River Crossings

Volume 21 **July/August/September 2012** **Number 3**

Chairman's Comments

Did we ever think last year that in the midst of a major flood we would 12 months later be in drought? It is one of the many reasons that river management is so complex. To get young professionals to help us with this, I am pleased to announce that MICRA is once again sponsoring its young professional travel grant. The successful applicant will receive funding to deliver a presentation on large rivers fisheries management at a professional meeting or conference in 2013 that they would not otherwise be able to attend.

Additional informationa and the application form can be found on MICRA's website (www.MICRArivers.org). The deadline for submissions is January 15, 2013. A letter requesting support from the appropriate agency administrator accompanying the application is strongly recommended.

The MICRA Executive Board will rank applications using a weighted scoring system based on the abstract's scientific value, relevance to large river fisheries and aquatic resource management, importance to MICRA, the applicant's level of involvment in the meeting, and letter of recommendation.

The MICRA Chair will notify the successful candidate and the respective agency administrator in writing within 30-days of the application deadline. In the event that the annual travel stipend is not awarded, the MICRA Executive Board will consider applications for the travel stipend on an individual basis throughout the remainder of the 2013 calendar year.

Asian Carp Issues

The Department of Fisheries and Oceans Canada, Canadian Science Advisory Secretariat (DFOC) released a study (*Science Advisory Report 2011/071*) in mid-June affirming that all five Great Lakes are hospitable to Asian carp. The DFOC report stated further that the most likely entry point for Asian carp into the Great Lakes Basin is into Lake Michigan through the Chicago Area Waterway System (CAWS). The U.S. Army, Corps of Engineers (Corps) contends that an electric barrier in the Chicago Sanitary and Ship Canal (CSSC) is blocking the carp's path northward toward the lake. But the DFOC report did not evaluate the effectiveness of the Corps' barrier, maintaining instead that the complex nature of the CAWS and proximity of bigheaded carp (i.e., bighead carp and silver carp) populations still make it the most likely entry point.

50 lb. bighead carp taken in Lake Erie in 2001 - University of Guelph Photo.

Once bigheaded carp gain entry into the basin, the DFOC expects them to spread to other lakes within 20 years. The spread will be more rapid for lakes Michigan, Huron, and Erie, and potentially Lake Superior; longer for Lake Ontario. The report states further that bigheaded carp would find suitable food, and thermal and spawning habitats in the Great Lakes basin which would allow them to survive and become established. The areas that would be attractive and favorable are Lake Erie, including Lake St. Clair, and high productivity embayments of lakes Superior, Michigan, Huron and Ontario. The DFOC report states that there is a greater

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than 50% probability of successful mating each year with very few (< 10) adult females (and a similar number of adult males) within the basin of a Great Lake. Population growth, the report says, is most sensitive to the survivorship of juveniles.

The consequences of an established bighead carp population are expected to include changes in planktonic communities, reduction in planktivore biomass, reduced recruitment of fishes with early pelagic life stages, and reduced stocks of piscivores (fish eaters). In order to reduce the probability of introduction (either at the arrival, survival, establishment or spread stage), and delay or reduce subsequent ecological consequences, the DFOC report states that immediate prevention actions would be most effective, especially in conjunction with population management actions at the invasion front.

Previous research had suggested that the Great Lakes would be inhospitable for the carp. But the DFOC, with contributions from two U.S. Geological Survey (USGS) scientists, found otherwise. "The questions everyone has been asking are: 'Can a breeding population survive in the Great Lakes, and would it be a significant problem if they did?'" USGS Director Marcia McNutt said in a statement. "Now we know the answers and unfortunately they are 'yes and yes.'" The DFOC study can be found online at: http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2011/2011_114-eng.html.

Responses from ecological and conservation interests were unanimous.. "Canadian and U.S. authorities must work together to ramp up efforts to protect the Great Lakes from these invasive species," said Hugh Wilkins, staff lawyer from *Ecojustice Canada*. Similar statements were made by Mary Muter, *Sierra Club Ontario;* Andy Buchsbaum, *National Wildlife Federation's Great Lakes Regional Center;* Joel Brammeier, *Alliance for the Great Lakes;* Jennifer Nalbone, *Great Lakes United;* Thom Cmar, *Natural Resources Defense Council;* Cheryl Kallio, *Freshwater Future;* Robert Hirschfeld, *Prairie Rivers Network;* Jack Darin, *Sierra Club, Illinois Chapter;* Kristy Meyer, *Ohio Environmental Council;* and Darrell Gerber, *Clean Water Action – Minnesota*.

Meanwhile, federal and state wildlife officials working in conjunction with academic researchers announced in mid-July that six water samples taken from Lake Erie's Sandusky and north Maumee bays tested positive for the presence of Asian carp environmental DNA (eDNA). Four samples from Sandusky Bay, in Ohio waters, and two from North Maumee Bay, in Michigan waters tested positive. A total of 417 samples were taken from Lake Erie in August 2011, and more than 2,000 samples have been taken from the Great Lakes Basin since 2010. The Lake Erie batch was recently analyzed and test results were confirmed by eDNA researchers.

The eDNA findings indicate the presence of genetic material left behind by the species, such as scales, excrement or mucous, but not establishment of populations. Positive eDNA tests are regarded by the scientific community as an indicator of the species' recent presence, however, positive results can occur whether the organism was alive or dead. The eDNA could enter the lake through ballast water dumping from water collected elsewhere or from other sources. Notre Dame biologist and eDNA specialist Chris Jerde said the eDNA could have gotten into the lake through bird feces, but he said it's most likely the results indicate the fish are living in the lake. Prior to 2003, three individual bighead carp were collected in Lake Erie, (see photo on page 1), but no additional observations have been reported during the past decade.

"The results from these water samples are certainly concerning...",said Michigan Department of Natural Resources Fisheries Division Chief Jim Dexter. "We are actively engaged in Asian carp surveillance programs throughout the Great Lakes, including Lake St. Clair and Lake Erie, and the Department stands ready to take the necessary and appropriate actions to investigate and respond to these test results," he said. "This alarming discovery underscores the need for action now to stop Asian carp and other invasive species from devastating our Great Lakes," said Sen. Debbie Stabenow (D/MI).

Sampling of Lake Erie waters by state and federal agency officials this August did not produce any live Asian carp. Additional water samples were also collected for eDNA research. Test results from future water samples will dictate the nature of further response methods from the interagency

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state and federal team (*Asian Carp Regional Coordinating Committee)* led by officials of the White House *Council on Environmental Quality*. Since 2010, partnering agencies and groups, including University of Notre Dame, Central Michigan University, and *The Nature Conservancy* have collected water samples from Great Lakes basin waters. The collaborative surveillance program is funded by the U.S. Fish and Wildlife Service (USFWS) with a federal *Great Lakes Restoration Initiative* grant, administered under the *Asian Carp Control Strategy Framework*.

Anglers are urged to become familiar with the identification of Asian carp, including both adults and juveniles, as the spread of juvenile Asian carp through the use of live bait buckets has been identified as a potential point of entry into Great Lakes waters. A video demonstrating how to identify bighead and silver carp can be viewed on the USFWS YouTube channel at http://youtu.be/B49OWrCRs38. Identification guides, frequently asked questions, management plans and an online reporting form are available online at www.michigan.gov/asiancarp and www.wildohio.com, or call 800-WILDLIFE.

In early August, the Obama administration announced that Canada has joined the, *Asian Carp Regional Coordinating Committee*. The Canadian agencies joining the committee are the federal Department of Fisheries and Oceans and the Ontario Ministry of Natural Resources. "Asian carp are a serious economic, social and environmental threat to Ontario and to all jurisdictions that border the Great Lakes," Michael Gravelle, Ontario's minister of natural resources, said in a statement. In May, the Canadian government stepped up with money, pledging $17.5 million to help keep Asian carp out of the Canadian waters of the Great Lakes. "The Great Lakes represent one of North America's most valuable resources," said Keith Ashfield, Canada's minister of fisheries and oceans. "Working with our provincial and American partners, as well other key stakeholders, will maximize our efforts to counter this invasive threat to our shared waters."

Meanwhile, Michigan Attorney General Bill Schuette announced in early July that Michigan and four other states (PA, OH, WI and MN) are moving forward with a lawsuit against the federal government demanding that additional steps be taken to prevent Asian carp from reaching the Great Lakes. A quicker timetable was one of the requests in a suit filed three years ago by the five states. Federal legislation approved in June requires the Corps to complete a plan for shielding the lakes from the invasive carp within 18 months, or toward the end of 2013. But the legislation doesn't guarantee that the Corps ultimately will sever the CAWS connection to Lake Michigan, so the states will continue to pursue their case, said Joy Yearout, spokeswoman for Schuette. The lawsuit seeks a court order for such a step. The case recently was transferred from U.S. District Judge Robert Dow to another judge, John Tharp, as part of a docket reshuffling, Ms. Yearout said. The case has not yet been scheduled for trial, and a government motion to dismiss the suit is pending. As noted earlier, the Corps contends that an electric barrier in the canal is blocking the carp's path northward toward the lake.

A problem in the Asian carp fight is the fact that scientific research hasn't yet found "smoking-gun" evidence that the species will devastate other fish populations. Even in places such as the Illinois and Mississippi rivers, where Asian carp are rampant, changes have been incremental. "We suspect at some point there will be a real crash in the populations of some of these native fishes," said John Chick, an aquatic ecologist with the *National Great Rivers Research and Education Center* on the Mississippi River near St. Louis. While years of study have turned up ominous signs that the carp are capable of crowding out other species and changing ecosystems, the worst-case scenario scientists expect to unfold hasn't yet been realized. Some scientists say that dire predictions about the damage carp can do may be premature. That makes the research Chick and his colleagues are conducting critical, and it likely will influence how the debate over managing waterways made vulnerable by carp plays out in Congress and the courts.

For example, while indigenous bigmouth buffalo and gizzard shad both have gotten skinnier since the carp arrived, the buffalo's population has declined only moderately while the shad populations have fluctuated. Commercially harvested buffalo are found on grocery shelves from Alabama to Minnesota. The shad are crucial prey for bass and other sport fish. "When you get a species invasion ... typically you see some native species decline or go extinct locally," said biologist Jim Garvey of Southern Illinois University at Carbondale. "We haven't seen that yet. We're kind of wondering what the heck's going on."

Chick and others have found that silver and bighead carp, the most menacing of several Asian carp varieties in the U.S., eat the same food as bigmouth buffalo and gizzard shad. A separate study detected weight declines among buffalo and shad in the Illinois River, where the largest concentrations of Asian carp exist. Researchers are looking for proof that Asian carp are at least partially to blame for the drop-offs. "It's just a correlation at this point," Chick said.

Other research supports the potential that Asian carp could take over the neighborhood. Garvey and his associates reported this year that Asian carp account for more than 60 percent of the biomass – the combined weight – of all fish species along the lower 150-mile reach of the Illinois River. They also make up virtually all fish longer than 16 inches. Such findings stir unease in the Great Lakes region. Ravenous and prolific, the carp typically weigh 30 to 40 pounds but can exceed a hefty 100 pounds, and they can gorge up to one-fifth of their body weight daily on plankton – tiny plants and animals that the larval stages of nearly all fish species eat.

Scientists are also digging through online databases for clues about how Asian carp have affected lake ecosystems in other countries. Duane Chapman, a USGS biologist, says silver carp have driven down populations of native species in Europe similar to the Great Lakes' prized walleye and yellow perch. Chick offered one possible explanation for why the carp's impact hasn't been more dramatic so far: There may be still enough food – for now – to ward off starvation in the Illinois and Mississippi rivers, which are richer with algae and zooplankton than most of the Great Lakes. So the expected die-off of other fish could take years to develop, until a tipping point is reached. "No one knows for sure what would happen," Garvey said. "But we don't want to get to that point. We're looking at some really scary scenarios." "This kind of research gives an early warning and justification to do everything possible to keep them out (of the Great Lakes)," said Marc Gaden, spokesman for the Great Lakes Fishery Commission. "The more understanding you have of what makes these fish tick and what's happening in the ecosystem where they've already invaded, the closer you get to maybe discovering ways to get them under control."

Meanwhile, in Canada a fish importing company and its president were recently fined $50,000 for trying to illegally import 5,450 pounds of live Asian carp into the country. "We have three more cases involving the illegal importing of Asian carp before the courts here, two of them involving people

from the U.S.," said John Cooper of the Ontario Ministry of Natural Resources. "It has been illegal since 2005 to possess live invasive carp in Ontario, including bighead, grass, black and silver carp."

Meanwhile in Michigan, an Arkansas man was recently charged with twelve felony counts of possessing and selling live Asian carp in violation of state law protecting against the spread of invasive species:
• Ten counts of possession of an illegal species, a felony punishable by two years in prison and a fine of $2,000-$20,000 for each violation; and,
• Two counts of selling an illegal species, a felony punishable by two years in prison and a fine of $2,000-$20,000 for each violation.
The charge alleges that David Shane Costner, 42, of Harrisburg, AR, possessed 110 grass carp. The fish were allegedly transported and sold from tanks housed in a semi-truck furnished by parent company *Farley's Arkansas Pondstockers*. Costner allegedly travelled around the state, conducting sales of the illegal carp from store parking lots. The trucks also contained live fish species permitted under state law, including channel catfish, largemouth bass and fathead minnows. On May 16, 2012, Costner allegedly sold two of the live grass carp to undercover Michigan Department of Natural Resources (MDNR) investigators in Midland, MI.

Grass carp, which are herbivorous and could potentially remove all vegetation from a body of water at the expense of native species, have been illegal to possess in Michigan for decades. "Once destructive Asian carp enter our waterways, the damage cannot be undone," Attorney General Schuette said. "We must remain vigilant and use every tool available to protect Michigan's tourism and sport-fishing industries from this dangerous threat." "Invasive species in general and the Asian carp in particular pose one of the most serious current threats to the economy and the ecology of the Great Lakes," said Rodney Stokes, MDNR Director.

