

River Crossings

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National Fish Habitat Initiative

National conservation leaders have agreed that something must be done to reverse the decline, and destruction of aquatic habitat. In response they have endorsed the National Fish Habitat Initiative (NFHI), to harness the energies, expertise, and existing partnerships of State and Federal agencies and conservation organizations. Their goal is to focus national attention and resources on common priorities to improve aquatic habitat health. Several working groups and teams have been formed to manage NFHI activities



The channelized (right) and unchannelized (left) Missouri River showing the habitat lost when a river is channelized for navigation.

The NFHI Core Work Group (CWG) is developing the *National Fish Habitat Action Plan* (NFHAP). Members consist of representatives from State and Federal governments, and partners engaged in aquatic habitat conservation efforts. The Work Group plans to complete work on the NFHAP by March 2006. The draft is available online at <http://www.fishhabitat.org/plan/default.htm>.

The NFHI Science and Data Team is charged with developing the *National Status of the Habitat Report*, including measures to allow for monitoring and reporting on progress. The team is focusing on developing a habitat classification and condition analysis tool that uses standard variables and scoring to

assess overall conditions in both inland and coastal areas. This tool will provide a multiple-scale framework (from local to regional to national) to examine habitat conditions within classified groups,

allowing easy integration of new information from localized efforts. This will also help professionals learn and share habitat improvement techniques among similar systems. Some of the standard variables

recommended for habitat condition and trend assessments are levels of land use, connectivity of habitats, hydrology modification, habitat modification, loss of habitat, and water quality and biological disturbance (such as nonnative species influences). In addition to identifying ways to consolidate existing data for NFHI efforts, the team also is making sound recommendations on the most important data gaps to fill in the future.

The NFHI Communications Team is currently working with the CWG to determine how to interact with the *National Fish and Wildlife*

Foundation's (NFWF) "More Fish" campaign, which will complement and raise funding for NFHI projects. A website for the Campaign has been established at <http://www.morefish.org>.

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There are currently over 650 individuals representing over 270 organizations who have signed on via the www.fishhabitat.org website. Companies are encouraged to take a leadership role in carrying out grassroots habitat restoration and promoting participation from others.

The NFHI Development Team is building its strategy for leveraging funding. NFWF Assistant Director of Development Mari Lou Livingood, said the foundation hopes to serve as the hub for major corporate support for NFHI habitat restoration in both coastal and inland waters. The *More Fish* campaign is NFWF's highest priority, she said, with a goal of raising \$25 million in five years from corporations, philanthropic foundations and individuals — money that will be matched or otherwise leveraged to reach \$100 million or more for a NFHI grant program to be administered by the foundation.

Bass Pro Shops, a lead partner in NFHI's development and the *More Fish* campaign, has stepped up as NFWF's first committed corporate fund-raising partner. NFWF and *Bass Pro Shops* have begun to use the retailer's numerous store openings as opportunities to raise funds and promote awareness of the NFHI in surrounding communities. According to Martin MacDonald, head of *Bass Pro Shops* corporate public relations, the company has pledged 10% of its sales during each store's ribbon-cutting "evening for conservation." This is supplemented by vendors who agree to commit a percentage of their sales. When these monies are matched by the NFWF, MacDonald says the partnership is bringing in \$40,000 to \$80,000 per event. What's more, *Bass Pro Shops* plans to open as many as 12 more stores next year. "In addition to some remarkable fund-raising, *Bass Pro Shops*' store openers are bringing local and regional conservation leaders together who can make things happen for fisheries in the community," Livingood said. "It's yet another fine example of *Bass Pro's* leadership in conservation and outdoor education."

As for public funding, the U.S. Fish and Wildlife Service (FWS) is currently working to allocate a \$1 million NFHI appropriation for FY 06. FWS managers and their partners agree that the funds should be used in accordance with Congressional guidance, to strategically support continued development of the

NFHI, and to conduct on-the-ground habitat projects that advance the goals of regional fish habitat partnerships that are identified within the NFHI.

In addition to the \$1 million FY 06 FWS appropriation, Congress has appropriated another \$5 million (through the Bureau of Reclamation) in the Energy and Water Development Act of 2006 which became Public Law 109-103 on November 11. Specifically, Congress provided "\$5,000,000 to (FWS), the Walker River Paiute Tribe, and the Nevada Division of Wildlife to undertake activities, to be coordinated by the (FWS) Director, to complete the design and implementation of the Western Inland Trout Initiative and Fishery Improvements in the State of Nevada with an emphasis on the Walker River Basin."

Additionally the following regional partnerships and initiatives have been formed:

Southeast Aquatic Resources Partnership (SARP) - The SARP is a broad coalition of partners organized to address the myriad issues related to management of aquatic resources in the southeastern U.S. SARP is at a pivotal point in the development of its *Southeast Aquatic Habitat Plan*. Completion of the regional plan is expected to lead to additional funding for Southeast aquatic habitat projects and will serve as a significant component of the NFHAP. The SARP website is available at <http://www.sarpaquatic.net/>.

Western Native Trout Initiative (WNTI) - The WNTI held a coordination meeting in mid-October in Las Vegas. Significant outcomes included the creation of a formal Steering Committee and the indication by the States that they are willing to move forward with the WNTI even if a Multi-State Conservation Grant is not awarded. This meeting was a key step in developing the WNTI and getting input from partners. The *Patagonia Co.* demonstrated its

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support for the NFHI by using its "World Trout Fund" to donate \$13,000 to *Trout Unlimited's* Colorado chapter for green-back cutthroat recovery. This investment will fortify the WNTI.

Eastern Brook Trout Joint Venture

(EBTJV) - The EBTJV has completed a draft of its threats assessment. Development has also begun on a habitat restoration "triage protocol". The EBTJV web site including a fact sheet and online presentation, is located at <http://www.fishhabitat.org/action.htm>.

Midwest Driftless Area Initiative (MDAI)

- Work has begun with State, County, and nongovernmental organization staff from Wisconsin, Minnesota, and Iowa to prioritize trout restoration projects that will have a good rate of success and complement previous efforts in the watershed. A meeting of MDAI stakeholders and partners is being planned for the near future. An MDAI webpage is under construction, and a list of brook trout projects proposed for 2006 funding is being developed.

For more information on the overall NFHI, visit <http://www.fishhabitat.org> or contact: Doug Austen, Pennsylvania Fish and Boat Commission, dausten@state.pa.us, 717-705-7801; Eric Schwaab, IAFWA, eschwaab@iafwa.org, 202-624-7890; or Christopher Estes, Alaska Department of Fish and Game, christopher_estes@fishgame.state.ak.us, 907-267-2142.

Source: *NFHI News Releases*

Yellowstone Cutthroat Trout in Peril

The Yellowstone cutthroat trout (YCT) population in the nation's oldest national park "appears to be in peril," according to an article in *Fisheries*, the magazine of the *American Fisheries Society*. In the article, National Park Service (NPS) scientists cite a YCT population decline of at least 60% in Yellowstone Lake, the fish's largest refuge. While Yellowstone National Park's largest lake once held millions of YCT, netting, testing and mathematical models suggest that "only a fraction of that population exists today." In 1998, anglers caught an average of two YCT's per hour from the lake, while last year, that number fell to 0.8 fish per hour.

The news could have implications both inside and outside the park. In the park, a wide variety of species, such as otters, pelicans, bald eagles and grizzly bears, rely on YCT as an important food. Outside the park, environmental groups have been trying for years to have the YCT listed under the Endangered Species Act (ESA). If they succeed, it could change how people irrigate, manage cattle and harvest timber in parts of several states around the park. The U.S. Fish and Wildlife Service has cited Yellowstone Lake's abundant YCT population as one major reason not to list the fish under the ESA. But environmentalists point to loss of habitat and crossbreeding with non-native fish outside the park as a reason to list it.

"The park's doing everything it can," said Steve Kelly, a Bozeman environmentalist who has pushed for the trout's listing. "If they can't make it happen there, maybe they can't make it happen. Normally, the park is a stronghold for a species." But the YCT face major threats from non-native lake trout and from whirling disease, a European malady that infests the lake and some of its major spawning tributaries. And lingering drought in recent years has left some tributaries so dry that by the end of summer, the tiny fish that hatch in the streams find themselves trapped in isolated pools and channels unable to reach the lake.



Yellowstone Cutthroat Trout (NPS Photo)

Lake trout were illegally introduced to the lake in the 1980s, and after they were discovered in 1995, the NPS began an aggressive gill netting program to reduce their numbers. Adult lake trout, which feed voraciously on YCT, cannot fill the cutthroats' place in the food chain because they favor deep waters, where they are unavailable to predators. NPS nets have killed more than 100,000 lake trout, and technicians are growing increasingly skilled in their pursuit, but "control" of the Yellowstone Lake's lake trout cannot yet be claimed, the article says.

Sources: *AP/Billings Gazette*, 11/28/05; and *Greenwire*, 11/29/05

Saving Salmon

Some 33 scientists, salmon policy analysts and advocates have been studying the future of wild salmon in the Pacific Northwest since 2002. Their project called *Salmon 2100* unveiled two dozen conflicting, provocative and radical recommendations in late January offering ground-breaking but pragmatic ideas for keeping salmon at sustainable levels through the year 2100. Some of their suggestions include:

- Give up on streams that no longer can sustain wild salmon;
- Throw open the fish hatchery gates;
- Create a Wild Salmon National Park; and
- Build new waterways instead of tearing down dams.

Salmon populations in the Northwest have been reduced to one-tenth of historic levels, despite recent gains. So the ideas of *Salmon 2100* are bold because the threats to wild salmon are so profound that none of the current efforts will sustain the fish for another century, the group concluded. Four key factors will reduce salmon to a mere remnant of their historic numbers, if not drive the species toward extinction, the group said. Those are:

- A likely quadrupling of population in the Northwest, to an estimated 65 million by 2100;
- Increased scarcity and competition for water;
- A system of commerce that favors profits over fish protection; and
- Individual life-style choices that ignore impacts to species such as salmon.

"We can't predict how these things are going to play out," said Bob Lackey, a senior fisheries biologist with the U.S. Environmental Protection Agency and co-leader of the project. "But they're not likely to change in ways that will be favorable to salmon. Wild salmon, by the end of the century, will be reduced to remnant runs in the lower 48 states... practically speaking", he said, "in most places, they'll be gone."

That's why *Salmon 2100's* members took the novel approach of accepting that current efforts won't overcome salmon's looming obstacles, and then finding ways to sustain the species anyway. Some of the project's "policy prescriptions," to be published in a book later this year, actually conflict with each other, which is

fine, Lackey said. The idea isn't to look for consensus on how to save wild salmon, but to propose a number of politically and socially palatable ideas that actually could work. *Salmon 2100's* proposals include the following:

- **Create sanctuaries, even a Wild Salmon National Park, in areas that have the best likelihood of keeping wild salmon in good shape. Abandon other runs that won't realistically survive the century.** Some argue for shifting effort to high-elevation areas that will suffer fewer impacts from climate change. Others advocate for refuges on the coast. "I'm not saying give up on the watershed," said Jim Martin, salmon adviser to former Oregon Gov. John Kitzhaber and former chief of fisheries with the state Department of Fish and Wildlife. "I'm saying don't invest in places in direct trajectory of the growth juggernaut, and are going to get nailed by a changing climate. Invest in the areas where we still have some snowpack... We're going to lose salmon in these low-elevation streams; they won't be able to withstand the water temperatures." Martin also suggested offering incentives to local governments to control growth.

