River Crossings

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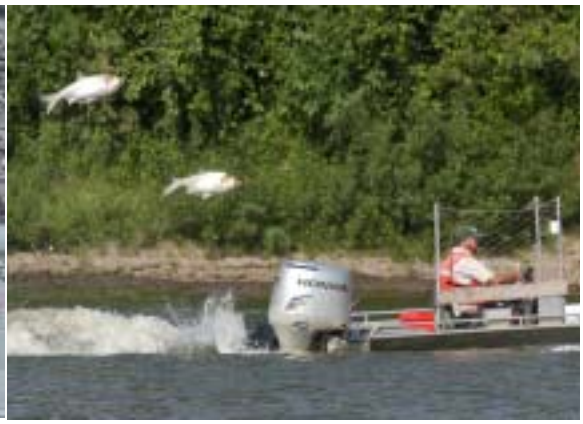
Silver and Largescale Silver Carp Importation and Transport Banned

Importation and interstate transport of live silver and largescale silver carp was banned under a final rule published in the July 10 issue of the Federal Register by the U.S. Fish and Wildlife Service (FWS). A petition to the FWS signed by 25 Members of Congress outlined the impacts of silver carp to humans and native aquatic species in waters of the U.S. The final rule - advanced under the injurious wildlife provisions of the Lacey Act - addresses these concerns and will become effective on August 9, 2007.



Silver carp on the Missouri River. Photos courtesy Duane Chapman,USGS.

"Slowing the spread of these carp is necessary to protect our native aquatic species," said H. Dale Hall, FWS director. "Although silver carp are established in parts of the Mississippi watershed, we will work to keep their impacts minimized and prevent additional populations from taking hold."

Silver carp, native to Asia, were introduced into the U.S. in the early 1970s for use as algae control agents in sewage lagoons and fishery production ponds, but escaped into surrounding waters. The silver carp have established themselves in the Mississippi River Basin but are not currently cultured in the U.S. Silver carp are difficult to handle and transport because of their tendency to jump.

Growing up to three feet long and over 60 pounds in weight, silver carp have leaped into moving boats (see photo above) injuring people and damaging equipment.

Biologists are concerned that silver carp could spread throughout large rivers and lakes in the U.S. and compete with native species for food and habitat, having both ecological and economic impacts and threatening, for example, the multimillion-dollar Great Lakes fishery.

Largescale silver carp, native to parts of China and Vietnam, are a distinct species related to the silver carp and warrant prohibition as well. While not yet known to be in the U.S., largescale silver carp could also directly compete with native aquatic species for food and habitat and may hybridize with silver and bighead carp, both of which are already in U.S. waters.

Inside This Issue

More information on the issue can be found at: http://www.fws.gov/contaminants/ANS/ANSInjurious.cfm#Silver

Two additional Asian carp species, the bighead and black carp, remain unlisted as injurious species under the Lacey Act. The bighead carp is nearly identical in appearance and feeding habits to the silver carp. The black carp, similar in appearance to the grass carp commonly used for vegetation control in farm and golf course ponds, preys on native mussels and snails, many of which are listed as federal threatened or endangered species. For that reason MICRA petitioned to list the black carp as injurious in 2000. But both species continue to be raised and sold by fish farmers, which may be the main reason that they have not been listed as injurious. Proposed listings for the bighead and black carp remain in the hands of the U.S. Office of Management and Budget (OMB), and so far, private commercial interests seem to carry more weight with OMB than do public ecological interests.

Source: Joshua Winchell, *U.S. Fish and Wildlife Service Press Release*, 7/10/07

Alabama Sturgeon Listing Upheld

Since the Alabama sturgeon was first classified as a separate species from the more common shovelnose sturgeon in 1976, various business interests have been trying to prevent the U.S. Fish and Wildlife Service (FWS) from adding this prehistoric fish to the endangered species list. But this past February the U.S. Court of Appeals for the Eleventh Circuit held that the FWS had properly identified the Alabama sturgeon as a separate species by using the best scientific methods available and correctly listed it.

The Alabama sturgeon was once fished commercially with an estimated 20,000 being caught in the late 1800s. Since then their numbers have decreased so drastically that the FWS, despite diligent efforts, had only eight confirmed catches during the 1990s. And the only bodies of water in which the fish is now found are small portions of the Alabama River channel in south Alabama and farther downstream to the mouth of the Tombigbee River. By way of the Tennessee-Tombigbee Waterway, the Alabama River system is now connected to the Mississippi River Basin.

The incredible decline in the Alabama sturgeon population has been attributed to (1) overfishing, (2) construction and operation of hydroelectric dams, (3) decline in habitat and water quality due to land management practices, and (4) dredging and channeling to improve the navigability of the Mobile River Basin.

Alabama sturgeon - FWS Photo

The FWS began evaluating the Alabama sturgeon in 1980, and attempted to list it as endangered under the Endangered Species Act (ESA) in 1993. This brought the FWS into court with the *Alabama-Tombigbee Rivers Coalition* (Coalition), a group of industries and associations formed in opposition to the listing. Initially, the Coalition sought and received a permanent injunction preventing the FWS from listing the sturgeon using information they had gained from a scientific report that was made in violation of the Federal Advisory Committee Act. The FWS appealed, but the appeals court held that the injunction was valid. A few months later the FWS withdrew the listing proposal because it did not have enough evidence to prove that the Alabama sturgeon still existed. But by 1999 a few sturgeon had been captured and the FWS once again proposed the listing.

According to the ESA, after a listing is made the FWS is responsible for designating "critical habitat", but the FWS failed to do so. So the Coalition brought a new suit alleging defects in the listing process under 16 U.S.C. § 1540(g)(1), a provision of the ESA that allows citizens to voice their concerns in court, and under 5 U.S.C. §§ 701-06, the judicial review provision of the Administrative Procedure Act. But the district courts decided that the Coalition

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Mississippi Interstate Cooperative Resource Association
(MICRA)
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Bettendorf, IA 52722-0774

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Coordinator for Large River Activities
Jerry L. Rasmussen, U.S. Fish and Wildlife Service, Rock Island, IL
MICRA email: ijrivers@aol.com
MICRA Web Site: http://wwwaux.cerc.cr.usgs.gov/MICRA/

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essentially had no case. They did, however, order the FWS to issue a proposed and final rule designating "critical habitat" by May 14, 2006 and November 14, 2006, respectively.

Then this past winter the Eleventh Circuit reviewed the district court's ruling. The Coalition raised the following three arguments:

- The FWS failed to consider the relevant factors in reaching their listing decision.
- The FWS violated § 4 of the ESA, which requires the agency to designate the "critical habitat" of an endangered species concurrently with putting the species on the endangered species list.
- The FWS ruling (Final Rule) should be dissolved because Congress's Commerce Clause powers could not be used for the protection of a fish that has no connection to interstate commerce.

The Coalition further contended that the FWS: (1) discounted genetic typing in favor of morphological taxonomy, (2) failed to examine the best taxonomic data, and (3) allegedly interfered with the research of a FWS scientist, Dr. Steven Fain. The court discredited these claims by a close reading of the Final Rule. The Coalition had hand picked research that supported their contention that the shovelnose and Alabama sturgeon are actually the same species, then claimed that the FWS did not give proper deference to this research.

Genetic testing of the shovelnose and Alabama sturgeon's mitochondrial cytochrome B gene, reveals that they are genetically very similar fish. But the FWS explained this similarity by invoking the long-held theory that the two species branched away from one another about 10,000 years ago, a relatively short period in evolutionary terms.

The taxonomic data the FWS supposedly ignored was a paper written for a statistics-focused journal that concluded that the two fish are actually the same species. The FWS countered this with another article, out of an ichthyological journal, that concluded that the species are separate. The judge resolved this dilemma by quoting the U.S. Supreme Court: "[w]hen specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if…a court might find contrary views more persuasive."

Finally, the Coalition asserted that because Dr. Fain, a FWS researcher, came to a different conclusion from the one he had shared with a Coalition researcher at the beginning of his study, the FWS must have interfered with the research. The court opined that findings typically change from the beginning to the end of a research project.

The Coalition next contended that even if the FWS had correctly interpreted the research, the listing was still invalid because the agency had failed to designate critical habitat within the statutory two-year period. The Coalition argued that critical habitat needs to be determined at the time public hearings are held to present opposition to the listing so that all parties influenced by the listing can make their opposition known. The Coalition further believed the district court's order that the FWS must finally make a designation of the critical habitat was an improper remedy to the agency's disobedience of the ESA's requirements. The Coalition believed that making the FWS start the listing process over would be the most effective remedy.

However, the appeals court judges determined that Congress wanted the listing of an endangered species and the determination of critical habitat to be separate processes so that the economics of potentially affected habitat would not interfere with the FWS' decision on listing the species. As for the Coalition's idea to make the FWS start the listing process over, the judge, bothered as he was by the FWS' inefficiency in designating critical habitat, said that delisting only benefited the Coalition's goals.

Congress used its broad constitutional power over interstate commerce, granted in the Commerce Clause, to enact the ESA. Administrative agencies that implement the ESA cannot exceed the reach of that power. The Coalition contended the FWS was powerless to regulate something located only within the boundaries of Alabama and having no connection to interstate commerce. But the court, in upholding the listing, relied on several recent cases that allowed Congress to grant the FWS authority under the ESA to list purely intrastate species as endangered. The judges went further, saying the reason the Alabama sturgeon is no longer part of interstate commerce and no longer has any reported commercial harvests is due to its near extinction. The court's final analysis on the issue, taken from the U.S. Supreme Court, was to look at all of the economic effects of an issue if it is an essential part of larger regulation. This means the FWS can regulate intrastate species because preventing them from doing so would undermine the entire ESA.

So despite the Coalition's best efforts, the judges of the Eleventh Circuit rejected its arguments and affirmed the district court's ruling. By doing so, the Eleventh Circuit gave the Alabama sturgeon, if nothing else, a chance at survival.

Sources: Jason M. Payne, 2L, University of Mississippi School of Law, *Water Log*, Volume 27, Number 1, March, 2007; and Alabama-Tombigbee Rivers Coalition v. Kempthorne, 477 F.3d 1250 (11th Cir. 2007)

Mo. River Barges vs Birds

The U.S. Army, Corps of Engineers (Corps) will spend $45 million in taxpayer money this year creating and protecting the habitats of threatened bird species on the Missouri River. In the meantime, in early July, many of the nests and young of these birds were likely destroyed in order to allow a single towboat, the *MV Omaha*, to reach Blair, NE.

Least tern eggs - casualties of the Mo. River water level rise to accomodate barge traffic. (Photo by Joe Riis)

Despite its expensive program to build sandbars for least terns and piping plovers, the Corps accommodated a request from *Consolidated Blenders Inc.* to raise water levels when the Nebraska company wanted to move alfalfa pellets down the river during the birds' nesting season. The Corps increased the flow of water from Gavins Point Dam in South Dakota by about 3,000 cubic feet per second in order to float the barge, and this translated into a water rise of 4 or 5 inches — enough in some spots to inundate sandbars where the birds were nesting. Biologists estimated that the rise would submerge up to 200 chicks and eggs.

An industry spokesman said they could neither transport the barge's cargo — 5,000 pounds of concentrated alfalfa — by railroad, nor wait until the birds were no longer nesting because the company had run out of storage space. The Endangered Species Act forbids a federal agency from harming a federally protected species, and the least terns are classified as "endangered", while piping plovers are listed as "threatened". Mike Olson, U.S. Fish and Wildlife Service's (FWS) Missouri River coordinator, said the Corps has legal protections for its decision as a result of an agreement that allows for the killing of about 340 birds, a level the Corps has not reached. "That's why they're out there spending millions of dollars to build this high-elevation sandbar habitat, to keep the (bird mortality) at a minimum," Olson said. "But there are still birds nesting at low elevation sandbars that become inundated."

Paul Johnston, spokesman for the Corps, said "The highway is there, and people can use the highway," noting the Corps' congressionally ordered mandate to maintain conditions for Missouri River barge traffic. Johnston added that the Corps has been working to balance competing interests on the river and has moved nests and chicks to safety when possible. But few barges have operated so far up river in recent years because of water shortages from severe drought, and the Corps has shortened the river's navigation season every year since 2003; this year's barge season was cut by 35 days, ending in late October.

