River Crossings

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Asian Carp Barrier Controversy

The $9.1 million electric barrier placed in the Cal Sag and Chicago Sanitary and Ship Canal to keep Asian carp out of the Great Lakes may have an "Achilles heel" — ballast water. Even if the barrier keeps adult Asian carp from reaching Lake Michigan, Eddie Landmichl, president of *Perch* America, a Chicago-based Great Lakes advocate fears that their eggs will reach the lake.

When Asian carp reach the canal, females will release millions of eggs into the water in late June or July, aquatic biologists say, providing the source for the infestation. Then Landmichl, 70 who worked on barges as a younger man, says the barges will pump canal water containing both fish eggs and larvae into their ballast tanks to level their loads, and when the boats deliver their cargoes to Lake Michigan ports, the ballast water — along with the eggs and larvae — will be dumped into the lake.

"What good is the barrier if we're going to let barges carry the eggs and young fish through the barrier and into the Great Lakes?" Landmichl said. By calling attention to the egg-transfer problem, "Eddie has certainly raised a valid concern," said Roger Klocek, conservation biologist at the *Shedd Aquarium*. "It's something nobody else thought of."

Mark Pegg of the Illinois Natural History Survey, who runs an Illinois River station at Havana agreed. But Pegg, who last summer found more than 2.2 million eggs in one 42 lb. Asian carp, said tumbling through barge pumps probably would

Resource managers fear that the Asian carp (right) could replace the salmon (left) in the Great Lakes fishery.

destroy eggs and larvae. Scott Stuewe, acting fisheries chief of the Illinois Department of Natural Resources, agreed. But Stuewe added, "It's always possible that some would survive."

But Landmichl said, "Many if not all of the pumps will pass 'em through." David Jude of the University of Michigan at Ann Arbor agreed. "Those eggs are practically bulletproof," he said. Jude is the researcher who identified the first round goby in this country. Native to Europe, those nuisance fish also got into the Great Lakes via ships' ballast water. Landmichl is convinced that the carp, Chinese imports that escaped from Arkansas fish farms into the Mississippi River and then entered the Illinois waterway, will use ballast water as their ticket to the Great Lakes. More work is definitely needed on this issue.

Landmichl also thinks that the carp will make their way into the canal upstream of the barrier during flooding from the nearby Des Plaines River, and the Army Corps of Engineers admits that he could

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be right. The voracious exotics, which devour food needed by native fish, threaten the lakes' $4.5 billion sport and commercial fishing industry. To halt their advance up the Illinois River before they reach Lake Michigan, the Corps installed a temporary barrier at Romeoville in 2002 and is at work on a permanent one at Lemont. Even though the barrier may have its faults, it is the best technology we presently have to stop the invasion.

In February, MICRA went on record in support of providing permanent federal funding to operate and maintain the barriers, and to conduct a study to determine methods of separating the Great Lakes and Mississippi River Basin biologically. If it weren't for the presence of the canal, this problem wouldn't exist, and some have recommended going so far as closing the canal to prevent the invasion.

Source: Gary Wisby, *Chicago Sun-Times*, 3/6/05

Bass Pro Shops Snakehead Reward

The Northern Snakehead has received much publicity since it's first invasion of a community pond in central Maryland. The predatory, nonnative Snakehead was then found in the Potomac River where last year, 20 were caught. Now *Bass Pro Shops Outdoor World* of Hanover, MD has joined with the Maryland Department of Natural Resources (MDDNR) in an effort to draw public attention to all invasive species by using the northern snakehead as a "poster child".

Bass Pro Shops of Hanover will be offering a 'Snakehead Reward' Gift Card to anglers catching a snakehead in Maryland waters or waters of the Potomac watershed. The fish must be caught on hook and line with legal fishing methods by a licensed angler and be reported to MDDNR or another resource management agency. The angler is not required to bring the actual snakehead into *Bass Pro Shops Outdoor World*, but the fish must be turned into the MDDNR Fisheries Service. If the fish is caught in Maryland, anglers are asked to call MDDNR at 410-260-8320, or toll-free at 1-877-520-8DNR, ext. 8320. Anglers may also call the U.S. Fish & Wildlife Service at 410-573-4506 for more information.

Anglers are asked to follow the MDDNR guidelines for immediately killing the fish, and then to bring verification from the agency that the fish has been reported and turned over to the agency to *Bass Pro Shops Outdoor World* at 7000 Arundel Mills Circle (Exit 10A off Route 100 at Route I-295) in Hanover, MD for collection of the reward. In addition, anglers will receive a 'Snakehead Wrangler' cap from the MDDNR.

The 'Snakehead Reward' Program runs from March 1 through October 31, 2005. *Bass Pro Shops* 'Snakehead Reward' Gift Card amounts are as follows:

- $10 for Snakeheads under 12 inches
- $25 for Snakeheads 13 to 24 inches
- $50 for Snakeheads over 24 inches

Contact: Allan Ellis at *Bass Pro Shops*, 410-689-2500 ext. 5217 or e-mail aellis@basspro.com or Megan Evans at MDDNR, 410-260-8016 office, 443-280-2599 cell or MArtsEvans@dnr.state.md.us.

Source: *Fishing World.com*, 03/02/05

Petition to List Snakehead as Endangered

A group of county commissioners from 12 Western states who have problems with the Endangered Species Act (ESA) has petitioned the U.S. Fish and Wildlife Service to have the northern snakehead protected under the act. Pershing County Commissioner Roger Mancebo, a Democrat from Lovelock, NV said the petition will be an eye-opener for those who have not had to deal with the Endangered Species Act in land management.

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In an interview, Washington County Utah Commissioner Alan Gardner said initially he found the creature "truly unique." "I thought, 'Man, that's something — a fish that can get out and move across dry land,' " he said. Then he mentioned the desert tortoise. It turns out that in Gardner's jurisdiction 60,000 acres of tortoise territory have been protected since 1996 inside the Red Cliffs Desert Reserve. The reserve, he said, devalued private property, kept out new subdivisions and golf courses and generally trampled the economy — all because the tortoise is listed as threatened under the ESA. "There's a lot of people in the West that consider any species that gets listed as the enemy," Gardner said, "because the real threat is to the people."

So Gardner hopes to hit Washington policymakers where it hurts. The snakehead's habitat could extend through 11 states from Vermont to North Carolina, the lawmakers said. All fresh water with any connection to the Potomac should be closed to boating, fishing or swimming to protect the snakehead, according to his petition. Traffic on existing bridges should be restricted to emergency vehicles only, and people mowing lawns within five miles of the water should be accompanied by a trained snakehead observer.

"Living in the West, we seem to be inundated with the cries from mostly people back in the East to list everything that is walking," Mancebo said. "This was just to send a message of how silly this stuff is." "It's a joke," said John Odenkirk, fisheries biologist with the Virginia Department of Game and Inland Fisheries. "To suggest that an exotic, invasive species that has only been in this country a couple years is somehow afforded protection under the Endangered Species Act is just ludicrous".

But U.S. Fish and Wildlife Service (FWS) spokesman Mitch Snow said the FWS will have to grin and bear it. The agency will perform the standard scientific review to see if certain factors, such as loss of habitat, predation or disease, warrant protecting the snakehead. The agency regularly receives petitions and litigation to protect all sorts of species.

As of late January, FWS staff members were working on 32 active lawsuits involving 42 species, Snow said. But the strangest petition, he said, was not the snakehead. Three months ago, he said, *Maxim* magazine, fearing the demise of macho men in a "metrosexual" world, petitioned to put males on the endangered species list. "Unfortunately," Snow said, "I'm not making this up."

Sources: Joshua Partlow, *Washington Post*, 2/17/05; *San Francisco Chronicle Online*, 2/14/05; and *Greenwire*, 2/15/05

Snakehead Conviction in CA

A Los Angeles grocery owner was fined earlier this year nearly $230,000 for selling live snakeheads. The snakehead case against Sung Chul "Daniel" Rhee, 46 and his *Assi Super Inc.* store, the largest in California, came as the result of an informant telling investigators in April 2003 that Rhee was selling live snakehead at his store for $14.99/lb.

A search in July of that year found live snakeheads at the market and records showing that Rhee had imported about $25,000 worth of the fish a year, beginning a year earlier. Investigators found the fish were being smuggled in shipments from Seoul, Korea's *Hae Won Seafood* aboard *Korean Air* passenger airlines, labeled as sea bass or fresh water bass. Last May, agents from the U.S. Fish and Wildlife Service and the Immigration and Customs Enforcement Service arrested Rhee, and the penalties follow guilty pleas in federal and state court for importing and selling the live fish.

The supermarket company pleaded guilty in federal court to seven felony violations of unlawful smuggling of wildlife and unlawful commercialization of smuggled wildlife. Rhee pleaded guilty to three misdemeanor violations of illegally importing injurious wildlife. He and the company were fined $200,000, with half going to the federal government, and the state splitting the other half with the *National Fish and Wildlife Foundation.*

The state settled its case in July, when Rhee and the supermarket company each pleaded guilty to four misdemeanor counts of unlawful possession of prohibited species. Rhee performed 30 days of *CalTrans* work instead of jail time and paid $29,531 in state fines and restitution.

Sources: Don Thompson, *San Francisco Chronicle*, 1/27/05; and *Greenwire*, 1/28/05

New Zealand Mudsnail in Colorado

Colorado's first infestation of New Zealand mudsnails was discovered in the city of Boulder by a fisherman in Boulder Creek in November 2004. The creatures, about one-eighth of an inch in length, have no natural predators in the Northern Hemisphere and have spread to several Western states since appearing in Idaho's Snake River in 1985. In Yellowstone National Park, they have been found in concentrations of up to 500,000 per square meter.

The mudsnail is native to New Zealand, where it is found in ponds, lakes, streams, rivers, estuaries and salt marshes. In its native range, populations of the snail are kept in check by a dozen species of trematodes that parasitize it, and several species of fish that eat it. The small brown snail is only one-quarter-inch long, with five to seven whorls, usually coiling dextrally, or to the right. It can close the aperture to its shell with a dark plate called an operculum. Sealed tightly, the snail can survive desiccation or even pass through a fish's stomach and intestines unharmed!

New Zealand mudnail

In New Zealand, the mudsnail occurs in two genetic forms. Some populations contain diploid individuals, meaning that they have two copies of each chromosome in each cell (as do humans). Snails in these populations are either male or female, and reproduce sexually. Other populations are composed of triploids, meaning they have three copies of each chromosome. All of the individuals in triploid populations are female, and they produce offspring asexually, and the offspring are genetically identical to their mother. All of the mudsnails in North America are triploid females with asexual reproduction, so a single colonizer can start a whole new population.

The tiny snail can become attached to boats, fishing gear or clothing, and be transported long distances to new aquatic habitats. It's ability to withstand desiccation for days and perhaps weeks, and its asexual reproduction — make it an aggressive colonizer. Immense popula-

tions can be produced quickly. A single mudsnail colonizing a new site can explode to several million mudsnails one year later. Each female produces 20 to 120 live-born offspring at a time, and the offspring are reproductively mature in a few months. Mudsnails reproduce about every three months, and they live about one year.

Mudsnails eat detritus, algae attached to rocks and microbial films on rocks, and this puts them in competition with invertebrate larvae such as mayflies, caddis flies and stoneflies — the food of trout and many other native fish. When mudsnails reach high concentrations in western streams, the mayflies, caddis flies and stoneflies disappear, and then the trout disappear. Shortly after mudsnails arrive, a productive trout stream can become water, devoid of fish, flowing over a thick carpet of mudsnails

Consequently, the Colorado Division of Wildlife wants a permanent fishing ban in a three-mile reach of Boulder creek to slow the spread of the invasive mudsnails. The move would extend a three-month fishing ban now in place until April. The division's jurisdiction in Boulder Creek is limited to fishing, but the city of Boulder banned all entry into that reach of the creek during the temporary ban. The city could extend those restrictions pending the state's decision, said Heather Swanson, wildlife ecologist with Boulder Open Space & Mountain Parks. It is feared that the infestation could be spread to other areas by snails carried in the mud attached to fishermen's boots.

