized by the WRDA '86.

Unfortunately, little evaluation of the effects of navigation has been completed in the interim, either by the Corps or the EMP. So it would seem that we are "back to square one" in what seems to have become somewhat of a game, perhaps called, "How to avoid assessing the environmental impacts of expanded navigation on the UMR".

This time, however according to the UMRCC Newsletter, some navigation proponents have indicated a willingness to work with the environmental community in achieving its goals, provided that this work does not cause delays in study progress. The Midwest Area River Coalition (MARC 2000), representing a number of river dependent interests, "...even chided the study plan because of the way the navigation impacts studies were reduced in scope."

As stated in the UMRCC Newsletter, "Biologists would do well to maintain an open dialogue with reasonable navigation interests, such as MARC 2000. The avoid and minimize program now underway in the St. Louis District is a good example of how such a dialogue can accomplish positive results."

The UMRCC is reportedly taking a a "wait and see" attitude regarding the Corps' response to the comments received at the December 9th meeting. That response will likely determine how far the Corps of Engineers is willing to go in addressing environmental concerns.

River Crossings carried an article in our September/October issue entitled, "The Corps of Engineers' New Environmental Ethic", as described by Colonel Gaylerd E. Davis, Deputy Commander of the Missouri River Corps of Engineers in Omaha, speaking for the Chief of Engineers in Washington, at the Annual Meeting of the American Fisheries Society. The reader is referred to that article.

What Colonel Davis described does not at all appear to be what we are witnessing on the UMR navigation study. We thought Colonel Davis' comments showed promise for the future. We hope we were right! What is happening with navigation planning on the UMR has basinwide implications which fishery biologists should be watching very carefully across the basin.

The Corps' reluctance to address the systemic impacts of navigation expansion on the UMR environment puzzles us. Are they afraid of what might be found? Are they concerned that basinwide implications may be exposed by scientific studies that would be best kept under wraps?

This may be an issue MICRA, or interested states outside of the UMR, may wish to investigate further and voice an opinion on, since navigation expansion has both site-specific and system-wide impacts (both economically and environmentally) that could drastically affect fisheries resources.

In the words of Mark Heywood,

UMRCC Chairman, "These concerns beg the question 'If costs associated with commercial navigation include the costs of environmental losses, other shipping alternatives may exist, and the demand for shipping may not increase as projected. Is it (then) really most economical to society as a whole to continue with multi-billion dollar expenditures for navigation improvements?' If we haven't looked at all the costs and alternatives, and it appears we haven't, we should question the wisdom of moving forward."

The questions raised by Mr. Heywood, and others, are not new. They are the same questions that were posed by the environmental community in the 1960s, 70s, and 80's. Some of us are old enough and have been around long enough to remember!

So as we move into the decade of the 1990's, will we see a "new environmental ethic" in the Corps, or will history repeat itself as the two sides gear up for yet another confrontation. Let's hope we can move forward with the "new environmental ethic", as Colonel Davis described last fall!

Written copies of Colonel Davis' remarks are available upon request from the Coordinator's office.

Source: The UMRCC News Letter, November/December 1992, Upper Mississippi River Conservation Committee, 4469 48th Avenue Court, Rock Island, IL 61201.

Environmental Groups Oppose Multi-Billion Dollar Expansion of Locks and Dams System on the Upper Mississippi and Illinois Rivers

A news release dated, Wednesday, December 9, 1992 from the Midwest Office of the Izaak Walton League of America (IWLA) stated that a number of national and local environmental groups have accused the Bush Administration of "a rush to judgement ...that will set a course to spend several billion dollars" on a U.S. Army Corps of Engineers proposal to build what would be the *"most expensive expansion of a waterway's navigation capacity in our nation's history"*.

Paul Hansen, director of The IWLA Midwest Regional Office said, "It is entirely inappropriate for a lame duck administration to be making a determination to go forward on an environmentally destructive pork barrel project of this magnitude, especially before there has been any independent analysis on whether the project is really necessary or a comparison of what a similar investment in a range of transportation alternatives might yield. This project will likely destroy much of the remaining recreational and biological value of the rivers. While the Corps calls this a feasibility study process, we know from experience that it is actually a justification process."

The groups, including the Izaak Walton League of America (IWLA), Sierra Club, Quad Cities Conservation Alliance and American Rivers, Inc., made their announcement at the December 9th public meeting held by the Corps to discuss their proposed plan to add 1200' locks at up to 16 sites on the Upper Mississippi and Illinois rivers. The new 1200' locks would speed lockage of the maximum size 15 barge tows using the river by permitting lockage without breaking the tow in two to fit through the current 600' locks. This would have the potential of doubling the current capacity of the system, thus doubling the impacts of tow passage on the environment.

The statement of the joint environmental groups called for a full investigation of alternative modes of commodity transport by an objective and independent group. Their statement said that this investigation should precede any additional spending on plans for navigation expansion.

They also called on Congress "...to obtain an independent analysis of the data and assumptions used by the Corps to justify a navigation expansion of this scale. The Corps' projections of future traffic have been disputed for many years. Agricultural products make up close to one-half of the commodities on the river, and there is simply not

enough new cropland to put into production to justify the increases in commodity transport envisioned in this plan. No evidence has been provided to indicate that any increased need that does occur could not be absorbed by the Duluth/Superior port, or other alternatives."