The 5,000 tons of concentrated alfalfa will be shipped to the Mississippi River en route to Arkansas, where it will provide food for horses, rabbits, goats and sheep, said the company president, another Mike Olson. "That river is really important to our company, and we just feel like our future is tied to it," Olson said. He said his company has not shipped on the Missouri for several years, but hopes to load more barges with the alfalfa pellets before the close of this navigation season. He added that shipping by railroad was inconvenient because of loading and that he was unable to wait until the birds were no longer nesting because his company had run out of storage space.

Sources: Bill Lambrecht, *St. Louis Post-Dispatch*, 7/11/07; and *Greenwire*, 7/12/07

Court Sides With Developers Over Endangered Species

The Clean Water Act (CWA) trumps endangered species protections, a divided Supreme Court ruled in late June in a decision that favored developers and the Bush administration in a dispute with environmental groups. The justices' 5-4 decision in *National Association of Homebuilders* v. *Defenders of Wildlife* found that the USEPA did not break the law in 2002 when it handed a water-permitting program over to Arizona without reviewing the effect of that decision on the state's 60 threatened and endangered species. The decision reverses a previous appellate court ruling that had given primacy to the Endangered Species Act (ESA).

At issue were permits that developers must obtain for stormwater discharges before they can begin construction. The CWA says EPA "must" give states control of the permitting program if they meet nine criteria, which do not include species considerations. But environmentalists argued that federal officials should have also met ESA's requirement for a full consultation with federal biologists on the potential effects on plants and wildlife of handing off the permit program. The federal government has more strict rules than states for species protection.

In the majority opinion, Justice Samuel Alito wrote that the "must" in the CWA overrides ESA. The consultation requirement in ESA should only be for "discretionary" actions, he wrote. But dissenting, Justice John Paul Stevens wrote that limiting ESA to discretionary actions is inconsistent with the text and history of the law. The case, he wrote for the minority, presented a "problem of conflicting 'shalls,'" and the court should have found a way to require federal officials to comply with both laws.

The ruling was the first substantive case on the ESA in the past decade, attorneys involved in the case said. "This recognizes that ESA is not an uber-state that trumps other environmental laws," said Duane Desiderio of the *National Association of Homebuilders*. The ruling will allow development to go forward and preserve EPA's "status quo" on the permits, Desiderio said, since the agency has been handing permits off to the states without considering species.

But environmentalists argue that Arizona is allowing rampant development that could harm habitat for the Southwestern willow flycatcher, minnows, pupfish and other imperiled plants and animals along the San Pedro River Basin. Homebuilders said forcing ESA compliance could have been crippling for new growth since the consultation process can take months to years.

Source: Allison Winter, *Greenwir*e, 6/25/07

Decision on Mountaintop Removal Mining

In a blow to the coal industry, a federal judge ruled in mid June that a mining industry practice of using sediment-treatment ponds to remove waste violates the Clean Water Act (CWA), effectively putting an end to a practice used for decades by the industry. Judge Chuck Chambers of the U.S. District Court for the Southern District of West Virginia also ruled that the U.S. Army, Corps of Engineers (Corps) did not have the authority to permit mines to discharge sediment from their operations into ponds downstream.

Chambers essentially outlawed the common coal industry practice of turning small stream segments downstream from mountaintop removal fills into waste treatment systems. In a 26-page decision, he concluded that the CWA not only protects parts of streams where mine operators traditionally build sediment-control ponds, but also the small segments of streams between those ponds and the bottom of valley fills. The Corps, Chambers declared, "has no authority under the CWA to permit the discharge of pollutants into these stream segments." The Corps' defense, Chambers said, "appears to be ... a post hoc rationalization for the purposes of this litigation."

In mountaintop removal, coal operators blast off entire hilltops to uncover valuable, low-sulfur coal reserves. Leftover rock and dirt is dumped into nearby valleys, burying streams. Generally, coal operators allow the water that discharges from the toe of a valley fill to flow through a stream segment to a sediment pond that is built inside a streambed farther downstream. In the sediment pond, solids settle to the bottom and, theoretically, clear water flows out into the stream below. State and federal regulators judge whether the mining operation complies with its water

pollution limits by testing the water that flows out of the sediment ponds.

Environmental groups alleged that the stream segments between the fills and the ponds — known by some regulators as "silt snakes" — are "waters of the United States" subject to federal pollution limits. "Compliance with water quality standards is therefore required not only at the outlet of the sediment pond, but also upstream starting at the toe of the valley fills," the environmental group lawsuit argued. In his ruling, Chambers agreed.

The Corps has long allowed mountaintop removal mines to construct these settling ponds down the mountain to discharge sediment, qualifying them as wastewater treatment ponds and not U.S. waters protected under the CWA. But Chambers ruled that the Corps violated the law when it issued permits for four mountaintop removal mines without assessing the possible environmental impact because the segments of streams between the ponds are protected

This ruling is the second time in three months that Chambers has dealt a major blow to the coal industry with a ruling to more strictly regulate mountaintop removal mining. In March, Chambers blocked four Corps permits for *Massey Energy* operations, ruling that agency officials had not fully evaluated the potential environmental damage before approving the operations. That ruling is being appealed.

The new ruling is part of the same case, a lawsuit brought by the *Ohio Valley Environmental Coalition, Coal River Mountain Watch* and the *West Virginia Highlands Conservancy*, which argued that the stream segments were guaranteed protections. Mining groups said they would appeal this ruling as well. "It's absolutely astounding to me," said Bill Raney, president of the *West Virginia Coal Association*. "Here's a judge outlawing a practice that has been in place for almost four decades".

Joe Lovett, a lawyer for the environmental groups, praised the judge's decision. "The CWA has prohibited this kind of activity since it was passed," Lovett said. "The agency simply never enforced it. "The mining industry has to change its practices to comply with the CWA," he said. "It's an ingenious industry, and it can find a way to do that."

Sources: Time Huber, *AP/Lexington Herald-Leader*, 7/13/07; Ken Ward Jr., *Charleston [WV] Gazette*, 6/14/07; and *Greenwire*, 6/14/07

Mysterious Fish Kills on Some Virginia Rivers

Smallmouth bass in the Shenandoah River are thin and listless and other sunfish species are breaking out in blisters that look like cigarette burns. Since 2002, fish have been dying in the Shenandoah and other western tributaries of the Potomac River, and scientists have been racing to find the cause. They have spent over $600,000 on studies considering viruses, oxygen-depleted "dead zones" and runoff from chicken farms, but so far they have found nothing definitive. At the same time, the search has been complicated by die-offs this year in two rivers outside the Potomac watershed: the Cowpasture and upper James.

View of the Senandoah River.

But at the center of the mystery is the Shenandoah, whose easy fishing and picturesque setting have long attracted visitors from the Washington area. Here, the impact has been ecological, economic and emotional, as locals try to understand how this beloved waterway became something that kills fish. "It was such a beautiful river and everything," said Chuck Kraft, a longtime fishing guide from Charlottesville, who has stopped bringing clients to the Shenandoah. "It's kind of sad, you know. It's like losing a friend or a family member."

This spring and summer, dead fish have been reported in six waterways that begin in the mountains near the Virginia-West Virginia border. Four are part of the Potomac River watershed: the North Fork of the Shenandoah, the South Fork of the Shenandoah, the main body of the Shenandoah and the South Branch of the Potomac. The other two are part of the James River watershed.

Often, dead fish have large blisters on their sides or patches of fungus that look like cotton balls. Sometimes, the gills are so inflamed that they can no longer filter oxygen out of the water. "You don't see a lot at one time, but you see some everywhere you look," said Bill Hayden, a spokesman for Virginia's Department of Environmental Quality. The kills aren't considered a threat to human health, and no risk is seen to people who swim in the affected rivers or Washington area residents whose drinking water is drawn from the Potomac downstream. But it troubles scientists that the same types of fish, with the same problems, have been dying in the region since 2002. "We can't say it's the same thing," Hayden said. "But it is very similar."

A 2002 fish kill occurred in the South Branch of the Potomac in West Virginia. Beginning in 2004, die-offs followed in the Shenandoah and its two main tributaries, which wind their way through mountain valleys just beyond Washington's western suburbs. In each case, scientists have looked for the usual suspects in any fish kill — a toxic algae bloom, a malfunctioning sewage treatment plant, an overturned chemical truck — and found none of them. Instead, some of the fish were being killed by bacteria that they would normally be able to fend off. Something, apparently, is weakening their immune defenses.

In January, a report from two university professors listed more than 20 theories that might explain the problem. The suspected causes include a virus, pesticides and the dumping of illegal drugs; but none of the theories has been proved. Vicki S. Blazer, a researcher with the USGS, said a major factor could be manure washed down from the chicken and cattle farms that dot the Shenandoah Valley. Animal waste carries hormones, such as estrogen, that can cause immune problems in fish. "It overwhelms the fish, is my feeling. But we don't have any proof of that yet," Blazer said.

One piece of evidence supporting this theory is the "intersex" fish found in some of the same rivers: male bass are growing eggs, possibly because of hormone-rich pollution. A new wrinkle was added to the mystery this year when fish died in the Cowpasture and upper James Rivers in far western Virginia. Both of those waterways are unconnected to the others. For now, nobody can say whether it is the same

problem or, if it is, how it traveled overland.

The affected rivers seem significantly changed. Although some fish species, including catfish and carp, have come through unharmed, others, including smallmouth bass and redbreast sunfish, have been devastated. After the 2006 fish kills, state scientists estimated that in sections of the Shenandoah, 80% of the smallmouth bass had died. "I think we're talking millions of fish," said Jeff Kelble, *the Shenandoah Riverkeeper*. State officials said they have no way of estimating the total number of fish killed.

The Shenandoah's famous bass fishery is not officially dead, but the kills have made an economic dent. Last year, a James Madison University researcher estimated that the gruesome kills had kept 2,100 fishermen away from the Shenandoah area, at a cost of $686,000 to the local economy and the state. At *Mossy Creek Fly Fishing* in Harrisonburg, VA, Colby Trow said many clients — once drawn by the Shenandoah's famous bass — had stopped coming. "They basically just said, 'We'll keep in touch, but we won't be back until that river's clean,' " Trow said.

Bob Cramer, a fishing guide in Dayton, VA, had been taking clients from Northern Virginia out on the Shenandoah for $300 a day. Now he's helping a friend install invisible pet-control fencing for $75 a day. But Cramer said the loss was more than financial: It is a sin, he said, that this rural stream seemed to be more toxic than big-city rivers. "To me, it's just an embarrassment," Cramer said. "We live in such a beautiful place, and we have such terrible water quality."

Source: David A. Fahrenthold, *Washington Post*, 6/20/07

Illinois River (OK/AR) Poultry Waste Issues

A federal judge sided with the state of Oklahoma in mid June on several legal challenges brought by the poultry industry in the state's case against 13 companies it says polluted the Illinois River with poultry litter. Judge Gregory Frizzell of the U.S. District Court for the Northern District of Oklahoma denied the requests to dismiss the case on procedural grounds and said the state should be allowed to use private lawyers that would be paid a percentage of any winnings.

But Jay Jorgenson, an attorney for Arkansas-based *Tyson Foods*, argued that the use of contingency fee lawyers created a "bounty system" where attorney's private interests could influence their decisions. But Oklahoma Attorney General Drew Edmondson (D) countered that the state did not have the resources to pursue the case without help. He said without the lawyers, it was "entirely likely the state would not be able to continue" with the suit and the pollution of the Illinois River watershed would continue.

Edmondson claims poultry litter spread on fields in the watershed (mostly in Arkansas) is polluting the river and Lake Tenkiller in Oklahoma with excessive nutrients, particularly phosphorus, and other hazardous substances. Additionally, Tahlequah, OK, uses Lake Tenkiller as drinking water. Oklahoma maintains that the entire 1-million acre Illinois River watershed qualifies as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Superfund site because of the poultry litter runoff from fields in the watershed. Edmondson further claims that the poultry companies are responsible for cleaning it up. But the outside lawyers Edmondson has hired under the contingency-fee contract would get 33-50% of any settlement and those funds would not go for restitution or payment for cleaning up the watershed

The two-pronged attack against contingency-fee lawyers includes questions of state law on separation of powers as well as a recent decision by the Tenth Circuit Court of Appeals that restricts the use of money recovered as damages in a federal Superfund lawsuit. The money can only be used to pay for specific natural resource damages and not punitive damages or attorneys' fees, attorneys for *Tyson Foods* said in their filings. Judge Frizzell said the contingency fee lawyer issue could be brought up again later in the case. The judge also dismissed one claim in the suit that sought to apply two Oklahoma state laws to the largely Arkansas-based companies. Earlier he rejected a request from the state of Arkansas to intervene, and in November 2005, when Arkansas Attorney General Mike Beebe (D) asked the Supreme Court to intervene in the case, they declined.

