River Crossings

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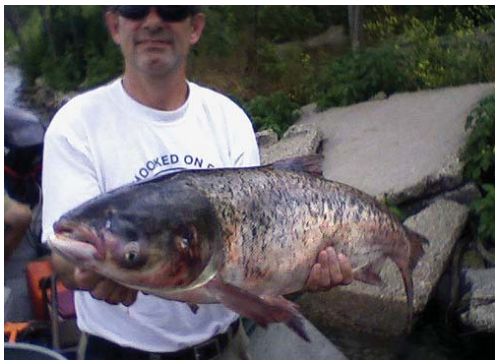
Ecological Separation of the Great Lakes and Asian Carp Update

The capture of a single bighead carp in Lake Calumet along the Chicago Area Waterway System (CAWS) was announced in an *Asian Carp Regional Coordinating Committee* (RCC) news release on June 23. This is the first physical specimen of Asian carp found in the CAWS above the U.S. Army Corps of Engineer's Aquatic Invasive Species Electric Barrier System. Lake Calumet is located between T. J. O'Brien Lock and Dam and Lake Michigan approximately six miles downstream of the Lake. The fish was caught by a commercial fisherman contracted by the Illinois Department of Natural Resources (ILDNR) during routine fishing in the area. The fish measured 34.6 inches in length and weighed 19.6 pounds (see photo at right).

RCC agencies announced that they would take immediate measures, including but not limited to more electrofishing and netting, to remove any additional Asian carp they could find in the area. "We set out on a fact finding mission and we have found what we were looking for," said John Rogner, Assistant Director of the ILDNR. "This is important evidence and the more information we have about where Asian carp are, the better chance we have of keeping them out of the Great Lakes."

"This issue is an extremely high priority for the U.S. Fish and Wildlife Service, and we will continue to work directly with our partners and stakeholders to implement the *Asian Carp Control Strategy Framework* using all available tools and techniques," said Mike Weimer, U.S. Fish and Wildlife Service (FWS) Assistant Regional Director for Fisheries and Aquatic Resources. "We remain firmly committed to achieving our collective goal of preventing Asian carp from becoming established in Great Lakes waters."



Bighead carp taken in Lake Calumet. (Illinois Department of Natural Resources Photo)

Intensive ILDNR and FWS Asian carp sampling operations began on the CAWS in February. Commercial fishing nets and electrofishing gear will continue to be used in Lake Calumet and additional resources will be deployed up the Calumet River leading to Lake Michigan. Meanwhile, "The Army Corps of Engineers will continue to operate the CAWS locks and dams for their Congressionally authorized purposes. We will continue to support fish suppression activities by modifying existing structures such as locks as requested by other agencies to support this common goal," said Colonel Vincent Quarles, Commander of the U.S. Army Corps of Engineers (Corps), Chicago District. "At this time there is no intention to close the locks," he said.

Meanwhile, studies at Southern Illinois University (SIU) indicate that the Lake Calumet carp appears to have spent most of its life at that location and may have been released there by humans who didn't know what type of fish it was or the environmental risk it posed. SIU researchers said in early August that tests of chemical markers in the bighead carp suggest it was not a recent arrival to the waterway and probably did not get there by evading an electric barrier meant to prevent the species from infesting the Great Lakes. Jim Garvey, an SIU fisheries biologist, acknowledged the findings were not certain

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because of incomplete data and were based on a number of assumptions. "But it is very plausible that this fish originated in the Illinois River and then moved or was transported to Lake Calumet or Lake Michigan during the early portion of its life," Garvey said.

Tests on the fish were conducted at SIU's *Fisheries and Illinois Aquaculture Center* in Carbondale. Researchers examined its tiny inner ear bones, called otoliths. These bones contain fingerprints of calcium and other chemicals that are unique to the waterways in which they live, Garvey said. Layers of the chemicals build up in otoliths similarly to tree rings, enabling scientists to identify a fish's age as well as the water bodies in which it has lived. The analysis suggests that the bighead spent most of its life in Lake Calumet or even Lake Michigan, which have similar water chemistry, Garvey said. But chemicals in the part of the otolith that developed in roughly its first year of life came from another waterway — one with chemistry similar to the Mississippi and Illinois rivers, he said. But the exact water body from which the fish originated hasn't been pinpointed.

ILDNR's Rogner said the SIU report reinforces the possibility that humans placed the carp in Lake Calumet. Releasing live fish is a cultural ritual for some people, he said. Or it might have been dumped from an angler's bait bucket. "We're not suggesting that anyone did this maliciously," Rogner said. "At that early age, it's very easy to misidentify Asian carp with other commonly used bait fish." As a result of this finding, the agency in September will begin testing for Asian carp DNA at about 60 Chicago-area bait shops and teaching owners how to spot young bighead and silver carp.

Joel Brammeier, president of the *Alliance for the Great Lakes* (AGL), said the SIU findings about this bighead did not mean the electric barrier was blocking the path of other Asian carp. "One fish did not leave behind the clouds of DNA that have been turning up in the Chicago waterway the past year," he said. But Lisa Frede, regulatory affairs director for the *Chemical Industry Council of Illinois*, said the university's discovery "should serve as yet another warning to alarmists calling for the total shutdown of the Chicago locks and complete hydrological separation, that perhaps their knee-jerk reactions are unwarranted."

Interestingly, Bill Bolen, Senior Advisor for the EPA's Great Lakes National Program Office, told an industry group that the e-DNA being found in the waterway could be from sources other than Asian carp. "There are possible other vectors, ways that DNA material could be getting into the waterway system," he said. Funding recently obtained by the EPA will allow the agency to work with the University of Notre Dame and with other federal agencies to consider other possibilities, such as waste from birds and barges, he said. "We do want to get some definitive information," he said. "Is DNA getting into the waterway in some other way, shape, and form? We're going to move really rapidly on that. I expect to get that work started within the next couple of weeks (i.e. early July)," he said. Jim Farrell of the *Illinois Chamber of Commerce* (ICC) summed it up for the business owners this way: "We want to know what you have to find out about e-DNA to continue to trust it, because on our side of the table, common sense has said it's time to put it on the shelf."

ILDNR's Rogner said risk analysis is also being done, based on "a large body of sampling data going back to last November or December." Along with actual fish that have been collected, Rogner said the data would help the ILDNR determine if Asian carp exist in significant numbers and are a risk to the Great Lakes. "Based on all of the sampling we've done so far," Rogner said, "our tentative conclusion is that if Asian carp are in that waterway, they're there in very low numbers. And every time we sample and fail to get Asian carp, it reinforces that conclusion." He said the exact numbers would eventually be made public.

In late June, Senators Richard Durbin (D/IL), and Debbie Stabenow (D/MI) introduced the "*Permanent Prevention of Asian Carp Act*" in Congress requiring the Corps to conduct an 18-month study of how to sever the Chicago-area connections between the Mississippi River and Lake Michigan. Dave Camp (R/MI) introduced the same bill in the House. The Corps has said that such research could take up to five years, but if enacted under these bills, the study would be required to begin within 30 days, and the

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Corps would be required to send a progress report to Congress and President Barack Obama within six months and again in 12 months. In the Senate, the new legislation is co-sponsored by seven Great Lakes states senators, and in the House by 12 representatives from Great Lakes states.

Also in late June and early July the Obama Administration was bombarded with letters and visits from state and federal politicians, as well as by a host of environmental groups calling for quick action on the Asian carp matter. These efforts included one by the environmental group *Ecojustice* who contacted Secretary of State Hillary Clinton's office on behalf of themselves, *Environmental Defence Canada* and the *Waterkeeper Alliance*, an eco group headed up by Robert F. Kennedy Junior. *Ecojustice* asked Clinton to use the U.S. Clean Water Act to require all relevant states and agencies to consider Canada and try and stop the Asian carp before they makes their way into the Great Lakes. "Canadian concerns need to be heard," *Ecojustice* staff lawyer Hugh Wilkins told the *Toronto Star*.

Then in mid July, five U.S. states sued the federal government and Chicago's water authority seeking emergency action to block Asian carp from entering the Great Lakes. The action by Michigan, Wisconsin, Minnesota, Pennsylvania and Ohio followed three previous attempts at court action, all of which were rejected by the U.S. Supreme Court. The suit, filed in federal court in Chicago, seeks a court order to force the Corps to use nets or other barriers to block carp on the Little Calumet River which drains into Lake Michigan. The states also want to close Chicago shipping locks temporarily and to order a study of whether the Great Lakes can be separated from the Mississippi River to block the carp. "President Obama and the Army Corps of Engineers have failed to fight Asian carp aggressively," said Michigan Attorney General Mike Cox, a Republican running for governor. "Asian carp will kill jobs and ruin our way of life," he said. But ICC's Farrell said the electronic barrier to the carp and other steps to control them were working. "This is another example of politicians and candidates for office imposing themselves on a scientific process that is progressing splendidly," he said.

The title of the lawsuit is *State of Michigan, et al v. U.S. Army Corps of Engineers, et al, No. 10-cv-4457, U.S. District Court for the Northern District of Illinois*. The states presented their arguments in federal court to Judge Robert Dow in late August. He will hold a three-day hearing in Chicago beginning on September 7 to consider the injunction request

Just three days after the lawsuit was filed in mid July, a coalition of Great Lakes governors and mayors took matters into their own hands and announced commencement of a $2 million study to investigate reseparating the lakes from the Mississippi River Basin. The study called, "*Envisioning a Chicago Area Waterway System for the 21st Century*," will be led by the *Great Lakes Commission* and the *Great Lakes St. Lawrence Seaway Cities Initiative*, a mayors' group founded by Chicago Mayor Richard Daley. The study is funded by the *Great Lakes Protection Fund* and other sources and is expected to take 18 months to complete.

The Corps has already begun evaluating separation of the water bodies, but this new study will explore how separation could benefit the regional economy. Many are concerned that cutting off the canal will hurt the barge industry and the businesses they support. "This project is not meant to displace the essential and urgent work of other institutions and government entities," said Michigan Gov. Jennifer Granholm (D). "Their responsibility for immediate action to prevent the spread of Asian carp remains. This study tackles the larger longer-term task of redesigning the waterways for sustainability. Both jobs need to be done, and both need to succeed," she said.

The idea of damming the canals is considered anathema to the Chicago business community because of the impact it could have on the barge industry and the way wastewater flows in the Chicago area. But political leaders across the region are taking the idea seriously. "This study is a critical step in finding the best solution to the problem of invasive species moving through the Chicago Area Waterway System between the Great Lakes and Mississippi River watersheds," said Mayor Daley. "At the same time, it can help identify ways to improve transportation, water quality and water management for the residents of the city of Chicago and the entire region." "We're talking about problems that go beyond invasive species like Asian carp," said Tim Eder, executive director of the *Great Lakes Commission*, of which Illinois Governor Pat Quinn is chairman. Eder said the study will analyze options that could enhance the flow of cargo through the Chicago area with the use of intermodal transportation centers that would allow cargo to move smoothly between barges, trucks and rails. It will also look at upgrading wastewater treatment options for the Chicago area, considered a first step in any plan to plug the canal system because it will mean that at least some of Chicago's wastewater would once again flow into Lake Michigan.

Some see this study as an opportunity for Chicago to secure a boundless supply of freshwater in the coming centuries. The Supreme Court has capped the amount of water Chicago can take from the lake at 2.1 billion gallons daily because, unlike other Great Lakes cities, Chicago does not return the water it takes back to the lake. Yet if the city were to re-engineer its river so it flows back into the lake, it would no longer be limited by that cap. "The purpose of the initiative is to put serious, credible, well-designed options on the table," said Eder. "Serious people are talking about this seriously for the first time," said Josh Ellis, the *Chicago-based Metropolitan Planning Council's* water policy expert. "This is not a carp issue — it's a future-of-the-region-type issue," Ellis said. "The cost will be easier to ballpark than the long-term benefits, but those can't be denied either if we start losing businesses to Milwaukee and Toronto because they have a basically unlimited water supply."

