River Crossings

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Chairman's Comments

The flood of 2011 will certainly go down in the annals as one of the greatest ever in recorded history along with the events of 1927 and 1937. In the lower Mississippi River and Atchafalaya basins folks continue to brace themselves for what may be extensive high water well into the summer. While human lives have been spared by the actions of Emergency Preparedness Agencies and the U.S. Army Corps of Engineers (unlike the events of 1927 and 1937), much property in the flood plain was lost this spring. Let us hope that when the water goes down and people return to the flood plain, that the flood of 2011 guides us all in future decisions when deciding to rebuild our lives there.

The spring floods of 1993 and 2008 served to further the spread and reproduction of Asian carp and other aquatic invasive species (AIS) in the watershed. The great flood of 2011 will undoubtedly do the same, but to what extent we may not know for several years. For those who will be out assessing aquatic resources post flood, keep a sharp eye out for species that you know are not native, and immediately report them to your state agency that monitors AIS in your region. Thanks in advance for your help.

The Great Flood of 2011

Once again flooding of the Mississippi River has come into the news and once again levees and their benefits/disadvantages are being debated. Several levees protecting areas called "floodways" have been intentionally breached to save cities like Cairo, IL, Baton Rouge, LA and New Orleans, LA, from inundation and great financial loss. This is the first time in history that three of the major lower Mississippi River spillways have been opened at the same time, said Col. Ed Fleming, the U.S. Army Corps of Engineers (Corps) Morganza Spillway commander.

Morganza Spillway opened to relieve flooding in Baton Rouge and New Orleans in mid May.

But residents and farmers living in and using some of those floodways cried foul, despite the fact that part of the title to lands in these floodways include a federal flood easement for times of great crisis such as we have experienced this year.

For example, levees blasted open in Missouri flooded farms and homes across a 130,000 acre "floodway" in order to save nearby towns and villages including Cairo, IL. The Corps' economic analysis of this act indicated that opening the floodway would inflict $314 million in flood damage to Mississippi County in Missouri, while preventing an estimated $1.1 billion in damages across a broader region. Two hundred Missouri homes were flooded in the floodway, while 2800 residents of Cairo, IL were saved from the same fate.

Overnight, floodwaters in Cairo dropped by more than a foot after the levees were breached. "We executed the plan and it performed as expected," Col. Vernie Reichling, commander of the Corps' Memphis District, said. Sen. Dick Durbin (D/IL) supported the Corps' decision, but also pledged to support recovery efforts in Missouri. "Though it doesn't make it easier for those affected, if intentionally breaching the levee in Missouri saves an entire city, the cost to the govern-

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ment will be dramatically less than it otherwise might have been," Durbin said.

But Missouri Sens. Roy Blunt (R), Claire McCaskill (D) and Rep. Jo Ann Emerson (R) objected to the Corps' decision, and pressed the Corps to prepare to "dedicate all available planning resources" to restore "property, livelihoods and public infrastructure" in the inundated floodway. "To be clear, most understand that 'activation' of the floodway in effect, means destruction' of the floodway," they wrote in a joint letter to the Corps. "Without pre-judging the ultimate decisions, if the floodway is destroyed, it is imperative that the floodway be restored," they said. Rep. Emerson said later that the Obama administration had told her that farmers living in the floodway who have crop insurance would be compensated as if the flooding was a natural disaster. "I know that helps a lot of people but not everybody," Emerson said. But for all the equipment and homes that will be damaged, "that's all down the rat hole," she said.

Farming interests argued further that the flooding likely washed away fertile topsoil and created mountains of debris. It could be years before farming resumes in some places, experts say. Farmland damage will likely top $100 million this year, the *Missouri Farm Bureau* said. "Where the breach is, water just roars through and scours the ground. It's like pouring water in a sand pile. There is that deep crevice that's created," said *Illinois Farm Bureau* spokesman John Hawkins. "For some farmers, it could take a generation to recoup that area," he said. Missouri Attorney General Chris Koster unsuccessfully carried the argument against the levee breach all the way to the Supreme Court. Koster said the agency's plan would simply transfer the flooding to people closer to the levee.

In Louisiana intentional flooding of the Morganza Floodway was intended to reduce flood elevations in the mainstem Mississippi and ameliorate major disruptions to fuel production in the 11 river-bordering refineries between New Orleans and Baton Rouge. The group of refineries produces about 2.5 million barrels of oil a day, making up about 13 percent of U.S. output, said Andy Lipow, president of Houston-based *Lipow Oil Associates LLC*. "If the Morganza is not opened and the levees are breached, the downstream destruction would be worse," said Fred Bryan, a professor emeritus of renewable natural resources at Louisiana State University in Baton Rouge.

However, Louisiana biologists expect the Morganza floodway opening will kill the country's richest remaining oyster grounds and cause economic woes for the fishing families who rely on it. But while the spillway opening may mean oyster kills in the short term, the action could have a long-term benefit. "This will be a terrible blow to the industry, to the fishermen, no question," said Patrick Banks, biologist in charge of the oyster program for the Louisiana Department of Wildlife and Fisheries. "But we know from records that these large freshwater events usually result in greatly improved conditions for production in the future. You have to remember that floods of water from the rivers originally were part of the natural cycle that helped Louisiana develop the incredible oyster resource it has," he said.

Banks said oysters have evolved to withstand these conditions and will ultimately thrive because of them. "The impact on the fishermen is not good. But the long-term impact for the animals is actually positive," he said. Oyster mortality rates hinge upon the length of the opening and the timing in terms of the oysters' life cycle, Banks said. Late spring, however, is a vulnerable time for bivalves as their spawning season is coming to a close. Young oysters will be unable to survive the drastically decreased salinity. "Judging from those other events, we could see 100 percent mortality in some of these areas," he said. Those reefs that do survive the inundation are likely to be closed by health authorities due to pollution concerns, Banks said.

Widespread concern about the mix of contaminants, trash and farm runoff in flood waters prompted warnings from public health officials. And experts expect to see a larger-than-normal "dead zone" in the Gulf of Mexico this year, as the flooding will bring more farm runoff into that water body. A dead zone is an area lacking enough oxygen for marine animals to survive. It is formed because algae reproduce in large numbers in the presence of excess nutrients and then die off, taking up the oxygen supply as they decompose. "We know that any time we have a lot of rain up here, that's when we have a large dead zone," said Mark David,

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a professor of environmental science at the University of Illinois.

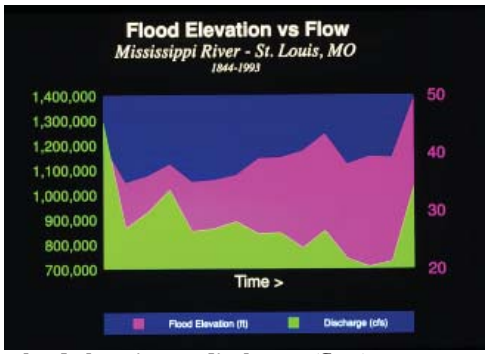
But getting back to the subject of breaching the levees that protect floodways, should those people who chose to live and farm there and then complained when their protecting levees were breached have been all that surprised? By definition a floodway is:
• "The channel and adjacent shore areas under water during a flood, especially as determined for a flood of a given height"; or
• "A channel for an overflow of water caused by flooding."

Title to lands that lie within a floodway generally carry a flood easement. But at least one of these floodways (the one in Missouri) hadn't been inundated since 1937, so the residents probably became complacent about where they lived or had even forgotten. As we learned from the "Great Flood of 1993", the human memory is short when it comes to things like floods. And historically after each flood, levees continue to be rebuilt ever higher exposing those behind them to ever greater risk with each successive flood. Levees are essentially a lateral dam which impounds water in a channel, squeezing it into an ever smaller space, and the only place for the water to go is up, raising flood elevations (see figure below), and pushing floodwaters onto new lands upstream that may have never before been flooded.

The dilemma with levees is that people who live behind them or in floodways should not feel "safe", but should be prepared to evacuate in a timely manner and with minimum loss of personal property in times of disaster. In this flood as with those of the past, people who heeded public warnings and evacuated minimized their losses , but others who chose to ignore those warnings suffered great losses.

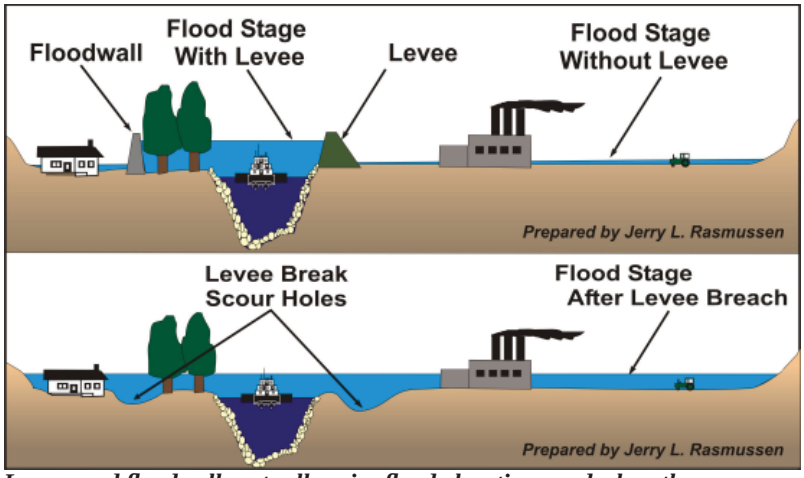
History has shown that flood damages and flood levels continue to reach record heights. One has to ask why that is when we have spent huge amounts of our national treasure building more and more levees nationwide to prevent those losses. The fact is (as shown in the figure below) that levees themselves actually cause flood heights to rise, and this was addressed in depth by MICRA in the 1993 and 94 issues of *River Crossings* in the aftermath of the Great Flood of 1993.

Data from the Corps at St. Louis developed at that time (see figure below) argue for that fact. Over the years, as discharge or river



Flood elevation vs discharge (flow) at St. Louis, MO 1844 to 1993. Source: U.S. Army Corps of Engineers

flow dropped in St. Louis, flood heights continued to rise until 1993 when many levees were breached. Discharge and flood elevation then rose in unison as one would expect. This was because the river was then released from confinement between the levees and was allowed to spread out across its natural flood plain. If the natural flood plain is allowed to be inundated in this way, it temporarily stores flood waters, lowers flood elevations and reduces flooding and flood damages both upstream and downstream. In the process it deposits nutrients and new soils on flood plain lands replenishing their productivity.



Levees and floodwalls actually raise flood elevations and when they are breached create scour holes and destroy lands and infrastructure in the way.

Robert Criss, a professor of Earth and planetary sciences at Washington University in St. Louis recently spoke up on this issue. "Flooding is getting more frequent and more severe," he said. Criss blames the Corps, which he says has "dangerously underestimated" flooding potential along the Mississippi, promoting risky flood plain development and pushing the National Flood Insurance Program to the brink. But the Corps disputes criticism of its flood calculations, arguing that Criss and others fail to recognize that a "100-year" flood has a 1 percent chance of showing up any given year, and could show up several times in a decade. The Corps' projections are based on historical data, Mike Petersen, spokesman for the Corps' St. Louis District said.

But Criss says it's the Corps that misunderstands the statistics. In a 2008 study, Criss ran a statistical test on the flood projections at various points along the Mississippi and found a 99.9 percent chance that they were incorrect. Flood frequency projections across the entire system, he said, are off by a factor of 10, meaning that 100-year flood events should be reclassified as 10-year events and that risk, insurance premiums and official flood zones should be recalculated accordingly and independently. The Corps "are the last people in the world at this point who ought to be doing it," Criss said. "Somebody independent needs to be doing it now. Talk about asking the fox to re-guard the henhouse. They have no credibility," he said.

Many water experts blame climate change for worsening floods. But Criss contends that climate change is a minor player in the worsening floods along the Mississippi. He blames the levees, weirs and dams — projects that Congress ordered the Corps to build. "Fundamentally, we've changed the landscape of the Mississippi River Basin," said Andrew Fahlund, senior vice president of conservation for the advocacy group *American Rivers*. "We've basically developed all the way up to the edge and really, the water has no place to go but to run off and create these massive floods." Construction of fewer levees and a return to the use of flood plains, Fahlund and Criss argue, would allow the river to spread out when heavy rain causes it to swell.

But industry groups contend that's a pie-in-the-sky solution, since towns and cities have already been built behind the thousands of miles of levees along the Mississippi. "The notion of returning nature to its pristine state along the rivers of this country is just not a

realistic goal," said Amy Larson, president of the *National Waterways Conference*, a group that represents a broad array of shippers, dredgers and local levee boards along the Mississippi. Fahlund concedes that flood plains that could be realistically reclaimed are "limited" but said that should not deter the government from attempting to purchase certain low-lying farmlands, to contract farmers to allow their land to be flooded during wet seasons, or to relocate outright some small, rural communities built in flood-prone areas. "We need a combined approach," he said. "Levees need to be our last line of defense, not our only line of defense." "This means letting the river act more like a river, giving it room to run," said John Kostyack, vice president of wildlife conservation for the *National Wildlife Federation* (NWF).