In other developments, Edmondson said a request by the poultry industry to draw a jury pool from outside the northeastern Oklahoma area doesn't "make any sense" to him. The motion filed on behalf of the poultry companies calls for a judge to seek a jury from outside the federal court's northern district and suggested a Wichita, KS-based jury pool would be the most practical alternative. Edmondson said, "I won't say it's the silliest motion I've heard so far, but it ranks in there." A hearing on the jury pool issue has yet to be scheduled.

Sources: *AP/ArkansasOnline.com*, 6/16/07; John L. Moore, *Northwest Arkansas Morning News*, 6/15/07; and *Greenwire*, 6/19/07

Iowa's Biofuels Pollution Problems

Some parts of Iowa may not have enough water to support projected levels of biofuels development state regulators said in early June. The last statewide water use inventory was completed a dozen years ago when biofuels plants used less than 5% of the state's water. They now use 7% and that could grow to 14% by 2012 after planned expansions and new plants come online, according to a study released last year by the *Institute for Agriculture and Trade Policy*.

"It frankly is one of our important natural resource issues," Iowa Department of Natural Resources (DNR) geologist Robert Libra said. "We haven't paid attention to the water supply in a long time. We need to do so before there is a panic." The state Legislature allocated $480,000 to update water records that have not had a full review since the mid-1990s. Those studies suggested water resources were already poor in most of west-central and southern Iowa, fair in the state's northwest corner and good in the northeast.

Biofuels production plant operators say they have reduced the amount of water needed to produce ethanol, but their

facilities still need abundant local water supplies. A single plant producing 100 million gallons of ethanol per year uses as much water as a town of approximately 10,000 people, according to state DNR reports.

Meanwhile, destroying trees and native grasses on land held in conservation to plant more corn for biofuels production will reverse decades of work in the state to prevent crop-related pollution, scientists said. Iowa-based researchers suggest that state farmers will put 500,000 acres of Conservation Reserve Program lands back into production so that they can grow corn for ethanol use.

In 1985, the federal government created the Conservation Reserve Program to reduce soil erosion nationally, stabilize land prices and control agricultural over-production. Iowa has 2 million acres enrolled in that program. "These are historic changes that have people worried about the environmental consequences," Iowa State University *Center for Agricultural and Rural Development* Director Bruce Babcock said. "We will have more soil erosion, more chemical runoff and less habitat ... There is no free lunch.

Also, of Iowa's 34 biofuels production plants, 11 were cited by the state DNR for wastewater violations over the past six years, according to agency records. The violations included polluting streams based on permit limits under the federal Clean Water Act. According to the *Iowa Environmental Council*, the concentrations of chloride and other suspended soils, mainly salts, coming from ethanol plants are among the highest of any industry in the state. Ethanol production requires purified water, and when biofuels production plants treat the water, their sewage discharges can include toxic salt levels and high iron levels.

The *Siouxland Energy & Livestock Coop* in Sioux Center is one plant that has had repeated water pollution problems, according to state DNR records. In November 2003, it accumulated five pages of violations, including emitting 13 times as many salts and other dissolved solids as its permit allowed.

Sources: Perry Beeman, *Des Moines Register*, 6/3/07; and *Greenwire*, 6/4/07

Coalbed Methane Issues

A Colorado water judge ruled in early July that energy companies wanting to drill coalbed methane (CBM) wells must prove that they are not harming nearby groundwater supplies. Two families in Bayfield, CO, sued the state engineer's office in 2005, arguing that it had not done enough to protect their water rights from CBM operations. Judge Gregory G. Lyman of the Durango-based court ruled the state engineer "cannot allow out-of-priority water diversions" even for CBM water without a well permit.

The ruling requires energy companies to show that when they use water to extract methane gas they are using the water for "beneficial use," a legal term that puts the operations under the state engineer's decision. "The court has properly found that the gas industry can't keep jeopardizing our way of life and that the state can't keep ignoring that they are," said Jim Fitzgerald, one of the plaintiffs. But lawyers for the engineer's office argued that the *Colorado Oil and Gas Conservation Commission* had jurisdiction over the water because it was a by-product of methane operations. *BP America Production Co.*, which owns 1,200 CBM wells in La Plata County in southwestern Colorado, supported the state's position. "The company will continue to comply with the state's water laws," said Dan Larson, a *BP* spokesman. "This decision creates confusion over the application of those laws, and we trust the state will move quickly to clarify these issues," Larson said.

State and industry attorneys said they were reviewing the case and have not yet decided whether they will appeal. Industry officials have said that a ruling for the plaintiffs would be detrimental for the energy industry. But Sarah Klahn, a Denver attorney representing the plaintiffs, said "Paying $200 for a well permit or the expense associated with an augmentation plan is hardly catastrophic for this industry."

Meanwhile, in Wyoming the declining populations of sage grouse in the Powder River Basin could be the result of increased CBM activity, according to a study released in early July. The peer reviewed study by University of Montana professor Dave Naugle shows that from 2000 to 2005, sage grouse populations declined by 86% near CBM drilling activities in the basin, while populations outside drilling areas declined by 35%. The study said that CBM development exceeds wildfires, sagebrush control and cropland conversion as the top cause of habitat loss for sage grouse populations. Critics of methane drilling say the studies reaffirm their concerns. "This is a real wake-up call to BLM that they are going to have to make serious changes in the way they are permitting the design of oil and gas projects throughout the range if they want to prevent that bird from heading to extinction," said Erik Molvar, biologist for the *Biodiversity Conservation Alliance*.

The Bureau of Land Management (BLM) has promised to take the new information into account in future decisions. "...these peer-reviewed studies will help inform management decisions in Wyoming in the months and years to come," Wyoming BLM Director Bob Bennett said. "The BLM encourages anyone interested in sage grouse to familiarize themselves with this important research." But BLM spokesman Steven Hall said it's too early to say exactly how the agency may modify permit stipulations based on this new research. Hall stressed that any action BLM takes will be in cooperation with other agencies and stakeholders. "It's not something BLM can do on its own," Hall said.

The *Petroleum Association of Wyoming* declined to comment on the results of the studies. Critics of the BLM's management of oil and gas activity in Wyoming said the study results prove what the industry and the BLM have ignored for years.

Sources: Kim McGuire, *Denver Post*, 1/3/07; Dustin Bleizeffer, *Casper [WY] Star-Tribune*, 7/5/07; *Greenwire*, 7/5 and 7/6/07

Restoring Natural Flood Plains

According to two Washington University (St. Louis) experts, floods forecast along the lower Missouri River didn't materialize this spring because of upstream floodplain restoration projects. Robert E. Criss is a professor in the Department of Earth and Planetary Sciences and Edward J. Heisel is an attorney for the School of Law's *Interdisciplinary Environmental Clinic*. In a *St. Louis Post Dispatch* article Criss and Heisel said "River gauges between Kansas City and Hermann showed a significant decrease in the peak discharge as the flood moved downstream. The water escaped from the river into the flood plain,

either through broken levees or at restoration sites where levees had been removed. It was then released downstream days later as the river receded."

In mid-Missouri, more than 10,000 acres of farmland that had been walled off with levees were returned to the river's natural flood plain after the 1993 flood. Entire valleys of Missouri River bottomland upstream of Jefferson City were bought by state and federal agencies from owners who were all too willing to sell: The '93 flood had ripped giant holes in levees and deposited several feet of sand on once-fertile fields. The farmers found a way out, and public agencies found a way to restore some ecological balance to the river. In that sense, at least, it was a win-win situation. And now, "These river restoration efforts are starting to pay significant dividends", Criss and Heisel said. "The flood last month was a disaster in western Missouri, with the Missouri River's floodwater reaching heights nearly equal to those of 1993 just downstream of Kansas City. But a funny thing happened when the flood hit mid-Missouri: It "lost" water." Most of the flood plain restoration projects in Missouri occur downstream from Kansas City.

Allowing rivers occasionally to reclaim their flood plains also has huge benefits for wildlife and outdoor recreation. Historically, large rivers like the Missouri and Mississippi would rise nearly every spring, spread out over their vast flood plains and provide fish and waterfowl with an abundance of food. But as levees were constructed, hundreds of thousands of acres of critical habitat were lost. River ecologists now believe that restoring even a modest percentage of the river's flood plain would be enough to avert the extinction of species and increase the amount of wildlife overall.

But the story of Missouri River flood plain restoration is only in its early chapters. Criss and Heisel said, "Despite the proliferation of strip malls on floodplains near St. Louis, the overall picture on the river today is better from an ecological standpoint than it was 20 years ago. And with each year, it's becoming clearer that farmers, towns and industries that remain near the river benefit from natural flood control." However, restoration projects such as the Big Muddy National Wildlife Refuge remain unfinished and need public support and funding. Only one-fifth of the refuge's authorized acreage has been purchased to date. "And some farmers continue to express vehement opposition to refuge expansion, despite the benefits to their fields of flood reductions", Criss and Heisel said. "We have by no means seen the last of huge floods on the Missouri River. But the wiser we become about floodplain management, the less often these events will occur and the less damage they will do."

Source: *STLToday.com, St. Louis Post-Dispatch*, 6/10/07

Utility to Pay Rent for Riverbed

Montana Attorney General Mike McGrath announced a settlement with one of the utilities targeted in a lawsuit alleging that the companies should be paying rent for use of the riverbeds on which hydroelectric dams sit. McGrath said *PacifiCorp* has agreed to pay about $50,000 a year for the land under the Bigfork Dam on the Swan River. The state Land Board approved the deal, and this sends money into an account to be used for public schools. "This is a great deal for the people of Montana," McGrath said. *PacifiCorp*, based in Portland, OR, said it agreed to settle to avoid a protracted legal battle. "We really believe settling the issue with the state was in our customers' best interest," spokeswoman Jan Mitchell said.

The settlement came out of the state's lawsuit against three owners of hydroelectric dams in Montana. The state argues that it should be compensated for the public land occupied by the dams and submerged by reservoirs behind the dams. The dispute began in October 2003 when two Gallatin County residents, later joined by the state and Great Falls elementary and high school districts, sued the utilities for compensation for use of the river beds for their dams. They argued that the state riverbeds are part of the school trust lands, but the utilities hadn't paid to use them. The courts later said that only the state had standing in the case, and the others were removed from the lawsuit.

Lawyers for the utilities have argued in court that the dams have existed for decades with the understanding they had a right to the water and to build the dams. The state's claim on land submerged below reservoirs is flawed, they said, because the power companies bought much of it from private landowners.

The *PacifiCorp* dam is far smaller than others, and McGrath said a similar settlement on the other dams would bring in a lot more money. The attorney general said he would like to enter into discussions with the other companies to avoid the scheduled October trial. But *PPL Montana*, which owns nearly a dozen of the dams at the heart of the lawsuit, said it would not comment on *PacifiCorp's* decision to settle. "We still firmly believe these projects are governed by the federal licenses that have been acquired," spokesman David Hoffman said. "We really do think it's a federal pre-emption issue." McGrath said *PacifiCorp* would be dismissed from the ongoing lawsuit.

Sources: *AP/Billings Gazette*, 6/19/07; and *Greenwire*, 6/20/07

NAS Says EPA Monitoring of Dredge Projects is Lacking

The U.S. EPA must improve monitoring of waterways where it has dredged toxic sediment as part of a Superfund cleanup, a *National Academy of Sciences* (NAS) panel said in a report in early July. "You have to monitor to see if your efforts have attained their anticipated effects," said Karl Gustavson, a senior program official at NAS's environmental studies and toxicology office. "That's been lacking."

Congressional appropriators requested the study in the FY 2006 EPA spending bill. *General Electric* (GE) helped draft the provision, which was included in the bill by former Rep. Charles Taylor (R/NC), who was then chairman of the House Interior and Environment Appropriations Subcommittee. *GE* had been ordered by EPA to dredge PCBs from New York's Hudson River at an estimated cost of $500 million. Some environmentalists and congressional Democrats worried that *GE* pushed for the study in hopes of using it as ammunition against being forced to undertake expensive dredging projects. But Gustavson said the report should not be used that way. "Dredging is one of our few options to be used in sediment remediation," he said. "The report specifically said that it should remain one of the options available for remediation of contaminated sediments." Other cleanup options include covering contaminated sediment with "clean" material or placing the polluted sediment under close observation. Dredging is the most expensive cleanup method while monitoring is the cheapest.