On a more positive note, a $5.4-million Asian carp processing plant has been proposed for Grafton, IL. The venture is headed by Ben Allen's *American Heartland Fish Products LLC*. Allen's firm has already landed a three-year deal to supply 35 million pounds of carp to a client in China, where the fish is popular. The plant also would market fish meal and fish oil. Given the plant's potential of several dozen jobs, "this is good for the whole region economically, and it gets rid of the damned fish," Democratic state Sen. Bill Haine said. The investors in the plant have said the carp are popular among Asian consumers, but because many Asian waterways are highly polluted, there is a large demand for carp caught in U.S. waters. Allen also said the farm-raised carp that China presently relies on lacks the wild taste of river species.

But Steve McNitt, sales chief of *Schafer Fisheries* in Thomson, IL said marketing Asian carp is a challenge. Last year *Schafer Fisheries* bought 15 million pounds of the fish from commercial anglers of the Illinois and Upper Mississippi rivers. "I'd like to say it's the fish of the future because of the ability to catch whatever you need," McNitt said. But the downside, he said, is that the profit margin is thin at times because of costs of freight and fishermen. Also, the fish has soft flesh that can spoil quickly if not rapidly processed and packed in ice. It's also a grind to develop new markets, he said, and can take fisheries such as *Schafer's* about a decade to do. Carp sales also slow in the summertime, when the fish develop an earthy, less-pleasant taste linked to their seasonal feeding.

"This business is really evolving every year, and I still believe there's a market at the end of the road," he said. He is hopeful that marketing will change the carp's image of being bony bottom-feeders unfit for American palates. "The name `carp' doesn't have much of a following in the U.S.," he said. "That's always going to be a problem." McNitt said *Schafer* is trying to craft carp into hot dogs, jerky, bologna, minced product for tacos and other "value-added products that are very good and could make some money." *Schafer* also has a patty maker to turn the fish meat into burgers, of sorts. *Schafer* shipped last year's bounty to 11 countries, including China and Israel, as well as Asian markets in Los Angeles.

Sources: Department of Fisheries and Oceans Canada, *Science Advisory Report* 2011/071; *Great Lakes United Press Release*, 7/13/12; Cynthia Dizikes, *Chicago Tribune*, 7/13/12; *Michigan and Ohio Departments of Natural Resources News Release*, 7/13/12; Francis X. Donnelly, *Detroit News*, 7/14/12; Spencer Hunt, *Columbus Dispatch*, 8/8/12; John Flesher, *AP/Pittsburgh Post-Gazette*, 7/6/12; John Flesher, *AP/San Francisco Chronicle*, 7/12/12; D'Arcy Egan, *The (Cleveland) Plain Dealer*, 6/22/12; *Michigan Attorney General's Office News Release*, 6/5/12; and John Flesher, *AP/Cleveland Plain Dealer*, 6/5/12; AP, 6/14/12; Paul Quinlan, *Greenwire*, 8/8/12; and *Greenwire*, 7/6, 7/12, 7/13 and 8/9/12

New Invasive Species Bill Introduced

In late May the *Invasive Fish and Wildlife Prevention Act of 2012* (H.R. 5864) was introduced by Rep. Louise Slaughter (D/NY), and a bipartisan group of nine co-sponsors. The proposed legislation would strengthen the U.S. Fish and Wildlife Service's (USFWS) ability to designate animals as "injurious," which cannot be imported or shipped between states without a permit. It would also empower the USFWS to become proactive rather than reactive in its listing and restriction process, and stop harmful invasive fish and wildlife from ever arriving at U.S. shores. "If this legislation had been introduced decades ago, species like bighead and silver carp would have been banned before the first shipment," said Jennifer Nalbone, *Great Lakes United*. "We have a lesson to learn from the Asian carp crisis; it's time to put an updated, proactive approach in place. Our best defense is to screen out potential invaders from imports in the first place," she said.

For years, the federal government has come under sharp criticism for allowing the import of invasive animal species that cause damage, are a burden to taxpayers, or present safety or health threats. As a leading import market, the U.S. receives hundreds of millions of live non-native animals each year. Under the current law, it takes an average of four years for the federal government to stop the importation of potentially harmful wildlife. During this time period, an animal can continue to be imported, potentially entering U.S. ecosystems, where it can spread widely, crowd out native wildlife, fundamentally alter natural systems, and spread infectious pathogens and harmful parasites.

The proposed legislation would implement a new regulatory process to more rapidly evaluate risks of importing non-native wildlife, and restrict those species that pose serious risks before they are imported to the U.S. It would create a new USFWS screening system within six years, while immediately giving the agency greater flexibility and authority to make science-based decisions regarding prohibiting or restricting live animals in trade. The USFWS also would get emergency authority to respond to the animal and human health threats posed by the live animal trade, a known potential vector for pathogens such as the West Nile and monkeypox viruses.

"The existing 112-year-old regulatory process is very slow and utterly inadequate

for the massive trade of live wild animals that is occurring in the 21st Century. It's like continuing to use a musket in the age of unmanned drones," said Peter Jenkins, spokesperson for the *National Environmental Coalition on Invasive Species*. "The listing of a damaging, non-native species often occurs after the species has either escaped or been released and become established, and this proves extremely costly for both taxpayers and ecosystems."

"Representative Slaughter's action provides a critical opportunity for Congress to close the loophole that allowed harmful invasive species like Asian carp, Burmese python, and red lionfish to enter the country," said Dr. Bruce Stein of the *National Wildlife Federation*. "Enacting this bill would be one of the most significant policy advances we can make to prevent future harmful invasions." A fact sheet on the economic impact of imported invasive species and diseases can be found at: http://www.glu.org/en/system/files/Factsheet_necis_economics_final.pdf.

Source: *Great Lake United News Release*, 5/31/12

Restoring the Mississippi River Delta

During last year's epic flooding, the U.S Army Corps of Engineers (Corps) opened Mississippi River spillways upriver of New Orleans and Baton Rouge to divert water away from the two cities. One of those spillways, the Bonnet Carré, redirected 10 to 20 percent of the river's floodwater into Lake Pontchartrain. While the diversion mitigated the havoc created by the flood, it also provided scientists with an opportunity to conduct research on land restoration in the Mississippi Delta as the Bonnet Carré's floodwater left behind huge dunes of sand. The research indicated that well-placed floodwater diversions can add significant amounts of land to the disappearing delta. A report on the research was published in late July in a *Nature Geoscience* letter.

Our study "demonstrate that there's a strong feasibility or potential to build new landscape in Louisiana," said Jeffrey A. Nittrouer, a geologist at the University of Illinois and the lead author of the letter. He said the recent use of the Bonnet Carré spillway showed that by choosing the right place to build a diversion in the Mississippi and opening it at the right time, planners could build up a substantial amount of sediment in the delta.

Much of the Mississippi River Delta is sinking since sands settle lower as they compact over time and the earth's crust warps. At the same time, the wetlands are being washed away by the sea – a point underlined when Hurricane Katrina demolished much of Louisiana's marshland in 2005. Sediments that once washed over the delta during floods, naturally restoring wetlands, are now often blocked by upstream dams and levees and other human activity on the river. Past research on the best way to restore the wetlands, or at least to combat their disappearance, had generally been grim. A study published in 2009 in *Nature Geoscience* concluded that the Mississippi River did not have enough sand to combat land loss, regardless of human impact on the river system. "If you look at the budget of sediments versus the amount of space being created by subsidence and increased sea level rise, there's not enough sediment in the system to fill that space," said Harry Roberts, a geologist at Louisiana State University and one of the two authors of the 2009 study.

But Roberts now suggests that all is not lost. "You can't save it all," but the recent study points to "encouraging" ways to save some of it, he said. In the current study, the researchers looked at the shape and composition of the Mississippi as it leads up to the spillway – its substrate and depth, the curvature of its bends and the sheerness of its walls and banks. They also compared the volume of sand left behind after the Bonnet Carré spillway dried out to the amount of floodwater that passed through during the diversion. The results indicate that by putting a diversion in a place with similar mechanics to those of the Bonnet Carré and only opening it during floods – "when the river gets very energetic" – a lot of land can be created in the delta, Nittrouer said. "As the results came through, we began realizing just how efficient this particular structure is for building sediment," he said. While the Bonnet Carré spillway skimmed off only the top 10 to 15 percent of the water column moving down the Mississippi, Nittrouer and his colleagues estimate that 31 to 46 percent of the sand in the river ended up in the spillway. Roberts said that people invested in the delta could harness research like Nittrouer's to find strategies for shoring up land. "Picking the right position to get the most out of every diversion that we establish is really important."

Dune field in the Bonnet Carré Spillway left behind by the 2011 Mississippi River diversion - New York Times Photo.

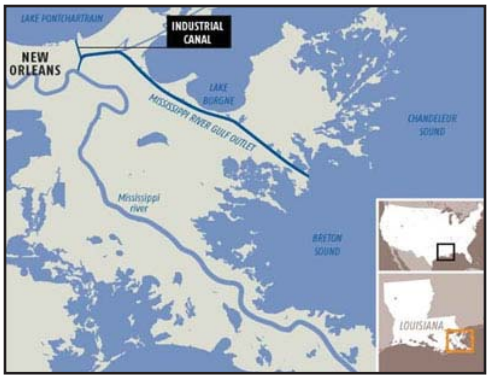
Sources: Kelly Slivka, *New York Times*, 7/25/12; ; and *Greenwire*, 7/26/12

Lower Mississippi River Restoration Plans

In late July, the U.S. Army Corps of Engineers (Corps) presented a portfolio of wetland-restoration projects that it says should mitigate the impact of building levees in Louisiana after Hurricane Katrina. The agency did not say how much the work would cost, but planners said earlier this year that they expect to spend about $252 million on restoration projects that stem from the construction of the 160-mile levee system. The overall plan to restore 885 acres of wetlands includes projects chosen from 400 possible mitigation sites. Some of these projects include filling abandoned oil-field canals in the Jean Lafitte National Historical Park and Preserve and restoring wetlands in a pond along Bayou Segnette and restoration of 643 acres of bottomland hardwood wetlands and swamp at Lake Boeuf, near Raceland in Lafourche Parish.

The mitigation plan also will eventually include restoration of wetlands in privately owned "mitigation banks," which will compensate for habitat damage on the protected side of levees. The mitigation bank projects will involve the Corps buying "credits" from an authorized bank located within the West Bank levee area. The Corps will issue a request for proposals to buy credits from the banks equivalent to the acreage it determines is needed to be rebuilt. See the following article for more information on mitigation banks.

The Corps also has completed a $2.9 billion plan to restore damage caused by the now-closed Mississippi River-Gulf Outlet (MR-GO) navigation channel, but recommended no action be taken on the plan at this time because the state refuses to pay 35 percent of the cost. The MR-GO restoration plan would repair damage to wetlands caused by the eroding navigation channel. The recommendation also calls for delaying



Location Maps for MR-GO Project.

construction of a diversion of freshwater and sediment from the Mississippi River into the Central Wetlands Unit in New Orleans and St. Bernard Parish, and into Lake Borgne, until further study of its impacts can be completed. Corps commander Lt. Gen. Thomas Bostick also concluded that if worst-case predictions of future sea level rise driven by global warming are accurate, the later stages of the project might need to be cancelled. This may be the first time that a recent internal Corps requirement to consider climate change-related sea level rise in approving water-related projects has the potential of cancelling portions of a project.

Garret Graves, chairman of Louisiana's *Coastal Protection and Restoration Authority*, attacked the Corps decision to not go forward, saying that a Congressional appropriations bill approved in the aftermath of Hurricane Katrina that ordered the deauthorization of the MR-GO required the federal government to pick up the full restoration cost. He said the intent of the legislation, including that all work authorized "shall be performed at full federal expense," was explained by U.S. Sen. David Vitter (R/LA) in the *Congressional Record* of Oct. 4, 2007. "If we were to sign on to the state paying over $1 billion, which would be the 35 percent cost share, the governor and legislature would skin me, and appropriately so," Graves said. "My expectation is that we're going to have to let the courts teach the Corps of Engineers phonics."

Col. Ed Fleming, commander of the Corps' New Orleans District, said the federal law was clear in requiring the federal government to pay for the restoration study, but that a 1986 law governing water projects requires the 65-35 federal-state cost share. A wild card in the money fight might be the result of a lawsuit filed by St. Bernard Parish and private landowners in the U.S. Court of Federal Claims in Washington, D.C., that argues the Corps' construction of the MR-GO and its failure to maintain the navigation channel affected the value of property adjacent to the channel. Part of the money from any settlement of the suit could be used as matching funds for the restoration projects, parish officials have said. State officials and environmental groups may also ask Congress to require the Corps to pay the full cost of the restoration projects in future water project legislation, said John Lopez, executive director of the *Lake Pontchartrain Basin Authority*.