"Congress should also obtain an investigation into what a similar investment in a range of transportation alternatives might yield. These should include a number of measures already being discussed by planners and natural resource officials in the region: 1) improvements in other existing regional infrastructure, such as highways or rail lines, some of which are currently under-utilized; 2) improvements in alternative access to divert cargo and increase utilization of the infrastructure of existing ports, such as Duluth, St. Louis or Chicago, some of which are also currently under-utilized;

3) construction of a 21st century infrastructure, such as high speed trains or pneumatic pipelines; and/or 4) rebuilding the navigation fleet rather than the navigation infrastructure with 21st century materials to enable cargo to be carried in vessels with only a six-foot draft."

According to the group's statement, "... both measures 3 and 4 could have the added advantage of eventually allowing a phased dismantling of the locks and dam system -- reducing operational costs and returning much of the river system to a free-flowing state. Biologists have been documenting a frightening decline in river species and habitat in recent years, and feel that the future of the river's environment depends on the establishment of a new hydrologic regime."

They propose "... an analysis, which would be performed by the National Research Council and funded by the Corps, to study the alternative approaches to navigation, the assumptions and the economics of managing the UMRS for both navigation and the environment. Costs of the study could be diverted from the Corps' Initial Project Management Plan (IPMP) proposed budget of $600,000 for the Corps and the public to exchange information about the plan. The public groups we represent would much rather see this money spent on a meaningful study of the real costs and alternatives to this project by some of the nation's best scientists, as represented by the National Research Council of the National Academy of Sciences, than on another meaningless round of public comments and meetings with the Corps that will almost certainly be ignored. The environmental community does not have the resources nor the intention of participating in another protracted 'public involvement' exercise that past experience has shown us will not result in any significant action.

'This analysis should also assess the economic benefit to the environment, and to recreation in the region, that would accrue from not building this project. The Upper Mississippi River between St. Louis and St. Paul alone contains over 500 river miles and 236,000 acres of national wildlife refuge, as well as over 60 state conservation areas. It is home to millions of wading birds, is breeding grounds and wintering grounds for the endangered bald eagle and is crucial migratory habitat for as much as 40% of the nation's remaining waterfowl. The Upper Mississippi River Wildlife and Fish Refuge alone experiences more visitor days per year than Yellowstone National Park.

'The Illinois River once supported an enormous hunting, fishing and wildlife recreation industry, but has

lost much of this industry due to the dramatic decline in water quality and habitat in recent years, due in large part to the effects of navigation.

'As our population grows, the recreational value of wildlife, lands and rivers is skyrocketing. Over the life of this proposed project, the economic value of these rivers for recreation may be of much greater value than the continued use of the river for commodities transport, especially if alternative means can be identified and developed. For example, in their Strategic Plan for Illinois Fisheries Resources, the Illinois Department of Conservation concluded that demand for sport fishing exceeds supply by 50% and will exceed supply by 85% in the year 2000. While there are alternative means

available for moving our goods, we can create no more prime recreational opportunities and

wildlife habitat, such as the restoration of this river could provide.

'We have already seen several cases where the public spent hundreds of millions of dollars on navigation expansion in areas where it was not needed and where recreational value of the waterway far exceeded the value of commodity transport. Two rivers were destroyed to construct the massive Tennessee - Tombigbee Waterway, but the primary value of the project today is for recreational boating -- a value that existed prior to construction. Closer to home, the Lower Kaskaskia was channelized, destroying much of its recreational value, but was never utilized for navigation at the levels predicted. On the Missouri River, states are suing the Corps to maintain water levels because the water has a much greater economic value to the state for recreation than for commodity transport.

'Even though Congress has repeatedly mandated that the UMRS be managed for both navigation and the environment, there has been a neglect of the biological and recreational resources of the river's environment for many years. The future of the river is put at additional jeopardy by the Corps of Engineers each time a new navigation improvement project is built, when a series of environmental promises are made, but are never kept. A study to identify mitigation needs for the most recent of these projects, construction of a second lock at Locks and Dam 26, has not even been started, even though the construction on the navigation project began years ago.

'Similarly, forty-three simple and generally low cost measures to 'avoid and minimize' the environmental impacts of navigation were identified by the U.S. Fish and Wildlife Service in 1986, but, in spite of a series of promises, few of these measures have been implemented. Information on the status of these measures has not been provided to the environmental community despite repeated requests to the Corps. Overall, while there has been some environmental planning, there has been little to no environmental doing.

'It is our conclusion, based on the past 20 years of our involvement with navigation expansion projects, that the Mississippi and Illinois River ecosystem will be largely destroyed as a significant biological and recreational resource if these projects are approved. A proposed navigation expansion of this scope and magnitude puts this river system, its environment, and its people at a critical juncture. The crucial decision on whether to proceed with this project must be made on the basis of the best possible information, not on pork barrel analyses of the past. It is time for change and a new approach to the management of this magnificent part of our natural heritage."

The IWLA is a national conservation organization with a long history of action on environmental threats to the extensive fish and wildlife habitat of the Upper Mississippi and Illinois Rivers. They are the group who took the initial stand against expanded navigation capacity on the Upper Miss in the early 1920's. It was their work that resulted in creation of the extensive Upper Mississippi River National Wildlife and Fish Refuge. Their interest in the 1920's was to protect the

spawning grounds of northern pike and smallmouth bass.

