

# OZARK ONE EARTH ONE CHANCE SIERRAN

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*Icy White Pine Branch*

*photo by Marsha Armentrout*

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# Introduction to Genetic Engineering

by Ginger Harris

**G**enetic Engineering (GE) has been very much in the news recently from the ground-breaking for a new Plant Technology Center in St. Louis to the protests against GE in Europe and at the World Trade Organization conference in Seattle. Will this new technology help to “feed the hungry of the world,” as its advocates predict? Or will it have unanticipated consequences that will make our descendants wish we had not acted so rashly to commercialize it before fully understanding it? The following article is based on notes from a presentation about GE in agriculture given by Melissa Belvadi at the St. Louis Ethical Society 9:45 Forum on October 31, 1999.

This article will address the following topics: the scientific basis of GE of crops; whether GE is just like traditional selective breeding; impacts on human health and on the environment; some global and economic impacts; labeling and regulation; and finally, the claims that GE will help to feed the world’s current and future hungry populations.

## *The science behind GE*

GE involves the extraction of genes from one organism and insertion into another organism in order to give the second organism some desirable

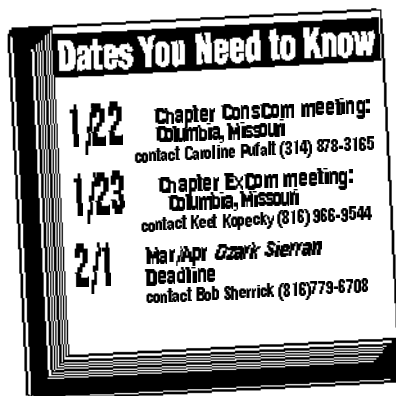
trait of the first.

Genes are the fundamental carriers of biological traits. Genes determine that we have two eyes and what color they are. Genes are made up of DNA, and genes themselves make up chromosomes. It’s the location of a gene sequence on the chromosomes that determines what the gene actually does.

In order to understand how GE is different from conventional selective cross-breeding, we need to understand what alleles are. Alleles are the different forms in which a genetic trait can express itself; for example, blue versus brown eyes. Alleles are limited to the options available in the gene pool for that particular gene for that particular species.

What is the process for creating a GE plant?

1. Through genome mapping scientists identify which particular stretch of which chromosome controls a trait they want; for instance, the ability of a flounder to resist freezing in very cold water.
2. Scientists use special lab techniques to cut just that segment out and attach to it a special virus. They also add another bit of DNA which confers the trait of antibiotic resistance.
3. The virus creates millions of copies of this chromosome segment in a petri dish.
4. The technician “loads” the millions of bits of DNA into a “gene gun” and “shoots” them at the cells of the seed of the target plant; for instance, a tomato.
5. Some bits of DNA “take” and some miss. An antibiotic is applied to the DNA bits that didn’t “take” in order to kill off the latter. The previously introduced antibiotic resistance helps keep



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**Genetic Engineering** continued from page 3 the absorbed DNA bits alive. This antibiotic resistance remains forever in the crop.

6. Technicians grow the cells into full plants, and then study them in more traditional ways to confirm that they have the desirable traits.

The gene gun has no control as to where on the plant's various chromosomes the new DNA inserts itself. Scientists assume that if the DNA landed in a bad place they'll find out during the growing stage because the plant will show ill effects. These plants are discarded.

### ***How is GE different from selective breeding?***

Proponents of GE technology often claim that GE does the same thing that plant breeders have done for thousands of years. Proponents call both processes "gene enhancement" and say GE merely selects traits with more control than we ever had in the past.

The most important difference between GE and selective breeding involves the difference between genes and alleles. Selective breeding involves crossing two different members of the same species. In this case, both original plants have the same genes. The breeder tries to combine a particular allele from one parent (e.g. color) with the desirable alleles of the other parent (e.g. height). If the wrong alleles combine (e.g. unwanted color with unwanted height), the breeder keeps trying. But the chromosomes maintain their integrity. The process of combining involves normal sexual reproduction, which is a mechanism that has evolved over millions of years. Conventional breeding avoids disrupting the basic functions of the plant.