- **Allow hatchery fish, traditionally excluded from interbreeding with wild stocks, to be released into the general population.** Conservationists have said such a move would introduce disease into the wild salmon population and weaken the gene pool. But it certainly would bolster salmon runs, proponents say.

- **Build new streams.** "You can build streams on old floodplains, old farmland, behind railroad dikes, highway dikes," said Ernest Brannon, distinguished research professor of the *Center for Salmonid and Freshwater Species* at the University of Idaho. Brannon estimated such work could be done for a cost of \$50,000 per mile.

- **Convince landowners that protecting salmon can benefit them economically, and the general public to reduce its footprint on the landscape.** The choices people make about where to live, what to eat and what to buy affect the environment salmon depend on for survival, some researchers said. "The way to alter life-styles is to change our ethical relationship with the land," said Jack Williams, chief scientist with *Trout Unlimited* and an adjunct professor at

Southern Oregon University. "Live in a place that reduces our need to drive; think twice about purchasing a second vehicle; buy a low-emissions, low-polluting model; reduce travel; walk; eat less meat; buy organic foods from local growers; when you move, move to a smaller house or apartment; use energy-efficient appliances."

But James Connaughton, chairman of the Bush administration's Council on Environmental Policy said, "We have to reflect that we are making progress, albeit incrementally." "All the runs have increased. It's important to know that runs can increase," he said. Connaughton also said that the Bush administration will review fishing practices and U.S. hatcheries, which could lead to tighter fishing restrictions and fewer hatcheries down the road. But Lackey said neither of those approaches reflects the *Salmon 2100* project's key premise — that minor tweaks to current approaches won't sustain salmon long-term.

Unfortunately, measures such as those taken by *Salmon 2100* may be a "sign of the times" for other fisheries across the U.S. as human population numbers, urban sprawl, pollution, and climate change continue to encroach on all of our remaining fishable habitats.

Sources: Winston Ross, *The (Eugene, OR) Register-Guard*, 1/26/06; and Jeff Barnard, *AP*, 1/26/06

Caviar Exports Halted

The global export of caviar was ordered halted in early January by the secretariat of the Convention on International Trade in Endangered Species (CITES). The order was described as a temporary measure to compel nations that export caviar and other products from wild sturgeon to demonstrate that their fishing practices are not pushing the remaining fish populations toward extinction.

Exporting nations must now "ensure that the exploitation of sturgeon stocks is commercially and environmentally sustainable over the long term," said Willem Wijnstekers, CITES secretary general. The suspension also bars signatory nations from importing sturgeon products. This means that Western retailers would still be able to

sell the wild foreign caviar they have already imported. But once that inventory is depleted, consumers would most likely have to purchase farmed eggs, which are generally regarded as less desirable, or eggs from limited domestic supplies. In any event, the market would tighten.

Sturgeon are the vestiges of an ancient line of fish whose eggs, meat, and the trade that surrounds them, have become deeply entwined in the histories, cultures and economies of the regions that produce them. Sturgeon products, legal and illegal, are thought to be worth at least several hundred million dollars each year, and perhaps, much more. But the remaining sturgeon fisheries have all suffered from plummeting populations, caused by dams that block spawning



Beluga sturgeon (CITES Photo)

routes, pollution, excessive fishing, corruption and highly organized black markets. And as a luxury item in the West and among the newly rich in the post-Soviet states, the fish and their eggs have become more valuable as they have become more rare. Caviar from beluga sturgeon, the most prized species, fetches more than \$200 an ounce, roughly double the price of a year ago.

Scientists and managers have noted that even before prices soared, there had been several local extinctions of sturgeon, and many species, including some in the U.S., had been reduced to marginal populations. "We just have to get this right, because there are not enough fish left," said David Morgan, head of the secretariat's science unit. There was no indication how long it would take for exporters to satisfy the secretariat that their fishing plans are sustainable, and based on real harvesting data. "We certainly hope that this is temporary, but if the problems are not addressed satisfactorily, it could be a longer time," Morgan said. He said further that all of the nations in each region would have to satisfy the secretariat's concerns before any of them could resume legal exports. "They are tied together; we can't have one without the others because we need to be sure of the whole catch rate for an entire basin," he said.

The suspension covers all principal areas that export wild sturgeon meat or eggs, including the Caspian Sea, where 90% of the remaining trade originates; the Amur River, on the Russian-Chinese border; the Black Sea and the lower Danube. It applies to 10 nations that still actively export products: Azerbaijan, Bulgaria, China, Iran, Kazakhstan, Romania, Russia, Serbia and Montenegro, Turkmenistan and Ukraine, the secretariat said. The convention covers exports only, meaning fish caught in each country can still be sold on domestic markets.

But the main importing nations — among them the U.S., Britain, France, Germany and Switzerland — are all parties to the 169-nation CITES and are expected to follow the secretariat's call to block imports. Susan Lieberman, director of the *World Wildlife Fund's* global species programs, said she expected the U.S., which in 2005 unilaterally banned the importation of beluga sturgeon products under the Endangered Species Act, to accept the new rules.

The secretariat ordered temporary bans twice before, in 2001 and 2002. The first, which was lifted when exporting nations agreed to follow stricter conservation measures, lasted about eight months. The second lasted only three weeks. But exporters have not lived up to their previous commitments, and sturgeon populations have continued to fall even as official quotas have dropped, leading to the new ban and stricter attention to fishing plans, said Ellen K. Pikitch, executive director of the *Pew Institute for Ocean Science* at the University of Miami.

One persistent problem in sturgeon management has been that harvest data do not account for widespread poaching. By some accounts illegal trade matches or exceeds legal harvest. Exporting nations, Mr. Wijnstekers noted, must "make full allowance for the amount of fish caught illegally." Mr. Morgan said exporters would also have to show that their fishing plans accounted for the real size of stocks.

Advocates of stronger protection welcomed the secretariat's decision, noting the fact that all remaining species and fisheries were included, reducing the opportunities for loopholes. In the past some exporters tried to package illegal fish or eggs as if they were legal species or from legal waters. "The bigger the ban, the more far-reaching it is and the easier it

is enforced," said Dr. Pikitch. The suspension also could cut deeply into illegal exports; black market caviar often masquerades as legal caviar, being packed and shipped under the same labels. With all exports closed, the illegal catch cannot be commingled on store shelves.

All of this could also bring additional pressure on domestic stocks of sturgeon and paddlefish in the U.S. whose eggs or roe have been used as surrogates for foreign caviar, and have been under increased fishing pressure as foreign caviar supplies have diminished.

Sources: C. J. Chivers, *The New York Times*, 1/4/06; and *Greenwire*, 1/4/06

Pesticides and Frogs

Frogs exposed to a mix of pesticides at extremely low concentrations like those widely found around farms suffer deadly infections, suggesting that the chemicals could be a major culprit in the global disappearance of amphibians. These are the findings of Dr. Tyrone Hayes, University of California - Berkeley, and his colleagues in an article published in a late January edition of the online version of the scientific journal *Environmental Health Perspectives*.

The Berkeley scientists tested four herbicides, including atrazine and alachlor, three insecticides and two fungicides in combinations used on cornfields. Each was administered to tadpoles at 0.1 part



per billion — amounts commonly found in waters near farms but thousands of times lower than the doses in most pesticide experiments — throughout their metamorphosis. When tadpoles were exposed in laboratory experiments to each pesticide individually, 4% died before they turned into frogs. But when atrazine and eight other pesticides were mixed to replicate a Nebraska cornfield, 35% died. Even

though all the animals harbored harmful bacteria, none developed deadly infections when exposed to just the individual pesticides.

But those exposed to the mixture suffered a variety of symptoms, including an inability to hold their heads up, meningitis, septicemia from a waterborne bacteria and smaller size. The scientists also found thymus damage and four times more corticosterone in the blood of exposed frogs, both signs of immune suppression. Corticosterone also slows growth. They also took longer to complete the transformation from tadpole to frog, which reduces their chances of survival.

"I think pesticides are underlying a lot of these other problems by reducing immune function, which opens them up to more parasites and diseases," said Donald Sparling an aquatic toxicologist with the Cooperative Wildlife Research Center at Southern Illinois University. Sparling, who was not involved in the Hayes research, said the study attempted to replicate what happened to frogs in their environment, while past studies investigated immediate effects of a few days of exposure to a single chemical. "Too often and for too long, we've simplified the real-world exposures," he said. "With this study by Hayes and other studies going on now, we're finally getting a realistic picture of what's happening in the environment and what amphibians are actually encountering." Sparling, formerly with the U.S. Geological Survey, previously reported that frogs and toads on the verge of extinction in Yosemite National Park and other parts of the Sierra Nevada encountered large doses of farm pesticides drifting there from the Central Valley.

Hayes wrote that his findings raised questions about the way the federal government regulates pesticides because decisions are based on investigations of chemicals one at a time, not combinations, which might "lead to gross underestimations of the role of pesticides in amphibian declines." "We demonstrated that a realistic pesticides mixture [based on a mixture applied to an actual field] at low, ecologically relevant concentrations can have dramatic effects on amphibian development and growth and ultimately, we predict, survivorship," Hayes and his colleagues said. "Given these adverse effects and the continued increase and

use of pesticides in agriculture over the past 50 years, it is likely that pesticides have played and will continue to play a role in amphibian declines,” they wrote.

In 2003, after reviewing the risks of atrazine, which has been in use for about 50 years, the U.S. EPA decided not to ban it. Instead, the EPA took the unusual step of allowing its use while requiring *Syngenta*, the manufacturer of atrazine, to monitor towns with contaminated drinking water. The agency concluded that there was “not sufficient evidence that atrazine consistently produces effects” in frogs. Atrazine is found in groundwater, streams and ponds near farms, and is banned in Europe. In September, a U.S. District Court judge in San Francisco ruled that the U.S. EPA had violated the Endangered Species Act by failing to review the effects on the California red-legged frog when it approved pesticides.

Sources: Marla Cone, *Los Angeles Times*, 1/25/06; Douglas Fischer, *Oakland Tribune*, 1/25/06; and *Greenwire*, 1/25/06

Support for Closure of the Chicago Ship Canal

More and more people are “joining the chorus” to close the Chicago Sanitary and Ship Canal which connects Lake Michigan with the Mississippi River Basin via the Illinois River (see the accompanying map) and provides a pathway for exchange of invasive species between these two great ecosystems. Joining that chorus is the editorial board of the *Bay City (Michigan) Times*.

MICRA first raised this issue in 2002, and the May/June 2002 issue of *River Cross-*

ings (available on our Web Page) described several options for the canal, including ecological separation of the two watersheds. Then in 2003, seventy world scientists assembled in Chicago for an *Aquatic Invasive Species Summit* said the best solution to prevent environmental contamination between the watersheds was “hydrologic separation.” Translated that means to “fill or close the canal”.

Then late last year, Illinois Gov. Rod R. Blagojevich asked his state’s congressional delegation to find \$750,000 in federal money to start studying the feasibility of doing just that. But the Chicago-based *Alliance for the Great Lakes*, which will conduct the study, isn’t waiting for the feds. It already has \$125,000 provided by the *Great Lakes Fishery Trust*, *Great Lakes Fishery Commission* and the *International Joint Commission on the Great Lakes* to begin its work.

