River Crossings

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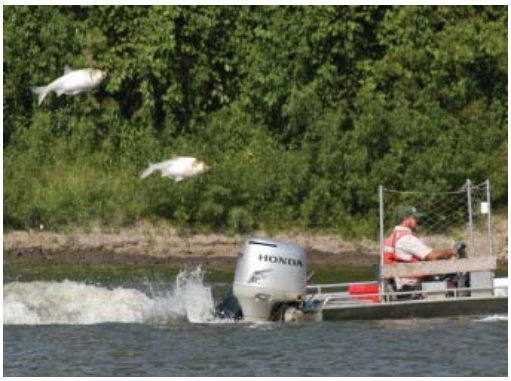
Starvation/Reproduction Problems in Missouri River Asian Carp

Asian carp populations in the Missouri River appear to be facing a food shortage which is impacting their body condition and reproductive capability. Duane Chapman, research fisheries biologist at the USGS Columbia Environmental Research Center (CERC) in Missouri said this year's silver carp population is starving, and the species might face a die-off sometime this year.

"Right now we have an extremely stressed population, because they are starving and trying to spawn, which expends energy," Chapman said. "When that happens, it is very common to have a lot of fish die since the chance of disease is very high." But despite their condition, Chapman said some of the Asian carp remain in good condition and will continue to survive. A die-off does not mean the fish would disappear from the river, but they will drop in numbers, he said.

Chapman said Asian carp starvation is evident in CERC's research and observations – the fish have a low body fat content. He said CERC researchers trying to spawn the carp in the laboratory to better understand the environments they can tolerate have had little success so far this year. The gametes, or reproductive cells from the fish, have been deficient. "In my opinion, the reason we aren't able to get good gametes to spawn is because they are too skinny and can't produce good eggs," Chapman said. Because of the difficulty faced by lab technicians, he predicts the carp will also have trouble reproducing in the river.



Duane Chapman and jumping 20 lb. (estimated) Missouri River Asian carp (USGS Photo)

Even though Chapman and other researchers predict that a Missouri River carp die-off is likely, they may not know if it happens. "In the Missouri River, the water flows really quickly, so we might not actually see many dead fish," Chapman said. "There's a good chance they might just float on down the river."

Chapman sees any decline in Asian carp numbers as a hopeful situation for the native species that compete with them for food. The zooplankton supply, the source of food for many fish, is much less abundant now than before the arrival of the carp – a fact that was discovered after a two-year study, Chapman said. Since an earlier study done in 1979 by University of Missouri graduate student D.K. Jennings, the total number of rotifer zooplankton (microscopic invertebrates), has decreased by 50 percent in the low velocity habitat preferred by bighead and silver carp, and crustacean zooplankton is down to a mere 10 percent of the original number found by Jennings. Because the 1979 data was collected before the abundance of Asian carp, and the current data after their overpopulation, the dramatic decline of zooplankton may be because of their presence Chapman said. But he added that it is difficult to determine conclusively from only two data sets.

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Since the plankton supply is low and silver carp are able to eat smaller sized plankton than other fish, they can prevent other plankton eaters from finding any, Chapman said. And unless they are able to find another food source, native filter-feeding fish like the paddlefish and gizzard shad could be affected, as well as the young and recently spawned fish of many other species, which almost always eat plankton, Chapman said.

Not a lot of research has been done on this problem, but the influence of Asian carp on native species was analyzed in a study on gizzard shad conducted by personnel at the U.S. Fish and Wildlife Service Columbia, Missouri Fish and Wildlife Conservation Office (CFWCO). That study revealed that from 2000 to 2006 gizzard shad experienced a 5.4 percent decrease in body weight. Although the results were inconclusive, Wyatt Doyle (CFWCO) said the decrease in health might be a result of competition within the shad population itself or with the Asian carp population. Doyle said the overabundance of Asian carp interferes with the Missouri River's entire food chain. "Gizzard shad compete directly with carp for food, and they are a food source for a variety of sport fish," Doyle said. "If they can't get enough food, there aren't enough prey fish, and therefore the sport fish don't survive as long."

The influence of Asian carp on native fish species has been discovered in other rivers as well. Kevin Irons, large-river ecologist at the Illinois Natural History Survey (INHS) Illinois River Biological Station in Havanna, IL, said they have found poor health in some Illinois River native species as well. "Since 2000, we've been looking at bigmouth buffalo and gizzard shad in the Illinois River, and their conditions have declined," Irons said. "This leads us to believe that there is competition in food sources, since we looked at a multitude of environmental factors and none were significant to the declining condition of the fish." As the Asian carp populations have increased, Irons said their condition has also been declining in both the Ohio and Mississippi rivers.

"So on the good side, carp are having troubles", Chapman said, "but the obvious question is, if carp are having trouble, what about native fish that inhabit the same habitat, and also require planktonic resources? I have to say I am more worried about native fish right now than ever before. Both the extreme loss in condition factor in Missouri River carp and the lesser but ubiquitous drop in condition factor over the broader range where bighead and silver carps are abundant indicate that these fishes are changing the environment by decreasing the availability of planktonic or filterable resources. Both the carps and native fishes of many species require those resources."

The bottom line is that all river fishes may be in trouble because of the Asian carps' ability to extract excessive amounts of planktonic resources from the system. Essentially wherever Asian carp populations expand, they have the potential to knock the bottom right out of the aquatic food chain of the infested ecosystem!

Sources: Amber Wade, *Columbia Missourian*, 6/7/09; and personal communication with Duane Chapman, CERC; Kevin Irons, INHS; and Wyatt Doyle, CMFRO

Asian Carp – Another Step Closer to the Great Lakes

New genetic monitoring techniques indicate that Asian carp may be closer (within less than 10 river miles) to the electric barrier site in the Chicago Sanitary and Ship Canal (CSSC) than previously thought. As part of its expanded Asian carp monitoring program, the U.S. Army Corps of Engineers (Corps) recently contracted with a University of Notre Dame team led by Dr. David Lodge in an attempt to detect the presence of Asian carp through genetic testing of water samples. The test results to date indicate the possible presence of silver carp in the Brandon Road Pool of the CSSC, including sites between the Lockport Dam (river mile 291) and the confluence with the Des Plaines River near river mile 290. Previous monitoring by other techniques never detected Asian carp in the Brandon Road Pool. Lodge and his associates collected approximately 150 water samples from the Dresden Island and Brandon Road pools.

"This is new technology and although we don't have all the lab results yet, and we have no confirmed physical sighting of Asian carp as close as the Lockport Lock, we are taking this new information very

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seriously. We have already taken action to gather additional water samples for more DNA testing, increased electrofishing efforts, and are using other traditional monitoring methods to confirm the initial findings of the DNA tests," said Col. Vincent Quarles, commander of the Corps' Chicago District. "While we work to validate these initial results, we will also consider if we need to make changes to current operations of our electrical dispersal barriers that are designed to deter the migration of Asian carp through the canal...," Quarles said.

The CSSC is a man-made waterway that provides a direct hydraulic connection between Lake Michigan and the Mississippi River Basin. Without intervention, the Asian carp could transfer between the basins, competing with native Great Lakes species for food, living space, and spawning areas with negative impacts on the environment. The Corps Barrier Project located between River Miles 296.1 and 296.7 consists of a series of electrical barriers that mitigate risks of invasive species reaching the Great Lakes.

"The big thing is, they got through a lock," said Phil Moy, University of Wisconsin Sea Grant, has been instrumental in getting the new electric fish barrier installed in the CSSC. "We're actively talking to other stakeholders like the U.S. Fish and Wildlife Service (FWS) and the EPA to assess what it means and what the next action should be," said Chuck Shea, Corps' barrier project manager. Shea said biologists headed back out in early August to conduct another round of tests to determine if the fish are any farther upstream. If the tests show the fish are even closer to the barrier, it could put the barrier operators in a sticky situation.

Because of the hazards the barrier's electrified water poses to barge operators and other boaters, it is presently being operated at only about a quarter of its designed strength – strong enough to repel adult fish but not juveniles. Barrier operators said they would consider turning up the electricity if they have evidence that the fish are approaching, and a positive DNA test could trigger that decision. "It's certainly something we would consider," Shea said.

Moy said biologists also are looking for fish above the barrier. "They took samples above the barrier," he said, adding that those test results won't be available for a couple of weeks. If the canal above the electric barrier also tests positive, it likely is only a matter of time before the fish make their way into Lake Michigan. The fish are a big deal because they are voracious feeders, overwhelming native species, and they pose a huge hazard to recreational boaters because of their habit of jumping out of the water when agitated by the sound of a boat motor.

Sources: *News Release*, U.S. Army, Corps of Engineers, 8/7/09; and Dan Egan, *Milwaukee Journal Sentinel*, 8/6/09

St. Lawrence Seaway, Invasive Species and the Mississippi River Basin

The St. Lawrence Seaway was first opened 50 years ago in June as a major Great Lakes shipping channel. While the Seaway brought tremendous economic opportunity to the Great Lakes region, the $470 million system of channels, locks and dams also opened the door to invasion by more than 60 foreign species. Invasives like the zebra mussel ferried into the lakes attached to the sides of ships and in ballast water tanks. And once in the lakes, the mussels found their way to Chicago and into the Illinois River via the Chicago Sanitary and Shipping Canal (CSSC). From there, the mussels attached themselves to barges and were carried to the far corners of the Mississippi River Basin and beyond via the Intercontinental Waterway System.

Diporeia (Michigan Today Photo)

Wherever they are found the mussels have wrought tremendous economic and ecological damage plugging industrial water intakes, and starving native fish and mussel populations. David Jude, School of Natural Resources and Environment at the University of Michigan, has been studying the Great Lakes for more than 30 years. "A decade ago, there were no quagga mussels in Lake Michigan," Jude said. "Now you can find them across the entire lake, and this invasion has happened faster than anyone thought it would. We're really grappling with some of the changes that are going on in the Great Lakes as a result," he said.

Jude, Thomas Nalepa (National Oceanic and Atmospheric Administration in Ann Arbor), and Mark Edlund (Science Museum of Minnesota, St. Croix Watershed Research Station) are studying links between the arrival of the invasive mussels and the decline of a tiny shrimplike creature called *diporeia*, which feeds on algae and has, for millennia, been one of the pillars supporting the base of the Great Lakes food web.

Over a two week period in May, they sampled a large area of lower Lake Michigan – roughly a 170-mile loop around the lake's southern basin. Data collected at five research stations included water and sediment samples as well as bottom trawls for fish. The sampling yielded huge hauls of quagga mussels but very little algae, few *diporeia* and few bottom-dwelling fish. Taken together, those observations help explain the dramatic changes now underway in the Great Lakes, Jude said. Less algae means fewer *diporeia*, a primary food source for whitefish and small "prey fish" such as alewives, bloaters, smelt and sculpins. Fewer prey fish leads to a drop in the number of bigger fish that feed on them. Chinook salmon, for example, rely largely on alewives.

The Lakes are thus in the midst of a remarkable ecological transformation, driven largely by the blitzkrieg advance of these two closely related species of non-native mussels. Though the zebra mussel is better known to the public, over the past decade it has largely been displaced in Lake Michigan by the quagga, which can thrive far from shore in deep, mud-bottomed waters. Each quagga and zebra mussel filters about a quart of water a day – and there are billions of them in Lake Michigan alone. The result is startlingly clear water that delights recreational boaters but disturbs scientists because the water's been stripped of its life-supporting algae. Make no mistake: The study of *diporeia's* decline is no esoteric academic pursuit. Nearly every fish species in the Great Lakes feeds on *diporeia* at some point in its life cycle.

The *diporeia* downturn is already impacting Great Lakes commercial fisheries and a sport-fishing enterprise valued at more than $4 billion per year. "Fundamental, amazing change is happening in the Great Lakes right now, and it's being propagated throughout the food web, from the bottom up," Jude said. "We're going to lose a big chunk of that sport fishery. That will have a tremendous economic impact and will result in dramatic changes to the fisheries people have relied on in the past."

Lake Huron has already experienced many of the changes expected to occur in Lake Michigan in the coming years. In Huron, the *diporeia* decline led to scrawnier, less abundant whitefish and contributed to the decimation of the alewife population, which led to a drop in Chinook numbers. "The loss of *diporeia* is one of several changes that are occurring in response to the expansion of the quagga mussel population," Nalepa said. "People have to realize that the lakes are no longer going to be what they were 20 years ago, or even 10 years ago, because of the quagga mussel. We're still in the explosive-growth stage of the quagga mussel expansion, and we're in uncharted territory in terms of what's eventually going to happen," he said. "But there's a delay between what the mussels do and how it affects the fish populations, so we haven't seen the worst of the impacts yet, in my opinion."

But amid all the gloom, a bright spot has been the resurgence of some native fish species, Jude said. Alewives, in addition to feeding on *diporeia*, dine on the larval forms of many fish species. In Lake Huron, the near disappearance of alewives is credited, in part, with the rebound of native walleyes, lake herring, lake trout and emerald shiners. Lake Huron whitefish seem to have adapted somewhat, and they now feed on quagga mussels – shells and all. "These lakes – Michigan, Huron and Ontario – are going to become less productive, and that translates into fewer fish as well as different types of fish," Jude said. "So the sport fishermen are probably the people who will be most affected by this. For example, because of all the walleyes being produced now in Saginaw Bay, there are a lot of walleyes in Lake Huron. So instead of fishing for Chinook salmon, sport fishermen may be shifting over to walleyes."