The fishing ban is among many approaches being considered to limit the spread of the tiny mollusk. Other potential measures include snail-electrocution, snail-freezing, and zapping the mollusks with shots from fire extinguishers. The option of draining a section of Boulder Creek by channeling water into adjacent ditches is moving forward, although it probably won't happen until next winter.

First, the chance of overnight temperatures falling well below freezing — required to kill the snails — is slim this season. Second, draining the creek would be an involved process requiring permission from regulatory agencies as well as diverse ditch users and water-rights holders downstream. But by next winter, the mudsnails may have migrated further downstream below the point where the Boulder sewage-treatment plant pumps millions of gallons of treated water into creek every day. Below that point the creek couldn't be drained.

It is felt that draining part of the creek could at least reduce numbers of the mudsnails next year, but draining has its skeptics, including Ken Cline, owner of the *Cline Trout Farm* in Boulder. Cline said there are too many places for snails to hide. "I can bet my farm that it would not be successful," he said. Cline's farm off Boulder Creek, which held 12,000 pounds of trout, was the first site of infestation. Mudsnails were discovered in pipes leading from his concrete-lined ponds to Boulder Creek. His farm has been closed since November, and Cline had to drain the tanks, bury the fish, scour the ponds and replace or modify the pipes at a cost of between $60,000 and $100,000, he said.

Some observers think that the mudsnail may have arrived in Colorado aboard a shipment of fish to the infested fish farm. But others observe that when the mudsnail showed up in the Madison and Firehole rivers in Yellowstone, the Henry's Fork of the Snake River, and the Green River tailrace below Flaming Gorge Reservoir in Utah, it is almost certain that it was carried there on the wading gear of fly fishermen. "If you look at where the organism is found, it seems to have a real tendency to show up in places where high-end fly fishers fish", said Pete Walker, a senior fish pathologist with the Colorado Division of Wildlife. So those of us who travel around the country and the world may have had a hand in this.

So what can we do about it? Some say that if you thoroughly dry out your wading equipment, that will kill the mudsnail. Others say to take it a step farther and spray them with soapy water and leave them in the hot sun for several hours. Still others say soak the waders and wading shoes in hot water (120 ^{o}F degrees) for several minutes. Optimists say just thoroughly clean the mud off your wading shoes and rinse them in clean water. Walker says the one surefire way he's found to kill the mudsnail is to wrap your wading shoes and waders in a plastic bag and put them in the freezer overnight. The one way he says may not kill the snails is to soak them in the kind of bleach baths that kill the whirling disease pathogen.

Ultimately, there is one other consideration. It may be time to hang up the felt sole wading shoes. The felts are a perfect medium for the mudsnails and the whirling disease pathogen to be transported no matter how careful you are. You can make a case that it was harder for the mudsnail to be transported when fishermen used the old time rubber soled boot foot waders, Walker said.

Sources: Jeff Mitton, *University of Colorado/Boulder and Daily Camera Online*, 2/11/05; Ed Engle, *Boulder Daily Camera Online*, 2/24/05; Todd Neff, *Boulder Daily Camera Online*, 3/1/05; and http://nas.er.usgs. gov/queries/FactSheet.asp?species ID=1008

Anglers' Rights vs Invasive Species and Ecosystem Protection

A recent ruling outlawing black bass in Japan demonstrates the global nature of the invasive species problem, and has triggered a new wave in the ongoing values debate regarding invasive vs native species. The ruling suggests that public administrators and private anglers need to cooperate to protect native ecosystems.

Largemouth bass

The Otsu District Court on February 7 ruled lawful the Shiga prefectural ordinance that bans anglers from releasing foreign fish species such as black bass back into Lake Biwa after they had been caught in the lake. Contested in court was whether the releasing of these foreign species into the lake should be left to anglers' discretion or if it should be banned in order to protect the Lake Biwa ecosystem.

The prefectural government in April 2003 enacted the ordinance on the recreational use of Lake Biwa. Although the ordinance does not provide for any punishment, it is the first ordinance under which a prefectural government has banned the releasing of foreign species such as largemouth bass. Soon after, bass fishing groups came out to protest the ordinance, saying the catch-and-release style is a credo of

bass fishing. They soon followed with legal action. Also, a type of largemouth bass has been listed as one of the nonindigenous species subject to restrictions under the new Invasive Alien Species Law, scheduled to take effect in June.

Plaintiffs in the case, including Kuniaki Shimizu, a 54-year old TV personality and bass angler, claimed that the releasing ban infringes on the constitutionally guaranteed right to pursue happiness, which for bass fishermen comes through fishing. Yet the court ruling recognized the prefectural government's assertion that said it was essential to reduce the number of foreign fish species in the lake so that the lake's original ecosystem could recover. The population of black bass in Lake Biwa has increased rapidly since the fish was first found there in 1974. Bluegill numbers have also risen sharply since around 1993, while that of indigenous species has rapidly declined.

Lake Biwa, which scientists believe to be at least 3 million years old, has been the source for local cuisine using indigenous fish, including funazushi sushi using Nigorobuna carp and tsukudani with Honmoroko carp boiled in soy sauce. For these reasons, the prefectural government became concerned over the declining population of indigenous species in the lake and launched efforts in 1985 to eradicate foreign species using gill nets. Starting next fiscal year, the government will start eradicating foreign fish by targeting fingerlings with nets.

The government of Hirata, Shimane Prefecture has also put into effect an ordinance that bans the releasing of largemouth bass. Commissions controlling the inland water fishing in seven prefectures, including Miyagi and Niigata, have also banned releasing of nonindigenous species in their instructions. The latest court ruling is in line with such administrative efforts.

Similar to Lake Biwa, Kawaguchiko Lake and two others in Yamanashi Prefecture and Ashinoko Lake in Kanagawa Prefecture, all popular for bass fishing, have established rules concerning black bass fishing where local fishermen's associations levy sportfishing fees from anglers, making bass fishing a tourist attraction. Yet both prefectures ban the releasing of bass in waters elsewhere in the prefectures, while entrusting local fishermen's associations of the four lakes to regulate bass from being released into other waters.

The plaintiffs plan to appeal to a higher court, and some anglers' groups have begun exploring ways of reducing negative effects on ecosystems by implementing a self-imposed ban on the releasing of nonindigenous species during spawning seasons. Hitoshige Raita, a managing director of the *All Japan Fishing Association*, said that it is necessary for both the public administrators and anglers to use their ingenuity to find ways to protect lake environments.

Sources: Shigeki Tao, *The Yomiuri Shimbun*, 3/18/05; and http://www.protectyourwaters.net/news/display.php?id=2546

Western Governors Urge ESA Revision

The Western Governors' Association (WGA) is urging Congress to make amending the Endangered Species Act (ESA) a priority in the next two years. The group is asking the Senate Environment and Public Works Committee (SEPWC) to: focus ESA changes on four objectives:

- requiring recovery goals for listed species;
- increasing states' role in recovery efforts;
- ensuring "good" science in ESA decisions; and
- providing incentives for conservation.

"While there are many other improvements that could be made to the Endangered Species Act, we believe that those we have outlined above are the most critical. ... We ask you to consider making these changes a priority," wrote Republican Gov. Bill Owens of Colorado and Democratic Gov. Dave Freudenthal of Wyoming in a late February letter. At a briefing at the *American Enterprise Institute*, Owens said he does not want to throw out the act but to make it "work better for wildlife, landowners and communities."

The SEPWC's current priorities are passage of the "Clear Skies" and transportation bills, Republican spokesman Will Hart said, but while amending the ESA is not a priority, the committee does expect to look at the governors' goals this year and is supportive of them.

In February Senate Wildlife Subcommittee Chairman Lincoln Chafee (R/RI), Sen. Mike Crapo (R/ID), House Resources Committee Chairman Richard Pombo (R/CA) and Rep. Greg Walden (R/OR) said they would work together to "improve and update" the ESA, with the hope of introducing bipartisan, bicameral legislation later this year.

Owens said he has not seen proposals from the four legislators and is not ready to endorse one, but is optimistic about the revision efforts, particularly of Pombo and Crapo. The four lawmakers said they would meet together along with administration officials and stakeholders from land-use and environmental groups to work on a consensus bill. Crapo said they would work for a "less contentious and more effective" law with a focus on habitat conservation and recovery, more incentives and a bigger role for states. Pombo and Walden said private property owners would have to be a part of the solution.

Chafee, a newcomer to the ESA debate, said he thought it would be essential to gain the backing of environmental groups and Senate Democrats. Chafee also cited as a "starting point" for discussion a bipartisan bill that former Sen. Dirk Kempthorne (R/ID) passed out of committee in 1997. That bill revamped ESA's recovery program and deadlines and gave additional protections to landowners in voluntary habitat conservation agreements.

Republican lawmakers and Owens have characterized the act as failing in its listing of thousands of species but only officially recovering 10 of them. "We can do better, it's time to update the act so it can do a better job," Owens said. At least three of the points made in the letter enjoyed broad support at the WGA's endangered species summit last December and were backed by stakeholders that included state officials, industry representatives, environmentalists and scientists. Nearly all agreed that recovery plans should be mandatory. Currently the three-year plans are optional.

They also agreed that states should play a larger role in species recovery, although environmentalists maintain that the federal government — not the states — should maintain primary responsibility for recovery. And many of the summit's

attendees agreed that the act would benefit from increasing incentives offered to landowners.

However, a large gulf exists among stakeholders on science issues. Many Republican governors, state officials and members of Congress support an effort similar to Pombo and Walden's proposal from last year that would require a more stringent standard as to what data is acceptable. But environmentalists and many scientists say the current standard of "best available science" is preferable because it remains modern over time and encourages precaution when dealing with imperiled species.

Owens also acknowledged the difficulty in revising ESA not only because of conflict between some environmental and landowner groups, but also at times between federal and state or local officials. "People in D.C. are given sweeping powers over private property, keeping power within the government is one reason why it would be difficult to reform," Owens said. "There can be an underlying agenda and sometimes that doesn't make it any easier."

Source: Allison A. Freeman and Natalie Henry, *Greenwire*, 3/4/05

Cormorant Culling Planned in Minnesota

The federal government has proposed killing thousands of cormorants on Leech Lake, where the big, black birds are blamed for reducing walleye populations. The U.S. Department of Agriculture in mid March released its environmental assessment of the plan to address the situation on Leech Lake, and the public has 30 days to comment on a range of alternatives — including doing nothing and using nonlethal tactics to reduce numbers of the fish-eating birds.

The favored plan would reduce cormorant numbers there by 80%, from more than 2,500 nesting pairs to about 500, by shooting birds and by rendering eggs sterile so they don't hatch. The birds, usually protected under federal law, also may be harassed, their nests destroyed and live birds captured and euthanized.

The Leech Lake Band of Ojibwe Indians would lead the effort with cooperation from the Minnesota Department of Natural Resources (MNDNR) and the U.S. Department of Agriculture's animal damage control unit will do the work. Lee Pfannmuller, director of ecological services for the MNDNR, said control efforts probably would start early this summer. Crews will shoot birds and rub vegetable oil on eggs. Adult cormorants would continue to sit on the eggs and won't try to re-nest, but the eggs would never hatch, so the colony won't expand, she said.

Cormorants are native to the region, but the toxic pesticide DDT nearly wiped them out in the 1960s. With DDT banned, cormorants have staged a remarkable comeback across the Great Lakes states and parts of Canada during the past 20 years. So far, efforts to scare them away or prevent them from nesting have failed in most areas, prompting wildlife managers to seek lethal controls. "We tried to remove their nesting materials last year on their island … but their numbers still doubled," said John Ringle, fish and wildlife director for the Leech Lake Band.

Double-crested cormorant

On Leech Lake, cormorant numbers have exploded from just a few in the 1980s to 73 nesting pairs in 1998 to 2,524 nesting pairs in 2004. Including juveniles and non-nesting adults, there were nearly 10,000 cormorants on Leech Lake last year, nearly all of which nest on barren Little Pelican Island, located on Leech Lake band property. While cormorants always have used Leech Lake, it appears their numbers may be higher now than even before DDT. "This may really be an issue of limited habitat availability. They don't have many good places to nest now, so as their numbers increase, they are really focused in a few areas," Pfannmuller said.