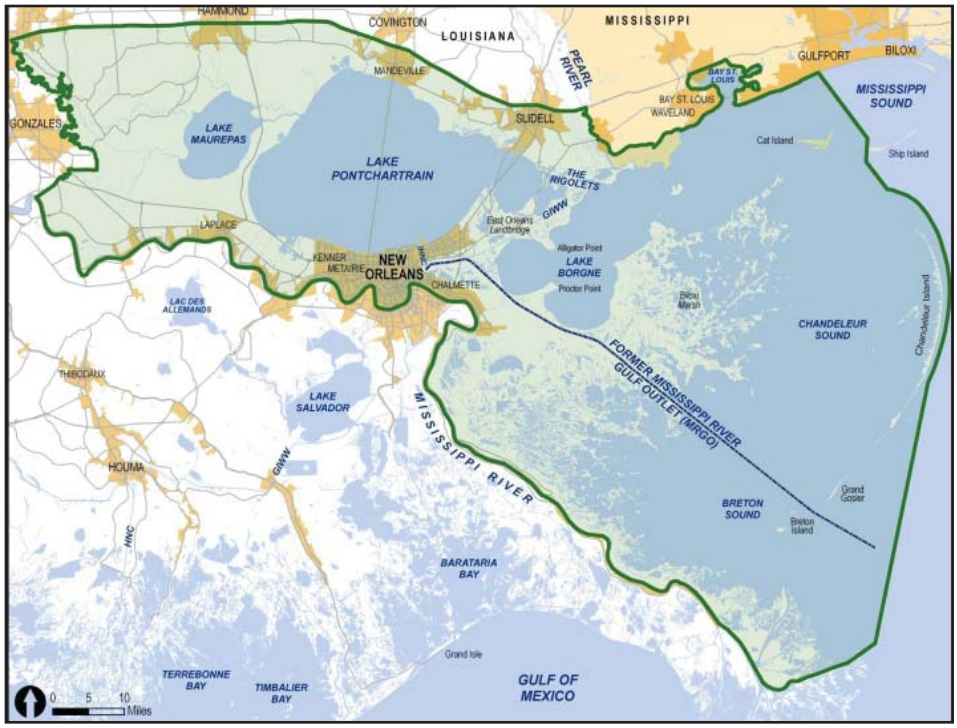
Graves said the state also objects to the delay in deciding where to locate the freshwater and sediment diversion. "The diversion is fundamental to the long-term success and sustainability of the MR-GO restoration," he said. Graves said the state also believes the restoration plan should include more projects throughout the area affected by the increased saltwater carried by the MR-GO. The report says the salinity affected areas as far away as the western edges of Lake Pontchartrain and Lake Maurepas.

The report recommends that the project be built in three tiers, with the first tier costing $1.3 billion. The second and third tiers would require additional research before being implemented. Fleming said the delay in approving the second and third tiers was needed to address concerns raised during public hearings in Louisiana and Mississippi. Corps officials also said that additional money would need to be appropriated by Congress to conduct that and other studies needed to begin construction. The exact amount needed was not known, but the state would have to pay 25 percent of those costs as well, Ken Holder, a Corps spokesman, said.

Tier 1 includes 21 features which are not dependent on the diversion, including 11 shoreline protection projects, one ridge restoration project, 8 wetlands restoration projects and a recreation feature. The state would be required to pay half the cost of the recreation feature. Also included would be the planting of 5.8 miles of artificial oyster reef on the Chandeleur Sound side of the Biloxi Marsh.

The Tier 2 projects, which would cost $325 million, are dependent on reduced salinity, but may be sustainable without the freshwater diversion. Further analysis is needed, however, before they will be cleared for construction. Included are several patches of the Central Wetlands Unit adjacent to the Lower 9th Ward in New Orleans, where a cypress forest would be reintroduced.

The Tier 3 projects would cost about $1 billion, plus the cost of building the diversion. The diversion, authorized under a different part of 2007 legislation governing the restoration project, would require a 25 percent state cost share, with Louisiana paying 80 percent and Mississippi paying 20 percent. The Mississippi contribution is related to the fact that freshwater from the diversion is expected to freshen oyster beds in Mississippi Sound. The cost of the diversion is not yet known. Tier 3 would include additional parts of the Central Wetlands Unit



Map of MR-GO Project Restoration Area.

in St. Bernard Parish east of the Paris Road Bridge, which will also require freshwater from the diversion. Also dependent on the diversion would be additional restoration of the Golden Triangle wetlands, parts of the East Orleans Landbridge bordering on Lake Pontchartrain, and a segment of the Biloxi Marsh bordering the southeastern edge of Lake Borgne.

Parts of the Tier 2 projects and much of the Tier 3 work may be dependent on the rate of sea level rise in the Lake Borgne area, according to the feasibility report. It follows new Corps rules in using three alternative forecasts of rising oceans, combined with estimates of how quickly local soils will sink. Those forecasts included the influence of the proposed Violet diversion, according to the feasibility report. The high rate in that forecast includes a sea level rise estimate with an upward adjustment to accommodate the potential rapid loss of ice from Antarctica and Greenland. Under that high scenario, the ground beneath wetlands in the project area would be sinking more quickly than sediment and organic material was being added, and the wetland plants would be unlikely to survive. As a result, the restoration projects would add only 11,387 acres of new land after 50 years, a third of the estimate from a low sea level rise scenario. "Results showed that as relative sea level rises, benefits of the federally identified plan diminish and would cease under the high relative sea level rise scenario," the Corps' report concluded.

Paul Kemp, a scientist with the *Louisiana Audubon Society* and a member of the *Southeast Louisiana Flood Protection Authority-East*, said the diversion is key to staving off the effects of sea level rise that Bostick said could cancel later parts of the project. "No restoration project built without linkage to a river diversion is sustainable under any likely sea level rise scenario," Kemp said. "The decision by Corps bureaucracy to artificially sever the short- from the long-term aspects (of the project) could condemn the project to futility, as they have noted. At best, it shows a lack of understanding of land loss processes at work in the Central Wetlands and MR-GO funnel." Copies of the feasibility report, and an accompanying environmental impact statement are available on the web at http://www.mrgo.gov/.

Meanwhile, as a side note, because of this year's drought, slowing currents in the lower Mississippi have allowed salt water from the Gulf of Mexico to advance up the River affecting drinking water sources in some Louisiana towns. The Corps of Engineers, in response, is moving forward with a project to stop this flow by building a$5.8 million, 1,700 ft. long sill at the bottom of the river to block the heavier salt water from seeping further north.

Sources: Mark Schleifstein, *New Orleans Times-Picayune*, 7/27 and 8/1/12; Richard Rainey, *New Orleans Times-Picayune*, 8/15/12; and *Greenwire*, 7/27, 8/2 and 8/16/12

Mitigation Banking Coming of Age?

A private-equity firm, Baltimore-based *Ecosystem Investment Partners* (EIP), has raised $181 million for wetland restoration, in what industry insiders are touting as a sign that for-profit ecosystem revival is coming of age. At issue is the business of mitigation banking – reviving degraded swamps, bogs, marshes and other habitat to generate "credits" that can be sold to developers. Such transactions are aimed at satisfying regulators who require developers who damage or destroy wetlands to restore or protect habitat elsewhere. Green groups question the ecological value of restored wetlands, and business analysts fret about mitigation banking's regulatory uncertainty and uneven demand. Mitigation banking has been around for some 30 years, but has been slow to catch on.

Fred Danforth, managing partner of EIP, discovered mitigation banking after retiring in 2002 from a Boston-based investment firm he helped found in 1987, *Capital Resource Partners*. A fly-fisherman and trustee of T*he Nature Conservancy* in Montana, Danforth waded into his first restoration project when he bought a 1,900-acre former ranch in the Blackfoot Valley of western Montana. The property's streams and wetlands were "unbelievably degraded" from decades of ranching and poor management, he said. So he and others went to work rebuilding 10,000 linear feet of streams to the correct depths and widths and restoring 260 acres of wetlands. "I became fascinated by the opportunity to do this important work and overlay a business model that could generate more conservation and more restoration at a real significant scale," he said.

Danforth assembled experts from the environmental and conservation worlds to form EIP and began fund raising. EIP beat its original $150 million target with large investments from typically risk-averse sources – a large university endowment, foundations and pensions, including $30 million from the *New Mexico Educational Retirement Board*, the state's teacher pension. "I think we're probably at a breakaway point, if you will, in terms of institutional capital understanding of this space," Danforth said. "It's good to see big-time institutional capital come into it, because we want to see the industry professionalized – not a lot of mom and pops" said George Howard, co-founder and president of Raleigh, N.C.-based *Restoration Systems*, which banks 25,000 acres of wetlands and 60 miles of waterways in half a dozen states. Randy Wilgis, president of both the *National Mitigation Banking Association* (NMBA) board and *Environmental Banc & Exchange*, a mitigation bank headquartered in Owings Mills, MD, said, "It's just exciting, and it validates the entire market."

Danforth's strategy involves acquiring large tracts of degraded but ecologically valuable lands in areas where development – and thus demand for offsetting credits – is expected to be high and regulations requiring wetland mitigation are strictly enforced. Danforth won't discuss specific figures, such as the costs of restoration, permitting and maintenance or the price of credits. Generally, EIP expects to acquire 10 to 15 properties priced between $5 million and $20 million and ranging in size from 1,000 to 10,000 acres, he said. The heart of wetland mitigation has traditionally been major highway projects, and that is expected to continue, but Danforth expects other projects are on the horizon. "If you think about pipelines and power lines and the siting of renewable energy – mining, oil and shale gas – all have significant impacts," he said.

Much of the recent growth for mitigation banking was spurred by the release in 2008 of new federal regulations governing mitigation banking that industry officials say brought clarity and predictability by laying out performance standards. But that same year brought the collapse of the real estate market and a corresponding plunge in demand for mitigation credits. This put many small mitigation banks out of business and forced even the largest industry players into a holding pattern. "It took a lot of the nonprofessionals out, which we welcome," Howard said. "You had developers jumping into it to make a quick pop."

The 2008 rules handed another gift to the industry: They indicated that mitigation banking was the preferred method for offsetting wetlands destruction, trumping both the do-it-yourself and in-lieu-fee options also available to developers. The Corps doesn't compile complete mitigation bank statistics

from all 38 of its districts. But Dave Urban, EIP's director of operations and past president of the NMBA, keeps an informal and incomplete tally of the number of federal bank applications approved: 10 in 2008, 68 in 2009, 78 in 2010, 86 in 2011 and 38 so far this year. "In 2009 and 2010, you just started seeing a flood of mitigation bank applications," Urban said. "Now I think you're seeing a lessening of application because, I think, people realize that in spite of a rule, the process is still balled up in local issues."

In 1989, President George H.W. Bush declared a "no net loss" policy toward wetlands. Enforcement by federal agencies then opened the door to mitigation banking by requiring that marshes and other wetlands destroyed had to be replaced with new ones either created or restored. A 1990 memorandum of agreement between the Corps and U.S. EPA followed that laid out guidelines for determining the type and level of mitigation necessary. Regulations developed in 2008 require developers confronting wetlands to strive to avoid destruction and then to minimize impacts. If destruction is "unavoidable," rules say, builders can look to mitigation.

But mitigation bankers say there are still regulatory uncertainties. One of the biggest headaches, they say, involves uncertainty over where a bank must be located to service a particular project. Regulations call for a "watershed approach," meaning banks must be within the same watershed. The methods used to define a watershed can be inconsistent and vary among the 38 Corps districts, according to the NMBA. The industry is also pushing legislation sponsored by Sen. Mary Landrieu (D/LA) in the Senate (S. 664) and Rep. Charles Boustany (R/LA) in the House (H.R. 2058) to allow the sale of mitigation credits to be treated as capital gains for tax purposes, but neither bill has gained traction.

But distrust still lingers among some environmentalists who note the poor early track record of the mitigation banking industry and argue that banking can, without proper oversight, encourage wetland destruction. "I think banking has a lot of potential promise, but the combination of the profit motive and the science just all have a tendency to work against genuine replacement of the wetland functions," said Jan Goldman-Carter, wetlands and water resources counsel at the *National Wildlife Federation*. "The bank is essentially paying for wetlands destruction somewhere else."

Urban, an environmental engineer and former Corps permit officer, says the cure to poor oversight is greater transparency. Boundaries of watersheds and siting of mitigation banks are dependent on factors ranging from flora and fauna to soil types and are not always conducive to simple rules. "There's some people who advocate simple solutions, but simple solutions are not always the right solutions," he said. "It keeps all boiling down to transparency," EIP's Urban added. "We want the administrative process to be transparent and to include people like us who have expertise in this world who could be helpful." As noted earlier, part of the lower Mississippi River restoration plan (previous article) includes a provisions for mitigation banking.

Source: Paul Quinlan, *Greenwire*, 7/17/12

EPA's Yazoo Pump Project Veto Upheld on Appeal

In early March, the U.S. Court of Appeals for the Fifth Circuit upheld the 2011 ruling of a Mississippi district court, affirming the EPA's right to veto the Yazoo Backwater Project, or Yazoo Pump Project under § 404(c) of the Clean Water Act (CWA). In reaching its ruling, the court disagreed with the Board of Mississippi Levee Commissioners' (Levee Board) argument that the project should be exempt from the EPA's veto power under § 404(r) of the CWA. Section 404(r) exempts Congressionally authorized federal projects from § 404 regulation so long as the implementing agency conducts an adequate Environmental Impact Statement (EIS), as required by the National Environmental Policy Act, and submits the EIS to Congress before the project begins and before funding for the project is authorized. According to the Levee Board, the Yazoo Project met these requirements.

The Yazoo Project came about in 1941 after Congress passed the Flood Control Act of 1928 to ease flooding through levee construction. Utilizing this Act, the Mississippi River Commission of 1941 prepared a report suggesting the construction of a levee along the west bank of the Yazoo River in order to prevent flooding in the Yazoo Backwater Area. That backwater, located in the Mississippi River Delta between the Mississippi and Yazoo Rivers, consists of 630,000 acres of wetlands, farmlands, and forests. The project went through several modifications, and its final layout focused on a hydraulic pumping station for the purpose of pumping any potential flood water from the Mississippi River out of the backwater area. The project also included plans for 60,000 acres of land to be set aside for agriculture and hardwood growth. The case at hand, however, focuses only on construction of the hydraulic pump station.

The project stalled several times and then in 2008, the EPA exercised its veto authority under §404(c) of the CWA and vetoed the project on grounds that it would destroy wetlands, water quality, and habitat for threatened species. The Levee Board appealed the veto in March 2011. The lower court sided with EPA, finding that the Project did not meet the necessary requirements for exemption. The Levee Board appealed, and now the Fifth Circuit affirmed the lower court's finding that no final EIS was submitted to Congress.

So the Yazoo Pump Project may have finally run its course. It is unclear at this time what alternative flood control measures the Levee Board may choose to pursue for the Yazoo Backwater Area.

