River Crossings

Volume 19 **October/November/December 2010** **Number 4**

Chairman's Comments

The *Young Professionals Travel Stipend* is again being offered to a MICRA state young professional fisheries biologist who has conducted research on river fisheries and is needing financial aid to travel to a meeting during 2011 to present his/her results. The deadline for this year's applications has been extended to January 31, 2011. Application forms have been electronically mailed to all the state fish chiefs and are available on-line.

MICRA is moving forward on its *AIS Action Plan* with recent development of an informational brochure. Our Executive Board is in the process of deciding on the number of copies of the brochure to publish for distribution to MICRA entities and other interested parties. It's purpose is to bring to the attention of decision makers the magnitude of AIS issues which the states are having to deal with on a daily basis in the central U.S., and the fact that the AIS problem is a national issue not just a regional one.

Additional information on the *Young Professionals Travel Stipend* and the *AIS Action Plan* can be found on MICRA's new website. That's right, MICRA has a new website! Visit www.MICRArivers.org and let us know what you think. The old website has been out of service for several months and resulted in the development of this completely new website. The new website is a work in progress and is continually being refined. Please give us your feedback and help us to make the website a useful resource for you.

Bobby Reed
MICRA Chairman

The Latest Asian Carp Impacts

Asian carp impacts continue to pile up across the Basin. This summer Kansas documented juvenile Asian carp in most of the state's tributaries to the Kansas and Missouri rivers. Hundreds of thousands of young Asian carp were stockpiled below a low head dam in suburban Kansas City. The school of fish stretched as far as the eye could see down the Kansas River, and the carp were so thick, a quick scoop with a landing net could collect 50 or more 3-10 inch long individuals.

Silver carp jumping frenzy.

At risk is Kansas' $250 million sport fishing economy. Jason Goeckler, Kansas Department of Wildlife and Parks aquatic nuisance species coordinator, said adult bighead carp were first found in the Kansas River in 1993, and the silver carp showed up in 2006. Last summer the first and only juvenile Asian carp was found in a Kansas stream, but early this August mass numbers of young Asian carp began showing up. Duane Chapman, USGS-Columbia, MO, credits this year's ideal spawning conditions to heavy rains, which created lots of shallow, calm backwater area along the Missouri River.

Asian carp will continue to be found below dams in the Kansas River and its tributaries. But aquatic experts say it's imperative that the bighead and silver carp not gain a foothold in Kansas' reservoirs or lakes. Chapman said the fish could thrive better in lakes — their native habitat in Asia — than in rivers. Gizzard shad would likely be a major loser if this were to happen. The plankton-feeding shad are at the base of most aquatic food chains in Kansas (and other Midwestern) lakes. Indirectly, Chapman said, deep-water

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fish like walleye, crappie, wipers and stripers would be the gamefish most affected. All rely heavily on shad and spend much of their time feeding in the deep water where Asian carp also prefer to feed.

But the aquatic food chain isn't the only Asian carp concern. In late August, Houston, TX resident Brad Pennington, 43, one of the favorites among men's solo racers in the *Missouri River 340 Canoe and Kayak Race*, was knocked out of the race when a 30-pound silver carp jumped from the water and hit him in the head. "It felt like a brick hit me," Pennington said. He said that he had to withdraw from the race just hours into it because of a "pounding, pounding headache that kept getting worse." "It's definitely a risk of being out on the river," said Tracy Hill, project leader for the U.S. Fish and Wildlife Service's Columbia, MO fisheries office. "It's extremely serious. Those things can kill you."

In fact, that almost happened to Jenniffer Herrin of Nesbit, MS during a family inner-tubing accident at Tunica Lake in Mississippi. Herrin was being pulled in the inner tube behind a boat when, "All of a sudden we got to one area of the lake when hundreds of fish started jumping out the water everywhere," she said. "I remember going under water and trying to get back to the top to get a breath and I couldn't get to the top. The fish kept me under water and I remember thinking this is it. This is my last breath." Herrin said her husband said he was screaming to his son "I don't see her. I don't see her" and finally the fish moved and my life jacket floated to the top of the water and they spotted my life jacket, she said. Herrin's husband then jumped in to save her because she wasn't breathing and her collarbone was broken.

Herrin says she won't ever get back into the water again at Tunica Lake and warns others to be careful as well. She said, "I wouldn't swim. I wouldn't tube or ski and if you're out there just be very, very cautious." Herrin also says she hopes the Mississippi Wildlife and Fishery agency will eventually place warning signs at Tunica Lake to let people know what might be in the water.

Sources: Michael Pearce, *The Wichita Eagle*, 8/22/10; Alan Scher Zagier; AP/*The Seattle Times*, 8/26/10; and Alex Coleman; *WREG.com, Memphis*, 9/20/10

Great Lakes Hydrological Separation Update

John Goss, an environmental activist and former state official from Indiana, was appointed in early September as the Obama Administration's point man or "Asian carp czar" in the fight to keep Asian carp out of the Great Lakes. Goss previously served as Executive Director of the *National Wildlife Federation's* Indiana affiliate, as Director of the state Department of Natural Resources and as Vice Chairman of the *Great Lakes Commission*. In his present position he will serve as the primary advisor to Nancy Sutley, head of the *White House Council on Environmental Quality*, and be charged with carrying out a $78.5 million federal effort to keep Asian carp.out of the Great Lakes.

His appointment was praised by most Great Lakes environmental interests, but Rep. Candice Miller, (R/MI), said the Asian carp job should have gone to someone from her state because it has the most to lose. "Mr. Goss must understand that we in Michigan and other Great Lakes states will not tolerate delays and study after study before decisive action is taken," Miller said. "The time to act is now."

A coalition of environmental groups also called for immediate action when they hand delivered more than 10,000 post cards to President Obama, urging him to demand federal regulators implement a solution, including the construction of a permanent barrier to separate the Great Lakes from the Mississippi River system — considered the main route the carp are following to reach the lakes. "Our message from people around the region couldn't be clearer: `We cannot wait any longer. We want a permanent solution that will protect our Great Lakes way of life,'" said Cheryl Mendoza, associate director of the advocacy group, *Freshwater Future*. The groups argue a permanent barrier between the two basins is the only guaranteed way to keep Asian carp and other invasive species from traveling between the two basins. Other groups participating in the postcard delivery included the *Apostle Islands Sport Fisherman's Association, Environment Illinois, Great Lakes United, Hoo-*

River Crossings

Published by

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sier Coho Club, N*atural Resources Defense Council, Northwest Indiana Steelheaders, Sierra Club*, and *Environment Illinois.*

Although the focus of hydrologic separation of the Great Lakes from the Mississippi River Basin has been on the Cal Sag and Chicago Sanitary and Shipping Canal, the U.S. Army Corps of Engineers (COE) has now identified 36 locations which could "establish a hydraulic connection in the right weather conditions." According to the COE, about half of those possible pathways are of enough concern to study further, and fewer than six are of the gravest concern. The most likely courses for a back-door entry into Lake Erie are through the Maumee River (from the Wabash River in Indiana) near Toledo or the Ohio and Erie Canal (from Long Lake in Summit County), according to a COE report. The threat that carp could cross into the lakes from those sites was deemed "acute". The report also identifies more than a half-dozen other less likely, but still possible, locations for carp crossings in Ohio where the Great Lakes watershed intersects the Ohio River watershed. Lake Erie is thought by most Great Lakes experts to be the one Great Lake where the carp are most likely to thrive.

The COE has taken temporary action to block two of the possible 36 entry points. Construction of an 8 foot high, 1,177-foot, chain link fence and a supplemental 494-foot debris catch fence in Eagle Marsh near Fort Wayne, IN was completed in late October (see photos at right). This fence is designed to stop Asian carp movement from the Wabash River through the marsh and into the Maumee River, a tributary to Lake Erie. Although the Wabash and Maumee basins drain in opposite directions and have no direct connection under normal conditions, their waters do comingle under certain flood conditions in Eagle Marsh, a 705-acre restored wetland. The final cost of the fence project is still being determined, but indications are that it will be less than the $200,000 bid estimate. The U.S. EPA and the U.S. Fish and Wildlife Service are funding the cost of the project through the *Great Lakes Restoration Initiative*. While blocking passage of adult Asian carp is a primary goal of the fence, it also is designed to allow movement of water so as not to increase flood elevations and cause property damage. Silver carp spawning has been documented downstream in the Wabash River system, and the fence would do little to stop the movement of small fish. Presumably this spawning activity would be far enough downstream that small Asian carp would not likely be found in the vicinity of Eagle Marsh.

A second 13-mile long concrete and steel mesh fence designed to keep the carp from traversing the narrow strip of land between the Des Plaines River and the Chicago Sanitary and Ship Canal during floods was also completed in late October (see photo below). The $4.5 million project, paid for with money from the federal *Great Lakes Restoration Fund*, was fast-tracked by state, county and city officials and completed in just about a year. John Rogner, Assistant Director of the Illinois Department of Natural Resources said that, the mesh openings in the fence are designed to block passage for all but the smallest fish eggs and water. The Des Plaines River runs parallel to the Sanitary and Ship Canal through Chicago's south suburbs. The distance between the two is only a couple hundred feet in some low-lying areas that are prone to flooding. The mesh fence, is only three-feet high in some areas, but rises as high as eight feet in areas where flooding is deeper.

Carp fences: Top - Chicago Des Plaines River (Chicago Tribune Photo); Middle and Bottom - Eagle Marsh fence (WLFI.com Photos)

"It was obvious with floods in the last couple of years that there are several points around the Great Lakes where flood waters could possibly allow Asian carp to move into the Great Lakes," Goss said. "These are the areas where we need to focus our study so that we aren't outflanked by the Asian carp," he said in a telephone interview. Goss and Maj. Gen. John W. Peabody, commander of the Great Lakes and Ohio River Division of the COE presented the information in early November in Chicago. They also laid out their $25 million, five-year plan to study further how to stop not only Asian carp, but also dozens of other invasive species from moving in either direction between these two systems. COE officials concede that the exhaustive, multiyear study could ultimately cost much more that its current $25 million price tag before the its expected completion in 2015. "The scope of this study is massive and complex," said Peabody. "It deals with dozens of different kinds of aquatic species which migrate naturally through a variety of means, and there is no known simple single or set of apparent solutions for this problem." "This study is another accomplishment in the aggressive strategy to protect our Great Lakes from Asian carp," Goss said. In compiling the research, the COE will lean heavily on the Department of Natural Resources in various states and other experts whose local knowledge of water routes and topography will provide clues to how invasive species move through the system, Peabody said.

But environmental advocacy groups, have criticized the study as just another delay action to put off establishment of a permanent hydrologic separation between the Great Lakes and Mississippi River Basin. Community ecologist Reuben Keller who has made a career out of studying aquatic invasive species in freshwater systems like the Great Lakes, and measuring their ecological and economic costs said, "This is a really unique situation for invasions into the Great Lakes". "It's unique in that we can see this invasion coming, and we may have the opportunity to prevent its arrival…. Asian carp gives us this opportunity to be proactive," he said. But just like the more than 180 biological invaders that came before it, he warned, "we need to assume that if [Asian carp] make it to the Great Lakes, we'll never get rid of them."

But Keller said, "Asian carp DNA is turning up so often that it is really hard to explain how that DNA is getting there without there being populations of Asian carp that are beyond the electric barrier." This suggests that the barriers may not be working as intended to block the fish, Keller said, but even if they do, they still won't block invasive invertebrate or plant species from getting into the lakes from the rivers, or the other way around.

But Gen. Peabody defends the study, saying that it takes time to understand the complexities of invasive species migration and that the COE is interested in the best long-term solution, not a quick fix. "I'm not personally concerned about the level of public interest waning on this issue, given my experiences over the last year," he said. But the COE admits on their web site that they have found new evidence that Asian carp are crossing the electric barrier. The web site documents eDNA evidence of both bighead and silver carp found in the Des Plaines River close to Lake Michigan during sampling conducted in October. No further details were given about the discovery, but it would seem that such evidence points to the urgency of the need for immediate action to stop them, not further study.

Chicago Mayor Richard Daley said in mid September that reversing the Chicago River to flow into Lake Michigan may be the Great Lakes' "salvation" from the invasive Asian carp. "I said that's a great project, we have to start thinking about it now, and of course go to the business community and set up a committee and work with Water Reclamation District and others and Army Corps of Engineers," Daley added. He went on to say that reversing the river wouldn't require the Metropolitan Water Reclamation District to reverse its long-standing opposition to treating sewage before it's dumped in the river. "An aggressive solution to a problem is almost always cheaper than repairing the damage later," Daley said at a 2003 convention. A river reversal could also boost barge business and pressure Chicago to improve its sewage treatment system — the city does not currently disinfect human waste flowing into its treatment plants.

A study released in late October by the *Natural Resources Defense Council* (NRDC) recommends creating a hydrologic separation between the Great Lakes and Mississippi River System by damming the Chicago canal system and pumping water over the dam into the Mississippi River Basin. The recommended dam system would also reverse the flow of the Chicago River back into Lake Michigan, its original direction before the canal system was installed in the 1900s. "It's not an engineering marvel," said Bill Abolt, a former commissioner of the environment for the City of Chicago who now works for the environmental engineering firm that completed the study. "You're building a dam and installing some pumps." The $100,000 NRDC study took eight months to complete. It does not estimate how much it would cost to build the dam, but Abolt estimated it could be completed in two years. The report also did not address how the dam system would affect the barge industry.

