

River Crossings

Volume 13

September/October 2004

Number 5

Reader's Survey

MICRA's Executive Board will be addressing the future of *River Crossings* (i.e. content, frequency, form of distribution, etc.) at their December meeting in Indianapolis. As part of that process we are seeking input (as in the past) from our readers. Your past comments have been invaluable in continuously upgrading the content and quality of our newsletter. The enclosed form can be used for that purpose, or you can email your comments to us at ijrivers@aol.com. We look forward to hearing from you, and want to thank you in advance for responding!

Clean Species Listing Legislation?

Infestations of exotic fish species such as Asian carp and northern snakehead have brought the invasive species problem "home" to many people across the Mississippi River Basin. Such invasives are reproducing in large numbers and displacing many desirable native fish species. MICRA recognized early on that prevention is the solution to this problem, and that "species screening" and "establishment of clean species lists" are tools which resource managers need in keeping invasive species from entering the country.

Species screening is a process that would require anyone who wanted to introduce a new species into the U.S. to complete an



Large bighead carp taken by bowhunter on the Des Moines River, Iowa. (Iowa Bowfishing Association)

extensive review and research in order to conclusively determine that such species would "do no harm" to native ecosystems or to native species before being allowed to enter the country.

Once such determination is made the species in question would be placed on a "clean species list", and could be freely used throughout the U.S. for various purposes. Possession of any species not listed on a clean species list would be prohibited. This is not unlike the testing of new drugs. And like drugs, invasive species can have unanticipated impacts that could be prevented with the collection and evaluation of adequate background information.

The National Aquatic Invasive Species Act (NAISA), currently before Congress, includes such provisions. Unfortunately, NAISA also includes provisions for many

Inside This Issue

Reader's Survey	1	Colorado Water Shortages	10
Clean Species List Legislation	1	Montana Resort Receives Record Fine	10
Fish Advisories on the Rise	2	AR/OK Phosphorous Pollution	11
The Cost of Mercury Pollution	3	Dam Removal in New York	11
Caviar Exports Banned	4	Mountaintop Removal Attacked	12
Asian Fish Markets Fined	5	Sensitive Wetland Dev. Approved	12
Snakeheads Invade Philadelphia	5	Habitat Benefits Questioned	12
Missouri River Diversion	6	Refuges Opened to Hunting/Fishing	13
MR Stewardship Commission?	6	Smart Growth Strategies	13
Dead Zone Report Controversy	7	Earth Observation Network	15
Meat Industry Regs Scaled Back	7	Assisted Fish Reproduction	16
Kentucky Waterways Lawsuit	8	Frozen Ark Project	16
MT Sues Utility Dam Owners	9	Meetings of Interest	17
PA Sues Dam Owners	9	Congressional Action	17

other invasive species issues, and because of its size, complexity and cost NAISA has become “bogged down” in Congress.

Species screening and development of clean species lists are relatively inexpensive measures which the government can take to protect the public and the environment. The costs of data collection and research necessary to prove the safety of a new species would fall on the importer as a “cost of doing business”. If the benefit of introducing a new species is great enough, then the cost of developing the necessary background information should not be prohibitive in obtaining a positive benefit:cost analysis. If a positive benefit:cost analysis cannot be achieved, then the species probably shouldn't be considered for introduction because the threat to the environment and to native ecosystems is too great.

Last December MICRA members agreed that we can't afford to wait for the passage of NAISA to proceed with species screening and development of clean species lists, and that we need to promote the development of separate legislation for this purpose. In doing so, we extracted appropriate language from NAISA and placed it into a separate suggested draft bill which we then presented to both the Midwest Association of Fish and Wildlife Agencies (MAFWA) and the International Association of Fish and Wildlife Agencies (IAFWA) for their support.

The MAFWA and IAFWA are organizations of state, provincial and federal wildlife agencies in the U.S. and Canada. As a result of MICRA's leadership, both the MAFWA and the IAFWA have now agreed to support separate legislation, so we now need to find a member or members of Congress who is/are willing to pursue such legislation. *River Crossings* readers can support these efforts by contacting their congressmen and informing them of the need for such legislation.

Fish Advisories on the Rise

Warnings of mercury contamination in U.S. lakes, rivers and coastal estuaries have reached an all-time high based on fish advisories issued by state governments and analyzed by the U.S. Environmental Protection Agency (EPA). PCBs, dioxin

and other toxic chemicals also remain persistent, resulting in degraded water quality and continued risk to public health. The number of river miles covered by fish advisories jumped by 35%, from 544,036 in 2002 to 846,310 in 2003. States also issued advisories for 14.2 million acres of lakes in 2003, up from 13.4 million in 2002. EPA Administrator Mike Leavitt announced the findings at an August press briefing at agency headquarters in Washington D.C.

EPA officials, however, cautioned against an overreaction to the advisory data, which has grown as the states have increased levels of monitoring and fish sampling. “More advisories is not a big surprise because we're assessing more waters than we have before,” said agency spokeswoman, Cathy Milbourn. Leavitt said another factor behind the increase was that two large states — Washington and Montana — for the first time issued statewide advisories rather than warnings for specific waters.

Leavitt noted that regulators face a daunting challenge with mercury because the pollutant comes from multiple sources and is widely distributed throughout the environment. Much of the nation's mercury emissions come from coal-fired industrial plants, where the substance is released into the air as a by product of coal combustion. Once emitted, elemental mercury settles back to the earth where it collects in waterways and undergoes a chemical transformation called methylation. Methylmercury, a toxic form of the metal, can then be taken up by certain fish species and passed onto humans who consume the fish. Leavitt stressed that the science of how mercury interacts with the environment is evolving, and he noted that one of the latest findings is that recently emitted mercury methylates faster than mercury that has been in the environment a long time.

The electric power sector is the largest domestic emitter of mercury (40%), according to EPA, but other industries — such as industrial boilers (10%), waste

River Crossings

Published by

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

MICRA Chairman

Doug Nygren, Chairman, Kansas Department of Wildlife and Parks, Pratt

Executive Board

Doug Nygren, Member at Large

Mike Armstrong, Vice Chairman, Arkansas Game and Fish Commission, Little Rock

Ron Benjamin, Upper Mississippi River Conservation Committee, Rock Island, IL

Mike Armstrong, Lower Mississippi River Conservation Committee, Vicksburg, MS

Steve Adams, Missouri River Natural Resources Committee, Missouri Valley, IA

Chris O'Bara, Ohio River Fish Management Team, Parkersburg, WV

Bobby Reed, Arkansas River Conservation Committee, Lake Charles, LA

Bill Reeves, Tennessee River Sub-basin Representative, Nashville, TN

Michael Mac, USGS, Biological Resources Division, Columbia, MO

Donny Lowery, Tennessee Valley Authority, Chattanooga, TN

Coordinator for Large River Activities

Jerry L. Rasmussen, U.S. Fish and Wildlife Service, Rock Island, IL

MICRA email: ijrivers@aol.com

MICRA Web Site: <http://wwwaux.cerc.cr.usgs.gov/MICRA/>

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.

incinerators and chlorine production (5% each) — also release mercury in significant amounts. Leavitt emphasized that mercury is an element that “has been in the water for centuries,” adding that the trend with man-made mercury emissions has been downward. For example, mercury emissions from power plants dropped 45% — from 220 tons to 120 tons — between 1990 and 1999, he said. Power plants currently emit about 48 tons of mercury per year. He attributed some of the nation’s mercury problem to factors beyond EPA’s control, such as emissions that originate in other countries and travel to the U.S. on upper atmospheric air currents. “That’s why this administration is trying to get the United Nations Environmental Programme (UNEP) to focus on mercury,” he said. As of 1995, 53% of the mercury in the global pool came from Asia, according to UNEP.

An EPA rule to cut U.S. utilities’ mercury pollution further will be issued no later than March 2005, Leavitt said. The Bush Administration is weighing two approaches for reducing emissions. The one favored by environmentalists calls for across-the-board caps on mercury emissions for each pollution source under what is known as a “maximum achievable control technology” (MACT) standard. The alternative approach, preferred by the administration, is a cap-and-trade program that would allow industrial facilities to bargain over mercury reductions as long as a broad, national emissions cap is met. According to administration officials, the cap-and-trade approach would reduce mercury emissions by 70% by gradually reducing emissions from the current 48 tons to 34 tons by 2010 and 15 tons by 2018.

Meanwhile, the *Center for Science and Public Policy* (CSPP), a nonprofit public policy group with ties to conservative Republicans, claims in a new report that the EPA has based its proposed rule on flawed science about the human health risks of consuming contaminated fish. “There is no sound scientific evidence to suggest that the American public, especially infants and young children, have been exposed to harmful levels of mercury,” the report claims. Further the report states that “strong scientific evidence does suggest that most, if not all, of the trace amounts of methylmercury contained in ocean fish are not connected to the inorganic form of mercury emitted by power plants.” The ocean itself contains tens of millions of tons of naturally occurring mercury that

methylates and builds up in fish tissue over time, according to the report.

The CSPP report also describes EPA’s reference dose for mercury — the blood content level at which health effects can occur in pregnant women and their children — as “the root of recent alarm and confusion.” EPA’s reference dose of 5.8 parts per billion is “ultra-precautionary” and based on a flawed study of fish consumption in the Faroe Islands, the report says. The Faroe Islands study does not account for the fact that island residents eat whale blubber that is heavily contaminated with PCBs and other highly toxic materials, said Robert Ferguson, executive director of the CSPP.

Another study, known as the Seychelles study — on a population the CSPP claims has similar eating habits to the U.S. population — “has consistently failed to uncover any adverse health effects of mercury on child development from maternal fish consumption.” Furthermore CSPP says, the Seychelles study showed nutritional benefits from fish consumption in children who were evaluated at 6 months, 9 months, 19 months, 29 months, 5 years old and 9 years old. The CSPP report also blasts environmental groups and their political allies for lobbying the public for tight restriction on utilities’ emissions of mercury.

EPA officials said the CSPP report raises legitimate issues, but the agency will still proceed with plans to issue the power plant rule next year. “EPA views mercury as a serious toxin and will issue the first ever regulation to control mercury emissions from power plants,” said EPA spokeswoman Cynthia Bergman. “The final mercury rule will concentrate on the need to protect children and pregnant women from the health impacts of mercury.” A widely quoted *National Academy of Sciences* study published in 2001 said that an estimated 60,000 children born every year may suffer from learning disabilities if their mothers ingested mercury-laden food. In March, EPA and the Food and Drug Administration (FDA) issued guidelines recommending that children and women who are pregnant, nursing or might become pregnant should continue to eat fish as part of a healthy diet, but only about twice a week. Still, EPA “will continue to study the mercury health impacts, control technologies, economic consequences of regulation and domestic and international emission sources,” Bergman said.

States vary significantly in how fish advisory programs are set up and warnings issued. While waterway monitoring and fish testing are generally done by state environmental or wildlife agencies, advisories are issued by state public health officials. While most states post signs at popular fishing locations where mercury has been found in fish tissues, the number and specificity of such advisories vary by state. Moreover, some advisories are specifically for mercury, while others may include warnings for PCBs, chlordane, dioxins and/or DDT. Leavitt said EPA, the FDA and states are in ongoing discussions about how to make state fish tissue assessments and advisory programs more consistent.

Source: Marty Coyne, *Greenwire*, 8/24/04 and 9/29/04

The Cost of Mercury Pollution

Mercury warnings come with significant economic implications for the fishing and food processing industries and serve to counter many of the public health messages encouraging greater consumption of fish for its nutritional benefits. The seafood industry, for one, has criticized some recent studies on mercury and PCBs in fish, noting that significant exposure to mercury would require almost daily fish consumption of specific species.

In the Midwest, loss of sportfishing revenue due to mercury contamination in fish could cost four states in excess of \$1.8 billion annually, according to a series of reports released in mid August by a coalition representing more than 50 regional environmental groups.

A 25% decrease in sportfishing in Minnesota, where water-based wildlife recreation represents a \$2.8 billion industry, could cost the state \$706 million annually and threaten 25,955 jobs, according to that state’s report, distributed by the nonprofit *Izaak Walton League of America* (IWL). Similar sportfishing declines due to mercury pollution would cost Wisconsin \$516 million, Ohio \$308 million and Michigan \$280 million annually, according to the *Wisconsin State Environmental Leadership Program’s* (WSEL) interpretation of figures from the *American Sportfishing Association* (ASA). According to the report, the four states are among the top 10 for sportfishing nationwide, and they

represent the nation's leading freshwater sportfisheries.

The solution, according to WSELP, is to reduce mercury pollution from coal-fired power plants by 90% as soon as possible. As noted in the previous article, a growing number of states have issued fish consumption advisories for species that bioaccumulate the metal, including some of the most popular Midwestern sportfish like walleye. The result has been a shrinking of available fishing grounds and a growing concern among fishers that their catch is no longer safe to eat.