"The recent discovery of an Asian carp so close to Lake Michigan was a wake-up call that we need to do more and we need to do it quickly," said Sen. Durbin. "While separating the waterways would require a complex feat of engineering, we need to understand the costs and benefits and whether this method offers the best hope for a long-term solution for containing not only the carp but other invasive species."
"Asian carp pose a threat to the Great Lakes that reaches beyond state borders, and it is important to work together — across traditional interests and political boundaries — to fight their spread," said Wisconsin Gov. Jim Doyle. "The support of the *Great Lakes Protection Fund* will play an important role in this effort," Eder said. The study is also receiving a $500,000 grant from *Chicago's Joyce Foundation*, and Eder said other funding sources are also being secured.

AGL's Brammeier, said, "Members of Congress have made it clear that waiting five years for answers won't keep carp out of the Great Lakes. It's gratifying to see the states and cities take up that challenge and build a united front to beat back invaders — fast. The Chicago Waterway System still poses the highest carp risk to the Great Lakes. This study can help peel back the veil that's needlessly shrouding innovative solutions

to ecological and economic problems." But many business leaders are dubious of any plan to separate the basins, saying it will lead to "economic devastation. "We don't even know if it's possible," said Mark Biel, executive director of the *Chemical Industry Council of Illinois*. "To claim this path forward has growing regional support is a gross distortion of the facts."

Clearly the cost of separating Chicago waterways from Lake Michigan would be huge, likely in the tens of billions. Less clear is how to pay for such a project at a time when state and federal budgets are stretched to the breaking point. Then there's the difficulty of reversing the Chicago River again after a century of metropolitan growth. More than 5.5 million people depend on the waterway system to flush their waste and stormwater, keeping it away from the city's drinking-water supply. A large barge-shipping industry relies on the river to haul some 25 million tons of cargo annually from New Orleans to Chicago and points north on the lake. And then there are the thousands of pleasure boaters and tour operators who feel threatened.

An immediate question is where to create a watertight separation between Chicago waterways and Lake Michigan. "You have to decide where to separate," says Dick Lanyon, executive director of the *Metropolitan Water Reclamation District of Greater Chicago*, which runs the area's canals and water treatment plants. "From that decision other decisions would flow." A single separation point at Lockport, where the manmade waterways begin, would force all of Chicago's wastewater and stormwater to flow into Lake Michigan, dictating a massive upgrade in water treatment facilities. "It would double or triple our current treatment costs," Mr. Lanyon says. Putting the separation close to the lake would allow much more shipping to continue normally. Water treatment plants to the west, such as the region's largest facility, at Stickney, would not need to be upgraded.

A separation point at the main branch of the Chicago River, just west of the Merchandise Mart, would allow the north and south branches of that river to flow freely. That's better than putting the break point at the mouth of the river, which would threaten much of downtown with flooding during major storms. Putting a separation point on the south branch, near where the Chicago Sanitary and Ship Canal begins, would preserve lake access for most boaters and industrial users.

The most difficult choice for a separation point is in the Lake Calumet area, where barge traffic is heaviest. Some kind of lift mechanism would be needed for dozens of 1,500-ton barges that cross that area every day. But Phil Moy, a University of Wisconsin invasive species expert who advises the Corps on its electric carp barrier, says, "The technology's out there." He calls the canals a "lifeline — you can't just close that."

After a meeting with Nancy Sutley, Chairperson of the White House Council on Environmental Quality (CEQ), Senator Durbin (D/IL) announced in mid July that the Obama Administration is working to appoint a *Coordinated Response Commander* for Asian carp. Durbin requested this action in a June 25 letter to the President. Sutley also assured Durbin that the Obama Administration views the effort to keep Asian carp out of the Great Lakes as a top priority. "The appointment of a *Coordinated Response Commander* will signal that the effort to prevent the Asian carp from entering Lake Michigan and establishing itself in the Great Lakes is a national priority," Durbin said. "This individual would coordinate the day-to-day efforts of the multiple federal, state and local agencies to implement immediate, emergency actions in the next few months while we continue to determine effective long-term solutions. I am encouraged by the Administration's commitment today," Durbin said.

Also in mid July, Illinois Governor Quinn announced that his state is entering into a public-private partnership that will reduce Asian carp populations in Illinois waters. Quinn said in a press release that this first-of-its-kind partnership will help enhance the commercial fishing industry, create approximately 180 jobs and relieve pressure on the Corps' Electric Invasive Species Barrier System. "Today's agreement is one of the most aggressive efforts to address the Asian carp problem, and is a critical step to long-term economic sustainability and the success of the commercial fishing industry," Quinn said.

Specifically, Illinois is entering into an agreement with Chinese meat processing company *Beijing Zhuochen Animal Husbandry Company* and *Big River Fisheries* (*BRF*) located in Pearl, IL. BRF will process, package and ship Asian carp to *Zhuochen* for resale in international markets where the fish are considered a delicacy. *BRF* is expected to harvest at least 30 million pounds of fish for the purpose of this agreement by the end of 2011. The state, through the Illinois Department of Commerce and Economic Opportunity, will invest $2 million in capital funds to help *BRF* retrofit its existing facility, increase its processing capacity and expand to new production facilities in Pittsfield, which will create 61 new jobs and 120 indirect jobs. Commercial fishermen, contracted by the ILDNR, have already started removing Asian carp from the Illinois River where large populations exist.

According to Kevin Irons with the Illinois Natural History Survey in Havanna, there are as many as 4,100 adult silver carp, or about 13 tons, per mile in the middle Illinois River. "When you look at an eighty mile [129 kilometer] reach, it's phenomenal how much biomass is taken up by these Asian Carp," said Irons "They compete with every other fish that's in our water.".

Liang Chang, *Zhuochen* Chairman said, "The high quality and taste of the wild Asian carp from *Big River Fish* far exceeded our expectations. We see a tremendous market in China for the wild Asian carp. As *Big River Fish's* production capacity increases, we will be able to expand our marketing efforts in China."

"*Big River Fish* can now retrofit and expand its facilities to meet our production commitment to *Zhuochen*," said Rick Smith, President, *BRF Corp*. "The Asian carp can become an economic engine for Illinois rather than a threat, and we thank Governor Quinn for his support of our efforts."

Meanwhile, in northeastern Indiana, state DNR officials are hoping to prevent Asian carp from entering Lake Erie through Eagle Marsh by erecting a 10-foot-tall, chain-link fence. The fence is designed to prevent adult carp from using Eagle Marsh to swim from the Wabash River system (where spawning populations exist) into the Maumee River — and then into Lake Erie — during flood conditions, said INDNR's Phil Bloom. Although smaller carp would be able to swim through the spaces in the chain-link fence, Bloom said that's unlikely because it would be difficult for them to overcome strong flood currents to reach the wetland. "Those small fish aren't able to battle that kind of current at their young age, so we don't expect them to be in that area," he said. "Our concern isn't the small fish — it's adult fish of spawning age."

The Wabash and Maumee river basins normally drain in opposite directions and have no direct link, but their waters can mix in

the 700-acre marsh near Fort Wayne under certain flood conditions. INDNR officials say flooding could allow the Asian carp that have been present in the Wabash for nearly 15 years to bridge the 20 miles between the Wabash system and the Maumee's tributaries by swimming through Eagle Marsh. From there, they could swim to Lake Erie about 100 miles to the northeast. The fencing is expected to be in place by late summer. Bloom said it will be installed on steel posts sturdy enough to survive floodwaters. The fence will be built in a shape similar to a flattened "Z'' with two of the sides running parallel and the third, middle-section, built perpendicular to the two other portions. He said that design is intended to allow floodwaters to flow through the middle portion in case debris accumulates in the other two sections, obstructing the flow of water. The marsh fencing will be only a temporary barrier for the carp until a permanent system to keep the fish out of the Maumee River can be designed.

The Corps expects to assist Indiana in its search for a permanent barrier in the marsh once they reach a formal agreement, said Michael Saffran, a Corps civil engineer with the agency's Great Lakes and Ohio River division. AGL's Brammeier said he's pleased that Indiana settled quickly on the design for its temporary fencing system. But he said a comprehensive regional analysis is needed to determine all of the possible rivers, streams, canals and other waterways carp might use to enter the five Great Lakes. "We still have to write the book on how we approach each of those connections between the Mississippi River and the Great Lakes," Brammeier said. "We need that regional triage to know where the next front in this battle is going to be," he said. Josh Mogerman, a spokesman for the *Natural Resources Defense Council* said a plan should be in place for each waterway where carp have the potential to spread.

While all of this action to stop the spread of Asian carp and to permanently separate the Great Lakes from the Mississippi River Basin is encouraging, the history on invasive issues hasn't been very bright. In the early 1980s, the Canadian and U.S. governments had "full and fair warning" that harmful creatures, specifically zebra mussels, had the potential to invade the Great Lakes via ballast water of Great Lakes freighters, says Dave Dempsey, a former member of the *Great Lakes Fishery Commission*. A 1981 report, commissioned by the Canadian government to analyze the potential perils of ballast water, stated that research "clearly indicate(s) that non-indigenous and non-endemic aquatic species are being imported into the Great Lakes system," and specifically points to the pipe-clogging zebra mussels — which at that time were plaguing Britain and Russia — as a species particularly adept at surviving an ocean journey in a ship's ballast tanks. But neither the Canadians nor the Americans opted to do anything about the warning, says Dempsey, who documented the governments' botch in his 2004 book "*On the Brink — the Great Lakes in the 21st Century*." "It's pretty apparent that pressure from shipping and import lobbies outweighed any concern about a possible threat," Dempsey says. "The burden is always on the person who wants to protect something to show the need for control, instead of the burden being on industry to show its practices are safe. That's the whole problem with Great Lakes management . . . . We wait until harm is demonstrated before we act." Dempsey agrees with the scientists that it likely is only a matter of time until the next zebra mussel arrives. "It could happen again. I don't see that the government has learned. Eighteen years after the zebra entered the Great Lakes, we still have no effective ballast water control," he says. "What does that say? It says we can't even close the barn door after the horse gets out."

Let's hope that history doesn't repeat itself for the Asian carp invasion! Separating the Great Lakes from the Mississippi River Basin is equally important for both ecosystems.

Sources: *RCC New Release*, 6/23/10; John Flesher, *AP*, 8/7/10; Steven Dahlman, *MarinaCityOnline.com*, 6/22/10; *Reuters*, 7/19/10; Dan Egan, *Milwaukee Journal Sentinel*, 7/22 and 7/23/10; Paul Merrion *Chicago Business*, 7/5/10; *AP/WCCO.com*, Detroit; *durbin.senate.gov*, 7/15/10; *IL Governor's Office News Release*, 7/13/10; Gitte Laasby, *Gary Post Tribune*, 7/3/10, Tom Henry, *Toledo Blade*, 7/15/10; Rick Callahan, *AP*, 7/27/10; Lee Bergquist, *Milwaukee Journal-Sentinel*, 7/7/10; Rachel Brougham *PetoskeyNews-Review*, 7/15/10; *Toronto Star*, 8/1/10; Dave Golowenski, *Columbus Dispatch*, 7/18/10; Scott Seroka, *KARE*, 7/26/2010; Jennifer Nalbone, *Great Lakes United*, 6/7/10; *Detroit Free Press*, 6/30/10; *Milwaukee Journal Sentinel*, 7/21/10; Kane Farabaugh, *Voice of America*, 7/20/10; Joel Hood, Chicago Tribune, 8/23/10; and *Greenwire*, 7/8, 7/23 and 8/23/10

Black Carp Showing Up in Commercial Catches

Ten years ago MICRA warned of the impending threat of black carp to the Mississippi River Basin ecosystem. We went so far as to send a letter to Jamie Clark, then Director of the U.S. Fish and Wildlife (FWS), asking that black carp be listed as an injurious species under the federal Lacey Act. Unfortunately, it wasn't until black carp were finally listed as injurious wildlife in November 2007 that it became illegal to import or ship the species across state lines

MICRA was concerned "(1) regarding the use of black carp (*Mylopharyngodon piceus*) as a control agent for snail populations in fish culture ponds, (2) for the potential of the escape of these black carp to the wild, and (3) for the welfare of the nation's mollusk populations (many of which are threatened or endangered) should these black carp escape from captivity and establish populations in the wild."