"The damage invasive species have caused to the Great Lakes is astounding," said Dennis Schornack, former U.S. chairman of the International Joint Commission. "But, what's most frustrating is that we still haven't closed this door." So a coalition of Great Lakes advocates, observing the St Lawrence Seaway's 50th anniversary, renewed their calls on the shipping industry to protect the world's largest freshwater system. The group is asking the industry to curb dumping into the lakes, forgo any plans to expand the seaway, reduce ice-breaking activity in sensitive areas and cut back on air emissions, among other things.

These changes are critical, some say, in order for President Barack Obama's Great Lakes restoration initiatives to be successful. "If the Obama administration is going to be investing nearly a half-billion dollars into restoration in the next year, then we have to ensure that shipping doesn't undo all that," said Jennifer Nalbone of the conservation group *Great Lakes United*.

But besides the threat of invasion via the St. Lawrence Seaway, the Great Lakes also are threatened by invasion from another direction. Asian carp are knocking at the door to Lake Michigan from the south (the Mississippi River Basin), and threaten to invade via the CSSC (See previous article). If the Asian carp invade the lakes, they will only exacerbate the situation created by the quagga and zebra mussels because they too are plankton feeders and have decimated plankton populations in places like the Missouri River.

Great Lakes and Mississippi River Basin advocates alike have expressed interest in restoring the hydraulic separation that existed historically between Lake Michigan and the Illinois River – thus stopping the open exchange of water and invasive species between these two magnificent ecosystems.

Sources: Dan Egan, *Milwaukee Journal Sentinel*, 6/26/09; Jim Erickson, *Michigan Today*, 7/15/09; and *Greenwire*, 6/29/09

Mississippi River Gulf Outlet Blocked With Rock

The U.S. Army Corps of Engineers (Corps) announced in early July completion of an $11.2 million project to close the Mississippi River Gulf Outlet (MRGO). The barrier in the waterway 1,500 feet southeast of Bayou La Loutre in rural St. Bernard Parish is made of 352,000 tons of rock. The MRGO closure structure stretches 950 feet across, and is 450 feet wide at the bottom, narrowing to 12 feet across at the top, the Corps said. The barrier juts 7 feet above the water level. Corps and St. Bernard Parish authorities have urged boaters to use extreme caution in the area around the barrier.

The MRGO channel, built in the 1960s, cut through St. Bernard Parish and was designed to provide a shipping shortcut from the Mississippi River to the Gulf of Mexico. Over the years, the channel was blamed for the loss of thousands of acres of protective wetlands. And after Hurricane Katrina, many elected officials and residents of St. Bernard Parish, eastern New Orleans and the 9th Ward loudly criticized the waterway as the cause of the deadly flooding that decimated the region.

The Corps, citing its own studies, contended the channel's effect on flooding was overblown, but noting the decline in shipping traffic over the years, recommended that the channel be closed. The Corps is now working with federal and state agencies to produce a supplemental plan to restore the area's wetlands. "With completion of the MRGO closure structure, attention can be turned to future work in the area, which will include ecosystem restoration projects to protect and rebuild coastal wetlands," Col. Alvin Lee, commander of the Corps' New Orleans District said.

Meanwhile, a federal judge in early August refused to dismiss a class-action lawsuit accusing the government of illegally taking the value of plaintiffs' land in St. Bernard Parish and the Lower 9th Ward through flooding caused by building the MRGO. Plaintiffs filed the lawsuit a month and a half after Hurricane Katrina hit both areas four years ago. They argue that ongoing environmental damage from the construction of the MRGO left them vulnerable to flooding. But Court of Federal Claims Judge Susan Braden decided to delay bringing the case to trial until a decision is reached in a separate case over whether construction of the MRGO was partly to blame for flood damage caused in both areas during Katrina. The judge suggested the delay could help determine whether that ruling will provide damage relief for the plaintiffs in her case.

Many folks in the upper Midwest would like to see similar action taken to close the Chicago Sanitary and Ship Canal that connects Lake Michigan with the Illinois River and the Mississippi River Basin. That canal is blamed for the spread of invasive species such as the zebra mussel between the Great Lakes and Mississippi River Basin.

Sources: *The New Orleans Times-Picayune*, 7/24/09; and Mark Schleifstein, *New Orleans Times-Picayune*, 8/3/09; and *Greenwire*, 8/4/09

Coastal Restoration, Dredging and Corps' Policy Disputes

Each year, the U.S. Army Corps of Engineers (Corps) and private companies dredge about 63 million tons of sediment from Louisiana's coastal areas, primarily to service the needs of shipping and petroleum interests. And the Corps constantly dredges the river to ensure ships can pass, and oil

and gas companies cut and maintain canals to service their facilities and lay pipelines through Louisiana's fragile wetlands. All of that extracted sediment, if strategically dumped back into areas of threatened coastline, could do wonders to revive the state's dying marshes – once its primary defense against hurricanes.

But the Corps rebuilds marshes with only 12 percent of the 60 million tons of sediment it removes from the river each year. The agency has long claimed that it is forced by federal law to dispose of the material in cheaper ways that don't help the state's environment. And the state has only been requiring industry to reuse 22 percent of its much smaller, but still substantial amount of sediment from dredging operations, about 3 million tons a year. Now, the state is demanding that the Corps use more of its dredged material to rebuild wetlands. "When you do the math, the Corps can create about 18 square miles a year of emergent wetlands in open water ... with all that material," said Louis Buatt, assistant secretary of the state Department of Natural Resources. "That's nearly two-thirds of the wetlands we lose annually."

But even as it turns up political heat on the Corps, the state has also proposed a sweeping new rule that requires private industry to play a greater role in coastal restoration. Until now, the state required wetlands rebuilding only on projects where more than 100,000 cubic yards of sediment were dredged – a requirement often not well-enforced, officials said. The new rules governing dredging in state waters provide dredgers of as little as 25,000 cubic yards of material with four options for capturing the value of 100 percent of the material they dredge:

- Use the dredged material in a nearby restoration project;
- Assist an existing federal, state or local project;
- Build a project elsewhere with a similar amount of dredged material; or
- Pay money into the Coastal Resources Trust Fund in lieu of reusing the dredged material, at a rate of $1 per yard or 1.5 percent of the cost of a barrel of crude oil, whichever is greater.

The in lieu payment would be limited to a third of the total dredging project cost, but the Natural Resources secretary could veto the payment if it did not sufficiently offset the failure to use the dredged material to create new wetlands. The rules also will apply to "prop-washing," in which a ship is brought into a canal and its prop reopens silted-in areas. The rules will go into effect this year after state agencies and the public get a chance to comment.

The state initially stepped up pressure on the Corps in January, when it used a federal law to remind the agency of its requirement to address the state's environmental concerns, which are outlined in its Coastal Resources Program. That program requires all actions occurring along the coast to comply with the state's coastal restoration master plan, which also recommends reuse of dredged material to build wetlands. And the federal law requires federal agencies to follow the state coastal program to the maximum extent feasible.

The state recognized the need to dredge the Southwest Pass to ensure shipping access. But it argued that the Corps' disposal of dredged material in the mouth of the nearby Pass-a-Loutre blocked the passage of sediment and water into the Delta National Wildlife Refuge and Pass-a-Loutre Wildlife Management Area – where new wetlands had been forming. So the state told the Corps to dump the material into the mouth of the nearby South Pass, where it would create wetlands, and asked that more material from the Head of Passes area be pumped to other wetland restoration sites. The state also told the Corps to prepare a dredging plan for the entire Mississippi River delta area, including how the Corps would use $100 million that Congress has authorized to spend on building wetlands with dredged material over the next 10 years. Congress, however, has not yet appropriated any of that money., and in Februay the Corps turned down most of the state's demands.

Dredged material disposal in the main channel of the Upper Mississippi River.

Corps New Orleans District commander Col. Alvin Lee said the additional money from Congress won't be available until the fiscal year 2010 budget is approved. And he ruled out using South Pass as a disposal area, since it also is a federally authorized navigation channel that must remain open to shipping.

Since then, the Corps received $10 million in federal stimulus money for additional dredging of Southwest Pass. But the Corps has said none of that money can be used to move dredged material to build wetlands.

So Buatt sent a second letter to the Corps reminding the agency of its legal responsibility to act in keeping with the state's environmental concerns. The letter said the Corps has avoided reusing untold tons of dredged material by hiding behind outdated legal opinions. Buatt's letter was accompanied by a white paper warning that, without massive efforts to restore the coast, the Gulf of Mexico will eventually swallow the river banks, levees and jetties that protect the nation's most important navigation channel. In other words, dredging to preserve shipping lanes now threatens the same shipping lanes in the future – unless the Corps uses the dredged material in part of a much larger effort to preserve the surrounding coast. And that should make restoring the wetlands an allowable cost under federal rules, Buatt argues. "The sustainability of navigation on the river is intricately tied to the sustainability of its surrounding landscape," the report said. "Beneficial use of dredged material is ultimately a tool for navigation to ensure its future."

But the Corps counters again that federal law requires it to use the cheapest alternative for disposing dredged material. And that requirement will not accommodate the steep cost of moving the dredged material miles away from the river's navigation channel to areas desperately in need of fresh sediment.

Meanwhile, the Gulf of Mexico's oxygen-depleted "dead zone" could be one of the largest on record this year, reaching an area the size of New Jersey or 7,350 to 8,456 square miles, with a strong chance of it growing larger, given recent flooding of the Mississippi River. The largest dead zone on record was 8,484 square miles in 2002. Researchers from the *Louisiana Universities Marine Consortium*, Louisiana State University, and the University of Michigan made the dead-zone forecast after observing large amounts of nitrogen flowing into the gulf from the Mississippi and Atchafalaya rivers. Both rivers had heavy water flows in April and May – 11 percent above average. "The high water volume flows, coupled with nearly triple the nitrogen concentrations in these rivers over the past 50 years from human activities, has led to a dramatic increase in the size of the dead zone," said Gene Turner, a lead forecast modeler from Louisiana State University.

The *National Research Council* recommended last December that the U.S. EPA and the U.S. Agriculture Department (USDA) take swift action to pinpoint the causes of Mississippi River pollution and reduce them after years of piecemeal efforts. The council found that EPA and USDA do not effectively coordinate on upstream pollution controls, especially from agricultural practices in the Midwest. Even with a more robust program to reduce river pollution, experts predict it could take decades to reverse the damage. But the Corps could help the dead zone problem by depositing its disturbed sediments (dredged material) in nearby wetlands where many of the pollutants would be stabilized before reaching the Gulf.

Sources: Mark Schleifstein, *New Orleans Times-Picayune*, 6/13/09 Allison Winter, *Greenwire*, 6/18/09; and *Greenwire*, 6/15/09

Levees, Dams and Louisiana Marshes

Louisiana officials are actually talking about breaking Mississippi River levees south of New Orleans to restore the nourishing flow of muddy water into the state's marshes. But new analyses by scientists at Louisiana State University say inland dams upstream in the Mississippi River watershed trap so much sediment that the river no longer carries enough to halt marsh loss, especially now that global warming is speeding a rise in sea levels. As a result, the loss of thousands of additional square miles of marshland is "inevitable," the scientists report in a late June issue of *Nature Geoscience*.

The finding does not suggest it would be pointless to divert the muddy water into the marshes, Dr. Harry H. Roberts, a coastal scientist said in an interview. "Any meaningful restoration of our coast has to involve river sediment," he said. But he said officials would have to choose which parts of the landscape could be saved and which must be abandoned, and to acknowledge that lives and businesses would be disrupted. Instead of breaking levees far south of New Orleans, where relatively few people live, Dr. Roberts said, officials should consider diversions much closer to New Orleans, possibly into the LaFourche, Terrebonne or St. Bernard basins.

"It's going to be an excruciating process to decide where that occurs," Dr. Roberts said of the levee-breaking. "Sediment carried by the Mississippi built up the marshes of Louisiana over thousands of years, but today inland dams trap at least half of it," he said. There are 8,000 dams in the Mississippi River drainage basin, and levees have turned the river into "a pipe" south of St. Louis. "Getting sediment into the marshes," he said, "is not happening, at least not very efficiently."

The extent to which inland dams have had an impact on sediment flow has been debated. Although sediment in the river is only about half what it was in the 18th and 19th centuries, some scientists have argued that the flow back then was unusually high because of the advent of farming in the nation's midsection. But Dr. Roberts said a new analysis of sediment data going back thousands of years challenged that idea. "There probably was a spike, but it was insignificant," he said. In theory, it might be possible to remove inland dams to increase the flow of sediment. But Dr. Roberts said the trapped sediments contain agricultural chemicals and other pollutants that might worsen the already deteriorating water quality at the mouth of the Mississippi. On the other hand, he said, if nutrient-rich sediment made its way into Louisiana's marshes, it might encourage the growth of plants that would contribute to marsh health.

