

River Crossings

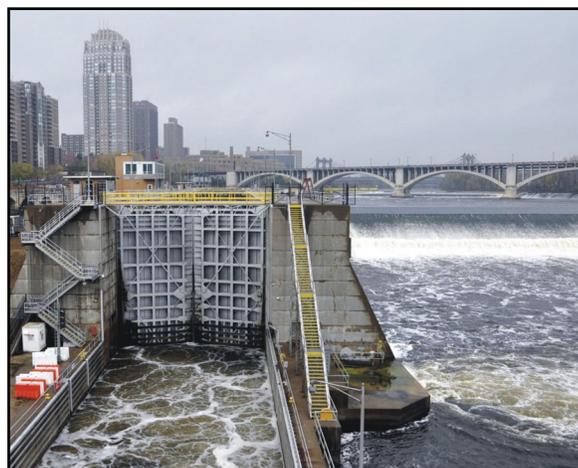
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Asian Carp Issues

Early this summer President Barack Obama signed legislation closing the Upper St. Anthony Falls lock to boat traffic. Located in downtown Minneapolis, the lock is the northern-most navigational structure on the Mississippi River. Closing the lock will help keep Asian carp (bighead and silver carp) from reaching Mille Lacs Lake and other important waters north of the Twin Cities. “Closing the Upper St. Anthony Falls lock is the single biggest and most important step Minnesota can take to keep invasive carp out of the Upper Mississippi River watershed, including Mille Lacs Lake,” said Minnesota Department of Natural Resources (DNR) Commissioner Tom Landwehr. “This will protect our local economies and outdoor heritage in the north-central part of the state.” Closing the lock comes none too soon because in mid-July DNR biologists collected one adult bighead and one adult silver carp in Mississippi River Pool 2 near the Twin Cities. This is the furthest upstream record for either species.



Upper St. Anthony Falls Lock and Dam

The DNR anticipates that the U.S. Army Corps of Engineers (Corps) and the City of Minneapolis will work with affected parties to ensure the timely and efficient closure of the lock. Under the new law, the Corps has up to one year to close the lock. While lock closure will prevent carp from swimming upstream, there still exists the risk of humans introducing carp into the Upper Mississippi River watershed above the lock, despite the fact it is illegal to transport invasive carp in Minnesota. The DNR will continue its education and enforcement efforts to minimize this risk. Landwehr said closing the lock will allow the DNR to reallocate its resources to other ongoing invasive carp prevention priorities. Those include: (1) creating several barrier projects in southwestern Minnesota to keep the invasive carp from coming upstream through the lower Mississippi River system; and (2) working with the University of Minnesota *Aquatic Invasive Species Research Center* to limit or slow the spread of Asian carp through the lower locks and dams located in the Minnesota reach of the Upper Mississippi. The latter efforts will

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help protect other parts of the Mississippi River and important tributaries like the Black and Chippewa rivers in Wisconsin and the St. Croix and Minnesota rivers in Minnesota.

At Upper Mississippi River Lock and Dam 8 located near Genoa, WI, five underwater speakers have been installed in the downstream gates in an attempt to deter Asian carp from swimming upstream through the lock. The speakers blare out a racket equivalent to about 20 outboard motors – a sound unpleasant to humans, unnoticed by native fish and super-annoying to invasive bighead and silver carp researchers hope. The “acoustic deterrent system,” is activated every time the downstream gates of Lock and Dam No. 8 open. The experimental project, believed to be the largest underwater speaker system in the world, and the brainchild of University of Minnesota (UM) scientists went into operation in late July. “It produces a sound that we know, from experiments in the lab and observations in the field, they hate,” said Peter Sorensen, a professor and lead researcher at the UM *Aquatic Invasive Species Research Center*. “This is why they jump.” Silver carp are known for leaping into the air – sometimes by the hundreds – as motorboats speed through their river habitats. Sorensen hopes to team up with federal and state researchers to monitor how native fish behave. Under normal operation, the racket from the underwater speakers is hard to hear above the water. And unlike the blare beneath the surface, the sound is similar to crickets chirping.

Individual Asian carp have been found upstream from Lock and Dam 8, but no breeding populations are believed to exist above Lock and Dam No. 19 at Keokuk, Iowa, near the Iowa/Missouri state line. Many scientists say they believe the fish could thrive upstream but simply haven’t invaded in large enough numbers to support a breeding population. Last winter, scientists mistakenly announced the discovery of fertilized invasive carp eggs in the waters immediately below Lock and Dam No. 8. Although they later concluded that the eggs were not fertilized eggs from invasive carp, the possibility added urgency to Sorensen’s plan to adapt locks and dams to reduce the likelihood of a carp invasion. He and his team, including postdoctoral associate Dan Zielinski, designed a three-year plan for the lock and dam at Genoa. The \$75,000 sound system, paid for with state lottery funds and nearly \$7,000 in private donations, is part of that plan. The other part involves adjusting the speed of waters flowing through the dam’s gates. Carp aren’t particularly strong swimmers, and the vast majority of them could be kept from passing through the dam gates by changing how the Corps operates the dam, Zielinski said.

Meanwhile, a federal appeals court in mid-July rejected an effort by 5 Great Lakes states (MI, OH, WI, MN and PA) to compel the Corps to take more immediate action to prevent Asian carp from reaching Lake Michigan. The 7th U.S. Circuit Court of Appeals unanimously ruled that the states failed to state a legal claim and present facts that the Corps and Chicago’s water district were failing to address the problem. “The Corps and the District in particular are engaged in intensive efforts to prevent the carp from reaching the Great Lakes, and there is a great deal of evidence that indicates they have succeeded thus far in doing so,” Chief Judge Diane Wood wrote on behalf of the panel. “Meddling with Mother Nature is not always a good idea, as the ongoing saga of the Asian Carp illustrates,” Wood wrote.

Also in late July, Mississippi Gov. Phil Bryant and officials from *Moon River Foods* announced that the company is locating a new fish processing operation in Baird, MS to harvest Asian carp from the lower Mississippi River and

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its tributaries. The \$3 million investment will create 100 new jobs. *Moon River* will work with contract fishermen licensed by the Mississippi Department of Wildlife, Fisheries, and Parks to harvest the carp. The carp will be processed at the Baird facility. The operation plans to be in production by the fourth quarter of 2014,” said *Moon River Foods* Chairman Xiaohan Zhu. “We will try our best to make the project a success and provide job opportunities and economic development in the Mississippi Delta,” he said.

A recent paper entitled, [Review of Harvest Incentives to Control Invasive Species](#) appeared in the *Proceedings of the 18th International Conference on Aquatic Invasive Species*. The authors Susan Pasko (National Oceanic and Atmospheric Administration) and Jason Goldberg (U.S. Fish & Wildlife Service) review the biological, ecological, human health, and socioeconomic factors involved in invasive species incentive programs and offer recommendations to assist in development and implementation of a successful harvest program.

Meanwhile, Illinois Natural History Survey biologists are reviewing 21 years of fish community data collected on the Illinois River as part of the federally sponsored Upper Mississippi River System [Long Term Resource Monitoring Program](#) (LTRMP). In the process, they are finding consistent differences in the fish communities that exist now versus fish communities that existed before establishment of Asian carp populations. White bass, bluegill, common carp, and smallmouth buffalo were commonly found to be more abundant prior to Asian carp establishment, whereas emerald shiner, bullhead minnow, gar, bowfin, and yellow bass were more abundant post-establishment. Strongest community differences were observed from electrofishing surveys which are likely the least biased gear and therefore give a better representation of the overall fish community. Collectively, they observed strong differences in the fish community in relation to the establishment of Asian carp. They noted that several other biotic and abiotic factors may be contributing to these differences, but changes in community structure are evident. Additional analyses are being performed to more directly identify the relationship between species with the greatest contribution to community differences and Asian carp. A peer-reviewed manuscript of these results is currently being prepared.

Sources: *Minnesota DNR News Release*, 6/11 and 7/18/14; Jeremy P. Jacobs, *E&ENews PM*, 7/15/14; Dave Orrick, *St. Paul Pioneer Press*, 8/4/14; *Mississippi Business Journal*, 7/22/14; and *UMRCC Newsletter*, Summer 2014

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Paddlefish Traffickers Plead Guilty in MO

Felix Baravik, 49, of Aurora, CO pleaded guilty in federal court in late August to charges under the federal Lacey Act of illegally trafficking in paddlefish caviar after being caught in an undercover operation in the Warsaw, MO, area in 2011. A covert sting operation was conducted by U.S. Fish and Wildlife Service and Missouri Department of Conservation officers in that area in April 2012 and March 2011. As part of the covert operation, the officers operated a paddlefish snagging business and sold paddlefish to interested parties.

By pleading guilty, Baravik admitted to travelling from Colorado to Missouri on April 16, 2012 when he and his co-conspirators met with covert agents posing as paddlefish fishermen. During conversations with the covert agents, Baravik and his associates exchanged telephone numbers with the agents and told them to call if they caught a paddlefish. The next day, Baravik and his co-conspirators arranged to purchase female paddlefish from the covert agents. On April 18, 2012, Baravik and a co-conspirator went fishing for paddlefish with the covert agents. During that fishing trip, the conspirators exceeded the Missouri daily paddlefish take limit. They kept the paddlefish, processed them by removing the eggs from the carcass, and further processed the eggs to make caviar. On April 20, 2012, Baravik and his co-conspirators transported the paddlefish and paddlefish eggs back to Colorado.

As part of the plea agreement Baravik agreed to three years of probation and a \$5,000 fine. The first six months of his probation will be served as home detention, and Baravik shall not fish, or accompany anyone fishing, anywhere in the world during his probation. Baravik must also perform 500 hours of community service. A sentencing hearing will be scheduled after the completion of a pre-sentence investigation by the United States Probation Office.

Last November, in a separate case arising from the same investigation, Bogdan Nahapetyan, 35, of Lake Ozark, MO, pleaded guilty to the same offense. Nahapetyan had numerous interactions and conversations with undercover investigators concerning the purchase of female paddlefish and paddlefish eggs. Although the investigators informed Nahapetyan numerous times that



Harvested Paddlefish - Missouri Department of Conservation Photo

the purchase of paddlefish was illegal in the state of Missouri, Nahapetyan went ahead and arranged to purchase numerous female paddlefish. On one occasion he purchased 80 lbs. of paddlefish eggs and five female paddlefish for \$4,625. Under federal statutes, Nahapetyan is subject to a sentence of up to one year in federal prison without parole, plus a fine up to \$100,000. A sentencing hearing will be scheduled after the completion of a pre-sentence investigation by the United States Probation Office.

Missouri law prohibits the transportation of paddlefish eggs which have been removed or extracted from a paddlefish carcass. Missouri law also prohibits the sale or purchase, or offer of sale or purchase, of paddlefish eggs. There are also several restrictions on the purchase and possession of whole paddlefish in Missouri. The Lacey Act makes it unlawful for any person to import, export, transport, sell, receive, acquire or purchase fish that were taken, possessed, transported or sold in violation of any law or regulation of any state, or to attempt to do so.

Source: Tammy Dickinson, *U.S. Attorney Western District Missouri News Release*, 8/20/14

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Mississippi River Restoration Proposed

The Mississippi River's future is at risk and requires a multibillion-dollar rescue plan, a five-state coalition of environmental groups says. The river suffers from high silt concentrations as well as pollution from agricultural runoff that creates a dead zone in the Gulf of Mexico each summer, the groups said at a conference sponsored by *America's Wetlands Foundation*. As much as \$50 billion will be needed to secure Louisiana's port system, but "there is no hope in the current budget of the United States," said Democratic Sen. Mary Landrieu of Louisiana. Despite a \$14 billion federal infusion after Hurricane Katrina ravaged the state in 2005, Landrieu said, southern Louisiana is losing land masses the size of the nation's capital to the Gulf of Mexico every year. "New Orleans is going to be very close to being under water," she said. "If you don't have wetlands around you and a healthy delta, you just can't live there."