The NRDC report was not well-received by barge operators. "If Asian carp is the face of this debate, NRDC is the face of ulterior motives and hidden agendas," said Mark Biel, chairman of the barge industry group *Unlock Our Jobs*. Biel noted the study does nothing to address the fact that stopping the carp in this manner also will stop barges. He called the plan a distraction to marshaling "a robust regional effort" to keep the carp from colonizing Lake Michigan. NRDC's Henry Henderson acknowledged that the study does not address how to accommodate the barges. But he said further studies will look at ways to use the blockage to enhance barge traffic by developing a cargo transfer system to better integrate barge traffic with trucks and trains.

Richard Lanyon, chief of the Metropolitan Water Reclamation District of Greater Chicago, which built and operates the canals, called the study flawed because it is "based on hopeful technology, very preliminary technical analysis and no cost impact estimation." Josh Ellis of the Metropolitan Planning Council in Chicago raised other issues. "There are no easy answers," he said, "my hunch is, if we're sending less water into the Des Plaines, there's going to be less water downstream. There could be an effect on recreational boat and freight movement. If closing the locks were the only thing you did, you would probably not greatly affect the total amount of water, nor the quality of the water, flowing south to the Illinois." He added, however, that if there were less water, it would be of a higher quality because less raw sewage would make its way into the Des Plaines and then into the Illinois. At any rate, he said, some water likely still would come down into the Illinois if the Chicago River were re-reversed. He noted that the Chicago River is not the only source for the Illinois, there are other tributaries. Ellis cautioned that changes to the Chicago River ultimately revolve around the issue of sewage disposal, not fish. "The goal is to have everything make sense for the different water interests," he observed.

Among those downstream interests are, of course, the barge companies. Terry Wiltz is with *Florida Marine Transporters*, based in Mandeville, LA, a company that does much business on the Illinois River through La Salle County. He said, "They can't afford for (the Illinois) to drop too much. There's already a lot of problem spots. The Army Corps of Engineers has to do dredging around Starved Rock." Metropolitan Water Reclamation District's Lanyon said he doubts the river will be reversed. But if one or both locks on the Chicago River were closed, it would hamper river traffic to the Great Lakes from the Illinois River, but not movement down the Illinois to the Mississippi. Illinois River anglers also expressed an interest. "The lock and dam usually keeps sufficient water for barges, but for the most part, the channel is nine feet deep and I've seen years when the level got very, very low. In the latter part of the year, there is not a great deal of margin," said Bruce Welbers of Spring Valley, president of the *Better Fishing Association of Northern Illinois*, in reference to any move that might lower the Illinois River.

The COE who is conducting its own study of restoring the barrier between Lake Michigan and the Mississippi River Basin, said it could not comment on the NRDC proposal until its investigation is complete. But that investigation is expected to take years.

With regard to the effectiveness of the electric barrier, Gen. Peabody testified in the on-going federal court case that metal-hulled ships can disrupt a small part of the barrier's electrical field. And when asked by an attorney for the states whether a fish could get through the barrier by swimming close to a barge, Peabody said, "It's possible. We consider it very unlikely."

An Italian biologist testified in federal court that the eDNA tests which have indicated the presence of Asian carp in the Chicago area could give misleading results. Gentile Ficetola of the University of Milan said the so-called eDNA testing could have found remains of dead fish or fish that were transported in barges' ballast water. Ficetola said that he and his colleagues were pioneers of the eDNA technique. Dr. David Lodge, the University of Notre Dame scientist who found carp eDNA in Chicago waters, acknowledged such possibilities but said it's

more likely the eDNA came from live fish.

When asked in court about the invasive potential for Asian carp in the Great Lakes, USGS's Duane Chapman said "I do believe individual (fish) will survive, but a large population? It's hard to say." Chapman has studied Asian carp in the U.S. and abroad for a decade. "We don't know what will happen, but we can make some guesses," he said Calling the Asian carp's habits "cryptic," Chapman told Judge Robert M. Dow that even if Asian carp enter Lake Michigan in large numbers, it could take decades before scientists know whether the Great Lakes are suitable habitat for the carp's long-term survival.

Outside of court, Konrad Dabrowski, an aquaculturist with Ohio State University's School of Environment and Natural Resources, who has studied Asian carp for 15 years says the threat to the Great Lakes posed by Asian carp has been greatly exaggerated. He claims that the conditions that allow the carp to thrive in flowing rivers do not exist in the Great Lakes or its natural tributaries. In order to spawn successfully, Dabrowski says, water flow and temperature must be elevated to certain thresholds simultaneously. Nowhere in the Great Lakes, including the Maumee River, do such conditions line up, he said. Asian carps were introduced to Dabrowski's native Poland without harmful consequences years ago, he said, to control algae and other unwanted life forms in certain containments. "There are populations of Asian carp in Europe that are 40 years old and never spawned," he says. He also dismisses the notion that an electronic barrier will keep the carp out of Lake Michigan. Once in that lake, it'll be only a matter of time before a few reach Lake Erie. However, because it's unlikely they'll reproduce, the carp won't have a major impact on native fish, he said. What's more, the cold conditions that prevail for much of the year in the Great Lakes generally won't allow the carps that do get in to continuously vacuum up the bottom of the food chain and grow to enormous sizes. Although he says he's "anti-carp" in areas where they have crowded out native species, Dabrowski said that in some situations not excluding Grand Lake St. Marys — the carps might be part of a solution for the blue-green algae infestation. "They can eat the blue-green algaes without becoming intoxicated," he said. Numerous biologists, however, disagree with Dabrowski's conclusions and his somewhat cavalier attitude toward the Asian carp problem.

However, Gary Fahnenstiel, senior ecologist with NOAA's *Great Lakes Environmental Research Laboratory* thinks the Asian carp will have difficulty surviving in the Great lakes for another reason. In a series of newly published articles in the *Journal of Great Lakes Research*, Fahnenstiel and his colleagues claim that quagga mussels, which invaded the lakes decades ago, have devoured so much plankton in southern Lake Michigan that the entire food web has been altered and there will be no food for the Asian carp. Mussels have "beaten the Asian carp to the buffet table," Fahnenstiel said. "While the public has been worried about Asian carp and the Chicago canal, another invader has fundamentally changed the lake and made it inhospitable to the Asian carp." Some types of microscopic plants have declined more than 80 percent with the mussel's arrival, they said, which probably explains a similar drop-off of a freshwater shrimp species that is a dietary staple for small fish pursued by prized sport varieties such as salmon and trout.

But many scientists and policy makers insist that the carp could survive and even thrive in a plankton-depleted environment. "They can eat other things besides plankton," said Chapman. "They are very flexible fish." Chapman and his colleagues are measuring Asian carp's appetite for substances that will remain abundant in the Great Lakes even where plankton runs short. One example is bits of food the mussels spit out rather than digest. Another is cladophora, a green algae that annoys beachgoers by washing ashore in stinky, rotting clumps. The cause of cladophora's resurgence in recent years is unknown but some believe it's linked to the mussels, which improve clarity as they filter water, allowing sunlight to penetrate deeper and thus stimulate the algae growth. "Chances are pretty good that Asian carp would do just fine eating that stuff, but we're going to test it to make sure," Chapman said.

Meanwhile, the Government of Canada has launched a comprehensive, basin-wide, binational Asian carp risk assessment that will take approximately 18 months to complete. This work will pinpoint key areas within the Great Lakes basin most vulnerable to invasion and identify likely routes where they could enter the Canadian side of the lake system. The results of the project will help to identify potential Asian carp habitat and spawning locations, and transfer routes to help guide prevention, monitoring, rapid response, and control efforts by authorities on both sides of the border. By gaining a greater understanding of the potential spread, population numbers and specific impacts of Asian carp, the Government will be prepared to take immediate, effective actions against any emerging threats to Canadian waters a news release stated. Canada has allocated approximately $415,000 over the next two years to fund this project, with an additional in-kind contribution from the *Great Lakes Fishery Commission* (GLFC).

Marc Gaden, spokesman for the GLFC, says he hopes never to find out how well the carp would fare in Lake Michigan. "What's important is to focus on the prevention," Gaden said. "Once you let the invaders in and they spread, it's permanent." In federal court Notre Dame's David Lodge said, "I think there is a risk, a very imminent risk of invasion." He added ominously that such "invasions are often irreversible."

Meanwhile in Congress, Senate bill 1421, introduced by Sen. Carl Levin, (D/MI) in 2009, passed by unanimous consent in a November Senate vote. The bill would amend the federal Lacey Act to add the bighead Asian carp to a list of injurious species that are illegal to ship or import into the U.S. A companion bill, H. R. 48, introduced by Rep. Judy Biggert (R/IL) is pending in the House of Representatives.

Sources: Carla K. Johnson and John Flesher; *AP*, 9/8/10; *The (Toledo) Press*, 9/30/10; *Fisheries and Oceans Canada News Release*, 10/7/10; Joel Hood, *Chicago Tribune*; 9/11, 10/29, 10/31 and 11/13/10; *The Journal Gazette (Ft. Wayne, IN)*; 10/20/10; Michael Scott, *The (Cleveland) Plain Dealer*, 11/9/10; Dan Egan, *Milwaukee Journal Sentinel*, 9/11 and 10/20/10; H. Dardick and J. Hood, *Chicago Tribune*, 9/10/10; Henderson et al., *Re-Envisioning the Chicago River: Adopting Comprehensive Regional Solutions to the Invasive Species Crisis*, NRDC Chicago, September 2010, www.nrdc.org/policy; Dan Churney, *The (Ottawa, IL) Times*, 11/6/10; Dave Golowenski, *The Columbus Dispatch*, 9/5/10; John Flesher, AP/*San Francisco Chronicle*, 9/29/10; Michael Tarm, *AP/Bloomberg Businessweek*, 9/7/10; Steve Kellman, *Circle of Blue WaterNews*, 11/14/10; Eartha Jane Melzer, *The Michigan Messenger*. 11/11/10; Gillian Losh, *The Badger Herald*, 11/19/10 and *Greenwire*, 9/13, 9/29 and 10/20/10

World's Rivers in Crisis

For the first time, scientists from around the world have assessed how the most critical threats to rivers affect people and aquatic life. Their diagnosis: "It's a crisis." Nearly 80% of the world's human population lives where river waters are degraded or depleted and their water security is highly threatened, according to a report published in late September in the journal *Nature*. In addition to that, thousands of species of plants and animals in 65% of the globe's rivers are at risk of extinction because of lack of water, pollution and destruction of watersheds, the report says. "We're pushing these river systems toward catastrophe," said Peter B. McIntyre, a professor of zoology at the University of Wisconsin-Madison's *Center for Limnology* and a co-author of the report.

Water security is determined by access to a reliable source as well as the quality and quantity of the resource. The team concludes that threats to water security for humans are on a par with threats to the water security required for biological diversity. "Our focus is on rivers, which serve as the chief source of renewable water supply for humans and freshwater ecosystems," researchers said in the *Nature* report. Unlike other river studies, this global analysis for the first time, summarizes the impact of activities along entire rivers, headwaters to mouth, rather than at single locations. According to Charles J. Vorosmarty of the City University of New York and a co-author of the report, a few thousand years of human civilization has resulted in a "fully global syndrome of river degradation."

Team members were not surprised to find levels of threat to water security increasing downstream on rivers where there is dense development. Not even dilution by increasingly larger water volumes could eliminate the problems. The Nile of Egypt and the Yangtze of China are on this list. But "What made our jaws drop is that some of the highest threat levels in the world are in the United States and Europe," McIntyre said. "Americans tend to think water pollution problems are pretty well under control, but we still face enormous challenges. The fundamental chemistry of rivers in much of the U.S. has profoundly changed with agricultural chemicals, stormwater runoff, air pollution, high density of development and other threats," he said.

By investing in drinking water treatment technologies to remove contaminants, U.S. communities are insulating themselves against problems but not fixing causes of those problems or preventing new threats, according to the team. Consequently, risk of illness and disease for residents of the U.S. and other wealthy nations is reduced while biodiversity of those nations remains vulnerable to the pollution, loss of water and other problems. "We're not making similar investments to protect aquatic species," McIntyre said.

Since poor nations cannot afford investing in treatment technologies, levels of threats to water security remain high for their residents, as well as the aquatic species struggling to survive in those rivers. "We know it is far more cost effective to protect these water systems in the first place," Vorosmarty said. Preserving floodplains, protecting watersheds through better land-use management, and keeping pollutants out of rivers are among the team's recommendations.

The unchannelized (left) vs the channelized (right) Missouri River. The unchannelized river provides far more biodiversity and ecosystem services than does the channeliezed river.

The report's careful accounting documents "a pandemic deterioration of fresh waters," wrote Margaret A. Palmer, a river restoration expert at the University of Maryland's *Center for Environmental Science*, in a separate essay in the journal. She is not a member of the team who compiled the report. The report provides more evidence of the vital links between healthy ecosystems, biodiversity and human well-being, Palmer said.