The NAS panel examined 26 dredging projects to see if the work helped meet cleanup goals at "megasites" — cleanups with price tags exceeding $50 million. The decision to dredge can be one of the most controversial at Superfund sites, the report says. But deciding to leave contaminants in place is unlikely to be popular. The report notes that the public "may have little tolerance" for cleanups that fail to remove toxic materials. "You have to consider whether or not dredging would result in the sediment being transported downstream," Gustavson said. The report concludes that monitoring has often been inadequate to assess the success of dredging projects.

Source: Lucy Kafanov, *Greenwire*, 6/5/07

Organophosphate Pesticides Threaten Amphibians

Chemicals produced when organophosphate pesticides are sprayed and begin to break down in the environment are 10 to 100 times more toxic to amphibians than their parent compounds, according to a USGS study published in early June in the journal *Environmental Pollution*. In that study Southern Illinois University research biologist Donald Sparling and USGS research biologist and amphibian specialist Gary Fellers conducted laboratory tests to determine the acute toxicity — the lethal dosage causing death in 96 hours or less — of the commonly used organophosphate pesticides chlorpyrifos, malathion and diazinon and their breakdown, or "oxon" derivatives, on tadpoles of the Sierra Nevada yellow-legged frog.

The study concluded that the derivative compounds killed all the tadpoles and were at least 100 times more toxic than the lowest concentrations of the parent compound organophosphates. Parent chemical chlorpyrifos sprayed on the tadpoles caused no mortalities, the study found. But its derivative compound, chloroxon, did. Another compound called maloxon was nearly 100 times more toxic than its parent chemical malathion, and diazoxon was about 10 times more toxic than its parent chemical, diazinon, the study found.

Organophosphorus pesticides suppress an enzyme called acetylcholinesterase, which is essential for the proper functioning of the nervous system. Reduced levels of acetylcholinesterase cause neurological synapses to fire repeatedly and uncontrollably, leading to death, usually by asphyxiation as the animal loses respiratory control, the USGS says.

Most chemicals in this group require oxidative desulfuration to achieve their greatest cholinesterase-inhibiting potencies. Most pesticides of this group reach their greatest potencies when metabolized internally and converted to an oxon form in the liver. However, oxons can also be found in the environment, formed by bacterial decay of the parent pesticide.

Sources: *Central Valley [CA.] Business Times*, 5/30/07; and *Greenwire*, 6/1/07

Atrazine Concerns in Minnesota

Environmentalists and government scientists are sounding the alarm in Minnesota over the potential health effects of atrazine — but corn farmers, Minnesota's Republican governor and the herbicide's manufacturer say it is just fine. Meanwhile, two scientists in the last three years claim that they were prevented from speaking out about atrazine.

In the most recent case this spring, a Minnesota Pollution Control Agency (MPCA) hydrologist Paul Wotzka, a 17-year career employee, was fired over the issue. In his whistle-blower lawsuit Wotzka claims that in March he was not allowed to tell a legislative committee about his latest research on atrazine pollution in waterways in southeastern Minnesota and that he was investigated and fired because of it. Also, three years ago, Tyrone Hayes, a University of California, Berkeley, professor and endocrinologist, found his invitation to be the keynote speaker at an environmental conference revoked by then-MPCA Commissioner Sheryl Corrigan after it was learned that Hayes would speak about how atrazine interferes with normal sexual development in frogs.

For Representative Jean Wagenius, DFL-Minneapolis, the incidents are part of a disturbing pattern in which scientists are muzzled. "When it comes to protection, industry is being protected and the public is not, especially in the case of atrazine," she said. But Brian McClung, spokesman for Gov. Tim Pawlenty said that no one has been silenced and that someone else from the Minnesota Department of Agriculture (MNDA) was able to tell legislators what they wanted to know about atrazine. "There are numerous studies including some related to atrazine that are ongoing, and we support those and public release of data about them," McClung said.

But three proposals that would have tightened atrazine regulations and required more review of the herbicide's potential effects by the Minnesota Department of Health failed in the Legislature this year. McClung said state authorities cannot comment on Wotzka's case, except to say that he was terminated for reasons other than those claimed in the lawsuit. State agriculture officials defend their regulation of atrazine and say their monitoring of groundwater and surface water statewide shows that average levels of atrazine are low. "We do good science," said Dan Stoddard, assistant director for environmental programs in the MNDA's pesticide and fertilizer management division. "We know that people are going to interpret it in different ways."

For *Syngenta Crop Protection Inc*., a major manufacturer of atrazine, the state's monitoring shows no cause for public concern. Tim Pastoor, head of human safety for the company, said that atrazine has been scrutinized closely for years and that water-quality standards in Minnesota and elsewhere provide "huge safety margins" for the herbicide. But Wotzka, who worked for the MNDA from 1990 to 2006, said in an interview in late June that atrazine levels in the middle branch of the Whitewater River in southeastern Minnesota have reached 30 parts per billion — 10 times higher than the state standard — after spring rains wash the chemical from farm fields.

The concentrations are dangerous not only for frogs and other aquatic organisms, Wotzka said, but are also likely to be contaminating groundwater and private wells in the area's fractured geology. "As a civil engineer and as somebody who has all this water quality background, I know that there are wells that are very suspect and potentially contaminated in southeast Minnesota," he said. Although Stoddard acknowledged that areas of the Whitewater River have shown high spikes of atrazine, he said they haven't violated any water quality standards yet because they were short-term incidents and the standard is based upon average concentrations.

Questions about atrazine have increased this year because Minnesota farmers have

planted 8% more acreage in corn than last season, largely because of higher demand from ethanol manufacturers. The U.S. Department of Agriculture estimated that atrazine was used on about 45% of the 7.3 million acres of corn grown in Minnesota in 2005, and state officials report that it has been the third or fourth most commonly sold pesticide in the state during the past decade, based upon pounds.

None of this surprises Samuel Yamin, toxicologist for the *Minnesota Center for Environmental Advocacy* who has raised numerous concerns about whether the state's water-quality standards for atrazine are too lenient. "We are concerned with high spikes in atrazine whereas the MNDA is not," he said. The herbicide is persistent in the environment, Yamin said, and shows up commonly in wells and rivers that have been tested. He and other environmentalists want Minnesota to follow the lead of Wisconsin, which established about 100 "atrazine prohibition areas" in the early 1990s that include 1.2 million acres of farmland. Use of the chemical was banned after groundwater in those areas showed atrazine contamination, according to a spokeswoman for the Wisconsin Department of Agriculture, Trade and Consumer Protection.

The USEPA reregistered atrazine in 2006 for continued use but noted that research about its ecological effects on frogs is inconclusive and ordered more studies.

Sources: Tom Meersman, *Minneapolis Star Tribune*, 6/30/07; and *Greenwire*, 7/3/07

More Endocrine Disrupter Issues

Traces of the synthetic estrogen used in human birth control pills can begin turning male minnows into females, according to a study published in late May in the *Proceedings of the National Academy of Sciences*. Scientists from the U.S. EPA and Fisheries and Oceans Canada conducted the research. The project was funded primarily by the Canadian government and the *American Chemistry Council*. It is not known how low dosages of estrogen in drinking water might affect humans.

In the summer of 2001, the team spiked a lake in Northwestern Ontario with very low dosages of estrogen and repeated the process over the next two years. Male minnows began developing eggs rather than sperm, became indistinguishable from female minnows in appearance and the minnow population nearly vanished within a few years. The lake water had estrogen concentrations of about 5 parts per trillion, about the same amount found in water discharged from sewage treatment plants in Canada and in other countries with wide usage of the pill. Although the female fish were affected, the change was much more noticeable in the males.

The lead researcher, Karen Kidd, conducted the project while she was with the Fisheries and Oceans Canada. She is now a biologist at the University of New Brunswick. "What's sobering for me is that we've shown such a dramatic response in fish populations at these low concentrations," Kidd said.

Meanwhile, five environmental groups submitted a petition to USEPA in early June asking the agency to ban a group of chemicals called nonylphenol and nonylphenol ethoxylates that are used in many household detergents and are also linked to gender changes in fish. Led by the *Sierra Club*, the groups took advantage of a provision of the Toxic Substances Control Act (TSCA) to petition EPA to regulate individual substances. The last chemical that EPA banned using the TSCA was asbestos in 1989 because it posed an "unreasonable risk" to public health. The petition is the first involving suspected endocrine disrupting chemicals.

Nonylphenol imitates estrogen, and male rainbow trout and other fish exposed to the chemical in laboratories have become part male and part female, producing female egg proteins, according to EPA documents and several independent scientific studies. "It is clear that the current unrestricted manufacture and release of nonylphenol and nonylphenol ethoxylates poses an unreasonable risk to the environment," the groups wrote in their petition. The human effects are unknown, but the petition calls for more research into the health effects of the chemicals, particularly on employees of dry cleaners and laundries.

"Tens of thousands of workers may be exposed to these harmful chemicals each day," said *Unite Here* health and safety program director Eric Frumin. Nonylphenol and nonylphenol ethoxylates "are among the most extensively studied compounds in commerce today," the *Alkylphenols & Ethoxylates Research Council* said in response to submission of the petition. "Few compounds have the same degree of available test data or have received the same degree of scientific scrutiny," the group added.

Meanwhile, EPA is developing a voluntary "*Safer Detergents*" program to reward companies that switch to less-toxic cleaning agents such as alcohol ethoxylates, which are available at comparable cost. But the design of EPA's forthcoming $76 million endocrine disruptor screening program favors chemical industry scientific interests because it does not harshly judge whether certain substances in the environment might cause disease in humans, a group of scientists said in late May. The program, which is mandated by the 1996 Food Quality Protection Act (FQPA) to check whether certain substances can disrupt human hormones, is set to begin chemical screening next year. FQPA mandated that EPA implement the program by 1999, but testing was delayed until next year because EPA said it interpreted the three-year deadline to include validating the lab assays for the program, which is still ongoing.

The scientists who are critical of the program allege that it will allow lab tests that are so badly designed that they will not find harmful chemicals. EPA has also failed to guarantee that tests will be conducted on prenatal exposure to chemicals or that correct dosage ranges will be used, both of which would allow chemical companies to tailor certain aspects of the tests, the scientists said. "If your objective is not to find anything, [the EPA endocrine disruptor screening program design is] the perfect way to do it," said University of Missouri developmental biologist Fred vom Saal. "There certainly is industry influence," said *Natural Resources Defense Council* reproductive biologist Sarah Janssen. "What really is driving [the decisions] is the industry focus of the [Bush] administration. That's why the EPA listens to them." But EPA biologist James Kariya said that the agency has developed the endocrine disruptor screening program in an open manner to protect it from special interests. "You're always going to find people that think their issue is not given appropriate attention," he said. "But if anything, this program has been very transparent, very open."

Meanwhile, Senate Environment and Public Works Committee Chairwoman

Barbara Boxer (D/CA) accused EPA of failing to deliver results on the FQPA mandates. "Over 10 years ago, Congress passed two laws ordering EPA to test chemicals to see whether they are endocrine disruptors, but EPA has dragged its feet and failed to test even a single chemical under this program," Boxer said. "The time has come for EPA to test chemicals for these toxic effects and to ban or severely restrict toxins that can disrupt our hormone systems".

Sources: Martin Mittelstaedt, *Toronto Globe and Mail*, 5/22/07; Marla Cone, *Los Angeles Times*, 6/6/07; Katy Human, *Denver Post*, 6/6/07; Sue Goetinck Ambrose, *Dallas Morning News*; *Greenwire* 5/22, 5/29 and 6/6/07

Climate Change Update

This year may be the second-warmest year since temperature record keeping began in the 1860s, University of East Anglia Climatic Research Unit head Phil Jones said in late June. Jones' university supplies the U.N.'s International Meteorological Organization (UNIMO) with temperature data. The warmest year ever recorded was 1998, he added. This year "isn't far behind ... it could change, but at the moment this looks unlikely," Jones said. The 10 warmest years in the past 150 years have all occurred post-1990. Last year ranked number six according to the UNIMO.