Nice catch of walleyes from the Des Moines River, Iowa

Keith Reopelle, a coordinator of WSELP, said "Unfortunately, EPA's proposed mercury regulations put the economic interests of the utilities ahead of the economic interests of Wisconsin, Minnesota, Michigan, and Ohio". "Sportfishing is the backbone of Lake Erie's travel and tourism industry," said Gary Lowry, owner of *Maumee Bait and Tackle* in Ohio. "We cannot let our shorelines become an economic wasteland."

Sarah Welch, associate director of the IWLA Midwest Office in St. Paul, MN, said "People who want to preserve our fishing heritage and our way of life in Minnesota need to urge Congress and the U.S. Environmental Protection Agency to issue a stronger mercury rule than what is currently proposed." "We have to make sure the public is aware of the threat mercury

contamination poses to human health, but also that we encourage people to fish. We're caught in a catch 22."

The sportfishing constituency nationwide is estimated at 34 million, who spend \$41.5 billion annually on the sport, according to data released by *American Sportfishing Association*, which also estimates that salaries and wages, combined with taxes from equipment sales and motor fuel as well as state and federal income taxes, amounts to a \$116 billion dollar industry in the U.S.

While ASA has found no evidence of waning interest in fishing, the group's vice president, Gordon Robertson, said he would favor any measure that addresses the problem of mercury in fish. But, he added, "We think advisories should be consistent, not sensational. "We certainly don't want to see hysterics used when it comes to advisories. We want to see sound science and common sense used," Robertson said.

Source: Tasha Eichenseher, *Greenwire*, 8/18/04

Caspian Sea Caviar Exports Banned

The United Nations has barred countries around the Caspian Sea from exporting sturgeon caviar until they adopt sustainable catch quotas. The delicacy sells for between \$750 and \$2,000 per pound in the U.S., the largest single importer. Because of the international caviar shortage, eggs of North American sturgeon and paddlefish species are being used as a replacement for Caspian Sea caviar and have thus come under increasing pressure from both legal and illegal fishermen who have attempted to capitalize on the market. California's *Stolt Sea Farm*, by far the largest stateside caviar producer, sells about 15,000 pounds of white sturgeon caviar per year.



A Minnesota lake sturgeon.

The U.N.'s Convention on International Trade in Endangered Species (CITES) has said for years that it would impose an international caviar ban if exporting nations did not make good on their promise to help sturgeon avoid extinction. For example, last year, Russia, Kazakhstan, Turkmenistan, Iran and Azerbaijan were allowed to export 340,000 pounds of beluga, sevruga and osetra caviar. But the Caspian states, which control 90% of the world's caviar, have been tempted by these high prices, and poaching has increased.

As a result CITES said that starting this year, Azerbaijan, Kazakhstan, Iran, Turkmenistan and Russia will have to account for poaching when setting quotas. Meanwhile, in Bulgaria, Romania and Serbia — where poaching is thought to be under control — CITES set export quotas at nearly 6 tons from the Danube River.

In Astrakhan, a city located at the head of the Volga River delta, the largest river flowing into the Caspian Sea, local officials say privately that poachers hide from wardens and pay them off if they get caught. They then sell their caviar to organized-crime rings who can it, often in unsanitary ways, and smuggle it throughout the former Soviet Union, where it is easily available and usually costs less than \$300 per kilogram. Scientists estimate that the illegal sturgeon catch in Russia in the early 1990s was up to 12 times the legal catch. With overall declines in sturgeon populations, the illegal catch is now estimated at two to five times the legal catch. "Poachers are being protected by those who are supposed to fight against them," Vladimir Yakovlev, an aide to Russian President Vladimir Putin, said in June. Yakovlev compared the caviar trade to narcotics trafficking, adding that 90% of Russia's caviar is from illegal fishing.

Ending poaching may prove difficult as it has become a way of life for many fishers since the collapse of the Soviet Union. The head of Russia's caviar union, Vyacheslav Mironov, who also runs Astrakhan's largest and oldest cannery, *Russkaya Ikra*, derided the CITES move as "unjustified and unfair", and said it is unlikely to help combat poaching and illegal exports. "They should combat illegal export and distribution, but not introduce meaningless bans on legal produce," he said.

Environmentalists in the U.S. expressed support for the ban. "This ban on caviar exports is a very positive sign," said Ellen

Pikitch of the *Pew Institute for Ocean Sciences* and the University of Miami. Sturgeon species worldwide are threatened by environmental degradation and over-fishing.

Sources: Christopher Pala, *St. Petersburg Times*, 9/14/04; Christopher Pala, *Washington Times*, 9/16/04 and *Greenwire*, 9/16/04

Asian Fish Markets Fined Despite Cultural Differences

A recent Iowa Department of Natural Resources' (IDNR) investigation of three Asian fish markets was deemed fair and reasonable by State Ombudsman Bill Angrick. The IDNR in 2002 charged the three markets and seven people with illegally selling fish caught from streams and lakes around the Des Moines area. Commercial sale of fish is only allowed under a commercial fishing license and commercial fishing is allowed only in the Mississippi and Missouri Rivers and in 20 inland lakes through a contract with the IDNR.

The IDNR investigation was criticized for not acknowledging the cultural differences of the Asian community and how they view fishing and fish consumption. However, Ombudsman Angrick's report said IDNR officials did not single out or treat the markets differently from other Polk County markets, nor did the IDNR unnecessarily prolong the investigation. Angrick also concluded that the IDNR did not act unreasonably in referring the violations to the county attorney for prosecution, instead of just warning or notifying the markets that they were violating Iowa law.

Angrick's investigation was requested by State Rep. Ed Fallon, (D/Des Moines). Angrick said his office was also contacted by several others who questioned whether the IDNR should have considered cultural differences and warned the markets, rather than pursuing criminal prosecution of a seldom-used statute. Angrick did suggest that the IDNR update its cultural awareness curriculum and provide updated training to all conversation officers. He also recommended that the IDNR revise language in its publications and on its Web site to emphasize the seriousness and potential consequences for unlawful commercialization of fish.

In addition, Angrick recommended that the IDNR consider asking the Legislature for

authority to create administrative penalties for unlawful commercialization of wildlife, in lieu of or independent of criminal charges for such violations. At the time of the charges, Lon Lindenberg, an IDNR law enforcement district supervisor, said the three-month investigation began after the department was tipped off by members of the Des Moines area fishing community.

Undercover officers followed individuals from bait shops to the water and sometimes fished alongside them. They would then follow the individuals home and on to the markets where the fish were sold. "We had undercover officers buying fish from the markets that were marked by other officers as coming from the river or from Saylorville or Red Rock (reservoirs)," Lindenberg said. "In many cases, these fish found their way into the markets within a day or two." The fish included crappie, white bass, channel catfish, flathead catfish and bluegill. Commercial fishing is restricted to rough fish species such as carp, buffalo and freshwater drum. Those charged in the investigation received penalties ranging from a 20-year suspended jail sentence and fines and restitution totaling nearly \$34,000 to a charitable contribution of \$500 in lieu of community service.

Cultural values and differences practiced by Asian communities in the U.S. and Canada have raised concerns regarding the spread of invasive species. Snakehead infestations in the eastern U.S. and bighead carp found in Lake Erie are thought to have resulted from cultural practices and eating habits of Asian communities in those areas.

Sources: *Omaha World Herald*, 8/30/04; *Greenwire*, 8/31/04

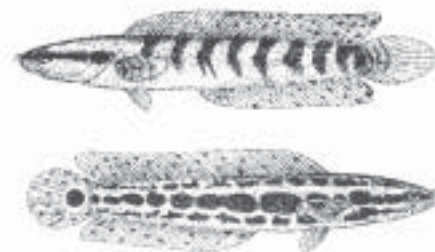
Snakeheads Invade Philadelphia

South Philadelphia's FDR Park has now become home to a population of snakehead fish. The northern snakeheads, discovered in the park this summer, are reproducing in large numbers and will likely become a threat to some native species in the nearby Delaware and Schuylkill rivers. Will Rodriguez, a South Philly fisherman in August collected "at least 5,000" newly hatched snakehead fry, or young, that he scooped up from a lake in FDR Park. Experts at the *Philadelphia Academy of Natural Sciences* raised a handful of the surviving young captured by Rodriguez to

tadpole size and positively identified them as snakeheads.

"Obviously, reproducing is a real key to establishing themselves and becoming a real nuisance," said Richard Horwitz, senior scientist at the academy's *Patrick Center for Environmental Research*. "... It indicates that there are soon likely to be more of them and that some of them will be wandering out into the Schuylkill."

Already this summer nine adult snakeheads — sometimes dubbed "Frankenfish" for their freaky looks — have been caught from the FDR Park lakes, which are linked by tidal flow to the Schuylkill and the Delaware rivers. In fact, the northern snakehead, a native of parts of Asia, may already be swimming in the two local rivers, say biologists from the Pennsylvania Fish and Boat Commission. It's less clear whether the invasive fish with the big mouth, cylindrical body and dark splotches will reproduce in the Delaware and Schuylkill, said Mike Kaufmann, regional biologist for the fish commission.



Asian and African Snakehead Species

Only time will tell if it devours other species to the point of wiping them out, or spreads fish diseases unknown so far in the Philly area, he said. Snakeheads can grow to 4 feet in length, survive out of water for up to four days and crawl on their fins. The adults have no known predators and become ferocious when guarding their young. "They're really aggressive," said Rodriguez, 39, who says he's caught four in FDR Park. "When they hit your lure, they come up like torpedoes out of the water."

It's unclear where the snakeheads came from, though speculation centers on abandoned exotic pets. In Philadelphia, the first six snakeheads were reported in July. Rodriguez then reported three more catches in August. His big find was a snakehead pair, each about 18 inches long, guarding their nest in a weedy area of the main lake. He spotted one fish, put a nightcrawler on his rod and cast his line. "And bang, he hit

it — I was shocked by the way he just hit it and grabbed it,” Rodriguez said. He caught the second parent fish within minutes. Then Rodriguez noticed a cloudlike mass in the water. That’s when he waded out, realized he’d discovered spawn and scooped the fry into a bag for a fish commission agent.

Most of the critters died before they ever got to the *Academy of Natural Sciences*, said Horwitz. But the scientist fed the survivors live plankton from the lakes and some dry fish food. The last couple dozen grew to about four-tenths of an inch, allowing him to identify them as snakeheads by their large heads, big mouths, distinctive fins and other features.

Source: Ramona Smith, *Philadelphia Daily News*, 9/7/04

Missouri River Diversion

Officials of Missouri, Minnesota and Canada said in early September that they wanted the International Joint Commission (IJC) to review a North Dakota project that could divert water from the Missouri River. The IJC, a bilateral organization established by the U.S. and Canada in a 1909 water treaty, has no regulatory authority. But its decision could influence contentious projects that pit dry Western states against downstream water users and neighboring provinces concerned about invasive species and water pollution.

North Dakota has been eyeing the Missouri River for more than 100 years as a source of water for irrigation, drinking water and other purposes. One proposed flood control project would drain water from land-locked Devils Lake into the Sheyenne River and ultimately into the Red River, which flows north into Canada. While that project itself wouldn’t draw water from the Missouri, the outlet has long been linked to a proposed inlet that would carry fresh water through canals from the Missouri River to the lake. “It completes the plumbing that allows the transfer of water,” said Ron Kucera, deputy director for policy of the Missouri Natural Resources Department (MDNR).

Officials of Minnesota and Manitoba also oppose the Devils Lake project because of concern that it could carry pollution and invasive plants, animals and diseases from one side of the continental divide to the other. “We both have an interest in protecting these watersheds, which have

been minimally connected for geologic time,” Norman Brandson, deputy minister of Water Stewardship for Manitoba, said. Earlier this year, Canada asked U.S. Secretary of State Colin Powell’s office to refer the Devils Lake project and related issues to the IJC, but Powell’s office has not responded.

The IJC last considered the topic in 1977, when it decided that a nearby project called the Garrison Diversion, as then authorized, would have violated the water treaty. That project should proceed only if there was no risk of transferring invasive species between the two ecosystems, the IJC said. The partially completed Garrison Diversion is still a concern for Missouri. Plans for the canal system, originally designed to divert water from the Missouri River to the Red River, have been altered several times through the years. Dave Koland, manager of the *Garrison Diversion Conservancy District*, said the project no longer allows for irrigation use in the Devils Lake or Hudson Bay drainage basins. Instead, most of the water would go for drinking water and industrial use, he said. “This started out as an irrigation project, but it’s not any more,” he said.