Sources: Cornelia Dean, *New York Times*, 6/28/09; and *Greenwire*, 6/29/09

Debate Over Levee Clearing

Trees nationwide that grow within 15 feet of a levee will be axed under a new order from the U.S. Army Corps of Engineers (Corps). In 2006, the Corps began sending hundreds of letters to levee districts across the nation, ordering them to cut down "unwanted woody vegetation," a prospect that could cost many of the districts millions of dollars each in timber-clearing expenses. Inspectors began an inventory of the levee system and told districts to fill in animal burrows, repair culverts and patch up erosion. If they fail to comply, the districts risk higher flood insurance premiums and a loss of federal funding. The Corps says the trees' roots could tunnel under levees and prompt collapses like those caused by Hurricane Katrina in 2005, but environmentalists and some engineers say the trees pose little threat to levees and may help solidify the soil used to build them.

An *Associated Press* survey of levee projects nationwide shows that the Corps wants to eliminate all trees along more than 100,000 miles of levees. Thousands of trees have been felled already, though Corps officials did not have a precise number of how many will be cut. The Corps has "this body of decades of experience that says you shouldn't have trees on your levees," said Eric Halpin, the agency's special assistant for dam and levee safety.

But experts outside the Corps say a tree has never caused a U.S. levee failure. "If trees are a problem, why aren't we having problems with them?" said George Sills, who formerly worked for the Corps' *Engineer Research and Development Center* in Vicksburg, MS. "There's never been a documented problem with a tree." In fact in a March 2008 e-mail, Sills told the Corps to remove his name from an updated vegetation policy paper he worked on for the Corps. He said he ran analyses for the Corps "that looked at the possibility that the trees caused any of the (levee) failures in New Orleans" and "it was determined that trees did not lead to any of these failures."

Andrew Levesque, senior engineer for King County, WA, where the Corps wants trees removed on the six rivers considered vital to salmon populations, agrees, "The literature on the presence of vegetation indicates that it may actually strengthen a levee," he said. "The Corps' new edict was regarded as a major change in policy," said Ronald Stork, senior policy expert with *California Friends of the River* in Sacramento. In 2007, the Corps sought to clear oaks, cottonwoods, willows and other vegetation from 1,600 miles of levees in California's Central Valley. But state wildlife officials complained that the policy would destroy habitat, and residents in Sacramento and elsewhere objected that it would have turned rivers into little more than barren culverts.

Along the woooded Ouachita River in Louisiana last summer, cutting crews came to a levee on the Breston Plantation, an 18th-century French colonial estate. The plantation is surrounded by sycamores, oaks, elms, pines, cedars, magnolias and crepe myrtles. Hundreds of trees were growing within 15 feet of the levee. In theory, they would all have to go. But after months of negotiations with landowners and the Tensas Basin Levee District, the Corps agreed to let the district chop down only a few dozen trees on the levee. "We don't know how long the trees have been here, but they've never caused any problem up until now," said Hugh Youngblood, 61, whose ancestors came to Breston in the 1800s.

"They don't care if that's good science," resident Walter Valenta said. "It is their

policy." "This is something they've dreamed up. It's like they're hell-bent to write up some negative reports," said Frank Keith, levee commissioner of the Tulsa County Drainage District in Oklahoma, where levees contain the Arkansas River. Some 230 miles of levees in Keith's district got an "unacceptable rating" in December 2007, and the district faced losing its federal accreditation in part because of tree growth. That levee district is now working with landowners to cut trees and fix other problems the Corps found with its levees.

Halpin, the Corps' dam and levee expert, said the agency does not know whether a tree has ever directly caused a levee failure. But he noted that dam failures have been linked to trees, including a 1970s collapse in Georgia that claimed 39 lives. The Corps also wants to get rid of trees for safety reasons. A treeless levee is easier to inspect and repair during a flood.

All this complaining frustrates Larry Larson, executive director of the *Association of State Floodplain Managers*, a group based in Madison, WI, that represents interests such as insurers and engineers. "If you're going to have a levee, you have to be able to maintain a levee and make it safe," Larson said.

Sources: *AP/MSNBC.com*, 6/9/09; and *Greenwire*, 6/10/09

New Draft Floodplain Executive Order

The White House is crafting an executive order aimed at toughening federal policies restricting the construction of dams, levees, roads and other structures in flood-prone areas. The order would toughen a 1977 directive by President Carter that was seen then as a landmark step establishing a federal leadership role in floodplain management. But since the devastating Midwest floods in 1993, disaster-management experts have been calling for a revision of federal floodplain policies, saying agencies have failed to consistently comply with rules written in the wake of Carter's order. "You still go out and find post offices being built in floodplains," said Larry Larson, executive director of the *Association of State Floodplain Managers*. "Where's the cheapest land? It's in the high-hazard area."

President Obama's draft order would direct agencies to use non-structural approaches – typically, building codes, planning laws and education campaigns – to manage floodplains and protect public safety, wetlands and other natural resources, rather than building levees and dams. The order would also bar federal agencies from supporting "critical" facilities – such as hospitals, police stations, power plants or evacuation centers – in 500-year floodplains, unless no alternative exists. If the government decides to proceed with a project in a 100-year floodplain, the draft order would mandate federal consultations with state, tribal and local governments. If those governments have more restrictive development rules, federal agencies are to comply with them.

"The whole principle is that the federal government should be a leader and avoid putting more property at risk," said Gerald Galloway, a civil engineering professor at the University of Maryland who led preparation of a floodplain-management study for President Clinton. "It's important to know that the president really thinks this is important. And an executive order signifies the relative priority of the president."

Executive orders guide federal agencies in developing regulations and hold no sway over state or local rules that allow building in flood-prone but less expensive lands. But experts say federal money is a powerful motivator, and state and local governments often accept stricter regulations to qualify for funds. But industry groups appeared wary of the draft order, concerned that it might discount the economic value of water-resource projects. "It seems to me the objective here is really to limit any sort of structural use of the floodplains," said Amy Larson, president of the *National Waterways Conference*. "You really need to have a balance. My concern is there won't be a balance anymore."

Christine Glunz, spokeswoman for the White House Council on Environmental Quality (CEQ), said the draft executive order is still being reviewed, and that CEQ is focusing first on a separate effort to rewrite guidelines for federal water projects. "This is just a draft executive order, so deliberations are still under way," Glunz said. "It is too early to project what a final executive order would address, but it is considering more protection for floodplains when considering facilities and structures."

Meanwhile, agencies and departments that stand to be affected by the draft order – notably, the Federal Emergency Management Agency (FEMA), the Army Corps of Engineers, the Department of Transportation, and the Department of Housing and Urban Development – are watching the White House's work closely. "We still have a lot of flooding going on in the country, and I think there is just an interest in revisiting that and re-establishing that the federal government does pay attention to it", said Deborah Ingram, director of FEMA's risk reduction division. "We're looking to clean up some of the language and make it a little more streamlined," she added. "After 30 years, different people have interpreted things in different ways."

Source: Taryn Luntz, *Greenwire*, 7/21/09

Corps Spending, OMB and Congress

The White House has drawn a hard budget line for the U.S. Army Corps of Engineers (Corps) in a bid to corral federal spending and harness what its critics say is a runaway agency. In fact, the Office of Management and Budget (OMB) wants to nix funding for any Corps project that fails to meet minimum cost-benefit standards, and the first of such projects as the *Ozark-Jeta Lock and Dam Power Plant* in northwest Arkansas.

While the agency has always had cost-benefit thresholds for starting new projects, the new rule also applies to ongoing work, including long-running enterprises. And Federal taxpayers have already provided the *Ozark-Jeta* hydropower project with more than $40 million while utility ratepayers have provided another $20 million to renovate the plant over the past four years. But the Corps's calculations show the project won't provide adequate returns on the federal investment – reaping only $1.70 for every tax dollar, while the administration wants every dollar to bring at least $2.50 in benefits.

But shutting down the *Ozark-Jeta* project won't save taxpayers a dime, since the government would have to pay a $12 million cancellation fee and reimburse utility ratepayers for their $20 million share. The bottom line is that Federal taxpayers would spend $32 million to kill the project – $4 million more than it would cost to complete it. The *Ozark-Jeta* project is located 120 miles northwest of Little Rock, and provides electricity through the *Southwestern Power Administration* to towns and utilities in Arkansas, Oklahoma, Louisiana and East Texas. The project has suffered the Corps's highest forced outage rate over the past decade, the result of a design flaw in the plant's five original turbines.

The Obama administration did make exceptions to the OMB policy, but only for projects that involve public safety or are in their final year of construction. Critics say the administration's hard-line policy paints with too broad a brush, creating illogical casualties and leaving no room for nuance in the Corps' $5 billion civil works budget. But with a $60 billion project backlog, the Corps must draw a line somewhere, said Robert Stearns, a water resources consultant who was the Army's deputy assistant secretary of civil works during the George H.W. Bush and Clinton administrations. "They've struggled with this whole concept for a long, long time," Stearns said. "The truth is, there's just not enough money to go around. The notion that somehow you could create a set of factors that would unambiguously drive a budget that would be unassailable – that's just never going to happen. There's too much to do."

But long time observers of the Corps say the Arkansas project is a symbol of a venerable problem – no one is in charge of crafting a coherent vision for the nation's water infrastructure. "They do have development plans that are supposed to give it a broader context, but there's sort of a current-year pressure to developing the budget," Stearns said. The Corps annually assigns economic values to projects and tosses draft budgets back and forth with OMB. Money is then provided by congressional appropriators who are chiefly concerned with work in their own districts.

"It continues to be a major problem that there is not a basic process for a broad-level determination of priorities," said David Conrad, senior water resources specialist for the *National Wildlife Federation*. "The Corps faces an insurmountable backlog of authorized projects, and I think it's safe to say the nation's priorities are changing. There's a major need to review the backlog in a very thoughtful way to figure out what is priority and what would have to fall off the platform." The Corps, whose civil works programs have long been criticized by environmentalists for damage done to natural resources, faced an outpouring of wrath in recent years after there were reports of cost-benefit analyses being cooked to justify billion-dollar projects. The Corps's planning studies are "fraught with errors, mistakes, and miscalculations, and use invalid assumptions on outdated data," the Government Accountability Office wrote in 2006.

In 2007 Congress directed the Corps to develop a new set of project planning guidelines that tally environmental gains as well as economic benefits, and the agency is scheduled to release a draft of those guidelines this fall. But the larger issues of vision and accountability remain, experts say. And most agree that even the best-honed economic formula is a poor substitute for thoughtful analysis.

Terrence "Rock" Salt, the Army's acting assistant secretary for civil works, conceded that there are indeed problems with the administration's approach in a hearing this summer before the Senate Energy and Water Development Appropriations Subcommittee. "I, too, am sharing some of your frustrations as to how we're doing this," Salt told lawmakers after fielding questions about the *Ozark-Jeta* plant and other funding decisions. "The big issue is ... how you ensure that we're funding the highest priority needs," Salt added. "And so, we're very interested in trying to come up with a better way of working through this in a way that's more mutually satisfactory."

But despite all this rhetoric, Senate and House Appropriations committees have both prepared fiscal 2010 energy and water bills that would boost Corps spending by more than $5 billion. The Senate bill allots $340 million for flood-damage reduction projects in the Mississippi River Valley, $89 million more than the House version. The Senate measure provides about $2.5 billion for maintaining and operating existing programs, $61 million less than the House proposal and $54 million less than the president's request. Investigations, which fund studies related to Corps projects, would see $170 million under the Senate bill, higher than both the House and administration requests.

And even the administration's hard line on *Ozark-Jeta* could be undone. The project is a candidate for leftovers from the federal stimulus law and could still get money from Congress despite its absence from the White House list.

Sources: Taryn Luntz, *Greenwire*, 7/7 and 7/8/09

Catfish Wars – U.S. vs Vietnam

Catfish farmers in Southeastern states fear that a catfish-like Vietnamese fish is going to steal their business because it is not subject to the same regulations as their homegrown stocks. At issue is a little-noticed provision of last year's farm bill that will soon subject catfish, whatever its origin, to a new, more rigorous federal inspection regimen. The provision was included after Chinese seafood was found in 2007 to include drugs banned in U.S. fish farming.

But the Vietnamese whiskered fish – often sold under the name "basa" or "tra" – does not share taxonomy with the American catfish despite its similar appearance, and therefore is not classified as such nor subject to the new regulations. Legislation supported by catfish farmers and passed by Congress in 2002 declared that no fish can be marketed as catfish "unless it is fish classified within the family *Ictaluridae*," which is found in the U.S.. The Vietnamese species come from the family *Pangasiidae*.

So American catfish farmers now want the Obama administration to reclassify the Vietnamese fish as catfish and put it under the new regulations' umbrella. "Our standards are so high, and they don't have any. That's the bottom line," said fish farmer Scott Kiker. "They ought to have to do what we have to do." But Vietnamese representatives note the 2002 legislation which prohibited the fish from being sold as catfish and say the reclassification would amount to protectionism. "The Vietnamese feel pretty whipsawed here," said Brenda A. Jacobs, a Washington trade lawyer who has advised the Vietnamese government. "They can't call their seafood 'catfish,' but they could be subject to a new inspection requirement that is applicable only to catfish," she said.

The U.S. catfish industry overall, has been stung by the soaring cost of grain, as well as last year's spike in diesel prices. And the restaurant industry's slowdown hasn't helped either. The catfish farmers think changing the definition of "catfish" may help. But some observers in Washington warn that changing the definition may heighten tensions between the U.S. and Vietnam, and possibly ignite a trade war. "This goes far beyond just the definition of a fish," said Gavin Gibbons of the *National Fisheries Institute*, a trade group.