An updated list of environmental groups signing on to this statement, or a list of state agency contacts, are available at the IWLA Midwest Office (612) 922-1608.

Tow Fined For Dumping Sewage

The American Milling Company of Alton, IL, owner of the towboat "Eastern", has agreed to pay more than $98,000 for dumping sewage into the Upper Mississippi River. Coast Guard Officials, inspecting the tow after it collided with the I-80 bridge near LeClaire, IA, found that one of the boat's toilets was discharging directly into the river instead of into a holding tank as required by law. The tow captain testified that he was not aware of the problem.

Source: The UMRCC News Letter, November/December 1992.

Towboats Collide on the Mississippi

The Associated Press reported (12-24-92) that two towboats collided on the Mississippi River near Cape Girardeau on December 22nd, scattering 20 barges and spilling up to 700 tons of liquid fertilizer.

The river channel was closed until one barge, which had sunk, could be located. The Coast Guard told downstream municipalities from Cape Girardeau to Paducah, KY, to close water intakes as a precaution.

The head-on collision between the Merlin Banta and the Ralph Plagge ripped a 50-foot hole into the side of the barge carrying ammonium nitrate, a liquid fertilizer, and sank another barge loaded with scrap metal, the Coast Guard said.

The collision happened about 13 miles north of Cape Girardeau

shortly before midnight. Chief Petty Officer Larry Lawrence of the Coast Guard said a three-mile section of the river had to be temporarily closed to traffic.

Chuck Brutlag, a spokesman for the Illinois Environmental Protection Agency, said state officials were aware of the spill but because the fertilizer dissolves in water, there was no way to recover the chemical. He said ammonium nitrate could be toxic to aquatic life.

Lawrence said the cause of the accident was under investigation. The Merlin Banta, owned by Plaquemine Towing Corp. of Sunshine, La., was heading up river pushing four barges and the Ralph Plagge, owned by Midland Enterprises Inc. of Cincinnati, was pushing down river with 19 barges when the collision occurred.

Source: Kansas City Star, 12-24-92

Izaak Walton League of America Calls for Double-hulled Barges on the Upper Mississippi

Nearly 4 billion gallons of oil, petroleum products, fertilizer, jet fuel, asphalt, chemicals, and other hazardous chemicals are transported each year on barges along the Upper Mississippi River (UMR) alone. This is nearly 160 times the amount spilled recently in the northern British Isles, Shetland Island incident. Based on U.S. Coast Guard records, the Izaak Walton League of America (IWLA) estimates 20 percent of the hazardous materials hauled on the UMR are hauled in single-hulled barges.

The IWLA is moving to force single-hulled barges off the Upper Mississippi according to IWLA Midwest Regional Representative Paul Hansen. Hansen will soon ask lawmakers in Iowa, Illinois, Wisconsin and Minnesota to back a bill that would require new state permits and fees for barges using the Mississippi and Illinois rivers.

"Fees for single-hull barges would be twice the amount for the double-hulled models, which cut the likelihood of a spill by 50 percent," Hansen said.

"The money would be used to pay for spill cleanups, and possibly for grants or loans for companies willing to switch immediately to double-hulled barges", Hansen said.

A federal law passed after the Exxon Valdez spill off Alaska bans

the use of single-hulled models after the year 2015; new barges have to have two hulls. Hansen said the law also allows states to charge fees and require permits that would allow them to check the safety of the barges.

However, Paul Werner of The American Waterways Operators, a barge-industry group, says the bill would duplicate the work of the U.S. Coast Guard, which already heavily regulates barges. Federal fees already are used to finance cleanups, he added, and much of the most hazardous material is already carried in double-hulled barges.

He said the industry's record is good, with 40 spills totaling 4,200 gallons from 1981 to 1990 in the upper Mississippi refuge. Of the 40 spills, nine were related to hull problems. The fees could lead firms to shift cargo to trucks and railroads, which spill more than barges, he said.

The single hulls vary in thickness from three-eighths to 1.5 inches, Werner said. In a double hull, the two layers are separated by two to four feet at various points.

Hansen says the barge group's study of 40 spills did not include all of the river. He adds that tows carrying one million gallons of hazardous materials are common in Iowa. "There is nowhere else in the United States where this much hazardous cargo is allowed to be transported in single-hull barges through such wildlife-rich lands."

The single-hulled barges threaten public water supplies as well as recreation, Hansen said. Also, "The wrong toxin could wipe out most of the canvasback ducks as well as kill fish and cause other problems", he said.

Hansen said the upper Mississippi and Illinois rivers include about 236,000 acres of national wildlife refuge and more than 60 state conservation areas that are used by roughly 40 percent of the nation's migratory waterfowl in the spring and fall.

Hansen said U.S. Fish and Wildlife Service officials have said it would be "basically impossible" to clean up a spill in the swift-moving Mississippi and its shallow, ecologically productive backwaters.

A new study by the Congress-formed Towing Safety Advisory Committee of both the Upper Mississippi and the Mark Twain

refuges found 97 hazardous cargo spills from 1981 to 1990. Sixteen spills totaling 7,000 gallons were related to hull problems on either single- or double-hulled barges, but the group said double hulls would have helped in fewer than 1 percent of the incidents.

A study conducted by the Illinois Department of Energy and Natural Resources documented 371 spills of hazardous materials in the Mississippi River bordering that state between 1974 and 1989. Most of these spills occurred near East St. Louis.