Because each adult cormorant eats about a pound of fish daily, the birds are blamed for helping deplete the lake's once famous walleye population to a point where some anglers and tourist businesses are angry. The birds could be eating more than a ton of Leech Lake fish each day. "It's clear we have a problem. I fish the lake a lot and there aren't any smaller walleyes out there. Something is taking them out," Ringle said. "We know cormorants eat some walleye and perch. We don't know how much. … But the fact that the big drop in walleye hit at the same time the cormorants are increasing can't be just a coincidence."

In an effort to rebuild walleye populations, the MNDNR will begin stocking the lake, while anglers are being forced to cut back their take of walleyes. Starting in May, Leech Lake's daily walleye limit will be lowered from six fish to four, and all walleyes between 18 and 26 inches must be thrown back. One trophy over 26 inches is allowed.

Cormorants also are muscling out a threatened bird, the wrongly named common tern, which nests on the same islands. Pfannmuller said terns may be permanently lost on Leech Lake, one of their few strongholds in the region, if action isn't taken. Tern numbers already have declined from 1,500 nesting pairs to 200 pairs. "There's compelling enough evidence with the fisheries decline and the tern situation to warrant some strong action," Pfannmuller said.

Cormorants are federally protected under an international migratory bird treaty. But a 2003 federal rule allows states to take action to cull the birds if they are harming fish farms or natural resources. Minnesota has leeway to kill up to 7,500 birds each year of about 16,000 that summer in the state.

Cormorants are also under scrutiny on Knife Island on Lake Superior and are expanding in number on Lake of the Woods. About 25 were killed on Knife Island last year, under the MNDNR's approval, where concerns were raised about the birds eating stocked steelhead trout. Elected officials also have called for killing the birds on Lake of the Woods, where 4,200 pairs nest in various spots.

Source: John Myers, *Duluth News Tribune*, 3/18/05

Refuge Manager Charged for Saving Threatened Frog

The U.S. Department of Justice (DOJ) has filed criminal charges against a National Wildlife Refuge Manager for rescuing a threatened species, according to documents released in late February by Public Employees for Environmental Responsibility (PEER). The charges involve actions the now-former manager took to save 400 tadpoles of the rare Chiricahua leopard frog from certain destruction.

Chiricahua leopard frog

The DOJ cited Wayne Shifflett, the long-time manager of the Buenos Aires National Wildlife Refuge in Arizona, with moving the tadpoles in 2003 without proper authorization. Not only was Shifflett the manager of the refuge where the frogs were reintroduced, after the species had been eradicated, but he also had an Endangered Species permit issued by U.S. Fish & Wildlife Service (FWS).

The Chiricahua leopard frog is listed as threatened under the federal Endangered Species Act. But DOJ contends that Shifflett did not have permission of the state agency, Arizona Game & Fish Department, to take the tadpoles from private lands onto the refuge. The citation DOJ issued on February 14th imposes a $3,500 fine. This is the only prosecution on record of a wildlife refuge manager for a conservation-related offense.

"Refuge managers who act boldly to protect wildlife should not be prosecuted; they should be commended," stated PEER Executive Director Jeff Ruch, who noted that the U.S. Attorney's office in Arizona twice declined to prosecute Shifflett, and that charges were ultimately filed out of DOJ Headquarters in Washington, D.C. "While it is a mystery why Justice would use scarce prosecutorial resources to pursue this case, it is a certainty that this action reeks of slimy politics," PEER stated.

Shifflett's decision to move the tadpoles has saved the species from complete elimination on the refuge. The frogs are now thriving in ponds, tanks and a breeding facility for which taxpayers had already spent $100,000 to facilitate the threatened leopard frogs' reintroduction. Shifflett acted after Arizona Game & Fish officials had refused to issue a permit to a university researcher to move the frogs onto the refuge.

"I have been asked many times by peers and friends if I had to make that decision again, would I have made the same decision and my answer is always the same: Without a doubt, it was the right decision for me and the resource," said Shifflett, who retired this May after a 38 year career in the FWS. "A former Director of the Service would always remind us 'Refuge Managers are all about saving dirt and protecting critters.' Politics change but saving dirt and critters has always remained the only constant which has directed my decisions."

Rather than spend months in his retirement fighting the criminal charges, Wayne Shifflett has decided to pay the fine. The criminal charges come more than a year and a half after his actions to save the frogs. The delay reflects months of back room pressure and meetings about whether Shifflett should be prosecuted even after he retired.

"This case is the perfect illustration of how federal wildlife policy is now being set by pencil pushers and political schemers rather than by experienced, dedicated professionals," Ruch added. "Regardless of the costs, Wayne Shifflett's decisiveness will pay dividends to the restoration of the Sonoran Desert ecosystem for generations to come."

The Justice Department citation can be found at: http://www.peer.org/docs/az/2005_21_2_shifflett_charges.pdf. Wayne Shifflett's Statement can be found at: http://www.peer.org/docs/az/2005_21_2_shifflett_statement.pdf

Source: *PEER News Release*, 2/21/05; and http://www.peer.org/news/news_id.php?row_id=481

Trends in Intersexuality of Cricket Frogs

Exposure of amphibian species to various anthropogenic endocrine disruptors has been listed as one of several potential causes of amphibian declines in recent years. A consortium of Illinois scientists under the leadership of Amy L. Reeder, Department of Animal Sciences at University of Illinois - Urbana-Champaign, examined the gonads of 814 cricket frogs *(Acris crepitans)* collected in Illinois and deposited in museum collections over the years to elucidate relationships between the decline of this species in Illinois and the spatial and temporal distribution of individuals with intersex gonads.

Compared with the preorganochlorine era studied (1852–1929), the percentage of intersex cricket frogs increased during the period of industrial growth and initial uses of polychlorinated biphenyls (PCBs) (1930–1945), was highest during the greatest manufacture and use of *p,p*-dichlorodi phenyltrichloroethane (DDT) and PCBs (1946–1959), began declining with the increase in public concern and environmental regulations that reduced and then prevented sales of DDT in the U.S. (1960–1979), and continued to decline through the period of gradual reductions in environmental residues of organochlorine pesticides and PCBs in the midwestern U.S. (1980–2001).

Cricket frog

The proportion of intersex individuals among those frogs was highest in the heavily industrialized and urbanized northeastern portion of Illinois, intermediate in the intensively farmed central and northwestern areas, and lowest in the less intensively managed and ecologically more diverse southern part of the state. Records of deposits of cricket frog specimens into museum collections indicate a marked reduction in numbers from northeastern Illinois in recent decades.

These findings are consistent with the hypothesis that endocrine disruption contributed to the decline of cricket frogs in Illinois.

Source: A. L. Reeder et. al. *2005. Environ Health Perspect* 113:261–265; available at: *http://dx.doi.org/*

Louisiana Coastal Restoration Plan Signed

In early February Louisiana Gov. Kathleen Blanco and Lt. Gen. Carl Strock , chief of engineers for the U.S. Army Corps of Engineers (Corps), signed documents committing them to the proposed $1.9 billion Louisiana Coastal Area Ecosystem Restoration Study. The documents include plans that federal, state and university officials have developed over a three year period to restore Louisiana's eroding coastline. They hope that Congress will approve and fund these documents as the master plan for saving the state's shoreline.

The documents included Gen. Strock's report on the restoration plan and the accompanying environmental impact statement, which will be forwarded to the secretary of the Army and then to President Bush and Congress. Blanco and Strock also signed an agreement reaffirming their commitment to follow the report. "It signifies the progress being made to reverse the decline and loss of the coastal wetlands, cypress swamps, marshes, barrier islands and other lands that comprise the nationally significant ecosystem of coastal Louisiana," Strock said.

Blanco reminded the audience that the restoration plan still needs congressional approval, and that Louisiana must persuade Congress to provide it with a continuing source of money from offshore oil production to pay the state's estimated $728 million share. And she warned Corps officials that the 10-year restoration plan is just the first part of a much larger $14 billion effort.

Congress is expected to include some form of the Louisiana Coastal Area plan in a version of the Water Resources Development Act that should be taken up this Spring. The same bill failed to make it out of the Senate last year. A version of the bill approved by the House authorized spending far less than the $1.9 billion on the restoration plan. If Congress approves the restoration plan, it must then appropriate the money, which is a separate process.

The State/Corps restoration plan contains five major restoration projects:

- Armoring a part of the shoreline of the Mississippi River-Gulf Outlet;
- A small diversion of Mississippi River water at Hope Canal into swamps surrounding Lake Maurepas;
- Rebuilding a part of the barrier islands and shoreline in the Barataria Basin, including the Caminada headland in Lafourche and Jefferson parishes near Port Fourchon and Shell Island in Plaquemines Parish;
- Diversion of river water into Bayou Lafourche at Donaldsonville; and
- Another diversion at Myrtle Grove on the West Bank of the Mississippi in Plaquemines Parish, with material dredged from the river bottom added to the water.

Source: Mark Schleifstein, *New Orleans Times Picayune*, 2/1/05

Water Rights vs Pollution Control Along the Arkansas River

Ever since the first settlers plowed up the prairie along the Arkansas River, farmers have flooded their fields with river water to grow crops. They quickly learned that the river was naturally salty and located their towns near river tributaries to find fresh water. But today the Arkansas is slowly poisoning the agricultural economy it helped create. Salt buildup in farm soil has slashed crop yields and high salt loads in the river have forced rural communities to confront huge drinking-water treatment bills, and provided a potential flash point of litigation between Kansas and Colorado, to say nothing of the impacts on stream ecology.

The lower Arkansas River in Colorado is the saltiest stream of its size in the U.S. Its underlying problem is geology. The river picks up salt as it cuts through ancient seabed formations on its route through Colorado's southern plains. And traditional flood irrigation — diverting river water across fields with canals, ditches and pipes — raises the salt content of the soil and the contaminant level of the river as it flows toward Kansas.

Neither state nor federal law regulates polluted farm runoff. Instead, people rely on underfunded incentive programs to address the problem. Colorado state law presents another obstacle by preventing water-quality regulations from interfering with water rights. But the economic toll is beginning to mount. Colorado State University (CSU) researchers have found that buildup of salt in farm soil has cut an average of 10% from per-acre yields in one 64,000-acre study area near La Junta. That loss translates to roughly $5.7 million/yr. Downstream near Lamar, pollution is worse. Preliminary data suggest losses may average 15%.

More than 851,000 tons of salt are deposited on farmland throughout the Lower Arkansas River Valley annually. Two towns have installed reverse osmosis treatment systems in an attempt to deliver more palatable tap water. But customers are feeling the bite. "It doubled our water rates," said Joe Kelly, the town's water department director. Many towns that haven't upgraded their water treatment plants are pursuing an alternative solution — they want the Bureau of Reclamation to build a $250 million pipeline from the Pueblo Reservoir to Lamar. The best way to keep river water clean, they argue, is not to take any water out of the river. Valley towns and cities may also have to make expensive sewage-plant upgrades to meet proposed state discharge limits on selenium, a naturally occurring salt that can be toxic to wildlife and livestock.

Though the costs imposed by chronic water pollution in the Arkansas are mounting, state and federal regulators lack strong laws to deal with it. Environmental law divides water pollution into two types: point and nonpoint source. Point-source pollution is discharged from specific sites, like industrial pipes or municipal sewage systems. These were the targets of the Clean Water Act (CWA), which was enacted in 1972 to improve waterways devastated by unregulated dumping of industrial wastes.

Nonpoint pollution is caused by runoff from broad areas such as urban streets, open-pit mines and agricultural fields. Congress specifically exempted agricultural runoff from the CWA. But as point sources were cleaned up, regulators realized nonpoint pollution caused just as much damage and is more difficult to control. The U.S. Environmental Protection Agency estimates that agriculture produces at least half of the pollution impairing the country's surface water.

And the Arkansas isn't the only Colorado river having trouble with nonpoint pollution. The reuse of surface and

groundwater for irrigation has also raised salinity levels in the lower South Platte River and its aquifer. And studies suggest that salinity drains up to $750 million/yr. from the economy of the Colorado River basin within the U.S.

Colorado has taken a first step toward addressing the Arkansas River pollution problem by designating the lower river from Pueblo to the state line as "impaired" for the salt selenium. The state has also committed itself to developing a new regulatory standard within 13 years, but the Water Quality Control Division has assigned the task a low priority. A further obstacle is the fact that Colorado's constitution prohibits water-quality regulators from interfering with the exercise of water rights.

