River Crossings

Volume 16 **May/June 2007** **Number 3**

America's Most Endangered Rivers of 2007

"Endangered rivers this year face a dizzying array of threats from sewage pollution, proposals for unnecessary dams, power lines to highways but all have one thing in common. "These are rivers at a crossroads," said Rebecca Wodder, president of *American Rivers*. "This is a make or break year for all ten rivers on the list." But the Most Endangered River for 2007 is missing its most important ingredient — water! The once once-thriving Santa Fe River has become a dry, weed-choked ditch most of the year.

Two rivers on this year's list are located in the Mississippi River Basin. They are the Iowa River **(3)**, a tributary to the Mississippi River in eastern Iowa, and Lee Creek **(9)**, flowing from Northwest Arkansas into Oklahoma. A brief summary of the conditions of all ten rivers follows:

1) Santa Fe River (New Mexico): Spring runoff in the Santa Fe River this year is giving residents a taste of what it used to be like to have a living river in the heart of their city, and what it could be like again. Much of the year, the Santa Fe suffers from the biggest threat any river could face — a complete lack of water. While Santa Fe Mayor David Coss has promoted a visionary plan to restore water to the river, the city still has not taken important steps to make that vision a reality. Until that happens, the Santa Fe River spends most of the year as a dry, weed-choked ditch.

2) San Mateo Creek (California): Natural treasures should be enjoyed, not buried under millions of tons of concrete. While that might seem like common sense, it apparently isn't to California's Transportation Corridor Agencies (TCA), which are

View of the Iowa River.

bulldozing ahead with plans to build the new Foothill Transportation Corridor South (FTC-South) right over the San Mateo Creek. The road will wreck a long section of the creek, cut off access to more than half of California's fifth most popular state park, and could doom the world-famous surf at Trestles beach. All this for a road that experts agree is unlikely to do anything to alleviate traffic problems in Southern Orange County.

3) Iowa River (Iowa): Iowans are proud of their state's high rankings for education and livability compared to other states, but on a crucial aspect of the Clean Water Act the state lags far behind the rest of the nation. Iowa has failed to adopt adequate clean water rules thirty years after passage of the Act that set a baseline to keep water quality from getting worse. If this baseline isn't enforced, the state will continue to issue permits that allow increased pollution in the Iowa and other rivers that are faced with a growing load of sewage from both humans and livestock.

4) Upper Delaware River (New York): The Wild and Scenic Upper Delaware River is the economic engine that drives a strong tourism-based economy in upstate New York, but that engine is threatened by a huge, proposed power line that would slash through 73 miles of the river corridor.

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Leaders from across the region have united in opposition to the plan, which would mean massive clear cutting, ongoing herbicide use and seizing property from landowners by eminent domain.

5) White Salmon River (Washington): For almost a century, Condit Dam in Washington State has cut off salmon and steelhead from an important Columbia River tributary. With the facility producing only a small amount of power, dam owner *PacificCorp* has agreed to remove it, but the Federal Energy Regulatory Commission (FERC) has yet to approve the deal.

6) Neches River (Texas): One of the last wild rivers in Texas is facing destruction at the hands of state lawmakers, the city of Dallas, and a Texas state agency that are poised to erase millions of dollars in economic activity, a hunting heritage that stretches back generations, and Texas' newest wildlife refuge. If these lawmakers get their way, a dam could soon choke the Neches River under the Fastrill Reservoir, for a dam that is completely unnecessary.

7) Kinnickinnic River (Wisconsin): The Kinnickinnic River gathers up a heavy load of problems (pollution, sedimentation and low flows) as it flows through the heart of Milwaukee. But none is more pressing than the accumulation of toxic sediments that are choking the river and flowing out into Lake Michigan.

8) Neuse River (North Carolina): As rivers go, North Carolina's Neuse is a tough one. But with more than a million people and two million hogs and woefully inadequate sewage treatment in place for both in the Neuse Basin, it is a river in deep trouble. More than a million new residents are expected to move into the area in the next two decades. This exploding growth will push the Neuse past the breaking point unless the state seizes the opportunity this year to control existing sewage pollution in the river and prevent new arrivals from adding to the problem.

9) Lee Creek (Arkansas, Oklahoma): One of Arkansas' great natural treasures is facing the prospect of drowning, and one in every six of the state's rivers could be at risk along with it. Lee Creek is a picturesque vacation destination for thousands of people every year and an economic engine for local economies all across Northwest Arkansas. A local water district is trying to trade all of that away for an unnecessary dam that will not only destroy the creek, but will open many of Arkansas' most treasured rivers and streams to similar obliteration.

10 Chuitna River (Alaska): Insatiable demand for coal throughout Asia has driven demand into some unlikely places, even into the headwaters of Alaska's pristine Chuitna River. Even in a state known for wild salmon and wild country, the Chuitna is special, producing some of Alaska's largest king salmon. A massive, proposed coal mine threatens the Chuitna, with plans to dump millions of gallons of mine waste a day into the river's tributaries and wreck more than 30 square miles of the river's headwaters.

Each year, *American Rivers* solicits nominations from thousands of river groups, environmental organizations, outdoor clubs, local governments, and taxpayer watchdogs for the *America's Most Endangered Rivers* report. The report highlights the rivers facing the most uncertain futures rather than those suffering from the worst chronic problems.

The report presents alternatives to proposals that would damage rivers, identifies those who make the crucial decisions, and points out opportunities for the public to take action on behalf of each listed river. More information on the *Ten Most Endangered Rivers of 2007* can be found online at: http://www.americanrivers.org/site/PageServer?pagename=AR7_MER2007

Source: *American Rivers Press Release*, 4/17/07

Saving the Mississippi River Delta

Rivaling the Everglades restoration both in cost and size, a $50 billion project under development by Louisiana authorities would reroute the Mississippi River to prevent the state's land from eroding away. The state loses about 24 square

River Crossings

Published by

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

River Crossings is a mechanism for communication, information transfer, and coordination between agencies, groups and persons responsible for and/or interested in preserving and protecting the aquatic resources of the Mississippi River Drainage Basin through improved communication and management. Information provided by the newsletter, or opinions expressed in it by contributing authors are provided in the spirit of "open communication", and do not necessarily reflect the position of MICRA or any of its member States or Entities. Any comments related to "River Crossings" should be directed to the MICRA Chairman.

miles per year due to river erosion. Rather than let all that material wash into the Gulf of Mexico, state authorities want to provide flood protection and at the same time reclaim the sediment from the river.

The plan would allow the river to flow out of its levees in more than a dozen places in the state, creating several new waterways that would carry river sediments to eroding coastal areas. In addition to mechanically pumping sand to rebuild marshes and islands, the plan also calls for hundreds of miles of new or reconstructed levees to add to flood protection. The plan would have to be approved by the state Legislature before facing the more arduous task of getting federal approval and funds, but planners say the project is needed.

"This will be one of the great engineering challenges of the 21st century — on the order of the Channel Tunnel or the Three Gorges Dam," said Denise J. Reed, a scientist at the University of New Orleans, "What is obvious to everyone is that something has to be done".

Source: Peter Whoriskey, *Washington Post*, 5/1/07; and *Greenwire*, 5/1/07

Wolf Creek Dam and Lake Cumberland Problems

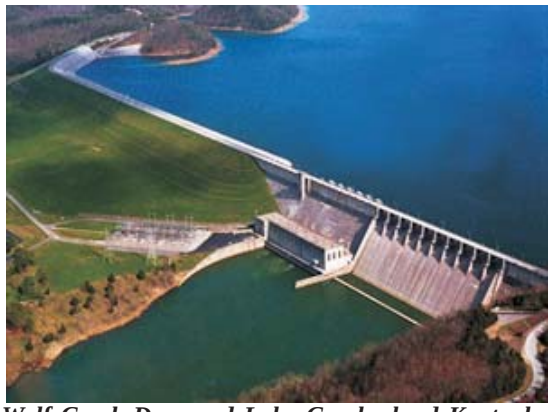
The U.S. Army, Corps of Engineers (Corps) in January announced that it would draw water levels at Kentucky's Lake Cumberland down about 40 feet below normal summer pool elevation to relieve pressure on the dam and reduce the consequences of a breach on downstream communities, including Burkesville and Nashville, TN. Water seepage in the dam has placed the structure at risk of failure.

Lake Cumberland, created by the Wolf Creek Dam, is located in south central Kentucky and impounds 6,089,000 acre-feet at its maximum pool elevation of 760 feet above mean sea level (msl). It is the largest reservoir east of the Mississippi and the ninth largest in the U.S. U.S. Highway 127 crosses the top of the dam, and the Corps' worst-case scenarios of dam failure projects $3 billion in damage, much of it in Nashville, with potential loss of life. The 5,736 foot-long dam is a combination rolled earth fill and concrete gravity structure. It has a maximum height of 258 feet above founding level.

In late 1967 and early 1968 muddy flows in the river were observed near the tailrace retaining wall, and in March and April 1968, two sinkholes developed upstream of the switchyard at the toe of the earthen embankment. Investigations indicated that the problems were due to the karst geology of the site characterized by an extensive interconnected network of solution channels in the limestone foundation. Piping of filling materials in these features and collapse of overburden and embankment into the voids caused the problems.

Investigations further revealed that high reservoir pressures existed near the downstream toe of the dam and that the most likely path of the reservoir pressures was through an upstream-downstream oriented solution channel system in the bedrock. Over a five-year period, 290,000 cubic feet of grout was placed in the foundation of the embankment to a depth of Elevation 500 msl in the bedrock, and powerhouse discharges were regulated to prevent large tailwater fluctuations for a period of eight months to stop the piping and restore the integrity of the structure.

But grouting was not considered a long-term fix and a more permanent solution was sought. After studying numerous alternatives, the District chose to construct a concrete diaphragm wall through the earthen embankment into the rock foundation to block the seepage. This wall was constructed between 1975 and 1979. But monitoring of the Project by Corps personnel indicates that persistent and increasing wet areas persist, and investigative borings have encountered soft, wet material at depth in the embankment confirming that solution features still exist that have not been cut off. While the original wall interrupted the progression of erosion, seepage has since found new paths under and around the wall and perhaps through defects in the wall itself as erosion of solution features continues.



Wolf Creek Dam and Lake Cumberland Kentucky.

To address the seepage problems, the District has prepared a Major Rehabilitation Report evaluating several alternatives to improve the long-term reliability of the dam. From this analysis, the recommended alternative, is to construct a new concrete diaphragm wall using newer technology that will reinforce the purpose of the original wall. This new wall will run 1,650 feet beyond the existing wall, and be constructed to a depth which is deeper than the deepest sections of the original wall and as much as 75 feet deeper than the majority of the original wall. The cost is estimated at $309 million and is scheduled for completion by 2014.

Meanwhile, the Corps has posted maps on its Web site showing how people who live downstream from the Wolf Creek Dam would be affected by flooding in the event of a breach. As recently as March, Corps officials refused to make electronic versions of the maps public, citing terrorism fears, after initially saying they would do so. But Corps spokesman Bill Peoples said in mid April that the agency, after a thorough review, decided to make an exception to its policy of not allowing widespread distribution of the maps because the dam is considered at a high risk for failure. "We look at this as a special circumstance," he said. "It's always a balancing act between the security concerns we have as an agency … and what the public needs to know. "We still have security concerns."

The Project was authorized as a part of the comprehensive plan for development of the Cumberland River Basin under the Flood Control Act of 1938 (Public Law 761, 75th Congress, 3rd Session) and the River Harbor Act of 1946 (Public Law 525, 79th Congress, 2nd Session). Designed and constructed during the period 1938-1952, it provides hydropower, flood control, water supply, and water quality benefits for the Cumberland River system and surrounding region.