Advocates of using federal buyouts to reclaim flood plains along the Mississippi River point to Valmeyer, IL, as a success story. The 1993 flood inundated the town under 16 feet of water and inflicted $15 billion in damages, prompting the federal government to demolish and rebuild the community 1.5 miles away, out of harm's way. More than 10,000 homes were similarly moved away from the river following the 1993 flood, as FEMA invested $87 million in buyouts and relocations, according to Nicholas Pinter, professor of geology and environmental resources and policy at Southern Illinois University, Carbondale (SIU-C) and Melissa Samet, senior water resources counsel of the NWF.

But developers have hardly changed their ways since 1993. An estimated $2 billion in construction has occurred on flood plains in the St. Louis area that were underwater following the 1993 flood — mostly strip malls and houses, according to Pinter. He and others argue that now is the time to change course permanently, starting with a new round of buyouts and relocations. "It would be a huge step toward righting some of the errors in U.S. flood plain management," Pinter said.

Three professors (Dr. James Garvey, Dr. Matt Whiles, and Dr. Silvia Secchi) at SIU-C also stepped forward on this issue. In a letter to President Barack Obama they argue that while the leveed off flood plain of the New Madrid – St. John's Bayou Floodway (MO) provides, "…farmland to Missouri residents, with high realized economic value to the State of Missouri. What is ignored is the much higher potential value of this flood plain to U.S. society if it is left open to the river and allowed to be inundated regularly." If the flood plain is left open they argue:

- The potential flood risk to the Mississippi and Ohio Rivers will be reduced upstream by allowing the river waters to spread out rather than being forced through the leveed main channel;
- High productivity of fish and water birds will be supported by the new wetland, contributing to commercial and recreational use of the region; and
- There is high potential for this area to become a substantive sink for nitrogen and other pollutants that would otherwise travel downstream to the Gulf of Mexico, contributing to the chronic hypoxia that occurs there.

They recognize that flooding will likely disrupt some farming in the floodway because some lands will become covered with sand, costing considerable treasure to reclaim. But the cost of a government purchase of these marginal lands from the Missourians living and working in the area and opening it to river management may result in far higher economic benefits in the long term for society at large and, with adequate planning, may result in local net benefits as well. They refer to a study underway at SIU-C which is addressing this issue.

In that study, Dr. Secchi, an economist in the College of Agricultural Sciences at SIU-C, argues that we "...need to find a compromise (for farmers) so we could have productive farmland where farmers could still get an income while at the same time providing those ecosystem services to society." To offset the costs of that change, Secchi and her colleagues recommend that farmers grow biomass crops instead of corn on these flood-prone fields, and they say farmers should get a little something extra from the rest of us for their trouble.

Secchi thinks native grasses such as switchgrass, a perennial crop used in producing cellulosic ethanol, would make an excellent alternative to corn. Switchgrass can take both flooding and drought, and it doesn't need much in the way of chemicals or care. Plus it could be very profitable once cellulosic ethanol becomes commercially viable. Researchers at the University of Nebraska have found that even on marginal land, ordinary switchgrass yielded an average of 300 gallons of ethanol per acre, just 50 gallons less than corn. That yield would probably go up with new cultivars developed specifically for biofuel.

But how much of a subsidy would farmers need to switch to switchgrass, and who would pay? A three-year, $112,536 grant by *The Nature Conservancy* (TNC) from funds donated specifically for flood plain restoration by TNC trustee Brenda Shapiro may help Secchi find out. Her project will build on successful new approaches to flood management taken by TNC and the Corps in the *Spunky Bottoms* and *Emiquon* preserves in TNC-owned levee districts located along the Illinois River. These efforts emphasize keeping the land in private ownership, making them economically viable, while at the same time aiding the environment and benefiting society.

The TNC grant will allow Secchi and emeritus colleague Steven E. Kraft to look at the costs and benefits of changing from row crops to biomass production in some Upper Mississippi River Basin levee districts TNC has identified as having ecological importance. "These districts also will be near areas that have flooded, have few building sites, few current owners and will be large enough to affect flood height," Secchi says. The researchers will draw on U.S. Department of Agriculture data on crop rotations, management practices, soil features, field boundaries, production and transportation costs and market prices to detail current conditions. Combining that information with data on biomass yield potential and field environmental conditions will let them get a feel for how much farmers would make from the different crops both when they had dry fields and when the floods came.

"By comparing expected profits under the various scenarios, we will be able to estimate the minimum amount of subsidies necessary to convert land uses," Secchi says. "Farmers make economic decisions based on prices, net returns and techniques they know. If we don't compensate farmers for growing switchgrass, it may make more economic sense for them to grow grain."

In addition, Secchi and graduate student Mohamed Esmail are trying to nail down how much floods cost upstream and down, both in the immediate aftermath — physical damage and repair — and over time through shuttered businesses, lower property values, higher insurance premiums, loss of tax revenue, psychological trauma and ecosystem damage. This information could suggest ways to devise market-based approaches to land-use management that could keep the land in private hands while achieving environmental benefits. It could also help determine possible sources of cash for the subsidies.

It might be that government or financial institutions that now shoulder the costs related to floods could pay a portion of the money saved by averting floods to farmers in districts where levees were removed. Because switchgrass doesn't need farm chemicals, perhaps downstream areas that siphon drinking water from the Mississippi could direct some of their payments for water purification to switchgrass growers. As switchgrass also helps soil retain more carbon, farmers who grow it might get some income from the emerging carbon credit markets.

But would farmers make the switch? "They've grown corn for many years — they have never grown switchgrass," Secchi points out. "It's not an annual crop; there's a different production cycle. "You can't just put that risk on farmers' shoulders and expect them to switch because you think it's better for the planet. As an economist, I believe in the power of rewards. If you want to convince them that something else is better, you put cash on the table," she said.

Michael Reuter, director of TNC's *North America Freshwater Program*, supports a balanced approach. "There's no silver bullet on these big river systems," he said. As noted above, TNC has bought levee districts in Illinois and worked with the government to buy other lands in Louisiana, gradually turning them back into natural wetlands that absorb and filter water from rainfall and floods. A study by the state of Illinois found that fully exploiting the water absorption capacity of one such tract near Peoria, would reduce flooding in the city by a few inches and affect flood levels as much as 80 miles downstream, Reuter said. There are also ways to make flood control work together with agriculture — adding retention ponds to slow and filter run-off water and trying new crops. "We need to grow more plants that like to get their feet wet," Reuter said.

In Louisiana, state officials are trying to counteract the environmental effects of decades of river engineering by tweaking levees in a way that tries to "mimic what *Mother Nature* used to do," said Garret Graves, chairman of Louisiana's *Coastal Protection and Restoration Authority*. The state is seeking federal approval for more channels — essentially relief valves — that lead from the river to the Gulf coast. The idea is to recreate natural river branches that once helped drain the Mississippi — but that decades of development have closed off. One thing Louisiana is not considering is breaching levees in a way that lets the river flow uncontrolled by humans. That could jeopardize the Mississippi River's reliability as "America's commerce superhighway," Graves said. "And that's simply not an option." "We need a bend-but-don't-break approach to flood management," said *American Rivers'* Andrew Fahlund. "Right now there's very little bending and the breaking has catastrophic consequences."

The most encouraging note that we found in recent news is that the Corps itself is reportedly in the process of officially changing its approach to flood control. Instead of its traditional focus on preventing floods, this summer the agency expects to win federal approval for a policy it has begun phasing in over the past several years: allowing more flooding to occur, while working with state and local governments to manage development on nearby lands to reduce economic damage when a flood comes. The idea is not to dismantle the hard structures, but to use other methods to prevent the river from getting so high it might breach them. "Whenever possible, the best way to manage floods is with a natural flood plain," said Terrence "Rock" Salt, the U.S. Army's deputy assistant secretary overseeing the Corps' water resource policy.

The 1994 White House report on the Flood of 1993 (i.e., the Galloway Report) argued for more natural flood controls, and said, farmlands should never be protected to the same level as critical infrastructure and urban areas. So what will happen in the aftermath of this flood? Lets hope that the Corps has, in fact, changed and that the days of building higher and higher levees are in the past.

Sources: Bob Marshall, *New Orleans Times-Picayune*, 5/11/11; Michele Munz, *St. Louis Post-Dispatch*, 5/2/11; Stephen Deere, *St. Louis Post-Dispatch*, 5/3/11; Brian K. Sullivan and Leela Landress, *Bloomberg*, 5/11 and 5/16/11; Michael J. Crumb and Jim Salter, *Pittsburgh Post-Gazette*, 5/6/11; Mark Schleifstein, *New Orleans Times-Picayune*, 5/6/11; Ned Potter, *ABC News*, 5/11/11; Joe Barrett and Jeffery Ball, *Wall Street Journal*, 5/9/11; K.C. Jaehnig, *The Saluki Times*, 12/14/2009; Paul Quinlan, *Greenwire*, 5/3, 5/17 and 5/18/11; and *Greenwire*, 5/2, 5/3, 5/6, 5/9, 5/11, 5/12/ and 5/16/11

Nashville Going Green on Flood Recovery

Nashville Mayor Karl Dean hopes his city will become the greenest in the Southeast as it continues to pick itself up from the 500-year flood that happened a year ago this Spring. Seeking to significantly expand the Tennessee capital's greenways, Dean announced the *"Nashville: Naturally"* plan in April to a crowd of about 200 in a park along the Cumberland River.

The plan establishes large-scale preserves in each bend of the river, whose waters overflowed in May 2010, causing $1.19 billion worth of damage to 11,000 properties in Davidson County, where the city is located. The Nashville Metro Government and nonprofit conservation groups were already working on the plan at that time, and the resulting destruction only heightened the city's need for a system of greenways that could act as natural flood barriers. "The plan certainly will help us for protection for floods," Dean said in an interview after the announcement. "Part of what we're looking at is ways to preserve open space, water quality, natural habitat. By expanding the open space along the river, it should have a very positive impact on flood mitigation."

Nashville has offered buyouts to 305 houses that were damaged in the flooding and is in the process of tearing some structures down, Dean said. *Nashville: Naturally* calls for increasing the city's parkland and green infrastructure by 6,000 acres in the next 10 years and by another 6,000 by 2035. An additional 10,000 acres of flood plain and sensitive natural areas would also be protected in the next decade. Downtown Nashville's tree canopy would be doubled and its impervious surfaces, such as parking lots, converted to pervious surfaces or natural plantings in the next 10 years. There are multiple benefits to protecting flood plains, said Will Allen, director of strategic conservation for the *Conservation Fund*. The group helped the city and the *Land Trust for Tennessee* (LTT) come up with 27 recommendations in the plan. Those benefits include keeping development out, which minimizes property damage, and improves water quality, Allen said. Preserving forests also enhances the flood plains' natural ability to soak up water, he said.

"We work on the flood still every day," he said, adding that "the city has recovered remarkably well, and it's a testament to the people of Nashville." Jeanie Nelson, president and executive director of the LTT, said she has been encouraged by what she's seen so far by Nashville citizens. "I feel very confident that a lot of the energy that we saw from volunteers around Nashville just jumping in in a way that hasn't been seen in other cities, that energy is going to be turned

into implementing this open space plan," said Nelson, a former general counsel for the U.S. EPA. Dean said he does not see budget problems prohibiting the city from carrying out the recommendations. Nashville has already appropriated $5 million in its capital budget toward the plan and expects to be able to raise private funds through its partnership with the land trust, Dean said.

In tough economic times, a plan like this may be a city's only means of flood control, said Allen of the *Conservation Fund*. "They're looking for ways, really kind of inexpensive, green, infrastructure solutions like buying up land to soak up water during storm events since most cities are tapped out on building a large water-management infrastructure," Allen said. The *Conservation Fund* has been helping with similar plans in a number of flood-pone areas, including Indianapolis and Houston.

Source: Amanda Peterka, *Greenwire*, 4/15/11

Asian Carp Issues

Asian carp continue to dominate the news regarding invasive species issues in both the Mississippi River and Great Lakes basins. Spread of the bighead carp in the mainstream Mississippi River have now reached the St. Croix River, a pristine tributary of the Mississippi a short distance downstream from the Twin Cities, MN. Commercial fishermen recently reported the catch of a single bighead carp in the lower reaches of that river. The St. Croix forms a portion of the boundary between the states of Minnesota and Wisconsin, and the Upper St. Croix is a National Scenic Riverway which is managed by the National Park Service (NPS).

Timing of the recent catch was fortuitous for the Minnesota Department of Natural Resources (MDNR), because it and, more broadly, MN Governor Mark Dayton's administration have been lobbying for an approximate $15 million upgrade to the Coon Rapids dam in the Twin Cities, which they see as a way to thwart, if not block, Asian carp from entering waters farther north, including the Rum River and, ultimately, Mille Lacs Lake and beyond. Some reporters have questioned why the MDNR and NPS haven't lobbied for similar actions to stop the carp from entering the St. Croix.

Meanwhile in Lake of the Ozarks, MO, Gene Swope of Excelsior Springs, MO caught what is potentially a new world record bighead carp. The 111 lb. fish was caught on April 23 while fishing for paddlefish. It took Swope 35 minutes to land the big fish and it required him and two partners to roll the fish into their boat. Identification was verified by a Missouri Department of Conservation agent and the fish was quickly purchased by "*Cabelas*" in Kansas City, MO, where it was to be quarantined for 5 days before being released into their large indoor fish tank. The fish shattered the old Missouri state record for bighead carp by 31 lbs.

