



Ozark Waters

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Ozarks New Energy: Getting the Priorities Right

By John E. Moore, Jr.
Upper White River Basin Foundation

The Ozarks New Energy Conference concluded February 23 in Springfield with a host of knowledgeable speakers and presentations by U.S. Senator Claire McCaskill and 7th District Congressman Roy Blunt bringing a perspective from the federal government. The purpose of the conference, the brainchild of Springfield City Councilman Dan Chiles, was to address energy issues today, their implications for future years, alternative technologies, as well as energy policy and strategy. An enthusiastic crowd gave focused attention to the issues and presentations.

I served as moderator of one of the sessions which featured two speakers. The first, Marc Wagoner, business development manager for Praj Schneider, an engineering firm in Omaha, spoke on the topic "building a bio-energy plant: costs and considerations." His presentation outlined the process of planning, permitting, funding and constructing an ethanol plant, a complex process clearly tedious in its details. Praj Schneider serves as technical advisor and engineer for companies getting into the bio-fuel business. Although his outline of the planning and due diligence requirements touched on potentially controversial elements of the process (e.g. water use, wastewater treatment, odors, traffic patterns, etc), his technical overview was received as informative and non-controversial.

Ethanol plants in the Ozarks, however, have been controversial. A proposed \$185

million corn based ethanol plant in Webster County, Missouri near Rogersville has sparked controversy and is currently in litigation with a number of county residents concerned about the plant's demands on groundwater resources. Although Missouri's Department of Natural Resources is reportedly near to issuing an air pollution permit and a trial judge has held in favor of the company on the suit filed by neighboring citizens, the future of the plant seems uncertain. The lawsuit is now on appeal and the economics of ethanol production have become less favorable.

This project, though not on the agenda specifically, provided some context for the second speaker, Tom Aley, who had testified against the Webster County ethanol facility. As a long-standing friend, Tom is the owner and principal hydrogeologist of the Ozark Underground Laboratory in Protom, Missouri. His work involves groundwater tracing and he has consulted on this issue widely. His underground laboratory, also known as Tumbling Creek Cave, has been developed as an educational resource widely used by teachers and students studying the karst topography of the Ozarks, the movement of surface water to ground water and the extensive fauna resident in the cave. Tom's presentation was entitled "impacts of ethanol production on critical water resources."

Rather than discussing the impact of ethanol production on ground water first, Aley began by constructing a framework for evaluat-

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Ozarks New Energy

Continued from page 1

ing the costs and benefits of any new energy strategy. Such a strategy should begin, he asserted, with concern for minimizing environmental impacts, including greenhouse gases, climate change and water resources. Second, a sound energy strategy should support our country's energy independence, and third, it should be economically viable. The problem with the new energy approaches and efforts today, Aley observed, has been that they have reversed these priorities with economic returns given major attention. These strategies also have been driven by boosterism, politics, special interests and government subsidies.

Sound science and comprehensive study, not political agendas, should serve as the foundation for new energy strategies with special attention given to the second and third order consequences of new approaches to energy production. Aley cited the disposal of nuclear waste as an example of energy production which had not solved one of its major implications. He also mentioned the need to take a hard look at the cultivation of biomass fuel sources like switch grass to assure that they would not become invasive species or have other unforeseen disadvantages.

As ethanol production has expanded, its net impact on greenhouse gas has become problematic. Aley quoted a study reported in the New York Times that biofuels create more greenhouse gas than traditional fossil fuels when all energy inputs are taken into account. Studies have also suggested a range of energy return from ethanol production from a low of 69% to as much as 134%, prompting controversy about the costs and benefits of this new energy source.

Aley concluded that in our rush to create new energy sources, not only have the priorities been reversed, but we have also been trading food and water quality for fuel.

Ethanol production draws down the ground water aquifer and drives up the cost for nitrogen fertilizer and the cost for corn and other food crops. He cited a recent study of the negative impact of nutrient erosion from Missouri and other states on the Gulf of Mexico, effectively creating a "dead zone" in the gulf, as indirect consequences of new energy strategies. The dismissal of this study by political leaders has been an example of political agendas taking precedence over sound science.

Tom Aley's presentation and others at the New Energy Conference gave participants much to think about. What are our priorities and what should they be? To what extent do boosterism and political agendas control our strategy? Is sound science diminished in the rush to economic and political gain? Does energy independence come at the price of food and water quality? These and related issues were focused in the session reported here, and will be with us in the process of developing a sound and viable national energy policy.

UPCOMING EVENTS

March 7, 2008

WATERSHED COMMITTEE OF THE OZARKS
MONTHLY MEETING

Midtown Carnegie Library, 397 E. Central
Springfield, MO

Presentations:

Peter Gleick, NPR—Looming Water Crisis
Missouri DNR Update

March 7—9, 2008

CARING FOR CREATION CONFERENCE

Mount Sequoyah Conference & Retreat
Center, Fayetteville AR.