Source: Barton Norfleet, *Water Log* 32:2, 5/2/12

Ohio River Pollution Credit Trading Agreement

Indiana, Kentucky and Ohio state officials agreed in early August to launch a pilot program that aims to reduce water pollution in the Ohio River by allowing trading of pollution credits between industrial facilities and farmers. It is the largest and most ambitious yet of about two dozen fledgling programs around the U.S. attempting to take a market-based approach to improving water quality and achieving the Clean Water Act's goal of returning the nation's waters to swimmable, fishable condition.

Architects of the *Ohio River Basin Water Quality Trading Project* – essentially an interstate cap-and-trade system for water pollution – say it will improve water quality more efficiently than simple regulatory mandates would. Backers of the concept, including many – but certainly not all – environmentalists, hope similar trading programs can be used to fight nutrient pollution in the Mississippi River Basin that feeds the Gulf of Mexico "dead zone".

The basic mechanism of the agreement is modeled after the successful cap-and-trade program implemented in the U.S. in the 1990s to reduce sulfur dioxide emissions

from smokestacks that contributed to acid rain. The theory is that farmers in the three states could implement relatively low-cost land management techniques to reduce fertilizer- and manure-laden runoff. Those reductions would generate "credits" that farmers could then sell to industrial facilities for which comparably effective pollution reduction technologies would be considerably more expensive to install. "This trading plan is a win-win for utility companies, agriculture and, ultimately, consumers and the environment," said *American Farmland Trust* President Jon Scholl. The plan was developed by the *Electric Power Research Institute*, a major electric utility coalition.

Work on the project began in 2009 with $1.3 million in grants from U.S. EPA and the Department of Agriculture's Natural Resources Conservation Service as well as $700,000 in matching funds from program partners. Initial trades are expected to take place in 16 counties, and should involve 30 farmers implementing agricultural "conservation best management practices" on up to 20,000 acres. The water quality credits from these operations are expected to be purchased by an initial three power plants. From this planned pilot beginning, nutrient reductions have been calculated to total approximately 45,000 pounds of nitrogen and 15,000 pounds of phosphorus annually. The organizers' goal for success is to eventually establish an eight-state trading area in the Ohio River Basin with farmers creating enough credits for 46 power plants, thousands of wastewater treatment facilities and other industries purchasing credits from about 230,000 farmers. The states targeted are Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia and West Virginia.

Source: Paul Quinlan, *Greenwire*, 8/9/12; Rich Keller, *Ag Professional*, 8/14/12 and *Greenwire*, 5/8/12

Ogallala Aquifer Could be Depleted in 30 Years

A new study looking at the Ogallala Aquifer beneath the Great Plains and California's Central Valley Aquifer suggests that areas of Texas and Kansas are drawing groundwater at an unsustainable rate, with slightly more than one-third of the southern Great Plains at risk of tapping out its sources within the next 30 years. Those are among the conclusions of the study published in late May in the *Proceedings of the National Academy of Sciences*. Concerns over the loss of groundwater in these areas aren't new. But the researchers say the tools they've used build a detailed picture of these critical water sources that could allow for a more nuanced approach to local water management.

The Ogallala Aquifer stretches north along the Texas-New Mexico border through the Oklahoma panhandle and western Kansas and includes virtually all of Nebraska and eastern Wyoming. In Texas the recent drought led to the aquifer's biggest decline in 25 years, according to new data from the *High Plains Underground Water Conservation District*. That 16-county water district, stretching across the Texas Panhandle, reported that its wells showed an average decline of 2.56 feet in the aquifer last year, the third-largest decline in the district's 61-year history and three times the average rate in the last 10 years. In Oklahoma, a second water district – the eight-county *North Plains Groundwater Conservation District* – registered a similar large decline in the Ogallala, finding that the average drop was 2.9 feet last year. "You never want to pull that much down, but under the circumstances, I think we're probably coming out pretty well," said Tommy Fondren, who rents out his land for cotton farming. The numbers come as farmers battle new regulations that restrict the amount of water they can take from the aquifer, arguing that their livelihoods will be negatively affected by the limitations.

Water specialists suggest that the ability to combine detailed well measurements with satellite data could open the door to developing region wide, even multistate planning for groundwater use – an approach that currently is applied to surface water. Moreover, careful tracking of aquifers is likely to become more critical as global warming's effects become more pronounced, particularly during the second half of this century, the team suggests.

A number of recent studies have highlighted the problem of groundwater depletion globally for irrigation, notes Bridget Scanlon, head of the *Sustainable Water Resources Program* at the University of Texas at Austin and the recent study's lead author. "We wanted to look in more detail at the two areas where there has been the most groundwater depletion in the U.S. and try to better understand what is going on so that we could see if it's possible to manage them more sustainably or reduce the depletion," she said.

Some of the biggest surprises involved the Ogallala Aquifer. Conventional wisdom has held that from north to south, the aquifer represents "fossil" water from the melting of the continent's glaciers at the end of the last Ice Age. And in the central and southern high plains, that remains true, and this is where groundwater losses have been most pronounced. But the researchers found that in the northern high plains, groundwater levels either have been holding relatively steady or have increased between 1950 and 2007 – fed by rain and seepage from lakes that come and go with the rainy season and snow melt. Some water also finds its way underground from the Platte (NE), Republican (NE), and Arkansas Rivers (CO and OK). The water percolates through soils that are coarser than soils in the central and southern high plains.

In Nebraska this summer Department of Natural Resources officials ordered more than 1,000 of the state's farmers to stop irrigating their crops because of low water levels in the rivers from which they draw, but did not take similar action for farmers who draw water from wells. More than 90 percent of irrigation systems in the state take water from wells bored into the Ogallala Aquifer. Other big agriculture states, like Iowa and Illinois, are largely dependent on rainfall rather than irrigation.

Overall, the Ogallala Aquifer has lost an average of 5.3 cubic kilometers of water a year between the 1950s and 2007 – a rate that increased to an average of 7 cubic kilometers of water between 1987 and 2007. About 4 percent of the land area above the aquifer, which falls in parts of Kansas and Texas, is responsible for about a third of its water losses, the team estimated. For the southern high plains in particular, if consumption continues into the future as it did between 1997 and 2007, the aquifer there will be unable to support irrigation for about 35 percent of the region within the next 30 years, the researchers estimate.

In the high plains individual water districts in each state may have different approaches to management, notes Ken Rainwater, director of the *Water Resources Center* at Texas Tech University in Lubbock. Some districts have set up mandatory conservation schemes; others take voluntary guidelines. These agencies are straddling the divide between private ownership of land, and by extension the water under it, and a growing need to manage what often turns out to be a shared resource. Dr. Christian-Smith, speaking in reference to the Central Valley's King Basin (California), said the first step in any management system is to gather information on water depletion and map the aquifer's dis-

tribution. When the agency did, it found that the aquifer was connected to another aquifer that the city of Fresno draws on for some of its water. The city's drawdown was pulling water away from farmlands elsewhere in the basin. For the high plains, efforts may depend on how willing landowners are to cede decisions to an outside regulatory agency.

Just as oil producers do with petroleum, landowners growing irrigated crops can get a tax break from the federal government to help offset the effect lower groundwater levels have on their property value, Dr. Rainwater explains. If multistate compacts, similar to those governing some surface waters, are to emerge, these are some of the issues with which the compact's architects will have to grapple.

Sources: Pete Spotts, *Christian Science Monitor*, 5/30/12; Kate Galbraith, *Texas Tribune*, 7/3/12; Karl Plume, *Reuters*, 7/16/12; and *Greenwire*, 5/31, 7/5 and 7/17/12

Mining Issues

Mountaintop removal is harming water quality far downstream from where active mining buries creeks beneath valley fill waste dumps, according to a new report published in July in the journal *Environmental Science and Technology* by researchers at Duke and Baylor universities. The new study was conducted using satellite images and computer data. The scientists created maps so they could examine the scope of mining and the degree of water quality impairment in a 7,500-square-mile area of the Southern West Virginia coalfields. Numerous previous studies have linked runoff of various pollutants from strip-mining to impaired water quality, measured in part through reduced diversity of aquatic insects. Further studies have shown this impairment is related to high levels of electrical conductivity, caused by sulfates and other pollutants.

Duke aquatic ecologist Emily Bernhardt and her co-authors pinpointed levels of sulfates and conductivity that leave streams impaired, and then calculated the extent to which streams in the mining region exceed those pollution levels or were impacted by a percentage of mining linked to impairment. Among other things, their analysis found that 22 percent of the streams in the region drain areas with mining extensive enough to leave the water quality there impaired. The study also reported that, while nearby valley fills had buried 480 miles of streams in the study area, pollution runoff from mountaintop removal likely stretches four to six times that far. "These analyses suggest that the many individual mines in the region are having additive effects and that more attention must be paid to the cumulative impacts of surface coal mining in this region," the study concluded.

Since taking office, the Obama administration through EPA guidance has sought to reduce the environmental impacts of mountaintop removal, and has expressed serious concerns about the growing body of studies that show residents near such mining are at greater risk of serious health impacts, including birth defects and cancer. West Virginia political leaders have opposed the Obama administration's efforts, but have offered no plans of their own to reduce mining's environmental impacts or investigate the public health concerns.

But the *West Virginia Environmental Quality Board* (EQB) recently called on state regulators to include in a mine permit similar standards to those in the EPA guidance. "We're glad to see the E*nvironmental Quality Board* take a tough stance to ensure the coal industry has to follow the rule of the law," said Jim Sconyers, head of West Virginia's *Sierra Club* chapter. The West Virginia board, an independent panel of experts appointed by the governor, said the state Department of Environmental Protection (WVDEP) permit for an *Arch Coal Inc.* mountaintop-removal mine in Monongahela County must include water pollution limits based on a review of potential problems and conductivity standards.

Conductivity is not in itself a pollutant but is seen as a barometer of aquatic health in Appalachia. The board's latest ruling comes amid litigation from WVDEP, which is resisting the standards, and a state judge's request for members to beef up their justifications. "The board finds that a growing body of science has demonstrated that discharges from surface coal mines in Appalachia are strongly correlated with and cause increased levels of conductivity, sulfate, and [total dissolved solids] in water bodies downstream from mines," the EQB said.

Meanwhile, a federal court ruling in late July struck down U.S. EPA's water pollution guidance document for Appalachian coal mining. U.S. District Judge Reggie Walton for the District of Columbia said last year's guidance, which included first-ever limits for conductivity in waters near strip mines, amounted to illegal regulatory action. He also said EPA was attempting to usurp the federal-state permitting and oversight process for such mines.

WVDEP attorney Jennifer Hughes said department leaders were considering their options, including potentially taking the EQB back to court over its demands for the mine permit. Last year, Gov. Earl Ray Tomblin (D) replaced two members of the EQB in a move environmentalists said was meant to sway the outcome in favor of coal companies. Tomblin praised Judge Walton's ruling. "As the court correctly recognized, the West Virginia DEP knows what's best for West Virginia, not the federal government," he said. Both West Virginia and Kentucky joined the *National Mining Association* in suing EPA over the guidance.

But the EQB ruling shows Tomblin and his political appointees that they are not only fighting the federal government, but also an independent state board, environmentalists say. They say that bodes well for the ultimate victory of strong protections that include conductivity requirements. "It is essential for both EPA and state agencies charged with protecting communities to follow the science, and they must do everything possible under the law to prevent the irreversible destruction of mountaintop removal mining, before more mountains and streams are destroyed forever," *Earthjustice* attorney Emma Cheuse said.

EPA, which is likely to appeal Walton's ruling and a similar one from last year, said it would not back down from its increased oversight of Appalachian mining operations. "We will continue to protect public health and water quality for Appalachian communities under the law," the agency said in a statement. But West Virginia shows no signs of backing down, either. Lawmakers there recently enacted a new law to clarify the state's water quality standards. WVDEP is considering a rule to specify that mining operations must follow only limits in their permit and not necessarily all the state's water quality standards.

Meanwhile in late July, an environmental group, *Radical Action for Mountain People's Survival* (RAMPS) was faced with the need to raise half-a-million dollars in order to bail out activists who faced misdemeanor charges after protesting at a coal site. More than 50 people from the RAMPS marched into the *Patriot Coal Hobet Mining* property and protested for three hours. Twenty were charged with trespassing and obstructing when they refused to leave. Matthew Louis-Rosenberg, a spokesman for the group, said state police

cooperated with miners to quash a nonviolent demonstration aimed at protecting the environment from the coal industry. This time, the protesters hung signs from trees and an explosives truck, while in previous years they have camped on treetops to stop mountaintop-removal operations.

He said the bail for the activists' release – $25,000 per person – was unreasonable considering that the protesters went limp rather than resist the police when told to leave and that supporters of the coal company were allowed to remain in the area. "They were not actively refusing [to leave], but they were forcing themselves to be carried or dragged," he said. More than 30 protesters who left the site had to walk about four hours to the main road where shuttles were waiting, he said. He said shuttles had arranged to pick up the protesters, but troopers blocked them from entering the area. Meanwhile, he said troopers allowed miners and counter protesters into the area to intimidate them. State Police spokesman Sgt. Michael Baylous said that claim is untrue and State Police would have arrested anyone trespassing or causing a disturbance.

In Virginia, several environmental groups in late July filed a federal lawsuit against *Penn Virginia Resource Partners LP* over pollution concerns at former mountaintop-removal mining sites. The groups – including the *Sierra Club*, *Appalachian Voices* and *Southern Appalachian Mountain Stewards* – say Pennsylvania-based *Penn Virginia* is liable for Clean Water Act violations at 14 sites on seven former surface mines in Wise County, VA. They filed their complaint in U.S. District Court for Virginia's Western District in Roanoke. "*Penn Virginia* has for decades been buying up land and leasing it to coal companies that have been polluting our streams, blowing up our mountains, and destroying our communities and culture," Matt Helper, a S*outhern Appalachian Mountain Stewards* organizer, said in a statement. Company spokesman Stephen Milbourne said, "*Penn Virginia Resource Partners* does not comment on pending litigation. It is also our policy to operate all PVR business in full compliance with all applicable laws and regulations."