Opponents charge that both projects are key pieces of a long-term plan to siphon huge amounts of Missouri River water, leaving downstream states high and dry. Drops in Missouri River water levels could affect farming, barge traffic, power plant operation and drinking water withdrawals in Missouri and Illinois. “We’ve got to keep the resistance up,” said Steve Mahfood, director of the MDNR. “Any caving on our part would allow this (diversion) to go forward.”

Ongoing drought in the West has heightened tension over water quantity and quality. Missouri River reservoir levels are so low this year that water releases will be reduced for 47 days in October and November, leaving too little water for barge traffic.

Sources: Sara Shipley, *St. Louis Post Dispatch*, 9/9/04; *Greenwire*, 9/10/04

Mississippi River Stewardship Commission?

A proposal in Congress to set up a *Mississippi River Stewardship Commission* is drawing opposition from a broad-based coalition concerned that the plan, if enacted into law, would slow down both navigation

and shoreline restoration projects. In what some lobbyists see as a gift for environmental groups and Democrats on the Senate Environment Committee, Section 1005 of the bill sets up a 23-member commission with \$10 million to perform a two-year study of the Corps of Engineers’ management of the Mississippi River. The proposal is included in the Senate Water Resources Development Act (WRDA) of 2004 (S. 2554) passed by the Senate Environment and Public Works Committee (EPW) in June.

The economic stakes in the Mississippi River Basin are high, according to industry groups that note much of the country’s grain and coal are shipped by barge on the river. So the proposed Commission tops the list of concerns about WRDA forwarded by the *National Waterways Alliance*, which includes proponents of projects to upgrade navigation, restore eroded beaches and improve recreation. Specifically, the Alliance is concerned that the proposed Commission — focusing on compliance with the National Environmental Policy Act and the Endangered Species Act — would unnecessarily slow down important development projects. “The Commission should be an advisory body to the Corps,” not a Commission with powers to shape management decisions, one pro-navigation lobbyist said.

On fish and wildlife management issues, the Alliance claims that the bill would lead to a flurry of lawsuits against the Corps because the legislation contains vague requirements for project sponsors to replace wetlands and wildlife lost to navigation projects. Full replacement and success criteria are among the confusing terms in the bill, according to the coalition.

To the chagrin of some coastal communities, the bill also requires the Corps and affiliated agencies to monitor water quality, establish buffer zones between projects and reefs containing sensitive aquatic species, and assess the overall environmental consequences of beach nourishment. The Alliance opposes these provisions because beach projects are already subject to state and environmental controls. Adding a similar layer of federal requirements would slow vital projects that protect coastal cities from severe storms, the Alliance contends.

Meanwhile, the ecological importance of the river is the focus of environmentalists who blame the Corps and Congress for navigation projects that destroy wetlands

and impair fish and wildlife habitat. Groups including *American Rivers*, *Earthjustice Legal Defense Fund*, *Friends of the Earth*, the *National Wildlife Federation*, the *Sierra Club* and the *U.S. Public Interest Research Group* claim the bill:

- fails to force reforms on how the Corps calculates economic benefits of navigation projects,
- does not ensure public participation in independent peer reviews of Corps projects, and
- would not phase out projects providing little commercial navigation.

The bill “constitutes a setback in efforts to improve and modernize the Corps civil works program,” the environmental groups said in a letter to the EPW Committee.

Assuming the Senate passes WRDA, the next step would be a conference with House lawmakers to settle differences between the two chambers’ bills. As written, the Senate bill contains tougher Corps environmental reforms than does H.R. 2557, the legislation passed by the House last fall.

Source: Marty Coyne, *Greenwire*, 9/7/04

Controversial Dead Zone Report

A federal task force addressing the Gulf of Mexico’s “dead zone” will consider a controversial new U.S. Environmental Protection Agency (EPA) report that calls for new strategies to reduce the oxygen-starved area that is largely uninhabitable for fish and other aquatic species. The current federal strategy for reducing the dead zone calls for a 30% reduction in nitrogen reaching Gulf waters through runoff from farms along the Mississippi River and other sources. But the new EPA report suggests that preventing the condition called hypoxia also requires reductions in phosphorous, another nutrient.

“The available Gulf hypoxia data and related scientific literature support a modification of the original hypothesis that, for waters subjected to nitrogen and phosphorus loads significantly above historic background levels, there may be considerable benefit to reducing both nutrients in order to restore water quality,” the report says. The report was produced by EPA’s Region 4, which covers several Southern states.

EPA is asking the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force on Gulf Hypoxia to subject the report to peer review as part of a broader planned reassessment of a 2001 “action plan” for controlling Gulf hypoxia that was based on a White House-led scientific assessment of the problem. The current action plan calls for steps such as creating buffer zones in farming areas and changing other farming practices to reduce fertilizer runoff, restore wetlands in floodplains and reduce industrial discharges that contain nutrients.

The report has prompted a flurry of charges and countercharges about whether it supports a broad overhaul of federal efforts to address the dead zone. Farming groups say the new EPA analysis shows that federal officials must emphasize reducing phosphorous from industrial sites, such as wastewater treatment plants and fertilizer plants, and rethink their focus on curtailing nitrogen, which stems overwhelmingly from diffuse “nonpoint” runoff from farm fields and elsewhere. The *American Farm Bureau Federation* released a statement in late August saying that “today’s best science indicates nitrogen, while present, is not the nutrient responsible for the volume of hypoxia in the Gulf,” and that “phosphorus from point (industrial) sources is the nutrient that fuels excessive algal growth and causes the resulting hypoxia.”



The Dead Zone

Farms are a major source of phosphorous as well as nitrogen. But some farm industry sources argue that much of the phosphorous that is released from farm areas binds to sediments and is not available to sustain algal growth, and that phosphorous discharged from industrial facilities close to the river’s mouth are a major problem. However, people involved with the report and hypoxia research caution that much more research is needed into the fate and behavior of phosphorous in the Gulf, and that the nutrients can break free from sediments and sustain algal growth.

Donald Scavia (University of Michigan), Robert Howarth (Cornell University) and the Donald Boesch (University of Maryland) expressed concern in a letter to EPA that the study could be seized on to “delay” efforts to reduce nitrogen flows into the Gulf. The letter stated further that while phosphorous reductions may “on further analysis” prove helpful in reducing Gulf hypoxia, “worldwide experience and contemporary scientific understanding of coastal eutrophication” shows that nitrogen reductions are needed to address the hypoxia problem. Scavia is the former chief scientist of NOAA’s National Ocean Service and helped craft the federal assessment of the Gulf hypoxia problem that forms the basis for the action plan. The letter also claims that the EPA report reveals an “inadequate understanding of the contemporary science” of chemical processes and nutrient dynamics.

An EPA spokesperson said the agency is interested in a review of the findings. But the agency appears unlikely to endorse farm industry calls to shift away from nitrogen reduction efforts. The report states that it “does not represent the agency position or recommendations regarding the *Gulf Hypoxia Action Plan*.” In addition, a letter to task force members from an EPA Region 4 official says “we strongly encourage” the task force to continue efforts to implement the existing plan, and that the plan’s underlying science is supported by strong evidence and peer review.

The “dead zone” that forms annually off the mouth of the Mississippi River covers thousands of square miles, reaching 13,640 square miles in a 2002 measurement.

Source: Ben Geman, *Greenwire*, 8/31/04

EPA Scales Back Meat Industry Discharge Regs

The U.S. Environmental Protection Agency (EPA) has reduced the scope of a rule imposing strict wastewater discharge limits on meat and poultry plants out of concern that the rule as originally proposed would be too costly for the industry. EPA’s February 2002 proposed rule would have limited discharges of nitrogen to less than 20 parts per million (ppm) for plants processing 10 million or more pounds of meat or poultry per year. The proposal also would have capped phosphorous at 12 ppm.

The final rule, published in the *Federal Register* on 9/8/04, allows discharges to contain 50-100 ppm of nitrogen and imposes no restrictions on phosphorus. While the proposed rule would have affected 300 facilities nationwide, the final rule affects considerably fewer plants because EPA raised the annual production threshold to 50 million pounds for meat plants, which produce beef and pork, and 100 million for poultry. Nitrogen and phosphorus are nutrients linked to various water quality problems, including low dissolved oxygen for fish and other aquatic species, and algae blooms that thrive in nutrient-rich waters such as the Gulf of Mexico.

Marv Rubin, a member of a team of EPA engineers and analysts that developed the rule, said industry officials convinced the agency to scale back the rule in part because of concerns that it imposed millions of dollars in additional compliance burdens. Rubin also pointed to competitiveness issues facing poultry producers, which generally operate smaller plants with lower profit margins than their beef and pork counterparts. "EPA determined that compliance costs per pound of poultry are about 40% larger than compliance costs per pound of meat," according to the final rule. If EPA had imposed the tougher new discharge standards on poultry plants, consumer costs for poultry could have increased significantly, EPA said.

An industry official, who asked not be identified, noted that EPA's own estimates show that the final rule will provide only \$2 million in annual water quality benefits while costing meat and poultry producers \$58 million a year. "We're still evaluating the final rule, but keep in mind that EPA is integrating a new layer of controls on an industry that's pretty heavily regulated already," the source said. Most large plants already operate under National Pollutant Discharge Elimination System permits. Industry officials claim the compliance cost of the scaled-back rule will be between \$58 and \$100 million each year for plants to install and operate the best performing water pollution control technologies.

Meat and poultry producers told EPA during the rulemaking process that the agency's initial assumptions about nitrogen and phosphorus reductions were flawed. "The agency's information was less than complete both in terms of the cost modeling and the limited number of facilities where they sampled" wastewater discharges, the

agriculture industry official said. Most of the facilities covered by the new rule will have to install some type of biological treatment process that removes nitrogen from the thousands of pounds of waste they generate, the industry official said.

As for phosphorus, other programs should be effective at reducing the nutrient's pollution, according to the industry official. For example, many states have developed plans to clean up heavily polluted waters under the Clean Water Act's total maximum daily loads (TMDLs) program, including provisions targeting phosphorus.

The *Natural Resources Defense Council*, which filed a lawsuit forcing EPA to issue effluent guidelines for meat and poultry processors, declined comment on the final rule. The *Chesapeake Bay Foundation*, which has targeted nutrient pollution as a major water quality issue, said in a recent report that "the entire Chesapeake Bay, all of its tidal tributaries and thousands of local waterways, are choking on overdoses of nitrogen and phosphorus." The Delmarva Peninsula on the eastern side of the Chesapeake Bay is one of the nation's leading poultry production areas and home to dozens of large poultry farms and processing plants.

Source: Marty Coyne, *Greenwire*, 9/14/04

Kentucky Waterways Lawsuit

A coalition of environmental groups has sued the U.S. Environmental Protection Agency (EPA), charging that the agency hasn't done enough to force Kentucky to protect its streams, lakes and rivers. "We have run out of patience," said Judith Petersen, executive director of the *Kentucky Waterways Alliance*, one of four groups suing the agency in U.S. District Court in Louisville. "It seems obvious to us that without a federal lawsuit, they are not going to fix the problem."

Other plaintiffs include the *Sierra Club's Kentucky Chapter*, *Kentuckians for the Commonwealth* and *Floyds Fork Environmental Association*. The suit says that since 1997, state environmental regulators have failed to adopt an EPA-approved standard that would prevent the deterioration of water quality in Kentucky. The groups want the EPA, which has ultimate responsibility for enforcement of the Clean Water Act (CWA), to put its own standard in place within 30 days. LaJuana S. Wilcher, the

Kentucky Environmental and Public Protection Cabinet (KEPPC) Secretary, said in a statement that she is "baffled" by the suit. "Water quality is a top priority for this cabinet and this administration," she said through spokesman Mark York.

But the EPA has been critical of state water pollution regulators for failing to adopt a standard that meets CWA demands. In 2002 the EPA concluded that the state was failing to fully protect as much as two-thirds of its waterways. To remedy the situation, the EPA proposed a standard that would have required the state to scrutinize more closely new or expanded industrial or sewage treatment plants, or other facilities that would increase pollution. Before allowing any project that would result in a decline of water quality, the state would have to conclude that the change was needed to accommodate an "important economic or social development." At the time, the EPA estimated that its draft standard could result in thousands to millions of dollars in additional pollution controls for businesses and communities. But the EPA never signed off on that standard, and the lawsuit contends that the 2002 EPA proposal "did not comply with the requirements of ... the Clean Water Act."