Now more and more black carp are being reported in the catches of commercial fishermen, especially in portions of the lower Mississippi Basin. Most recently (7/1/10), Rob Maher, Illinois Department of Natural Resources, reported the catch of a 35 inch, 15.4 lb. specimen near Hamburg, IL in Mississippi River Pool 25 at River Mile 258 (see photo below). The fish was taken by a commercial fisherman in a hoop net. Meanwhile, downstream in Louisiana, black carp are reportedly taken rather frequently by commercial fishermen and have been as large as 74 lbs. in size.

The online *USGS Nonindigenous Aquatic Species Site* (http://nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=573) validates MICRA's concerns of ten years ago: "There is high potential that the black carp would negatively impact native aquatic communities by feeding on, and reducing, populations of native mussels and snails, many of which are considered endangered or threatened... Given their size and diet preferences, black carp have the potential to restructure ben-

Black carp taken by a commercial fisherman in Louisianna in June 2010. (Photo Credit: Jody David, LA DWF)

thic communities by direct predation and removal of algae-grazing snails. Mussel beds consisting of smaller individuals and juvenile recruits are probably most vulnerable to being consumed by black carp... Furthermore, based on the fact that black carp attain a large size (well over 1 meter long), both juvenile and adult mussels and snails of many species would be vulnerable to predation by this fish...Fish farmers report that black carp are very effective in reducing the numbers of snails in some ponds...the effectiveness of black carp in significantly reducing snail populations in aquaculture ponds indicates that any black carp occurring in the wild may cause significant declines in certain native mollusk populations in North American streams and lakes...Because the life span of black carp is reportedly over 15 years, sterile triploid black carp in the wild would be expected to persist many years and therefore have the potential to cause harm to native mollusks by way of predation...".

Upon hearing of the aforementioned black carp capture in Mississippi River Pool 25, Duane Chapman, USGS Columbia, MO, immediately sent out a plea to anyone who captures a black carp from the wild, to collect samples for genetic and ploidy analysis and provide them promptly to the correct people. Of three black carp taken so far in the Upper Midwest only one has had the ploidy measured, he said, and thankfully it was triploid (i.e. sterile). Of the dozens of fish now captured from the wild in the USA, Chapman said, this was the only fish that has tested triploid. Missouri is the source of the only documented escape of black carp, and most, if not all, of those fish were probably triploid, and probably of similar parentage, although we cannot be sure. All of the fish captured further south in Arkansas, Mississippi, and Louisiana that have been tested have been diploids (and thus probably fertile).

If a fish is taken alive, Chapman says, the best sample to take for ploidy analysis is a blood sample. If freshly dead, an eyeball will work if it is shipped promptly on blue ice to Katie Bertrand at the South Dakota State University (605) 688-6121. Frozen will also work, but is not preferable. It is also important, he said, to take a genetic sample, a fin clip would do nicely but any body part will work. Such a sample should be placed in ethanol. There is a lot we can do to chart what is happening with the black carp invasion if these things are done, he said.

Sources: Rob Maher, Illinois Department of Natural Resources email to Steve Pallo, et.al., *Black Carp Collected in Pool 25*, 7/7/10; Duane Chapman, USGS email to Mike Bayless, et.al., *Fw: Black Carp Collected in Pool 25*, 7/8/2010; Jody David, Louisiana Department of Wildlife and Fisheries email to Jason Duet, Black Carp, 6/17/10; and USGS Nonindigenous Aquatic Species Site, *http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=573*

Genetically Modified Organisms Reality Check

Concerns about genetically modified (GM) organisms have been addressed in this newsletter before. But now a report presented at a recent meeting of the *Ecological Society of America* raises significant concerns about GM canola plants. The species is now reported to be growing in the wild and evolving into a plant that could outstrip our best efforts to contain it. It also has the potential to cross-pollinate and swap genes with other non-GM wild plants.

Canola plant

According to University of Arkansas researchers traveling through North Dakota, more than 83 percent of the wild canola they tested were positive for GM genes. But some of the plants also tested positive for resistance to both glyphosphate (*Roundup*) and glusfosinate (*Liberty*). Commercial GM canola is resistant to either *Roundup* or *Liberty*, but not both. The dual resistance has evolved in the wild, after the plants escaped.

The wild canola is doing what living things do — mutating and selecting for traits that will best ensure its survival — and all without our help. What we are witnessing here is not science fiction, but true escape-from-the-test-tube science, and the results could be devastating. According to *Scientific American* there are eight species of wild weeds GM canola is most likely capable of hybridizing. According to an interview with Meredith Schafer the researcher who presented the report, "We really don't know what the consequences of the gene escape [are]. We don't know what these plants are going to do." It's not hard, though, to see the potential consequences. Sooner or later, as GM evolves and genes are swapped between GM and non-GM plants, GM and wild may be one in the same — there could be virtually no such thing as a non-GM food plant or food crop. So there would be no choice between eating GM and non-GM food crops. And all may be resistant to our known herbicides.

If GM canola can establish itself in the wild, evolve and potentially cross-pollinate with other plants, what about other experiments lying in wait at the lab? According to Dr. Cynthia Sagers, co-author of the report, other GM traits could raise different concerns, including human health risks. She added, "There have been 1,100 plants approved for field trials and who knows what those are — pharmaceutical proteins, drought-resistant crops? Herbicide-resistances are very simple traits. Products in development are more complicated."

Schafer and Sagers, speculated that the plants they found along North Dakota roads might have fallen off of trucks during transport. But some sites they visited had no link to transport routes at all, which points to the plants having established wild populations. According to Schafer, that's not supposed to happen. In an interview with *Discovery News*, Sagers said, "I think the herbicide resistance is going to be a very serious problem for agronomists and farmers in the near future. I think it could be an environmental problem if we find we've created these herbicide-resistant weeds."

But who knows what other GM organisms are being propagated in the lab. Someone could be fooling around with GM aquatic species that are far more invasive than the snakehead, Asian carp, or zebra mussels. Regulators need to take a closer look at the whole GM industry.

Source: Andrew Gunther, *The Huffington Post*, 8/18/10

Felt Soled Waders Targeted to Stop the Spread of 'Rock Snot'

For fly fishers who pride themselves on a conservationist ethic, it hurts to discover that they may be trampling on that ethic every time they wade into a trout stream. Growing evidence shows that the felt on the bottom of fly fishers' boots is carrying dangerous

microorganisms that can disrupt freshwater ecosystems. *Didymo*, a single-celled organism also known as "rock snot" that thrives on the felt, can be spread to river bottoms. Once *Didymo* pioneer cells are established, clumps of the algae bloom first appear on rocks, then quickly cover the entire river bottom with a fibrous mat that can choke out the insect life that is food for trout and other fish.

Alaska and Vermont both recently banned felt-soled boots, and Maryland says it will do so soon. Fishermen say the felt soles help them stay upright on the slippery rocks. So the bans have been controversial among those who want to both enjoy and protect the rivers. "We people are clearly the vector for its spread," said Jonathan McKnight, a wildlife biologist with the Maryland Department of Natural Resources. "It's the fly fishermen who are doing it. The people who love and appreciate those rivers the most have got to be the ones protecting them." For now, amid grumbling, fishing groups are pushing rubber-soled shoes and trying to convince fishers that the switch is worth it to protect the ecosystem.

Sources: Felicity Barringer, *New York Times*, 8/15/10; and *Greenwire*, 8/16/10

Coal Mines as Fish Farms?

With deep-sea fisheries unable to keep up with rising demand for fish, some are eying abandoned coal mines as potential fish farms. The U.N. Food and Agricultural Organization estimates that 110 million metric tons of fish were consumed worldwide in 2006. A report released in September by the *National Academy of Sciences* found that deep-sea fisheries can't keep up with the escalating demand, so aquaculture now accounts for half of the fish people eat. So Joe Hankins, director of the *Conservation Fund's Freshwater Institute*, a leading proponent of something called the "recycled mines concept", says 1,000 or so abandoned mines between Pennsylvania and West Virginia are an "unrecognized resource" for aquaculture. An abandoned mine is, in effect, a gigantic subterranean rain barrel, so why not make productive use of all that trapped water? "There's no reason from a technical standpoint that millions of pounds of fish couldn't be raised in the state," Hankins says.

In 1994, a study by the *Freshwater Institute* estimated that coal-to-fisheries conversions could generate 600 jobs for West Virginia -- nothing to sniff at considering West Virginia historically has one of the highest unemployment rates in the country. State officials had anticipated having some 20 farms up and running by now. But after 16 years of hard work and best intentions, only two mines have successfully made the transition to aquaculture, accounting for roughly a dozen full-time jobs. "To say this has failed is probably premature," says Jeff Silverstein, national program director for aquaculture at the Agricultural Research Service (ARS), an appendage of the U.S. Department of Agriculture. "But right now things have not panned out."

The idea is tantalizingly simple, especially considering that the unique qualities of mine water are surprisingly conducive to fish farming. By law, coal companies must purify any water left behind in mines that might be tainted with residual traces of, say, sulfur or iron. What's more (and this is the case in large areas of southern West Virginia), limestone in the soil serves as a natural filtering agent. In addition, since these are isolated pockets of water, they're free of pathogens carried by exposed rivers and streams that can prove deadly to fish. Mine-cured water also is shielded from airborne, mercury-laced acid rain — a byproduct of coal-burning power plants.

Water in West Virginia's mines offers an added benefit because of a unique combination of climate and topography: The temperature holds steady year round at about 56 degrees, ideal for breeding trout, salmon or Arctic char. "It's by far the easiest place I've ever raised fish," says Tom Ort, who has 30 years' experience in the aquaculture business and is general manager of *Mountaineer Trout Farm* in Josephine, WV, which relies entirely on mine-cached water. "In North Carolina I had to deal with low water flow and 72-degree [water] temperatures," he said.

But the first wave of West Virginia aquaculture investors didn't pay strict attention to operating margins and had unrealistic visions of windfall profits. "The expectation was that this is a quick-return or high-return kind of business. It isn't," says Hankins. Coal companies themselves were partners in some of the original startup farms. But their interest has cooled, and most now prefer to just lease water rights. Then, shortly after the coal companies bowed out, the recession kicked in, scaring off other potential investors.

As Silverstein of the ARS observes, aquaculture is a relatively young enterprise, and rookie mistakes are still being made. One West Virginia company jumped into the fray with a faulty business plan that based fish production projections on measurements of mine-water flow taken in early spring. But then the dry summer months arrived. Also, mines only serve to provide the essential reservoir of water, which has to be pumped or gravity-fed to the actual breeding farm, so design elements are crucial. Some farms utilize circular tanks, others a "raceway" system, and the water can be used once or recirculated multiple times. Experienced breeders also like to add liquid oxygen.