The problem, from the Southern perspective is that butchers buy basa and tra and tell customers it's catfish. So do some restau-

rants. The fish industry has fought back with the help of sympathetic state legislatures. In August, Alabama joined a number of states that require restaurants to inform customers where their catfish comes from. But Thoan V. Ngo, commercial counselor at the Vietnam Embassy in Washington, said he hoped the Americans "would see this as being less about just the definition of a fish and more about the definition of how the U.S. treats developing countries." However, when asked about Vietnam's concerns, Rep. Rodney Alexander (R/LA), said "I'm more concerned about my constituents than I am their constituents."

The specifics of this trade issue are well-known in Humphreys County, MS where the rich Mississippi Delta farmland once proudly produced more catfish than any other U.S. county. But not anymore, the acres devoted to producing catfish in the county dropped from 29,650 acres in 2001 to 18,400 acres last year. Jim Steeby, an aquaculture specialist for Mississippi State University, said that a bad batch of Vietnamese fish could give a bad name to Mississippi catfish – and do even more harm to Humphreys County's signature industry. "We have a reputation in this industry of having an immaculate product, and we don't want it tarnished," he said.

Steeby pointed out numerous swaths of land that once held shallow, nine-acre pools of catfish that are now overrun with weeds or, in the best cases, sown with row crops. The crops, he said, are not as labor intensive as catfish, another blow to employment in the region. And Michael Pruden, a 55 year old son of fish farmers said, "Unless it gets better, there's no future growing fish."

Sources: Richard Fausset and Richard Simon, *Los Angeles Times*, 6/16/09; and *Greenwire*, 6/16/09

Basa, Pegasius hypopthalmus, (top) and Channel catfish, Ictalurus punctatus, (bottom)

Fish Impacts at TVA Coal Ash Spill

Results of an independent study on water, sediment and fish samples collected after the December 22 coal ash spill at the Tennessee Valley Authority's (TVA) Kingston Fossil Fuels Plant show high levels of toxicity. Additionally, fish populations show evidence of being at the toxic "tipping point" of losing reproductive ability. The report estimates the spilled ash sludge contains 3,380 tons of the 10 most toxic elements in fly ash.

"Overall, these test results indicate much more severe impacts to water, sediment and fish than has been previously reported by the TVA, which tells us they haven't been sampling in the right places," said *Watauga Riverkeeper* Donna Lisenby of *Appalachian Voices*, an environmental organization based in Boone, NC. Scientists with Appalachian State University, Wake Forest University, the Tennessee Aquarium and *Appalachian Voices* released the study online in mid May. TVA spokesman Gil Francis said agency officials are reviewing the report. "Early on we got data from some of these folks and we said, 'Show us where you are collecting this so we can go back and make sure we haven't missed anything,'" he said. Mr. Francis said the agency has "numerous studies in progress to make sure we understand all the issues. We'll put that information out there as soon as we get it available."

Findings at the spill site from the independent Preliminary Summary Report include the following:

- Arsenic - 260 times the drinking water standard
- Barium - 3.65 times the drinking water standard
- Cadmium - 3 times the drinking water standard
- Lead - 16 times the drinking water standard
- Selenium - 1.9 times the Tennessee acute aquatic life criteria and 7.6 times the Tennessee chronic aquatic life criteria

TVA's 60-foot-high ash landfill in Kingston broke open three days before Christmas 2008 dumping 1.1 billion gallons of coal ash sludge into the Emory River and over 300 acres of residential farm land. The U.S. EPA announced in mid May that it is assuming regulatory oversight of the cleanup. TVA officials have said the ash is nonhazardous and that the agency is cleaning up the spilled material.

But University scientists said they expect the toxicity levels – particularly of selenium – to rise, especially with the dredging the agency recently began. The study states that additional intake of selenium severely could affect fish reproduction. Fish reproductive systems soon likely could be so damaged from the toxic levels of selenium that their eggs and young will die, and their population eventually will be eliminated, said Dr. Dennis Lemly, adjunct professor of biology at Wake Forest University.

The online study report states selenium concentrations in fish species in the Emory River are "at toxic thresholds." "This means that the river ecosystem cannot tolerate further assimilation of selenium from the ash spill," the report states. "There is no margin of safety." Dr. Lemly said findings of such high levels indicate the landfill had been leaking before the December breach. "If we started with a clean ecosystem and started to put selenium in and let it bioaccumulate into fish tissues, we'd expect it to take 30 days for that to happen," Dr. Lemly said. "What we saw in the fish in the Emory River is that those fish were already contaminated by selenium to toxic threshold concentrations at only 18 days following the spill." He said there is an implication "for public health as well," because selenium bioaccumulates up the food chain. The professor noted fish consumption warnings already exist on the river because of PCB and mercury levels.

The study also found lead oxides and high arsenic levels on 10 percent of the site's samples of cenospheres – particles of filmy silica seen floating on the surface of water when released from the ash. TVA officials have said the cenospheres were inert. But Dr. Shea Tuberty, associate professor of biology at Appalachian State, said the cenospheres were coated with iron oxides, which collect and bind to arsenic and other toxins. Arsenic was not present on the cenospheres that were not coated with iron oxides, he said. "It is likely that arsenic is not the only heavy metal that adheres to the iron oxide coating on the ash particle, but further study is necessary to confirm this," the report states.

Ms. Lisenby and Dr. Tuberty said the research group has taken new and more intense water and fish samplings for another study it expects to release later. In those samplings they took water and sediment samples from three levels in the water, as well as through bank-to-bank sampling.

Meanwhile, an independent assessment released in late July said a culture of lax standards, poor accountability and frag-

mented responsibilities permeates the TVA's management of coal-ash facilities and this contributed to the catastrophic spill. The report by the Atlanta-based law firm *McKenna Long & Aldridge* was commissioned after the spill to identify deficiencies in TVA's ash storage program at 11 coal-fired power plants.

Another independent assessment released in June revealed the probable causes of the spill, including an unstable layer of "slime" beneath a coal ash-storage pond and the increasing height of the stored ash. The new report concludes that TVA put little emphasis on preventing such spills. TVA now estimates that it will cost $1.2 billion to clean up the spill. But that estimate does not include potential fines and penalties or the results of seven pending federal lawsuits. Also it is estimated that it will cost as much as $2 billion to put ash from the TVA's 11 coal-burning power plants into dry-storage ponds, TVA officials said in late August.

But Perry County, a district of Alabama that is poor even by that state's standards, is welcoming the influx of cash that will come with the waste from the Tennessee spill. The first of what may be 35,000 railroad cars have begun lumbering into the county. The waste will be dumped into a 976-acre landfill in Perry that accepts trash from 16 states. The coal ash could bring more than $3 million to the county of 11,860 people, where unemployment is near 17 percent. "We're not desperate to the point that we would endanger the health and safety of our people," said Commissioner Albert Turner Jr., who supports the landfill project. "But we are desperate enough to know we should take a golden opportunity when we see one."

However, a local farmer, Robert Bamberg, accused his elected officials of selling out the county for short-term lucre. "Where is it written that Perry County or Alabama in general is fair game for other states to dispose of their unmentionables?" Bamberg said.

Sources: Pam Sohn, *Chattanooga Times Free Press*, 5/19/09; *E&ENews PM*, 6/25/09; *AP*, 8/2/09; Jay Reeves, *AP/San Francisco Chronicle*, 7/17/09; Eric Bontrager, *Greenwire*, 8/21/09; *Greenwire*, 5/19, 7/17, 7/22 and 8/3/09

Habitat Plan for Alabama Sturgeon Released

The U.S. Fish & Wildlife Service (FWS) released its final habitat plan for the Alabama sturgeon in early June spelling out the amount of river needed to preserve the endangered fish. The final version of the "critical habitat" plan covers 326 miles of river channel in the Alabama and lower Cahaba rivers. The plan requires consultation with the FWS on any federally funded or authorized activity that could significantly affect river flows, water chemistry or the stability of the river channel. Despite concerns raised by business critics, the FWS concluded that there will be little economic cost.

The plan was required by a federal court order, and comes nine years after the sturgeon was listed as endangered. The Alabama sturgeon is so rare that researchers have found only one since 1999. Development of the plan was delayed by a long-running legal challenge brought by the *Alabama-Tombigbee Rivers Coalition*, an industry group that called the listing flawed. The case ended last year when the U.S. Supreme Court declined to take the coalition's appeal of lower court rulings in favor of the government.

Alabama sturgeon (FWS Photo)

A spokesman (Michael Sznajderman) for *Alabama Power Co.*, a leading coalition member, said employees are still reviewing the plan and that it is "premature" to say whether the utility would consider filing a new lawsuit to block it. In response to earlier comments from *Alabama Power* and others, however, the FWS did soften language saying the sturgeon needs an average minimum river flow of 4,640 cubic feet per second. "There was a lot of confusion generated by that number," said Rob Tawes, deputy field supervisor for the FWS's Alabama field office. "The wording failed to indicate that the waterflow needs of the species are relative to the season of the year." The plan appears unlikely to have much effect on prospects for the sturgeon, which some biologists fear may have already passed the point of no return.

Sources: Sean Reilly, *Mobile Press-Register*, 6/3/09; and *Greenwire*, 6/3/09

Report Shows Greater Peril for Threatened Animals and Plants

The global crisis for endangered species is more serious than the financial meltdown, with numbers of imperiled animals and plants rising at record rates the *International Union for Conservation of Nature* (IUCN) warned in early July. In its latest four-year assessment of endangered species the IUCN added several new entries to the *Red List of Threatened Species*. Judging from the list's expansion, the report warns, the world is unlikely to meet a goal of reversing a trend toward species depletion by 2010. The report entitled, "*Wildlife in a Changing World*," estimates that 22 percent of known mammals are either facing the threat of extinction or are already extinct. It also found great stress for amphibians, with more than 30 percent classified as threatened or extinct. "We now know that nearly one quarter of the world's mammals, nearly one third of amphibians and more than 1 in 8 of all bird species are at risk of extinction," IUCN warns. "This allows us to come to the stark conclusion that wildlife ... is in trouble."

"The conservation status for most of the world's species remains poorly known, and there is a strong bias in those that have been assessed so far towards terrestrial vertebrates and plants and in particular those species found in biologically well-studied parts of the world," the report says. The 2008 review covers 44,837 species, up from 38,047 in 2004 and 16,507 in 2000. Thus far, IUCN has recorded 869 separate cases of plant and animal extinctions, including 804 wiped out and 65 others considered extinct in the wild. Scientists say the numbers of total recorded extinctions could rise to 1,159 if they add 290 or so critically endangered species now labeled "possibly extinct." There are insufficient data on another 5,561 species.

Though the overall picture is bleak, scientist point to signs that conservation efforts are bringing back from the brink some animals previously facing annihilation. In North America, for example, the U.S. Fish and Wildlife Service is credited with probably saving the black-footed ferret from being classified as extinct in the wild after a 10-year effort to reintroduce the species to eight Western states and Mexico.

The Red List is used as a benchmark for several bilateral and U.N. treaties aimed at wildlife protection, including the *Convention on International Trade in Endangered Species* (CITES), the *Ramsar Convention on Wetlands* and the *Convention on Biological*

Diversity. Data from the list are also used by scientists working under the *U.N. Framework Convention on Climate Change* to help them track how global warming could be affecting wild flora and fauna.

Source: Nathanial Gronewold, *Greenwire*, 7/2/09

New Salamander Genus Found in Appalachia

Graduate students, Bill Peterman of the University of Missouri and Joe Milanovich of the University of Georgia have discovered a new species of salamander that is so genetically different from its peers that it has been given its own genus. The striking new species was found living in a small stream in the Appalachian foothills. The lungless salamander breathes through its skin, and unusual for its kind, males and females have different coloration.

Peterman and Milanovich described the species in the *Journal of Zoology,* dubbing it the 'patch-nosed' salamander after the yellow patch on the animal's snout. Scientifically it was named *Urspelerpes brucei*. The tiny animal averages just 25 to 26mm long, and so few were found that either it is highly secretive, or more likely it survives in such small, isolated numbers that it is already at risk of extinction. "This animal is really a spectacular find," says biologist Carlos Camp of Piedmont College in Demorest, GA, who led the team which described the new species. "It is the first genus of amphibian, indeed of any four-footed vertebrate, discovered in the U.S. in nearly 50 years."

Patch-nosed Salamander (T. Lamb Photo)

Around the world, there are approximately 500 species of salamander. Two-thirds of these species are lungless, breathing entirely through their porous, moist skin. The Appalachian Highlands of the southeastern U.S. is a hot spot for lungless salamander diversity, with species occupying a variety of moist or wet environments including living in streams, underground, among the leaf litter of the forest floor, up cliffs and in trees.

"The salamander fauna of the U.S., particularly of the southern Appalachians, has been intensively studied for well over a century, so the discovery of such a distinct form was completely unsuspected," said Camp. "When we realized that it was something novel, we contacted a geneticist, Trip Lamb, of East Carolina University, Greenville and a bone specialist, David Wake of the University of California at Berkeley. John Maerz, a professor at the University of Georgia, completed the research team," said Camp. The team's investigations revealed just how novel the salamander is.