Source: Des Moines Register, 1-16-93, and The Leader (Davenport, IA), 12-23-92.

Missouri River Recreation Update

Last month "*River Crossings*" included an article entitled, "Missouri River Recreation (in Nebraska?)". Larry Hesse, Nebraska Game and Parks Commission biologist, wrote us and asked that the following clarification be printed in this issue. We're more than happy to do so:

"I am writing this to clarify a few points made in Volume 1 (6) of *River Crossings*. We have continued to work with the 1992 recreational use data for the Missouri River along Nebraska and we have some updated values to share. The study covered 385 miles of river and the value has been increased from the original draft report to between $35.5 and $51.7 million dollars annually. It is important to point out that these are not expenditure dollars but National Economic Development (NED) value calculated with unit-day value estimates derived by the Corps of Engineers. We reported actual expenditures to be $380 million, which is nearly double that reported for the upper Mississippi along eastern Iowa if those figures are also truly expenditure data (I haven't seen the report).

'As for whether Nebraska's data is accurate or not: the 75% probability level confidence interval around our total man-hour estimate of 11.6 million for May through August was plus or minus 14%. This represents a measure of accuracy.

'I am sure the upper Mississippi is or was a very lovely place. However, I must take exception with the statement in *River Crossings* 1 (6) "It is doubtful that the Missouri River could ever achieve the status of the Upper Mississippi." If recreational use is an indicator its already surpassed it. The Missouri along Nebraska is in deplorable condition. We have historical data which suggests that a whole group of native fish needs to be reviewed for state listing including flathead chub, silver chub, sicklefin chub,

sturgeon chub, plains minnow, western silvery minnow, burbot, sauger, blue catfish, flathead catfish, blue sucker, shortnose gar, longnose gar, paddlefish, shovelnose sturgeon, and lake sturgeon as a starter.

'During 1992 only 106 sauger were caught in the tailwaters of Gavins Point Dam, while in 1962, 284,156 sauger were caught in the tailwater

only several years after the dam was closed. In the winter of 1958, before the Missouri was channelized north of Omaha, the ice fishing catch rate was 1.7 fish per hour; 64% were sauger, 24% were crappie and 12% were largemouth bass.

'Imagine the recreational use today with fishing of that magnitude. I found the following quote in the Yankton, SD newspaper published 5 August 1862: 'Katphish of fabulous dimensions are being taken from the placid waters of the 'Big Mo' about these times. A great many of them weigh two and three hundred pounds!'

The Missouri River may have been the 'junk yard dog' of rivers in North America; it was wild, it was full of dirt, it was full of snags, apparently it was full of fish as well. Being a bit of a junk yard dog myself, I choose to believe the Missouri River has 'status'."

We agree with you Larry, and apologize if our comparisons between the Upper Mississippi and Missouri River seemed to put a negative light on the "Big Muddy".

For further details contact: Larry W. Hesse, Nebraska Game and Parks Commission, Norfolk, NE 68701-0934, (402) 370-3374.

Restoring Native Fisheries in the Missouri River (a project using organic waste)

The Missouri River has changed dramatically during the 20th Century. According to a Nebraska Game and Parks Commission project brochure, "...these changes have been wrought by some 75 dams built on the river's mainstem and tributaries to control flooding

and provide for commercial navigation. Historically, immense spring floods 'worked' the banks of this once wild river, eroding its banks and felling huge cottonwoods and carrying a diversity of smaller herbs and grasses into its waters.

'Plants constantly fell into the river, and we know now that this was an essential process. Rivers like the Missouri depended on plants living along its floodplain as a source of carbon, nitrogen, phosphorous and other essential elements. Carbon, in fact, is the basic element in all living organisms. Unlike lakes which usually have high populations of rooted aquatic plants and microscopic plants, called phytoplankton, rivers often depend on their lateral relationship with floodplain terrestrial plants to obtain nutrients.

'The Missouri River fish community has declined 80% from the level it was in 1940. The Big Mo was home to 156 species of native fish, including some that grew to immense size. Blue catfish, flathead catfish, channel catfish, paddlefish, lake sturgeon, pallid sturgeon, bigmouth buffalo, smallmouth

buffalo, blue sucker and several types of gar were often huge. Some were known to exceed 300 pounds in weight. This immense biomass of fish was directly related to the availability of plant production on the floodplain. When damming stopped the major floods, and channelization prevented the river from meandering, the link was severed between the food chain of fish communities with the sun's energy stored in the carbon bonds of floodplain plant communities.

'For 40 years regulations have prohibited putting organic materials in our rivers because of the fear of water pollution and concern about impeding navigation. However, today biologists believe efforts went too far. These earlier actions

inadvertently contributed to the reduction of valuable fisheries and had a negative impact on the entire ecosystem.

'It is possible to correct some of this loss without restoring the largest and most destructive flooding. Communities along the river produce an abundance of grass, leaves, and trees that are currently disposed of in our overflowing landfills. There is a better way to dispose of these organic materials. " Game and Parks Commission fisheries managers are proposing a three year (1993-95) pilot project to shred and place this material in the Missouri River where aquatic communities can utilize it and flourish as additional carbon and nutrients become available.

