River Crossings

Volume 11 **May/June 2002** **Number 3**

We're Back!

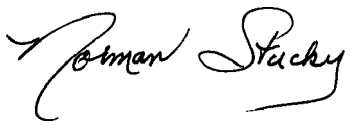
After an 18-month absence we have resumed publishing *River Crossings*. We apologize to our regular readers who may have missed our publication, but may not have known where we have been or why.

Unfortunately, we hit a speed bump brought on by controversy surrounding our February 2000 petition to the U.S. Fish and Wildlife Service (FWS) to list the black carp (*Mylopharyngodon piceus*) as a species of injurious wildlife under the federal Lacey Act. If you're interested in more details on that issue, you can visit our web site or please feel free to give me a call. However, my preference now is to focus on the positive, silver lining in this cloud. I believe MICRA has emerged from this issue stronger, and with more character and greater resolve than before to champion aquatic resources in the Basin. A special word of thanks goes to the staff of FWS Region 3 for their extraordinary support and encouragement in helping us "get back on our feet."

So the future of MICRA has never looked brighter. Our Executive Board had an excellent meeting earlier this spring in St. Louis, and several key actions were taken. We revised our Constitution and Bylaws and our Strategic or Operational Framework. We also agreed that MICRA should continue moving ahead toward the goal of sponsoring a Mississippi River Basin Aquatic Nuisance Species (ANS) Regional Panel.

As for *River Crossings,* we intend to continue publishing as before, six times per year. This would be our eleventh year of publication were it not for our 18-month hiatus. So in respect for the issue which caused the break in publication, and in keeping with our previous *River Crossings* numbering system, this issue will be numbered Vol. 11, No. 3. As such, Vol. 9, Nos. 5-6; Vol. 10, Nos. 1-6; and Vol. 11, Nos. 1-2 will simply remain as the "missing issues".

Finally, let me say that as we look to the future, I am committed to doing a better job of engaging all stakeholders in addressing controversial issues. As always, please feel free to drop us a line and let us know your views on issues related to these important rivers. These are exciting days on the old riverfront, and we pledge our continued support for the best interests of the interjurisdictional river resources of the Mississippi River Basin. We also solicit your support for that cause.



Norm Stucky, MICRA Chairman

Asian Carp Threat to the Great Lakes

The last few issues of *River Crossings*, published in 1999 and 2000, reported on the threat of Asian carp to the rivers of the Mississippi River Basin. That threat has now extended to the Great Lakes via the Illinois River and Waterway, and the Cal-Sag and Chicago Sanitary and Ship Canals that connect the Mississippi River Basin to Lake Michigan (See map on the next page).

Regular *River Crossings* readers may remember fish kills which were reported from stagnant backwaters of the Mississippi

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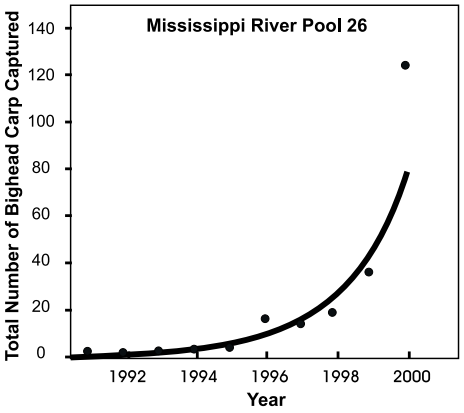
River near St. Louis during the fall of 1999 and 2000. Those kills, investigated by personnel from the U.S. Fish and Wildlife Service (FWS) Marion, IL Fisheries Resources Office, documented Asian carp numbers as high as 97% of the total fish population. Additionally, only four species of native fish were reported in the kills, and those were represented by only one individual each!

Since that time Asian carp have continued to spread, with documented numbers increasing exponentially in Pool 26 of the Mississippi River. The graph shown below displays actual data collected by biologists of the Upper Mississippi River System Long Term Resource Monitoring Program (UMRS-LTRMP).



Total numbers of Asian carp collected in Mississippi River Pool 26 between 1993 and 2000. Source: Chick, J.H. and M.A. Pegg. 2001. Invasive carp in the Mississippi River Basin. Science 292(5525) :2250-2251.

The lower end of the Illinois River (near St. Louis) is impounded by Lock and Dam 26 at Alton, IL, the lowermost Upper Mississippi River navigation dam. The first Illinois River navigation dam, upstream from Pool 26, is located at La Grange, IL. UMRS-LTRMP data for the La Grange Pool documented a 600 fold increase in Asian carp numbers between 1999 and 2000. Then last summer, upstream movement of Asian carp was documented in the next upstream Illinois River Pool (Peoria Pool) near Starved Rock, IL, located about 100 river miles from the Lake Michigan connecting canals. But more recent evidence suggests that Asian carp may now be within 25 miles of the Lake, putting the entire Great Lakes ecosystem in jeopardy of invasion by large numbers of the species.

The tendency throughout the Midwest has been for Asian carp species to move steadily

Map showing the connecting channels between Lake Michigan and the Illinois River, including the location of an aquatic nuisance species barrier.

upstream from the initial sites of infestation (i.e. Arkansas, Mississippi and other southern states where channel catfish farming operations occur). The only thing which has seemed to stop their upstream colonization has been blockage of their

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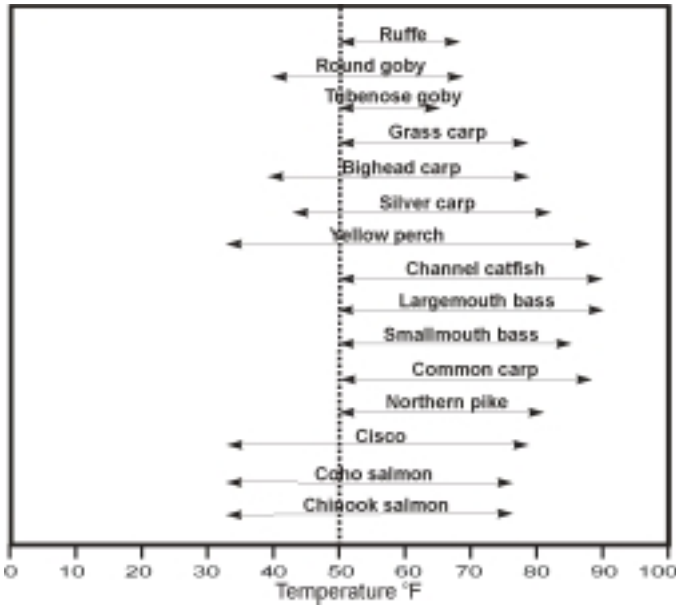
movements by high dams.

The two primary Asian carp species currently involved are the bighead carp (*Hypophthalmichthys nobilis*) and silver carp (*H. molitrix*). Both of these species were introduced from China by and for catfish farmers in southern states to control plankton blooms in channel catfish production ponds in the 1970's. Both species then either escaped or were released to the wild in the 1980's.

In their native range, both the bighead and silver carps occur in climates as far north as portions of Siberia. According to data provided by fishbase.org (an online international fishery database), both also prefer cool to cold waters. A chart showing preferred temperatures of bighead, silver and grass carp (*Ctenopharyngodon idella*), along with several species of popular North American gamefish is shown at right. The grass carp, the third species of Asian carp, has been widely introduced into the U.S. to control vegetation in lakes and ponds. No temperature preference data could be found for a fourth species, the black carp (*Mylopharyngodon piceus*), which remains in captivity. The latter was brought to the U.S. to control snails in fish culture ponds.

Judging from the preferred temperature data of Asian carp vs other common Great Lakes species, the Asians will clearly not be temperature-limited by the cold waters of the Lakes. In fact, they might prefer it. Note that the preferred temperatures for bighead and silver carp drop well into the range preferred by trout and salmon. Then if one considers the native range of Asian carp in northern China and Siberia (see map at the bottom of page), the Great Lakes seem to be a prime target for colonization, where the carps will likely spawn in many tributaries and connecting channels. In fact, the Great Lakes lie at the southern end of the native latitudinal range of the silver carp in China and Siberia. Thus, Great Lakes colonization by both the silver and bighead carps seems likely unless some type of barrier can stop them.

The connecting canals between Lake Michigan and the Mississippi River Basin have long been a concern to MICRA. These canals provided the route of invasion from the Great Lakes to the Mississippi River Basin for the zebra mussel (*Dreissena polymorpha*), as well as for numerous other planktonic life forms. More recently, and also reported in past issues of *River Crossings*, these canals provided the pathway for invasion of the round goby (*Neogobius melanostomus*). MICRA had urged installation of an electric aquatic nuisance species (ANS) barrier in the canals to stop the round goby invasion as long as three or more years ago. However, due in part to funding shortfalls, this barrier remained unfinished until this past March. In the meantime the round goby had reportedly spread its range beyond the barrier into the upper reaches of the Illinois River and Waterway.

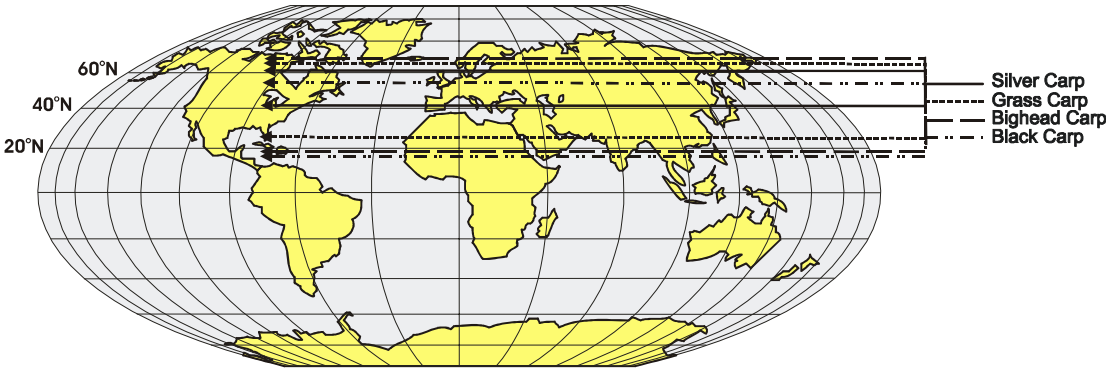


Preferred climate or temperature of three species of Asian carp, other Great Lakes invasives and several species of popular North American gamefish. Source: www.fishbase.org

Earlier this year FWS Regional Director William Hartwig visited Chicago Mayor Richard Daley to inform him of the potential for a Great Lakes invasion by Asian carp. Thanks to this visit and the subsequent extraordinary efforts of Mayor Daley, the electric ANS barrier has been electrified and is now being tested. Unfortunately, the barrier is only a prototype that will require extensive testing and adjusting to reach full effectiveness.

Different sizes and species of fish react differently to different electric fields, and so the electric charge will have to be carefully adjusted in order to stop the movements of all fish. In fact, the manufacturer, Smith-Root, Inc. of Vancouver, WA, suggested that a duplicate barrier may be needed to achieve 100% efficiency. An engineering sketch of the barrier is displayed on the next page.

Fortunately for the Great Lakes this electric barrier, if fully tested and operational, with backup electrical power, and perhaps a duplicate of itself, may prevent an Asian carp invasion of the Great Lakes via the canals. It, however, will not prevent invasion via other means (i.e. use of Asian carp as baitfish in the Lakes or release by other means). The electric barrier will also not stop larval and planktonic forms of species such as the zebra mussel from leaving Lake Michigan via the canals and drifting downstream into the Mississippi River Basin. In fact, in a letter to Mayor Daley in mid April, MICRA Chairman Norm Stucky pointed out that preventing such invasions "...will require measures such as treatment of all diversion waters, elimination of the diversion, or hydraulic separation of the two watersheds by some engineering means".



Map showing the native ranges of Asian carp in China and Siberia (i.e. 20-60° North latitude) projected onto a map of North America.

Stucky said further that "We (MICRA) don't have the answer, we only face the problem and encourage your support in helping us to gain some relief from it". He said further, "We understand that today's technology can correct some of the problems of the past regarding Chicago's water, waste treatment, and diversion needs, and that you are actively pursuing answers to some of those issues. We applaud you for that, as we do for drawing attention to the entire matter of nuisance species invasions".
Stucky concluded that, "This issue has indeed become a major concern for both basins. Proactive preventative measures need to be taken as soon as possible, without which the consequences for both basins could be huge. We (MICRA) will do whatever we can to solicit the political support and funding needed by the City of Chicago to solve the barrier as well as the water and waste treatment issues."

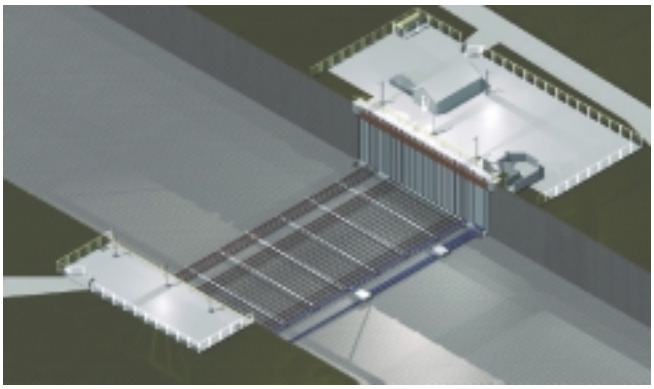


Diagram of the aquatic nuisance species (ANS) barrier located in the connecting canals between Lake Michigan and the Illinois River.