"The genetic data revealed that this was far more unusual than any of us suspected, which is why we described it in its own genus," said Camp. But the amphibian also looks strikingly different from other species. For a start, it has the smallest body size of any salamander in the U.S. It is also the only lungless salamander in the U.S. whose males have a different color and pattern than females, a trait more characteristic of birds. Males have a pair of distinct dark stripes running down the sides of the body and a yellow back. Females lack stripes and are more muted in color. Males also have 15 vertebrae, one less than females. Yet while most species of lungless salamander have male and females of differing sizes, those of *Urspelerpes brucei* are close to being equal in size. Unique for such a small lungless salamander, *Urspelerpes brucei* has five toes, whereas most other small species have reduced that number to four.

The behavior and lifestyle of the salamander remain a mystery. The animal's jaw and teeth structure suggest that it eats small, terrestrial prey such as insects caught using a projectile tongue as some other species of lungless salamander do. So far, Camp's team has recovered just eight adults, all from within or alongside a single stream. Four were collected hiding under rocks and four in loose leaf litter. Three were females, each carrying eggs.

Sources: Matt Walker, *BBC News*, 7/8/09; and *Greenwire*, 7/8/09

NPS to Store Species' DNA at NYC museum

Officials of the *American Museum of Natural History* and the U.S. National Park Service (NPS) signed an agreement in early July for samples from endangered species in America's parks to be added to the museum's existing DNA collection. The frozen samples provide researchers with genetic materials to study and help protect hundreds of species.

Underground in the museum's laboratories a half-dozen metal vats cooled with liquid nitrogen can store up to 1 million frozen tissue samples. They're stored on racks in barcoded boxes that are linked to a computer database so they can be located in seconds. The NPS doesn't have such a state-of-the-art facility. With this kind of DNA analysis the agency can better manage existing animal populations, using genetic relationships among the samples to trace animals' movements on land and estimate population sizes. The samples will provide researchers "with a uniform method to collect, analyze and store genetic material collected in parks," acting NPS Director Dan Wenk said.

The lab is part of the *Ambrose Monell Collection for Molecular and Microbial Research*, which has allowed geneticists to use its samples for free since 2001. Researchers collect tissue samples from animals in the wilderness – an effort essential to Earth's biodiversity at a time of massive species loss. Wenk said the DNA samples going to the Manhattan museum are "a great asset" to the Endangered Species Act of 1973, which aims to restore all federally listed threatened and endangered species "to the point where they are again viable, self-sustaining members of their ecological communities." Julie Feinstein, who heads the museum's sample collection, emphasizes that although DNA is extracted from tissue, cloning "is not part of our mission." The main goal, museum officials said, is preservation of species. "Our parks are our most valuable natural area," said George Amato, director of the museum's *Sackler Institute for Comparative Genomics*, which includes the collection.

The NPS sites with the most federally listed threatened and endangered species are Golden Gate National Recreation Area, the Point Reyes National Seashore and the Redwood National and State Parks, all in California; Hawaii's Volcanoes National Park, the Haleakala National Park and Kalaupapa National Historical Park; the Canaveral National Seashore, the Everglades National Park and Biscayne National Park, all in Florida; and the Natchez Trace Parkway in Mississippi.

Sources: Verena Dobnik, *AP/Yahoo News*, 7/7/09; and *Greenwire*, 7/8/09

TVA Land Deals Favored Wealthy and Influential

Wealthy and influential people seeking private lakeshore access to the Tennessee Valley Authority's (TVA) 11,000 miles of shoreline on the Tennessee River system appeared to receive preferential treatment, according to a recent audit. TVA Inspector General Richard Moore's 85-page report released in early June found no evidence that rules were deliberately broken, but said the nation's largest public utility managed its program "selectively and arbitrarily" often to the benefit of "the wealthy, the influential, or both."

Among those receiving approval for waterfront access was U.S. Rep. Heath Shuler, D/NC, who until recently served on a House subcommittee with TVA oversight. The audit, pushed by publicity over Shuler's influence on a residential lake development near Knoxville in which he is an investor, focused on TVA's "maintain and grow" program under which it grants private water-access rights to one piece of land in exchange for public rights on another chunk. The goal is to ensure no net loss of public shoreline.

TVA lakeshore management reforms adopted in 2006 for the first time set residential development limits on TVA lakes and rivers, ensuring the public could use at least 68 percent of its managed shoreline. His audit of nine deals since 1999 determined "TVA proceeded blindly with a process that gave rise to the appearance of preferential treatment, resulting in a reputational harm both to the applicants and to TVA." In some cases, public notices were waived, management review committees were bypassed and other agencies were not consulted, the audit said. With no program definition for what deals qualified as a "public benefit," it became "whatever TVA employees want it to be."

Others who were approved for private docks or water access were former TVA Chairman Bill Sansom and Charles Perry, the former general manager of the Paris (TN) Board of Public Utilities – a TVA power distributor. TVA President and CEO Tom Kilgore said he would recommend the TVA board kill the program at its August meeting. It had been suspended since December awaiting the audit outcome. Kilgore said the TVA would set up a clear protocol for shoreline access that would help identify potential conflicts of interest.

Moore's report devoted most of its attention to a development on Watts Bar Lake in which Shuler is a partner. Shuler is a former University of Tennessee star quarterback who spent a few seasons in the NFL and was elected to Congress in 2006. The development in which he is an investor, *Shuler's Cove at Blackberry Ridge*, negotiated over several years with TVA to gain 145 feet of water-access rights in exchange for giving up another 150 feet of water access and other considerations. TVA ultimately approved the deal, but then suspended it in October before it could be closed. The inspector general said it didn't help that Shuler's representatives kept "dropping Shuler's name with TVA employees," but the auditors found no evidence the congressman or his people used his political influence to pressure TVA to help *Blackberry*.

The auditors also found no problems with the 2004 approval of a private boat dock for Sansom on Fort Loudoun Lake. But auditors did find that Perry, the former distributor manager, built a personal dock without permission on Kentucky Lake in 2000 and refused to tear it down. "Perry admitted hoping that his position as general manager of the utility that provided $25 million in revenue to TVA would influence TVA in his favor," the auditors wrote. Perry said it was a "mistake" to use his official letterhead stationary to make his case to TVA, the auditors said. TVA approved Perry's permit in 2006.

Sources: Duncan Mansfield, *Associated Press*, 6/9/09; and *Greenwire*, 6/9/09

Tongue/Powder River Water Wars

Montana's lawsuit contending that Wyoming is violating terms of the *Yellowstone River Compact* by taking more than its share of water from the Tongue and Powder rivers advanced another step in early June. A special master appointed by the U.S. Supreme Court, Barton Thompson Jr. of California, issued an opinion saying that Wyoming's bid to have the lawsuit dismissed should be denied. Thompson also ruled that the Compact protects Montanans with water rights acquired before 1950 from Wyoming uses that began after the Compact was ratified.

The Tongue and Powder rivers have their source in the Bighorn Mountains of Wyoming and flow into the Yellowstone River in Montana. The *Yellowstone River Compact* was negotiated among Montana, Wyoming and North Dakota in 1950. Its basic objective was to preserve existing water rights and define the division of unallocated water. The Compact specified a three-tier system. Those on the first tier are irrigators in both states with water rights dating before 1950. They have first call on water from the two rivers. The second tier includes post-1950 water rights granted to first-tier users. The third tier consists of new uses. Third-tier users supposedly get their water after first- and second-tier demands have been met.

But in dry years, not enough water crosses the state line to meet obligations of first-tier users in Montana, the state claims. Montana alleges that while its first-tier users go without, Wyoming has allowed users in the second and third tiers to receive water. Montana charges in its complaint that Wyoming has built new storage reservoirs that impermissibly hold water that should drain into the rivers; that new acreage has been put in production in Wyoming since 1950; that groundwater pumping for irrigation and coalbed methane production have reduced flows in the rivers; and that new, more efficient irrigation methods have reduced the amount of water that flows back into the rivers.

Wyoming disputes the claims and argues that Montana has never quantified water rights on the two streams and that groundwater and tributaries of the two rivers are not covered by the Compact. The groundwater issue is critical because of Wyoming's coalbed methane industry. Wyoming also maintains that irrigators are entitled to use their entire water allotment with new, more efficient systems that don't produce as much return water to streams as systems used in 1950.

In his ruling, Thompson said that terms of the Compact "generally protect pre-1950 appropriators in Montana from new surface and groundwater diversions by Wyoming, whether for direct use or for storage, that prevent adequate water from reaching those appropriators." But Montana can't object to more efficient use of irrigation waters by Wyoming's first-tier users. Thompson also ruled that where possible, Montana must remedy any shortages to its first-tier users by reducing deliveries to its second- and third-tier users. "Where this is not possible, however, the Compact requires Wyoming to ensure that new diversions in Wyoming do not interfere with the pre-1950 appropriations," he said.

The case is being closely watched by Montana irrigators whose canals ran dry in the drought years of the past decade and by Wyoming's coalbed methane industry, which fears that Montana's demands could mean the loss of groundwater critical to

gas production. "This opinion is very good news for all Montanans, but especially for those farmers and ranchers whose livelihoods rely on water from the Tongue and Powder rivers," Montana Attorney General Steve Bullock said. "This case is of historic importance to Montana, but it doesn't end with this decision."

Wyoming Attorney General Bruce Salzburg said, "It's a lengthy opinion and we're in the process of analyzing what it means for Wyoming water users. Obviously Wyoming won on some issues and didn't win on others." Thompson invited attorneys for both states to submit briefs with additional arguments before he incorporates his ruling into an interim order. Salzburg said that once the order is issued, either side can take their exceptions to it to the U.S. Supreme Court. The case could be resolved by negotiations between the states or could proceed toward trial, Bullock said. The case is still a long way from being resolved and Thompson's findings are not binding on the Supreme Court. But Bullock said Thompson has set out the law that will guide subsequent steps toward resolution.

Meanwhile, Montana's Northern Cheyenne Tribe wants to impose tighter restrictions on water pollution in and around the Powder River Basin, which some fear could curb drilling in the area. The tribe's plan would be more than twice as restrictive as state limits during some months of the year. "I don't think it's going to shut down the industry," said Northern Cheyenne environmental director Charlene Alden. "It's just going to make people more reasonable about the development." But energy watchers aren't so sure. "You could go to a basin where it's much easier [to drill], where you don't have nearly the rules and regulations that you do here," said Monica Deromedi with the *Coalbed Natural Gas Alliance* in Cheyenne, WY. U.S. EPA spokesman Richard Mylott said his agency plans to review the tribe's proposal.

Sources: Lorna Thackeray, *Billings Gazette*, 6/4/09; Matthew Brown, *AP/Billings Gazette*, 8/12/09 and *Greenwire*, 6/4 and 8/13/09

WV Water Issues

This Spring the West Virginia Department of Environmental Protection (DEP) announced it intends to allow more mercury in the state's waterways – up to 0.5 parts per million. To do this, they have to get U.S. EPA approval, and the EPA recommends that mercury levels not exceed 0.3 parts per million. Of the dozen states that have implemented mercury standards so far, West Virginia is the only one proposing a less stringent level than the EPA recommends. In fact, Oregon has strengthened its standard.

Denise Keehner of the EPA's Office of Water said most states have followed her agency's recommendations. "You can imagine that it is easier for EPA and a smoother process for EPA to approve water quality standards a state submits if in fact the state has followed EPA's recommendations," she said. But West Virginia DEP says a recent study it conducted proves that more mercury in the state's waters won't hurt state residents. "The more fish people consume in a given area, the lower that number has to be in order to keep the public safe," said Mike Arcuri, an environmental resources analyst with DEP's water quality standards program. "And then if people are consuming lower numbers of fish, that number in the fish tissue can be a little bit higher because they're not taking as much in," he said.

It's this logic – that lower consumption justifies more pollution – that concerns Catherine O'Neill, a professor at the *Seattle University School of Law*. In 2002, she was a consultant to the *National Environmental Justice Advisory Council*, a group that was advising the EPA on fish contamination. "We actually warned of just this sort of outcome that we're seeing in West Virginia," she said. Low-income people who rely on fish for food, in spite of the advisories, are the ones who will be hurt the most if the DEP succeeds in raising the mercury standard critics say. It's a cycle O'Neill says: the water is polluted, fish consumption advisories are posted, people eat less fish, and then the state uses the fish consumption data to justify more pollution. She says West Virginia is the first place she's seen her prediction so perfectly borne out. Janice Nease of *Coal River Mountain Watch* agrees. "The fact that West Virginia is eating a lot less fish, doesn't that seem to tell him that we are afraid to eat the fish?" she asked.

Higher-educated, higher-income people are the ones who are most likely to know about and follow fish advisories, said Conrad Volz, director of the *Center for Healthy Environments and Communities* at the University of Pittsburgh. He says this makes West Virginia's disregard for its fish-eating population an environmental justice issue. "Your state cannot tell me that there isn't a group of people who live more on a subsistence basis because I know there is," he said. "And there's no way the state can survey those people unless they're going door-to-door in hollers and places where people may not even have telephones." What this issue boils down to, Volz says, is that fish advisories aren't reaching everyone. And even if everyone understood these fish advisories and followed them, it would still take a toll on public health because fish are a great source of nutrients – the best source of omega-3 fatty acids, which have numerous health benefits.