In Ohio, the *Murray Energy Corp.* has pleaded guilty to violating the Clean Water Act, polluting a stream and causing a large fish kill, according to court documents filed in early July. The proposed settlement filed in U.S. District Court for the Southern District of Ohio could cost Murray more than $7 million in fines and equipment upgrades at subsidiary *Ohio Valley Coal Co.'s* Powhatan No. 6 mine in Belmont County. Court documents say the mine discharged polluted water into nearby waterways in 2008. They say "wastewater pumped via the decant pipe from the impoundment to Captina Creek was sufficiently polluted to alter the natural color of Captina Creek to black."

In another incident in 2010, there was a pipeline rupture from an *American Energy Corp.* preparation plant, putting thousands of gallons of slurry into Captina Creek. Court documents say water bypassed treatment systems and discolored the creek for more than a mile. Captina – a tributary of the Ohio River – is one of the highest-quality streams in the state and includes sensitive fish species, court documents say. Subject to approval by the court, the settlement includes a $500,000 federal fine, $87,000 restitution to cover studies by the Ohio Environmental Protection Agency and a $368,000 fine for violations of Ohio law. The company also agreed to a one-year probation.

In Illinois, faced with opposition from groups that said a proposed coal mine would create water problems for a nearby village and local wildlife, the Department of Natural Resources (IDNR) has denied the mine's permit application. *Capital Resources Development Co.* proposed to operate the 600-acre surface mine in an Illinois River floodplain near the 150-person town of Banner and the Rice Lake State Fish and Wildlife Area. According to the *Sierra Club*, which worked to block the permit, the mine would threaten nesting ospreys, bald eagles and short-eared owls. Critics also said the mine could harm the structural integrity of the local wastewater treatment plant. "Banner could have lost its wells and water if the coal mine had happened," Mayor Ken Fuller said. "I was really scared. My town could have died." *Capital Resources Development* declined to comment on the decision.

Cindy Skrukrud, of the *Sierra Club of Illinois*, said she hopes the permit's denial "heralds a new chapter in how our state sites new mines." "It is my hope that in future mining issues the IDNR will heed concerns raised by ordinary citizens earlier in the review process," she said. While serving as lieutenant governor in 2005, current Illinois Gov. Pat Quinn warned the mine could pollute and cut into the area's tourism potential. He launched an online petition drive against the project and urged the mine's developers to look elsewhere, insisting "nature-based tourism is booming in Illinois, but this strip mine plan sends tourists and eagles packing."

Sources Ken Ward Jr., *Charleston Gazette*, 7/26/12; *E&ENews PM*, 5/3 and 7/31/12; Travis Crum, *Charleston Gazette*, 7/30/12; *AP/CBS News*, 7/31/12; Manuel Quinones, *Greenwire*, 7/19, 7/31 and 8/1/12; and *Greenwire*, 7/27, 7/31 and 8/1/12

Freshwater Species Going Extinct Faster than Birds and Mammals

Freshwater fish in North America are going extinct at a rate faster than birds and mammals, according to a new study published in *BioScience* by Noel Burkhead of the U.S. Geological Survey. Freshwater fish species have vanished from lakes and rivers much faster since 1898 than in previous centuries, and if the trend continues, dozens more species could go extinct by 2050, according to the study. Burkhead determined current and future extinction rates using data from various studies, including a survey he helped lead in 2008 for the *American Fisheries Society*.

Between 1898 and 2006, 57 fish species went extinct, and three distinct populations were removed from North America, according to the study. Extinctions occur as a natural part of evolution, but they typically occur at a frequency of about one species every 3 million years. The modern average extinction rate of 3.2 percent of North American fish species a year is 877 times greater than the background rate, the study said. That rate is the highest of any vertebrate group, including mammals and birds. "I was surprised by the modern-to-background ratio," said Burkhead, who is considered a leading fish ecologist and biologist. "I had no idea it would be that high." Today, there are 1,212 described fish species in Canada, the United States and Mexico. More species are likely to be discovered and described each year, but if the current extinction rate continues, Burkhead calculates an additional 53 to 86 species will be lost by 2050.

Burkhead said that estimate is conservative because he used the average rate since modern extinctions began in the 1900s, rather than accelerating the rate by looking at data only since the 1950s. About 25 percent of the extinct fish species were added after 1989. Burkhead noted that habitat destruction and invasive species are two leading causes. "I think it's fair to say ... we've not been the wisest stewards of aquatic resources," he said.

The study's findings are "a little disheartening," said Steve Herrington, the director of freshwater conservation for *The Nature Conservancy* in Florida. But more importantly, Herrington said, he views the study as a call to action. "We have the tools to manage things better, to protect, conserve and restore habitat, which is the key underlying factor," he said. Jamie Glasgow, the science director of *Wild Fish Conservancy*, said current management practices have not quelled the loss of freshwater organisms, which she called the "bellwethers for the health of our environment." "More than ever, responsible resource management will require a significant retooling that embraces the precautionary principle," Glasgow said.

Source: Laura Petersen, *Greenwire*, 8/10/12

Diamond Darter Proposed for ESA Listing

The U.S. Fish and Wildlife Service (USFWS) in late July proposed listing the rare diamond darter as endangered under the Endangered Species Act. The announcement also proposed designating more than 100 miles of stream and several spots in Kentucky and West Virginia as critical habitat for the small fish, including in Clay and Kanawha counties. The darter, said to have diamond-shaped markings, is only found in West Virginia's Elk River. It was thought to be extinct but was rediscovered in 1980, according to biologist Tierra Curry with the *Center for Biological Diversity* (CBD). Conservation groups such as CBD have been demanding protections for the diamond darter for years, citing what they say are threats from coal mining, sewage and gas drilling. The USFWS agreed to speed up its review as part of a settlement last year.

"The Elk River is one of the most ecologically diverse rivers in the country, supporting more than 100 species of fish and 30 species of mussels, but it's also one of the most threatened," Curry said in a statement. "Coal mining occurs throughout the entire Elk River watershed, and fracking is a rapidly emerging threat." The diamond darter was once found in five states, but it hasn't been seen in Ohio since 1899 and in Kentucky since 1929, Curry said. The USFWS is accepting public comments on its proposed listing until Sept. 24.

Diamond darter - Conservation Fisheries, Inc. Photo

Manuel Quinones, *Greenwire*, 7/26/12

Roundup Herbicide Toxic in the µg /L Range

New research published in July in the journal *Environmental Monitoring and Assessments* on the DNA-damaging effects of the popular herbicide *Roundup*® (or glyphosate) indicates that it can do significant harm to fish even after short-term, environmentally low concentration exposures in the parts per billion range (µg /L). Researchers studied the genotoxic effects of the herbicide on a species of catfish known as *Corydorasa paleatus*. When exposed to minute concentrations of *Roundup*® (at a concentration of 6.67 µg/L, corresponding to 3.20 µg/L glyphosate) for 3,6 and 9 days, the study showed a high rate of DNA damage for all treatment times, both for blood and hepatic cells.

The researchers concluded that for the low concentration used in this research, the herbicide shows potential genotoxic effects. Owing to the fact that glyphosate is now a ubiquitous contaminant in our environment, having been found in most U.S. air and rain samples tested, as well as being measured beyond the limit of quantification (higher than 2.5 µg/L) in 41% of 140 groundwater samples collected from Catalonia Spain, this new finding has profound implications for environmental and human health alike. With over 88,000 tons of the stuff used in the U.S. in 2007, according to the U.S. Geological Survey (USGS), and with an ever-expanding volume being applied to increasingly glyphosate-resistant GM crops (i.e. *Roundup® Ready*), the problem of exposure will likely only get worse in the future.

Monsanto, the originator of glyphosate and its most popular branded formulation, *Roundup*®, once marketed their herbicide "as safe as table salt," and claimed it was "highly biodegradable." Researchers say these claims have now been disproved. Like Agent Orange, another *Monsanto* co-creation (along with *Dow Chemicals*, and several other government contractors), this herbicide exhibits a broad range of biocidal (life-killing) properties. Of all the adverse health effects, researchers say the genotoxicity (DNA-damaging) of glyphosate is the most concerning, and the most consistently supported by the evidence. The researchers state that they have 16 studies on their database substantiating this connection alone, and these studies involve human cell line and animal research as well.

Source: Sayer Ji, *Wake Up World*, 7/24/12

USDA Voluntary Pollution Reduction Program

The U.S. Department of Agriculture (USDA) in mid-June announced the release of $8.5 million for 23 projects to reduce fertilizer runoff in the Mississippi River Basin. Natural Resources Conservation Service (NRCS) Chief Dave White said the funding brings his agency's three-year investment in the *Mississippi River Watershed Basin Initiative* to $190 million which includes a total of 143 conservation projects. Projects getting cash include wetland restorations and the planting of cover crops, buffer zones and filter strips that are designed to keep pollutants from washing off fields into the river, White said.

He emphasized that farmer participation in the initiative is "purely voluntary." But environmental groups are advocating ongoing litigation to force U.S. EPA to crack down on pollution. Environmental groups want federal regulators to force reductions in nutrient pollution by setting numeric limits and requiring pollution controls in the watershed – a plan opposed by agricultural and water utility industry groups. Asked about the litigation, White reiterated his support for voluntary programs. "We believe very strongly in a voluntary, incentive-based approach to conservation, and we believe everything we're doing here will help water quality," he said.

Farm runoff and treated urban sewage are the primary sources of nutrients that flow down the Mississippi River to the Gulf, triggering the annual formation of a sprawling low-oxygen zone (dead zone) stretching from Louisiana to Texas. Lack of dissolved oxygen can make waters uninhabitable for marine life. This year's dead zone, as measured in July, is the fourth-smallest since record-keeping began in 1985, according to a survey by scientists supported by the National Oceanic and Atmospheric Administration. This is largely attributed to the drought plaguing more than half the U.S. "The smaller area was expected because of drought conditions and the fact that nutrient output into the Gulf this spring approached near the 80-year record low," said Nancy

Rabalais, executive director of the *Louisiana Universities Marine Consortium*, which led the dead zone survey. This year's dead zone measures about 2,889 mi.^{2}, about the size of Delaware, scientists said

It is much smaller than last year, when flood conditions brought large amounts of nutrients to the Gulf of Mexico, resulting in a dead zone that covered 6,770 mi.^{2}, about the size of New Jersey. This year's smaller dead zone confirms the "strong relationship between the size of the hypoxic zone and the amount of fresh water and nutrients carried to the Gulf by the Mississippi River," Rabalais said in a statement. Still, this year's dead zone is larger than the 1,900 mi.^{2} goal identified by the *Gulf of Mexico/Mississippi River Watershed Nutrient Task Force* and threatens commercial and recreational fisheries. The smallest dead zone recorded to date measured 15 mi.^{2} in 1988, which was a record drought year. The largest dead zone was measured in 2002 at more than 8,400 mi.^{2}.

Sources: Paul Quinlan, *Greenwire*, 6/19 and 6/22/12; *ClimateWire*, 7/30/12; Laura Petersen, *Greenwire*, 7/30/12

Federal Farm Subsidies Cause Habitat Loss

Farmers converted more than 23 million acres of grasslands, wetlands and shrub lands to cropland between 2008 and 2011 in response to high commodity prices and large government subsidies, according to a new report by environmental groups. The study by the *Environmental Working Group* (EWG) and *Defenders of Wildlife* (DOW) found that nearly three-fourths of the converted land is in the following 11 states:

- Texas - 3.08 million acres
- South Dakota - 1.94 million
- Iowa - 1.51 million
- Nebraska - 1.50 million
- Oklahoma - 1.45 million
- Illinois - 1.40 million
- Minnesota - 1.34 million
- North Dakota - 1.31 million
- Missouri - 1.27 million
- Kansas - 1.20 million
- Wisconsin - 1.14 million

The environmental groups said the findings should be a "wake-up call" and warned that government subsidies are overturning conservation gains made in the past few decades, impairing water quality and threatening wildlife habitat. "What we're seeing is the consequence of a lot of good farmers playing by some very bad rules," Ken Cook, EWG's president, said. "You're incentivized by crop insurance ... to maximize the acreage you farm. And farmers are responding to that." Among the converted acres in the past several crop years, more than 8.4 million acres was for corn crops, 5.6 million for soybeans and 5.2 million for winter wheat.

The environmental groups said they used satellite data from the Department of Agriculture and mapping techniques that involved counting pixel values on the satellite images over time. The data show that the losses are still occurring despite federal conservation initiatives, including large-scale initiatives targeting critical species. The conversions are also affecting water quality by increasing the amount of fertilizers being applied to lands and eliminating buffers that filter farm runoff as it spills off fields, the groups said. The areas where conversions were greatest correlate strongly with those areas that received the greatest crop insurance subsidies from the government between 2008 and 2011, according to the study.

Scott Faber, EWG's vice president for government affairs, said crop insurance has removed risks from farming, inducing farmers to plant on otherwise marginal land. "When you provide a subsidy," Faber said, "many farmers are no longer responding to the market but are instead looking for ways to essentially farm the Treasury." The study's results are similar to a recent report by economists Daniel Sumner of the University of California, Davis, and Carl Zulauf of Ohio State University that found the availability of crop insurance encourages the planting of crops on "fields that would not otherwise be considered for that crop because of the potential for significant losses." USDA currently subsidizes on average 62 percent of crop insurance premiums.

Crop farmers suffering from this year's drought may still make out relatively well, due to the taxpayer-subsidized insurance program that Congress presently appears poised to augment. Farmers "are laughing all the way to the bank," said Bruce Babcock, an Iowa State University economist and a critic of the insurance program. "If the price goes up, you could end up better off than anticipated if you have a crop loss." He added, "I'm not saying this is anything illegal or immoral. It's just the way it is." The U.S. Department of Agriculture said 1,369 counties in 31 states – or 44 percent of those in the country – were designated disaster areas this year because of drought conditions

The U.S. Senate recently passed a bill that would cause the premiums of new farmers to drop, increase cotton growers' insurance and permit farmers to purchase a supplemental policy. The Congressional Budget Office indicates the changes in the Senate bill would cost an additional $5 billion over the next 10 years. In the House, the Agriculture Committee pushed forward a similar provision. Farmers have continually pointed to crop insurance as their No. 1 priority in the new farm bill, a five-year piece of legislation.

The EWG and DOW have urged Congress to reform crop insurance by tying subsidy eligibility to conservation criteria, limit subsidies, reject cuts to conservation programs and reform conservation programs to promote better collaboration. Current projections show that the crop insurance will cost the government about $90 billion over the next decade.

Sources: Amanda Peterka, *Greenwire*, 8/7/12; Mark Drajem and Alan Bjerga , *Bloomberg*, 7/26/12; Josephine Marcotty, *Star Tribune*, 8/6/12; and *Greenwire*, 7/27/12

Addressing Fracking Issues

A study released by the *National Research Council* (NRC) in mid-June states that hydraulic fracturing presents little risk of causing damaging earthquakes. But the report states that earthquakes can be caused by other oil and gas activities, particularly injection of waste from drilling. Carbon capture and storage (CCS) and geothermal energy projects can also lead to man-made earthquakes. The report suggests implementing "best practices" for avoiding such earthquakes and having regulators make plans for when they begin to occur.

But, "No mechanisms are currently in place for efficient coordination of governmental agency response to seismic events that may have been induced," the report says. And "No best practices protocol for addressing induced seismicity is generally in place for each energy technology." U.S. Geological Survey (USGS) scientists raised the profile of the issue earlier this year with research finding a "remarkable" rash of earthquakes in the middle of the country that they linked to underground injection of waste brine from oil and gas production.

The NRC study notes that a lot of the fluid used in fracking comes back up to the surface as brine, even more toxic than when it went down. Some of this wastewater can be reused, but eventually most of it is injected

back underground into wells. So as drilling is becoming more common amid a domestic drilling boom, a lot more wastewater is being injected back into the ground than in previous years. Because large amounts of this wastewater are injected for a long time, such injection can increase pressures underground. In rare circumstances, that can cause earthquakes, the report explains. CCS could also cause earthquakes because it also involves injecting large amounts of fluid, the report says. But the study notes that the seismic potential of CCS isn't well-understood because there are no large CCS projects in operation.

The report also says that the earthquake potential of geothermal projects appears to be related to fluid balance considerations and temperature changes produced in the subsurface. And different forms of geothermal resource development appear to have differing potential for causing earthquakes.

Another new study being conducted by the Department of Energy may provide some of the first solid answers to the question: Can gas drilling fluids migrate and pose a threat to drinking water? A drilling company in southwestern Pennsylvania is giving researchers access to a commercial drilling site, said Richard Hammack, a spokesman for the *National Energy Technology Laboratory* in Pittsburgh. The firm let scientists conduct baseline tests, allowed tracing elements to be added to hydraulic fracturing fluids and agreed to allow follow-up monitoring. That should let scientists see whether the drilling fluids move upwards or sideways from the *Marcellus Shale*, which is 8,100 feet deep at that spot. Hammack said he believes this is the first time such research has been done on a commercial gas well.

"Conceptually, it sounds like a really great idea," said P. Lee Ferguson, a Duke University civil and environmental engineering professor who is not involved with the project. "I have wondered about this since I started thinking about fracking. Which compounds are mobile and which aren't?" Ferguson cautioned that no single study will answer all questions about fracking and the potential for pollution. "The complicating factor is some of the compounds don't act in the same way underground," he said of fracking fluids, as well as the fact that there are substantial differences in geology throughout the Marcellus region.

Environmentalists have claimed that fluids associated with drilling could rise and pollute shallow drinking water aquifers. The industry and many government officials say the practice is safe when done properly, but there have also been cases where faulty wells did cause pollution. Hammack said the study is designed to see whether the fracking fluids or naturally occurring salty brine from deep underground reach a testing area located at about 4,000 feet. "We're just looking for any indication of communication between the two zones," he said. If the fluids do rise, more research will be needed, he said. If they don't reach the 4,000-foot level, there will be no need to test drinking water aquifers, which are closer to the surface.

Other researchers have asked the same question, but have done so using computer simulations or testing not involving commercial wells. Both methods mean there's considerable uncertainty about the accuracy of the projections. For example, a study released by other Duke researchers in early July suggested that deep, salty brine fluids could migrate upwards through natural pathways, but made no estimate of whether that might take years, decades or centuries. Hammack said his monitoring will go on for at least a year, but that the Energy Department will release information earlier if there's proof the fluids migrate to the upper testing level. Some background data from the research is also expected to be available later this year.

Meanwhile, Dr. Paul Edmiston, a professor of chemistry at the College of Wooster in Ohio says he has created a material that acts as a powerful sponge that could absorb small organic compounds like gasoline, motor oil, and pesticides dissolved in water. He is hoping that his invention, dubbed *Osorb*, will have a new commercial application in cleaning the wastewater created by hydraulic fracturing. *Osorb* is an organosilica material, "halfway between the silica in your window and the silicone in your tub," he said. The porous substance adheres to itself, which keeps the material compressed. When it comes into contact with small molecules that can fit through its tiny pores, it expands to up to eight times its weight, he said. The molecules that make up *Osorb* repel water so that it cannot absorb any, which could make it a powerful tool for cleaning water, he said.

In its original formulation, Dr. Edmiston said, *Osorb* was most useful for pulling dissolved oil out of water. Since then he and *ABSMaterials*, the company that he founded in late 2008 to commercialize his discovery, have come up with about 30 different variations. Two years ago, Edmiston and his team began adapting *Osorb* to prevent the flowback of the chemical additives that are used in fracking and the organic compounds that the water absorbs underground in a project financed by the federal government's *Small Business Innovation Research* program.

By tweaking the molecules that form the material, changing their concentrations and controlling the rate of the chemical reaction that drives the material's production, Dr. Edmiston has been able to remove more than 90 percent of the organic compounds found in the wastewater from fracking when it comes out of the ground. So far he and his team have been able to treat some of the contaminants associated with flowback. Next they will turn their attention to other substances in the wastewater like radioactive elements and rare earth metals, and scaling up the treatment system they have developed to clean the wastewater more quickly and at a lower cost.

With regard to risks associated with fracking, the *Nationwide Mutual Insurance Co*. says it will not cover damages related to the process, becoming the first major insurance company to limit payments related to oil and gas production. The company's personal and commercial policies "were not designed to cover" risk from the process, said *Nationwide* spokeswoman Nancy Smeltzer. "After months of research and discussion, we have determined that the exposures presented by hydraulic fracturing are too great to ignore," a company memo reads.

Sources: Mike Soraghan, *Greenwire*, 6/15/12; Kevin Begos, *AP/Kansas City Star*, 7/11/12; Sophia Li, *New York Times*, 6/26/12; Mary Esch, *AP/San Francisco Chronicle*, 7/13/12; *Greenwire*, 6/27 and 7/13/12

Heat Related Fish Kills

Thousands of fish died this year as the hot, dry summer dried up rivers and caused water temperatures to climb in some spots to nearly 100 °F. For example, about 40,000 shovelnose sturgeon were killed in Iowa in early August as water temperatures reached 97 °F. Iowa Department of Natural Resources (IADNR) officials said sturgeon found dead in the Des Moines River were worth nearly $10 million, a high value based in part on their highly sought after eggs, which are used for caviar. The fish are valued at more than $110 a pound. Gavin Gibbons, a spokesman for the *National Fisheries Institute*, said the sturgeon kills don't appear to have reduced the supply enough to hurt regional caviar suppliers. Mark Flammang,

a fisheries biologist with the IADNR said sturgeon develop health problems when water temperatures climb into the 80s.

Nebraska fishery officials said they've seen thousands of dead sturgeon, catfish, carp, and other species in the Lower Platte River from Kearney in the central part of the state to Columbus in the east. Fisheries program manager Daryl Bauer said the warm, shallow water has also killed an unknown number of endangered pallid sturgeon. "It's a lot of miles of river, and a lot of fish," Bauer said. "Most of those fish are barely identifiable. In this heat, they decay really fast." Bauer said a single dry year usually isn't enough to hurt the fish population. But he worries dry conditions in Nebraska could continue, repeating a stretch in the mid-2000s that weakened fish populations.

In Illinois, heat and lack of rain dried up a large swath of Aux Sable Creek, the state's largest habitat for the endangered greater redhorse, a large bottom-feeding fish, said Dan Stephenson, a biologist with the Illinois DNR. "We're talking hundreds of thousands (killed), maybe millions by now," Stephenson said. "If you're only talking about game fish, it's probably in the thousands. But for all fish, it's probably in the millions if you look statewide." Stephenson said fish kills happen most summers in small private ponds and streams, but the hot weather this year has made the situation much worse.

He also said a large number of dead fish were sucked into an intake screen near Powerton Lake in central Illinois, lowering water levels and forcing a temporary shutdown at a nearby power plant. A spokesman for *Edison International*, which runs the coal-fired plant, said workers shut down one of its two generators for several hours because of extreme heat and low water levels at the lake, which is used for cooling.

Sources: Grant Schulte, *AP*, 8/5/12; and *Greenwire*, 8/6/12

Climate Change Update

According to the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center's "*State of the Climate: National Overview for June 2012*" report released in early July, the 12-month period from July 2011 to June 2012 was the warmest on record (since record keeping began in 1895) for the contiguous U.S. The nationally-averaged temperature was 56.0 ^{o}F, 3.2 degrees higher than the long-term average. According to the report, every single state in the contiguous U.S. except for Washington saw warmer-than-average temperatures during this time period. The *U.S. Drought Monitor* also showed that as of July 3, 56 percent of the contiguous U.S. was experiencing drought conditions. Additionally, more than 170 all-time warm temperature records were broken or tied in June. As NOAA points out, "The odds of this occurring randomly is 1 in 1,594,323." National Climatic Data Center scientist Jake Crouch said, "What's going on for 2012 is exactly what we would expect from climate change." Princeton professor Michael Oppenheimer said, "What we are seeing is a window into what global warming really looks like."

The relentless heat felt across much of the U.S. this summer is so rare that it could only be caused by man-made global warming, according to a new study published by James Hansen in the *Proceedings of the National Academy of Science*. Hansen is a noted government scientist at NASA's *Goddard Institute for Space Studies* and a professor at Columbia University who has long warned of the risks of climate change. He used statistical analysis for his study rather than the modeling methods more commonly employed by other scientists. He found that the odds of such temperatures occurring between the 1950s and the 1980s were greater than 1 in 300. Today, they are closer to 1 in 10, his study found. "This is not some scientific theory. We are now experiencing scientific fact," Hansen said.

Andrew Weaver, a climate scientist at the University of Victoria in British Columbia and a member of the Nobel Prize-winning international panel of climate scientists that issued a series of reports on global warming, praised Hansen's study and said it reframed the question. "Rather than say, 'Is this because of climate change,' that's the wrong question. What you can say is, 'How likely is this to have occurred with the absence of global warming?' It's so extraordinarily unlikely that it has to be due to global warming," Weaver said.

According to another study published in the journal *Science* in late July, powerful summer thunderstorms that push water into the upper atmosphere can damage the protective ozone layer over the U.S. drawing one of the first connections between climate change and the loss of ozone over populated regions. The stratosphere is normally drier than a desert, but in this study Harvard University researchers found that some storms can send water vapor into the layer that sits miles above the Earth's surface. That water can then react with chlorofluorocarbons – now-banned refrigerant gases – left in the atmosphere in a way that destroys the ozone layer. The odds of creating this type of ozone damage could increase if climate change brings more storms, scientists said. "It's the union between ozone loss and climate change that is really at the heart of this," said James Anderson, lead author of the study. Anderson noted that if climate change does lead to more storms that inject water into the stratosphere, the impact on ozone could not be stopped because the chemistry would continue, even if greenhouse gas emissions levels dropped. "It's irreversible," Anderson said.

A new study published in the journal *Nature* by a team of international researchers says that human activities are pushing the Earth toward a "tipping point" that could cause sudden, irreversible changes in conditions that have allowed civilization to flourish. There are signs that a toxic brew of climate change, habitat loss and population growth is dramatically reshaping life on Earth, the report says. Those pressures are greater than the natural forces that caused the end of the last ice age roughly 11,700 years ago, a time when half the planet's large mammal species went extinct. "We are doing enough to cause one of these tipping points," said lead author Anthony Barnosky, a paleobiologist at the University of California, Berkeley. "The question now is, how close are we? Is it inevitable? What are the changes that we see coming down the road that we should be aware of in order to make the best of it, essentially." Barnosky is one of more than 20 scientists who contributed to the new study. The researchers say there is a pressing need for better models and observations to help anticipate future changes and determine how close the planet is to a global tipping point.

Meanwhile, an iceberg twice the size of Manhattan recently cracked off Greenland's large Petermann Glacier. Most of Greenland is covered by an ice sheet, and the Petermann Glacier is primarily on land, although part of it extends over water, which is where the break happened. The iceberg, which spans 46 mi^2, follows another big break from the glacier in 2010. That iceberg was twice as large as the current one. "It's dramatic. It's disturbing," said University of Delaware oceanographer Andreas Muenchow, who was one of the first scientists to detect the break. "We have data for 150 years, and we see changes that we have not seen before." The Petermann break brings large ice loss

much farther north than in the past, said Ted Scambos, lead scientist at the *National Snow and Ice Data Center* in Boulder, CO. If it continues, and more of the Petermann is lost, the melting would push up sea levels, he said. Northern Greenland and Canada have been warming five times faster than the average global temperature, Muenchow said.

In Alaska climate change is threatening the way of life for Inuit villages. The warming temperatures result in more intense storms, melting permafrost and soil erosion, leaving federal, state and local officials puzzled over whether it is possible to save the region's native heritage. "So much of our culture is being washed away in the ocean," said Steve Oomittuk, mayor of Point Hope, AK. Culture and history are just the beginning of what could be lost. Basic survival is also on the line. Several households rely on hunting and fishing – activities that need sea ice – for most of their food consumption. While Arctic sea ice shrinks over the summer and grows in the winter, this year has marked the largest loss on record for the month of June, totaling 21.1 million mi^2, according to the NOAA. Summer sea ice has declined 40 percent since the 1970s.

The Alaska Canada Military Highway, or Alcan, is also facing a major challenge from the melting of permafrost. Much of the Alcan, which snakes from British Columbia across the Yukon to Alaska, was built on permanently frozen ground. But as the permafrost has started to melt, the pavement of the road has started to crack, threatening its stability. Several factors contribute to the melting, experts say, but the most worrisome contributor is climate change.

In the Corn Belt, climate change is likely to drive up corn prices and decrease productivity, costing farmers between $1.1 billion and $4.4 billion a year, according to a federal study released in early July. The report by the U.S. Department of Agriculture's (USDA) Economic Research Service modeled the effects of varying scenarios of climate change on agriculture between now and 2030 and predicted how farmers might react by altering crop and production practices. The study overall found that climate change will have complex effects on production that vary from region to region and from crop to crop. The complexity comes from the numerous ways that climate change is likely to act on agriculture, including increasing temperatures, changing precipitation patterns, influencing pest distributions, changing soil fertility and increasing the frequency of extreme weather events. The report found that climate change will increase the number of agricultural acres in the U.S. by 0.2 to 1 percent as farmers adapt by expanding acres and switching crops. The changes vary on a regional basis: Southern farmers, for example, could increase their acreage by up to 5 percent, while the change in the Corn Belt will be more marginal. Significant effects could also be felt by the natural environment because of the expanded crop acreage. The study projects that nitrogen runoff will increase by between 1.4 and 5 percent, and that soil erosion could rise by up to 1.2 percent. Farmers have a number of options available to them to adapt, beyond expanding their acres or switching crops. They could alter their planting schedules, apply different fertilizers or adopt new methods of production, for example. But in some cases, adaptation could have detrimental consequences.

How well and quickly farmers adapt to climate fluctuations can make or break their chances during strenuous times like the current drought, agriculture experts say. For the next 18 years, the USDA predicts, hotter and more unpredictable weather will result in more struggling farmers. Most concerning for farmers are changes in precipitation the agency said. According to an agency analysis from July, farmers' net returns could vary from increases of $3.6 billion a year to losses of $1.1 billion due to weather changes alone. Insect losses and weeds resulting from climate change could cut returns by $1.5 billion to $3 billion a year. According to a soil conservationist with the Natural Resources Conservation Service, Phillip Sandoval, leaving more than 90 percent of harvested wheat plants standing and rotating corn into their crop cycle is one way to avoid being slammed by drought.

Agriculture Secretary Tom Vilsack recently shrugged off queries about the possibility that greenhouse gas emissions might be exacerbating the impact of this year's drought. His move dismayed some climate activists who had hoped for a more direct engagement from the White House. The green group *Forecast the Facts*, recently formed to focus on the links between the warming planet and extreme weather events, said, "The scientific links between climate change and drought are well established by his own Department, and it's Secretary Vilsack's responsibility to share that information with farmers and the American public." "(This is) Another apparent example of the Obama administration's politicized evasiveness on forthright communication about anthropogenic climatic disruption," said Rick Piltz, a former official at the federal government's climate research program who now leads the green group *Climate Science Watch*. "Vilsack surely knows better, or should. Is his response any better than what we would have gotten from the Bush-Cheney administration?", Piltz asked.

Meanwhile, belief in climate change is as widespread as ever; it's just less important to the American public than it was a few years ago according to a recent survey conducted by the *Washington Post* and Stanford University. Asked to name their most pressing environmental concern, only 18 percent of the 804 adults contacted for the survey said "climate change." That was down from 33 percent in 2007. The poll was conducted June 13-21 and had a margin of error of 4.5 percentage points. More interesting, Jon Krosnick, a senior fellow at Stanford's *Woods Institute*, said, was the poll's finding that the number of people who say that global warming is either "extremely" or "very" important to them personally has dropped from a combined 52 percent in 2007 to 38 percent in this survey. "That turns out to be a terrifically important question," Krosnick said. It indicates that a third fewer Americans are voting, volunteering and donating based on a zeal for action on climate change, he said. But while Americans are feeling less passionate about climate change, most still believe it is occurring. The survey showed that nearly three-quarters of respondents believe that the planet is warming, a number that has changed little since 2010. And 88 percent believe it is at least somewhat likely that trend will continue throughout the next century "if nothing is done to stop it," which is the same percentage as two years ago. That hints that respondents attribute climate change at least in part to human activity.

Interestingly, a *Koch Industries*-backed former climate skeptic University of California, Berkeley, physicist Richard Muller, said in a column in the *New York Times* in late July that his own (*Koch* sponsored) research has convinced him that climate change is not only happening, it is man-made. "Call me a converted skeptic," he said. "In the world of politics and the media," said Joe Romm, a fellow at the *Center for American Progress*, "when somebody who used to be a skeptic now says, 'I've looked at the data and global warming is real, it's happening faster than people thought and it's almost entirely due to humans,' that's a big deal."

Meanwhile, the *American Tradition Institute* (ATI), which has garnered attention for seeking emails written by climate scientist

Michael Mann when he worked at the University of Virginia, is now making similar Freedom of Information Act requests concerning email exchanges between scientists and reporters. The aim is to illustrate what the group describes as "collusion" between the "media and environmentalist establishments." The top target so far is *New York Times* reporter Justin Gillis, who covers environmental science for the paper. Others include Suzanne Goldenberg, a U.S.-based reporter with the U.K. *Guardian* newspaper. Chris Horner, director of litigation at ATI, said he decided to investigate Gillis after the *Times* published a story in April on how climate skeptics are, as Gillis wrote, relying on the argument "that clouds will save us." The story examined the role of leading skeptic Richard Lindzen, a meteorology professor at the Massachusetts Institute of Technology, who maintains that predictions of catastrophic climate change are overstated in part because clouds can counter the effects.

Horner's latest move has attracted criticism both from scientists and environmental groups, who say it's another way for ATI to achieve its goal of chilling speech among scientists. "Any unguarded comment mailed in what a scientist thought was a private communication can be found and fed into the right-wing echo chamber," said Jeff Ruch, executive director of *Public Employees for Environmental Responsibility*. "It, in essence, is forcing scientists to behave as if they are public figures without having made a decision to enter public prominence." Mann, now a researcher at Pennsylvania State University, said journalists will now face the same pressures that scientists have experienced due to the "rampant threats of retribution and intimidation by those doing the bidding of vested interests who fund the attacks against climate science."

Meanwhile, at a late May meeting of the conservative, Chicago-based *Heartland Institute* climate skeptical blogger Marc Morano summed up the matter regarding climate change at a luncheon saying that, "The only thing that stands between us and a prosperous future is public policy".

But on another front, a New Mexico judge has cleared the way for an unusual climate change lawsuit against the state to proceed. Judge Sarah Singleton of the 1st Judicial District Court issued a written order in mid-July denying the state's motion to dismiss the case and a companion request for an immediate appeal. The order clears the way for the lawsuit filed by *WildEarth Guardians* and 18-year-old Akilah Sanders-Reed to go forward. The lawsuit filed in May 2011, claimed that Gov. Susana Martinez (R) and the state violated the state's public trust doctrine, which the plaintiffs say requires all branches of government to protect and maintain certain shared resources fundamental for human health and survival. With Singleton's order, the case will proceed on the issue of whether the state agency charged with protecting the atmosphere has met its public trust obligation. "Today's decision brings New Mexico citizens and youth one step closer to holding the state and the governor accountable for their failure to protect the next generation from the irreversible impacts of climate change," said Samantha Ruscavage-Barz of *WildEarth Guardians*. Meanwhile, in Texas, just days before Singleton issued her order, Texas Judge Gisela Triana found in a similar lawsuit that all natural resources, including the atmosphere, are protected under the public trust doctrine and the Texas constitution.

Sources: Joanna Zelman, *The Huffington Post*, 7/9/12; *E&ENews PM*, 7/11/12; Seth Borenstein, *AP/Detroit News*, 7/17/12; Cornelia Dean, *New York Times*, 7/23/12; Henry Fountain, *New York Times*, 7/26/12; Juliet Eilperin, *Washington Post*, 8/5/12; Tom Lutey, *Billings Gazette*, 8/5/12; Elana Schor, *Greenwire*, 7/25/12; Lauren Morello, *Greenwire*, 6/6/12; Amanda Peterka, *Greenwire*, 7/9/12; Jean Chemnick, *Greenwire*, 5/22, 7/3 and 7/30/12; Lawrence Hurley, *Greenwire*, 7/11/12; April Reese, *Greenwire*, 7/12 and 7/18/12; and *Greenwire*, 7/18, 7/24, 7/27 and 8/6/12

One-stop Shopping for Planning Outdoors Trips on Public Lands

Discovering recreational opportunities on public lands just got a whole lot more user-friendly at the website *Recreation.gov*. The Obama administration in mid-August unveiled its updated website for planning and booking trips to the nation's parks, refuges, forests and other public lands. The revamp is part of the administration's effort to boost tourism to the U.S. by promoting natural treasures, as well as to connect Americans with the outdoors.

The website also serves as a "one-stop" shop for Americans to learn about hiking, fishing and other outdoor activities within a day's drive of their homes, officials said. Users can now search by location and activity, and the website will provide a list of federal recreation sites based on distance. They can click on the site's name, like the *Elizabeth Furnace Group Camp* in the George Washington and Jefferson National Forests, and read about the facility and book a campsite. Recreation sites are easily viewed on an interactive map, where users can click on icons to see the name of the museum, refuge or seashore, then click through to learn more.

Other new features include "Go Lists" that highlight destinations, events and activities under particular themes, such as "*Day Hikes for Weekend Warriors*" and "*Civil War 150th Anniversary: Places and Events that Shaped Our Nation.*"

Source: Laura Petersen, *Greenwire*, 8/20/12

Meetings of Interest

Oct. 29-30: Upper Midwest Invasive Species Conference, La Crosse, WI. See: http://www.umisc2012.org/preliminary-program.html www.umisc2012.org

Dec. 9-12: 73rd Midwest Fish and Wildlife Conference, Hyatt Regency, Wichita, KS. See: midwestfw.org

Dec. 10-14: ACES 2012 and Ecosystem Markets Joint Conference, Marriott Harbor Beach, Ft. Lauderdale, FL. See: www.conference.ifas.ufl.edu/aces

Mar. 12-13: International Didymo Conference, Providence, RI. Contact: Invasive Species Action Network and Northeast Panel on Aquatic Nuisance Species.

Mar. 25-30: 78th North American Wildlife and Natural Resources Conference, Crystal Gateway Marriott, Arlington, VA. See: http://www.wildlifemanagementinstitute.org/index.php?option=com_content&view=article&id=348&Itemid=61

Apr. 21-25: 18th International Conference on Aquatic Invasive Species, Sheraton-on-the-Falls Hotel in Niagara Falls, Ontario, Canada. See: www.icais.org. For more

information contact: The Invasive Species Centre. Contact: Elizabeth Muckle-Jeffs, elizabeth@theprofessionaledge.com, 1-800-868-8776 or 613-732-7068

Apr. 21-26: Groundwater Quality Conference (GQ13), University of Florida, Gainesville, FL. See: www.conference.ifas.ufl.edu/GQ13

Jul. 21-25: 7th International Symposium on Sturgeons, co-hosted by Vancouver Island University (VIU) and the City of Nanaimo, Canada, See: http://iss7.viu.ca/call-for-papers-abstracts.

Jul. 29 – Aug. 2 : 5th National Conference on Ecosystem Restoration (NECR), Renaissance Schaumburg Convention Center Hotel, Chicago, IL. See: www.conference.ifas.ufl.edu/NCER2013

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 22 Co-sponsors and **H. R. 750.** Walberg (R/MI) and 103 Co-sponsors. 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 44 Co-sponsors and **H. R. 910.** Upton (R/MI) and 95 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.

S. 1393. Barrasso (R/WY) and **H. R. 2603**. Posey (R/FL) and 8 Co-sponsors.. Prohibits the enforcement of a climate change interpretive guidance issued by the Securities and Exchange Commission, and for other purposes.

H. R. 97. Blackburn (R/TN) and 125 Co-sponsors and **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.

H. R. 153. Poe (R/TX) and 62 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 49 Co-sponsors. Prohibits U.S. contributions to the Intergovernmental Panel on Climate Change.

H. R. 1149. Bilbray (R/CA) and 12 Co-sponsors. Amends the Clean Air Act to include algae-based biofuel in the renewable fuel program and amends the Internal Revenue Code of 1986 (IRC) to include algae-based biofuel in the cellulosic biofuel producer credit.

H. R. 3242. Stark (D/CA) and 22 Co-sponsors. Amends the IRC to reduce emissions of carbon dioxide by imposing a tax on primary fossil fuels based on their carbon content.

H. R. 3323. Huelskamp (/KS) and 7 Co-sponsors. Freeing Agriculture to Reap More Act.

Conservation

S. 339. Baucus (D/MT) and 21 Co-sponsors. Amends the IRC to allow a credit against income tax for qualified conservation contributions.

S. 664: Landrieu (D/LA) and Crapo (D/ID) and **H.R. 2058.** Boustany (R/LA). Wetlands Conservation Investment Act of 2011.

S. 901. Tester (D/MT) and 2 Co-sponsors. and **H.R. 1997**. Miller (R/FL) and 15 Co-sponsors. Making Public Lands Public Access Act.

S. 1105 Murray (D/WA) and 4 Co-sponsors and **H. R. 1982.** Reichert (R/WA) and 3 Co-sponsors. Provides a Federal tax exemption for forest conservation bonds, and for other purposes.

S. 1201. Lieberman (ID/CT) and 9 Co-sponsors. Conserves fish and aquatic communities in the U.S. through partnerships that foster fish habitat conservation, to improve the quality of life for the people of the U.S., and for other purposes.

S. 1265. Bingaman (D/NM) and 29 Co-sponsors. Land and Water Conservation Authorization and Funding Act of 2011

S. 1494. Boxer (D/CA) and 13 Co-sponsors. National Fish and Wildlife Foundation Reauthorization Act of 2011.

S.1594. Gillibrand (D/NY) and Schumer (D/NY). Amends the Food Security Act of 1985 to make payments to assist owners and operators of muck land to conserve and improve the soil, water, and wildlife resources of the land.

S. 1774. Baucus (D/MT) and Tester (D/MT) Rocky Mountain Front Heritage Act of 2011.

S. 2066. Mukowski (R/AK) and 10 Co-sponsors and **H. R.2834**. Benishek (R/MI) and 58 Co-sponsors. Recreational Fishing and Hunting Heritage and Opportunities Act.

S. 2282. Inhofe (R/OK) and 14 Co-sponsors and **H.R.1960.** Wittman (R/VA) and 26 Co-sponsors. North American Wetlands Conservation Extension Act of 2011.

H. R. 390. Thompson (D/CA) and 2 Co-sponsors. Amends the IRC to provide an exclusion from the gross estate for certain farmlands and lands subject to qualified conservation easements, and for other purposes.

H. R. 1443. Broun (R/GA) and 13 Co-sponsors. Prohibits the EPA from prohibiting or otherwise restricting, the manufacture, importation, sale, or use of any traditional hunting and fishing implement based on material content.

H. R. 1444. Broun (R/GA) and 13 Co-sponsors. Requires that hunting activities be a land use in all management plans for Federal land under the jurisdiction of the Secretaries of the Interior or Agriculture as long as it is compatible with the purposes for which the Federal land is managed.

H. R. 1593. Bishop (D/NY) and Hanna (R/NY). Amends the IRC to allow an unlimited exclusion from transfer taxes for certain farmland and land of conservation value, and for other purposes.

H. R. 1917. Kind (D/WI) and 3 Co-sponsors. Authorizes USFWS, to conduct a Joint Venture Program to protect, restore, enhance, and manage migratory bird populations, their habitats, and the ecosystems they rely

on, through voluntary actions on public and private lands, and for other purposes.

H. R. 1964. Gerlach (R/PA) and 309 Co-sponsors. Amends the IRC to make permanent the tax deduction for charitable contributions by individuals and corporations of real property interests for conservation purposes.

H.R. 3074. Kline (R/MN) and 23 Co-sponsors. Cormorant Management and Natural Resources Protection Act.

H. R. 3496. Kind (D/WI) and 18 Co-sponsors. Sets forth requirements concerning the maintenance of viable populations of existing native and desired non-native species within each planning area in the National Forest System's or BLM public lands

H. R. 4089. Miller (R/FL) and 27 Co-sponsors. Requires federal public land management officials to facilitate the use of, and access to, federal public lands, including wilderness areas for fishing, sport hunting, and recreational shooting.

Endangered Species Act of 1973 (ESA)

S. 826. Feinstein (D/CA) and **H. R. 1907.** Calvert (R/CA) and 2 Co-sponsors. Infrastructure Facilitation and Habitat Conservation Act of 2011

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

H. R. 1042. Baca (D/CA) and 16 Co-sponsors. DELIST Act.

H. R. 1719. McMorris-Rodgers (R/WA) and 10 Co-sponsors. Endangered Species Compliance and Transparency Act of 2011.

Energy

S. 629. Murkowski (R/AK) and 8 Co-sponsors and **H. R.3680.** McMorris Rodgers (R/WA) and 2 Co-sponsors and **H.R. 5892**. McMorris Rodgers (R/WA) and 11 Co-sponsors. Hydropower Improvement Act of 2011.

S. 892. Burr (R/NC) and 17 Co-sponsors and **H.R. 4295.**. Blackburn (R/TN) and 10 Co-sponsors. Consolidation of Department of Energy and Environmental Protection Agency Act of 2011

S. 1343. Bingaman (D/NM). Energy and Water Integration Act of 2011.

S.1775. Tester (D/MT) and 6 Co-sponsors and **H.R. 6154.** Gosar (R/AZ) and 9 Co-sponsors. Public Lands Renewable Energy Development Act of 2011

H. R. 795. Smith, (R/NE) and 16 Co-sponsors. Small-Scale Hydropower Enhancement Act of 2011.

H. R. 1861. Murphy (R/PA) and 20 Co-sponsors. Infrastructure Jobs and Energy Independence Act.

Federal Water Pollution Control Act (FWPCA)

S. 272. Manchin (D/WV) and 8 Co-sponsors and **H. R. 457.** McKinley (R/WV) and 15 Co-sponsors. EPA Fair Play Act.

S. 468. McConnel (R/KY) and 11 Co-sponsors and **H. R. 960.** Rogers (R/KY) and 8 Co-sponsors. Mining Jobs Protection Act.

S. 661. Lautenberg (D/NJ). Safe Dispersants Act.

S. 711 Lautenberg (D/NJ). Secure Water Facilities Act.

S. 1313. Whitehouse (D/RI) and 5 Co-sponsors. Clean Estuaries Act of 2011.

S. 2115. Maro (R/FL) and **H.R.3856.** Southerland (R/FL) and 13 Co-sponsors. State Waters Partnership Act of 2012.

S.2245. Barrasso (R/WY) and 39 Co-sponsors and **H.R.4965.** Mica (R/FL) and 88 Co-sponsors. Preserve the Waters of the United States Act

S.3264. Vitter (R/LA) and Landrieu (D/LA). Reauthorizes the Lake Pontchartrain Basin Restoration Program.

S. 3467. Johanns (R/NE) and **H.R.6093.** Smith, (R/NE). Establishes a moratorium on aerial surveillance conducted by the Administrator of the U.S. EPA under the FWPCA.

H. R. 395. McNerney (D/CA). Healthy Communities Water Supply Act of 2011

H. R. 517. Young (R/AK) and 12 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.

H. R. 872. Gibbs (R/OH) and 137 Co-sponsors. Reducing Regulatory Burdens Act of 2011

H. R. 1375. Pallone (D/NJ) and 129 Co-sponsors. Clean Water Protection Act.

H. R. 2018. Mica (R/FL) and 39 Co-sponsors. Clean Water Cooperative Federalism Act of 2011.

H. R. 2427. Miller (R/CA) and 8 Co-sponsors. Flood Control Facility Maintenance Clarification Act.

H. R. 3145. Bishop (D/NY) and 36 Co-sponsors. Water Quality Protection and Job Creation Act of 2011

H.R. 4278. Hurt (R/VA) and 24 Co-sponsors. Preserving Rural Resources Act of 2012.

Grazing

S. 1129. Barrasso (R/WY) and 8 Co-sponsors and **H. R.4234.** Labrador (R/ID) and 14 Co-sponsors. Grazing Improvement Act of 2012.

Invasive Species

S. 471. Stabenow (D/MI) and 8 Co-sponsors and **H. R. 892.** Camp (R/MI) and 36 Co-sponsors. Stop Asian Carp Act of 2011.

S. 2164. Klobuchar (D/MN) and Franken (D/MN) and **H.R. 4146.** Ellison (D/MN) and 2 Co-sponsors. Upper Mississippi CARP Act.

S. 2317. Stabenow (D/MI) and 9 Co-sponsors and **H. R. 4406.** Camp (R/MI) and 21 Co-sponsors. Stop Invasive Species Act.

H. R. 2840. LoBiondo (R/NJ) and 7 Co-sponsors. Commercial Vessel Discharges Reform Act of 2011

H.R. 3210. Cooper (/D/TN) and 21 Co-sponsors. Retailers and Entertainers Lacey Implementation and Enforcement Fairness Act or the RELIEF Act.

H.R.5864. Slaughter (/NY) and 28 Co-sponsors. I nvasive Fish and Wildlife Prevention Act of 2012.

H.R.6007. Hall (R/TX) and 3 Co-sponsors. North Texas Zebra Mussel Barrier Act of 2012 .

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 (SMCRA) of 1977 to clarify that uncertified States and Indian tribes have the authority to use certain payments for certain non-coal reclamation projects and acid mine remediation programs.

S. 1003. Tester (D/MT). Amends the SMCRA of 1977 to limit the liability of a State performing reclamation work under an approved State abandoned mine reclamation plan.

S. 1455. Tester (D/MT). Surface Mining Control and Reclamation Act Amendments Act of 2011.

H. R. 785. Pearce (R/NM) and 3 Co-sponsors. Amends the SMCRA of 1977 to clarify that uncertified States and Indian tribes have the authority to use certain payments for certain non coal reclamation projects.

Water Quality

S. 1502. Baucus (D/MT) and Testor (D/MT). Clean Rivers Act of 2011

S. 1701. Snowe (R/ME) and 12 Co-sponsors and **H. R. 2484.** Harris (R/MD) and 9 Co-sponsors. Harmful Algal Blooms and Hypoxia Research and Control Amendments Act of 2011.

H. R. 553. Markey (D/MA) and 8 Co-sponsors. Endocrine Disruptor Screening Enhancement Act of 2011.

H.R. 3158. Crawford (R/AR) and 41 Co-sponsors. Farmers Undertake Environmental Land Stewardship Act.

H. R. 4458. Kind (D/WI). Upper Mississippi River Basin protection act.

H.R.5826. Johnson (D/TX) and 4 Co-sponsors. Coordinating Water Research for a Clean Water Future Act of 2012.

H.R. 5827. Johnson (D/TX) and 7 Co-sponsors. Energy and Water Research Integration Act of 2012.

Water Resources

S. 399. Baucus (D/MT) and Tester (D/MT). and **H.R. 3301**. Rehburg (R/MT). Blackfeet Water Rights Settlement Act of 2011.

S. 573. DeMint (R/SC) and Graham (R/SC). Corps of Engineers Reform Act of 2011.

S. 1197. Coats (R/IN) and 2 Co-sponsors and **H. R. 2432.** Visclosky (D/IN) and 18 Co-sponsors. Provides for a feasibility study before carrying out any Federal action relating to the Chicago Area Water System.

S. 1284. Feinstein (D/CA). Amends the National Flood Insurance Act of 1968 to require the Administrator of the Federal Emergency Management Agency to consider reconstruction and improvement of flood protection systems when establishing flood insurance rates.

S. 1377. Roberts (R/KS) and Johanns (R/NE) and **H. R.2579.** Jenkins (/KS) and 5 Co-sponsors. Requires the Corps to take into account all available hydrologic data in conducting Missouri River basin operations.

S. 1588. Webb (D/VA) and 12 Co-sponsors and **H. R. 1865.** Gibbs (R/OH) and 101 Co-sponsors. Recreational Lands Self-Defense Act of 2011.

S. 1669. Cardin (D/MD) and 2 Co-sponsors and **H. R. 2738.** Capps (D/CA) and 22 Co-sponsors. Water Infrastructure Resiliency and Sustainability Act of 2011

S. 1795. Grassley (R/IA) and Johanns (R/NE) and **H. R.2942.** King (/IA) and 12 Co-sponsors. Directs the Corps to revise the Missouri River Mainstem Reservoir System Master Water Control Manual to ensure greater storage capacity to prevent serious downstream flooding.

S. 2039. Hoeven (R/ND) and Conrad (D/ND). Allows for a State or local government to construct levees on certain properties otherwise designated as open space lands

S. 2104. Cardin (D/MD) and 5 Co-sponsors. Water Resources Research Amendments Act of 2012.

S. 2122. Rand (/KY) and 9 Co-sponsors and **H.R. 4304.** Rooney (/FL) and 5 Co-sponsors. Defense of Environment and Property Act of 2012.

H. R. 700. Walberg (R/MI) and 16 Co-sponsors. 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. 1026. Waters (D/CA) and 7 Co-sponsors. Flood Insurance Reform Priorities Act of 2011.

H. R. 1421. Boren (D/OK) and 3 Co-sponsors. 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. 2330. Loebsack (D/IA) and Kucinich (D/OH). National Flood Research and Education Act of 2011.

H. R. 2993. Graves (R/MO) and 5 Co-sponsors. Directs the Corps to revise the Missouri Mainstem Reservoir System Master Water Control Manual and any related regulations to delete fish and wildlife as an authorized purpose of the Corps and elevate flood control as the highest priority of authorized purposes of the Corps at all times.

H. R. 3223. Foxx (R/NC). Directs the Corps to allow certain entities to use a portion of collected recreational user fees for administrative expenses and for the operations, maintenance, development of recreational facilities or management of natural resources.

H. R. 3719. King (R/IA) and 8 Co-sponsors. Provides that funds made available to the Corps for certain Missouri River fish and wildlife purposes be used for the reconstruction of flood control structures, and for other purposes.

H.R. 4090. Carnahan (D/MO). Dam Safety Act of 201.

H. R. 4342. Withfield (R/KY) and 23 Co-sponsors. Waterways Are Vital for the Economy, Energy, Efficiency, and Environment Act of 2012 .

H.R. 5831. Matsui (D/CA) and 30 Co-sponsors. Levee Vegetation Review Act of 2012.

H.R. 5931. Crawford (R/AR) and Ross (D/AR). National Mitigation Fisheries Coordination Act.

H.R. 6026. Richmond (D/LA). DREDGE Act of 2012.

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