Measures which have been suggested for solving the cross-infestation of these two great ecosystems by invasive species include the following:

Organism Barriers

• The existing electric barrier needs to be thoroughly tested and maintained to ensure its efficacy in controlling the passage of a wide range of species, representing all sizes of fish. If necessary its electric charges need to be increased and/or additional barriers need to be installed to increase efficiency to 100%.

• A barrier or combination of barriers (i.e. electrical, chemical, bubble, toxic, anoxic, etc.) which will kill all aquatic organisms attempting to move upstream or downstream in the canals need(s) to be designed, developed, constructed, tested, operated and maintained

Water and Waste Treatment Measures

• Water quality in a reach (2 miles or more long) of the Cal-Sag and Chicago Sanitary and Ship Canal needs to be allowed to return to the toxic/anoxic conditions of the past, destroying all aquatic life and creating a toxic barrier (dead zone) to the movement of organisms until other measures can be effectively employed and tested.

• Measures (chemical, physical, etc.) need to be taken at Chicago's water treatment facilities to cycle all diversion waters drawn from Lake Michigan through the city's water processing system in order to ensure that all living organisms are destroyed before being released into the Illinois River and Waterway.

• Increased efforts are needed to complete Chicago's tunnel and reservoir project. This would enhance the city's ability to treat waste and runoff waters in order to return them to Lake Michigan, thus providing a closed system of water use and waste treatment, and eventually eliminating the need to divert wastes down the Illinois River.

Hydraulic Separation

• Engineering techniques need to be employed to hydraulically separate the Great Lakes and Mississippi River basins, essentially reversing or amending the engineering feats of the past (not unlike the Kissimmee River Project in Florida). Such a project could replumb the system, using new technology to better treat the city's wastes and to create new navigation alternatives. Such an alternative might employ a "turning basin" filled with heated power plant effluents and treated city wastes where water used for lockages would either be heated, treated or returned to the respective ecosystem from whence it came (See diagram below).

Navigation Project Changes

• Navigation connections between Lake Michigan and the Illinois River and Waterway (i.e. Chicago River lock, T.J. O'Brien lock, Hammond canal, etc.) need to be severed. Connecting canals could be filled with dredged material and replaced with terminals or harbors for off-loading of ships and barges over levees or barriers between the two ecosystems using conveyors or other physical means similar to that used to off-load ships at Great Lakes power plants and terminals.

• Navigation locks need to be temporarily closed and retrofitted with devices designed to prevent invasive species passage. Such

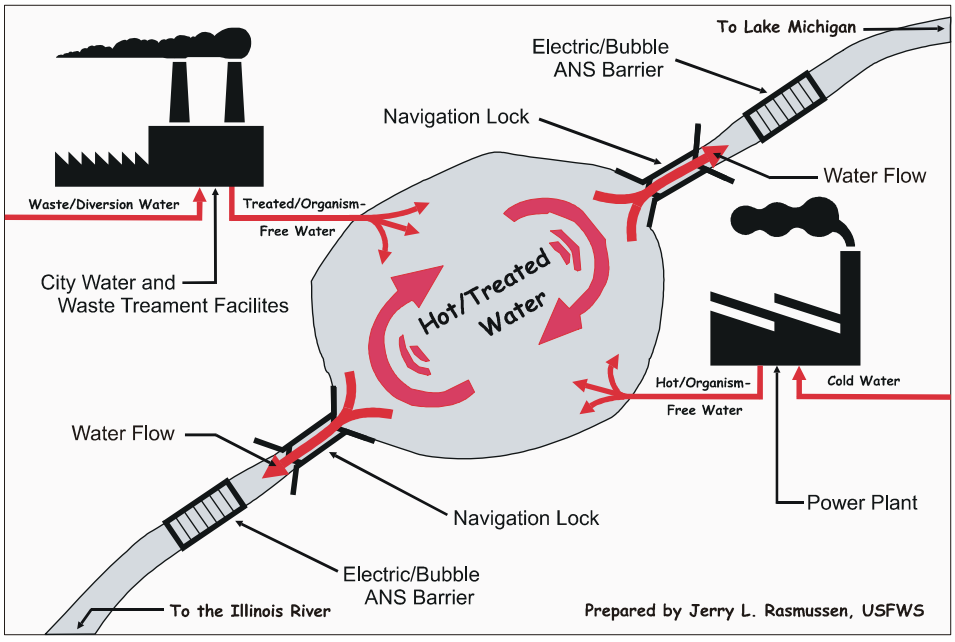


Diagram of a potential hydraulic separation between the Illinois River and Lake Michigan, utilizing heated and organism-free wastewaters to fill a basin used for lockages. Each lock could be protected by its own ANS barrier and lockage waters would be heated and treated, or returned to the watershed from whence they were taken.

devices might include electric, bubble or chemical barriers to fish movement, use of heated power plant effluents or treated (organism-free) diversion waters to fill locks, or on-going use of fish toxicants for each lockage to destroy any fish entering the locks.

• Locks need to be closed to commercial traffic, as above, establishing off-loading terminals, and allow only recreational navigation through smaller, more closely monitored and controlled locks using the treatments (physical and chemical barriers) described above.

Regulation Changes

• Federal codes of conduct, pre-clearance or compliance agreements need to be developed as described by the National Invasive Species Council (2001) to formulate realistic and fair phase-in evaluation of intentional introductions of new species currently moving into the U.S., in consultation with state governments, scientific and technical experts and societies, and other stakeholders, including affected industries and environmental groups.

• Species lists (i.e. white and black) need to be developed and enforced to control any future species introductions. White listed species could and black listed species could not be imported into, or possessed within U.S. borders. All species not white or black listed would be placed on a "grey list" and barred from importation until adequate studies were completed to conclusively determine that introduction would not harm any native U.S. species.

• Regulations need to be strengthened to place the "burden of proof of no harm" on importing agents for any species not black or white listed. Detailed studies must be required (and funded by importing agents) to determine the potential impacts of a species on U.S. ecosystems before importation is allowed. Simply described, this measure needs to become a "cost of doing business for importation" requirement that would be assumed by the importer and presumably passed on to the consumer.

• Regulations and penalties need to be strengthened for interstate transport and trade of nonnative species.

All possible alternatives need to be considered in reaching a solution to this significant problem. But any solution will require application of a combination of alternatives.

Bighead carp (50 lbs. class) taken by fishermen in the Cumberland River, TN (left) and the White River, IN (right). Sources: Tennessee Wildlife Resources Agency and Indiana Department of Natural Resources.

For example, the electric ANS barrier may be improved enough to block the movement of larger organisms (i.e. fish), but such a barrier will never be efficient enough to kill or block the downstream drift of smaller organisms (i.e. plankton). The latter could be addressed by a method of chemical or physical treatment such as passing all diverted waters from Lake Michigan through Chicago's drinking water treatment plant, or by hydraulic separation of the watersheds.

Fortunately, today's technology provides more options than were available in the past, so there is more that can be done now than there was before. But the problem remains that every solution requires a will, a trade-off and funding; and in this case, we have the added element that time is of the essence. Asian carps may soon invade Lake Michigan in large numbers. And once a species enters an ecosystem and becomes established, its too late, there is no turning back.

In the Mississippi River Basin we're receiving more and more reports of Asian carp catches like those shown at the top of the page. We would hate to see the Great Lakes fishery suffer the same fate. We need to act and act now in order to keep the "genie in the bottle" and thus prevent another disastrous zebra mussel-like infestation of either ecosystem.

Source: Rasmussen, J.L. 2001. The Cal-Sag and Chicago Sanitary and Ship Canal: A Perspective on the Spread and Control of Selected Aquatic Nuisance Fish Species. U.S. Fish and Wildlife Service White Paper. Region 3, Fort Snelling, MN. 26 pp.

Following the Black Carp Trail

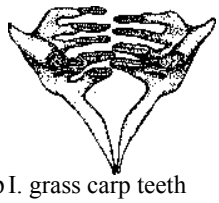
Biologists across the Basin have been watching for the appearance of black carp in the wild. Several were reported escaped from a private fish hatchery near Lake of the Ozarks, MO during the 1994 floods, but to date the species has not been detected in the wild. It is also known that black carp were first introduced into the U.S. as contaminants in grass carp shipments. The two species are very difficult to distinguish based on external appearance (Note the photographs below).
It has been reported that when commercial

Black carp (top) and grass carp (bottom).

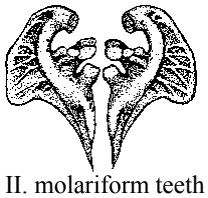
stocks of black and grass carp are mixed, some shippers separate the two based on the habit of grass carp swimming near the surface of the water column and black carp near the bottom. Fish dipped from the top of the water column are accordingly reported to be grass carp, while those that remain at the bottom are reported as black carp. This sorting system may be responsible for

contaminating the early grass carp shipments that first brought the black carp to the U.S.

A reliable way of differentiating the two species is through extraction of their respective pharyngeal arches (located behind the mouth in the throat), and examination of their pharyngeal teeth (see diagram at right). Grass carp pharyngeal teeth, numbering 2,5-4,2 are elongated and finger-like, with prominent parallel grooves. Black carp teeth take on a molariform appearance (i.e. they are fused structures looking similar to human molars). Apparently the finger-like teeth of the grass carp are useful in tearing or shredding aquatic vegetation, while the fused molariform teeth of the black carp are useful in crushing the shells of snails and mollusks.



I. grass carp teeth



II. molariform teeth

Anterior view of pharyangeal arches showing configurations of grass carp teeth and black carp-like (i.e. molariform) teeth.

Biologists have been encouraged to inspect dead grass carp carcasses in the wild to ensure that some aren't actually black carp. Complicating this situation is the fact that common carp (*Cyprinus carpio*), another Asian carp species, also exhibit molariform teeth. Recently, pharyngeal arches taken from a dead fish carcass observed on a sandbar on the Missouri River were thought to be from a black carp, based on the appearance of the pharyngeal teeth (see photo above center).

However, consultation with Leo Nico at the USGS/BRD Florida Caribbean Science Center resolved this concern. Based on photos provided by Vince Travnichek, Nico concluded that the subject pharyngeal teeth apparently came from a common carp. Nico said the molariform pharyngeal teeth of common carp are similar to those of black carp, but display clear grooves on the crushing edges, in three rows 1.1.3 - 3.1.1. That dental form, according to Nico, clearly matches what is shown in Travnichek's photo. He said further that most reports indicate that the pharyngeal teeth of subadult and adult black carp consists of a single row of 4 or 5 teeth per side. Also, black carp teeth observed by Nico have not displayed the groove pattern shown in Travnichek's

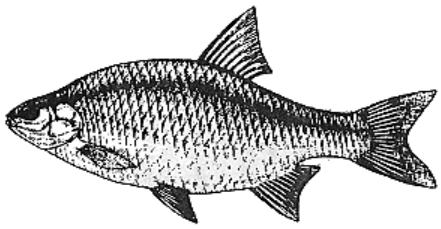
Pharyngeal arch of a common carp (found on a Missouri River sandbar). Note the grooves on the crushing edges (described by Leo Nico in the accompanying text). Photo courtesy of Vince Travnichek, Missouri Department of Conservation.

photo.

This is good news for the Mississippi River Basin, and may indicate that the MICRA petition for listing the black carp as a species of injurious wildlife under the Lacey Act to prevent its escape to the wild still has merit.

Dealing With Nuisance Fish Invasions

Like some other states, North Dakota recently began restricting the use of fish bait brought in from outside the state for fear of introducing non-native species. Under the rule, effective April 7, anglers must get a $200 license to bring live bait such as minnows, leeches, worms and nightcrawlers across state lines. Officials fear the spread of nonnative fish and pests such as the zebra mussel and a small fish called the rudd, a notorious egg-eater that carries a tapeworm parasite. The rudd has already been found in South Dakota. North Dakota's new



Rudd

regulation carries a maximum punishment of a $1,000 fine and 30 days in jail.

Two of North Dakota's neighbors, Montana and Minnesota, have had such restrictions for years. Montana has an absolute ban on imported live bait fish, aside from some exceptions on two reservoirs shared with Wyoming. The Montana rule was prompted by the unintentional introduction of fish such as northern pike, predators that are damaging the state's trout fisheries, said Jim Peterson, fish health coordinator for the state Department of Fish, Wildlife and Parks. Montana's maximum punishment for the misdemeanor is a $1,000 fine and six months in jail, but Peterson said officials would probably not try to jail violators. Minnesota bans imports of live bait, but fines vary from county to county, said Roy Johannes, fisheries program consultant for the state Department of Natural Resources.