Meanwhile, emissions of carbon dioxide (CO_2) from fossil fuel burning increased three times faster in recent years than in the 1990s, international climate researchers reported in a late May issue of the *Proceedings of the National Academy of Sciences*. Michael Raupach, of the Australian government's science agency and leader of the *Global Carbon Project*, headed the study, working with scientists from Britain, France, Germany and the U.S. The rate of CO_2 is climbing most drastically in developing countries like China and India, but developed countries, with only 20% of the world's population, still emit nearly 60% of all fossil-fuel CO_2 released each year. On average, each person in the U.S. and Australia emits five tons of carbon per year, while in China the figure is 1 ton per year.

Switzerland's climate has warmed twice as quickly since the 1970s as the average temperature for the Northern Hemisphere, according to a study published in the scientific journal *Theoretical and Applied Climatology*. The Federal Institute for Forest, Snow and Landscape Research found Swiss temperatures rose an average of 0.57 °C per decade, compared to an average increase of 0.25 °C for the Northern Hemisphere over the last 30 years. The difference was most apparent in spring and winter, when the average increase for one decade was 0.8 °C in Switzerland. The warming trend likely explains the retreat of Alpine glaciers and the increasingly early blossoming that occurs in the country, a study author said. Researchers concluded Switzerland's distance from major oceans and relatively high latitude contributed to its temperature increases. Northern Sweden, Russia and parts of China are said to face the same problems.

In China wetlands are drying up that make up the source of two of the country's greatest rivers, already causing reduced waterflows on the Yangtze and Yellow rivers. Wetlands on the Qinghai-Tibet plateau dwindled more than 10 % over the past 40 years, according to a study by the Chinese Academy of Sciences. Those at the origin of the Yangtze shrank 29 %. The study also found that about 17.5 % of the lakes at the Yangtze's origin have disappeared. The plateau is considered to be an indicator of the world's climactic health. It is also the source of several of Asia's other large rivers, including the Ganges, Brahmaputra, Indus and Mekong.

The disappearance of a lake in Chile's Bernardo O'Higgins National Park was discovered in late May by park rangers, who found a 40m-deep crater where the large lake had been. After flying over the lake, scientists said they were able to draw preliminary conclusions that point to climate change as the force behind the lake's disappearance. They suggested the melting of nearby glaciers raised the lake's level to the point where water pressure caused part of a glacier acting as a dam to give way. Water in the lake flowed out of the breach, into a nearby fiord and then to sea, said Andres Rivera, a glaciologist at Chile's Centre of Scientific Studies. The advance and retreat of glaciers is part of the normal dynamics of Patagonia but climate change is distorting the process, Rivera said.

Rising temperatures in the Himalayas could completely melt away that region's glaciers within 50 years, experts in Nepal warned in early June. "If temperatures continue to rise...then there will be no snow and ice in the Himalayas in 50 years time," said Surendra Shrestha, the regional director for the United Nations Environment Programme. Experts also warned that the melting could push the sizes and capacities of the region's glacial lakes to their breaking point, presenting a threat to mountain communities that could be washed away should the lakes burst. Of the 2,400 lakes catalogued in Nepal in 2000, about 14 are about to burst, Shrestha told reporters.

Satellite data and flyovers indicate Greenland's ice sheets are also melting at a faster rate than previously observed, confirming global warming's effects on Arctic ice, scientists said. The rate of glaciers melting and sliding into the sea along Greenland's southwestern coast "is speeding like gangbusters this year," said William Krabill, leader of a NASA team that is probing glacier dynamics with airborne lasers and radar. The southern coast is speeding to the sea at more than 75 feet per year, Krabill said. As a result of these and other data, predictions made by the U.N. Intergovernmental Panel on Climate Change (IPCC) report for the break up of Greenland's ice sheets may have to be revised from thousands to hundreds of years, said Bert Metz, senior member of the IPCC team. The IPCC report said that the entire Greenland ice sheet would melt over a period of thousands of years if temperatures remained around 2 °C or more above the levels predating wholesale industrialization in the developed world. But Metz said "It's plausible that the whole thing could disintegrate in hundreds (rather than thousands) of years, an order of magnitude faster". The shelf's entire collapse would raise sea levels globally by around 7 meters, the IPCC report said.

Also, the speed of coastal erosion along Alaska's far northern coast has doubled over the past 50 years and coastal cliffs saturated with melting permafrost have crumbled into the sea as the world's climate has warmed, scientists report. Using evidence from satellite observations and aerial photographs, two geologists at the USGS have concluded that pack ice shrinking rapidly over the Beaufort Sea has probably caused the waves to surge more powerfully against the weakened cliffs. At the same time small inland lakes have expanded as ice covering their surface has melted away, the scientists say. In some instances the landlocked margins of ice-covered lakes that were isolated from the

coast 50 years ago have moved north until erosion has turned them into open bays, the geologists say. John Mars and David Houseknecht of the survey's headquarters in Reston, VA, analyzed 50-year-old topographic maps made from aerial photographs and images from Landsat satellites run by NASA and the survey for their findings. The erosion rate is speeding, too, and in the 30 years from 1955 to 1985, the coast in the study area lost an average of 120 acres a year, but during the following 20 years the loss of land from erosion along the coast averaged nearly 270 acres a year, the scientists said. "The waves undercut the mud-rich permafrost land, causing it to collapse into the sea," Mars said. Ocean water has surged into many freshwater lakes in the region as the coastal land retreated, while melting permafrost has threatened the calving grounds of large caribou herds and changed the environment for waterfowl and other migratory birds, the report noted.

Climate change in Alaska has caused average temperatures there to rise by as much as 3.6 to 5.4 °F, according to the international *Arctic Climate Impact Assessment.* Because of this, Alaskan roads, runways, railroads and water and sewer systems will wear out more quickly and will be more expensive to replace. According to a study released in late June by the *Institute for Social and Economic Research* at the University of Alaska-Anchorage estimated replacement costs could increase as much as $6.1 billion — totaling $40 billion altogether — for work on nearly 16,000 pieces of public infrastructure between now and 2030. The study does not cover costs of projects such as moving villages, protecting the Trans-Alaska pipeline, fighting wildfires and safeguarding private property.

Biologists on the Pacific Coast from Mexico to Canada are finding higher numbers of malnourished gray whales, and they think increased temperatures in Arctic waters might be responsible. Whale numbers had been on the upswing until 1999, when the marine mammals' primary food source — small crustaceans that live on the bottom of the Bering Sea — was hit hard by El Nino-related warming waters. During 1999 and 2000, a third of the gray whale population died from malnourishment and disease. This spring, a team led by National Marine Fisheries Service (NMFS) and Autonomous University of Baja California Sur scientists noticed that about 10% of the gray whales that had spent the winter in Baja looked skinnier than usual. The scientists said that the whales have been seeking alternate food sources, which can expose them to parasites and force them to expend extra energy they need for the long migration north. When the whales stray from their normal routes, they are also at greater risk of being hit by ocean going vessels. Reduced ice cover in the Bering Sea also increases competition for food, as new types of fish congregate around ice-dependent food sources like algae and plankton. But the whales still may be able to adapt. "Gray whales are good at switching prey," said one of the NMFS team leaders. "They need to find new places to feed, because the ocean is changing on them...".

Below the equator, southern oceans may be losing their ability to absorb large amounts of CO_2, meaning that future concentrations of the greenhouse gas (GHG) in the atmosphere may eventually be higher than what current projections suggest, according to a study published online in the journal *Science* in mid May. The study concludes that the southern Atlantic, Pacific and Indian oceans, which take up about 15% of the total absorbed CO_2, became 30% less efficient at absorbing the GHG between 1981 and 2004. The researchers based their conclusions on observed data collected from 11 stations in the southern oceans and 29 other stations across the globe. Previous research showed that the southern oceans became less efficient CO_2 absorbers because of an increased "windiness" that began in the late 1950s linked to depletion of the ozone layer and global warming. But the authors found that more wind causes more mixing of the water of the southern oceans, which brings up CO_2 rich water from the depths to the surface. As a result, the heavily CO_2 laden water is less efficient at absorbing atmospheric quantities of the gas. University of East Anglia oceanographer and study lead author Corinne Le Quere said that the findings suggest that over the next 25 years, the oceans' capacities to absorb CO_2 will continue to decline.

Meanwhile, Asian desert dust and city pollution is traveling rapidly in huge plumes across the Pacific Ocean to North America, interacting with storms and possibly hastening climate change here, Jeff Stith, of the *National Center for Atmospheric Research* said. Stith and his colleague, V. Ramanathan, warn that the particles could affect cloud formation. Ice crystals are found in extremely cold, white-looking clouds that reflect a lot of sunlight. If particles of dust intermingle with the crystals, the clouds could end up absorbing more solar energy.

In Japan, global warming contributed to a significant rise in sea temperatures over the past century, according to the country's weather agency. Average sea temperatures around Japan soared between 0.7 °C to 1.6 °C between 1900 and 2006, while the world's average increase in temperature was 0.5 °C during that time according to a Japan Meteorological Agency report issued in mid May. Sea surface temperatures affect locations of fishing grounds, and global warming could cause Japan's fish catch to decline by as much as 70% over the next century, according to a 2004 report by the Japanese National Research Institute of Fisheries Engineering. The weather agency collected data for their report from ships that fish the waters off Japan.

The effects of climate change — including rising seas, coastal flooding, drought and disease — could be felt first in the Pacific, according to scientists speaking at the Pacific Global Health Conference in late June. American Samoa, Micronesia, Fiji and Tuvalu were cited as being most at risk. "Low-lying atolls in our generation or our children's generation will no longer exist unless we do something to mitigate it," said Mark Keim, of the U.S. Center for Disease Control and Prevention. Drought, wildfires, crop failure, storms, flooding, changes in fish abundance, spread of diseases, poor sanitation, malnutrition, more frequent and severe cyclones, more frequent El Ninos, reduced freshwater resources, erosion, coral bleaching and changes in the islands social culture all could result from global warming, said Keim. A key concern for officials is the possible increase of mosquitoes as temperatures rise and more areas flood. Associated with that is the increased risk of infectious diseases including cholera, dengue fever, typhoid fever, leptospirosis, measles and influenza.

Meanwhile in certain locations in the Arctic, Denmark, Norway, Russia and the U.S. all dispute Canada's claims to ownership. In response, Canadian Prime Minister Stephen Harper has detailed a new military presence in the North Pole meant to serve as a blunt warning to countries that may try to stake claims in

the area. Canada will spend C$7 billion to modify up to eight military patrol boats for use in thick ice and a new deep-water port to service them. At issue is Russia's claim this spring to a large swath of the Arctic where they found evidence of massive oil deposits. A team from the Oceanology Research Institute in St. Petersburg said they have data to support the resources claim in the 1.2 million-square-kilometer territory in the Lomonosov Ridge area. Under the U.N. *Law of the Sea Convention* five Arctic countries — Canada, Denmark (through its claim to Greenland), Norway, Russia and the U.S. — control an economic zone of 200 nautical miles from their shores, but a country can extend that zone if it proves the structure of the continental shelf is similar to the geology of its territory. The Russian geologists said they had such evidence that showed the Lomonosov Ridge was part of the Russian Federation's territory.

The effects of climate change may have already contributed to the genocide in Sudan's Darfur region, U.N. Secretary-General Ban Ki-moon said in an op-ed published in the *Washington Post* in mid June. The leader said the droughts that have evaporated the arid region's water sources are "to some degree, from man-made global warming," creating conflict between different forces striving to control the last remaining water supplies. "Almost invariably, we discuss Darfur in a convenient military and political shorthand — an ethnic conflict pitting Arab militias against black rebels and farmers," Ban wrote. "Look to its roots, though, and you discover a more complex dynamic. Amid the diverse social and political causes, the Darfur conflict began as an ecological crisis, arising at least in part from climate change." According to the U.N., average precipitation in Darfur has fallen 40% since the early 1980s, drying up lands for farmers and herders that had been using that land for centuries. "It is no accident that the violence in Darfur erupted during the drought," Ban wrote.

In North Carolina, the effects of rising sea levels due to climate change could cost the state billions in property damage and land loss over the coming decade, economists found in a study released in late June. By 2080, 14 of the state's 17 beaches could erode away, costing local economies $3.9 billion in lost recreation revenues. For just four of the state's 20 coastal counties the damage caused by higher sea levels could reach $6.9 billion. "Coastal North Carolina has been identified as one of the most vulnerable regions to climate change in the U.S.," said report co-author Ben Poulter, who works with the Department of Global Change and Natural Systems at the *Potsdam Institute* in Germany. The report, compiled for the *National Commission on Energy Policy*, also found that each hurricane could cause at least $157 million in damage for the state by 2080. Meanwhile in nearby Virginia, rising sea levels caused by global warming could drown half of that state's wetlands over the next 100 years, according to a *Wetlands Watc*h study released in early June. The study found that at least half, and perhaps as much as 80%, of Virginia's wetlands could be covered in too much water to survive if sea levels rise 1.5-2 feet.