The team's analysis of river health around the globe used information on 23 damaging activities summarized as four common problems:

- water resource development, such as dams and water withdrawals;
- pollution, including nitrogen from Midwestern farm fields flowing in the Mississippi River to the Gulf of Mexico, or into Green Bay of Lake Michigan and inland lakes;
- watershed disturbance, such as loss of wetlands and forests and stormwater runoff to streams; and
- disruption of native aquatic species through release of exotic pests and overfishing.

Additional information on the team's work can be found at their web site: www.river-threat.net.

Sources: Don Behm, *Milwaukee Journal Sentinel*, 9/29/10; and *Greenwire*, 10/1/10

Nutrients Continue to Choke Waterways and Groundwater

Nearly 40 years after passage of the Clean Water Act, excessive nutrients are still choking U.S. rivers, lakes and streams, the U.S. Geological Survey (USGS) said in a report released in late September. From 1992 to 2004, more streams experienced an increase in nitrogen and phosphorus levels than saw a decline, said Neil Dubrovsky, USGS's chief of nutrient research and leader of the national water quality assessment. Nutrients are also on the rise in groundwater, and an increasing number of wells are drawing from supplies that fail U.S. EPA's standards to protect public health, Dubrovsky said.

"Current efforts to limit nutrients in water are not producing measurable effects on a nationwide scale," Dubrovsky said, adding that new pollution controls are needed to address nutrient pollution from "nonpoint" sources such as farms, parking lots, and lawns. The USGS report was based on 24,000 water samples taken between 1992 and 2004 from more than 500 bodies of water.

Dubrovsky said it is likely that groundwater conditions have worsened since 2004 and will continue to do so as surface nutrients move down the water table over a period of years or decades. He declined to speculate on the change in surface water since then, saying samples are being taken but have not yet been subject to a comprehensive analysis.

Nutrient pollution is one of the top three causes of degradation for streams and rivers, according to the U.S. EPA. At high concentrations, nutrients overfertilize waterways and spur algae blooms that later create low-oxygen zones in which aquatic creatures cannot survive. The most famous "dead zone" is the hypoxic zone in the Gulf of Mexico, which is fed in large part by agricultural runoff brought to the Gulf by the Mississippi River. The use of nitrogen fertilizer has grown tenfold since 1950, according to USGS statistics.

Ephraim King, director of U.S EPA's Office of Science and Technology, defended his

agency's efforts on nonpoint-source pollution, saying it has put in place a system that can address the nutrient problem in the future. "We've made substantial progress," he said, "but we have a lot of work left to do."

Source: Patrick Reis, *Greenwire*, 9/24/10

Report Blames Agribusiness for U.S. Waterway Ills

Corporate farming is responsible for some of the worst U.S. water quality problems, according to a report released in mid November by the advocacy group *Environment America*. The report links agribusiness runoff to so-called "dead zones" in the Chesapeake Bay, the Gulf of Mexico and Lake Erie and to excessive nutrients, bacteria and sediment in other waterways. Big agribusiness has boomed, the group says, and has used its size and power to stave off regulations and dominate farm markets.

Manure spread on crop fields from large livestock confinement operations has become a fertilizer cash crop as valuable as the livestock itself in some locales in the Midwest.

Since 1993, the report says, for example, the amount of U.S. milk coming from farms of 200 cows or more, more than doubled, from 31 percent to 66 percent. Similar shifts have given rise to a growing number of large-scale poultry operations, it says. "The industrial giants that now produce much of that food are not keeping their waste out of our waterways," said John Rumpler, senior attorney at *Environment America*.

The report also blames industry-promoted federal policies for widespread, chemical-intensive corn planting for ethanol, corn syrup and animal feed that has contributed fertilizer pollution linked to dead zones, where fertilizer-fueled algae blooms consume dissolved oxygen needed by aquatic life.

But an agriculture industry representative blasted the report as outdated and "inflammatory," saying that the farm industry is among the nation's most heavily regulated and has steadily reduced its pollution over the past 50 years. "If they're using data, then it's old data, because the industry is second to none in the amount of regulatory oversight they're subject to," said Don Parrish, senior director of regulatory relations for the *American Farm Bureau*. "These guys can't hiccup unless the federal government says it's OK to do so," he said.

Environment America's report singles out eight companies -- *Perdue Inc., Tyson Foods, Pilgrim's Pride, Smithfield Foods, Cargill, JBS, Vreba-Hoff* and *Archer Daniels Midland* -- linking each to a regional pollution problem.

Source: Paul Quinlan, *Greenwire*, 11/18/10

Intersex Fish and Poultry Waste Runoff

University of Maryland scientists have found intersex fish in six lakes and ponds on the Delmarva Peninsula in Maryland, a possible indication of contaminants in the water from nearby farms. Intersex fish were first found in the region seven years ago in the Potomac River. The condition is not as severe as it is in the Potomac, the scientists say, but it appeared to be widespread in the largemouth bass of the peninsula's water bodies. "We find it in every lake that we look," said Daniel Fisher, senior research scientist at the University's *Wye Research and Education Center*. "We found fish with intersex in all of the lakes, and the percentage [with the condition] ranged from 33 percent of fish we sampled to 100 percent."

In separate laboratory tests, the researchers exposed juvenile fish to water contaminated with poultry waste and found their sex and development to be affected. The hormones in the waste were similar to the levels measured in runoff from nearby farm fields, the researchers said. About 600 million chickens are raised each year on the peninsula, producing up to 1 million tons of waste or more.

Intersex fish have been found across the U.S., and scientists suspect that the condition is linked to pesticides, pharmaceuticals, personal care products and animal waste. According to scientists, the chemicals or substances act like hormones and disrupt an animal's endocrine systems.

Sources: Timothy Wheeler, *Baltimore Sun*, 11/11/10; and *Greenwire*, 11/12/10

Mountaintop Removal Mining Issues

An independent scientific panel set up by the U.S. EPA has found that mountaintop removal mining causes serious damage to Appalachian streams. The *Science Advisory Board* report, in agreement with an earlier U.S. EPA study on the issue, said that valley fills increase the levels of electrical conductivity downstream from mining operations and threaten aquatic life in streams. The panel advised EPA that electrical conductivity is a coarse measure of water quality, and the agency should more carefully characterize the nature of the damage. The panel recommended that EPA study the areas affected by strip mining during different time frames, and create an inventory of all the habitats affected. It also called for more detailed studies of biodiversity and ecosystem loss. The advisory board made its recommendations based on a study EPA released in April that looked at the water impacts of mountaintop removal.

Also in April the U.S. EPA issued guidance saying companies seeking Clean Water Act permits for surface mines in Pennsylvania, Ohio, West Virginia, Virginia, Kentucky and Tennessee would have to show that their projects would not cause pollutant concentrations to climb past roughly five times the normal level, a limit the agency said would protect 95 percent of aquatic life. Then in July, the *National Mining Association* (NMA) sued to overturn the new requirements and in September asked the U.S. District Court for the District of Columbia to suspend the rules during the trial, saying they will put coal companies out of business before the trial can be completed. The NMA claims EPA did not allow the public adequate opportunity to comment on the new standards and is basing them on faulty science.

Meanwhile, *Earthjustice*, the *Sierra Club* and six Appalachian groups asked the court to let them intervene in the lawsuit saying the suit would prevent EPA from protecting the region's waterways and people. "For 40 years, the Clean Water Act has protected Americans from unacceptable pollution like the mining waste that destroys our essential mountain streams. But here in Appalachia, we're still waiting for real protection," said Debbie Jarrell, assistant director of the advocacy group, *Coal River Mountain Watch*.

In October, West Virginia also filed a lawsuit seeking to void EPA's new guidelines. Gov. Joe Manchin (D), who resigned the post in

November after being elected to replace the late Sen. Robert Byrd (D) in the Senate said EPA would put his state's coal industry out of business, and he has pledged to push back on the agency as a member of the Senate. The *Sierra Club* and the Appalachian conservation groups then asked the U.S. District Court for the Southern District of West Virginia to also let them intervene in the West Virginia case. The groups targeted Manchin, saying he was blocking West Virginians' access to clean water and threatening their health. "If the state continually abdicates its responsibility to protect us and our water, then I say thank goodness we have the EPA willing to enforce one of our most basic, and popular, laws — the Clean Water Act," said Jim Sconyers, chairman of the *Sierra Club's West Virginia Chapter*.

According to a revised report issued in mid November by *Downstream Strategies LLC* and the *West Virginia Center for Budget and Policy* (WVCBP), the coal industry costs West Virginia's state government $42 million more than the industry paid in taxes and other revenues. The report corrects an earlier number released in June that put the industry's costs at $97.5 million above what the industry paid the government. The earlier report was funded in part by environmental groups. The revision came about after the state's coal lobbyists and industry researchers at West Virginia's Marshall University criticized the findings. "We agreed with a number of their suggestions; however, several are simply mistaken and fail to acknowledge many of the costs associated with coal mining," said Ted Boettner, director of the WVCBP. "After incorporating their suggestions that were valid, we found that the net impact of the coal industry for the state budget in fiscal year 2009 remains negative, meaning that the industry imposed an overall cost on the state and its taxpayers." "The Legislature should consider enacting new policies that ensure that the coal industry, rather than the state's taxpayers, pays for the costs associated with coal-related activity," said Rory McIlmoil of *Downstream Strategies*.

Then in October, EPA also blocked 11 water discharge permits for surface mining projects in eastern Kentucky saying the "best science available" made the action the best way to protect Kentucky's water. "Despite many efforts by the EPA, state officials have not engaged in a meaningful discussion of sustainable mining practices that will create jobs while protecting the waters that Appalachian communities depend on for drinking, swimming and fishing," EPA said in a statement. The agency added that it provided the guidance at the request of Kentucky to ensure that "permits are reviewed using the best science available to protect residents from the significant and irreversible damage [surface mining] can have on communities and their water resources."

In response, the state and the *Kentucky Coal Association* filed yet another federal lawsuit charging that the agency superceded state authority and established a new standard that requires public notice and a comment period. EPA promised to work with the industry to reach an agreement that would allow more environmentally safe mining.

View of mountaintop removal mining in West Virginia.

Meanwhile, Tennessee Gov. Phil Bredesen (D) asked the federal government to restrict coal mining on 500 miles of the Cumberland Mountain ridgetops, preserving the land for recreation and hunting. Under the petition filed with the U.S. Office of Surface Mining and Department of the Interior, mining would still be allowed below the mountaintops and even on them, although with restrictions. But Bredesen wants the federal government to help protect the mountains' "important cultural, recreational and scientific resources." Federal action would also settle a dispute between the state and mining companies over control of the region. The state controls the surface rights, while others control the mineral rights.

Some conservation groups and Sen. Lamar Alexander (R) support the proposal. Coal groups, however, say it is a threat to property rights. Chuck Laine, president of the *Tennessee Mining Association*, said the group was "strongly opposed" and that the state was "attempting to take the mineral rights from the rightful owners without any proper compensation." Much of the land is part of a 2007 conservation project called *"Connecting the Cumberlands,"* which established new public lands and linked them with other wildlife management areas. A federal declaration that the land is "unsuitable for mining" would preserve the connected area, said Bredesen

Sources: Ken Ward Jr., *Charleston (WV) Gazette*, 9/30 and 11/15/10; Anne Paine, *Nashville Tennessean*, 10/2/10; Tom Loftus, *Louisville Courier-Journal*, 10/19/10; Patrick Reis, *Greenwire*, 10/14/10; and *Greenwire*, 7/20, 10/1, 10/4 10/6, 10/20 and 10/16/10.

Fracking Update

Drilling for natural gas in the *Marcellus Shale* formation running through the Appalachian Basin can degrade nearby streams, according to a preliminary study by the *Academy of Natural Sciences in Philadelphia*. Water conductivity, an indicator of contamination by salts that are a component of drilling wastewater, was almost twice as high in streams near numerous drilling wells as in streams in areas with no drilling. Populations of salamanders and aquatic insects, animals sensitive to pollution, were 25 percent lower in streams in areas with high drilling activity.

"This suggests there is indeed a threshold at which drilling — regardless of how it is practiced — will have a significant impact on an ecosystem," said David Velinsky, vice president of the academy's *Patrick Center for Environmental Research.* The study has not been peer-reviewed or published, but indicates further research should be pursued, Velinsky said. More than 5,000 permits have been issued for wells in the *Marcellus Shale*, though only about half have been drilled. The *Heinz Foundation* is funding a three-year, $2 million baseline survey of aquatic and terrestrial ecosystems around the drilling area in order to track how the environment is affected.

Meanwhile, Tracy Bank, a geochemist and assistant professor in geology at the State University of New York, Buffalo, said in research presented at the *Geological Society of America* that all wastes from hydraulic fracturing for natural gas, both liquids and solids, should be considered potentially hazardous material. Bank's research shows the need to take precautions in disposing of both kinds of fracking waste. Bank and her colleagues examined fracking wastes for the presence of uranium and other elements in the *Marcellus Shale* formation. She said the chemical mapping of *Marcellus Shale* samples turned up virtually every single element on the periodic table. "It's a lot of information," she said, "and it's going to take a long time to process through it."

Bank said her work to date has focused on uranium because she has a background in uranium remediation, but she plans to look at the other elements, as well.