Earlier this year, the KEPPC proposed its own standard, which recently was endorsed by two legislative committees. It is awaiting EPA approval. But Petersen said that the state's proposal has major problems. The plaintiffs contend that it exempts coal mining, factory-scale farming and construction activities, and allows industries to increase their pollution by as much as 20% per year. Scott Smith, director of regulatory affairs for the *Kentucky Environmental Cabinet*, said the environmentalists are misinterpreting the proposed standard. The activities they cite as being exempt are covered by other regulations, he said. Wilcher, who was a top water regulator in the administration of President George H.W. Bush, said that she is confident that the state's new standard complies with the CWA.

For their part, environmentalists pointed to state surveys showing that many Kentucky water bodies carry advisories about limiting or avoiding fish consumption and swimming. "The fact that 30 years after the Clean Water Act the state is issuing warnings against the eating of fish from almost all of Kentucky's streams is unacceptable," said Doug Doerrfeld, a member of *Kentuckians for the Commonwealth*.

“The fact that it’s unsafe for our children to swim in many of Kentucky’s rivers and streams is appalling. ... To adopt a weak anti-degradation program is to tell the people of Kentucky that our health does not matter.”

The environmentalists cited a recent state assessment of water quality as evidence that streams, rivers and lakes are in decline. The report found that nearly half of Kentucky’s rivers and streams are so polluted or altered, that they do not meet their officially designated uses, such as swimming or supporting aquatic life. The 47% level was up from 35% in 2000. When they released the report, state officials said the public should not interpret the numbers as meaning that water quality is declining. They said they have been surveying more streams and improving their methods.

Sources: James Bruggers, *The Louisville Courier-Journal*, 9/22/04; and *Greenwire*, 9/23/04

Montana Suing Utilities for Stream Bed Use

Montana’s state Justice Department has told a federal court that no federal authority prevents the state from demanding that dam owners pay for decades of using state-owned riverbeds for their hydroelectric power operations. Contrary to arguments by utilities running the dams, the Federal Power Act does not affect state ownership of the underlying land or override Montana’s right to be compensated for use of the property, Solicitor Brian Morris said in written arguments submitted to the court.

His filing supports a lawsuit filed last fall which claims that Montana is owed decades of lease payments from *PPL Montana*, *Avista Corp.* and *PacifiCorp*, whose dams sit atop state land. The suit, Morris said, “simply demands payment of compensation for the use of its lands by hydropower corporations that have heretofore taken a free ride.” Filed by two Bozeman residents and Great Falls schools, the suit contends that Montana should be able to recover unpaid rent and interest dating to construction of the dams, some of which are 90 years old. The complaint lists no dollar amount, but also requests damages for trespassing and “unjust enrichment.”

The utilities have asked U.S. Magistrate Leif Erickson of Missoula to throw out the suit. They argue that federal authority to

regulate hydropower production pre-empts the state from charging for use of the riverbeds. The companies also say the beds are not considered school trust lands, so the state cannot charge for their use.

Morris said federal law governing hydro-electric dams deals with placement, operation and maintenance of such structures, and doesn’t affect the state’s property rights claim contained in the suit. Montana is not insisting it has the power to grant permission for operation of the dams, he said. Rather, the state merely wants to be paid for use of its land, he said. Whether the property is part of the school trust — land from which any earnings go to schools — does not matter, Morris said. The state



has the sovereign right to charge for the land it owns, no matter what its label, he added. Morris said the state did not forfeit that right by waiting until now to demand payment. Even if Montana were deemed negligent for not requiring payment from the time the dams were built, that would not prohibit the state from requiring the money be paid now, he said.

Sources: *AP/Billings Gazette*, 8/14/04 / *Greenwire*. 8/17/04

Pennsylvania Sues Dam Owners

Pennsylvania Governor Edward Rendell’s administration is getting tough with the owners of six “high-hazard” dams in his state, including two owned by *Maple Creek Mining Inc.* in Washington County. State Department of Environmental Protection (DEP) Secretary Kathleen A. McGinty said in July that she’s going to court to seek orders against *Maple Creek Mining* and four other dam owners who have ignored DEP’s requests to create “emergency action plans” for the dams.

“We have given these dam owners every opportunity to comply with the law, but still they have not taken the steps necessary to ensure the safety of downstream lives and property,” McGinty said in a statement. *Maple Creek Mining* was cited for potentially hazardous dams called “Slurry Pond No. 2 Dam A” and “Treated Water Pond,” both in Fallowfield, Washington County. The other owners cited, each of whom have one dam, include William and Barbara Summerville, Bradford County; *Valley View Lake Association*, Columbia County; George T. Schmidt, Pike County; and Elmer Reese, Wyoming County. “Our message is clear,” McGinty said. “Dam owners cannot ignore their responsibilities to ensure the safety of their dams and maintain emergency action plans. Recent flooding and dam collapses in New Jersey illustrate all too well why these dam safety regulations are so important.”

According to the state’s Dam Safety Act of 1978, owners must come up with an emergency action plan for any dam that would endanger people or property in downstream communities in the event of a dam failure. Such plans outline what must be done by the dam owners, government agencies, police, medical and other emergency personnel in such cases. The plans also must identify the schools, nursing homes and roads that might be inundated if a dam collapses and what should be done with the people in the line of danger.

The DEP regulates about 3,100 dams statewide. In April it sent violation notes to the owners of 276 dams who had failed to submit an emergency action plan. Of those notices, 28 went to state agencies, all of which later complied. The DEP then filed administrative orders against 20 owners of 23 dams who did not respond to the violation notices and gave them 30 days to comply. Of those 20, the five owners of the six dams still haven’t complied, McGinty said, so legal action to force them to comply has been started. If the owners continue to refuse to obey the law, they could face civil penalties of up to \$10,000, plus \$500 a day for each day of ongoing violations, McGinty said.

Rendell began a major dam-safety campaign on June 1, and has asked for federal funds to help repair dams. He is also seeking support from other governors in this effort.

Sources: Tom Barnes, *Pittsburgh Post-Gazette Harrisburg Bureau*, 7/30/04

Colorado Water Shortages

As many as 300,000 acres of irrigated farmland — an area bigger than Rocky Mountain National Park — will be lost during the next 25 years in Colorado as communities move to buy the water, according to a new state study. On the Front Range, along the South Platte River, more than 200,000 acres of irrigated land are slated to be dried up by fast-growing towns. That's about 20% of the irrigated acres along the South Platte.

Statewide, as much as 10% of irrigated farmland is expected to disappear, the survey shows. "This is our prime land. It's alarming," said Jim Miller, deputy director of policy and communications at the Colorado Department of Agriculture. "Do we have to give up farmers every time we go to expand a municipal water supply?" Agriculture comprises about 2% of Colorado's gross product, or nearly \$3 billion, according to the Legislative Council. But that number grows dramatically, to more than \$15 billion, when such things as fertilizer and tractor sales, and meat processing are included.

The findings from the *Statewide Water Supply Initiative*, as the study is known, come as its sponsor, the *Colorado Water Conservation Board (CWCB)*, puts the finishing touches on the \$2.7 million effort. The report, launched 14 months ago in response to the drought, is designed to show policymakers how much water the state uses, how much it's going to need, and where those new supplies will come from. West slope communities fear the study, to be completed in November, will open the door to ever larger water diversions to the Front Range, while Colorado's urban water utilities worry that it could hamper their efforts to divert water they already own.

Early findings suggest Coloradans should begin debating now on how best to use and protect existing water supplies, such as those used in agriculture, said Don Schwindt, a rancher from Cortez, who also sits on the CWCB. Because roughly 80% of Colorado's water is used by agriculture, experts have long predicted that Colorado will lose vast swaths of farmland to thirsty cities. But until now, little has been known about the scale of the cities' plans.

Colorado farmers irrigate more than 3.1 million acres of cropland, primarily growing hay and corn for livestock and, especially along the South Platte, onions,

sugar beets and carrots, according to the Colorado Department of Agriculture. The South Platte is home to the largest chunk of Colorado's irrigated farm economy, watering about 1 million acres of land annually.

But the farm water — as valued by cities — is often worth much more than the crops it produces. These days, cities routinely pay more than \$10,000 an acre-foot for new water. An acre-foot equals 326,000 gallons. At the same time, 1 acre of corn grown with that same acre foot of water generates only about \$422, Miller said. In addition to the purchase of water rights on farms, cities also plan to expand existing reservoirs, recycle more water, and continue with conservation programs, according to Rick Brown, who is managing the study for the CWCB.

Even with all those efforts, however, the state report says Colorado faces at least a 66,600 acre-foot shortfall in its available water supplies by 2030, and that assumes the cities are successful in building such projects as the Colorado Springs pipeline to the Arkansas River and northern Colorado's proposed expansion of its systems.

The massive buy-up of agricultural land — already under way in many communities — will accelerate, as growth forces cities to find new sources of water the report says. Researchers gathered the farm data from dozens of water utilities across the state, asking them how they planned to supply their communities with water, Brown said. Several involved in the water and farm worlds believe the state report may understate the extent of the changes ahead.

The dry-up is likely to mean profound changes in rural economies, even if cities agree, as many already do, to make ongoing payments to offset the loss of jobs and industries. Cities such as Parker, Aurora and Thornton, for instance, have already purchased the water from dozens of farms in the Arkansas and South Platte river basins, often paying millions of dollars to local governments to help offset the loss in tax revenues and jobs tied to farming.

Water withdrawals for either agriculture or municipal uses create major problems for fisheries and stream ecology.

Source: Jerd Smith, *Rocky Mountain News*, 8/31/04

Montana Resort Fined Record \$1.8M for Wetland Violations

The *Yellowstone Mountain Club (YMC)*, a gated resort community near Big Sky, Montana, has agreed to pay \$1.8 million in fines and restore and replace damaged wetlands, marking what is believed to be the largest U.S. Environmental Protection Agency (EPA) settlement in history for such wetland pollution, the U.S. attorney's office said on 8/9/04. In 2001, EPA cited the 13,000 acre resort near Yellowstone National Park, for 60 Clean Water Act violations, primarily stemming from alleged dumping of construction debris into streams and federally protected wetlands in a tributary of the Gallatin River.

The resort also has agreed to settle with the state Department of Environmental Quality (DEQ) for \$231,000 for dumping dredged material into a tributary of the Gallatin River, DEQ officials said in June. Under that settlement, the company was allowed to choose from a list of environmental projects to fund in lieu of paying the total settlement in cash. The club chose to pay for a \$155,000 glass pulverizer for a statewide recycling project and a \$76,000 cash penalty, the DEQ said.

Resort owner Tim Blixseth has not admitted to the alleged violations, said YMC attorney Steve Brown. "The club has denied liability but is entering into this settlement," he said. "We've been working with the federal government for about three years now to address their concerns." EPA officials said the investigation leading to the settlement was complicated by private property rights. "Just the challenges alone of accommodating the club's private property rights with the public's interest in making sure these violations were addressed was difficult," said Leif Johnson, assistant U.S. attorney for Montana. The settlement is open to public comment and subject to a federal judge's approval, EPA officials said.



The YMC is a multimillion-dollar resort development. Prospective members must have a net worth of at least \$3 million, and are required to pay a \$250,000 initiation fee and annual dues of \$16,000. The club features homes with starting price tags of \$5 million, an 18-hole golf course and a private ski slope.

Sources: John MacDonald, AP/*San Francisco Chronicle*, 8/9/04; and *Greenwire*, 8/10/04

Phosphorus Dispute in OK/AR Waterways Continues

Arkansas officials said a new report released in late September by the state Soil and Water Conservation Commission (SWCC) shows progress on the amount of phosphorus in the state's streams. The report said levels of the oxygen-depleting nutrients decreased in Benton and Washington county streams that feed the Illinois River. "Surely, everyone will be encouraged," said Earl Smith of SWCC. "We'll look and see why it's happened that way, but part of it is the reduction in flow."

In 2002, neighboring Oklahoma lowered the allowable amount of phosphorus in the Illinois River to 0.037 milligrams per liter. Then OK Governor Frank Keating (R) said earlier voluntary agreements between Arkansas and Oklahoma to reduce phosphorus levels by 40% did not lower phosphorus levels or improve water quality.

Arkansas and Oklahoma have long fought over water quality in the Illinois River, which flows through both states, because most of its pollution comes from poultry farms in northwestern Arkansas and eastern Oklahoma. A 1992 Supreme Court decision, which said upstream states are subject to downstream rules, would force Arkansas to comply with Oklahoma's rules.

Oklahoma said the new data is not encouraging, since Illinois River water in Arkansas measured six times above the Oklahoma limit for phosphorus last year. "The take-home message is there's nothing significant," said Derek Smithee of the Oklahoma Water Resources Board. "There are no 'eureka' moments in this year's report. The past three years we saw increases, and this year we saw decreases. It's still ... way above the 0.037 criteria he said.