111 lb. bighead carp taken in Lake of the Ozarks, MO, April, 23 2011.

Last November in Ontario, Canada, Feng Yang, 52, a fish importer, violated Canada's federal Fisheries Act when he tried to bring 1,860 kilograms of bighead and grass carp into the country. He was ordered to pay a $50,000 fine. He had committed the same offense in 2006 and was ordered then to pay a $40,000 fine. Yang's current $50,000 fine is the largest handed out for Asian carp possession in Ontario. "It's a matter of hoping this kind of conviction will send a message that it's not worth the while to try to sneak these fish across the border," said John Cooper, a spokesperson for the Ontario Ministry of Natural Resources.

An Indiana company (*Sweetwater Springs Fish Farm*) was also caught and pleaded guilty to bringing live Asian carp into Canada. *Sweetwater* was fined $20,000. During a Feb. 18 secondary inspection of a transport truck at the Blue Water Bridge, Canadian officials found 6,000 pounds of bighead carp packed in ice on *Sweetwater's* truck. Bighead carp can live 24 to 48 hours out of the water, and the gills of some of the fish were still active when found. Several were placed in water and they began moving, the court was told.

A third such violation by another party is pending in the courts. Marc Gaden, spokesman for the *Great Lakes Fishery Commission*, says the good news is that the Canadians are "…looking for these fish, are able to identify them and they're willing to actually prosecute." But, Gaden said, these three cases are likely just the tip of the iceberg.

The U.S. government designated silver carp, which has essentially no commercial value, as an "injurious" species under the federal Lacey Act in 2007, making it illegal for the fish to be transferred "live" across state lines. But the bighead carp, which is the Asian carp species that is a popular food fish among some Asian groups and is being raised as a commercial product in southern U.S. states didn't receive its Lacey Act designation as injurious until last December. That listing has now left fish farmers with few options for selling their crop, since most customers prefer live fish.

Mike Freeze, a former chairman of the Arkansas Game and Fish Commission and a fish farmer himself, said he does not think most farmers mean to ship live product, but (as noted above) killing a bighead carp is not as easy as it sounds. The fish that Canadian officials confiscated were indeed transported in tanks with little ice and no water, but some were still twitching, gasping and writhing when they reached the border, said Bill Ingham, an intelligence and investigations officer with the Ontario Ministry of Natural Resources. The fear is that, if those fish were dumped into open water, some could survive long enough to breed.

Freeze said, "A few farmers are still raising bighead carp, but that will probably decrease soon." Southern fish farmers themselves haven't been the target of any of the Canadian operations, Ingham said, because "they're conducting a legal business." It is, he explains, the haulers who are breaking the law, and Ingham said even the people driving the trucks appeared surprised the fish were surviving out of water. Still, they are being slapped with heavy fines. "I do not have much sympathy for someone who intentionally breaks the law, but I am quite concerned about the heavy Lacey Act penalties that apply even in an accidental violation," Freeze said. But Ingham said there is one thing fish haulers can do to ensure they aren't breaking any laws. "Eviscerate them," he said.

Meanwhile, Arkansas Sen. Mark Pryor wants

fish farmers compensated for their losses since December, when the federal government listed bighead carp as an "injurious species," making it illegal to import the fish or move them across state lines — robbing fish farmers of their ability to sell their crops of the live fish. Pryor said that without relief for the farmers, no one should be surprised if the fish are accidentally let loose. "I worry that the law could even lead to greater environmental harm to the Mississippi River and Great Lakes region without mechanisms to ensure the proper disposal of the bighead carp currently sitting in aquaculture ponds in Arkansas, Mississippi, and Alabama," the Democrat wrote in a letter to President Obama.

Fish farmers want compensation because they say the injurious listing came too quickly and the government did not do a required economic impact study. Federal officials say that, while such a study is normally done, it wasn't in this case because Congress bypassed the normal system and simply passed a law. Nancy Sutley, who leads the Obama administration's *Council on Environmental Quality*, replied to Pryor's letter last month, telling him that fish farmers should not expect direct compensation but that federal fishery officials would be on hand to help them with technical issues related to disposal of the fish.

With regard to the Lacey Act, conservation and fishing groups are now calling on federal officials to update the import screening law before the next invader gets here. "Stopping Asian carp should have happened before the first shipment. This incredible threat, this incredible expense, was avoidable," said Jennifer Nalbone, Director of Navigation and Invasive Species for *Great Lakes United*. "It's time for the antiquated Lacey Act to be modernized so that we never have to fight off another invasion like this again."

During the 111 years since the Lacey Act was adopted, only about 40 animal groups have been prohibited under this legislation, and usually long after the animals have been imported, escaped into the wild, and are causing harm. By modernizing the Lacey Act, the U.S. Congress can empower the U.S. Fish and Wildlife Service (FWS) to first assess the potential risks associated with a species proposed for import before deciding whether to allow or prohibit its trade in the U.S. "Right now, the next species that might terrorize the Great Lakes could be on its way to the U.S.," said Max Muller, Policy Director for *Environment Illinois*. "We need Congress to plug the gaping loophole that allows invasive species to be imported into the country, and leaves states like Illinois holding the bag."

"In hindsight, if Asian carp had not been allowed into North America, we would have avoided a crisis that very well may permanently alter the ecology of the Mississippi River and could forever change the Great Lakes, two of the largest and most important ecosystems in this country," said *Wisconsin Sea Grant's* Phil Moy. "In this globalized world, animals are traded across continents every day, and the rules governing the live animal trade in this country need to be brought into the 21st Century," said Dr. Phyllis Windle, *National Environmental Coalition on Invasive Species* spokesperson. "We need to stop the Asian carp, and we also need to learn a lesson from all this," said Captain Rick Unger, President of the *Lake Erie Charterboat Association*. "It's time to make the changes necessary to ensure the next big invader doesn't threaten the Great Lakes fishing and boating community." "Our screening law was outmoded four decades ago when Asian carp first entered the country," said Joel Brammeier, president of the *Alliance for the Great Lakes*. "We have to slam the barn door closed before another new invasion is unleashed."

In Illinois, officials of the Department of Natural Resources (IDNR) announced in late February the results of Asian carp eDNA sampling at 52 bait shops in nine northeast Illinois counties. The sampling, which took place a year ago in February and March and again this past summer, included visual bait tank inspections and testing of 2-liter water samples. "This *Bait Shop Survey* is another component of a sophisticated and effective multilevel strategy of monitoring and removal that IDNR is undertaking in the fight to prevent Asian carp from entering the Great Lakes," said IDNR Director Marc Miller. The water samples were transferred to the University of Notre Dame, where they were filtered and analyzed for the presence of bighead and silver carp DNA. No Asian carp were observed during the bait shop visits and no bighead or silver carp DNA were found in the water samples. A questionnaire filled out by bait shop owners or employees during the summer survey indicated minnows were purchased from local wholesalers and not captured from the wild. Surveys to assess the bait trade as a potential pathway for Asian carp to gain access to Chicago waterways and Lake Michigan will continue during the summer of 2011. Surveillance likely will include additional visits to area bait shops and local minnow suppliers.

In Chicago, the Corps continued its effort to keep Asian carp out of the Great Lakes by turning on a third electric fish barrier in the Chicago Sanitary and Ship Canal. The new barrier (IIB) will work with an existing one (IIA) that was turned on in 2009. That barrier is now on standby and will receive maintenance over the next couple of months. Barriers IIA and IIB deliver up to 4 volts per inch of charge, although they are currently being kept at about half that strength. But at 2 volts per inch the charge is not enough to repel small juvenile carp.

In fact the Corps reports that new lab tests show the barriers need to be turned up from 2 volts per inch to 2.3 volts per inch to stop fish smaller than 5.7 inches. Little fish have a smaller surface area and consequently need a bigger jolt to be repelled. The barrier could be turned up almost immediately, but Maj. Gen. John Peabody said his agency is still evaluating potential hazards that higher voltages could pose for canal barge operators, many of whom carry flammable materials. Those studies are expected to continue into the spring, but "I am fully prepared to change the (barrier's) operating parameters if the threat evaluation changes and tells us there is a compelling need," Peabody said.

The problem is discerning the extent of that threat. Asian carp expert Duane Chapman, a biologist with the U.S. Geological Survey, says even if fish are spawning just 25 miles from the barrier, that doesn't mean little fish are about to be pushing on the barrier at any moment. He explained that after Asian carp spawn in a river, the eggs and young fish float downstream on the current, sometimes more than 100 miles. But Chapman said there is always the slight chance that spawning populations exist closer to the barrier than people realize. "I'm fairly confident they are not there, but there is always room for error," he said. "The biggest problem is we can barely monitor for large fish, especially at low densities," said *Wisconsin Sea Grant's* Phil Moy, a former Corps employee and co-chair of the "technical policy and work group" for the federal government's Regional Coordinating Committee in the Asian carp fight. "We currently have almost no capability to monitor for small fish unless they're highly abundant," Moy added. "So how will the Corps determine that (it's) the right time to run (the barrier) at the higher setting before it's too late?"

The City of Chicago is leaning on the Corps to fast-track an ongoing study to evaluate methods of protecting the Great Lakes from an Asian carp invasion. "The proposed

timeline for the study is too long," Chicago environment commissioner Suzanne Malec-McKenna wrote to the Corps in March. "The threat of Asian carp has been known for more than a decade. It is not acceptable to wait another five years for solutions. We urge the Corps to speed up this timeline to every extent possible." "We encourage you to consider solutions that provide multiple co-benefits beyond the aquatic invasive species issue, especially for the Chicago region," she wrote. "This is a unique opportunity to positively affect change around long-standing issues related to flooding, storm water management, ecological degradation, transportation and navigation."

The idea of re-reversing the Chicago River so it again flows into Lake Michigan instead of the Mississippi River Basin won the support of Chicago Mayor Richard Daley, who left office in May. Fortunately, Rahm Emanuel, his successor, has publicly embraced the idea of pushing the Corps to complete the study as early as possible. "Invasive species are a significant and immediate threat, and separation of the watersheds is an important opportunity to invest in and improve the environment, our infrastructure and our economy," Emanuel wrote during his mayoral campaign this year in response to a questionnaire from a coalition of conservation groups. "We cannot go slow or take a wait and see approach. The study must be expedited," he said.

But a change in focus of that study has raised concerns with environmental groups. The Corps has adjusted the focus of its study to look at options that will "prevent or reduce the risk" of invasions – not just "prevent". Environmental groups say that subtle change conflicts with an explicit congressional directive. They worry it will waste time and money by exploring less-than-sure solutions, which they say are no solution at all. "The only permanent and sustainable solution to this problem is hydrologic separation of the Great Lakes and Mississippi River basin," states a March 31 letter to the Corps from a coalition of environmental groups that includes the *National Wildlife Federation*, the *Alliance for the Great Lakes*, the *Natural Resources Defense Council* and *Great Lakes United*. "Very simply, if water does not flow between the two great watersheds, aquatic plants, animals and diseases will not be able to migrate actively or passively between the two," the groups said. Corps officials say they changed the scope of the study because it may be impossible to devise a plan that will absolutely prevent new invasions. It is worth noting that Great Lakes' invasive quagga mussels have made their way over the Continental Divide and are now ravaging Western waters, the likely result of their being attached to the hull of a recreational boat carried overland by trailer.

New concerns related to the potential of a successful Great Lakes Asian carp invasion were raised by Dr. Leon Carl, director of scientists at the Great Lakes/Midwest division of the USGS, at the 2011 *Great Lakes Days* held Feb 28-Mar 2 in Washington, D.C. Carl told Great Lakes Commission members at that meeting that scientists had discovered two new problems:

- Asian carp larvae learn to swim vertically at younger ages than scientists had previously assumed. What that means is that the larvae don't need to be suspended as long in turbulent water to survive and thrive…which means that shorter river segments or even the coastal areas of the Great Lakes themselves can support Asian carp reproduction. So their capacity to breed and spread looks much greater.
- Asian carp eat *Chladophora*, a common algae that grows along much of the Great Lakes shoreline. Scientists had believed that there wasn't enough food in much of the Great Lakes to support the voracious carp. Now it turns out that there's plenty of food along much of the coastline to support spread of the invasive fish.

In Congress, U.S. Sen. Debbie Stabenow (D/MI), said the *Stop Asian Carp Act* which she introduced in early March would require the Corps to provide options for separating the Mississippi River Basin from Lake Michigan within a year and a half, pending its passage by lawmakers. A partner bill with similar requirements is being introduced in the U.S. House by Rep. David Camp, (R/MI), chairman of the House Ways and Means Committee. Stabenow's previous bill aimed at temporarily closing locks between the water systems in order to stop the carp failed in 2010, notably lacking support from Illinois lawmakers. But Sen. Dick Durbin (D/IL), is on board this go-around, Stabenow said. Under the proposed legislation, a plan for a permanent solution must begin within 30 days of the bill's enactment. The act would require the Corps to send a progress report to Congress and President Barack Obama within six months and again in 12 months. Stabenow said Obama has indicated he'll back the effort.