In California, officials are attempting to use explosives in their battle against non-native northern pike that are threatening a Sierra lake's trout fishery. In recent years, the State Department of Fish and Game has unsuccessfully tried to poison the pike or to scoop them up in nets at Lake Davis. But this year, biologists plan to test the effectiveness of underwater blasting. If the use of detonation cord proves successful, biologists hope it can be used to help block the pike's spread to other lakes and streams in the region. Biologists worry that the aggressive fish could escape from Lake Davis down the Feather River and into the San Joaquin Delta, putting an important salmon fishery at risk. State biologists also will try to kill the pike through netting and electrocution in shallow water. No one knows for sure how the pike wound up in the lake, but experts suspect that rogue anglers planted them.

In Maine such illegal stocking has reached epidemic proportions, and is worst in central and southwestern parts of the state, where nearly every lake and pond is affected. "Illegal stocking is (done for) selfish reasons," said fisheries biologist Jim Pellerin. "People are moving into Maine from the South or from other places in the country. They buy a camp along a lake or pond, and they bring fish with them that they always liked to catch and dump it into the pond." Part of the problem stems from fishing enthusiasts who watch televised shows and see people catching 4-foot pike, says state Rep. Matthew Dunlap, chairman of the Legislature's Inland Fisheries and Wildlife Committee. The allure of catching

big fish is enough to make someone take a float plane to Canada, bring back pike in a live tank and drop them into Maine waters, he said. The illegal exotic fish of choice has gone from bass to black crappie, bluegill, northern pike and walleye. Pike and walleye are damaging salmon and brook trout populations in central Maine's Belgrade Lakes, which used to be a world-famous trout fishery. Failure to have a permit to stock fish in Maine can bring a six-day jail sentence and a fine of $1,000 to $10,000.

In Alaska U.S. Forest Service biologists working near the Copper River Delta say they've found the first genetically verified Atlantic salmon swimming in fresh water in that area. Officials say, most likely, the fish was an escapee from a commercial salmon farm in British Columbia or Washington state. Alaska officials consider these farmed fish an invasive species and warn that Atlantic salmon, favored for farming because of their superior growth and survival rates, could someday displace native Pacific salmon species. The salmon was collected last May while conducting a study of trout hybrids in the Martin River, which dumps into the Copper River Delta about 30 miles east of Cordova. The delta annually is the scene of Alaska's first major commercial salmon fishery. Although salmon and trout from foreign fish farms now dominate world markets, once owned by Alaska's wild salmon, the state continues to outlaw fish farming and has decried neighboring British Columbia's recent decision to expand its salmon farming industry.

A federal judge in California ruled in early April that the U.S. Fish and Wildlife Service (FWS) had overlooked key data regarding the threat of nonnative fish in deciding not to list the westslope cutthroat trout under the Endangered Species Act (ESA). The plaintiffs – five regional and local environmental groups and one well-known fly-fishing guide – charged FWS with overlooking a number of items, but the judge focused on just one issue: hybridization. Westslope cutthroat mate with nonnative species introduced for sportfishing, such as rainbow trout from California, brook trout from the eastern U.S. and brown trout from Europe. At issue is the fact that FWS biologists counted hybrids as well as purebreds when determining the westslope population. "The agency tried to play a numbers game, counting hybrids and pure strains of westslope cutthroat trout as the same. Yet, in the same document, they stated that hybridization is the greatest threat to the native fish," said Rob Ament of *American Wildlands*. FWS spokesman Lynn Kaeding in Bozeman, MT, acknowledged that Ament's argument has merit, but added, "We don't have criteria under the ESA that tell us, for example, that a fish has to be 90 percent pure...Similarly, there's no criteria that says the fish has to be 100 percent pure..." The judge ordered FWS to come up with some criteria and apply it unilaterally to population counts when making a new listing determination. Abigail Dillen of the *Earthjustice Legal Defense Fund*, arguing for the plaintiffs, said the decline of westslope cutthroat "is telling us a lot about what development, mining and logging are doing to our fish." Logging, energy extraction and road building often lower the water quality of rivers and streams, which give the nonnative species an advantage. Nonnative rainbow trout, brook trout and brown trout seem to thrive in lower-quality water than the native cutthroat.

The invasion of non-native species has thus become a national issue and MICRA has been invited by the National Aquatic Nuisance Species (ANS) Task Force to host the formation of a Mississippi River Basin ANS Regional Panel. This Panel would assist the National ANS Task Force in taking measures to:

- prevent unintentional introductions;
- coordinate research, control, and information dissemination activities;
- develop and carry out environmentally sound control methods;
- minimize economic and ecological impacts; and
- establish a research and technology program to benefit state governments.

Similar panels already exist for the Great Lakes, the Western States and the Gulf of Mexico.

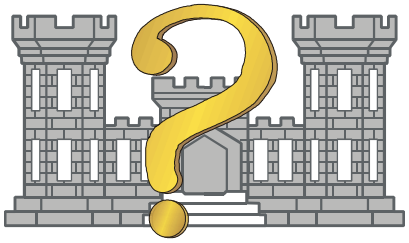
Sources: *Associated Press*, 4/8/02; *Las Vegas Sun*, 4/21/02; *Portland (Maine) Press Herald Online, 4/8/02;* Wesley Loy, *Scripps-McClatchy Wester Service and Seattle Post-Intelligencer*, 5/11/02; Natalie M. Henry, *Greenwire*, 4/5/02

Corps Water Projects Halted For Economic Review

The Army Corps of Engineers (Corps) on 4/1/02 announced that it was suspending work on about 150 congressionally approved water projects for further economic review. Maj. Gen. Robert H. Griffin, Corps' civil works director said his agency would "pause" work on billions of dollars worth of active projects. These would include projects:

- authorized by Congress but not under construction;
- with an economic analyses done before 1999; and
- "...with credible indications of changes in economic conditions or other engineering and environmental information".

According to Michael Grunwald, *Washington Post,* this was "an unprecedented response to mounting criticism of Corps analyses inside and outside the Bush administration". But when the list, totalling 172 projects, was finally released on 5/17/02, environmentalists, budget hawks and reform-minded congressmen immediately cried foul because the Corps also announced that many of the reviews had already been completed.



Griffin's initial announcement had said that, "This action is part of a more comprehensive initiative to ensure that Corps projects are a sound investment for our nation and are proposed in an environmentally sustainable way." "It is essential that Corps projects keep up with the pace of change," he said. But then six weeks later eyebrows were raised when the Corps announced that 46 of the projects were "already undergoing rigorous reevaluation due to problems previously identified", while another 118 had already been "reassessed and cleared to proceed"; leaving just eight projects subject to reassessment:

- 2 beach replenishment projects in Delaware and New Jersey,
- 3 levee restoration projects in California,
- 2 unspecified projects in California, and
- 1 unspecified project in Texas.

According to Tim Breen, *Greenwire*, environmentalists said that because so many of the reviews were already done, or were unrelated to the much-ballyhooed review, this just showed that the agency was highly disingenuous and more in need of reform than ever. The review was done to turn up economic problems but was also a sham in environmental terms, the critics suggested, because any credible effort could not have

helped but turn up big problems at any number of Corps projects involving wetlands, dredge spoils, riverine habitat and the like.

"This ridiculous charade shows exactly why we can't rely on the Corps to reform itself," said *American Rivers* President Rebecca Wodder. "We'd have more confidence in this audit if Arthur Andersen had conducted it." The group referred to the Corps' "highly publicized" initiative as cynically changed into a "token gesture intended to dispel momentum toward real reform." That the Corps will not suspend the projects and review them transparently — and in fact has already reviewed and approved all but a handful — means the final list of vetted projects will be presented as a "fait accompli," *American Rivers* said.

Jeff Stein, policy analyst for *Taxpayers for Common Sense*, a group often allied with *American Rivers* and others against expensive, environment-damaging projects, said, "The Corps of Engineers had the opportunity to come clean. They had the chance to restore some of the agency's credibility on how they conduct business, but they blew it."

The groups combined for criticism of what the small slate of still-to-be-reviewed projects did not include, such as the multi-million-dollar "Yazoo Pumps" in Mississippi they say will drain more wetlands than the Corps itself allows to be drained in a given year by private developers, and navigation improvements along Arkansas' White River that also endanger wetlands. Indeed, many of the recently vetted projects appeared on *American Rivers*' 2002 list of the nation's most endangered rivers (see the following article).

If, as the critics believe, the Corps was angling to buy off reform efforts, that gambit appears to have failed, said Breen. According to the *Washington Post*, which has dredged up much controversy on the Corps in the last two years, Sen. Bob Smith (NH) reacted by saying, "What was promised to be a comprehensive review appears only to be cheap window dressing. It is more clear than ever that it is going to take congressional action to fix the problems at the Corps." Smith co-sponsored reform legislation earlier this year with Sens. Russ Feingold (WI) and John McCain (AZ)

In 2000, a *Washington Post* series by Grunwald detailed how the Corps has justified many projects with skewed assumptions and overly optimistic predictions of barge and ship traffic. E-mails from high-ranking Corps officials revealed that they had manipulated an economic study in order to justify a billion-dollar lock expansion project on the Upper Mississippi River. An internal Pentagon investigation concluded that Corps studies were tainted by an institutional bias toward large-scale construction. Grunwald noted that every presidential administration since Franklin D. Roosevelt's has tried to rein in the Corps, but it has flourished with help from its patrons in Congress, who have used its projects to steer money and jobs home.

Sour*ces:* Michael Grunwald, *Washington Post*, 5/1/02; and Tim Breen, *Greenwire*, 5/20/02

America's Most Endangered Rivers 2002

Each year since 1986, *American Rivers* has released the "*America's Most Endangered Rivers*" report highlighting rivers facing the most urgent and imminent threats. The report identifies rivers that are "in danger and at a crossroads", not the nation's most chronically polluted rivers. *American Rivers* solicits nominations from thousands of river groups, conservation organizations, outdoor clubs, and individual activists. Then with input from their staff and scientific advisors, the nominations are reviewed for:

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- The magnitude of the threat to the river,
- A major decision point in the coming year affecting that threat, and
- The regional and national significance of the river.

Again this year's list (released on April 2) is dominated by interjurisdictional rivers of the Mississippi River Basin (i.e. Missouri, Big Sunflower, Kansas, White and Powder rivers). According to the group, this years report calls attention to U.S. Army Corps of Engineers (Corps) projects that damage rivers, waste tax dollars, and fail to deliver promised economic benefits. A summary of threats facing the eleven most endangered rivers follows:

1. Missouri River (Montana, North Dakota, South Dakota, Nebraska, Iowa, Kansas, Missouri) - On the eve of the bicentennial of Lewis and Clark's historic exploration of the Missouri River, visitors experience just a fraction of its former ecological and historical glory, thanks to a management scheme that prioritizes a handful of barges over the river's health and its growing recreation and tourist industry. In the next few months, the Corps must resist pressure to evade its Endangered Species Act responsibilities and instead modernize its dam operations to restore more natural seasonal water levels and reverse the river's decline – a step that would bring new prosperity to communities along America's longest river and prevent the extinction of several species first documented by Lewis and Clark. Contact: Chad Smith, (402) 477-7910

2. Big Sunflower River (Mississippi) - Unless the public strongly speaks out and environmental regulators vigorously exercise their legal authority, construction crews working for the Corps will soon begin work on a pair of projects that will scrape the heart out of Mississippi's Big Sunflower River and drain and damage over 200,000 acres of its surrounding wetlands. The Corps is proposing to spend more than 250 million taxpayer dollars on these boon-doggles that will help large landowners increase production of surplus crops on marginal agricultural lands. Contact: Melissa Samet, (202) 347-7550

3. Klamath River (California, Oregon) - In the drought-prone headwaters of the Klamath River, the Bureau of Reclamation is contesting its environmental responsibilities and attempting to maximize irrigation deliveries even though the diversions and polluted agricultural runoff is causing the river's ecosystem to collapse. Salmon populations have dropped to less than 8% of their historic averages, and unless Congress acts to reduce irrigation and restore wetlands, the fisheries will continue to dwindle – threatening the livelihoods of commercial fishermen and local communities, as well as the treaty rights of several Indian tribes. Contact: Steve Rothert, (530) 478-5672

4. Kansas River (Kansas) - Thirty years after the Clean Water Act became law, the state of Kansas has given up its effort to clean up the agricultural runoff polluting its namesake river – passing a law intended to

strip away the Act's water quality standard protections from nearly all its waters. Unless the U.S. EPA asserts its authority and rejects the state's attempt to walk away from its environmental and public health responsibilities, agricultural lobbyists across the country will seek to copy the state's example – and the Kansas River will continue to fester under a smothering load of livestock manure. Contact: David Sligh, (423) 265-7505

5. White River (Arkansas) - The Corps has started work on an enormous irrigation project that will suck more than 100 billion gallons of water from the White River each year, and is also proposing to construct hundreds of wing dikes along 250 miles of the lower river to improve navigation for a handful of commercial barges. Unless the public and elected representatives act to stop these projects, one of the ecologically richest areas in the lower 48 states will become just another over-engineered barge channel and overtaxed source of irrigation water. Contact: Kelly Miller, (202) 347-7550