'In addition, large storm-damaged trees would be used whole, where they are available. These trees would have to be 18 inches minimum diameter at breast height, multiple branched, and 40 feet long to be placed in the river to restore in-stream habitat. The Missouri once had millions of large trees in the channels. They were essential habitat for fish and fish food organisms, which included mayflies and caddisflies."

According to Gene Zuerlein, Nebraska Assistant Fisheries Chief, "There seems to be a lot of light bulbs going on around here, especially with organizations who view this as one method to help prolong the life of landfills. We view the tree snags as one source of carbon, places for macro-invertebrates to colonize, and of course a lot of fish habitat."

Nebraska's brochure recognizes that "There are concerns with the project. People use chemicals on their lawns, and chemically contaminated material cannot be accepted for river restoration work. Large snags in the river channel will necessitate careful boating to avoid damage and injury. Water clarity will decrease somewhat, as organic matter is restored.

'However, the quality of river water may actually improve because organic matter will help bind up some contaminants already dissolved in the river. More importantly, biologist believe that without this project the future of native Missouri River fishes is bleak indeed and will impact on human use of this valuable natural, renewable resource.

'This program requires people to review their thinking about how large rivers in the Great Plains function. There will be setbacks along the road to recovery of this unique and valuable resource. Competing users will have to find ways to share the river, if the needs of native fish communities are to be met."

State and federal agencies working with the Nebraska Game and Parks Commission to develop this pilot project include: Nebraska Department of Environmental Quality, Nebraska Natural Resources Districts, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and the National Park Service.

Several things have been said about the project by both its supporters and critics. "It is new, it is innovative, and it is somewhat controversial." Not all biologists in the states bordering the Missouri River agree with Nebraska biologists. Also some utility, water supply, and water intake managers have expressed concern about the project. But as Nebraska's brochure concludes it is "Time to Give Back".

"Missouri Basin settlers depended on this great river for food, fuel, and transportation. The river gave freely, it's time to give something back. If this pilot project is successful, it potentially could be applied to other mainstem tributaries such as the Platte, Elkhorn, Niobrara, Big Nemaha, the Loups, and other important tributaries in Nebraska and adjacent states."

More information on the project can be obtained by contacting Larry Hesse, Project Leader, District III, Nebraska Game and Parks Commission, P.O. Box 934, Norfolk, NE 68702-0934, (402) 370-3374.

Where Have All the Upper Mississippi River Bass Gone?

According to a January 17th article in the Quad-City Times (Davenport, IA), the most frequent question bass fishermen along the Iowa reach of the Upper Mississippi have been asking about the 1992 angling season is, "Where have all the bass gone?"

Iowa and Illinois biologists respond by telling fishermen not to blame size limits, weather, moon phases or sunspots for poor fishing. They say, "It's simpler -- and more complex-- than that."

"A natural system like this has some fluctuations in numbers," said John Pitlo, a fisheries biologist for the Iowa Department of Natural Resources (DNR) who has studied Mississippi River bass for the past decade. "There are normal ups and downs in the system."

He and Tom Boland, another Iowa DNR fisheries biologist, believe that the shortage of bass last year was due to non-specific environmental conditions. Electroshocking collections in Brown's Lake (a backwater near Bellevue, Iowa) were down 40 per-cent from 1991, for example. But there were fewer of all sizes of fish, suggesting there is not just a shortage of keepers 14 inches long or longer.

Some fishermen spoiled by great fishing in 1988 and 1989 may have forgotten how mediocre river fishing was before that, Pitlo suggested. Record droughts those years concentrated the fish and made good fishing easy. During the drought years, electroshocking collections were up 50 percent from 1987.

Some fishermen think that length limits on bass may be to blame. Others suggest that fishing should be prohibited during the spawning season, when bass are on their nests and easier to catch.

But Dan Sallee, biologist with the Illinois Department of Conservation, told members of Quad-City In-Fisherman earlier this month that fishing limits during the spawn historically have not helped fish populations.

Another short-term factor is water availability. In drought years, bass have fewer spawning areas and produce fewer young, Sallee said.

Iowa biologist John Pitlo used radio telemetry equipment this summer to track the movements of largemouth bass. According to Pitlo, over wintering habitat seems to be the limiting factor for bass populations. "Habitat is the critical, long-term factor for bass and many other fish species, he said, but winter habitat may be the most vital of all".

Pitlo's studies of transmitter-tagged bass have shown that the largemouth will travel nearly 10 miles to over-wintering sites, and few adequate sites remain.

These sites are in backwater areas where there is no current, and deep holes with plenty of oxygen. "More than 5,000 bass may spend the winter nestled in these 30- to 100-acre areas", he said.

Bluegills, crappies and other members of the sunfish family also congregate there. He wouldn't reveal their locations for obvious reasons. "These over-wintering sites are silting in, due to sedimentation from the lock and dam system", he said.

"Fish are no different than pheasants and quail," Pitlo said. "They need cover. We need to do something drastic...We need to restore our backwater lakes. Habitat is the bottom line."

"Bass, bluegill and crappie populations will decline if backwaters continue to fill with sediment", Pitlo said. Those areas are reaching the critical stage.

According to Tom Boland, efforts are under way to get more funding for habitat improvements, such as the recently constructed $1.6 million

restoration project at Brown's Lake. Spring Lake near Savanna, IL, another backwater area, is slated for a $5 million rehabilitation.