Last fall *Illinois-Indiana Sea Grant* organized an *Asian Carp Marketing Summit* (ACMS) to explore the idea of using commercial markets (and their concomitant harvesting) to control wild populations of Asian carp. Using a facilitated process, ACMS participants identified and agreed upon the most promising generalized markets for Asian carp. These include human consumption and by-product markets. The participants also set priorities for future product development based on demand, profit potential, and ease of exit once wild Asian carp populations decline. The group agreed that businesses need to take a leadership role, but that the government can play a partnership role. They noted that domestic demand for fresh and frozen fillets needs to grow, and new technologies are needed to cost-effectively process Asian carp into fillets and other high-value products. Commercial fishermen are the key to successful carp removal, but incentives are needed. Additionally, more data (e.g., accurate estimates of Asian carp populations, fully-developed marketing plans) and improved communication among stakeholders are needed for making critical business and environmental decisions. These discussions evolved into development of an integrated strategy, which focuses on capitalizing on existing markets to quickly start reducing Asian carp in large numbers (Stage 1) followed by development of higher-quality products that command a higher price (Stage 2).

According to Ron Brooks, Kentucky Department of Fish and Wildlife Resources, sufficient market demand exists to support increased commercial harvest. The bottleneck, he says, is having processing facilities located close to the source of fish so that the product is kept fresh. Asian carp processing facilities must have large equipment necessary to properly freeze the fish and large amounts of freezer storage for the tons of product shipped overseas in large cargo containers. A government and private partnership in Kentucky is seeking an additional $750,000 to get a mega-processing plant operational near Kentucky and Barkley Lakes.

Recent studies by the FWS concluded that the alligator gar (a native fish to the Mississippi River Basin) does not negatively affect sport fish populations. Commercial anglers reported catches taken from 1913 to 1950 that allegedly were more than 8 feet long and weighed between 195 and 250 pounds. The species was extirpated from much of its range due to overfishing and popular concerns that the species was detrimental to sport fisheries. But their primary prey is shad, common carp and other rough fish. So the FWS is looking at the gar as a potential control mechanism for Asian carp. Recently the FWS captured several giant alligator gars

in Texas and Louisiana and spawned them in a private fish hatchery where they are now producing thousands of gar fingerlings for distribution to states threatened by invasive Asian carp — including those in the Midwest. That's why Kentucky started an alligator gar restoration project last year, and Illinois has recently joined a multi-state consortium that is stocking 7 to 18-inch long alligator gars to various state areas. But because the gar will take 15 to 17 years to reach sexual maturity, biologists say it will be 2026 before the success of restocking efforts can be determined. With lots of prey available, young alligator gar can grow from seven inches long to 18 inches long in just under six months. Hopefully they'll develop an appetite for the invasive Asian carp. Some anglers are happy, saying the gar is a good sport fish with rod-and-reel. And in Arkansas, Texas and Louisiana, many cooks rate alligator gar as a supreme food fish species with light, white flesh and flaky texture.

Sources: Dennis Anderson, *Minneapolis Star Tribune*, 4/26/11; Bruce Archambault, *email to Kevin Polley*, Missouri Dept. of Conservation, 4/24/11; Dan Egan, *Milwaukee Journal Sentinel*, 3/13, 3/22, 4/7 and 4/10/11; Chloé Fedio, *Toronto Star*, 3/4/11; Neil Bowen, *QMI Agency*, Sarnia, Ont., 3/8/11; Sarah Sacheli, *The Windsor Star*, 3/4/11; *Great Lakes United Media Release*, 2/28/11; *Illinois DNR Press Release*, 2/23/11; Andy Buchsbaum, *National Wildlife Federation, March 1 Dispatch from Washington*, 3/2/11; Juliana Keeping, *AnnArbor.com*, 3/3/11; Patrice Charlebois, Susan Parks, Kristin TePas, and Mike Peterson (eds), *Asian Carp Marketing Summit, 9/20/-21/11*, Sea Grant Publication IISG-11-04; *E&E Daily*, 12/2/12; *Evansville Courier & Press*, 4/9/11 and *Greenwire*, 3/17, 3/24 and 4/8/11

Concerns About Aging Dams

Of the nation's 85,000 dams, more than 4,400 are considered susceptible to failure, according to the *Association of State Dam Safety* (ASDS) officials. But repairing all those dams (most of them made of earthen materials) would cost billions of dollars.

For example several years ago the U.S. Army Corps of Engineers (Corps) learned that California's Lake Isabella was built on an active fault. The lake is located on the Kern River just 40 miles upstream from Bakersfield, a city with a population of 340,000 people. Lake Isabella is impounded by two dams (a main and auxiliary dam). Water seeps through both dams, as it does through most earthen dams. But seepage at Lake Isabella is especially severe, and water seeping through a dam can erode it from the inside out, to the point where the dam may fail.

Engineers have learned to build structures into dams like drains and filters, to stop erosion and allow infiltrating water to drain safely away. But the Lake Isabella dams were constructed before such features became commonplace. "It was built with the best available knowledge and technology at the time," said Veronica V. Petrovsky, Corps project manager. That knowledge, or lack of it, extended to the understanding of the large and complex watershed, which includes the slopes of Mount Whitney, the tallest peak in the contiguous U.S.

Aerial view Lake Delhi, IA, a privately owned Maquoketa River dam breached in July 2010. See River Crossings Vol. 19, No. 3.

To determine how big the spillway needs to be, it is critical to know how much water might be impounded behind the dam each year, and calculations show that in an extreme year with a "probable maximum flood," the existing spillway would be far too small. "We could not release the water fast enough," Ms. Petrovsky said. "It would overtop." An overtopped dam can fail quickly as the water erodes the downstream side. But overtopping presents only a "small concern," the Corps said. With both seepage and overtopping there would be plenty of warning that the dam was in jeopardy, allowing Lake Isabella and Bakersfield residents to evacuate. But an earthquake would cause a more immediate disaster, although Bakersfield would still have about seven hours before a wall of water made its way down the canyon, according to the Corps.

The second or auxiliary dam in the Lake Isabella project was built, knowingly, on the Kern Canyon fault, one of many in the region. At the time the Corps brought in seismologists and geologists who concluded that the fault was not active. But recently scientists have been able to accurately detect and measure ancient earthquakes, determining that there have been three significant earthquakes on the fault in the past 10,000 years. "We have got a fairly active fault on our hands," David Serafini, Corps technical expert said. The last quake occurred about 3,400 years ago, he added.

It is possible to construct a safe earthen dam on an active earthquake fault, by using the proper materials to minimize settlement or slumping when shaken, and including drains and filters to help stop the inevitable cracks from growing through erosion. Not only do the Lake Isabella dams lack those features, but the auxiliary dam was built on sediments that could turn into a virtual liquid in a quake, leading to even greater damage.

While Mr. Serafini and his team are still working on proposals, the likeliest solutions include blasting a much bigger spillway out of bedrock adjacent to the main dam and using the excavated rock to build a buttress — essentially an entirely new dam — downstream from the auxiliary dam. The old dam could still move in an earthquake, Mr. Serafini said, but the buttress would have the necessary drains and filters to prevent failure. A worst case scenario at Lake Isabella (a catastrophic failure caused by an earthquake) could send as much as 180 billion gallons of water — along with mud, boulders, trees and other debris — churning down the canyon and into Bakersfield. The floodwaters would turn the downtown and residential neighborhoods into a lake up to 30 feet deep and spread to industrial and agricultural areas. Corps engineers are preparing to propose fixes to Lake Isabella later this year. But at best, repairs would not begin until 2014 and could cost $500 million or more, money that would have to be approved by Congress.

Nationwide, the potential repair costs for other dams at risk are staggering. A 2009 report by the ASDS put the cost of fixing the most critical dams — where failure could cause loss of life — at $16 billion over 12 years, with the total cost of rehabilitating all dams at $51 billion. But those figures do not include Lake Isabella and other dams among the approximately 3,000 that are owned by the federal government. The Corps, for example, says that more than 300 of the roughly 700 dams it is responsible for need safety-related repairs, and estimates the total fix-up bill at about $20 billion. The Corps has already spent about $24 million just to determine the scope of the problems at Lake Isabella.

But about two-thirds of all dams are private, and financially struggling state and local governments own most of the remainder. It is difficult to predict how needed repairs to these dams will be financed; legislation to provide federal money to help has languished in Congress. What's more, the number of high-risk dams keeps rising as structures age, downstream development increases and more accurate information is obtained about watersheds and earthquake hazards.

Sources: Henry Fountain, *New York Times*, 2/21/11; and *Greenwire*, 2/22/11

MRGO Controversy

The U.S. Army Corps of Engineers (Corps) plans to fix the environmental damage caused by the crisscrossing canals of the Mississippi River-Gulf Outlet (MRGO) by digging another canal. The $3 billion plan is meant to restore wetlands to protect the low-lying Louisiana coast from hurricane damage, but it has been a point of controversy among locals.

"The bottom line with the Corps: Fix one problem, create four more," said Michael DeFranza, a local handyman. "They go in with good intentions, but it's poor long-term planning." Many agree there is a need to infuse the land with nourishing Mississippi River water and the land-building sediment it carries, but misguided efforts by the Corps in the past have led some to doubt whether the agency's latest plan will succeed.

"You can't just cut the levee and dig these straight, hard lines across this deltaic environment without consequences," said Richard Campanella, a Tulane University geographer, who's studied the history of canal digging in Louisiana, which dates back to 1719.

In 1923, the St. Bernard Parish and New Orleans' Lower 9th Ward were separated from the city when the Industrial Canal was dug. It was designed to connect the trade corridor along the Mississippi River with industrial sites near Lake Pontchartrain, but turned into a flood maker that inundated both areas during Hurricane Betsy in 1965 and Katrina in 2005. Four years after the Industrial Canal opened, St. Bernard was intentionally flooded during the Great Mississippi Flood of 1927 when a section of levee was dynamited to relieve the flood risk to New Orleans. Homes, farms and businesses were washed away. Dozens more large and small canals followed. In the 1930s, the Gulf Intracoastal Waterway went in between New Orleans and St. Bernard, chewing up a slice of marsh known as the Golden Triangle.

Worst of all was the MRGO. Imagined as a shortcut to New Orleans from the Gulf of Mexico for ships, it turned into a fiasco. Salt water washed in and killed cypress forests that had helped hold delta soil in place with their roots; the channel's banks eroded away and took with them large chunks of marsh. Over the next 40 years, the channel destroyed 40 square miles and damaged 1,000 square miles.

By the time Katrina hit, the channel had left St. Bernard's flanks — which also serve as New Orleans' back door — bare and exposed. Katrina's storm surge roared up the MRGO channel and destroyed the levees and floodwalls protecting St. Bernard and the Lower 9th Ward. In 2009, a federal judge ruled that the Corps' negligence in maintaining the MRGO caused the flooding. This ruling along with past projects and events has made it difficult for the Corps to convince locals of the current plan, even though the agency has in recent years made ecological re-engineering a cornerstone of its mission in places like the everglades and the Upper Mississippi and Missouri rivers.

On paper, the proposed canal seems modest and beneficial. It would run about 3 miles over an empty cow pasture in Meraux, channeling water from the Mississippi to ravished and sinking marshes. The Corps says the freshwater will "nourish existing marshes" and help rebuild wetlands, make the basins less salty and inject sediment and nutrients into the damaged ecosystem. It's meant to do work that was once accomplished naturally by river tributaries and bayous that have been closed off one by one since the 1880s. The Corps also wants to bolster marshes with mud it would dredge up, plant cypress trees and harden eroding shorelines with rock dikes. The Corps says its plan — mandated by Congress in 2007 — will restore roughly 93 square miles of the lost land.

Scientists argue that something needs to be done — quickly. "If you don't get aggressive in that area, you will find what we are really concerned about: the Gulf of Mexico lapping up against the levees of New Orleans," said Robert Twilley, a delta scientist at the University of Louisiana at Lafayette.

But locals are concerned they will look back on this project as a mistake. "I'm going to say here that in another 20 years we're going to be back to the drawing board and saying, 'Oops,' just like they said with the MRGO — 'oops!'" said Donald Merwin, who works at a machine shop. Some fear that the canal would be a new source of flooding. "You don't need more water! We got enough water in this parish already," spewed Mike Fireck, a 40-year-old machinist who works for Merwin. Fishers also spoke out against the freshwater diversion for other reasons: They don't want to lose the salty waters they've come to enjoy in the wake of the swamps' demise and the speckled trout, red fish and oysters that now thrive there.

Many locals — along with parish leaders and some scientists — favor an alternate proposal: Reuse the nearby Violet Canal instead of digging a new channel. They want the Corps to re-engineer the canal by widening it and installing a system of pipes to get freshwater from the river to the back swamps. The Corps has studied the Violet option but says it appears to be too costly because about 100 structures including a bridge, a government building and homes would have to be moved, said Greg Miller, a Corps project manager. Miller dismissed fears that the proposed new canal would cause flooding. He says that the entrance would be shut off with gates and that robust levees would line it. Engineers hope to submit their final plan to the chief of the Corps by the end of the year. It will then go to Congress.

