MICRA
River Crossings

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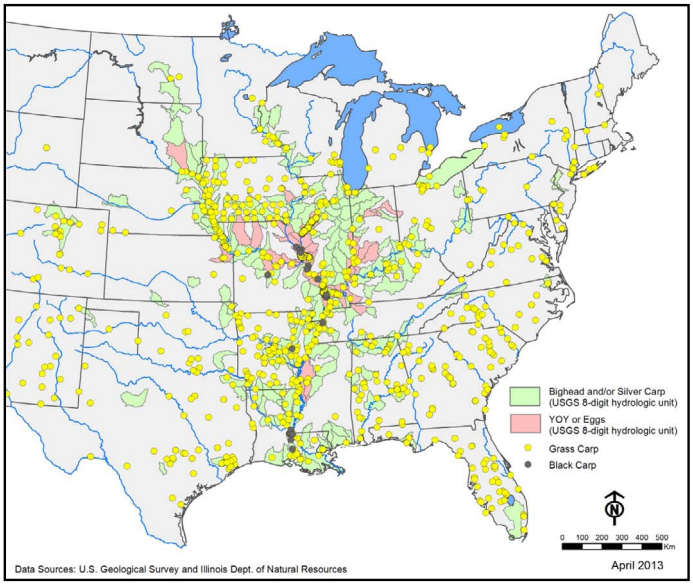
Asian Carp Issues

Researchers in Indiana are finding that Asian carp are reproducing in more places and under more varied conditions than experts had previously believed. Based largely on data collected in Asia, scientists had believed that the carp could spawn successfully only under the right circumstances, including temperatures of about 70 °F and in long stretches of continuously flowing water where fertilized eggs could drift while incubating. But a study led by Dr. Reuben Goforth of Purdue University has found Asian carp eggs in locations that previously were considered unsuitable. "We need to recognize that these species have greater flexibility... than perhaps we originally thought, so we probably need to be prepared for them to become established in a wider range of ecosystems than we originally expected," Goforth said.

Goforth, an assistant professor of forestry and natural resources, said he and his colleagues focused their study on the Wabash River in Indiana. Authorities have built a fence in the Fort Wayne, IN area to prevent the carp from migrating from the Wabash to the headwaters of the Maumee River, a Lake Erie tributary regarded as ideal Asian carp spawning habitat. The Purdue team, assisted by personnel from the Indiana Department of Natural Resources and the U.S. Geological Survey, collected water samples containing Asian carp eggs in 2011 from sections of the river that were much shallower and narrower than had previously been considered adequate for spawning, Goforth said. Some were found 50 miles upstream from previously known spawning areas.

Another surprise was the discovery of drifting eggs as late as September, contrary to previous belief that the Asian carp spawning season ends in July. "What's particularly interesting to me is that they're showing more flexibility here than in their native range," Goforth



Distribution of Asian Carp in North America as of April 2013 - K. Baerwaldt, A. Benson , and K. Irons

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said. Ironically, while Asian carp are spreading rapidly in the U.S., they're declining in China, where dam projects are reducing their habitat. Further research is needed to determine whether eggs laid in more remote stretches of the river are surviving to adulthood, he said. Duane Chapman, a USGS research fisheries biologist and Asian carp expert who didn't participate in the Purdue study, said the new findings were important because Asian carp have been widely regarded as "large river spawners." The Wabash is "probably the smallest river in which we are aware of Asian carp spawning," Chapman said. "One of the big questions we're dealing with, particularly in the Great Lakes, is which tributaries might be potential spawning sites or what reservoirs are potentially at risk ... and how far upriver it goes."

Meanwhile, a new study published in early April in the *Canadian Journal of Fisheries and Aquatic Sciences* reports no new findings of Asian carp environmental DNA (eDNA) in the Great Lakes. The researchers from Notre Dame University, *The Nature Conservancy* and Central Michigan University who developed the eDNA technology, collected water samples from various locations around the Great Lakes between September 2009 and October 2011. Traces of Asian carp eDNA were noted in 58 of those samples, but only from locations where it had previously been detected. These were in western Lake Erie and in Lake Calumet, a small lake adjacent to the Chicago Canal System near downtown Chicago. One live Asian carp was collected by a fisherman in Lake Calumet in 2010, and three live Asian carp were taken from Lake Erie in 2000. The source of the Asian carp in Lake Calumet was speculated to have been transported and released from a fisherman's bait bucket, while the source of the carp in Lake Erie have been suggested to be releases from Asian religious ceremonies. Federal officials have argued that the low number of fish caught over such a long time suggests there is no broader threat.

A federally sponsored electric fish barrier in the Chicago Sanitary and Ship Canal System about 35 miles downstream from Chicago's Lake Michigan shoreline is the last line of defense to keep the carp present in the Illinois River system downstream from invading Lake Michigan and the entire Great Lakes system. The canal provides an artificial link between the once naturally separated Mississippi and Great Lakes basins. A recent U.S. Army, Corps of Engineers (Corps) report suggested that the source of continued detection of Asian carp eDNA in the lakes is bits and pieces of carp that could have been carried beyond the barrier by fish-eating birds or aboard barges, not from live fish that have negotiated past the barrier itself.

But the eDNA research team notes that since carp eDNA was found primarily in the two locations that were known to have live carp in the past, the data suggests that live carp are still there. After all, if the carp eDNA is being brought in only by birds and barges, it should be widespread – not just concentrated in the two areas where carp have been caught previously. "We know migratory birds go to those other places [where carp eDNA does not exist]. So it's very unusual that the only places where birds or barges or people throwing fish guts out is the only place where we capture Asian carp (eDNA)," says Christopher Jerde, lead author of the eDNA study and biology professor at Notre Dame.

"We're at the point now where we've had captures in the Great Lakes," he adds. "We can safely conclude there is some evidence of some Asian carp in the Great Lakes." "The question is, have we gone past the tipping point," Jerde says. He points out that the results suggest that carp populations are still largely localized and that intervention is needed to keep them in check. But

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Kelly Baerwaldt, a Corps fisheries biologist said that Jerde's report is not conclusive and questioned why more live carp have yet to be captured beyond the barrier. "Sure, it could be live fish, and it also could be these other things" such as waste from fish-eating birds, Ms. Baerwaldt said. "The bottom line is there's just a lot we don't know about eDNA." She said in order to accurately determine the source of an eDNA sample, several more years of research are necessary.

But Jerde and his colleagues insist that eDNA is a reliable tool for early detection and that the current discussion should move from debating whether or not live fish are in the Great Lakes to how to stop their proliferation. "There's a lot of things outside the science that is driving the science," he says. "If we wait until the point where fish are jumping out of the water, we're no longer in a situation where we can do something about it which can be meaningful."

Sources: Coulter, A. A., Keller, D., Amberg, J. J., Bailey, E. J. and Goforth, R. R. (2013), Phenotypic plasticity in the spawning traits of bigheaded carp (Hypophthalmichthys spp.) in novel ecosystems. *Freshwater Biology*. doi: 10.1111/fwb.12106; Dan Egan, *Milwaukee Journal Sentinel*, 4/4/13; Mark Guarino, *Christian Science Monitor*, 4/5/13; K. Baerwaldt (Corps), A. Benson (USGS), and K. Irons (ILDNR). 2013. Asian Carp Distribution in North America. Interagency White Paper. April 2013, 8 pp, and *Greenwire*, 3/2, 4/5 and 4/8/13

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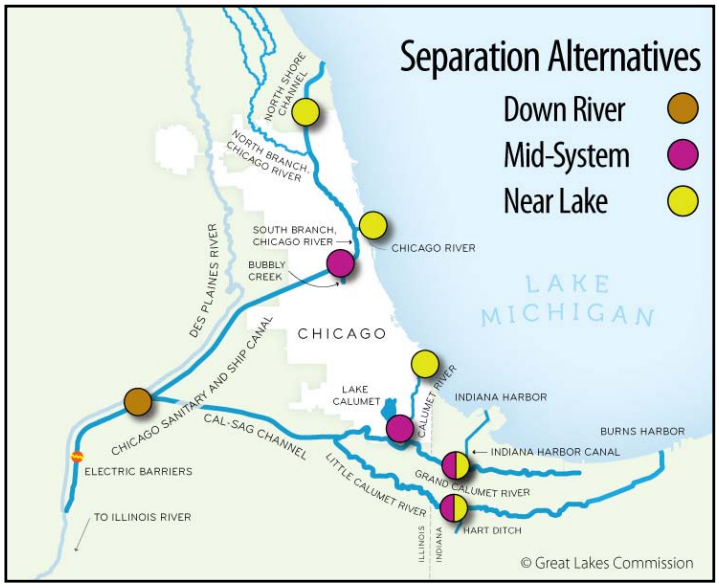
Status of Great Lakes/Mississippi River Basin Separation

Dave Wethington, U.S. Army, Corps of Engineers (Corps) Great Lakes and Mississippi River Interbasin Study (GLMRIS) Project Manager, said in an interview that hydrologic separation is one of 90+ technologies being evaluated for preventing aquatic nuisance species (ANS) transfer through aquatic pathways. Regarding such a separation, he said, "We've made a lot of great progress looking into various types of hydrologic separation...." A number of detailed numerical models have been completed he said, and the Corps has created water quality models that will help with decision making by looking at the impacts of key pollution indicators, such as phosphorous, dissolved oxygen, chloride, and fecal coliform – both in the Chicago Area Waterways System (CAWS) and Lake Michigan. He said, navigation models will help predict how commercial cargo shipments may be impacted by changes in the CAWS and what measures may be needed to offset potential impacts. "Imagine if you will," he said, "placing a physical barrier in a location that has minimal impacts to commercial navigation and water quality, but has huge impacts to flooding. Our models will help us understand how we could move/optimize that barrier's design – either by changing its location up or downstream, or by adding tunnels or reservoirs, for example, to help relieve the flood risk...."

He said the Corps will include important information about these options, along with other technology-based or hybrid (combination of physical and technology barriers) controls, in a GLMRIS Report due to Congress in December 2013. "This document," he said, "will contain information describing a number of ANS Controls that could be further developed for future implementation. Once that report is produced to Congress, we'll be looking forward to working with all stakeholders – including the public – to try and identify the best option to solve the problem of ANS transfer through the CAWS."

Meanwhile of the 18 potential aquatic pathways found outside of the CAWS, Eagle Marsh, IN, was the only one rated as in high need of attention. It had its own controls report produced to identify available options to prevent the spread of ANS across this pathway. Nine structural alternatives were compared in that report and at least three were determined to have a high likelihood of preventing the inter-basin spread of ANS. The GLMRIS team is currently working with state and local partners to solidify the best path forward at that location.