In fact, *Mountaineer Trout Farm* went belly up at first, having constructed a fish farm that courted disaster by using fiberglass tanks that, problematically, weren't made to hold water. Ort subsequently took over as manager and rebuilt the system. This year *Mountaineer Trout Farm* will produce 600,000 pounds of fish. "There's no doubt there will be some additional investment" in West Virginia," Hankins insists. "It's smart to do it," says Ken Semmens, an aquaculture researcher at West Virginia University. "But it's not easy. That's kind of where we're at."

Source: Tom Dunkel, *AOL News*, 5/30/10; and *Greenwire*, 6/2/10

Environmental Concerns About Natural Gas Drilling

Drilling for natural gas has become increasingly controversial as residents from Pennsylvania to Wyoming have found wells and streams contaminated by cocktails of chemicals used in the gas extraction process known as hydraulic fracturing or "fracking". Tap water in some areas has even been found to be flammable when exposed to a spark. In Wyoming four out of five people responding to a health survey reported respiratory problems in a community affected by fracking. According to the *Earthworks Oil and Gas Accountability Project*, which organized

Flames ignited from home water tap. (Photo from "Gasland" television documentary)

the survey, respondents also experienced headaches, nausea, itchy skin and dizziness. And small earthquakes in the Dallas-Fort Worth (DFW) area are thought to be linked to natural gas drilling.

With regard to the latter, an injection well near the DFW airport used by *Chesapeake Energy Corp.* to get rid of wastewater from natural gas drilling was thought to be the culprit. Researcher Brian Stump of Southern Methodist University, one of four researchers who worked on a study published in the magazine *Leading Edge*, said the injection well at the airport was a "plausible cause" of the earthquakes that started seven weeks after the well began operating in 2008 and stopped when the well was closed. Stump said the research suggests that the fracking process itself was not the culprit, but pressure from fluid, or possibly heat from the process, could have been a trigger for the earthquakes. Stump added that the fluid could have also served as a lubricant and caused the existing fault line to slip. The earthquakes, not big enough to do any damage on the surface (< magnitude 3.3), were centered on a fault line that ran close to the injection well at the south end of the airport. Stump said the quakes occurred at the same depth as the injection well.

Meanwhile in Pennsylvania, hoof prints around a pool containing toxic wastewater from a natural gas drilling site led officials to quarantine 28 cows in May. The state agriculture department said that the cows were quarantined because their meat may be contaminated by the chemicals. The pool had formed from a leaking wastewater holding pond on a farm where *East Resources Inc.* was drilling into the *Marcellus Shale*. Some farmers have reported sick animals and birth malformations they say are a result of fracking. Tests from the water in the pool found chloride, magnesium, potassium and strontium.

Fracking is an old process that blasts tankerloads of a mixture of water, chemicals (as mundane as ice cream thickener and as toxic as benzene) and sand or plastic beads into compressed rock to open cracks and release trapped oil or gas. The drilling technique has been used for decades to improve production at aging wells and has more recently been used to tap unconventional shale reservoirs like the *Barnett* in Texas, *Marcellus* in Appalachia and *Haynesville* in Louisiana.

In 2005, the Republican Congress led by Vice President Dick Cheney exempted fracturing from U.S. EPA regulation under the Safe Drinking Water Act, heading off an appellate court ruling that had said the law should cover fracturing. Since then, fears have grown among environmentalists, community groups and some lawmakers that the chemicals used could contaminate groundwater, and they are demanding detailed, well-by-well information about the types of chemicals that drillers inject. They also want the information put on the Internet for all to see.

Dozens of environmental and community groups are also urging Congress and the U.S. EPA to investigate energy companies' injections of diesel fuel into the ground. At issue is the acknowledgment by *Halliburton Co.* and *BJ Services Co.*, two of the world's largest oil-field services companies, of using diesel fuel in their hydraulic fracturing operations in at least 15 states between 2005 to 2007. The environmental groups, led by *Earthworks* and the *Natural Resources Defense Council*, also are urging EPA to investigate all the chemicals used during hydraulic fracturing to certify that diesel is not being used. And they want the House committee to investigate exactly where the diesel injections occurred. "This industry has proven time and time again that they cannot be trusted to regulate themselves," Wes Gillingham of *Catskill Mountainkeeper* said in a statement. "Full regulation of hydraulic fracturing is needed to ensure that our drinking water is protected."

Congress included in the $32.2 billion spending bill funding environmental agencies for fiscal 2010, a measure that calls on U.S. EPA to conduct a new peer-reviewed study on the risks of hydraulic fracturing on drinking water supplies. EPA is also drilling two wells in Wyoming to confirm residents' fears that hydraulic fracturing and other possible oil and gas sources has contaminated 11 water wells around the town of Pavilion.

Public meetings across the country have been jammed with people concerned about the fracking issue. The Delaware River Basin Commission (DRBC) heard three hours of public comment, largely marked by heckling and jeering and a crowd so large that 165 people had to wait outside. Many came from northeastern Pennsylvania, where consideration about drilling for natural gas in the *Marcellus Shale* formation has become a major point of contention. The state has issued nearly 1,500 *Marcellus* permits this year, but the DRBC has prevented nearly all of the drilling, arguing that natural gas regulations must be developed first. "Every drill site is a potential Superfund site!" yelled protester Tracy Carluccio of the *Delaware Riverkeeper Network*, a group opposed to drilling. But farmers and property owners who say the money from drilling leases will help their land held signs that read: "Natural gas now. America's future is under our feet."

But drillers in the *Marcellus Shale* violated Pennsylvania's oil and gas laws 1,435 times in the past two-and-a-half years, according to a report by the *Pennsylvania Land Trust Association*. And two-thirds of the violations were of a nature that would harm the environment, while the rest were administrative or safety breaches. The state Department of Environmental Protection (PADEP) regulates the industry, and provided the list of violations to the association.

In Colorado, some 5.2 million gallons of drilling liquids and oil have spilled over the past two-and-a-half years, ranging from leaks from half-closed valves to spills of thousands of barrels of tainted water. Regulators have received reports of almost 1,000 spills in that time, including almost 200 that got into groundwater and 82 that got into surface water. Water extracted with natural gas or fracking water were the most common substances, accounting for 461 spills and about 85 percent of the amount. Those spills led to two fines totaling $650,000, both based on incidents in 2008. "To believe we can have a lot of little spills and a lot of big spills and that we're not going to see a really, really big impact is to ignore the reality of the risks of this industry," warned Nada Culver, senior counsel for the *Wilderness Society* in Denver.

Out of the 952 environmental violations in Pennsylvania 277 were for improper erosion and sedimentation plans or controls; 268 were for faulty wastewater pits; 100 for violations of the Clean Streams Law; and 154 for spilling brine, oil, drill cuttings or waste into the ground or streams. In one incident, the PADEP fined *Talisman Energy USA* $15,506 for spilling between 4,200 and 6,300 gallons of wastewater at a Bradford County well site. Larger violations that could lead to well blowouts and gas contamination of water supplies were not as frequent. There were 10 instances of improper construction of cement and steel casings that isolate drinking water aquifers from shale wells, and 16 violations where drillers were using improper blowout measures. The 25 drillers with the most violations was led by *East Resources Inc.* based in Warrendale, PA, which had 138 notices. *Chesapeake Appalachia LLC, Chief Oil & Gas LLC, Cabot*

Oil & Gas Corp., and *Talisman Energy Inc*. made up the remainder of the top five. Supporters of the industry said that tight scrutiny of the industry by inspectors had led to the extensive list of violations.

In one instance, Pennsylvania regulators blamed the operator of a *Marcellus Shale* operation for a gas well that blew out in June, and used the incident to crack down on other gas drillers. The PADEP said an independent investigation showed *EOG Resources Inc.'s* "untrained personnel and the failure to use proper well-control procedures were the principal causes" of the blowout. PADEP Secretary John Hanger said the blowout was the fault of *EOG*, which lost control of the well while performing post-fracturing clean-out activities. "Make no mistake, this could have been a catastrophic incident," Hanger said in a statement. "Had the gas blowing out of this well ignited, the human cost would have been tragic, and had an explosion allowed this well to discharge wastewater for days or weeks, the environmental damage would have been significant." The June 3 incident allowed natural gas and wastewater to spew uncontrollably from the well for 16 hours, but no one was injured. *EOG* and a subcontractor were fined $400,000 and suspended from hydraulic fracturing operations for 40 days.

On another front, environmentalists are arguing that the PADEP illegally allowed natural gas companies to pull water from rivers for use in the *Marcellus Shale* mines. The PADEP has permitted drillers to use million of gallons of river water, but only owners of the land along the rivers have the legal right to do so, said the *Allegheny Defense Project*. Energy companies use about 3 million gallons of water for each well that is hydraulically fractured, and more than 800 wells were drilled in the *Marcellus Shale* formation just this year.

Colorado, which overhauled its oil and gas laws in 2007, requires companies to maintain a well-by-well inventory of chemicals used for the life of the well plus five years. Companies don't have to file the list with state regulators, but are required to provide it to the Colorado Oil and Gas Conservation Commission if asked. The agency can share the information with health officials, or a treating physician, subject to a confidentiality agreement. The inventory can be shared more broadly if the company does not request trade secret protection.

But Wyoming's Oil and Gas Conservation Commission decided earlier this summer to order drillers to report the chemicals used in hydraulic fracturing to commission staff, the first such requirement in the nation. But the measure specifically shields the information from the public. Gov. Dave Freudenthal (D) directed the agency to draft the rules as a way to assure federal officials that Wyoming adequately regulates fracturing.

Most gas producers have objected to publication of the chemicals they use in the fracking process, claiming proprietary issues. But a Texas natural gas producer has decided to voluntarily disclose the chemicals it injects into the ground and this could prompt other drillers to do the same, paving the way for regulators to require such disclosure. *Range Resources Corp.'s* move also reflects the desire of industry to get out ahead of the issue to prevent federal regulation. *Range* said that it used 4.5 million gallons of liquid for a simple fracture, and 99.8 percent of it was water and sand. Chemicals included "small amounts" of sodium hydroxide, ethylene glycol, hydrochloric acid and benzalkonium chloride. The chemicals are "comparable to household chemicals in a very diluted form," said Ray Walker, a *Range* executive. The *Natural Resources Defense Council* said that the disclosure will help local residents test their water wells for contamination since they will now know what to look for.

Meanwhile, members of the oil and gas industry's main trade association, the *American Petroleum Institute* (API), are finalizing their own proposal for disclosure, Cathy Landry, an API spokeswoman said in July. But their proposal could provide less information than what environmentalists and lawmakers have sought, and also less than what *Range* is preparing to disclose. Landry said the four basic principles of the API disclosure policy will be (1) no federal regulation, (2) maintaining state control over regulation of fracturing, (3) confidentiality of proprietary information, and (4) transparency. Landry said further that API supports rules like those in Colorado, which requires disclosure to regulators and physicians in emergency situations, but doesn't provide the information to the public.

But *Range* is proposing to disclose the amount of additives used at each well site, along with their classifications, volumes, dilution factors, and specific and common purposes. Some of that information falls under what other companies consider proprietary trade secrets. *Range's* willingness to disclose is particularly significant because it was the first gas company to drill and complete a *Marcellus Shale* well in Pennsylvania. The Fort Worth-based company has become one of the dominant drillers in the burgeoning *Marcellus* play, with 1.3 million acres under lease. The move could also provide ammunition to environmentalists and lawmakers pressing for more complete public disclosure. One of the lawmakers who has pushed federal regulation of fracturing and more disclosure called *Range's* move a hopeful sign. "One company in one region is a good start, but any community where fracking is occurring deserves similar information," said Rep. Diana DeGette (D/CO). "It is my hope that *Range Resources* and other companies engaged in fracking will support our efforts to create a more systematic and comprehensive method of disclosure."