Sources: Robert J. Smith, *Arkansas Democrat-Gazette*, 9/22/04; and *Greenwire*, 9/22/04

Dam Removal in New York

The 90-year old Cuddebackville Dam tucked away in Orange County on the Neversink River is the first dam in New York history to be removed for purely environmental reasons. It also signals a change of purpose for the Army Corps of Engineers (Corps), which has spent more than a century creating dams and now is just beginning to remove them.

A team of engineers from *The Nature Conservancy* and the Corps began removing major parts of the dam on 9/22/04 as part of a painstaking effort to save an endangered mussel. "This is a pretty symbolic occasion for us," said Brian J. Mulvenna, project manager for the Corps. He said the project is the first in which the Corps has worked with a nonprofit organization since a federal law was passed in 1999 allowing such partnerships. "It also shows a changing of the guard at the Corps," Mulvenna said, "as the older generation of dam supporters give way to a younger group who are often dam opponents."

Built in 1915, the dam diverted water down the Delaware and Hudson canal system to turn turbines at a power plant in Cuddebackville, about 65 miles northwest of New York City. But the dam became a vestige in the mid-1940's when the power plant was shut down as modern power lines were built to draw electricity from farther away.

"We've come to realize the ecological costs of tapping nature for our purposes, and where possible we've started paying Mother Nature back," said George E. Schuler, director of *The Nature Conservancy's Neversink Program*. The project will remove one of two dams located on either side of an island that splits the Neversink River. Mr. Schuler explained that *The Nature Conservancy* has no plans to remove a separate dam on the northeast side of the island because most fish swim up the southwest side.

River depth (about four feet) and speed will not change when the dam is removed, Mr. Schuler said. But American shad and native brook trout will again be free to swim upstream in the Neversink, where fly-fishing became popular in the United States. But the biggest beneficiary will be the dwarf wedgemussel, a tiny freshwater mussel no bigger than a quarter and one of the most

endangered species in upstate New York. While the wedgemussel, which helps purify the water, does not swim upstream, host fish carrying its larvae do.

The removal of the steel-reinforced concrete dam, 6 feet tall and 125 feet across, is expected to be completed by the end of October at a cost of about \$2.2 million. The *Nature Conservancy* is paying for 35% of the removal costs, while the Corps is paying for the rest.

The project, begun in July 2003, is a feat of civil engineering and ecological planning. Many dams are demolished using explosives, but Mr. Schuler decided against that approach because of the damage it would cause to the local habitat. Instead, his team has built a temporary dam, or cofferdam, upstream, to divert the water to the other side of the island and enable workers to move backhoes and large hydraulic hammers in front to chip away at the concrete.

The fish and mussels from the side of the island that is now dry were relocated upstream. Once the dam is removed, the streambed will be restored and water will be released from behind the cofferdam. A second, smaller, cofferdam was built to block an artificial trench that divides the island in two. The trench was used to direct water from the southwestern side of the island to a canal system on the northeastern side.

"American dams are not the pyramids of Egypt, and they were not meant to stand forever," said Amy Souers Kober, a spokeswoman for *American Rivers*, a conservation group based in Washington, D.C. "Many states are starting to realize that river restoration starts with dam removal since that is the only way to open the flow to aquatic life."

Ms. Souers Kober said there are plans to remove an estimated 60 dams in 14 states and in the District of Columbia in 2004. Only four of these dams ever supplied electricity, and they have been off line for years, she said. Of the 77,000 dams higher than 6 feet across the country, fewer than 2,500 generate electricity, she noted. Most were built to run mills that are now obsolete, to control floods or to create water supplies or recreational lakes.

While sometimes providing useful services, dams drown valuable habitats under reservoirs and can create

inhospitable downstream conditions for fish and wildlife. More than 145 dams nationwide have been removed since 1999, only one of them in New York. But until now, none were removed in New York to help the environment. "In many places, aging dams have become major public hazards and legal liabilities," said Mulvenna. "Each one of those that we take out is one less headache for us in the future."

Unfortunately, because of invasive species infestations, some dam removals cannot be done. In some locations high dams serve as the only effective barrier to the upstream movement of invasives such as the Asian carp. In these cases the merits of dam removal have to be weighed against the wisdom of allowing access for invasives into uninfested upstream waters. Invasive species invasions have thus turned this otherwise excellent management technique into one that simply can't be considered for some areas.

Sources: Ian Urbina, *The New York Times*, 9/22/04; *Greenwire*, 9/23/04

Enviros Attack WV Over Mountaintop Removal Controversy

West Virginia regulators have not helped enforce a court order on mountaintop removal mining, environmentalists said in early August. The ruling, by Judge Joseph Goodwin of the U.S. District Court for the Northern District of West Virginia, calls for more scrutiny before approving mountaintop mining. Goodwin ruled on July 8 that an Army Corps of Engineers (Corps) system known as Nationwide Permit 21 (NWP 21) violated congressional intent of the Clean Water Act.

But complications have arisen in regards to Goodwin's order halting all projects not commenced by the day of the ruling. Some have claimed mountaintop removal projects are continuing in spite of the court order. And while the Corps has asked the West Virginia Department of Environmental Protection (DEP) for help, environmentalists said that the state is not participating.

"While what constituted the commencing of construction has not yet been specifically defined, *Massey Energy Company* had started some construction on all five permits by the date of the ruling," said Don Blankenship, president of the company,

which holds five of the 11 permits specifically mentioned in Goodwin's decision. State DEP officials said they are trying to avoid the controversy surrounding the lawsuit. "We prefer not to be caught in the middle," said Perry McDaniel of the state DEP. "At best, we would provide some basic information, and let Judge Goodwin and the parties to that lawsuit sort it out".

Under NWP 21, mining permit applications that involve dumping mine waste in valleys that often contain streams are automatically approved if they meet certain criteria.

Goodwin's ruling said applications must be more strictly scrutinized. Mountaintop mining is used to expose coal seams in West Virginia, Kentucky and other Appalachian states. Environmentalists are concerned that the practice will hurt waterways because the mining method involves shearing off the top of a mountain ridge and depositing the waste rock in adjacent valleys, many of which are coursed by small streams.

Sources: Ken Ward, Jr., *Charleston Gazette*, 8/9/04; and *Greenwire*, 8/10/04

Development in Sensitive Wetlands Approved

A Bush Administration interpretation of a 2001 Supreme Court decision has allowed developers to drain thousands of acres of isolated wetlands, according to a report released in mid August by a coalition of environmental groups.

In a 2001 Supreme Court decision, the high court rejected an assertion by the Army Corps of Engineers (Corps) that isolated wetlands could be regulated under the interstate commerce clause of the U.S. Constitution because they provide habitat for migratory birds, which in turn attract tourists. This case, *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC)*, led to a January 2003 interpretation in which the Corps and U.S. EPA issued guidance to their field staffs.

In addition to telling Corps districts and EPA regional offices not to rely on the migratory bird rule to protect wetlands, the Bush Administration guidance instructs staff to vet with their headquarters in Washington any decision to regulate intrastate, nonnavigable waters that provide some other commercial benefit. Before SWANCC, the federal government viewed the migratory

bird rule as an acceptable "umbrella approach" for implementing wetlands rules.

In the report — issued by *Earthjustice*, the *National Wildlife Federation*, the *Natural Resources Defense Council (NRDC)* and *Sierra Club* — environmentalists identified more than a dozen cases where the Corps approved development in ecologically sensitive areas. "There's no way to describe how mindless a policy that is when it comes to wetlands protection," said NRDC attorney Daniel Rosenberg.

But White House Council on Environmental Quality Chairman James Connaughton criticized the report's findings, saying: "Everybody loves what we're doing".

Sources: Juliet Eilperin, *Washington Post*, 8/12/04; *Greenwire*, 8/12/04

Critical Habitat Benefits Questioned by Interior Department

The U.S. Fish and Wildlife Service (FWS) in early August released its final critical habitat designation for the Topeka shiner, an endangered Midwestern fish, amid charges from environmentalists that the Bush Administration had again ignored the potential economic benefits of critical habitat. FWS designated 836 miles of streams in Iowa, Minnesota and Nebraska as critical habitat for the shiner. The agency had originally proposed an additional 1,500 stream miles across the three states plus Kansas and South Dakota, but scaled back the designation based on an analysis of critical habitat's economic consequences.

Similar complaints were made when the FWS designated habitat for the bull trout, an endangered Pacific Northwest species. Among other things, environmentalists have charged that the Administration is using a new accounting method that effectively prohibits discussion of benefits in formal analyses of critical habitat. However, FWS and Interior Department officials maintain that critical habitat confers no additional conservation benefits upon a species and modified a number of proposed designations on grounds that doing so does not compromise the ecological needs of the species.

The critical habitat provision of the Endangered Species Act is the only part of the law allowing the government to consider the economic consequences of its actions. But Brian Nowicki of the *Center*

for *Biological Diversity* said the FWS should look beyond simply the costs of habitat designation and evaluate economic benefits as well. Moreover, by analyzing only costs the Administration often places economic needs above the needs of species. “Just one small part [of the law] allows consideration of economic impact,” Nowicki said. “It’s not supposed to be some overriding issue as it is becoming under this Administration.”

Nevertheless, the law mandates that the agencies designate critical habitat for all ESA-protected species, and court challenges to the provision have largely gone in favor of environmentalists. According to Craig Manson, the Interior Department’s assistant secretary for fish, wildlife and parks, FWS does evaluate the benefits of critical habitat, as required under guidelines from the White House Office of Management and Budget (OMB). Regarding allegations that the Administration has adopted a policy that stifles discussion of critical habitat benefits, Manson countered: “As far as I know, there is no new accounting method,” he said. “There’s no order to exclude benefits, there’s no regulation or ruling or policy or philosophy that asks the FWS to exclude economic benefits.”

While there may not be an overriding policy to exclude benefits, according to a memo obtained by *Greenwire*, OMB did ask FWS to delete an entire section of its Topeka shiner analysis addressing benefits of critical habitat. The memo states in part: “The benefits accruing from designating the critical habitat are not relevant to the policy decision at hand (the decision is how extensive should the habitat be, not whether to designate critical habitat), and the studies cited are not useful.”

Elsewhere in the three-page memo, OMB suggests changes to certain paragraphs “to reflect that the relevant benefits in this analysis should be the benefits to the species, not to society.” However, it appears that FWS did not follow OMB’s suggestion on that point. Nowicki acknowledged that benefits accrued from critical habitat — such as clean air, clean water, habitat for both game and non-game wildlife, and recreational opportunities — are hard to quantify in dollars. But, he said, OMB’s standards allow for inclusion of such qualitative benefits when quantitative measures are unavailable.

However, Manson rejected the notion that recreation provides an economic benefit to

areas with critical habitat. With the bull trout, for example, some people suggested the habitat designation would encourage recreational activities with direct economic benefit to local communities. But Manson said such logic is flawed. “If anything, critical habitat is more likely to restrict those economic activities rather than enhance them,” he said.

Nowicki argued that the skewed analyses from FWS originates in part from assumptions like Manson’s. But economists are developing new ways to quantify ecological values that may help steer future analyses, he said. “It’s something a lot of people are working on, and we definitely need to do that,” Nowicki said.

Source: Natalie M. Henry, *Greenwire*, 8/2/04

Additional Refuges Opened to Hunting and Fishing

An additional 243,500 acres of national wildlife refuges and wetlands were opened to fishing and hunting starting 9/1/04, the U.S. Fish and Wildlife Service (FWS) announced in late August. Critics of the proposed plan said the announcement was an attempt to win votes. “I do think politics are at play,” said *League of Conservation Voters* Vice President Betsy Loyless. “The areas they’ve chosen play to the base. What this means in terms of conservation is questionable.”

While both President George W. Bush and Democratic candidate John Kerry have touted their love of the outdoors and sportsmanship in an attempt to align themselves with millions of voters, FWS officials did not address questions about connections between the Bush Administration’s decision to increase refuge access and its strategy to boost re-election efforts. “This is just another example of the president’s commitment to sportsmen,” said FWS Director Steve Williams. “By law, Congress directed the FWS to consider and provide opportunities for hunting and fishing where it’s compatible on the refuges. We take that quite seriously.”

National wildlife refuges opened for the first time under the new order include: Mountain Long Leaf in Alabama, 3,300 acres; Cypress Creek in Illinois, 100 acres; Red River in Louisiana, 2,700 acres, and Waccamaw in South Carolina, 10,500 acres. Another six wetlands management districts

were opened: Devils Lake in North Dakota, 56,000 acres; and Huron, 11,000 acres; Lake Andrews, 20,000 acres; Madison, 38,500 acres; Sand Lake, 45,000 acres, and Waubay, 4,400 acres all in South Dakota. Additional lands were added to existing open hunting areas on the seven following refuges: Savannah in Georgia and South Carolina, 2,000 acres; Big Oaks in Indiana, 10,000 acres; Big Branch Marsh in Louisiana, 6,000 acres; Crescent Lake in Nebraska, 5,000 acres; Cross Creek and Tennessee in Tennessee, 24,000 acres, and Trinity in Texas, 5,000 acres.