Mercury has always existed in West Virginia's waterways – it's a naturally occurring element. But since humans began burning fossil fuels for energy, the amount of mercury in the air and water has increased. There's no easy and inexpensive way to remove mercury from the water. So to crack down on mercury in fish, the DEP would have to go after the source. In West Virginia, three-fourths of the mercury air emissions come from coal-fired power plants. Power plants in other states also contribute to mercury in West Virginia's waters.

In fact, according to a study released in mid August by the U.S. Geological Survey, mercury contamination found in a quarter of U.S. freshwater fish exceeds federal safe levels for human consumption. The agency examined mercury in fish, sediment and water drawn from 291 rivers and streams between 1998 and 2005, finding 25 percent carried mercury at levels above the safe standard for human consumption (0.3 parts per million wet weight), while all of the fish had detectable mercury levels. Some of the highest levels of mercury in fish were found in "blackwater" streams in North and South Carolina, Georgia, Florida and Louisiana, all of which have large, undeveloped, forested watersheds. Some high levels were also found in the western United States, which the scientists attributed to mining.

Meanwhile in West Virginia, the *Sierra Club* and three local groups (*West Virginia Highlands Conservancy*, *Coal River Mountain Watch* and *Ohio Valley Environmental Coalition*) have asked the EPA to take away the state's authority to administer the federal National Pollutant Discharge Elimination System (NPDES) pollution program. West Virginia has done such a "grossly deficient" job of running the program that one-third of its rivers, streams and lakes are impaired, the groups argued in a letter sent to EPA Administrator Lisa Jackson. The groups' letter also argues that the state DEP's permitting and enforcement program contributes to

pollution from biological material, mercury, iron and other elements. It also claims West Virginia's legal authority no longer meets the requirements of federal law and repeatedly issues permits that don't meet federal regulations.

While "drastic," withdrawing the state's authority to run the program "is the only remedy that will bring West Virginia into compliance with the Clean Water Act," the groups said. But the West Virginia DEP said the state is better equipped to run the program than EPA. "It is in the state's best interest to keep it here," the agency said, adding that EPA recognized West Virginia for its outstanding performance in implementing its NPDES program in 2005 and 2007.

All of the groups involved in the request are vocal opponents of mountaintop removal coal mining, a common approach to mining in West Virginia and other Appalachian states that involves blasting away ridges to expose multiple coal seams. And the *Sierra Club* made it clear that the letter is all about mining. "The coal companies are poisoning West Virginia's streams, and the cops are not on the beat. We now look to the Obama administration to take strong steps to protect our nation's waterways from the impacts of the coal industry," spokesman Oliver Bernstein said in an e-mail. But the new administration has also been criticized widely by the mining industry and its many opponents over its early approach to regulating surface coal mining in Appalachia. While mine operators say Obama has gone too far by scrutinizing Clean Water Act permits and overturning a Bush administration rule on stream buffer zones, the *Sierra Club* and other groups have been disappointed that the new president hasn't banned mountaintop mining outright.

Meanwhile, the State of Pennsylvania is asking the EPA to set tougher pollution limits on the Monongahela River, an interstate drinking-water source which it shares with West Virginia. While Pennsylvania has imposed limits on the amount of total dissolved solids in the river, state DEP officials say West Virginia has not taken similar steps. As a result, levels of the microscopic contaminants in the river where it leaves West Virginia and flows into Pennsylvania spiked to almost 600 milligrams per liter in early August, exceeding the federal and Pennsylvania secondary maximum contaminant levels of 500 milligrams per liter. West Virginia does not have such a standard but is reviewing whether to enact one. "We're not satisfied with the response we've received from West Virginia and are engaging the EPA," Pennsylvania DEP Secretary John Hanger said, "because at the end of the day, without federal involvement, we may not get the kind of cooperation needed to solve this problem." "I personally have concerns that the posture of West Virginia on this matter is not aggressive enough," he said.

Sources: Erica Peterson, *Charleston Gazette*, 6/13/09; Tim Huber, *AP/Charleston Gazette*, 6/17/09; Don Hopey, *Pittsburgh Post-Gazette*, 8/17/09; Sara Goodman, *Greenwire*, 8/19/09 and *Greenwire*, 6/18 and 8/19/09

Estrogen Linked to Fish Kills and Disease

A new U.S. Geological Survey (USGS) study shows that exposure to estrogen reduces a fish's ability to produce proteins that help it ward off disease and pointed to a possible link between the occurrence of intersex fish and recent fish kills in the Potomac and Shenandoah rivers. Published in the current issue of *Fish & Shellfish Immunology*, the report adds to a growing body of research pointing to problems with estrogen in the nation's waterways.

In a 2006 study, USGS scientists found widespread endocrine disruption among smallmouth and largemouth bass in the Potomac River and its tributaries across Maryland and Virginia. Tests on smallmouth bass in the Shenandoah River in Virginia and in the Monocacy River in Maryland – both of which feed the Potomac – concluded that more than 80 percent of all the male bass were growing eggs. Other scientists observed similar problems in fish in Southern California and in labs in Canada and the U.S. Scientists have not targeted the source of estrogen, but many suspect it stems from certain pollutants and drugs in waterways.

For the new research, USGS scientists injected largemouth bass with estrogen in laboratory tests. They discovered that the fish produced lower levels of hepcidins, proteins that regulate iron and may be a first line of defense against disease-causing bacteria, fungi and viruses. Largemouth bass usually produce two kinds of these sickness-shielding proteins. After being exposed to estrogen, they reduced production of one type of the protein, and exposure to estrogen and bacteria completely blocked production of the other. The researchers say this could explain why the Potomac and Shenandoah rivers seem to have the co-occurence of intersex fish, fish lesions and fish kills. "The fact that estrogen blocked production of hepcidins in fish exposed to bacteria gives more weight to the theory that estrogen or estrogen-mimicking chemicals could be making fish more susceptible to diseases," said Laura Robertson, who led the research.

Environmental groups have asked U.S. EPA to ban chemicals used in many household detergents that are linked to endocrine disruption and gender changes in fish. One chemical, nonylphenol, imitates estrogen. The *Sierra Club* and other environmental groups want EPA to use a provision of the *Toxic Substances Control Act* to regulate individual substances. Hormone-disrupting chemicals also pose a threat to public health, so policy makers and scientists should work to improve their understanding of the compounds' connection to health problems, the *Endocrine Society* said in June. But definitively connecting the chemicals to health problems is not easy, the group concedes, since people are exposed to many industrial chemicals.

Sources: Allison Winter, *Greenwire*, 6/4/09; Sara Goodman, *Greenwire*, 6/11/09

Separating Science and Politics

A panel of scientists and policy experts urged the Obama administration in early August to establish procedures for keeping politics from clouding science in regulatory decisions. The *Bipartisan Policy Center's* report says the White House and federal agencies should try new strategies to prevent the politicization of science. The measures are intended to prevent heated disputes over whether regulatory decisions are being influenced by faulty scientific data.

The report was published by the think tank's *Science for Policy Project* and co-chaired by former House Science Chairman Sherwood Boehlert (R/NY) and Donald Kennedy, former editor of *Science*. The organization was formed in 2007 by former Senate Majority Leaders Howard Baker (R/TN), Tom Daschle (D/SD), Bob Dole (R/KS) and George Mitchell (D/ME). "Often, policy disputes are cast as fights over science," Boehlert said. "This damages the credibility of science and obscures the real issues that ought to be debated. For example, how much risk a substance poses to human health or the environment is a science question; how much risk is acceptable is a policy question."

Conflict between science and politics have "left the U.S. with a system that is plagued by charges that science is being 'politicized' and that regulation lacks a solid scientific basis," the report says. "As a result, needed regulation may be stymied, dubious regulations may be adopted, issues can drag on without conclusion and policy debate is degraded." In a politically charged regulatory process, "the morale of scientists is weakened, and public faith in both government and science is undermined," the report says.

The group's recommendations come as the administration is finalizing a review of federal rulemaking. The report encourages the administration to improve the clarity and transparency of the science used to formulate regulations and to encourage a greater focus on science in advisory committees. In order to clearly distinguish scientific questions from policy questions, the report says, Federal Register notices for proposed rules should clearly differentiate between scientific matters and policy matters and should explain what science was most influential in crafting the regulation.

Greater transparency should also be required for agencies' scientific advisory committees, the authors conclude. Advisory committees that exclusively review science questions should generally consist only of members with relevant scientific experience, the report says. The authors suggest that these panel members should be categorized as "special government employees," making them subject to conflict-of-interest and other ethics rules. But that could be problematic, said Jeff Holmstead, who served as EPA's air chief during the Bush administration. While an adviser's ties to industry should be transparent, he said, such a measure could disqualify some of the most capable scientists.

Additionally, the report concludes that the process used to review scientific literature in rulemaking should become more transparent and thorough. Agencies and committees should be explicit about their criteria for determining which studies to review and papers that have not been peer-reviewed should generally be treated with skepticism. "Our recommendations would make the regulatory process more rigorous and transparent," said Kennedy, who served as commissioner of the Food and Drug Administration under President Carter. "That should lead to better, more thoughtful regulations and greater consensus when the government is considering whether or not to regulate."

Source: Robin Bravender, *Greenwire*, 8/5/09

Climate Change Update

U.S. emissions of carbon dioxide (CO_2) from energy use fell 2.8 percent in 2008 according to estimates, released in late May by the federal Energy Information Administration (EIA). This represents the sharpest drop in emissions since 1982, but EIA estimated that emissions related to energy use were still about 15.9 percent higher than 1990 levels, the benchmark level countries will use in negotiating an international climate pact in December in Copenhagen.

Sulfur dioxide emissions at U.S. power plants in the first half of this year were also down 24 percent from the same time last year, a power industry data provider said in early July. The drop is larger than would be expected from the recession's lower electricity demands, a sign that the industry is preparing for tighter regulations of the gas in 2010, according to *Genscape*, the data provider. Many plants have already installed equipment to scrub sulfur from emissions, *Genscape* said in its quarterly review of industry trends. This year versus last, nitrogen oxide emissions also fell 5 percent in May and 11 percent in June. And CO_2 emissions in the *Regional Greenhouse Gas Initiative* area were down 10 percent in the second quarter compared with 2008. Both declines can be attributed to the recession or cool weather in the Northeast, *Genscape* said.

But Asia's share of greenhouse gases (GHGs) could climb 40 percent by 2030 as the continent becomes the largest contributor to climate change, according to the *Asian Development Bank*. The continent already emits a third of the world's GHGs, and its share of emissions from energy has tripled over the past three decades, bank president Haruhiko Kuroda said. Meanwhile, China has said that developed nations must slash their GHG emissions by at least 40 percent by 2020 from 1990 levels. Poorer countries should have "nationally appropriate" voluntary targets, China said in a document posted on the country's National Development and Reform Commission Web site. China also wants rich countries to donate at least 0.5 to 1 percent of their annual gross domestic product to help poorer countries cope with climate change and GHG emissions. Su Wei, Director General of China's climate change department did say in August, however, that China will begin reducing emissions of GHGs by 2050, the first time that country has made such a time-specific announcement.

Meanwhile, India announced plans to reject any new global warming treaty that requires it to reduce GHG emissions because such action would harm its energy consumption, transportation and food security. "India cannot and will not take emission reduction targets because poverty eradication and social and economic development are first and over-riding priorities," said Environment Minister Jairam Ramesh in a statement. Ramesh said his country would, however, voluntarily agree to prevent its per-capita GHG emissions from surpassing that of developed countries.

According to a new study led by geochemist Bärbel Hönisch of the Lamont-Doherty Earth Observatory in Palisades, NY, atmospheric CO_2 levels haven't been as high as current levels in more than 2 million years, making it difficult to determine the exact impact of global warming. In order to determine how high temperatures may climb and how climate patterns may shift, scientists must pinpoint for comparison a time in our planet's history when a similar CO_2 jump happened Hönisch said. According to his research, that time has never been recorded. Researchers studied chemicals in long-dead, single-celled plankton called forminifera to determine CO_2 levels at roughly thousand-year intervals going as far back as 2.1 million years. The study found that the average CO_2 level during warm periods over that time was 38 percent lower than the current average level, meaning scientists will have to look back further in time to find global warming answers.

The science academies of 70 nations warned in a statement in early June that CO_2 emissions are turning the world's oceans more acidic, endangering coral reefs and fisheries. The effect could be irreversible for tens of thousands of years, the statement said. The academies urged countries to cut the world's CO_2 emissions at least 50 percent below 1990 levels by 2050, with additional cuts after that. Without such action, the consequences will be stark, the academies said. "At current emission rates models suggest that all coral reefs and polar ecosystems will be severely affected by 2050 or potentially even earlier," the statement said. Some climate models suggest that, at current CO_2 emissions levels, 80 percent of Arctic waters could prove corrosive to clams, pteropods and other species at the base of the polar food chain by 2060, the statement said. If the level of CO_2 in the atmosphere reaches 550 parts per million – compared with the current 387 ppm level – "coral reefs may be dissolving globally."