GE, on the other hand, adds a completely new function when it adds new genes from other species.

Dr. Michael Antoniou, senior lecturer in molecular biology and experimental pathology at King's College London, with 17 years

experience in the use of GE, wrote:

"The totally artificial nature of GE does not automatically make it dangerous. It is the imprecision in the manner by which genes are combined and the unpredictability in how the introduced gene will interact within its new environment which results in uncertainty. The balanced gene functions that have evolved together and which are preserved with traditional methods, are lost with GE..."

The manner in which GE animals and plants are produced always selects for the splicing of the foreign gene into regions of the host DNA where other natural genes are trying to work. Given the interdependence of gene function within any grouping of genes, this random splicing of the foreign gene into the host DNA will always result in a disruption in the normal genetic order. Therefore, GE of animals and especially of plants always results in a loss, to a lesser or greater degree, of the tight genetic control and balanced functioning which is retained through conventional cross breeding."

### ***Some biological and ecological dangers of GE***

The overarching danger is the introduction of unexpected side effects at a genetic level, a phenomenon that scientists have labeled pleiotropy. Pleiotropic effects are by their nature unpredictable. These effects can happen in one of two main ways: either the gene that was clipped out from the source organism actually does more than was expected or desired, or that gene when added to your target organism combines with the other genes already there to do more than desired.

For example, scientists trying to make red petunia flowers engineered a red gene from corn with white petunia flowers. They did get red petunias, but those red petunias also had more leaves and lowered fertility, which was completely unexpected by the scientists who still don't know exactly why. Similarly, a GE effort to make faster

growing salmon made faster growing green salmon, and again, the scientists could not explain where the green came from.

Scientists are coming to understand that genes are not independent bundles of function. They are highly interdependent with the other genes that make up the total organism, creating what Dr. Antoniou described as “gene balance.” Scientists do not yet understand how that balance works. There is immense potential risk to human beings and to the ecosystem in commercializing the products of GE without first understanding gene balance.

Below are some specific biological and ecological risks from GE that are either expected or already documented:

1. The unexpected effects of GE could create or introduce allergens or other toxins. Many plants, like tomatoes, have the ability to create substances that are very toxic to humans, but which have been bred out of them by centuries of selective breeding. “Bred out of them” may just mean “made the gene inactive,” whereas the engineered gene could turn one of these toxin-creating genes back on. Since we don’t know where on the chromosome the inactive toxin gene is, and we don’t control where the new gene goes, this possibility is completely out of the engineer’s control.

Also, the transferred gene itself may carry a human allergen in it. For instance, an early attempt to transfer a desirable trait of brazil nuts to another food accidentally transferred the brazil nut allergen. Many people are allergic to brazil nuts. The researchers discovered it only very late in the testing process and had to kill that product. The brazil nut allergen was known and could be tested for. But scientists are now looking at transferring genes from organisms which are not foods into food crops. Thus, there is simply no way of knowing — until they’re actually in the food supply —

whether these new genes will be allergens to some proportion of the population.

2. The gene may affect the nutritional quality of food. There are already controversial studies being done on GE soybeans which are now being grown extensively in the US. Some studies show that some GE soybeans have less phytoestrogens than regular soybeans. Phytoestrogens are considered useful in counteracting cancer. Some biotech industry studies dispute the negative studies. One problem is that the government did not test for nutritional content before permitting large scale commercialization of these products.
3. Another risk to humans is the possible increase in exposure to pesticides from the agricultural practices that are changed by GE products. Close to 80% of GE crops now in fields in the US are specifically engineered for resistance to herbicides. An herbicide kills plants, so people usually don’t consume much herbicide on their food, since spraying it on the food would have killed the crop. When crops become immune to herbicide through GE, however, farmers can spray much more herbicide directly on the edible crop. Thus, the herbicide will enter the human food supply as never before. Monsanto’s Roundup herbicide is at the heart of this issue because there is increasing scientific data suggesting that consumption of Roundup can cause non-Hodgkin’s lymphoma (a type of cancer), depressed immune system, and a near fatal condition called toxic pneumonitis.
4. GE plants may be considered non-indigenous plants: they did not evolve their characteristics in synchronization with the other organisms of the local ecosystem. Humans have learned the hard lesson — e.g. from snakes in Guam to kudzu in the Deep South — that introducing

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non-indigenous organisms can have very unexpected and very negative effects on the environment. GE plants pose a special risk because many of the traits being engineered into these plants convey extra survivability that would help them overcompete in the wild; for instance, through insect resistance or cold resistance. This risk might come from the GE crop itself escaping from the farm to become a weed. Or it could come from the pollen of the crop being crossed by Mother Nature's pollinators with weedy local relatives to create super-weeds.