Nearly 550 national wildlife refuges and 3,000 wetlands already are open to fishing or hunting. The current proposal, opening the additional 17 properties, does not include funding for managing possible increased activity. Loyless, whose group promotes more limited hunting and fishing on refuges, said the Bush Administration’s decision and other wetlands policies put millions of acres at risk of being developed. “This is like putting a hole in the bucket and then saying you’re going to fill it with a little water, or a little wetlands,” Loyless said.

Sources: John Heilprin, AP/*San Francisco Chronicle*, 8/30/04; and *Greenwire*, 8/31/04

Protecting Water Resources with Smart Growth

Growth and development can have profound effects on our water resources. Storm sewer overflows and polluted runoff from nonpoint sources are a major reason that some water bodies do not meet Clean Water Act (CWA) standards. In fact, the *National Water Quality Inventory: 2000 Report to Congress* identified urban runoff as one of the leading sources of water quality impairment in surface waters. And of the seven pollution source categories listed in the report, “urban runoff/storm sewers” was ranked as the fourth leading source of impairment in rivers, third in lakes, and second in estuaries.

One factor related to persistent water pollution problems is our development patterns, particularly patterns of highly dispersed development that have been common since the end of World War II. The more woodland, meadowland, and wetland areas that disappear under impermeable cover, and the more miles and vehicles we drive and park on impermeable roads and highway surfaces, the more difficult it is to

protect the quality and quantity of our water supplies.

“Protecting Water Resources with Smart Growth” is a new U.S. Environmental Protection Agency (EPA) publication intended for audiences such as communities, local governments, state and regional planners already familiar with smart growth and who are seeking more ideas on how to protect their water resources. The document is a compilation of 75 policies designed to protect water resources and implement smart growth. The majority of these policies (46) are oriented to the watershed, or regional planning level, while the other 29 are targeted for specific development sites.

The report says that communities and local governments are looking for, and using, policies and tools that enhance existing neighborhoods, improve schools, protect drinking water, and provide solid housing and transportation choices. Section I of the report describes how communities have used smart growth techniques at the regional level to minimize the impacts of new development on their water resources. Success has been achieved in implementing policies to preserve critical regional watershed areas, and strategically directing development to existing communities to minimize runoff from impervious surfaces such as roadways, driveways, and rooftops.

Section II discusses site-level techniques that local governments have used to further mitigate the impacts of development. When used in combination with regional techniques, these site-level techniques can prevent, treat, and store runoff and associated pollutants at the site. Many of these practices incorporate some elements of low-impact development techniques (e.g., rain gardens, bioretention areas, and grass swales), although others go further to incorporate smart growth principles such as changing site design practices. Incorporating these techniques can help localities not only to meet their water quality goals, but also to create more interesting and livable communities.

Examples are provided in both sections that draw from communities across the country. Many of the listed policies are supplemented by “practice tips” that illustrate their application or identify additional resources to aid communities with implementation. In addition, several policy descriptions include “issues to consider,” which highlight potential complications or other concerns

associated with implementing a policy. The experience of local governments has shown that regional and site-specific policies will be most effective when implemented together; addressing the regional or site level alone might not be effective in achieving lasting changes in water quality.

According to the report smart growth can be characterized by the following 10 principles:

- mixed land uses;
- taking advantage of compact building design;
- creating a range of housing opportunities and choices;
- creating walkable neighborhoods;
- fostering distinctive, attractive communities with a strong sense of place;
- preserving open space, farmland, natural beauty, and critical environmental areas;
- strengthening and directing development towards existing communities;
- providing a variety of transportation choices;
- making development decisions predictable, fair, and cost effective; and
- encouraging community and stakeholder collaboration in development decisions.

These principles, the report says, support economic development and jobs; create strong neighborhoods with a range of housing, commercial, and transportation options; and achieve healthy communities and a clean environment. They also provide a foundation — a basic springboard — for implementation of the following 75 smart growth policies detailed in the report:

- Conduct watershed planning;
- Develop a regional comprehensive plan;
- Implement watershed-based zoning districts;
- Designate special development districts;
- Coordinate development and conservation plans;
- Allow higher densities;
- Use density averaging;
- Preserve open space, including critical environmental areas;
- Direct development through transferable development rights;
- Coordinate development planning with sewer and water authorities;
- Limit development on land near public wells;

- Consider the cumulative and secondary impacts of development in the floodplain;
- Update combined sewer and sanitary sewer systems in downtown areas;
- Develop infill sites;
- Redevelop brownfields;
- Redevelop greyfields;
- Maximize transportation choices;
- Create a stormwater utility;
- Use wastewater fees to fund watershed-level planning;
- Vary sewer hookup fees for existing and suburban fringe locations;
- Direct infrastructure spending to designated growth areas;
- Differentiate development fees based on location of the development;
- Use compensation fees to address high-priority water quality problems;
- Charge for water usage on an incremental basis;
- Use Clean Water State Revolving Funds for smart growth initiatives;
- Improve oversight of onsite treatment systems;
- Provide a stormwater fee credit for redeveloping existing impervious surfaces;
- Tie bonds to performance measures;
- Use private activity bonds to finance projects that protect water resources;
- Allocate a portion of highway and transit funding to meet water quality goals;
- Establish a community preservation fund;
- Establish a clean water management trust fund;
- Offer incentives for adopting land use changes under a TMDL implementation plan;
- Create performance-based standards;
- Consider future growth when developing TMDLs;
- Make adequate water a prerequisite of additional growth;
- Incorporate smart growth into stormwater management plans;
- Incorporate smart growth into pollution trading programs;
- Use smart growth to vigorously pursue CWA antidegradation policy;
- Create a sliding scale of mitigation requirements based on level of density;
- Modify facility planning area process to support smart growth;
- Create partnerships to improve water quality;

- Educate local officials on the water quality impacts from development;
- Develop a model town to demonstrate how and where polluted runoff flows;
- Create a program to certify developers, builders, and other industry professionals responsible for implementing BMPs;
- Provide municipalities with sufficient data to make better land use decisions;
- Consider cumulative site-level development-related impacts;
- Provide incentives to encourage specific development practices;
- Minimize stormwater runoff through construction site design;
- Use conservation site design;
- Minimize stormwater runoff through traditional and non-traditional BMPs;
- Designate smart growth site design as a BMP;
- Allow green building points for infrastructure repair
- Allow offsite mitigation;
- Adopt model development principles;
- Allow developers to pool stormwater management efforts;
- Maximize use of existing impervious cover;
- Design open space areas to minimize stormwater runoff;
- Preserve and enhance green areas in existing neighborhoods;
- Use green practices to manage rooftop runoff;
- Use low impact development techniques;
- Construct narrow, walkable, well-connected streets;
- Adopt stormwater ordinances;
- Adopt ordinances for source water protection
- Adopt water-saving landscaping ordinances;
- Adopt tree ordinances;
- Implement ordinances and standards to better manage development along waterways;
- Reduce lot sizes through zoning and setback requirements;
- Minimize parking requirements;
- Provide resources to educate developers and local staff on LID techniques;
- Create a statewide educational program for local experts;
- Notify home buyers of future water availability and cost;

- Educate citizens and businesses to help protect water resources;
- Train teachers on smart growth issues; and
- Encourage information-sharing among developers concerning smart growth designs that protect water resources.

Protecting Water Resources with Smart Growth is one in a series of publications on smart growth produced or supported by the EPA. Earlier publications, such as EPA's *Our Built and Natural Environments*, (PDF, 1.6MB, pp 102) or the *International City/County Management Association's Getting to Smart Growth: 100 Policies for Implementation* (PDF, 2.7MB, pp 104), *Why Smart Growth* (PDF, 873KB, pp 44), and *Best Development Practices* (PDF, 1.1MB, pp 30), provide basic background on smart growth and a broad range of smart growth techniques.

Both the *Smart Growth Network* and *Smart Growth America* have posted information, tools, and resources on all aspects of smart growth on their Web sites: <http://www.smartgrowth.org> and <http://www.smartgrowthamerica.org>. The complete EPA report, "*Protecting Water Resources with Smart Growth*" can be accessed online at: <http://www.epa.gov/smartgrowth>.

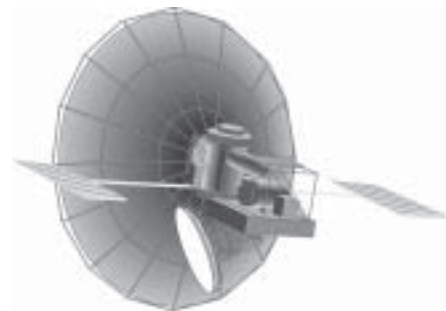
U.S. is Moving Forward with Earth Observation Network

The Bush Administration is moving ahead with plans to help establish an integrated Earth Observation System (EOS) to support a wide range of environmental management decisions, from matters of global climate change to restoring ocean health, according to a draft strategic plan released in early September. The document details a 10-year timeline for linking existing environmental observation systems into a functional network while developing and deploying new technology to improve remote sensing and monitoring of the earth's natural systems.

Thus far, 48 countries and the European Commission have agreed to help develop the system, and a global strategic plan that incorporates the U.S. efforts is scheduled to be hammered out in Brussels early next year. Nations agreed on a broad framework for the EOS at a meeting in Tokyo earlier this year. The draft U.S. plan lays out a nine-point agenda whose goals include improving weather forecasting, protecting

and monitoring ocean resources as well as developing an ecological forecasting capability. The document is the product of a working group within the Cabinet-level *National Science and Technology Center* (NSTC). In total, 18 entities had a hand in shaping the EOS plan, including the National Oceanic and Atmospheric Administration (NOAA) and the Smithsonian Institution.

The EOS "...transcends individual agency perspectives and focuses the activity on broad societal, scientific, and economic imperatives," the document states. Kathie Olsen, associate director for science at the White House Office of Science and Technology Policy and co-chair of the NSTC Committee on Environment and Natural Resources, said EOS will require agencies to shed their traditional stovepipe mentality and "look at [EOS] in terms of an interactive, integrated and interoperable system." While not strictly a climate change program, expanding climate observations is a key driver of EOS and will mesh well with the administration's *Climate Change Science Program*, said Scott Rayder, NOAA's chief of staff. "We need more data, and we need better data on how the systems on the planet work," Rayder said. He noted that EOS is essentially about taking the pulse of the planet, highlighting the intricate connections between systems to "see how they dance and work together."



According to the draft plan, U.S. weather and climate-sensitive industries account for up to one-third of the country's gross domestic product, about \$2.7 trillion. It states that El Nino forecasts have saved about \$300 million annually, and those economic benefits could be extended to other realms with a coordinated observation system. "The return on our investments for Earth observations has brought great benefits to the general public. However, we can do much more," the document states.

In August NOAA Administrator Conrad Lautenbacher and U.S. Environmental Protection Agency (EPA) Administrator

Mike Leavitt touted EOS's benefits to problem-solving on the national, regional and even local levels. Leavitt and Lautenbacher said the system — which they claim would process data streams from a network of satellites, air quality monitors, ocean sensors and other equipment — would:

- allow states to better predict environmental conditions and reduce damage and deaths from hurricanes, forest fires and other disasters;
- provide important data on Great Lakes conditions to one or more Midwestern states;
- “pinpoint the location” of oil and chemical spills and “help cleanup crews respond faster and avoid hazards as they work”;
- work to reduce storm damage and fatalities by combining data from satellites, Doppler radar and other equipment to provide residents with severe storm warnings sooner;
- provide “real-time visibility monitoring” for national parks;
- monitor snowpack and precipitation as well as drought conditions “to help farmers, foresters, and local water authorities” better manage their resources;
- allow power plants to better forecast energy demand on any given day because the earth observation system would improve temperature forecasts; and
- allow application of fertilizers and pesticides — which pose major water quality problems because of agricultural runoff — without harm to the environment because states would have real-time feedback on how those chemicals are affecting lakes, rivers and streams.

Lautenbacher said linking satellites and land- or ocean-based sensors is critical to verify images from space about problems or potential problems. Satellites and sensors serving the Arctic and Antarctic should be linked first because of the critical role these regions play in global climate, he said.

Leavitt and Lautenbacher could not provide a cost estimate for development of the EOS, but Lautenbacher said such efforts would involve coordinating data that already exists at NOAA, EPA and other federal agencies such as the Federal Emergency Management Administration. He acknowledged that satellites — which cost \$200-\$400 million each — would need to be retrofitted with additional equipment so they can receive and send information to and from earth-

based sensors. NOAA already spends about \$800 million annually to manage information collected from its satellites and land-based sensors, according to Lautenbacher.