Wolf Creek Dam, along with Dale Hollow Dam, Center Hill Dam and J. Percy Priest Dam, provide water to enhance navigation on the mainstem

of the Cumberland River from Celina, TN, to the Ohio River.

Sources: James Bruggers, *The Louisville Courier-Journal*, 4/17/07, *Greenwire*, 4/18/07; and http://www.lrn.usace.army.mil/WolfCreek/seepage.htm

Klamath River Dam Removal Would Save $114M

Deconstructing and removing the four hydroelectric dams on the Klamath River would be more cost effective than trying to keep them operational, saving $114 million in long-term expenses, the California Energy Commission (CEC) said in a report released in late March. Decommissioning the dams and building new power plants would cost between $152 million and $277 million over 30 years. Relicensing the dams under rules that require the installation of fish ladders and other environmental measures would cost between $230 million and $470 million in 2005 dollars.

In March 2006, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service demanded a change in Klamath management because salmon runs had plummeted. The Klamath was once the third-most productive salmon river in the country, but now its coho salmon are listed as endangered and chinook are at record lows.

PacifiCorp, the Oregon-based utility that owns four hydroelectric dams, told the Federal Energy Regulatory Commission that the Interior Department and CEC study is flawed. The utility said that the financial assessment of upgrade versus removal of the dams fails to take into account the effects on the river and the purchase of energy to make up for the dams' loss. But CEC's John Geesman said that the new analysis, which used *PacifiCorp's* numbers, "clearly indicates" that the utility's electrical customers would save money with dam removal.

Meanwhile, an environmental group filed suit against the California Department of Fish and Game (CDFG) and *PacifiCorp* in late March over discharges from a fish hatchery on the Klamath River that is allegedly violating the Clean Water Act. In a suit filed in the U.S. District Court in Sacramento, *Klamath Riverkeeper* said that fish parts, excrement and food released from the hatchery at the Iron Gate Dam near the Oregon border are causing toxic algae blooms that are killing the Klamath's salmon population. The dam is operated by CDFG and owned by *PacifiCorp*.

Riverkeeper said the CDFG is also releasing drugs given to the hatchery's fish into the Klamath, which violates California water regulations. *PacifiCorp* spokesman Dave Kvamme said the suit was based on a misunderstanding created by a CDFG report that used the wrong unit of measurement, giving the impression that the hatchery was releasing too much waste. He said CDFG corrected the mistake. *Riverkeeper* said the suit is intended to increase pressure on *PacifiCorp* to remove the hydroelectric dams on the Klamath.

Source: Eric Bailey, *Los Angeles Times*, March 27; Marcus Wohlsen, AP/*San Francisco Chronicle* online, 3/27/07; and *Greenwire*, 3/13, 3/27 and 3/28/07

Bighorn/Powder/Tongue River Water Wars

Montana's governor and congressional delegation say a federal plan to scale back flows along the lower Big Horn River reneges on earlier pledges to keep water levels high enough for the river's renowned trout fishery. Wyoming officials, on the other hand, like the federal plan the way it is. Montana officials made a joint appeal to Bureau of Reclamation Commissioner (BOR) Robert Johnson to increase water flows to 2,000 cubic feet per second (cfs) by May. That's considered the minimal amount of water needed for a healthy trout spawn. BOR officials said in late March they could meet that level.

"The subsequent announcement on April 9 to set flows at only 1,500 cfs came as a complete surprise and demonstrated a disregard for traditional federal agency-state channels of communication," the Montana officials wrote in a letter to Johnson. The letter said the plan to wait until June to increase the amount of water released into the river from Yellowtail Dam could kill off "trout in one of the nation's premier trout streams" and have "a devastating effect on the local economy."

The Big Horn River flows from Wyoming into Montana, and the two states have quarreled over it repeatedly in recent years. The united front offered by the Montana officials signals the political stakes in that fight continue to rise. The letter was signed by Sen. Max Baucus (D), Sen. Jon Tester (D), Rep. Denny Rehberg (R) and Gov. Brian Schweitzer (D).

But the BOR plan was welcomed by Wyoming officials, who want more water retained behind Yellowtail Dam to boost local tourism. Bighorn Lake National Recreation Area, which straddles the border, has struggled to attract visitors in recent years as the upper reaches of the lake in Wyoming stayed dry. "Wyoming has simply asked the BOR to consider the facts and the underlying law surrounding the operation of Yellowtail Reservoir and Bighorn Lake National Recreation Area," Gov. Dave Freudenthal said. "What is evident is that Montana has been bending both for 30 years," he added.

U.S. Sen. Craig Thomas (R/WY) earlier objected to Baucus' plan to introduce a bill to "mandate" Big Horn River flows. Thomas said that approach made no sense when everyone is dealing with drought conditions. Thomas still believes the states need to work together to come up with a solution that works for everybody, Thomas' press secretary, Cameron Hardy said. "One of the sticking points is we have to have enough rain for it not to be an issue," he added. In pushing back the spring flow, the BOR earlier cited below-average winter snowfall and the need "to be conservative" as the region continues to suffer a drought. But the about-face caught by surprise Montana officials, who had spent months pressing agency officials to give precedence to the downstream trout fishery. "We do not accept the latest decision by the BOR as final," they declared in the letter to Johnson.

Meanwhile on the Powder and Tongue rivers, court papers filed in late March by Wyoming Attorney General Pat Crank

asked the U.S. Supreme Court to reject claims that his state is depleting the two rivers at the expense of downstream Montana farmers. A lawsuit filed in January by Montana Attorney General Mike McGrath asserts that Wyoming farmers and coalbed methane (CBM) developers consume more than their fair share of water from the two rivers in violation of a 1950 interstate water compact. The Powder and Tongue rivers flow from northeast Wyoming into southeast Montana before draining into the Yellowstone River in Montana. Heavy snowfall in late March was expected to provide short-term relief but not solve the states' fundamental disagreement over the rivers.

In a brief submitted to justices as they weigh whether to accept the case, Crank and his staff wrote that Montana had offered no evidence to prove it has been shortchanged. "Montana's claims lack sufficient seriousness or dignity to justify this Court's exercise of its original jurisdiction," they wrote. "Had Montana gathered the facts before prematurely filing this suit, it would have discovered that it has no factual or legal basis for its claims." The court filings also said several of Montana's claims were not covered by the 1950 agreement. In particular, Wyoming says water pumped from underground aquifers for irrigation or during CBM drilling is not covered by the compact. Montana contends such uses should be counted against Wyoming's share of the water.

The 1950 Yellowstone River Compact said disagreements between the states that cannot be settled by an interstate commission would go straight to the Supreme Court. The *Yellowstone River Compact Commission* declined to act when Montana complained about allocations from the Tongue and Powder rivers in 2004 and again last year. McGrath said he and his staff were analyzing Wyoming's response and will prepare a reply. "We think we made a good case and we're confident the U.S. Supreme court will accept jurisdiction," he said. "They owe us more water in both the Tongue and the Powder."

North Dakota, another signatory to the Yellowstone Compact, also is named as a defendant in the case. But Montana officials have said they have no gripe with their eastern neighbor and included it in the lawsuit only as a formality.

Sources: *Casper Star Tribune*, 4/20/07; Matthew Brown, *AP/Billings Gazette*, 3/31/07; and *Greenwire*, 4/3 4/23/07

Coalbed Methane Issues

U.S. Environmental Protection Agency (EPA) regulators have warned Montana Gov. Brian Schweitzer of possible Clean Water Act (CWA) violations in a proposed legislative measure that would allow for storage of coalbed methane (CBM) water in hundreds of small reservoirs used by livestock and wildlife. The bill would give companies a way to dispose of some of the billions of gallons of poor-quality water produced during CBM production, while giving southeast Montana ranchers, desperate for water after years of drought, use of the reservoirs to water their cattle or to benefit wildlife.

But the water pumped from underground aquifers by companies trying to access the methane, or natural gas, found in coal seams contains high amounts of sodium and other salts that can kill crops and damage soil if it is used to irrigate land. The water is, however, considered generally acceptable for animals, which have a higher salt tolerance.

Montana law restricts the pumping of CBM water into streams, rivers and the channels that drain into them. But Senate Bill 407, sponsored by Keith Bales, R/Otter, would strip some of those restrictions from farm and ranch "impoundments" — small reservoirs often used as stock ponds. But because water from impoundments can seep into other water bodies or overflow after heavy rain or snow, officials from the EPA say the measure could lead to violations of the federal CWA, and the EPA can override Bales' proposal if it does not meet provisions of the act.

"EPA is very reluctant to become involved with the actions of a state's legislature," Kerrigan Clough, the agency's deputy administrator for the Rocky Mountain region, wrote in a recent letter to Gov. Schweitzer. "However, this pending legislation potentially raises concerns about whether important parts of the state's environmental programs would meet federal requirements if the proposed legislation were to become law."

CBM development in Montana has been sharply limited in recent years because of court challenges from a conservation group, the *Northern Plains Resource Council* (NPRC). That is expected to change once the federal Bureau of Land Management completes a study that recommends allowing more than 18,000 CBM wells in southeast Montana over the next 20 years. A single well can produce more than 23,000 gallons of water per day, according to one Montana Department of Environmental Quality (DEQ) study.

Bales said that for some ranchers, such a bountiful water source could alleviate years of drought, and that a similar program has been used for years in neighboring Wyoming. "This is not about the CBM companies, this is about ranchers trying to water their cows," Rep. Lew Jones, (R), said. But Mark Fix, chairman of the NPRC and a farmer along the Tongue River, downstream from the CBM industry's initial drilling in Montana, said the risk outweighed any benefits. He said stock ponds easily can overflow or seep into streambeds farmers rely on for irrigation. "These ponds are going to overflow someday and it's going to get down into the river and harm our irrigated ground. It's just a matter of time," he said.

There are about 4,600 small reservoirs in southeast Montana, according to the DEQ. Up to 10% annually would meet the criteria outlined in Bales' bill. Judy Wong, the EPA's regional director for water quality, said her staff is in discussions with the state and has not decided if it would block the program proposed in Bales bill. Schweitzer spokeswoman Sarah Elliot said the governor's office is awaiting final action by the Legislature before deciding on a possible veto. But DEQ Director Richard Opper said if the EPA's concerns are not satisfied, "he may be forced to veto it." Opper said his agency had stayed out of the Legislature's deliberations on the bill out of sympathy for ranchers hard hit by years of below-average rainfall.

Meanwhile in Wyoming, Gov. Dave Freudenthal in late April rejected rule changes adopted by his state's Environmental Quality Council (EQC) that would have regulated effects of the quantity of CBM water on soil, vegetation and landowners. Freudenthal said the EQC exceeded its authority in adopting the rules. The governor must approve any rule changes by the council for them to

become law. "I believe these proposed rules reach beyond the statutory authority of the Environmental Quality Act and invite the Department of Environmental Quality (DEQ) to regulate water quantity discharge, not as a coincidence of achieving a water quality result, but as a simple matter of reducing the amount of discharge for its own sake," the governor said in a letter to council chairman Richard Moore.

Some Wyoming landowners find the CBM water beneficial for irrigating crops or watering livestock. But others complain that the water damages their land either because there is too much or because of salt and other chemicals in it. The proposed rule changes were sought by the *Powder River Basin Resource Council*, a Sheridan-based advocacy group. The group issued a statement saying Freudenthal's decision "thwarts a thoughtful and considered effort by Powder River Basin landowners and the state's EQC to address a growing problem in the basin." "The governor says this was the wrong route to take, but he refuses to suggest an alternative - to even get started," said Bob LeResche, a landowner in Clearmont and chairman of the group's board. "We need leadership from the top on this issue, but the governor once again simply refuses to provide it."