5. GE poses a risk to beneficial organisms in the ecosystem. Research indicates that Monarch butterflies are harmed by GE corn, and lacewings and ladybugs (which serve an important ecological function both for farmers and in the wild) are harmed by specific GE products now used extensively in the Corn Belt.
6. Another risk is that of gene pollution to neighboring farms. So far, three cases have been documented in which GE pollen has blown to organic or non-GE farms, and pollinated and tainted the latter's crops.
7. GE risks the loss of a valuable organic pest control tool: the naturally occurring bacteria, bacillus thuringiensis (Bt). Bt's ability to kill crop pests like the cotton boll weevil, European core borer, and cucumber and squash beetles — while not killing beneficial insects like bees, nor affecting the plant at all — makes Bt valuable to farmers.

Organic farmers and gardeners have been using Bt for decades to control these pests. Because Bt lasts only a few days on plants outside, farmers have used it only when they actually see the pests, and spray in limited amounts to control them. Organic farmers in particular are concerned about

insects building up resistance, and have followed a kind of ethical code to use Bt judiciously, as it represents the only organic treatment for some of these crop-killing pests. This kind of limited use has meant virtually no serious resistance developed over several decades of use.

However, instead of inventing their own means of killing pests like the corn borer and cotton boll weevil, GE scientists have co-opted Bt. Since no one owned Bt, no one could stop them. They engineered the "active ingredient" of Bt directly into crops, especially corn and cotton. This 100% present use guarantees that insect resistance will build quickly, after which Bt itself, as well as seeds engineered with Bt, will become useless to everyone.

Scientists argue about how long it will take for Bt to lose its effectiveness. The biotech industry claims 10 years, but recent studies indicate an even faster loss. When Bt's effectiveness is lost, it is lost forever, and thousands of organic farmers whose livelihoods depend on these crops will have no defense against these pests.

The two sides also argue over plans for setting aside "refuges" to slow down (but not prevent) the inevitable loss of resistance. Recent studies indicate that the assumptions on which the biotech industry made its calculations on the rate of development of resistance — and on which the USDA approved Bt-engineered products and refuge plans — are turning out to be flawed. Some assumptions involved how long Bt-resistant pests vs. non-resistant pests require to reach maturity, and whether the pest's resistance is a dominant or recessive trait. (see Nature Aug 5, 1999, "Boll worms, Genes and Ecologists," by M. J. Crawley.)

### ***Global and economic impacts***

GE poses complex economic

risks, because a very small group of companies are gaining control over the most important food crops of the world. The top three conventional seed corporations (Dupont/Pioneer, Monsanto, and Novartis) also constitute two of the top three GE seed marketers. These same three companies are among the top five agrochemical, pesticide, and herbicide sellers world-wide.

By the end of 1998, Monsanto controlled 87% of the US cotton seed market, and now grows 88% of all GE seed. Four companies (DuPont/Pioneer, Monsanto, Novartis, and Dow) control 69% of the North American corn seed market and at least 47% of the commercial soybean seed market. The top five vegetable seed companies control 75% of the global vegetable seed market.

These companies can use their leverage to pressure farmers — especially farmers in poor countries dependent on IMF or private microcredit loans — into purchasing these companies' GE crops and chemicals. Farmers have experienced that kind of pressure already with the Green Revolution. Monsanto recently came close to an exclusive deal with Grameen Bank, which extends microcredit loans in third world countries. Farmers rely heavily on loans, since they have a lot of up front costs in the spring and no income until harvest in the fall. Thus, an exclusive deal between Monsanto and Grameen would be very strong leverage in favor of Monsanto.