Rayder said it is unclear how much the U.S. will invest in EOS because many of the technologies planned are “over the horizon.” Some of the technologies on the drawing board include radar-equipped unmanned aerial vehicles to monitor hurricanes, and new types of ocean buoys that create their own power and travel a predetermined course to track ocean currents. “It’s fascinating stuff,” he said.

Sources: Marty Coyne, *Greenwire*, 8/18/04; and Andrew Freedman, *Greenwire*, 9/9/04

Assisted Reproduction May Help Rare and Endangered Species

A new genetic engineering technique that involves altering the reproductive organs of a species could help recover endangered species, according to a study published in an early August issue of the journal *Nature*. The radically new technique involves both surrogate mothers and surrogate fathers.

Scientists at Tokyo University of Marine Science and Technology first extracted primordial germ cells from rainbow trout embryos. These are cells which will, as the embryo develops, become testes or ovaries. These cells were then placed into the peritoneal cavities of 60 developing masu salmon embryos. When the salmon grew to maturity and mated with each other, most of the offspring were trout-salmon hybrids which died quickly. However, some were pure trout — an identity confirmed by genetic analysis. Scientists hope the technique could be used to help populations of rare commercial fish, such as bluefin tuna.

“The most striking biological difference between them is that rainbow trout are able to spawn several times during their lives, whereas masu salmon die after their first spawning,” stated the study. Lead researcher Yutaka Takechi of Tokyo University of Marine Science and Technology said, “The seed production for a species with a large body size and longer generation time could be carried out in surrogate parents with a smaller body size and shorter generation time.” He said further, “If primordial germ cells of bluefin tuna could be transplanted into mackerel, the surrogate mackerel would produce mature eggs and

sperm derived from the donor tuna in a short period and in a small facility. Therefore, our technique may help to feed the world’s sushi habit,” he said.

Professor Norman MacLean from Southampton University believes there might be other commercial applications. “The obvious one is the sturgeon, which only become reproductively mature around the age of ten,” he said, “so perhaps you could have them reared by another species which develops much faster.” As details of the technique have only just been published, it’s difficult to judge how widely it might be applied, and how closely related the species need to be.

But critics said transplanting tissues between species is not the best way to save endangered species. John Sumpter, a fish biologist at Brunel University said, “They are trying to sell this on the grounds of helping to preserve endangered species, but it strikes me as a hi-tech solution. The problem is not going to be addressed by this solution. The problem is one of habitat loss, over-fishing, and possibly climate change and pollution. These are what need to be addressed”.

Sources: Richard Black, *BBC Online*, 8/5/04; Steve Connor, *London Independent*, 8/5/04; and *Greenwire*, 8/5/04

Frozen Ark Project

In an effort to preserve species that may not survive in nature, a group of British scientists announced the creation in late July of a DNA repository for endangered species. The *Frozen Ark Project* hopes to save a “back-up” copy of many species before they are lost. Their genetic codes will be stored in a frozen database, which can be called upon in the future to build knowledge and — perhaps — conservation initiatives.

The *Frozen Ark* project — supported by London’s Natural History Museum, the Zoological Society of London and Nottingham University — will gather tissue samples from endangered species, freeze the samples, and keep them frozen at one of several locations around the world. Some experts have warned that as many as a quarter of all mammals, a tenth of all birds and many insects and worms could become extinct in the next 30 years. “Many people don’t understand the current threat to

biodiversity we face today,” said Crispin Tickel of Oxford University, the project’s patron. “Extinctions today probably equal the last five great extinctions”.

Ten thousand animal species are currently endangered and we have an amazing uncertainty about their importance in the web of life. When a species is snuffed out, it leaves a hole in the ecosystem and, perhaps, a dent in our conscience. But there is something else, too. The last animal of its kind to die, takes with it a tome of information. “When the last individual of a species dies, you lose all the adaptations that have accumulated over millions of years of evolution,” said Georgina Mace, of the Natural History Museum. “It would be incredibly reckless of us to allow these adaptations to be lost.”

Bryan Clarke, a population geneticist at Nottingham University said, “The *Frozen Ark* is not a conservation measure but rather a back-up plan for when all best conservation efforts have failed”. The *Frozen Ark*

Project process would include the following:

- Scientists would take whole insects, or small tissue samples from animals so life is not endangered.
- Tissues would then be frozen for safe-keeping.
- DNA would be extracted from tissue samples, either straight after it was obtained or after freezing.
- This DNA could then be used later for research, which may one day lead to resurrection of extinct species.
- Portions of the DNA samples would be sent to separate labs as an insurance against damage or loss.
- The unused DNA would be frozen and remain viable potentially for thousands of years.

The principal *Frozen Ark* DNA collection will be set up in London at the Natural History Museum and the Institute of Zoology, and there are plans for duplicate collections elsewhere in the world to

safeguard the survival of the samples. With some 10,000 species listed as in danger of extinction, the Ark will fill quickly. The project will be guided by the *World Conservation Union’s* red list of threatened species.

Should the project succeed, the possibility may exist in the future to use the frozen tissue samples to clone extinct species. However, project participants said the goal is not to bring back species from the dead. “We’re cautious about cloning because it gets so sexed up, but who knows what we’re going to be using these specimens for in the future,” said Alan Cooper of Oxford University, a member for the project’s steering committee. He added, “It would be impossible to clone the dodo anyway, but even if you could, what would you do with it? There’s no environment left for the dodo.”

Sources: Julianna Kettlewell, *BBC News Online*, 7/27/04; Robert Barr, *AP/San Diego Union-Tribune*, 7/26/04; and *Greenwire*, 7/27/04

Meetings of Interest

Oct. 25-28: 7th Annual Wetlands Workshop: The Protection of Aquatic Ecosystems Using Watershed-Based Approaches, Atlantic City, NJ. See: www.wetlandsworkgroup.org. Contact: Frank Reilly, Frank@wetlandsworkgroup.org, (540) 286-7523.

Oct. 28-29: 31st Annual Conference on Ecosystems Restoration and Creation, Tampa, FL. See: www.hccfl.edu/depts/detp/ecoconf.html. Contact: Patrick Cannizzaro, pcannizaro@hccfl.edu, (813) 253-7523.

Nov. 1-3: Watershed Planning: Approaches, Challenges, and Strategies for Success II, Stevenson, WA. Contact:

ssf@island.net, (250) 729-9623 or C. Susan Weiler, dialog@whitman.edu, (509) 527-5948.

Nov. 3-5: 24th International Symposium of the North American Lake Management Society, Victoria, BC, Canada. See: www.nalms.org. Contact: Carol Winge, winge@nalms.org, (608) 233-2836

Dec. 3-4: Fourth Biennial Northeast Aquaculture Conference and Exposition: From the Mountains to the Sea, Manchester, NH. See: www.northeast.aquaculture.com. Contact: J. J. Newman-Rode, jj.newman@unh.edu, (603) 749-1565.

Dec. 12-15: Midwest Fish and Wildlife Conference, Indianapolis, IN. See: www.in.gov/dnr/midwest2004. Contact: Chris Grauel, cgrauel@dnr.state.in.us, (812) 352-8486.

Jan. 11-13, 2005: *Scaphirynchus* Conference, St. Louis, MO. See: <http://bio.slu.edu/mayden/conferences/sturgeon.html>. Contact: Tom Keevin, thomas.m.keevin@mvs02.usace.army.mil, (314) 331-8462.

Sep. 11-15, 2005: 135th Annual Meeting of the American Fisheries Society, Anchorage, AK. Contact: Betsy Fritz, bfritz@fisheries.org, (301) 897-16, ext. 212.

Congressional Action Pertinent to the Mississippi River Basin

Conservation

S. 2590. Alexander (R/TN) and Landrieu (D/LA). Provides a conservation royalty from Outer Continental Shelf revenues to establish the Coastal Impact Assistance Program, provide assistance to States under the Land and Water Conservation Fund Act of 1965, ensure adequate funding for

conserving and restoring wildlife, assist local governments in improving local park and recreation systems, and for other purposes.

H. R. 2036. Isakson (R/GA). Amends the Internal Revenue Code of 1986 to provide economic incentives for the preservation of open space and conservation of natural resources, and for other purposes.

H. R. 4100. George Miller (D/CA) and Young (R/AK). Establishes a permanent trust fund to get Americans outdoors by providing access to parks and recreation areas in urban and rural communities; preserving historic places; promoting healthy and active lifestyles; and providing for hunting, angling, and wildlife viewing for the people of the United States.

Endangered Species Act (ESA) of 1973

S. 369. Thomas (R/CA). Amends the ESA to improve the processes for listing, recovery planning, and delisting, and for other purposes.

S. 1178. Enzi (R/WY). Amends the ESA to require the Federal Government to assume all costs relating to implementation of and compliance with that Act.

S. 2009. Smith (R/OR) and **H. R. 1662.** Walden (R/OR) and 18 Co sponsors. Amends the ESA to require the Secretary of the Interior to give greater weight to scientific or commercial data that is empirical or has been field-tested or peer-reviewed, and for other purposes.

H. R. 1194. Herger (R/CA). Amends the ESA to enable Federal agencies to rescue and relocate any endangered or threatened species that would be taken in the course of certain reconstruction, maintenance, or repair of man-made flood control levees.

H. R. 1235. Gallegley (R/CA) and Gibbons (R/NV). Provides for management of critical habitat of endangered and threatened species on military installations in a manner compatible with the demands of military readiness, and for other purposes.

H. R. 1835. Gallegley (R/CA) and 3 Co sponsors. Amends the ESA to limit designation as critical habitat areas owned or controlled by the Department of Defense, and for other purposes.

H. R. 1965. Gibbons (R/NV). Limits application of the ESA with respect to actions on military land or private land and to provide incentives for voluntary habitat maintenance, and for other purposes.

H. R. 2602. Otter (R/ID). Amends the ESA to make the authority of the Secretary to designate critical habitat discretionary instead of mandatory, and for other purposes.

H. R. 2933. Cardoza (D/CA) and 17 Co sponsors. Amends the ESA to reform the process for designating critical habitat under that Act.

H. R. 4475. Graves (R/MO). Amends the ESA to focus conservation efforts under that Act on the 109 species most in danger of extinction, and for other purposes.

Energy

H. R. 1013. Radanovich (R/CA), Hastings (R/WA), and Walden (R/OR). Amends the Federal Power Act to provide for alternative conditions and alternative fishways in hydroelectric dam licenses, and for other purposes.

Federal Water Pollution Control Act (FWPCA) Amendments:

S. 170. Clean Water Infrastructure Financing Act of 2003. Voinovich (R/OH) and **H.R. 20.** Kelly (R/NY) and Tauscher (D/CA). Amends the FWPCA to authorize appropriations for State water pollution control revolving funds, and for other purposes.

S. 473. Feingold (D/WI) and 3 Co sponsors and **H.R. 962.** Oberstar (D/MN) and 21 Co sponsors. Amends the FWPCA to clarify the jurisdiction over waters of the U.S.

S. 2550. Crapo (R/ID) and 2 Co sponsors. Amends the FWPCA and the Safe Drinking Water Act to improve water and wastewater infrastructure in the U.S.

H. R. 738. Pallone (D/NJ) and 16 Co sponsors. Amends the FWPCA to clarify that fill material cannot be comprised of waste.

H. R. 784. Camp (R/MI) and 17 Co sponsors. Amends the FWPCA to authorize appropriations for sewer overflow control grants

H. R. 1560. Duncan (R/TN) Amends the FWPCA to authorize appropriations for State water pollution control revolving funds, and for other purposes.

Floodplain Management

S. 2301. Inouye (D/HI). Improves management of Indian fish and wildlife and gathering resources, and for other purposes.

H. R. 67. Flake (R/AZ) and Hayworth (R/AZ). Provides temporary legal exemptions for certain management activities of the Federal land management agencies undertaken in federally declared disaster areas.

H.R. 253. Two Floods and You Are Out of the Taxpayers' Pocket Act of 2003. Bereuter (R/NE) and Blumenauer (D/OR). Amends the National Flood Insurance Act of 1968 to reduce losses to properties for

which repetitive flood insurance claim payments have been made.

Forestry

S. 32. Kyl (R/AZ) and 4 Co sponsors and **H.R. 460.** Hayworth (R/AZ) and 7 Co sponsors. Establishes institutes for research on the prevention of, and restoration from wildfires in forest and woodland ecosystems of the interior West.

S. 1208. Collins (R/ME) and Reed (D/RI). Amends the Cooperative Forestry Assistance Act of 1978 to provide assistance to States and nonprofit organizations to preserve suburban forest land and open space and contain suburban sprawl, and for other purposes.