Suggested alternative barriers for separation of the Great Lakes from the Mississippi River Basin - Great Lakes Commission graphic

Source: *Great Lakes and Mississippi River InterBasin Study Newsletter* , March 2013, Volume 3, Issue 1

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Invasive Species Screening Act Introduced

Intentionally introduced species such as the Asian carp, Northern snakehead and Burmese python have cost the American taxpayer hundreds of millions of dollars in attempts to control their spread. Existing law on live animal imports 18 USC § 42 (part of the Lacey Act) provides the U.S. Fish and Wildlife Service (FWS) only limited power to declare nonnative species as "injurious" and prohibit their importation and interstate sales. The existing regulatory approach is excruciatingly slow – the average time required to complete a listing is now about four years – and only about 30 animal families, genera, or species are listed. Unless we improve this regulation, costs to the taxpayer can be expected to increase significantly as more invasive species find their way into the U.S. At least 2,500 different species of nonnative wildlife were imported into the U.S. in the last decade, and research indicates that more than 300 of those are already known to be potential invaders or present a disease risk.

The Invasive Fish and Wildlife Prevention Act (H.R. 996), introduced on March 6 by Rep. Louise Slaughter (D/NY) and 28 Co-sponsors, would help address these issues. H.R. 996 would direct the FWS to perform more risk assessments, cut through bureaucratic delays and consider more species. Most of the costs for this work would come from a new modest user fee system to paid by importers themselves, rather than borne by tax payers. Meanwhile, qualified zoos, aquaria, research facilities and other institutions would enjoy greater flexibility in handling potential injurious species through the establishment of a new tiered listing system.

Specifically, the new law would authorize any person, entity, or the FWS Director to propose the regulation of nonnative wildlife species or taxa, and require the FWS Director to determine whether the proposal should be approved within 180 days. The FWS Director would further be required to promulgate regulations to:

- specify criteria for regulating nonnative taxon as either Injurious I or Injurious II in terms of their potential for harm to humans, agriculture, horticulture, forestry, wildlife, or wildlife resources;
- establish a process for assessing and analyzing the risks of taxa that may have been imported into or found in interstate commerce;
- designate wildlife taxon that was previously designated as injurious by statue or the Secretary of the Interior (Secretary) as Injurious I or Injurious II.

Injurious I taxon would be those exhibiting a high degree of potential harm and which qualified institutions have not previously had significant experience in maintaining successfully in captivity and preventing escapes or releases. Importation and transportation of such taxa in interstate commerce could be conducted only under a permit issued to a qualified institution. Injurious II taxon would be those exhibiting a degree of potential for harm that is less than the degree of potential harm of an Injurious I taxon, or is one with which qualified institutions have previously had significant experience in maintaining successfully in captivity and preventing escapes or releases. A permit would not be required for importation and transportation of Injurious II taxa in interstate commerce, if imported to a qualified institution, among qualified institutions¸ or held by a qualified institution. Prior to designating a taxon as Injurious I or Injurious II the Director of the FWS would prepare a risk determination. The FWS Director would also be authorized emergency authority to immediately and temporarily designate a nonnative wildlife taxon as Injurious I if an imminent threat of harm was determined to exist because of such unregulated taxon. The Interior Secretary would also be authorized to forego time-consuming optional administrative steps that are not essential and to forego an economic impact analyses.

The Act would prohibit any person from: (1) importing or knowingly possessing an Injurious I or Injurious II taxon, or the descendant of such an animal, that was imported in violation of the Act; (2) engaging in interstate commerce for or knowingly possessing such an animal that was transported in interstate commerce in violation of the Act; and (3) releasing any such taxon into the wild. The Act, however, would authorize the FWS Director to issue permits to qualified institutions to authorize actions otherwise prohibited for such taxon, giving qualified institutions greater flexibility than they presently enjoy. H.R. 996 would also establish civil and criminal penalties for violations of the Act, and the Secretary would be required to adopt a fee to be charged on imported live wildlife shipments, excluding shipments made by qualified institutions for scientific, veterinary, or medical research, education, conservation outreach, or display purposes. An *Injurious Wildlife Prevention Fund* would also be established to carry out the Act. One quarter of the fund's revenues would be transferred to the States to help them improve their own monitoring and risk analyses for this trade.

Not later than three years after enactment of the Act the Secretary would : (1) define the phrase "nonnative wildlife taxa novel to the United States"; (2) establish a process to ensure that all such taxa are thereafter reviewed by the FWS Director to determine whether they should be regulated as Injurious I or Injurious II prior to allowing their importation; and (3) seek to avoid, in promulgating such regulation, creating a new incentive for animal importers to import novel taxa prior to the effective date of such regulation.

The FWS would also be required to: (1) establish an electronic, publicly available database that describes all quantities of imports of all live wildlife and the regulatory status of such wildlife; (2) monitor and report on the identities and quantities of nonnative wildlife taxa being imported; and (3) make more rapid determinations on proposals for regulation of importations or shipments of injurious mammals, birds, fish, amphibians, and reptiles under the Lacey Act. Also, under H.R. 996, the Interior Secretary would become the primary authority to prevent the importation of, and interstate commerce in, wildlife pathogens and harmful parasites. The Secretary would also be required to promulgate regulations to impose import restrictions to prevent the importation of, and commerce in such pathogens and parasites.

Legislation to modernize and expand existing federal laws regarding the import, movement, and release of invasive species is needed. The Invasive Fish and Wildlife Prevention Act of 2013 would go a long way toward improving control of the intentional importation of injurious species and reducing future expenditures on future control efforts. However, passage of any such act by Congress is a lengthy process, and will require significant support from states, interstate groups, NGOs and other constituents, including individuals.

Sources: *http://www.govtrack.us/congress/bills/113/hr996/text*; Jenkins, P.T., K. Genovese and H. Ruffler. 2007. *Broken Screens - The Regulation of Live Animal Imports in the United States*, Report by *Defenders of Wildlife*, Washington, DC; and *National Environmental Coalition on Invasive Species News Release*, www.necis.net

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Dogs Being Used in Minnesota to Detect Zebra Mussels

The Minnesota Department of Natural Resources (DNR) will be using three zebra mussel-sniffing K-9 teams for the first time this year to help combat the spread of aquatic invasive species (AIS). Minnesota is the second state in the country to use trained dogs for this purpose. They will be used throughout the state during the open water season. "The use of K-9s is a progressive enforcement tool that will complement and support our invasive species prevention efforts," said Col. Jim Konrad, DNR Enforcement director. Earlier this year, conservation officers Todd Kanieski and Travis Muyres traveled to California to learn about the country's first program successfully utilizing mussel trained K-9s to prevent the spread of AIS. "A K-9 can find a mussel on a boat much faster than a human inspector," Kanieski said.

Minnesota's mussel dogs were trained in-house for five weeks by Muyres, an experienced K-9 handler and certified K-9 unit trainer. The dogs include a Belgium Malinois purchased from a domestic breeder and two Labrador retrievers provided by animal shelters and animal rescue organizations. "It's very difficult to find a qualified prospective detector dog, but each of the dogs selected from the shelter was healthy, sociable and had a strong search drive," Muyres said. "That search drive will prove to be invaluable in detecting AIS." A video of the dogs is available at: http://youtu.be/lHK-aVQebhw.

Source: Minnesota Department of Natural Resources, *News Release*, 5/7/13

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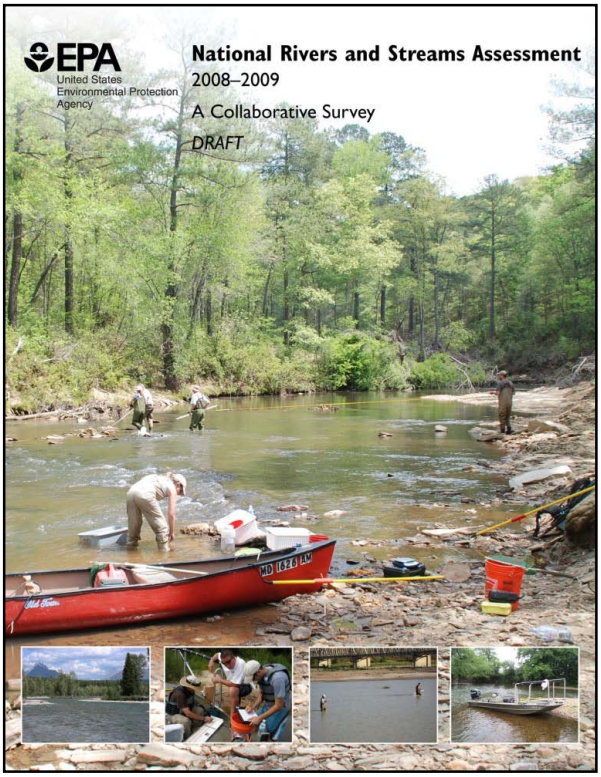
National Rivers and Streams Assessment 2008–2009

The National Rivers and Streams Assessment (NRSA) represents an unprecedented sampling effort undertaken by the U.S. EPA and its state and tribal partners. During the summers of 2008 and 2009, more than 85 field crews sampled 1,924 river and stream sites across the country. Using standardized field methods, they sampled waters as large as the Mississippi River and as small as mountain headwater streams. Sites were selected using a random sampling technique that uses a probability-based design. This design ensures that the results of the survey reflect the full variety of river and stream types and sizes across the U.S. To determine water quality conditions, sampling results were compared to conditions at least-disturbed (or reference) sites in different ecological regions. The goals of the NRSA were to determine the extent to which rivers and streams support healthy biological conditions and the extent of major stressors that affect them. In addition, the survey supports a longer-term goal: to determine whether our rivers and streams are getting cleaner and how we might best invest in protecting and restoring them. Compared to the findings of the 2004 Wadeable Streams Assessment (WSA), some statistically significant changes were found in stream condition.



The study separated the Nation into three major climate regions (i.e., Easter Highlands, Plains and Lowlands, and West). Nationally, the amount of stream length in good quality for macroinvertebrate condition dropped from 27.4% in 2004 to 20.5%; this change appears driven in large part by a 13.3% decline in streams in good condition in the Plains and Lowlands climatic region. In addition, the percent of stream length in good condition for phosphorus dropped nationally from 52.8% to 34.2% and declined in all three major climatic regions. However, other indicators showed an increase in stream length in good condition: (1) the percent of stream length in good condition for nitrogen rose from 46.6% in 2004 to 55.4%; (2) percent of stream length

with good in-stream fish habitat rose from 51.7% to 68.9%; and (3) percent of stream length in good condition for riparian disturbance (i.e., with low levels of disturbance) rose from 22.7% to 34.8%. It is important to note that these are differences for streams only, between two points in time. Future surveys and more data are needed to discern trends and the reasons for those trends.