Cain Burdeau, *AP/New Orleans Times-Picayune*, 4/6/11 and *Greenwire*, 4/8/11

Mission Impossible for the Corps

The U.S. Army Corps of Engineers (Corps), according to a report by a *National Research Council* (NRC) panel, is facing a real-world "Mission: Impossible." The NRC warns that the Corps is being asked to tackle a growing list of complicated problems for managing water resources problems with a shrinking budget. The Corps' plight, the report says, reflects the fundamental "paradox" of U.S. water management. "It's not just up to the Corps to change themselves," said David Dzombak, an engineering professor at Carnegie Mellon University and the NRC panel's chairman. "But the nation needs to rethink how we go about developing, prioritizing and implementing water resources projects." The Corps' mission was long focused on harnessing water by building dams, levees and navigation channels, the scientists note. But in the last two decades, Congress has shifted the Corps away from building big civil works projects to rehabilitating old ones,

allocating limited water supplies to competing users and repairing ecosystems. So the Corps asked the NRC to convene a committee to offer advice on how the agency might function with so many often-competing objectives.

The NRC report released in late March is the first of five that will examine aspects of the agency's annual $5 billion water resources program. The NRC works under the umbrellas of the *National Academy of Sciences* and the *National Academy of Engineering* as a private, nonprofit government adviser. "We're trying to take stock of the current situation and look at the future," Dzombak said. The report's bottom line: The Army Corps' mission is unsustainable.

Congress has consistently opted to delay maintenance on the vast network of levees, dams and waterways, while adding new water projects to its wish list — including home-state pork projects authorized under the banner of job creation and economic development, the report says. In 2007, the report notes, the Senate approved a $14 billion list of water projects for the Water Resources Development Act reauthorization in May. But a reconciliation with the House yielded a $23 billion authorization with enough Congressional support to override President George W. Bush's veto and become law. Most of those projects have yet to get funding, the report says, offering an example of how lawmakers' desires have outpaced their ability to pay. The result: a $59.6 billion backlog in authorized projects and billions more in unmet maintenance needs, the report says.

"The collective backlog of unfinished work leads to projects being delayed, conducted in a start-stop manner, and to overall inefficient project delivery," the report says. As authorized projects get added to the Corps' to-do list, the number of agency employees available to do that work has declined. The Corps' Civil Works Program, which manages water resources, has seen a more than 30 percent decline in staffing since 1983, while the total number of employees throughout the Corps declined by 27 percent from a 1983 peak of 46,130 to 33,750 last year.

Modern efforts to manage water resources will only become more complex, the NRC report says, inevitably requiring the Corps to work with a smaller staff and budgets and to consider a wider range of environmental goals. "The challenges the Corps is facing are fairly similar to the challenges that our nation is facing in infrastructure in general: The requirements are growing, the demands are growing, yet the resources and investment from whatever sources they need it to come aren't keeping up," said Rick Capka, chief operating officer of the water resources lobbying firm *Dawson & Associates* and a former Corps division commander. "Consequently, we're seeing things start to fray at the edges."

The Corps will also have to consult with a large number of stakeholders, in part because the 1986 Water Resources Development Act requires local governments and other project co-sponsors to help foot the bill. That has forced the Corps to focus on local demands, sometimes at the expense of more comprehensive planning, the report says. The implications, the report says, is that "the nation may have to consider more flexible, innovative, and lower cost solutions to achieving water-related objectives."

The report singles out the Missouri River as an example of the Corps' dilemma, where the agency built six major dams in the 1930s and '40s that it now operates and maintains. The Corps must balance an array of competing needs on the Missouri: flood control, navigation, water supply, hydropower generation, recreation and wildlife. The demands have grown as environmental laws — the National Environmental Policy Act, the Clean Water Act and the Endangered Species Act — have hit the books, the report says. Those laws are enforced by other federal agencies.

Balancing those duties against the wants and needs of states, local authorities, American Indian tribes, companies and residents who use the river and facilities became increasingly complex and burdensome, as the then-commanding general of the Corps' Northwestern Division, David Fastabend, described in 2002 comments that the report cites. "The challenge is that the people of the United States have — over time — told us to do many, many things," Fastabend said. "As you can well imagine, no one was able to 'deconflict' the multiple instructions given to the U.S. Army Corps of Engineers. Our guidance is sometimes contradictory, and the resolution of those contradictions is extremely problematic."

However, many ecologists have argued that the Corps biggest problems come from the fact that they have a long history of working against *Mother Nature* rather than with it. The Corps has been described as more interested in "keeping busy" in the process of satisfying the whims of special interests than in serving the long term interests of environmental quality and society at large.

On the Missouri River, for example, navigation and flood control was taken to an extreme and the lower river (downstream from Sioux City, IA) was channelized into little more than a large rain gutter (see photos below), speeding normal and flood water discharges downstream at an alarming rate. In fact, the gradient created was so steep and flows so fast that towboats could push no more than a handful of barges (4-6) upstream. Virtually all side channels and backwaters were eliminated by levees, causing many native species to decline in numbers or become threatened with extinction. The cost to society for all of this has been phenomenal and was demonstrated even further when many of the levees were breached during the 1993 floods.

The unchannelized Missouri River (left) upstream from Sioux City, IA and the channelized River (right) downstream from Sioux City.

What was referred to as "common sense flood control" during the 1993 flood recovery effort would have allowed the river to meander more, reducing the gradient, slowing flows, improving natural habitats and flood storage, and enhancing recreational opportunities at reduced construction and maintenance costs. But in that scenario navigation and farming interests would have had to make a few concessions which they and their powerful lobbyists have resisted. Until the latter changes, the Corps will undoubtedly be faced with a Mission Impossible on the Missouri River and elsewhere.

Source: Paul Quinlan, *Greenwire*, 3/25/11

Erosion Concerns in the Midwest

After years of decline, soil erosion is once again emerging as a threat in Iowa because of rising commodity prices and a corresponding push to plant more corn and soybeans on steeper and steeper lands. Added to this are changing weather patterns and

inadequate enforcement of protections, scientists and environmentalists say. "There's a lot of land being converted into row crop in this area that never has been farmed before," said Bill Hammitt, a farmer in fertile southwestern Iowa. He said that recently cleared land was too steep and expensive to make a profit farming in years of ordinary prices, but that changed when prices for corn and soybeans surged last fall. "It brings more highly erodible land into production because they're out to make more money on every acre," Hammitt said.

Research by scientists at Iowa State University confirms that erosion in some parts of the state is occurring at levels far beyond government estimates. That is being exacerbated, they say, by severe storms, which have occurred more often in recent years, possibly because of broader climate shifts. "The thing that's really smacking us now are the high-intensity, high-volume rainstorms that we're getting," said Richard M. Cruse, an agronomy professor at Iowa State who directs the *Iowa Daily Erosion Project* (IDEP). "In a variety of locations, we're losing topsoil considerably faster — 10 to as much as 50 times faster — than it's forming", he said. All this erosion can do major damage to water quality, silting streams and lakes and dumping fertilizers and pesticides into the water supply. In fact, fertilizer runoff is responsible for a vast "dead zone," an oxygen-depleted region where little or no sea life can exist, in the Gulf of Mexico. And because it washes away rich topsoil, erosion also can threaten crop yields.

Significant gains were made in combating erosion in the 1980s and early 1990s, as the federal government began to require farmers receiving agricultural subsidies to carry out individually tailored soil conservation plans. Those plans often included measures such as terracing steep ground or sowing buffer strips with perennial grasses to stabilize areas prone to erosion, such as the edges of fields near streams or borders between crops. Many farmers, such as Mr. Hammitt, who is on the board of the *Harrison County Soil and Water Conservation District*, also do little or no plowing and leave crop residues on harvested fields, techniques that also reduce runoff.

But environmentalists say that enforcement of conservation plans by the U.S. Department of Agriculture (USDA) is not as strict as it should be and that the gains in fighting erosion have stalled or are being undercut by budget concerns. Enforcement is needed more than ever, environmentalists say, because high crop prices provide a strong incentive for farmers to plant as much ground as possible and to take fewer protective measures like grass buffer strips.

Other factors are also at work. Farmers increasingly rent the land they cultivate, which can mean that as a renter they are less familiar with areas at risk for erosion or are less invested in caring for the land over the long run. In addition, farmers using modern supersize tractors, built to efficiently cover large swaths of land, can find it inconvenient or impossible to break up land into smaller sections through buffer areas or terraces. Widely used herbicides also can kill the grass in buffer strips, leaving them more vulnerable to erosion. And government biofuels policies that have increased the demand for corn have encouraged farmers to plant more.

"You've got all these market forces and public policies and biofuel mandates and more severe storms," said Craig Cox, senior vice president of the *Environmental Working Group* (EWG), an advocacy group that released its own report on erosion in mid April. "It's all coming together, and we're asleep at the switch," he said. Mr. Cox also said that he flew over parts of Iowa in a helicopter last spring after a severe storm and found that deep gullies had formed in unprotected farmland, becoming conduits for soil runoff. Farmers frequently level off such gullies after harvesting in the fall, he said, and then replant the same low-lying areas year after year, leaving them susceptible to further erosion.

But Thomas W. Christensen, a USDA regional conservationist, disagreed, saying, "Conservation compliance is working," and adding that improvements to its enforcement program were in the works. Last year, however, the agency reviewed fewer than 1 percent of the tracts nationwide that it considered highly erodible to make sure that farmers were following conservation plans. About 1 percent of those reviewed were found to be in violation. But the new federal budget deal cuts 12 percent from the agency's conservation spending, which could further hamper soil conservation efforts and enforcement.

Iowa State's IDEP paints a grimmer picture than a recent assessment by federal officials. The USDA's *2007 National Resources Inventory*, released last year, estimated that erosion in Iowa averaged 5.2 tons per acre annually. That was slightly higher than the five tons per acre that USDA estimated was a tolerable annual rate of erosion for most Iowa soils (i.e., a level that would allow for a high level of crop productivity to be maintained indefinitely). Five tons of soil would fill a small dump truck, and spread over an acre that amount of soil would make a layer slightly less than the thickness of a dime, Mr. Cruse said.

While the USDA's report estimates average rates of erosion for states and regions over a full year, the IDEP uses detailed information on rainfall and field conditions to estimate soil loss in 1,581 Iowa townships — nearly all of them — after each storm. And last year, according to IDEP data analyzed by the EWG, the average estimated rate of erosion exceeded the sustainable level in 133 townships. In 2009, an estimated 641 townships exceeded the sustainable rate, including nearly 400 that had double or more that rate.

The IDEP also provides a picture of the erosion caused by severe storms, like the one that dumped more than seven inches of rain in parts of southwest Iowa in May 2007. In a single day, the figures show, 69 townships had average estimated soil losses of more than 10 tons an acre. Of those, 14 townships were estimated to have an average loss between 20 tons and nearly 40 tons per acre. The 2007 storm was exceptionally damaging, but severe storms are becoming more frequent, according to a state report on climate change submitted in January to the Iowa Legislature and governor.

More than anything else this year, farmers are making decisions based on how they can best take advantage of corn and soybean prices, which have soared in recent months. And Dr. Cruse said that creates a paradox. When crop prices are low and farmers are scraping by, many say they cannot afford to take steps to protect their fields from erosion. Now, he said, they say they still cannot afford it because there is too much profit to be made from farming every bit of land!

Todd G. Duncan, a USDA district conservationist in Winneshiek County in northeast Iowa, another area of the state with steep hills said, "We have some people that are making bad land-use decisions right now."

Sources: *E&E Daily*, 4/13/11; William Neuman, *New York Times*, 4/12/11; and *Greenwire*, 4/13/11

States Struggle to Regulate 'Factory Farms'

The U.S. Environmental Protection Agency (USEPA) in 2003 classified Concentrated Animal Feeding Operations (CAFOs), as point sources of pollution and required them to get National Pollutant Discharge Elimination System (NPDES) permits under the Clean Water Act. Stored manure from such feeding operations can spill over into surrounding groundwater and local waterways, causing algae blooms and fish kills, and (CAFOs) release volatile organic compounds and greenhouse gases into the air. But after a court order in 2008, USEPA changed the 2003 rule, requiring only CAFOs that "intend" to discharge to get permits, and most states have the authority to hand out those permits.

Don Parrish, senior director of regulatory relations at the *American Farm Bureau Federation*, said states have done a "pretty nice job tailoring regulations to fit their needs." But environmentalists say it's a "race to the bottom" when it comes to permitting facilities, enforcing rules and preventing water and air pollution. "The bottom line is that we're not seeing as much enforcement as we need to see especially with something that does produce such cognizable environmental and human health problems," said Hannah Connor, staff attorney for the *Waterkeeper Alliance*.

States face different types of issues than the USEPA, ranging from permitting problems to under-staffed agencies to strong industry influences to the loss of local control over CAFO siting. States must also work with a lack of tough regulations and clarity on the federal level (i.e., lawsuits over the 2008 rule have not yet been fully resolved, and USEPA has yet to regulate air emissions).

As for the states, environmentalists agree that Illinois is the weakest link in CAFO regulation. In a 2006 report, *Illinois Citizens for Clean Air and Water* found the state to have the most lax environmental regulations in USEPA Region 5, which covers Indiana, Michigan, Minnesota, Ohio, Wisconsin and 35 tribes in addition to Illinois. The group filed a petition in March 2008, touching off an USEPA investigation. "It was unbelievable how that CAFO program just completely fell through the cracks," said Danielle Diamond, attorney and organizer with the citizens group. Max Muller, program director for the nonprofit *Environment Illinois*, said that CAFOs have targeted the state because of its "weak regulatory regime." "A lot of the factory farms or CAFOs are owned by or have very close business relationships with slaughterhouses that are owned by national companies, and some of these are some of the biggest privately owned national companies in the country," Muller said, "and they're the kind of companies that would shop around when deciding where to locate and would be likely to choose a place with a weak regulatory regime."