6. Powder River (Wyoming) - The burgeoning coal bed methane (CBM) industry in the Powder River basin creates an unusual threat for a Western river: too much low-quality water that enters the river at the wrong time of year. Federal and state agencies are making important decisions this year that will set critical guidelines for the CBM industry in the Powder River basin in Wyoming and Montana. With at least 51,000 methane gas wells anticipated by 2010, public officials must ensure that CBM development proceeds responsibly and that its by-product water is properly managed to protect the Powder River and its tributaries. Contact: Michael Garrity, (202) 347-7550

7. Altamaha River (Georgia) - With projected population growth topping 300% for some communities in coming years, Metro Atlanta's seemingly insatiable demand for services such as drinking water and electricity threatens to overwhelm the Altamaha River. Unless the state's political leaders begin a comprehensive and inclusive effort to minimize the collective consequences of a number of reservoir and power plant proposals, one of the healthiest rivers on the eastern seaboard faces a future of perpetual drought. Contact: David Sligh, (423) 265-7505

8. Allagash Wilderness Waterway (Maine) - Once the crown jewel of the nation's Wild and Scenic Rivers System, the Allagash Wilderness Waterway has lost much of its primitive character to decades of neglectful management. Some Maine legislators have introduced an unprecedented proposal to strip away the protections that federal wild and scenic river designation affords. Unless the state renews its commitment to preserve the river as a vestige of primitive America, the public will lose the best opportunity for a true wilderness experience in the crowded Northeast, and the nation's legal framework for protecting its most special rivers will be seriously compromised. Contact: Kristen McDonald, (202) 347-7550

9. Canning River (Alaska) - Alaska's Canning River marks the western border of the Arctic National Wildlife Refuge. Should the U.S. Senate follow the House of Representatives and vote to allow oil and gas exploration and drilling in the refuge, the Canning River would be the first to feel the consequences – the industry would pump millions of gallons of water from lakes in its delta, dig huge gravel mines in its floodplain, and disturb/chase the wildlife away from its banks – with the threat of a catastrophic oil spill looming in the background. Contact: Andrew Fahlund, (202) 347-7550

10. Guadalupe River (Texas) - As Texas continues its statewide water planning effort, the Guadalupe River and its tributaries are threatened by growing demand for their water. A conservation organization is seeking to preserve the ecological resources and rural economy the river sustains by securing water rights which it will leave in the river. If the state of Texas awards the remaining water rights to water developers instead, the river's water will be siphoned off and sold – with profound consequences for the river and its estuary, which support thriving commercial and recreational fisheries, and draw thousands of tourists each year to see the magnificent whooping crane. Contact: Serena McClain, (202) 347-7550

11. Apalachicola River (Florida) - In a futile effort to maintain a commercial shipping channel that is barely used, the Corps is steadily destroying Florida's Apalachicola River by scouring the river bottom, dumping the dredge material in sensitive habitat, and aggressively manipulating the flow. The Corps itself has conceded that its efforts are not "economically justified or environmentally defensible." Rather than pour more money into this wasteful project, Congress should deauthorize it altogether in the Water Resources Development Act of 2002. Contact: Melissa Samet, (202) 347-7550

The full text of the *American Rivers* "*2002 Most Endangered Rivers*" report is available online at: http://www.american rivers.org/mostendangered2002/default.html

Missouri River Water Wars

Conflicts between navigation and farming interests on one side, and recreation and wildlife interests on the other boiled over once again this spring on the Missouri River with new lawsuits being filed by four states and two Indian tribes. The battle had been between Missouri's concerns for protecting navigation interests vs the other six states' (Iowa, Nebraska, Kansas, South Dakota, North Dakota and Montana) and the U.S. Fish and Wildlife Service's (FWS) concerns for protecting multiple use and endangered species interests. The Army Corps of Engineers (Corps), who manages the River's flow, has been caught in the middle with the mandate to protect both.

Iowa was the first to back away from supporting the upstream "reservoir" states' interests by siding with Missouri, saying they needed to protect their farmers from unecessary flooding. Then when the Corps began drawing water from Oahe Reservoir during the spring walleye and rainbow smelt spawning season, South Dakota Gov. Bill Janklow filed a lawsuit in federal court to

stop them. In past years such drawdowns have flushed the smelt (a favorite walleye food) right out of the lake, causing walleye fishing to plummet. Biologists, fishing guides, anglers and resort owners on Oahe had complained that losing the smelt spawn, thought to be potentially the best in five years, could set back walleye fishing on Oahe just as it is beginning to rebound, Janklow said. "We need three weeks."

The Corps responded by drawing down Lake Francis Case, another South Dakota reservoir. Janklow stopped them again by getting another court injunction, but not before the lake had been drawn down three feet and most of the walleys spawn had been lost. The Corps then began draining Lake Sakakawea in North Dakota. This prompted that state to file its own lawsuit. Next, the Corps looked to Fort Peck Reservoir in Montana, forcing that state to file yet another lawsuit. Then Nebraska sided with Missouri and Iowa to protect downstream water rights by filing its own lawsuit to maintain adequate flows to support barge traffic downstream from Sioux City, IA. Interestingly, Missouri remained silent during all of this, apparently because, all the while, St. Louis was under a flood threat.

In mid May the governors of South Dakota, North Dakota and Nebraska reached agreement with the Corps to make minor water level adjustments in three South Dakota reservoirs, but then the Lower Brule and Crow Creek Sioux tribes sued to prevent the lowering of Lake Sharpe which is located between the two tribes' reservations in central South Dakota.

At issue is the Corps' Missouri River Master Water Control Manual that hasn't been revised since 1979. Janklow argued in court that the Corps has failed for almost a decade to live up to its legal obligation to re-write the Manual in a way that gives the River's multimillion-dollar recreation industry in South Dakota equal treatment with navigation. The Missouri River's navigation project has been largely a failure, with only one or two towing companies operating just a few tows per year, while the recreation industry on the reservoirs has grown dramatically.

Prior to enactment of the Endangered Species Act (ESA) and the drought of the late 1980's, Missouri and the navigation industry pretty much had things their own way on the River. Then in the late 1980's when the Corps nearly drained the reservoirs to keep barges afloat, tempers began to flare. Janklow was in between stints as governor when then-Gov. George Mickelson hired him to represent the state in the initial lawsuit. To settle that suit, the Corps agreed to rewrite the Master Manual to be more equitable to recreation and other interests and to do it in two years, Janklow said. "They haven't done it. They're operating under a Master Manual that is not legal under the laws of the U.S.," Janklow said. "The manual says navigation comes ahead of fish and wildlife. Eleven years ago they said they'd change that."

The Corps has been working on a rewrite of the manual since 1989, but it has been a contentious process that was hastened in the fall of 2000 when the FWS said changes were needed to protect endangered and threatened birds and fish. At issue is how water in the River's reservoirs should be released (i.e. at a steady rate to ensure a 9-foot commercial navigation channel, or at varying rates to mimic more of the River's natural ebb and flow or hydrograph needed to meet the needs of fish and wildlife interests and recreation).

So once again the battle lines have been drawn. Some state officials have said, "O.K. now that we all know our positions, let's negotiate." But all of this has happened before, and now the Tribes have filed suit. In the meantime, the Corps must have a new master manual in place by 2003 to comply with their ESA mandate. The agency is scheduled to release its preferred alternative rewrite by the end of May, said Rosemary Hargrave, the Corps' Master Manual project manager in Omaha. Whatever its final form, Corps officials have said that they expect a legal challenge from river interests who feel slighted.

And so, the beat goes on!

Source: Kevin Woster, *Sioux Falls Argus Leader*, 4/26/02; and *Omaha World Herald*, 5/22/02

Illinois River (OK/AR) Water War

Phosphorus levels at the point where the Illinois River flows into Oklahoma are 10 times higher than what Oklahoma officials want. The Illinois River feeds Lake Tenkiller and joins the Arkansas River southeast of Gore, OK.

Using federal and state researchers, Oklahoma determined that Arkansas pollutions sources account for 60 to 70 percent of the phosphorous in the Oklahoma reach. Most of that phosphorous comes from poultry farms in northwestern Arkansas and eastern Oklahoma. Phosphorous emissions from one plant in Springdale, AR were recorded to be 6 to 8 times higher than from the city Fayetteville. Springdale is home to *Tyson Foods* and *George's Inc.*, two of the country's largest poultry processors.

The city of Tulsa has already sued several poultry companies and the city of Decatur, AR, for polluting two lakes that provide Tulsa's drinking water. The lawsuit says the six poultry companies own about 300 farms and 1,000 bird houses that process an estimated 85.5 million birds per year. Those birds generate about 85,000 tons of litter. Tulsa officials say they have spent more than $4 million on water system filters and upgrades, and another $80 million for a new water treatment plant to combat the pollutants. Oklahoma Attorney General Drew Edmondson is still reviewing the state's legal options, which include possibly filing its own lawsuit against the poultry companies who contract with farmers to house the chickens.

Meanwhile, Oklahoma Gov. Frank Keating (R) has approved rules lowering the allowable amount of phosphorus in six scenic rivers in eastern Oklahoma to 0.037 milligrams per liter. "This is a historic and aggressive attempt to maintain the quality of our scenic rivers," Keating said. The rules affect the Illinois, Baron Fork and Upper Mountain Fork rivers; and Lee, Little Lee and Flint creeks. "I think these limits, with which Oklahoma and Arkansas must both comply, are fair and attainable", Keating said. Arkansas must comply with the rules because of a 1992 U.S. Supreme Court opinion that said upstream states are subject to downstream water quality regulations. The Oklahoma Water Resources Board adopted the rules in March and gave businesses and towns 10 years to comply.

In a letter to Arkansas Gov. Mike Huckabee (R) earlier this year, Keating said an agreement by both states to reduce the phosphorous levels by 40 percent has not resulted in lower levels of phosphorus or improved water quality. He said Arkansas has left Oklahoma no choice but to enact tougher standards. Officials with Huckabee's office said the Oklahoma rules are unreasonable and unattainable. Huckabee spokesman Rex Nelson said, "We're working diligently to improve water quality, but the level being set by Oklahoma really flies in the face of scientific data." Nelson said Arkansas officials hope to meet with Oklahoma representatives to find a "reasonable solution."

Meanwhile, Gov. Huckabee (R) has said he would counter Oklahoma's rules for the Illinois River by tightening water quality restrictions on the Arkansas River, which flows from Oklahoma into his state. Environmental regulators in Oklahoma said they're disturbed by Huckabee's threat. They

said Huckabee's remarks are reflective of the heated rhetoric that's come out of Arkansas.

The dispute started in 1982 when Oklahoma challenged Fayetteville's permit to discharge treated wastewater in the Illinois River, and went on for 10 years until the U.S. Supreme Court's 1992 decision. The long-simmering tensions have prevented both states from working to reduce the pollution. Arkansas officials have said that Oklahoma's phosphorous standard would strangle future economic development in Northwest Arkansas.

Sources: Diane Plumberg Clay, *The Oklahoma City Oklahoman*, 5/8/02; Jack Money, *Oklahoma City Oklahoman*, 3/29/02; and Brad Branan, *Arkansas Democrat-Gazette*, 4/1/02

Southeastern Water Wars?

Federal water experts suggest that fast-growing metro Atlanta is taking all the water that Lake Lanier and the Chattahoochee River can provide, decades before it was forecast to have reached that limit. If the assessment is verified it could stymie new development in the region. Metropolitan Atlanta would have to stop growing, enact tougher conservation measures, or secure new sources of water.

South Carolina and Tennessee have warned there would be major battles if Atlanta tried to tap the Savannah or Tennessee river systems. And residents around Lake Allatoona (GA) say they would fight efforts to draw more water from their lake for the metro region. State environmental officials had predicted metro Atlanta would not exhaust Lanier and the Chattahoochee until 2030.

But new water use data presented by the U.S. Army Corps of Engineers (Corps) suggest the region already is close to reaching — or in some cases exceeding — the predicted 2030 levels. The Corps said metro Atlanta, which grew from 3 million residents in 1990 to 4.1 million in 2000, actually exceeded expected water use for 2030 during some of 1999 and 2000.

Corps officials stressed their information was preliminary, and that they would be compiling additional data. Water use projections are complicated by the fact that they must take into account not just stream withdrawals for drinking water systems, but also discharges from sewage systems. Consumption also can fluctuate with weather conditions — residents may water lawns more during droughts, for example. The Corps, which regulates flow in the Chattahoochee by releases from Lanier, must maintain at least 750 cfs at Peachtree Creek to dilute wastewater and sustain fish and other aquatic life. Some experts, while stressing the need for more information, said the Corps' data is clearly cause for concern.

Source: Charles Seabrook, *Atlanta Journal-Constitution*, 5/15/02

Restoring the Coastal Wetlands of the Mississippi River Delta

With an estimated 50 square miles of wetlands slipping annually into the Gulf of Mexico, Louisiana has launched an appeal to the U.S. Congress to take on what could be one of the largest construction projects in U.S. history. Rep. Billy Tauzin (LA) and others say the key will be convincing federal policy makers that the disappearing coast is not just a Louisiana problem. "This is a national issue, one with severe economic and national security implications", Tauzin said. "Every citizen of this nation benefits from Louisiana's natural resources, so it is in all of our best interest to preserve this national treasure."