However, industry groups said *Range's* move showed that federal government intervention isn't necessary. "There's certainly a trend among some producers to announce support for voluntary disclosures, but that will be a business, and sometimes legal, decision that each company will consider for itself," said Jeff Eshelman, spokesman for the *Independent Petroleum Association of America*, which has lobbied hard against federal regulation of fracturing.

But environmentalists say voluntary action by companies shouldn't head off a law guaranteeing that neighbors of drill sites will know what to look for when trying to determine if their water has been contaminated. "One company's efforts at transparency don't substitute for an industry wide requirement that such substances be disclosed to the public," said Dave Alberswerth of the *Wilderness Society*. "Congress and state legislatures should move forward with requirements that all companies engaged in hydraulic fracturing publicly disclose the chemicals used in this process."

Complicating the regulating process is disagreement among different regulators and company officials on the value of posting "typical" or even company-by-company information on web sites, as opposed to a well-by-well inventory of chemicals. Tom Rathbun, PADEP spokesman, said that each company uses the same ingredients in each of its wells. But a *Chesapeake Appalachia LLC* spokesman said the chemicals used vary between each site, and are often changed as the crews fracture the wells. And *Range's* officials said, "In some instances, you may not know specific amounts until you're doing it."

The Senate climate bill authored by Sens.

John Kerry (D/MA) and Joe Lieberman (I/CT) would order fracturing companies to post on the Internet the worker-safety documents for the chemicals, called material safety data sheets. But that bill's future is increasingly uncertain. In the House, DeGette has pending legislation (H.R. 2766) to rescind fracturing's exemption from federal regulation. Her bill would also require companies to tell regulators the "chemical constituents" in their fracturing fluid, but not the formulas for how those chemicals are mixed together. The legislation would also order regulators to make those ingredients public by publishing them on the Internet. DeGette has said that she is negotiating a disclosure proposal with the industry. But those negotiations appear to have been stymied by a debate within the industry among those willing to have disclosure written into federal law and those who want to resist any federal intervention.

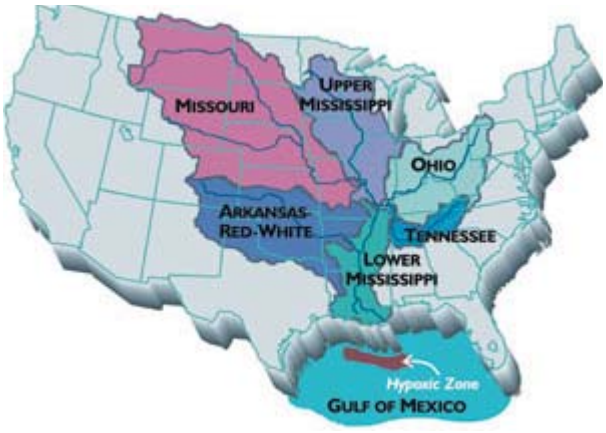
Also in Congress, Sen. Bob Casey (D/PA) plans to establish better emergency response procedures for oil and gas wells by introducing legislation that would require faster notification of emergency responders and ensure certified teams are within a one-hour drive of well sites. The "*Faster Action Safety Team Emergency Response Act of 2010*," if passed, would require that local and national emergency response agencies be notified promptly of accidents, explosions or fires. "These are basic procedures that should already be in place, fundamental health and safety procedures that make sense for people across the nation," Casey said.

So the whole issue remains unresolved, but the bottom line is that fracturing is not going to go away anytime soon because it has become vital to U.S. natural gas production. And vast shale formations under Pennsylvania, Texas and Louisiana have doubled U.S. gas reserves by some measures, but they can be tapped only with fracturing. As an environmental plus, however, providing a stable, long-term supply of natural gas, shale gas could push a transformative switch from coal to gas in power plants and other energy uses. That would reduce greenhouse gas emissions and other pollutants and fight climate change. But fracturing needs to be conducted in a manner safe to both human and ecological interests.

Sources: Mike Lee, *Fort Worth Star-Telegram*, 3/10/10; Laura Legere, *Scranton Times Tribune*, 8/3/10; Sandy Bauers, *Philadelphia Inquirer*, 7/15/10; Mead Gruver, *AP*, 7/6/10; *Reuters*, 7/7/10; *E&E Daily*, 6/24/10; Don Hopey, *Pittsburgh Post-Gazette*, 7/27/10; Russell Gold, *Wall Street Journal*, 7/14/10; *E&ENews PM*, 6/4/10; Jon Hurdle, *Reuters/Yahoo News*, 8/10/10;Burt Hubbard, *Denver Post*, 6/28/10; Matt Canham, *AP/Casper Star-Tribune*, 8/19/10; Katie Howell, *Greenwire*, 6/9, 7/14 and 8/5/10; Mike Soraghan, *Greenwire*, 7/15/10; *Greenwire*, 11/5/09, 3/11, 3/23, 6/9, 6/21, 6/28, 7/2, 7/7, 7/14, 7/15, 7/27, 8/3, 8/5, 8/11 and 8/20/10

BP Oil Spill, the Mississippi River and the Gulf Dead Zone

A good deal of attention was paid this summer to the 140,000 pounds of the dispersant *Corexit* sprayed into the *BP* oil slicks in the Gulf of Mexico. But experts say an equivalent amount of similar surfactant chemicals are spilled into the Gulf each day from the Mississippi River. However, they warn that the chemicals used directly in the BP oil spill could be more toxic than the ones that have flowed down the river for years.



U.S. map showing the Mississippi River Basin and the Hypoxic (or "dead") Zone in the Gulf of Mexico. (U.S. Department of Agriculture Figure)

The surfactants in the Mississippi and other rivers are the ingredients in dishwasher detergent and industrial solvents that cause oils to disperse. They get into the Mississippi from the disposal of wastewater to sewage treatment plants and directly to the river. According to a 1996 U.S. Geological Survey (USGS) report, the median concentration of surfactants in the river was .05 parts per million. And based on the river's average flow rate, that would result in 140,000 pounds of surfactant entering the Gulf each day, said David Dzombak, director of the *Steinbrenner Institute for Environmental Education and Research* at Carnegie Mellon University and chairman of a *National Research Council* committee that authored a 2008 study on Mississippi River water quality.

But surfactants are only one of a myriad of potentially harmful chemical substances delivered by the Mississippi and other rivers and streams to the Gulf each day, scientists say. USGS researchers Gregory Clark and Donald Goolsby estimated the river carried as much as 1,920 tons of herbicides to the Gulf in 1993, including 640 tons of atrazine, the most popular herbicide used on both farmland and residential yards. "We have abused the Gulf for years," said George Crozier, executive director of the *Dauphin Island Sea Lab* and associate professor of marine science at the University of South Alabama.

During the past 20 years, USGS researchers have also identified a variety of what they refer to as "emerging contaminants" that may also be harming organisms in the Gulf. These include a long list of pharmaceutical and household chemicals, ingredients used to make plastics, new herbicides and pesticides, and estrogen compounds from the disposal of birth control pills. The Mississippi River has 'always been considered the waste disposal chute,' said John McLachlan of the *Tulane Center for Bioenvironmental Research*. "One of the things we know is that almost any pharmaceutical taken by human beings or given to livestock or chickens ends up in wastewater and eventually in the river," said McLachlan, an expert in the study of chemicals that can change the way sexual organs work in living things. The amounts of hormones measured by former Tulane University chemical engineer Glen Boyd were "enough to feminize fish in an aquarium," McLachlan said.

But nutrients are considered the largest threat to the Gulf and they annually create a low-oxygen dead zone along the coast of Louisiana and Texas. The dead zone forms as runoff from snowmelt and rainfall in the Mississippi River's drainage basin flows into the river, bringing with it nutrients from farms and cities. And this year's dead zone is among the largest on record, scientists said in early August. The sprawling area with levels of dissolved oxygen low enough to smother marine life is 7,722 square miles, the researchers said, slightly smaller than the state of New Jersey.

Nancy Rabalais, executive director of the *Louisiana Universities Marine Consortium* and leader of the annual dead-zone survey,

which is now in its 25th year started mapping it on July 24. She said the 2010 dead zone extends between Galveston, TX, and the Mississippi River delta. The dead zone's "total area probably would have been the largest if we had enough time to completely map the western part," she said. This year's dead zone also overlaps some waters exposed to crude oil from the damaged BP oil well, but researchers said it is not clear if there is a connection between the spill and the size of the low-oxygen area. "It would be difficult to link conditions seen this summer with oil from the *BP* spill, in either a positive or a negative way," said Rabalais.

Louisiana State University zoologist Eugene Turner had already predicted a larger dead zone this year when he observed higher nitrates and nitrogen flowing toward the Gulf in May. Turner said there is an "unambiguous relationship" between the nitrogen load from the river and the size of the dead zone. "We need to act on that information," he said. Federal and state scientists are urging a concerted government effort to shrink the dead zone to 2,000 square miles, an effort overwhelmed by continued pollution from the Mississippi River. Besides its large size, scientists said this year's dead zone is also notable for its patchiness. Usually, the dead zone comprises one large expanse of low-oxygen water. But this year, the researchers found patchy areas with high oxygen concentrations — which they attribute to tropical storms stirring up the waters.

Understanding that oil and dispersants associated with the *BP* oil spill are not the only contaminants in the Gulf does not take away from concerns about their effects, said Michael Blum, an assistant professor in Tulane's Department of Ecology and Evolutionary Biology who is studying how coastal marsh plants and the microbes that live in and around them respond to the spill. "Those other compounds are in the background and always ongoing," Blum said. "Now we have the oil in the environment to contend with. There is a concern about a dead zone created by oil in the water. A dead zone driven by oil and not nutrients could be dwarfed, or relatively small, compared to what we already see along Louisiana's coastline on a seasonal basis. So the question is to what extent is oil in the environment making things worse." And that's more likely to be a concern in terms of the immediate or long-term toxic effects of oil and dispersants on Gulf organisms, he said. For instance, the chemical used as a dispersant is more toxic than the surfactants coming from dishwasher detergent and hand soap, engineered to be less toxic to humans and are already weathered in the river by the time they enter the Gulf, he said.

Blum said he's also concerned that the announcement by NOAA and other federal agencies that a significant percentage of the oil released during the spill has "disappeared" by being turned into tiny droplets or dissolved in water could be misleading. "They compared dissolved oil to sugar dissolving in water, and that's accurate in the sense that you can't see it anymore. But the next logical step to that statement is if you drink that water, are you OK? When sugar and water mix, it's not that the sugar is not there; it's just changed form and composition. From a human or wildlife perspective, there's still an oil presence, just a difference in its composition," he said. "The same logic applies to dispersed oil. If it's been reduced to a 100-micron level, should we feel that it poses no risk? The argument is it's remediated more quickly by microbacterial communities and that argument has weight to it because microbes in the Gulf are predisposed to metabolize oil. But it's not clear that the microbes are going to be at the same place, or depth as the oil, or how they will interact," he said. "You can have as many estimates as you want from the laboratory, but you can't reconstruct the environment at 3,000 or 4,000 feet." Thus, the lack of information about the long-term effects on the marine coastal food chains is important, said Blum.

"Everyone has been concerned about the near-term, the day-to-day and week-to-week effects of the spill," he said. "We need to put more time into monitoring long-term changes and understanding the long-term trajectories" of how oil and dispersant are passed along the food chain from microbes to larger species, including humans. "That will give us a better perspective on how the effects of this oil geyser compare to background levels of contamination from the Mississippi River," Blum said.