Debate on the use of hydraulic fracturing in all shale reserves has been heated, focusing largely on the chemical mix pumped into the ground by drillers and on the disposal of the liquid that returns to the surface. Solid waste created through fracking, though much smaller in volume than the liquids, appears to be less studied and less regulated, Bank said. "To my knowledge, no one is testing for the metals," she said. These metals are potentially dangerous, and in my opinion, everything that comes out of the holes, because there's the potential to be enriched with toxic metals, should be considered a toxic waste." The concern is not radioactivity, Bank said, because uranium is very weakly radioactive. Rather, she said, it and other metals can be toxic if ingested or if allowed to leach through landfill protections into the ground.

Bank's work examined how uranium and other metals present in the shale react through the fracturing process. While the imaging tools that they use don't distinguish between natural gas and other hydrocarbons, she said, the results show that uranium and hydrocarbons are physically and chemically bound together. That means that when the shale is loosened in hydraulic fracturing, the uranium is likely mobilized, as well, she said. Both liquid and solid waste from the process may include toxic metals, Bank said.

Meanwhile, Rep. Maurice Hinchey (D/NY), a leading Congressional critic of shale drilling is upset with the Obama administration for failing to try to slow drilling in the *Marcellus Shale*. Hinchey sent a letter to Brig. Gen. Peter "Duke" DeLuca, commander of the North Atlantic Division of the U.S. Army Corps of Engineers (COE) expressing his concerns. But DeLuca who represents the federal government on the little-known but powerful *Delaware River Basin Commission* (DRBC), rebuffed Hinchey's request that he use his vote to block gas drilling there until a lengthy study is completed. DeLuca said earlier that the DRBC had to balance environmental and economic interests. But Hinchey said the DRBC's job is to protect water quality, not spur economic development or "secure energy reserves." "Your letter raises very serious and troubling questions about the role of the *Delaware River Basin Commission's* federal representative," Hinchey wrote. Hinchey demanded answers to a barrage of questions, such as "How have you complied with your agency's environmental review requirements?" and "Was your response to my letter approved by any superior officers ... or senior administration officials before it was sent?"

In addition to the COE other members of the DRBC include the governors of four states, Delaware, New Jersey, New York and Pennsylvania. Hinchey wants DRBC to block drilling in the basin's areas of upstate New York and northeast Pennsylvania until the commission completes a "cumulative impact statement," but DeLuca said that could delay drilling for years. DeLuca said he is tasked with representing a "family" of federal agencies who must support the basin's economic needs and develop energy supplies "while protecting the environment."

But not so according to Hinchey who says the compact that created DRBC's charter calls for it to protect water quality but does not charge it with supporting economic development. "The compact provides no charge or direction to the DRBC to 'secure energy reserves,' other than hydroelectric power," Hinchey wrote. He added that two other federal agencies, the National Park Service and U.S. Fish and Wildlife Service, have written to the commission expressing concerns about shale gas drilling in the basin.

Hinchey's assertion that DRBC is supposed to protect water, not boost business, tracks with the complaints of local and national environmental groups. But industry groups say fracturing is safe and Hinchey is too quick to dismiss economic concerns. "The message Hinchey is delivering to the Army Corps here is pretty simple: 'I don't care about the devastating economic consequences of instituting a back-door ban on the *Marcellus*. And you shouldn't either,'" said Chris Tucker spokesman for *Energy In Depth*, a group formed by independent gas drillers to fight federal regulation.

Hinchey, a member of the powerful House Appropriations Committee, is seeking $1 million for DRBC to study the cumulative effects of drilling in the basin, which provides drinking water to 5 percent of the country's population. Cash for the study has been set aside in the House Interior Appropriations bill, but it has not cleared the Senate.

Meanwhile in Pennsylvania, an $11.8 billion pipeline will be built to provide water to 18 homes in a rural town whose wells, according to the state, have been contaminated by natural gas from *Marcellus Shale* gas driller, Texas-based *Cabot Oil & Gas Corp*. The Pennsylvania Department of Environmental Protection (PDEP) said they have overwhelming evidence that *Cabot's* drilling activities contaminated water wells in Susquehanna County. The PDEP ordered the pipeline in late September and said that it would force *Cabot* to pick up the bill, though the driller is denying that it is the cause of contamination in Dimock Township, calling the decision "unfounded, irrational and capricious." *Cabot* took out ads in Pennsylvania and said that it "intends to fight these allegations through its scientific findings." The state has blamed *Cabot* for methane contamination in 18 wells in Dimock Township, pointing to what it says are conclusive tests that show excessive pressure and faulty casings led to *Cabot's* natural gas wells leaking methane from above the *Marcellus Shale* into the water wells. Gas found in the wells matches that found leaking from nearby *Cabot* wells, the state says.

Residents in Dimock have sued *Cabot* and turned down all of the company's previous offers to drill new wells or install in-house water treatment systems for residents with contaminated water. The company says it has spent $8 million investigating the problem. In a letter to PDEP Secretary John Hanger, *Cabot* CEO Dan Dinges said that Hanger had "an obvious and unfounded bias against *Cabot*." Dinges also said that a Jan. 1, 2009, explosion of a resident's well never happened and provided Hanger documents that said there was no evidence of an explosion and that the resident had been using a blow torch to work on the well several days before the incident.

Hanger said that the PDEP has been working for almost two years to resolve the contamination problem and that he was shocked by the letter from Dinges. "It's remarkable that *Cabot* has not resolved this problem," Hanger said. But *Cabot* spokesman George Stark said in a late October press release that only four of the wells have levels exceeding the U.S. mercury limit and that the company has provided "substantial and persuasive proof that methane gas has been present in water wells in and around the Dimock area for generations,

On an other front, some energy companies and environmental groups are forming an unexpected alliance working together on ways to increase safety and regulation of hydraulic fracturing. The two groups have normally been in opposition on the state level over the controversial drilling tech-

nique. But as New York, Pennsylvania and other states seek to increase profitable shale drilling, both sides see potential gains from crafting common standards. Environmentalists want to further restrict a technique they say is dangerous but can lead to a cleaner power source. Industry leaders feel that better standards can increase public support and possibly prevent government restrictions on the technique.

"The fact is, the public is concerned. They are fearful of what they don't know," said *Southwestern Energy Co*. Executive Vice President Mark Boling. "It is our obligation as an industry to let them know what the issues and obstacles are and show them we are willing to work with environmental groups and state regulators to come up with solutions." Boling is behind the collaboration with environmentalists, which started with *Southwestern Energy* and the *Environmental Defense Fund*. More than a dozen other companies and groups were approached about joining and several are working on the regulations. The team now has a 40-page draft it hopes can be a model for states and hopes to issue a final proposal next year. The regulations deal with everything from the composition of fracking fluids to the structure of underground wells. Groups say current state regulations are too lax. For example, many do not consider whether wells are built in a robust way that will prevent fluid movement.

In Texas two other groups are working with the U.S. Department of Energy to create a "user-friendly" and publicly available registry of the chemicals used in hydraulic fracking, according to *Texas Railroad Commission* Chairman Victor Carrillo. Environmental groups have pushed for disclosure of the chemicals used in the process, and EPA is launching a study to see whether it is a threat to sources of drinking water. Some chemical information is already posted at wells. The new registry will be voluntary and will be put together by the *Interstate Oil and Gas Compact Commission* and the *Ground Water Protection Council* at a cost of about $3 million. "Most energy companies are expected to actively participate in the program," said the initiative's announcement. The goal for the system is to make it available to the public, first responders and emergency personnel," Carrillo said

Meanwhile, the *General Electric Co.* (GE) has developed a machine that recycles water used in hydraulic fracturing and could reduce the volume of wastewater and fresh water needed by between 50 and 90 percent. The mobile device, about the size of a truck, would boil wastewater to turn it into steam, which would condense into distilled water that could be reused for fracking. Recycling water on site would reduce water usage, as well as trucking and disposal costs for wastewater, GE said. The machine will be available early next year.

Sources: Jennifer A. Dlouhy, *Houston Chronicle*, 10/31/10; Sandy Bauers, *Philadelphia Inquirer*, 10/12/10; *Luzerne County (PA) Citizens Voice*, 10/20/10; Jillian Cohan, *AP/FuelFix.com*, 10/1/10; Andrew Maykuth, *Philadelphia Inquirer*, 9/30 and 11/10/10; Jack Smith, *Fort Worth Star-Telegram*, 10/15/10; Mike Soraghan, *Greenwire*, 10/1/10; Jenny Mandel, *Greenwire*, 10/29/10;.*Greenwire*, 9/13, 9/22, 10/1, 10/12, 10/18, 10/20 11/1 and 11/10/10

FWS Sued Over Sturgeon Listing

The *Illinois Commercial Fishing Association* (ICFA), filed suit in late September against Interior Secretary Ken Salazar and the U.S. Fish and Wildlife Service (FWS) regarding listing of the shovelnose sturgeon (*Scaphirhynchus platorynchus*) as a threatened species under the "similarity of appearance" (SOA) provision of the federal Endangered Species Act of 1993, (ESA) as amended. The listing occurred under a FWS rule published in the Federal Register on September 1, 2010.

Shovelnose sturgeon (top photo) and pallid sturgeon (middle photo). One way to distinquish between the two is by the placement of the barbels on the underside of the head (bottom photo). The barbels on the pallid (left) do not have their bases in a straight line as as do those of the shovelnose (right).

Section 4(e) of the ESA authorizes the treatment of a species as endangered or threatened if (a) the species so closely resembles in appearance a listed species that law enforcement personnel would have substantial difficulty in attempting to differentiate between the listed and unlisted species; (b) the effects of this substantial difficulty is an additional threat to an endangered or threatened species; and (c) such treatment of an unlisted species will substantially facilitate the enforcement and further purposes of the Act. The FWS believes that each of these factors apply to the shovelnose sturgeon with regard to its SOA to the endangered pallid sturgeon (*Scaphirhynchus albus*). The pallid sturgeon was listed as an endangered species in 1990.

In addition to the concerns listed above, the two species inhabit overlapping portions of the Missouri and Mississippi River basins, and domestic commercial fishing pressure in these and other rivers has been driven by demand for sturgeon and their roe. U.S. sturgeon species have been targeted for their roe by the caviar industry since Eastern European sturgeon populations collapsed with the fall of the Soviet Union several years ago. Of major concern is the fact that commercial harvest of shovelnose sturgeon has resulted in the documented "take" of pallid sturgeon where the two species coexist and the FWS has determined that this is a threat to the continued existence of the pallid sturgeon. The ESA prohibits "take" of species that are listed as endangered or threatened except where authorized by permit or by a special rule that exempts the take prohibition for certain activities that are consistent with conservation of the species. "Take" is defined in the ESA as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

The FWS rule therefore terminated commercial harvest of shovelnose sturgeon and shovelnose-pallid sturgeon hybrids where they commonly coexist with the pallid sturgeon beginning on October 1, 2010. Specifically, the areas where the two species coexist includes the portion of the Missouri River in Iowa, Kansas, Missouri, Montana, Nebraska, North Dakota, and South Dakota; the portion of the Mississippi River in Arkansas, Kentucky, Illinois (downstream from Melvin Price Locks and Dam), Louisiana, Mississippi, Missouri (downstream from Melvin price Locks and Dam), and Tennessee; the Platte River in Nebraska (downstream of the Elkhorn River confluence); a portion of the Kansas River (downstream from Bowersock

Dam in Kansas); the Yellowstone River in North Dakota and Montana (downstream of the Bighorn River confluence); and the Atchafalaya River in Louisiana.

In this context, commercial fishing is defined as any activity where shovelnose sturgeon and shovelnose-pallid sturgeon hybrid roe or flesh is attempted to be, or is intended to be traded, sold, or exchanged for goods or services. The rule allows for accidental capture of shovelnose sturgeon or shovelnose-pallid sturgeon hybrids in the course of legal fishing for non-sturgeon species and is therefore not expected to impact recreational and other non-commercial fishing activities. Specifically, the capture of shovelnose sturgeon or shovelnose-pallid sturgeon hybrids in any commercial fishing gear would not be prohibited if it is accidental or incidental to otherwise legal commercial fishing activities, such as commercial fishing targeting non sturgeon species, provided the animal is released immediately upon discovery, with all roe intact, at the point of capture. All otherwise legal activities involving shovelnose sturgeon and shovelnose–pallid sturgeon hybrids that are conducted in accordance with applicable State, Federal, Tribal, and local laws and regulations are not considered to be "take" under the final regulation.

Prior to promulgation of the rule, ICFA members were harvesters, buyers, or sellers of the shovelnose sturgeon, in whole or part, including the roe. These activities are banned in portions of the shovelnose sturgeon's range under the new rule. The ICFA contends in its lawsuit that the FWS:

- Actions were in excess of statutory jurisdiction and authority. 5 U.S.C. § 706(2)(C);
- Prohibited taking of the shovelnose sturgeon by commercial fishermen, but did not prohibit the taking for recreational purposes;
- Failed to meet the "so closely resembles in appearance" element. 16 1J (i' s 1533(e)(A);
- Failed to meet the "substantial difficulty" element concerning enforcement. 16 U.S.C. § 1533(e)(A);
- Failed to prove causation, i.e., the "effect," of the "substantial difficulty" element and the "additional threat" element. 16 U.S.C. § 1533(e)(B);
- Failed to meet the "additional threat" element. 16 U.S.C. § 1533(e)(B);
- Promulgated a Final Rule that is overly broad, when less regulation would achieve the same or better results; and
- Failed to meet several administrative requirements.