Seed companies are working to engineer into the plants themselves the control technology that would force farmers to keep buying the company's seeds instead of saving their own seeds from each harvest. Due to public outrage, Monsanto now says it won't use the Terminator Technology which it will own if its proposed purchase of Delta Pine and Land Co. is accepted by the Federal Trade Commission. But the big seed companies are now working on a related technology, dubbed "Traitor genes," in which the seed won't germinate unless a new

chemical is sprayed on them. This technology would, again, deny farmers any benefit from saving seeds.

The companies say that farmers can always choose not to buy the GE seeds if they aren't to the farmers' advantage. But it's not that easy. If your neighbor sprays Roundup over his farm, the drift will kill your crop unless yours is also genetically engineered to survive Roundup. This has already happened. This kind of problem in combination with the possible restrictions on loans, the loss of Bt as a tool for organic farmers, control by the same companies over the conventional seed market, and the genetic pollution referred to earlier, make a mockery of the idea that farmers can choose.

### ***Labeling and Regulation***

A rational and efficient market assumes that consumers make informed choices. However, without labeling which food is or is not genetically engineered, consumers cannot make informed choices. The issue of labeling also involves the basic right of people to know what they're eating, whether or not it poses any known risks. In addition, as pointed out by molecular biologist and cancer researcher Dr. John Fagan, "without labeling, it will be very difficult for scientists to trace the source of new illness caused by genetically engineered food."

GE companies have fought to prevent labeling by arguing that organic growers will benefit the most from labeling and therefore should bear the additional cost of labeling. However, the primary issue involves consumer information and choice, not the cost of labeling. In fact, organic and non-GE producers would be glad to pay for labeling, but are currently denied even the right to label their own food, under threat of lawsuit by certain GE companies.

The Food and Drug Administration (FDA), United States Department of Agriculture (USDA), and Environmental Protection Agency (EPA) are theoretically charged with

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**Genetic Engineering** continued from page 7 regulating food in the US. However, because of documented instances of agency employees going to work for GE companies they were regulating immediately before and/or after their stint in government, the regulatory agencies are just as likely to promote as to regulate GE food.

All ecological safety testing is done by the companies. Government agencies provide no raw data oversight. Once a product gains commercial approval, government oversight largely ends.

Regarding the regulation of food safety, in 1992 the FDA issued a controversial policy that genetically engineered foods are “substantially equivalent” to conventional foods, and thus do not have to be labeled or safety tested prior to entering the marketplace. So far, every single GE product has been granted this status and no toxicological or nutrition tests have been done by the US government.

A recent article in the journal *Nature* addressed this policy as follows:

“The concept of substantial equivalence has never been properly defined; the degree of difference between a natural food and its Genetically Modified (GM) alternative before its ‘substance’ ceases to be acceptably ‘equivalent’ is not defined anywhere, nor has an exact definition been agreed by legislators. ... Substantial equivalence is a pseudo-scientific concept because it is a commercial and political judgment masquerading as if it were scientific. It is, moreover, inherently anti-scientific because it was created primarily to provide an excuse for not requiring biochemical or toxicological tests. It therefore serves to discourage and inhibit potentially informative scientific research.”

Regarding the validity of the testing that the agencies do require, current US government policy is that once a product is approved for commercial release based on small test plots, no further oversight is done.

However, Philip Regal, a molecular ecologist at the University of Minnesota, implies that even the limited testing that agencies require is inadequate:

“Small field populations of genetically engineered organisms (GEOs) can provide valuable data to help make decisions about widespread commercial releases. But one cannot claim that since plants in small confined and ecologically irrelevant field plots, plots used largely to study commercial features, have not ‘caused problems’ or have not ‘caused surprises’ then it will be safe to truly release any transgenic forms commercially.

For example, ‘no adverse consequences have resulted from work in more than fifteen years in laboratories and in over 500 field releases’ (Casper & Landsmann 1992, p. xiii). The term ‘releases’ is completely misleading. These were largely not scientific tests of realistic ecological concerns.

It is hard even to imagine a case where one might have concerns that ecological problems might arise from widespread release, and where one would expect to see ‘problems’ by simple inspection of field plots, especially if they contained no potential native competitors.