Ultimately, the state and the water community must find a balance, said CSU engineering professor Timothy Gates, who studies pollution's impact on the valley. "We cannot continue to leave those two issues separate in the political world," he said, "because in the physical world they are closely linked." But in a region battered by drought and frightened by the prospect of cities siphoning more water out of the valley, not everyone thinks pollution is the region's biggest concern. "We don't have a water quality problem," said Dan Henrichs, superintendent of the *Rocky Ford High Line Canal Co.*, one of the biggest southeastern Colorado ditch companies. "We have a water quantity problem."

Arkansas Valley water-rights owners, for example, are under increasing pressure to sell their water to cities on the Front Range. Environmentalists and Kansans worry that current proposals to divert more water out of the valley would decrease river flows that now dilute salt concentrations. Already, three major water-supply projects are on the drawing board: the Arkansas Valley Conduit; Colorado Springs' Southern Delivery System; and a reservoir enlargement project known as the Preferred Storage Options Plan.

Originally proposed in the 1950s, the Arkansas Valley Conduit was never built because locals couldn't afford to pay their share. With supporters now pushing it as a water-quality solution, local and state officials have asked the federal government to provide about $187 million — 75% of the pipeline's cost. That would still require valley communities to kick in $63 million.

Crowley County Commissioner Matthew Heimerich, who operates a farm in Ordway, said agriculture needs to acknowledge that it's part of the water-quality problem. "None of us want to degrade the stream," he said. Some predict flood irrigation will go the way of the covered wagon. "We're irrigating the same way my great-granddad did," said Colin Thompson, who farms in Holly. "What business can say that? That's not very efficient."

Ongoing studies by Gates and other CSU researchers suggest the cycle of irrigation-amplified pollution can be broken but not without great expense. Gates said aging ditches, canals and other water-delivery systems need to be rehabilitated and modernized; subsurface drainage systems must be installed and maintained; new and more salt-tolerant crop varieties will have to be planted. Widespread adoption of drip irrigation, which delivers water directly to crop roots, could help save farming and improve environmental conditions in the river, Gates believes. But the cost of installing drip systems — up to $1,600 per acre — deters many farmers.

Much more money is needed to pay for basic research and for irrigation improvements, he said. "Quite frankly, we should have been studying this 15 years ago, but we weren't," Gates said. "Now it's coming back to bite us."

Theo Stein, *Denver Post*, 2/27/05

Dam Operator Not Liable for Downstream Flooding

In 1985, flooding caused by storms associated with Hurricane Gloria severely damaged property in Luzerne County, PA. Three homeowners affected by the flooding filed suit against *PG Energy*, the owner and operator of water supply dams in the watershed, seeking compensation for damages they claimed were caused by negligent dam design, maintenance, and operation. But the Pennsylvania Supreme Court in *Shamnoski v. PG Energy, 858 A.2d 589 (Pa. 2004)* determined that *PG Energy* was not negligent.

In one day in September 1985, Hurricane Gloria deposited more than six inches of rain over the Springbrook Creek watershed, a steep mountain waterway in Luzerne County near Scranton, PA. The plaintiffs lived in close proximity to Springbrook Creek, approximately one-half to three-quarters of a mile downstream and their homes were destroyed by the creek's floodwaters. *PG Energy* owned and operated four water supply dams upstream from the plaintiffs' property. These dams, built between 1893 and 1925, were designed to create water supply reservoirs for the collection of drinking water, not to control flooding. During Hurricane Gloria, the reservoirs filled to capacity and overflowed. The dams themselves, however, did not fail.

The Plaintiffs' suit claimed that *PG Energy's* dams must "be designed, maintained and operated so as to cabin and safely pass on the rain and floodwaters which accompany a storm of the magnitude of Hurricane Gloria," regardless of the dam's purpose. *PG Energy* argued that a dam operator's duty was limited to ensuring that its dam does not fail as a structural matter. Both lower courts (trial court and Superior Court) concluded that although *PG Energy's* dams did not fail, *PG Energy* "violated a duty to construct, maintain and operate them in a fashion that would have protected the downstream homeowners from these floodwaters, and that the homeowners' losses were the proximate result of that breach of duty."

But *PG Energy* appealed to the state Supreme Court and the case was accepted in order to examine "what legal duty a water supply reservoir/dam owner has to undertake with respect to its dams in order to protect downstream property owners against floodwaters caused in the aftermath of a storm of the magnitude of Hurricane Gloria." In their finding the Superior Court said that *PG Energy* was liable for damages resulting from the overflow of the dam because it failed to warn downstream communities of the dangers posed by the hurricane. The court relied on "negligence per se" to reach this conclusion. Negligence per se is a form of negligence that results from the violation of a statute.

The Superior Court ruled that *PG Energy* violated the Pennsylvania Dam Safety Act which imposes a legal duty on dam owners to "monitor, operate and maintain the facility in a safe condition" and notify appropriate authorities in downstream communities "of any condition which

threatens the safety of the facility, and take all necessary actions to protect life and property . . ." In the opinion of the Superior Court judges, the term "safety" referred to the security of downstream communities and therefore operators have a duty to warn even if the dam is structurally sound. *PG Energy* was therefore negligent because it violated the Dam Safety Act by failing to warn.

But the Supreme Court disagreed with the Superior Court and held that negligence per se had been improperly invoked. Generally, negligence per se is appropriate only when the statute at issue is sufficiently specific to leave little doubt that a person violating it deviates from a reasonable person standard. For example, motor vehicle statutes establishing maximum speed limits can be the basis for negligence per se because they impose strict standards. Statutes, however, requiring drivers to maintain reasonable speeds cannot support a finding of negligence per se because the "reasonableness" of a driver's actions will depend on the circumstances.

The court stated that the Dam Safety Act does not mandate particular actions for dam owners and therefore lacks the required specificity. The act simply requires operators to maintain the dam in a "safe condition" and take "necessary actions." The Supreme Court ruled that § 693.13 does not support a finding of negligence per se as it "sets forth a general standard of conduct . . . express[ing] the familiar and flexible reasonable man standard."

In order for *PG Energy* to be liable for the damage to plaintiffs' property, the company must have breached a recognized legal duty of care owned to the plaintiffs and its breach of that duty must have caused the plaintiffs' injuries. The Supreme Court held that § 693.13 does not impose a general duty of flood control for the protection of downstream homeowners, but rather imposes a duty on owners "to monitor, operate, and maintain the facility in a safe condition." "The Act may fairly be said to impose a duty upon dam owners to protect the public from foreseeable harms that would result from the failure of the facility - irrespective of what might occasion the danger of failure." *PG Energy's* dams did not fail. In fact, the dams provided a modicum of protection to downstream homeowners during the storm because the reservoirs were not filled to capacity prior to the storm, and therefore actually provided some flood control.

Despite the tragedy suffered by the plaintiffs due to the hurricane, the court refused to hold *PG Energy* responsible for the plaintiffs' damages because its dams remained structurally sound during the storm. The lower court judgments in favor of the plaintiffs were reversed and a judgment in favor of *PG Energy* was entered.

Source: Stephanie Showalter, *The Sand Bar*, Vol. 3.4

Court Rules on EPA Confined Animal Waste Controls

A federal appeals court ruled in late February that Bush administration regulations for managing animal waste from large agricultural operations violate the Clean Water Act (CWA), but stopped short of requiring permits for stormwater runoff from fields treated with animal waste. At issue were challenges by environmental and farming organizations that filed suit in federal appeals courts claiming the administration's 2003 revision of Confined Animal Feeding Operations (CAFOs) rules did not adequately protect public health and the environment or farmers' rights.

Inside a typical pig CAFO.

The *American Littoral Society*, *Natural Resources Defense Council* (NRDC), *Sierra Club* and *Waterkeeper Alliance* argued that under the rules, U.S. EPA allowed large facilities to violate federal water quality standards and CWA permitting requirements for the land application of animal waste, which when applied improperly can be washed by storms into waterways. Meanwhile, the *American Farm Bureau Federation*, *National Chicken Council* and the *National Pork Producers Council* argued that the rules authorize EPA to overextend its authority by requiring all CAFOs to apply for pollution discharge permits.

While the 2nd U.S. Circuit Court of Appeals in New York ruling did not provide a complete victory for either side, it forces state and federal authorities to review nutrient management plans for phosphorus and nitrogen when issuing a pollution discharge permit for CAFOs, and opened the permitting process to public comments.

The court ruled that EPA can no longer require all CAFOs to apply for a pollutant discharge permit unless there is a proven discharge. Richard Schwartz, who represented the pork producers and argued on behalf of all the farm groups, said most CAFOs do not illegally discharge pollutants because stormwater runoff is not regulated and other sources of discharge are usually controlled.

Stormwater runoff from fields properly treated with animal waste are exempt from permit requirements, a caveat that environmental groups unsuccessfully challenged in the two-year court battle. Environmentalists were disappointed with the ruling in favor of agricultural groups, saying the record shows that all CAFOs discharge pollutants. "It's impossible for them to operate facilities the way they have been without having any pollutants enter the water," said Melanie Shepherdson of the NRDC. "The court's ruling is somewhat perplexing," she said. The outcome of the court decision will depend on how EPA interprets the court ruling, said Richard Lobb, a spokesman for the *National Chicken Council*.

Siding with environmental groups, the court ruled that EPA must revise portions of the CAFO rule that regulate technology controls that reduce pathogens from swine, poultry and veal operations and reconsider federal and state wastewater limits beyond stormwater discharges. EPA officials said the CAFO rules would force an additional 11,000 animal farms to acquire point-source pollution permits under the National Pollutant Discharge Elimination System — more than tripling the number of currently permitted facilities.

The rules, which require CAFOs to develop comprehensive plans to manage manure runoff, will reduce annual

phosphorous discharges into U.S. waterways by 56 million pounds and nitrogen discharges by 100 million pounds per year, EPA officials said. Still, the rule represents a significantly relaxed version of the one proposed by the Clinton administration in 2000 by reducing the number of facilities that would fall under the regulatory scheme.

Many of the regulations are aimed at the nation's more than 10,000 large animal feeding operations, which house as many as 700 cows, 10,000 sheep or 55,000 turkeys. The administration had said the rule needed revisions to reflect the changing landscape of agriculture, which has shifted to a smaller number of larger animal feeding operations. EPA was required to revise its CAFO rules under a 1992 consent decree with NRDC. According to the EPA and the U.S. Dept. of Agricultural, the factory farm industry generates nearly 500 million tons of animal waste a year, said Shepherdson. EPA says CAFO waste includes nutrients and pathogens, as well as traces of arsenic, antibiotics, pesticides and hormones.

"This case sends a clear message to EPA that they can't use these permitting schemes that essentially allow industry to dictate the terms of the permits without any review and approval by state or EPA and without any public input," Shepherdson said.

Source: Tasha Eichenseher, *Greenwire*, 3/1/05

Pennsylvania Mining Subsidence Study

A five-year Department of Environmental Protection (DEP) study on the effects of coal mining subsidence in Pennsylvania, released on March 2, found that streams were damaged more than wetlands by underground mining. It also found that the number of subsidence complaints quadrupled over the period under study. Pennsylvania's mining law requires the department to issue reports on the effects of underground mining every five years and this is the second such report. It was prepared by researchers and students at California University of Pennsylvania.

The assessment reviewed DEP records from August 1998 to August 2003 related to 79 mines under 37,456 acres in 10 counties, mostly in southwestern Pennsylvania. Nine of the mines were longwall mines where coal was extracted in swaths hundreds of feet wide and thousands of feet long, far below the surface. Hydraulic supports are used during longwall mining to hold up the earth as machines carve out coal; but when the supports are removed, the ground subsides. Coal in the remaining mines under study was extracted using the room-and-pillar method, and a variation, that leaves pillars of coal behind to support the ground above. The less common full retreat method is a variation of room-and-pillar. Although less often, subsidence also sometimes occurs under room and pillar methods.

The study found that subsidence complaints increased from 50 in 1999 to 250 in 2003. It also noted that 115 miles of streams were undermined — the vast majority, 97 miles — by longwall mines — and loss of flow or pooling due to subsidence was reported on 22 different streams. In many cases stream flow eventually recovered but efforts to grout subsidence cracks in streambeds to stop dewatering were unsuccessful, the report said.