The Gulf of Mexico is one of the most diverse areas of the world's oceans, according to the most recent update of the *Census of Marine Life*. With 15,374 different species identified so far, the Gulf is the fifth most diverse marine region on the planet. But it is also one of the most threatened — even before the *BP* oil spill — because it is mostly enclosed, according to the report published in early August in the journal *PLoS ONE*. "The sea today is in trouble," said biologist Nancy Knowlton of the *Smithsonian Institution*, and leader of the *Census'* coral reef project. "Its citizens have no vote in any national or international body, but they are suffering and need to be heard."

Its not surprising that the Minerals Management Service (MMS) was criticized for its lack of deepwater drilling oversight leading up to the *BP* oil spill. And critics say the U.S. Fish and Wildlife Service (FWS) also seems to have forgotten its role to protect endangered species. In 2007, the FWS agreed with the MMS biological assessment that concluded the potential for deepwater drilling to pollute critical habitat was "low." However, the report estimated that even a spill of 1,000 to 15,000 barrels — much less than the amount spilled by the BP incident — carried up to a 27 percent risk of oil reaching the critical habitat for some endangered species. "Would people get on a plane if they knew it had a one in four chance of a major mechanical problem?" said Daniel Rohlf, clinical director of the *Pacific Environmental Advocacy Center* at Lewis & Clark Law School. "Federal wildlife agencies made conscious choices — under the guise of science — to allow offshore oil drilling with an identical risk of serious harm to endangered species."

The FWS is required to review environmental assessments, and while it cannot block lease sales, it can request further investigation or conduct its own survey. Deborah Fuller, the endangered species program coordinator for the FWS office in Lafayette, LA, said her team suggested increasing cleanup preparedness, but did not challenge the report's conclusion. "We all know an oil spill is catastrophic, but what is the likelihood it will happen?" Fuller asked. Her office does not typically require further protections if the likelihood of an impact is less than 50 percent.

The report found the chance of oil from a 1,000-plus-barrel spill reaching critical habitat within 10 days to be substantial — more than 1 in 4 for the piping plover and the bald eagle, 1 in 6 for the brown pelican, and almost 1 in 10 for the Kemp's ridley sea turtle. The probabilities were even higher when the model was extended to 30 days. "Obviously, we are going to relook at all these numbers for upcoming consultations," Fuller said.

Sources: Mark Schleifstein, *New Orleans Times-Picayune*, 8/4/10; Randolph Schmid, *AP/Yahoo News*, 8/2/10; Leslie Kaufman, *New York Times*, 7/5/10; Allison Winter, *Greenwire*, 8/3/10 and *Greenwire*, 7/6, 8/3, 8/4 and 8/5/10

Dam Break in Iowa

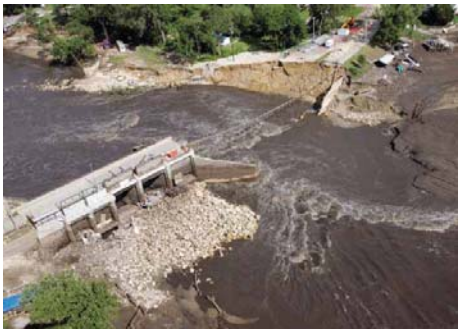
The Lake Delhi dam in eastern Iowa failed on July 24 as rising floodwater from a 13-inch rain upstream on the Maquoketa River breached 300 foot of its earthen embankment. Floodwaters eroded a 30-foot-wide hole in the dam, causing water to drop 45 feet to the river below and threaten the small town of Hopkinton. The hydroelectric dam that created Lake Delhi in the 1920s was no longer used for power but maintained the lake for recreational purposes. The dam had been used by *Iowa Interstate Power* to generate electricity until 1973, when lightning damaged the last operating generator.

The 9-mile-long reservoir was surrounded by about 900 homes and cabins, and although smaller in size, the lake setting was very similar to that of Missouri's popular Lake of the Ozarks. Its disappearance meant that hundreds of nearby homes lost their lakefront status. "This is a real landmark and I think it's in Iowans' best interests to save this lake," Iowa Gov. Chet Culver (D) said during a visit to the scene. Culver said the areas that broke were earthen portions of the dam, next to the main concrete structure.

The dam is currently owned by the local homeowners association, and state Department of Natural Resources (IDNR) officials said if the homeowners decide to rebuild the dam, it would have to meet modern design requirements. "We would hold them to a higher standard so this couldn't happen again," said Jon Garton, an IDNR dam safety engineer. Garton said that despite the dam's age, it had been well-maintained. A 2009 state inspection found a few minor problems, but nothing that could have caused its failure. The gates apparently couldn't let water out fast enough to keep the lake from pouring over the top of the dam and to keep the breach from happening, he said.

Garton pointed out that Iowa has dozens of dams similar in design to the one at Lake Delhi, although most are only about 10 feet tall. The one at Lake Delhi was about 50 feet tall. The dam didn't have an emergency spillway to divert water before it could go over the top, he said. It had three gates to regulate outflows, and they reportedly were wide open. Garton said a few smaller Iowa dams have failed in past years. "This is probably the most significant one we've had in recent history."

Culver said dam restoration could include reinstallation of hydroelectric turbines, which could generate power for a quarter of Delaware County. U.S. Rep. Bruce Braley, a Democrat who represents the area said that the lake was the area's top tourist attraction, and that vacation homes there provided 10 percent of the county's tax revenue. FEMA spokesman Bob Josephson said it was too early to speculate about whether a dam rebuilding project could qualify for money from his agency. However, he said, vacation homes damaged by flooding generally are ineligible for such assistance. FEMA often helps people repair or replace their primary homes, he said, but not their second homes. Homes along Lake Delhi range from modest cottages worth about $50,000 to large houses worth hundreds of thousands of dollars.



Aerial view of Lake Delhi on Sunday July 25. [Gazetteonline.com (Cedar Rapids, IA) photo by Jim Slosiarek]

Homeowners expressed amazement at how fast the weekend's events unfolded. On Friday, vacationers floated on inflated tubes, played on beach sand and swam in quiet waters. By Friday night, floodwaters were surging through homes like never before. Then, on Saturday morning, the dam broke and the lake drained away. "Now, my dock is 20 feet above where it should be," said Jim Kouba, a dentist from Bloomfield. Several boats were forced ashore near his vacation home in the Hickory Hollow neighborhood, along with wooden docks and a yellow swimming slide. Foundations of nearby cabins blew apart when lake water outside drained away, leaving floodwater trapped inside basements. "Houses just exploded because the water couldn't escape fast enough," Kouba said. By Sunday afternoon, the shore of the lake was a steep cliff leading down to mud flats, then a thin channel of running river water. The air reeked of rotting fish. Lawns were muddy messes, laden with soaked furniture, carpet, drywall, insulation, mattresses and other household goods.

But within days of the dam failure, Jim Willey, president of the *Lake Delhi Recreation Association* said the Lake Delhi dam will be rebuilt and will generate hydropower electricity to pay for the repair bills. The repair will be paid for by power generation from the dam and some taxpayer money. Engineers are already drafting plans, and reconstruction will begin as soon as possible, Willey said. Some taxpayer money will likely be sought to help pay for repairs because the lake also serves as a public recreation area. "But certainly we are going to pay for everything that we possibly can ourselves," Willey said. The estimated cost of the repairs is not yet known, he said. The private association sought to obtain federal permission to operate two electrical turbines at Lake Delhi long before the dam was breached, documents filed with the Federal Energy Regulatory Commission show.

The Lake Delhi hydro project would include two refurbished turbines, each capable of generating 750 kilowatts. The relatively small power project would provide enough electricity for about 700 homes. The cost of the hydro project would be less than $2 million. There was no estimate in the draft application of the potential revenue from the electrical generators.

Sources: Jacobs/Leys, *Des Moines Register*, 7/26/10; William Petroski, *Des Moines Register*, 8/4/10; *AOL News*, 7/24/10; and *Greenwire*, 7/26/10

Iowa DNR Ignoring 16 Laws

Iowa's Department of Natural Resources (IDNR) has not complied with 16 state laws dealing with issues such as treatment of infectious waste, an audit released in late July reported. Some of the laws have been on the books for nearly 20 years. Two lawmakers — one Democrat and one Republican — called for Gov. Chet Culver (D) to hold officials at the IDNR accountable and to launch a major overhaul in its leadership. "If in fact we've got state departments that are not complying with the law, that's illegal," said Sen. Dennis Black, D-Grinnell and vice chairman of the Agriculture and Natural Resources Appropriations Subcommittee. "If it's illegal, then someone has to pay."

But IDNR Director Richard Leopold said instances of inaction identified by the audit have never endangered public safety. In past audits, even more laws weren't enforced, he said, so he viewed Monday's audit as an improvement. "I think having this short of a list actually speaks to progress," Leopold said. "This, to me, is a couple of pages of things we can work on. ... That's not to say that everything is perfect and we've got

everything we need. There are always ways to improve," he said.

State Auditor David Vaudt said it's common for these audits to find laws that various departments have ignored or failed to completely enforce. However, findings of the IDNR's audit are more serious than usual because many of the laws the department enforces directly affect the quality of life for thousands of Iowans. In addition, he said the number of laws the IDNR has failed to enact or enforce is longer than for most other departments. "Obviously, the Legislature put these requirements in place because of the concerns they had over these areas," said Vaudt, a Republican who is seeking re-election. Neila Seaman, director of the Iowa chapter of the *Sierra Club*, said she was "in shock" about the department's inaction in enforcing state law. "It's so hard to get legislation passed that's protective of the environment and when an agency just sort of ignores it? That's disconcerting," she said.

The IDNR's written responses to the audit's findings called some of the laws "a low priority" and said that resources were unavailable for the department to move forward on some of the laws. Black said the department's job is to implement the law, and if there are problems in doing so, it's the job of department administrators to notify the Legislature or the governor about those problems. "The last thing I will accept is any state department telling me or telling the legislative branch is that it's our fault for passing laws," Black said. "It's time for an overhaul within the department. It's time to make sure that the Department of Natural Resources makes the decision to comply with the rules." Senate Republican Leader Paul McKinley of Chariton also called for Culver to act, agreeing with Black that an IDNR reorganization is needed. "It just shows you that somebody's not manning the store, and it's quite a problem," McKinley said. "Government just isn't being properly managed. That's why we're spending so much and getting so little."

The law dealing with infectious waste treatment was passed in 1991 and was a key piece of legislation that year, according to House staff summaries. It required the state to adopt rules to require a person who owns or operates an infectious waste treatment or disposal facility to obtain a permit before operating the facility. No rules have been adopted. The response from the IDNR in the audit said: "Due to higher rule-making priorities, these rules have not been developed." The response went on to say that such rules would likely be undertaken in 2011, which is 20 years after the law was passed. IDNR employees said that Iowa has a moratorium on infectious waste treatment facilities. Other than hospitals or clinics, the department can't issue more permits for infectious waste treatment. An IDNR lawyer said at least one business had sought to begin operation and couldn't because of the moratorium.

Culver's staff said in a statement that his office had received the audit and was "looking forward to reviewing it carefully with Director Leopold." Aides did not directly answer questions about whether the governor was concerned about the audit's findings. The IDNR director is appointed by the governor and confirmed by the Senate. Culver, a Democrat, appointed Leopold.

Some of the audit's findings appear to be more about paperwork than substantive issues. For instance, state law requires the IDNR to adopt rules for certifying supervisory personnel and operators of hazardous waste treatment, storage or disposal facilities. No rules have been adopted. The IDNR's response said the program was turned over to the U.S. Environmental Protection Agency in the 1980s. The department will recommend the requirement be rescinded from Iowa's laws in 2011.