In September 2010, USEPA issued an ultimatum to Illinois EPA (the state's environmental agency) telling the state to address concerns with CAFO permitting and enforcement or risk having USEPA take over regulation. USEPA enumerated multiple flaws with the state's program, including failure to properly permit large farming operations, inspect facilities, levy fines and respond to citizen complaints. For example, USEPA found that of 12 NPDES permits issued by the Illinois EPA at one time or another, only two permits were valid at the time of the review. "Illinois EPA has serious deficiencies in its program," USEPA noted.

While environmentalists praised USEPA's crackdown, industry officials criticized the action. "For (US)EPA to come over on top of the state, push them around, to threaten them — that doesn't do anybody any good," Parrish said. "It just adds cost." But since the scathing review, the state agency has worked to get its program up to par, said Bruce Yurdin, field operations section manager at Illinois EPA. For example, on Dec. 1, 2010, Illinois delivered a draft of new regulations to USEPA that take into account the 2008 federal rule. The state agency is also working to add six new hires to its staff of three full-time workers dedicated to CAFOs. For the most part, USEPA was on the mark, Yurdin said: "I don't think our feeling was we had an adequate program."

Since Nov. 1, 2010, when Illinois EPA first responded to the review, the state has issued permits to eight CAFOs, bringing the total number of operations with permits in the state up to about 20, Yurdin said. USEPA put the total number of CAFOs in Illinois at around 500, but the exact number is unknown, as the state does not have a database. Muller said he hopes the outcome of the crackdown is that the state will develop "clear, unambiguous" rules. "In Illinois, and in a lot of states, farming is an important industry, and we need farming, but we also need clean water," Muller said. "We really need both, and the way to have both is to have clear regulations on pollution and then enforcement."

Farming is also an important industry in neighboring Iowa, ranked No. 1 in the country for large-scale hog and chicken operations. As of 2007, the state had nearly 18 million hogs, nonprofit *Food & Water Watch* found in a recent report. According to Karen Grimes, a spokeswoman at the state Department of Natural Resources, there are 2,750 swine operations in Iowa with more than 1,000 animal units. Hog facilities built or expanded after 1995 are called confinements, meaning they are completely roofed. By law, they are not allowed to discharge. Consequently, the state has never issued a permit to any of the state's hog operations, a fact roundly criticized by environmental groups. Chris Gruenhagen, government relations counsel at the *Iowa Farm Bureau*, said that "Iowa has very stringent regulations that apply to farms that raise animals inside as well as farms that raise animals outside."

But environmentalists push for more. They say their efforts have been hampered by industry group opposition, lack of political will and a prohibitive statute that does not allow state CAFO rules to be stricter than federal ones. Iowa is also among many states that have passed laws preventing local communities from deciding whether to allow large farming operations to be built. When he was first governor in the 1990s, Gov. Terry Branstad (R) signed into law a measure that took away that control.

In Missouri, on the other hand, activists have been successful in warding off attempts to strip away local control. "Corporate agribusiness and their lobbyists have tried numerous times, maybe for the last eight years, to take away the county's right to self-govern itself in terms of industrialized stock operations," said Tim Gibbons, communications director for the *Missouri Rural Crisis Center* (MRCC). There are between 500 and 550 CAFOs in Missouri out of 100,000 farming operations, according to Gibbons. The MRCC has argued that protecting those agriculture operations goes at the expense of the majority of family farmers, a message that has "rung pretty clear with our Legislature," Gibbons said. The success the center has had in retaining local control belies what environmentalists say is a key point in the regulation of CAFOs: "It takes creating a sort of political situation, or it takes really, really working with these agencies to get them out there to enforce," said Patty Lovera, assistant director of *Food & Water Watch*.

But the state to watch in the next few years is Wisconsin, environmentalists say. That

state has seen an "explosion in the number and size" of large-scale dairy operations in the past 10 years, said John Rumpler, senior attorney with *Environment America*. With almost 260,000 dairy cows, Wisconsin ranked fifth in the country in 2007 for dairy operations, according to *Food & Water Watch*. In 2010, the state passed regulations that would curb phosphorus loading from the application of manure as fertilizer, the first in the country to do so. Studies have shown that manure is often over-applied on fields, leading to nutrient runoff into local waterways. New Gov. Scott Walker (R) has the implementation of these rules ahead of him, and Rumpler said how he handles them will be telling. "Is he going to faithfully implement this bipartisan legislation to curb a key pollution source of Wisconsin's beloved lakes?" Rumpler said. "It's a great opportunity for him to do the right thing on the environment. Let's see if he does."

Source: Amanda Peterka, *Greenwire*, 2/23/11

Tribes Join Western Water Fight

Droughts exacerbated by climate change and by population growth have expanded in the Great Plains and the Southwest, where Indian water rights loom as a largely unsettled factor that could affect the price and availability of water to millions of homes and businesses. "There are huge and vested rights to water that are unquantified," said Taiawagi Helton, an expert on Indian law and water law at the University of Oklahoma College of Law and a member of the Cherokee tribe. But turning theoretical rights into what is widely termed "wet water" under the terms of long-ago court rulings can take decades.

Now Oklahoma's Choctaw and Chickasaw tribes are vying for a share of the water from Sardis Lake, a reservoir in southeastern Oklahoma, and each case involves multiple water users. A 103-year-old Supreme Court decision effectively put tribes in Western states at the head of the line in times of water shortage, or if a water basin is oversubscribed. But Interior Department officials want to be certain there are no big losers when a tribe's rights are recognized. If the Choctaw and Chickasaw were to gain water rights under that old court ruling, legal experts say, it could prompt a new push for similar rights across Oklahoma, which has 39 federally recognized tribes. It could also encourage more tribes in the West to start claiming their reserved rights.

Despite the age of the Supreme Court ruling, known as the *Winters Doctrine*, efforts to quantify tribes' water rights proceeded at a crawl until the 1980s and 1990s. Since then, however, about three dozen Indian claims have been tabulated, mostly though drawn-out settlements. Today the Interior Department is presiding over water negotiations with 18 tribes. A push by the department and by senators in Arizona, Montana and New Mexico resolved four claims at the end of last year. Yet unlike tribes whose rights were signed into law recently, the Choctaw and Chickasaw no longer have reservations, which raises the question of whether water claims must be tied to a specific land grant. The Choctaw and Chickasaw lands were parceled out to tribal members more than 110 years ago.

Still, "the water was never taken away," said Stephen Greetham, lawyer for the Chickasaw nation. When the Choctaw and Chickasaw did have reservations, their land covered virtually all of southeastern Oklahoma and was watered by the Kiamichi River, whose tributary, Jackfork Creek, was impounded by the Sardis Dam in 1982. The tribes' goals are to have some ownership and control over the water, to keep as much water as possible in the lake and to enhance southeastern Oklahoma's recreational industry. And, assuming the water is valuable, they want to share in the profits from selling or leasing it. That prospect is unsettling for places that could face water shortages, like Oklahoma City and suburbs like Edmond, whose City Council has already voted to issue $102.5 million in bonds to help bring Sardis Lake water 110 miles north, to the taps of new homes. It is even more unsettling in the Southwest, where irrigated agriculture and industries consume most of the available water.

Daniel McCool, director of the environmental studies program at the University of Utah, cautioned that the more broadly tribes seek to assert their rights, the greater the risk that the federal courts — the Supreme Court in particular — will trim or even eviscerate earlier rulings establishing Indian rights. "It's case law, and case law can be changed," Professor McCool said.

The political push back against Indian rights could come from other local users who fear for their livelihoods, said Chris Kenney, a former federal water rights negotiator now living in Oklahoma. "You've got local people who have used water for many, many years," Mr. Kenney said. "In many cases they are at enormous risk." A settlement just approved by Congress and signed by President Obama granted water from a Colorado River tributary to the Navajo tribe. Two New Mexico towns, Bloomfield and Aztec, are suing to overturn it.

Sources: Felicity Barringer, *New York Times*, 4/11/11; and *Greenwire*, 4/12/11

Caviar Companies Charged in Four-count Lacey Act Indictment

A Kentucky couple and their caviar companies were charged in mid March with trafficking in and falsely labeling illegally harvested paddlefish (*Polydon spathula*), the Department of Justice and the U.S. Attorney for the Southern District of Ohio announced. Paddlefish are common in waters throughout the Midwest and their eggs, marketed as caviar, are regulated by federal law. The global decline in other caviar sources, such as sturgeon, has led to an increased demand for paddlefish caviar. This increased demand has led to over-fishing of paddlefish, and a consequent decline of paddlefish populations. Presently, it is illegal to harvest paddlefish in Ohio waters, but they can be harvested legally in Kentucky waters.

The indictment charges Steve T. Kinder, 51, and *Kinder Caviar Inc.* with illegally harvesting paddlefish from Ohio waters and falsely reporting to the Kentucky Department of Fish & Wildlife Resources that he caught the fish in Kentucky. The indictment charges Cornelia Joyce Kinder, 53, as well as *Kinder Caviar Inc.* and *Black Star Caviar Company* with providing false information about the paddlefish eggs to the U.S. Fish & Wildlife Service in order to obtain permits to export the paddlefish eggs to foreign customers, including the amount of paddlefish eggs to be exported, the names of the fishermen that harvested the paddlefish and the location where the paddlefish were harvested. The alleged violations occurred between March 2006 and December 2010.

If convicted, the Kinders face a maximum penalty of five years in prison, a $250,000 fine or both on each count. The companies could be fined up to $500,000 per count. An indictment is merely an accusation and a defendants is presumed innocent unless and until proven guilty beyond a reasonable doubt.

Source: Department of Justice, Office of Public Affairs, Environment and Natural Resources Division *News Release*, 3/14/11

Fish Habitat Status Report

The *National Fish Habitat Board* (NFHB) recently released a report titled *THROUGH A FISH'S EYE: The Status of Fish Habitats In The United States 2010.* The report summarizes the results of an unprecedented, nationwide assessment of the human effects on fish habitat in the rivers and estuaries of the U.S. It provides an important picture of the challenges and opportunities facing fish and those engaged in fish habitat conservation efforts. Urbanization, agriculture, dams, culverts, pollution and other human impacts have resulted in degraded habitat in need of restoration.

The assessment assigns watersheds and estuaries a risk of current habitat degradation ranging from very low to very high. These results allow comparisons of aquatic habitats across the nation and within 14 sub-regions. The results also identify some of the major sources of habitat degradation that plague waterways. Overall the report says 27 percent of the miles of stream in the lower 48 states are at high or very high risk of current habitat degradation and 44 percent are at low or very low risk. Twenty-nine percent of stream miles in the lower 48 states are at moderate risk of current habitat degradation.

"This report identifies areas where those (restoration) efforts are most needed and points to areas where fish habitat is most likely still intact and should be protected to maintain its value for fish and other aquatic organisms", said Kelly Hepler, Chairman of the NFHB. Habitats with a very high risk of current habitat degradation include those in or near urban development, livestock grazing, agriculture, point source pollution or areas with high numbers of active mines and dams.

Specific locations that stand out as regions at high risk of current habitat degradation include: the urban corridor between Boston and Atlanta; the Central Midwestern states of Iowa, Illinois, Indiana and Ohio; the Mississippi River Basin, including habitats adjacent to the lower Mississippi River in Arkansas, Mississippi and Louisiana; habitats in eastern Texas; and habitats in Central California and along the Columbia River in Oregon and Washington.

Areas that stand out as being at very low risk of current habitat degradation include rural areas in New England and the Great Lakes states; many habitats throughout the Mountain, Southwest and Pacific Coast states; and most of Alaska. It should be noted that not all water and land management issues could be addressed in the assessment, so some of the areas mapped as at low risk of current habitat degradation actually may be at higher risk due to disturbance factors not assessed. For example, most arid regions of the western United States were found to be at low risk of current habitat degradation.

The release of this report is also accompanied with the release of a map viewer, which offers the maps that are in the report in greater detail. The *National Fish Habitat Action Plan* map and data web tool (www.nbii.gov/far/nfhap) was developed by the U.S. Geological Survey's Biological Informatics Program under guidance of the *National Fish Habitat Action Plan Science and Data Committee*. A pdf copy of the report can be downloaded at: http://fishhabitat.org/images/documents/fishhabitatreport_012611

New Accounting Tool Tallies 'Ecosystem Services'

Pollinating insects contribute $190 billion per year to the global economy – about eight times the total operating income of *Wal-Mart Stores Inc*. in 2010 – and their contribution, along with other crucial functions provided by natural ecosystems, should be accounted for in business decision making. So argues a new framework entitled, *Corporate Ecosystem Valuation* (CEV) published by the *World Business Council for Sustainable Development* (WBCSD). CEV aims to help companies take stock of the resources they use and their contribution to the corporate bottom line.

"Biodiversity loss and ecosystem degradation are continuing to escalate, thereby putting business at risk, but if managed properly, [they] can be transformed into new opportunities," WBCSD President Björn Stigson said. CEV launched in Geneva in April "allows business to fully recognize and value ecosystems and the services they deliver," Stigson said. The term "ecosystem services" covers a broad swath of benefits that accrue from the natural environment including filtering dirty water, providing flood control, dispersing pollutants, providing naturally occurring resources like minerals and the genetic basis for farmed resources like crops, and serving up recreational and spiritual opportunities.