“It’s a marvelous movement that just might save two of the continent’s largest watersheds from each other”, said a January 10th *Bay City (MI) Times* editorial. “...it’s already too late to prevent the spread of the zebra mussel from the Great Lakes into the vast Mississippi watershed. And everyone is holding their breath, hoping an electric barrier in the canal will prevent the aquatic nightmare Asian carp from entering the lakes and destroying their ecosystems”, the editorial added.

The 28-mile canal permanently reversed the flow of the Chicago River in 1900 to carry disease-causing raw sewage away from Lake Michigan, Chicago’s water supply. Later, the Cal-Sag Channel was dug, also reversing the flow of the

Calumet River into the Sanitary and Ship Canal. Chicago’s treated wastes now flow into the canal and downstream into the Illinois River, and the treatment is so good that a recent bass fishing tournament was held in the canal. But closing the

hydraulic connection between the two water bodies should not disrupt that or other uses, including recreational boating and the few barges that still ship on the canal. The small number of barges that actually leave the canal to enter the Lake could in the future easily off-load to ships over an earthen barrier between the two. Likewise, recreational craft could be passed between the two water bodies by boat lifts.

For years after the canal was built reversing the flow of these rivers was known by many as one of the seven or eight modern man-made wonders of the world. But, “The will is growing to undo that marvel. And protect two of our nation’s natural wonders from each other. The Mighty Mississippi and the Great Lakes can no longer stand the watery tie that binds them. Break that link. Save them both”, says *The Bay City Times* editorial board.

Source: *The Bay City Times*, 1/10/06

Flooding Problems Blamed on the Corps

The devastation of New Orleans was a disaster waiting to happen because of a significant flaw in levee design by the U.S. Army Corps of Engineers (Corps), says preliminary findings of *Team Louisiana*, the official Louisiana team investigating Hurricane Katrina flooding. The findings, prepared by team engineers, mirror the conclusion of many outside experts: that the levee that toppled at the 17th Street Canal was built with too little regard for the inherent weakness of the soil under the canal banks. Similar conditions, the experts say, existed at the sites of the two other major levee breaches in metropolitan New Orleans.

“It should have been obvious,” said the deputy director of the Louisiana State University (LSU) Hurricane Center, Ivor van Heerden, leader of the investigative group. Billy R. Prochaska, an engineering consultant to the team, said, “That’s our question: how could this be?” The puzzlement is especially acute, Mr. Prochaska said, because the levee design “was gone over by everyone” up and down the Corps organization, from the local level to Washington, before the levees were upgraded with flood walls in the 1980s and 90s.



Map showing Chicago Sanitary and Ship Canal connections between Lake Michigan and the Mississippi River Basin.

The *Team Louisiana* investigation shows that the sheet piles, the interlocking sheets of steel that are driven into soil to anchor the levees and prevent a flow of water underneath, were too shallow to prevent that flow. Tests by the group found that sheet piles reached only 10 feet below sea level in some spots, far less than would protect the city. Corps documents dating from the time of construction show that the design was for a depth of 17.5 feet, but even that, the investigators say, would have been too shallow. By comparison, in spots where the levees are now being repaired, the Corps is calling for sheet piles to be driven to depths of 51 to 65 feet.

The state manager for *Team Louisiana*, Edmond J. Preau Jr., assistant secretary of the Louisiana Department of Transportation and Development, said the levees had failed at water levels that would have been predicted had the soil problem been recognized. The walls should never have been toppled by water levels of 11 or 12 feet, Mr. Preau said. "You had a wall that was supposed to protect to water levels up to 14, 14.5 feet," he said. "Water didn't get that high."

A spokesman for the Corps acknowledged that its own sonar tests had confirmed the state's findings of 10-foot sheet pile depths, and said piles would be pulled from the ground at the 17th Street Canal to measure them directly. But the spokesman, James Taylor, noted that pile depth is only one factor contributing to the strength of a levee, others include levee height and width. Another Corps spokesman, Wayne Stroupe, said it was still too early to know exactly why the levees failed. Stroupe said, the Corps is conducting its own investigation, with a report expected at the beginning of June. He said the report would include detailed analyses of the forces that the storm actually brought to bear on the city's flood control systems.

Engineers typically build structures with somewhat greater strength than is necessary for expected challenges. A design standard set by the Corps calls for levees to be built at 130% of the strength needed to withstand a Category 3 hurricane, and design documents from the Corps stated that the New Orleans levees would meet these standards. But the

preliminary calculations by *Team Louisiana* suggest that the 17th Street Canal levee was actually built at 93-98% of that strength near the breached area — substantially weaker than the forces of a Category 3 storm. Mr. Preau, the state manager of the team, declined to comment in detail about its draft, which was not officially released because data are still being collected and analyzed, he said. "We don't want to release any of this until we have all of our background data completely documented," he said. But he said the final determinations will likely be similar to those in the draft. Another member of *Team Louisiana*, G. Paul Kemp, an associate professor at LSU and director of the *Natural Systems Modeling Group* at the university's *Center for Coastal, Energy and Environmental Resources*, said outsiders might interpret the findings as an effort to foist blame for Louisiana's problems onto the federal government and avoid responsibility for local lapses in levee maintenance. But, Dr. Kemp argued, "the design and construction is a process that is overseen by federal people at every step." He added that the ultimate goal was to find out precisely what went wrong, for the sake of future guidance.



Map showing the approximate route of the MRGO channel.

Meanwhile, one of the more significant environmental proposals to emerge from a city commission's blueprint for rebuilding New Orleans is the closure of one of the city's primary shipping lanes, the 62-mile long Mississippi River Gulf Outlet (MRGO). MRGO was constructed in the 1960s by the Corps to greatly shorten the distance between the Port of New Orleans and the Gulf of Mexico (see accompanying map), and is blamed for much of the flooding that occurred in the city's New Orleans East neighborhood immediately after Hurricane Katrina.

According to experts, the canal provided a straight pipe for Katrina's storm surge

to plow directly into the heart of City. The result was the complete devastation of several low-lying neighborhoods that had been protected from the canal by levees with floodgates. However, for environmentalists, the MRGO is much more than a flood risk. The digging, maintenance and daily use of the canal's 36-foot shipping canal has resulted in the loss or alteration of roughly 20,000 acres of marsh, according to estimates provided to the Louisiana Sea Grant program by the Corps.

In addition to the erosion problem, the canal is cited as a primary conduit for saltwater intrusion into freshwater marshes, resulting in dramatic changes to habitat for waterfowl and fisheries. As such, it has been targeted by some who are working to restore the state's coast under the 1990 Coastal Wetlands Planning, Protection and Restoration Act.

The elimination of the channel is expected to be included in a report from the *Bring Back New Orleans Commission* created by Mayor Ray Nagin in September.

In a 10-point plan of action issued in early January by 13 environmental groups to help guide the New Orleans' restoration, drafters said the city should immediately close the MRGO and other unsustainable navigable facilities. In addition, the groups said, the city should assume greater technical and fiduciary oversight over all federal navigation projects administered by the Corps.

Meanwhile, nature is taking its course on the 62-mile outlet. Its channel has filled to roughly 21 feet, and sedimentation is expected to continue until Congress lifts a one-year moratorium on dredging the canal.

Sources: John Schwartz and Christopher Drew, *New York Times*, 12/1/05; Daniel Cusick, *Greenwire*, 1/11/06; *Greenwire*, 12/1/05

Rethinking, Then Rebuilding New Orleans

Dr. Richard E. Sparks, Director of research at the National Great Rivers Research and Education Center in Godfrey, IL, in the Winter issue of the journal, *Issues in*

Science and Technology Online, proposes a natural approach to rebuilding New Orleans. Sparks has spent more than 30 years as a river ecologist in Illinois working with government agencies to bring common sense management to the Basin's rivers, and his approach to rebuilding New Orleans has implications for the entire Mississippi River Basin. The remainder of this article summarizes his suggested solution to the problem.

Advocates for rebuilding New Orleans in its current location point to the 1,000+ year levees and storm surge gates that the Dutch have built. But Sparks points out that the Netherlands is one of the most densely populated countries in Europe, with 1,000 people per square mile, so the enormous cost of building such levees is proportional to the value of the dense infrastructure and human population there. The same is not true in Louisiana, he says, where there are only approximately 100 people per square mile, concentrated in relatively small parcels of the Delta. This low population density provides Louisiana with the luxury of using Delta lands instead of levees as a buffer for the relatively small areas that must be protected.

Sparks point out, however, that the Dutch should be imitated in several regards. First, planners addressing the future of New Orleans should take a lesson from the long-term deliberate planning and project construction undertaken by the Dutch after their disastrous flood of 1953. These efforts have provided new lands and increased flood protection along their coasts and restored floodplains along their major rivers. Some of these projects are just now being realized, so the planning horizon was at least 50 years.

Sparks also says that planners focusing on New Orleans would be wise to emulate Dutch efforts to understand and work with nature. Specifically, they should seek and adopt ways to speed the natural growth and increase the elevation of the new delta "lobe" being created by sediment deposition of the Atchafalaya River distributary, and to redirect sediments onto the Delta south of New Orleans to provide protection from storm waves and surges.

A key question for the Federal Emergency Management Agency (FEMA), FEMA equivalents at the state level, planners and zoning officials, banks and insurance

companies, and the Corps of Engineers (Corps), Sparks says, is whether it is more sustainable to rebuild the entire city and a higher levee system in the city's original location or to build a "new" New Orleans somewhere else, perhaps on the Atchafalaya lobe.

Under Sparks' natural option, "old" New Orleans would remain a national historic and cultural treasure, and continue to be a tourist destination and convention city. Its highest grounds would continue to be protected by a series of strengthened levees and other flood-control measures. City planners and government agencies (including FEMA) that provide funding for rebuilding must ensure, however, that not all of the high ground is simply usurped for developments with the highest revenue return, such as convention centers, hotels, and casinos. That high ground also should include housing for service workers and their families, so they are not consigned again to the lowest-lying, flood-prone areas. The flood-prone areas below sea level should be converted to parks and planted with flood-tolerant vegetation. If necessary, these areas would be allowed to flood temporarily during storms.

Sparks says work already is under way that might aid such rebuilding efforts and help protect the city during hurricanes. The Corps, in its West Bay sediment diversion project, plans to redirect the Mississippi River sediment, which currently is lost to the deep waters of the Gulf, to the south of the city and use it to create, nourish, and maintain approximately 9,800 acres of marsh that will buffer storm waves and surges. At the same time, the Corps, in consultation with state officials, should guide and accelerate sediment deposition in the new Atchafalaya lobe, under a 50- to 100-year plan to provide a permanent foundation for a new commercial and port city.

If old New Orleans did not need to be maintained as a deepwater port, then more of the water and sediment in the Mississippi could be allowed to flow down the Atchafalaya, further accelerating the land-building. The new city could be developed in stages, much as the Dutch have done. The port would have access to the Mississippi River via an existing lock (constructed in 1963) that connects the Atchafalaya and the Mississippi, just downstream of the Old River Control Structure.

Sparks says this plan would no longer force the Mississippi River down a channel it "wants" to abandon. The shorter, steeper path to the sea via the Atchafalaya River might also require less dredging than the Mississippi route, because the current would tend to keep the channel scoured. Because the Mississippi route is now artificially long and much less steep, accumulating sediments must be constantly dredged, at substantial cost. Traditional river engineering techniques that maintain the capacity of the Atchafalaya to bypass floodwater that would otherwise inundate New Orleans also might be needed to maintain depths required for navigation. These techniques include bank stabilization with revetments and wing dikes that keep the main flow in the center of the channel where it will scour sediment.