The conference laid out the findings of forums attended by more than 400 government, nonprofit and private-sector leaders over a 12-month period in Minneapolis, Chicago, St. Louis, Memphis and New Orleans. Some of the findings included the following:

- The construction of locks and dams along the river to control flooding and facilitate shipping has resulted in a glut of silt along its northern stretches, reducing the flow of crucial, nutrient-containing sediments to the delta and impairing the growth of wetlands that shield the coast.
- Agricultural runoff has polluted the river with high levels of nitrogen and phosphorus that are running into the Gulf of Mexico, contributing to an oxygen-depleted zone that can't support marine life.
- Levees along the river have severed its connections to floodplains, reducing their water-retention capabilities and exacerbating floods and droughts.

Conference attendees spoke of galvanizing a coalition of mayors up and down the river to muster enough clout to win a massive federal financial commitment to save the river and the Gulf Coast, especially in southern Louisiana and southwestern Mississippi. However, the forum found that building a coalition to address those and other threats has been difficult because (1) interests are localized, (2) various regions bear the consequences of inaction unequally and (3) the states have lacked a systemic view to motivate action. R. King Milling, the *Wetland Foundation's* chairman, said he thought mayors in cities along the river "are beginning to coalesce" and that trade groups "are beginning to panic" over the impact of droughts and floods. Ultimately, he said he hopes that a broad coalition will "come to Washington and say, 'Look, we have a crisis. And you've forgotten about it.'" Environmentalists back a plan to divert the silt that's flowing beyond the Outer Continental Shelf back to shore, but they need money. Landrieu has proposed allotting a portion of the federal royalties that oil and gas companies pay for Gulf of Mexico mineral leases to address the problem, perhaps \$2 billion annually.

Sources: Greg Gordon, *McClatchy/Miami Herald*, 6/11/14; and *Greenwire*, 6/12/14

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MRB Lock and Port Restoration Proposed

Higher-capacity ports, expanded locks and dams and other infrastructure improvements are needed in the Mississippi River Watershed to allow its waterways to handle shipping demands caused by higher agriculture, oil and natural gas production and to manage climate change effects, Brig. Gen. Peter A. DeLuca, commander of the U.S. Army Corps of Engineers' (Corps) Mississippi Valley Division said. Gen. De Luca spoke at a public meeting held on a Corps vessel on the Mississippi River in Memphis as part of a low-water inspection trip. He called on federal, state and local governments – plus citizens groups, businesses and private entrepreneurs – to invest in updating existing infrastructure, and starting new projects.

In June, President Barack Obama signed a \$12.3 billion water projects bill that finances 34 new projects over the next 10 years. Its price tag is half the amount of the last water projects bill seven years ago. Some conservative groups argued the bill contained unnecessary spending, but it had broad support from state and local officials and business groups such as the U.S. Chamber of

Commerce. All of the projects were recommended by the Corps. Still, DeLuca said more investment is needed. He said the United States ranks about 143rd in the world in infrastructure investment, a statistic also cited by other sources. Meanwhile, over the past 20 years, total federal, state, and local investment in transportation has fallen as a share of gross domestic product, while population, congestion, and maintenance backlogs have increased, according to an analysis of transportation infrastructure investment released in July by the White House.

The [*American Society of Civil Engineers' 2013 Report Card for America's Infrastructure*](#) gave inland waterways a D-minus. "My eyes are bleeding looking at the growth that we are forgoing right now because we are not yet investing at a level that will pay us back," DeLuca said at the meeting. In a slide-show presentation, DeLuca said farming and manufacturing, plus a national rise in natural gas and oil production, are creating a higher demand for freight shipping in the Mississippi Watershed. Farming production has grown in the Mississippi Valley, partly due to precision land leveling and irrigation, he said. Manufacturing has also increased in the valley, due to more investment by the steel, chemical and hydrocarbon-production industries.

During a visit to the Arkansas River, DeLuca heard about ports being at capacity and looking to expand. DeLuca said the infrastructure that makes shipping and water resource management possible, such as the system of dams and locks, needs more investment. He said about 85 sites along the nation's inland waterways, including 51 sites on the Mississippi and Ohio rivers, would benefit from expansion, lengthening and widening projects. DeLuca also discussed what he termed as effects of climate change. Those include an increase in storm intensities and a rise in annual precipitation in the watershed. The amount of water flowing into the watershed has risen, leading to changes in water management plans to avoid costly events such as the 2011 flood. "The watershed is behaving differently now," DeLuca said. "The volumes of water are different, the speed at which they come is different."

Source: Adrian Sainz, *AP/Quad City Times*, 8/20/14

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Altered Missouri River Flow Related to Climate Change

The flow of the Missouri River has significantly changed over the past 50 years and climate change is likely to blame, according to a [report](#) published by the U.S. Geological Survey (USGS) in July. The changing water flow could have wide-reaching effects in the region. The 2,300-mile river is a water source for agriculture, energy, recreation and municipalities across several states. "Understanding stream flow throughout the watershed can help guide management of these critical water resources," said Parker Norton, a USGS hydrologist and lead author of the report. States that use the river's water have been affected by the changing flow in different ways. "Climate change models predict that where it is wet, it will get wetter, and where it is dry, it will get drier," said Matt Rice, a program director at *American Rivers*, a nonprofit conservation organization.

Reduced water levels through Montana and Wyoming have caused water shortages, while flooding is more common in North and South Dakota. Lower water levels in Montana are threatening the viability of the state's crops. About 2 million of its 9.5 million acres of cropland is irrigated, according to the state Department of Agriculture. Meanwhile, the number of acres farmers in North and South Dakota insured against flood damage has doubled since last year. The lower river flow is also hurting tourism. Much of Montana's economy relies on tourists coming to fish in the state. Yet over the past few years, many fishing areas have been closed for portions of August and September due to "low flows, high temperatures and too much stress on fish," said Bruce Farling, the executive director of *Montana Trout Unlimited*.

But many farmers blame human interventions, rather than climate change, for the altered river flow. As noted in the last issue of *River Crossings*, nearly 200 landowners in South Dakota, Nebraska, Iowa, Kansas and Missouri sued the U.S. Army Corps of Engineers in March alleging mismanagement that they believed caused three months of flooding in 2011.

Sources: Maya Srikrishnan, *Los Angeles Times*, 8/17/14; and *ClimateWire*, 8/19/14

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USDA Regional Conservation Partnership Program

The U.S. Department of Agriculture is investing \$2.4 billion in a five-year program that will team up the agency with local businesses and nonprofit groups to fund locally designed soil and water conservation projects, Secretary Tom Vilsack said. The *Regional Conservation Partnership Program*, authorized by a new farm law passed this year, is meant to draw the private sector into planning and bankrolling agriculture-related environmental protection plans. "It's a new approach to conservation that is really going to encourage people to think in very innovative and creative ways," Vilsack said, describing the projects to be funded as "clean water startup operations." He said the programs will help rural economies by generating tourism and outdoor recreation jobs as well as stopping pollution that would cost money to clean up. More than a third of the grant money will be distributed among "critical" areas like the Great Lakes; the Chesapeake Bay watershed; and the Columbia, Mississippi and Colorado river basins. Another 40 percent will go to multistate or regional projects chosen on a competitive basis, and 25 percent will go to state-level projects.

Sources: John Flescher, *AP/WRAL*, 5/27/14 and *Greenwire*, 5/27/14[BACK TO TOP](#)

Effect of Tighter Regulations on Acidity Levels in Rivers

New federal research concludes that acidity levels in some of the nation's largest rivers have steadily declined over the past six decades, and it credits tighter regulations of industrial and agricultural wastewater discharges and air pollution as major factors. The study was conducted by researchers with the U.S. Geological Survey (USGS) and published in the journal *Science for the Total Environment*. The study reviewed water quality data in 23 rivers between 1945 and 2010 from Connecticut to California and found that acidity levels in most have been decreasing for years. Reduced acidity levels were most commonly found in rivers in the Northeast, such as the Delaware and Schuylkill rivers; the Midwest, such as the Illinois and Ohio rivers; and the Missouri River in the Great Plains, according to USGS officials. A major reason is reduced pollution levels from numerous sources, including industrial waste discharged into waterways or into the air that is ultimately deposited into waterways in the form of acid rain. There's also less "acid mine drainage" from abandoned hardrock mining sites, according to the study.

Acid rain has steadily declined since the 1970s, when the government strengthened regulations of motor vehicle exhaust and sulfur dioxide emissions from coal-fired power plants, though it remains a problem in some rivers and streams in the eastern United States. Sulfur dioxide and nitrogen oxides cause acid rain, which in addition to polluting waterways can also erode buildings, sidewalks and other structures. High alkalinity is generally not considered an indicator of the overall health of a waterway. But the USGS study states that the higher alkalinity levels sampled in the rivers are a good sign because they measure a river's ability to neutralize acids in the water. The high acidity levels measured in rivers in the early 20th century reduced the alkalinity of some rivers and caused them to become more acidic, according to the USGS. The higher alkalinity also indicates that there are less harmful nitrates and sulfates in the water that often absorb alkalinity, according to the study, giving the researchers confidence that these rivers are in fact recovering from decades of high acidity levels. "Increasing alkalinity can indicate recovery from acidification," the study said, because atmospheric deposition of nitrate and sulfate acids "consumes alkalinity and so a relaxation of this process results in positive alkalinity trends." Thus, overall, "increasing alkalinity levels in large rivers across the country since 1945 is a positive trend," said William Werkheiser, USGS's associate director for water.



Acid Mine Drainage - USEPA Photo

Source: Scott Streater, *Greenwire*, 7/7/14[BACK TO TOP](#)

Landmark Ruling on Conductivity

A West Virginia federal court judge, in early June, faulted subsidiaries of *Alpha Natural Resources Inc.* for affecting the conductivity levels of regulated waters and, as a result, hurting aquatic life. The USEPA and environmental groups have been pressing for the use of conductivity – the measure of how well waters carry an electric charge – as a barometer of environmental health, over strong objections from mining companies and state regulators. U.S. District Court Judge Robert Chambers for the Southern District of West Virginia sided with the green groups, including the *Sierra Club*, the *West Virginia Highlands Conservancy* and the *Ohio Valley Environmental Coalition*. After holding a trial in December, Chambers wrote that there was "a preponderance of evidence" that the *Alpha* subsidiaries had committed "at least one violation" of permits to discharge pollutants into Laurel Creek or Robinson Fork.

Coal company lawyers argued that West Virginia policy and a measure approved by the state Legislature don't consider conductivity a pollutant. They also cited a 2012 U.S. District Court ruling against a USEPA guidance document setting suggested conductivity levels for waterways near Appalachian coal mines. An appeals court ruling is forthcoming. But Judge Chambers wrote, "In multiple ways, the chemical and the biological components of the aquatic ecosystems found in Laurel Creek and Robinson Fork have been significantly adversely affected by Defendants' discharges." He added, "Losing diversity in aquatic life, as sensitive species are extirpated and only pollution-tolerant species survive, is akin to the canary in a coal mine."