After all, ecological problems are only apt to occur within the context of biological and physical interactions that take place on natural soils and within a natural community of competitors. Yet this sort of non-data on non releases has been cited in policy circles as though 500 true releases have now informed scientists that there are no legitimate scientific concerns.”

### ***Is GE a solution for world hunger?***

The risks of GE could be outweighed if GE could relieve overwhelming human suffering. But evidence may actually point in the other direction.

The quantity of food is not currently the cause of world hunger.



An estimated 800 million people starve or are severely malnourished now. According to the United Nations' World Food Programme, however, the world currently produces one-and-a-half times the amount required to provide everyone with a nutritious and adequate diet.

In response to claims by Monsanto that GM crops will help feed the world's growing population, 24 leading African agriculturists and environmental scientists representing their countries at the UN wrote: "We do not believe that such companies or gene technologies will help our farmers to produce the food that is needed in the 21st century. On the contrary, we think it will destroy the diversity, the local knowledge, and the sustainable agricultural systems that our farmers have developed for millennia and that it will thus undermine our capacity to feed ourselves."

In response to a comment in late 1997 by a British scientist who claimed that those who want GE crops banned are undermining the position of starving people in Ethiopia, Tewolde Egziabher of the Institute of Sustainable Development in Addis Ababa, said: "There are still hungry people in Ethiopia, but they are hungry because they have no money, no longer because there is no food to buy. We strongly resent the abuse of our poverty to sway the interests of the European public."

On the other hand, socio-economic factors seem to have more impact on world hunger than does the quantity of food produced. On June 30, 1999, the World Food Programme cited a recent study showing that improvements in women's education have accounted for 44 % of the reduction in child malnutrition over the past 25 years. When women's status also improved, the percentage increased to over 50%. To the extent that third-world farmers become dependent on buying seeds, pesticides, and fertilizers from multi-national corporations, and depend on selling their produce to

first-world consumers, they may not be able to feed their own families.

GE proponents try to justify the use of short-term technology, like Bt (which will be useless within 10 years) as a way to feed the world population in 2050. Proponents are rushing GE products into our food supply without adequate safety and nutrition testing and far in advance of the claimed need. Also, despite claims made for the technology's potential to increase agricultural yields, the evidence for this is very weak and is contradicted by other evidence that GE crops give lower yields.

In conclusion, the following quotes provide a reminder of the biological and economic risks to consumers inherent in the current commercialization of GE food.

Robert Shapiro, Chief Executive of Monsanto, (SWF News interview, San Francisco, 27 October 1998):

"But we realize that with any new and powerful technology with unknown, and to some degree unknowable — by definition — effects, then there necessarily will be an appropriate level at least, and maybe even more than that, of public debate and public interest."

Phil Angell, Monsanto's director of corporate communications, in an interview with the New York Times Sunday Magazine:

"Monsanto should not have to vouchsafe the safety of biotech food. Our interest is in selling as much of it as possible. Assuring its safety is the F.D.A.'s job."

Finally, from one of the co-discoverers of the structure of DNA, Dr. James D. Watson:

"This [GE] is a matter far too important to be left solely in the hands of the scientific and medical communities. The belief that...science always moves forward represents a form of laissez-faire nonsense dismally reminiscent of the credo that American business if left to itself will solve everybody's problems. Success of a corporate body in making money need not set the human condition ahead."

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## We Defend Air Suit Before Highway Commission

Following is the text of a statement made to the Missouri Highways and Transportation Commission at its December 3 meeting regarding the Club's suit regarding St. Louis air quality. The Commission has intervened in the suit because it could result in withholding of federal highway funding from the St. Louis region.

"...The Sierra Club and the Missouri Coalition for the Environment have sued the EPA to enforce the Clean Air Act with respect to the failure of the St. Louis region to reduce its ozone pollution levels to within the health-based federal limits.

Local sanctions are being sought, as they are required under law.

Contrary to popular misconceptions, however, the suit does not ask the Court to order statewide sanctions.