The climate in the northeastern U.S. may change markedly in the years ahead due to higher average temperatures caused by global warming, according to a *Union of Concerned Scientists* (UCS) study released in mid July. The report concludes that winters in the region will rise on average 8-12 ^{o}F higher by the end of the century and summers will be 6-14 ^{o}F higher if CO_2 emissions are not regulated. Cities such as Atlantic City, Boston and New York City may regularly experience disastrous flooding. Also, the northeastern coastline may become subject to unprecedented damage from erosion, and local agricultural industries like apple orchards, lobstering and fishing will fail because of ecological and environmental changes. "The bad news is that the character of the Northeast will change dramatically under the business-as-usual scenario," UCS member and study lead author Peter Frumhoff said. "But on the other side…the worst of the damage can be mitigated if we act soon".

Climate change and shrinking habitat will also imperil more than 20% of terrestrial bird species over the next century, according to a new study by Princeton University and University of California-San Diego biologists. Habitat loss could put 950 to 1,800 bird species at risk by 2100. Climate change would propel losses at higher latitudes, but deforestation would likely have greater effects on tropical birds. "This is akin to killing two birds with one stone," said David Wilcove of Princeton, a co-author of the study. "Deforestation drives tropical species to extinction and also contributes to global climate change. Climate change, in turn, drives temperate species to extinction." Wilcove and other researchers recommend developing a larger reserve network in the tropics to protect both tropical and temperate birds and expanding worldwide efforts to reduce heat-trapping GHG emissions. The report appears in an early June issue of *PLoS Biology*, a journal from the *Public Library of Science*. The scientists warn that even under the most optimistic scenarios, the birds' geographic ranges are expected to be reduced by half over the next 50 years, putting at least 400 species at risk. But all estimates are based on the assumption that birds will not dramatically shift their ranges in response to climate.

National parks across the country are also suffering the impact of global warming, according to a *National Parks Conservation Association* report released in early July. The report warns that much of the 1.5-million acres Everglades National Park could be underwater by the end of this century. The majority of the Everglades stands less than 3 feet above sea level and is "very vulnerable" to sea level rise, according to Park Superintendent Dan Kimball. Other parks affected by global warming include Yosemite National Park in California, which has experienced warming and droughts that led to wildfires; the Historic Jamestown settlement in Virginia, which could be underwater in the next 100 years; and the Blue Ridge Parkway in the Southeast, which faces increasing smog as summers become warmer.

Global warming will have far-reaching effects on Americans' recreation options and habits, several tourism and recreation industry experts testified in late May before the Senate Environment and Public Works Committee. Warmer winters will leave skiers and snowmobilers hunting for new terrain, while anglers face the prospects of fewer cold-water fish species as their favorite streams and rivers heat up. Americans' recreation opportunities also will shift north over the next half century, with Southern beaches and golf courses seeing the most profound effects. Chairwoman Barbara Boxer (Calif.) stressed the wider implications of climate change, noting in 2001 U.S. tourism generated $1.2 trillion and 8 million jobs. "It's just not an academic exercise," Boxer said. "It's literally life and death in terms of their survival."

Global warming is also causing poison ivy to grow faster and produce more potent oil than ever before, Agriculture Department

plant physiologist Lewis Ziska said in late June. Ziska and other researchers think that rising ambient CO_2 levels are the cause. Ziska's study exposed one group of plants to about 300 parts per million of CO_2, which is about the same level of the gas that was found in the atmosphere in the 1950s. The other group was exposed to 400 ppm of CO_2, which is about the level of the gas in the atmosphere today. After eight months, leaf size, stem length and weight and oil content of the plants raised under current CO_2 levels were, on average, 50-75% higher than the plants exposed to the 1950s conditions. Ziska's research follows a Duke University report released last year that found that high CO_2 levels create a chemical change in poison ivy that results in a more potent form of urushiol, which is the oil that triggers an itchy rash in about 70% of the people exposed to it.

Global warming could also push wild varieties of peanuts and potatoes to extinction by mid-century, endangering potentially valuable genes that could make hardier domesticated crops, according to a study released in late May by the *Consultative Group on International Agricultural Research*. Sixty-one percent of wild peanut species and 12% of wild potatoes could disappear by 2055 as a result of changing weather patterns and rising temperatures the study found. Lead author Andy Jarvis of the group's *International Centre for Tropical Agriculture* said the predictions were based on "conservative estimates" of climate change over coming decades. The study's authors call for a combination of seed banking and protection of at-risk crops in areas where they are already growing.

To the contrary, many Arctic plant species have adjusted easily to big shifts in the temperature, repeatedly recolonizing the rugged islands of the remote Svalbard archipelago off Norway's coast through 20,000 years of warm and cool cycles, according to a study released in a mid June issue of the journal *Science*. The study concluded that the Arctic plants may be able to shift long distances to follow the climate conditions to which they are best adapted as conditions change. The findings are based on a DNA analysis by the researchers of more than 4,000 samples of nine flowering plant species from Svalbard, which is a group of islands between the Scandinavian mainland and the North Pole. The analyses found genetic patterns that could only be explained by the repeated re-establishment of plant communities after the arrival of seeds or plant fragments from Greenland, Russia or other Arctic regions hundreds of miles away.

Meanwhile, nitrogen released into the air from traffic exhaust and agriculture is assisting the growth of northern forests and aiding the trees' absorption of CO_2, according to a study published in the journal *Nature*. But the study's authors warn against the view that nitrogen pollution will make a significant difference in the battle against global warming. Eventually nitrogen saturation could harm forests through soil acidification, nutrient imbalance and tree damage, according to Federico Magnani, a professor at Italy's University of Bologna, and his colleagues. The study compared CO_2 and tree growth at natural and well-managed forests in Western Europe and the U.S. and looked at similar data from forests in Canada, Siberia and New Zealand. Although carbon intake varies over a forest's lifecycle, in their data comparisons the researchers found a strong link between faster carbon fixation and higher levels of atmospheric nitrogen deposition. "Roughly speaking, we found that 2.2 pounds of nitrogen in the atmosphere translates into an uptake of 880 pounds of carbon by the trees and soil," Magnani said.

Indonesia's 50 million acres of tropical peat swamps have the potential to store more carbon than all the planet's vegetation combined, according to University of Nottingham peat expert Jack Rieley. Preserving the peatlands can save an enormous amount of carbon. On the other hand, they can release 2 billion tons of carbon per year if destroyed, according to a Nov. 2006 report by *Wetlands International* (WI). A voluntary system allowing Indonesia to sell carbon credits to curb the drainage of peat swamps could start as early as next year WI says. Indonesia releases approximately 2 billion metric tons of CO_2 per year through draining the swamps and starting fires to clear land for plantations. Selling carbon credits in exchange for preventing those emissions could net the country $39 billion, using the U.N. estimate of €14.59 per ton. Alex Kaat, a WI spokesman, said the nation may be willing to begin curbing peatland degradation in return for emission credits payment. Malaysia and Thailand could also benefit from a similar system, Kaat said.

Asian nations must begin fighting the environmental effects of global warming with the same gusto they use to fight disease epidemics, *World Health Organization* (WHO) official Shigeru Omi said in early July. "Increasing temperatures are among the variables that affect malaria, and the disease is emerging and re-emerging in places where it did not exist before, or for a long time," Omi said. He added that malaria was found in the highlands of Papua New Guinea this year after re-emerging in South Korea in late 1990. Also, he said, the mean annual temperature in Singapore rose to 28.4 ^oC in 1998 from 26.9 ^oC in 1978, contributing to a more than 10-fold increase in dengue cases over the last two decades. "Everybody knows the environment issues, but still their primary concern is economic development, so it's very important to give the evidence of this environmental degradation," he said. "If you continue to focus on the economic profit, earth as a whole will suffer," Omi said.

But Asian business and government leaders said at the *World Economic Forum* on East Asia in late June that developed countries are hypocritical for lambasting China's escalating GHG emissions while they profit off the country's cheap labor,. "This is green imperialism," said Nor Mohamed Yakcop, Malaysia's deputy finance minister." Companies that are polluting in China are owned by Americans, European, Japanese and others. They are benefiting from the cheap labor, from the resources and at the same time accusing China of pollution. In recent months, China has faced increasing pressure from the U.S. in particular to curb its CO_2 emissions. The nation relies on coal for two-thirds of its energy and surpassed the U.S. in CO_2 emissions by about 7.5% in 2006.

New Zealand Prime Minister Helen Clark warned business leaders in mid June that countries that refuse to address climate change and other environmental issues could become outcasts on the global market. Speaking in Australia, Clark explained that recent pressures on her country regarding the energy required to transport its food and wine exports were a sign of things to come that neither companies nor governments can ignore. "I do believe that those who do not take sustainability seriously are likely to face consumer resistance and even trade barriers in the future," Clark said. While Australia did not ratify the Kyoto Protocol, Clark warned that the country could not sit on the sidelines or risk being

labeled as dirty and uncaring of the planet's needs.

Also, former USEPA administrator Christie Whitman told *Rolling Stone* magazine that patience for the Bush administration's approach to climate change is wearing thin as international consensus on the phenomenon's threat continues to grow. Whitman, who served as Bush's EPA chief until 2003, told the magazine that the administration's position on the issue crafted by Vice President Dick Cheney would not last long. "I don't see how he can say that with a straight face anymore," said Whitman. Cheney has said that what is known about climate change today is "not enough to just sort of run out and try to slap together some policy that's going to 'solve' the problem." "The consequences of climate change are very real and very negative, but Cheney is not convinced of that. He believes — not quite as much as Sen. James Inhofe, that this is a 'hoax' — but that the Earth has been changing since it was formed and to say that climate change is caused by humans is incorrect", Whitman said.

The Cheney/Inhofe view showed its effect recently when the *Smithsonian Institution* decided to water down its exhibit on climate change in the Arctic at the National Museum of Natural History. *Smithsonian* managers did not want to ruffle the feathers of Congress or the Bush administration, according to a former administrator at the museum. Robert Sullivan, who was the associate director in charge of exhibitions, said the official text of last year's exhibit was toned down to show more uncertainty about whether humans cause global warming. He also claimed officials altered graphs to "show that global warming could go either way" and let visitors draw their own conclusions from the data. He did not say the Bush administration requested the changes but claimed *Smithsonian* officials acted on their own. "The obsession with getting the next allocation and appropriation was so intense that anything that might upset the Congress or the White House was being looked at very carefully," he said. The exhibit, "*Arctic: A Friend Acting Strangely,*" still available online, discussed the Arctic's melting ice and snow and possible effects on people and wildlife.

Meanwhile, a new study is punching holes in the Cheney/Inhofe theory. Examining solar radiation records over the last 11 years, British scientists found that total radiation from the sun peaked in 1985, meaning that the solar radiation hitting the planet has actually subsided during the 20 years of increased global temperatures. "The sun did a U-turn around 1985, but the temperatures kept on rising," said Mike Lockwood, a solar physicist at the *Rutherford Appleton Laboratory*. "Everything on the sun that could have affected climate has been going in the wrong direction to cause warming, and we've seen continued warming". A highly charged magnetic field around the sun prevents cosmic rays, which help form clouds, from hitting the Earth. The argument of the solar activity theory is that if the sun's magnetic field is high, there should be less cosmic rays and less clouds, translating into higher temperatures. But the research shows that global temperatures have continued to rise despite the falloff of solar radiation. The findings, published in early July in the journal *Proceedings of the Royal Society A*, also debunk one of the central arguments made by the counter-warming documentary "*The Great Global Warming Swindle*" that aired on British television earlier this year. "That program was so bad it was almost fraudulent," Lockwood says. Nathan Bindoff, a physical oceanographer and director of the *Tasmanian Partnership for Advanced Computing*, said: "All of the climate science portrayed in the program is out of context, incorrect or neglects other processes that are well known".