Added to these concerns, many of the geoengineering solutions proposed to halt climate change will do little to stop ocean acidification, according to a new study released by scientists at Stanford University. "This century will see the end of coral reefs for the next tens of thousands of years," said Ken Caldeira, an environmental science professor and lead author of the paper, published in *Geophysical Research Letters*. Many proposed engineering solutions to climate change depend on increasing the amount of sunlight reflected from the Earth. The most prominent scheme, which mimics the effect of volcanoes, involves pumping sulfur-based gases into the upper atmosphere to form reflective sulfate particles. In a hypothetical "emergency response" scenario where sulfates are used to cool the planet, ocean acidification would remain a huge concern, since the amount of CO_2 in the atmosphere would not be reduced, according to Caldeira.

Meanwhile, coastlines in Alaska are rising as the glaciers that suppressed them for centuries are melting. The land is ascending faster than sea levels rise, creating disruptions in regional ecosystems. The land is rising above its water table, drying streams and wetlands. Melted water from glaciers – which near Juneau have retreated 30 feet or more – is carrying silt into waterways once used for navigation, silting them in. It may hurt the local economy as well, as runs for salmon – a draw for commercial and subsistence fishers and a foundation for tourism – dry up.

According to recent U.S. Fish and Wildlife Service (FWS) estimates there are 1,526 polar bears presently living in the southern Beaufort Sea – 33 percent fewer than the 2,272 the agency estimated in 2003, the last time an assessment was made. Bruce Woods, spokesman for FWS's Alaska office, said "polar bears are declining…because of a lack of sea ice habitat." After a spate of environmental lawsuits, the Department of Interior designated the bear as threatened under the Endangered Species Act in May 2008, making this the first time a species has been listed, in part, because of threats from climate change.

Also according to a report released in late May by the *Global Humanitarian Forum*, which is led by Kofi Annan, the former United Nations secretary general, worldwide, climate change is responsible for more than 300,000 human deaths and about $125 billion in economic losses each year. The report found that human-driven climate change is elevating the global death rates from illnesses including malnutrition, diarrheal disease, malaria and heat-related ailments. In addition to deaths, the report found that the lives of 325 million people in mostly poor countries were being seriously affected by climate change, and projected that number to double by 2030.

The changing global climate will also place new threats on national security and may force the military to intervene abroad to deal with the effects of violent storms, drought, mass migration and pandemics, military and intelligence analysts say. Climate-induced crises have the potential to destabilize states, fuel the growth of non-military violence groups and unbalance regions, say Pentagon and intelligence agencies who for the first time are analyzing the potential impacts of climate change on national security. Last year's budget authorizations for the Department of Defense pushed the military to include climate change considerations in its strategic plans.

According to a new *Washington Post-ABC News* poll, three out of four Americans say they would like to see the U.S. government clamp down on GHG emissions from power plants, cars and factories to reduce global warming, But support varied considerably when participants were asked to consider the costs of cutting emissions. Although 62 percent of those surveyed said they would support regulation even if it raised the price of purchases and 56 percent would back cap and trade if it meant a $10 increase in utility costs, only 44 percent said they would back a cap-and-trade system if it boosted monthly electricity bills by $25.

Another recent survey found that while nearly all scientists accept that human activity, mostly in the form of GHG emissions, is causing global warming, only half of the American public agrees with this view. The survey found that 11 percent of the public does not believe there has been any warming at all, and about a third believes there is a lively scientific debate on whether man has caused climate change. The poll, conducted by the *Pew Research Center for the People & the Press* and the *American Association for the Advancement of Science*, drew on 2,000 members of the public and 2,500 members of the scientific association. Among other findings: almost a third of the public believes human beings existed in their current form since the beginning of time; and 85 percent of the scientific community surveyed said public ignorance of science was a major problem.

But according to members of a task force from the *American Psychological Association,* psychological factors could be impeding an effective response to global warming. The findings cited a variety of psychological barriers such as doubt over climate change, distrust of warnings from experts and lawmakers and denial that climate change is happening or can be attributed to human activity. The task force pointed to habit as the most significant impediment to making changes to combat climate change. Fortunately, they said, these habits can be easily changed if government officials, scientists and marketers push more effective incentives.

But two years after receiving the Nobel Prize for its scientific work, the *Intergovernmental Panel on Climate Change* (IPCC) is at risk of losing its relevance unless it adjusts its methods and focus, according to climate experts. "Like grabbing the tail of a tiger, the IPCC has gotten the world's attention, but now the challenge is to get the tiger to head in the right direction," said Michael McCracken, chief scientist of the *Climate Institute.* While a new study is not set to be released until 2014, this October representatives from more than 80 countries will meet to sketch its outline. One hurdle facing the panel's cohort of volunteer scientists is the increasing number of climate studies published: 4,500 were released in 2007, triple the total from a decade earlier. The panel, known for its moderation, could also do more to distinguish between highly unlikely outcomes and possible but uncertain risks, said Stephen H. Schneider, a climatologist at Stanford. Policymakers are not well served if these poorly understood risks are not raised, he added. "If you say nothing until you have high confidence and solid evidence, you're failing society," he said.

On a more positive note, a Massachusetts biotechnology start-up unveiled plans in late July to produce chemicals and transportation fuels from CO_2. Cambridge-based *Joule Biotechnologies Inc.* – founded in 2007 and funded by the investment firm *Flagship Ventures* – will rely on what company officials dub "*Helioculture*" technology to mix brackish water, nutrients and photosynthetic organisms in flat "SolarConverter" panels. Laboratory tests show that adding CO_2 and sunlight to the mixture causes the organisms to secrete the chemical equivalent of ethanol and hydrocarbon-based fuels and chemicals, *Joule's* president and CEO, Bill Sims, said. Sims would not divulge details of *Helioculture's* mystery critters, but said, "We believe we are the first to use these organisms to

produce fuel." *Joule* plans to break ground on a modular pilot plant early next year, and in 2011 break ground on a commercial-scale operation with the capacity to produce more than 20,000 gallons of fuels per acre, per year. Optimum size for such a plant would range from 1,000 to 10,000 acres. David Berry, a partner with *Flagship Ventures* and co-founder of *Joule*, said *Helioculture's* advantages are that it is modular and that it does not require arable land or fresh water. The company aims to produce fuel at the equivalent cost of less than $50 a barrel of oil.

Meanwhile, after years of quietly building steam, the algae industry has recently received major, attention-grabbing investments from *Exxon Mobil Corp.* and *Dow Chemical Co.* And the industry is starting to find support in Congress where proposals have been made to provide it with tax credits and other incentives. Algae -- using nonpotable water, sunlight and CO_2 – produce lipids, or oil, which can be tweaked to molecularly match traditional hydrocarbons. The fuels can then be used with traditional infrastructure.

Exxon is making a $600 million investment in algae-based biofuels and joining a biotech company, *Synthetic Genomics Inc.* (SGI), in their effort to research and develop next-generation biofuels. The companies are mum about the specific technology the collaborative effort would employ, but they said the team would investigate all options, including growing organisms in open ponds and in closed photobioreactors. Others in the algae-biofuels industry say *Exxon Mobil's* investment validates the sector. Riggs Eckelberry, president and CEO of *OriginOil Inc., said,* "Algae is the feedstock to overtake petroleum. It's the real alternative to petroleum."

Others in the algae industry include *Sapphire Energy* and *Solazyme Inc.* who have raised more than $75 million for their own algae-conversion effort. The Southern Ute Indian Tribe is also involved in a startup project co-founded by a Colorado State University professor who is growing a strain of algae that is sucking up CO_2 in a water tank next to a natural gas processing plant. The Southern Utes who have profited from one of the world's richest fields of natural gas from coal-bed methane believe algae could be the next billion-dollar energy boom.

But while *Exxon* and the others grow their own algae in controlled onshore facilities, *LiveFuels Inc.* – a Silicon Valley start-up hopes to convert algae in the dead zone of the Gulf of Mexico into biofuels by scooping it up and using it to feed fish that could be processed for oil. The process is already used to produce fish-oil dietary supplements. "It is too expensive for humans to grow algae, harvest it and get the water out and then convert it into a petroleum-like substitute," said *LiveFuels* Chief Executive Lissa Morgenthaler-Jones. The company is hoping to cut costs by releasing high volumes of fish into the blooms and letting them gather and synthesize the algae themselves.

Bob Walsh, the CEO of the California-based startup, *Aurora Biofuels* announced in mid August the development of optimized microalgal strains capable of doubling biofuel production and CO_2 uptake compared with wild strains. "We've more than doubled the productivity of unoptimized algae," Walsh said. The 3-year-old company is scaling up its operations with a goal of producing 100 gallons a day on a 50-acre site in Florida by next year, and hopes to reach commercial-scale production by 2012. Greg Mitchell, a biologist at the *Scripps Institution of Oceanography* at the University of California at San Diego, said it is crucial to the algae-fuels industry to improve the productivity of algal strains and prove their long-term sustainability outdoors. "If they (*Aurora*) make this breakthrough, it would be transformative," Mitchell said. He added that he would like to see all algae-fuels companies "lay their cards on the table and show their results."

According to a report written by the consulting firm *Cambridge Systematics*; and sponsored by the U.S. Department of Transportation, the *American Public Transportation Association* and *Shell Oil Co.*; the U.S. can cut GHG emissions from transportation in half by 2050. Strategies required to achieve such cuts will range from cutting speed limits to imposing road pricing and changing travel behavior and land-use patterns. The emissions reduction hit 47 percent by adding road pricing techniques, ranging from pay-as-you-go insurance to charging Americans for every mile driven. The report found environmental gains from advances in fuel efficiency would be mostly undermined by increased travel and population, making it important to address the efficiency of the transportation sector by investing in public transit, land-use planning and other low-carbon alternatives. Transportation accounts for roughly 28 percent of the U.S.'s GHG emissions, and the sector has been one of the fastest-growing in the past two decades – representing nearly half of the nation's total increase in GHG emissions since 1990.

And finally, the American chestnut tree, which towered over eastern U.S. forests before succumbing to a deadly fungus in the early 20th century, appears to be an excellent sponge for GHGs, according to a new study by Douglass Jacobs at Purdue University. But scientists need to develop a fungus-resistant version of the tree. Jacobs' study appeared in the June issue of *Forest Ecology and Management*. The study conducted at four sites in southwestern Wisconsin, showed that the American chestnut grew much faster and larger than the black walnut and northern red oak, allowing it to soak up more CO_2. The tree's higher carbon capacity makes it an ideal candidate for forest restoration projects and carbon offset schemes, particularly on marginal farmland in the Midwest the study noted. "Generally, the faster a tree grows, the more carbon it is able to sequester," Jacobs said. "And when these trees are harvested and processed, the carbon can be stored in the hardwood products for decades, maybe longer." Once known as the "redwood of the east," the American chestnut represented up to 45 percent of the forest canopy in parts of its native range, which extended from southern New England and New York southwest to Alabama. Scientists at the *American Chestnut Foundation* say they are close to developing a blight-resistant hybrid and plan to begin full reintroduction of the plant within the next five years.

Sources: Steven Mufson, *Washington Post*, 5/21/09; *Reuters*, 7/6, and 8/5/09; Teresa Cerojano, *AP/Yahoo!*, 6/16/09; Yang/Oster, *Wall Street Journal*, 5/21/09; Matthias Williams, *Reuters*, 6/30/09; Cornelia Dean, *New York Times*, 5/18 and 7/10/09; *E&ENews PM*, 5/14/08; Maggie Koerth-Baker, *National Geographic News*, 6/18/09; Mufson/Agiesta/Kane, *Washington Post*, 6/25/09; John Lorinc, *New York Times*, 7/8/09; Andrew C Revkin, *New York Times*, 5/29 and 8/4/09; Betsy McKay, *Wall Street Journal*, 7/8/09; John Broder, *New York Times*, 8/9/09; Buckley/Graham-Harrison, *Reuters*, 8/13/09; Russell Gold, *Wall Street Journal*, 8/12/09; Kirk Johnson, *New York Times*, 8/17/09 Lauren Morello, *Greenwire*, 6/1/09; Patrick Reis, *Greenwire*, 6/19/09; Josh Voorhees, *Greenwire*, 7/28/09; Phil Taylor, *Greenwire*, 7/1/09; Michael Burnham, *Greenwire*, 7/27/09; Katie Howell and Ben Geman, *Greenwire*, 7/14/09; Katie Howell, *Greenwire*, 8/18 and 8/21/09; and *Greenwire*, 5/8, 5/18, 5/21, 5/29, 6/16, 6/19, 6/25, 7/7, 7/8, 7/10; 8/4, 8/6, 8/10, 8/12, 8/13 and 8/17/09

Meetings of Interest

Oct. 25-30: Sixth International Symposium on Sturgeon, Wuhan, Hubei Province, China. See: www.iss6.org

Nov. 9-12: 2009 Annual American Water Resources Association Annual Water Resources Conference,, Red Lion Inn on Fifth Ave., Seattle, WA. See: www.AWRA.org

Dec. 6-9: 70th Midwest Fish & Wildlife Conference, Springfield, IL. Contact: Ann Holtrop, (217) 785-4325

2010

Mar. 1-5: Aquaculture 2010, San Diego, CA. See: www.was.org

Jun. 20-22: Second International Catfish Symposium, St. Louis, MO. See: wwwcatfish2010.org

Jul. 7-12: Joint Meeting of Icthyologists and Herpetologists, Providence, RI. See: www.dce.ksu.edu/conf/jointmeeting/future.shtml

Jul. 25-30: Climate Change and Fish - Fisheries Society of the British Isles Conference, Belfast, Northern Ireland. See: www.fsbi.org.uk/events.htm

Sep. 12-16: American Fisheries Society 140th Annual Meeting, Pittsburgh, PA. See: www.fisheries.org

Sep. 27-30: Wild Trout Symposium, West Yellowstone, MT. See: www.montana.edu/cs/images/wild_trout/fish.jpg

Congressional Action Pertinent to the Mississippi River Basin

Climate Change

S. 137. Brown (D/OH). Creates jobs and reduces U.S. dependence on foreign and unsustainable energy sources by promoting the production of green energy, and for other purposes.