The NRSA also classified the Nation's rivers into nine ecoregions (i.e., Northern Appalachians, Southern Appalachians, Coastal Plains, Upper Midwest, Temperate Plains, Southern Plains, Northern Plains, Western Mountains, and Xeric). The proportion of rivers and streams in poor biological condition based on a Macroinvertebrate Multimetric Index ranged from 26% in the Western Mountains ecoregion to 71% in the Coastal Plains ecoregion. A clear pattern is evident: the easternmost ecoregions (generally east of the Mississippi River) have a higher proportion of rivers and streams scoring in poor (high) biological condition than those in the west. In the western ecoregions, the percent in poor condition ranged from 26% to 43%.

The nutrients phosphorus and nitrogen are the most widespread stressors of those assessed in the NRSA. Phosphorous levels in six of the nine ecoregions are consistently rated poor, in about a third or more of river and stream miles. In two more ecoregions – the Northern Plains and the Northern Appalachians – the proportion of miles rated poor is much higher (84% and 71%, respectively). Only in the Southern Plains ecoregion are half the river and stream miles rated good and only 23% rated poor for phosphorus levels. The national picture shows less widespread impacts for nitrogen in many ecoregions. The ecoregions with the highest proportion of miles in poor condition for nitrogen are the Northern Plains (60% rated poor), the Temperate Plains (58% rated poor), the Northern Appalachians (42% rated poor), and the Xeric (36% rated poor). Five ecoregions (Coastal Plains, Southern Plains, Southern Appalachians, Western Mountains, and Upper Midwest) have between 7% and 21% of river and stream miles rated poor for nitrogen.

One ecoregion – the Northern Plains – stands out as having the highest percentage of river and stream miles in poor condition for riparian vegetative cover, at 59%. The next highest is the Xeric ecoregion, at 37% of river and stream miles rated poor. In the remaining seven ecoregions, between 13% and 29% of river and stream miles are rated poor for riparian vegetative cover. In six of the nine ecoregions, less than a tenth of river and stream miles exceed thresholds protective of human health for enterococci bacteria. Of the three remaining ecoregions, the Southern Appalachians has 14% of river and stream miles exceeding thresholds, the Southern Plains has 13%, and the Central Plains has 11%.

Our rivers and streams are thus under significant stress and more than half exhibit poor biological condition. Phosphorus, nitrogen, and streambed sediments in particular have widespread and severe impacts; reducing levels of these constituents will significantly improve the biological health of rivers and streams. The NRSA suggests the need to address the many sources of these stressors – including runoff from urban areas, agricultural practices, and wastewater – in order to ensure healthier waters for future generations.

Source: U.S. EPA, National Rivers and Streams Survey 2008-2009 BACK TO TOP

Secondary Air Pollution Standards Needed to Protect Waterways

While U.S. EPA regulations have helped curb airborne mercury, nitrogen oxides (NOx) and sulfur dioxide (SO_2), the agency might need secondary air standards to ratchet down air pollution linked to contaminated waterways, the Government Accountability Office (GAO) said in a new report. The report says EPA could use a Clean Air Act guidance to reduce power plants' and transportation's emissions of NOx, SO_2 and mercury that pollutes water. Previous EPA efforts to establish secondary National Ambient Air Quality Standards (NAAQS) to address acid rain and other side effects of air pollution were sidelined because of insufficient scientific data. Existing regulations, the report says, have helped water quality, but "atmospheric deposition continues to affect water quality and harm aquatic ecosystems." GAO recommends that EPA determine whether it can acquire data needed to establish secondary standards to target acid rain or come up with alternatives that would have the same effect. In a response, EPA air chief Gina McCarthy said the agency has started a five-year pilot program to study the impact of a secondary NAAQS, although the report notes that it is unclear whether the study will give EPA the scientific information it needs.

At issue is atmospheric deposition – the movement of air pollutants into water bodies. NOx and SO_2 can contribute to acid rain and nutrient loading, while the presence of mercury can contaminate fish. The full impact of atmospheric deposition is unknown because states may not have assessed all their waterways and aren't required to report on pollution sources. But existing data show 53,300 square miles of the Great Lakes fail to meet Clean Water Act standards, in part due to atmospheric deposition. EPA has attempted to address the problem through the Clean Water Act, but GAO says those efforts have fallen short. When a polluted waterway is identified, a state must establish a total maximum daily load (TMDL) of a pollutant that can enter the water, but that action falls short of stopping the flow of contaminants. A secondary standard that addresses pollutants in acid rain, then, could be more effective, GAO said. The report also recommends that EPA address other sources of nitrogen, including those unrelated to atmospheric deposition, in order to combat the over-fertilization of waterways, which deprives aquatic life of dissolved oxygen because of algal blooms, creating "dead zones."

Source: Jason Plautz, *Greenwire*, 2/26/13 BACK TO TOP

Landowner Help Sought to Protect Missouri River Lands

The Obama administration is proposing a major new effort to work with private landowners along a pristine stretch of the Missouri River that bisects Nebraska and South Dakota in an effort to preserve thousands of acres of sensitive lands and dozens of ecologically significant fish species. The U.S. Fish and Wildlife Service (FWS) and National Park Service (NPS) recently released a draft environmental impact statement and land protection plan that would use mostly conservation easement agreements to establish the *Niobrara Confluence Conservation Area* and *Ponca Bluffs Conservation Area* in northeast Nebraska and southeast South Dakota. The draft EIS sets a goal of protecting 140,000 acres in the two conservation areas. Of that total, about 112,000 acres would be preserved through the purchase of conservation easements – legal agreements binding property owners to protect their most environmentally sensitive lands while allowing for continued farming and ranching. The purchase of conservation easements from willing landowners is generally viewed as the most efficient and cost-effective strategy in areas such as the section of the Missouri River at issue because they tap into the expertise of the landowners who know and care most about the landscape.

View of Missouri River from Ponca State Park - USFWS Photo

FWS and NPS officials say the effort is needed along the Missouri River because of man-made alterations to the river over the last century, mostly dams that have caused a mixed bag of good and bad environmental impacts to the region. The proposed *Niobrara Confluence* and *Ponca Bluffs* conservation areas are two increasingly rare sections along the Missouri River that still exhibit pre-dam conditions and function much as they did under historical conditions, according to the draft EIS. The *Niobrara Confluence* area contains one of the last segments of the middle Missouri River that have not been channeled, remaining undeveloped and relatively free-flowing. Thus, the wide river valley contains important habitat for at least 60 native and 26 sport fishes, according to the document.

"In creating these areas, the Service and NPS would work with willing private landowners, local communities, and other conservation entities to conserve important wildlife habitats, increase high quality recreational opportunities, preserve sensitive cultural sites, and maintain sustainable farming and ranching operations in the region while not increasing regulations or altering dam operations," Noreen Walsh, regional director of FWS's Mountain-Prairie Region, said. The latest proposal to establish the two privately owned conservation areas continues the Obama administration's efforts to work with private landowners to achieve conservation goals across the West.

Source: Scott Streater, *Greenwire*, 4/8/13 BACK TO TOP

Texas/Oklahoma Red River Water Wars

The Dallas-Fort Worth Metroplex (DFWM) needs water and Texas maintains that it has a right to Oklahoma water under the *1980 Red River Compact* signed by TX, OK, LA and AR. Oklahoma disagrees and the 10+ year feud has become deeply ingrained between the two states, with Oklahoma enacting laws that effectively ban the sale of water to Texas for fear the Lone Star State will suck it dry. So this Spring, Texas' challenge to those laws is being heard by the U.S. Supreme Court in *Tarrant Regional Water District v. Herrmann*, a case that could have far-reaching implications for precious water resources across the West. Experts say that if the court upholds Oklahoma's laws, it has the potential to undo the more than 25 water compacts on which Western states rely. The Compact language at the heart of the dispute, said attorney Kirsten Nathanson, who is not directly involved in the dispute, is of "broad importance." "Similar language appears in many of the interstate compacts in this country," Nathanson said. "It would allow states to have statutes similar to Oklahoma's, and that would cause all kinds of disruption in the implementation of these compacts." Bottom line, she said: "The court could throw the current water crisis into overdrive."

California native, Dan Buhman, an engineering consultant for *Tarrant Regional Water District* charged with planning the area's water supply for the next 50 years, sees demographics defining the dispute. The DFWM has more than 6.5 million residents, while there are fewer than 4 million in all of Oklahoma. Fort Worth, he said, is the fastest-growing U.S. city with more than 500,000 people, and it's the country's biggest that is not on a seaport. "These cities are being built so fast that they can't keep up with it," Buhman said. Consequently, north Texas must double its water supply by 2050. "Our watersheds are tapped out from a future water availability perspective," Jody Puckett, director of *Dallas Water Utilities* said. Puckett added that the DFWM has looked to develop other water sources within the state's borders including building another lake on east Texas' Neches River. But that plan was scuttled by the U.S. Fish and Wildlife Service when it obtained a conservation easement in the middle of the proposed lake's footprint. Texas has no

natural lakes; all have been built by the U.S. Army, Corps of Engineers and the state since the drought of 1950. The area has enough water to last through 2030, said Jim Oliver of the Tarrant district. But that's sooner than it seems: It takes five years to build a lake – after going 10 to 15 years in the permitting process.

There are many reasons the water in southeast Oklahoma appeals to Texas. For one, it's only 125 miles away and less salty than western water, so it would require less treatment. Because it's to the east, it is less susceptible to drought and it is uphill, so it would require less energy to pump into the DFWM. And there are relatively few people in southeast Oklahoma. "There is more water than they will ever use up there," Buhman said. "You could build several New York Cities in southeastern Oklahoma and still never even touch the true amount of water up there."

Confluence of the Kiamichi and Red rivers - Jeremy J. Jacobs, Greenwire Photo

A little more than a decade ago, the district was in negotiations with Oklahoma to buy the water outright, thinking it would be a simple transaction: Oklahoma needed to upgrade its water infrastructure, and Texas was flush with cash from oil and natural gas development. But the talks broke down, as Oklahoma politicians feared ramifications from cutting deals with Texas to give up its natural resources. "It was just emotional," said Linda Christie of the Tarrant district. "They could not get over that hump." The issue then laid dormant for several years until 2007 when the district filed a lawsuit seeking roughly 130 billion gallons of water from the Red River Basin. The district argued it has a right to that water under the *Red River Compact*, which it says expressly allocates to covered states 25 percent of the water in the basin, regardless of state boundaries. If Texas tapped all the relevant Red River tributaries within Texas, the district argued, it could get only 17 percent of the available water, so the intent of the compact was to supersede state lines.