But representatives of the *Petroleum Association of Wyoming*, said the rules could slow CBM development in the state by imposing cumbersome paperwork on the industry and landowners. Currently the state DEQ allows CBM operators to discharge water under the assumption that the water is put to some beneficial use. But the rule change approved by the EQC would have required operators to get landowners to say the water is a benefit to them or prove by "representative and valid data" that the water is benefiting agriculture or wildlife. Operators also would have to show that the quantity of water didn't affect its quality. Some opponents feared the proposed rules would all but shut down a CBM industry that has proved lucrative to industry and Wyoming coffers, while supporters argued that the rules shouldn't slow down the speed of issuing drilling permits.

Freudenthal said state Attorney General Pat Crank issued an opinion last year that said the state DEQ lacked the authority to regulate water quantity in Wyoming. "The attorney general opined on April 12, 2006, correctly in my view, that DEQ could only concern itself with water quantity when it had an effect on quality," the governor said. "DEQ has always concerned itself with those issues, but that is clearly not the same as saying they have broad authority to regulate quantities and usage of discharged water." Freudenthal also questioned whether the council followed proper administrative procedures in adopting the rules.

LeResche said it was unclear what landowners seeking the rule changes will do next. "I guess that's up to the governor," LeResche said. "... This problem is only going to get more and more out of control."

Source: Matthew Brown, *AP/Billings Gazette*, 4/20/07 and *AP/Billings Gazette*, 4/24/07

Federal Judge Shuts Out Irrigators' Property Rights Claims

Property rights advocates, farmers and water districts in the West who have been seeking federal payouts for the diversion of scarce irrigation water for endangered species have less legal ground to stand on after a recent court ruling that may change the legal precedent on the issue. An early April ruling from the U.S. Court of Federal Claims said that a water district in California cannot argue that it was an automatic takings of its property when the government forced it to divert part of its water for the endangered steelhead trout. The decision from Judge John Weise said the plaintiffs seeking compensation could not rely on the arguments from a previous case, in which he had ruled in favor of a group of California irrigators.

That decision two years ago from Weise had stood out among case law as the only success in several legal attempts of irrigators to get federal compensation. "It will make future takings claims in water much harder, at least in claims court," said John Leshy, a professor at the University of California Hastings College of Law. The previous case, which led to a $16.7 million payout, had "been hanging over the whole area of the law," said John Echeverria, executive director of the *Georgetown Environmental Law & Policy Institute*. But he said last week's decision essentially takes any wind out of its sails. Echeverria filed an amicus brief in the case for the *Natural Resources Defense Council* that argued against the payouts.

Roger Marzulla, the attorney who represented the plaintiffs in both cases, said it would make things more difficult for property rights advocates, but he said he would not go so far as to say the ruling negated the previous decision, since Weise did not specifically overrule that case. He said his clients are considering an appeal. In the previous case, Weise had ruled that the government should pay water users in Tulare County, CA, for water diversions to help winter-run chinook salmon and delta smelt in the early 1990s. Weise said that just as the government pays property owners if they take land to build a school, it should pay water districts if it takes their water — even if it was to comply with another law.

The government chose not to appeal that case and handed $16.7 million to the water districts, spurring a "mini-boomlet" of similar claims, including the Casitas case, Echeverria said. In the lawsuit from the Casitas Municipal Water District currently before the court, the government argued that water diversions are different than taking property for a school or a road. The federal government argued it should not have to pay to use the water, since it was a "regulatory" taking to comply with the Endangered Species Act, not a physical taking of property.

Even though Weise had rejected that argument in the Tulare County case, he accepted it in the Casitas ruling, saying that he would have to take into account a 2002 Supreme Court ruling that allowed Lake Tahoe to ban development in some areas without having to compensate the landowners. "That case compels us to respect the distinction between a government takeover of property (either by physical invasion or directing the property's use to its own needs) and government's resistants on an owner's use of that property," Weise wrote in his 10-page decision. Weise said there is a legal distinction between regulatory takings and property takings, "although from a property owner's standpoint there may be no practical difference between the two."

This ruling was the second blow in 10 days to property rights advocates seeking payouts. Earlier a separate federal claims court rejected Klamath Basin irrigators'

effort to secure federal payment for losses they sustained during a 2001 water diversion for endangered salmon.

Source: Allison Winter, *Greenwire*, 4/4/07

KY/WV Mining Lawsuit

Facing an estimated $2.4 billion in threatened fines, *Massey Energy Co.* in mid May downplayed the environmental harm done by thousands of alleged U.S. Clean Water Act (CWA) violations at its West Virginia and Kentucky coal operations. *Massey*, the nation's fourth-largest coal producer, also predicted no major effect to its bottom line from a lawsuit filed by federal prosecutors against the company and 27 subsidiaries.

But analysts warned investors otherwise. Citing the $2.4 billion figure as the "worst case" for *Massey*, analyst Daniel W. Scott at *Banc of America Securities* coupled the lawsuit with a federal judge's recent rulings blocking key permits at four *Massey* mines in West Virginia. Filed on behalf of the U.S. Environmental Protection Agency, the lawsuit alleges *Massey* operations have illegally poured pollutants into West Virginia and Kentucky waterways about 4,633 times within the last six years. These discharges in excess of average monthly or maximum daily permit limits equal about 69,071 days worth of violations of the CWA, federal prosecutors contend.

The lawsuit threatens seven *Massey* subsidiaries with fines of $27,500 for each day in violation before March 15, 2004, and of $32,500 for each day afterward. *Massey* President, CEO and Chairman Don Blankenship said his company strives to comply with all federal and state regulations. "For the permits in question, the Company believes it achieved a compliance rate of 99% or better," *Massey* said in a statement. "Importantly, the vast majority of incidents at issue had little or no impact on water quality."

The company also said that "EPA has suggested that *Massey Energy* is part of a wider enforcement effort across the industry." "The federal government is dedicated to enforcing the laws on the books, including the Clean Water Act," U.S. Justice Department spokesman Andrew Ames said. Three of the four prosecutors assigned to the case are lawyers from the department's Environment & Natural Resources Division in Washington, D.C.

The lawsuit follows the levying of $1.5 million in fines against *Massey* by the U.S. Mine Safety and Health Administration. Those penalties are for 25 violations stemming from a fire at the company's *Aracoma Alma No. 1 Mine* that killed two miners. The January 2006 fire remains the subject of a federal criminal probe. West Virginia regulators have fined the company $70,000 over *Aracoma* violations, while the miners' widows have sued *Massey*, several subsidiaries and Blankenship.

Sources: *AP/Charleston Gazette*, 5/15/07 and *Greenwire*, 5/15/07

Judge blocks WV Mountaintop Removal Permits

A federal judge blocked four permits for mountaintop removal coal mines in West Virginia in late March, ruling that the U.S. Army Corps of Engineers (Corps) did not properly assess the potential impact on stream loss. In a ruling that "could force much tougher regulation of West Virginia's coal industry," Judge Robert Chambers of the U.S. District Court for the Southern District of West Virginia ruled that the Corps needs to study mountaintop mining proposals more carefully. Chambers cited the failure to measure the ecological loss of burying headwaters streams with mountaintop debris.

"The Corps has evaluated the physical structure of the streams and partially considered impacts to those streams as habitat, but has given no more than lip service to the other attributes of headwaters that must be considered in assessing the structure and function of a stream," he wrote. The permits, issued to subsidiaries of *Massey Energy Co.*, would have allowed the stripping of about 3,800 acres of land and the burial of more than 12 miles of streams, according to court records.

Mountaintop Removal in Tennessee.

The ruling upholds two other decisions regulating mountaintop removal in West Virginia, which were overturned by the 4th U.S. Circuit Court of Appeals. The latest decision is a follow-up to an overturned ruling that blocked the Corps from streamlining the permitting process for valley fill proposals. The appeals court vacated a 2004 decision, in which Judge Joseph Goodwin of the U.S. District Court in Charleston blocked the Corps from granting any new permits for mountaintop coal mines. Goodwin's decision specifically looked at the Corps' practice of approving valley fill waste piles through a Clean Water Act authorization. Goodwin said the agency never concluded that such fills did not cause more than minimal environmental harm.

The late March ruling found that a more detailed "individual permit" review was still too cursory, and that the Corps needed to conduct "a full assessment of the streams' ecological functions" before concluding that damage would be minimal or feasibly mitigated. "The scientific community is skeptical of the likelihood that important headwater stream functions will actually be achieved in manmade streams," Chambers wrote. "The court finds that the Corps has too little experience to support its faith in stream creation as an acceptable means of compensatory mitigation."

Plaintiffs *Ohio Valley Environmental Coalition*, *Coal River Mountain Watch* and *West Virginia Highlands Conservancy* said the decision was a major victory, although Chambers stopped short of ordering an environmental impact study to be conducted on every mountaintop removal permit application. "The evidence to date shows that the Corps has no scientific basis — no real evidence of any kind — upon which it bases its decisions to permit this permanent destruction to streams and headwaters," said Steve Roady, a lawyer with *Earthjustice*, which represented the plaintiffs. *Massey Energy* and *West Virginia Coal Association*, a supporter of the defendants, had no comment.

Sources: Pam Ramsey, AP/*San Francisco Chronicle* online, 3/23/07; Ken Ward, Jr.,

Charleston (WV) *Gazette*, 3/24/07; and *Greenwire*, 3/26/07

TNC and IBM Cooperate on Major River Model

In an unusual effort to marry technology and large-scale conservation goals, The Nature Conservancy (TNC) has developed a partnership with International Business Machines Corp. (IBM) to model and create visual representations of the Parana-Paraguay River System, South America's second-largest river basin after the Amazon. TNC began the *Great Rivers Partnership* in 2005 to help protect freshwater resources and transform the way large river systems are preserved and protected. In addition to the Parana-Paraguay River Basin in Brazil, the program is pushing conservation efforts of the Yangtze River in China, the Zambezi River in Africa and the Mississippi River.

Steven McCormick, president of TNC, said that while the group traditionally acquires land to promote species diversity and the preservation of natural landscapes, upstream activity directly affects lower areas of a river, and "it's unrealistic to acquire river basins." As a result, the group increasingly tries to work with governments and private developers to mitigate impact.

Mr. McCormick said accurate models of rivers allowing visualization are important because even small changes can help or hurt local conditions. The IBM involvement developed through IBM director James W. Owens, chairman and chief executive of *Caterpillar Inc.*, which contributed $12 million to start the Great Rivers program in 2005, McCormick said. But the organizations declined to put a total value on IBM's contribution. Sharon Nune, vice president at IBM, said that to create the visual models, programmers will correlate existing histories of river levels and rainfall with underground water-table information and map data on deforestation.

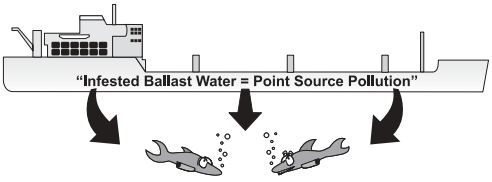
Joao Campari, director of the TNC program in Brazil, said that the greatest value of the visualization capability will be in helping to show politicians the impact of their regulations on development. He said he expects that IBM's visualization specialists will be able to provide an experience "as if you're diving in the river" and show the increased level of silt that will occur if trees are cut along a particular riverbank. McCormick says developing the models on IBM's high-performance super-computers "comes with real credibility for decision makers."

Meanwhile, IBM itself has been accused of polluting underground water supplies in its manufacturing center in Endicott, NY The company acknowledged one chemical spill there in 1979, and it has spent tens of millions of dollars since to pump and clean underground water to keep chemicals from polluting town wells.