Aaron Isherwood, managing attorney for the *Sierra Club*, said in a statement, "This decision further confirms that the science overwhelmingly shows that coal mines in Appalachia are harming streams due to conductivity pollution." Isherwood added, "The court's ruling further underscores the need for EPA to engage in rule making to protect Appalachian streams from conductivity pollution that is very harmful to aquatic life," pressing a petition by environmentalists. The case dates back to the beginning of

2012, when the environmental groups, represented by attorneys for *Public Justice* and *Appalachian Mountain Advocates*, sued *Alpha subsidiaries Elk Run Coal Co. Inc.* and *Alex Energy Inc.* The ruling is one of several recent adverse federal court decisions against coal mining in Appalachia. The litigation now moves to the penalty phase, along with other similar disputes. Appeals are likely.

Source: Manuel Quiñones, *E&ENews PM*, 6/5/14

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Appeals Court Won't Rehear CWA Selenium 'Permit Shield' Case

The 4th U.S. Circuit Court of Appeals in mid-August denied a coal mining company's request that it reconsider a much-touted ruling boosting the Clean Water Act's (CWA) so-called *permit shield*. Environmental groups have been targeting dumps of the chemical element selenium, which can hurt aquatic life, as a way of boosting scrutiny on coal mining companies. Some mining companies have, in turn, brandished the CWA's permit shield. That shield generally protects companies from liability for releasing pollutants not outlined in their permits. But in July, a three-judge panel unanimously agreed with environmental groups and a lower court judge in finding that *A&G Coal Corp.*, owned by West Virginia billionaire James Justice, could not use the permit shield to avoid liability for selenium released from western Virginia mining operations. The three-judge panel said regulators knew or should have known about the prospect of selenium releases. "There is no question that selenium is a pollutant under the CWA," said the July opinion. "And there is no question that *A&G* was required by its [Virginia] permit application instructions to test for the presence of selenium and by federal and state regulations to, at minimum, report whether it believed selenium to be present or absent."

But *A&G* attorney Allen Dudley argued for a full-court rehearing by noting potential conflicts between the July ruling and a 2001 decision concerning releases into Maryland's Piney Run. Dudley wrote in a brief that companies and groups "would benefit from greater uniformity of this Court's permit shield jurisprudence." He argued that, "Although the permitting agency authors the permit, and thus its understanding of what pollutants will be discharged is the paramount concern, the panel's decision deems it irrelevant because *A&G* did not address selenium in its application responses." Dudley also wrote in his brief that the litigation's record was inconclusive over whether Virginia regulators "reasonably contemplated" selenium from discharges. "As such, and with the more than scintilla of evidence indicating the permit shield defense may have succeeded," he wrote, "summary judgment should not have been granted in favor of [environmental groups], and to avoid conflict with Piney Run, rehearing or rehearing en banc is requested."

But in the brief filing in August, the court said no judge had requested a poll on whether to rehear the case. Dudley has not responded to a request for comment on whether the company will take the issue to the Supreme Court. A decision on a similar case is pending before the 6th U.S. Circuit Court of Appeals. In that litigation, the lower court ruled in favor of a coal mining company's permit shield defense.

Source: Manuel Quiñones, *Greenwire*, 8/12/14

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Fracking Fluids and Groundwater Pollution

Hydraulic fracturing wastewater could trigger the transport of particles and associated pollutants through exposed soils into groundwater new research shows, adding a new element of concern about fracking. Oil and gas companies shoot a mixture of water, sand and chemicals into tight rock formations as part of the fracking process. Some of the fluid – up to about 40 percent – returns to the surface, where it is often held in tanks or impoundments or injected underground. A new paper in the *American Chemical Society* journal *Environmental Science & Technology* found that the fluid, which is so effective at loosening hydrocarbons, can also mobilize tiny particles in soils. The release of these microscopic colloids can lead heavy metals and other associated contaminants to leach out of the soil and into groundwater, Cornell University researchers found. In the lab, the team applied flowback from a *Marcellus Shale* well to a column of sand with known quantities of deposited colloids. Postdoctoral associate Cathelijne Stoof, a co-author of the paper, described the research as a "first step" toward understanding the complex environmental effects of accidental and intentional flowback releases. "There's very little known about the potential environmental impacts of fracking wastewater spills or fracking in general," she said. "I think it's important for me as a scientist to look at those facts and then communicate those facts to let others determine when and how and whether to carry this out." Greater awareness of these processes can help decision makers design mitigation strategies, Stoof said.

Source: Pamela King, *EnergyWire*, 6/26/14

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Powerful Insecticide Found in Major Midwestern Rivers

A pervasive agricultural insecticide that has been linked to the decline of honeybees is now a near-constant presence in the small and large rivers that flow through Midwestern farm country, according to the first major review of its kind. Scientists at the U.S.

Geological Survey (USGS) tracked the toxins called neonicotinoids in six states and nine Midwestern rivers, including the Mississippi River, and found that they were universally present throughout the growing season in every watershed tested. The results, published in late July in the journal *Environmental Pollution*, raise significant questions about possible threats to the insects that form the base of the food chain in aquatic ecosystems, and they follow another study released in June that found sharp declines in birds wherever the insecticides were widely used in Holland. “If you get enough rain to transport it over land or into tile drains, then it gets into streams quite quickly at higher concentrations,” said Kathryn Kuivila, a scientist at the USGS *Oregon Water Science Center* in Portland, OR, and a lead author of the study.

The concentrations found by the study are lower than those the USEPA considers fatal to aquatic insects, she said. But Kuivila said that other studies have found that toxicity can be much lower than USEPA tolerances for some species, and others have found that the number of tiny worms and other soil insects drops precipitously at very low concentrations. “Even more importantly, these organisms are not exposed to just one neonicotinoid,” Kuivila said. “And there are other pesticides, other stressors.” “We are finding them throughout the season,” Kuivila said. “They tend to be more water-soluble than older insecticides.” What is not clear, however, is what impact they have in aquatic ecosystems, she said.



There are many neonicotinoid containing insecticides on the market. These are a few that are commonly used around the home.

Neonicotinoids, a synthetic nicotine, are neurotoxins whose use has exploded since they were first introduced in the mid-1990s. They are now the most widely used insecticide in the world, having quickly replaced older classes of chemicals that were far more toxic to humans and mammals. The manufacturers, *Bayer CropScience* and *Syngenta*, say that neonicotinoids provide significant increases in yield for farmers and that there is no evidence that they are harmful to the environment. But recent studies have found that they may play a major role in the decline of honeybees, other pollinating insects and wildlife. The compounds are most often used as a seed treatment for corn, soybeans and other cash crops, and – because they are water-soluble – they become part of the plant’s vascular system as it grows. But only a tiny portion of the toxin is absorbed into the plant, while the rest remains in the soil, where it can leach into ground and surface water. The USGS study is the first to measure how widely the toxins have spread through surface waters. The researchers took monthly measurements at eight sites from spring through fall in 2013. They looked at small watersheds such as the Little Sioux River in MN and IA, and the huge watersheds of the Missouri and Mississippi rivers. At a ninth site, a tiny watershed in Iowa surrounded by agricultural fields, they took more frequent measurements to track how the pollutant levels changed during the growing season and with rain. They found one or more of three different kinds of neonicotinoids in each of the 79 samples. The highest concentrations were found in smaller watersheds where farming was the dominant use of the landscape; lower concentrations were found in the big rivers that drained areas with more diverse uses.

Meanwhile, an analysis conducted by the *Taskforce on Systemic Pesticides*, part of the *International Union for Conservation of Nature*, reviewed more than 800 studies over the last two decades on neonicotinoids, or neonics, and fipronil and said their findings showed the chemicals are harmful and need to be controlled through tighter regulations. The findings are being published in the journal *Environment Science and Pollution Research*. “The evidence is very clear,” said Jean-Marc Bonmatin, of the *National Centre for Scientific Research* in France. “We are witnessing a threat to the productivity of our natural and farmed environment equivalent to that posed by organophosphates or DDT. Far from protecting food production the use of neonics is threatening the very infrastructure which enables it, imperilling the pollinators, habitat engineers and natural pest controllers at the heart of an ecosystem.”

Sources: Josephine Marcotty, *Minneapolis Star Tribune*, 7/25/14, *London Telegraph*, 6/23/14; and *Greenwire*, 6/24/14

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Pesticide Use Increasing on Genetically Modified Corn

Pesticide use is surging among U.S. corn farmers who are worried that some insects have become resistant to genetically modified (GM) versions of the crop. That’s an unexpected reversal since one of the promises of engineered corn when it was introduced 17 years ago was its ability to kill pests. The use of soil insecticides for the crop plunged 90 percent through 2010, according to the U.S. Department of Agriculture. Whether the return to pesticide use makes sense, or is simply spurred by a chemical industry marketing campaign, is at the center of one of the biggest debates in the corn belt. At the heart of the controversy is whether snuffing out pests in the short term with chemicals may create a worse problem down the road.

Although *Monsanto Co.* designed its corn to kill rootworms, resistant bugs have been found in four states and growers say pesticides are needed again to protect their crops. It would be “financial suicide” to plant rootworm-killing corn without a soil insecticide as a secondary way to control the larvae, said Illinois farmer Mike Jenks, echoing the views of growers across the Midwest. That view

is driving up profit for pesticide makers like *FMC Corp.*, *American Vanguard Corp.*, and *Syngenta AG*. They're marketing corn insecticides as a kind of insurance policy that costs \$12 to \$25 an acre. But some scientists are skeptical that a return to pesticide use is in the long-term interests of farmers. Soil insecticides don't improve root health or yields when the corn is already producing its own insecticide, according to a paper published by University of Illinois scientists online on April 25 by the *Journal of Applied Entomology*. Iowa State University researchers reached a similar conclusion last year. Chemical insecticides are simply redundant, said Michael Gray, a University of Illinois entomologist. "It's pretty clear where the science and the scientific community is on this point," Gray said.

Entomologists also warn that the additional insecticide may exacerbate the resistance problem that farmers fear. That's because pairing pesticides with engineered corn exposes insects to extra toxins, delaying maturity. That leads to increased mating between resistant worms, hastening the evolution of rootworms that aren't vulnerable to GM corn. A USEPA panel of scientific advisers warned in March that "the use of a soil insecticide with a *Bt* hybrid should not be done." The report refers to GM corn as *Bt* because it includes a gene from *Bacillus thuringiensis*, a soil bacterium widely used to control insects. That echoes a 2012 warning to the USEPA from 22 corn entomologists that "an insurance-based approach" to insecticides "will only increase insect resistance." But pesticide manufacturers dispute the scientists' findings. There haven't been any studies confirming that soil insecticides are speeding the evolution of resistant rootworms, said Peter Porpiglia, head of product developing at *American Vanguard*. "It's pretty much conjecture." Meanwhile, net income for *American Vanguard* jumped 56 percent from 2011 through 2013 and soil insecticides for corn have been "a very material driver," said William Kuser, a company spokesman. More than a quarter of its sales come from soil insecticides such as *Smart Choice 5G* and *Aztec*, which are used on about 5 million acres of corn.

Farmers' concerns will boost demand for soil insecticides through at least 2015, *American Vanguard* Chairman and CEO Eric Glenn Wintemute told analysts. "We will continue to push our message," Wintemute said. "It's a good return on investment to make a soil insecticide application." *FMC* runs ads in farming magazines showing insects gorging on corn roots, warning that *Bt* "protection isn't enough." *FMC* promises to boost yields by as much as 11 bushels an acre with its *Capture LFR* insecticide. Profit in its agriculture unit jumped 55 percent from 2011 through 2013, driven by rising North American pesticide sales. *FMC* CEO Pierre Brondeau expects sales to increase this year, in part due to "concern over corn rootworm," he said. The company dismisses concerns that promoting *Capture* for use with *Bt* corn may accelerate resistance. "That's not a theory we necessarily agree with," said David Wheeler, *FMC*'s technical business manager for North American crops.