Specifically, the district is seeking to obtain permits from the *Oklahoma Water Resources Board* to build a dam, pumping station and pipeline on the Kiamichi River just above where it meets the Red River, which separates southern Oklahoma from Texas. It has also sought groundwater from private property owners and Native American tribes in the state. Texas has lost multiple times in court, and after every defeat Oklahoma politicians became more emboldened. After a five-year moratorium on exporting water expired in 2009, the state Legislature passed measures that would require legislative approval of any diversion of water out of the state – effectively prohibiting it.

In the Supreme Court, the *Tarrant* district is contending that those laws violate the Constitution's Commerce Clause because Texas is treated differently from in-state entities when trying to get a permit for the water. The Red River Compact, which was ratified by Congress in 1980, should preempt those laws, the district says. But the Denver-based 10th U.S. Circuit Court of Appeals disagreed, in another setback for Texas. In September 2011, the court ruled that although the Compact governs regional water allocation, it also gives states considerable discretion over how they regulate and apportion water. Consequently, the ruling says, Oklahoma's laws, which protect its authority over allocating water permits for sources within its state boundaries, were sound. But the Tarrant district maintains the court relied on the wrong parts of the Compact and didn't properly address the preemption issue. "These compacts were really the states negotiating what's fair and an allocation of this resource," Christie said. "Our concern is when an appellate court can come in and read a compact differently from the intent it was entered into; it creates chaos."

The Obama administration agrees, in part, with the *Tarrant* district. Solicitor General Donald Verrilli urged the Supreme Court to hear the case, largely because the 10th Circuit decision poses a significant problem for Texas' rapidly growing population. In court documents, Verrilli wrote that the Compact doesn't apply to state lines, and the 10th Circuit "improperly" applied a "presumption of preemption" in ruling that the Compact granted Oklahoma the authority for its laws. "The better interpretation," he wrote, "is that Oklahoma may not categorically foreclose Texas from diverting water." But Oklahoma state Sen. Jerry Ellis doesn't see it that way. Ellis, a member of the state's Democratic leadership, represents the southeast corner of Oklahoma and has forged his political identity largely by denying Texas any of the state's water.

Ellis contends that Texas doesn't want the water for residential use but, rather, for natural gas development. It takes millions of gallons of water to hydraulically fracture, or frack, one natural gas well, he noted in an interview, and there are more than 16,000 rigs in Fort Worth alone on the *Barnett Shale*. Moreover, recent studies have found that water use for fracking in Texas has doubled in recent years and is expected to continue to rise. Instead of its relentless pursuit of Oklahoma's water, he said, Texas would be better served by developing infrastructure to use the Gulf of Mexico's water. "Texas needs to get rid of the lawyers and lobbyists; they spend millions on them," Ellis said. "It needs to take that money that they are using for lawyers and lobbyists and build desalination plants on the Gulf." He added: "Texas needs to take care of itself and let us take care of ourselves." Oklahoma voters appear to be on

Ellis' side. Polls last year showed that two-thirds of voters oppose selling water out of the state. And Ellis is confident that the law is on his side because Oklahoma has won in court three times. He contends that if Texas were successful at the Supreme Court, it would change water quality farther down the Red River. "If you take it out, it could eventually affect the permits for southwest Arkansas irrigation," he said. "If they rule for Texas, they are going to open up a flood of litigation downstream."

The Supreme Court began reviewing the issue in April, but the justices struggled with the intent of the Compact. Justice Ruth Bader Ginsburg said the Texas utility is relying on vague language. In other areas of the Compact, she said, the "provision is much clearer, much more definite" when it comes to states having access to water across their border. Justice Stephen Breyer took issue with Texas' interpretation that the Compact gives them "equal rights" to a quarter of the water in the river. "It doesn't say that," he said. The Compact, he went on, says "no state is entitled to more than 25 percent." Further, Breyer added, the Compact provides "no mechanism" for how water should be taken out of a neighboring state. It would create an "enormous administrative mess," he said, to sort out how much of Oklahoma's water it may tap into. Charles Rothfeld, representing the Tarrant Regional Water District, contended, however, "All it says is you can't take more than 25 percent." It does not, he added, say what Texas should do if it cannot get to 25 percent. Both liberal and conservative justices appeared to struggle with the procedural aspects of how Texas could take water out of Oklahoma. Justice Samuel Alito suggested that what Texas wanted to do was seize Oklahoma's property through eminent domain. Others, including Chief Justice John Roberts and Justice Elena Kagan, asked whether Oklahoma's water board would have to give Texas priority over Oklahomans when considering permit applications because of the Compact. And Justice Anthony Kennedy asked whether Texas has to go onto Oklahoma's property to get to the water. Lisa Blatt, representing Oklahoma, said that there is, in fact, an area of the river along the border and within the same sub-basin where Texas already pulls water. "It can, and it does," Blatt said.

Justice Kagan took issue with how the Obama administration has interpreted the Compact. The government's brief, she said, "gives you kind of a headache." Roberts was one of the few justices who appeared to throw Texas a lifeline. He questioned Oklahoma's claims of state sovereignty, arguing that the Compact is, by its definition, an interstate agreement in which states "give a little here and a little there." "I don't know why state sovereignty applies," he said. Blatt maintained, however, that because there has been no accounting of exactly how much water is available, Texas would have a hard time proving there isn't 25 percent within its borders. "If we lost this case," she said, "Texas would be in a pickle to show they can't get their 25 percent."

The Supreme Court review continues.

Source: Jeremy P. Jacobs, *Greenwire*, 3/12 and 4/23/13 BACK TO TOP

Georgia/Tennessee Border/Water War

Two centuries ago, surveyors from Georgia and Tennessee marked the official border between the two states. They were supposed to follow the 35th parallel, according to an agreement approved in 1802 by Congress. Instead, they wandered off course by about a mile, marking a border that puts the Georgia state line just a short stroll from the edge of the Tennessee River. That has led to years of water wars between Georgia and Tennessee, as the Peach state's population has exploded, outstripping its water supply. Now Brad Carver, a Georgia lobbyist, has floated a resolution in the Georgia state legislature that calls on Tennessee to give Georgia about 1.5 square miles of forest and meadow – an area he calls "occupied Georgia." This small amount of land would be just enough to extend a water pipe into a wide inlet of the Tennessee River's Nickajack Lake. Carver says that could easily supply parched Georgians with more than a billion gallons of water a day.

Carver, whose clients include the *Georgia Association of Realtors*, major hospital systems and energy companies, says he feels so strongly about the state's water rights that he is lobbying on the water issue pro bono for no specific client. He is proposing what he calls a generous swap. In return for the small piece of Tennessee land, Georgia would give up its long-standing claim to about 68 square miles of land and water given to Tennessee when the surveyors mistakenly ambled off the parallel. It includes large parts of the river, several towns and the homes of 30,871 residents, Carver says. If the Volunteer state doesn't accept the offer, Georgia will take its case to the U.S. Supreme Court, he says.

But Tennessee says Georgia's proposal is all wet. "The governor will continue to protect the interests and resources of Tennessee," a spokesman for Republican Tennessee Gov. Bill Haslam said in an email. Mr. Carver's resolution – the 10th from Georgia since 1887 calling for a change in the border – passed overwhelmingly in both of the state's legislative chambers. His proposal is less bellicose and more modest, yet more desperate, than past claims to the mismarked land. Over the years, resolutions from agitated Georgia legislators have called for the return of all 68 square miles. One such resolution in 2008 prompted Ron Littlefield, the mayor of Chattanooga, TN, to send a truckload of bottled water to the Georgia State Capitol in Atlanta along with a proclamation calling Georgia lawmakers "misguided souls" engaged in "irrational and outrageous actions seeking to move a long established and peaceful boundary." "It is feared that if today they come for our river, tomorrow they might come for our Jack Daniel's or George Dickel," the proclamation read, referring to Tennessee whiskey.

But Georgia legislators see little humor in the situation. When the Georgia senate passed the resolution 48 to 2 on March 25, state Sen. Charlie Bethel, a Republican from north Georgia, sternly condemned Tennessee politicians' "late jocularity on the issue." The resolution directs the state to sue if Tennessee doesn't cooperate. A spokeswoman for Georgia Gov. Nathan Deal declined to comment on whether he supports the resolution. Experts on the history of American surveying say many state borders in the Eastern U.S. have quirky twists and turns. Tennessee's borders with Virginia and Kentucky are also off the mark of what was originally approved. Tennessee's claim that it should continue to control the land stems from "acquiescence," a concept in property law that it has the right to keep a boundary if it is not contested over a long period. But Mr. Carver and other Georgians insist their state has complained about the border to Tennessee numerous times and therefore never "acquiesced."

It remains to be seen whether Georgia's threat to take the case to the Supreme Court holds water. Any state in a border dispute with another can petition directly to the high court under judicial powers defined in Article III of the Constitution, according to Joseph Zimmerman, a political-science professor at the University at Albany, State University of New York, and the author of several books on interstate disputes. Mr. Zimmerman said the court almost always takes such cases, and then appoints a special master, usually a retired judge, to review the facts of the case and sometimes make a recommendation to the court. "This could very well happen, if Georgia wants to push it," he said. But even if Georgia ever got the boundary moved, it still wouldn't necessarily be able to slake its thirst. The Tennessee Valley Authority, which owns the property in question and manages the river, would have final say on whether Georgia could pipe out water, according to a spokeswoman. Georgia is thirsty despite a rainy winter that has filled reservoirs. Its population has nearly doubled over the past 40 years, and frequent droughts have restricted development and forced residents of Atlanta at times to use dirty water (second hand water from showers and washing machines) to irrigate their gardens.

Sources: Cameron McWhirter, *The Wall Street Journal*, 4/10/13; and *Greenwire*, 4/11/13 BACK TO TOP

The Price of Water

Demand for water is increasing, potentially pitting cities against farms for limited supplies, said Terry Anderson, president of the *Property and Environment Research Center*, a Bozeman, MT-based think tank that advocates market-based solutions. "Water's scarce, and we price it as if it's cheaper than dirt," Anderson said. "Therein lies the problem." Anderson spoke on whether water is the "next scarce resource" at *The Wall Street Journal's* late March *ECO:nomics: Creating Environmental Capital* conference, an annual conclave of energy company leaders, entrepreneurs and environmental groups.

Water is an urgent issue, with 33 states facing shortages in some areas over the next five to 10 years, said Gretchen McClain, president and CEO of *Xylem*, a White Plains, NY, seller of technologies to pare water consumption. But water typically is the least expensive of the utility bills, she added. In places where rates have risen, she said, there has been increased conservation. With price, she said, "your behavior changes. Those things drive the incentives and help drive a market. There are examples across the board." Conveyance of water also uses a great deal of energy, McClain said, yet water is regulated mostly at the local level in a patchwork system.