The new city would have a life expectancy of about 1,000 years — at which time it would be an historic old city — before the Mississippi once again switched channels. The two-city option might prove less expensive than rebuilding the lowest parts of the old city, because the latter approach probably would require building flood gates in Lake Ponchartrain and new levees that are high enough and strong enough to withstand 500- or 1,000-year floods. In both scenarios, flood protection will need to be enhanced through a continual program of wetland restoration.

In evaluating these options, the Corps should place greater emphasis on the 9,000 years of geological and archaeological data related to the recurrence of large floods along the Mississippi River. Shortly before the recent hurricanes, the Corps had completed a revised flood frequency analysis for the upper Mississippi, based solely on river gauge data from the past 100 to 200 years. Sparks says that unless the Corps considers the prehistoric data, it probably will continue to underestimate the magnitude and frequency of large floods. If the Corps does take older data into account in determining how high levees need to be and what additional flood control works will be needed to prevent flooding in New Orleans and elsewhere, then the actual costs of the "traditional" approach are likely to be much higher than currently estimated. Sparks says the higher costs will make his "working with nature" option even more attractive and economically feasible.

Sparks says the Corps also should include in its assessments the gradual loss of storage capacity (due to sedimentation) in existing flood control reservoirs in the upstream Mississippi River Basin, as well as the costs and benefits associated with proposed sediment bypass projects in these reservoirs. For example, he says, the Corps undertook preliminary studies of a sediment-bypass project in the Lewis and Clark Reservoir on the upper Missouri River in South Dakota and Nebraska because the reservoir is predicted to completely fill with sediment by 2175, and most of its storage capacity will be lost well before then.

By starting to bypass sediments within the next few years, the remaining water storage capacity could be prolonged, perhaps indefinitely. But studies showed that the costs exceeded the expected benefits. In these studies, however, the only benefits considered were the maintenance of water storage capacity and its beneficial uses, not the benefits of restoring the natural sediment supply to places as far downstream as the Delta.

It is possible, Sparks says, that the additional sediment would significantly accelerate foundation-building for the “new” New Orleans and the rebuilding of protective wetlands for the old city. Over the long term, the diminishing capacities of such upstream storage reservoirs also will add to the attractiveness of more natural options, including bypassing sediments now being trapped in upstream reservoirs, utilizing the sediments downstream on floodplains and the Delta, and restoring flood conveyance capacity on floodplains that are now disconnected from their rivers by levees.

Sparks emphasizes that action to capitalize on the natural option should begin immediately. The attention of the public and policymakers will be focused on New Orleans and the other Gulf cities for only a few more months, so the window of opportunity to plan a safer, more sustainable New Orleans, as well as better flood management policy for the Mississippi and its tributaries, is briefly open.

Without action, a new New Orleans — a combination of an old city that retains many of its historic charms and a new city better suited to serve as a major international port — will go unrealized. And the people who would return to a New Orleans rebuilt as before, but with higher

levees and certain other conventional flood control works, will remain unduly subject to the wrath of hurricanes and devastating floods. Sparks concludes that, “No one in the Big Easy should rest easy with this future”.

Source: Sparks, R.E. 2006. *Rethinking, Then Rebuilding New Orleans. Issues in Science and Technology Online*, Winter 2006

Southeastern Coal Mining Controversy

The Cumberland Mountains of East Tennessee, where sedimentary coal seams range in thickness from a 8 inches to 5 feet, and haven’t produced significant coal for decades, have now become the target of mining companies who are gearing up for the next wave of mountaintop mining — extending their activity from the industry’s core in Kentucky and West Virginia into Tennessee and elsewhere.

But unlike in Kentucky and West Virginia, where the practice of mountaintop removal mining is allowed, a technique called “cross-sectional” or “cross-ridge” mining is used in Tennessee. This less damaging technique still strips away mountaintops to expose coal seams, then stockpiles waste rock and places it atop the mountain to restore a semblance of its former contour. Grasses and trees are then planted on the rock waste to stabilize it, but environmentalists claim the practice rarely results in a restored mountain. Rather, they say, reclaimed areas resemble steep hillside parks or golf course greenways, more suitable for suburban-style recreation than providing habitat for the complex web of plant and animal life formerly occupying the mountain peaks.

Experts say that a once marginal coal-producing state like Tennessee, if fully developed, could boost its coal production several fold over the next two decades — from a current annual average 3.2 million tons to more than 10 million tons. “It’s been a neglected area,” said Richard Bonskowski, a geologist with the U.S. Energy Information Administration. But environmentalists fear mining’s

resurgence will reverse two decades of gradual but sustained ecological recovery in the region’s high-elevation forests and streams. Moreover, they fear that mining will undermine a new regional economy — built on tourism, second homes and backcountry recreation.

For example, on Zeb Mountain, the state’s largest operating cross-ridge mine, where uninterrupted forest once defined the landscape, a hard-rock plateau now fills an 1,100-acre swath of the horizon. Its configuration is serpentine, following the general contours of the mountain, but there is no longer a forest or even a semblance of a mountain peak. In their place is a humming hive of mining activity, as evidenced by multiple drag lines and dump trucks encircling what is essentially a high-elevation quarry for coal.



Zeb Mountain, TN “cross section” mining where waste rock is salvaged and used to restore the mountain’s contour (Greenwire Photo by Daniel Cusick).

The Zeb Mountain mine is owned and operated by *National Coal Corp.* The Knoxville-based company, founded just three years ago, has staked its future on extracting coal from the mountains of northeast Tennessee and southern Kentucky, and its executives maintain its mining methods allow for enhanced protection of the surrounding mountains, streams and wildlife. *National Coal* officials are particularly proud of their work with the University of Tennessee’s (UT) forestry program, which is helping the company improve its environmental practices and reputation. Among other things, UT students seed former mining sites with native grasses and trees “so that the area is returned to its former state easily and successfully,” the company said in a statement.

But Don Barger, a native Tennessean who has spent most of his adult life trying to

shield the Cumberlands from extractive industries, says he has heard the promises about low-impact mining before, dating back to 1977 when Congress passed the Surface Mining Control and Reclamation Act (SMCRA). The mining law's crowning achievement was to require companies to restore — to the greatest extent possible — the cavern-sized gashes caused by mining, and to ensure water quality and adjacent lands would not suffer from coal-mining's by-products, including acid mine drainage.

But the Cumberland Mountains receive an average of 50 inches of rain per year, allowing for continued erosion and runoff from abandoned mine sites into high-elevation streams. And while not as great a problem in Tennessee as elsewhere in the Appalachians, Tennessee has seen its share of acid mine drainage, a condition that unchecked can contaminate drinking water and render streams and lakes lifeless.

"The existing situation is about as bad as you can get short of not having a [mining] law at all," said Barger, who directs the Southeast office of the *National Parks Conservation Association* (NPCA). Environmentalists say they are not set on shutting down all mining in East Tennessee. "We are asking the Office of Surface Mining to be reasonably cautious, to look before it leaps, before it issues so many mining permits that this area is damaged beyond repair," Vanessa Morel, NPCA's Southeast regional program analyst, said in a statement.

In a 90-page petition filed in November with the U.S. Office of Surface Mining's (OSM) Knoxville field office, the NPCA and a local chapter of the *Audubon Society* are seeking to have the entire New River watershed — 284,000 acres across four counties — declared "unsuitable for mining". Their concerns are related to the area's steep slopes and what the petition alleges would be "severe and largely irreversible environmental threats" to the Big South Fork River, two Tennessee wildlife management areas and a state park containing habitat for the Cerulean warbler, a bird *Audubon* says is at risk of a population decline.

At the petition's heart is protection of the New River, the primary tributary of the Big South Fork National River and Recreation Area. The canyon-rimmed Big South

Fork, established as National Park Service (NPS) property in 1974, continues to bear the insults of past mining, as evidenced by the slugs of dirt that periodically wash down from old mines that were never reclaimed. Typical of higher-elevation streams, the New River usually runs clear and cool over a hard rock bed. But after a soaking rain last fall, the river had taken on a brown milky sheen, a sure sign of upland runoff from old surface mines and other development sites. Even more telling, a handful of river bottom sediment turned up not just gravel and mud, but shards of pure Appalachian coal. "That comes right out of the mines," Barger said.

NPS managers, who are charged with "protecting and enhancing" the Big South Fork's water quality, acknowledge that upstream disturbances from mining, agriculture, residential development, road-building and sewage treatment plants pose a challenge to meeting that charge. But NPS's Steve Seven, a longtime employee and public affairs officer at Big South Fork, was reluctant to single out coal mining as inconsistent with the park's mission. "We are neither for nor against coal mining," Seven said. "Our concern is for the water quality in the New River drainage and the entire watershed as it impacts the Big South Fork." "The mining would occur up in the headwaters of the New River, so there would be an impact," he said.

The Tennessee Valley Authority (TVA), the nation's largest coal-burning utility is actively considering opening large new areas to mining companies, and is to issue an environmental impact statement (EIS) on its plans early this year. "We do have some reserves, and we are looking at opportunities to lease them or sell them, as it makes sense to do that," said Gil Francis, a TVA spokesman in Knoxville. NPCA and *Audubon Society* petitioners, represented by the *Southern Environmental Law Center* (SELC), are keeping close watch on TVA's decision-making process, as it could, as one observer said, "open the floodgates" for mining companies to pour additional resources into the region. Deborah Murray, a senior attorney with SELC, expressed concern that one option TVA is considering under the EIS calls for "greatly stepped up mining throughout the region." Also concern has been raised that pressure from top policymakers, including President Bush, to mine more coal to meet growing energy demand will

lead ultimately to the opening of vast new areas that are prized for their environmental values.

Besides *National Coal*, two other mining firms operate in East Tennessee, and much of the recent mining has been done underground or along former contours where new technologies allow for the extraction of more coal. Such mines pose different, and arguably smaller, risks to the environment than large, cross-ridge mines like Zeb Mountain. However, underground mines do generate huge volumes of waste rock which is often packed into mountainside landfills that are susceptible to erosion.

Environmental groups are also concerned about the stability of older surface mines that have been reclaimed with massive quantities of fill material, mostly loose rock and dirt stabilized with grass and fast-growing trees. Last February, the region saw one of its worst landslides in recent memory when roughly 25 acres of rock and dirt crashed down High Point Mountain in rural Scott County. The landslide was discovered only after parts of Smoky Creek, a tributary of the New River, turned coffee brown due to massive sediment loads being swept downstream. According to best estimates, the last coal to come from the High Point mine was in the late 1980s or early '90s, when it was owned by a now-defunct mining company. OSM approved its reclamation plan in 1993.

Barger, whose organization has not always seen eye-to-eye with the NPS, warned that unless federal regulators act now to control mining's expanding footprint in the Cumberlands, there may be little left worth seeing in this corner of the state, and the most scenic parts of the Big South Fork River will have lost much of their appeal. "This watershed has been declared by the Park Service and the state of Tennessee as one of the most pristine in the eastern United States," Barger said. "And yet it's about to get hammered."

Source: Daniel Cusick, *Greenwire*, 12/22/05

Hundreds of Species Impacted Because of Court Decision

More than 250 species could lose habitat as a result of a 2001 Supreme Court decision known as SWANCC (*Solid Waste*

Agency of Northern Cook County v. U.S. Army Corps of Engineers). That decision exempts isolated wetlands from Clean Water Act (CWA) protections. This is the conclusion of *NatureServe*, a consultant to U.S. EPA.