Insecticides are effective in controlling grubs, wire worms and other lesser pests, and are appropriate when resistant rootworms are known to be in a field. But *Monsanto* says resistant rootworms are rare. Only 0.2 percent of the 37 million acres with *Monsanto*'s rootworm-protected corn have had "unexpected damage" from the insects, said Jeffrey Neu, a spokesman for the company. But Gray, the entomologist, said resistance is probably more common. Resistant worms have been found in six Illinois counties and they may be about as common in other states, he said. Rootworm resistance can occur when farmers plant GM corn on the same plot year after year, overexposing bugs to toxins. Other growers fail to plant a so-called refuge of conventional corn to deter resistance. Rotating crops, planting a refuge and using a variety of *Bt* corn types are the best ways to control rootworms, not insecticides, said Gray.

Sources: Jack Kaskey, *Bloomberg*, 6/11/14; and *Greenwire*, 6/12/14

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Overuse of Pesticide Creating Superweeds

Overuse of *Monsanto*'s *Roundup* herbicide has led to the evolution of superweeds that aren't vulnerable to the world's best-selling weedkiller. A nearly indestructible invasive weed resistant to most pesticides is laying waste to crops as it moves into the Midwest after devastating cotton fields in the South. The palmer amaranth is one of 16 types of weeds that developed a resistance to *Monsanto*'s *Roundup* – after its indiscriminate use. A survey in 2012 found that weeds resistant to the herbicide covered as much space as the state of Oregon and expanded their reach by 51 percent a year. Palmer amaranth's resistance to the herbicide began to shoot up in 2005 in Macon County, GA, and now has spread to 24 states. "There's no substantive argument about whether the problem's gotten far worse in this era of genetically resistant crops," said Charles Benbrook, a professor and herbicide expert at Washington State University. "The advent of herbicide-tolerant crops made it possible for farmers to load up so much herbicide on one crop that it was inevitable that it would develop resistance."

Meanwhile, USEPA is likely to approve a *Dow AgroSciences LLC*'s application to market a new version of its 2,4-D herbicide called *Enlist* which could also lead to an increase in pesticide use on the nation's fields. Farmers who grow corn and soybean are waiting to use the new product, which they



Palmer amaranth - Missouri State University Photo

say will play a crucial role as they combat increasingly aggressive weeds that resist other pesticides. The 2,4-D is designed to be used in combination with *Roundup*. The U.S. Department of Agriculture also is expected to weigh in this fall on whether farmers can use new genetically modified seeds that grow crops designed to resist the new version of the chemical. The agency recommended approving the new seeds in a final environmental review released in mid-August, estimating the decision could increase the use of 2,4-D herbicide by 200 to 600 percent by 2020. But some groups are pushing the agencies to slow down and perform additional health studies on the pesticide. “This is a once-in-a-generation decision that will have a huge impact on public health, especially on farmers and rural residents,” Scott Faber of the *Environmental Working Group* said. “This is a moment to step back and ask if this is a durable weed control solution for farmers.”

Sources: Michael Wines, *New York Times*, 8/11/14; Mary Clare Jalonick, *AP*, 8/13/14; and *Greenwire* 8/12 and 8/13/14

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Pharmaceuticals Effects on Fish

As humans have increased their reliance on anti-anxiety drugs, fish are increasingly exposed to these drugs in our rivers and lakes. Jonatan Klaminder, a postdoctoral research fellow at Umeå University has been studying the fish response. “If you want to measure how pharmaceuticals are affecting fish, you need to measure both their positive and negative potential,” Klaminder said. “Fish share human receptors, so it is natural that they should respond much as we do, but in the current system, there isn’t really a way to measure what these positive effects may be.” That’s because conventional risk assessments on aquatic environments are focused on toxicity, but pharmaceuticals don’t really fall into this category properly. Pharmaceuticals are designed to enhance health, so risk assessment studies, finding no evidence of increased mortality associated with them, deemed their impact on aquatic environments to be minimal, or not worthy of extensive research.

Klaminder took issue with this approach. He felt that by only focusing on the possible negative effects of pharmaceuticals, we may be masking their other potential effects. His work, [published](#) in *Environmental Research Letters*, found fish not only are consuming and maintaining these chemicals but may actually respond to them precisely as humans do, by chilling out. Klaminder exposed two subsets of Eurasian perch fry prior to hatching and 2-year-old mature fish, to *Oxazepam*, an anti-anxiety drug, and found that in both cases, the drug decreased mortality rates. Populations showed higher feeding rates, higher activity and increased boldness. By reducing anxiety, the perch strayed farther from the school, and as a result, were better scavengers. “If you’re a small fish, you are constantly anxious,” said Klaminder, “just waiting for a bigger fish around the corner to eat you. It is very normal for perch especially to be rather inactive, laying in wait for food to come to them, but these bolder fish found more food sources by exploration and taking risks.” While these may sound like advantages, Klaminder is cautious in calling these positive effects. Perch behave the way they do for a reason, gaining protection in numbers, so changing their behavioral normalities may expose fish to increased risk, causing higher mortality rates. But whether or not these effects turn out to be helpful or detrimental is really not the question researchers were trying to answer, nor is it the take-home message, Klaminder said. “We are not interested so much in the impact of this particular drug so much as the flaws in the system it shows,” said Klaminder.

But Gerald Ankley, a toxicologist with USEPA, doesn’t fully agree that there is a flaw to be fixed. Having studied a variety of chemicals in aquatic systems for many years, including some pharmaceuticals, Ankley said research has not been driven toward studies like Klaminder’s for good reason. “As toxicologists, we do struggle to explain the cases where contamination actually leads to increased health, when they do better than their control counterparts,” said Ankley, “but we’re a community looking at toxicity, and ultimately, when it comes down to it, we’re looking for negative effects.” Ankley feels that while studies like Klaminder’s present interesting inroads, much more proof is needed to label these effects as consequential. “I think it’s a little overstated to claim these findings warrant changing the system, but what would be interesting is to determine whether this effect is reproducible,” said Ankley, “not just in the wild but also in other species.” Klaminder and his team hope to do just that, focusing future efforts on extending findings to more species and under more realistic environmental conditions than those found in the lab, but Klaminder added that what he truly desires from his work is something not many scientists would be hoping for. “It may sound strange for a scientist to say this,” he said, “but I actually hope what we found is wrong, and that these effects are not being lived out in the wild already, because if they are, it means we’ve been looking at this the wrong way and don’t really have a clue how many pharmaceuticals are affecting aquatic environments.”

Source: *ClimateWire*, 8/8/14

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Amphibians Can Acquire Resistance to Deadly Fungus

Emerging fungal pathogens pose a greater threat to biodiversity than any other parasitic group, scientists say, causing population declines of amphibians, bats, corals, bees and snakes. Now research results published in early July in the journal *Nature* reveal that amphibians can acquire behavioral or immunological resistance to a deadly chytrid fungus implicated in global amphibian population

declines. Experiments in the study revealed that after just one exposure to the chytrid fungus, frogs learned to avoid the deadly pathogen. “The discovery of immunological resistance to this pathogenic fungus is an exciting fundamental breakthrough that offers hope and a critical tool for dealing with the global epidemic affecting wild amphibian populations,” said Liz Blood, a program officer in the *National Science Foundation’s* Directorate for Biological Sciences, which funded the research through its *MacroSystems Biology Program*. “Acquired resistance is important because it is the basis of vaccination campaigns based on ‘herd immunity,’ where immunization of a subset of individuals protects all from a pathogen,” said Jason Rohr, a biologist at the University of South Florida (USF) who led the research team along with Taegan McMahon of the University of Tampa.

In further experiments in which frogs could not avoid the fungus, frog immune responses improved with each fungal exposure and infection clearance, significantly reducing fungal growth and increasing the likelihood that the frogs would survive subsequent chytrid infections. “The amphibian chytrid fungus suppresses the immune responses of amphibian hosts, so many researchers doubted that amphibians could acquire effective immunity against this pathogen,” Rohr said. “However, our results suggest that amphibians can acquire immunological resistance that overcomes chytrid-induced immunosuppression and increases survival.” Rohr also noted that “variation in the degree of acquired resistance might partly explain why fungal pathogens cause extinctions of some animal populations but not others.” Conservationists have collected hundreds of amphibian species threatened by the fungus and are maintaining them in captivity with the hope of re-establishing them in the wild. But reintroduction efforts so far have failed because of the persistence of the fungus at collection sites. “An exciting result from our research is that amphibian exposure to dead chytrid induced a similar magnitude of acquired resistance as exposure to the live fungus,” McMahon said. “This suggests that exposure of waterbodies or captive-bred amphibians to dead chytrid or chytrid antigens might offer a practical way to protect chytrid-naïve amphibian populations and to facilitate the reintroduction of captive-bred amphibians to locations in the wild where the fungus persists.”

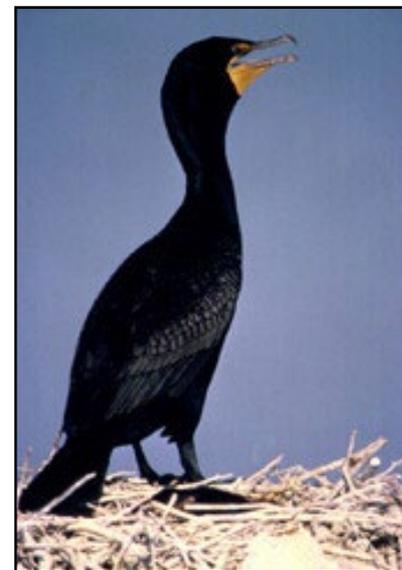
Immune responses to fungi are similar across vertebrates, and many animals are capable of learning to avoid natural enemies, Rohr said. “Our findings offer hope that amphibians and other wild animals threatened by fungal pathogens – such as bats, bees and snakes – might be capable of acquiring resistance to fungi and so might be rescued by management approaches based on herd immunity.” Rohr cautioned, however, that “although this approach is promising, more research is needed to determine the success of this strategy.”

Source: *National Science Foundation*, 7/9/14

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Corps Plan Would Kill Birds to Save Fish

The U.S. Army Corps of Engineers (Corps) is proposing to cull an oversized seabird population along the Columbia River in Oregon as part of its management plan to protect salmon and steelhead bound for the Pacific Ocean. Shooting some 16,000 double-crested cormorants is the preferred choice among four options the Corps has put forward to protect the fish. The plan, which includes taking a limited number of cormorant eggs, would enlist the Wildlife Services agency of the U.S. Department of Agriculture to shoot the birds after the U.S. Fish and Wildlife Service granted permits. “We feel it’s the one that gives us the most certainty of achieving the requirements that have been put upon us,” said Joyce Casey, chief of the Corps’ environmental resources branch in Portland. “It’s the most cost-effective, and it’s the one that has the best likelihood of not moving the problem somewhere else.” The population of cormorants ballooned from about 100 breeding pairs to 14,900 pairs after dredging decades ago to aid river commerce created a flat, sandy island ideal for nesting. The birds on East Sand Island feast on an estimated 11 million fish a year, including endangered species. While fishermen want to see fish protected, some observers wonder whether alternatives – including the Corps’ other three options that would not involve killing birds – might be more effective at meeting the requirements laid out under the Endangered Species Act. “I can’t believe in this day and age we can’t come up with an alternative solution to killing things,” Tommy Huntington of Cannon Beach said at a recent open house. “You have to kill one to save the other one? It doesn’t make any sense.” Public comments were accepted by the Corps through mid-August.