The ICFA asserts further that the rule fails to fairly and equitably consider its cumulative impacts. The suit was filed in the Federal District Court for the District of Columbia and was assigned to Judge Rosemary M. Collyer.

Sources: *Case: 1:10-cv-01642*, Federal District Court for the District of Columbia, 9/29/10; *News Release*, U.S. Fish and Wildlife Service, Mountain-Prairie Region, 134 Union Boulevard, Lakewood, CO 80228, 9/1/10; and *Mike Sweet, FWS, Ft. Snelling, MN email to Daniel Zekor et.al*, 9/1/10

Lake Sturgeon Have Genes from Parasite and Signs of Human STD

While trying to find a DNA-based test to determine the sex of lake sturgeon, Purdue University researchers found that the sturgeon genome contains trematode genes that didn't originally belong to it and may harbor a protozoan parasite that causes a sexually transmitted disease in humans. Genetics professor Andrew DeWoody and postdoctoral associate Matthew C. Hale found the parasite and pathogen genes while analyzing DNA from lake sturgeon gonads. The findings were reported in the early online version of the journal *Genetica*.

Lake Sturgeon

DeWoody said about 15 genes found in the lake sturgeon came from *Schistosoma*, a parasitic worm. Lateral gene transfer from one organism to another is rare, especially in multicellular animals, he said, but could be part of some evolutionary process for the sturgeon. "Organisms may accept some new genes from other species because the new genes can serve as raw material for evolution. The genome may be more fluid than we usually think," said DeWoody. Hale said genes often work in combination, and new genes may one day become involved with other genes to help the lake sturgeon create new traits needed to adapt to changes in its environment. "It isn't necessarily a bad thing for the sturgeon. It probably doesn't have a cost," Hale said. "It's either neutral or has a benefit or it wouldn't be there."

While lateral gene transfer from a trematode worm could ultimately benefit the lake sturgeon, evidence of the *Trichomonas* pathogen is more likely to have a negative effect. According to the *Centers for Disease Control and Prevention*, a human version of this pathogen causes *Trichomoniasis*, a common sexually transmitted disease that mostly affects women and can cause pregnant women to deliver early or have children with lower birth weights. While it's unclear how the parasite might affect lake sturgeon, DeWoody said it could negatively impact the fish's reproductive ability, which is especially alarming in a species of conservation concern. "If it has the same effect in lake sturgeon as it does in humans, that wouldn't be good," he said. The finding is the first suspected case of *Trichomonas* in a fish, DeWoody said.

DeWoody and Hale were also able to successfully identify a gene thought to play a role in sex determination, but it was found to be expressed in both males and females. Next, DeWoody and Hale would like to determine the effect — if any — the *Trichomonas* parasite has on lake sturgeon. Hale said lake sturgeon can live more than 100 years, and females do not reach sexual maturity for more than 20 years. Even then, they only lay eggs about every five years. Understanding how a pathogen or humans are affecting the sturgeon could be key to conserving them. "Humans can have an effect very quickly and very easily on the sturgeon population," Hale said.

The *Great Lakes Fishery Trust* and the Indiana Department of Natural Resources funded the study.

Source: *ScienceDaily*, 5/12/10

Battle Brews Over Ban of Lead From Hunting Ammo and Fishing Tackle

Gun-rights activists are mobilizing in opposition to a request by environmental groups for the U.S. EPA to ban lead from hunting bullets and fishing tackle, raising the prospect of a politicized battle between conservationists and firearms owners. The groups behind the push for new lead limits dismiss its portrayal as "anti-hunting" by the *National Rifle Association* (NRA) and the hunting-industry representatives at the *National Shooting Sports Foundation* (NSSF).

Where gun-rights advocates see this as a back-door attempt to rein in hunting, the

environmentalists petitioning EPA see it as an effort to protect species vulnerable to lead poisoning from the ingestion of spent ammunition. "This is not about curtailing hunting," said Michael Fry, director of conservation advocacy at the *American Bird Conservancy*. "It's simply about having bullets and shotgun pellets that get into the environment be nontoxic."

The petition filed in August by Fry's group and four others, including the *Center for Biological Diversity* (CBD) and *Public Employees for Environmental Responsibility*, cites the availability of less toxic alternatives to lead in asking EPA to weigh in. The lead-ammunition critics cite nearly 500 studies of lead's effect on wildlife and the outdoor environment, including research that estimated upward of 8 million mourning doves per year are killed by lead poisoning — nearly as many of the birds as are harvested annually by American hunters.

But the NSSF contends that prohibiting lead hunting equipment "would have a negative impact on wildlife conservation." "The federal excise tax that manufacturers pay on the sale of the ammunition (11 percent) is a primary source of wildlife conservation funding," NSSF Senior Vice President Larry Keane wrote. "The bald eagle's recovery, considered to be a great conservation success story, was made possible and funded by hunters using traditional ammunition — the very ammunition organizations like the CBD are now demonizing."

The NRA, an outsized lobbying force on Capitol Hill, took a different tack in blasting the petition in an August letter to EPA. Chris Cox, NRA's top lobbyist and chief of its *Institute for Legislative Action*, wrote in that missive that the environmental groups' request for a lead-bullets ban hinges on "a Solomonic suggestion" that EPA could propose a ban using its authority under the 34-year-old Toxic Substances Control Act — despite that law's exemption for ammunition. The anti-lead petition aims to work around the ammunition exemption by arguing that the lead components of hunting gear can be feasibly replaced without affecting availability of the products, bolstering the case for EPA action against substances that pose a significant risk to health and the environment. But Cox argued that such an interpretation of the law would step on congressional intent. "Put another way," Cox wrote, "if Congress exempts a cow from regulation, one could hardly argue that it nevertheless would allow for regulation of the hide attached to the cow's body."

Fry said he and fellow petitioners anticipated the "predictable reaction" of resistance from gun-rights groups, which has extended into pushback from conservative outlets such as the *Weekly Standard* and the editorial page of *Investors' Business Daily*. A state-level ban on lead ammunition use near the home regions of the endangered California condor, he noted, continued to attract rebukes from gun-rights groups even after its passage. "This is strictly an issue about the poisoning of wildlife," Fry said. "We waited for years to file this petition until there were commercially available alternatives to lead."

Source: Elana Schor, *Greenwire*, 8/27/10

Wal-Mart, Sustainability and Farm Practices

Wal-Mart Stores Inc. is developing sustainability standards and ways to let consumers know the environmental impact of its farm products as it works toward a goal of doubling locally grown food by 2015. The company says it wants to improve soil quality, use less fossil fuels and conserve water. According to farm groups, this could mean that *Wal-Mart*, not the federal government, could force farmers to change practices, but without compensating them for higher production costs. "I'm not under any illusion that farmers are going to get premiums for these practices," said Russell Williams, director of regulatory relations at the *American Farm Bureau Federation*. "It's going to be a cost of doing business. If that's the case, we're going to have to focus on how not to destroy farm income."

Wal-Mart representatives have been touring Iowa farms to look at different practices. The company is working with *Monsanto Co., Syngenta AG, Tyson Foods Inc*. and *Stonyfield Farm*, along with the *Sustainability Consortium*, an initiative of the University of Arkansas and Arizona State University. The *Sustainability Consortium* is developing prototype standards for orange juice, wheat breakfast cereal and strawberry yogurt, to be out next summer.

Some doubt that *Wal-Mart* will go far enough. "A large corporation like *Wal-Mart* has some definite power here to accomplish something, but they have two goals, and one, of course, is their bottom line, and the other is to keep their prices low," said Lee Searles of the *Iowa Environmental Council*. "It remains to be seen if [*Wal-Mart's* initiative] will be truly effective. It sounds good".

Sources; Philip Brasher, *Des Moines Register*, 11/7/10; and *Greenwire*, 11/8/10

Extinction, Conservation and Development

A fifth of the world's vertebrates face extinction due to agricultural expansion, logging, over-exploitation and invasive species according to a study published in the journal *Science*. The study also showed that while rates of extinction are increasing, conservation efforts have been successful in putting the brakes on the speed of loss. Scientists analyzed data for 25,000 mammals, birds, amphibians, reptiles and fish species on the *Red List of Endangered Species*, published by the *International Union for the Conservation of Nature*.

Every year, 50 species move closer to extinction, the analysis shows. Amphibians are at the greatest risk, with 41 percent making the list, while 13 percent of birds are listed. But the study showed that conservation efforts have prevented even greater species loss. More than 60 vertebrates have improved their status due to protective actions. Three animals once extinct in the wild have been successfully reintroduced, including the California condor and the black-footed ferret in the U.S., and the Przewalski's horse native to Mongolia. "Results show that the status of biodiversity would have declined by nearly 20 percent if conservation action had not been taken," according to the report, which was launched at the *U.N. Convention on Biological Diversity* held in October at Nagoya, Japan. The Convention brought together almost 200 countries to discuss targets to slow the rate of biodiversity loss by 2020.

The value a healthy environment provides is invisible in the global economy, leading to ecosystem degradation and species loss, according to *The Economics of Ecosystems and Biodiversity* (TEEB) study released at the Convention. For example, bees and other insects jumping from flower to flower provide an essential service for crop production, valued at a whopping $200 billion. But "Not a single bee has ever sent you an invoice," said Pavan Sukhdev, leader of the study. "And that is part of the problem, because most of what comes to us from nature is free, because it is not invoiced, because it is not priced, because it is not traded in markets, we tend to ignore it."

The "broken" financial system must be reformed so that the environment and the

valuable services it provides are incorporated into every decision and transaction, the report concludes. That is vital not only for slowing environmental destruction and species loss, but for modern economies to flourish, Sukhdev said. While most cost-benefit analyses look at natural resources that can be extracted, such as gold, timber and food, those products only account for one-third of the total economic value provided by the environment, the report said. Other "ecosystem services," such as pollination, forests filtering drinking water and wetlands providing flood protection, make up the other two-thirds.

Currently, businesses do not pay for the loss of services caused by production or development. Estimated at $2.2 trillion annually for the top 3,000 listed companies, those costs are passed on to society, or externalized. "We are at a stage now where the rate of loss of ecosystem services and the rate of loss of biodiversity is so severe we cannot treat them as mere externalities of economics," said Sukhdev, who is on sabbatical from *Deutsche Bank* while working for the *U.N. Environment Programme* on green economics initiatives. To slow the alarming rates of biodiversity loss, environmentalists need not pull on the public's heart strings with images of cute baby polar bears, the study said. They need to lay out the cold, hard impacts on the bottom line. To internalize environmental values and costs, the TEEB report recommends implementing a variety of financial tools, such as charging for services, creating environmentally friendly markets with eco-labeling and providing financial incentives and subsidies for environmentally friendly businesses.

Normal business practices should report negative environmental externalities and offset their impacts so they have a net zero impact, or even a net positive impact, the report said. And subsidies for industries harming the environment, such as fossil fuels, should be phased out. Environmental protection can also save money, according to the TEEB report. For example, New York saved more than $6 billion by paying farmers about $1 billion to change management of runoff to reduce water pollution, rather than build a $6-8 billion wastewater treatment plant that would have cost between $300 million and $500 million a year to operate.

But convincing board rooms and consumers across the globe to start paying for things that have been free in the past is not going to be easy. Sukhdev said it is not going to happen overnight — new, emerging models will begin to compete with old, lingering ones. "It could happen, but not in today's environment," said Patrick Michaels, a senior fellow in environmental studies at the *Cato Institute*, a free-market think tank. "Right now, people — and it's not just the U.S. — people are worried about economic contractions more than they are about environmental protection."

Dominic Waughray, the senior director of environmental initiatives at *World Economic Forum*, estimates it will take 20 years, but environmental externalities will eventually be internalized into a new economic model. The biggest challenge will be changing the mindset of politicians and consumers, since many investors are already beginning to look at environmental risks and costs, such as carbon and water scarcity, Waughray said. "It could be a very academic, technical debate within the high-level United Nations circuitry, or it could play out quite quickly and practically among investor networks because of the real challenge of the resource scarcity that companies and others are facing," Waughray said. "I suspect it will be a mixture, but I think it will be the second issue that will really drive this."

The TEEB report was commissioned in 2007 by the *Group of Eight* countries, plus five emerging economies. Some of the targets to slow the rate of biodiversity loss by 2020 presented at the Japan Convention mirror recommendations of the TEEB report. "We expect the TEEB study will deliver significant impacts on global biodiversity policy," Hideki Minamikawa, Japan's vice minister for global environmental affairs, said in a statement.

The Nature Conservancy, one of many environmental organizations sounding the alarm about biodiversity loss for years, welcomed the framing of its fight in a new light. The nonprofit pledged to work to implement some of the recommendation of the report. "We've spent decades talking about habitat degradation and species loss," said Andrew Deutz, the group's director of international government relations, in a statement. "The people who run the world talk in terms of economic growth and employment rates. This report could be our Rosetta stone."

Meanwhile, the president of the *World Bank* urged nations at the Japan convention to increase conservation of plant and animal species as an essential way to advance economic growth and alleviate poverty. "[S]uccessful conservation of our natural resources, our ecosystems, and our biodiversity is central to addressing all development challenges and to improving the lives of the poor," Robert Zoellick said in his prepared remarks. "Biological resources provide livelihoods, sustenance, medicines, trade, tourism, industry and more," Zoellick added. "Forests, grasslands, lakes, oceans, deserts and other natural ecosystems provide a range of natural services that people have often taken for granted, even though they are vital to human welfare."