Pitlo and Boland said they are puzzled that the U.S. Army Corps of Engineers can get funding for navigation work, and now is considering a plan to expand some of the locks and dams, while conservation projects struggle for financial aid.

However, the Upper Mississippi River currently does have a $200 million Environmental Management Program (EMP) being funded by Congress through the Corps of Engineers to collect scientific data, and to develop habitat improvement projects such as described by Pitlo and Boland.

But fisheries biologists have been frustrated in getting fisheries projects funded through the EMP, even though it was largely justified by fisheries needs identified in the the Upper Mississippi River Master Plan, developed by state and federal agencies between 1978 and 1981.

Part of this frustration has been caused by the fact that, federal cost-sharing formulas (imposed by the Reagan Administration) have caused most EMP projects to be constructed on National Wildlife Refuge lands. Any time a project has been built on federal refuges it has had to meet refuge objectives, which place the highest priority on the needs of waterfowl (i.e. shallow or moist soil habitats). Unfortunately fish do not survive the winter well in shallow water and moist soils!

Many of our nation's rivers are facing similar backwater habitat loss. This is especially true for those which support slackwater navigation projects. Improved backwater management is essential in all of these rivers if we hope to maintain quality fisheries.

Since fisheries management has not been compatible with management for waterfowl, traditional wildlife refuges have not proven very useful in maintaining viable fishery habitats. Many fisheries biologists have thus begun to consider the need for establishment of some kind of riverine fisheries management or refuge system. This concept may be the only way we can hope to save our native riverine fishes. Such a system could also provide enhanced fishing, which is often discouraged by waterfowl managers.

The Fish and Wildlife Service's Enhancement Office in Bismarck, ND has announced that the sturgeon chub, sicklefin chub, and blue sucker are currently under review, and may soon be listed on the federally threatened and endangered fish list. As more and more fish species become threatened or endangered, a national fish refuge system may be the only reasonable alternative available to save these and other endangered and threatened fish species.

Major Hydropower Deal Made With Michigan Utility

In late November the Michigan Department of Natural Resources and several other resource agencies signed an agreement with Consumers Power Company, the state's largest hydroelectric supplier, limiting harmful operations of dams on trout streams.

The agreement is the result of several years of negotiations and has been signed by both the U.S. Forest Service and U.S. Fish and Wildlife Service, but is awaiting approval of the Federal Energy Regulatory Commission (FERC).

FERC currently is considering applications to relicense Consumers' dams and about two dozen other Michigan hydropower dams. This is the first time these licenses have come up for renewal since the dams were built more than 80 years ago.

If approved, the agreed to restrictions would remain in force for the life of the 30-year licenses. The agreement requires:

- Contributions of up to $17.25 million to the state fund for restoring fish habitat and improving water quality.

- Payment of $5 million to design and build protection devices to minimize loss of fish in dams.

- Construction of $2.5 million worth of new or upgraded recreational facilities along the rivers.

- Dedication of $3.25 million to stabilize stream and reservoir banks, control soil erosion and gauge streams.

- Funding of $1 million worth of land management planning for each river with attention to recreation, endangered and sensitive species, wildlife and habitat, forestry management, historic and archeological resources, and access for handicapped and disabled people.

- Reimbursement of up to $100,000 a year to the state for monitoring compliance.

- Allocation of $750,000 to remove Stronach Dam and restore Pine River banks if removal of the dam proves advisable.

• Reimbursement of up to $315,000 to state and federal agencies annually for operating and maintaining public campgrounds, tourist sites, launches and other recreational facilities on Consumers Power land.

• Installation of fish ladders if and when they are called for by state and federal fisheries agencies.

• Modification of dam operations to minimize impact on riverbanks, fish and spawning areas.

• Payment for any natural resource damage caused by failing to comply with state water quality limits.

• Establishment of a trust fund for each dam to assure proper management if the dam is taken out of service.

• Monitoring of water and sediment quality every five years.

According to Rich Greenwood, the biologist who handled the agreement for the U.S. Fish and Wildlife Service, "This is going to set the precedent for lots of hydro projects, not just in Michigan, but throughout the Great Lakes and the whole nation."

Environmental groups have praised the utility for coming to terms with the state and federal regulators after only a year of negotiations. However, some fear that the agreement may not be approved by FERC because of its national ramifications. So most folks are taking a wait and see attitude until that decision is known.

Source: Flint Journal, 11-26-92, Kalamazoo Gazette, 11-26-92, and Lansing State Journal, 11-29-92.

Stemming the Spread of the Zebra Mussel

State and federal biologists are working on a plan to stop, or at least slow the spread of zebra mussels on the upper St. Croix River. The St. Croix is a national wild and scenic river, tributary to the Mississippi, and forms the shared border between Minnesota and Wisconsin, above its confluence with the Mississippi.

Besides being of National importance as a wild and scenic river, it also supports some 28 species of freshwater mussels, several of which are rare or endangered. The lower reach of the St. Croix is also commercially navigable, supporting one small barge terminal.

The zebra mussel control plan being developed jointly by National Park Service, U.S. Fish & Wildlife Service, Minnesota and Wisconsin biologists is intended to educate boaters against spreading the mussels into the wild and scenic portion of the river by attaching themselves to fishermen's boats.