Source: William M. Bulkeley, *The Wall Street Journal*, 4/25/07

Oceangoing Vessel Ban Considered for the Great Lakes

A nonpartisan group of Michigan politicians said in April that they are open to the idea of banning oceangoing vessels that are dumping invasive species in the Great Lakes. *Great Lakes United* cited the damage to native fisheries and beaches and the costs to water-dependent industries as primary reasons for a moratorium on oceangoing vessels. But in order for a ban to take effect, the U.S. would have to coordinate with Canada. "Three years ago, I'd have said, 'That's a little radical.' Now it's probably more realistic," says Michigan state Sen. Patty Birkholz (R). Michigan passed a law restricting contaminated discharges in 2005. The law was supposed to go into effect this year, but the state gave the oceangoing ships a grace period, provided they give the state a sample of the ballast they dump into its waters. The shippers responded by suing the state in March in order to block the new law.



Meanwhile, Rep. Jim Oberstar (D/MN) is trying to push a federal ballast law in the House and Transportation Infrastructure Committee that he chairs, although that legislation stops short of an outright ban. Supporters of the ban say the Great Lakes' most valuable industry is not overseas shipping, and a draft study by the U.S. Army Corps of Engineers (Corps) backs them up. The Corps' study shows that recreational boats were economically much more important to the region, generating $5.5 billion in business revenue every year. Commercial navigation on the other hand generates about $3.4 billion in business revenue per year for the U.S., and oceangoing vessels account for only about 7% of commercial navigation on the Great Lakes.

The report says the eight Great Lakes states are home to 4.3 million private boats, about a third of the U.S. total. And nearly a quarter of those boats are owned by individuals who live in counties along the Great Lakes shoreline, and the average owner spends about $3,600 per year on boating. Yet commercial navigation clearly remains the Corps' priority. Just a few years ago, the Corps even suggested looking at a $10 billion expansion of the St. Lawrence Seaway (gateway for oceangoing vessels entering the Great Lakes) to accommodate bigger vessels. But the agency backed off after a public outcry, and it is now in the process of analyzing what it will take to keep the aging Seaway open. The original system of locks and channels, which are crumbling in places, originally cost $3 billion in today's dollars, not to mention the costs of dredging and maintaining channels and harbors in ports across the Great Lakes.

Because of invasive species, some see these navigation projects as being at cross purposes with the interests of the recreational boating industry. "The federal government is putting all the resources and emphasis on the wrong industry," says Ned Dikmen, chairman of *Great Lakes Boating Federation*, a recreational boating group. Dikmen contends that the recreational industry is likely worth much more than the estimates in the Corps' draft report. Experts estimate the annual transportation savings from using overseas shipping on the Great Lakes at only $55 million, while the estimated price to date just for dealing with the zebra and quagga mussels that now live in the lakes is $2 billion. Altogether, officials said, 183 foreign species

are living in the lakes. *Great Lakes United* said given those facts the U.S. should ban oceangoing vessels from the Great Lakes until the ships are equipped with sterilization systems for their ballast tanks.

Adding fuel to this fire is a deadly virus that is now threatening nearly two dozen aquatic species in the Great Lakes and nearby waterways. Viral hemorrhagic septicemia (VHS) is a muted pathogen not native to North America that causes hemorrhaging and organ failure. Archived samples show that the virus was in the lakes as early as 2003, although it was not discovered until 2005. Its origin is still a mystery, although scientists have suggested it was likely brought in by oceangoing vessels.

VHS is not harmful to humans even if they consume the contaminated fish. But for the fish there is no known treatment for the virus, and experts said it is having a significant impact on the $4 billion Great Lakes fishing industry. "This is a new pathogen," said Paul Bowser, a professor of aquatic medicine at Cornell University. "For the first number of years — four, five or 10 years — things are going to be pretty rough, then the animals will become more immune and resistant and the mortalities will decline."

The Great Lakes are connected to the Mississippi River Basin via the manmade Cal Sag and Chicago Sanitary and Ship Canal which discharges Lake Michigan waters into the Illinois River. This is the source of contamination which introduced several invasive species including the zebra mussel, quagga mussel and round goby into the Mississippi River Basin.

Source: Dan Egan, *Milwaukee Journal Sentinel*, 4/22/07; Susan Saulny, *New York Times*, 4/21/07; *Greenwire*, 4/23/07

ESA and the Bush Administration

Environmentalists and congressional Democrats blasted the Bush administration in late March over leaked documents showing ongoing discussions about an across-the-board Endangered Species Act (ESA) overhaul that would scale back federal power to list species or prevent disruptive activities in their habitat. The 114 page draft, dated June 2006, included detailed regulatory language and revisions and edits made as late as February. The Interior Department draft being circulated by the *Center for Biological Diversity* (CBD) and featured on *Salon.com*, is broader in scope than environmentalists or industry lobbyists had been led to expect.

Kieran Suckling of the CBD, said it reads like a wish list of how to change the act to make it comply with changes the administration has sought without success in court. "This is exactly what they have been trying to do for the last six years," Suckling said. If the proposal went forward, it would remove recovery standards, scale down the scope of listing species and allow states to take over parts of the act or veto endangered species listing. "They undermine every aspect of law," Suckling said.

House Interior Appropriations Committee Chairman Norm Dicks (D/WA) called the administration's approach "worrisome." "If you are going to make comprehensive changes, you have got to come to the U.S. Congress," Dicks told U.S. Fish and Wildlife Service (FWS) Director Dale Hall. Chairwoman Barbara Boxer (D/CA) of the Senate Environment and Public Works Committee vowed to "vigorously oppose any weakening of the Endangered Species Act." But Rep. John Peterson (R/PA) encouraged Hall to plow forward, saying he would be "as old as Moses" before the House and Senate ever reached agreement on legislative changes to the law.

Hall told the House Natural Resources Committee (HNRC) in an early May letter that his agency is working on rule changes that would limit ESA protection to plants' and animals' current habitat, rather than throughout their historic range, and allow states and other federal agencies to consult on ESA cases, a task now restricted to FWS biologists. House Democrats say the proposed rule changes could undermine key protections for species. "This is an agency that seems focused on one goal — weakening the law by administrative fiat, and it is doing much of that work in the shadows, shrouded from public view," said HNRC Chairman Nick Rahall (D/WV). "We fear it is on a fast track, and I urge Congress to pay careful attention to the regulatory process that is under way, because what was not achieved legislatively in the last Congress could easily be achieved administratively," said *Defender of Wildlife's* Jaime Rappaport Clark. Clark was FWS Director under the Clinton administration.

In an interview broadcast in mid May on *E&ETV's OnPoint*, former representative Richard Pombo (R/CA), who pushed for the rewrite under the last Congress, said his staff worked closely with the administration and FWS staff to shape the legislation last year. "I would expect their proposal in terms of regulatory changes or administrative changes would reflect a lot of things we had in the bill," Pombo said. A former Pombo aide, Todd Willens, now a deputy assistant secretary at Interior, said in an interview that he has not yet been directly involved in the regulatory rewrite but would likely be a part of the team that reviews the proposal.

FWS should complete its ESA recommendations "very, very soon," Hall said. The proposal is expected to be sent to Interior for review within the next few weeks, he said. Interior Secretary Dirk Kempthorne, Deputy Secretary Lynn Scarlett and others will have the final say, he said. Some proposed provisions of the ESA rewrite that environmentalists found most troubling have been cut, Hall said. No longer under consideration are proposals that would change the definition of what puts a species in "jeopardy," give veto power to states on federal listing decisions and allow the destruction of vegetation grown after critical habitat is designated. Still being considered, Hall wrote is a provision allowing the government to avoid designating "critical habitat" if a species is not threatened by habitat loss and "adverse modification" rules aimed at limiting destruction of important habitat

Under the current language of the ESA, the FWS under the George W. Bush administration has listed only 57 species as protected, according to a CBD report released in early May. By contrast the FWS under the George H.W. Bush and Clinton administrations listed 234 and 512 species, respectively. Additionally, at least two species — the Hawaiian Haha and the Lake Sammamish Kokonee — have gone extinct during the current Bush administration, and there are other species on the candidate list right now that are close to extinction. "...what the administration has done to date is to say that they don't have enough money and resources to list these species," said Bill Snape, senior CBD counsel. But an Interior Department official attributed the lack of listings to a backlog of litigation against the agency regarding the listings.

Meanwhile, a high-ranking Interior Department official accused of systematically pressuring career employees into changing scientific documents and findings related to ESA listings, has resigned. Interior's inspector general (IG) Earl Devaney said in a report released in late January that Julie MacDonald, Deputy Assistant Secretary for Fish, Wildlife and Parks, before resigning, had used her post to intervene in FWS work on species listings and critical habitat decisions and sent information to third parties to use in challenging the FWS in court.

"MacDonald has been heavily involved with editing, commenting on, and reshaping the Endangered Species Program's scientific reports from the field," Devaney wrote. MacDonald has a degree in civil engineering and no formal education in natural sciences. The IG report marks the latest in a series of incidents on a range of environmental issues — from climate change to forests — in which Bush administration political appointees have attempted to censor documents or limit the distribution of scientific information.

Rep. Dicks, called MacDonald's actions "highly inappropriate" and "very concerning." Dicks grilled Interior's top lawyer at a hearing in late January on what he sees as a pattern of ethical problems — including the MacDonald report and former Deputy Secretary J. Steven Griles' guilty plea the week before on a charge of lying to a Senate panel.

MacDonald had been at the center of complaints from environmental groups over the past year, who charged her with flagrant edits of scientists' habitat and listing decisions to bring them more in line with political goals. The *Union of Concerned Scientists* and CBD released documents last year that showed she had rejected scientists' recommendations on federal protection for imperiled animals at least six times in the past three years. And a coalition of environmental groups sued the Interior Department last December over its decision not to protect a prairie dog species, due to orders from MacDonald.

An FWS assistant director for external affairs described MacDonald as "an angry woman" who had been abusive to her and had become a liability to the FWS. She stated MacDonald had demoralized the FWS program with her interference in endangered species studies — often reaching "way down the line" to have reports reflect what she wanted, the report says. MacDonald provided an unpublished copy of an interim critical habitat designation policy to the *Pacific Legal Foundation*, a conservative law firm that has challenged several ESA listings in the West. She also forwarded U.S. EPA files on water policy and guidelines to a private AOL account and a chevron texaco.com address.

Meanwhile in the private sector, a group of the world's top scientists announced in early May that they will lead a $12.5 million effort to document the world's 1.8 million named species in an online "*Encyclopedia of Life*." The scientists aim to create a separate Web page on every known species within the next decade. Like *Wikipedia*, the pages will be subject to public editing. The effort is a collaboration of Chicago's Field Museum, Harvard University, the Marine Biological Laboratory at Woods Hole, MA., the *Smithsonian Institution*, the *Biodiversity Heritage Library* and the *Missouri Botanical Garden*. The sites' creators have said they will make entries available in several major languages.

Sources: Allison Winter, *Greenwire*, 3/27 and 3/28/07; Dan Berman and Allison Winter, *Greenwire*, 3/29/07; Deborah Zabarenko, *Reuters*, 5/9/07; Juliet Eilperin, *Washington Post*, 5/9/07; Allison Winter, *Greenwire*, 5/10/07; and *Greenwire*, 5/9/07

Mysterious Loss of Bees

More than a quarter of the nation's 2.4 million bee colonies have been lost — tens of billions of bees, according to an estimate from the *Apiary Inspectors of America* (AIA), a national group that tracks beekeeping. So far the so-called "*colony collapse disorder*" has been found in 27 states, according to *Bee Alert Technology Inc*., a company monitoring the problem. The colony collapse phenomenon, first seen in Florida and quickly identified in Pennsylvania, Montana and California, occurs when worker bees leave the hive and don't return. Queens and their brood of bee larvae remain inside the hive until they die.