CEV was developed by WBCSD over 18 months along with consulting group *Environmental Resources Management*, the *International Union for Conservation of Nature*, *PricewaterhouseCoopers* and the *World Resources Institute* (WRI). The framework builds on a previous tool developed by WRI, WBCSD, and the facilitation group *Meridian Institute* that they say has been used by more than 300 companies since 2008 to tally their exposure to ecosystem-related risks and opportunities.

The new approach was road-tested by more than a dozen companies that have endorsed the road map, including mining giant *Rio Tinto*, forest product group *Weyerhaeuser*, Italian oil and gas company *Eni*, South African utility *Esko*, and manufacturer *Hitach*i. "We see that CEV can strengthen business performance by considering social benefits, sustaining revenues, reducing costs, revaluing company assets and determining levels of liability and compensation," the group of early testers said in a joint statement.

WBCSD officials say the framework does not tell businesses how to carry out an ecosystem valuation, nor does it put values on particular services. Rather, it can help companies decide if they might benefit from carrying out a comprehensive assessment and lays out a process of scoping, planning and evaluation with further advice on how the results can be applied to change companies' "business as usual" processes. This tool was specially designed to meet the requirements of a study, *The Economics of Ecosystems and Biodiversity* (TEEB) report, released by the "G-8 + 5" group of environment ministers at last year's *U.N. Convention on Biological Diversity*, they said.

Source: Jenny Mandel, *Greenwire*, 5/3/11

Most Americans Clueless About Water Sources

More than 75 percent of Americans don't know where their drinking water comes from, a poll commissioned by *the Nature Conservancy* (TNC) found. Most Americans also are unaware of the role lakes, streams and aquifers play in providing clean and dependable water, which suggests a growing disconnect between people and nature, the group said.

The poll, conducted by *Fairbank, Maslin, Maullin, Metz & Associates and Public Opinion Strategies*, asked nearly 1,000 people where their water originates. More than half could not hazard a guess, while about half of the rest guessed incorrectly. Some respondents said they believed their drinking water came from the "oceans" or "God."

Jeff Opperman, a senior freshwater scientist at TNC said the poll results suggest residents who live near large bodies of water such as the Great Lakes or the Mississippi River tend to have a better idea of where their water comes from, while people in urban areas such as Philadelphia may not know as well. Anecdotally, interviews with Washington, D.C., residents showed that many did not know their drinking water comes from the Potomac River, Opperman said.

Source: Phil Taylor, *Greenwire*, 3/22/11

On Line Game to Promote Environmental Awareness

Conservation International, movie star Harrison Ford and video game studio *Talkie* in early March unveiled plans to launch an environmental civilization game on *Facebook*, in an effort to capitalize on the popularity of social gaming. The game called *"Ecotopia"*, like such story-driven games as *"FarmVille"* or *"FrontierVille,"* will be distributed free on *Facebook*. Its designers say it will "wrap fun and compelling gameplay with philanthropy and real-world involvement via the world's largest social networking site."

Put another way, *"Ecotopia"* players will be presented with "a dirty, uninhabitable environment" and have to (virtually) clean it up. Gamers will have to fight litterbugs, "eco-enemies" and other toxic evils along their way to building an environmentally benign utopia.

The game will be the first ever to reward users for performing sustainable acts in the real world, giving them bonus points in the game for acting like environmental stewards outside it. Eligible acts include packing a litter-less lunch, using rechargeable batteries, arranging a car pool and installing solar panels. To verify these acts, users will be invited to post images of their green goodness on the Internet. "Social proofing, as *Talkie* (the video game developer) refers to it, will allow friends to verify this green act was completed or let people know this green act was never really done," said Miranda Gooding, a spokesperson for *Talkie.*

Source: Colin Sullivan, *Greenwire*, 3/8/11

Climate Change Update

Three-quarters of the world's coral reefs are threatened by global warming while coastal development, overfishing and pollution pose an even more immediate and direct threat to more than 60 percent of corals, according to a sweeping global assessment released in late March by the nonprofit *World Resources Institute* (WRI). The report shows a 30 percent increase in threatened coral reefs since 1998, the last time a detailed assessment was conducted. Bottom line: More than 90 percent of reefs will be threatened by 2030, and nearly all will be at risk by 2050. Reef cover in the Caribbean, for example, declined by 80 percent from 1977 to 2002.

Increasing concentrations of greenhouse gases (GHGs) in the atmosphere are the primary culprits for the growing threats to reefs, the report says. Emissions of carbon dioxide (CO_2) and other GHGs from the combustion of fossil fuels and other sources have spurred the acidification of marine waters and prevented corals from building strong skeletons, a condition dubbed "osteoporosis of the sea." Scientists emphasize that reefs can rebound if corrective measures are taken such as reductions in GHG emissions and better management of fishing, development and pollution.

Tree growth and fecundity – the ability to produce viable seeds – are more sensitive to climate change than previously thought, according to an 18-year study of 27,000 individual trees by Duke University researchers. The study, published in early April in the journal *Global Climate Biology*, identifies earlier spring warming as one of several overlooked factors that affect tree reproduction and growth, and can help scientists and policy makers better predict which species are vulnerable to climate change, and why. It also identifies summer drought as an important but overlooked risk factor for tree survival and fecundity, and finds that species within four broad genera of trees – pinus (pine); ulmus (elm); fagus (beech) and magnolia – are particularly vulnerable to variations in climate.

"In a sense, what we've done is an epidemiological study on trees to better understand how and why certain species, or demographics, are sensitive to variation and in what ways," said the study's lead author, James S. Clark, the H.L. Blomquist Professor of Environment and professor of biology and statistics at Duke's *Nicholas School of the Environment*. Clark and his colleagues measured and recorded the growth, mortality and fecundity of each of the 27,000 trees in the study at least once every three years, ultimately compiling an archive of more than 280,000 tree-years of observed data. The researchers analyzed the effects of climate change on the species of trees with spatial climate correlations. This approach allowed them to calculate the relative importance of various factors, such as competition for light and summer drought, alone and in combination, and the effect on the trees.

"As climate continues to change, we know forests will respond. The problem is, the models scientists have used to predict forest responses focus almost solely on spatial variation in tree species abundance – their distribution and density over geographic range," Clark said. If all trees of a species grew in the same conditions – the same light, moisture, soil and competition for resources – this generalized, species-wide spatial analysis might suffice. Scientists wouldn't need to worry about demographic variables and risk factors when trying to predict biodiversity losses due to climate change. "But in the real world, we do," Clark said. "That's where this new concept of climate and resource tracking of demographic rates comes in." Trees are much more sensitive to climate variation than can be interpreted from regional climate averages. "By quantifying the effects and relative importance of competition and climate variables, including previously overlooked impacts on fecundity, over both time and space, the model we've developed addresses this need," he said, "and can be used to help guide planning."

Meanwhile, Forest Service researchers are in the midst of teasing out which genes help some 40 species of plants, animals and pathogens found in Western forests adapt to climate change. Armed with that information, managers could select more robust seeds to replant forests destroyed by fire or disease, or propagate those seeds to help conserve a species. "Finding genetic markers for things that help confer adaptive benefits in high temperature – that could make the difference for something like whitebark pine," Richard Cronn, a research geneticist at the Forest Service's Pacific Northwest Research Station said. So far, geneticists have sequenced more than 40 billion base pairs (the two nucleotides that join the two strands of DNA or RNA together) from 130 samples of species like tan oak, sugar pine, sagebrush and fishers. That is more than 12 times the amount of information in the human genome, which has about 3.3 billion base pairs. The massive undertaking, known as the *Western Forest Transcriptome Survey*, is a collaboration between the Pacific Northwest, Pacific Southwest and Rocky Mountain research stations and four universities.

A "transcriptome" is the collection of genes an organism is expressing at any given point in time, reflecting its response to environmental cues like stress. While DNA is fixed, RNA is the active part of genes that make proteins to carry out functions as they are needed. Whether a gene's RNA is turned on or off, and to what degree, is highly dependent on environmental factors and changes all the time. By seeing what genes have active RNA under different conditions, like emerging from dormancy or high temperatures, geneticists can figure out what genes play a role in those processes and responses. "If we knew the genes that were responsible for that trait ... we could screen seedlings at an early stage to say, 'Do they have the particular suites of genes we want to be able to put on a particularly stressful situation?'" Cronn said. This information can be used to plan for future climate scenarios.

Preliminary results from the controversial *Berkeley Earth Surface Temperature* (BEST) Study of global temperature data confirm the overall warming trend long reported by government scientists in the U.S. and the U.K. The warming trend – a rise of 0.7 ^{o}C since 1957 – "is very similar" to the findings of independent analyses by NASA, the National Oceanic and Atmospheric Administration and the U.K. *Hadley Centre*, said Richard Muller head of the BEST study in late March. "The world temperature data has sufficient integrity to be used to determine temperature trends," said Muller, a physicist at *Lawrence Berkeley National Laboratory*.

Muller's testimony before the House Science, Space and Technology Committee comes in the midst of climate skeptics' sustained attack on the accuracy of the world's surface temperature data, collected by thousands of weather stations around the world. Skeptics have alleged that many of the weather stations are located in areas that would bias their observations. They have also pointed to emails taken from the University of East Anglia's *Climatic Research Unit* (CRU) and posted on the Internet last year as evidence that analyses of the weather station data have been skewed. Those skeptics include House Science Chairman Ralph Hall (R/TX). "For many of us here, these emails were evidence that the trust in the underlying process was misplaced," he said. "I may not be a scientist, but as a politician, I can tell when someone is trying to pull the wool over my eyes." But those claims have been rebutted.

A study by NOAA's *National Climatic Data Center*, published last year, found evidence that some weather station temperature data are of poor quality – but it found the data would add a slight bias toward "cooling" in climate analyses. Meanwhile, five independent reviews have found no evidence of scientific misconduct by scientists whose emails were taken from the University of East Anglia's server.

Muller's study, overseen by the nonprofit *Novim Group*, aims to create a new analysis of global surface temperature data that avoids what it deems to be problems with the existing analyses. The effort is funded by the *Lawrence Berkeley National Laboratory* and several foundations, including a group set up by *Microsoft Corp.* founder Bill Gates and another funded by the *Charles G. Koch Foundation*, which has also supported efforts opposing mainstream climate change science. Although the BEST group's final results remain to be seen, Muller said he was surprised to find that early results agree with existing temperature analyses.

Meanwhile, VA Attorney General Kenneth Cuccinelli II (R) is not letting up in his crusade against the theory of man-made global warming. He is suing the U.S. EPA over its ruling that GHG emissions are a threat, calling the decision "unreliable, unverifiable and doctored." The attorney general said his doubts about man-made global warming were deepened with "Climategate," in which a cache of e-mails between scientists from the CRU of the University of East Anglia in Britain were published online. But the Virginia Senate has voted both to strip Cuccinelli of his power to investigate academic fraud in the future and to require Cuccinelli to keep detailed reports on his expenses for major projects. "There is a significant portion of the Virginia public that sees these issues as distractions from what the attorney general should be focusing on," said Mark Rozell, a professor of political science at George Mason University. "There are many people who are deeply uncomfortable with the crusader-type style that he is cultivating." His crusade, though, is gaining traction in Congress, where Republican leaders are attempting to rid federal regulators of their authority to control industrial GHG emissions. But unlike Cuccinelli, Republican leaders are framing their arguments in economic terms, rather than attacking the science behind man-made global warming. For example, two of the West's leading Republican senators, Orrin Hatch (UT) and John Barrasso (WY), recently introduced a bill to limit the Obama administration's authority to address climate change through new regulation of CO_2.

While rises in global average temperature are remote from the experience of most people, two recent studies in the journal *Nature* conclude that climate warming is already causing extreme weather events that affect the lives of millions. The research directly links rising GHG levels with the growing intensity of rain and snow in the Northern Hemisphere, and the increased risk of flooding in the U.K.. "This has immense importance not just as a further justification for emissions reduction, but also for adaptation planning," says Michael Oppenheimer, a climate-policy researcher at Princeton University, who was not involved in the studies. There is no doubt that humans are altering the climate, but the implications for regional weather are less clear. No computer simulation can conclusively attribute a given snowstorm or flood to global warming. But with a combination of climate models, weather observations and a good dose of probability theory, scientists may be able to determine how climate warming changes the odds.

Gabriele Hegerl, a climate researcher at the University of Edinburgh, UK, says "Climate models have improved a lot since ten years ago, when we basically couldn't say anything about rainfall." In the first of the latest studies, Hegerl and her colleagues compared data from weather stations in the Northern Hemisphere with precipitation simulations from eight climate models. We can now say with some confidence that the increased rainfall intensity in the latter half of the twentieth century cannot be explained by our estimates of internal climate variability," she says.

The second study links climate change to a specific event: damaging floods in 2000 in England and Wales. By running thousands of high-resolution seasonal forecast simulations with or without the effect of GHGs, Myles Allen of the University of Oxford, U.K., and his colleagues found that anthropogenic climate change may have almost doubled the risk of the extremely wet weather that caused the floods. The rise in extreme precipitation in some Northern Hemisphere areas has been recognized for more than a decade, but this is the first time that the anthropogenic contribution has been nailed down, Oppenheimer said.