The report was critical of the DEP's record-keeping and urged it to standardize its terminology and its documentation of water loss complaints. The report found that in 120 of 268 claims the DEP ruled the mining company had "no liability" for water loss, but the department records failed to show a basis for that decision. The report also said that the state Mining Bureau doesn't have enough employees working on mining-related problems.

The report shows that most of 683 water loss claims filed with the department were the result of longwall mining impacts, and noted that almost 22% or 150 claims remain unresolved today. The report recommended that the DEP "take immediate action to reduce the large number of aged water loss claims." According to the report, permanent replacement water supplies were reestablished on average in 206 days for properties affected by room-and-pillar mines and in 441 days for longwall mines.

DEP Secretary Kathleen McGinty touted the report as an "independent assessment" that will help the department's ongoing examination of its permitting, record-keeping and enforcement work. "All of us want Pennsylvania's mining industry to be successful on the national and international level," McGinty said, "but we also have a responsibility to ensure public health and safety and protect the environment."

The *Pennsylvania Coal Association*, which represents the mining industry, said it hadn't had a chance to look at the report and couldn't comment immediately, but the *Raymond Proffitt Foundation*, an environmental group based in Philadelphia, disputed the findings. "I'm not surprised the DEP would commission a report saying it's not that damaging," said Joe Turner, the group's secretary and treasurer. "What's being put out by California University is certainly much different than the data we collected."

"I'm skeptical about claims that many or most streams are recovering because we have examples of streams like Laurel Run that don't recover," said John Hanger, president of *Citizens for Pennsylvania's Future*, called *PennFuture*, a statewide environmental organization that has been critical of state's longwall mining policies. "We're starting to get empirical data about what happens to streams that have been longwall mined and it shows that damage is real and most haven't fully recovered."

Meanwhile, in February the DEP admitted that it made a mistake in revising *UMCO Energy Inc.'s* permit to mine under a tributary of Maple Creek in Fallowfield, Washington County, without public notice, comment or a full assessment of the mining's impact on the stream. The department promised it wouldn't happen again in a settlement of the August appeal by *PennFuture* that was approved by the state Environmental Hearing Board.

The DEP had at first stopped *UMCO's High Quality Mine*, but then allowed it to use longwall mining under the small stream after the company agreed to post a $1.38 million bond to cover stream damages caused by mining subsidence. But the longwall mining caused immediate subsidence that, in this case, fractured the streambed and dried up the flow. "DEP violated the public notice and comment requirements of its own regulations, and did not fulfill important obligations like reviewing the comprehensive impact of this mine on area streams," said George Jugovic Jr., a *PennFuture* attorney.

Sources: Don Hopey, *Pittsburgh Post-Gazette*, 2/25 and 3/3/05; Dan Nephin, *AP/ Harrisburg Patriot News*, 3/2/05 and *Greenwire*, 2/28/05

Missouri River Drought and Controversy Continues

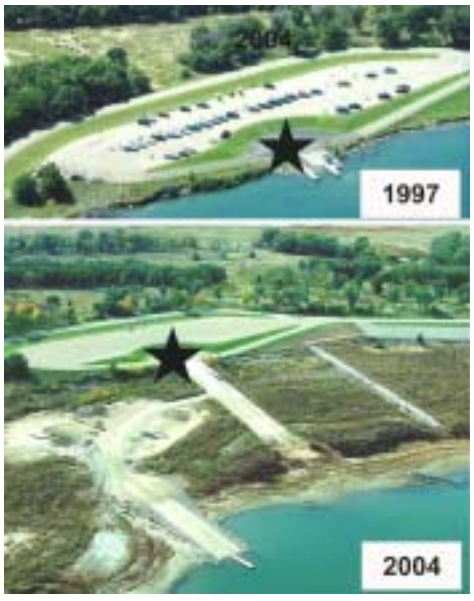
The Missouri River drought continues — the High Plains were bare of snow again this winter, and snow pack is at two-thirds of normal levels in the Rocky Mountains of Montana and Wyoming. The giant reservoirs — Fort Peck in Montana, Garrison in North Dakota, and Oahe in South Dakota (the largest storage reservoirs in the nation managed by the Corps) — normally have 57 million acre-feet (MAF) of water in storage, but they are now down to about 35 MAF. In 2003, runoff was 17.6 MAF, and last year it was only 16.6 MAF. Montana Gov. Brian Schweitzer said this year looks to be worse than the past six. "This has been some time in coming", he said, "and it's probably going to be around for a little while."

The 100 mile long Oahe Reservoir dropped to a record low last fall with surface water elevation down 44 feet from its peak in the late 1990s, when wind slopped water over the top of the emergency spillway. Now, more than a mile of dry land separates the spillway from the water. Where anglers once pursued trophy walleye, hunters now send their dogs in pursuit of pheasants. "Roughly half of that lake is gone today," said Wayne Nelson-Stastny, a fishery biologist for the South Dakota Department of Game, Fish and Parks. "The basin is really entrenched in a pretty significant drought right now," he said.

The figure at right shows the effect of the drought on water level elevation at Whitlock Bay boat ramp in Lake Oahe. The black star in the pictures locates a common reference point in each year. Note the size (for scale) and number (usage) of cars in 1997 vs 2004 at the two-stage, improvised boat ramp needed to reach the lake's low 2004 water levels.

Hydropower dams in the upper Missouri River are generating two-thirds of their usual capacity, and there is serious talk about the potential for power shortages and blackouts. The Western Area Power Administration (WAPA) markets Missouri River power to 300-plus customers, including municipal utilities, rural cooperatives, tribal governments, irrigation districts, federal and state agencies, and public utility districts that serve about 1.5 million industrial, business, farm, and household accounts. WAPA raised its rates for the region by an average of 15.6% last year, largely because of the continuing drought. The federal agency ran deficits the previous three years, because of low generation and high costs for purchasing replacement power, and faced the same problem in 2004. Generation last year was 65% of normal. Not only did the administration have to buy power on the market to fulfill its contracts; it lost revenue, because it couldn't sell surplus power. "My perspective is that too little attention has been given to the economic value hydropower provides to South Dakota and the region," said Jeff Nelson, general manager for *East River Electric Power Cooperative* in Madison, SD.

Meanwhile, Missouri River communities are spending millions of dollars to relocate water-supply pipes. Some boat ramps are closed, and wildlife departments have spent millions to extend and relocate those that remain open to preserve access to the lakes (see photo below). Some agricultural irrigators have given up chasing water and have shut off their pumps. And because not enough water is flowing into the reservoirs in the spring to match demand for power generation and navigation, fish reproduction has suffered. Some species of fish, especially rainbow smelt, a small finger-sized fish that is an important food source for game fish such as walleye and northern pike, lay their eggs in very shallow water. If the water level goes down, the fish eggs are exposed to the air and die.



Whitlock Bay boat ramp, Lake Oahe, SD 1997 and 2004.

Charles Murphy, chairman of the Standing Rock Indian Reservation in North and South Dakota, said low water on Lake Oahe led to siltation clogging the intake pipes on a water system. Schools, hospitals, businesses and 10,000 people were without water, he said. The tribe spent $3 million for a quick fix, to shuttle the elderly and hospital patients, and for temporary toilets. "People suffered and they don't want this crisis again," he said.

Downstream of the reservoirs, the commercial barge season was cut short by 47 days last year, the most ever, and will probably be shorter this year. Unless the drought breaks in the next year, officials say, it's probable there will be no shipping on the Missouri River in 2006. But the potential impact doesn't end there because the Missouri feeds water into the Mississippi River just north of St. Louis, helping to supply water for barges to negotiate difficult Mississippi River reaches. As the Missouri's flow lessens, potential trouble thus looms for shipping on the much busier Mississippi. "This has only happened once in more than 100 years of record keeping on the Missouri River, in the drought of the 1930s," said Paul Johnston, a spokesman in the Corps' Omaha, NE, district office.

In response to all of this, Missouri River governors, or their representatives, met in Sioux Falls, SD in early February in an effort spearheaded by South Dakota Gov. Mike Rounds (R) to reach agreement on adjusting the Missouri River navigation season to preserve reservoir capacity for the 2006 season. Gov. Schweitzer (MT/ D), North Dakota Gov. John Hoeven (R), and Nebraska Gov. David Heineman (R) all attended, as did governors' representatives from Missouri, Kansas and Iowa.

Gov. Rounds pushed for a resolution to keep as much water as possible in the reservoirs next year. If the drought continues, Rounds said, the amount of water held behind the dams probably will shrink to 31 MAF by March 2006. At that point, the Corps, under their Master Control Manual, would suspend barge traffic on the middle and lower River. Rounds said all Missouri basin states

would suffer, including possible power plant cutbacks and reduced access to water for public water systems and crop irrigation. He appealed to Missouri and other downstream states to support cutbacks this year to avoid the possibility of having no navigation season next year. Rounds and other officials have proposed that the Corps delay the start of this year's barge navigation season until May and release less water than normal throughout the season to preclude the season-long closure.

"We're not here to try to draw lines in the sand," Gov. Heineman said. "I'm optimistic that we'll continue to work toward a resolution of this where all the interests are balanced." He said Nebraska can support water-saving measures that comply with the Corps' Master Manual. "This is a much more complex issue than we all realize," Heineman said. "There are more competing interests than I envisioned. But I also sensed that all states want to find a solution".

Corps officials said its plan for operating the river this year emphasizes conservation. "We will look at every opportunity to work with the states to save water," said Gen. William Grisoli, the Corps' division commander. But Gov. Schweitzer said it is a question of priorities. "We have the ability in the system. There are dams," he said. "But as long as we make the priority navigation, it's going to put your interests — drinking water and power production — at risk."

But representatives from downstream states said farmers already have signed contracts for barge-delivered fertilizer to be delivered before the start of Rounds' proposed shortened navigation season. "Our businesses, our farmers, need reliability and certainty [with water flows], and thought when we got a new master manual even if they didn't like it — it would have some reliability and certainty," said Ron Kucera of the Missouri Department of Natural Resources.

Darrell Dorsey, of the Kansas City Board of Public Utilities said that pumping systems for power plants and water systems can take years to design and build at a cost that generally is passed on to the consumer. But Rounds and Hoeven frequently pointed out that low-water problems in their states will spread to downstream states at the 31 MAF trigger. When downriver flows are low enough, power producers "will take it in the shorts," Rounds said. "I did not realize that the persuasion of the barge industry would be greater than perhaps the persuasive discussion or points made by the power producing organizations or a whole lot of consumers in the lower basin," he told Kucera.

Rounds intimated later that this may be the only time for compromise. "I will tell you", he said, "that it will be our (South Dakota) position that should we not find compromise on this issue this year, when preclude occurs next year we will most certainly ask that it be fully enforced in an effort to conserve water for the following year." Schweitzer said the worry in his state is that with two years of low flow from the 31 MAF trigger, downstream states will argue they aren't getting their share of water and will make it a political fight in Washington, D.C. "We know preclude is not a good place to go politically," Schweitzer said. "We know there's a master manual and some highfaluting folks worked on this for a dozen years and now it's all cast in concrete, but when folks don't have water to drink in big cities it becomes a big problem, not a little problem like it is when its 10,000 people on an Indian reservation in North or South Dakota," Schweitzer said.

But with Missouri's representative voicing the most opposition, Rounds was only able to get agreement that the governors would work on a resolution encouraging the Corps to conserve water whenever possible. Much of the day's discussion simply reiterated the familiar themes — upstream states with the reservoirs want more water kept in the lakes for recreation and domestic water supplies, while downstream states want a steady flow for navigation, to cool power plants and for their municipal water systems.

Sources: David Hendee, *Omaha World-Herald*; Michele Linck, *Sioux City Journal*; Wayne Ortman, *AP/Kansas City Star*; *AP/Billings Gazette*, 2/8/05; Bob Mercer, *Boston Globe*, 3/7/05; and *Greenwire*, 2/8/05

Climate Change Update

According to NASA scientists, 2004 was the fourth-warmest year since temperature measurement began in the 19th century. It was marked by particularly warm weather in Alaska, the Caspian Sea region and the Antarctic Peninsula. Last year's temperatures continued a 30-year rise that is "due primarily to increasing greenhouse gases in the atmosphere," according to James Hansen, director of NASA's *Goddard Institute for Space Studies*. Hansen said a weak El Niño pattern could push temperatures up further in 2005 and it is possible that this year may eclipse 1998 as the warmest on record.