A recent survey of 13 states by the AIA showed that 26% of beekeepers had lost half of their bee colonies between September and March. Bee numbers in parts of the East Coast and in Texas have fallen by more than 70%. Numbers in California have dropped 30-60%. And so far, no one can say what is causing the bees to become disoriented and fail to return to their hives. Even the parasites, wildlife and other bees that normally raid the honey and pollen left behind when a colony dies, refuse to go anywhere near the abandoned hives.

Honeybees are arguably the insects that are most important to the human food chain. They are the principal pollinators of hundreds of fruits, vegetables, flowers and nuts. And the number of bee colonies has been declining since the 1940s, even as the crops that rely on them have grown. Albert Einstein once said that if bees vanished from the earth, "man would have only four years of life left".

Bee Keeper

Large bee losses are not unheard of, and have been reported at several points in the past century. But this time researchers think they are dealing with something new — or at least with something previously unidentified. "There could be a number of factors that are weakening the bees or speeding up things that shorten their lives," said Dr. W. Steve Sheppard, a professor of entomology at Washington State University. Scientists first learned of the bee disappearances in November, when David Hackenberg, a Pennsylvania beekeeper, told Dr. Diana Cox-Foster that more than 50% of his bee colonies had collapsed in Florida, where he had taken them for the winter. Dr. Cox-Foster, an entomologist and a 20-year veteran of studying bees at Pennsylvania State University and Jeffrey S. Pettis, an entomologist from the USDA, are leading a team of researchers who are trying to find answers to explain "colony collapse disorder," the name given for the disappearing bee syndrome.

As with any great mystery, a number of theories have been posed as reasons for the bees disappearance. Among other

things they include cellular phone towers, high-voltage transmission lines and genetically modified crops. The volume of theories "is totally mind-boggling," said Dr. Cox-Foster, "Clearly there is an urgency to solve this". "We are trying to move as quickly as we can," she said. "There are losses around the world that may or not be linked," Dr. Pettis said.

A limited study at Landau University in Germany found that bees refuse to return to their hives when cell phones are placed nearby. The mobile phone theory asserts that radiation from cell phones interferes with bees' navigation systems, causing them to become lost far away from their hives. Some British beekeepers believe the theory is credible and that cell phones are beginning to have an impact on the bee population in Britain. Other German research has long shown that bees' behavior changes near power lines.

A study by the *National Academy of Sciences* questioned whether American agriculture was relying too heavily on one type of pollinator, the honeybee. Bee colonies have been under stress in recent years as more beekeepers have resorted to crisscrossing the country with 18-wheel trucks full of bees in search of pollination work. These bees may suffer from a diet that includes artificial supplements, concoctions akin to energy drinks and power bars. In several states, suburban sprawl has limited the bees' natural forage areas. So far, the researchers have discounted the possibility that poor diet alone could be responsible for the widespread losses. But they emphasized that feeding supplements produced from genetically modified crops, such as Bt corn or high-fructose corn syrup, need to be studied.

A fungus known as *Nosema ceranae* may be the culprit according to researchers at the University of California-San Francisco (UC-SF) after finding the microbe in dead bees. Other researchers said that they had found the single-celled parasite in affected hives. UC-SF biochemist Joe DeRisi described the results as "highly preliminary". The once-rare microbe previously affected only Asian bees but might have evolved into a strain lethal to those in Europe and the U.S., DeRisi said. Spanish researchers recently found it is capable of wiping out an entire hive. Government scientists warned that the parasite was an early suspect in their investigation, but concluded that it was probably not responsible for the die-off.

The investigation is now entering a critical phase. The researchers have collected samples in several states and have begun doing bee autopsies and genetic analyses. So far, known enemies of the bee world, like the varroa mite, on their own at least, do not appear to be responsible for the unusually high losses. Genetic testing at Columbia University has revealed the presence of multiple microorganisms in bees from hives or colonies that are in decline, suggesting that something is weakening their immune system. The researchers have found some fungi in the affected bees that are found in humans whose immune systems have been suppressed by the Acquired Immune Deficiency Syndrome or cancer. "That is extremely unusual," Dr. Cox-Foster said.

Samples were also sent to a USDA lab in North Carolina to screen for 117 chemicals. Particular suspicion falls on a pesticide that France banned out of concern that it may have been decimating bee colonies. In the late 1990s, French beekeepers reported large losses of their bees and complained about the use of imidacloprid, sold under the brand name *Gaucho*. The chemical, while not killing the bees outright, was causing them to be disoriented and stay away from their hives, leading them to die of exposure to the cold, French researchers later found. The beekeepers labeled the syndrome "mad bee disease."

The French government banned the pesticide in 1999 for use on sunflowers, and later for corn, despite protests by the German chemical giant *Bayer*, which has said its internal research showed the pesticide was not toxic to bees. Subsequent studies by independent French researchers have disagreed with *Bayer*. Alison Chalmers, an ecotoxicologist for *Bayer CropScience*, said that the bee colonies had not recovered in France as beekeepers had expected. "These chemicals are not being used anymore," she said of imidacloprid, "so they certainly were not the only cause."

Scientists say that definitive answers for the colony collapses could be months away. But recent advances in biology and genetic sequencing are speeding the search.

Source: Alexei Barrionuevo, *New York Times*, 4/23/07; *AP/MSNBC*, 4/26/07; Jeff Nesmith, *Cox/Atlanta Journal Constitution*, 4/25/07; Chong/Maugh, *Los Angeles Times*, 4/26/07; Sabin Russell, *San Francisco Chronicle*, 4/26/07; and *Greenwire*, 4/10, 4/17, 4/24, 4/25 and 4/26/07

EPA Finalizing List of Potential Endrocrine Disruptor Chemicals

The U.S. EPA plans to release "in the next few weeks" a long-awaited list of chemicals to be screened for their potential to damage the reproduction and growth of people and wildlife, an agency spokeswoman said in late March. The agency has been working on suspected endocrine disruptors for 11 years — since EPA's Office of Research and Development ranked the issue among its top six research priorities in 1996. Endocrine disruptors affect glands and hormones that regulate many bodily functions, most notably reproduction.

Environmentalists who have campaigned to force EPA to test the chemicals and limit public exposure to them say the agency's effort is going to fall far short of what is needed. "I'm very, very discouraged," said zoologist Theo Colborn, a University of Florida professor and co-author of a 1996 book on endocrine disruptors, *Our Stolen Future*. Colborn participated in EPA committees that attempted to design assays to test for endocrine disruption. She said industry representatives managed to control the panels' progress. "From day one, they never called in the people who actually discovered endocrine disruptors," she said in an interview. "They only ever called in toxicologists and not endocrinologists, biochemists or other kinds of maverick health people. As a result, a lot of these review committees are controlled by corporate toxicologists."

EPA spokeswoman Ernesta Jones defended the agency's efforts. "The list of chemicals was developed through a very open and transparent process with equal access for all interested parties to provide input," she said in a late March e-mail. EPA's Office of Science Coordination and Policy is drawing up the list. The effort springs from the Endocrine Disruptor Research Program, created in 1998 when Congress passed the Food Quality Protection Act, which directs EPA to screen pesticides for estrogenic activity

in humans as well as for other endocrine effects.

EPA outlined how it would select chemicals for screening under that law in a 2005 *Federal Register* notice. The notice says the agency would select 50 to 100 chemicals for the list "based on their relatively high potential for human exposure rather than using a combination of exposure- and effects-related factors." "The scope of this first group of chemicals to be tested includes pesticide active ingredients and high production volume chemicals used as pesticide inerts," the notice says. "This will allow EPA to focus its initial screening efforts on a smaller and more manageable universe of chemicals that emphasizes early attention to the pesticide chemicals that Congress specifically mandated EPA to test for possible endocrine effects."

EPA and chemical industry representatives are emphasizing that a chemical's inclusion on the list does not suggest its probable toxicity. "The list is NOT based on any effects data, but rather it's based on exposure data," Jones said. "Therefore it shouldn't be seen as a list of chemicals we think are endocrine disruptors. The statute mandates that ALL pesticide chemicals be screened. This simply starts that process."

The EPA endocrine disruptor program puts chemicals into two tiers. The first is a screening layer, the second includes chemicals that could be endocrine disruptors based on screening results and need thorough testing to determine their potential health effects. The list that EPA is currently reviewing will feature chemicals from the second tier. That means that chemicals such as phthalates and bisphenol-A that are widely considered endocrine disruptors will not be on the list, participants in the EPA committees said.

"It took us two months just to resolve what the definition of an endocrine disruptor was," Colborn said. "In the end, EPA never let us actually define the chemicals, we were just allowed to use a description of them. No definition was ever resolved." Mark Maier of *CropLife America*, the trade group for major manufacturers, said he expects the list will include 15 chemicals that are non-active ingredients in pesticides and a further 80 that are active. Many high-production chemicals will be left off the list because EPA does not have enough toxicity information about them and needs to do more testing, he said.

Health advocacy groups are concerned the agency is not going far enough to warn people about risks associated with the chemicals. "The list doesn't go as far as it could in terms of protecting human health," said Marisa Walker, a spokeswoman for the California-based Breast *Cancer Fund*. "At what point will they decide when we should stop using these chemicals?" *Environmental Working Group* staff scientist Rebecca Sutton said she was pleased EPA was finally taking an in-depth look at certain chemicals. But the length of the effort to assemble the list is problematic, she said. "We do not want to see another 10 years go by before EPA does anything about such chemicals," Sutton said.

Sex reversals in fish found in many rivers across the country including the Potomac and Mississippi rivers have been blamed on endocrine disruptors. The chemicals are thought to have entered the rivers through runoff from pesticide treated lands and from the outfall from sewage treatment plants.

Source: Russell J. Dinnage, *Greenwire*, 3/27/07

"After the Storm" DVD Available

DVD copies of the popular half-hour television special about watersheds – *After the Storm* – co-produced by *The Weather Channel* (TWC) and the U.S. EPA are now available at no charge. This program premiered on TWC in 2004 and continues to be used by teachers at all levels and by cable TV stations to help educate citizens about stormwater management. The program highlights three case studies – Santa Monica Bay, the Mississippi River Basin/Gulf of Mexico, and New York City – where polluted runoff threatens watersheds highly valued for recreation, commercial fisheries and navigation, and drinking water.

For more information on this program, including tips about what you can do to prevent watershed pollution, visit EPA's Web site at: www.epa.gov/weather channel. To order a free copy of *After the Storm*, please contact NSCEP at 800-490-9198 or send an email to nscep@bps-lmit.com and please refer to *After the Storm* (DVD), EPA 841-C-06-001 OR After the Storm (VHS), EPA 840-V-04-001.

Climate Change Update

This winter Arctic sea ice was at its second lowest level on record at 5.7 million square miles — slightly above the all-time low experienced in 2005-06 at 5.6 million square miles. The thick, perennial Arctic sea ice is also declining by 7-10% per decade, according to a NASA study released in early April. "The winters and summers before fall 2005 were unusually warm," NASA Jet Propulsion Laboratory scientist and study co-author Ron Kwok said. "The low replenishment seen in 2005 is potentially a cumulative effect of these trends. If the correlations between replenishment area and numbers of freezing and melting temperature days hold long-term, it is expected the perennial ice coverage will continue to decline".

"This long-term trend, which seems to be accelerating, is really an indication of a warming, and the only way you get the warming is with greenhouse gases," said National Snow and Ice Data Center (NSIDC) research scientist Walt Meier. In fact, a new study, published in a recent issue of the journal *Geophysical Research Letters* by scientists from the NSIDC and the National Center for Atmospheric Research (NCAR) indicate that global warming is causing Arctic sea ice to melt faster than many scientists and computer models predicted in the United Nations *Intergovernmental Panel on Climate Change* (IPCC) report released in February. The new study compared nearly six decades of measurements of Arctic sea ice with current computer model estimates for that same period. The study's observations indicate Arctic summers may be ice-free by the middle of this century. It also calculated that about half, if not more, of the warming observed since 1979 is due to emissions produced by humans.