But despite all the data, people in the United Kingdom remain more concerned nationally about immigration issues and locally about dog messes on sidewalks than about global warming, according to a survey of 2,031 adults released in early July by *Ipsos MORI*. The survey concludes that there is a need to bring home the realities of climate change to individuals, and that although public understanding of the issue is on the rise, the facts still need reinforcing. The survey finds that 56% of people still think there is scientific doubt about the theory of global warming and that the problem is exaggerated. While 68% of respondents believe climate change is happening, only 38% think it will have an impact on their lives and 51% think it will have little or no effect, even though 45% of the respondents placed global warming at the top of a list of the most serious threats to mankind. As such, 90% of the respondents agree that climate change will have a significant impact on future generations. *Ipsos MORI* Head of Environment Phil Downing said, "They are a bit concerned by climate change but they think it has been exaggerated and over-hyped. The idea that the debate is over is not true. There are a lot of people out there who have not bought into the view that climate change is a threat".

Canadian Prime Minister Stephen Harper seems to be one of those. He pledged in late June to ignore measures to combat climate change in a bill passed by the Canadian Senate, saying the efforts to bring the nation into compliance with the Kyoto Protocol would hurt the economy. "Obviously, this government isn't going to implement any measures that would do severe damage to Canadian jobs or to the Canadian economy," Harper told reporters. "We will continue implementing our [own] national system of regulations." Harper's Conservative government has described the GHG emissions cuts required under Kyoto as unattainable. The Senate easily passed the bill requiring Harper's government meet Kyoto goals with a vote of 53 to 20. But Harper said his government has no obligation to adhere to it.

Also, *Exxon Mobil Corp*. continued to bankroll climate skeptics even after saying such practices ended in late 2005, *Greenpeace USA* said in a mid May report. The oil company gave $2.1 million last year to 41 groups that *Greenpeace* calls "prominent climate-denial organizations." The report got the attention of the chairman of the House Science and Technology Committee's oversight arm, and Rep. Brad Miller (D/SC) asked the company to turn over a host of financial records by June 1. "The analysis done by *Greenpeace* highlights disparities between your *2005 World Giving Report* and actual giving as reflected in the copy of your IRS 990 tax form," Miller wrote. "These discrepancies call into question the accuracy of the *2006 World Giving Report*." Miller asked *Exxon* to provide the House panel with a copy of their 2006 IRS 990 tax form and complete lists of grants *Exxon* awarded in 2006 and 2007, broken down by the recipient, purpose and amount. Miller's request comes months after a similar request by Sens. Jay Rockefeller (D/WV) and Olympia Snowe (R/ME), who in October asked *Exxon* to stop funding "a small cadre of global climate change skeptics". The *Greenpeace* report is the latest attempt by environmental groups to determine which organizations have received *Exxon* grants. It follows a January report by the *Union of Concerned Scientists* that found *Exxon* spent $16 million between 1998 and 2005 to

fund 43 small nonprofit groups that question the science behind global warming.

Global warming also continues to be a religious issue. The *Southern Baptist Convention* (SBC) approved a resolution at its annual meeting in mid June questioning whether humans are the primary cause of global warming and warning that increased regulation of GHGs could harm the poor. The resolution acknowledged a rise in global temperatures but rejected government-mandated limits on emissions as "very dangerous." It said those limits could have little effect on warming and could cause "major economic hardships" worldwide, particularly in developing countries. Some of the 8,500 delegates at the convention also took support for government-funded research into global warming's causes and alternative energies out of the resolution, fearing it would endorse strong government engagement in the issue.

On the other side of the issue, a coalition of 35 religious denominations in early June called for sharp cuts in GHG emissions. "God's planet and people are already suffering from global warming and it is our duty and call to serve justice and be good stewards of God's creation by acting now to reduce carbon emissions," the *National Council of Churches* said in a statement released at a Senate hearing on religion and climate change. Citing recent reports of the IPCC, the council's statement calls for an 80% cut in GHG emissions by 2050, a target favored by increasing numbers of environmental groups and scientists. "We will need to make economy-wide reductions as well as changes in our personal lifestyles in order to curb global warming emissions," the statement continues. "In answering our call to be good stewards of God's creation, we must also become educated and mindful consumers." The *African Methodist Episcopal Church*, the *Episcopal Church*, the *Evangelical Lutheran Church in America*, and the *Union of Reform Judaism* were among those endorsing the emissions target.

Also, the Vatican will now use solar energy to power some of its buildings. The roof of the Paul VI auditorium will have its cement panels replaced with photovoltaic cells, said engineer Pier Carlo Cuscianna, noting that the change would reflect Pope Benedict XVI's concern for the environment. The cells will produce enough electricity to illuminate and either heat or cool the building. Because the building is not used every day, excess energy will be routed to other Vatican offices. Last summer, Benedict called on Christians to "take care of creation without squandering its resources." The late Pope John Paul II was also known for his environmental stewardship.

Tenzin Gyato, the 14th Dalai Lama supported caring for the environment in his address to a forum on sustainability and spirituality during his 11-day tour of Australia this spring. The exiled Tibetan leader stressed the interdependence of humanity and the environment and said the planet's survival depended on mankind's care for it. "Taking care of the environment should be part of our daily life," he said. "Using cars, or using electricity, your water, every moment, keep in mind the preservation of energy and resources." He called it a "moral responsibility" to preserve resources for future generations.

Getting behind a proposed European ban on incandescent light bulbs, lamp manufacturers announced in June that they would phase out the energy-wasting bulbs by 2015. The *European Lamp Companies Federation*, which represents 95% of the industry in Europe, said that its ban would cut annual CO_2 emissions from domestic lighting by more than 60%. The ban could also save European power customers €7 billion per year in energy costs, according to manufacturers. The phaseout would begin in 2009 with a ban on 100-watt bulbs followed in 2015 with a ban on 25W bulbs. The proposal comes on the heels of the European Union's move in March to ban incandescent light bulbs across the bloc. The European Commission is charged with drawing up requirements for energy efficiency for officials and public lighting like street lamps "to be adopted by 2008" and on incandescent bulbs for private use by 2009. The European Union hopes this initiative and others will help it reach a bloc-wide goal of 20% energy efficiency savings and a 20% cut in CO_2 emissions by 2020.

In the U.S. more than 500 mayors signed the *United States Conference of Mayors' (USCM) Climate Protection Agreement* in mid May, protesting the federal government's lack of action on climate change and supporting the GHG emissions reduction goals of the Kyoto Protocol. The agreement commits their cities to reduce GHG emissions by 7% below 1990 levels by 2012, which would be the national U.S. goal for emissions reductions if the U.S. signed the Kyoto Protocol. "Mayors took action because we have to, because the federal government was silent," USCM head (and mayor of Trenton, NJ) Douglas Palmer said. Tokyo Governor Shintaro Ishihara said that the U.S. is responsible for worsening the world's environment — "It is ridiculous that the United States didn't ratify the Kyoto Protocol," he said. "The world really is looking to these cities for leadership. You're not going to get this from other government bodies. You're going to get it from the mayors of the world and the cities of the world, where they have to make decisions, and the consequences of their decisions are visible within hours or days," New York Mayor Michael Bloomberg said. Bloomberg is trying to avoid waste by urging New York residents to drink tap water, rather than bottled water. Environmentalists say that four out of five plastic bottles are thrown away rather than recycled, and shipping them from thousands of miles away creates additional GHGs. Some New York restaurants have started to follow the lead of California, where some dining establishments serve only tap water at tables. The city's $700,000 "*Get Your Fill*" advertising campaign is promoting tap water as "healthy" and "great on the rocks" through posters and radio. Consumers in the U.S use about 1 billion plastic bottles each week.

According to a USCM survey, 134 cities in 36 states are promoting green technology, primarily by using clean vehicles and installing energy-efficient streetlights and traffic signals. "The survey shows that there are no cookie-cutter solutions," Palmer said. "Cities, no matter what size, are coming up with innovative ways to reduce energy." But more than half of the cities surveyed shied away from requiring energy efficient homes and businesses. Three-quarters were replacing vehicles with hybrids or using biofuels like ethanol, and six in 10 require that new city government buildings be energy efficient. Four in 10 are requiring developers to build green. About two-thirds are using renewable energy such as solar or wind. Albuquerque, N.M., saved more than $2 million on its $36 million utilities bill by using green technology. One prohibiting factor is funding, particularly for smaller cities. The conference is pushing Congress to create a grant program for cities' green projects in order to solve the problem.

At the state level, different green choices have led to major differences in each state's contribution to climate change. According to an *Associated Press* analysis of 2003 Energy Department figures, Wyoming's coal-fired power plants produce more CO_2 in just eight hours than Vermont's power generators do in a year despite Vermont's higher population. Texas, the leader in GHG emissions, cranks out more than the next two biggest producers combined, California and Pennsylvania, which together have twice Texas' population. In Alaska, the per-capita CO_2 emissions from flying and driving are six times that produced by New York travelers. Experts say the common trait among highest-emitting states is their lack of controls. "Some states are benefiting from both cheap electricity while polluting the planet and make all the rest of us suffer the consequences of global warming," said Frank O'Donnell, director of the Washington environmental group *Clean Air Watch*. "I don't think that's fair at all".

New Jersey Gov. Jon Corzine (D) signed a bill in early July that will cut that state's GHG emissions by 16% by 2020 and 80% by 2050, making it the strictest emissions reduction law in the nation. The *Global Warming Response Act* also deals with emissions from vehicles by enhancing public transportation, carpooling and the shipping of goods by rail instead of truck. In Rhode Island the state Legislature passed a bill this spring formally approving the state's entry into the *Northeastern U.S. Regional GHG Initiative* (RGGI), making it the 10th state to join the group. Initially, Rhode Island will be given CO_2 emissions allowances for about 2.7 million tons, which is the current amount of CO_2 emitted by power plants in the state. Beginning in 2015, the allowances will be reduced annually by 2.5%, which will reduce emissions by a total of 10% by 2018. Other RGGI states are Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York and Vermont. Iowa became the second state — alongside Nevada — to join a group called the *Climate Registry*, which develops and manages a GHG emissions reporting system. Now composed of Illinois, Iowa, Minnesota, Missouri, Nevada and Wisconsin, the registry allows companies in member states to choose to have their emissions tracked. "I believe sitting on the sidelines during this debate is no longer an option. We must find a way to track GHG emissions and provide accurate data to scientists and lawmakers working to reduce emissions," Iowa Gov. Chet Culver (D) said.

Meanwhile, in the private sector, *Dell Inc.* in early June launched what it is billing as the information technology industry's most comprehensive bid to zero-out the GHG emissions of its operations and products. *Dell* Chairman and CEO Michael Dell has pledged to cut the carbon intensity of the company's global operations 15% by 2012 by improving the energy efficiency of computers and office buildings, among other things. He also extended to Europe the "*Plant a Tree for Me"* program, which enables *Dell* customers to offset the CO_2-equivalent emissions associated with the electricity used by their machines. *Dell's Conservation Fund* and *Carbonfund.org* use donations from *Dell* customers to plant trees that naturally convert CO_2 into oxygen.

Starbucks will promote "*Arctic Tale*," an animated film on the dangers of climate change starting July 31. Produced by *Paramount Classics* and *National Geographic Films*, the kid-oriented documentary is narrated by Queen Latifah, following a polar bear and a walrus as they scramble to survive in a melting environment. Besides promoting the film in stores with the cartoon characters on merchandise and its soundtrack playing overhead, *Starbucks* will host a "*National Day of Discussion*" on Aug. 15, holding in-store talks with environmental groups such as *Earth Watch* and *Global Green USA* to publicize the issue. *Starbucks*' said that all three producers will profit from the deal but declined to release other details. The film debuts nationwide Aug. 17.

Meanwhile, scientists in the United Kingdom believe they may be close to a solution for reducing Britain's methane emissions — change the diets of pastoral animals. One of the largest sources of methane, a powerful GHG, comes from the burping and flatulence of pastoral animals like sheep and cows. Some estimates show that methane from farm animals account for a quarter of methane emissions worldwide. But scientists at the *Institute of Grassland and Environmental Research* believe that the diet of the animals can be changed to produce less methane by feeding them grass varieties with high sugar concentrations. The higher sugar content changes how the animals' stomachs break down the plant material into gas. Similar estimates in New Zealand show that altered grass diets could reduce methane emissions from sheep by up to 50%.