The announcement came as a new paper in the journal *Nature* corroborates the agency's findings that the world's warming trend is unlike any other over the past 2,000 years. Anders Moberg of Stockholm University studied indirect temperature records in tree rings, stalagmites and seabed layers, and found while there were warming trends during medieval times, no spikes in the last 2,000 years matched the temperature change since 1990.

Scientists at the *Scripps Institution of Oceanography*, part of the University of California at San Diego, also said in mid February that they have discovered the first clear evidence of human-produced warming in the world's oceans, a finding they say leaves little doubt that "greenhouse gases" are the main cause of global climate change. The team fed different scenarios into computer simulations to try to reproduce the observed rise in ocean temperatures over the last 40 years. Several scenarios were used to try to explain the oceanic observations, including natural climate variability, solar radiation and volcanic emissions, but all fell short. "What absolutely nailed it was greenhouse warming," said Dr Tim Barnett, a marine physicist at *Scripps.* This model reproduced the observed temperature changes in the oceans with a statistical confidence of 95%, conclusive proof — say the researchers — that global warming is being caused by human activities.

Even if environmental changes are made immediately, researchers said, some parts of the world — including the western U.S. — won't be able to stop dramatic water shortages over the next 20 years. Regional water supplies will be dramatically

affected. "The implications are huge . . . and in the short term, we're sort of screwed," Barnett said.

He called his findings so significant that the Bush administration should immediately convene research for solutions on the level of the Manhattan Project, the unprecedented World War II research operation that developed the atomic bomb. But a Bush administration spokesman downplayed the results. "Our position has been the same for a long time," said Bill Holbrook, spokesman for the White House Council on Environmental Quality. "The science of global climate change is uncertain." Holbrook said the administration has pledged nearly $2 billion a year to study climate change and is committed to policies that will reduce greenhouse gases significantly by 2012.

But the *Scripps* computer models and field tests show that heat and energy levels as deep as nearly a half-mile in some oceans have risen dramatically during the past 40 years, in direct conjunction with rising levels of carbon dioxide and other greenhouse gases. "The debate is over — our work really just nailed it," Barnett said. "If somebody from the White House or anyplace else says everything's still far too uncertain… that argument just no longer holds."

Meanwhile, Dr. Ruth Curry, a researcher at the *Woods Hole Oceanographic Institution* in Massachusetts, said that while many of the world's temperate zones are receiving less rain and snow, precipitation is shifting to the higher latitudes — toward the North and South poles. This in addition to melting snow and ice in the Arctic are adding fresh water to the North Atlantic, a situation that could disrupt the Gulf Stream — the natural "conveyor belt" which brings warm water from the tropics to the north and cold and salty water from the Arctic to the south. Scientists are worried that an accumulation of fresh water in the northern seas and the corresponding drop in salinity in the currents that feed the conveyor belt could actually stop its flow.

"These are the first steps that would constitute a movement toward a slowdown or shutdown of the ocean conveyer," Curry said. "The system is moving in that direction." Collapse of the Gulf Stream or what oceanographers call the Atlantic thermohaline circulation (THC) could send western Europe and eastern North America into a deep freeze.

Mike Schlesinger, from the *Climate Research Group* at the University of Illinois, said a 3 ^{o}C rise in temperature this century, which is well within current predictions, would lead to a 45% chance of the Gulf Stream halting by the end of this century and a 70% chance by 2200. But he said some sophisticated climate models show the current halting with as little as 2 to 2.5 ^{o}C rise in temperatures — "and that is what you could call dangerous climate change". The current, which carries one million billion watts of heat — a "petawatt" — from the tropics past Scotland and northwards to the Arctic is known to be weakening by about 10%, but the chance of it being switched off completely by climate change was previously considered remote. But Professor Schlesinger said that even if politicians imposed stringent carbon taxes to reduce emissions there was still a greater than one in four chance of the current being turned off. "Waiting 30 years to act increases the odds to more than one in three," he said.

Rising temperatures are already damaging ecosystems for birds that travel to the Arctic. In 1997, warming waters spawned a bloom of phytoplankton called coccolithofore, that colored the water and obscured fish that a bird called the short-tailed shearwater feeds on, said Sharon Smith, a researcher at the University of Miami. The result — hundreds of thousands of the birds starved to death in 1997 and for several years afterward.

Ricardo Letelier, a researcher at Oregon State University, has seen evidence for an even more ominous change. By warming the ocean's waters, rising levels of greenhouse gases might be disrupting the ability of oceans to continue absorbing carbon dioxide from the atmosphere. Marine organisms that form calcium carbonate shells help the oceans absorb carbon in atmospheric carbon dioxide. When those animals die, they sink to the bottom of the ocean and carry the carbon with them. Scientists have observed that changes in ocean temperature can upset the productivity of these creatures.

Scientists at Durham University, Edinburgh University and the *British Antarctic Survey* (BAS) say that the current retreat of ice shelves in the Antarctic due to global warming is nothing new — but this time the problem is manmade and therefore potentially more serious. Published in a recent article in the journal *Geology* the team of scientists analyzed sediments from the bottom of a freshwater lake close to the edge of the present George VI Ice Shelf. The results revealed that about 9,500 years ago the shelf retreated, allowing the sea to flood into the lake. The ice shelf didn't reform until 1,500 years later, and has been present ever since.

Dominic Hodgson, a BAS scientist said, "What this tells us is that ice shelves don't just break up because they get too big — as the global warning skeptics argue," he said. Previous periods of warming — about 9,500 years ago and some 2,000 years to 4,000 years ago — were the result of natural causes, including the ending of ice ages, rather than man's emissions and the ice shelves had been able to reform, he said. "This time, the problem is man-made and if we don't take steps, the damage will be worse," he said. "There is no room for complacency." Ice shelves are formed when glaciers flow into the sea and freeze, then coalesce with other frozen flows.

In a circumpolar investigation led by Canadian scientists and published by the *U.S. National Academy of Sciences* in late February clear signs of climate change were discovered in scores of Arctic lakes dating back to the mid-19th century, when the Industrial Revolution kicked off widespread burning of fossil fuels. The scientists concluded that warmer temperatures have pushed some plant and animal life in the lakes over an ecological threshold that won't be reversed for generations, if ever.

"We're seeing big changes occurring in lakes and ponds all around the Arctic. It's not just algae but also invertebrates like water fleas higher up the food chain," said University of Toronto professor Marianne Douglas, a polar lake expert and one of the lead researchers. The study also found the ecological changes became greater the farther north the lakes were located, just as average temperatures have risen more in the High Arctic than farther south at the Arctic Circle. Douglas said mud cores from 46 Arctic lakes in Canada and three other countries showed clear evidence of a longer growing season beginning as far back as the 1850s, well before the occurrence of thinning pack ice and starving polar bears

that are currently being linked to global warming. Russia, Norway and Finland provided the other research sites.

The long-term evidence in this study comes from the distinctive glassy casings of single-celled algae called diatoms that rain to the lake bottom as the algae die. Experts can read the past climate from the layers of sediment since some diatoms do better under ice and others in clear water. Douglas said the sediment cores suggest that many of the lakes were now ice-free a month longer than in the mid-1800s, doubling the growing season for some diatoms. This has produced a surge in *Cyclotella*, a diatom that thrives only under open water conditions.

Lead researcher John Smol of Queen's University said the study should put the final nail in the coffin of arguments that climate change is not happening. "This is a completely new independent set of data and wasn't included in earlier studies the skeptics spend so much time attacking," said Smol, who pioneered the effort. This view was echoed by John Hobbie, a leading American expert in Arctic lakes who was not one of the 26 researchers involved in the unprecedented circumpolar investigation. "We had thousands of years with no changes in the algae species. Now they've shown that changes occur in places where warming is going on and, more importantly, don't occur where there is no warming," said Hobbie, co-director of the renowned *Marine Biological Laboratory* at Woods Hole in Maine.

Smol also said ecosystems in the Arctic lakes would need several generations to switch back to their previous condition and that could happen only if the world actually reduced atmospheric levels of greenhouse gases like carbon dioxide. "We have low-productivity, sensitive ecosystems that are essentially cast into overdrive," said Alex Wolfe, a University of Alberta paleoecologist, speaking from the remote Norwegian island of Svalbard, where he is doing research. "I would stake my reputation against the lakes reverting back to what they looked like 1,000 years ago...ever," Wolfe added.

Meanwhile, soot pollution from southern Asia appears to be contributing to climate change at the North Pole, raising atmospheric temperatures and speeding up the melting of snow and sea ice, according to a study by NASA scientists. The researchers, who have been using satellite imaging to track the effects of soot, or black carbon emissions, believe they have found a link between the timing of Arctic warming and ice loss and deposits of tiny particles from man-made pollution during the late 20th century.

When soot particles fall on ice, they darken the surface. The seemingly minuscule shift in coloration can make the ice more prone to absorb sunlight instead of reflecting it, and can thus cause it to melt more easily. Similarly, tiny soot particles can warm the air and have been shown to alter weather patterns and affect the formation of clouds, which collect condensation around tiny airborne particles known as aerosols. The findings, which support earlier conclusions, demonstrate that the climate changes affecting the Arctic region are complex and may be a result of traditional pollution as well as global warming from the release of heat-trapping greenhouse gases. The findings also show that most of the pollution in the Arctic does not come from smokestacks and tailpipes in the developed world, but from industrial emissions in South Asia and forest fires and the burning of other vegetation around the planet.

Oceans will keep rising and the planet will keep warming for more than a century, even if people were able to freeze greenhouse-gas emissions at today's levels, according to two additional new studies. Sea levels would rise 10 to 20 inches per century for 400 years or more, said Tom Wigley, a senior scientist at the *National Center for Atmospheric Research* (NCAR) in Boulder, CO. "We've already done so much to the atmosphere that sea-level rise is just going to keep going, and there's just not much that we can do about it," he said. "We'd better learn to live with those future changes and develop strategies to reduce our vulnerability".

Wigley and NCAR senior scientist Gerald Meehl report their latest findings about "climate-change commitment" in the March 18 edition of the journal *Science*. Meehl calculated that in one likely scenario, the planet would warm about 1 ^{o}F in the next century, which may not sound like much, but that's a best-case scenario, given that greenhouse-gas emissions will most likely continue to rise, he said. Moreover, that increase is comparable to the warming seen in the last century, when extreme weather events such as heat waves became more common. Meehl said he also worries about a drop in the number of frost days — frost can kill insect pests, so warmer temperatures could mean more crop-munching bugs.

Scientists have long known that oceans react more slowly to climate change than the atmosphere, but the new papers detail how that behavior commits the planet to long-term warming. Wigley, compared the climate situation to driving a car: "If you take your foot off the accelerator, the vehicle doesn't stop; it just keeps going for a while," he said. "That's essentially what's happening because of the massive thermal inertia of the ocean." Carbon dioxide gas has a lifetime of about a century, so gases pumped into the air today will continue trapping heat long into the future. That heat will warm the air, land surfaces and the ocean. As the heat creeps deeper and deeper into the ocean, the warmed water expands, resulting in sea-level rise. "Because the ocean takes longer to warm up than the land or the air, the sea level will continue to rise over several centuries," said Meehl, who used two of NCAR's global-coupled models, or GCMs, in his study. Melting of ice sheets and glaciers also will contribute to the rise. "I think people have thought that if the problem gets bad enough, OK, we'll just hit the stop button on the greenhouse gas increases, and that'll solve the problem," Meehl said. "But it's not that easy."

Meehl said he hoped their study results are interpreted as cause for action, not pessimism, but Roger Pielke Jr., director of the University of Colorado's *Center for Science and Technology Policy Research*, wasn't so upbeat. "This may reinforce an existing gridlock" between pessimists and activists, said Pielke,. "To present them (GCM results) as predictions is overstating their capabilities," Pielke said. "They are valuable tools to study climate processes but are not skillful climate prediction tools." But Meehl said the latest-generation models are more realistic and reliable than their predecessors. And the results they yield agree, in general, with earlier predictions about sea-level rise. Over the past century, global temperatures increased about 1 degree and sea levels rose 6 to 8 inches.