Sources: Jason Clayworth, *Des Moines Register*, 7/20/10; and *Greenwire*, 7/22/10

USGS Produces First Interactive U.S. Land Cover Map

Decades of mapping, advances in satellite imagery and a dedication to scientific decision making has resulted in the first comprehensive, interactive land cover map of the United States. "It's the best imagery we have right now, the best characterization of land cover that exists as far as I know," said John Mosesso, manager of the Gap Analysis Program (GAP), a project of the U.S. Geological Survey (USGS) that created the map.

It depicts the extent of forests, grasslands, wetlands and other habitats from coast to coast. USGS has made it searchable by state and region at three different levels of detail using eight, 43 or 590 classification categories. That means a user can view the map as broadly as forest or shrubland, or as specifically as Mediterranean California Lower Montane Black Oak-Conifer Forest and Woodland. And it is available for anyone with computer access. "It doesn't do much good to have data sitting somewhere where people can't get at it," Mosesso said.

The habitat information can be combined with maps of species distribution and protected areas to see where there are conservation holes. While this can be used for endangered species, GAP's motto is "Keeping common species common." USGS makes no specific recommendations, but the hope is that resource managers will use this information to proactively fill in conservation gaps before habitats are fragmented by development and wildlife pushed toward extinction. But to do that accurately and effectively, managers need the baseline data these maps provide. "It's vitally important for scientific decision makers and resource managers to have a clear understanding of exactly what they are dealing with," Mosesso said. In the past, decision makers relied on information observers collected based on where they had been and happened to have seen. Now, satellite imagery provides a systematic snapshot of the entire country. "It creates a framework to monitor changes over time," said Rob McDonald, a conservation scientist with *the Nature Conservancy*. "That's a really powerful thing for conservation."

USGS has been working on this multi-million-dollar map for most of a decade, attacking large regions at a time. Prices for satellite images have come down dramatically in the past 20 years, enabling the mapping team to purchase images for much of the US. Instead of government agencies pooling resources to buy just one image per site, USGS could afford three images per location to capture seasonal variation, which increases accuracy in categorizing habitats, said Kevin Gergely, GAP's national program coordinator. The satellite images are not like the street-view photographs in Google maps; they are numerical values expressing how much light is reflected from the surface of the Earth. To translate those numbers into corresponding habitat categories, scientists from USGS and partner organizations spent hours in the field recording on-the-ground conditions. Surveyors matched the field samples with the satellite numbers, and trained computer models to convert the reflection values into tangible land cover categories like forest, grassland, wetland, human use and so on.

Once this process was completed for the Southwest, Northwest, Southeast and California by 2009, surveyors had enough consistent data to combine with the Forest Service's Land Fire database and, voilà, they had pieced together the first complete national land cover map. The map is

1:100,000 resolution, which is less detailed than a 1:24,000 topography map. It cannot tell viewers how many trees are in a forest, but it can identify the dominant tree species. A broad brush stroke is important for large-scale planning at agencies like the federal Bureau of Land Management or state departments of fish and game. The map helps them see where large tracts of diverse ecosystems still exist so they can work to preserve whole habitats, rather than just single species. "We'll never map or have knowledge of where every species is," McDonald said. "A coarse filter helps you protect species you don't know or even think about." USGS scientists may publish findings based on the map in a peer-reviewed journal, Gergely said.

The land cover map can be found on line at: http://www.gap.uidaho.edu/landcoverviewer.html

Source: Laura Petersen, *Greenwire*, 7/14/10

USDA Lunches Effort to Promote Fishing & Hunting on Private Lands

The U.S. Department of Agriculture (USDA) launched a program in early July aimed at encouraging landowners to allow public access to their property for fishing, hunting and other recreational activities. The "*open fields*" program offers states and American Indian tribes up to $50 million in grants through 2012 to expand or create public-access programs, improve wildlife habitat or pay farmers to allow public access to their land.

Sporting groups have pushed for the program for years and scored a victory with its inclusion in the 2008 farm bill. They praised the release of rules for the program, which is officially called the *Voluntary Public Access and Habitat Incentive Program*. Agriculture Secretary Tom Vilsack touted the program's potential for stimulating sluggish rural economies. USDA released a report in early July that found that visitors spend $13 billion a year around communities within 50 miles of a national forest or grassland, sustaining 223,000 jobs. "We know if we do a better job at this, if we grow hunting and fishing, the numbers will absolutely have an impact on the rural economy," Vilsack said. "There are so many pluses to this." Vilsack also tied the program with broader efforts from USDA and first lady Michelle Obama to motivate more physical activity in an increasingly obese society. "We need to reconnect Americans with the great outdoors."

Nationwide, the numbers of hunters and fishermen are declining, a trend that sporting groups blame on lack of access to open space, according to Whit Fosburgh, president and CEO of the *Theodore Roosevelt Conservation Partnership*. "Seventy-seven percent of the nation's hunters hunt on private land, but across the nation hunters have seen private lands posted or disappear as hunting grounds either because of expanding subdivisions or the fact that private landowners simply decide to keep hunters away," Fosburgh said.

Funding will be given to projects that maximize participation by landowners. The program does not have specific wildlife requirements, according to Vilsack, but he said wildlife would benefit by the conservation efforts. Twenty-six states currently have some public-access programs for hunting, fishing and other activities. Vilsack said the program would broaden public-access programs by providing a bigger scope and budget. Keith Sexson, assistant secretary of wildlife operations for the Kansas Department of Wildlife and Parks, said the federal program would allow his state to expand access, particularly on private lands near the state's urban areas — where there is more demand and less access available. "As a state that is over 97 percent privately owned, Kansas has been aware of the critical need for public access to private lands for recreational purposes for many years," Sexson said. "States have been looking forward to this day." Kansas currently has agreements with 2,200 landowners to provide access to more than 1 million acres of land.

The first round of grant applications ran through August 23. Vilsack said he hopes to announce grant recipients in September.

Source: Allison Winter, *Greenwire*, 7/9/10

USDA Sets Rules for the Conservation Stewardship Program

The Obama administration will soon pay farmers for having strong overall conservation plans, rather than focusing federal support on specific conservation practices or plots. The Agriculture Department finalized rules in early June for the long-anticipated *Conservation Stewardship Program*, which sends financial rewards to farmers whose plans get high scores for protecting natural resources. The program was authorized in the 2002 farm bill, but has been slow to develop. "There have been years of pent-up demand for this program," said Ferd Hoefner of the *Sustainable Agriculture Coalition*. The $1 billion program contrasts sharply with other USDA conservation programs that pay farmers to idle cropland or offer cost assistance for landowners who build fences, terraces or other structures to improve resource protections.

To participate in the new program, landowners must submit overall conservation plans that outline methods of animal management, fertilizer use and water management. USDA will award five-year contracts to farms with the best overall plans, based on scores on criteria set by the department; payments will rise or fall with scores. USDA's other conservation programs will continue, but lawmakers and advocacy groups have said the *Conservation Stewardship Program* should play an even larger role. Congress created the framework for the new program in the 2008 farm bill after revamping the *Conservation Security Program*. That effort, created in the 2002 farm bill, was limited by lack of money and regulations that focused on certain watersheds.

The new rule doubles the maximum amount a farm can receive to $80,000 a year and creates a higher incentive for ranchers who maintain grass-fed livestock on land suitable for cropping. The program is available to all producers regardless of operation size, crops produced or location. The key provision is that the program will pay more for conservation efforts that farmers are just starting and less for existing practices. In a preliminary sign-up last year, USDA found more than 80 percent of eligible applicants were already meeting or exceeding federal conservation thresholds. So rather than pay landowners for what they have been doing, USDA opted to create incentives for new conservation.

Hoefner said the new payment structure is unfair to farmers who started conservation efforts while waiting for the new program to start. He says the USDA should pay the most to farmers who get the best environmental benefits, regardless of when they put them into place. "It is unfortunate the department has taken it upon itself to rewrite the farm bill and to move away from payments based on natural resource and environmental outcomes," Hoefner said. Without the payment tiers, he said, new and old practices would be balanced as the program expands.

Allison Winter, *Greenwire*, 6/4/10

Climate Change Update

Russia's cold winters are giving way to brutally hot summers as the country becomes a prime example of the dangers of climate change. Temperatures reached 100 °F in Moscow in late July, the hottest day on record and the fourth record-setting day that week for the city. Typical temperatures in July and August are in the 70s. Russian President Dmitry Medvedev blamed the heat on climate change and has used it to lobby for action. A 2008 report by the state environmental agency found that Russia has been heating up twice as fast as the rest of the world, with temperatures rising about 2.1 °F over the 20th century.

An "ice island" four times larger than Manhattan broke off of Greenland this summer and is drifting toward Canadian shipping lanes. Researchers in late July discovered the 155-square-mile chunk of ice had split off Greenland's Petermann Glacier after first identifying a crack there two years ago. The giant ice block is the largest to form in nearly 50 years.

Increased levels of carbon dioxide (CO_2) in the ocean are disrupting coral reef fish's survival instincts, showing how climate change can have unexpected consequences, according to a study by marine ecologists. Scientists at the James Cook University in Australia put larval fish in tanks with CO_2 levels ranging from 390 parts per million (ppm), the current level, to 850 ppm, the level predicted for 2100 if current trends continue. Instead of swimming away from a predator's chemical signature, fish exposed to the highest levels swam toward the smell. When put in the ocean, these same fish swam farther away from their reef, were more aggressive hunters, less likely to hide from predators and five to nine times more likely to die. The study, which was published in early July in the *Proceedings of the National Academy of Sciences*, raises questions about how CO_2 affects a fish's sense of smell and if the same thing happens with other marine life.

Rising levels of greenhouse gases (GHGs) are causing major declines in marine ecosystems by breaking down the food chain, another new study has found. The work, published in the journal *Science*, found that oceans are warming and acidifying rapidly, ocean currents are being altered and the number of ocean dead zones is rising. Such change has not occurred for millions of years, according to the study. The report studied 10 years of research on marine ecosystems and found major declines in kelp forests and coral reefs, as well as a breakdown in the food chain. Larger fish were in decline, and there were more frequent diseases and pests affecting creatures. "We are becoming increasingly certain that the world's marine ecosystems are approaching tipping points. These tipping points are where change accelerates and causes unrelated impacts on other systems," said co-author John Bruno, a marine scientist at the University of North Carolina.

In Minnesota, increasing water temperatures spell trouble for ciscoes, a cold-water fish that serves as food for gamefish such as walleyes, northerns, muskies and lake trout. Large cisco dieoffs — likely caused by higher water temperatures and surface runoff that robs lakes of oxygen — have become more common in recent years, and cisco populations have declined sharply in some lakes said Andy Carlson, a Department of Natural Resources fisheries biologist. Carlson calls ciscoes the "canary in the coal mine,'' an indicator that Minnesota lakes are changing. Ciscoes — also known as tullibees — will be among the first fish to feel the impact if Minnesota's summer climate becomes more like that of present-day Kansas over the next 85 years, as some studies have predicted. The trends mean dieoffs could become more common and their populations could disappear in some lakes. This year many northern lakes set records for early-ice out, and air temperatures reached 90 °F by late May. Ciscoes are found in about 650 northern Minnesota lakes, but their populations have been trending downward since the mid-1970s. Ciscoes prefer waters no warmer than 63 °F, and this year the temperature was already 68 °F on the surface of some Minnesota lakes in early June. So as the surface water warms, the ciscoes go deeper. But at the same time, nutrients and materials decomposing on the lake bottom consume oxygen, creating an oxygen-depleted "dead zone'' near the bottom. As more nutrients come in from runoff, that low oxygen area grows, so the ciscoes are caught in the middle. They move to the small layer of water between those extremes which may be limited to a 3-foot zone about halfway down in a lake 42 feet deep. "There's nowhere for them to go,'' Carlson said. While climate change solutions are long-term, there are some things that can be done short-term. "If we can limit some of the nutrients coming in, that could help,'' Carlson said. Protecting shorelines could help, too. But for now, ciscoes in central Minnesota are at the southern edge of their range — a range that appears to be shifting north.