Double Crested Cormorant

Sources: *Associated Press*, 8/1/14; and *Greenwire*, 8/4/14

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State Record Invasive Fish

Maryland officials are hoping that the prospect of landing a record fish will enlist anglers in the battle against the northern snakehead. The invasive snakehead, which can breathe air and travel short distances over land, has spread throughout much of the Potomac River basin in Virginia and Maryland in the last decade, snapping up anything in front of it. The new program sets official records

for snakeheads caught in Maryland waters. The first state record was a 16.78 lbs. (7.61-kg) snakehead set on June 1. That record was broken two hours later by a snakehead weighing 16.94 lbs. (7.68 kg). Both fishermen will receive award plaques. “Snakeheads are thriving,” said Joe Evans, spokesman for the Maryland Department of Natural Resources. “We’ve been encouraging people to catch them, keep them and eat them since they are a non-native species that has a capacity to affect the local fish population.” There are enough of the fish in the region to support the annual *Potomac Snakehead Tournament*, where some anglers call the fish Potomac pike. The world record fish was caught in a Potomac tributary in Virginia and weighed 17.6 pounds (7.98 kg). Native to China, Russia and Korea, the snakehead has no natural predators in the United States. It got its start in the Potomac through releases from aquariums and the live fish trade. It can out-compete native fish for food and damage commercial fishing industries. Evans said the snakehead has expanded out of the Potomac and into rivers on the Eastern Shore of the Chesapeake Bay. “The population is stabilizing a bit and I think the anglers are part of that,” he said. Other efforts to curb the population boom include putting snakehead on area menus. The snakehead is a delicacy in Chinese and Korean cuisine.

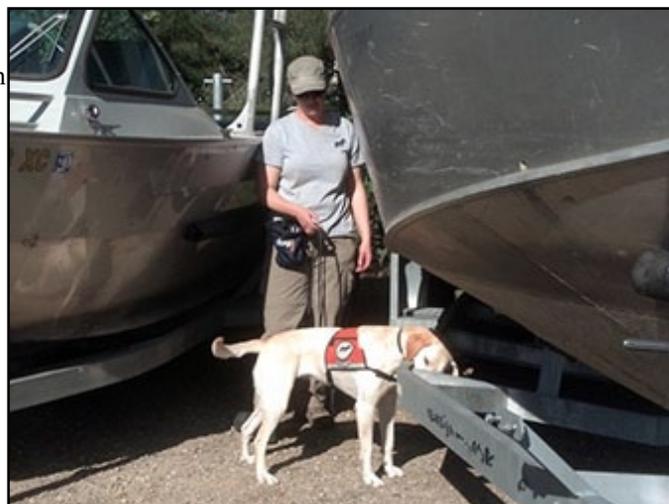
Sources: John Clarke, *Reuters*, 7/24/14; and *Greenwire*, 7/25/14

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Dogs Sniff Out Invasive Mussels

Dogs were used in a pilot project this summer to sniff out invasive mussels on boats crossing the U.S./Canadian border. The dogs were excellent at finding invasive quagga and zebra mussels hitching rides on the bottoms of boats and kayaks traveling into the lakes and waterways of the Flathead Basin in Montana and into Coultts and Medicine Hat, Alberta. “The dogs are quite accurate at it, and they’re faster” than humans, said Alice Whitelaw, co-founder and programs director for *Working Dogs for Conservation* (WDC), an organization based in Montana that participated in the pilot project funded by the *Flathead Basin Commission* and the Alberta government. The WDC dogs have previously worked on other invasive species-detection projects as well as efforts to detect ivory and bush meat poaching in Zambia. “We partner with dogs to further conservation,” Whitelaw said. But it’s hard work, and even pooches don’t work for free. “It takes a special dog. Not all dogs can do this,” Whitelaw said, explaining that the dogs are rewarded with playtime after they locate their target.

The dogs used by WDC have high levels of endurance and an obsession with fetching balls. That obsession is key, Whitelaw said. Only about one in 1,000 dogs screened from shelters and rescue groups are smart enough for the detective work and have the endurance to deal with sometimes long hours and long-distance searches. Size, intelligence and a good nose are also important factors, and some of the breeds the group has had success with include Labrador retrievers or Lab crosses, border collies, Australian or German shepherds, and Belgian malinois. “The dogs are having a good time. It’s just a party,” she said, adding that the dogs probably think, “You collect your silly human data and then we go play.” To counteract any work fatigue problems with the play-for-reward system, human handlers often carry mussel samples or other things the dogs are trained to smell in order to ensure a reward. “We don’t make them work without a find forever and ever,” Whitelaw said.



Mussel sniffing dog. - Working Dogs for Conservation Photo

Boaters, too, like to see the canine antics, said Caryn Miske, executive director of the *Flathead Basin Commission*. “The dogs have been universally received. The vast majority of people are really excited to see the dogs,” Miske said. “It will hopefully help us in the long term in changing behaviors. The system will likely fail if we don’t have the cooperation and support of people,” she said. Miske stressed that the dogs aren’t brought in to replace people but supplement human knowledge with their advanced sense of smell. “There are certain things that only humans can do, but there are also things only dogs can do,” she said, adding that humans are often better at detecting mussels on kayaks that are tied to the top of vehicles too high for the dogs to reach. Miske said the dogs have performed “extremely well” so far, with a 100 percent detection rate. Humans, on the other hand, missed some boats. Similar programs that used dogs to monitor for quagga and zebra mussels have taken place in California and Minnesota. “We’re taking what’s already been done successfully and trying to start it in new states and provinces,” Whitelaw said.

Source: Joshua Learn, *Greenwire*, 8/11/14

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Wiping Out Mosquitos

Female mosquitoes drink blood when they are producing eggs, while male mosquitoes sip nectar. So if you can eliminate female mosquitos, you can eliminate mosquito bites. A team at Imperial College London has been working for years to create male-only

mosquito families, but the method they used to damage the X chromosome ended up killing all the mosquito larvae. Now they've perfected the method, Roberto Galizi, Andrea Crisanti and colleagues report in the journal *Nature Communications*. Just like people, mosquito sex is determined by the X and Y chromosomes. Males have one X – inherited from the mother, and one Y – inherited from the father. Females have two X chromosomes, one inherited from each parent. So if one is damaged, the female offspring cannot survive. The researchers spliced a gene into the mosquitoes that slices up the X chromosome when sperm is produced. “Shredding of the paternal X chromosome prevents it from being transmitted to the next generation, resulting in fully fertile mosquito strains that produce 95 percent male offspring,” they wrote.

“What is most promising about our results is that they are self-sustaining,” said Nikolai Windbichler, who helped lead the study. “Once modified mosquitoes are introduced, males will start to produce mainly sons, and their sons will do the same, so essentially the mosquitoes carry out the work for us.” But it's likely that mosquito populations would rebound after a few years, so researchers would have to continually re-introduce genetically engineered mosquitoes. In theory, the approach could be used to fight all types of mosquitoes – not just the *Anopheles gambiae* mosquitoes that transmit most malaria, but also *Aedes aegypti* and other species that transmit dengue, Chikungunya, West Nile and other deadly viruses. “The research is still in its early days, but I am really hopeful that this new approach could ultimately lead to a cheap and effective way to eliminate malaria from entire regions,” said Galizi.

Outside experts said wiping out mosquitoes would be unlikely to disrupt any ecosystem. “The mosquitoes are not keystone species in their ecosystems. No other animal is dependent on them for food, and we don't rely on mosquitoes to eat anything,” said Luke Alphey of Britain's *Pirbright Institute*.

Source: *NBC News*, 6/9/14

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Tamarisk Beetle and Drought Control

Tamarisk, an invasive tree species in the West, can consume up to 200 gallons of water a day, contributing significantly to drought conditions, and can actually dry up and destroy small trout streams. Arizona is now using a small beetle to kill the tamarisks and fight drought conditions. Officials say the centimeter-long beetle – which was released in Arizona a decade ago – could help maintain water levels in the Colorado River. “We're all looking at ways to increase the flows from the Colorado,” said David Modeer, the general manager for the *Central Arizona Project*, a public agency that said in June that it might have to cut water deliveries to some cities by 2020 if the state can't reduce its water consumption. “Every drop counts,” Modeer added. Still, some observers said the beetle won't kill every tamarisk tree and could harm other plants as it spreads across the state. “You'll never get the last tree,” said Gibney Siemion, an ecologist with the *Grand Canyon Wildlands Council*. “You do your best, but the tamarisk is very adaptable.”



Tamarisk beetles - NPS Photo

Sources: Ken Belson, *New York Times*, 7/14/14; and *Greenwire*, 7/15/14

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Climate Change Accelerates Hybridization in Trout

A new study, published in the journal *Nature Climate Change*, by scientists of the U.S. Geological Survey, University of Montana, and Montana Fish, Wildlife & Parks has discovered that the rapid spread of hybridization in the wild between native westslope cutthroat trout species and invasive rainbow trout is strongly linked to climate change. Experts have long predicted that climate change could decrease worldwide biodiversity through cross-breeding between invasive and native species, but this study is the first to directly and scientifically support this assumption. The study, based on 30 years of research, found that stream temperature warming over the past several decades and decreases in spring flow over the same time period contributed to the spread of hybridization between the two species. Westslope cutthroat trout and rainbow trout both spawn in the spring and can produce fertile offspring when they interbreed.

The researchers used long-term genetic monitoring data coupled with high-resolution climate and stream temperature predictions to assess whether climate warming enhances interactions between native and nonnative species through hybridization. Historical genetic samples revealed that hybridization between the two fish species was largely confined to one downstream Flathead River population. However, the study noted, over the past 30 years, hybridization rapidly spread upstream, irreversibly reducing the genetic integrity of native westslope cutthroat trout populations. Genetically pure populations of westslope cutthroat trout are now known to occupy less than 10 percent of their historical range. The rapid increase in hybridization was highly associated with climatic changes in the region. From 1978 to 2008 the rate of warming nearly tripled in the Flathead basin, resulting in earlier spring runoff, lower spring flooding and flows, and warming summer stream temperatures. Those locations with the greatest changes in stream flow and temperature

experienced the greatest increases in hybridization.

“Climatic changes are threatening highly prized native trout as introduced rainbow trout continue to expand their range and hybridize with native populations through climate-induced ‘windows of opportunity,’ putting many populations and species at greater risk than previously thought,” said project leader and USGS scientist Clint Muhlfeld. “The study illustrates that protecting genetic integrity and diversity of native species will be incredibly challenging when species are threatened with climate-induced invasive hybridization.” Over time, a mating population of native and non-native fish will result in only hybrid individuals with substantially reduced fitness because their genomes have been infiltrated by nonnative genes that are maladapted to the local environment. Thus, protecting and maintaining the genetic integrity of native species is important for a species’ ability to be resilient and better adapt to a rapidly changing climate.

Relative to cutthroat trout, rainbow trout prefer these climate-induced changes, and tolerate greater environmental disturbance. These conditions have likely enhanced rainbow trout spawning and population numbers, leading to massive expansion of hybridization with westslope cutthroat trout. “The evolutionary consequences of climate change are one of our greatest areas of uncertainty because empirical data addressing this issue are extraordinarily rare; this study is a tremendous step forward in our understanding of how climate change can influence evolutionary process and ultimately species biodiversity,” said Ryan Kovach, a University of Montana study co-author. Hybridization has contributed to the decline and extinction of many native fishes worldwide, including all subspecies of cutthroat trout in western North America, which have enormous ecological and socioeconomic value. Overall, aquatic ecosystems in western North America are predicted to experience increasingly earlier snowmelt in the spring, reduced late spring and summer flows, warmer and drier summers, and increased water temperatures – all of which spell increased hybridization between these two species.