The second, more unusual climate study, enlisted the services of thousands of volunteers around the world to run different versions of the same model with their computers' spare capacity. The

study, called *climateprediction.net* and funded by Britain's *Natural Environment Research Council*, was run as a screensaver on idle computers. The program simulated what would happen if carbon dioxide levels in the atmosphere were double those of the 18th century, before the Industrial Revolution, the situation predicted by the middle of this century.

David Stainforth, research fellow at Britain's Oxford University and the chief scientist for *climateprediction.net*, said processing the results showed the Earth's climate is far more sensitive to increases in man-made greenhouse gases than previously realized. The team hopes to refine a long list of atmospheric and oceanic variables, and eventually produce a 21st-century forecast that neither overhypes nor underestimates warming scenarios. It's a tall order, but more than 95,000 volunteers from 150 countries have participated since the experiment's formal launch in September 2003, running about 60,000 simulations. Together, the volunteers simulated more than 4 million model years, donated 8,000 years of computer time and exceeded the processing power of the world's largest supercomputers.

Published in a late January issue of the journal *Nature*, the study focused on about 2,000 of those simulations, each one tweaking a half-dozen variables concerning rainfall and cloud formation. The model versions that first proved their mettle in calibration and control tests were then allowed to formulate a response to a doubling of carbon dioxide levels, currently at 379 parts per million. Although many of the models predicted a long-term temperature rise of about 6 °F, the range extended from 3.4 degrees to more than 20 °F, far higher than anticipated. Mr Stainforth said: "…It is possible that even present levels of greenhouse gases maintained for long periods may lead to dangerous climate change... When you start to look at these temperatures, I get very worried indeed." Stainforth said he hoped his group's results would add a sense of urgency to the issue rather than be construed as "fear-mongering." Gavin Schmidt, a climate modeler at NASA's *Goddard Institute for Space Studies* in Manhattan, urged caution, however, arguing that many of the extreme predictions would have fallen by the wayside under more realistic constraints based on past climate records.

In his study, NCAR's Meehl determined that if current concentrations of carbon dioxide and other greenhouse gases could be frozen now — an impossibility, given ongoing emissions — the planet would warm 1 °F and sea levels would rise at least 8 inches by 2100. Under various scenarios involving continued emissions increases, Meehl found that sea would rise 15 to 24 inches by 2100. But in its 2001 climate-change update, the authoritative *Intergovernmental Panel on Climate Change* projected a sea-level rise of 3.6 to 35.2 inches by 2100, with a best-guess estimate of 19.2 inches. It's too late to avoid some future sea-level changes. A sea-level rise of 20 inches would put at risk tens of millions of people living in low-lying areas and on islands, mainly in the Pacific and Indian oceans and the Caribbean, Vivien Gornitz, a sea level-rise expert with NASA said.

Humans now pump the equivalent of about 7 billion tons of carbon into the air each year in the form of carbon dioxide gas. Under a "business-as-usual" scenario in which little is done to curtail the growth of emissions, 20 billion tons of carbon will enter the atmosphere each year by 2100, NCAR's Wigley said. But there's still time to avert the most drastic shifts if worldwide greenhouse emissions are cut below present levels, NCAR's Meehl and Wigley said. It would require a commitment far beyond the reductions required by the *Kyoto Protocol*, which went into effect this year without U.S. participation.

While the concept of climate-change commitment isn't new, these fresh results "tell us what's possible and what's realistic" and that for the immediate future, "prevention is not on the table," University of Colorado's Pielke said. To Pielke and others, this means adaptation should be given a much higher priority than it has received to date. "There's a cultural bias in favor of prevention," he says. But any sound policy includes preparation as well, he adds. "We have the scientific and technological knowledge we need to improve adaptation" and apply that knowledge globally.

Meanwhile, a recent Massachusetts Institute of Technology (MIT) survey shows that the average American knows nearly nothing about efforts to reduce greenhouse gases and is confused about the effects of nuclear power and renewable energy, and researchers say this has serious policy implications. MIT drew these conclusions from a survey of 1,200 people on a range of climate change-related questions.

The important conclusions from the survey follow:

- The environment is not a pressing concern for the majority of the public.
- Global warming is not the top environmental concern (even among those who are concerned about the environment).
- Very few people in the U.S. have heard of carbon dioxide capture and storage (CCS).
- Those who have heard of CCS are no more likely to know what environmental concern it addresses than those who have not heard of CCS.
- A large portion of the public supports investment in renewable energy technologies, but that support decreases when cost information that suggests they are more expensive than other climate mitigation technologies is provided.

Sources: Andrew C. Revkin, *New York Times*, 2/10/05; Bob Keefe, *The Atlanta Journal-Constitution*, 02/18/05; Paul Rincon, *BBC News*, 2/17/05; Bruce Lieberman, *San Diego Union-Tribune*, 2/18/05; Sue Leeman, *San Francisco Chronicle*, 2/24/05; Paul Brown, *The London Guardian*, 2/2/05; Peter Calamai, *Toronto Star*, 3/1/05; Julianna Kettlewell, *BBC News Online*, 3/1/05; Katy Human, *Denver Post*, 3/18/05; Jim Erickson, *Rocky Mountain News*, 3/18/05; Mike Toner, *The Atlanta Journal-Constitution*, 03/18/05; Peter N. Spotts, *The Christian Science Monitor*, 3/18/05; Bryn Nelson, *Newsday*, 1/27/05; Steve Connor, *The London Independent*, 1/27/05; Patricia Reaney, *Reuters*, 1/26/05; Miguel Bustillo, *Los Angeles Times*, 3/24/05; *Massachusetts Institute of Technology survey*; Brian Stempeck *Greenwire*, 3/24/05; and *Greenwire*, 1/27, 2/10, 2/17, 2/18, 2/24, 3/1 and 3/18/05

Environmental Issues May be Uniting the Left and Right

According to Paul Nussbaum of the *Philadelphia Inquirer*, environmental issues, especially at the state and local levels, are bringing together conservatives and liberals who agree on little else, providing common ground in an increasingly polarized nation. And some Republicans and Democrats see environment-related agreements as a way to build a

broader consensus. "I have formed relationships with members of the other party based on our interest in the environment," said Rep. James Saxton (R/NJ), one of the most pro-environment Republicans in Congress, according to the *League of Conservation Voters'* (LCV) annual scorecard. "I'm still on the conservative side, and they're still what I'd call liberal, but we now have a kind of bond that you get with people you work closely with."

Conservatives such as pro-gun hunters and antiabortion evangelicals are making common cause with pro-abortion-rights, gun-control liberals on land conservation, pollution, and endangered-species protection, Nussbaum says. "We've heard a lot about the death of environmentalism, but I think what we're seeing is the rebirth of environmentalism. We're going back to where we were in the 1970s," said Deb Callahan, president of the LCV. "We're building a populist movement." Callahan said 90% of the 18,000 campaign volunteers who worked for the league last fall had not been members of environmental organizations.

"You have a new politics overlaid on the old that talks about the environment," said Robert J. Brulle, associate professor of sociology and environmental policy at Drexel University. "About 70% of the issues still break down along the old lines, but for 30 or 40% of them, the traditional left-right dichotomy doesn't work anymore." "The strangest bedfellows I've ever seen are Earth Firsters and evangelical Christians," he said. Brulle said the blurring of ideological lines on the environment is apparent in Washington — "When you look at this Congress, it's easily the most conservative in 50 years, but the Clear Skies bill didn't even make it out of committee and the opening up of ANWR [Arctic National Wildlife Refuge] won by a single vote."

At the ballot box, on issues such as land preservation, water quality, renewable energy and public transit, American voters crossed party lines to approve about 75% of environment-related ballot measures last November, even as they chose George Bush over John Kerry for president Nussbaum said. Most Americans — 61% — say they are active in the environmental movement or sympathetic toward it, according to a 2004 Gallup poll. That number is down from 71% four years earlier. Thirty percent said they were "neutral" toward environ-mentalism in 2004, up from 23% in 2000. Local and state issues often appeal across political divides, as shown in the 2004 election. Nationwide, 162 of a record 217 land-preservation ballot measures were approved, according to the *Trust for Public Land*, a land conservation organization. Nussbaum gave other examples from Montana, Colorado, Georgia, Florida.

Most evangelical Christians, a pivotal conservative group for Bush in the last election say they favor strict rules to protect the environment even if they cost jobs or result in higher prices, according to the *2004 National Survey of Religion and Politics*. "Evangelicals are more sympathetic to the environmental movement than people think," said Rich Cizik, vice president for governmental affairs for the *National Association of Evangelicals*. "The stereotype of evangelicals is that we're all sitting at home reading *Left Behind* or out pillaging and plundering the environment. That's just not the case." The evangelical association's manual on public policy says, "We are not the owners of creation, but its stewards, summoned by God 'to watch over and care for it.' This implies the principle of sustainability; our uses of the Earth must be designed to conserve and renew the Earth rather than to deplete or destroy it."

Hunters and fishermen, typically conservative in politics, can be a powerful pro-environment force, Nussbaum says. In 2003, sportsmen's groups succeeded where traditional environmental groups had failed in lobbying the Bush administration to scrap plans to reduce protections for isolated wetlands — critical habitat for fish and wildlife and essential to waterfowl and duck hunting. "Our interests sometimes merge," said James D. Range, chairman of the *Theodore Roosevelt Conservation Partnership*, a coalition of hunting and fishing organizations. "Environmentalists for a long time didn't want to talk to the conservation community... but now, I think the environmentalists realize they need an ally and that they're going to have to negotiate what many would perceive as a more reasonable position to go forward. They're going to do that, and that common ground is where progress is going to be made."

Jim DiPeso, policy director for *Republicans for Environmental Protection*, a small national group based in Albuquerque, NM, said environmentalists need to do a better job of linking economic and environmental issues. Recent Gallup polling indicates Americans are interested in the economic impact of environmental protection. In 2004, 49% said protection of the environment should be given priority even at the risk of curbing economic growth, down from 69% in 2000. Those who felt economic growth should be given priority, even if the environment suffers, rose from 26% in 2000 to 44% in 2004. "The lesson that environmentalists really need to learn is that when you're talking about environmental protection, you have to frame it for the audience and community that you're trying to reach," DiPeso said. "You need to show tangible, concrete benefits that are relevant to people's lives. It's time to bring environmental benefits back to earth."

Conservative voters who typically oppose increased government spending or tax increases often support spending for land preservation because it "delivers tangible results, close to home," said Ernest Cook, senior vice president and director of conservation finance for the *Trust for Public Land*. He noted that 97 of the nation's 100 fastest-growing counties voted for Bush last November, but that many of those same counties recognize "a great need to set aside land for conservation purposes." "We are translating what people already know and feel into action," Cook said. "People understand more about the environment than we give them credit for."

Source: Paul Nussbaum, *Philadelphia Inquirer*, 3/22/05

Student Ocean (Hypoxia) Conference

The National Mississippi River Museum & Aquarium (NMRMA) Coastal Ecosystem Learning Center (CELC) has announce a five-state *Student Ocean Conference* for high school teachers and their students to be held at the NMRMA museum in Dubuque, IA on May 18-19. The conference is free to participants through funds from the *National Geographic Education Foundation* in partnership with *Coastal America*. Participants will explore issues about the environment; specifically

hypoxia, the Mississippi River Watershed and its link to the Gulf of Mexico.

Students will also gain exposure to regional and national environmental leaders. Dr. Sylvia Earle, one of *National Geographic's* seven *Explorers-in-Residence* will be the keynote speaker. NMRMA-CELC conference will provide unmatched learning opportunities for teachers and students.

Contact: Mark Wagner, Education Director, (563) 557-9545, mdwagner@rivermuseum. com

International Conference on Rivers

An *International Conference on Rivers and Civilization: Multidisciplinary Perspectives on Major River Basins* has been scheduled for June 25-28, 2006 in La Crosse, WI. This international conference sponsored by the University of Wisconsin-La Crosse is the third in a series of such conferences on major river basins. The first was held at Dubna University (Russia), along the Volga River in July 2002, and the second at Assiut University (Egypt), along the Nile River in October 2003.