According to an Associated Press article in the Saint Paul Pioneer Press, publicity will begin to appear in April before the boating season begins. Tom Lovejoy, Wisconsin Department of Natural Resources biologist was quoted as saying that "biologists also want to develop a long-term plan that may eventually require some restrictions on navigation". Lovejoy said that for now boaters and fishermen will be told ways to prevent transporting the mussels, such as cleaning boat hulls and draining bait buckets. However, he added, "I don't think any of the agency people feel that ultimately we're going to keep the zebra mussel from the St. Croix, but let's slow it down as long as we can."

Paul Burke, a U.S. Fish & Wildlife Service biologist, told *"River Crossings"* that just slowing down the spread of zebra mussels will be enough success to make the effort worth while. He added that at least one local power company has expressed interest in making their heated effluent waters available to spray down boats after leaving the lower St. Croix and heading upstream by trailer in hopes the hot water will kill any attached mussels. Small boats have to be trailered, or transported by other means to reach upstream pools.

A major problem with implementing the plan, according to Burke, however, is finding adequate funding to print informational brochures, to provide manpower necessary for educational efforts, and to man inspection and control stations, etc.

Federal and state resource agencies are, of course, reluctant to use scarce resource management funds to correct the zebra mussel problem; especially since it was caused by users who already compete with their interests (i.e. the commercial navigation industry).

It is widely accepted that the mussel reached the U.S. via deep draft commercial vessels which filled their ballast tanks with contaminated water in Europe, and then after their trans-Atlantic trip, emptied the contaminated bilge water into the Great Lakes.

The zebra mussel reached the Mississippi River by way of the Sanitary and Ship canal connecting Lake Michigan with the Illinois River, either attached to barges and large recreational vessels, or simply by riding downstream currents. Once in the Illinois River, it was a simple matter for the zebra mussel to continue drifting downstream to the Mississippi, or to travel by way of attachment to commercial barge hulls and large recreational craft

transiting the system. Fish and Wildlife Service biologists recently reported finding adult zebra mussels attached to riverine habitat as far downstream as Vicksburg, MS.

However, transport upstream in the Mississippi created a more significant challenge for the zebra mussel. It might have been years before the mussel could have traveled the some 600 miles upstream from the Illinois/ Mississippi River confluence to the St. Croix if it had to rely on natural means or attaching itself to the few recreational craft which travel the entire distance upstream.

However, the regular movement of commercial barges made the task easy, and the zebra mussel was carried to the very doorstep of the St. Croix as well as to all the Mississippi River tributaries in record time. Several hundred were found attached to barge hulls at a barge cleaning facility in St. Paul last summer (upstream from the Mississippi's confluence with the St. Croix).

As such, this is a classic example of the systemic impacts of navigation traffic, an issue which Upper Mississippi River biologists have been wrestling with since the mid 1970's when Congress funded development of an Upper Mississippi River Master Plan (See related articles on navigation concerns in this issue of *River Crossings*).

This being the case, it seems that St. Croix River biologists should look no further than the Corps of Engineers and the towing industry for the funds to pay for measures which might be used to "stem the spread" of the zebra mussel.

Certainly, the economic burden of zebra mussel control should not fall to the fishermen, hunters, boaters, recreationists, and mussel industry who are being impacted by the zebra mussel invasion.

It will be interesting to watch this issue play out on the St. Croix and elsewhere.

In the meantime, reports have been coming in that a close relative of the zebra mussel, the *quagga mussel* has appeared in the Great Lakes, also presumably as a stowaway, hitching a ride in the bilge water of trans-Atlantic ships.

Similar in appearance and habits to the zebra mussel, the question now is, "How long will it be before the new invader finds its way to entire Great Lakes System and to the nation's rivers?."

Persons interested in more information can contact Paul Burke at U.S. Fish & Wildlife Service, 4101 E. 80th St., Bloomington, MN 55425-1665, (612) 290-3131.

Documenting the Spread of Exotic Species

Bill Bertrand, Illinois Department of Conservation and past committee chairman of the American Fisheries Society, North Central Division Rivers and Streams Committee (RSC) has proposed that the RSC begin to document the spread of exotic species in rivers and streams of the north central states.

Bertrand says that experience tells him that specimens of exotic species collected by field biologists are not necessarily reported to anyone other than in casual conversation, or they are reported to someone who is not further "spreading the word".

Bertrand is requesting that RSC members report their and their colleague's exotic species collections to the RSC Chairman. The Chairman would then assemble the information into visuals such as range maps which might be passed on to members at meetings or to others by special request. Bertrand's concerns include all aquatic species being introduced accidentally such as the zebra mussel, but also species being introduced by a growing aquaculture industry and its impact on the genetic integrity of existing fish stocks.

Bertrand said, "This would put all of us a 'step ahead' in 1) being aware that the exotic may show up in our river samples; 2) sounding the alarm in our own agencies about the presence of the exotic in our systems; and 3) initiating discussion on what (if any) action can be taken to slow the progress of the new exotic." Bertrand is calling for pertinent information such as number of individuals, size, location and date of collection.

As implementation of MICRA proceeds we hope to work with the RSC and others to document similar records for the entire Mississippi River Basin.

Boat User Fee Repealed

Boaters will have a little extra money to fill their fuel tanks this summer thanks to repeal of the boat user fee that was implemented a year ago. The fee system, administered by the Coast Guard, required that power boats display a use sticker costing from $25 to $100.