In Greenland, the tip of a peninsula halfway up the remote east coast has become an island unto itself thanks to a melting glacier that had connected it to the mainland. The island lies about 400 miles north of the Arctic Circle, and represents one of the most alarming signs of the rising worldwide temperatures' toll on ice sheets around the world. In 1985, the former peninsula was a major part of the coastline, but by 2002 was linked to the mainland only by a small ice bridge.

Greenland has 2.5 million cubic kilometers of ice, making it the world's second-largest icesheet behind Antarctica. If the ice were to melt completely, it would make the global sea level rise by more than 23 feet.

In the Antarctica water from melting glaciers and ice sheets is already starting to threaten the currents in the Southern Ocean and that could have a ripple effect on the rest of the world. Australian scientists report that the melting ice is releasing fresh water that interferes with the formation of dense "bottom water," which sinks to the ocean floor and helps drives the world's ocean circulation. The "overturning circulation" of the ocean's current helps distribute 85% of atmospheric heat absorbed by the ocean and carried around the world. But if fresh water changes the properties of that bottom water, it could slow down that circulating system. "If the water gets fresh enough ... then it won't matter how much ice we form, we won't be able to make this water cold and salty enough to sink," said Steve Rintoul, a senior scientist at the Australian government-funded *CSIRO Marine Science*. "Changes would be felt ... around the globe", he said.

According to 11 former generals, global warming also poses a "serious threat" to U.S. security and should be elevated to the highest levels of military preparedness. The retired military officers urged the U.S. in April to "commit to a stronger national and international role to help stabilize climate changes at levels that will avoid significant disruption to global security and stability." "Countries are unlikely to go to war over levels of greenhouse gas emissions, but they may well go to war over the results of climate change, including water shortages and large-scale human migration," Richard Haass, president of the *Council on Foreign Relations*, said. "Projected climate change will seriously exacerbate already marginal living standards in many Asian, African and Middle Eastern nations, causing widespread political instability and the likelihood of failed states," the general's report says.

The UN IPCC report predicts that two-thirds of the world's population will suffer from water stress by 2025. While population growth, pollution and wastefulness are ever-present threats, global warming will also affect water supplies, as shifting rainfall patterns, dwindling snowpack runoff and more droughts take their toll. "Drought-affected areas will likely increase and extreme precipitation events, which are likely to increase in frequency and intensity, will augment flood risk," the report says. "Water volumes stored in glaciers and snow cover are very likely to decline, reducing summer and autumn flows in regions where more than one-sixth of the world population currently live".

Parts of Greece are already in danger of permanent desertification and other areas are at risk of drought which could lead to a mass exodus of people from the Mediterranean, a Greek environmental official warned. Other drivers of desertification include tourism-related construction and farming. Greece's average rainfall has fallen by about 30% since the mid-1970s, and about 30-35% of the country is at great risk of desertification, the official said.

Meanwhile, the United Kingdom experienced its hottest April since at least 1659, according to the U.K. Met Office's data, averaging about 52 ^{o}F, nearly 5.8 ^{o}F above the long-term average. The 12-month rolling period ending in April was also set to be the warmest on record for the country. France also experienced its hottest April on record. The *Center for Ecology and Hydrology's* Tim Sparks said that the data was unsurprising and confirmed his study last year that found spring was beginning six to eight days earlier than it did 30 years ago.

If global warming continues it will erase some regions' climates and replace them with new ones not known to the world today, researchers reported in a March issue of the *Proceedings of the National Academy of Sciences*. By 2100, regions like tropical highlands and areas near the polar caps could become so altered by rising temperatures that they would morph into drastically new climates. According to scientists at the University of Wisconsin-Madison, higher temperatures would increase the likelihood of extinction of certain species as well as the ecological structures of climates vulnerable to the effects of minor temperature differences. "There is a real problem for conservation biologists," said the lead author, John Williams. "How do you conserve the biological diversity of these entire systems if the physical environment is changing and potentially disappearing?"

The cool climates of Arizona's highlands began warming up over the past 10 years, drying up plant life and turning the region into one of North America's first climate change victims. Known as sky islands, the peaks of southern Arizona's mountains have always enjoyed substantially cooler temperatures than other parts of the region. But an eight-year drought and record-breaking temperatures have started to transform these once-green peaks into something more typical in Arizona — dry and dead. The changing climate is threatening the survival of some species while opening the door to invasive species like beetles. "A lot of people think climate change and the ecological repercussions are 50 years away," said Thomas W. Swetnam, director of the *Laboratory of Tree-Ring Research* at the University of Arizona in Tucson. "But it's happening now in the West. The data is telling us that we are in the middle of one of the first big indicators of climate change impacts in the continental United States".

The American Southwest and other areas of the world will become so hot and dry that Dust Bowl-like droughts will become commonplace, according to a study, in an early April issue of the journal *Science*. As the planet warms, hot air from the equatorial tropics that suppresses rainfall will spread over a wider area. The full effect on precipitation levels will not be felt until 2100, the study says, but tangible evidence of the effect is already mounting. The Southwest's below-average rainfall levels since 1999 are likely to be linked to global warming, the study found. Co-author Yochanan Kushnir of Columbia University's *Lamont-Doherty Earth Observatory* noted that the drought continued last year, even though a significant El Niño effect was supposed to generate increased rainfall. The drought effect is expected to become strikingly noticeable within about 15 years, the authors said. At-risk areas include parts of New Mexico, Arizona, western Mexico, the Yucatan Peninsula, nearly all of Central America and all of Texas.

Researchers warned that drought conditions would require meticulous water planning, especially in the face of urbanization and population growth. "Water resources will become more limited in a region that's already water-resource limited," said co-author Richard Seager. Water supplies could be further reduced by global warming's tendency to create shorter winter snow seasons. Among the

water systems likely to struggle in the face of rising demand and declining snowpack are the San Joaquin and Colorado rivers, which may "struggle to meet needs by 2020," said NOAA's Roger Pulwarty. "Some of what's happening with the early snowmelts could be due to variations based on ocean circulation," said Gregg Garfin, project manager for the University of Arizona's *Institute for the Study of Planet Earth*. "But there's a pretty large fraction that can't be explained that way, and we think that's due to increasing temperatures".

North America's snowmobiling industry, now valued at $27 billion, could disappear by 2050 as natural snowpack recedes, the IPCC report finds. The West Coast could also see major blows to its timber industry, with the IPCC report predicting increased wildfires, insect invasions and plant disease that could cause losses of $1-$2 billion per year before the end of the 21st century.

On the East Coast, rising sea levels and increasingly strong storms are "the number one vulnerability," said Cynthia Rosenzweig of the *Goddard Institute for Space Studies*. "It's a very real threat that needs to be considered in all coastal development." The report predicts sea levels could rise 13-20 feet over the next several centuries, as glaciers in Greenland and West Antarctica melt. "Right now, our ability to project sea level rise is very limited," said Michael Oppenheimer of Princeton University. "But even current levels of sea level rise have caused problems." The danger is especially great for low-lying barrier islands, like Atlantic City and New York City, Oppenheimer said.

In fact, rising sea levels could affect 600 million people in large cities and coastal areas, according to a study released in late March in the journal *Environment and Urbanization*. Worldwide, 634 million people live less than 33 feet above sea level, and the number is increasing, the study said. About 70% of the 180 countries that have populations in such low-lying zones also have urban areas of more than 5 million people. Such cities include Dhaka, Bangladesh; Jakarta, Indonesia; Mumbai; New York; Shanghai; and Tokyo. The report recommended halting or reducing development in coastal areas, in addition to building protective engineering structures. "Migration away from the zone at risk will be necessary but costly and hard to implement, so coastal settlements will also need to be modified to protect residents," said report co-author Gordon McGranahan of the *International Institute for Environment and Development* in London. "I don't know what they'll do in the long term," Oppenheimer said. "It's not clear we have the ability to manage that type of sea level rise."

The IPCC report also predicts the potential loss of 15-40% of North America's plant and animal species by 2050. The bottom line: "We needed to act yesterday," said Patricia Romero Lankao, an author of the IPCC report and scientist at the NCAR. "None of us," she said, "will escape the impacts of climate change." South America's natural features are particularly at risk — the Andean glaciers could melt and the Amazonian forest could become a savannah in parts. Africa and Asia will see the highest human tolls, with hundreds of millions of people threatened by low-lying "mega-river deltas" and the spread of infectious diseases. Two to 7 million people each year will be victims of coastal flooding, the report predicts.

But healthy tidal marshes should be able to adapt to rising seas associated with global warming, Duke University researchers say in a new study published in the *Proceedings of the National Academy of Sciences*. The key to wetland survival is vibrant vegetation and adequate sediment supplies upstream. Tidal wetlands are critical shoreline resources that buffer storm surges, slow shoreline erosion, absorb excess nutrients running off farms and lawns, and provide habitat for marine life and migratory birds. Duke researchers analyzed computer models based partly on field studies in South Carolina and compared them with observations in Louisiana, Massachusetts and British Columbia. While previous studies used similar models, Duke's emphasizes how biology influences and interacts with physical erosion processes, the study's co-author, A. Brad Murray, said. "If the vegetation is intact, it holds the system in place and enhances the trapping of sediments and tends to minimize the erosion," Murray said. "Up to some high level of sea-level rise, the system is going to keep itself in place because of that vegetation." But if vegetation is removed and the marsh is starved of sediment supplies, rising water will drown the marsh, Murray said. "We think that could be why marshes in the Chesapeake Bay region as well as in Louisiana are tending to deteriorate," said Murray. "That's because those are both places with relatively high sea-level rise rates and because of land-use changes that decrease rates of sediment delivery downstream."

Global climate change could also dramatically reshape America's public lands and the government's ability to manage them, Interior Department officials told a House panel in late April. Changing temperatures have spurred the movement of wildlife, forcing managers to rethink how to protect animals and habitat. "We can anticipate further reductions in the level of allowable uses on public lands due to the loss of productivity and capacity," Ron Huntsinger, the Bureau of Land Management's science coordinator said. "The results are more fragile ecosystems, a greater susceptibility to the outbreaks of attacks by parasites and disease, increased vulnerability to wildland fire and erosion, and an overall reduction in the carrying capacity of the land." Don Neubacher, superintendent of California's Point Reyes National Seashore, said the park regularly experiences severe winter storm damage that requires emergency spending. "The intensity of the storms and the number of storms each year has been increasing," he said. At Everglades National Park, Superintendent Dan Kimball is concerned about rising seas threatening the nation's largest freshwater wetland and primary recharger of drinking water supplies for 5 million South Floridians. The park's highest point is 11 feet above mean sea level, and 60% of the park is less than 3 feet above sea level. "Sea level rise would likely push salt water into the Everglades and threaten the viability of South Florida's drinking water supply," Kimball said.

The growing concentrations of carbon dioxide (CO_2) in the atmosphere may also be putting pollen-producing plants into overdrive, leading to higher allergy and asthma rates worldwide. In 2001, USDA plant physiologist Lewis Ziska began experimenting on how pollen production in ragweed is affected by different CO_2 emissions. Planting identical plots in urban, suburban and rural areas, Ziska found that the urban plants produced five times as much pollen as the rural ragweed. The potential cause: 20% higher CO_2 concentrations in the city than in the country, which if true could lead to higher

rates of asthma and allergies as global warming continues. "We can assume that allergic disorders are starting earlier because the pollen season starts earlier," said Bettina Menne, a doctor at the *World Health Organization*. "Climate change contributes to the problem, but we don't exactly know by what amount."