A new strain of a virulent, deadly fungus has spread through the Pacific Northwest as climatic changes have helped the organism thrive in temperate regions where it couldn't survive before. The Centers for Disease Control and Prevention (CDC) issued its first advisory in mid July asking doctors to watch out for *Cryptococcus gattii* infections in a *Morbidity and Mortality Weekly Report*. The fungus typically inhabits tropical and subtropical nations such as Australia and New Zealand, and is found growing passively on trees. But since 2004, 60 infections have been found in the United States — not a significant cause for concern, say researchers — but the disease can be fatal when acquired, according to the CDC. The most recent infections have been found in California, Oregon and Washington state. People and animals inhale the spores, which cause *Cryptococcosis*, a yeast infection that manifests as pneumonia or meningitis. It cannot be prevented or easily treated.

In one attempt to control climate change, Indonesia will receive $136 million over three years from the U.S. for environment and climate change programs, according to a White House statement. The money comes on top of a recent commitment by Norway to give $1 billion to the country. Indonesia is seen as key in combating climate change since its tropical forests and peatlands act as sinks for CO_2. Rapid Indoesian deforestation rates have caused concern, but the country has committed to cutting emissions by 26 percent from projected levels by 2020. And with international funding and support, that number will be 41 percent, according to the promise made by President Susilo Bambang Yudhoyono.

Scientists have now developed a way to track and monitor CO_2 underground, which helps remove some uncertainty and liability concerns of capturing and storing the GHGs deep in the earth. The U.S. Department of Energy's National Energy Technology Laboratory injected CO_2 marked with nontoxic liquids known as perflourocarbon tracers into a New Mexico coal seam. For the past year, scientists have been tracking the CO_2 using the tracers, which can differentiate between naturally produced and injected CO_2. This chemical technology is better than geophysical tracers such as seismic imaging because it is a direct observation, said Brian McPherson, a University of Utah professor who was involved in the study. "They're less subjective and less interpretive," McPherson said. "We can actually forecast how much a tracer is going to go where and then measure it and watch for it." Carbon capture and

sequestration is seen as a promising method for reducing climate change and is supported by President Obama, who has pledged $4 billion for its research.

Meanwhile, climate scientists accused of fudging data about climate change in a controversy popularly termed *"Climategate"* were cleared in early July after a six-month British investigation into the allegations. Sir Muir Russell, a senior civil servant who led the investigation, said scientists at the *Climate Research Unit* (CRU) of the University of East Anglia were rigorous and honest. Their only fault was they were not helpful enough while responding to requests made under the Freedom of Information Act by nonacademics and skeptics. But all their source material was available to anyone who was competent enough to find it, said Russell. The scientists also did not go around the peer-review process to censor skeptics, he said. Last year, e-mails between CRU scientists were leaked online that seemed to suggest scientists were manipulating and suppressing data to support the theory of climate change. This latest review, which is the final of three into the affair, clears Professor Phil Jones, head of CRU, and his colleagues.

As a result of this controversy and the news media's intense coverage of it, Britain has become a haven for climate skeptics as more people are doubting that human activity is warming the planet. A survey by the *BBC* in February found that only 26 percent of Britons believed that "climate change is happening and is now established as largely man-made." The same poll conducted in November 2009 had found that 41 percent of respondents agreed with the statement. In 2008, climate change was such a popular issue in the United Kingdom that the Parliament entered targets for emission cuts into national law. But this year in a poll conducted in January asking 141 potential candidates of the Conservative Party to rate their personal priorities found that "reducing Britain's carbon footprint" was the least important of the 19 issues presented to them. And in the latest blow, London's Science Museum announced that it is changing the name of a permanent exhibit to be opened later in the year to *Climate Science Gallery*, rather than *Climate Change Gallery* as originally planned. Surveys in other countries have found a similar shift in public opinion. The German magazine *Der Spiegel* found that only 42 percent of Germans believe in climate change, down from 62 percent in 2006. In America, 48 percent believe that climate change is "generally exaggerated," up from 41 percent a year ago, according to a March *Gallup* poll. "I'm still concerned about climate change, but it's become very confusing," Sandra Lawson, a London resident, said to *The New York Times*.

In Colorado, a national group called *Balanced Education for Everyone* brought a petition effort to the Mesa County school board to push for "balanced education" in climate change. Rose Pugliese, an unsuccessful candidate for the board presented the petition with 700 signatures demanding that science teachers stop presenting climate change lessons to students. Pugliese hopes that Mesa County will be a test case for a national campaign. She said climate change "is not a proven scientific theory. There is not evidence to support it." Her statements were well received by conservatives and members of the Tea Party movement who attended the school board meeting. However, speakers, including a Mesa State College environmental science professor, argued that climate change had a scientific backing and was "not just some liberal theory." School board members did not take action on the petition at the meeting, but accepted it. Pugliese said she would check back in a few months to see what progress the board had made. *Balanced Education for Everyone* started a national campaign in April to stop the teaching of man-made climate change in science classes. The group is an offshoot of the conservative *Independent Women's Forum*. Pugliese said she was drawn to the group when she heard parents complain that conservative values were not expressed or recognized in the classroom. The group is promoting a curriculum based on the documentary "*Not Evil Just Wrong*," which was produced in opposition to former Vice President Al Gore's "*An Inconvenient Truth*." Brenda Ekwurzel, a climate scientist from the *Union of Concerned Scientists*, said the *Balanced Education for Everyone* campaign is "very troubling" and "anti-education".

Meanwhile, a Dutch environmental agency has stepped up to take responsibility for an error in a landmark U.N. report on climate change, even while pointing out a few more minor ones. The overall conclusions of the report by the *Intergovernmental Panel on Climate Change* (IPPC) that anthropogenic GHG emissions are leading to an unprecedented warming of the planet are still true, said the Netherlands Environmental Assessment Agency. It was tasked with reviewing the IPCC report for the past five months. The agency said that IPCC reports must be reviewed robustly, and conclusions need to be clearly sourced and transparent. The IPCC needs to be careful making generalizations, said Maarten Hajer, the Dutch agency's director. Mistakes were discovered in the 3,000-page report last year, fueling skepticism over climate change and its consequences for the natural world. The agency said that it was responsible for saying that 55 percent of the Netherlands is below sea level when 26 percent is. The report should have said that 55 percent is prone to flooding from rivers as well as the ocean, according to the agency. The agency also traced the "*Himalaya-gate*" error, which stated that Himalayan glaciers would melt by 2035, to a report on the possible shrinking of glaciers by 2350. Other errors it found were minor and regional. The original report said that 75 million to 250 million Africans will face severe water shortage in the next 10 years, but the range should be 90 million to 220 million, the agency said.

In response to the on-going climate controversy, a suite of environmental groups are calling on climate scientists to persevere against the wave of challenges they have faced over the past half-year from groups skeptical of or opposed to the science underlying anthropogenic climate change. In a letter released in late June, executives from 10 prominent nongovernmental organizations, including the *National Wildlife Federation* and *Oxfam America*, thanked scientists for establishing the "overwhelming evidence that GHGs produced by humans are causing the Earth's climate to change." This work, which in truth builds on 150 years of effort, is "one of the landmark intellectual achievements of our time," they wrote. Anthropogenic warming continues to carry significant uncertainties within its underlying robust framework, however, questions will continue to involve scientific debate. These questions, they wrote, "need an open and civil dialogue to provide policymakers and other leaders with tools to make sound and responsible decisions about climate change, the threats it poses and how to mitigate its potential impacts." "Regrettably," they added, "opponents of policies to address climate change too often have exploited the open give and take among scientists. They have mischaracterized these exchanges to push a false narrative that there is broad dissent in the scientific community around this issue. In fact, the scientific consensus remains resolute." Without mentioning any particular cases, the groups warned that the harassment of scientists, whether through anonymous threats or campaigns of intimidation "can create a climate of fear and squelch the sort of intensive research upon which the public so greatly depends."

Earlier this year, the *National Academy of Sciences* released three parts of a massive report on climate change, saying that available evidence makes a compelling case that climate change is happening now, is largely driven by human activities and threatens the well-being of people today and in future generations.

Interestingly, White House officials were discussing the possibility of climate change more than three decades ago, according to documents released in early July by the *Nixon Presidential Library*. Adviser Daniel Patrick Moynihan, who would become a Democratic senator representing New York, wanted the Nixon administration to start monitoring CO_2 in the atmosphere. In a 1969 memo, Moynihan wrote that there was widespread agreement that CO_2 content would rise by 25 percent by 2000. "This could increase the average temperature near the earth's surface by 7° F," Moynihan wrote. "This in turn could raise the level of the sea by 10 feet. Goodbye New York. Goodbye Washington, for that matter." Moynihan, then the counselor for urban affairs, received a response in January 1970 from Hubert Heffner, the deputy director for the administration's Office of Science and Technology. Heffner agreed that the issue should be explored and that he would ask the Environmental Science Services Administration to explore more.

Sources: John Collins Rudolf, *New York Times*, 8/6/10; Randy Boswell, *Vancouver Sun*, 8/7/10; Amina Khan, *Los Angeles Times*, 7/6/10; David Adam, *London Guardian*, 7/7/10; *AP/New York Times*, 7/5/10; *AP/Seattle Times*, 7/2/10; Michael Perry, *Reuters*, 6/17/10; Doug Smith, *Minneapolis Star Tribune*, 6/1/10; Nancy Lofholm, *Denver Post*, 5/26/10; Sunanda Creagh, *Reuters*, 6/28/10; *ClimateWire*, 5/19 5/28/10; Elisabeth Rosenthal, *New York Times*, 5/25/10; Susan Montoya Bryan, *AP/Atlanta Journal-Constitution*, 6/14/10; Paul Voosen, *Greenwire*, 6/24/10; Michael Burnham, *Greenwire*, 8/9/10; Gayathri Vaidyanathan, *Greenwire*, 7/27/10; and *Greenwire*, 12/4/09, 5/25, 5/26, 6/15, 6/18, 6/28, 7/6, 7/7 and 8/9/10

Meetings of Interest

Oct. 11-14: Potential Invasive Pests Workshop, Mayfair Hotel, Miami (Coconut Grove), FL. See: www.conference.ifas.ufl.edu/TSTAR

Oct. 11-14: 13th Annual Riversymposium, Perth, Australia. See: http://www.riversymposium.com/

Oct. 19-21: Freshwater Mollusk Conservation Society 2010 Workshop - Regional Fauna Identification and Sampling. Kirkwood, MO. Contact Steve McMurray (573) 882-9909 or Heidi Dunn (636) 281-1982

Dec. 6-9: ACES (A Community on Ecosystem Services) 2010 Conference, Sheraton Wild Horse Pass, Chandler, AZ. See: www.conference.ifas.ufl.edu/aces

Dec. 12-15: 71st Midwest Fish and Wildlife Conference. Minneapolis, MN. See: www.midwest2010.org

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

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

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 manmade 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 manmade 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. 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 Administrator 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. 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. 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. 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.

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) and **H.R. 699.** Rahall (D/WV) and 20 Co-sponsors 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. 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.

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). 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). 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

River Crossings

Mississippi Interstate Cooperative Resource Association
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Marion, IL 62959

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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. 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.

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.

H. R. 172. Salazar (D/CO) and Markey (D/CO). Provides for the construction of the *Arkansas Valley Conduit* in CO.

H. R. 5892. Oberstar (D/MN) and Johnson (D/TX). Provides for the conservation and development of water and related resources, to authorize the Secretary of the Army to construct various projects for improvements to rivers and harbors of the U.S., and for other purposes.

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