Now the Supreme Court will hear two cases that test the government's interpretation of *SWANCC* and its use of the interstate commerce clause to regulate wetlands that are not directly connected to navigable waters. Environmentalists have said the ruling could undermine a host of resource and wildlife protections. But the Corps of Engineers (Corps) contends that little has changed post-*SWANCC*. Overall, the Corps makes about 100,000 wetland jurisdictional decisions a year and estimates 23,000 acres are filled every year under CWA permits, both with permits issued under the CWA and those affected by the *SWANCC* ruling, according to EPA officials.

NatureServe found that nearly 29% of all wetlands nationwide could lose protections, and that isolated wetland ecological systems support high levels of biodiversity, including significant numbers of at-risk species and plant communities. For example:

- A total of 274 at-risk plant and animal species are supported by isolated wetlands, with more than one-third (35%) apparently restricted to these wetland types. At-risk animal species are even more closely tied to isolated wetlands; more than one-half of at-risk animals considered in this study appear to be obligate to isolated wetland habitats.
- A total of 86 plant and animal species listed as threatened, endangered, or candidates under the Endangered Species Act (ESA) are supported by isolated wetland habitats. This represents about 5% of all plant and animal species currently listed under the Act. A majority (52%) of these listed species are completely dependent on isolated wetland habitat for their survival.
- Nearly half of isolated wetland types (35 of 81, or 43%) are known to support at least one listed species under the ESA.
- On average 6% of the at-risk plant species in a given state are directly supported by isolated wetlands.
- Nearly one-quarter of U.S. counties (725 counties, or 23%) harbor at least one at-risk species associated with isolated wetland habitats, and 80 of these counties have five or more such species.

- A total of 279 at-risk vegetation associations (9% of all plant community types classified in the U.S. National Vegetation Classification) were documented as being characteristic of isolated wetlands, and two-thirds (67%) of these associations are not found in any other types of habitat.

Of the plants and animals surveyed, 33 are federally listed as endangered or threatened mammals, amphibians and invertebrates. The report also considers state-listed species among those the report considers at-risk. "The report underscores the ecological value of wetlands, including isolated wetlands ... and affirms the importance of this administration's initiative to improve the National Wetlands Inventory," said EPA's assistant administrator for water, Benjamin Grumbles.

In the wake of the *SWANCC* ruling, environmentalists claimed that millions of acres of ephemeral streams, ditches and other marshes that were important for water quality and wildlife habitat could be lost. The Corps and U.S. EPA, which has jurisdiction over CWA enforcement, abandoned an effort to develop a rule that would clarify which wetlands they would regulate, instead leaving the definition up to regional Corps offices and the courts. The two cases now before the Supreme Court thus have the potential of setting significant precedents for the future.

Sources: Comer, P., K. Goodin, A. Tomaino, G. Hammerson, G. Kittel, S. Menard, C. Nordman, M. Pyne, M. Reid, L. Sneddon, and K. Snow. 2005. *Biodiversity Values of Geographically Isolated Wetlands in the United States*. NatureServe, Arlington, VA; and *Greenwire*, 12/7/05

MT/WY CBM Water Quality Debate

The U.S. Department of Energy (DOE) released a report in early January concluding that Montana's tougher water-quality rules will hamper the coalbed-methane (CBM) industry, potentially costing the industry and state coffers hundreds of millions of dollars. The DOE report comes as the Montana state Board of Environmental Review mulls tougher regulations for the industry.

To get at CBM, water must be removed from deep underground to relieve pressure on the gas. Montana's proposed rules would require that water withdrawn from wells be injected back into the aquifers. If that's not possible, because of the geology, the water, which is often highly saline, would have to be treated before being discharged into rivers and streams for irrigation. Such a rule could cost the industry anywhere from \$600 million to roughly \$1.5 billion over the next 30 years, according to an economic impact analysis from the state Department of Environmental Quality (DEQ). The industry could lose as little as 6% of expected profits, or as much as 74%, depending upon a number of variables such as natural gas price, the report concluded. Under the worst-case scenarios, the state would lose up to \$271 million in tax money from the industry.

Benefits of the rule, the report said, include less risk of polluted rivers, streams and land. Also, the proposed rule could ensure more availability of well water to future generations. The *Northern Plains Resource Council* (NPRC), a conservation group pushing the proposed rule, said it is still reviewing the report. "I think where we will diverge from the DEQ report is under the worst-case scenario," said Mike Reisner, NPRC staff attorney.

The U.S. DOE got involved in the issue at the request of Wyoming officials who worry that Montana's proposed rule could hamper their own state's CBM exploration. In Wyoming's CBM mining area most of the streams drain north from the Powder River Basin into Montana's Yellowstone River drainage basin. "The more stringent and costly the water management option, the less of the CBM resource in the basin that will be economic, generating lower domestic gas production and lower public revenues," researchers working for the DOE wrote.

Their report notes that wastewater from the CBM wells could be an asset in the arid West, and might be used for agricultural purposes. It says further that the impact of tougher water quality rules is less severe if natural gas prices continue to increase because the industry is more able to pay for costly mitigation efforts. The CBM industry has been opposing the proposed new rule, saying such rules are premature.

Sources: *AP/Billings Gazette*, 1/10/06; and *Greenwire*, 1/10/06

New Mexico to Protect Basin Headwaters

Northern New Mexico's Valle Vidal, where sportsmen and environmentalists are fighting to keep out coalbed-methane (CBM) drilling, got a new layer of protection in December from the state Water Quality Control Commission. The commission voted 11-1 in favor of designating the streams and ponds in the Valle Vidal as *Outstanding National Resource Waters*. The 12-member commission made the decision after accepting testimony from three state agencies and more than a dozen citizens. The state Department of Game and Fish, state Environment Department and New Mexico Energy, Minerals and Natural Resources petitioned for the Valle Vidal waters to receive the special designation.

The federal Clean Water Act allows states to protect waters from degradation caused by such activities as road building or CBM drilling. Conservationists and recreational users have fought to keep such drilling out of the 100,000-acre Valle Vidal — or Valley of Abundant Life — in the Carson National Forest. And witnesses from the *New Mexico Farm and Livestock Bureau*, *Trout Unlimited*, *New Mexico Wildlife Federation* and *New Mexico Riparian Council* were all among the groups that spoke in favor of protecting Valle Vidal's waters. Waters designated as "outstanding" must be part of an excellent trout fishery, provide exceptional recreation or ecological value or contain quality water that meets or exceeds standards for aquatic species and other wildlife.

Valle Vidal's waters are only the second in the state to be designated as outstanding resource waters. The designation won't affect fishing, hunting, recreation or livestock grazing in the Valle Vidal, according to Marcy Levitt, bureau chief of the Environment Department's Surface Water Division. "It does not limit ongoing activities as long as they don't degrade water quality," she said. Among the waters protected under the designation are Rio Costilla and associated creeks, Middle Ponil Creek, Shuree Lakes, North Ponil Creek and Leandro Creek.

Levitt showed the commission pictures of Vermejo Park Ranch, owned by Ted Turner and adjacent to the Valle Vidal, before and after CBM drilling began. The aerial photos taken after drilling show a

network of roads and well pads. "Roads are one of the largest threats to water quality," Levitt said. *El Paso Co.* of Houston has asked to lease the Valle Vidal for CBM development. Carson National Forest is now deciding whether such development will be allowed. Valle Vidal is located in the very headwaters of the southwestern corner of the Mississippi River Basin watershed.

Source: Staci Matlock, *The New Mexican*, 12/15/05

BLM/State Management Agreement

Oregon officials will have greater say into how federal lands in the state are managed, under a deal with the U.S. Bureau of Land Management (BLM). Signed in December by Oregon Gov. Ted Kulongoski (D) and BLM's Oregon/Washington state director, the 12-page cooperative agreement is said to be the first of its kind between BLM and a state government. The agreement makes the state Forestry Department a "key cooperator" as federal officials develop a management plan for 2.5 million acres of BLM forestland west of the Cascade Mountains.

In the past, BLM has not allowed state agencies to comment on such land-use plans until the public comment period. Now, according to Oregon Forestry Department spokesman Rod Nichols, "It's going to allow our planners to enter into the process at the outset." "The state's ability to work in cooperation with the BLM is critical to successfully managing our lands and is essential to the well-being of Oregon's rural communities," Kulongoski said in a statement. The agreement with Oregon involves 10 state agencies.

BLM officials said they have signed similar cooperative agreements with 16 counties in western Oregon. Those counties, as well as the state, will be able to offer input and suggestions as federal managers develop logging and preservation guidelines for the forestland. The agreement does not transfer authority to state or local jurisdictions, nor does it give "cooperators" veto power. "It gives them a seat at the table as these decisions are made," said Alan Hoffmeister, a spokesman for BLM's Western Oregon Plan Revision Process. "It's not giving

them the responsibility to make decisions."

Hoffmeister said BLM officials began meeting with cooperators in April to formalize the relationship. The Council on Environmental Quality regulations for implementing the National Environmental Policy Act (NEPA) say a "State or local agency of similar qualifications...may by agreement with the lead agency become a cooperating agency." The Federal Land Policy and Management Act allows the BLM to enter into cooperative agreements for management of public lands (43 USC 1737 sec 307b).

Source: David Loos, *Greenwire*, 12/5/05

Privatizing of Public Lands

Faced with rising costs and possible budget shortfalls next year, the National Park Service (NPS) and the Forest Service are each considering the use of corporate donations and advertising to raise money. Jeff Ruch, executive director of the *Public Employees for Environmental Responsibility* (PEER), and others worry that this pull of corporate money will affect decisions by federal officials. "This is a chance to give corporations a role in the administration of natural resource programs," Ruch said. And Phil Voorhees, vice president of the *National Parks Conservation Association* (NPCA), said there is a "real risk" of loosened rules on corporate contributions leading to a commercialization of the NPS.

The comment period on NPS's rule governing donations and advertisements, officially called Director's Order 21, ended in December. The Order would allow donors to purchase naming rights for trails, benches, and rooms in NPS buildings (but not the buildings themselves), remove restrictions on alcohol and tobacco advertising, and expand the list of NPS senior officials who would be allowed to solicit donations. But critics say the changes would put the NPS directly in the fund-raising business, rather than relying on the current system of using the over 160 friends groups for donations.

Those groups currently raise \$17 million annually for the parks, but the NPS does not have an estimate of how much more it

expects to collect if the changes to the rule are adopted, John Piltzecker, head of the NPS partnership office said. He said further that the NPS wants to ensure accepting a donation will not affect the integrity, impartiality and public confidence people have in the agency. "If a park manager in any way thinks it will affect one of those things, they should bump it up to the regional level or to the Washington office for discussion, but no donation should be dismissed out of hand," he said.

The proposal would allow companies to use the NPS *Arrowhead* logo in their advertising campaigns, but Piltzecker felt that suggestion may not survive when the final rule comes out early this year. "We're hearing this for the first time," he said. "One of the things you send things out for review is to get input. I think that may be something that inadvertently got left out. By policy it's never used to endorse a company's product or service." Piltzecker says the agency is simply updating policies and continuing a traditional relationship that friends groups and corporate donors have had with the national parks. "Corporate and private philanthropy is a long tradition in the parks, we certainly want to be friendly to that...without any kind of impairment," Piltzecker said.