These findings mean that Northern Hemisphere countries need to prepare for more of these events in the future. "What has been considered a 1-in-100-years event in a stationary climate may actually occur twice as often in the future," says Allen. But he cautions that climate change may not always

raise the risk of weather-related damage. In Britain, for example, snow-melt floods may become less likely as the climate warms. And Allen's study leaves a 10% chance that global warming has not affected — or has even decreased — the country's flood risk. Similar attribution studies are under way for flood and drought risk in Europe, meltwater availability in the western United States and drought in southern Africa, typical of the research needed to develop effective climate-adaptation policies.

People who have directly experienced flooding are more likely to be worried about climate change and willing to adopt energy-saving behavior, according to a new British study. Researchers at two universities based their findings on a 2010 survey of 1,822 individuals across the U.K. "We show that those who report experience of flooding express more concern over climate change, see it as less uncertain and feel more confident that their actions will have an effect on climate change," the authors write. "Importantly, these perceptual differences also translate into a greater willingness to save energy to mitigate climate change."

Previous psychological research suggests that many people are relatively unconcerned about climate change because they perceive it as a distant issue that will not directly affect them. But the authors of the new study, researchers at the University of Nottingham and Cardiff University, say their results suggest that drawing links between local weather events and climate change is "likely to be a useful strategy for increasing concern and action." The analysis was published in late March in the journal *Nature Climate Change*. The new study's findings, "provide a glimmer of hope that similar 'tipping point' dynamics might exist in the domain of climate change" said Elke Weber – a professor of business and psychology at Columbia University.

Meanwhile, a group of U.S. attorneys has recruited children and young adults as plaintiffs in a series of lawsuits meant to force government intervention on climate change. The activists plan to file legal actions in every state and Washington, D.C., in an effort to convince the courts to declare the atmosphere a "public trust" worthy of special protection, a tactic used previously to order the cleanup of rivers and coasts. *Our Children's Trust*, an Oregon-based nonprofit, is leading the effort.

The lawsuits, filed in early May, are based on common-law theories rather than state or federal statutes. Opponents say the lawsuits could overload the courts and create excessive regulations. But attorneys involved in the cases celebrated the idea that even one or two victories could lead to regulations they hope would curb GHG emissions. "It's not just a political issue; it's a legal issue. All three branches of government have an obligation to protect that public trust," said Amy Eddy, a trial attorney from Kalispell, MT, who helped draft litigation to be filed with the Montana Supreme Court. "You have just as much control over emissions into the atmosphere as you do pollution into water." It is unclear whether the courts will agree.

A similar lawsuit that used unconventional tactics to address climate change was not warmly received when it was brought before the U.S. Supreme Court. The plaintiffs in *American Electric Power Co. v. Connecticut* sought to rein in power plant emissions, calling them a public nuisance. If a judge is willing to innovate a new legal standard, the lawsuits could work, said Gus Speth, chairman of the *Council on Environmental Quality* (CEQ) under former President Carter and current professor at Vermont Law School. Such an outcome is unlikely, said analyst and senior legal fellow at the *Heritage Foundation* Hans von Spakovsky, and depends on a judge accepting what he called "a creative, made-up legal theory." "This is a complete violation of our whole constitutional system. These kinds of public policy issues are up to either the state legislatures or Congress to determine, not judges," he said

Sources: Laura Petersen, *Land Letter*, 3/31 and 4/28/11; *Earth & Climate*, 13:36, 4/4/11; Quirin Schiermeier, *Nature*, 470, 316 (2011); Karoun Demirjian, *Las Vegas Sun*, 2/24/11; *Land Letter* 3/3/11; Lauren Morello, *ClimateWire*, 3/21/11; *AP*, 5/4/11; *E&E Daily*, 3/1/11; John Collins Rudolf, *New York Times*, 2/22/11; John McArdle, *Greenwire*, 3/15/11; Lauren Morello, *Greenwire*, 3/31/11; Annie Snider, *Greenwire*, 4/8/11; Paul Quinlan, *Greenwire*, 2/23/11; *Greenwire*, 2/23 and 5/4/11

Meetings of Interest

Jul 27-29: USACE Workshop on Restoration of Riparian Areas for Water Quality & Ecological Functions, Omaha, NE. Contact: Dr. Richard Fischer (Richard.A.Fischer@usace.army.mil).

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

Aug. 17-19: GIS Applications in Aquatic Ecology and Evolutionary Biology. Department of Biology and Center for Environmental Sciences, Saint Louis University, St. Louis, MO. See: http://pages.slu.edu/faculty/jknouft/index_files/Page304.htm or contact: Dr. Jason Knouft at aquaticgis@slu.edu

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

Oct. 26-28: 31st International Symposium of the North American Lake Management Society (NALMS), Spokane, WA, See: http://www.nalms.org/nalmsnew/

Dec. 4: Native Mussel Symposium at the 72nd Midwest Fish & Wildlife Conference, Des Moines, IA. See: www.umrcc.org

Dec. 4-7: 72nd Midwest Fish & Wildlife Conference, Des Moines, IA. See: www.midwest2011.org

Congressional Action Pertinent to the Mississippi River Basin

Climate Change

S. 116. Vitter (R/LA) and Barrasso (R/WY). Provides for the establishment, on-going validation, and utilization of an official set of data on the historical temperature record, and for other purposes.

S 228. Barrasso (R/WY) and 10 Co-sponsors and **H. R. 750.** Walberg (R/MI), Preempts regulation of action relating to, or consideration of greenhouse gases (GHGs) under Federal and common law on enactment of a Federal policy to mitigate climate change.

S. 482. Inhofe (R/OK) and 43 Co-sponsors and **H. R. 910.** Upton (R/MI) and 9 Co-sponsors. Amends the Clean Air Act to prohibit the Administrator of the EPA from promulgating any regulation concerning, taking action relating to, or taking into consideration the emission of a GHG to address

climate change, and for other purposes.

H.R. 97. Blackburn (R/TN) and 46 Co-sponsors. Amends the Clean Air Act to provide that GHGs are not subject to the Act, and for other purposes.

H. R. 153. Poe (R/TX) and 19 Co-sponsors. Prohibits funding for the U.S. EPA to be used to implement or enforce a cap-and-trade program for GHGs, and for other purposes.

H. R. 680. Luetkemeyer (R/MO) and 23 Co-sponsors. Prohibits U.S. contributions to the Intergovernmental Panel on Climate Change.

H. R. 1149. Bilbray (R/CA) and 7 Co-sponsors. Amends the Clean Air Act to include algae-based biofuel in the renewable fuel program and amend the Internal Revenue Code of 1986 to include algae-based biofuel in the cellulosic biofuel producer credit.

H. R. 1292. Cuellar (D/TX). Amends the Clean Air Act to provide that GHGs are not subject to the Act, and for other purposes.

Conservation

S. 339. Baucus (D/MT) and Tester (D/MT) and **H. R. 481.** Connolly (D/VA) and 3 Co-sponsors. Amends the Internal Revenue Code of 1986 to allow a credit against income tax for qualified conservation contributions which include National Scenic Trails.

S. 901. Tester (D/MT) and Risch (R/ID). Amends the Land and Water Conservation Fund Act of 1965 to ensure that amounts are made available for projects to provide recreational public access, and for other purposes.

H. R. 390. Thompson (D/CA). Amends the Internal Revenue Code of 1986 to provide an exclusion from the gross estate for certain farmlands and lands subject to qualified conservation easements, and for other purposes.

Endangered Species Act of 1973 (ESA)

S. 826. Feinstein (D/CA). Requires the Secretary of the Treasury to establish a program to provide loans and loan guarantees to enable eligible public entities to acquire interests in real property that are in compliance with habitat conservation plans approved by the Secretary of the Interior under the ESA, and for other purposes.

H. R. 39 Young (R/AK). Delists the polar bear as a threatened species under the ESA.

H. R. 1042. Baca (D/CA) and 9 Co-sponsors. Amends the ESA to require that certain species be treated as extinct for purposes of that Act if there is not a substantial increase in the population of a species during the 15-year period beginning on the date the species is determined to be an endangered species, and for other purposes.

H. R. 1719. McMorris-Rodgers (R/WA) and 9 Co-sponsors. Better informs consumers regarding costs associated with compliance for protecting endangered and threatened species under the ESA.

Energy

S. 629. Murkowski (R/AK) and 8 Co-sponsors. Improves hydropower, and for other purposes.

S. 892. Burr (R/NC) and 15 Co-sponsors. Establishes the Department of Energy and the Environment, and for other purposes.

H. R. 230. Jackson Lee (D/TX). Authorizes the Secretary of Energy to make loan guarantees for cellulosic ethanol production technology development.

Federal Water Pollution Control Act (FWPCA)

S. 272. Manchin (D/WV) and 7 Co-sponsors. Amends the FWPCA to clarify and confirm the authority of the U.S EPA to deny or restrict the use of defined areas as disposal sites for the discharge of dredged or fill material.

S. 468. McConnel (R/KY) and 2 Co-sponsors and **H. R. 960.** Rogers (R/KY) and Capito (R/WV). Amend the FWPCA to clarify the authority of the Administrator to disapprove specifications of disposal sites for the discharge of, dredged or fill material, and to clarify the procedure under which a higher review of specifications may be requested.

S. 661. Lautenberg (D/NJ). Amends the FWPCA to ensure the safe and proper use of dispersants in the event of an oil spill or release of hazardous substances, and for other purposes.

S. 711 Lautenberg (D/NJ). 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. 395. McNerney (D/CA). Amends the FWPCA to extend the pilot program for alternative water source projects.

H. R. 457. McKinley (R/WV) and 4 Co-sponsors. Amends the FWPCA to remove the Administrator of the U.S. EPA's authority to disapprove after a permit has been issued by the Secretary of the Army under section 404 of such Act.

H. R. 517. Young (R/AK) and 9 Co-sponsors. Amends the FWPCA to eliminate the authority of the Administrator of the U.S. EPA to deny or restrict the use of a defined area as a dredged or fill material disposal site, and for other purposes.

Invasive Species

S. 471. Stabenow (D/MI) and 6 Co-sponsors and **H. R. 892.** Camp (R/MI) and 21 Co-sponsors. Requires the Secretary of the Army to study the feasibility of the hydrological separation of the Great Lakes and Mississippi River Basins.

Government Regulations

H.R. 125. Gingrey (R/GA) and 23 Co-sponsors. Requires Congress to specify the source of authority under the U.S Constitution for the enactment of laws, and for other purposes.

H. R. 214. Young (R/AK). Establishes a Congressional Office of Regulatory Analysis, to require the periodic review and automatic termination of Federal regulations, and for other purposes.

H. R. 1026. Waters (D/CA) and 6 Co-sponsors. Extends the authorization for the national flood insurance program, to identify priorities essential to reform and ongoing stable functioning of the program, and for other purposes.

River Crossings

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

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

Mining

S. 897. Bingaman (D/NM) and 4 Co-sponsors and **H.R. 1365.** Rahal (D/WV). Amends the Surface Mining Control and Reclamation Act of 1977 to clarify that uncertified States and Indian tribes have the authority to use certain payments for certain noncoal reclamation projects and acid mine remediation programs.

National Environmental Policy Act (NEPA)

H. R. 332. Filner (D/CA). Amends title 10, U.S. Code, to require the Department of Defense and all other defense-related agencies of the U.S. to fully comply with Federal and State environmental laws, including certain laws relating to public health and worker safety, etc.

Public Service

S. 896. Bingaman (D/NM) and 2 Co-sponsors and **H. R. 587.** Grijalva (D/AZ) and Markey (D/MA). Amends the Public Lands Corps Act of 1993 to expand the authorization of various departments to provide service opportunities for young Americans; help restore the Nation's natural, cultural, historic, archaeological, recreational and scenic resources; train a new generation of public land managers and enthusiasts; and promote the value of public service.

H. R. 494. Kaptur (D/OH). Authorizes the President to reestablish the Civilian Conservation Corps as a means of providing gainful employment to unemployed and underemployed citizens of the U.S. through the performance of useful public work, and for other purposes.

Water Quality

H. R. 553. Markey (D/MA) and 4 Co-sponsors. Amends the Safe Drinking Water Act regarding an endocrine disruptor screening program.

H. R. 872. Gibbs (R/OH) and 21 Co-sponsors. Amends the Federal Insecticide, Fungicide, and Rodenticide Act and the Federal Water Pollution Control Act to clarify Congressional intent regarding the regulation of the use of pesticides in or near navigable waters, and for other purposes.

Water Resources

S. 573. DeMint (R/SC). Establishes a harbor maintenance block grant program to provide maximum flexibility to each State to carry out harbor maintenance and deepening projects in the State, to require transparency for water resources development projects carried out by the Corps of Engineers, and for other purposes.

H. R. 700. Walberg (R/MI). Provides a moratorium on the issuance of flood insurance rate maps, to assist property owners in adapting to flood insurance rate map changes, and for other purposes.

H. R. 1421. Boren (D/OK) and Cole (R/OK). Amends the Water Resources Development Act of 1986 to clarify the role of the Cherokee Nation of Oklahoma with regard to the maintenance of the W.D. Mayo Lock and Dam in Oklahoma

H. R. 1865. Gibbs (R/OH) and 21 Co-sponsors. Protects the right of individuals to bear arms at water resources development projects administered by the Secretary of the Army, and for other purposes.

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