However, even Tauzin concedes that it will take a lot of convincing to get Congress to view Louisiana's marshy and largely inaccessible coast as a "national treasure". Specifically, Louisiana loses 25 to 35 square miles of coastal wetlands each year, amounting to 80 percent of the nation's annual wetland loss, according to the USGS National Wetlands Research Center. The state has lost 1,500 square miles of coastal wetlands over the past 70 years, and if the current rate of loss continues, the state could lose an additional 1,000 square miles of wetlands by 2050, pushing the shoreline inland as much as 33 miles in some areas, according to the agency. In 1990, the state estimated that the loss of wetlands would amount to $57.8 billion in economic loss over the next 50 years.

Tauzin said he is optimistic that Congress will authorize a task force to study the problem, similar to the one which began studying the Florida Everglades problem in 1996. He hopes that by 2004, the federal government will be ready to begin writing checks. "Once we get all of the federal agencies committed, invested in the process, how can they then say there isn't a problem?" he said.

Louisiana, however, doesn't want to completely follow the Florida model. That state must kick in 50 percent of the costs of Everglades restoration, something a poor state like Louisiana isn't in a position to do. In February, a committee set up by Louisiana Gov. Mike Foster sent a shiver through the state Legislature when it said that Louisiana must be prepared to spend $150 to $200 million annually as its share of coastal protection and restoration costs. That amounts to just 20 to 30 percent of the project's cost, which has ranged from $14 to $20 billion.

Groundwork being laid to justify why the Louisiana coast deserves special consideration includes a report issued by the governor's committee in March. That report entitled, "*Saving Coastal Louisiana, A National Treasure*", argues that the rest of the country played a role in the loss of Louisiana's coastline. Leveeing the Mississippi River has fostered commerce and protected population centers, but it also has prevented the annual flood of nutrients that nourished the coastal wetlands. And canals were dug through wetlands for oil and gas exploration that benefits all of the U.S., but they also allow saltwater intrusion that has ravaged the wetlands. "The nation reaps great benefits from all of these construction projects, not only during peacetime, but more importantly in times of crisis," the report says. "However, only one state — Louisiana — is paying the price."

The report also contends that there will be a national price to pay unless something is done. Partly, it says, the cost will come in increased federal emergency spending as Louisiana loses a major source of protection from storms and floods. The wetlands also offer protection for the nation's energy supply, the report says. Twenty-five percent of the imported and domestic oil in the U.S. comes through Louisiana's wetlands, and erosion exposes critical pipes, barges and tankers, along with 30,000 coastal oil and gas wells, to hurricanes and other damages. Price and delivery of energy products could be affected by storm damage, and the report predicts the likelihood of spills will increase. Inland waterways that are increasingly exposed to the open sea also threaten commerce across the country. The report said that 41 percent of goods produced in America's heartland travel through coastal Louisiana bound for foreign ports. Meanwhile, the coastal estuaries and wetlands also serve as breeding grounds for

much of the country's fish and shellfish. "As our coastal wetlands disappear, so will the fisheries," the report said.

Sen. John Breaux (LA) said that persuading Congress to dedicate the amount of money needed to save the coast will require "a massive education effort." An act that bears Breaux's name already delivers an average of $36 million annually to coastal restoration, but state officials say a far broader commitment is needed. Breaux said he takes solace in knowing that the federal government has undertaken other large-scale environmental projects to save the Chesapeake Bay and the Florida Everglades. He said he doesn't think the state will have to resort to arguing that restoring coastal Louisiana is a matter of national security. "When you lose that amount of land and it never comes back, that's justifiable on its own," Breaux said.

Source: Bill Walsh, *New Orleans Times-Picayune*, 4/22/02; and April Reese, *Land Letter*, 1/17/02

Nationwide Water Survey

Water downstream from many sewage treatment plants and livestock herds contain traces of dozens of drugs, disinfectants, hormones, chemicals excreted by smokers and other contaminants, according to government scientists. Researchers at the USGS said any effect on people and wildlife from tiny amounts of these substances, almost all of which are measured at concentrations of less than one part per billion, had yet to be determined. Yet they found that when all the substances in some stream samples were tallied, levels were similar to those that other studies had linked to damage in fish and other aquatic life. This was particularly true for samples with traces of hormones or hormone-like compounds used in birth control and hormone replacement therapy.

For example, a 1998 federal study of walleyes taken from the Mississippi River below the Twin Cities showed depressed testosterone and other hormonal abnormalities. The cause of the abnormalities was not identified, but scientists expressed concern that the fish were exposed to chemicals known as endocrine disrupters, which mimic natural hormones.

The current USGS study tested waterways for 95 organic wastewater contaminants, such as sex hormones, that are not routinely checked during water supply screening of state health departments. State departments usually only test the water after it has been treated for human consumption. Federal food and drug officials said the USGS study could lead to changes in the drug approval process. For example, the agency could require more drugs to undergo tests for hazards they might pose once they leave the body. "Hopefully, the study will help people understand that chemicals they use and consume on a daily basis and their behavior can affect our environment and water resources," said Herbert Buxton, an author of the study.

Earlier studies done in Europe a decade ago found similar widespread, low-level contamination. But this is the first nationwide survey for such compounds by U.S. government scientists. The selection of sampling sites in 139 streams across 30 states (see map below) was biased toward streams susceptible to contamination (i.e. downstream from intense urbanization and livestock production facilities). About 80 percent of the sampled streams contained tiny amounts of at least one, often several, and in some cases up to 38 of the 95 chemicals for which the scientists ran tests. Few of the streams showed pollution levels that violated clean-water laws, the researchers said, though they noted most of the substances are not the subject of existing pollution rules.

Map showing stream survey locations.

The survey detected more than two dozen human or veterinary antibiotics in stream waters, along with Triclosan, the active ingredient in many antibacterial soaps and lotions. Some experts said that this finding added to their concerns that such contamination could be helping to breed resistant strains of bacteria. However, other experts down played the findings, saying the study only revealed the power of new tools to measure parts-per-trillion amounts of chemicals that are most likely far below concentrations that could harm health or wildlife.

Among the most common compounds found were the insect repellent DEET and 4-nonylphenol, which is produced when detergents break down. The latter has been shown to have some hormonelike effects in laboratory tests. The entire USGS study is published online by the *American Chemical Society* in the journal *Environmental Science and Technology* at http://pubs.acs.org/hotartcl/est/es011055j_ rev.html

Sources: Andrew C. Revkin, *New York Times*, 3/13/02 ; David Shaffer and Tom Mersman, *Minneapolis Star Tribune*, 3/13/02; and Kolpin, D.W. et. al. 2002. Pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams, 1999-2000: a national reconnaissance. *Environ. Sci. Technol.* 36:1202-1211.

Miscellaneous River Issues

Arizona/Nevada Water Banking - If Arizona and Nevada officials can settle on terms, Nevada will purchase a set amount of water from Arizona, perhaps as much as 15,000 acre-feet to start in a new water banking arrangement. Arizona would pump that water into underground aquifers in Pinal County, where it would help farmers bridge gaps in their water supplies. When Nevada decides it needs the water - probably not until 2018 or later, authorities there say - that state would make a "withdrawal" from its Arizona account. No water would be shipped back north, Nevada would simply take what it needs from Lake Mead and Arizona would use the same amount from its underground storage areas. The deal would mark a historic shift in the way Western states manage their scarcest resource, creating a rare avenue for water to move across state lines without a court order or a lengthy legal battle. The two states have been working out the details of the plan for more than four years and hadn't intended to launch it until 2003. But when the Arizona Legislature eliminated $1 million from the state's Water Banking Authority budget earlier this year, officials decided to explore covering that shortfall using the interstate water banking program. Arizona created the

banking program in 1996 as a way to use the state's entire allocation of Colorado River water. Because the state wasn't using its full share, that water ran downstream, where California took it free of charge. Using the water bank, Arizona now takes nearly all its river allocation. The unused amounts, delivered to Phoenix and Tucson through the 336-mile Central Arizona Project canal, are "recharged" into underground aquifers. Some of the water is used to offset residential use of natural groundwater and some is stored for future use. The bank has stored 300,000 to 350,000 acre-feet most years since the program began. Arizona had long intended to allow other states, chiefly Nevada and California, to participate in the banking program. The interstate deposits would add to the amount of water Arizona could recharge into its badly overdrawn aquifers and could help the state pay for the program over time. Source: Shaun McKinnonk, *The Arizona Republic, 4/11/02*

EPA Sets Louisiana Water Quality Regs - Louisiana environmentalists and the U.S. EPA signed a legal order in early April requiring the federal government to set pollution limits on a basin-by-basin basis for more than 1,100 of the state's already-impaired waterways. Judge Mary Ann Vial Lemmon of the U.S. District Court for the Eastern District of Louisiana issued the consent decree, which has a 3/31/11, deadline for EPA to complete the listings. Under the Clean Water Act (CWA), EPA must set total maximum daily loads (TMDLs) for all U.S. impaired waterbodies. The TMDL program has been under fire as a broad range of industry groups challenged the wide-ranging implications of the lists and possible costs associated with their implementation. Environmental groups, meantime, have turned to the courts to press both state and federal regulators to move ahead with the CWA program. The Louisiana settlement draws to a close a 1996 lawsuit brought on behalf of the *Sierra Club* and *Louisiana Environmental Action Network* by *Earthjustice*. Esther Boykin, an *Earthjustice* attorney, said green groups believe CWA requires EPA to step in and complete a state's TMDL program when the state fails to do an adequate job itself. The environmentalists' suit was spawned after Louisiana officials completed about a dozen TMDLs, and only a few were satisfactory. Boykin said the consent decree accomplishes what environmental groups had set out to do in the first place, albeit on a slower pace. EPA is on deadline to complete the first TMDLs this May, for the Calcasieu and Ouachita River basins with others to come. Because of an earlier consent decree, another 100 TMDLs have already been established by EPA for the state's Vermillion-Teche and Mermentau basins. Absent from the negotiations were Louisiana state and industry officials since neither signed on as an intervenor. Source: Darren Samuelsohn, *Greenwire*, 4/8/02

Glen Canyon Flooding - The Glen Canyon advisory group is proposing another flood early next year in a second attempt to restore natural beaches along the Colorado River and improve conditions for several endangered fish species. The planned flood would resemble a similar experiment carried out in 1996, when extra water was released from Lake Powell for several days to mimic the river's natural hydrograph before the Glen Canyon Dam was built. Scientists hope the artificial flood will stir up some of the sediment that no longer flows regularly below the dam and help the endangered humpback chub, whose habitat has been affected by the river's cooler, clearer conditions. But Interior Secretary Gale Norton must first approve the plan. If she signs off, and if conditions along the Colorado and its tributaries are right, the flooding experiment could take place next January. Flows from the dam would increase to about 41,000 cfs during the floods. The test will hinge on whether enough new sediment comes into the river system from tributary flows below the dam before the fall monsoon season, said Barry Wirth, spokesman for the advisory group. Under full power-generating conditions, the dam's output is about 31,000 cfs. In 1996, the flow was increased to 45,000 cfs. The U.S. Fish and Wildlife Service concluded in 1995 that Glen Canyon's flood control and power-generating operations jeopardized the endangered humpback chub and razorback sucker. Since then, scientists have searched for ways to artificially re-create conditions erased by the dam, which changed the river's temperature and sediment content and eliminated seasonal flooding. They also have continued to study the reasons behind the loss of native fish in the Grand Canyon. "There is still uncertainty about the cause of the decline in the humpback chub population," said Randall Peterson, manager of the Bureau of Reclamation's Adaptive Management Division in Salt Lake City. However, the flood experiment will go only so far. Additional steps may be needed, including raising the river's temperature artificially, adding even more sediment to the normal flow and controlling the population of non-native fish species, many of which prey upon the chub and sucker. The advisory group also is recommending possible development of a population of humpback chub to preserve its DNA strain. Surveys estimate that there are just 2,000 humpback chubs in the canyon, down from 8,300 in 1993. Source: Shaun McKinnon, *The Arizona Republic***,** 4/26/02 *and San Francisco Chronicle online, 4/25/02*

Grazing Buyouts Proposed - To ease grazing pressure on federal lands, environmental groups plan to ask Congress to enact a voluntary buyout program for ranchers who own grazing leases. About 25,000 ranchers are expected to get letters that outline the $3.3 billion proposal by the *National Public Lands Grazing Campaign*, a coalition of regional and national environmental groups. The proposal represents a new tact for environmental groups that for years have been fighting grazing on public lands. The proposal would pay federal leaseholders more than twice the market rate when they voluntarily relinquish their permits. The average market value in the West of a federal animal unit month (AUM) is $50 to $75. The new proposal would pay permittees a fixed price of $175 per AUM, supporters say. For example, a leaseholder with 300 cow/calf pairs that graze federal lands for five months would get a one-time payment of about $262,000, according to organizers. The proposal has drawn fire from at least one national livestock group. "It's almost kind of comical. It just isn't going to fly," said Jason Campbell, director of federal lands for the *National Cattleman's Beef Association*, which represents about 250,000 livestock breeders and producers. Campbell admitted that there are some ranchers who are still damaging the land, but said improvements have been made in recent years. He said his group supports staying the course: trying to get Congress to fund more programs to improve environmental conditions and grazing practices. He added that there wouldn't be enough votes in Congress to pay for the multibillion-dollar buyout program. The environmental groups say livestock grazing is the most pervasive and destructive use of federal lands in the West - and that it costs taxpayers about $500 million a year in direct costs. Under their proposal, buying out all federal grazing permits would initially cost taxpayers about $3.3 billion. Proponents say the net savings of the program would eventually be around $5 to $11 billion. Source: Mike Stark, *Billings Gazette Wyoming Bureau*, 4/11/02

Irrigation Canal Pollution - The US EPA will allow farmers to use herbicides in

irrigation canals without permits despite a federal appeals court ruling that permits are necessary. EPA officials said applying aquatic herbicides to maintain an irrigation system, if done according to the product's EPA-approved labeling, should be considered exempt from permit requirements under the federal Clean Water Act (CWA). The agency expects its policy, based on language by Congress in the 1977 CWA amendments, to be challenged further in court. "The court didn't have the opportunity to consider the exemption," said Joe Martyak, a spokesman for the EPA. "At some point in time this will be resolved in the court system as folks look at the scope of the exemption." In March 2001, the 9th U.S. Circuit Court of Appeals in San Francisco ruled that the *Talent Irrigation District* in southern Oregon must get a CWA permit if it is to use acrolein — a highly toxic compound harmful to fish and wildlife — to control weeds in its irrigation canals. Two environmental groups had sued the district after it accidentally spilled acrolein into a local creek in 1996 and killed thousands of juvenile steelhead trout. The federal appeals court overturned a lower court ruling that the district did not need a permit to discharge the chemical. The EPA said it issued its new policy to clarify its regulatory and enforcement authority under the Federal Insecticide, Fungicide and Rodenticide Act. The agency said its intent was "to resolve a degree of confusion" from the lawsuit and to prevent the misuse of herbicides in agricultural irrigation systems. To justify the new policy, EPA cited language by Congress that said the EPA administrator "shall not require a (CWA) permit ... for discharges composed entirely of return flows from irrigated agriculture." However, Jay Feldman, executive director of the *National Coalition Against the Misuse of Pesticides*, said any such chemicals applied to water should be evaluated through permits issued under the CWA. "The permitting process offers another level of protection that is warranted given the broad failure of those who use pesticides to follow labels," he said. Source: John Heilprin, *AP, San Francisco Chronicle On Line*, 3/29/02

Kentucky Riverkeeper Established - A *Riverkeeper* effort has been established on the 259-mile Kentucky River, a tributary to the Ohio River. Environmental attorney Robert F. Kennedy Jr., Kentucky native Kevin Richardson of the *Backstreet Boys* music group and Eastern Kentucky University (EKU) President Joanne Glasser were among those at Fort Boonesborough State Park on May 6 to launch the effort. The Kentucky River, with the network of streams that flow into it, winds through a 41-county area that's home to 700,000 people. Nearly 60 cities draw drinking water from the river, said Jerry Raison, curator of the Kentucky River Museum, which also opened on May 6 at Fort Boonesborough. The Kentucky Department for Environmental Protection says the river's water-quality problems include acidic runoff from coal mines, illegal trash dumping, failing septic systems and straight pipes — raw sewage running directly from homes into nearby streams. Heather Crawley, executive director of *Kentucky Riverkeeper*, said an 86-mile stretch is contaminated to the point that swimming and other recreational contact with the water are prohibited. Kennedy, the son of former U.S. Attorney General Robert F. Kennedy and a lawyer who has worked to fight pollution of waterways in upstate New York, placed much of the blame for the river's problems on coal mining. ''They're allowed to create slurry ponds and chop off the tops of entire mountain ranges,'' Kennedy said. ''The landscape has been dismantled by this industry.'' Bill Caylor, president of the *Kentucky Coal Association*, said Kennedy's comments were ''ludicrous.'' ''We do a tremendous job now of cutting down pollution,'' Caylor said. ''But there will be minimal pollution.'' Caylor, who did not attend the *Riverkeeper* announcement, said coal mining is necessary in a country that demands a lot of energy. "Nobody wants any kind of pollution. Nobody wants any kind of nuisance,'' he said. "But everybody wants cheap energy." *Kentucky Riverkeeper*, a nonprofit organization established by the *Center for Appalachian Studies* at EKU, is part of *Waterkeeper Alliance*, a national environmental movement. More than 80 waterkeeper programs have been established in North and Central America. The *Riverkeeper* will provide a citizens' patrol of the river to protect the water and the communities around it. Crawley said the group's protection efforts will include monitoring for polluters, conducting water quality tests and responding to complaints about discharges into the river. The *Riverkeeper* also plans to give schools the chance to use the river as an outdoor classroom. Source: Alan Maimon, *Louisville Courier-Journal*, 5/7/02

Kentucky/West Virginia Coal Slurry Spills - The federal government on 4/25/02 levied a $110,000 penalty — the largest fine possible — against the *Martin County Coal Co*. for failing to prevent the 10/11/00 spill of 300 million gallons of sludge in and around Inez, KY. Sludge from the spill clogged streams and turned more than 60 miles of the Tug Fork black. The Mine Safety and Health Administration (MSHA) imposed the penalty six months after its investigation concluded that the company failed to properly build the impoundment that collapsed into an underground mine, dumping a mixture of water and coal waste on nearby property and into the Big Sandy River and its tributaries. MSHA determined that *Martin County Coal* did not spread a layer of fine coal particles around the perimeter of the 70-acre impoundment, a procedure that blocks water seepage. Regulators also found that the company failed to take action after an increasing amount of water and slurry began flowing out of the impoundment. The company was fined $55,000 for each violation, the maximum civil penalty. No one was injured in the impoundment collapse, but some property was buried up to seven feet deep in sludge, and drinking water was polluted. *Massey Energy*, owner of *Martin County Coal*, spent $40 million cleaning up the spill, and paid $225,000 in fines to the Kentucky Dept. of Fish and Wildlife for damages. Some area landowners are also suing the company. Meanwhile, on 4/10/02 (two weeks before the above fine was levied), nearly 135,000 gallons of coal wastes spilled into Long Fork and Big Creek again forcing cities along the Tug Fork to close water intakes during the night. This spill occurred after a pipe ruptured at a Pike County coal processing plant. A plume of black water 7 to 8 miles long was responsible for a large fish kill. The pipe carried liquid waste, primarily dust and particles washed from processed coal before shipping to electric generating plants. The waste is a gritty tar-like substance that also contains chemicals used in the cleaning process. Joe Schmidt, spokesman for the Kentucky Department of Environmental Protection (KYDEP), said that the *Sidney Coal Co*., also a subsidiary of *Massey*

Fish killed from coal slurry pollution. Source: American Rivers Web Page.

Energy was responsible for the latest spill. Katherine Kinney, a spokeswoman for *Massey Energy*, said the company shut down the processing plant as soon as the rupture was discovered. However, the KYDEP has sued *Massey* for the spill. Then on 5/2/02, another spill again sent several million gallons of coal slurry into the Tug Fork, this time in McDowell County, WV, when floodwaters breached an impoundment from an abandoned mine owned by the *Antaeus Energy Project*. After this event the Wayne County (WV) Commission filed a lawsuit to recover damages. The Commission wants coal companies held responsible for the multiple accidents. "It's time for someone to be held accountable for what has been done to the Tug Fork," Commission President Charles Sammons said. "It's basically a dead river now," he said. "We want something done to bring it back to the state it was before the big accident." Earlier the West Virginia Department of Environmental Protection had filed a multimillion-dollar lawsuit against *Massey* and *Martin County Coal.* That suit is pending in Wayne Circuit Court. Diane Bady of the *Ohio Valley Environmental Coalition* hailed the Wayne County Commission's action. "It's about time somebody did something about the river," Bady said. Sources: James R. Carroll, *Louisville Courier-Journal*, 4/26/02; Alan Maimon, *The Louisville Courier-Journa*l, 4/11/02; and Roger Alford, *Lexington Herald-Leader*, 4/11/02

Listing of Wild, Not Hatchery Reared Fish - Conservation groups (*Trout Unlimited* and *Oregon Trout*) have petitioned the National Marine Fisheries Service (NMFS) to only list wild — not hatchery fish — under the Endangered Species Act (ESA) for 15 stocks of West Coast salmon and steelhead. The intent is to artfully circumvent a court ruling ordering NMFS not to differentiate between hatchery and wild coastal coho salmon in Oregon. Judge Michael Hogan of the federal district court for Oregon had ruled last September that NMFS wrongly differentiated between wild and hatchery-spawned Oregon coastal coho salmon when they ordered the state Department of Fish and Wildlife to kill thousands of hatchery coho in the Alsea River Basin in 1997-1999. NMFS routinely kills excess returning hatchery fish to prevent them from spawning with wild fish. Based on the ruling, if NMFS decides not to differentiate between hatchery and wild salmon, certain stocks could lose protection under the ESA, which conservation groups are trying to avoid. Jeff Curtis of *Trout Unlimited* said ESA specifies three levels for listing: species, subspecies and distinct population segments (DPS). In the Hogan case, salmon are the species, and the subspecies is coho. The third category, DPS, are specific to the Alsea River and include hatchery and wild fish. But NMFS only listed the wild fish, taking the distinction to a fourth level. Curtis said the petitions to list wild salmon and not hatchery salmon uses NMFS' own science showing that hatchery and wild fish are genetically distinct, despite a factual finding in Hogan's court that they are not. Not only do the petitions use NMFS' own science, but they use the agency's own policies as well, said Joe Whitworth, executive director of *Oregon Trout*. "We believe this is a simple, appropriate and indeed somewhat of an elegant way to deal with the confusion of the so-called Hogan decision," Curtis said. However, Russell Brooks of the *Pacific Legal Foundation*, the firm that sued NMFS leading up to the Hogan decision, argues that hatchery and wild fish are the same and should be listed – or not listed – as such. Differences between subspecies based on taxonomic classifications are allowed under ESA, as are separations in geography, Brooks said. Congress designed the DPS option to make it possible, for example, for an administration to list grizzly bears in the Rocky Mountains but not in Alaska. "What these groups want to do is totally way off base from there," he said. If the same subspecies of fish are swimming in the same river, "either you've got to list all the fish in that river or none of them," Brooks said. However Jason Miner of *Oregon Trout said,* "The purpose of the ESA is the conservation of natural species in their native habitat. ... We are putting the priority right where the ESA puts the priority, on natural species in their native habitat." "If you list hatchery fish, everything gets turned on its ear," Whitworth said. "Will you get swimming pools listed as critical habitat? Maybe the barges that [salmon] get shipped in will be critical habitat." Since the first hatchery was built on the Klackamas River in 1877, hatcheries have never been used to recover natural fish populations, only to provide for human harvest, Whitworth said. NMFS has repeatedly stated that hatcheries are not intended to replace wild fish, only to sustain commercial and recreational fisheries, he said. Kaitlin Lovell of *Trout Unlimited* said, "The science (differentiating wild and hatchery fish) really wasn't there in the last 100 years," only in the last 10 to 25 years. The petition "is a simple solution to a very complicated matter," Lovell said. Source: Natalie M. Henry, *Greenwire*, 4/26/02

Logging Practices and Wildlife - Taking a new angle on the debate over logging practices in national forests, a coalition of hunting and environmental groups are arguing to the Bush administration that young forests are necessary wildlife habitat. "Too often, commercial forest management practices are portrayed as solely a means to harvest wood fiber," the groups wrote. "This oversimplification is inaccurate and serves only to further polarize already disparate publics regarding the management of our national forests." "No single forest, young or old, pine or hardwood, can provide suitable habitat for the full array of forest wildlife," the groups added. "But a diverse forest landscape, supporting young and old stands of all native forest type, can help to sustain local wildlife populations." The 31 groups who signed the letter — including the *Congressional Sportsmen's Foundation*, *Wildlife Society*, *National Rifle Association* and *Izaak Walton League of America* — may disagree on other aspects of forest management, said Daniel Dessecker, a wildlife biologist with *The Ruffed Grouse Society*, but the 5.5 million people represented by the groups could all agree that total elimination of commercial forest management is a bad idea. "Old growth forests are not the best thing for wildlife," added Doug Jeanneret, communications director for the *U.S. Sportsmen's Alliance*. "You need a mixture. There's a direct correlation between forest management practices and wildlife management." Meanwhile, a bill from Rep. Cynthia McKinney (GA) would end logging on public lands. H.R. 1494, the National Forest Protection and Restoration Act has 109 co-sponsors, and would redirect federal timber subsidies to create ecologically sustainable jobs in rural logging communities. Source: Brian Stempeck, *Greenwire*, 5/14/02

Platte River Grasslands - The *Nature Conservancy* will use a $750,000 donation from the *ConAgra Foods Foundation* to restore native grassland along the central Platte River. Renee King, an Omaha-based conservancy fund-raiser, said it's the largest corporate donation in the Nebraska chapter's history. The money will be used to acquire marginally productive farmland along the Platte and provide grants to farmers who agree to restore such land to native grasses and prairie. The focus primarily is to improve crane habitat, but many other species will benefit. Sandhill cranes swarm over the central Platte in the late winter and early spring, and whooping cranes are seen occasionally in the area. The project will involve only the property of willing landowners, King said. Bryce Neidig,

president of the *Nebraska Farm Bureau*, said he was skeptical of the value of improving land for the sandhill cranes, considering that hundreds of thousands stop along the central Platte each year. "Is there really a need for more habitat for cranes or anything else when they're doing pretty well now?" Neidig asked. Phil James, a senior vice president with *ConAgra*, said his company had no interest in diminishing agricultural productivity with the contribution to the *Nature Conservancy*. Rather, he said, the intent was to take fields of marginal worth in producing corn and soybeans and convert them to hay production and livestock grazing, for which they are more suited. That makes economic sense and is environmentally beneficial at the same time, James said. Brent Lathrop, a project director with the conservancy, said the contribution would be used on land within the Platte River corridor, from just east of Grand Island to Sutherland, NE, west of North Platte. Although the cranes eat mainly corn during their Nebraska stay, Lathrop said they use grasslands to supplement their diets with worms, insects and grass seeds. Source Rick Ruggles, *Omaha World-Herald*, 4/4/02

Powder River Basin Project Delayed - The US EPA's Denver office has given a failing grade to a gas drilling project in Wyoming's Powder River Basin. The EPA regional office's concerns focused on water pollution caused by coal bed methane (CBM) gas development, especially in the Tongue and Belle Fourche rivers. If polluted water is allowed to flow into the rivers, the resulting rise in salinity levels will harm crops irrigated with river water, according to the May 15 letter from EPA Regional Administrator Robert E. Roberts to Al Pierson, state director of the Bureau of Land Management's Wyoming office. Roberts gave the project's draft environmental impact study the worst rating possible — EU-3, for environmentally unsatisfactory. Dan Heilig, executive director of the *Wyoming Outdoor Council*, an environmental group concerned about the effects of CBM gas drilling, said "It's apparent that the project as proposed . .. could potentially result in violations of the Clean Water Act and cannot be sanctioned." Source: Ellen Nakashima, *Washington Post*, 5/17/02

Utah Wildlife Conservation Program Fails - The Legislature approved the *Utah Wildlife Heritage Certificate* with great fanfare in 1993. But the program encouraging Utahns who don't hunt or fish to purchase a $20 certificate for wildlife conservation, management and education is a bust, despite an infusion of $30,000 in promotional money in 1997. So the Legislature's Natural Resources, Agriculture and Environmental Interim Committee voted to allow the program to expire next year. Division of Wildlife Resources Director Kevin Conway said 24 heritage certificates were purchased in 2001, generating $460. Printing and administrative costs of the license program surpassed income. By comparison, the approximately 600,000 hunting and fishing licenses sold in 2001 generated $24 million in revenue. Even the *Utah Audubon Society* said the heritage certificate program did not work. This clearly demonstrates the importance of contributions made to fish and wildlife conservation by the nation's hunters and fishermen! Source: Tom Wharton, *The Salt Lake Tribune*, 4/25/02

Pesticides and Parasites Linked to Frog Abnormalities

Atrazine - Laboratory experiments at the University of California at Berkeley (UCB) suggest that exposure to even very low levels of the common farm chemical atrazine can disrupt hormones and alter sexual development of male African clawed frogs, *Xenopus laevis*. "We saw a loss of male characteristics," said UCB biologist Tyrone B. Hayes, lead author of the study, which appeared in the 4/16/02 issue of the *Proceedings of the National Academy of Sciences*. "As somebody who's concerned about biodiversity and environmental health, I think it's very serious. "There is virtually no atrazine-free environment," Hayes said. The US EPA permits up to 3 ppb of atrazine in drinking water. Now, we need to explore the possibility that such effects are occurring in the wild", Hayes said .

The damaged frogs showed none of the gross external abnormalities, such as multiple or misshapen limbs, that have generated widespread public concern in recent years. Instead, the defects were internal: low levels of testosterone, smaller than normal voice boxes and multiple or mixed sets of male and female gonads. Hayes' research team concluded that the effect on the frogs resulted from atrazine's causing cells to produce the enzyme aromatase, which is present in vertebrates and converts the male hormone testosterone to the female hormone estrogen. The effects on frogs in Hayes' study occurred at exposure levels more than 600 times lower than the dose that has been seen to induce aromatase production in human cells. The lab animals were exposed to atrazine at varying concentrations – much less, in some cases, than has been measured in farm runoff – during early development. Examined at maturity, females appeared to be unscathed, while an estimated 40 percent of the males were mutated or biologically feminized, the apparent result of chemical disruptions and depressed testosterone levels.

Despite many unknowns (including the fact that the test frogs are not native to the U.S.), scientists said they were troubled by evidence of reproductive defects in animals exposed to extraordinarily low concentrations of atrazine – down to as little as 0.1 part per billion. James Collins, a biologist at Arizona State University who is heading a large study of amphibian declines around the

world, said a new environmental culprit might have to be added to such other factors as habitat loss, contagious diseases and exotic predators. Stanley I. Dodson of the University of Wisconsin at Madison called the work "the most important paper in environmental toxicology in decades. "It shows the effect of the most commonly used herbicide on amphibians in environmentally relevant concentrations," he said. Asked if people should be worried, he also said: "We don't know."

DDT - In another study, frogs given trace amounts of DDT and other pesticides experienced a near-total collapse in their immune systems, a finding that could help explain the rise in human autoimmune diseases such as asthma and allergies, Canadian researchers say. The scientific team also says the work could shed light on the global decline in amphibians, animals that may no longer have strong enough immune systems to survive exposures to viruses and parasites.

The pesticides had an effect on frogs identical to cyclophosphamide, a drug used on human transplant recipients to suppress their immune systems so they don't reject new organs. Frogs and mammals essentially have the same type of immune system, so the

finding could have implications for humans, who also have elevated pesticide exposures. In laboratory experiments, the team injected northern leopard frogs with tiny, sublethal doses of DDT, dieldrin or malathion. For comparison purposes, some other frogs were given the immune-suppressing drug cyclophosphamide. Frogs injected with DDT, malathion or cyclophosphamide had only 1 to 2 percent of normal antibody production, while dieldrin led to 30 percent of normal production, two weeks after exposure. It took frogs 20 weeks of living in a pesticide-free environment to have their immune systems return to normal.

In human terms, impaired immune systems could lead to people dying of common colds or other infections that a healthy person would be able to resist easily. Frogs live in bacteria- and parasite-infested environments, and consequently may not be able to shake illnesses because of their weakened immune systems.

The researchers also tested wild leopard frogs from a number of locations in Ontario and found major differences in their immune systems, depending on their exposure to pesticides. Specimens collected near Point Pelee National Park in Southwestern Ontario had weaker immune systems, compared with those from other regions of the province, such as around Collingwood, less polluted by agricultural chemicals. Point Pelee is a DDT hot spot because a children's camp in the park was once heavily sprayed to kill mosquitoes and it lies near one of Canada's largest concentrations of farms. The research project was prompted partly to investigate the mysterious disappearance of leopard frogs in Point Pelee, to see if it was linked to DDT.

Many experiments use exceptionally high chemical doses — hundreds of times normal environmental exposures — to cause deleterious effects, but these frog tests were conducted with doses of less than one part per million.

Parasites - In a third most ambitious field study, a burrowing parasitic worm appears to be causing deformities in 11 species of frogs, toads, newts and salamanders throughout the Western U.S. Prompted by earlier laboratory studies and some smaller field surveys, researchers fanned out across California and four other Western states … Montana, Idaho, Oregon and Washington looking for evidence of parasites and malformed amphibians in all variety of natural watersheds, man- made ponds and irrigation canals. Researchers found surprisingly widespread evidence of parasites and freakish, mutant amphibians with missing limbs, extra digits or bizarre skin webbings. The new findings were published in the May issue of *Ecological Monographs*, a journal of the *Ecological Society of America*.

Eleven species of mostly indigenous amphibians were found to be affected, with malformations found to be six times as common at sites where the parasite was also present. In some cases, as many as 90 percent of the amphibians were found to be suffering abnormalities. Affected species included the ubiquitous Pacific tree frog and common bullfrog along with more scarce creatures, such as the threatened red-legged frogs native to the mountain streams of the Sierra foothills, and the Cascades frog, thought to be all but extinct in California but still found in Oregon.

The parasite is a trematode worm called *Ribeiroia ondatrae*. Its complex life cycle includes as hosts not only the hindquarters of developing tadpoles but also, at different stages, a type of aquatic snail and the digestive tract of predatory birds. Infected tadpoles typically survive only to grow into slow-moving adult frogs … easy dinner for the birds, which then help complete the cycle when their wastes, laden with worm eggs, are deposited in the same watersheds that are home to the snails and amphibians. Humans may also figure into the equation, scientists suspect, noting that fertilizers and other nutrient-laden runoff nourish more algae for feasting water snails. "We found a very strong relationship between the presence of the snail, the parasites and the malformed frogs," said study co-author Andy Blaustein, a biologist at Oregon State University.

The multidisciplinary research team was led by Pieter Johnson of the University of Wisconsin at Madison and included government scientists at the USGS and U.S. Fish and Wildlife Service. More than 12,000 individual frogs, newts and toads taken from 101 sites were examined as part of the field survey, undertaken after a 1999 laboratory study implicated the trematode as the likely culprit causing amphibian limb deformations.

Stanley K. Sessions, a biologist at Hartwick College in Oneonta, N.Y., said "We can now make all the deformed frogs we want right in the lab..." The damage seems to be caused by the physical displacement of the early limb buds. That is because the trematodes form cysts, Sessions added, displacing the limbs and "causing them to sprout weird-looking deformities and even extra whole legs." "I think it is now safe to say that we know what is causing some (probably most) of the limb deformities in frogs (at least those involving extra limbs)," Sessions said. The next question is to pin down what may be causing the apparent increase in parasite infestations. Along with the possibility of organic pollutants and runaway algae, some other possibilities have not been ruled out, such as an increase in certain species of predatory birds, as well as pesticides or ultraviolet irradiation that could be damaging the immune system of some of the trematode's host species.

Sources: Carl T. Hall, *San Francisco Chronicle*, 4/16/02 and 4/20/02; Randolph E. Schmid, *Philadelphia Inquirer*, 4/16/02; and Martin Mittelstaedt, *Toronto Globe and Mail*, 4/24/02

Possible Rotenone Link to Parkinson's Disease

Preliminary results from a study of thousands of farmers in Iowa and North Carolina suggest exposure to several crop pesticides, including rotenone, may be linked to the development of Parkinson's disease. "The idea of some link to environmental toxins is becoming pretty well-accepted, but the exact ones and how much you have to be exposed to, to be at risk of Parkinson's disease isn't clear," said Dr. Robin Brey, a professor of medicine, division of neurology, at University of Texas Health Sciences Center, San Antonio. Brey said that while this study doesn't answer these questions once and for all, it suggests tantalizing links that need to be probed further.

Researchers surveyed over 20,000 farmers — 55 of whom reported having Parkinson's disease — in the mid-1990s about their health history and exposures to specific pesticides. Dr. Freya Kamel, an epidemiologist at the National Institute of Environmental Health, presented the initial findings to members of the *American Academy of Neurology* meeting in Denver in mid April.

The study found that use of several crop pesticides (i.e. dieldrin, paraquat, maneb, rotenone and a class of insecticides known as organochlorines) was more common among the Parkinson's group than the non-affected farmers. Those with Parkinson's

were 80 percent more likely to have been exposed to dieldrin. The other pesticides appeared to carry an increased risk ranging from 20 to 60 percent.

These pesticides have been shown in test-tube studies or laboratory animal experiments to have toxic effects on certain brain cells, which can lead to Parkinson's-like symptoms of tremor, rigidity, slowness of movement and imbalance. Dieldrin, an insecticide, is now banned in the U.S.; rotenone, a pesticide, has been banned for agricultural use though it is still used to kill unwanted fish in reservoirs. Paraquat, a herbicide, and maneb, a fungicide, are still used by farmers.

Researchers do not think that exposure to these pesticides necessarily results in Parkinson's disease. "We don't think any one compound causes Parkinson's disease because then we would expect to see more clusters of cases," said study co-author Dr. Samuel Goldman, a research scientist at the Parkinson's Institute in Sunnyvale, Calif. "So it has got to be a whole lifetime of mild insults that set off a degenerative cascade in the brain." Most experts think that a complex interaction between a person's genes and environmental exposures is at play in the development of Parkinson's.