We understand that the Court cannot order such sanctions. At most the

Court could remind the EPA that it has the power to impose such sanctions. Given that the EPA has not yet done the things the law requires it to do, and considering the makeup of the Senate committee that oversees its budget, it seems unlikely that the EPA would go from zero to warp speed on this issue by imposing statewide sanctions.

The Sierra Club didn't make up the ozone standards or the rules by which they are to be met. We just want clean air for St. Louis, and we are engaged in a lawful action to see that existing laws are carried out.

You and we might disagree about air quality matters, but that should not prevent our working together to improve Missouri's transportation system."

The Commission appeared to take that statement in stride.

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## New Chapter Political Chair

Hello, I am Thomas Moran, not the celebrated painter, but your newly-elected Chapter Political Chair. I am looking forward to an exciting season of getting the environmental agenda taken off the back burner and putting it into its proper place among issues facing the candidates. It will be my job, along with much help from you, to keep the Pol's feet to the coals, to get responsible people nominated and voted for, and to keep the baddies out of office. Together, we can accomplish much. Let's get out there, work for the children, their health, and our treasured natural places. We CAN (as AmeriCANS) get the government and our elected and nonelected employees to stand up and take notice of our desires. We are a strong organization; several would-be office seekers are looking for our endorsement. They may get it if they are worthy by past record and future promises to help preserve and protect our priceless natural heritage. With your help, we can identify, support, and help get elected those who are worthy, and work to defeat those with dismal records on the environment and children's health. Together we can make a critical difference. I look forward to working alongside you and the chosen few among the office seekers to advance our causes. Lets get to work!

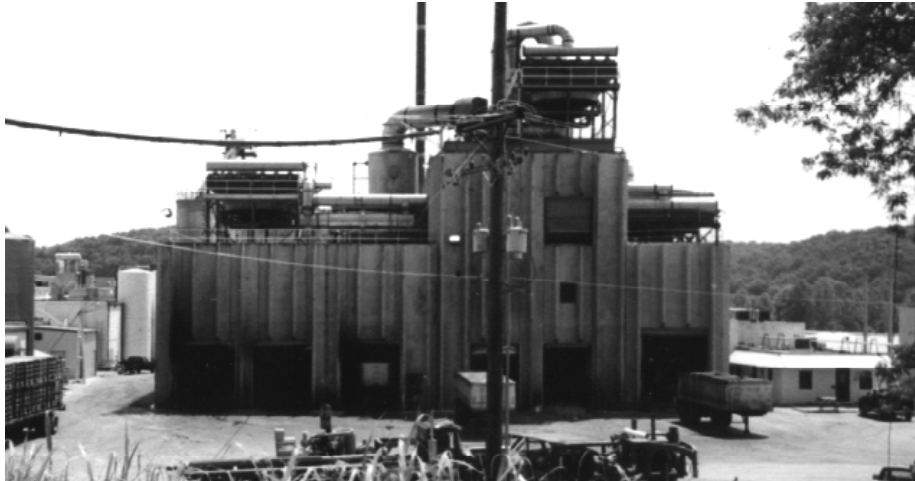
# Mr. Tyson's Neighborhood (and Mr. Simmons' and Mr. MO-Ark's)

by Ken Midkiff and Caroline Pufalt

Albert Midoux and Hobart Bartley know chickens. These former USDA meat inspectors once worked in the massive slaughterhouses of Hudsons (now Tysons) and Simmons in McDonald County, Missouri, 'way down there in the southwest corner of the state. Hobart and Albert also know their area well — where all the poultry houses are located, where the waste is dumped, and what has happened to

wastewater per day. Simmons discharges into the now infamous Cave Springs Branch, and Tyson's wastewater goes into the Elk River.

Add to this the huge egg laying houses of Mo-Ark Industries— several million laying hens contained in those notorious little cages, stacked so that the wastes of the cages above drip over the metal ceiling of the ones below. All of this liquid crap ends up in a large pit and then is tanked out and sprayed on local fields. This can best be described as a stinking mess...



Tyson's rendering plant, McDonald County, Missouri

photo by Albert Midoux

the streams and rivers as a result.