S. 1449. Crapo (R/ID) and Lincoln (D/AR) and **H. 1904.** Cochran (R/MS). Improves the capacity of the Agriculture and Interior secretaries to plan and conduct hazardous fuels reduction projects on National Forest System and Bureau of Land Management lands and for other purposes.

S. 1453. Leahy (D/VT) and Boxer (D/CA) Expedites procedures for hazardous fuels reduction activities and restoration in wildland fire prone national forests and for other purposes.

S. 1938. Corzine (D/NJ) and 3 Co sponsors. Amends the Forest and Rangeland Renewable Resources Planning Act of 1974 and related laws to strengthen the protection of native biodiversity and ban clearcutting on Federal land and for other purposes.

H. R. 652. Andrews (D/NJ). Assures large areas of land in healthy natural condition throughout the country to maximize wildland recreational opportunities, maximize habitat protection for native wildlife and natural plant communities, and to contribute to the preservation of water for use by downstream metropolitan communities and other users, through the establishment of a National Forest Ecosystem Protection Program.

H. R. 1042. Udall (D/CO) and Udall (D/NM). Authorizes collaborative forest restoration and wildland fire hazard mitigation projects on National Forest System lands and on other lands, to improve the implementation of the National Fire Plan, and for other purposes.

H. R. 2169. Leach (R/IA) and 89 Co sponsors. Saves taxpayers money, reduces the deficit, cuts corporate welfare, protects communities from wildfires, encourages Federal land management agency reform and accountability, and protects and restores America's natural heritage by eliminating the fiscally wasteful and ecologically destructive commercial logging program on Federal public lands, restoring native biodiversity in our Federal public forests, and facilitating the economic recovery and diversification of communities affected by the Federal logging program.

H. R. 3566. Walden (R/OR). Amends the Cooperative Forestry Assistance Act of 1978 establishing a program using GIS technologies to inventory, monitor, characterize, assess, and identify forest stands and potential forest stands, and for other purposes.

Global Warming

S. 17. Daschle (D/SD) and 15 Co sponsors. Initiates responsible federal actions that will reduce global warming and climate change risks to the economy, the environment, and the quality of life and for other purposes.

S. 139. Lieberman (D/CT) and McCain (R/AZ) and **H. R. 4067.** Gilchrest (R/MD) and 19 Co sponsors. Provides for scientific research on abrupt climate change, to accelerate reduction of U.S. greenhouse gas (GHG) emissions by establishing a market-driven system of GHG tradeable allowances; limit U.S. GHG emissions; and reduce dependence on foreign oil, and ensure benefits to consumers from the trading in such allowances.

S. 1164. Collins (R/ME) and 4 Co sponsors. Provides for the development and coordination of a comprehensive and integrated U.S. research program that assists the people of the U.S. and the world to understand, assess, and predict human-induced and natural processes of abrupt climate change.

H. R. 1578. Udall (D/CO). Promotes and coordinates global climate change research, and for other purposes.

Invasive Species

S. 144. Craig (R/ID) and 9 Co sponsors and **H.R. 119.** Hefley (R/CO). Requires the Interior Secretary to establish a

program to provide assistance through the States to eligible weed management entities to control or eradicate harmful, nonnative weeds on public and private land.

S. 525. Levin (D/MI) and 15 Co sponsors and **H. R. 1080.** Gilchrest (R/MD) and 67 Co sponsors. Amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA) to reauthorize and improve it.

S. 536. DeWine (R/OH) and 5 Co sponsors and **H.R. 266.** Ehlers (R/MI) and Gilchrest (R/MD). Establishes the National Invasive Species Council, and for other purposes.

S. 2490. Inouye (D/HI) and Stevens (R/AK). Amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 to establish vessel ballast water management requirements, and for other purposes.

S. 2598. Akaka (D/HI) and 5 Co sponsors. Protects, conserves, and restores public land administered by the Department of the Interior or the Forest Service and adjacent land through cooperative cost-shared grants to control and mitigate the spread of invasive species, and for other purposes.

H.R. 273. Gilchrest (R/MD) and Tauzin (R/LA). Provides for the eradication and control of nutria in Maryland and Louisiana.

H. R. 989. Hoekstra (R/MI). Requires issuance of regulations to assure that vessels entering the Great Lakes do not discharge ballast water that introduces or spreads nonindigenous aquatic species and that such ballast water and its sediments are treated through the most effective and efficient techniques available.

H. R. 1081. Ehlers (R/MI) and 67 Co sponsors. Establishes marine and freshwater research, development, and demonstration programs to support efforts to prevent, control, and eradicate invasive species, as well as to educate citizens and stakeholders and restore ecosystems.

H. R. 2310. Rahall (D/WV) and 17 Co sponsors. Protects, conserves, and restores native fish, wildlife, and their natural habitats through cooperative, incentive-based grants to control, mitigate, and eradicate harmful nonnative species.

H. R. 3122. Miller (R/MI). Amends the NANPCA directing the U.S. Coast Guard to prohibit vessels with ballast tanks containing

more than 5% ballast water from entering the Great Lakes.

Mining

S. 2049. Specter (R/PA); **H.R. 3778.** Petersen (R/PA) and Sherwood (R/PA). Amends the Surface Mining Control and Reclamation Act of 1977 (SMCRA) to reauthorize collection of reclamation fees, revise the abandoned mine reclamation program, and make sundry other changes.

S. 2086. Thomas (R/WY) and Enzi (R/WY); **S. 2211.** Rockefeller (D/WV) and **H.R. 3796.** Cubin (R/WY) and Rahall (D/WV). Amends the SMCRA to reauthorize and reform the Abandoned Mine Reclamation Program, and for other purposes.

S. 2208. Rockefeller (D/WV) and 2 cosponsors. Amends the SMCRA to reduce the amounts of reclamation fees, modify requirements relating to transfers from the Abandoned Mine Reclamation Fund, and for other purposes.

H. R. 504. Udall (D/CO). Provides for the reclamation of abandoned hardrock mines, and for other purposes.

Public Lands

S. 124. Roberts (R/KS). Amends the Food Security Act of 1985 to suspend the requirement that rental payments under the conservation reserve program be reduced by users, through the establishment of a National Forest Ecosystem Protection Program.

H. R. 380. Radanovich (R/CA). Provides full funding for the payment in lieu of taxes program for the next five fiscal years, to protect local jurisdictions against the loss of property tax revenues when private lands are acquired by a Federal land management agency, and for other purposes.

H. R. 749. Udall (D/CO). Directs the Secretary of the Interior to establish the Cooperative Landscape Conservation Program.

H. R. 3324. Shays (R/CT) and 7 Cosponsors. Provides compensation to livestock operators who voluntarily relinquish a grazing permit or lease on Federal lands, and for other purposes.

Public Service

S. 89. Hollings (D/SC) and **H.R. 163.** Rangel (D/NY) and 5 Co sponsors. Provides for the common defense by requiring that all young persons in the U.S., including women, perform a period of military service or civilian service in furtherance of the national defense and homeland security, and for other purposes.

S. 2188. Feingold (D/WI), McCain (R/AZ) and Daschle (SD/D) and **H.R. 2566.** Kind (D/WI) and 3 Co sponsors. Provides for reform of the Corps of Engineers, and for other purposes

Water Resources

S. 323. Landrieu (D/LA) and Breaux (D/LA). Establishes the Atchafalaya National Heritage Area, Louisiana.

S. 531. Dorgan (D/ND) and Johnson (D/SD). Directs the Interior Secretary to establish the Missouri River Monitoring and Research Program, to authorize the establishment of the Missouri River Basin Stakeholder Committee, and for other purposes.

S. 561. Crapo (R/ID) and 5 Co sponsors. Preserves the authority of States over water within their boundaries, and delegates to States the authority of Congress to regulate water, and for other purposes.

S. 993. Smith (R/OR). Amends the Small Reclamation Projects Act of 1956, and for other purposes.

S. 2244. Hutchison (R/TX) and Breaux (D/LA) and **H. R. 2890.** Saxton (R/NJ). Protects the public's ability to fish for sport, and for other purposes.

S. 2301. Inouye (D /HI). Improves the management of Indian fish and wildlife and gathering resources, and for other purposes.

S. 2470. Bond (R/MO) and 7 Co sponsors, and **H.R. 4785.** Hulshof (R/MO) and 17 Cos sponsors. Enhances navigation capacity improvements and the ecosystem restoration plan for the Upper Mississippi River and Illinois Waterway System.

S. 2554. Frist (R/TN) and 4 Co sponsors; **S. 2773.** Inhofe (R/OK) and **H. R. 2557.** Young (R/AK) and 4 Co sponsors. Authorizes the Secretary of the Army to construct various projects for improvements to rivers and harbors of the U.S., and for other purposes.

H.R. 30. Bereuter (R/NE). Amends the Water Resources Development Act of 1992 to authorize the Secretary of the Army to pay the non-Federal share for managing recreation facilities and natural resources on water resource development projects if the non-Federal interest has agreed to reimburse the Secretary, and for other purposes.

H. R. 135. Linder (R/GA) and 3 Co sponsors. Establishes the "Twenty-First Century Water Commission" to study and

develop recommendations for a comprehensive water strategy to address future water needs.

H. R. 961. Kind (D/WI) and 5 Co sponsors. Promotes a Department of the Interior effort to provide a scientific basis for the management of sediment and nutrient loss in the Upper Mississippi River Basin, and for other purposes.

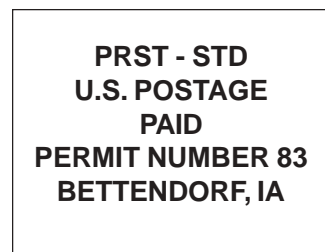
H. R. 1517. Graves (R/MO) and 6 Co sponsors. Amends the Land and Water Conservation Fund (LWCF) to limit the use of funds available from the LWCF Act of 1965 for maintenance.

H. R. 2828. Calvert (R/CA) and 25 Co sponsors. Authorizes the Interior Secretary to implement water supply technology and infrastructure programs aimed at increasing and diversifying domestic water resources.

Wild and Scenic Rivers

H. R. 987. Herger (R/CA) and Doolittle (R/CA). Amends the Wild and Scenic Rivers Act to ensure congressional involvement in the process by which a river that is designated as a wild, scenic, or recreational river by an act of the legislature of the State or States through which the river flows may be included in the National Wild and Scenic Rivers System, and for other purposes.

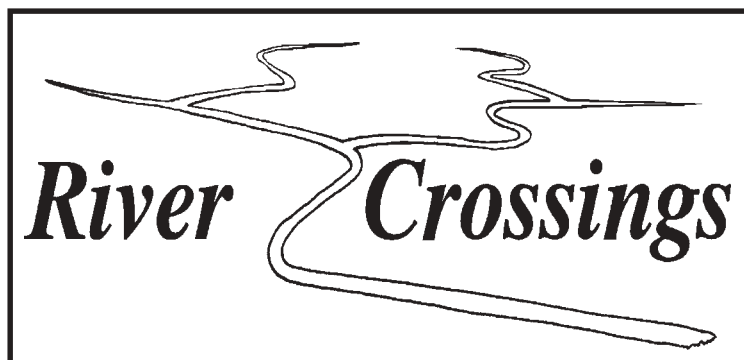
Source: *U.S. Congress On Line; <http://www.access.gpo.gov/congress/cong009.html>*



ADDRESS SERVICE REQUESTED



2004 Reader's Survey



Dear *River Crossings* Reader:

Thank you for your past interest in *River Crossings*, and most of all for your support in promoting the conservation and preservation of the Mississippi River Basin's great rivers. Without your continuing support and help in furthering the interests of aquatic resource management and conservation on the Nation's interjurisdictional rivers (i.e. those that border on or pass between two or more states or management jurisdictions), our work would be impossible.

In our continuing effort to provide you with a quality newsletter, we ask that you fill out this survey and provide us with your thoughts on what we are doing well, what we could do better, and what we should be doing, but currently aren't. Also, please let us know if you wish to remain on our mailing list. **Please return this survey to MICRA, P.O. Box 774, Bettendorf, IA 52722 by November 30, 2004.**

Sincerely,

A handwritten signature in cursive script that reads 'Doug Nygren'.

Doug Nygren
Chairman

I enjoy reading *River Crossings*, so please keep my name on your mailing list. My additional thoughts and comments are provided below.

I enjoy reading *River Crossings*, but prefer to download it at your Web Site: <http://wwwaux.cerc.cr.usgs.gov/>, so please remove my name from your mailing list. My additional thoughts and comments are provided below.

I am no longer interested in receiving *River Crossings*, so please remove my name from your mailing list. My additional thoughts and comments are provided below.

Additional Comments:
