River Crossings

Volume 14 **September/October 2005** **Number 5**

Feds Accused of Ignoring Flood Plain Management Recs

In the wake of the recent hurricanes, floodplain management (or the lack of it) has again come to the forefront. Suddenly, people have begun to realize that for more than a decade the federal government has ignored much of the flood-protection advice offered by the Clinton Administration's *Floodplain Management Review Committee*, assembled in the aftermath of the Midwest's 1993 flood.

After $12 billion in damages in the Mississippi and Missouri river valleys, 30 of the nation's top water experts prepared a report (Galloway Report) in 1994 which made a host of recommendations about protecting levees, reducing development in flood plains and guarding against the sort of floods spawned by hurricanes Katrina and Rita.

Eleven years later, two administrations and multiple sessions of Congress haven't acted on most of the recommendations. The report's author, retired Brig. Gen. Gerald Galloway, estimated that just 35-40% of the panel's advice was heeded. And while full adoption of the report's suggestions probably wouldn't have prevented the disasters in Louisiana, he said, far fewer people would have been in harm's way. "The most impressive picture to me was the casino that . . . squished on top of a *Holiday Inn*," he said. "I hope this makes people in the risk zones realize what they're up against."

House Destroyed by Flooding During the 1993 Midwest Floods.

"We said, if you don't need to develop in a flood plain, don't do it," Galloway said. "We had top talent working on that report, a bunch of very smart people." Galloway attributes the lack of response to changing personnel in key agencies and a tendency for society to let down its guard once floodwaters recede. Galloway cited the following as significant recommendations that the federal government failed to follow:

- Neither President George W. Bush nor Bill Clinton followed recommendations to order federal agencies to allow less building in flood-prone areas.
- Neither White House accepted the advice to have the U.S. Army Corps of Engineers (Corps) give environmental quality equal importance with economic development when considering water projects. In July, the Bush administration finally went on record as saying the Corps' guidelines need to be revised, but has done nothing about it.
- Officials ignored advice to reactivate a panel to better coordinate flood-protection efforts or to establish a separate Mississippi River basin commission to manage flooding and other river issues.
- Congress turned a deaf ear to legislation aimed at guiding states and localities about what to do — and what not to do — to sensitive land along waterways that provide buffers against flooding.

The government did accept recommendations to revamp the National Flood Insurance Program with an eye toward

Inside This Issue

relocating people out of flood plains. And thousands of families accepted buyouts. But the insurance program, operated by the Federal Emergency Management Agency (FEMA), continues to pay damages for homes and businesses that have been repeatedly flooded. In Louisiana alone, the government is insuring more than 11,000 flood-prone properties that have collected damages for previous floods, nearly 5,000 of which have collected damages four or more times on the same property, according to FEMA records.

FEMA spokesman Ed Pasterick said, "In a tragic way, this becomes an opportunity to make sure those properties are not rebuilt in the same way or even in the same place." He said that FEMA had about 271,000 insured properties in the path of Katrina and that the payouts will mark "the biggest single event in the history of the flood program. But we will pay these claims no matter how high the toll goes."

Galloway, who works now for an engineering company and teaches at the University of Maryland, added his hope that news stories and television images coming out of the Gulf Coast will refocus attention on the flood plain management recommendations that were ignored. Many of those recommendations were controversial, especially those aimed at limiting development in flood-prone areas and advising the government to consider "permanent evacuation" in some places, though it did not specify locations.

Missouri's St. Charles and western St. Louis counties, that were devastated by flooding in 1993, provide examples of "flood plain mismanagement". Along the Missouri River flood plain in those counties there has been a building boom in the last decade with shopping centers and several billion dollars of development. "They've completely ignored the Galloway Report," contended Wayne Freeman, executive director of the nonprofit, *St. Louis-based Great Rivers Habitat Alliance*. "Nowhere in the world do you see this kind of development in a flood plain."

Galloway said that he and the other experts never intended to ban flood plain development. Rather, he said, they wanted to emphasize that communities have the responsibility to make those decisions and that the federal government has the duty to say when decisions are unwise. "Ultimately, the decision is made by the people who zone the land. Sometimes they make excellent judgments, and sometimes they don't," he said.

In recent years the Corps has been in the eye of the storm about its preparations for a flooding disaster along the Gulf Coast. Environmental advocates contend that the Corps has been lax in its role of protector of wetlands in the region and unduly willing to give the go-ahead for development in fragile coastal lands that serve as a barrier for flooding. But Sen. Christopher "Kit" Bond, R/MO, defended the Corps, asserting that "some of the people who are now condemning the Corps have fought against funding for flood control." Bond observed that the responsibility to handle disasters lies mainly with state and local emergency management agencies, not the federal government. "After this is over, we need to look at what was done and what wasn't done and at the recommendations of the Galloway Report so that we can begin putting people back in New Orleans without them being in danger," he said.

Corps officials have given different explanations as to why levees failed in New Orleans, including an assessment by one official that it would have cost $2.5 billion for the type of levee needed to resist a storm of Hurricane Katrina's magnitude. Julie LeBlanc, a Corps engineer, agreed that the levees stood no chance against Katrina. "My opinion is that this could not have been avoided because the structures were overtopped. They were built to withstand a Category 3 storm, and we had a Category 4. That undermined the bottom of the walls, and they failed," she said.

Tom Waters, chairman of the *Missouri Levee and Drainage District Association*, was among those paying close attention to news about breached levees. Waters' sister was among the Louisiana residents displaced by the storm, and she and her

River Crossings

Published by

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

MICRA email: ijrivers@aol.com
MICRA Web Site: http://wwwaux.cerc.cr.usgs.gov/MICRA/

---

family have resettled for the time being in Missouri. Waters, who farms near Orrick, MO, worries that the Corps is not adequately maintaining thousands of acres of levees along the Missouri River. "That maintenance money has just gone away," he said. "They (the Corps) are funding every environmental project along the river, but they're not funding what's needed to maintain the levees."

But scientists and conservationists along the Gulf Coast describe areas where little attention has been paid in recent years to wetlands, barrier islands and the natural systems that help prevent flooding. In Louisiana, some 1,900 square miles of coastline has disappeared since the 1930s, and one expert noted that, even now, an amount equal to a football field disappears every few minutes. With little regulation over the years, oil and gas companies simply plowed through coastal wetlands to punch holes for their drilling rigs.

Even before the hurricane, Congress was scheduled to take up a $2 billion funding proposal that would begin to restore some of those wetlands. In the aftermath of hurricanes Katrina and Rita, Gulf Coast politicians will be seeking vastly more money to restore their coastline. "Nobody pretends to think that $2 billion is enough for the task at hand," said Robert Twilley of Louisiana State University, a member of the team that drew up the earlier coastal restoration plan. The ability to win approval of a project of such magnitude may well depend on how long the memories of Katrina linger, a calculation that even experts such as Gerald Galloway have difficulty making after his experience with the Great Flood of 1993. Recalling the words of a colleague, he said that people often forget the perils and the pains of flooding. "Six months after a flood, (new) people will be moving back into a neighborhood that was under water, and not know that it was under water," he said.

For example, in Mississippi and Alabama an explosion of growth has occurred along the coast, fueled in part by the casino industry, which has provided a jolt to the economies of the region. The trade-off has been government-sanctioned disappearance of the fragile lands that prevent flooding. Coastal development often degrades the barrier beaches and coastal wetlands that can serve as natural buffers against hurricanes. "You just cannot justify massive building and rebuilding near the most dangerous property in the United States," said Orrin H. Pilkey Jr., a professor emeritus at Duke University and a specialist in coastal ecosystems. "It's a form of societal madness."

But in the words of President Bush: "The good news is — and it's hard for some to see it now — that out of this chaos is going to come a fantastic Gulf Coast, like it was before," Bush said. "Out of the rubble of Trent Lott's house — he's lost his entire house — there's going to be a fantastic house. And I'm looking forward to sitting on the porch."

Does anyone really think that we aren't going to make the same mistakes again?

Sources: Bill Lambrecht, *St. Louis Post-Dispatch*, 9/3/05; Michael Grunwald, *Washington Post*, 9/7/05 and *Greenwire*, 9/7/05

The Levee Debate Goes On

Engineering experts recently meeting in Washington, D.C., expressed mixed views on the use of levees to guard against future flooding in New Orleans and elsewhere in the nation. *American Society of Civil Engineers* Executive Director Pat Natale said his organization has called for a federally funded reconstruction advisory panel to guide the redevelopment in New Orleans.

Other critics have said that levees, no matter where they are, are never a good option. "Levees are not the right thing — there are those that have failed and those that will fail," said Larry Larson, executive director of the *Association of State Floodplain Managers*. He called for a levee safety program to assess the nation's thousands of miles of levees — both federally and locally controlled. They protect dozens of cities, from Los Angeles to St. Louis.

Gerald Galloway, engineering professor at the University of Maryland, former member of the *Mississippi River Commission* and leader of the *Floodplain Management Review Committee* for the 1993 Midwest floods took a more flexible approach, agreeing with Larson and floodplain and wetland restoration advocates on the need for employment of natural mitigation. "It makes sense to do both structural and nonstructural," said Galloway about flood protection. However, he added about New Orleans, "we have lost the luxury of time and need to act on these needs now." Galloway said he would advise the White House to make sure rebuilding takes into account the vulnerability of levees and incorporates better construction.

When the Army Corps of Engineers (Corps) decided to move forward in the 1970s with hurricane protection for New Orleans — built below sea level in the Mississippi River floodplain — it chose the current levee system around Lake Pontchartrain over a storm surge barrier that would have separated the lake from the Gulf of Mexico farther to the east. According to former Corps employees, the barrier would have been the better option but was abandoned because of environmental objections and costs.

Now, according to the Jackson (MS) *Clarion-Ledger*, Federal officials appear to be seeking proof to blame the New Orleans flood on environmental groups. *Clarion-Ledger* officials say they obtained a copy of an internal e-mail that the U.S. Department of Justice (DOJ) sent out in mid September to various U.S. attorneys' offices asking: "Has your district defended any cases on behalf of the (U.S.) Army Corps of Engineers against claims brought by environmental groups seeking to block or otherwise impede the Corps' work on the levees protecting New Orleans? If so, please describe the case and the outcome of the litigation."

Cynthia Magnuson, a DOJ spokeswoman said she couldn't comment "because it's an internal e-mail." Shown a copy of the e-mail, David Bookbinder, senior attorney for the *Sierra Club*, remarked: "Why are they (Bush administration officials) trying to smear us like this?" The *Sierra Club* and other environmental groups had nothing to do with the flooding that resulted from Hurricane Katrina that killed hundreds, he said. "It's unfortunate that the Bush administration is trying to shift the blame to environmental groups. It doesn't surprise me at all."

Federal officials say the e-mail was prompted by a Congressional inquiry but wouldn't comment further. But whoever is behind the e-mail may have spotted an article in the Sept. 8 issue of the *National Review Online* (NRO). The NRO article seemed to serve as little more than an

apologist for the Corps and the Bush Administration, and a critic of anyone who ever opposed the use of levees and promoted "common sense" floodplain management. For example, NRO cynically argued that environmental groups who argued against levees in favor of more natural river management clearly "had other agendas in mind besides flood control. They were concerned because levees were allegedly threatening their beloved exotic animals and plants".

Specifically NRO chastised the *Sierra Club* and other environmental groups for suing to halt the Corps' 1996 plan to raise and fortify 303 miles of Mississippi River levees in Louisiana, Mississippi and Arkansas. The Corps settled the litigation in 1997, agreeing to hold off on some work until an environmental impact statement could be completed. Interestingly, the NRO article concluded that: "Whether this delay directly affected the levees that broke in New Orleans is difficult to ascertain."

But the problem with NRO's allegation is that the levees that broke causing New Orleans to flood weren't the Mississippi River levees that were the subject of the lawsuit. Instead, they were the levees that protected the city from Lake Pontchartrain on the other side of the city. When Katrina struck, the hurricane pushed tons of water from the Gulf of Mexico into Lake Pontchartrain, which borders the city to the north. Corps officials say the water from the lake cleared the levees by 3 feet. It was those floodwaters, they say, that caused the levees to degrade until they ruptured, causing 80% of New Orleans to flood.

Bookbinder said the concern of the *Sierra Club's* litigation and others in 1996 was where the Corps got the fill dirt for the project. "We had no objections to levees," he said. "We said, 'Just don't dig fill materials out of the wetlands. Get the dirt from somewhere else.' " If you listen to what some conservatives say about environmentalists, he said, "We're responsible for most of the world's ills."

In 1977, the Corps wanted to build a 25-mile-long barrier and gate system to protect New Orleans on the east side. Both environmental groups and fishermen opposed the project, saying it would choke off water into Lake Pontchartrain. After litigation, Corps officials abandoned the idea, deciding instead to build higher levees. "They came up with a cheaper alternative," Bookbinder said. "We didn't object to raising the levees."

John Hall, a Corps spokesman in New Orleans, said the barrier the Corps was proposing in the 1970s would only stand up to a weak Category 3 hurricane, not a Category 4 hurricane like Katrina. "How much that would have prevented anything, I'm not sure," he said. Since 1999, Corps officials have studied the concept of building huge floodgates to prevent flooding in New Orleans from a Category 4 or 5 hurricane.

Although the Federal Emergency Management Agency in 2001 listed a hurricane striking New Orleans as one of the top three catastrophic events the nation could face (the others being a terrorist attack on New York City and an earthquake in San Francisco), funding for Corps projects aimed at curbing flooding in southeast Louisiana lagged. U.S. Sen. Mary Landrieu, D/LA, said the White House cut $400 million from Corps' requests for flood control money in the area.

In fiscal 2006, the Corps had hoped to receive up to $10 million in funding for a six-year feasibility study on such floodgates. According to a recent estimate, the project would take 10 years to build and cost $2.5 billion. "Our understanding is the locals would like to go to that," Hall said. "If I were local, I'd want it."

But former Interior Department Secretary Bruce Babbitt makes the controversial argument that it is time for state and local officials to abandon much of the Louisiana coast and rebuild New Orleans as an island similar to Venice, Italy. The former Clinton administration Cabinet member also says that climate change will dictate measures such as this, and that climate change will be a central focus during the 2008 presidential election. Babbitt also calls on the environmental movement to develop a stronger long-term vision.

So the "beat goes on", and the arguments and discussions about the merits of levee building continue. Those who care about our rivers and coastlines must be involved in that debate.

Sources: *The Clarion-Ledger*, 9/16/05; John Berlau, *National Review Online*, 9/8/05; *E&E TV 9/19/05;* Tasha Eichenseher, *E&ENews PM*; and *Greenwire*, 9/9 and 9/16/05

White River Projects May Impact Ivory-billed Woodpecker

A proposal by the U.S. Army Corps of Engineers (Corps) to divert water from the White River in Arkansas to irrigate farm fields would threaten habitat of the recently rediscovered ivory-billed woodpecker, according to a federal lawsuit being filed by two environmental groups. The lawsuit — to be filed in U.S. District Court for the Eastern District of Arkansas by the *National Wildlife Federation* (NWF) and the *Arkansas Wildlife Federation* (AWF) — alleges that the $319 million Grand Prairie project would damage the bird's habitat by drawing 158 billion gallons of water annually from the White River.

Ivory-billed woodpecker as sketched by Mark Bowers, FWS, Raleigh, NC.

In April, a team of ornithologists announced that they had spotted the woodpecker, which had not been conclusively seen in continental North America since 1944. At least eight independent sightings of the bird were recorded in the report in the journal *Science*, as well as a video recording that shows the red-crested bird's characteristic patterns of white and black on its wings.

"We are asking the court to stop the rush to judgment by federal agencies more determined to build the irrigation project than to consider the damage it will do to

the bottomland hardwood forests where the ivory-bill was found," said David Carruth, president of the AWF. "The ivory-billed woodpecker reminds us that this is a very special region. Protecting it means protecting an irreplaceable part of our country's wildlife heritage for future generations."

Under the Corps' proposal, the river water would be distributed to 1,000 rice farmers in the region. The 158 billion gallons equals about 1.5% of the river's flow. Overall, the project will encompasses 250,000 acres and take 13 years to complete. "This project has no significant negative environmental impacts," said project manager Jim Bodron. The Corps had stopped work on the Grand Prairie project on May 9, but two weeks later issued a biological assessment saying it "is not likely to adversely effect" the woodpecker, which was sighted 20 miles away from the construction. Work then continued on June 6.

The U.S. Fish and Wildlife Service (FWS) concurred with the Corps' assessment two days after it restarted the project, saying federal engineers should monitor whether the construction was harming the bird's habitat. "If we find something down the road, they have agreed to adapt their management," said Jeff Fleming, FWS spokesman for the agency's southeast region. Fleming added that federal officials had joined with private groups, including *Ducks Unlimited* and the *Nature Conservancy*, to protect the bird's habitat. "We have hunters and anglers in Arkansas who are fired up about having this bird here," he said.

But John Kostyack, lead attorney in the NWF/AWF suit, said administration officials would undermine conservation efforts for the bird by pressing ahead with the project. "Both common sense and solid science tell us that withdrawing substantial amounts of water from a habitat can harm the wildlife there," Kostyack said. "The Fish and Wildlife Service acknowledged this fact in their own early Grand Prairie reviews [in 2001], noting that changing the hydrology in the Cache River and White River National Wildlife refuges will affect 'overall habitat values there.' "

Meanwhile, the advocacy group *Environmental Defense* (ED) is planning to challenge a nearby White River navigation project on similar grounds to the NWF and AWF lawsuit. That project would reduce flooding but could drain water from forests. Senior ED attorney Tim Searchinger said the Corps estimated two years ago that the $30 million channeling effort will generate only between $1 million and $3 million a year in economic benefits. "We shouldn't risk destroying the last remaining habitat for the ivory-billed woodpecker in the pursuit of extraordinarily marginal projects, at best," Searchinger said.

But environmental groups have lost in two previous lawsuits that were trying to derail the Grand Prairie project, one in state court and one in federal court. They are appealing both decisions and note that each of them occurred before Interior officials announced the woodpecker's rediscovery.

Sources: Juliet Eilperin, *Washington Post*, 9/8/05; and *Greenwire*, 9/8/05

Clark Fork Superfund Site Settlement Reached

The U.S. EPA reached a $100 million settlement agreement in August with *Atlantic Richfield* and *NorthWestern Corp.* over remediation of the Milltown Reservoir Superfund site in Montana. Over 100 years of copper mining by *Anaconda Copper Co.* had washed 6.6 million cubic yards of heavy metals to the 95-year-old wooden Milltown Dam, built at the confluence of the Clark Fork and Blackfoot rivers. Milltown was designated as a Superfund site in 1983.

The waste has contaminated Milltown's groundwater with arsenic, making it unfit for human consumption, according to the Missoula County Health Department. Contaminated sediments also squeeze through the dam's wooden planks into the lower parts of the Clark Fork River, toward Missoula, putting humans, fish and other animals at risk, officials say.

In April 2003, EPA designated removal of the Milltown Dam as part of a $106 million Superfund cleanup and finalized its remediation and dam removal plans last December. Negotiations have focused on how to split the cost of the cleanup. The consent decree directs *Atlantic Richfield Co.* to remove nearly 2.5 million cubic yards of sediment contaminated with arsenic, cadmium, copper, lead and other heavy metals. *Atlantic Richfield*, owner of *Anaconda Copper Co.*, will pay for most of the costs under Superfund law. *NorthWestern Energy*, which purchased *Montana Power* and the dam in 2002, will contribute a total of $11.4 million to help the state with restoration work at the removal site and contribute to *Atlantic Richfield's* cleanup expenses. *NorthWestern* had reached an agreement with EPA at least a year ago, said spokeswoman Claudia Rapkoch.

Under EPA's remediation plan, the dredged sediment from Milltown will be sent by rail nearly 100 miles upstream for disposal at the *Anaconda* Superfund site in Anaconda, MT. Environmentalists following the case applauded the settlement outcome. After more than 10 months of closed-door negotiations, there was concern the remediation plan would fall through, said Tracy Stone-Manning, executive director of the *Clark Fork Coalition*. Disposing of 2.6 million cubic yards at a site that already hosts 3,000 acres of mine tailings should not pose any environmental problems, she added.

According to a *Resources for the Future* 2001 study, the average cleanup cost for a Superfund mega site is nearly $140 million.

Source: Tasha Eichenseher, *Greenwire*, 8/3/05

Canada and U.S. Agree to Drain Devils Lake

North Dakota and Canadian officials reached an agreement in late July to allow the state to operate a 14-mile flood outlet to divert water from the swollen Devils Lake into the Sheyenne River. The Sheyenne empties into the Red River, which runs north along the North Dakota-Minnesota state line and into Canada's Lake Winnipeg in the province of Manitoba. Some have said that water from Devils Lake could introduce new types of pollution, including invasive species, into Canadian waters.

To ward off these concerns, the agreement calls for North Dakota to install a crude 18 foot thick rock-and-gravel filter into the outlet to block fish, eggs and some plants from going into the Sheyenne River — something it has already done at a cost of about $50,000. The deal also requires Canada and the U.S. to design and build a more advanced

filtration system. But that could take more than a year and the water is expected to start flowing now. The agreement also calls for water monitoring downstream to help prevent invasive species, nitrogen and phosphorus from crossing the border. If any fish or organisms are detected that may pose a hazard to Canadian waters, the states "will take immediate measures" to prevent them from spreading, according to the statement announcing the agreement.

Devils Lake has not drained into the Red River Basin for more than 1,000 years, which has Canadian officials worried about the potential introduction of striped bass and microscopic species into Canadian waters, particularly Lake Winnipeg. Canadian officials said that Lake Winnipeg has no natural predators for unforeseen species and the diversion could spoil a fishing industry that generates $20 million a year in income.

But Milt Sauer of *People to Save the Sheyenne*, an advocacy group, said there is nothing to force the water to go through the gravel. If the filter fills up with debris, the water will simply pour over the top. Joy Smith, a Conservative MP from Winnipeg, said the gravel filter "does nothing to stop anything that is less than two millimeters in diameter and that includes bacteria and sulfates and mercury,"

Home Threatened by Devils Lake Waters.

North Dakota officials said the 14-mile canal is needed because the saline lake has no natural outflow and the water level has risen more than 26 feet since 1993, to 1,448 feet — in the process, washing out roads and forcing the relocation of 350 homes and flooding 30,000 hectares of farmland. The new outlet will siphon up to 50 cubic feet per second (cfs) from Devils Lake, reducing its water level by up to 4 inches per year.

The state began working on its outlet after the U.S. Army Corps of Engineers canceled plans for a larger, more expensive version in 2002. That outlet would have funneled up to 300 cfs from the lake at a pricetag of about $500 million — a cost that was its undoing. The state has already spent nearly that much raising roads and dikes around the city of Devils Lake, buying flood insurance and compensating homeowners.

Canada had become increasingly angry with North Dakota as it built the system of pumps, pipes and canals on the lake to channel overflows into the Sheyenne River. The waters would eventually be drained all the way north into Hudson Bay. Prime Minister Paul Martin has repeatedly raised the issue with President Bush, asking him to intervene with North Dakota officials to stop the project. Mr. Martin wanted the International Joint Commission (IJC), a binational agency appointed by the two countries, to settle the issue.

Canadian officials warned that by going around the commission, the United States would jeopardize decades of cooperative management of 300 shared lakes and rivers at a time when disputes over pollution going both north and south are spiraling. But North Dakota's government and Congressional delegation has pushed hard for the project, even though it has also been opposed by neighboring states. North Dakota denied there was any pollution problem, and pushed ahead with the draining project.

Some critics have said that Canada is bowing to American pressure by agreeing to the deal. "It's pretty much of a joke," said Sauer. "I think it got to the point where they realized nothing was going to happen so, to save some face, they are saying that we've reached an agreement and this is going to help. But it is nothing in reality." "We've played all of our cards and we've done our best and the Americans won," said Pat Martin, a New Democrat MP from Winnipeg. "The Americans always win"

In addition to their concerns that the outlet will contaminate the Lake Winnipeg watershed with rogue marine life, salt and farm chemicals, environmentalists are also concerned that a future inlet proposed to bring much more dangerous water from the Missouri River into Devils Lake would increase the risk further. And, although the agreement says there is no current plan to divert water from the Missouri by means of an inlet, it does not specifically forbid construction of such an inlet or other diversion.

Sources: Clifford Krauss, *New York Times*, 8/6/05; Dale Wetzel, *AP/San Francisco Chronicle*, 8/6/05; Gloria Galloway, *Toronto Globe and Mail*, 8/8/05; and *Greenwire*, 8/8/05

Sound and Bubble Barrier Deters Asian Carp

Preventing Asian carp from entering the Great Lakes may include an idea as simple as using tiny bubbles and chirping-like noises. Mark Pegg and John Chick of the Illinois Natural History Survey found that an underwater acoustic barrier is effective in deterring these invasive species. "The acoustic barrier works with the use of sound projectors and an air line that generates bubbles," said Pegg. "Typically, sound is muffled underwater, but bubbles provide a way to amplify the repellant sound and direct it to a specific area. And, the effervescence is an additional disturbance to the fish."

With funding from *Illinois-Indiana Sea Grant*, the researchers tested sound-bubble technology in fish raceways where it proved 95% effective in causing bighead and silver carp to turn around. "Since then we have learned more about what Asian carp actually hear, and we believe we can get the success rate closer to 100%," said Pegg.

Asian carp pose a threat to the Great Lakes fisheries because they eat zooplankton, which all fishes typically feed on in their juvenile stages, and have grown as large as 50 pounds in U.S. waters. They have been steadily moving up the Mississippi and Illinois rivers towards Lake Michigan where a temporary electric barrier in the Chicago Sanitary and Ship Canal stands in their way. A permanent electric barrier is under construction and is likely to be up and running within the next six months.

Previously, as part of the same project, Chick and Pegg established that the electric barrier can be successful in stopping Asian carp. Since then, they found that the acoustic barrier can work effectively on its own and in conjunction with an electric barrier. "Because the acoustic barrier design is so simple,

installation, operation and maintenance of this system is an affordable option," said Pegg. "And since it doesn't require much electricity, during a power outage an acoustic barrier can easily run off a generator."

Sound-bubble technology, developed by *Fish Guidance Systems, Ltd.*, has been used widely to divert fish where their presence is unwanted, such as hydroelectric plant intake sites. Pegg and Chick's experiments are the first attempt to use this system in a cross-channel environment, in other words, where the goal is to cause the fish to turn around.

"The next step," said Phil Moy, *Wisconsin Sea Grant* aquatic invasive species specialist and chair of the *Dispersal Barrier Advisory Panel*, "is to test the acoustic technology on a larger scale in field trials. If funding becomes available and the technology continues to prove effective, an acoustic barrier may augment the electric barrier at its site, or downstream where it can protect the Chicago Sanitary and Ship Canal as well as the Des Plaines River."

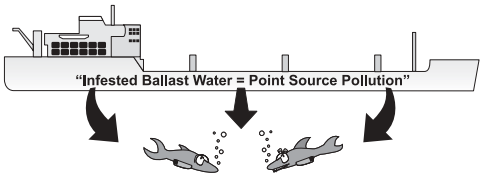
At the *Aquatic Invasive Species Summit* held in Chicago in 2003, experts from around the country gathered to discuss possible solutions to the movement of species between the Mississippi and Great Lakes basins. "The summit participants recommended that we focus on long-term solutions, but they also felt that we should pursue experimental technologies, such as acoustic systems, that might help in the interim," said Pat Charlebois, *Illinois-Indiana Sea Grant* aquatic invasives specialist. "This technology presents a promising way to boost the efficacy of the electric barrier."

"Keep in mind, barriers will not prevent people from unintentionally moving species from one water body to another," added Charlebois. "For example, young Asian carp closely resemble some common wild caught baitfish, so someone might spread these species without realizing it," explained Charlebois. "Outreach efforts need to continue so that people are made aware of the role they can play in preventing the spread of invasive species."

Source: *News Release*, Illinois-Indiana Sea Grant College Program, 7/21/05

Coast Guard Establishes NOBOB Policy

The U.S. Coast Guard on August 31, 2005 established a policy of best management practices for vessels entering the Great Lakes that declare No Ballast Onboard (NOBOB). Ballast water from foreign ships was the original source for the introduction of zebra mussels, water fleas, gobies and other invasive species into Great Lakes; and from there into the Mississippi River Basin. This new policy was established to reduce the introductions of such aquatic nonindigenous species (NIS) into the Great Lakes.



Under the new policy, the masters, owners, operators, or persons-in-charge of vessels equipped with ballast water tanks and a voyage plan including transits to ports or places in the Great Lakes (including the Hudson River, North of the George Washington Bridge), should do the following:

- Conduct mid-ocean ballast water exchange during ballast-laden voyages in an area of 200 nautical miles from any shore and in water 2000 meters deep whenever possible, prior to entering the U.S. EEZ.
- For vessels unable to conduct mid-ocean ballast water exchange, conduct saltwater flushing of their empty ballast water tanks in an area of 200 nautical miles from any shore, whenever possible. Saltwater flushing is the addition of mid-ocean water to empty ballast water tanks; the mixing of the flush water with residual water and sediment through the motion of the vessel; and the discharge of the mixed water, such that the resultant residual water remaining in the tank has as high a salinity as possible, and preferably is greater than 30 parts per thousand (ppt). The vessel should take on as much mid-ocean water into each tank as is safe (for the vessel and crew) in order to conduct saltwater flushing. The master of the vessel is responsible for ensuring the safety of the vessel, crew, and passengers.
- NOBOB vessels that conduct these best management practices should incorporate them into their required ballast water management plan onboard their vessels. The requirements for ballast water management plans are found in 33 Code of Federal Regulations (CFR) § 151.2035(a)(7). Also, NOBOB vessels are reminded that there are required ballast water management practices for vessels equipped with ballast water tanks that operate in U.S. waters regarding avoiding ballasting operations in certain situations, sediment removal, and the cleaning of ballast tanks. These requirements are found in 33 CFR § 151.2035(a).

Unfortunately, vessels declaring NOBOB do still carry residual ballast water and/or sediments that have the potential to harbor NIS. As these vessels transit the Great Lakes, they off-load their cargo and take on Great Lakes water as ballast water. Once NOBOB vessels take on new cargo, and discharge the mixed (residual and Great Lakes) ballast water, the potential still exists for the introduction of NIS into the Great Lakes.

The Coast Guard will take samples of residual water from the ballast tanks of these NOBOB vessels during normal pre-arrival processing (or when updated ballast water reporting forms are obtained) in order to determine the success of the shipping industry's implementation of this initiative. NOBOB vessels that conduct these best management practices should indicate that they have done so when submitting their Ballast Water Reporting Form (OMB Control No. 1625-0069). If it is determined that this program is not effective in preventing the introduction of NIS into the Great Lakes, the Coast Guard may consider other alternatives.

The NOBOB policy can be found at: http://dms.dot.gov. In this web site, proceed to simple search, and under docket number, enter 19842. Additional information can be found at: http://www.uscg.mil/hq/g-m/mso/ans.htm.

Source: *Press Release*, U.S. Coast Guard, 8/31/05

Plan for Amphibian Recovery

The *Global Amphibian Assessment*, released last October, revealed that 5,743 species of amphibians are known to exist, but that about 10,000 are believed to exist. Those include frogs, toads, salamanders and caecilians — snakelike creatures that live mostly underground. But, according to a team of 500 scientists in 60 countries, at least 43% of the known species are declining in population size, including 1,856 that might soon become extinct. Thirty-four species are already known to be extinct, and 122 species have not been seen for so long that scientists believe they may also be extinct.

Establishing the reasons behind this decline has proved more difficult than finding the numbers. But the biggest single threat appears to be a fungus, *Batrachochytrium dendrobatidis*; first identified just six years ago and firmly established in parts of the Americas, Australia and Europe. The disease which it causes, *chytridiomycosis*, appears to kill amphibians by damaging their sensitive skins, blocking the passage of air and moisture. It is believed that environmental stresses, including drought and pollution, may make the animals more vulnerable to the chytrid fungus, perhaps by weakening their immune system or reducing their birth weight.

"The smoking gun in all of this is the fungus," said Claude Gascon, chair of the *International Union for the Conservation of Nature* (IUCN). "We have some idea what it's doing, but we don't know where it's coming from and how it's being moved around, and there is no way of controlling it in the wild. "That leaves us with few options but to go and rescue some populations at risk from disease, and then reintroduce them in the wild when we've cleaned up or found ways of allowing them to live in the wild with the fungus."

At a September meeting, the IUCN, *Conservation International* and other groups announced a $404 million amphibian restoration effort. The plan contains a series of emergency actions and long-term research that include preventing future habitat loss and reducing trade in amphibians for food and pets. The groups will look to governments, private institutions and individual donors for funding. The plan lists the following six major reasons behind amphibian declines:

- habitat loss and degradation;
- climate change;
- chemical contamination;
- infectious disease, notably the fungal infection *chytridiomycosis*;
- invasive species; and
- overharvesting

So widespread and so devastating is *Batrachochytrium dendrobatidis* that one of the main recommendations emerging in the action plan is that extensive captive-breeding programs should be established for amphibians at particular risk. That recommendation envisions that, ultimately, around 1,000 species could be preserved in this way, with specialist facilities established on every continent. The action plan thus sees captive breeding as a bridge to a better era when *chytridiomycosis* can be beaten and the amphibians returned to the wild.

But not all delegates believe this to be an effective approach. "Many species can't be bred in captivity," said Cynthia Carey, University of Colorado, "and with 99% of the species they're looking at, we just don't know how to do it. You can give them the right habitat and food, but they may need specific light or heat or moisture or group size, otherwise the female won't ovulate — and it can take years to study that." "We've been running a captive-breeding program with the boreal toad (*Bufo boreas*) since 1995," said Professor Carey. "We've tried reintroducing them to the wild seven or eight times, but every time they die within a couple of years; if you don't get rid of the fungus, all you're doing is providing it with lunch."

Another part of the plan would investigate ways of dealing with *Batrachochytrium*. Ideas include researching why some species are immune, which could lead to drugs or even a vaccine, though that is considered to be a long way off. Another idea is developing fungal resistance in captive populations through crossbreeding before returning them to the wild.

"But we also need to identify critical habitats, protect them and then enforce protection," said Rohan Pethiyagoda, who runs the *Wildlife Heritage Trust* in Sri Lanka. "Where I come from, 95% of the original habitat has already disappeared; and sometimes the patches left are less than one square kilometer in size."

Other sums would go towards combating overharvesting — the unsustainable use of amphibians for food, medicine and the pet trade — and to establishing rapid-response teams that could travel to a site when a particular population collapses.

Many delegates emphasized the importance of putting amphibian decline in the context of broader environmental change and its impact on human societies. "We all know that amphibian decline is just the first manifestation of synergies between different factors," said Tom Lovejoy, president of the *Heinz Center for Science, Economics and the Environment* in Washington, D.C. "We're living in this global soup of chemicals; there's climate change, the oceans are already a tenth of a percent more acid than they were". "So, by finding ways to manage the first manifestation of these negative synergies, we'll be better able to deal with other manifestations that will occur in the future."

But others were less optimistic that the proposed $404 million effort — even presuming that it is forthcoming — can make much a difference. "I would be optimistic if people started doing something about the underlying issues such as climate change and pollution," said Professor Tim Halliday, international director of the *Declining Amphibians Task Force*. "But there's no sign that these things are changing."

Meanwhile, a study published in the September issue of the journal *Ecological Applications*, revealed that the weed killer, *Roundup*, a *Monsanto* product, could be responsible for a decline in amphibian populations. University of Pittsburgh ecologist Rick Relyea, who conducted the study, revealed that *Roundup* killed 98% of tadpoles during a three-week test and 79% of young frogs and toads within a day. "It's much deadlier than we thought," Relyea said.

Relyea added one tablespoon of *Roundup* to 250 gallons of water in cattle-watering tanks where tadpoles were growing with soil and food. That amount mimicked a worst-case accidental spraying of a small wetland, Relyea said. But St. Louis-based *Monsanto* disputed Relyea's study and said *Roundup* is not meant to be used near water. A simulation putting a high concentration of *Roundup* in water, therefore, is not accurate. "We believe this needs to be studied in a natural setting where other factors come into play," said *Monsanto* spokeswoman Mica DeLong. A field study published last year by Canadian scientists showed that even when wetlands are accidentally sprayed, *Roundup* concentrations never reach high enough levels to do damage, DeLong said.

Monsanto says that *Roundup* isn't meant to be used near water and that its directions clearly say so. But many amphibians live in shallow puddles, Relyea said. And he worries that wetlands within fields and forests are accidentally being sprayed. But Washington University biologist Jonathan Chase said that, even if *Roundup* has a toxic effect, it's unlikely to cause global declines on its own. Rather, there are likely many causes with the biggest being loss of habitat, he said. "The No. 1 cause is that we're building parking lots and malls and expanding our footprint on the world," he said. Relyea said he agrees that habitat loss is the most important factor. There isn't evidence yet that *Roundup* is contributing to the worldwide decline, he said. But his experiments show its striking lethality.

Roundup is a product name for a herbicide, one of many in a general class that use the chemical glyphosate, which *Monsanto* pioneered. Glyphosate is now the top agricultural pesticide in the U.S., according to the Environmental Protection Agency. In 1993, the U.S. EPA renewed its permit for the herbicide *Roundup*, noting that the chemical ingredient glyphosate was not toxic to aquatic life, but rather the surfactant used to bond glyphosate to plants posed the most danger. *Monsanto* sells *Roundup Biactive*, a version with a different surfactant — one less harmful to amphibians — in Australia and Europe.

"The frogs are trying to tell us something," said Andrew Dobson, a Princeton University professor who studies infectious diseases in the wild. "We're making the world a sicker place and, mercifully, the frogs have picked up on it before us humans." Almost a third of all the known species of frogs, toads and other amphibians are considered "globally threatened" by the IUCN. By comparison, 23% of mammal species and 12% of bird species are threatened.

Declines and disappearance of amphibian species are occurring the most in North and South America, Puerto Rico and Australia. In the U.S., 54 known amphibian species are threatened or extinct, with California species accounting for 13, including the California tiger salamander and the mountain yellow-legged frog. Nine of 34 known extinctions occurred in the U.S., when global amphibian declines started to accelerated worldwide.

Source: Richard Black, *BBC News*, 9/14 and 9/19/05; John Heilprin, *AP/San Francisco Chronicle*, 9/19/05; Eric Hand, *St. Louis Post-Dispatch*, 8/7/05; and *Greenwire*, 8/9, 9/15 and 9/19/05

FWS Accused of ESA Violation

Two former U.S. Fish and Wildlife Service (FWS) employees have accused the agency of violating the Endangered Species Act by allowing New Mexico's Rio Grande River to dry up at times that threatened the endangered Rio Grande silvery minnows. Biologists Zach Simpson and Keith Basham, who worked on the silvery minnow recovery effort between 2002 and 2004, said the agency violated the 2003 Biological Opinion that calls for the Bureau of Reclamation (BOR) and FWS to allow no more than four miles of river to run dry in a day and then withheld information about dead fish.

Program supervisors allowed longer sections of river to dry up, making it difficult for "salvage" crews to save fish stranded in pools of standing water in the riverbed, the biologists said. There were several days when the BOR, which manages dams for irrigation, did not notify FWS that parts of the river were drying up until it was too late to rescue fish, they contend. "It is clear to me that these violations were systematic, and, furthermore, that the Fish and Wildlife Service was clearly silent and complicit in the face of obvious violations of the Biological Opinion," said Simpson in a statement distributed by the Santa Fe-based advocacy group *Forest Guardians*.

The biologists allege that a FWS employee directed a state worker helping with the salvage effort to dump dead minnows in willows along the riverbank to reduce the dead fish count so that federal water managers would not appear to be in violation of the "incidental take" for the population. Incidental take is the number of fish that can be killed during routine water management activities.

FWS spokeswoman Elizabeth Slown said the fish were discarded because contractors failed to properly document where they were found. She also said the river dried up for two days in a stretch because a flood gate was left open accidentally, allowing water to flow into a diversion channel. Overall, she said, the minnow is doing "abundantly well in the middle Rio Grande right now."

The biologists' allegations come in the wake of a FWS move last summer to raise the incidental take. Citing a boost in the population due to a break in the drought, the agency increased the take from 760 to 10,440 fish. The idea was that since there were more minnows surviving in the river, more were likely to be killed. But the biologists say that the incidental take was increased to save the BOR from violating the Biological Opinion.

Rio Grande Silvery Minnow

FWS officials note that they have saved thousands more minnows this year than in the past years. Biologists have rescued more than 560,000 fish from the river this year, compared with 714 in 2003, when the incidental take limit was set, agency officials say. But Basham said in an interview that FWS appears to have little interest in recovering the fish. "The silvery minnow program has collected $10-12 million of taxpayer money with no real vision of how they're going to save this species," he said.

The agency's lack of commitment to recovery of the species has led several biologists to leave the program, said Basham, who said he left the agency in frustration last year. "There are a lot of

good biologists who have left FWS because they were not allowed to do their jobs the way they thought fit to do it," he said.

Source: *Greenwire*, 9/19/05

EPA's NonPoint Source Pollution Guidance Changed

New U.S. EPA guidance has given states more leeway to avoid creating pollution plans for dirty waterways if they can show alternative programs would help them meet federal water quality standards. EPA's goal is to bolster a range of state and local approaches for reducing pollution washing into the water from nonpoint sources such as farmland, streets and parking lots. Mike Haire, an EPA scientist who helped write the guidance said in an interview it could lead to faster pollution cleanups.

The new guidance addresses how states should draft and submit biennial lists of waters needing total maximum daily loads (TMDLs) of nonpoint source pollution. It defines "requirements" more broadly than EPA had in the past and allows for a range of actions that state and local governments can take, such as providing grants and other funding agreements. The guidance would allow EPA to examine alternatives to TMDLs on a case-by-case basis and require that states prove their plans would bring waterways into compliance within reasonable time periods. EPA would provide flexibility if certain conditions are met for state programs being used instead of TMDLs. These conditions include the availability of funding for controlling pollution and existing commitments by polluters to implement controls. The guidance also says some voluntary programs and other alternatives, such as Forest Service management plans, could replace or supplement EPA's normal requirements for waters listed as impaired.

But the EPA plan may prove controversial, because it expands the scope of what constitutes "required" alternative controls needed to avoid creating federal plans for reducing TMDLs. Environmentalists say the approach lacks adequate safeguards, while state regulators say they are still reviewing the guidance that became final in mid August.

Under the Clean Water Act's TMDL rules, states must calculate the highest amount of various types of pollution that waters can absorb and still meet federal water-quality standards and then set limits on pollution sources. EPA allows states to avoid setting TMDLs if they can show other alternative pollution control requirements will bring a waterbody into attainment with federal standards. But some states have alleged in recent years that this approach fails to credit effective voluntary, incentive-based efforts for reducing nonpoint pollution and favors regulatory approaches.

More than 34,000 waters nationwide do not meet federal standards, but there are just a little more than 15,000 approved TMDL plans, EPA says. Failure to implement the program in the past has spurred litigation. There are 23 states in which EPA is under court order or has agreed to establish TMDLs if the states fail to do so, EPA says. The agency's Web site provides a program summary as of Oct. 1, 2004.

EPA, which is still collecting information from states and assessing how acceptable alternatives were used in the 2004 listing cycle, says there might be hundreds of pollution control plans that qualify for TMDL alternatives. EPA officials say further that guidance for the biennial lists of impaired waters, called 303(d) lists, is an effort to define and offer states more efficient alternatives for reporting on and achieving water quality standards for impaired waters.

Haire said the agency wanted to spur increased use of alternative approaches that are already in place or can be implemented quickly, rather than waiting to do a TMDL. He noted that current guidelines give states 8-13 years to do TMDLs and said the alternative approach could prompt faster action. He said further that the level of analysis would be "almost equal to the analysis of a TMDL, but we are hoping it gets initiated and implemented right off the bat."

He said that through the new discussion of what constitutes "requirements" and the alternative approaches that EPA would review on a case-by-case basis, the agency is crediting a host of agreements that state and local officials may craft. He emphasized that programs must be required to show results in implementation of the standards and achieve those results faster than going through the TMDL process. "More than anything else it is saying 'tell us what may suffice to meet these three requirements.' We don't have a stranglehold on all of these techniques," Haire said.

Meanwhile, an attorney for an environmental group argues the modified approach lacks accountability. Melanie Shepherdson of the *Natural Resources Defense Council* criticized the guidance for defining "requirements" so broadly. Also, she said the absence of a TMDL will remove pressure on regulators to ensure waters are cleaned to meet standards. "They seem to be reinterpreting the word required to allow something that is not required," she said.

Shepherdson also expressed concern that the level of analysis regulators will likely undertake to claim the alternative approaches bring attainment with standards will not be as robust as going through the TMDL process, especially with relation to agricultural runoff and other nonpoint sources of pollution. "What kind of analysis are they doing to show that any of these so-called required programs are going to work?" Shepherdson asked. "Particularly with something that is voluntary you have no assurances under the example they gave that it is going to work. Where is the accountability?"

Source: Ben Geman and Tasha Eichenseher, *Greenwire*, 8/18/05

OK Sues AR Poultry Farmers

Poultry waste problems in the Illinois River watershed of northwestern Arkansas and northeastern Oklahoma reached a boiling point this summer as the state of Oklahoma sued 14 Arkansas poultry companies — including three run by *Tyson Foods*, the world's largest meat producer. The suit is accusing the farmers of tainting Oklahoma waters with the wastes from millions of chickens and turkeys.

Poultry farmer Gene Pharr scoffs at the thought of chicken droppings as hazardous waste. Poultry waste spread along the Ozark Mountains has turned the region into a lush green, he says. And chickens have made the northwestern corner of Arkansas truly prosperous. That's why Pharr fears a lawsuit targeting the industry that could put chicken waste

on par with industrial solvents, pesticide remnants and old car batteries. "We could see the loss of this industry to this country," says Pharr, whose 125,000 chickens are a fraction of the region's $2 billion industry.

Chicken Confinement Operation (Sierra Club Web Site Photo)

But Oklahoma's attorney general, Drew Edmondson, sees it another way. Edmondson says phosphorous from poultry litter runoff fuels algae growth that reduces the clarity of rivers and streams, depletes oxygen and can kill certain populations of fish. He remembers that, as a college student in Tahlequah, OK, he could stand chest-high in the Illinois River and still see his toes. "I've seen it change," Edmondson says. "It's nice to have green land. It's not so nice to have green rivers."

The Oklahoma lawsuit seeks unspecified money to clean up the Illinois River and is using the same South Carolina law firm that handled lawsuits against tobacco companies. Meanwhile, the farmers have banded together as a group called "Poultry Partners." "The poultry industry is not the tobacco industry, and poultry litter is not a hazardous waste," says Janet Wilkerson of *Peterson Farms*, a spokeswoman for the companies.

Poultry companies say Edmondson is ignoring phosphorus added to the water by a growing population. Even so, while the region is rapidly expanding, it still has well fewer than 1 million people. According to the lawsuit, Arkansas has 2,363 chicken houses in the Illinois River watershed while Oklahoma has 508. The chickens add phosphorus waste equivalent to 10.7 million people per year, Edmondson says.

The Arkansas growers question why Oklahoma sued rather than seeking more regulatory standards. They say money would be better spent developing alternative ways to use poultry litter, such as in composting or in generating electricity.

Hard feelings over the lawsuit have caused Arkansas state Rep. Mike Kenney of Siloam Springs to say his town might cut services provided to West Siloam Springs, OK, if it must spend more money to improve water quality. Edmondson says he wants the companies, not the farmers, to pay for the cleanup.

Attempts to have animal waste declared a noxious substance have been tried in court before. The city of Waco, TX, alarmed by phosphorus levels in the North Bosque River, is using the federal Comprehensive Environmental Response, Compensation and Liability Act to fight dairies.

Source: April L. Brown, *AP/USA Today*, 7/24/05

Road Salt and Stream Salinity

The amount of salt dissolved in streams in the Northeastern U.S. is rising, and chemicals used to clear snow and ice from the roads are being blamed. "We're basically hardening the watersheds and feeding them a high-salt diet. There is a direct connection between the number of driveways and parking lots we have and the quality of our water," said Sujay Kaushal researcher from the University of Maryland *Center for Environmental Science* in Frostburg, MD.

Kaushal and his colleagues tested water in streams in rural areas of New Hampshire, upstate New York, and Maryland, comparing the amount of dissolved salt over several decades. Their findings were reported in the September 6 issue of *Proceedings of the National Academy of Sciences*. "We think that the salt has built up in the ground water, so even if we quit applying it, it would still be slightly salty for decades," Kaushal said. There are alternatives methods of deicing, he added, but they have side effects too. "The problem is the number of roadways," he said, saying the number being built should be limited.

In New Hampshire's White Mountains, some streams exceeded 100 milligrams per liter of chloride on a seasonal basis, the researchers said, similar to the salt level in the mixing region where the Hudson River meets the ocean. Salt concentrations measured in the same streams in the 1970s were around 10 milligrams per liter, Kaushal said. EPA's safe drinking water limit for salinity is 500 milligrams per liter.

In streams feeding into Baltimore's reservoirs, salinity increased from about 10 milligrams per liter to about 50 milligrams per liter since the 1970s, while in Dutchess County, NY, the increase was from 30 milligrams per liter to 60 milligrams per liter since the 1980s, the researchers said. The study focused on Little Mogan Run, Middle Run, and Beaver Run feeding into Baltimore's Liberty Reservoir; Wappinger Creek and the Mohawk River in New York State; and streams in the Hubbard Brook Valley of New Hampshire's White Mountains. The researchers noted that this problem is also occurring in other parts of the country, with rising salinity reported in some Midwestern lakes.

Source: Randolph E. Schmid, *AP/The Boston Globe*, 9/6/05

Forest Recreational Values Scaled Back

Forest Service officials under the Bush administration have scaled back their assessment of how much recreation on national forest land contributes to the American economy, concluding that these activities generate just a tenth of what the Clinton administration estimated. Under President Clinton, the Forest Service projected that by 2000, recreation in U.S. forests would contribute nearly $111 billion to the nation's annual gross domestic product, or GDP. Bush administration officials, by contrast, have determined that in 2002 these activities generated about $11 billion.

Joel Holtrop, deputy chief of the National Forest System, said the revised numbers may spur the administration to shift some of its recreation dollars within the system, but will not prompt it to downgrade activities such as hunting, fishing and

wildlife-watching. "It's just as valuable to us today as it was 10 years ago; we just have a better way of calculating it," Holtrop said in an interview. "We recognize recreation activity is an important program to the American people."

But critics of the administration said they fear that the new numbers, which were obtained from the nonprofit *Natural Resources News Service*, will be used to justify more logging and mining on national forests. Under the old estimates, recreation accounted for 85% of the system's contribution to the GDP, compared with extraction's 11%; under the new formula, recreation represents 59%.

"Would I expect anything different from the Bush administration? No," said Michael Francis, who directs the national forest program at the *Wilderness Society*, an advocacy group. "They will cook the books for whatever they want." But according to Forest Service strategic planner Ross Arnold, who developed the most recent estimates, earlier studies inflated the number of people visiting national forests and how much money they spent while they toured the area. In 1995, Clinton administration officials assumed there would be 800 million visits each year to national forests by 2000; current officials have determined that there were just over 200 million visits in 2002.

The Forest Service obtained the lower visitor numbers through its *National Visitor Use Monitoring Program*, which surveyed tourists in every national forest between 2000 and 2004, Arnold said. The agency also decided to peg spending associated with such visits at $46 a person, by basing it on how much visitors spent within 50 miles of a forest on a single day. Greg Alward, another Forest Service planning staffer, said officials did not purposely inflate the earlier recreation numbers but were simply relying on rougher estimates. "They were the best available data at the time," he said.

American Forest Resource Council Vice President Christopher West, who represents Western sawmill operators and forest landowners, hailed the new estimates as a better assessment of the national forests' true economic worth. "The bottom line for us is: There's value to all these resource uses," West said. "And as long as we compare them apples to apples, we can have responsible discussions about the national treasures."

The revised numbers come as an array of groups, including outdoor equipment and clothing suppliers and wildlife advocates, are touting the financial benefits that come from preserving recreation areas within the forest system. *Watchable Wildlife* President James Mallman, whose nonprofit represents state and federal wildlife agencies, noted that in 2001 the Fish and Wildlife Service (FWS) estimated that birders and wildlife watchers spend $38 billion a year on equipment and travel. Last year, FWS officials concluded that wildlife and nature viewing had surpassed hunting and fishing in terms of the nation's top recreation activity.

"Often not developing an area is where the best economic gain can be, because that is what people want," Mallman said. He added that he was surprised by the Forest Service's new numbers, because "more people are going to national forests than ever before." Holtrop said he did not question that forests are seeing an upsurge in visitors. "Empirically, we know that recreation use on national forests continues to rise," he said.

Sources: Juliet Eilperin, *Washington Post*, 8/15/05; and *Greenwire*, 8/16/05

National Land Use Change Survey

A team of researchers at the *EROS Data Center* in South Dakota is leading a project to match three decades of satellite images with what is happening on the ground in actual forests, cities, mountains and cornfields throughout the U.S. The *Land Cover Trends Study* will provide insight into economic and cultural changes, and help to predict climate change. The effort is the first such review of vegetation, development and land use on all public and private lands in the U.S. since the 1960s.

The scientists are currently in the midst of surveying more than 3,300 random parcels of 100-square kilometers each throughout the country. They chose their sites by first dividing the country into 84 ecoregions, and then picking 40 random squares of 100 square kilometers for ground surveys in each region. Then each site is visited at ground level, taking photographs and recording signs of change with Global Positioning System coordinates.

"The thing that the satellite images don't do is tell us what's underlying that change ... what's the story behind it all," said *EROS* researcher Tom Loveland. "That's what we get from going out in the field." Aside from the economic and cultural value of locating and quantifying change, this *Land Cover Trends Study* also will help predict what's coming, Loveland said. *EROS* scientists are working on a computer model to take past measurements of change, project them into the future and predict how different policies would alter those projections. For example, researchers might ask how a change in government subsidies would reduce the acres of grassland converted to corn and soybean production in South Dakota.

The *EROS* study will also help describe how more heat reflects into the atmosphere when a field becomes a parking lot or how much carbon dioxide a growing forest absorbs. For example, in South Dakota, introduction of new corn varieties could push more grassland acres into row crop production. That could happen within five years, as seed companies develop drought-tolerant corn.

But Don Doering, a policy researcher with the nonprofit development organization *Winrock International* in Arlington, VA said the first new corn varieties probably will not radically expand the corn belt Large-scale changes in agriculture arise from complex factors, which is why big-picture projects such as *EROS* research are so useful, he said. "This kind of information that can paint to people how we're changing our landscape... is enormously valuable information, because it's literally stuff that's hard to get at except from 100,000 feet," he said.

The findings so far show that:

- the fastest change to vegetation is in commercial forests of the Pacific Northwest and the Southeast;
- advances in biotechnology have allowed the corn belt in the Midwest to shift westward into North and South Dakota; and
- the "cotton belt is now the pine belt" in the Southeast.

Sources: Ben Shouse, *Sioux Falls Argus Leader*, 9/12/05; and *Greenwire*, 9/13/05

Global Warming, Water, and the West

The West depends on its great rivers for its water supply, and these rivers depend on a delicate balance of snowpack and snowmelt to maintain their water supplies. Now, a new analysis of government data finds that this delicate balance has been upset by the effects of global warming. The report, entitled *"Less Snow, Less Water,"* and written by the *Rocky Mountain Climate Organization* (RMCO), finds that the West's major river basins are getting warmer, at exactly the time of year water needs to be stored as snow. The study also finds that since 1991, river-basin snowpacks have been below average for the vast majority of the time.

Analyses of government temperature and snowpack records for the upper basins of the Columbia, Missouri, Colorado, and Rio Grande rivers show that:

- In each river basin, the most recent five-year period was the hottest in the past 110 years. In the upper Columbia and upper Missouri River basins, 2000-2004 was 1.5 °F hotter than the historic average; in the upper Colorado basin, 2.1 °F hotter; and in the upper Rio Grande, 2.5 °F hotter.
- In all four river basins, the monthly pattern of increased temperatures between 1995 through 2004 has a telltale signature of global warming, with warming the greatest in January, February, and March – exactly what is predicted by global-warming scientists. Unfortunately, this is also when warming has the greatest effects on the size of snowpacks and the timing of snowmelt.
- Government snowpack measurement records going back to 1961 indicate that snowpack levels have been below average for 14 of 16 years in the Missouri River basin, 13 of the last 16 years in the Columbia River basin, 11 of 16 years in the Colorado River basin, and 10 of 16 years in the Rio Grande basin.

Precipitation in the West is not just scarce; it is scarcest where and when it is needed most – in the lowlands and in the heat of summer. Despite this demand, western precipitation falls mostly in the mountains and in the winter. Luckily for the West, winters in the mountains have historically been cold enough that precipitation falls as snow, not rain, and stays in the high country in snowpacks through the winter. These snowpacks are the region's largest reservoirs, dwarfing those people have built; they naturally delay the runoff until spring's warmth releases it as snowmelt to flow to the lowlands, often months after it fell as snow. Snowpack provides nearly three-quarters of the West's water.

Now, however, global-warming pollution from power plants and cars is causing snowpacks to decline in the West, further limiting these already scarce water supplies. Warming earlier in the spring will mean snowpacks melting sooner, and peak water flows will occur before the peak water needs of cities, farmers, and ranchers. With this inherent vulnerability to even small changes in the snow-water cycle, this risk alone should give Westerners ample reason for concern.

Rocky Mountain Snowpack (RMCO photo)

The climate is already changing as a result of human activities. Yet, these changes are just a small glimpse of what is likely to come if global-warming emissions continue to increase. While average temperatures worldwide are projected to rise by 3-10 °F by the end of the 21st Century, compared to 1990, temperature increases likely will be even greater in the American West. In addition, temperature increases are predicted to be greater in the winter than in the summer, and at higher elevations than in the lowlands, with significant implications for snowpacks and water availability.

These changes could mean:

- Smaller snowpacks,
- Earlier snowmelt,
- More evaporation and dryness,
- More flood-control releases,
- Less groundwater,
- More legal fights over water rights, and
- More summertime droughts.

To ward off these problems, aggressive and prompt action by federal, state, and local governments is needed to reduce global-warming pollution both domestically as well as abroad, and to prepare for the remaining, unavoidable impacts to come.

Source: *Global Warming, Water, and the West*, *The Rocky Mountain Climate Organization*, 1200 18th Street, NW Washington, DC 20036, (202) 887-1715, www.cleartheair.org

Climate Change Update

The rate of ice melting in the Arctic is increasing and a panel of researchers says it sees no natural process that is likely to change that trend. Within a century the melting could lead to summertime ice-free ocean conditions not seen in the area in a million years, the group said. Melting of land-based glaciers could take much longer but could raise the sea levels, potentially affecting coastal regions worldwide. And changes to the permafrost could undermine buildings, drain water into bogs and release additional carbon into the atmosphere.

"What really makes the Arctic different from the rest of the nonpolar world is the permanent ice in the ground, in the ocean, and on land," said Jonathan Overpeck of the University of Arizona and head of the *National Science Foundation's Arctic System Science Committee* that issued the report. "We see all of that ice melting already, and we envision that it will melt back much more dramatically in the future, as we move toward this more permanent ice-free state," he said. The findings were published in the August 23rd issue of *Eos*, the newspaper of the *American Geophysical Union*.

The researchers said there are two major feedback systems influencing the region — ocean circulation in the North Atlantic and the amount of precipitation and evaporation that takes place. Feedback can accelerate changes. For example, the white sea ice reflects solar radiation back into space, but as the ice melts the dark

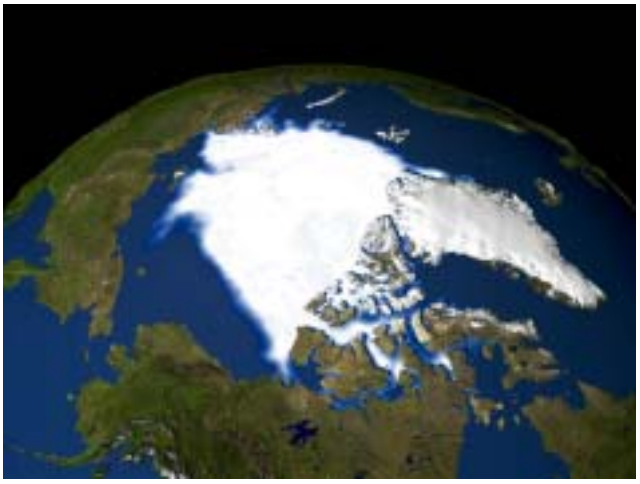
water will absorb some of the light, warming and melting more ice.

The scientists said they did not see any natural mechanism that could stop the loss of ice, and future impacts could have broader reach. Flushing sea ice into the Arctic Ocean could slow thermohaline circulation, the ocean conveyor belt (gulf stream) that moves warm equatorial water into the North Atlantic and saves Europe from Canadian winters. But the summer melt also could strengthen the conveyer belt, Mark Serreze, a senior research scientist with the *Cooperative Institute for Research in Environmental Sciences* and one of the paper's coauthors said. "Which wins, we don't know," Serreze said. "That's one of the big mysteries."

Julienne Stroeve, a scientist with the *University of Colorado's National Snow and Ice Data Center*, said 2005 could surpass 2002 as the lowest sea-ice summer in a century. "So far, the numbers are pretty disturbing," Stroeve said. "The rate of change has taken us by surprise a little bit. I think it's changing a lot quicker than we expected."

Western Siberia is heating up faster than anywhere else in the world, experiencing an increase of 3 °C over the past 40 years. There is particular concern about melting permafrost because as it thaws, it reveals bare ground and that in itself speeds up the warming process. Siberia's permafrost hasn't melted since it formed 11,000 years ago, and so that process could release billions of tons of methane into the air speeding and increasing global temperature rise, according to a report published in *New Scientist* in early August. Researchers said the melting of the frozen peat bog — which is larger than France and Germany combined — could force climate scientists to revise predictions of future temperatures upward. The greenhouse gas methane is 20 times more potent than carbon dioxide (CO_2).

It is a scenario climate scientists have feared since first identifying "tipping points" — delicate thresholds where a slight rise in the Earth's temperature can cause a dramatic change in the environment that itself triggers a far greater increase in global temperatures. The discovery was made by Sergei Kirpotin at Tomsk State University in western Siberia and Judith Marquand at Oxford University. Dr. Kirpotin said the situation was an "ecological landslide that is probably irreversible and is undoubtedly connected to climatic warming". He added that the thaw had probably begun in the past three or four years. "When you start messing around with these natural systems, you can end up in situations where it's unstoppable. There are no brakes you can apply," said David Viner, a senior scientist at the *Climatic Research Unit* at the University of East Anglia.



NASA Image of 2004 North Pole Sea Ice.

"If we don't take action very soon, we could unleash runaway global warming that will be beyond our control and it will lead to social, economic and environmental devastation worldwide," said Tony Juniper, director of *Friends of the Earth*. "There's still time to take action, but not much".

In the U.S. the rate of the spring thaw in the Great Lakes region is three times as fast as it was before 1975, according to a University of Wisconsin-Madison report published in mid August in *New Scientist*. The team of researchers looked at the timing of ice breakups on 61 lakes between 1975 and 2004, comparing it to data dating back to 1846. On 56 of the lakes, the ice breakup occurred an average of two days earlier each decade since the 1970s.

University of Arizona's Jonathan Overpeck, a paleoclimatologist and an author of a forthcoming report of the *Intergovernmental Panel on Climate Change* (IPPC), said that with global warming the nation's most arid regions would face longer and more frequent droughts, more intense flooding when the rains do come, and a greatly stressed water storage system — most notably, Colorado River dams and reservoirs that serve seven Western states.

While global average surface temperatures are expected to increase between 2.5-10.4 °F over the next century, according to a 2001 IPCC report, the Southwest could see a rise of 14 degrees or more, Overpeck said. Winters may be wetter in some years, but the snowpack would melt earlier, and overflowing reservoirs would have to release water that typically is stored for use during the dry summer months, he said. And evaporation rates — already an issue for the Colorado River's two major reservoirs, Lake Powell and Lake Mead — will increase, he added.

"This will wreak havoc on our water supply systems," he said. Warming would probably further encourage beetle outbreaks, which have already killed thousands of the Southwest's trademark pinyon pines. The jury is still out on whether climate change is contributing to the current drought, Overpeck said, who is also a member of the National Oceanic and Atmospheric Administration's *Climate Change Working Group*. Scientists should know more in a couple of years, he said.

The two most important actions the region — and the rest of the country — can take to address climate change is to lessen the damage by decreasing greenhouse gas emissions and to "adapt smartly" to minimize the vulnerability to climate change, Overpeck said. "Why not have a Manhattan Project-like effort to do this?" he said, referring to the government effort in Los Alamos in the 1940s to develop the first atomic bomb. "That kind of expenditure would probably solve this problem."

With regard to global warming and hurricanes, one thing most scientists agree on is that higher ocean temperatures lead to more intense storms. Hurricanes cannot form unless the ocean is at least 80 °F for at least 150 feet below the surface. Otherwise, water does not evaporate from the surface rapidly enough to sustain the huge energy required for a hurricane. The higher the temperature, the more water vapor and

heat energy are released into the air, fueling the storm. Other factors, such as winds at certain altitudes, can interfere with the formation and stability of a storm, but water temperature is the ultimate driving force.

In July, Massachusetts Institute of Technology climatologist Kerry Emanuel published a paper drawing a strong connection between tropical storm intensity and rising sea surface temperatures. Emanuel's study, which appeared in the journal *Nature*, concluded that the destructive power from hurricanes has increased by 50% over the last 50 years, with the rise in surface temperatures partly responsible. Emanuel argues it is human activity — global warming caused by the release of CO_2 and other gases related to industrial activity that trap the sun's heat, raising Earth's temperature.

Suzana Camargo, a cyclone specialist at Columbia University, supported Emanuel's conclusion based on her studies of typhoons in the Pacific Ocean. When water temperatures rise by a few degrees as the result of cyclical El Niño events, she said, the number of typhoons does not increase, but their intensity does. But those findings leave unanswered the question of what is causing the temperature rise in the Atlantic.

One of the nation's leading hurricane forecasters, William Gray of Colorado State University, said Emanuel is leaping to conclusions based on imprecise information about the strength of hurricanes, especially in decades past. He said Emanuel's formula for calculating the energy released by hurricanes obscures the fact that no one directly measured the winds in many of the storms, roughly estimating speeds from satellite images instead. "It's a terrible paper, one of the worst I've ever looked at," said Gray, who does not believe that cyclone intensity worldwide is increasing.

He also questioned Emanuel's contention that human actions, such as the burning of oil and other fuels, have caused the surface of the ocean to warm. Gray said the ocean-temperature increase is natural. George Taylor, the state climatologist of Oregon, adds that records of past hurricanes reflect a cyclical heating and cooling of ocean waters. Taylor also notes that global warming models predict increases in ocean temperatures mainly at the most northern and most southern latitudes, not in the mid-ocean regions where hurricanes are spawned.

Max Mayfield, director of the *National Hurricane Center*, said also that warmer temperatures caused by greenhouse gas emissions will not make future hurricanes appreciably stronger. He cited a study by the National Oceanic and Atmospheric Administration's *Geophysical Fluid Dynamics Laboratory*, which concluded that a doubling of atmospheric CO_2 would increase hurricane intensity just 5% by 2080.

NASA image of a large hurricane off the Florida coast.

But Kevin Ternbeth, a climate scientist at the government-funded *National Center for Atmospheric Research* in Boulder, CO, praised Emanuel's research. He also noted that the next edition of the IPCC assessment that he is coauthoring will include a more thorough examination of the link between tropical storms and global warming. Ternbeth added that Emanuel's comments fit into the understanding of most international scientists that rising sea temperatures are fueling stronger hurricanes. "Evidence is supporting the view that these storms are getting more intense, lasting longer and that is associated with global warming," he said.

Nate Mantua, a scientist with the University of Washington's *Climate Impacts Group* added, "There is a growing consensus that ... a warmer ocean should lead to more intense hurricanes,". Over the past 30 years, the surface temperature of the oceans has increased by about 0.5-1 ^{o}F. During that period, the average annual number of the fiercest hurricanes — Categories 4 and 5 — has nearly doubled, according to a recent *Georgia Institute of Technology* and the *National Center for Atmospheric* study published in the journal *Science*. "What we found was rather astonishing," said Peter Webster, a coauthor of the report, in announcing the results. But Webster won't say conclusively that the more powerful hurricanes can be blamed on global warming.

Some researchers say blaming the intensity of the storms on global warming is too simplistic an explanation. "There are other factors," said Phil Klotzbach, a researcher in the Department of Atmospheric Science at Colorado State University. Major climate patterns, such as El Niño and La Niña, play a key role in determining hurricane strength. Conditions associated with El Niño can create winds that rip apart and weaken hurricanes. Climate patterns lasting decades — versus the year-long El Niño — also influence hurricane behavior. Recent studies documenting the growing ferocity of the storms are based on satellite data from the North Pacific, North Atlantic, Indian and southwest Pacific oceans. Klotzbach cautioned that some of the satellite data is "quite poor." And he noted that while ocean surface temperatures have "climbed considerably" since 1995, there hasn't been a corresponding rise in the number of high-intensity cyclones overall.

Meanwhile, in Europe, officials have said that global warming is responsible for an array of new diseases and health problems. Along the Mediterranean Sea in Italy, a toxic warm-water algae sickened more than 120 people this summer with fevers and headaches. In Sweden, scientists have said the spread of disease-carrying ticks correlates with warming temperatures throughout the continent. The insects need short, warm winters in order to survive. "Variations in climate have had a very noticeable impact," said Elisabeth Lindgren of the University of Stockholm's Department of Systems Ecology. "We're seeing disease in areas where we've never had it before, as well as more cases in areas where it previously existed".

On another front, scientists say that greenhouse gases absorbed by the Amazon rainforest are returned to the atmosphere by means of tropical rivers and wetlands after as little as five years of sequestration in the trees. This is much faster than scientists had thought previously, somewhat dampening the hope that the Amazon serves as an

efficient mechanism for carbon sequestration. Biogeochemist Anthony Aufdenkampe, of the *Stroud Water Research Center* in Avondale, PA, published this information in the journal *Nature*. He also found that any long-term growth added to the Amazon rainforest each year is offset by slash-and-burn agriculture and, to a much lesser extent, timber harvesting.

But, according to a U.N. commissioned report obtained by *Agence France-Presse*, sequestering CO_2 deep below the ground could cut global emissions by 20-40% between now and 2050. The U.N. *Intergovernmental Panel on Climate Change* — the world scientific authority on global warming — commissioned the report in 2003. The report found that between 220 and 2,200 billion tons of CO_2 could be economically stored underground in geological structures such as empty oil and gas fields and also in deep oceans between now and 2100. The IPCC estimated that the process could cost anywhere from $15 to $75 per ton of CO_2.

U.K. officials already are dedicating funds to CO_2 sequestration, having announced in June that they will spend £25 million on a carbon sequestration plan in the North Sea to help mitigate the effects of climate change. Under the British plan, captured greenhouse gases such as CO_2 and methane from power stations and oil rigs would be pumped underground into spent oil and gas fields. Officials said they hope the method could eventually become a major export earner for the U.K. as other countries begin to adopt similar techniques. Experts have said emptied gas fields in the North Sea are capable of storing U.K. CO_2 for the next 100 years.

Though most of the world's 500 largest companies acknowledge that climate change poses a risk to their bottom line, fewer than half have implemented an emissions reduction program and less than a third are involved in emissions trading, according to a recent report based on a global survey of corporations. The *Carbon Disclosure Project* (CDP), a group supported by institutional investors, asked the world's 500 largest companies to disclose the amount of CO_2 they produce and what steps, if any, they are taking to reduce emissions. More than 70% of the companies responded and more than 90% of respondents recognize the risk or potential opportunity posed by climate change; about 60% said they are taking steps to curb emissions, but fewer than one in seven reduced greenhouse gas emissions in the past year.

"Wall Street is waking up to climate change risks and opportunities," said CDP chairman James Cameron. "Considerably more of the world's largest corporations are getting a handle on what climate change means for their business and what they need to do to capture opportunities and mitigate risks" Among the 146 companies that did not respond to the survey are *Boeing, Apple, Amazon, Morgan Stanley* and *Wal-Mart*. "It's shocking, out of date and will make them look ridiculous in many people's eyes," said Catherine Pearce of *Friends of the Earth*, on the companies that did not respond. "How many times can they refuse to acknowledge what is going on around them?

In a landmark legal proceeding in the U.S. in late August, a federal judge allowed a case to proceed that will become the first lawsuit over alleged harm from climate change. The suit alleges that two federal agencies have contributed to global warming by funding oil and gas development projects. Judge Jeffrey White of U.S. District Court for the Northern District of California said there is evidence that the *Overseas Private Investment Corp*. and the *Export-Import Bank* are directly or indirectly responsible for 1.9 million tons of annual CO_2 and methane emissions. In his ruling, White rejected an attempt by the Justice Department to have the case dismissed.

The case began in 2002, when the plaintiffs — *Friends of the Earth*; *Greenpeace*; and the cities of Arcata, CA; Oakland, CA; Santa Monica, CA; and Boulder, CO — accused the investment agencies of financing or insuring overseas power plants that contribute to global warming. According to the lawsuit, funding for power plants, oil fields and pipelines totaled $32 billion between 1992 and 2002, and the projects accounted for 8% of global CO_2 and methane emissions. White said the evidence "is sufficient to demonstrate it is reasonably probable that emissions from projects supported by [the two agencies] will threaten plaintiffs' concrete interests'".

The *Overseas Private Investment Corp.* is a federal agency that helps companies invest overseas through direct loans and loan guaranties. The *Export-Import Bank* was created by Congress to be the nation's official export credit agency. *Friends of the Earth* Executive Director Norman Dean said the decision is "a wakeup call for the federal government to tackle the growing environmental and human impacts of global warming".

In another case, five states and the District of Columbia in late August filed an appeal of a federal court ruling that backed U.S. EPA's refusal to regulate greenhouse gas emissions. The coalition is asking the full U.S. Court of Appeals for the District of Columbia Circuit to reverse a ruling issued by a three-judge panel of the court in July. "Because the court was split on the question of whether EPA is legally required to regulate greenhouse gases, the three-judge panel allowed the agency to continue on its path of inaction," Massachusetts Attorney General Tom Reilly said. "This case deals with one of the most serious environmental threats of our time. Surely, it warrants a decision by the full court," he said.

Reilly was joined by the attorneys general of Maine, New Mexico, Oregon and Rhode Island and the D.C. attorney. In its petition, the coalition argues that each of the two legal theories on which the three-judge panel relied contradicts controlling legal precedents. Existing precedent makes clear that EPA may not refuse to regulate greenhouse gases simply because it opposes such regulation on policy grounds, the states argue. They also say that while the agency relies on the fact that global warming has not been "unequivocally established" as a reason against regulating, EPA never argues that any scientific uncertainty is significant enough to prevent the agency from carrying out its charge of determining whether such emissions are likely to cause harm.

Meanwhile, experts say that the U.S. economy could suffer in the long-term if the Bush administration continues to refuse placing caps on greenhouse gas emissions. "While there are costs associated with reducing emissions, there are certainly costs associated with not doing anything," said Kevin Forbes, head of Catholic University's economics department. "It would be, in my opinion, folly not to try to do something." "There are real economic costs associated with not taking action, including changes to

water supply infrastructure, industrial capital, like pipelines, and with human health," said Janet Peace, senior research fellow at the *Pew Center on Global Climate Change*. "With droughts, there's a cost. With increased flooding, there's a cost [and] with increased hurricanes and tornadoes."

But White House spokeswoman Dana Perino said some of the tactics used worldwide against climate change, especially the *Kyoto Protocol* and other emissions cuts, have their own negative economic impacts. "We oppose policies like mandatory caps on emissions, that would achieve reductions by raising energy costs, slowing the economy, and putting Americans out of work," she said. But John Reilly of the Massachusetts Institute of Technology's *Joint Program on the Science and Policy of Global Change*, who studied the economic effects of several proposals, disagrees. "When we looked at implementing Kyoto ... we estimated that would be 6/10ths or 1% of the economy. We thought that was costly but that's not wrecking the economy," he said.

Sources: *Los Angeles Times*, 9/22/05; Lisa Stiffler, *Seattle Post-Intelligencer*, 9/23/05; Elizabeth Rosenthal, *International Herald Tribune*, 9/11/05; Fiona Harvey, *Financial Times*, 9/14/05; Michael Harrison, *London Independent*, 9/15/05; David Adam, *London Guardian*, 9/15/05; Bob Egelko, *San Francisco Chronicle*, 8/25/05; Josh Richman, *Oakland Tribune*, 8/25/05; Randolph E. Schmid, AP/*Seattle Times*, 8/24/05; Todd Neff, Boulder *Daily Camera*, 8/24/05; Margaret Neighbour, *Scotsman*, 8/18/05; and Tom Avril, *Philadelphia Inquirer*, 8/15/05; Ian Sample, *London Guardian*, 8/11/05; Scott Allen, *Boston Globe*, 8/1/05; *Greenwire*, 7/28, 8/2, 8/11, 8/12, 8/16, 8/19, 8/24, 8/25, 8/31, 9/7, 9/12, 9/15, 9/19 and 9/21/05

Species Identification Program Being Developed

A group of London-based scientists hope the computer software they are developing will assist in rapid species identification and thus help to uncover previously unknown plant and animal species. Professor Norman MacLeod, keeper of paleontology at London's Natural History Museum, is among those creating a database of every known species, covering all known animal and plant life on Earth.

The system, called *Digital Automated Identification System* (Daisy), will eventually give anyone in the world the ability to identify species almost instantly, MacLeod said. "Only a handful of experts are currently able to identify species in any given group of organisms accurately, and even these experts disagree with each other over aspects of these identifications and can make mistakes," he said. "This technology will not replace basic human expertise, but it will give access to that expertise to people in remote locations, where the identifications are often needed most," he said.

MacLeod said the program could also have a profound implication on medicine, industry and research. The same pattern-recognition principles behind the software could eventually help identify cancer cells, he said. "If we can identify species more quickly and accurately then we can use this information to focus more on addressing the larger issues of evolution and biodiversity." Previously, if, for example, a botanist discovered what was believed to be a new species of orchid, they would need to take the specimen to an expert, which could often mean transporting it to the other side of the world. By using *Daisy*, the botanist would be able to confirm the type of species with the click of a mouse.

The software program works by combining artificial intelligence and computer vision technologies, which will load computers with virtual collections of identified specimens. Using this information, the computer will then be able to distinguish different species from one another. *Daisy* identifies species by sampling electronic images, digitized sounds or digital representations of DNA sequences. For example, a user could simply photograph a specimen with a mobile phone camera out in the field, upload it to a computer which has the *Daisy* software on it, and the identification could be made in seconds.

MacLeod said the program would also be able to recognize fossilized specimens, which means it would be able to play a major role in helping scientists piece together the history of life's past as well as its present and future. Until now, the only way of determining identifications has been for specialists to compare unknown specimens with the 70 million identified specimens in the museum's collection. As well as being prone to human error, that resource is unavailable to most people around the world, he said.

Source: Julie Clothier, *CNN.com*, 8/19/05

Meetings of Interest

Nov 9-11: 25th Annual Symposium of the *North American Lake Management Society*: Lake Effects: People/Water Exploring the Relationship, Madison, WI. See www.nalms.org. Contact Carol Winge, winge@nalms.org, (608) 233-2836.

Nov 13-17: 26th Annual Meeting of the *Society of Environmental Toxicology and Chemistry*: Environmental Science in a Global Society: SETAC'S Role in the Next 25 Years, Baltimore, MD. See: www.setac.org.

Dec 5-7: Environmental Results Using Market-Based Approaches, Atlantic City, NJ. Contact Andrew Seligman, seligman.andrew@epa.gov, (215) 814-2097.

Dec 11-14: 66th Annual Midwest Fish and Wildlife Conference: Bridges to Understanding: Linking Multiple Perspectives, Grand Rapids, MI. See: www.midwestfishandwildlife.com.

Feb 8-12, 2006: *Southern Division American Fisheries Society* Spring Meeting: Water Allocation for Fisheries, San Antonio, TX. See: http://www.sdafs.org/meetings/2006. Contact: Dave Terre, dave.terre@tpwd.state.tx.us, (903) 566-1615.

May 14-19, 2006: 14th International Conference on Aquatic Invasive Species, Key Biscayne, FL. Contact: Elizabeth Muckle-Jeffs, Conference Administrator, 1027 Pembroke Street East, Suite 200 Pembroke ON K8A 3M4, Canada, N.Amer.

phone: (800) 868-8776, International phone: (613) 732-7068, Fax (613) 732-3386, email: profedge@renc.igs.net, Web Site: www.icais.org

Jun 12-16: Symposium on the Ecology of Stream Fish: State of the Art and Future Prospects II, Leon, Spain.

Jul 12-17: American Society of Ichthyologists and Herpetologist Annual Conference, New Orleans, LA. See: www.asih.org/meetings/meetings. Contact: Mark Pyron, mpyron@bsu.edu.

Jul 18-22: Seventh International Congress on the Biology of Fish, St. John's, Newfoundland, Canada. See: www.mun.ca/biology/icbf7. Contact: Kurt Gamperl, kgamperl@mun.ca, (709) 737-2692.

Jun 25-28, 2006: International Conference on Rivers and Civilization: Multidisciplinary Perspectives on Major River Basins, La Crosse, WI. Contact: Jim Wiener, University of Wisconsin-La Crosse, (608) 785-6454, wiener.jame@uwlax.edu

Aug 6-11, 2006: 8th International Conference on Mercury as a Global Pollutant, Madison WI. See: www.mercury2006.org. Contact: James Wiener, weiner.jame@ uwlax.edu, 608/785-6454.

Sep 10-14, 2006: *American Fisheries Society* 136th Annual Meeting, Lake Placid, NY. Contact Betsy Fritz, bfritz@fisheries.org, 301/897-8616, ext. 212.

Jun 6-8: Fourth International Reservoir Symposium: Balancing Fisheries Management and Water Uses for Impounded River Systems, Atlanta, GA. Sponsored by the Southern Division AFS Reservoir Committee. Contact Mike Colvin, Mike.Colvin@mdc.co.gov.

Sep 2-6: American Fisheries Society 137th Annual Meeting, San Francisco, CA. Contact Betsy Fritz, bfritz@fisheries.org, 301/897-8616, ext. 212.

Congressional Action Pertinent to the Mississippi River Basin

Climate Change

S. J. RES. 5. Feinstein (D/CA) and 13 Co-Sponsors. Expresses the sense of Congress that the U.S. should act to reduce greenhouse gas emissions.

S. 245. Collins (R/ME) and 5 Co-Sponsors. Provides for the development and coordination of a comprehensive and integrated U.S. research program that assists in understanding, assessing, and predicting human-induced and natural processes of abrupt climate change.

S. 342. McCain (R/AZ) and 12 Co-Sponsors and **H.R. 759.** Gilchrest (R/MD) and 25 Co-Sponsors. Provides for scientific research on abrupt climate change, to accelerate the reduction of greenhouse gas emissions in the U.S. by establishing a market-driven system of greenhouse gas tradeable allowances, to limit greenhouse gas emissions in the U.S. and reduce dependence upon foreign oil, and ensure benefits to consumers from the trading in such allowances.

S. 387. Hagel (R/NE) and 3 Co-Sponsors. Amends the Internal Revenue Code of 1986 to provide tax incentives for the investment in greenhouse gas intensity reduction projects, and for other purposes.

S. 887. Hagel (R/NE) and 6 Co-Sponsors. Amends the Energy Policy Act of 1992 to direct the Secretary of Energy to carry out activities that promote the adoption of technologies that reduce greenhouse gas intensity and to provide credit-based financial assistance and investment protection for projects that employ advanced climate technologies or systems, and for other purposes.

S. 1151. McCain (R/AZ) and Lieberman (D/CT). Provides for a program to accelerate the reduction of greenhouse gas emissions in the U.S. by establishing a market-driven system of greenhouse gas tradeable allowances.

H. R. 955. Olver (D/MA) and Gilchrest (R/MD). Amends the Clean Air Act to establish an inventory, registry, and information system of U.S. greenhouse gas emissions, and for other purposes.

Conservation

S. 260. Inhofe (R/OK) and **H. R. 2018.** Sullivan (R/OK). Authorizes the Secretary of the Interior to provide technical and financial assistance to private landowners to restore, enhance, and manage private land to improve fish and wildlife habitats through the Partners for Fish and Wildlife Program.

S. 339. Reid (D/NV) and 4 Co-Sponsors and **H. R. 731.** Udall (D/CO) and Otter (R/ID). Reaffirms the authority of States to regulate certain hunting and fishing activities.

S. 421. Lott (R/MS) and Kohl (D/WI). Reauthorizes programs relating to sport fishing and recreational boating safety, and for other purposes.

S. 964. Alexander (R/TN) and 3 Co-Sponsors. The "American Outdoors Act of 2005" provides a conservation royalty from Outer Continental Shelf revenues to establish the Coastal Impact Assistance Program, to provide assistance to States under the Land and Water Conservation Fund Act of 1965, to ensure adequate funding for conserving and restoring wildlife, to assist local governments in improving local park and recreation systems, and for other purposes.

H. R. 524. Berkley (D/NV). Amends the Internal Revenue Code of 1986 to provide incentives for the conservation of water.

Endangered Species Act (ESA)

S. RES. 219 Feinstein (D/CA) and 3 Co-Sponsors. Designates March 8, 2006, as "Endangered Species Day", and encourages the people of the U.S. to become educated about, and aware of, threats to species, success stories in species recovery, and the opportunity to promote species conservation worldwide

H. R. 93. Gilchrest (R/MD). Assists in the conservation of flagship species throughout the world.

H. R. 3824. Pombo (R/CA) and 13 Co-Sponsors. Amends and reauthorize the ESA to provide greater results conserving and recovering listed species, and for other purposes.

Energy

H. R. 140. McHugh (R/NY). Promotes use of anaerobic digesters by agricultural producers and rural small businesses to produce renewable energy and improve environmental quality.

H. R. 174. Millender-McDonald (D/CA). Encourages greater use of geothermal energy resources.

H. R. 2064. Udall (D/CO). Assures that development of certain Federal oil and gas resources will occur in ways that protect water resources and respect the rights of the surface owners, and for other purposes.

Federal Water Pollution Control Act (FWPCA) Amendments:

S. 912. Feingold (D/WI) and 8 Co-Sponsors and **H.R. 1356.** Oberstar (D/MN) and 125 Co-Sponsors. Amends the FWPCA to clarify the jurisdiction of the U.S. over waters of the U.S.

S. 1400. Chafee (R/RI) and 3 Co-Sponsors. Amends the FWPCA and the Safe Drinking Water Act to improve water and wastewater infrastructure in the U.S. .

H. R. 74. Davis (R/VA). Amends the FWPCA to impose limitations on wetlands mitigation activities carried out through the condemnation of private property.

Invasive Species

S. 363. Inouye (D/HI) and 3 Co-Sponsors. Amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 to establish vessel ballast water management requirements, and for other purposes.

S. 507. De Wine (R/OH) and 4 Co-Sponsors and **H. R. 1593.** Ehlers (R/MI). Establishes the National Invasive Species Council, and for other purposes.

S. 770. Levin (D/MI) and 12 Co-Sponsors and **H.R. 1591**. Gilchrest (R/MD) and 4 Co-Sponsors. Amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 to reauthorize and improve that Act.

S. 1402. DeWine (R/OH) and 7 Co-Sponsors and **H. R. 3049.** Green (R/WI). *Asian Carp Prevention and Control Act* amends the Lacey Act, to add certain species of carp to the federal list of injurious species that are prohibited from being imported or shipped.

S. 1541. Akaka (D/HI) and 3 Co-Sponsors. To protect, conserve, and restore public land administered by the Department of the Interior or the Forest Service and adjacent land through cooperative cost-shared grants to control and mitigate the spread of invasive species, and for other purposes.

H. R. 489. Pearce (R/NM). Provides for an assessment of the extent of the invasion of Salt Cedar and Russian Olive on lands in the Western U.S. and efforts to date to control such invasion on public and private lands, including tribal lands, to establish a demonstration program to address the invasion of Salt Cedar and Russian Olive, and for other purposes.

H. R. 1592. Ehlers (R/MI) and 5 Co-Sponsors. Establishes marine and freshwater research, development, and demonstration programs to support efforts to prevent, control, and eradicate invasive species, as well as to educate citizens and stakeholders and restore ecosystems.

Mining

S. RES. 64. Jeffords (I/VT) and 7 Co-Sponsors. Expresses the sense of the Senate that the U.S. should prepare a comprehensive strategy for advancing and entering into international negotiations on a binding agreement that would swiftly reduce global mercury use and pollution to levels sufficient to protect public health and the environment.

S. 961. Rockefeller (D/WV) and **H. R. 1600.** Cubin (R/WY) and 4 Co-Sponsors. Amends the Surface Mining Control and Reclamation Act of 1977 to reauthorize and reform the Abandoned Mine Reclamation Program, and for other purposes.

S. 1701. Thomas (R/WY) and Enzi (R/WY). Amends the Surface Mining Control and Reclamation Act of 1977 to improve the reclamation of abandoned mines.

H. R. 905. Cubin (R/WY). Amends the Mineral Leasing Act to provide for the development of Federal coal resources.

H. R. 1165. Kanjorski (D/PA) and 6 Co-Sponsors. Amends the Internal Revenue Code of 1986 to allow a credit against income tax to holders of bonds issued to finance land and water reclamation of abandoned mine land areas.

H. R. 1265. Udall (D/CO). Provides a source of funding for the reclamation of abandoned hardrock mines, and for other purposes.

H. R. 1266. Udall (D/CO) and Salazar (D/CO). Facilitates the reclamation of abandoned hardrock mines, and for other purposes.

H. R. 2721. Peterson (R/PA) and 16 Co-Sponsors. Amends the Surface Mining Control and Reclamation Act of 1977 to reauthorize collection of reclamation fees, revise the abandoned mine reclamation program and for other purposes.

Public Lands

H. R. 599. Udall (D/CO) and Tancredo (R/CO). Provides a source of funds to carry out restoration activities on Federal lands under the jurisdiction of the Secretary of the Interior or the Secretary of Agriculture, and for other purposes.

H. R. 975. Tancredo (R/CO) and 5 Co-Sponsors. Provides consistent enforcement authority to BLM, NPS, FWS, and FS to respond to violations of regulations regarding the management, use, and protection of public lands under the jurisdiction of these agencies, and for other purposes.

H. R. 3166. Grijalva (D/AZ). Provides compensation to livestock operators who voluntarily relinquish a grazing permit or lease on Federal lands where conflicts with other multiple uses render livestock grazing impractical, and for other purposes.

Water Resources

S. 232. Smith (R/OR). Authorizes the Secretary of the Interior, acting through the Bureau of Reclamation, to assist in the implementation of fish passage and screening facilities at non-Federal water projects, and for other purposes.

S. 353. Conrad (D/ND) and Dorgan (D/ND). Amends the Water Resources Development Act of 1999 to direct the Secretary of the Army to provide assistance to design and construct a project to provide a continued safe and reliable municipal water supply system for Devils Lake, ND.

S. 728. Bond (R/MO) and 17 Co-Sponsors and **H.R. 2864**. Provides for the consideration and development of water and related resources, to authorize the Secretary of the Army to construct various projects for improvements to rivers and harbors of the U.S., and for other purposes.

S. 753. Feingold (D/WI) and McCain (R/AZ). Provides for modernization and improvement of the Corps of Engineers, and for other purposes.

S. 802. Domenici (R/NM) and 10 Co-Sponsors and **H. R. 1386.** Hastings (D/FL) and 24 Co-Sponsors. Establishes a National Drought Council within the Department of Agriculture, to improve national drought preparedness, mitigation, and response efforts, and for other purposes.

S. 1017. Chaffee (R/RI) and 10 Co-Sponsors. Reauthorizes grants for the water resources research and technology institutes established under the Water Resources Research Act of 1984.

H. CON. RES. 120. Schakowsky (D/IL) and 23 Co-Sponsors. Expresses the sense of the Congress with regard to the world's freshwater resources.

H. J. RES. 3. Davis (R/VA). Acknowledges a long history of official depredations and ill-conceived policies by the U.S. Government regarding Indian tribes and offers an apology to all Native Peoples on behalf of the U.S.

H. R. 109. Herseth (D/SD). Provides compensation to the Lower Brule and Crow Creek Sioux Tribes of South Dakota for damage to tribal land caused by Pick-Sloan Projects along the Missouri River.

H. R. 135. Linder (R/GA) and 8 Co-Sponsors. Establishes the "Twenty-First Century Water Commission" to study and develop recommendations for a comprehensive water strategy to address future water needs.

H. R. 391. Leach (R/IA). Directs the Secretary of the Army to convey the remaining water supply storage allocation in Rathbun Lake, IA, to the Rathbun Regional Water Association.

H. R. 487. Pearce (R/NM). Imposes limitations on the authority of the Secretary of the Interior to claim title or other rights to water absent specific direction of law or to abrogate, injure, or otherwise impair any right to the use of any quantity of water.

H. R. 494. Rohrabacher (R/CA). Amends the Water Resources Development Act of 1986 to expand the authority of non-Federal interests to levy harbor fees.

H. R. 1368. Burgess (R/TX) and 2 Co-Sponsors. Provides the Secretary of the Army with additional and enhanced authority with respect to water resources projects, and for other purposes.

Source: http://www.gpoaccess.gov/bills/index.html

River Crossings

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

ADDRESS SERVICE REQUESTED

PRST - STD
U.S. POSTAGE
PAID
PERMIT NUMBER 83
BETTENDORF, IA