The two panelists said changes are needed to balance supply and demand. Many California cities already have implemented tiered pricing, said Andrew Fahlund, executive director of the *Water in the West* program at Stanford University. They employ rates that are low for smaller uses but jump when a household hits each subsequent level. Those structures have "significantly curbed demand," he said, with the amount of water consumed almost the same over several decades even as the population has grown. Los Angeles now uses roughly the same amount of water it used in the 1970s, Fahlund said. California in many ways is leading the country in its approach to water, he said. "It certainly is because there's greater level of scarcity there. There's also much greater awareness of potential for scarcity. It's only getting worse." "Even conservative communities are acknowledging that," he added, "even if they might not acknowledge climate change or the need for adaptation." Republican-leaning Orange County, CA, he said, has some of the highest water prices, along with conservation and efficiency, water recycling, and groundwater storage. "Everything they are doing is pretty aggressive," Fahlund said.

But at the same time, Fahlund and others said, other parts of the water system aren't as possible to alter via market forces. A large portion of California's water goes to agriculture. Those users pay very low rates that mostly just cover expenses. The Golden State's fruits and vegetables are shipped all over the country. "If [water is] not affordable for them, they will not be able to grow their crops," said Maurice Roos, chief hydrologist with California's Department of Water Resources. "There's a whole economy that's based on having affordable agriculture," he said. Some experts argue that if agricultural regions began selling more of their allotment of water to parched cities, that would lead to fewer crops and could dry up the economy of farm towns, Fahlund said. "That is creating a tension that perhaps runs a little bit against this trend of water marketing and sales and increasing prices and efficiency." As human populations continues to grow, the value, and thus the price, of water will only continue to increase.

Source: Anne C. Mulkern, *Greenwire*, 3/26/13 BACK TO TOP

Mississippi River Caucus and the Mississippi River Cities and Towns Initiative

Lawmakers and mayors from towns up and down the Mississippi River are banding together to advocate for their shared interests, from shipping to flood control to environmental issues. The new bipartisan, bicameral *Mississippi River Caucus* which now includes 12 senators and 13 representatives as members, is an expansion of the Senate caucus launched in February by Sens. Tom Harkin (D/IA) and Roy Blunt (R/MO). "This is a river with multiple uses, multiple resources and multiple economic impacts, no matter where you reside," said Rep. Ron Kind (D/WI). "It is one continuous ecosystem, one continuous transportation system, and we're all in this together." Kind said legislative priorities for the caucus would be a Water Resources Development Act (WRDA), a conservation title to the farm bill that would help reduce sediment and nutrient flows into the river, and authorization and funding of ecosystems restoration projects.

Congressman Fincher (TN) speaks during the MRCTI press conference announcing the formation of the Mississippi River Caucus. Mr. Fincher was joined by Senator Harkin as well as Congressmen Kind (WI), Walz (MN), and Crawford (AR). Twelve mayors from nine of the river states also joined the members. Soource: www.NEMW.org

These priorities hew closely to those of the mayors, who are members of the *Mississippi River Cities and Towns Initiative* (MRCTI), a group modeled on a similar Great Lakes initiative and funded initially by the *Walton Family Foundation*. The MRCTI laid out its platform in late March, which includes: enacting an environmentally and financially sound WRDA; focusing federal dollars on the most-needed improvements to the river's water quality; passing a comprehensive farm bill; establishing a *National Drought Council* to create a comprehensive action plan and preparedness legislation; developing a plan to help local governments address aquatic invasive species in the Mississippi River Basin; and preserving funding for the *Pre-Disaster Mitigation Program*.

Dave Kleis, mayor of St. Cloud, MN, and co-chairman of the MRCTI, said that as climate change brings more extreme weather, the cities and towns initiative will provide an important foundation for cooperation. "We're united, as an organization, to be proactive and to address issues along the Mississippi River before there's a disaster," he said. The local leaders also said they were pleased to see a WRDA moving through the Senate. Larry "Butch" Brown, mayor of Natchez, MS, who recently served as executive director of the state's Department of Transportation, underscored the importance of the nation's lock and dam system. "We have the largest commercial highway in the world – four times as big, economic development and revenue-wise, as any other waterway in the world," Brown said. "Yet we are still living with locks and dams and infrastructure on the Mississippi River that are older than some of the states in the United States of America." Shutting down navigation on the river for just one day can result in a $300 million loss to the U.S. economy, according to Kleis. More than 1 million jobs, he said, depend upon the river. But the inland waterways system is aging and funding is short for upgrades. The trust fund that industry pays into through a $0.20/gal. fuel tax doesn't nearly cover its mandated share of needed construction and upgrades. That issue "should be addressed," he said.

In addition to Harkin and Blunt, Senate members of the *Mississippi River Caucus* include: John Boozman (R/AR), Thad Cochran (R/MS), Dick Durbin (D/IL.), Al Franken (D/MN), Chuck Grassley (R/IA), Amy Klobuchar (D/MN), Mary Landrieu (D/LA), Claire McCaskill (D/MO), Mark Pryor (D/AR) and Roger Wicker (R/MS). In addition to Kind, House members of the caucus are: Rodney Alexander (R/LA), Marsha Blackburn (R/TN), Cheri Bustos (D/IL), Bill Cassidy (R/LA), Steve Cohen (D/TN), Rick Crawford (R/AR), Sam Graves (R/MO), Tim Griffin (R/AR), Stephen Fincher (R/TN), David Loebsack (D/IA), Tim Walz (D/MN) and Ed Whitfield (R/KY).

In addition to Kleis and Brown, participating MRCTI Mayors include: Mayor Slay, St. Louis, MO – co-chair; Mayor Huber, Prescott, WI; Mayor Buol, Dubuque, IA; Mayor Smiley, Clarksville, MO; Mayor Thompson, Grafton, IL; Mayor Hoechst, Alton, IL; Mayor Wharton, Memphis, TN; Mayor Kennemore, Osceola, AR; Mayor Winfield, Vicksburg, MS; and Mayor Copeland, Vidalia, LA.

Source: Annie Snider, *E&E Daily Headlines*, 3/22/13 and Northeast-Midwest Institute *News Release*, 3/21/13 BACK TO TOP

Fish Cannot Smell in Polluted Waters

Fish use their sense of smell to find mates, to feed, and to avoid predators. Their sense of smell also helps them navigate through murky waters. But according to a recent Canadian study when metals contact fish nostrils, the neurons shut down to protect the brain.

Metals already have been linked to impaired reproduction and growth in fish, but now they are proving to be "covert toxics," said Keith Tierney, a University of Alberta assistant professor who did not participate in the new study. "If you can't smell food, or avoid predators, you're more likely to die – simple as that," he said. Greg Pyle, a professor at the University of Lethbridge in Alberta, said he suspects that impaired sense of smell "has meaningful and profound effects" on many fish species. It may be jeopardizing entire populations of fish, including some endangered species. "We've tested everything from leeches to water fleas to several species of fish," Pyle said. "Every species and every metal we've observed has had effects at low, environmentally relevant concentrations."

Most contaminated lakes have a metallic mix, making it hard to tease out which pollutants are to blame. So in the latest study, Pyle and his team of researchers took yellow perch that lived in Ontario lakes contaminated with mercury, nickel, copper, iron and manganese, and put them in a cleaner lake. Within 24 hours of exposure to the clean water, the fish regained their sense of smell. This shows "fish from metal contaminated lakes have the ability to recover once the lake recovers," the authors wrote in the paper published in February in the *Ecotoxicology and Environmental Safety Journal*. The researchers used wild fish from two lakes with metal contamination (Ramsey and Hannah lakes) and from a cleaner one (Geneva Lake). Ramsey and Hannah, located in Sudbury, Ontario, are polluted from more than a century of mining, particularly with nickel. Hannah Lake is one of the worst-polluted lakes in the area, while Ramsey is similar to other North American lakes near industrial areas. Geneva Lake is far enough northwest to escape most contaminants. Just as the clean lake revived the sense of smell for the Ramsey and Hannah fish, Geneva Lake's perch had decreased smell after just 24 hours of exposure to the water in the dirtier lakes. Their response times to substances that smelled like their food dropped 75 to 59 percent. Similar results have been reported with minnows and perch, with metals apparently reducing their ability to escape predators.

Some metals attack specific neurons in the nostrils that respond to certain smells, Pyle said. Nickel targets the neurons that help fish smell food, while copper – at low concentrations – targets the neurons that help fish avoid predators. At higher concentrations, copper impairs their smell for everything. "Copper is a poster child for water pollution," said Nathaniel Scholz, an ecotoxicology program manager at the National Oceanic and Atmospheric Administration's (NOAA) *Northwest Fisheries Science Center*. "Copper is intensively used as a pesticide, fungicide…It's found in cars, in boat paint, so boat yards are often contaminated. And it's often found in industrial discharge and near legacy mining operations. It's a rare pollutant that's both agricultural and urban," he said. Copper use has more than doubled in the U.S. over the past three decades, according to a 2012 report from the *Copper Development Association*. Copper and other metal contaminants are a factor in the poor survival of the West Coast's coho salmon, which are endangered or threatened in most of the region, Scholz said. Young coho salmon exposed to low levels of copper did not evade predators – cutthroat trout – nearly as well as unexposed salmon, according to a lab study by Scholz and colleagues. This is concerning, Scholz said, because they are listed as endangered or threatened throughout most of the Northwest United States.

The problem is "likely to be widespread in many freshwater aquatic habitats," according to a NOAA report. The report said that increases in salmon response time to smells came within 10 minutes of exposure in some cases. Some pesticides also affect fish smell, including atrazine and chlorpyrifos, according to research by Oregon State University and Canadian scientists, respectively. Adding to the concern, Tierney found that zebrafish hung out where the herbicides entered their water, instead of avoiding it. The fish seemed to think that there was more food where the chemicals were because of excessive nutrients and bacteria. Pyle said one way to mitigate the problem is cleaning up contamination near spawning sites, as embryos are sensitive to the metals. Pyle said hatching in clean water, even if the fish ends up in dirty water, bolsters the chance it will maintain its sense of smell.

Source: Brian Bienkowski, *Scientific American*, 3/18/13 BACK TO TOP

Scientists Pursue Resurrections for Extinct Animals

A new, growing field of research called "de-extinction" is making rapid advances in molecular biology and genome engineering making it possible to imagine a world where long-gone species such as the passenger pigeon – or hybrid animals very similar to them – could again roam the Earth. "It may sound like science fiction, but it is very much grounded in the revolution in technology on the ground that is helping human health," said George Church, a pioneering Harvard University geneticist whose gene sequencing technology, developed to help scientists fight human disease, could also open doors to resurrect extinct animals or help severely endangered species. "We are trying to recreate species from information alone," Church told the *TEDxDeExtinction Conference* held in Washington, D.C. on March 15. Church has created new technology, primarily used for human medical advancements, that makes it easier and more efficient to read and write DNA. "This is real, not science fiction, and particularly applicable to extinct and endangered species," he said.