Source: *Science Daily*, 5/25/14

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The Sixth Mass Earth Extinction

The loss and decline of animals around the world – caused by habitat loss and global climate disruption – mean we’re in the midst of a sixth “mass extinction” of life on Earth, according to several studies published in the late July issue of the journal *Science*. One study found that although human population has doubled in the past 35 years, the number of invertebrate animals – such as beetles, butterflies, spiders and worms – has decreased by 45% during that same time period. “We were shocked to find similar losses in invertebrates as with larger animals, as we previously thought invertebrates to be more resilient,” said Ben Collen of the U.K.’s University College London, one of the study authors. Researchers say that even the disappearance of the tiniest beetle can significantly change the various ecosystems on which humans depend. “We tend to think about extinction as loss of a species from the face of Earth, and that’s very important, but there’s a loss of critical ecosystem functioning in which animals play a central role that we need to pay attention to as well,” said lead author Rodolfo Dirzo of Stanford University. “Habitat destruction will facilitate hunting and poaching, and species will have difficulty in finding refuge given land use change and climatic disruption,” added Dirzo.

The study reported that around 322 species have gone extinct over the last five centuries. Scientists have coined the phrase “anthropocene defaunation” – meaning human-caused animal decline – to describe this apparent mass extinction. Five times in the history of the Earth, a huge percentage of the planet’s life has been wiped out in what are called mass extinctions, typically from collisions with giant meteors. What’s new about this extinction is “that the underlying driving force for this is not a meteorite or a mega-volcanic eruption; it is one species – homo sapiens,” said Dirzo. A study earlier this year in *Science* found that species of plants and animals are becoming extinct at least 1,000 times faster than they did before humans appeared. Overall, scientists estimate that due to all of the past extinctions, about nine out of 10 of all life-forms that have existed on our planet are extinct.

Sources: Doyle Rice, *USA Today*, 7/24/14; and *Greenwire*, 7/25/14

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Meetings of Interest

Oct. 20-22: [Upper Midwest Invasive Species Conference](#), Duluth, MN.

Marriot, Arlington, VA.

[Joint Meeting](#), St. Charles, MO.

Oct. 26-30: [Aquatic Resources Education Association](#), Traverse City, MI, Park Place Hotel.

Feb. 8-11, 2015: [75th Midwest Fish and Wildlife Conference](#), Indianapolis, IN.

Jun. 14-19, 2015: [Catchment Science: Interactions of Hydrology, Biology, and Geochemistry 2015](#), Andover, NH

Dec. 8-11: [A Community on Ecosystem Services \(ACES\)](#), Crystal Gateway

Mar. 22-26, 2015: [Upper Mississippi River Conservation Committee and Freshwater Mollusk Conservation Society](#)

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Congressional Action Pertinent to the Mississippi River Basin

Climate Change

S. 7. Reid (D/NV) and 21 Co-sponsors. Promotes investment to ensure resilience to extreme weather and disasters and ensures that the federal government is a leader in reducing pollution, promoting the use of clean energy sources, and improving energy efficiency.

S. 332. Sanders (I/VT) and Boxer (D/CA). Addresses climate disruptions, reduces carbon pollution, enhances the use of clean energy, and promotes resilience in the infrastructure of the U.S., and for other purposes.

S. 659. Wyden (D/OR) and **H.R. 518,** Markey (D/MA) and 14 Co-sponsors. Reauthorizes and amends the *Reclamation States Emergency Drought Relief Act of 1991*, and for other purposes.

S. 1202. Whitehouse (D/RI) and Baucus (D/MT). Requires establishment of an interagency *Natural Resources Climate Change Adaptation Panel* to adopt the *National Fish, Wildlife, and Plants Climate Adaptation Strategy* and review and revise such strategy every four years.

H.R. 3988. Huffman (D/CA) and 11 Co-sponsors. Supplements Corps of Engineers (Corps) authorities to change reservoir operations in order to meet the needs of climate change.

H.R. 4461. Honda (D/CA) and 13 Co-sponsors. Climate Change Education Act.

H.R. 5065. Cartwright (D/PA) and 15 Co-sponsors. Establishes an integrated Federal program to respond to impacts of extreme weather and climate change by protecting, restoring, and conserving the natural resources of the U.S., and to maximize government efficiency and reduce costs, in cooperation with State, local, and tribal governments and other entities.

Conservation

S. 51. Boxer (D/CA) and 11 Co-sponsors and **H.R. 263,** Grimm (R/NY) and Dingell (D/MI). Reauthorizes the *National Fish and Wildlife Foundation*.

S. 327. Barrasso (R/WY) and 10 Co-

sponsors and **H.R. 2401,** Cotton (R/AR) and LaMalfa (R/CA). Authorizes the Secs. of Agriculture and Interior to enter into cooperative agreements with states authorizing state foresters to provide certain forest, rangeland, and watershed restoration and protection services.

S. 338. Baucus (D/MT) and 42 Co-sponsors and **H.R. 2727,** McKinley (R/WV) and 15 Co-sponsors. Amends the *Land and Water Conservation Fund Act of 1965* to provide consistent and reliable authority and funding for it, and for other purposes.

S. 526. Baucus (D/MT) and 25 Co-sponsors and **H.R. 2807,** Gerlach (R/PA) and 221 Co-sponsors. Amends the IRS Code to make permanent tax deductions for charitable contributions of real property interests for conservation purposes, and for other purposes.

S. 632. Mc Cain (R/AZ) and 19 Co-sponsors and **H.R. 1313,** Hartzler (R/MO) and 63 Co-sponsors. Repeals a provision of the *Food, Conservation, and Energy Act of 2008* establishing an inspection and grading program for catfish and other species of farm-raised fish or shellfish.

S. 741. Vitter (R/LA) and 15 Co-sponsors and **H.R. 2208,** Whitman (R/VA) and 9 Co-sponsors. Extends the *North American Wetlands Conservation Act* through 2017.

S. 923. Udall (D/NM) and **H.R. 1890,** Blumenauer (D/OR) and 25 Co-sponsors. Amends the *Food Security Act of 1985* to make a producer violating certain conservation requirements under the highly erodible land or wetland programs ineligible for federal crop insurance premiums.

S. 1441. Bennet (D/CO) and 3 Co-sponsors and **H.R. 3023,** Gardner (R/CO) and 5 Co-sponsors. Amends the IRS Code to facilitate water leasing and water transfers to promote conservation and efficiency.

S. 2080. Cardin (D/MD) and 2 Co-sponsors. Authorizes appropriation of \$29 million over the 2015-2018 period for the Department of the Interior to fund projects to conserve fish habitats, and for other purposes.

S. 2636. Begich (D/AK) and Murkowski

(R/AK) and **H.R. 4721,** Young (R/AK). Amends the IRS Code of 1986 to encourage charitable contributions of real property for conservation purposes by Native Corporations.

H.R. 48. Bishop (D/NY) and Hanna (R/NY). Amends the IRS Code to allow installment sales treatment for land sold to a governmental unit or tax-exempt charitable organization for conservation purposes even though the purchase funds for such sale are held in a sinking or similar fund, as required by state law.

H.R. 638. Fleming (R/LA) and 13 Co-sponsors. Amends the *National Wildlife Refuge System Administration Act of 1966* to require that any new national wildlife refuge may not be established except as expressly authorized by statute.

H.R. 910. Fleming (R/LA). Reauthorizes Title 1 of the *Sikes Act* through 2019.

H.R. 1080. Bordallo (D/GU). Amends the *Sikes Act* to promote use of cooperative agreements for land management related to the Department of Defense on military readiness activities.

H.R. 1611. Ribble (R/WI). Authorizes use of Forest Service funds derived from conservation-related programs executed on National Forest System lands to utilize the *Agriculture Conservation Experienced Services Program* to provide technical services for conservation-related programs and authorities carried out on such lands.

H.R. 1788. Bachmann (R/MN) and 10 Co-sponsors. Amends the *Migratory Bird Treaty Act* to delegate double-crested cormorant management authority to a state on the date the Interior Secretary approves a cormorant management plan submitted by such state, and for other purposes.

H.R. 1834. Grijalva (D/AZ). Establishes the *21st Century Great Outdoors Commission* to assess the use, value, job creation, and economic opportunities associated with the outdoor resources of public lands and other U.S. lands and water areas.

H.R. 2261. Crawford (R/AR) and 6 Co-sponsors. Ensures continuation of successful fisheries mitigation programs by

imposing charges for such mitigation on the federal agency developing an impacting project, and for other purposes.

H.R. 2714. Meadows (R/NC). Amends the IRS Code to allow taxpayers to assign to another taxpayer the amount of the unused charitable deduction for qualified conservation contributions.

H.R. 4551. Gibson (R/NY) and 10 Co-sponsors. Amends the *Cooperative Forestry Assistance Act of 1978* to authorize states to allow certain entities to acquire, hold, and manage conservation easements under the forest legacy program.

H.R. 4790. Hastings (D/FL) and 11 Co-sponsors. Authorizes use of federal funds for the provision of habitat, forage, and migratory way stations for Monarch butterflies, other native pollinators, and honey bees that is related to a federally-funded transportation project.

H.R. 5026. Gosar (R/AZ) and 13 Co-sponsors. Prohibits closing or repurposing any propagation fish hatchery or aquatic species propagation program of the U.S. Department of the Interior unless such action is expressly authorized by an Act of Congress, and for other purposes.

H. R. 5220. Graves (R/MO). Amends the Land and Water Conservation Fund to limit the use of funds available for maintenance.

Endangered Species

S. 19. Cornyn (R/TX) and 17 Co-sponsors and **H.R. 1314,** Flores (R/TX) and 5 Co-sponsors. Amends the Endangered Species Act (ESA) to establish a procedure for approval of certain settlements.

S. 1175. Feinstein (D/CA) and **H.R. 2280,** Calvert (R/CA). Requires that the Treasury Secretary establish a program to provide loans and loan guarantees to enable state political subdivisions to acquire interests in real property pursuant to habitat conservation plans approved under the ESA, and for other purposes.

S. 1731. Paul (R/KY) and 2 Co-sponsors and **H.R. 3533,** Amodei (R/NV). Amends the ESA to permit state Governors to regulate intrastate endangered and threatened species, strips the protection from many

currently listed species and their habitats, and for other purposes.

S. 2084. Pryor (D/AR) and Landrieu (D/LA) and **H.R. 4319,** Crawford (R/AR) and 27 Co-sponsors. Amends the ESA to require the Interior Secretary to publish and make available for public comment a draft economic analysis at the time a proposed rule to designate critical habitat is published.

S. 2635. Cornyn (R/TX) and 5 Co-sponsors, and **H.R. 4315** Hastings (R/WA) and 28 Co-sponsors. Amends the ESA to require Internet publication of the basis for threatened and endangered species determinations, and for other purposes.

S. 2729. Pryor (D/AR) and Boozman (R/AR). Amends the ESA to require publication of a public comment draft economic analysis at the time a proposed rule to designate critical habitat is published.

S. 2748. Lee (R/UT) and **H.R. 4318.** Huizenga (R/MI) and 28 Co-sponsors. Amends the ESA to conform citizen suits under that Act with other existing law, and for other purposes.

S. 2752. Lee (R/UT) and **H.R. 4316,** Lummis (R/WY) and 26 Co-sponsors.. Amends the ESA to improve the disclosure of certain expenditures under that Act, and for other purposes.

H.R. 576. Stockman (R/TX) and 2 Co-sponsors Amends the ESA to provide for captive breeding and for other purposes.

H.R. 1866. Young (R/AK). Amends the ESA to promote sustainable-use conservation to harmonize it with the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES), and for other purposes.

H.R. 4256. Stewart (R/UT) and 2 Co-sponsors. Amends the ESA to require counting the number of the species occurring on state and private lands before listing as endangered or threatened.

H.R. 4284. Neugebauer (R/TX) and 3 Co-sponsors. Amends the ESA to encourage greater state input and authority over species and habitat management by allowing states to propose and implement state Protective Action before species are listed

under that Act, and for other purposes.