On any given day, there are 26 million chickens in McDonald County. On that same day, Tyson's slaughterhouse will "process" 300,000 of those chickens and Simmons a like number. Six hundred thousand a day, three MILLION chickens a week — killed, cleaned, cut up, packed in ice, and shipped out. The innards from these and several other plants are rendered into various products in the slaughterhouses' "protein plants." A lot of wastewater is created in all of this slaughtering, cutting, cleaning, and rendering: each of these facilities generates about 1.2 million gallons of

The Elk River and its tributaries receive all of this waste, from the slaughterhouses, the broiler growing operations (ten buildings each with 22,000 chickens in each building), and the laying facilities. Twenty-six million chickens' worth of waste.

These were the sites, sights, and smells that greeted several Ozark Chapter leaders who were taken on tours of "Mr. Tyson's Neighborhood" by Albert Midoux and Lynette and Hobart Bartley. It sounds bad enough just reading about it, but up close and personal, it is really ugly. And it smells worse.

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The Ozark Chapter has been involved for several years now in pushing the state and federal agencies to bring the companies' polluting ways

under control. This has involved public hearings, administrative appeals, posting warning signs on Cave Springs Branch, and assisting local residents in getting the story out to the media and the public.



*Tyson's discharge pipe empties into Elk River*

*photo by Albert Midoux*

## ***Sierrans gather at Neosho***

A group of Sierrans in southwest Missouri has been involved, along with other concerned citizens, in bringing the problems of "big chicken" to the public's attention. Those Sierrans have joined together in an interest group called Thunderidge.

In November the Ozark Chapter Conservation and Executive Committees met with local Sierra Club members and other interested folks in Neosho, Missouri, to share dinner and conversation. The local group has not spent all its time on big chicken problems, although that issue alone takes considerable attention. It has also

addressed dairy CAFO issues, expanding local recycling options, and has active stream team participation through the leadership of Bill Miller. Several of the Chapter Conservation and Executive Committee members had not met the active Sierrans in southwest Missouri prior to this weekend. Thus we all enjoyed our visit and a chance to see some of the sights in southwestern Missouri. The fact that some of those sights were less than glamorous only reinforced the appreciation of the work that local conservationists are doing.

## Smart Growth, Congestion Pricing Recommended to Highway Commission

by Ginger Harris

On December 3, Ozark Chapter Transportation Chair Ron McLinden spoke to the Missouri Highways and Transportation Commission. He reminded them of the statement he had made 21 months earlier about smart growth, and asked Commissioners to carefully consider an upcoming report of MoDOT's Smart Growth Task Force that is expected to reach them early in 2000.

Ron identified one of the Commission's most fundamental unwritten policies as appearing to be at odds with smart growth. "That policy," he said, "is that you will do your level best to build roadway capacity to meet the demands of all of the traffic that presents itself on the state road system."

"The broadly held expectation that you will continue this policy means that local jurisdictions have less incentive to guide their own development so as to limit road needs. It means that less costly distant land is developed, since state roads can be counted on to make it more valuable. It means that households make their own location choices with fast, free commutes in mind, and in anticipation of future resale values buoyed by the growth that depends on the expectation that you will continue to add capacity — in an unending feedback loop. In summary, that expectation leads to urban growth patterns that are less smart than they might otherwise be."

Ron also asked the Commission to consider "congestion pricing" as part of its request to the legislature for authority to operate toll roads. The idea is to charge a toll for each motorist entering an urban freeway during morning and evening rush hours. "Scarce goods like freeway capacity shouldn't be free," he said. "Market mechanisms like time-of-day tolls should be used to see that those scarce resources are used most efficiently. By doing so you should be

able to avoid or at least postpone adding freeway lanes that would be fully utilized only a few hours each week. We'd further suggest that congestion pricing revenues be used to help fund public transit in the same corridor in order to further reduce traffic."

Ron closed by reiterating that "smart growth" policies should be part of the Commission's plan for the state. "If you can avoid adding highway capacity by supporting local development practices that reduce total travel demand, and through selective use of

market incentives like congestion pricing, then by all means you should do so. And in fact I think one measure of your credibility will be the degree to which you do just that."

Ron's presentation appeared to have been well received. At the close of his statement Melissa Blakley of the Thomas Hart Benton Group ExCom presented a Sierra Club Wilderness calendar to each Commission member.