Michael Archer, a professor at the University of New South Wales Australia, announced at the De-extinction Conference that he had successfully created embryos with DNA from the gastric brooding frog, extinct since 1979. "It's not a tadpole, it's not a frog, but it's a long way toward bringing it back," he said. "….I think we are going to have this frog hopping glad to be back in the world again," he said. Archer inserted DNA from the extinct frog into host eggs from similar frogs. After five years of attempts, he said he created "good quality" embryos. His first successful embryo was two years ago, but it had poorer quality. Even with the improvements, his

team has not yet been able to get the embryo beyond the blastula stage. But Archer thinks if he can improve the methodology and interfere less with the host egg, a tadpole and frog may come to life. "We're pretty convinced if we can get this thing past the blastula phase, it will go," Archer said. The gastric brooding frog was discovered in 1972 in a mountain rainforest in Queensland, Australia. Within the next decade, it was extinct, perhaps because of a new fungus that entered its environment. The frog is unique among all animals in the way it gives birth to its young. Most frogs lay eggs and leave them to develop into tadpoles, then frogs, on their own. The gastric brooding frog would lay eggs, eat them and essentially transform its stomach into a uterus, until it eventually coughed up baby frogs. Archer thinks that if the frog could once again be researched, its ability to transform its stomach could have clues for human medicine.

Gastric Brooding Frog

"Work that is being done with stem cells to genome editing to sequencing is all converging to actually make de-extinction an increasing possibility," said Ryan Phelan, head of *Revive & Restore*, a California-based nonprofit. "The technology has advanced quite rapidly just in the last few years, and the cost of genome sequencing has just plummeted," Phelan said. "When you start to apply this to conservation, it means that things that were unthinkable are thinkable." *Revive & Restore* is investing in the passenger pigeon first because of its iconic status and relative practicality. Hundreds of passenger pigeons are preserved, providing a ready DNA source, and trees that nested the birds 100 years ago are still standing. A team of scientists at the University of California, Santa Cruz, led by ancient-DNA expert Beth Shapiro, has already sequenced the passenger pigeon's DNA. Over the next two years they will create a 10-year plan to "rewild" the passenger pigeon. The group started a campaign, "*The Great Comeback*," to raise funds for the effort.

Work will be conducted on the genomes of both the passenger pigeon and the band-tailed pigeon, a very close relative that is still living. They will eventually use technology to go in and, letter by letter, transform the genome of the band-tailed pigeon to that of the passenger pigeon. That is actually the easy part. New technology from Church's lab at Harvard is making gene replacement more efficient and affordable every year, removing what used to be one of the biggest barriers for such an effort. But then scientists must also solve the age-old problem of the chicken – or pigeon – and the egg. At some point, another bird will have to lay a passenger pigeon egg. There are also advancements in that field. In research published last year, scientists at *Dubai's Central Veterinary Research Laboratory* succeeded in having one species essentially create another. They created a "chimeric" duck that produced chicken sperm. It mated with hens and produced four chicken chicks. "The technology is definitely in this decade; the progress curves definitely point to that," said Ben Novak, a young scientist working on the project. "There might be some very difficult challenges facing us, but five years from now we would be having a very, very different conversation."

But some prominent biologists question if the effort is worth it. "While it may become technically feasible to do some of the things that are proposed, we should ask whether the technology would really be contributing to 'conservation,' where the generally agreed motivation is to protect species so that they can thrive into the future," said William Holt, a reproductive biologist at the *Zoological Society of London*. Stuart Pimm, a renowned conservation biologist from Duke University, takes it a step further. He is concerned that even attempting de-extinction could foster a political environment that could make it harder to protect currently living, imperiled species. "I think it is at best a colossal waste of money and at worst has potential to do significant harm," Pimm said. "The people working on this are lovely and I like them a lot, but I am afraid they are being politically naive. I am afraid the political consequences of this would be disastrous." Pimm recounted past arguments, when his foes opposed protections for species in the wild, as long as there was a small population that could rebound somewhere. He is worried hopes of de-extinction could exacerbate that attitude.

But Phelan and other supporters of the de-extinction movement say their efforts are rooted in conservation, and the technology developed could help imperiled species. The scientific push to resurrect a bygone species is coming, like it or not, they say, and they want to work together to make sure it is done well and benefits the environment. "We do it because we care about diversity, we have the scientific knowledge that diversity is a good thing, and we believe that in order to create healthy environments, we want to have species flourish," Phelan said. "This is potentially the moral thing to do.

Sources: Allison Winter, *Greenwire*, 3/14 and 3/15/13 BACK TO TOP

Appeals Court Rules Against Corps of Engineers Mountaintop Removal Measures

The U.S. Court of Appeals for the District of Columbia Circuit ruled in late April that U.S. EPA's 2011 retroactive veto of a major West Virginia mountaintop-removal mining project was legal. The decision by a three-judge panel confirms EPA's contention that

the Clean Water Act's (CWA) Section 404 grants the agency authority to scrap specifications in dredge-and-fill permits issued by the U.S. Army, Corps of Engineers (Corps). Writing for the panel, Judge Karen Henderson said "the unambiguous language of subsection 404(c) manifests the Congress's intent to confer on EPA a broad veto power extending beyond the permit issuance." The ruling reverses U.S. District Judge Amy Berman Jackson's decision last year that threw out EPA's veto of the permit for the *Arch Coal Inc. Spruce No. 1* mine in Logan County, WV. She accused the agency of relying on "magical thinking" to block key parts of the 2007 permit four years after it had been issued. But while Berman Jackson said the CWA was unclear on the issue, the appellate panel cited the law's "unambiguous statutory language" in ruling for EPA. The CWA gives the EPA administrator the power to "deny or restrict the use of any defined area for specification" in an Army Corps permit "whenever he determines" it will have negative environmental effects.

Arch argued that "whenever" meant during the permitting process. But Henderson wrote, "Notwithstanding the unambiguous statutory language, [*Arch* subsidiary] *Mingo Logan* presses its own view of the language, the statutory structure and section 404's legislative history to maintain that the Congress intended to preclude post-permit withdrawal." She added, "We find none of its arguments persuasive." Emma Cheuse, an attorney with *Earthjustice*, which intervened on behalf of EPA, said the decision "upholds essential protections" under the CWA. "Communities in Appalachia can finally breathe a sigh of relief knowing that EPA always has the final say to stop devastating permits for mountaintop-removal mining," she said.

Mountaintop removal in KY - Silas House, Berea, KY.

With the ruling in hand, Cheuse urged EPA to be even more aggressive in its mining oversight. "Now, we just need EPA to take action to protect more communities and mountain streams before they are gone for good," she added. Because Berman Jackson ruled that EPA didn't have the legal authority to retroactively veto the permit, she didn't rule on the actual merits of the agency's decision. The ruling came less than two months after oral arguments in March. Both *Arch* and EPA had agreed to expedited consideration of the issue because of the company's desire to move forward with mining activities on the site.

Numerous industries joined in briefs to the court against the EPA veto, saying that the government's ability to scrap permits after they are issued would have a chilling effect on the economy. John Iani, former administrator of the EPA Region 10 office in Seattle under President George W. Bush and now a Seattle-based lawyer, has predicted that the legal controversy could reach the Supreme Court. *Arch* has yet to indicate how it will proceed. The ruling is also likely to reignite the debate in Congress over EPA's retroactive permit vetoes, which had waned after Berman Jackson's ruling. Earlier this year West Virginia's Congressional delegation introduced H.R. 524 to prevent such retroactive vetoes.

Also, in late April, the 6th U.S. Circuit Court of Appeals threw out a controversial Corps streamlined permitting scheme for strip mining activities. The court rebuked the Corps for its enforcement of the so-called Nationwide Permit 21, which had been used to allow dredge-and-fill activities for Appalachian mountaintop-removal coal mining sites. Even though the Corps has revised the permitting scheme and the permits at issue have expired, about 70 pre-existing approvals qualify for special consideration. As such, judges declined to declare the litigation moot. "Though the permits here expired," Judge Deborah Cook wrote in the ruling, "the Corps grand fathered mining activities authorized by permit 21 for five years, allowing project reauthorization without applying the new limits imposed [in 2012]."

The litigation goes back to 2005, when environmental groups – including *Kentucky Riverkeeper* and *Kentuckians for the Commonwealth* – sued the Corps for failing to conduct enough scrutiny of strip mining projects under Nationwide Permit 21. In 2011, Kentucky U.S. District Judge David Bunning had ruled in favor of the Corps. But Appeals Court Judge Cook, appointed by former President George W. Bush, said the Corps misused Nationwide Permit 21 by not requiring enough environmental mitigation planning from mines and relying on environmental assessments rather than more stringent environmental impact statements. "While taking advantage of the more lenient environmental assessment method – instead of the intensive environmental impact statement method – the Corps short-circuited the 'cumulative impact' analysis by confining its review to an estimate of future impacts," Cook wrote.

While the Appeals Court called the Corps' action "arbitrary and capricious" and invalidated the previous Nationwide Permit 21 scheme, judges "stayed" the litigation for 60 days and sent it back to the district court level for a review of the decision's impacts and remedies. "Our allies deserve immense credit and warm congratulations for winning an 8 year battle against a permit that serves mountaintop removal mining interests to the great detriment of our Appalachian heritage," said Mary Anne Hitt, director of the *Sierra Club's Beyond Coal* campaign, referring to attorneys with *Public Justice*, *Appalachian Mountain Advocates* and others involved.

The Obama administration suspended the use of Nationwide Permit 21 in 2010 in six Appalachian states – KY, OH, PA, TN, VA and WV. It reauthorized the process in 2012 under much stricter conditions.

Source: Manuel Quinones, *Greenwire*, 4/22 and 4/23/13 BACK TO TOP

Mountaintop Removal Mining and Global Warming

Recent research on Appalachian mountaintop-removal coal mining says the procedure is destroying the region's natural ability to absorb heat-trapping carbon dioxide (CO_2) emissions and creating another source of emissions linked to climate change. The research, focusing on the fate of Appalachia's "carbon sinks," forested areas that capture and remove CO_2, was published in *Environmental Research Letters* late last year. Citing modeling of historical mining rates, the researchers argue that strip-mine reclamations that create grasslands, coupled with the natural regrowth of unmined forested areas, will cause southern Appalachian forests to switch from being net carbon sinks to net carbon sources between 2025 and 2033. According to the study, "These results suggest that while power plant stack emissions are the dominant life-cycle stage in coal-fired electricity, accounting for mountaintop coal mining in bottom-up inventories may be a critical component of regional carbon budgets." The research was conducted by Elliott Campbell, University of California, Merced, School of Engineering; James Fox, University of Kentucky; and graduate research assistant Peter Acton.