The 2006 conference is targeted for a multidisciplinary audience from the sciences and humanities. Headlining the conference will be keynote speaker, Jared Diamond, winner of the Pulitzer Prize.

Additional invited speakers include internationally renown scholars such as Wendy Doniger (USA), David Dudgeon (China), Fekri Hassan (England), Robert Howard (USA), Donna Mergler (Canada), and Christer Nilsson (Sweden).

Topics to be covered at the conference include Ecology of River Basins; Socio-economic Impact and Sustainability; Ecological Restoration; Historical Development; Literature and the Arts; and Contemporary Water Resource Use. In addition to these general topics, conference organizers encourage comparative approaches to the analysis of river basins. All sessions will be conducted in English.

Information and deadlines for the conference can be accessed online at: http://www.rivers2006.org/. Contact: Jim Wiener, University of Wisconsin-La Crosse, (608) 785-6454, wiener.jame@uwlax.edu

Meetings of Interest

May 9-13: Fifth International Symposium on Sturgeon, Ramsar, Iran. See www.iss5.org. Contact M. Pourkazemi, pourkazemi@iss5.org, +98 131 6606733.

May 15-18: 2005 Freshwater Mussel Conservation Society Symposium. Radisson Riverfront Hotel, St. Paul, MN. See: http://ellipse.inhs.uiuc.edu/FMCS/Symposium/2005FMCSregistration.doc

May 20-24: National River Rally 2005, Keystone Resort, Keystone, CO. See: http://www.rivernetwork.org/rally

May 22-25: 9th Annual Missouri River Natural Resources Conference, Ramkota Hotel, Pierre, SD. Contact: Jim Riis, (605) 223-7701, jim.riis@state.sd.us. See: http://infolink.cr.usgs.gov/events/05.htm

May 23-27: B04: Interactions Between Physical and Biological Processes in Riverine Landscapes: New Insights from Interactive Research, New Orleans, LA. See: www.agu.org/meetings/sm04/.

Jun 3-8: 2006 International Symposium on Society and Resource Management, Vancouver, British Columbia, Canada. Contact: Robert Ditton, r-ditton@new.tamu.edu, (979) 845-9841.

Jul 6-11: American Society of Ichthyologists and Herpetologists, Tampa, FL. Contact: Mark Pyron, MPYRON@bsu.edu, (765) 285-8852.

Jul 12-14: River and Lake Restoration: Changing Landscapes, UCOWR/NIWR conference (Universities Council On Water Resources). See: http://ucowr.siu.edu/

Jul 18-22: Seventh International Congress on the Biology of Fish, St. John's, Newfoundland, Canada. Contact: Bill Driedzic, wdriedzic@mun.ca.

Aug 16-19: Second North American Lake Trout Symposium, Yellowknife, Northwest Territories, Canada. See: www.laketrout symposium2005.ca/. Contact: Dave Tyson, tysond@dfo-mpo.gc.ca.

Sep 11-15: 135th Annual Meeting of the American Fisheries Society, Anchorage, AK. Contact: Betsy Fritz, bfritz@fisheries.org, (301) 897-16, ext. 212.

Sep 11-23: Environmental Leadership Course, National Zoo's Conservation and Research Center, Front Royal, VA. See www.si.edu/simab. Contact Jennifer Sevin, sevinj@si.edu.

Sep 12-18: The Society for Ecological Restoration World Conference on Ecological Restoration: A Global Challenge, Zaragoze, Spain. See www.ser.org/content/2005Conference.asp

Oct 16-19: 59th Annual Conference of the Southeastern Association of Fish and Wildlife Agencies: When Practice Meets Policy, St. Louis, MO. See www.sdafs.org.

Nov 9-11: 25th Annual Symposium of the North American Lake Management Society: Lake Effects: People/Water Explorng the Relationship, Madison, WI. See www.nalms.org. Contact Carol Winge, winge@nalms.org, 608/233/2836.

Nov 13-17: 26th Annual Meeting of the Society of Environmental Toxicology and Chemistry: Environmental Science in a Global Society: SETAC'S Role in the Next 25 Years, Baltimore, MD. See www.setac.org.

Feb 8-12, 2006: Southern Division American Fisheries Society Spring Meeting, San Antonio, TX. See http://www.sdafs.org/meetings/2006. Contact Dave Terre, dave.terre@tpwd.state.tx.us, 903/566-1615.

Jun 25-28, 2006: International Conference on Rivers and Civilization: Multidisciplinary Perspectives on Major River Basins, La Crosse, WI. Contact: Jim Wiener, University of Wisconsin-La Crosse, (608) 785-6454, wiener.jame@uwlax.edu

Congressional Action Pertinent to the Mississippi River Basin

Climate Change

S. J. RES. 5. Feinstein (D/CA) and 13 Co-Sponsors. Expresses the sense of Congress that the United States should act to reduce greenhouse gas emissions.

S. 245. Collins (R/ME) and 5 Co-Sponsors. Provides for the development and coordination of a comprehensive and integrated U.S. research program that assists the people of the U.S. and the world to understand, assess, and predict human-induced and natural processes of abrupt climate change.

S. 342. McCain (R/AZ) and 12 Co-Sponsors and **H.R. 759.** Gilchrest (R/MD) and 25 Co-Sponsors. Provides for a program of scientific research on abrupt climate change, to accelerate the reduction of greenhouse gas emissions in the United States by establishing a market-driven system of greenhouse gas tradeable allowances, to limit greenhouse gas emissions in the United States and reduce dependence upon foreign oil, and ensure benefits to consumers from the trading in such allowances.

S. 386. Hagel (R/NE) and 3 Co-sponsors. Directs the Secretary of State to carry out activities that promote the adoption of technologies that reduce greenhouse gas intensity in developing countries, while promoting economic development, and for other purposes.

S. 387. Hagel (R/NE) and 3 Co-Sponsors. Amends the Internal Revenue Code of 1986 to provide tax incentives for the investment in greenhouse gas intensity reduction projects, and for other purposes.

S. 388. Hagel (R/NE) and 3 Co-sponsors. Amends the Energy Policy Act of 1992 to direct the Secretary of Energy to promote the adoption of technologies that reduce greenhouse gas intensity and to provide credit-based financial assistance and investment protection for projects that employ advanced climate technologies or systems, to provide for the establishment of a national greenhouse gas registry, and for other purposes.

H. R. 955. Olver (D/MA) and Gilchrest (R/MD). Amends the Clean Air Act to establish an inventory, registry, and information system of U.S. greenhouse gas emissions to inform the public and private sectors concerning, and encourage voluntary reductions in, greenhouse gas emissions, and for other purposes.

Conservation

S. 260. Inhofe (R/OK). Authorizes the Secretary of the Interior to provide technical and financial assistance to private landowners to restore, enhance, and manage private land to improve fish and wildlife habitats through the Partners for Fish and Wildlife Program.

S. 339. Reid (D/NV) and 4 Co-Sponsors. and **H. R. 731.** Udall (D/CO) and Otter (R/ID). Reaffirms the authority of States to regulate certain hunting and fishing activities.

S. 421. Lott (R/MS) and Kohl (/WI). Reauthorizes programs relating to sport fishing and recreational boating safety, and for other purposes.

H. R. 524. Berkley (D/NV). Amends the Internal Revenue Code of 1986 to provide incentives for the conservation of water.

Endangered Species Act (ESA)

H. R. 93. Gilchrest (R/MD). Assists in the conservation of flagship species throughout the world.

H.R. 1299. Cardoza (D/CA) and 16 Co-sponsors. Amends the ESA to reform the process for designating critical habitat under that Act.

Energy

S. 232. Smith (R/OR). Authorizes the Secretary of the Interior, acting through the Bureau of Reclamation, to assist in the implementation of fish passage and screening facilities at non-Federal water projects, and for other purposes.

H. R. 140. McHugh (R/NY). Promotes use of anaerobic digesters by agricultural producers and rural small businesses to produce renewable energy and improve environmental quality.

H. R. 174. Millender-McDonald (D/CA). Encourages greater use of geothermal energy resources.

Federal Water Pollution Control Act (FWPCA) Amendments:

H. R. 74. Davis (R/VA). Amends the FWPCA to impose limitations on wetlands mitigation activities carried out through the condemnation of private property.

H. R. 1356. Oberstar (D/MN) and 125 Co-sponsors. Amends the FWPCA to clarify the jurisdiction of the U.S. over waters of the U.S.

Invasive Species

S. 363. Inouye (D/HI) and 3 Co-Sponsors. Amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 to establish vessel ballast water management requirements, and for other purposes.

S. 507. De Wine (/OH) and 4 Co-Sponsors. Establishes the National Invasive Species Council, and for other purposes.

H. R. 489. Pearce (R/NM). Provides for an assessment of the extent of the invasion of Salt Cedar and Russian Olive on lands in the Western U.S. and efforts to date to control such invasion on public and private lands, including tribal lands, to establish a demonstration program to address the invasion of Salt Cedar and Russian Olive, and for other purposes.

Mining

S. RES. 64. Jeffords (I/VT) and 7 Co-Sponsors. Expresses the sense of the Senate that the U.S. should prepare a comprehensive strategy for advancing and entering into international negotiations on a binding agreement that would swiftly reduce global mercury use and pollution to levels sufficient to protect public health and the environment.

H. R. 905. Cubin (R/WY). Amends the Mineral Leasing Act to provide for the development of Federal coal resources.

H. R. 1165. Kanjorski (D/PA) and 6 Co-Sponsors. Amends the Internal Revenue Code of 1986 to allow a credit against income tax to holders of bonds issued to

finance land and water reclamation of abandoned mine land areas.

H. R. 1265. Udall (D/CO). Provides a source of funding for the reclamation of abandoned hardrock mines, and for other purposes.

H. R. 1266. Udall (D/CO) and Salazar (D/CO). Facilitates the reclamation of abandoned hardrock mines, and for other purposes.

Public Lands

H. R. 599. Udall (/CO) and Tancredo (R/CO). Provides a source of funds to carry out restoration activities on Federal lands under the jurisdiction of the Secretary of the Interior or the Secretary of Agriculture, and for other purposes.

H. R. 975. Tancredo (R/CO) and 5 Co-Sponsors. Provides consistent enforcement authority to the BLM, the NPS, the USFWS, and the FS to respond to violations of regulations regarding the management, use, and protection of public lands under the jurisdiction of these agencies, and for other purposes.

Water Resources

S. 353. Conrad (D/ND) and Dorgan (D/ND). Amends the Water Resources Development Act of 1999 to direct the Secretary of the Army to provide assistance to design and construct a project to provide a continued safe and reliable municipal water supply system for Devils Lake, ND.

H. J. RES. 3. Davis (R/VA). Acknowledges a long history of official depredations and ill-conceived policies by the U.S. Government regarding Indian tribes and offers an apology to all Native Peoples on behalf of the U.S.

H. R. 109. Herseth (D/SD). Provides compensation to the Lower Brule and Crow Creek Sioux Tribes of South Dakota for damage to tribal land caused by Pick-Sloan Projects along the Missouri River.

H. R. 135. Linder (R/GA) and 8 Co-Sponsors. Establishes the "Twenty-First Century Water Commission" to study and develop recommendations for a comprehensive water strategy to address future water needs.

H. R. 391. Leach (R/IA). Directs the Secretary of the Army to convey the remaining water supply storage allocation in Rathbun Lake, Iowa, to the Rathbun Regional Water Association.

H. R. 487. Pearce (R/NM). Imposes limitations on the authority of the Secretary of the Interior to claim title or other rights to water absent specific direction of law or to abrogate, injure, or otherwise impair any right to the use of any quantity of water.

H. R. 494. Rohrabacher (R/CA). Amends the Water Resources Development Act of 1986 to expand the authority of non-Federal interests to levy harbor fees.

H. R. 1368. Burgess (R/TX) and 2 Co-sponsors. Provides the Secretary of the Army with additional and enhanced authority with respect to water resources projects, and for other purposes.

H. R. 1386. Mr. Hastings (/FL) and 24 Co-sponsors. Establishes a National Drought Council within the Department of Agriculture, to improve national drought preparedness, mitigation, and response efforts, and for other purposes

Source: http://www.gpoaccess.gov/bills/index.html

River Crossings

Mississippi Interstate Cooperative Resource Association
P.O. Box 774
Bettendorf, IA 52722

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