The variety of life on the planet, or biodiversity, is disappearing 1,000 times faster than historical rates, and the *World Bank* has supported more than $6 billion in biodiversity conservation over the past 20 years, but that is not enough, Zoellick said. He pledged to increase financing of ecosystem and biodiversity services in infrastructure, agriculture, climate change and policy lending operations. Zoellick announced two new programs. One of them, the *Global Partnership for Ecosystems and Ecosystem Services Valuation and Wealth Accounting*, will help governments assess the value of services provided by natural resources, such as water filtration and storm protection, and integrate them into development planning and accounting systems. Second, the *Wildlife Premium Market Initiative* will pay rural poor people to protect forests rich in biodiversity, as a complement to a similar U.N. program called *Reducing Emissions from Deforestation and Forest Degradation Plus* (REDD-plus). Zoellick did not say exactly how much funding would go toward the two programs.

An acknowledgement by the head of the *World Bank* that the environment is critical for economic growth is significant, said Deutz. "That has been self-evident to environmentalists, but it has not always been for economists — the people who run the *World Bank* and the finance ministries that govern it," he said. Deutz praised Zoellick's pledge to increase funding for ecosystem benefits in its mainstream lending practices, which environmentalists have long pushed. The challenge now is making sure the institution follows through and helps other countries make conservation a key part of their development, he added. "The essential transition for the *World Bank*, as for any institution or business, is to make sustainability core to its business model, rather than a sideline," Deutz said.

But others in the environmental community were skeptical that Zoellick's statements would result in any significant, concrete action. "It's not a game-changer by any stan-

dard," said Kieran Suckling, Executive Director of the *Center for Biological Diversity*. Suckling also questioned the effectiveness of framing conservation in economic terms. "History has shown the primary motivating factor of wildlife conservation is a human ethical concern translating into government regulation," he said. "Economic self-interest does not seem to motivate people."

Meanwhile, India's Minister for Environment and Forests, Jairam Ramesh, stepped forward at the Japan convention and committed to publishing accounts of his nation's plants, animals, water and other "natural wealth" together with financial measurements such as gross domestic product. The move assigns value to ecosystems and the "services" they provide to humans. It puts ecosystem growth provided by nature participants such as honeybees on the same pedestal as economic growth provided by human beings. Units of measurement for these "services" provided by nature will be coordinated by the *World Bank*, which hopes to sign up a dozen countries for its pilot. India is the first nation to commit to such a measure. A report will be published by 2015.

Sources: Juliette Jowit, *London Guardian*, 10/20/10; *CNN*, 10/27/10; Laura Petersen, *Greenwire*, 10/20 and 10/27/10; and *Greenwire*, 10/21 and 10/27/10

FWS Unveils Strategy for Species, Landscapes

A new strategic plan from the Obama administration aims to prioritize research and response to climate change as part of the government's efforts to conserve at-risk species, acquire land and shape future conservation projects. The new plan, which the U.S. Fish and Wildlife Service (FWS) released in late November, calls for federal agencies, states and conservation groups to work together on the effort. It directs the agencies and groups to identify the most vulnerable species, establish a network of landscape conservation cooperatives and compile data on how climate change is affecting plants and wildlife.

The effort, 18 months in the making, is tied to a directive from Interior Secretary Ken Salazar for his department to consider climate change in all its decisions and projects. "It wasn't long ago that you couldn't discuss the issue [of climate change] or the challenge within the corridors of the Department of Interior," said Tom Strickland, Interior's Assistant Secretary for Fish, Wildlife and Parks. "What we've done is organize ourselves within Interior, with the leadership of the Fish and Wildlife Service to create a coherent approach. ... [T]his is a signature day."

The plan does not change any regulations or permits, but attempts to steer the agency to reach out to other groups and develop more wide-ranging responses to threats including water scarcity and habitat fragmentation. Dan Ashe, acting FWS director, admitted that a strategic plan from a federal agency does not usually qualify as "earth-shattering," but insisted that this one is different because parts of it are already being implemented and because of the focus on agencies and groups working together.

The U.S. Geological Survey is also creating eight regional climate science centers to give that agency climate data on a regional scale that can be used to make decisions on species conservation or land acquisition. Another hallmark of the effort is an initial $25 million investment this year to set up "landscape conservation cooperatives," in which federal, state and outside researchers will collaborate to tackle regional climate questions. Eventually, the goal is to support a total of 21 centers. With each focused on particular representative species, the centers could help feed the FWS information it needs to make climate-oriented decisions and predictions. Such information, for example, would help the FWS predict where a species might migrate as the climate warms — and plan how to help it get there. An effort to set up a migration corridor in the Northern Rockies is already under way to deal with threats like climate and habitat fragmentation. There, ranchers are getting payments to keep their lands instead of selling to developers.

The plan won early praise from the *National Wildlife Federation* (NWF) and *Ducks Unlimited*. John Kostyack, who leads the NWF's efforts on climate, praised the agency for being "forthright on the gravity of the threat" from climate change, reaching beyond the usual boundaries to work with other agencies and groups and taking "unprecedented degrees of cooperation." Bill Snape of the *Center for Biological Diversity* was less enthusiastic. He said the strategy is "clearly better than nothing and a step in the right direction" but lacks hard targets like how many endangered species recovery plans need to be updated.

Source: Allison Winter, *Greenwire*, 9/27/10

Climate Change Update

Extreme heat this year caused accelerated bleaching in ocean corals from Thailand to Texas, the first step in a sequence triggered by excess heat and sunlight that leads to death. Computer models predicted that reefs in the Caribbean would bleach rapidly this fall. The first bleaching event occurred in 1998, the hottest recorded year in history, when 16 percent of shallow-water reefs died. This year is set to rival or exceed that event in places like Thailand, with 2010 already on record as being one of the hottest years so far. The temperatures of oceans have also risen and had an unfavorable effect on sensitive corals, which harbor a quarter of all marine species globally. Scientists attribute at least some of the die-off to climate change-related temperature rises. "It is a lot easier for oceans to heat up above the corals' thresholds for bleaching when climate change is warming the baseline temperatures," said Mark Eakin, who runs NOAA's *Coral Reef Watch Program*. "If you get an event like El Niño or you just get a hot summer, it's going to be on top of the warmest temperatures we've ever seen".

The Pacific Ocean thermocline where warm surface and cold, deeper waters meet is also getting shallower due in part to climate change, according to new research published in the journal *Geophysical Research Letters*. Ohio State University researchers analyzed tropical corals in the western Pacific Ocean to determine the thermocline's shift, providing the first physical evidence that supports climate modeler's predictions of how global warming will affect ocean circulation. The thermocline has been getting shallower since the 1970s and this may also be attributed to natural variation in ocean surface temperatures known as the *Pacific Decadal Oscillation* (PDO), researchers said. Much like El Niño but over longer periods of time, the western Pacific waters cool while the eastern part of the ocean warms, and vice versa. "We think the thermocline rose when the PDO shifted, that it was a cumulative effect of both the natural variability of the PDO plus the warming global temperatures," said Andrea Grottoli, a study team member. Studying underwater mixing is difficult because measurement instruments are mostly restricted to the surface. As a proxy, the researchers used the growth rings of soft coral to determine when there was more warm water or cold water.

The El Niño weather phenomenon has doubled in intensity and warmth and shifted westward over the past 30 years, according

to a new study, but further research is needed to determine if the change is due to man-made global warming or natural variation. "El Niño is the largest fluctuation of the climate system. It has worldwide impact on climate patterns, so any change in El Niño's behavior might cause a change in its impact," said Tong Lee, the lead author and an oceanographer at the *Jet Propulsion Laboratory*. El Niño occurs when trade winds on the Pacific Ocean die down, causing the sea surface temperature to warm around the equator. This has led to increased rainfall in the U.S. and Peru and drought in Australia. Three decades is too short a period to draw definite conclusions, said Bill Patzert, a *Jet Propulsion Laboratory* climatologist not involved in the paper. "It is too early to tell," Patzert said. "The one thing we know is that the future ain't what it used to be. The planet is definitely warming, and El Niño has morphed into something different".

Meanwhile, buds are flowering earlier in the season, long before bees emerge from hibernation to pollinate plants in the spring. This disruption of timing could be responsible for declining rates of pollination in at least some of the cases, according to James Thomson, researcher at the ecology and evolutionary biology department at the University of Toronto. "Early in the year, when bumble bee queens are still hibernating, the fruiting rates are especially low," Thomson said. "This is sobering because it suggests that pollination is vulnerable even in a relatively pristine environment that is free of pesticides and human disturbance but still subject to climate change." The study looked at a species of wild lily in Colorado over a 17-year period. Some scientists cautioned that the study was too specific and could not be used to correlate climate change with declining pollination. Others said that factors including habitat loss, climate change, pesticide use and disease could all affect pollinators

Climate change is expected to help invasive species spread, endangering crops, fisheries and forests, according to a *World Bank*-funded report. The study by Nairobi, Kenya-based *Global Invasive Species Programme* highlights numerous examples of how non-native plants and animals already out compete local species, causing an estimated $1.4 trillion in damages every year — 5 percent of the global economy. Climate change is predicted to make it more difficult for native species to adapt to warmer temperatures and more severe droughts and floods, opening the door for invasive species to take over. The report describes climate change and invasive species as a "deadly duo." "Individually, climate change and invasive species present two of the greatest threats to biodiversity and the provision of valuable ecosystem services," according to the report.

On the political side of the climate change issue, the midterm elections swept into office a number of politicians skeptical of the science backing human-driven climate change, prompting spasms of worry in the scientific community that the overwhelming evidence supporting global warming could fall on deaf ears. In fact, 50 percent of the more than 100 new GOP members say they doubt global warming's man-made origins, according to the *Center for American Progress*. Some Republican members of Congress have also vowed to investigate U.S. EPA's regulation of greenhouse gases (GHGs), as well as last year's *Climategate* controversy. Additionally, a disproportionate number of Tea Party candidates and supporters are skeptical of global warming compared with the general public, a recent *New York Times/CBS News Poll* showed. Fourteen percent of Tea Party supporters agreed that global warming is an environmental problem that is having an effect now, compared with 49 percent of the general public, according to the poll. More than half of Tea Party supporters said global warming would have no serious effect at any time in the future, a view shared by 15 percent of other Americans. And 8 percent of Tea Party adherents volunteered that they did not believe global warming exists at all, while 1 percent of other respondents agreed.

"It's a flat-out lie," said Norman Dennison, a 50-year-old electrician and founder of the *Corydon Tea Party* in Indiana, who added he based his view on the preaching of Rush Limbaugh and the teaching of Scripture. "I read my Bible," Dennison said. "He made this Earth for us to utilize." Skepticism or denial of global warming in the Tea Party movement stems from a range of convictions, from religious beliefs to distrust of those they call elites. For some, the issue is a conspiracy to grow government and transfer wealth. "This so-called climate science is just ridiculous," said Kelly Khuri, founder of the *Clark County Tea Party Patriots* in Indiana. "I think it's all cyclical." Lisa Deaton, a small business owner who started *We the People Indiana*, a Tea Party affiliate said, "They're trying to use global warming against the people." "It takes [away] our liberty." "Being a strong Christian," she added, "I cannot help but believe the Lord placed a lot of minerals in our country, and it's not there to destroy us."

Jean-Pascal van Ypersele vice chairman of the *Intergovernmental Panel on Climate Change* (IPCC) says that attacks on climate science are an organized effort to undermine concerns about global warming. "How could it simply be a coincidence that the '*Climategate*' e-mails are revealed two weeks before Copenhagen and that the mistake on the Himalayas is raised and transformed by some media into major error?", he said. "I have a hard time imagining it could simply be a coincidence." The attacks are just as organized as the tobacco industry's efforts to block regulations 30 to 40 years ago, according to research by science historians Naomi Oreskes and Eric Conway. "Many of us were expecting something to happen in the run-up [to Copenhagen]," Oreskes said. "When it happened, the only thing that surprised me was that, compared with the events we documented in our book, the attacks had crossed the line into illegality." Van Ypersele said the attacks have damaged IPCC's reputation but that the organization is adopting reforms to correct errors when they are made and to improve its public relations.

On another front, hundreds of climate scientists are joining an effort to refute attacks by congressional conservatives who have pledged to investigate climate research and stop regulation of GHG emissions. The *American Geophysical Union*, the largest association of climate scientists, announced in early November that 700 scientists have agreed to speak out as experts on global warming and anthropogenic emissions. The move represents a shift in the thinking of researchers who usually prefer to stay out of political controversies and the media spotlight.

Separately, a "climate rapid response team" of researchers will go in front of potentially hostile audiences on conservative talk radio and television shows in recognition of the idea that science and politics cannot be divorced, said John Abraham of St. Thomas University in Minnesota, who is assembling the team. "We are taking the fight to them because we are ... tired of taking the hits," Abraham said. "The notion that truth will prevail is not working. The truth has been out there for the past two decades, and nothing has changed."