But opponents of the rule change say the agency is purposely massaging language in order to allow more latitude for corporate money and influence. "The proposed rule removes easily understandable bright line prohibitions and replaces them with slippery, 'don't get caught' kind of standards," PEER said in comments submitted to NPS. For instance, the new rule has nonspecific criteria such as saying a donation "would not likely result in public controversy" or "maintains the impartiality, and appearance of impartiality," of Interior and the NPS.

The NPS acknowledges it is attempting to give employees more leeway, but that the proposed rule has suitable restrictions to prevent unwanted problems and appearances of impropriety. "Previous guidance on philanthropy focused on what cannot be

done, instead of approaching philanthropy from a positive, collaborative direction," said NPS Director Fran Mainella when she released the draft changes in October. The rule mandates that any donor recognition plaques cannot detract from the character of an area, must be consistent with park planning guidelines and does allow corporate logos on a permanent basis within a park.

"Fund-raising by government employees at a time when the general public is extremely concerned about declines in the amount of congressional funding reaching the national parks would present the NPS as a tin-cup-in-hand agency, an image to be avoided in a respected public institution whose uniformed employees are also highly regarded," the *National Park Friends Alliance* said in comments submitted to NPS. If that is a concern of donors, however, it is not something that NPS employees could address directly. The proposed NPS rule would forbid employees from portraying Congress as having failed to appropriate enough money for park operations.

But NPCA's Voorhees says the increased push for donations is directly related to the funding levels set by the administration and Congress. "All the land management agencies — all are under intense stress, financial and otherwise — as there's less funding available to go around to support all these places," Voorhees said. Asking donors for help instead of Congress is nothing new, and this has led to concerns some friends groups are too close with the agency. In its comments, the *Friends Alliance* also expressed concern that fund-raising by NPS employees has the potential to decrease donations to the friends groups and threaten their "philanthropic clout."

Forest Service officials say they did not consult with the NPS in developing its rule, but critics of using corporate money on federal lands insist the proposals are related. While the NPS, Forest Service, Bureau of Land Management (BLM) and other agencies have different missions, Scott Silver of *Wild Wilderness* says the rule changes are part of an effort to diminish the differences between the agencies and their styles of land management. "There's an underlying premise that people don't differentiate between agencies," Silver said. "The tourism industry has pushed the idea there should be standardization and the agencies

should look like one another. The parks have untapped recreation potential and tourism potential that really can't be tapped unless you weaken the protection for the NPS and treat it like the BLM."

According to *Greenwire*, at the Forest Service, which unveiled its proposed rule the day after Thanksgiving, the push for increased advertising at national forests is less motivated by revenue for the agency than to give concessionaires an additional revenue stream. "The Forest Service wants to encourage concessionaires to promote public participation in the management of [national forests] by proposing public services, evaluating solutions to specific natural resource management problems, and promoting conservation awareness and public health and safety," the *Federal Register* listing states. "These endeavors may cost money without generating a return on investment by the concessionaires. Concessionaires have encouraged the agency to consider sponsorship and advertisement as ways to generate funding for these types of activities."

Financially, the low-margin recreation industry is likely to see the biggest boost from the Forest Service rule change, although revenue collected by the concessionaires, such as a ski operator, will be accounted for in payment for a special use permit from the Forest Service. And because the concessionaires have increased incentive to sell advertisements, Steve Sherwood, director of recreation for the Rocky Mountain region, admitted the Forest Service has concerns about allowing the expanded use of ads, but believes the rule is crafted narrowly enough to prevent an operator from plastering a forest with signs. And unlike the NPS proposal, the Forest Service plan would not allow the display of the agency shield in conjunction with any product or service in order to avoid the appearance of an endorsement. The Forest Service is accepting public comment on its proposal through 3/27/06.

Source: Dan Berman, *Greenwire*, 12/5/05

Climate Change Update

Last year was the hottest recorded on the Earth's surface since record keeping began in the 1890s, NASA officials said in late January. The year 2005 topped 1998, previously the warmest year because of

strong El Niño patterns, while 2002, 2003 and 2004 rounded out the top-five list. The Earth has warmed over the last 100 years by 1.44 °F, 1.08 of those degrees coming in the last 30 years. "It's fair to say that it probably is the warmest since we have modern meteorological records," said Drew Shindell of NASA's *Goddard Institute for Space Studies*. "Using indirect measurements that go back farther, I think it's even fair to say that it's the warmest in the last several thousand years".

Global warming has also caused Europe's four hottest years on record since 1998 and resulted in the continent's worst climate change in more than 5,000 years, according to a report released by the European Environment Agency (EEA). The report said that while the average global temperature rose 1.25 °F in the 20th century, the rise in Europe was 1.71 °F. "Ten percent of Alpine glaciers disappeared during the summer of 2003 alone," the report said. "At current rates, three-quarters of Switzerland's glaciers will have melted by 2050." "Without effective action over several decades, global warming will see ice sheets melting in the north and the spread of deserts from the south," said EEA Executive Director Jacqueline McGlade.

Also the sharp increase in atmospheric CO₂ recorded over the past four years could exacerbate global warming, experts said in early January. According to preliminary figures from the National Oceanic and Atmospheric Administration (NOAA), levels of CO₂ at the Mauna Loa summit in Hawaii will rise to 2.2 ppm in the first 10 months of this year. The measurements have been taken regularly since 1958 in the 11,400ft peak's pristine conditions, 2,000 miles from the nearest landmass and protected by unusual climatic conditions from the pollution of Hawaii, two miles below. In the late 1990s, CO₂ levels were measured at 1.6 ppm and at 2 ppm in 2002-03. Scientists said this could mean global warming is entering a new phase of acceleration, as rising temperatures continue to alter the world's ecosystem.

James Hansen, the director of NASA's *Goddard Institute for Space Studies* said "It's not something you can adapt to, we can't let it go on another 10 years like this. We've got to do something". Hansen has accused the Bush administration of trying to prevent him from publicly calling for

cuts in U.S. greenhouse gas GHG emissions, after giving a lecture on the subject in December. He said the administration has ordered the NASA public affairs staff to review his coming lectures, papers, postings on the Goddard Web site and requests for interviews from journalists. "They feel their job is to be this censor of information going out to the public," he said. But the agency denied any attempt to censor Hansen. "That's not the way we operate here at NASA," said Dean Acosta, deputy assistant administrator for public affairs at the space agency. Hansen has been speaking out on global warming since 1988, having briefed Vice President Dick Cheney twice on climate issues. A registered independent, Hansen said he thinks the Bush administration should change its policy on climate change. In 2004, he accused NASA Administrator Sean O'Keefe of cutting off one of his presentations.

Meanwhile, according to the Energy Information Administration (EIA) annual report, released in late December, U.S. GHG emissions rose by 2% in 2004 from 6,983.2 in 2003 to 7,122.1 million metric tons in 2004. The emissions were also 16% higher than the nation's 1990 levels of 6,148.8 million metric tons. But President Bush's preferred measuring stick for GHG emissions is *GHG intensity*, which calculates emissions compared to economic growth. That measure shows U.S. emissions in 2004 declining by 2.1%. GHG intensity from 1990 to 2004 has dropped 23%, EIA said.

EIA's latest figures also show a continued rise in the most significant GHG, carbon dioxide (CO₂), as well as methane, nitrous oxides and engineered gases. The transportation sector remains the nation's largest source of energy-related CO₂ emissions, increasing 3.1% in 2004. Industrial CO₂ emissions climbed 2.6% in 2004, while residential emissions were 0.1% lower in 2004 due primarily to a warmer winter and cooler summer, EIA said. Commercial CO₂ emissions rose 0.3% in 2004. And the U.S. electric power industry saw an increase in its CO₂ emissions by 0.9% in 2004. Globally, EIA said U.S. commercial CO₂ emissions represent about 24% of the world's total. But growing economies in the developing world are expected to overshadow the U.S., shrinking its share of world CO₂ emissions to about 20% by 2025.

Meanwhile, in Europe, only two of the 15 countries that signed the Kyoto Protocol are on target to meet their commitments to reduce GHG emissions, according to a report released in late December by the *Institute for Public Policy Research* (IPPR). "We are nearing the point of no return on climate change," said IPPR executive director Tony Grayling. "It is vital that European Union countries keep their promises to cut pollution.

In the U.S. 25 economists, including three Nobel laureates, called in early December for aggressive cuts in U.S. GHG emissions, warning that the price of adapting to global warming's effects would harm the economy. Using the market-based policy, such as the cap-and-trade program, would cost the U.S. economy 1% of its gross domestic product, said Geoffrey Heal, professor at Columbia University. While this percentage is large in absolute terms, he said, it is not relative to the growth in U.S. economy, which is currently at 4%. The economists said a market-based mechanism "assures that economic forces are directed to keeping the cost of reducing emissions as low as they can be." Moreover, as other nations set up carbon trading markets, the demand for renewable energy and associated technologies will increase further bringing down the costs, they said. The U.S. they said, "should be the global leader in manufacturing and exporting clean energy technologies." Kevin Knobloch, president of the *Union of Concerned Scientists*, an advocacy group, said the lack of U.S. leadership on the issue "is an opportunity cost to U.S. businesses and consumers."

Also in the U.S., attorneys for California, Connecticut, Iowa, New Jersey, New York, Rhode Island, Vermont, Wisconsin, New York City and the *Open Spaces Coalition* are trying to revive a global warming lawsuit the group lost last summer in federal district court. The group — using the argument that CO₂ emissions create a public nuisance covered under common law — wants to force first-ever mandatory GHG limits on power plants owned and operated by *American Electric Power Co.*, *Southern Co.*, *Tennessee Valley Authority*, *Xcel Energy Inc.* and *Cinergy Corp.* The five companies and their subsidiaries emit some 650 million tons of CO₂ annually, or about 25% of the 2.6 billion tons of CO₂ created annually by the U.S. power sector. According to the state-driven coalition's brief, those

emissions have created a host of changes in the U.S. climate, including reduced snowpack and drinking water supplies in California, rising sea levels and increases in smog levels in major urban areas.

U.S. District Court Judge Loretta Preska dismissed the plaintiffs' case last August, explaining that the claims raised broad "political questions" that can only be addressed by Congress or the executive branch. But in a 68-page brief filed in December with the 2nd U.S. Circuit Court of Appeals in New York City, the states and New York City sought to pick apart several pieces of the lower court's ruling. Plaintiffs said that precedents set by both the Supreme Court and 2nd Circuit do not set such restrictive limits on a lawsuit when politics also surround an issue. Environmentalists, led by the *Natural Resources Defense Council*, filed a separate 80-page petition on the issue.

Meanwhile, the governors of seven Northeastern states signed an agreement in late December to cut their GHG emissions — the first mandatory regional pact to address global warming in the U.S. Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York and Vermont are members of the so-called *Regional Greenhouse Gas Initiative*, or RGGI. The plan beginning on Jan. 1, 2009 outlines a series of reduction targets for their coal-fired power plants over the next 15 years. Using the same type of market-based system implemented by U.S. EPA to control acid rain and smog, the states will use a trading program that caps CO₂ emissions in the region at their 1990 levels of 121.3 million short tons.

The first cap will last through 2014, with an additional 10% reduction required by 2019. Under the agreement, states unable to make actual emission cuts to meet their targets will be able to pay for others around the country to make GHG reductions. The states also have set a \$7 per ton price cap on the cost of carbon emissions to help dictate how the credits can be purchased and used for compliance. But Massachusetts and Rhode Island dropped out of the regional plan, citing cost concerns. Industry officials have said that litigation may be filed against the regional plan once the states begin to issue regulations that formally begin the trading process. There are also potential constitutional issues that need to be overcome for states to form such a pact.