Contact Marilyn Braswell (800)760-8126 or
programs@mountsequoyah.org or visit
www.mountsequoyah.org

REGISTER ONLINE!

Planning to attend *Sharing Success: Lessons from Effective Watershed Organizations*? You can download the registration form, agenda and hotel information from our website uwr.org.

Questions? Call us at (417) 334-7644 or email to info@uwr.org

Water Warrior Nominations

Know someone whose work exemplifies commitment to water quality in the Ozarks? Nominate them for the Foundation's first annual Water Warrior award!

Open to all organizations and residents living and working in the upper White River basin, the Water Warrior award will honor both an individual and an organization for their commitment to keeping Ozarks water clean. Nominations are open to the public.

Letters of nomination should include details on contributions, leadership qualities and accomplishments an individual or organization has made toward preserving water quality in the upper White River basin area. Supplemental and supportive material may be submitted with the nomination letter.

Submit your nominee by February 29, 2008 to the Upper White River Basin Foundation, Attn: Water Warrior Award, PO Box 6218, Branson, MO 65615.

Frogs invisible now, but ready for spring concert

Ozarks Newsstand, February 20, 2008

For original article, click [here](#).

Looking across the desolate surface of a winter marsh or stream, it is easy to forget a thousand wild voices will announce the arrival of spring there in a few weeks. The vernal emergence of frogs and toads that mystified ancient people continues to thrill modern-day nature lovers. Science is discovering the secrets of their winter survival, but has yet to unravel them all.

Frogs and toads are different from many other animals that disappear during the winter. Woodchucks, chipmunks and bats truly hibernate during the winter, going into a profound sleep. These mammals produce their own body heat during hibernation. In contrast, frogs are at the mercy of surrounding temperatures. In warm conditions, they are very active, but in cold weather they have no choice but to be dormant. Their small bodies are too cold to move around or eat. In some cases, it is even too cold to breathe. When they emerge, they are fully committed to a season of activity, usually starting with breeding.

Herpetologist Jeff Briggler, the Missouri Department of Conservation's reptile and amphibian expert, said none of Missouri's more than 20 frog and toad species remain active throughout the winter.

"Frogs are programmed to get below the surface when winter approaches," Briggler said. "They get cues from surrounding air and soil temperature. In a lot of cases, the adults know their territories. They have their favorite crayfish holes, their favorite muddy bottom or even their favorite cave. They start arriving at their overwintering spots a few weeks before winter arrives. The young of the year typically forage on the surface as long as they can, trying to get their growth rates up."

Exactly where a frog spends the winter depends mostly on its species. Green frogs seek out spaces beneath rocks in small springs or seeps, where upwelling water prevents freezing. Pickerel frogs prefer to spend the winter in wet caves where available. Several thousand may migrate to suitable caverns and spend the winter together. Spring peepers, green frogs, bullfrogs and American toads also sometimes use caves to escape winter.

Northern crawfish frogs crawl down below the water table in prairie crayfish burrows to wait

for spring. Eastern and plains spadefoot toads use tiny shovels on their hind feet to burrow deep into sandy soil. Illinois chorus frogs go headfirst, using their well-developed front legs to burrow beneath the sandy soil. Green tree frogs hide beneath leaves at the bases of cypress or tupelo trees when the weather in southeast Missouri gets frosty.

Bullfrogs bury themselves in mud at the bottoms of ponds, lakes or wetlands. Briggler said pond owners often ask why all their bullfrogs have disappeared.

"The first thing I ask them is if they have renovated their ponds. People notice their pond is filling up with mud, so they dig out the pond and remove the mud layer needed for bullfrogs to survive through the winter."

Where some frogs go and what they do in the winter remains a mystery.

"You would think in this day and age we would know where everything goes," Briggler said, "but we don't. Cricket frogs and narrow-mouthed toads are so small we haven't been able to put radio transmitters on them and track them to their winter homes. We believe they hide in little holes and crevices around wetlands, but we don't know for sure."

Frogs have amazing adaptations for winter survival. Perhaps the most striking is producing cryoprotectants, natural antifreeze agents allowing them to survive sub-freezing temperatures.

Some of these substances, such as glycerol and glucose, lower the freezing point of water inside living tissues. Wood frogs, western chorus frogs and some tree frogs have a different type of freeze protection. Their bodies use urea, a metabolic byproduct, to modify the shape of water crystals so they do not form jagged shapes that poke through cell walls and other delicate structures.

Temperature is the main trigger for frogs' and toads' reappearance from dormancy to breed. Heavy rain also stimulates many species to start breeding.

When conditions are right, the emergence of a frog or a toad species in a particular locality can be a spectacular event.

"Wood frogs are explosive breeders," Briggler said. "Thousands of thousands may breed at one time, after a heavy rain in late February or early March. When they are done, they disappear into woods again."