As climate change continues to push warm zones to higher latitudes, gardeners and farmers are experiencing more stable and temperate weather further north, but that same shift could also erase some iconic plants from their home states. While uncharacteristic plants like palm trees can grow in places like Kentucky, horticulturists say the climate shift north can also bring the same parasites and invasive species associated with subtropical plants. Warmer temperatures have even made poison ivy more toxic. The warmer temperatures are also making seasonal blooms like cherry blossoms and dogwoods peak and could in time make the climate inhospitable for some state flowers like the Kansas sunflower or Mississippi magnolia. In fact, according to "*The Gardener's Guide to Global Warming*," released in April by the *National Wildlife Federation*, conditions will no longer be favorable for the official state tree or flower in 28 states by the end of the century.

The highest-profile climate change battle thus far being waged is the potential Endangered Species Act listing for the polar bear due to the disappearing Arctic sea ice. "I believe the polar bear case study is a clear and serious example of the threats facing us due to global warming," Rep. Norm Dicks (D/WA) said. USGS is scheduled to deliver a major report on sea ice and the polar bear population by the end of August, said Susan Haseltine, USGS associate director for biology. Haseltine noted that because the effects of climate change are more exaggerated at the poles, the polar bear issue might be the best signal yet of the potential effect of global warming. "Perhaps polar bears are a clearer signal because they are so dependent on sea ice," Haseltine said. "They may be in that sense a canary in the cage."

Apparently more than 500,000 people agree that the polar bear is a big issue because that's how many comments the U.S. Fish and Wildlife Service (FWS) received on their proposal to list the bears. Meanwhile, Russian officials are set to approve the legal hunting of polar bears in the northeastern portion of the country because declining Arctic sea ice is increasingly forcing the bears southward in search of food where they pose a threat to local villages. The Soviet Union banned the legal hunting of polar bears in 1956 following a sharp decline in the bear population. Lifting of the ban will allow subsistence hunting by villagers in an impoverished, sparsely populated region across the Bering Strait from Alaska. The hunting could resume either this year or next year following completion of a census and the setting of an annual quota that would not threaten the entire polar bear population in the region, officials said. In Alaska, the annual legal hunting quota averages roughly 40 bears per year.

Wild chinook salmon populations could be further weakened by global warming's effect on river temperatures and flows, according to a study published in early April in the *Proceedings of the National Academy of Sciences*. University of Washington and NOAA scientists used computer modeling to predict that wild chinook populations would decline 20-40% in the Snohomish River basin by 2050. Warmer waters in the summer and early fall are predicted to increase disease, stress and die-offs, while warmer winters could cause snowpack-full flows to flush out salmon eggs from spawning grounds. The most remote, high-elevation river basins are expected to fare the worst in terms of salmon survival, the study says. Salmon may eventually concentrate in the mid- to lower stretches of the rivers due to high-elevation rains triggering sudden flow surges during the winter. The study authors cautioned that some recovery plans for the threatened salmon do not take global warming effects into account. A comprehensive plan including tree planting, dam removal and other efforts could reduce climate-related decline to 5% in the Snohomish basin by 2050, according to one computer model. Another model found the plan could generate a 19% gain in spawning populations.

Climate change will also lead to more frequent sewer overflows, growing "dead zones" for aquatic life and soaring costs for water treatment facilities in the Great Lakes and New England regions, U.S. EPA warns in two draft reports. Prepared by the *National Center for Environmental Assessment's* climate research staff and released in April, the reports suggest that water utilities should invest in treatment plant and sewer upgrades now to prepare for an increasingly stormy future. Sewer improvements could be "underdesigned" if planners assume wet weather will not increase as the Earth warms the reports said. Ben Grumbles, EPA's top water administrator announced plans in late March to establish an advisory panel to address climate-related water issues. Grubles said his agency is working on efforts to mitigate and adapt to climate change and boost research on such concerns. Global warming could accelerate wetland losses, shoreline erosion and saltwater intrusion into coastal freshwater aquifers, Grumbles said.

A substantial international effort is needed to combat climate change and stem the accelerating growth of greenhouse gas (GHG) emissions, according to the IPCC Summary Report. "Mitigation efforts over the next two to three decades will determine to a large extent the long-term global mean temperature increase and the corresponding climate change impacts that can be avoided," the report said. Implementing changes in design standards and material chosen for construction could cut about 30% of projected emissions of heat-trapping gases from buildings by 2020, with more than half of the cuts coming from developing countries.

A record high number of Americans support setting stricter emissions standards for automobiles, according to a *Gallup* poll released in early April. Seventy-nine percent of respondents to the sixth annual environmental survey said they favored the higher standards, while 18% said they opposed them. The poll shows similar levels of support for tightening emissions pollution standards for business and industry at 79% and imposing mandatory controls on GHG emissions at 79%. The results follow a Supreme Court ruling in early April that will force U.S. EPA to consider regulating GHG emissions from automobiles under the Clean Air Act. Overall, the poll shows support for stronger environmental regulations rebounding from a slight decrease last year, *Gallup* said. Forty-one percent of respondents favored opening up the Arctic National Wildlife Refuge, an 8-point decline in support from 2006. A majority of poll respondents opposed energy exploration in the wildlife refuge. In the case of nuclear energy, this year's poll showed Americans to be almost evenly divided over expanding U.S.

nuclear power generation, with 50% favoring it and 46% opposing it — a 5-point decline in support from 2006. *Gallup* conducted its national survey of 1,009 adults in mid-March, and the results have an error margin of plus or minus 3%.

The Supreme Court's ruling in early April forcing U.S. EPA to consider regulating GHGs should quickly ripple down to related legal challenges, a key attorney in the case said. Lower courts have delayed ruling on several climate lawsuits in anticipation of the court's verdict in *Massachusetts v. EPA*, which revolved in part around whether the Clean Air Act applies to regulating CO_2 and other GHGs. But the Supreme Court's 5-4 ruling removes the roadblocks to resolving those cases, *Sierra Club* attorney David Bookbinder said. The verdict "demolishes" the Bush administration arguments for waiting to take action on climate change and "adds momentum" to an issue already seeing widespread congressional debate, Alden Meyer, director of strategy and policy at the *Union of Concerned Scientists* said.

Environmental groups said the latest IPCC report will wake up lawmakers worldwide and in turn drive government action to reduce emissions. "It's kind of an apocalyptic view of what life is going to be like if we don't do something about it," said Stephanie Tunmore, a London-based campaigner at *Greenpeace International*. Larry Schweiger, president of the *National Wildlife Federation* in Washington, D.C., issued a statement that called on the U.S. to reduce its GHG emissions by 2% per year through 2020. "America must choose between a fundamentally different planet or a fundamentally different energy future that breaks our oil addiction and aggressively opens the path to alternatives and renewables," Schweiger said.

But the White House signaled no interest in changing policies. In sharp contrast congressional Democrats said the IPCC document strengthens the case for enacting climate legislation as soon as possible. House Science and Technology Committee Chairman Bart Gordon (D/TN) said the IPCC report "delivers a powerful and sobering message about the current state of our climate system." But an aide to Senate Environment and Public Works Committee ranking member James Inhofe (R/OK), critic of global warming, criticized the report saying it "will surely spawn another round of media alarmism and hype."

British economist Nicholas Stern said in late March that world governments should invest as much as $15 billion per year into a global fund to cut deforestation work in half. Forest clearance for farming or urban development releases large amounts of GHGs, Stern said at a meeting in Indonesia. "The cost of action, strong and urgent action, will be very much less than the cost of inaction. If we do nothing, if we go on with business as usual, we will eventually derail growth and development," Stern said. He added that rich nations had a powerful interest in helping to preserve forest cover because they would also be affected by global warming. "The money is not charity — it's investing in a future of which they will be the big beneficiaries," he said.

In the U.S. more and more state governors are taking action on climate change.

- Wisconsin Gov. Jim Doyle (D) established an Office of Energy Independence with the state's goal to produce 10% of the nation's renewable energy sources by 2030. He also announced establishment of a state task force on global warming.
- Maryland Gov. Martin O'Malley (D) signed the state's Clean Cars Act requiring the state to adopt California's tougher emissions standards rather than those used by the U.S. EPA. The law mandates raising average fuel efficiency for new vehicles sold in the state to 43 miles per gallon starting in model year 2011.
- Colorado Gov. Bill Ritter (D) signed an executive order and four energy-related bills designed to put his state at the forefront of the nation in energy efficiency requiring all state agencies to cut energy consumption by 20%, paper-product use by 20%, water use by 10% and petroleum consumption by 25% through 2013. He also created the position of a state climate change adviser.
- Massachusetts Gov. Deval Patrick (D) announced that major building projects in his state must estimate the amount of GHGs the work will create and reduce the pollution using energy efficiency measures. State officials said they believe Massachusetts is the first state to consider GHGs as part of a developer's environmental impact review.
- Alaska Gov. Sarah Palin (R) announced formation of a new subcabinet of top administration officials who will develop policies to combat the effects of climate change that are more pronounced in Alaska than elsewhere in the country. These include:

- pilots flying above the ocean have to be wary of navigating through clouds because they are increasingly composed of cold water, rather than ice crystals. Water can freeze on a plane and cause failure;
- reduced sea ice is allowing saltwater intrusion into low-lying rivers and coastal communities;
- warming temperatures are forcing flounder, cod and pollock north and reducing crab habitat in the Bering Sea; and
- maintaining roads and bridges damaged by flooding and melting permafrost will cost Alaska billions of dollars over the next 30 years.

But the Alaska Environmental Conservation Commission is not examining causes or solutions, reflecting some legislators' positions that warming is not human-caused. According to Sen Ted Stevens (R/AK), "We see the results…..We want to deal with the results now and let other people argue about the causes.

Meanwhile, New York City Mayor Michael Bloomberg (R) announced 127 environmental proposals in late April aimed at making his city more energy efficient and reducing its GHGs. Bloomberg said his goal is to reduce New York City's carbon emissions by 30% over the next 20 years, during which time he expects the city to grow by 1 million residents.

Tourism, through its associated airline flights and air-conditioned hotel industry, is one of the biggest producers of GHGs, *World Tourism Organization* director general Francesco Frangialli said. About 1.1 billion tourists are expected to travel abroad in 2010, and 1.6 billion by 2020, he said. In response, travel agency *STA Travel* has joined a carbon-offset exchange to assure travelers of the efficacy of their attempts to reduce their carbon footprint, offering to offset a trip around the world for $260. *STA Travel* is one of the six initial members of the exchange, but environmentalists point out that the $16 per metric ton set as their cost of CO_2 emissions is far below the $110 estimated by British economist Nicholas Stern. Claiming that travel is so damaging to the environment that there is no way to have an environmentally sound vacation, *Rough Guides* founder Mark Ellingham said, "We must encourage travelers to travel less and neutralize their carbon

footprint through offsetting." "Balancing all the positives and negatives, I'm not convinced there is such a thing as a 'responsible' or 'ethical' holiday", he said.

In the U.S., fourteen more companies have joined the *U.S. Climate Action Partnership* (USCAP), a coalition of businesses and environmental groups calling for a mandatory cap on U.S. GHG emissions. The new members include: *American International Group Inc., Alcan Inc., Boston Scientific Corp., ConocoPhillips, Deere & Co., Dow Chemical Co., General Motors Corp., Johnson & Johnson, Marsh & McLennan Cos. Inc., PepsiCo, Royal Dutch Shell PLC, Siemens AG, The Nature Conservancy* and the *National Wildlife Federation.* The 27-member coalition now has influential players within the transportation, energy, agriculture, insurance and chemicals industries as it calls on Congress to pass legislation that forces all sectors of the economy to curb their emissions of GHGs over the next 50 years. USCAP supports a cap-and-trade system phased in over several decades and endorses emissions offsets that allow industries to meet their requirements by funding projects that avoid or soak up carbon emissions. *Dow* Chairman and CEO Andrew Liveris said, "Climate change is real and the most urgent environmental issue our society faces."