In the West, Montana Gov. Brian Schweitzer, concerned with high energy costs and continued drought, wants to form an advisory council to find ways of dealing with global warming. In December he called on the state Department of Environmental Quality to form a *Climate Change Advisory Board*. The panel, to be composed of Montanans selected from throughout the state, is expected to come up with concrete ways to reduce GHGs produced in Montana by 2007. Also, Seattle Mayor Greg Nickels (D) says that 200 cities have now joined a pact to reduce their GHGs 7 % below 1990 levels, the same standard that the United States would have been held to had it ratified the Kyoto Protocol. Nickels spearheaded the joint city campaign in 2005.

Meanwhile, the *National Association of Evangelicals* (NAE) is drafting a policy statement calling for strong action against global warming. NAE is made up of more than 30 million members from 45,000 churches. The policy statement is expected to be released early this year. "I am sure it will be a really positive and influential statement — and will counter the misinformation campaign propagated by the oil industry since 1992," said John Houghton, former head of the U.K. Meteorological Office.

Also, the *The Inuit Circumpolar Conference* (ICC) announced in December that it is submitting a petition to the Washington-based *Inter-American Commission on Human Rights* seeking relief from violations of the human rights of Inuit resulting from global warming. The petition cited as evidence the November 2004 *Arctic Climate Impact Assessment* prepared by 300 scientists from 15 countries and six indigenous organizations. "This petition is not about money, it is about encouraging the United States to join the world community to agree to deep cuts in GHG emissions needed to protect the Arctic environment and Inuit survival," said Sheila Watt-Cloutier, chairman of the ICC.

In the scientific arena, new research published in the journal *Nature* suggests that plants are a major, overlooked source of methane emissions — a finding that, if confirmed, could cause a wholesale revision of the global methane budget. Scientists had believed that plants could only emit the GHG in the absence of oxygen. But that idea is contradicted by this study's new data which show that a wide variety of plants and decaying plant

matter produce methane under normal, oxygen-rich conditions — and those emissions likely total 60-240 tons of methane per year, or about 10-30% of the annual global flow. Other sources of methane include coal mining, livestock, rice cultivation, peat bogs and landfills.

The finding could explain large plumes of methane that have been observed above tropical rainforests. It also raises questions about the unintended environmental effects of planting trees to sequester CO₂, given that methane is second only to CO₂ in its contribution to global warming. Under the Kyoto Protocol, reforestation is considered a carbon sink that can be used to offset GHG emissions from industrial sources — a position that may have to be reevaluated, said David Lowe of New Zealand's National Institute of Water and Atmospheric Research. "We now have the specter that new forests might increase greenhouse warming through methane emissions rather than decrease it by sequestering CO₂," Lowe writes in a *Nature* editorial. "This paper will undoubtedly unleash controversy, not the least of which will be political", he said.

The discovery was the result of a hunch, said Thomas Röckmann, an atmospheric scientist at Utrecht University and a co-author of the paper. An intriguing piece of the puzzle he said is that plants' methane emissions seem to be heat sensitive, doubling with every 10 degrees Celsius increase in temperature. The scientists are still working to identify the biological process plants use to produce the methane, but it appears to be related to the amount of a chemical, pectin, that helps support cell walls.

Meanwhile, Australia's first project to capture CO₂ emissions and store them under ground will get under way early this year. The \$23 million project, partly financed by companies including *Chevron Corp.*, *Xstrata Plc* and *Rio Tinto*, will be carried out by the *Cooperative Research Centre for Greenhouse Gas Technologies*, and will be located in western Victoria. "Our experiments will simulate natural geological processes that trap CO₂ for up to millions of years," Peter Cook, chief executive of the research group, said in the statement. "We will be putting the CO₂ back underground, from where it came." CO₂ will be extracted from a gas mixture, transported several kilometers by pipeline and injected about 2 kilometers (1.2 miles) underground into a depleted

gas field. It will involve the injection of about 100,000 metric tons a year of CO₂, Cook said. Similar, larger-scale projects are underway in Norway, Canada and Algeria, he said.

But according to Professor Chris Rapley, director of the *British Antarctic Survey*, the world's booming population growth needs to be reined in before there is any hope of effectively tackling climate change. Rapley said the annual 76 million increase in the world's population threatens "the welfare and quality of life of future generations". Rapley says that scientific analysis suggests that the Earth could sustain around 2-3 billion people at a good standard of living over the long term. But the current global population of 6.5 billion — expected to rise to 8 billion by the middle of the century — means that mankind is imposing an ever greater ecological "footprint" on the planet. He said further that advances made in the battle to limit climate change may be threatened by the need of each additional person for food, shelter, transport and waste disposal facilities. While reducing human emissions to the atmosphere is undoubtedly important, the truth is that the contribution of each individual cannot be reduced to zero, he said. "Only the lack of the individual can bring it down to nothing. So if we believe that the size of the human 'footprint' is a serious problem (and there is much evidence for this), then a rational view would be that, along with a raft of measures to reduce the footprint per person, the issue of population management must be addressed." But he said population control and reduction is "a bombshell of a topic", raising profound moral and ethical issues.

At the same time, until global warming is reversed, significant ecological changes will occur. For example, Canadian permafrost will continue to thaw throughout this century, releasing millions of ton of GHGs and damaging oil and gas infrastructure, according to a recent study by McGill University professor Nigel Roulet. Only extreme northern areas of Canada and Greenland will remain frozen year round by 2100, he says. Such melting could expose pipelines, including the proposed \$7 billion Mackenzie Valley gas pipeline.

Also Arctic polar bears will continue be at risk, and a report released in mid December by the Minerals Management Service (MMS) documented, for the first time in 2004, polar bear deaths off the coast of

Alaska that likely were caused by drowning as the animals tried to swim between the melting Arctic ice shelves. According to the report, scientists counted 10 polar bears swimming as far as 60 miles offshore in September 2004, the same year the polar ice cap retreated to a record 160 miles north of the Alaskan coast. Researchers later found four of the bears dead in the water. "Extrapolation of survey data suggests that on the order of 40 bears may have been swimming and that many of those probably drowned as a result of rough seas caused by high winds."

As a consequence, the *Center for Biological Diversity*, the *Natural Resources Defense Council* and *Greenpeace* argued in a lawsuit filed in mid December in San Francisco that Arctic polar bears deserve protection under federal law. The groups, are using the lawsuit to try to force the U.S. Fish and Wildlife Service to give the bears "threatened" status under the Endangered Species Act. If so listed, polar bears would be the first mammal protected under the act because of global warming. There are 22,000 to 25,000 bears worldwide. "Under the act, the government must take steps to protect the bear's critical habitat. The habitat is the Arctic sea ice," said Melanie Duchin, a *Greenpeace* specialist in climate and energy issues. "The only way to preserve it is to reduce emissions of global warming pollution".

Meanwhile, some East Coast ornithologists believe that populations of hummingbirds have grown in recent years, in part because of the warmer climate. The birds normally nest in the Northwest and spend most of the winter in Mexico, but that trend has changed in recent years. Over the past two decades, researchers in East Coast states have spotted and tagged more and more of the birds during the winter months. Bob Sargent, founder of the Alabama-based *Hummer/Bird Study Group* is coordinating much of the winter hummingbird research.

In the prairie pothole region of the Upper Midwest global warming could cut duck populations in half as early as 2050, according to a new study published in the journal *BioScience*. The region produces 50-80% of the continent's ducks and contains an estimated 5 million small ponds spread across the Dakotas, western Minnesota and Iowa, northeastern Montana and three Canadian provinces. Even though the area is notorious for wet

and dry spells, it is large enough for waterfowl to adapt and migrate to other ponds with enough water and cover.

That would end if climate change increases average temperatures across the entire prairie pothole region, said Carter Johnson, a professor of ecology at South Dakota State University who co-authored the study. He said most of the area would become too dry for ducks and other birds, and wetlands might remain only in fringes of the region (western Minnesota and northwestern Iowa), he said. Johnson and researchers from Minnesota and Montana reached their conclusions after studying 95 years of climate data and using hydrologic models to simulate changes to the Northern Great Plains during this century. Study co-author Glenn Guntenspergen, a research ecologist with the U.S. Geological Survey in Duluth, said the area would still have occasional wet years, but they would be much less frequent. That would lead to lower water levels, longer dry periods and no water for years in many shallow wetlands.

He said that if the most productive waterfowl breeding areas in the Dakotas become marginal, the next-best habitat for birds will be on the eastern and northern edges of the pothole region, including western Minnesota and northwestern Iowa. Most wetlands have been drained and would need to be restored in those areas, he said, adding that he believes federal conservation managers may need to begin spending more money on wetlands restoration in those areas.

Sources: Deborah Zabarenko, *Reuters*, 1/24/06; *Agence France-Presse*, 11/29/05 and 1/27/06; Clive Cookson, *Financial Times* 12/23/05; Peter Calamai, *Toronto Star*, 12/28/05; Lauren Morello, *E&ENews PM*, 1/11/06; Geoffrey Lean, *The London Independent*, 1/15/06; Angela Macdonald-Smith, *Bloomberg*, 1/9/06; *The London Guardian*, 1/6/06; *BBC News*, 1/6/06; Jane Kay, *San Francisco Chronicle*, 11/29 and 12/16/05; Jim Carlton, *Wall Street Journal*, 12/14/05; D'Vera Cohn, *Washington Post*, 12/14/05; Jennifer McKee, *Billings Gazette*, 1/19/06; Andrew Revkin, *New York Times*, 1/29/06; Juliet Eilperin, *Washington Post*, 1/29/06; *E&ETV Today*, 1/30/06; Darren Samuelsohn, *Greenwire*, 12/20/05 and 1/4/06; Pamela Najor, *Greenwire*, 12/7/05; Lauren Morello, *Greenwire*, 1/12/06; and *Greenwire*, 12/14, 12/16 and 12/29/05, 1/3, 1/9, 1/10 and 1/16, 1/25 and 1/30/06

National Academies UMR Booklet Available

The National Academies has released "Science and Planning on the Upper Mississippi and Illinois Waterway", a booklet that summarizes findings from National Research Council reports on the U.S. Army Corps of Engineers' (Corps) study of congestion along the lower portion of the Upper Mississippi and Illinois rivers. The reports evaluate the Corps' assessment of the economic feasibility of extending several locks to 1,200 feet and also highlights several important analytical and river management issues. For more information, contact the National Academies' Water Science and Technology Board at 202-334-3422, e-mail to water@nas.edu or visit <http://dels.nas.edu>.

New Fish Passage Web Site

A new web site on "Planning, Design and Construction of Fish Friendly Stream Crossings" has been developed by the U.S. Fish and Wildlife Service's Ashland Wisconsin Fishery Resources Office. The site was developed as an informational resource for those involved with planning, design and construction of stream

crossings on small streams less than 20 feet wide. It is based on best practices recommended for designing long lasting, stable, road crossings that will have minimum adverse affect on fish and other aquatic species and their stream habitats.

The site offers specific information on:

- Identifying problem fish passage structures;
- Evaluating a site for possible fish passage remediation;
- Designing and installing replacement fish passage structures that are safe and friendly to fish and their habitats; and
- Locating additional resources for planning, design and construction of fish friendly stream crossings.

Developed under the leadership of Mark Dryer, major contributors include Frank Stone and Lee Newman. The site is located at: <http://www.fws.gov/midwest/fisheries/StreamCrossings/index.htm>.