Once the temperature is right and rains arrive, the earliest emergers can be heard calling. Illinois chorus frogs begin singing in the Bootheel as early as late January. Western chorus frogs, wood frogs and spring peepers join the choir in February in southern counties. Their relatives farther north and west may not tune up until March or early April. Crawfish frogs, leopard frogs, gray tree frogs and toads begin singing next, followed by late bloomers, including narrow-mouthed toads, green frogs and bullfrogs.

The conservation department tracks the number and annual appearance of some frog species. Volunteers provide the eyes and ears for this effort, spending a few minutes at each of several sites throughout the breeding season and recording their observations. Visit the [MDC](#) for more information.



The Wood Frog

I am a frozen frogsicle.

I froze beneath a logsicle.

My mind is in a fogsicle
Inside this icy bogsicle.

My temperature is ten degrees.

I froze my nose, my toes, my knees.

But I don't care, I feel at ease,
for I am full of antifreeze.

"The Wood Frog" is copyright 2001 by Douglas Florian from his book *lizards, frogs, and polliwogs*

BASIN NEWS

Expert: Injunction would lead to improved watershed conditions

The Morning News

<http://nwaonline.net/articles/2008/02/21/news/022208okpoultrylawsuit.txt>

Stopping poultry companies from disposing of animal waste in the 1 million-acre Illinois River watershed would reduce levels of bacteria and decrease the human health risk there, a microbiologist testified Thursday in federal court.

Can't link poultry litter to disease, scientist says

Arkansas Democrat Gazette

<http://www.nwanews.com/adg/News/217622>

Oklahoma can't produce any evidence to connect disease rates in the Illinois River watershed to poultry-litter spreading, and epidemiologist testified Friday.

Witness: Karst speeds runoff

Arkansas Democrat Gazette

<http://www.nwanews.com/adg/News/217427/>

The Illinois River's water quality would improve immediately if a federal judge bans the spreading of poultry litter on farms in the watershed, a Florida toxicologist testified Wednesday.

State water quality list due in '06 out at last

Arkansas Democrat Gazette

<http://www.nwanews.com/adg/News/217443/>

The Arkansas Department of Environmental Quality publicly vetted a long-delayed list of impaired water bodies this week, concluding that the health of the state's waterways remains essentially unchanged from the previous studies.

Chiles: Energy research gets low priority

Springfield News-Leader

<http://www.news-leader.com/apps/pbcs.dll/article?AID=2008802240379>

During a humorous presentation that earned him a standing ovation, Springfield City Councilman Dan Chiles noted the Bush administration has spent astronomically on the Iraq war while spending only a pittance on research and development of new energy.

GBE Presses on despite tightening ethanol market

Springfield Business Journal

http://www.sbj.net/weekly_article.asp?aID=20648067.2091255.1044472.8544773.8709975.401&aID2=80335

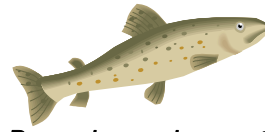
Market conditions for ethanol producers aren't nearly as favorable as they were in 2006, when Gulfstream Bioflex Energy LLC of Mount Vernon rolled out its plan to build a \$185 million corn-based ethanol plant on 252 acres east of Rogersville.

Ethanol plants could trigger new water-use laws

Springfield News-Leader

<http://www.news-leader.com/apps/pbcs.dll/article?AID=2008802240411>

Missouri's rush to expand ethanol production may end up rewriting the state's water-use laws.



Did You Know? Trout Season opens March 1 in Missouri.

Record crowd expected for trout opening day

The Morning News

<http://nwaonline.net/articles/2008/02/21/outdoors/022208roaringriver.txt>

Missouri's version of March Madness happens on the first day of that month, when thousands of anglers make the annual pilgrimage to Roaring River State Park and three other Missouri trout parks.

Trout class of 2010 is on its way at RRSP

Cassville Democrat

<http://www.cassville-democrat.com/articles/2008/02/21/news/story1.txt>

Each year, the Roaring River State Park Hatchery produces more than 212,000 pound of fish to stock the 1.7 miles of stream that wind through the tag area of the trout park.

WATER NEWS

Why stormwater matters, and how you can help keep it clean

Sudbury Town Crier

<http://www.wickedlocal.com/sudbury/news/lifestyle/columnists/x1529758334>

Environmental to the core

The Joplin Globe

http://www.joplinglobe.com/profiles.joplinglobe.com/local_story_049161932.html?keyword=topstory

Grace Hill teacher uses worms, old pajamas in environmental lessons

The Morning News

<http://nwaonline.net/articles/2008/02/21/news/022208rzgreengracehill.txt>

Ponds take on broader purpose

Springfield News-Leader

<http://www.news-leader.com/apps/pbcs.dll/article?AID=2008802210335>

OPINION

Animal Waste: Department works to protect

Springfield News-Leader

<http://www.news-leader.com/apps/pbcs.dll/article?AID=2008802250310>