In mid November a collection of high-profile scientists and communication experts, published a letter in the journal *Scienc*e, calling for the creation of a nonpartisan education service aimed at helping organizations and governments make informed decisions about climate change. Such an initiative, they said,

would address misperceptions and "counter misinformation and deception." Above all, they said, the initiative must be seen as nonpartisan. "In the face of efforts to undermine public confidence in science, it must become a trusted broker of unbiased information for people on all sides of the issue," they said. While organizations like the *American Geophysical Union* have already begun establishing teams of scientists to field questions on climate change, the letter in *Science* suggests formalizing such an approach.

Debate always exists within climate science, and such uncertainties can be discussed in public if they are made intelligible, rather than used to create "this fog of uncertainty" that could undermine the scientific fundamentals of global warming, said Gary Yohe, an environmental economist at Wesleyan University and one of the letter's authors. Among the experts joining Yohe on the letter include Michael Mann, a climate scientist at Pennsylvania State University; Richard Somerville, a climate modeler at the *Scripps Institution of Oceanography*; Edward Maibach, director of the *Center for Climate Change Communication* at George Mason University; and Anthony Leiserowitz, director of the *Yale Project on Climate Change.*

In Congress in late October House Science and Technology Chairman Bart Gordon (D/TN) released a report calling for launch of a formal research program to prepare engineering responses to global warming. "It is important to acknowledge that climate engineering carries with it not only possible benefits, but also an enormous range of uncertainties, ethical and political concerns, and the potential for harmful environmental and economic side effects," the report warns. "If climate change is indeed one of the greatest long-term threats to biological diversity and human welfare, then failing to understand all of our options is also a threat to biodiversity and human welfare," the report says. The paper is the culmination of 18 months of work by the committee, which has included three public hearings as well as cooperation with a corresponding committee in the United Kingdom's House of Commons. Gordon has said he wants to authorize a research program on geoengineering, likely within the Department of Energy. But he is retiring at the end of the year, so that effort will likely be left to the discretion of his successor.

According to an expert panel from the *National Academy of Public Administration* (NAPA), NOAA should establish an in-house Climate Service that acts as the lead agency for all federal climate science and services. NAPA panelists assert in a September report the need for a climate office that is "the center of gravity for aggregating and rigorously providing an authoritative road map or portal to the best available science that can be harnessed to support public policy decision making." "In short, there is a much-needed role for one agency to serve as a day-to-day integrator of the overall federal effort regarding climate science and services," panelists wrote. "This is a job for an agency that can serve as a convener, a guide to valid science, an inveterate dot-connector that probes the interstices between climate-related disciplines, and a repository for the inventory of available federal services offered by the full list of federal climate service providers."

Meanwhile in Iowa, researchers are plowing high grade charcoal (called biochar) into corn rows, hoping to limit the tons of fertilizer that saturate the state's fields each year. At these farms and more, scientists are probing the limits of how biochar, can be formed from plant and animal waste to squirrel away the atmosphere's carbon for centuries, or even millennia. Inspired by ancient Amazonian soils, researchers have found that buried charcoal resists bacteria's attempts to break it down. And thanks to its porous geometry, it has a knack for improving land in ways still being revealed. "[Biochar] is one of the major tools we can use to fight climate change, if we decide to do so," said James Amonette, an environmental geochemist at the Energy Department's Pacific Northwest National Laboratory.

Charcoal's status may be comparable to the start of the world's head-over-heels embrace of synthetic fertilizer a century ago, scientists say. As piling evidence shows, converting organic matter — be it corn scraps, human sewage or chicken litter — to charcoal can, in effect, increase the carbon cycle's latency by hundreds of years, buying humanity just a bit more time to solve its fossil fuel fix. "Biochar is not a fix for all problems," be it soil quality or climate change, said Johannes Lehmann, a scientist at Cornell University and perhaps the leading biochar researcher. It will only improve soil that can be improved, he said. "Whether it's a viable global strategy? Nobody can say at this point."

Biochar may not sequester all of society's excess carbon, but it can play a tangible role in limiting emissions. Projections recently released by Amonette have found that biochar could trap the equivalent of 12 percent of the world's GHG emissions a year, in sustainable scenarios. Such a plunge, however, would carry steep economic costs and would likely only be spurred by putting a price on carbon dioxide (CO_2) emissions. In effect, these researchers believe that biochar will allow society to generate energy from plant waste and nonfood crops — a combustible oil is the major by-product of charcoal production — while also ticking down CO_2 emissions. Plants naturally absorb atmospheric CO_2 to build themselves up and by delaying the escape of that carbon once crops die a thumb is placed on the carbon-cycle scale, mitigating emissions. Unlike the geological CO_2 sequestration proposed for coal-fired power plants, biochar can operate on small scales. It can be produced in massive factories but also in small stoves tagged for distribution in the world's poorest regions, which often also have impoverished soil, an option that has drawn interest from the *Bill & Melinda Gates Foundation.*

But for many scientists, biochar is about much more than climate change. It is a chance to rewire agriculture. For too long, farmers have neglected soil health, instead dousing their fields with escalating amounts of synthetic fertilizer, heavy in nutrients, to boost plant growth, said David Laird, a soil scientist at Iowa State University. "Soil quality has not been the focus of a lot of research or industry over the years," Laird said, with attention instead locked on fertilizer and irrigation. "Char is a paradigm shift. It puts the emphasis on building the soil resource base itself. That's the opportunity." "Biochar becomes increasingly viable once we make a societal decision to deal with climate change," Amonette said. "Until we do that, it will remain a niche."

The simple step of painting rooftops white may be the cheapest way to win a short-term reprieve from global warming, and an influential expert says the Energy Department could soon be offering technical support to countries interested in implementing white roof-friendly policies. At an *Alliance to Save Energy* event in mid September, Art Rosenfeld, a University of California, Berkeley, professor, former California Energy Commissioner and member of DOE Secretary Steven Chu's new advisory board, said he and Chu are pushing to offer technical help to "the first 10 to 20 countries that want in on this." Rosenfeld said making a rooftop white can save 10 to 20 percent of a building's annual cooling bill because the color reflects heat and light away from the structure, and back into space. If all the flat roofs in the world were white, he

said, it would prevent the emission of 25 billion tons of CO_2 over 20 years, equivalent to "turning off the world for one year." Rosenfeld said that thanks to differences in the sun's position on the horizon, flat white roofs reflect far more heat in the summer than they do in the winter, meaning that even in cold climates they are often cost-effective. He said the "winter penalty" of increased energy required to replace reflected sunlight during the cold months is about 3 percent in Florida, 7 percent in Washington, D.C., and 30 percent in Fargo, N.D. Since air conditioning is significantly more energy-intensive than heating, this means that white roofs are still cost-effective in all three of those zones, he said. Rosenfeld's campaign to push the conversion of flat roofs to a white color is largely for commercial and industrial buildings. If white roof technologies were widely adopted, they could make up for some of the reflectiveness the Earth is losing from retreating glaciers and ice cover. "I don't want to imply that this is a permanent solution -- the carbon dioxide is still there," he said. "But it's a reprieve."

Sources: *MSNBC*, 10/12/10; ;Justin Gillis, *New York Times*, 9/20/10; Margot Roosevelt, *Los Angeles Times*, 8/27/10; *London Guardian*, 9/8/10; David Fogarty, *Reuters*, 10/22/10; Damian Carrington, *London Guardian*, 10/28/10; Neela Banerjee, *Chicago Tribune*, 11/8/10; John Broder, *New York Times*, 10/20/10; Emily Yehle, *Greenwire*, 9/22/10; Jenny Mandel, Greenwire, 9/20 and 11/1/10; Paul Voosen, *Greenwire*, 9/7 and 11/19/10; and *Greenwire*, 8/27, 9/8, 9/21, 10/13, 10/21, 10/22 10/28, 11/8 and 11/19/10

Meetings of Interest

Feb. 3-5: Implementing the Human Right to Water in the West, Salem, OR, See: http://www.willamette.edu/wucl/news/2010/spring/water_conf_papers.php

Feb. 27-Mar 2: 2011 Upper Midwest Stream Restoration Symposium, Oconomowoc, WI, See: http://www.prrsum.org/content/umsrs-symposium-2011

Apr. 28-29: 43rd Annual Meeting of the Mississippi River Resarch Consortium, La Crosse, WI. See: http://www.ngrrec.org/mrrc/

Mar. 8-10: Bottomland Ecosystem Restoration 2011 Conference, DoubleTree Hotel Collinsville, IL, Contact: Theresa Heyer at: theyer@fs.fed.us, 651-649-5239 or Lyle Guyon at: lguyon@lc.edu, 618-468-2870.

Mar. 9-11: Missouri River Natural Resources Committee Conference and BiOP Forum, Lied Conference Center, Nebraska City, NE, Contact Chris Larson at: chris.larson@dnr.iowa.gov

May 24-27: Climate Information for Managing Risks, Caribe Royale, Orlando, FL, See: www.conference.ifas.ufl.edu/CIMR

May 25-27: River Basin Management 2011, Riverside, CA, See: http://www.wessex.ac.uk/11-conferences/riverbasinmanagement-2011.html

Aug. 1-5: 4th National Conference on Ecosystem Restoration (NCER), Baltimore, MD, See: www.conference.ifas.ufl.edu/NCER2011

Sep. 4-8: 141st Annual Meeting of the American Fisheries Society, Seattle, WA, See: http://www.fisheries.org/afs2011/

Congressional Action Pertinent to the Mississippi River Basin

Climate Change

S. 137. Brown (D/OH). Creates jobs and reduces U.S. dependence on foreign and unsustainable energy sources by promoting the production of green energy, and for other purposes.

S. 1035. Reid (D/NV) and 2 Co-sponsors and **H. R. 3727.** DeGette (D/CO) and 7 Co-sponsors. Enhances the ability of drinking water utilities in the U.S. to develop and implement climate change adaptation programs and policies, and for other purposes.

S. 1667. Collins, (R/ME) and 4 Co-sponsors. Provides for the development and coordination of a comprehensive and integrated U.S. research program that assists the people of the U.S. and the world to understand past, assess present, and predict future human-induced and natural processes of abrupt climate change, and for other purposes.

S. 1733. Kerry (D/MA) and Boxer (D/CA) and **H. R. 2998.** Waxman (D/CA) and Markey (D/MA). Creates clean energy jobs, achieves energy independence, reduces global warming pollution and transitions to a clean energy economy.

S. 1933. Bingaman (D/NM) and 3 Co-sponsors and **H. R. 2192.** Grijalva (D/AZ) and 9 Co-sponsors. Establishes an integrated Federal program to protect, restore, and conserve the Nation's natural resources in response to the threats of climate change and for other purposes.

S. 2835. Kerry (D/MA) and 4 Co-sponsors. Reduces global warming pollution through international climate finance, investment, and for other purposes.

H. R. 232. Baldwin (D/WI) and 3 Co-sponsors. Provides for creation of a Federal greenhouse gas (GHG) registry, and for other purposes.

H. R. 391. Blackburn (R/TN) and 9 Co-sponsors. Amends the Clean Air Act to provide that GHGs are not subject to the Act, and for other purposes.

H. R. 594. Stark (D/CA) and McDermott (D/WA) Amends the Internal Revenue Code of 1986 to reduce emissions of carbon dioxide by imposing a tax on primary fossil fuels based on their carbon content.

H. R. 1438. Fortenberry (R/NE). Prohibits any Federal agency or official, in carrying out any Act or program to reduce the effects of GHG emissions on climate change, from imposing a fee or tax on gaseous emissions emitted directly by livestock.

H. R. 1666. Doggett (D/TX) and 21 Co-sponsors. Amends the Internal Revenue Code of 1986 to establish an auction and revenue collection mechanism for a carbon market that ensures price stability with environmental integrity.

H. R. 1760. Inslee (D/WA) and 2 Co-sponsors. Mitigates the effects of black carbon emissions in the U.S. and throughout the world.

H. R. 1862. Van Hollen (D/MD) and 3 Co-sponsors. Caps the emissions of GHG through a requirement to purchase carbon permits, to distribute the proceeds of such purchases to eligible individuals, and for other purposes.

H. R. 2306. Dicks (D/WA). Provides for the establishment of a National Climate

Service, and for other purposes.

H. R. 2407. Gordon (D/TN). Establishes a National Climate Service at NOAA.

H. R. 2685. Bordallo (D/GU) and 9 Co-sponsors. Establishes a NOAA and a National Climate Enterprise, and for other purposes.

H. R. 2757. Kind (D/WI) and 3 Co-sponsors. Requires the return to the American people all proceeds raised under any Federal climate change legislation.

H. R. 3129. Luetkemeyer (R/MO). Prohibits U.S. contributions to the Intergovernmental Panel on Climate Change.

Conservation

S. 655. Johnson (D/SD) and 3 Co-sponsors. Amends the Pittman-Robertson Wildlife Restoration Act to ensure adequate funding for conservation and restoration of wildlife, and for other purposes.

S. 1214. Lieberman (ID/CT) and 7 Co-sponsors and **H. R. 2565.** Kind (D/WI). Conserves fish and aquatic communities in the U.S. through partnerships that foster fish habitat conservation, to improve the quality of life for the people of the U.S., and for other purposes.