On the internet a new carbon footprint calculator called the *GoZero Footprint Calculator* was launched this spring. *Zerofootprint* CEO Ron Dembo, who built the Web tool, said people will be able to use it to enter data, see the carbon effect and how their carbon footprint compares with averages in their city and in cities worldwide. Users will also be able to calculate what-if simulations to see how changes in their activities affect GHG emissions. The anonymous data will be collected by climate change scientists for analysis. "The idea is something that will address millions of people and is infinitely customizable to any culture or lifestyle," Dembo said. He added that the top-down global warming policies of governments — such as the creation of environmental regulations and product standards — are important. "But bottom-up is where we're really going to make progress and this is a tool that can potentially enable a really massive carbon footprint reduction," he said. You can use the calculator to evaluate your own carbon footprint at: http://zerofootprint.net/calculators

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Meetings of Interest

Sep 2-6: American Fisheries Society, 137th Annual Meeting, San Francisco, CA. See: www.fisheries.org/sf/.

Oct 9-12: International Symposium: Wild Trout IX, West Yellowstone, MT. www.wildtroutsymposium.com/. Contact: Dirk.Miller@wgf.state.wy.us , 307/777-4556.

Oct 21-24: Southeastern Association of Fish and Wildlife Agencies Annual Meeting, Charleston, WV. See www.seafwa2007.org.

Oct 29-Nov 1: North American Lake Management Society, Orlando, FL, http://www.nalms.org/Conferences/Orlando/Default.aspx

Apr. 6-10: International Association for Landscape Ecology, U.S. Division, Madison, WI, http://www.cof.orst.edu/org/usiale/madison2008/index.htm

Aug. 13-17: Short Course on Geostatistical Analysis of Environmental Data, University of Florida, Gainesville. See: http://conference.ifas.ufl.edu/soils/geostats/index.html; Contact: Jhanna Crutchfield, (352) 392-5930, Fax: (352) 392-9734, jhanna@ufl.edu

Aug. 17-21: American Fisheries Society 138th Annual Meeting, Ottawa, Ontario. Contact: Betsy Fritz, bfritz @fisheries.org, (301) 897-8616, ext. 212.

Oct 5-9: Pathways to Success 2008 Conference: Integrating Human Dimensions into Fisheries and Wildlife, Estes Park, Park, CO. See www.warnercnr.colostate.edu/nrrt/hdfw/partners.html.

Congressional Action Pertinent to the Mississippi River Basin

Climate Change

S. 280. Lieberman (I/CT) and 6 Co-Sponsors. Establishes a market-driven system of GHG tradeable allowances to support the deployment of new climate change-related technologies to ensure benefits to consumers from the trading in such allowances, and for other purposes.

S. 309. Sanders (I/VT) and 10 Co-Sponsors. Reduces emissions of CO_2, and for other purposes.

S. 317. Feinstein (D/CA) and Carper (D/DE). Establishes a program to regulate the emission of GHGs from electric utilities.

S. 485. Kerry (D/MA) and Snowe (R/ME). Establishes an economy-wide global warming pollution emission cap-and-trade program to assist in transitioning to new clean energy technologies, to protect employees and affected communities, to protect companies and consumers from significant increases in energy costs, and for other purposes.

S. 1018. Durbin (D/IL) and 2 Co-Sponsors and **H.R. 1961**. Markey (D/MA) and 7 Co-Sponsors. Addresses security risks posed by global climate change and for other purposes.

S. 1168. Alexander (R/TN) and Lieberman (I/CT). Establishes a regulatory program for sulfur dioxide, nitrogen oxides, mercury, and CO_2 emissions from the electric generating sector.

S. 1177. Carper (D/DE) and 7 Co-Sponsors. Establishes a national uniform multiple air pollutant regulatory program for the electric generating sector.

S. 1201. Sanders (I/VT) and 3 Co-Sponsors. Reduces emissions from electric power plants, and for other purposes.

S. 1389. Obama (D/IL) and 2 Co-Sponsors. Authorizes the National Science Foundation to establish a Climate Change Education Program.

S. 1554. Collins (R/ME) and Lieberman (I/CT). Addresses challenges relating to energy independence, air pollution, and climate change.

S. 1766. Bingaman (D/NM) and 5 Co-Sponsors. Reduces GHG emissions from the production and use of energy, and for other purposes.

H. R. 620. Olver (D/MA) and 17 Co-Sponsors. Establishes a market-driven system of GHG tradeable allowances that will limit GHG emissions in the U.S., reduce dependence upon foreign oil, and ensure benefits to consumers from the trading in such allowances, and for other purposes.

H. R. 906. Udall (D/CO) and Inglis (R/SC). Promotes and coordinates global climate change research, and for other purposes.

H. R. 1590. Waxman (D/CA) and 126 Co-Sponsors. Reduces GHG emissions and protects the climate.

H. R. 2337. Rahall (D/WV). Promotes energy policy reforms and public accountability, alternative energy and efficiency, and carbon capture and climate change mitigation, and for other purposes.

H. R. 2338. Dicks (D/WA) and 2 Co-Sponsors. Establishes the policy of the

Federal Government to use all practicable means and measures to assist wildlife populations in adapting to and surviving the effects of global warming, and for other purposes.

H. R. 2701. Oberstar (D/MN) and 14 Co-Sponsors. Strengthens the Nation's energy security and mitigates the effects of climate and ensures sound water resource and natural disaster preparedness planning, and for other purposes.

Conservation

S. 50. Isakson (R/GA). Amends the Internal Revenue Code of 1986 to provide economic incentives for the preservation of open space and conservation of natural resources, and for other purposes.

S. 241. Wyden (D/OR) and Akaka (D/HI). Authorizes the Secretary of the Interior to enter into coop agreements to protect natural resources of units of the National Park System through collaborative efforts on land inside and outside of units of the National Park System.

S. 272. Coleman (R/MN). Amends P.L. 87-383 to reauthorize appropriations to promote the conservation of migratory waterfowl and to offset or prevent the serious loss of important wetland and other waterfowl habitat essential to the preservation of migratory waterfowl, and for other purposes.

S. 919. Menendez (D/NJ) and 4 Co-Sponsors. Reauthorizes USDA conservation and energy programs and certain other programs to modify the operation and administration of these programs, and for other purposes.

S. 1424. Schumer (D/NY) and 3 Co-Sponsors. Provides for the continuation of agricultural programs through fiscal year 2013, and for other purposes.

H. R. 2419. Peterson (D/MN). Provides for the continuation of agricultural programs through fiscal year 2012, and for other purposes.

H. R. 3036. Sarbanes (D/MD). Amends the Elementary and Secondary Education Act of 1965 providing grants that would allow states to develop environmental education in schools and help train environmental teachers who would also serve as mentors to students.

Endangered Species Act (ESA)

S. 658. Thomas (R/WY) and 4 Co-Sponsors. Improves the processes for listing, recovery planning, and delisting, and for other purposes.

S. 700. Crapo (R/ID) and 16 Co-Sponsors and **H. R. 1422.** Thompson (D/CA) and 3 Co-Sponsors. Amends the Internal Revenue Code to provide a tax credit to individuals who enter into agreements to protect the habitats of endangered and threatened species, and for other purposes.

H. R. 1917. Herger (R/CA). Enables Federal agencies to rescue and relocate members of any threatened species that would be taken in the course of certain reconstruction, maintenance, or repair of Federal or non-Federal man-made flood control levees.

H. R. 2530. McMorriss Rogers (R/WA) and 12 Co-Sponsors. Better informs consumers regarding costs associated with compliance for protecting endangered and threatened species.

Federal Water Pollution Control Act (FWPCA) Amendments:

S. 134. Allard (R/CO) and Salazar (D/CO), **H. R. 186.** Musgrave (R/CO) and **H.R. 317.** Salazar (D/CO). Authorizes construction of the Arkansas Valley Conduit in the State of Colorado, and for other purposes.

H. R. 110. J. Davis (R/VA). Imposes limitations on wetlands mitigation activities carried out through the condemnation of private property.

H. R. 720. Oberstar (D/MN) and 3 Co-Sponsors. Authorizes appropriations for State water pollution control revolving funds, and for other purposes.

Invasive Species

S. 336. Durbin (D/IL) and 7 Co-Sponsors and **H. R. 553.** Biggert (R/IL) and 24 Co-Sponsors. Requires the Secretary of the Army to operate and maintain as a system the Chicago Sanitary and Ship Canal dispersal barriers.

S. 725. Levin (D/MI) and Collins (R/ME). Amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA) to reauthorize and improve that Act.

S. 726. Levin (D/MI) and 7 Co-Sponsors. Amends the Lacey Act to prohibit the importation and shipment of certain species of carp.

S. 791. Levin (D/MI) and 6 Co-Sponsors and **H.R. 1350**. Ehlers (R/MI) and 12 Co-Sponsors. Establishes a collaborative program to protect the Great Lakes, and for other purposes.

S. 1578. Inouye (D/HI) and Stevens (R/AK). Amends the NANPCA to establish vessel ballast water management requirements, and for other purposes.

H. R. 83. Biggert (R/IL). Amends the Lacey Act, to add certain species of carp (black, bighead, silver and largescale silver) to the list of injurious species that are prohibited from being imported or shipped.

H. R. 260. Ehlers (R/MI). Establishes marine and freshwater research, development, and demonstration programs to support efforts to prevent, control, and eradicate invasive species, as well as to educate citizens and stakeholders and restore ecosystems.

H. R. 767. Kind (D/WI) and 12 Co-Sponsors. Protects, conserves, and restores native fish, wildlife, and their natural habitats at national wildlife refuges through cooperative, incentive-based grants to control, mitigate, and eradicate harmful nonnative species, and for other purposes.

H. R. 801. Kirk (R/IL) and 20 Co-Sponsors. Amends NANPCA to require application to all vessels equipped with ballast water tanks the requirement to carry out exchange of ballast water or alternative ballast water management methods prior to entry into any port within the Great Lakes, and for other purposes.

H.R. 889. Miller (R/MI). Amends the NANPCA to establish vessel ballast water management requirements, and for other purposes.

H. R. 2423. LaTourette (R/OH) and 4 Co-Sponsors. Provides for the management

and treatment of ballast water to prevent the introduction of nonindigenous aquatic species into coastal and inland waters of the U.S., and for other purposes.

Public Lands

H. R. 1463. Udall (D/CO) and Trancredo (R/CO). Provides for restoration activities on Federal lands under the jurisdiction of the Interior or Agriculture Depts, and for other purposes.

H. R. 1484. Tancredo (R/CO) and Udall (D/CO). Provides consistent enforcement authority to federal agencies (BLM, NPS, FWS and FS) to respond to violations of regulations regarding the management, use, and protection of public lands under their jurisdiction, and for other purposes.

Water Resources

S. 564. Feingold (D/WI) and McCain (R/AZ). Modernizes water resources planning, and for other purposes.

S. 752. Nelson (D/NE) and 3 Co-Sponsors and **H. R. 1462.** Udall (D/CO) and 4 Co-Sponsors. Authorizes the Secretary of the Interior to participate in the implementation of the Platte River Recovery Implementation Program for Endangered Species in the Central and Lower Platte River Basin and to modify the Pathfinder Dam and Reservoir.

S. 1116. Salazar (D/CO) and 3 Co-Sponsors. Facilitates the use for irrigation and other purposes water produced in connection with development of energy resources.

S. 1248. Boxer (D/CA) and **H. R. 1495.** Oberstar (D/MN) and Johnson (R/TX). Provides for the conservation 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.

H. R. 68. McIntyre (D/NC). Amends the Water Resources Development Act of 1976 to allow the Secretary of the Army to extend the period during which beach nourishment for water resources development projects may be provided.

H. R. 135. Linder (R/GA) and 5 Co-Sponsors. Establishes the 21st Century Water Commission to study and develop recommendations for a comprehensive water strategy to address future water needs.

H. R. 307. 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. 574. Whitfield (R/KY). Ensures the safety of residents and visitors to Lake Barkley, KY, improves recreation, navigation, and the economic vitality of the lake's region, and establishes a pilot program to maintain its pool elevation at 359 feet until after the first Monday in September.

H. R. 591. Musgrave (R/CO). Amends the Cache La Poudre River Corridor Act to designate a new management entity, make certain technical and conforming amendments, enhance private property protections, and for other purposes.

H. R. 1180. 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.

H. R. 2277. Lamborn (R/CO) and Tancredo (R/CO) and **H.R. 1833.** Salazar (D/CO). Authorizes the Secretary of the Interior to conduct a feasibility study relating to long-term water needs for the area served by the Fryingpan-Arkansas Project, CO, and for other purposes.

Source: http://www.gpoaccess.gov/bills/index.html; and http://thomas.loc.gov/cgi-bin/thomas

River Crossings

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