S. 1035. Reid (D/NV) and 2 Co-sponsors. Enhances the ability of drinking water utilities in the U.S. to develop and implement climate change adaptation programs and policies, and for other purposes.

H. R. 232. Baldwin (D/WI) and 3 Co-sponsors. Provides for creation of a Federal greenhouse gas (GHG) registry, and for other purposes.

H. R. 391. Blackburn (R/TN) and 9 Co-sponsors. Amends the Clean Air Act to provide that GHG are not subject to the Act, and for other purposes.

H. R. 594. Stark (D/CA) and McDermott (D/WA) Amends the Internal Revenue Code of 1986 to reduce emissions of carbon dioxide by imposing a tax on primary fossil fuels based on their carbon content.

H. R. 1438. Fortenberry (R/NE). Prohibits any Federal agency or official, in carrying out any Act or program to reduce the effects of GHG emissions on climate change, from imposing a fee or tax on gaseous emissions emitted directly by livestock.

H. R. 1666. Doggett (D/TX) and 21 Co-sponsors. Amends the Internal Revenue Code of 1986 to establish an auction and revenue collection mechanism for a carbon market that ensures price stability with environmental integrity.

H. R. 1760. Inslee (D/WA) and 2 Co-sponsors. Mitigates the effects of black carbon emissions in the U.S. and throughout the world.

H. R. 1862. Van Hollen (D/MD) and 3 Co-sponsors. Caps the emissions of GHG through a requirement to purchase carbon permits, to distribute the proceeds of such purchases to eligible individuals, and for other purposes.

H. R. 1905. Capps (D/CA) and 3 Co-sponsors. Amends the Coastal Zone Management Act of 1972 to require the Secretary of Commerce to establish a coastal climate change adaptation planning and response program, and for other purposes.

H. R. 2192. Grijalva (D/AZ) and 9 Co-sponsors. Establishes an integrated Federal program to protect, restore, and conserve the Nation's natural resources in response to the threats of climate change and ocean acidification.

H. R. 2306. Dicks (D/WA). Provides for the establishment of a National Climate Service, and for other purposes.

H. R. 2407. Gordon (/TN). Establishes a National Climate Service at the National Oceanic and Atmospheric Administration.

H. R. 2685. Bordallo (D/GU) and 9 Co-sponsors. Establishes a National Oceanic and Atmospheric Administration and a National Climate Enterprise, and for other purposes.

H. R. 2757. Kind (D/WI) and 3 Co-sponsors. Requires the return to the American people of all proceeds raised under any Federal climate change legislation.

H. R. 2998. Waxman (D/CA) and Markey (D/MA). Creates clean energy jobs, achieves energy independence, reduces global warming pollution and transitions to a clean energy economy.

H. R. 3129. Luetkemeyer (R/MO). Prohibits U.S. contributions to the Intergovernmental Panel on Climate Change.

Conservation

S. 655. Johnson (D/SD) and 3 Co-sponsors. Amends the Pittman-Robertson Wildlife Restoration Act to ensure adequate funding for conservation and restoration of wildlife, and for other purposes.

S. 1214. Lieberman (ID/CT) and 7 Co-sponsors and **H. R. 2565.** Kind (D/WI). Conserves fish and aquatic communities in the U.S. through partnerships that foster fish habitat conservation, to improve the quality of life for the people of the U.S., and for other purposes.

H. R. 404. Grijalva (D/AZ) and 23 Co-sponsors. Establishes the National Landscape Conservation System, and for other purposes.

H. R. 631. Matheson (D/UT). Increases research, development, education, and technology transfer activities related to water use efficiency and conservation technologies and practices at the U.S. EPA.

H. R. 1080. Bordallo (D/GU). Strengthens enforcement mechanisms to stop illegal, unreported, and unregulated fishing, and for other purposes.

H. R. 1328. Bishop (D/NY) and 2 Co-sponsors. Amends the Internal Revenue Code of 1986 to allow an unlimited exclusion from transfer taxes for certain farmland and land of conservation value, and for other purposes.

H. R. 2188. Kratovil (D/MD) and 3 Co-sponsors. Authorizes the Secretary of the Interior, through the U.S. Fish and Wildlife Service, to conduct a Joint Venture Program to protect, restore, enhance, and manage migratory bird populations, their habitats, and the ecosystems they rely on, through voluntary actions on public and private lands, and for other purposes.

H. R. 2807. Kind (D/WI) and Jones (R/NC). Sustains fish, plants, and wildlife on America's public lands.

H. R. 3086. Bordallo (D/GU). Coordinates authorities within the Department of the Interior and within the Federal Government to enhance the U.S.'s ability to conserve global wildlife and biological diversity, and for other purposes.

Endangered Species Act (ESA)

S. 724. Barrasso (R/WY) and Vitter (R/LA). Amends the ESA to temporarily prohibit the Secretary of the Interior from considering global climate change as a natural or manmade factor in determining whether a species is a threatened or endangered species, and for other purposes.

Energy

S. 531. Bingaman (D/NM) and Murkowski (R/AK). Provides for the conduct of an in-depth analysis of the impact of energy development and production on the water resources of the U.S., and for other purposes.

S. 539. Reid (D/NV). Amends the Federal Power Act to require the President to designate certain geographical areas as national renewable energy zones, and for other purposes.

H. R. 2227. Murphy (R/PA) and 6 Co-sponsors. Greatly enhances America's path toward energy independence and economic and national security, to conserve energy use, to promote innovation, to achieve lower emissions, cleaner air, cleaner water, and cleaner land, and for other purposes.

H. R. 2300. Bishop (R/UT) and 34 Co-sponsors. Provides the U.S. with a comprehensive energy package to place Americans on a path to a secure economic future through increased energy innovation, conservation, and production.

Federal Water Pollution Control Act (FWPCA)

S. 696. Cardin (D/MD) and Alexander (R/TN). Amends the FWPCA to include a definition of fill material.

S. 787. Feingold (D/WI) and 23 Co-sponsors. Amends the FWPCA to clarify the jurisdiction of the U.S. over waters of the U.S.

S. 1005. Cardin (D/MD) and 3 Co-sponsors. Amends the FWPCA and the Safe Drinking Water Act to improve water and wastewater infrastructure in the U.S.

H. R. 700. McNerney (D/CA) and Tauscher (D/CA). Amends the FWPCA to extend the pilot program for alternative water source projects.

H. R. 1262. Oberstar (D/MN) and 9 Co-sponsors. Amends the FWPCA to authorize appropriations for State water pollution control revolving funds, and for other purposes.

Invasive Species

S. 237. Levin (D/MI) and 4 Co-sponsors and **H. R. 500.** Ehlers (R/MI) and 20 Co-sponsors. Establishes a collaborative program to protect the Great Lakes, and for other purposes.

S. 462. Boxer (D/CA) and Vitter (R/LA). Amends the Lacey Act Amendments of 1981 to prohibit the importation, exportation, transportation, and sale, receipt, acquisition, or purchase in interstate or foreign commerce, of any live animal of any prohibited wildlife species, and for other purposes.

S. 594. Casey (D/PA) and Stabenow (D/MI). Requires a report on invasive agricultural pests and diseases and sanitary and phytosanitary barriers to trade before initiating negotiations to enter into a free trade agreement, and for other purposes.

H. R. 48. Biggert (R/IL). Amends the Lacey Act, to add certain species of carp to the list of injurious species that are prohibited from being imported or shipped.

H. R. 51. Kirk (R/IL). Directs the Director of the USFWS to conduct a study of the feasibility of a variety of approaches to eradicating Asian carp from the Great Lakes and their tributary and connecting waters.

H. R. 669. Bordallo (D/GU) and 9 Co-sponsors. Prevents the introduction and establishment of nonnative wildlife species that negatively impact the economy, environment, or other animal species or human health, and for other purposes.

Mining

S. 140. Feinstein (D/CA) and **H. R. 699**. Rahall (D/WV) and 20 Co-sponsors. Modifies the requirements applicable to locatable minerals on public domain lands, consistent with the principles of self-initiation of mining claims, and for other purposes.

S. 409. Kyl (R/AZ) and McCain (R/AZ) and **H. R. 2509**. Kirkpatrick (D/MI) and Flake (R/AZ). Secures Federal ownership and management of significant natural, scenic, and recreational resources, to provide for the protection of cultural resources, to facilitate the efficient extraction of mineral resources by authorizing and directing an exchange of Federal and non-Federal land, and for other purposes.

S. 796. Bingaman (D/NM) and **H.R. 699.** Rahall (D/WV) and 20 Co-ponsors Modifies the requirements applicable to locatable minerals on public domain land, and for other purposes.

H. R. 493. Rahall (D/WV). Directs the Secretary of the Interior to promulgate regulations concerning the storage and disposal of matter referred to as ``other wastes'' in the Surface Mining Control and Reclamation Act of 1977, and for other purposes.

H. R. 3203. Lamborn (R/CO) and Bishop (R/UT). Promotes remediation of inactive and abandoned mines, and for other purposes.

National Environmental Policy Act (NEPA)

H. R. 585. Lee (D/CA) and 5 Co-sponsors. Directs the President to enter into an arrangement with the *National Academy of Sciences* (NAS) to evaluate certain Federal rules and regulations for potentially harmful impacts on public health, air quality, water quality, plant and animal wildlife, global climate, or the environment; and to direct Federal departments and agencies to create plans to reverse those impacts that are determined to be harmful by the NAS.

H. R. 996. Nunes (R/CA) and McCarthy (R/CA). Temporarily exempts certain public and private development projects from any requirement for a review, statement, or analysis under the NEPA of 1969 (42 U.S.C. 4321 et seq.), and for other purposes.

Public Lands

S. 22. Bingaman (D/NM). Designates certain VA, WV and OR lands as components of the National Wilderness Preservation System, to authorize certain programs and activities in the Department of the Interior and the Department of Agriculture, and for other purposes.

S. 32. Spector (R/PA) and Casey (D/PA). Requires FERC to hold at least one public hearing before issuance of a permit affecting public or private land use in a locality.

S. 452. Crapo (R/ID) and Risch (R/ID) and **H. R. 2025.** Minnick (D/ID) and Simpson (R/ID). Ensures public access to Federal land and to the airspace over Federal land.
S. 1470. Tester (D/MT). Sustains the economic development and recreational use of National Forest System land and other public land in the State of Montana, to add certain land to the National Wilderness Preservation System, to release certain wilderness study areas, to designate new areas for recreation, and for other purposes.

H. R. 1041. Melancon (D/LA). Directs the Secretary of the Interior to study the suitability and feasibility of designating sites in the Lower Mississippi River Area in the State of Louisiana as a unit of the National Park System, and for other purposes.

Water Quality

H. R. 135. Linder (R/GA) and 3 Co-sponsors. Establishes the *21st Century Water Commission* to study and develop recommendations for a comprehensive water strategy to address future water needs.

H. R. 276. Miller (R/MI). Directs the Administrator of the USEPA to convene a task force to develop recommendations on the proper disposal of unused pharmaceuticals, and for other purposes.
H. R. 631. Matheson (D/UT). Increases research, development, education, and technology transfer activities related to water use efficiency and conservation technologies and practices at the USEPA.

H. R. 1145. Gordon (D/TN). Implements a *National Water Research and Development Initiative*, and for other purposes.

H. R. 3202. Mr. Blumenauer (D/OR) and 3 Co-sponsors. Establishes a *Water Protection and Reinvestment Fund* to support investments in clean water and drinking water infrastructure, and for other purposes.

Water Resources

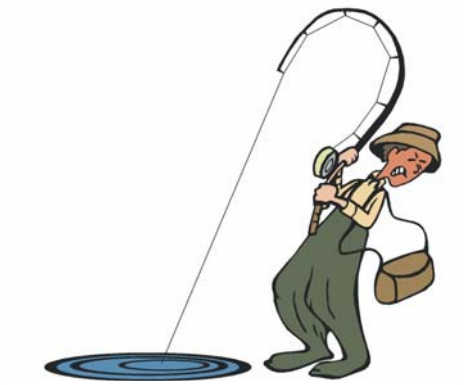
H. R. 172. Salazar (D/CO) and Markey (D/CO). Provides for the construction of the *Arkansas Valley Conduit* in CO.

S. 637. Baucus (D/MT) and Tester (D/MT). Authorizes the construction of the *Dry-Redwater Regional Water Authority System* in the State of Montana and a portion of McKenzie County, North Dakota, and for other purposes.

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

River Crossings

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



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