H.R. 4317. Neugebauer (R/TX) and 29 Co-sponsors. Amends the ESA to require disclosure of the basis of determinations under such Act, to the states to ensure use of information provided by state, tribal, and county governments in decision making under such Act, and for other purposes.

H.R. 4319. Crawford (R/AR) and 27 Co-sponsors. Amends the ESA to require exclusion of an area from critical habitat if the benefits of exclusion outweigh the benefits of including the area, unless the failure to designate the area as critical habitat will result in the extinction of the species.

H.R. 5329. Conaway (R/TX) and 7 Co-sponsors. Amends the ESA to require establishment of objective numerical recovery goals for removal of species from lists of endangered and threatened species under that Act, and for other purposes.

Energy

S. 279. Tester (D/MT) and 9 Co-sponsors and **H.R. 596,** Gosar (R/AZ) and 60 Co-sponsors. Promotes development of renewable energy on public lands, and for other purposes.

S. 545. Murkowski (R/AK) and 12 Co-sponsors and **H.R. 267,** McMorris-Rodgers (R/WA) and 9 Co-sponsors. Improves hydropower, and for other purposes.

S. 1233. Inhofe (R/OK) and 13 Co-sponsors and **H.R. 2511** Black, (R/TN) and 37 Co-sponsors. Authorizes states to develop all forms of energy resources on available federal land in the state including meeting the requirements of the ESA and NEPA.

S. 1234. Inhofe (R/OK) and 18 Co-sponsors and **H.R. 2513,** Gohmert (R/TX) and 11 Co-sponsors. Gives states sole authority to regulate hydraulic fracturing on Federal lands within their boundaries.

S. 1482. Hoeven, (R/ND) and 4 Co-sponsors. Prohibits the Interior Secretary from issuing or promulgating any guideline or regulation relating to oil or gas exploration or production on federal land in a state if the state has otherwise met the requirements under applicable federal law, and

for other purposes.

S. 2010. Barrasso (R/WY) and **H.R. 1963.** Daines (R/MT) and 4 Co-sponsors. Amends the *Water Conservation and Utilization Act* to authorize development of non-Federal hydropower and issuance of leases of power privileges at projects.

S. 2280. Hoeven (R/ND) and 55 Co-sponsors. Approves the Keystone XL Pipeline.

H.R. 334. Poe (R/TX) and 42 Co-sponsors. Approves a specified permit regarding certain energy-related facilities and land transportation crossings on the international boundaries of the U.S. for the Keystone XL pipeline project.

H.R. 1235. Hartzler (R/MO) and 5 Co-sponsors. Amends the *Federal Power Act* to prohibit FERC from considering public use and environmental purposes in issuing a license for a project in a state whose law expressly authorizes such a prohibition.

FWPCA and Water Quality

S. 496. Pryor (D/AR) and 11 Co-sponsors and **H.R. 311,** Crawford (R/AR) and 73 Co-sponsors. Directs the USEPA to change the *Spill Prevention, Control, and Countermeasure* rule with respect to certain farms.

S. 802. Hagan (D/NC) and 13 Co-sponsors and **H.R. 935,** Gibbs (R/OH) and 61 Co-sponsors. Clarifies Congressional intent regarding regulation of pesticide use in or near navigable waters, and for other purposes.

S. 830. Manchin (D/WV) and 6 Co-sponsors and **H.R. 524,** McKinley (R/WV) and 13 Co-sponsors. Amends the FWPCA to clarify and confirm USEPA authority to deny or restrict use of defined areas as disposal sites for discharge of dredged or fill material.

S. 861. McConnell (R/KY) and Paul (R/KY) and **H.R. 1829,** Capito (R/WV) and 21 Co-sponsors. Amends the FWPCA to provide guidance and clarification regarding issuance of new and renewal permits, and for other purposes.

S. 890. Paul (R/KY) and 8 Co-sponsors and **H.R. 3377,** Thornberry (R/TX) and 28 Co-sponsors. Prohibits FWPCA activities

carried out by the USEPA or the Corps from impinging upon states' power over land and water use, clarifies the definition of navigable waters, and for other purposes.

S. 1006. Barrasso (R/WY) and 27 Co-sponsors. Preserves existing rights and responsibilities with respect to waters of the U.S.

S. 1343. Grassley (R/IA) and 5 Co-sponsors and **H.R. 4157** Crawford (R/AR) and 15 Co-sponsors. Prohibits the USEPA, or any USEPA contractor or cooperator, from disclosing any information regarding the location of the owner, operator, livestock, or employee of any CAFO regulated under the Clean Water Act (CWA).

S. 1470. Kaine (D/VA) and Warner (D/VA) and **H.R. 2937,** Hurt (R/VA) and 7 Co-sponsors. Amends the FWPCA with respect to the guidelines for specification of certain disposal sites for dredged or fill material.

S. 1961. Manchin (D/WV) and 5 Co-sponsors and **H.R. 4024,** Capito (R/WV). Protects navigable waters from contamination by chemical storage facilities, and for other purposes.

S. 2225. Udall (D/NM) and Chambliss (R/GA). Provides for a smart water resource management pilot program.

S. 2226. Udall (D/NM) and 2 Co-sponsors and **H.R. 123,** Holt (D/NJ) and Miller (D/CA). Establishes a *WaterSense* program within the USEPA.

S. 2496. Barrasso (R/WY) and 37 Co-sponsors, **H.R. 5078,** Southerland (R/FL) and 120 Co-sponsors. Preserves existing rights and responsibilities with respect to waters of the U.S.

H.R. 1175. Cartwright (D/PA) and 70 Co-sponsors. Amends the FWPCA to direct the Interior Secretary to conduct a study with respect to stormwater runoff from oil and gas operations, and for other purposes.

H.R. 1296. Miller (R/CA) and 4 Co-sponsors. Amends the FWPCA to clarify a maintenance exemption regarding the removal of sediment, debris, and vegetation from certain structures.

H.R. 1304. Walberg (R/MI) and 19 Co-sponsors. Permits the chief executive of a state to create an exemption from certain requirements of Federal environmental laws for producers of agricultural commodities, and for other purposes.

H.R. 1837. Pallone (D/NJ) and 93 Co-sponsors. Amends the FWPCA to clarify that fill material cannot be comprised of waste.

H.R. 1877. Bishop (D/NY) and 40 Co-sponsors. Amends the FWPCA to authorize appropriations for state water pollution control revolving funds, and for other purposes.

H.R. 1887. Engel (D/NY) and 3 Co-sponsors. Amends the IRS Code to deny all income tax credits and deductions to an offending oil polluter, and for other purposes.

H.R. 1948. Mica (R/FL) and 2 Co-sponsors. Amends the FWPCA to preserve the authority of each state to make determinations relating to the state's water quality standards, and for other purposes.

H.R. 2581. Hurt (R/VA) and 9 Co-sponsors. Replaces the need for an FWPCA permit for the discharge of dredged or fill material into navigable waters for projects which bring waters into uses for which they were not previously subject and where the flow or circulation of such waters may be impaired or the reach of such waters may be reduced with a requirement that a permit be obtained for any such discharge that is not currently exempted from permit requirements.

H.R. 2850. Smith (R/TX) and 2 Co-sponsors. Oversees review and release of the USEPA study on the impacts of hydraulic fracturing.

H.R. 2948. Matheson (D/UT) and Harper (R/MS). Requires analyses of the cumulative and incremental impacts of certain rules and actions of the USEPA, and for other purposes.

H.R. 3464. LoBiondo (R/NJ) and 10 Co-sponsors. Amends the FWPCA to prohibit a permit from being required under such Act for a discharge incidental to the normal operation of a commercial vessel, and for other purposes.

H.R. 3582. Blumenauer (D/ID) and 7 Co-sponsors. Amends the IRS Code to establish a *Water Infrastructure Investment Trust Fund* for the USEPA to use in making capitalization grants under the CWA.

H.R. 4012. Schweikert (R/AZ) and 52 Co-sponsors. Prohibits the USEPA from releasing a regulation or related action without publicly disclosing the technical backing.

H.R. 4854. Gibbs (R/OH) and 19 Co-sponsors. Amends the FWPCA to clarify when the USEPA Administrator has the authority to prohibit the specification of a defined area, or deny or restrict the use of a defined area for specification, as a disposal site under section 404 of such Act, and for other purposes.

H.R. 4895. Pallone (D/NJ) and 2 Co-sponsors. Amends the Federal Food, Drug, and Cosmetic Act to prohibit, beginning January 1, 2018, the distribution of a cosmetic that contains synthetic plastic microbeads.

H.R. 5071. Ribble (R/WI) and 47 Co-sponsors. Preserves existing rights and responsibilities with respect to non-prohibited discharges of dredged or fill material under the CWA.

Grazing

S. 258. Barrasso (R/WY) and 8 Co-sponsors and **H.R. 657**, and 15 Co-sponsors. Amends the *Federal Land Policy and Management Act of 1976* to improve management of grazing leases and permits, and for other purposes.

Invasive Species

S. 248. Begich (D/AK) and 2 Co-sponsors and **H.R. 584**, Young (R/AK) and 23 Co-sponsors. Amends the *Federal Food, Drug, and Cosmetic Act* to require labeling of genetically engineered fish.

S. 365. Klobuchar (D/MN) and Franken (D/MN) and **H.R. 709**, Ellison (D/MN) and 3 Co-sponsors. Authorizes the Corps to take actions to manage the threat of Asian carp traveling up the Mississippi River in the State of Minnesota, and for other purposes.

S. 1153. Gillibrand (D/NY) and 3 Co-

sponsors and **H.R. 996**, Slaughter (D/NY) and 32 Co-sponsors. Establishes an improved regulatory process for injurious wildlife to prevent the introduction and establishment in the U.S. of nonnative wildlife and wild animal pathogens and parasites.

S. 1463. Boxer (D/CA) and 11 Co-sponsors and **H.R. 2856**, Fitzpatrick (R/PA) and 80 Co-sponsors. Amends the *Lacey Act* to prohibit importation, exportation, transportation, sale, receipt, acquisition, and purchase in interstate or foreign commerce of any live animal of any prohibited wildlife species.

S. 2094. Begich (D/AK) and 31 Co-sponsors. Requires the U.S. Coast Guard to establish and implement enforceable uniform national standards for the regulation of discharges incidental to the normal operation of a vessel into navigable waters.



S. 2530. Heller (R/NV). Prohibits the importation or exportation of quagga mussels, and for other purposes.

H.R. 985. Rogers (R/MI) and 12 Co-sponsors. Directs the Corps to prevent the spread of Asian carp in the Great Lakes and the tributaries of the Great Lakes, and for other purposes.

H.R. 1823. Heck (R/NV) and 22 Co-sponsors. Amends the *Lacey Act* to prohibit the importation and exportation of quagga mussels.

H.R. 3105. Crawford (R/AR) and 5 Co-sponsors. Amends the *Lacey Act* to exclude from the meaning of the term “fish or wildlife” any animal accidentally included in a shipment of an aquatic species produced in commercial aquaculture

for human consumption or for use for recreational or ornamental purposes.

H.R. 3994. Bishop (R/UT) and 3 Co-sponsors. Improves the control and management of invasive species on Federal lands, and for other purposes.

Mining

S. 222. Udall (D/NM) and 3 Co-sponsors and **H.R. 488.**, Pearce (R/NM) and Lujan (D/NM). Amends the *Surface Mining Control and Reclamation Act of 1977* to clarify that uncertified states and Indian tribes have the authority to use certain payments for certain non coal reclamation projects and acid mine remediation programs.