Campbell called mountaintop-removal mining "drastically damaging," adding in a statement that "it makes clear-cutting forest look mild." "There's no reclamation, and the ability of those areas to support life is dramatically altered," he said. The study focused on forests in southern WV and parts of KY, VA, OH and TN. Campbell said it could lead to policy changes in these areas related to mountaintop mining. "The mounting scientific evidence could also provide fodder for [President] Obama's Environmental Protection Agency, which took the highly unusual step in 2011 of revoking a mountaintop removal permit," Campbell said. Mountaintop-removal foe *Appalachian Voices* blog post said, "Consequently, ending mountaintop removal may have more environmental benefits than originally realized." But *National Mining Association* spokesman Luke Popovich said the paper ignores other causes of deforestation or mine reclamation requirements. The *West Virginia Coal Association* (WVCA) argues that reclaimed strip mine sites often end up as prime locations for schools, sports facilities and hardwood tree plantings. A 2009 report by *Walker Machinery Co*., which serves the Appalachian coal industry, said, "Mountaintop mining is the most efficient and environmentally responsible type of surface mining over the long term," in a document, posted on the WVCA website.

Source: Manuel Quinones, *Greenwire*, 2/22/13 BACK TO TOP

Planning for a Changing Climate

In partnership with State and Tribal agencies, the Obama Administration in late March released the first nationwide strategy to help public and private decision makers address the impacts of climate change on natural resources and the people and economies that depend on them. Developed in response to a request by Congress, the National Fish, Wildlife and Plants Climate Adaptation Strategy (Strategy) is the product of extensive national dialogue that spanned nearly two years and was shaped by comments from more than 55,000 Americans. The Strategy provides a road map of key steps needed over the next five years to reduce the current and expected impacts of climate change on our natural resources, which include: changing species distributions and migration patterns, the spread of wildlife diseases and invasive species, the inundation of coastal habitats with rising sea levels, changing productivity of our coastal oceans, and changes in freshwater availability. It also builds upon efforts already underway by federal, state, tribal governments and other organizations to safeguard fish, wildlife and plants and the communities that depend on them, and provides specific voluntary steps that agencies and partners can take in the coming years to reduce costly damages and protect the health of our communities and economy. The Strategy does not prescribe any mandatory activities for government or nongovernmental entities, nor suggest any regulatory actions.

Implementation of the strategy will provide public and private decision makers with the information and tools they need to consider and respond to climate change as part of their ongoing activities. The Strategy identifies seven key steps to help safeguard the nation's fish, wildlife and plants in a changing climate:

- Conserve habitat to support healthy fish, wildlife, and plant populations and ecosystem functions;
- Manage species and habitats to protect ecosystem functions and provide sustainable commercial, subsistence, recreational and cultural use;
- Enhance capacity for effective management;
- Support adaptive management through integrated observation and monitoring and use of decision support tools;
- Increase knowledge and information on impacts and responses of fish, wildlife, and plants;
- Increase awareness and motivate action to safeguard fish, wildlife, and plants; and
- Reduce non-climate stressors to help fish, wildlife, plants, and ecosystems adapt.

Meanwhile, a pair of green groups in late April issued their own guide aimed at helping local leaders plan for the impacts that climate change may have on water supplies. "Getting Climate Smart: A Water Preparedness Guide for State Action," produced by the *Natural Resources Defense Council* and *American Rivers*, aims to offer state governments, water managers and other stakeholders a tool kit to help plan for the local impacts of rising average temperatures and shifting precipitation patterns. Ten states currently have comprehensive plans in place, the report states. "All states must start the planning process now," it says. "The impacts of climate change are already being seen, and continued delays in planning and preparedness will only magnify the impacts."

The report offers three tracks for planning:

- basic, which includes a few recommendations that would require additional resources or regulatory changes;
- intermediate, for states with the wherewithal to conduct a more in-depth analysis of their vulnerabilities; and
- robust, for states that have substantial support and capacity to prepare for climate change.

Each track walks stakeholders through steps such as building support for the process, establishing goals and groups, assessing risks and vulnerabilities, and drafting and implementing a plan. The guide also provides strategies for impacts in seven sectors: agriculture, urban infrastructure, fisheries, public health, tourism and recreation, coastal areas, and water management.

Source: *NOAA News*, 3/26/13 and Annie Snider, *E&E News PM*, 4/22/13 BACK TO TOP

Floodplains by Design

A new video entitled, *Floodplains by Design* and sponsored by *The Nature Conservancy* illustrates ways of harnessing floodplain ecosystems for humans and wildlife. Floodplains are relatively flat areas that border rivers and are prone to flooding. But floodplains are also some of the most valuable places on Earth, both for people and wildlife. Fertile soils deposited on floodplains by rivers make these areas extremely productive for agriculture, and floodplain forests and marshes are among the richest habitats for wildlife, both in terms of diversity and numbers. Fish and wildlife species thus thrive in and along floodplain rivers, benefiting important commercial and recreational industries. The goal of the *Floodplains by Design* video is to ensure that floodplains are used and managed in ways that enable them to provide these valuable services, while maintaining or even improving flood protection.

Source: http://www.nature.org/ourinitiatives/habitats/riverslakes/floodplains-by-design.xml BACK TO TOP

USGS Web-based Biodiversity Information System

A new federally sponsored web site called, "*Biodiversity Information Serving Our Nation*" or BISON is the only system of its kind; a unique, web-based Federal resource for finding species in the U.S. and territories. Its size is unprecedented, offering more than 100 million mapped records of nearly every living species nationwide and growing. And the vast majority of the records are specific locations, not just county or state records. What's more, BISON provides an "Area of Interest" search capability in which users can query by drawing the exact boundary around their area of interest, down to and including towns, villages, or even much smaller areas such as parks. Other BISON search options include querying the species by scientific or common name, year, range, state, county, basis of record, or provider institution. BISON displays search results in both an interactive map and a list format. Users can click on each species occurrence point to retrieve more information, such as the institution providing the data, the collector, the date collected, and whether it was from a collection or an observation. Further, occurrences can be dynamically visualized with more than 50 other layers of environmental information in the system. Extensive web services are also available for direct connections to other systems.

USGS Core Science Systems Mission Area, which developed the resource, expects that BISON users will be broad-based and include land managers, researchers, refuge managers, citizen scientists, agriculture professionals, fisheries managers, water resource managers, educators, and more. Land managers, for instance, might be looking for a piece of land to purchase for conservation – but first they want to know what species have been documented for that parcel. BISON will tell them after only a few mouse clicks. BISON already includes millions of points from the Federal investment in biodiversity research. It is also formally cooperating with other Federal agencies to greatly expand the delivery of federally funded biodiversity data for the greatest possible good. Hundreds of thousands of citizen and professional scientists have collected the data in BISON. Non-governmental organizations, state and local governments, universities, and many others are also participating in this enormous undertaking. The USGS has built and maintains

BISON, which is hosted on the massive Federal computing infrastructure at Oak Ridge National Laboratory.

Source: *USGS News Release*, 4/18/13 BACK TO TOP

Natural Resource Protection Spending has Broad Economic Benefits

A newly released study has found that every dollar of public and private investment into natural resource conservation generates nearly $3 in economic activity, a conclusion conservation groups say highlights the economic benefits of protecting and preserving environmentally sensitive landscapes that support an entire industry. Overall, $38 billion in public and private money is invested into natural resource conservation nationwide each year, according to the 26-page study commissioned by the *National Fish and Wildlife Foundation*. That, in turn, results in $93 billion in federal, state and local tax revenues, as well as wages and salaries associated with thousands of jobs supported by these investments. The study was conducted by *Southwick Associates Inc*., a Fernandina Beach, FL-based natural resource and environmental economics firm.

"Conservation-focused investments impact our nation's economy in ways that cannot be ignored," said Whit Fosburgh, president and CEO of the *Theodore Roosevelt Conservation Partnership*. "If the government wishes to prioritize spending on areas that provide substantial return on investment, conservation, outdoor recreation and historic preservation should be at the top of their lists." The conclusion that investing in conserving public lands and natural resources drives significant economic activity is not new; the *Outdoor Industry Association* (OIA), for example, reported last summer that recreation alone generates $646 billion in direct spending and supports 6.1 million jobs. Even during the recession, the outdoor recreation economy grew 5 percent a year between 2005 and 2011, according to the OIA report.

The study is also the latest entry in the ongoing debate over how best to use public lands and whether the economic benefits associated with extracting minerals and other natural resources trump conservation. The oil and natural gas industry and GOP leaders in Congress, for example, have complained for years that the Obama administration's land-use policies favor conservation at the expense of domestic energy production, stalling the economic recovery. Often overlooked, conservation leaders say, is the fact that spending on outdoor recreational activities and equipment such as gear and trips supports more jobs than the oil and gas industry, education or construction. They add that protecting the lands that support this activity has significant economic benefits, too.

"The benefits of wild places in America are clear from both the economic and environmental perspective," said Bill Meadows, the co-chairman of *America's Voice for Conservation, Recreation and Preservation* (AVCRP) – a coalition of more than 1,200 organizations that view conservation, recreation and historical preservation programs as ways to improve the economy. AVCRP crunched some of the numbers in the *Southwick Associates* study, compiled them with other existing data, and found that the total economic impact attributed to natural resource conservation, outdoor recreation and historical preservation sparks $1.6 trillion in consumer spending, as well as $211 billion in annual federal, state and local tax revenue. In addition, these three sectors support 12.8 million jobs, according to the coalition. Yet the federal government spends only $33 billion annually on natural resource conservation, outdoor recreation and historical preservation, according to AVCRP. "Federal investments made in conservation are returned to all Americans, supporting millions of jobs, improving our infrastructure, encouraging economic investment in local communities, and keeping our air breathable, our water clean, and our wildlife and outdoor spaces protected – all of which make our nation unique and prosperous," said Meadows, former president of the *Wilderness Society*.

The NFWF-commissioned study focused on all forms of public and private conservation investments, including mitigation dollars and legal settlements when the funds are directed toward habitat. The *Southwick* researchers limited their definition of "natural resource conservation" to steps intended to support the protection or management of native fish and wildlife species and to land and water acquisitions to protect their habitats. The study analyzed natural resource conservation spending by public and private interests, such as individuals, foundations and nonprofits, in all 50 states. "It really is an exhaustive study by a well-respected organization in *Southwick*," said Alan Rowsome, director of conservation funding at the *Wilderness Society*.