Watershed Handbook Released

EPA's Office of Water has published a guide to watershed management as a tool in developing and implementing watershed plans. The 414 page draft, *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*,

is aimed toward communities, watershed groups, and local, state, tribal, and federal environmental agencies. It is designed to take the user through each step of the watershed planning process and is intended to supplement existing watershed planning guides that have been developed by agencies, universities, and other nonprofit organizations. It is more specific than other guides with regard to quantifying existing pollutant loads, developing estimates of the load reductions required to meet water-quality standards, developing effective management measures, and tracking progress once the plan is implemented.

EPA is making the draft document widely available with the purpose of having it used and tested by a variety of watershed partnerships, whose advice will be considered in developing the final version. Comments should be addressed to watershedhandbook@epa.gov no later than June 30, 2006.

It is available online at: http://www.epa.gov/owow/nps/watershed_handbook or from the National Service Center for Environmental Publications by calling 800-490-9198 or e-mailing ncepimal@one.net. When ordering, refer to EPA document number EPA 841-B-05-005.

Meetings of Interest

Apr 19-22: Workshop on Computational Science for Natural Resource Managers, University of Tennessee, Knoxville, TN. See www.tiem.utk.edu/workshop06. Contact: workshop06@tiem.utk.edu.

May 7-11: Fifth National Monitoring Conference: Monitoring Networks: Connecting for Clean Water, San Jose, CA. Contact: NWQMC2006@tetrateach-ffx.com, (410) 356-8993.

May 14-19: 14th International Conference on Aquatic Invasive Species, Key Biscayne, FL. Contact: Elizabeth Muckle-Jeffs, Conference Administrator, 1027 Pembroke Street East, Suite 200 Pembroke ON K8A 3M4, Canada, N. Amer. phone: (800) 868-8776, International phone: (613) 732-7068, Fax (613) 732-3386, profedge@renc.igs.net, Web Site: www.icaeis.org

Jun 3-8: 12th International Symposium on Society and Resource Management:

Social Sciences in Resource Management: Global Challenges—Local Responses, Vancouver, British Columbia. See: www.issrm20006.rem.sfu.ca.

Jun 4-9: American Society of Limnology and Oceanography Summer Meeting: Global Challenges Facing Oceanography and Limnology, Victoria, B.C., Canada. See: <http://aslo.org/meetings/victoria2006/> Contact: Contact Helen Lemay, business@aslo.org, (254) 399-9635.

Jun 12-16: Symposium on the Ecology of Stream Fish: State of the Art and Future Prospects II, Leon, Spain. Contact: Fred Utter, fmutter@u.washington.edu.

Jun 14-21: 24th Session of the European Inland Fisheries Advisory Commission and Symposium on Hydropower, Flood control and Water Abstraction: Implications for Fish and Fisheries,

Mondsee, Australia. See: www.fao.org/fi/body/eifac/eifac.asp.

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

Jul 10-14: Fish Population Structure: Implications to Conservation, Aberdeen, UK. See: www.fsbi2006.org.uk.

Jul 12-17: American Society of Ichthyologists and Herpetologist Annual Conference, New Orleans, LA. See: www.asih.org/meetings/meetings. Contact: Mark Pyron, mpyron@bsu.edu.

Jul 18-22: Seventh International Congress on the Biology of Fish, St. John's, Newfoundland, Canada. See: www.mun.ca/biology/icbf7. Contact: Kurt Gamperl,

kgamperl@mun.ca, (709) 737-2692.

Aug 6-11: 8th International Conference on Mercury as a Global Pollutant, Madison WI. See: www.mercury2006.org. Contact: James Wiener, weiner.jame@uwlax.edu, (608) 785-6454.

Sep 10-14: American Fisheries Society 136th Annual Meeting, Lake Placid, NY. Contact: Betsy Fritz, bfritz@fisheries.org, (301) 897-8616, ext. 212.

Dec 9-13: Restore America's Estuaries, Third National Conference and Expo on Coastal and Estuarine Habitat Restoration: Forging the National Imperative, New Orleans, LA. See: www.estuaries.org/conference.

Feb 18-23, 2007: Sixth International Symposium on Ecohydraulics, Christchurch, New Zealand. See: www.conference.co.nz/echohydraulics2007. Contact: Rachel Cook, rachel@conference.co.nz.

Jun 6-9, 2007: Fourth International Reservoir Symposium: Balancing Fisheries Management and Water Uses for Impounded River Systems, Atlanta, GA. Sponsored by the Southern Division AFS Reservoir Committee. Contact: Mike Colvin, Mike.Colvin@mdc.co.gov.

Sep 2-6, 2007: American Fisheries Society, 137th Annual Meeting, San Francisco, CA. Contact: Betsy Fritz, bfritz@fisheries.org, 301/897-8616, ext. 212

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 U.S. 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 in understanding, assessing, and predicting 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 scientific research on abrupt climate change, to accelerate the reduction of greenhouse gas (GHG) emissions in the U.S. by establishing a market-driven system of GHG tradeable allowances, to limit GHG emissions in the U.S. and reduce dependence upon foreign oil, and ensure benefits to consumers from the trading in such allowances.

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. 887. Hagel (R/NE) and 6 Co-Sponsors. Amends the Energy Policy Act of 1992 to direct the Secretary of Energy to carry out activities that 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, and for other purposes.

S. 1151. McCain (R/AZ) and Lieberman (D/CT). Provides for a program to accelerate the reduction of greenhouse gas emissions (GHG) in the U.S. by establishing a market-driven system of GHG tradeable allowances.

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, and for other purposes.

Conservation

S. 260. Inhofe (R/OK) and **H. R. 2018.** Sullivan (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 (D/WI). Reauthorizes programs relating to sport fishing and recreational boating safety, and for other purposes.

S. 964. Alexander (R/TN) and 3 Co-Sponsors. The "American Outdoors Act of 2005" provides a conservation royalty from Outer Continental Shelf revenues to establish the Coastal Impact Assistance Program, to provide assistance to States under the Land and Water Conservation Fund Act of 1965, to ensure adequate funding for conserving and restoring wildlife, to assist local governments in

improving local park and recreation systems, 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)

S. RES. 219 Feinstein (D/CA) and 3 Co-Sponsors. Designates March 8, 2006, as "Endangered Species Day", and encourages the people of the U.S. to become educated about, and aware of, threats to species, success stories in species recovery, and the opportunity to promote species conservation worldwide

S. 2110. Crapo (R/ID) and 3 Co-sponsors. Amends the ESA to enhance the role of States in the recovery of endangered and threatened species, to implement a species conservation recovery system, to establish certain recovery programs, to provide Federal financial assistance and a system of incentives to promote the recovery of species, and for other purposes.

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

H. R. 3824. Pombo (R/CA) and 13 Co-Sponsors. Amends and reauthorize the ESA to provide greater results in conserving and recovering listed species, and for other purposes.

Energy

S. 1860. Domenici (R/NM) and 5 Co-sponsors. Amends the Energy Policy Act of 2005 to improve energy production and reduce energy demand through improved

use of reclaimed waters, 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.

H. R. 2064. Udall (D/CO). Assures that development of certain Federal oil and gas resources will occur in ways that protect water resources and respect the rights of the surface owners, and for other purposes.

Federal Water Pollution Control Act (FWPCA) Amendments:

S. 912. Feingold (D/WI) and 8 Co-Sponsors and **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.

S. 1400. Chafee (R/RI) and 3 Co-Sponsors. Amends the FWPCA and the Safe Drinking Water Act to improve water and wastewater infrastructure in the U.S. .

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

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 (R/OH) and 4 Co-Sponsors and **H. R. 1593.** Ehlers (R/MI). Establishes the National Invasive Species Council, and for other purposes.

S. 770. Levin (D/MI) and 12 Co-Sponsors and **H.R. 1591.** Gilchrest (R/MD) and 4 Co-Sponsors. Amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 to reauthorize and improve that Act.

S. 1402. DeWine (R/OH) and 7 Co-Sponsors and **H. R. 3049.** Green (R/WI).

Asian Carp Prevention and Control Act amends the Lacey Act, to add certain species of carp to the federal list of injurious species that are prohibited from being imported or shipped.

S. 1541. Akaka (D/HI) and 3 Co-Sponsors. Protects, conserves, and restores public land administered by the Department of the Interior or the Forest Service and adjacent land through cooperative cost-shared grants to control and mitigate the spread of invasive species, 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.

H. R. 1592. Ehlers (R/MI) and 5 Co-Sponsors. Establishes marine and freshwater research, development, and demonstration programs to support efforts to prevent, control, and eradicate invasive species, as well as to educate citizens and stakeholders and restore ecosystems.



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.

S. 961. Rockefeller (D/WV) and **H. R. 1600.** Cubin (R/WY) and 4 Co-Sponsors. Amends the Surface Mining Control and Reclamation Act of 1977 to reauthorize and

reform the Abandoned Mine Reclamation Program, and for other purposes.

S. 1701. Thomas (R/WY) and Enzi (R/WY). Amends the Surface Mining Control and Reclamation Act of 1977 to improve the reclamation of abandoned mines.

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.

H. R. 2721. Peterson (R/PA) and 16 Co-Sponsors. Amends the Surface Mining Control and Reclamation Act of 1977 to reauthorize collection of reclamation fees, revise the abandoned mine reclamation program and for other purposes.

Public Lands

S. 1897. Corzine (D/NJ) and Dodd (D/CT). Amends the Forest and Rangeland Renewable Resources Planning Act of 1974 and related laws to strengthen the protection of native biodiversity and ban clearcutting on Federal land, and for other purposes.

H. R. 599. Udall (D/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 BLM, NPS, FWS, and 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.

H. R. 3166. Grijalva (D/AZ). Provides compensation to livestock operators who voluntarily relinquish a grazing permit or lease on Federal lands where conflicts with other multiple uses render livestock grazing impractical, and for other purposes.

Water Resources

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.

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.

S. 728. Bond (R/MO) and 17 Co-Sponsors and **H.R. 2864** (Passed by the House). Provides for the consideration and development of water and related resources, to authorize the Secretary of the Army to construct various projects for improvements to rivers and harbors of the U.S., and for other purposes.

S. 753. Feingold (D/WI) and McCain (R/AZ). Provides for modernization and improvement of the Corps of Engineers, and for other purposes.

S. 802. Domenici (R/NM) and 10 Co-Sponsors and **H. R. 1386.** Hastings (D/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.

S. 1017. Chaffee (R/RI) and 10 Co-Sponsors. Reauthorizes grants for the water resources research and technology institutes established under the Water Resources Research Act of 1984.

H. CON. RES. 120. Schakowsky (D/IL) and 23 Co-Sponsors. Expresses the sense of Congress with regard to the world's freshwater resources.

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.

ive water strategy to address future water needs.

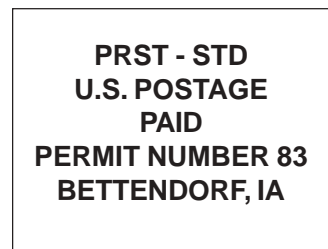
H. R. 391. Leach (R/IA). Directs the Secretary of the Army to convey the remaining water supply storage allocation in Rathbun Lake, IA, to the Rathbun Regional Water Association.

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. 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. 4588. Doolittle (R/CA). Re-authorizes grants for and require applied water supply research regarding the water resources research and technology institutes established under the Water Resources Research Act of 1984.

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