Kamel acknowledged that the data included only a small number of Parkinson's patients, and relied on self-reports of the disease, which may be inaccurate. "It's a very dirty study at this point," Brey said. "Self-reports have a tremendous potential for bias. Many patients may have tremor and say they have Parkinson's. The diagnosis clearly needs to be confirmed."

The subject data came from the initial phase of an ongoing government study of more than 84,000 pesticide applicators and their spouses. Kamel said the next step will be to identify more Parkinson's patients, have neurologists confirm the diagnosis, and test their blood and homes for pesticide levels. This major endeavor is widely hoped to definitively answer the question about the role of pesticide exposure in Parkinson's.

Source: Julia Sommerfeld, *MSNBC Online*, 4/19/02

Meetings of Interest

Jun 17: A Century of Water for the West, Hoover Dam, NV. Contact Brit Storey, (303) 445-2918, bstorey@do.usbr.gov or Robert Walsh, (702) 293-8421, rwalsh@lc.usbr.gov

Jul 3-8: Joint Meeting of Icthyologists and Herpetologists, Kansas City, MO. See www.dce.ksu.edu/dce/cl/2002jointmeeting

Jul 17-19: 45th Annual Sportfishing Expo, Las Vegas, NV. Contact 703/519-9691, icast@asafishing.org .

Jul 20-24: 3rd International Percid Fish Symposium, Madison, WI. Contact Jeffrey Malison 608/263-1242, jmalison@facstaff.wisc.edu

Jul 29-Aug 2: HydroVision 2002, Portland OR. Contact 1-816/931-1311, ext. 129, hydrovision@hcipub.com

Aug 5-9: Ecological Society of America, Tucson, Arizona. See www.esa.org/tucson/

Aug 15-17: Trout Unlimited Annual Meeting, Portland ME. Contact David Bowie, dbowie@maine.rr.com

Aug 18-22: 132nd AFS Annual Meeting, Baltimore Convention Center, Baltimore, MD. Contact Betsy Fritz, 301/897-8616 x 212, bfritz@fisheries.org.

Sep 2-6: 4th International Symposium on Aquatic Animal Health, New Orleans, LA. See: www.vetmed.lsu.edu/isaah2002.htm.

Sep 3-6: Riversymposium. Brisbane, Australia. Visit: www.riverfestival.com.au. Contact: conference@riverfestival.com.au or call +61 7 3846 7444

Sep 8-11: Dam Safety 2002. Tampa, FL. Contact Association of Dam Safety Officials at 859-257-5140 or email info@damsafety.org

Sep 10-12: Design and Nature 2002: Comparing Design in Nature with Science and Engineering. Udine, Italy. Contact Rachel Green. 01144(0) 238 0293223**,** *rgreen@wessex.ac.uk*

Sept. 22-26: Rocky Mountain Summit: Sustaining Ecosystems and Their People. Whitefish, MT. Contact Julia Rodriguez or Jessie Williams-Bell, 573/882-9291

Oct. 7-9: Wetlands 2002. Indianapolis, IN. Visit www.Core4.org/Wetlands

Oct 10-13: 12th National Conference of the Society of Environmental Journalists. Baltimore, MD. Contact Beth Parke, 215/884-8174, sej@sej.org

Nov 12-14: Symposium on the Effects of Fishing and Benthic Habitats: Linking Geology, Biology, Socioeconomics, and Management, Tampa, FL. Contact Peter Barnes, pbarnes@usgs.gov.

Aug 21-22, 2003: Maritime Environmental Engineering Technical Symposium 2003. Arlington, VA. Contact David Breslin, BreslinDA@navsea.navy.mil

Congressional Action Pertinent to the Mississippi River Basin

Aquaculture and Marketing

S. 1494: Lincoln (AR) and 6 Co-sponsors. To amend the Federal Food, Drug, and Cosmetic Act to limit the use of the common name "catfish" in the marketing of fish.

S. 1898: McConnell (KY). To establish the Green River National Wildlife Refuge in the State of Kentucky.

H. R. 2439: Ross (AR) and 10 Co-sponsors. To amend the Agricultural Marketing Act of 1946 to require that retailers of farm-raised fish inform consumers, at the final point of sale, of the country of origin of the commodities.

Corps of Engineers Reform

H. R. 1310: Kind (WI) and 13 Co-sponsors; **S. 646:** Feingold (WI); and **S. 1987:** Smith (NH) and 2 Co-sponsors. To reform the Army Corps of Engineers.

H. R. 2353: Tancredo (C)) and 5 Co-sponsors. To revise certain policies of the Army Corps of Engineers for the purpose of improving the Corps' community relations, and for other purposes.

Endangered Species Act (ESA) Amendments:

- S. 911: Smith (OR) and Baucus (MT). To reauthorize the ESA of 1973.
- S. 347: Thomas (CA). To improve the listing, recovery planning, and delisting, and for other purposes.
- S. 1912: Smith (OR) and **H. R. 2829:** Walden (OR) and 6 Co-sponsors.. To require the Secretary of the Interior and the Secretary of Commerce 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. 1402: Thomas (CA). To reform the regulatory process under the ESA.
- H. R. 2409: Otter (ID) and Simpson (ID). To vest in the Secretary of the Interior functions under that ESA with respect to species of fish that spawn in fresh or estuarine waters and migrate to ocean waters, and species of fish that spawn in ocean waters and migrate to fresh waters.
- H. R. 3705: Pombo (CA). To require the Secretary of the Interior to use the best sound science available in implementing the ESA.
- H. R. 4579: Miller (CA) and 77 Co-sponsors. To ensure the recovery of our Nation's declining biological diversity; to reaffirm and strengthen this Nation's commitment to protect wildlife; to safeguard our children's economic and ecological future; and to provide assurances to local governments, communities, and individuals in their planning and economic development efforts.

Federal Water Pollution Control Act (FWPCA) Amendments:

- S. 678: Bond (MO) and **- H. R. 325 :** Tanner (TN) and 11 Co-sponsors. To establish a program for fisheries habitat protection, restoration, and enhancement, and for other purposes.
- H. R. 1474: Jones (NC) and 16 Co-sponsors. To address wetlands mitigation banking, and for other purposes.
- H. R. 1750: Dingell (MI) and 29 Co-sponsors. To authorize funding for the State water pollution control revolving fund program for fiscal years 2002 through 2006.
- H. R. 668: Kelly (NY) and 15 Co-sponsors and **H. R. 3792:** Kelly (NY) and Tauscher (CA). To authorize appropriations for State water pollution control revolving funds, and for other purposes.
- H. R. 4572: Dingell (MI). To increase certain criminal penalties, and for other purposes.
- H. R. 4683: Pallone (NJ) and Shays (CT). To clarify that fill material cannot be comprised of waste.

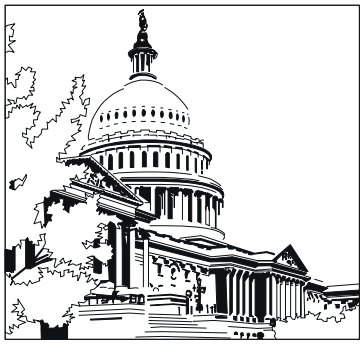
Forestry

H. R. 1494: McKinney (GA) and 109 Co-sponsors. To save taxpayers money, reduce the deficit, cut corporate welfare, protect communities from wildfires, and protect and restore 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.

Fish and Wildlife

S. 531: Lincoln (AR) and Dorgan (ND) and **H. R. 1013:** Deal (GA) and 3 Co-sponsors. To promote recreation on Federal lakes, to require Federal agencies responsible for managing Federal lakes to pursue strategies for enhancing recreational experiences of the public, and for other purposes.

S. 990: The American Wildlife Enhancement Act of 2001, Amends the Pittman-Robertson Wildlife Restoration Act to



improve the provisions relating to wildlife conservation and restoration programs, and for other purposes. Passed.

S. 1314: Breaux (LA) and Hutchison (TX); **H. R. 3104:** Peterson (MN) and 5 Co-sponsors; and **H. R. 3547:** Peterson (MN) and Green (TX). To protect the public's ability to fish for sport, and for other purposes.

S. 1328: Landrieu (LA). "Conservation and Reinvestment Act".

H. R. 3570: Bereuter (NE). To direct the Secretary of the Interior to monitor the health of the Missouri River and measure biological, chemical, and physical responses to changes in river management and other significant variables.

H.R. 3727: Peterson (MN), and 7 Co-sponsors. To authorize the Interior Secretary to issue regulations under the Migratory Bird Treaty Act that would allow states to establish hunting seasons for double-crested cormorants.

Mining

H. R. 4078: Udall (CO). To provide for the reclamation of abandoned hardrock mines, and for other purposes.

Nonindigenous Aquatic Nuisance Species Act (NISA) Amendments:

- S. 1034: Stabenow (MI) and 12 Co-sponsors. To require the Secretary of Transportation to promulgate and review regulations to ensure, to the maximum extent practicable, that vessels entering the Great Lakes do not spread nonindigenous aquatic species, to require treatment of ballast water and its sediments through the most effective and efficient techniques available, and for other purposes.
- H. R. 2732: Baird (WA) and 22 Co-sponsors. To prevent the westward spread of aquatic nuisance species by directing the Secretary of the Interior to prevent westward spread of such species across and beyond the 100th meridian, monitor water bodies, and provide rapid response capacity in certain Western States, and for other purposes.
- H. R. 3558: Gilchrest (MD) and Underwood (Guam). To protect, conserve, and restore native fish, wildlife, and their natural habitats on Federal lands through cooperative, incentive-based grants to control, mitigate, and eradicate harmful nonnative species, and for other purposes.

Public Lands

H. R. 883: Young (AK). To preserve the sovereignty of the U.S. over public lands and acquired lands owned by the U.S., and to preserve State sovereignty and private property rights in non-Federal lands surrounding those public lands and acquired lands.

H. R. 1381: Udall (CO). To direct the Secretary of the Interior to establish the Cooperative Landscape Conservation Program.

H. R. 3962: Peterson (PA) and 5 Co-sponsors. To limit the authority of the Federal Government to acquire land for

certain Federal agencies in counties in which 50 percent or more of the total acreage is owned by the Federal Government and under the administrative jurisdiction of such agencies.

Water

S. 350: Chaffee (RI) and 55 Co-sponsors. To amend the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 to promote the cleanup and reuse of brownfields, to provide financial assistance for brownfields revitalization, to enhance State response programs, and for other purposes

S. 446: Crapo (ID) and Craig (ID) and **H. R. 1156:** Simpson (ID) and 4 Co-sponsors. To preserve the authority of States over water within their boundaries, to delegate to States the authority of Congress to regulate water, and for other purposes.

S. 447: Crapo (ID) and 2 Co-sponsors and **H. R. 705**, Simpson and 6 Co-sponsors. To subject the United States to imposition of fees and costs in proceedings relating to State water rights adjudications.

S. 1137: Harken (IA) and Grassley (IA) and **H. R. 2372:** Boswell. To direct the Secretary of the Army to convey the remaining water supply storage allocation in Rathbun Lake, Iowa, to the Rathbun Regional Water Association.

S. 1148: Burns (MT) and **H. R. 2202:** Rehberg (MT). To convey the Lower Yellowstone Irrigation Project, the Savage Unit of the Pick-Sloan Missouri Basin Program, and the Intake Irrigation Project to the appurtenant irrigation districts.

S. 1255: Wyden (OR) and Brownback (KS). To encourage the use of carbon storage sequestration practices in the United States.

S. 1537: Bingaman (NM) and 2 Co-sponsors. To authorize the Secretary of the Interior to conduct a hydrogeologic mapping, modeling, and monitoring program for the High Plains Aquifer and to establish the High Plains Aquifer Coordination Council to facilitate groundwater conservation in the High Plains.

S. 1538: Bingaman (NM) and 2 Co-sponsors and **H. R. 3121:** Moran (KS) and Udall (NM). To further continued economic viability in the communities on the High Plains by promoting sustainable groundwater management of the Ogallala Aquifer.

S. 1961: Graham (FL) and 3 Co-sponsors. To improve the financial and environmental sustainability of U.S. water programs

S. 2118: Jeffords (VT). To amend the Toxic Substances Control Act and the Federal Insecticide, Fungicide, and Rodenticide Act to implement the Stockholm Convention on Persistent Organic Pollutants and the Protocol on Persistent Organic Pollutants to the Convention on Long-Range Transboundary Air Pollution.

H. R. 1800: Kind (WI) and 20 Co-sponsors. To establish the Upper Mississippi River Stewardship Initiative to monitor and reduce sediment and nutrient loss in the Upper Mississippi River.

H. R. 2694: Horn (CA). To redesignate the Environmental Protection Agency as the Department of Environmental Protection, and for other purposes

H. R. 3561: Linder (GA) and 2 Co-sponsors. To establish the Twenty-First Century Water Policy Commission.

H. R. 4709: Slaughter (NY). To amend the Public Health Services Act to authorize the Director of the National Institute of Environmental Health Sciences to conduct and coordinate a research program on hormone disruption.

Source: *U.S. Congress On Line*

River Crossings

Mississippi Interstate Cooperative Resource Association
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Bettendorf, IA 52722

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