S. 1443. Udall (D/CO) and Bennet (D/CO) and **H.R. 2970**, Tipton (R/CO). Facilitates the remediation of abandoned hardrock mines, and for other purposes.

H.R. 526. Yarmuth (D/KY) and 46 Co-sponsors. Places a moratorium on permitting for mountaintop removal coal mining until health studies are conducted by the Department of Health and Human Services, and for other purposes.

H.R. 2467. Markey (D/MA) and 2 Co-sponsors. Permits state or local governments or Indian tribes to petition for withdrawal of specific federal land from mining in order to protect specific values, and instructs the Interior Secretary to ensure that mineral activities on federal land are carefully controlled to prevent undue degradation of public lands and resources.

H.R. 2824. Johnson (R/OH) and 5 Co-sponsors. Amends the *Surface Mining Control and Reclamation Act of 1977* to implement the final rule on excess spoil, mining waste, and buffers for perennial and intermittent streams, and for other purposes.

Public Lands

S. 311. Landrieu (D/LA). Directs the Interior Secretary to study the suitability and feasibility of designating sites in the Lower Mississippi River Area in the State of Louisiana as a unit of the National Park System, and for other purposes.

S. 400. Boozman (R/AR) and Merkley

(D/OR). Amends the *Federal Lands Recreation Enhancement Act* to include the Corps as a Federal land management agency, and for other purposes.

S. 1294. Alexander (R/TN) and Corker (R/TN). Designates specified federal lands in the Cherokee National Forest in Tennessee as wilderness and as additions to the *National Wilderness Preservation System*.

S. 1966. Barrasso (R/WY) and 2 Co-sponsors. Provides for restoration of the economic and ecological health of National Forest System lands and rural communities, and for other purposes.

S. 2560. Cardin (D/MD). Authorizes the USFWS to seek compensation for injuries to trust resources and use those funds to restore, replace, or acquire equivalent resources, and for other purposes.

H.R. 916. Kind (D/WI) and 16 Co-sponsors. Directs the Interior Secretary to develop a multipurpose cadastre of federal real property to assist with federal land management activities, including, but not limited to, resource development and conservation, travel management, agricultural use, active forest management, environmental protection, and use of real property.

H.R. 1017. Poe (R/TX) and Jones (R/NC). Directs the sale of certain BLM and Forest Service lands to reduce the Federal budget deficit, and for other purposes.

H.R. 1021. Stivers (R/OH). Directs that there shall be no net increase in the acres of BLM, NPS, USFWS or FS lands unless the Federal budget is balanced for the year in which the land would be purchased.

H.R. 1526. Hastings (R/WA) and 22 Co-sponsors. Doubles logging on national forests.

H.R. 1633. Amodei (R/NV) and 3 Co-sponsors. Provides for the conveyance of small parcels of federal lands up to 160 acres in size to adjacent landowners, and for other purposes.

H.R. 4545. Harper (R/MS) and 3 Co-sponsors. Directs the USDA to convey to the *Pat Harrison Waterway District*, approximately 8,307 acres of specified

National Forest System land within the Bienville National Forest of Mississippi.

Public Works

S. 360. Udall (D/NM) and 10 Co-sponsors and **H.R. 1351**, Grijalva (D/AZ) and 42 Co-sponsors. Promotes a new generation of young men and women with the desire to seek careers in resource stewardship and public service by working directly with professionals.

S. 994. Warner (D/VA) and 10 Co-sponsors, and **H.R. 2061** Issa (R/CA) and 10 Co-sponsors. Puts limits on federal spending for and attendance at scientific conferences, and for other purposes.

S. 1262. Nelson (D/FL) and 3 Co-sponsors and **H.R. 3451** Garcia (D/FL) and 29 Co-sponsors. Establishes a *Veterans Conservation Corps* to work on public lands.

H.R. 188. Kaptur (D/OH) and 2 Co-sponsors. Authorizes reestablishment of the *Civilian Conservation Corps* to provide gainful employment to unemployed and underemployed citizens of the U.S. through the performance of public work, and for other purposes.

Recreation

S. 170. Murkowski (R/AK) and 15 Co-sponsors and **H.R. 1825**, Benishek (R/MI) and 108 Co-sponsors. Directs Federal public land management officials to facilitate use of and access to Federal public lands for fishing, sport hunting, and recreational shooting, and for other purposes.

S. 421. Alexander (R/TN) and 3 Co-sponsors and **H.R. 826**, Whitfield (R/KY) and 6 Co-sponsors. Prohibits the Corps from taking any action to establish a restricted area prohibiting public access to waters downstream of a Corps dam, and for other purposes.

S. 1554. Heinrich (D/NM). Requires publication of information on federal web sites of public lands available to public access for hunting, fishing and other recreational purposes.

S. 1996. Hagan (D/NC) and 27 Co-sponsors. Amends several acts and addresses multiple issues related to resource management and hunting and fishing on

public lands.

S. 2018. Barrasso (R/WY) and 2 Co-sponsors and **H.R. 3492**, Lummis (R/WY) and Bishop (R/UT). Opens the rivers and streams of Yellowstone and Grand Teton National Parks in Wyoming to hand-propelled vessels. Declares specified regulations to have no force or effect with regard to the closing of rivers and streams of such Parks to such vessels.

S. 2028. Rockefeller (D/WV) and Thune (R/SD). Reauthorizes the *Sport Fish Restoration and Boating Trust Fund*, and for other purposes.

S. 2327. Walsh (D/MT). Makes continuing appropriations for certain programs that benefit sportsmen in the event of a lapse in appropriations.

S. 2363. Hagan (D/NC) and 46 Co-sponsors. Revises a variety of existing programs to expand access to, and opportunities for, hunting, fishing, and recreational shooting.

H.R. 2046. Gibbs (R/OH) and 8 Co-sponsors. Prohibits the Corps from promulgating or enforcing any regulation that prohibits an individual from possessing a firearm at a Corps water resources development project if the person can legally possess such firearm.

H.R. 2799. Latta (R/OH) and 7 Co-sponsors. Amends the *Fish and Wildlife Coordination Act* to establish the *Wildlife and Hunting Heritage Conservation Council Advisory Committee* to advise the Secs. of the Interior and Agriculture on wildlife and habitat conservation, hunting, and recreational shooting.

H.R. 3197. Latta (R/OH) and 4 Co-sponsors. Amends the *Toxic Substances Control Act* (TSCA) to exclude from the definition of "chemical substance" various types of hunting and fishing gear, and for other purposes.

H.R. 3590, Latta (R/OH) and 86 Co-sponsors. Amends several acts with regard to hunting and fishing on public lands.

H.R. 3962. Daines (R/MT). Amends the *Land and Water Conservation Fund Act of 1965* to ensure that amounts are made available for projects to provide

recreational public access, and for other purposes.

H.R. 4642. Israel (D/NY). Requires all recreational vessels to have and post passenger capacity limits and authorizes states to enter into contracts for the provision of boating safety education services, and for other purposes.

Water Resources

S. 66. Vitter (R/LA) and 2 Co-sponsors. Directs the Corps to establish a pilot program to evaluate the cost-effectiveness and project delivery efficiency of non-federal sponsors as the lead project delivery teams for authorized Corps civil works, flood control and navigation construction projects.

S. 407. Casey (D/PA) and 6 Co-sponsors and **H.R. 1149**, Whitfield (R/KY) and 33 Co-sponsors. Provides funding for construction and major rehabilitation for projects located on inland and intracoastal waterways of the U.S., and for other purposes.

S. 565. Durbin (D/IL) and 2 Co-sponsors and **H.R. 1152**, Enyart (D/IL) and 3 Co-sponsors. Provides for the safe and reliable navigation of the Mississippi River, and for other purposes.

S. 566. Durbin (D/IL) and Kirk (R/IL) and **H.R. 1153**, Bustos (D/IL) and 7 Co-sponsors. Establishes a pilot program to evaluate the cost-effectiveness of allowing non-Federal interests to carry out certain water infrastructure projects, and for other purposes.

S. 574. Landrieu (D/LA) and **H.R. 1161**, Richmond (D/LA). Modifies the 50-foot Mississippi River Ship Channel – Gulf of Mexico to Baton Rouge for navigation, and for other purposes.

S. 732. Paul (R/KY). Modifies the criteria used by the Corps to dredge small ports.

S. 970. Cardin (D/MD) and Boozman (R/AR). Amends the *Water Resources Research Act of 1984* to require research into new ideas that expand the understanding of water resources and for other purposes.

S. 996. Landrieu (D/LA) and 2 Co-

sponsors and **H.R. 1035**, Moore (D/WI) and 2 Co-sponsors. Improves the *National Flood Insurance Program*, and for other purposes.

S. 1630. Barrasso (R/WY) and 7 Co-sponsors and **H.R. 3189**, Tipton (R/CO) and 15 Co-sponsors. Prohibits the Secs. of Interior and Army from conditioning the issuance, renewal, amendment, or extension of any permit or similar action on the relinquishment of any water right directly to the U.S., and for other purposes.

S. 2055. Boozman (R/AR) and 4 Co-sponsors. Amends WRDA to authorize the Army Secretary to allow non-federal public or private entities to charge user fees for facilities which they are operating at civil works projects whether built by them or the government.

H.R. 136. Matsui (D/CA) and Bera (D/CA). Authorizes the Corps to implement any flood risk management project for which the Defense Secretary has transmitted to Congress, before the date of enactment of this Act, a letter that is technically sound, environmentally acceptable, and economically justified; and consistent with the President’s policy and programs.

H.R. 1268. Palazzo (R/MS). Amends the IRS Code to allow qualified taxpayers a tax credit, up to \$5,000 in a taxable year, for flood mitigation expenses and for other purposes.

H.R. 1460. Graves (R/MO) and 5 Co-sponsors. Directs the Corps to revise certain authorized purposes described in the *Missouri River Mainstem Reservoir System Master Water Control Manual*.

H.R. 1489 Maloney (D/NY) and 2 Co-sponsors. Amends the *National Dam Safety Program Act* to identify and ensure the safety of dams in need of repair and rehabilitation, and for other purposes.

H.R. 1662. Richmond (D/LA) and Boustany (R/LA). Provides for liability for the Corps in cases of damages caused by the gross negligence of an officer or employee of the Corps.

H.R. 1769. Richmond (D/LA). Provides for a study to evaluate the National benefits of flood protection.

H.R. 2741. Noem (R/SD) and 2 Co-sponsors. Declares that states have authority to manage the waters of rivers located within their boundaries; and that states in which Missouri River mainstem reservoirs occur have the authority to allocate the quantity of water in the reservoir attributable to the natural flows of the Missouri River within its boundaries.

H.R. 2813. Cotton (R/AR). Amends the *Water Supply Act of 1958* to permit an interested state or local interest to submit to the Army Secretary by January 1, 2016, a plan for the utilization of future water storage under such Act.

H.R. 4001. Miller (R/MI) and 4 Co-sponsors. Directs the Corps to create a physical barrier between the Mississippi River System and Lake Michigan to prevent an Asian carp invasion of Lake Michigan.

H.R. 4029. Smith (R/MO), Requires the Interior Secretary to transfer all Federal land and facilities associated with the *Ozark National Scenic Riverways* to the State of Missouri.

H.R. 4182. Smith (R/MO). Adds the preservation of historical recreational activities as a purpose of the *Ozark National Scenic Riverways* in Missouri and prohibits the Interior Secretary from designating management zones in said Riverways.

H.R. 4258. Napolitano (D/CA) and 18 Co-sponsors. Amends the *Omnibus Public Land Management Act of 2009* to include “planning for or addressing the impact of drought” among the activities for which the Secretary may make grants and enter cooperative agreements for water management improvement, and for other purposes.

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