S. 3508. Udall (D/NM) and Brownback (R/KS) and **H. R. 4959**. Carnahan (D/MO) and 8 Co-sponsors. Strengthens the capacity of the U.S. to lead the international community in reversing renewable natural resource degradation trends around the world that threaten to undermine global prosperity and security and eliminate the diversity of life on Earth, and for other purposes.

H. R. 404. Grijalva (D/AZ) and 23 Co-sponsors. Establishes the National Landscape Conservation System, and for other purposes.

H. R. 631. Matheson (D/UT). Increases research, development, education, and technology transfer activities related to water use efficiency and conservation technologies and practices at the U.S. EPA.

H. R. 1080. Bordallo (D/GU). Strengthens enforcement mechanisms to stop illegal, unreported, and unregulated fishing, and for other purposes.

H. R. 1328. Bishop (D/NY) and 2 Co-sponsors. Amends the Internal Revenue Code of 1986 to allow an unlimited exclusion from transfer taxes for certain farmland and land of conservation value, and for other purposes.

H. R. 2188. Kratovil (D/MD) and 3 Co-sponsors. Authorizes the Secretary of the Interior, through the USFWS, to conduct a Joint Venture Program to protect, restore, enhance, and manage migratory bird populations, their habitats, and the ecosystems they rely on, through voluntary actions on public and private lands, and for other purposes.

H. R. 2807. Kind (D/WI) and Jones (R/NC). Sustains fish, plants, and wildlife on America's public lands.

H. R. 3086. Bordallo (D/GU). Coordinates authorities within the Department of the Interior and within the Federal Government to enhance the U.S.'s ability to conserve global wildlife and biological diversity, and for other purposes.

Endangered Species Act (ESA)

S. 724. Barrasso (R/WY) and Vitter (R/LA). Amends the ESA to temporarily prohibit the Secretary of the Interior from considering global climate change as a natural or man-made factor in determining whether a species is a threatened or endangered species, and for other purposes.

S. 3146. Crapo (R/ID) and 9 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. 5531. Herger (R/CA). Amends the ESA to enable Federal agencies responsible for the preservation of threatened and endangered species to rescue and relocate members of any of those species that would be taken in the course of certain reconstruction, maintenance, or repair of Federal or non-Federal man-made flood control levees.

H. R. 5964. McMorris Rodgers (R/WA). Better informs consumers regarding costs associated with compliance for protecting endangered and threatened species under the ESA.

Energy

S. 531. Bingaman (D/NM) and Murkowski (R/AK). Provides for the conduct of an in-depth analysis of the impact of energy development and production on the water resources of the U.S., and for other purposes.

S. 539. Reid (D/NV). Amends the Federal Power Act to require the President to designate certain geographical areas as national renewable energy zones, and for other purposes.

S. 1713. Reid (D/NV) and 4 Co-sponsors and **H. R. 3748.** Berkley (D/NV) and Titus (D/NV). Establishes loan guarantee programs to develop biochar technology using excess plant biomass, to establish biochar demonstration projects on public land, and for other purposes.

S. 3570. Murkowski (R/AK) and 3 Co-sponsors. Improves hydropower, and for other purposes.

S. 3571. Murkowski (R/AK) Extends certain Federal benefits and income tax provisions to energy generated by hydropower resources.

H. R. 2227. Murphy (R/PA) and 6 Co-sponsors. Greatly enhances America's path toward energy independence and economic and national security, to conserve energy use, to promote innovation, to achieve lower emissions, cleaner air, cleaner water, and cleaner land, and for other purposes.

H. R. 2300. Bishop (R/UT) and 34 Co-sponsors. Provides the U.S. with a comprehensive energy package to place Americans on a path to a secure economic future through increased energy innovation, conservation, and production.

H. R. 5922. Smith (R/NE). Expands small-scale hydropower.

Federal Water Pollution Control Act (FWPCA)

S. 696. Cardin (D/MD) and Alexander (R/TN). Amends the FWPCA to include a definition of fill material.

S. 787. Feingold (D/WI) and 23 Co-sponsors. Amends the FWPCA to clarify the jurisdiction of the U.S. over waters of the U.S.

S. 1005. Cardin (D/MD) and 3 Co-sponsors. Amends the FWPCA and the Safe Drinking Water Act to improve water and wastewater infrastructure in the U.S.

S. 3598. Lautenberg (D/NJ) and Gillibrand (D/NY). Amends the Safe Drinking Water Act and the FWPCA to authorize the Admin-

istrator of the EPA to reduce or eliminate the risk of releases of hazardous chemicals from public water systems and wastewater treatment works, and for other purposes.

H. R. 700. McNerney (D/CA) and Tauscher (D/CA). Amends the FWPCA to extend the pilot program for alternative water source projects.

H. R. 1262. Oberstar (D/MN) and 9 Co-sponsors. Amends the FWPCA to authorize appropriations for State water pollution control revolving funds, and for other purposes.

Invasive Species

S. 237. Levin (D/MI) and 4 Co-sponsors and **H. R. 500.** Ehlers (R/MI) and 20 Co-sponsors. Establishes a collaborative program to protect the Great Lakes, and for other purposes.

S. 462. Boxer (D/CA) and Vitter (R/LA). Amends the Lacey Act Amendments of 1981 to prohibit the importation, exportation, transportation, and sale, receipt, acquisition, or purchase in interstate or foreign commerce, of any live animal of any prohibited wildlife species, and for other purposes.

S. 594. Casey (D/PA) and Stabenow (D/MI). Requires a report on invasive agricultural pests and diseases and sanitary and phytosanitary barriers to trade before initiating negotiations to enter into a free trade agreement, and for other purposes.

S. 1421. Levin (D/MI) and 9 Co-sponsors. **H. R. 48.** Biggert (R/IL). Amends the Lacey Act, to add certain species of carp to the list of injurious species that are prohibited from being imported or shipped.

S. 2946. Stabenow (D/MI) and **H. R. 4472.** Camp (R/MI). Directs the Secretary of the Army to take action with respect to the Chicago waterway system to prevent the migration of bighead and silver carps into Lake Michigan, and for other purposes.

S. 3063. Reid (D/NV) and 7 Co-sponsors and **H. R. 4782.** Young (R/AK) and Berkley (D/NV). Directs the Secretary of the Interior to provide loans to certain organizations in certain States to address habitats and ecosystems and to address and prevent invasive species.

S. 3553. Stabenow (D/MI) and 10 Co-sponsors and **H. R. 5625**. Camp (R/MI) and 13 Co-sponsors. Requires the Secretary of the Army to study the feasibility of the hydrological separation of the Great Lakes and Mississippi River Basins.

H. R. 51. Kirk (R/IL). Directs the Director of the USFWS to conduct a study of the feasibility of a variety of approaches to eradicating Asian carp from the Great Lakes and their tributary and connecting waters.

H. R. 669. Bordallo (D/GU) and 9 Co-sponsors. Prevents the introduction and establishment of nonnative wildlife species that negatively impact the economy, environment, or other animal species or human health, and for other purposes.

Mining

S. 140. Feinstein (D/CA) and **H. R. 699**. Rahall (D/WV) and 20 Co-sponsors. Modifies the requirements applicable to locatable minerals on public domain lands, consistent with the principles of self-initiation of mining claims, and for other purposes.

S. 409. Kyl (R/AZ) and McCain (R/AZ) and **H. R. 2509**. Kirkpatrick (D/MI) and Flake (R/AZ). Secures Federal ownership and management of significant natural, scenic, and recreational resources, to provide for the protection of cultural resources, to facilitate the efficient extraction of mineral resources by authorizing and directing an exchange of Federal and non-Federal land, and for other purposes.

S. 796. Bingaman (D/NM) Modifies the requirements applicable to locatable minerals on public domain land, and for other purposes.

S. 1777. Udall (D/CO). Facilitates the remediation of abandoned hardrock mines, and for other purposes.

S. 2830. Bingaman (D/NM) and 5 Co-sponsors and **H. R. 4817.** Teague (D/NM) and 2 Co-sponsors. Amends the Surface Mining Control and Reclamation Act of 1977 to clarify that uncertified States and Indian tribes have the authority to use certain payments for certain noncoal reclamation projects.

S. 3053. Specter (D/PA). Amends the Surface Mining Control and Reclamation Act of 1977 to permit the Abandoned Mine Reclamation Fund to be used for transportation and use of dredged materials for abandoned mine reclamation, and for other purposes.

S. 3252. Tester (D/MT). Amends the Surface Mining Control and Reclamation Act of 1977 to limit the liability of a State performing reclamation work under an approved State abandoned mine reclamation plan.

S. 3933. Bunning (R/KY) and **H. R. 6113**. Rogers (R/KY) and 11 Co-sponsors. Protects electricity reliability by prohibiting the use of funds for carrying out certain policies and procedures that adversely affect domestic coal mining operations, and for other purposes.

H. R. 493. Rahall (D/WV). Directs the Secretary of the Interior to promulgate regulations concerning the storage and disposal of matter referred to as ``other wastes'' in the Surface Mining Control and Reclamation Act of 1977, and for other purposes.

H. R. 3203. Lamborn (R/CO) and Bishop (R/UT). Promotes remediation of inactive and abandoned mines, and for other purposes.

National Environmental Policy Act (NEPA)

S. 3230. Inhofe (R/OK) and 6 Co-sponsors. Prohibits the use of NEPA to document, predict, or mitigate the climate effects of specific Federal actions.

H. R. 585. Lee (D/CA) and 5 Co-sponsors. Directs the President to enter into an arrangement with the *National Academy of Sciences* (NAS) to evaluate certain Federal rules and regulations for potentially harmful impacts on public health, air quality, water quality, plant and animal wildlife, global climate, or the environment; and to direct Federal departments and agencies to create plans to reverse those impacts that are determined to be harmful by the NAS.

H. R. 996. Nunes (R/CA) and McCarthy (R/CA). Temporarily exempts certain public and private development projects from any requirement for a review, statement, or analysis under the NEPA of 1969 (42 U.S.C. 4321 et seq.), and for other purposes.

Public Lands

S. 22. Bingaman (D/NM) and **H. R. 146** Hold (D/NJ) and 10 Co-sponsors. Designates certain VA, WV and OR lands as components of the National Wilderness Preservation System, to authorize certain programs and activities in the Department of the Interior and the Department of Agriculture, and for other purposes.

S. 32. Spector (R/PA) and Casey (D/PA).

River Crossings

Mississippi Interstate Cooperative Resource Association
9053 Route 148
Marion, IL 62959

Please send an e-mail to MICRA@MICRArivers.org to subscribe, unsubscribe, or change to an electronic subscription.

Requires FERC to hold at least one public hearing before issuance of a permit affecting public or private land use in a locality.

S. 452. Crapo (R/ID) and Risch (R/ID) and **H. R. 2025.** Minnick (D/ID) and Simpson (R/ID). Ensures public access to Federal land and to the airspace over Federal land.

S. 1470. Tester (D/MT). Sustains the economic development and recreational use of National Forest System land and other public land in the State of Montana, to add certain land to the National Wilderness Preservation System, to release certain wilderness study areas, to designate new areas for recreation, and for other purposes.

H. R. 1041. Melancon (D/LA). Directs the Secretary of the Interior to study the suitability and feasibility of designating sites in the Lower Mississippi River Area in the State of Louisiana as a unit of the National Park System, and for other purposes.

Public Service

S. 277. Reid (D/NV) and 32 Co-sponsors. Amends the National and Community Service Act of 1990 to expand and improve opportunities for service, and for other purposes.

S. 1442. Bingaman (D/NM) and 2 Co-sponsors and **H. R. 1612.** Grijalva (D/AZ) and Rahall (D/WV). Amends the Public Lands Corps Act of 1993 to provide service-learning opportunities on public lands.

Water Quality

S. 3561. Udall (D/NM) and Whitehouse (D/RI) creates a new green infrastructure program within U.S. EPA to research and promote the use of soil, plants and vegetation to catch and filter stormwater before it fouls water bodies.

H. R. 135. Linder (R/GA) and 3 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. 276. Miller (R/MI). Directs the Administrator of the USEPA to convene a task force to develop recommendations on the proper disposal of unused pharmaceuticals, and for other purposes.

H. R. 631. Matheson (D/UT). Increases research, development, education, and technology transfer activities related to water use efficiency and conservation technologies and practices at the USEPA.

H. R. 1145. Gordon (D/TN). Implements a *National Water Research and Development Initiative*, and for other purposes.

H. R. 3202. Blumenauer (D/OR) and 3 Co-sponsors. Establishes a *Water Protection and Reinvestment Fund* to support investments in clean water and drinking water infrastructure, and for other purposes.

H. R. 5124. Ellison (D/MN). Prohibits the use, production, sale, importation, or exportation of any pesticide containing atrazine.

Water Resources

S. 637. Baucus (D/MT) and Tester (D/MT). Authorizes the construction of the *Dry-Redwater Regional Water Authority System* in the State of Montana and a portion of McKenzie County, North Dakota, and for other purposes.

S. 1122. Barrasso (R/WY) and 5 Co-sponsors. Authorizes the Secretaries of Agriculture and Interior to enter into cooperative agreements with State foresters authorizing State foresters to provide certain forest, rangeland, and watershed restoration and protection services.

S. 1712. Reid (D/NV), and 2 Co-sponsors and **H. R. 3747**. Berkley (D/NV) and Titus (D/NV). Promotes water efficiency, conservation, and adaptation, and for other purposes.

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