In total, an estimated $38.8 billion is spent annually on conservation in the U.S., and the federal government is the leading source of conservation investments, accounting for about 60 percent of all spending, according to the study. State and local governments accounted for 29 percent of spending, while the private sector provided 11 percent. The $38.8 billion of direct spending generates $93.2 billion of total economic activity, mostly in the form of salaries and wages for jobs tied to this effort, as well as federal, state and local tax revenues, according to the study. If the federal government stopped these conservation investments and spent the money elsewhere, the study said, "U.S. economic activity would fall by $93 billion." "When Americans pursue their favorite outdoor pastimes each year, they support wildlife conservation, but also are strengthening our economy to a much greater degree than they may realize," said Dale Hall, the CEO of *Ducks Unlimited*. "Investing in conservation is a great deal for the American taxpayer."

Source: Scott Streater, *Greenwire*, 5/9/13 BACK TO TOP

Meetings of Interest

Jul. 21-24: Resilient Landscapes – Planning for Flood, Drought & Fire, 68th International Annual Conference, Reno, NV. See: www.swcs.org/13AC

Jul. 21-24: American Society of Agricultural and Biological Engineers Annual International Meeting, Kansas City, MO. See: http://www.asabemeetings.org

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

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

Aug. 12-14: 2nd International Conference on Biodiversity & Sustainable Energy Development, Raleigh, NC. See: http://www.gulfbase.org/event/view.php?eid=2icobsed

Sep. 8-12: American Fisheries Society Annual Meeting, Little Rock, AR. http://afs2013.com/

Sep. 25–28: Midwest Environmental Education Conference, Coralville, IA. See: https://sites.google.com/a/cfu.net/icec/home/winter-solstice-scholarship.

Oct. 5–9: 86th Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), Chicago, IL. See: www.weftec.org/

Oct. 6-11: 5th World Conference On Ecological Restoration, Madison WI. See: http://www.ser2013.org/

Oct. 9–12: Promoting Excellence in Environmental Education: 42nd Annual North American Association for Environmental Education Conference, Baltimore, MD. See: www.naaee.net/conference.

Jan. 26-29, 2014: 74th Midwest Fish and Wildlife Conference. Sheraton Kansas City, Kansas City, MO. See: http://www.midwestfw.org/html/call.shtml

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Congressional Action Pertinent to the Mississippi River Basin

Climate Change

S. 7. Reid (D/NV) and 21 Co-sponsors. Promotes (1) investment to ensure resilience to extreme weather and disasters; (2) investment in clean energy infrastructure; and (3) development of clean energy technologies. Also ensures that the federal government is a leader in reducing pollution, promoting the use of clean energy sources, and improving energy efficiency.

S. 107. Vitter (R/LA). Prohibits regulation of CO_2 emissions in the U.S. until China, India, and Russia implement similar reductions.

S. 332. Sanders (I/VT) and 1 Co-sponsor. 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.

H.R. 518. Markey (D/MA) and 14 Co-sponsors. Amends the *Reclamation States Emergency Drought Relief Act of 1991* to extend authority and appropriations for the drought program through FY 2018, and requires cooperative drought contingency plans to address projected long-term climate variability and change.

H.R. 662. Luetkemeyer (R/MO) and 26 Co-sponsors. Prohibits U.S. contributions to the IPCC and the *U.N. Framework Convention on Climate Change*.

Conservation

S. 51. Boxer (D/CA) and 10 Co-sponsors and **H.R. 263.** Grimm (R/NY) and 1 Co-sponsor. Reauthorizes the *National Fish and Wildlife Foundation*.

S. 327. Barrasso (R/WY) and 8 Co-sponsors. 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 6 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. 741. Vitter (R/LA) and 13 Co-sponsors. North American Wetlands Conservation Extension Act of 2013.

H.R. 349. Roby (R/AL) and 3 Co-sponsors. Prevents enrollment of land in the conservation reserve that is classified as class I or class II land under the NRCS land capability classification system, unless such land is enrolled as a buffer, filterstrip, or strip adjacent to a riparian area.

H.R. 638. Fleming (R/LA) and 12 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). Sikes Act Reauthorization Act of 2013.

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

Endangered Species

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

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 that Act with the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES), and for other purposes

Energy

S. 279. Tester (D/MT) and 7 Co-sponsors and **H.R. 596.** Gosar (R/AZ) and 15 Co-sponsors. Promotes the development of renewable energy on public lands, and for other purposes.

S. 545. Murkowski (R/AK) and 11 Co-sponsors. Intended to improve hydropower, and for other purposes.

H.R. 267. McMorris-Rodgers (R/WA) and 9 Co-sponsors. Amends the *Public Utility Regulatory Policies Act of 1978* to increase from 5,000 to 10,000 KW the size of small hydroelectric power projects which the FERC may exempt from its license requirements.

H.R. 334. Poe (R/TX) and 33 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 permit States to exempt projects from certain FERC considerations in issuing licenses for such projects.

H.R. 1769. Richmond (D/LA). Improves energy infrastructure resilience through federal water resource investments, and for other purposes.

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

FWPCA

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

S. 861. McConnell (R/KY) and Paul (R/KY). Amends the FWPCA to provide guidance and clarification regarding issuing new and renewal permits, and for other purposes.

H.R. 524. McKinley (R/WV) and 10 Co-sponsors. Amends the FWPCA to clarify that the EPA doesn't have the authority to disapprove a permit after it has been issued by the Corps under section 404 of such Act.

H.R. 1175. Cartwright (D/PA) and 49 Co-sponsors. Amends the FWPCA to direct the Secretary of the Interior 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 3 Co-sponsors. Amends the FWPCA to clarify a maintenance exemption regarding the removal of sediment, debris, and vegetation from certain structures.

H.R. 1837. Pallone (D/NJ) and 52 Co-sponsors. Amends the FWPCA to clarify that fill material cannot be comprised of waste.

H.R. 1877. Bishop (D/NY) and 27 Co-sponsors. Amends the FWPCA to authorize appropriations for State water pollution control revolving funds, and for other purposes.

Invasive Species

S. 125. Brown (D/OH) and 5 Co-sponsors and **H.R. 358.** McCollum (D/MN) and 18 Co-sponsors. Requires the USFWS, in coordination with the Corps, the NPS, and the USGS, to lead a multi agency effort to slow the spread of Asian Carp in the Upper Mississippi and Ohio River basins and tributaries by providing high-level technical assistance, coordination, best practices, and support to state and local government strategies, to slow, and eventually eliminate, the threat posed by such carp.

S. 365. Klobuchar (D/MN) and 1 Co-sponsor 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.

H.R. 584. Young (R/AK) and 4 Co-sponsors. Amends the *Federal Food, Drug, and Cosmetic Act* to require labeling of genetically engineered fish.

H.R. 985. Rogers (R/MI) and 11 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. 996. Slaughter (D/NY) and 28 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.

H.R. 1823. Heck (R/NV) and 5 Co-sponsors. Amends the Lacey Act to prohibit the importation and exportation of quagga mussels.

Mining

S. 222. Udall (D/NM) and 3 Co-sponsors and **H.R. 488.** Pearce (R/NM) and 1 Co-sponsor. 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.

H.R. 526. Yarmuth (D/KY) and 27 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.

Public Work

S. 360. Udall (D/NM) and 4 Co-sponsors and **H.R. 1351.** Grijalva (D/AZ) and 28 Co-sponsors. Instills a new generation of young men and women from across the U.S. with the desire to seek careers in resource stewardship and public service by

working directly with professionals.

H.R. 188. Kaptur (D/OH) *21st Century Civilian Conservation Corps Act*. Authorizes reestablishment of the Civilian Conservation Corps as a means of providing gainful employment to unemployed and underemployed citizens of the U.S. through the performance of useful public work, and for other purposes.

Recreation

S. 170. Murkowski (R/AK) and 2 Co-sponsors. Recognizes the heritage of recreational fishing, hunting, and recreational shooting on Federal public land and ensures continued opportunities for those activities.

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

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

H.R. 322. Miller, J. (R/FL) and 85 Co-sponsors. Amends the *Toxic Substances Control Act* (TSCA) to exclude from the definition of "chemical substance": (1) any component of any pistol, revolver, firearm, shell, or cartridge, including shot, bullets and other projectiles, propellants, and primers; and (2) any sport fishing equipment the sale of which is subject to federal excise tax and sport fishing equipment components.

H.R. 1825. Benishek (R/MI) and 13 Co-sponsors. Directs Federal public land management officials to exercise their authority under existing law to facilitate use of and access to Federal public lands for fishing, sport hunting, and recreational shooting, and for other purposes.

Water Quality

S. 496. Pryor (D/AR) and 10 Co-sponsors. Direct the EPA to change the Spill Prevention, Control, and Countermeasure rule with respect to certain farms.

S. 802. Hagan (D/NC) and 12 Co-sponsors and **H.R. 935.** Gibbs (R/OH) and 46 Co-sponsors. Clarifies Congressional intent regarding regulation of the use of pesticides in or near navigable waters, and for other purposes.

H.R. 311. Crawford (R/AR) and 69 Co-sponsors. Authorizes the EPA to require certification of large capacity farm storage tanks (> 10,000 gal.) under the Spill Prevention, Control, and Countermeasure rule.

H.R. 1304. Walberg (R/MI) and 13 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.

Water Resources

S. 4. Reid (D/NV) and 14 Co-sponsors. Updates and enhances dams, ports, water infrastructure, and flood protection infrastructure, and for other purposes.

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 team 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 21 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. 601. Boxer (D/CA) and Vitter (R/LA). Water Resources Development Act of 2013.

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

S. 890. Paul (R/KY) and 6 Co-sponsors. Clarifies the definition of navigable waters, and for other purposes.

H.R. 123. Holt (D/NJ) and 1 Co-sponsor. Establishes a *WaterSense* program to identify and promote water efficient products, buildings and landscapes, and services to reduce water use, conserve energy, and preserve water resources.

H.R. 136. Matsui (D/CA) and Bera (D/CA). Authorizes the Corps to implement any flood risk management project for which the 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. 399. Matsui (D/CA) and 27 Co-sponsors. Directs the Corps to undertake a comprehensive review of the policy guidelines on vegetation management for levees in order to determine whether current federal policy is appropriate for all regions of the U.S.

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 dam, and for other purposes.

H.R. 1161. Richmond (D/LA). Modifies the Mississippi River Ship Channel, Gulf of Mexico to Baton Rouge for navigation, and for other purposes.

H.R. 1460. Graves (R/MO) and 4 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 Gibson (R/NY). 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). Provide for liability for the Corps in cases of damage caused by the gross negligence of an officer or employee of the Corps.

Source: http://thomas.loc.gov/home/thomas.php

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