Repeal of the requirement will be phased in over the next two years. Boats under 21 feet in length were exempt as of October 1, boats under 37 feet will be exempt October 1, 1993, and all other boats will be exempt after October 1, 1994.

Table 1. Survey of "River Crossings" Circulation, Vol. 1, No. 6, November/December 1992.

Geographic Destination	Affiliation of Recipient *											
	SA	FA	NA	UC	IG	CU	PE	PG	EG	PC	CO	TOTAL
Alabama	1	1	1	1			2	1				7
Arkansas	6			1			1	2	1	2		13
California									2			2
Colorado	2	7	1	2				1				13
Connecticut	1											1
District of Columbia		12		1	3		5		6		2	29
Florida		2							1	1		4
Georgia	1	4		1				2	2			10
Illinois	7	4		2	1	1	4	3	8	2		32
Indiana	6							2	1			9
Iowa	10	1	1	2				2	4	1		21
Kansas	8	3	4	2				1	1			19
Kentucky	7	1		1			1	2	3			15
Louisiana	10	2	2	1		2		2	3	1		23
Maryland		1		1	2			3				7
Massachusetts							1					1
Michigan		1				1		2				4
Minnesota	10	8	9	1	2	4	4	2	3	1		44
Mississippi	2	7	1	3	1			2	1	1		18
Missouri	16	7	1	3		1	3	1	7	2		41
Montana	6	6	7	1	1			2				23
Nebraska	5	4	2				1	2				14
New Mexico	2	3										5
New York	2	1	1					2		1		7
North Carolina	1	1	1	1			2	3				9
North Dakota	3	3	2	2			1					11
Ohio	3	1		2	1			2		1		10
Oklahoma	2	2	33	3			1	1				42
Oregon					1				1			2
Pennsylvania	1	1		2				2				6
South Carolina							1					1
South Dakota	5	1	9	1	1			3				20
Tennessee	1	4					2	2	4	1		14
Texas	3	4		2			1	1				11
Virginia	3	3						3	4			13
Washington	1						4					5
West Virginia	4			1								5
Wisconsin	4	13	8	4	1		3	1	5	2		41
Wyoming	5	1	2	1				1				10
Toronto, Ontario	1											1
Vancouver, B.C.	1											1
United Kingdom						1						1
TOTAL	140	109	85	42	14	10	37	53	57	16	2	565

* SA=State Agency, FA=Federal Agency, NA=Native American Group, UC=Utility Company, IG=Interagency Group, CU=College/University, PE=Private Enterprise, PG=Professional Group, EG=Environmental Group, PC=Private Citizen, CO=Congressional Office

River Crossings' Circulation Survey

We thought our readers would enjoy reviewing the circulation list we compiled for our reader survey, so we are printing it in this, our first anniversary issue (Table 1). It lists readers by affiliation and geographic location.

As you can see, the bulk of our mailing goes to representatives of State and Federal agencies, followed by Native American Tribes, environmental groups, professional groups, utility companies, and private enterprise interests, respectively.

Now that you know who our audience is, we encourage you to submit articles and ideas to *River Crossings* to enhance the cross-basin communications we hope to develop and maintain!

Meetings of Interest

Third International Zebra Mussel Conference - February 23-26, 1993, Westin Harbour Castle Hotel, Toronto, Ont. For further information contact: Chris Brousseau, Ontario Ministry of Natural Resources, (416) 832-7113.

UMRCC 49th Annual Meeting - March 9-11, 1993, Chestnut Mountain Ski Resort, Galena, IL. For more information contact: Dan Sallee, ILDOC, (309) 582-5611.

Riparian Ecosystems in the Humid U.S. - Functions, Values, and Management - March 15-18, 1993, Sheraton Colony Square, Atlanta, GA. For more information contact: Beverly Ethridge, USEPA, Region VI, (214) 655-2263.

MRNRC Spring Meeting - March 18-19, 1993, Airport Hilton, Minneapolis, MN. For more information contact: Kent Keenlyne, USFWS, Missouri River Natural Resources Committee, (605) 224-8693.

Watershed '93: A National Conference on Watershed Management - March 21-24, 1993, Radisson Plaza Hotel, Alexandria, Virginia. For more information contact: Jennifer Paugh, Terrene Institute (202) 833-8317.

Mississippi River Research Consortium - April 22-23, 1993, Holiday Inn, LaCrosse, WI.

MANDATORY READER SURVEY

This survey is being conducted to identify regular *River Crossings* readers who wish to remain on our mailing list. Unless you respond to this questionnaire, your named may be dropped from our mailing list! We will be pleased to keep sending you the newsletter, if you find it useful. But if you do not respond, we will assume that it is not being read, and we will take your name off our list to reduce publication costs and to "save the trees!. Thank you for your cooperation, we look forward to hearing from you.

Name _____

Address _____
_____
_____

_____ I like the format of the Newsletter, please keep sending it to me.

_____ I think the Newsletter could be improved, here are my suggested changes:
_____
_____
_____
_____

_____ I recommend sending copies of the Newsletter to the following persons/groups:
_____
_____
_____
_____

Additional Comments:

U.S. Department of the Interior
Fish and Wildlife Service
Fish and Wildlife Enhancement
Columbia Field Office
608 East Cherry Street
Columbia, Missouri 65201

Official Business
Penalty for Private Use, $300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF THE INTERIOR
INT-423

FIRST CLASS MAIL