Vermont-based *Bright Planet* is offering the first U.S. credit card that applies points to offsetting CO_2 emissions, rather than frequent flyer miles. Scottish employee benefits software group *Vebnet* is allowing its 170 client organizations, representing 250,000 employees, to offset their carbon emissions through payroll deductions. *PepsiCo Inc.* will buy more than 1 billion kilowatt-hours of "green power" annually during the next three years, marking the largest purchase ever of renewable energy credits by a corporation. Eight prominent British companies have launched a campaign to encourage shoppers to reduce their CO_2 emissions by 10% over the next three years. *Tesco* said it would cut the costs of energy-saving light bulbs by 50%, while *Marks & Spencer* is relabelling many of its clothing lines to encourage people to save energy by washing them in colder water. Other companies participating in the campaign are: *B&Q, Barclaycard, British Gas, O2, Royal & SunAlliance* and *BSkyB*. *Ford Motor Co.* CEO Alan Mulally is convinced global warming is real, human-made and caused in part by auto emissions. "I firmly believe we are at an inflection point in the world's history as it relates to climate change and energy security. The time for debating whether climate change is real has passed. It is time for a conversation about what we, as a society, intend to do to address it," Mulally wrote in an email to *Ford* employees.

After neutralizing the GHG emissions from its operations, a New England utility, *Green Mountain Power*, is allowing its customers to neutralize their carbon footprints through renewable power and home-heating and driving offsets. *Green Mountain* launched a first of its kind, "*choose2bgreen*" program enabling its 90,000 customers to sign up for any of three programs. *Greener GMP* allows customers to buy energy from certified renewable resources equal to some or all of their monthly electricity use. *Cool Driver* and *CoolHome* enable customers to offset the carbon emissions associated with driving their cars and heating their homes, respectively. The cost of participating in the programs ranges from about $3 per month — the cost of offsetting the emissions from a small car — to about $50 per month, the cost of buying 100% renewable energy and offsetting both home heating and driving a large SUV.

The *Doris Duke Charitable Foundation* will begin this year offering nearly $100 million in grants for research intended to develop policies for reducing global warming. The grants will be handed out over the next five years.

While Christians traditionally give up indulgences like alcohol or chocolate for Lent, several churches in North Carolina encouraged their parishioners to give up some of their energy use. The United Church of Chapel Hill distributed energy-saver devices like low-flow showerheads and fluorescent light bulbs to its members on Ash Wednesday, and also offered weekly sessions during Lent to offer tips to members about how they can reduce their carbon footprint.

But to put today's global warming in perspective, the most rapid global warming period in known geologic history was caused by a series of volcanic eruptions at the separation of two continental plates, according to a study published in late April in the journal *Science*. The heating event, known as the Paleocene-Eocene Thermal Maximum, was first discovered in the early 1990s. The volcanic eruptions set off a chain reaction that released 1,500 to 4,000 gigatons of carbon into the atmosphere over several thousand years, which in turn sparked a 10,000-year warming period that heated the polar oceans, killed off deep-sea-dwelling microorganisms and sent mammals migrating poleward, according to the study. It then took about 200,000 years for the carbon to enter the deep ocean, allowing the planet to cool. While the eruptions could not have provided enough GHGs on their own to account for the more than 9 degree temperature jump, the study suggested that the lava flows heated sediments containing methyl hydrates, which co-author Robert Duncan described as the "turbocharger" that accelerated warming. Scientists not involved in the study said that current human activities are producing emissions of about 7 gigatons per year — a much faster rate of emissions than in the past.

Meanwhile, the research vessel, *Weatherbird II*, set out from Florida in May on its way to the South Pacific to see if plankton could be used to fight present day global warming. Plankton absorbs CO_2 from the atmosphere and then carries it down to the ocean floor. Theoretically, large fields of plankton could act in the same fashion as forests of carbon-absorbing trees, removing GHGs from the atmosphere. Backed by Silicon Valley investors, the *WeatherBird II* will seed a 10,000-square-kilometer patch of ocean with iron. The ore is an essential plankton nutrient, and scientists hope the seeding will encourage the growth and reproduction of the tiny organisms. The scientists will study how much carbon the plankton absorbs. If the results are substantial, it could mean a new low-cost method for reducing CO_2 concentrations in the atmosphere. It could also mean a new source for carbon offset credits.

Finally, the global carbon market tripled last year to $30 billion from $11 billion in 2005, according to a recent *World Bank* report. Many policymakers hope that the carbon market will finance the cleanup of heavy industry in poor countries, which likely will contribute most to increases in future GHG emissions. But despite being all the rage, going carbon neutral by offsetting one's emissions may continue to fuel a culture of waste without any real benefit to the environment, some environmentalists argue. The offsets do not

address the underlying issues of use and waste that contribute to carbon emissions.

The average American produces 20 tons of CO_2 per year; while the average for the rest of the world is 4.5 tons per year. "The worst of the carbon offset programs resemble the Catholic Church's sale of indulgences back before the Reformation," said Denis Hayes, the president of the *Bullitt Foundation*, an environmental grant-making group. "Instead of reducing their carbon footprints, people take private jets and stretch limos, and then think they can buy an indulgence to forgive their sins." "This whole game is badly in need of a modern Martin Luther," Hayes added.

Sources: Timothy Gardner, *Reuters/PlanetArk*, 4/10/07; *Reuters/The Australian*, 3/23/07; *Agence France-Presse*, 3/21, 3/23, 4/3, 4/30 and 5/1/07; Michael McCarthy, *London Independent*, 4/24/07; Andrew C. Revkin, *New York Times*, 4/27, 4/29 and 5/1/07; Richard Black, *BBC News online*, 4/30/07; Ingham/Chaon, *Agence France-Presse*, 3/21/07; Karolos Grohmann, *Reuters/PlanetArk*, 3/21/07; Lee Bergquist, *Milwaukee Journal Sentinel*, 3/27/07; James Randerson, *London Guardian*, 3/27/07; Timothy Egan, *New York Times*, 3/27/07; Marlowe Hood, *Agence France-Presse*, 3/30/07; *AP/CBS News online*, 3/29/07; Marc Kaufman, *Washington Post*, 4/6/07; Randy Lee Loftis, *Dallas Morning News*, 4/6/07; Shaun McKinnon, *Arizona Republic*, 4/6/07; Gautam Naik, *Wall Street Journal*, 5/3/07; Shaila Dewan, *New York Times*, 5/3/07; Juliet Eilperin, *Washington Post*, 4/5/07; Dan Joling, *AP/Anchorage Daily News*, 4/10/07; Steven Lee Myers, *New York Times*, 4/16/07; *BBC News online*, 4/27/07; Wendy Frew, *Sydney Morning Herald*, 3/21/07; Amelia Hill, *London Observer*, 5/6/07; *AP/MSNBC.com*, 5/1/07; Matt Richtel, *New York Times*, 5/1/07; Steve Connor, *London Independent*, 5/3/07; *Reuters/International Herald Tribune*, 5/2/07; Alan Zarembo, *Los Angeles Times*, 4/27/07; Ed Davies, *Reuters*, 3/23/07; Bryce G. Hoffman, *Detroit News*, 4/24/07; Micheline Maynard, *New York Times*, 4/24/07; Rebecca Smithers, *London Guardian*, 4/24/07; *AP/El Paso Times*, 3/26/07; Simon Bain, *Glasgow Herald*, 4/6/07; *E&ENews PM*, 1/29 and 4/2/07; Elizabeth Bluemink, *Anchorage Daily News*, 4/12/07; Tom Kizzia, *Anchorage Daily News*, 4/12/07; Andre A. Green, *Baltimore Sun*, 4/25/07; Gargi Chakrabarty, *Rocky Mountain News*, 4/17/07; *AP/Denver Post*, 4/16/07; Steve Lohr, *New York Times*, 4/9/07; Yonat Shimron, *Raleigh News & Observer*, 4/6/07; Stephanie Ebbert, *Boston Globe*, 4/22/07; Sara Kugler, *AP/San Francisco Chronicle online*, 4/23/07; Leila Abboud, *Wall Street Journal*, 4/26/07; Michael Burnham, *Greenwire*, 4/23, 4/30 and 5/8/07; Lauren Morello and Alex Kaplun, *Greenwire*, 4/2/07; Darren Samuelsohn, *Greenwire*, 4/16, and 4/18/07; Lucy Kafanov, *Greenwire*, 3/22, 4/3 and 4/29/07; Lauren Morello, *Greenwire*, 4/3, 4/5, 4/6 and 4/17/07; Dan Berman, *Greenwire*, 4/27/07; Alex Kaplun, *Greenwire*, 3/23/07; *Greenwire*, 2/27, 3/22, 3/23, 3/27, 4/4, 4/5, 4/6, 4/9, 4/10, 4/11, 4/12, 4/13, 4/16, 4/17; 4/23, 4/24, 4/25,4/26, 4/27, 5/1 and 5/7/07

Meetings of Interest

Jul 11-16: American Society of Ichthyologists and Herpetologists Annual Conference, St. Louis, MO. See: www.dce.ksu.edu/jointmeeting/.

Aug. 7-9: Managing Vertebrate Invasive Species. Hilton Hotel, Fort Collins, CO. Contact: Kathleen A. Fagerstone, kathleen.a.fagerstone @aphis.usda.gov

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.

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, 2008: American Fisheries Society 138th Annual Meeting, Ottawa, Ontario. Contact: Betsy Fritz, bfritz @fisheries.org, (301) 897-8616, ext. 212.

Oct 5-9, 2008: 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. Provides for acceleration of the reduction of GHG emissions in the U.S. by establishing a market-driven system of GHG tradeable allowances to support the deployment of new climate change-related technologies and to ensure benefits to consumers from the trading in such allowances, and for other purposes.

S. 309. Sanders (I/VT) and 10 Co-Sponsors. Amends the Clean Air Act to reduce emissions of CO_2, and for other purposes.

S. 317. Feinstein (D/CA) and Carper (D/DE). Amends the Clean Air Act to establish a program to regulate the emission of GHGs from electric utilities.

S. 485. Kerry (D/MA) and Snowe (R/ME). Amends the Clean Air Act to establish 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). Amends the Clean Air Act to establish 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. Amends the Clean Air Act to establish a national uniform multiple air pollutant regulatory program for the electric generating sector.

S. 1201. Sanders (I/VT) and 3 Co-Sponsors. Amends the Clean Air Act to reduce emissions from electric powerplants, 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 (/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.

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.

Endangered Species Act (ESA)

S. 658. Thomas (R/WY) and 4 Co-Sponsors. Amends the ESA to improve 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). Amends the ESA to enable 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 manmade flood control levees.

Energy

H. R. 6. Rahall (D/WV) and 197 Co-Sponsors. Reduces the Nation's dependency on foreign oil by investing in clean, renewable, and alternative energy resources, promoting new emerging energy technologies, developing greater efficiency, and creating a Strategic Energy Efficiency and Renewables Reserve to invest in alternative energy, and for other purposes.

H. R. 80. Bartlett (R/MD). Provides for Federal research, development, demonstration, and commercial application activities to enable the development of farms that are net producers of both food and energy, and for other purposes.

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 the construction of the Arkansas Valley Conduit in the State of Colorado, and for other purposes.

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

H. R. 720. Oberstar (D/MN) and 3 Co-Sponsors. Amends the FWPCA to authorize 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 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.

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 the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 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 Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 to

establish vessel ballast water management requirements, and for other purposes.

Public Lands

H. R. 1463. Udall (D/CO) and Trancredo (R/CO). Provides a source of funds to carry out 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 (/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 it 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

Mississippi Interstate Cooperative Resource Association
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