*"That policy," he said, "is that you will do your level best to build roadway capacity to meet the demands of all of the traffic that presents itself on the state road system."*

## State Chip Mill Committee Releases Report

by Caroline Pufalt

November, 1998, was the starting point for the Governor's Advisory Committee on Chip Mills, and in December, 1999, it released its report for public comment. It would be easy to be disappointed in the report as it failed to reach consensus on tough measures needed to protect Missouri's forests from the high capacity chip mill threat. But the many members of the public who followed the committee's work can appreciate the difficult job and short time frame the committee had.

The draft report acknowledges many problems facing Missouri's forests. It reports on the ecological, economic, and social angles of forest management that chip mills aggravate. The committee members themselves were a diverse group of people; the fact that the report recognizes these problems is a valuable accomplishment. Early on, committee members recognized that the chip mill threat was only highlighting some underlying problems in forest ownership and management.

The committee did agree on the need for logger education and for more information and agency assistance to landowners. There was also considerable agreement on the need for state standards for certifying professional foresters. The committee was unable to come to agreement on issues such as how to enforce the use of what is called "best management practices" (BMPs), which are minimal standards set to reduce soil erosion and water runoff. There was no agreement on methods to reduce large scale clear-cutting or land conversion.

There was recognition among many committee members of the desirability to limit chip mill operations

in Missouri. High capacity chip mills put pressure on landowners to clear-cut and lose the potential growth of many pole size trees. This is poor timber management and has obvious ecological impacts. But again the committee found it difficult to agree on how to limit chip mill presence in Missouri.

The draft did include a discussion of these issues and ideas on how to implement these stronger measures were provided in the public comment period. The Sierra Club submitted comments and many individual Sierrans also contributed.

The draft report can be viewed as an important step in ongoing efforts to improve the management of Missouri's forests. Committee members included legislators, agency personnel, landowners, mill owners, and concerned citizens. Together they listened to many Missourians and out-of-state specialists discuss chip mills. The committee held public hearings and took a field trip. It visited a variety of forest management sites in the state. Throughout the committee's year-long work, the public was invited to view its actions, and on many occasions contribute and participate in discussions. The committee was established by Governor Carnahan and the state can be credited with taking this important step in addressing chip mill threats. Now, however, in order to reach real protective measures we must continue efforts at legislation and education to bring about the changes we need.

Although the official comment period for the report ended in December, this issue is far from over. It is never too late to let your state representative know about your concern for Missouri's forests and your desire to see them protected from chip mills.

# BIG INDUSTRY WANTS DIFFERENT RULES FOR ELECTRICITY IN MISSOURI: WILL THE ENVIRONMENT BE AT RISK?

by Wallace McMullen

A battle in the legislature concerning electricity may have major environmental and cost effects for Missourians. Large industrial users such as Boeing, Anheuser-Busch, and General Motors want the regulatory structure changed so that they can use their buying power to get electricity at a lower cost.

Restructuring, or "deregulation" of the electric industry could have major environmental impact because our big electric utilities emit major amounts of airborne pollution from their generating facilities. EPA and the Missouri Department of Natural Resources (DNR) estimate that coal burning electric utilities in our state put out more than 80 million tons of carbon dioxide and over 60 million tons of Nitrous oxides (NOx) per year. Carbon dioxide is a greenhouse gas, contributing to global warming; NOx cause acid rain, smog, and harmful deposits in water bodies.

## CHEAP COUPLED WITH POLLUTING?

The restructuring of the electric power industry could potentially be very detrimental to the environment and small consumers. Utility companies might be able to evade environmental concerns under the guise of being competitive, despite the social costs and adverse environmental impacts of generating and selling

electricity at the lowest dollar cost without concern for the long-term effects involved.

Big industrial electric consumers want to get the lowest price possible on the electricity which they consume, and from the utility point of view, big customers with a consistent demand for electricity are more desirable than small residential consumers who have great variation in their seasonal consumption of electricity. The result of these factors in a deregulated retail market structure might give the big customers lowered costs, and produce higher charges per unit for the small customers. This would especially hurt residential ratepayers with limited income.

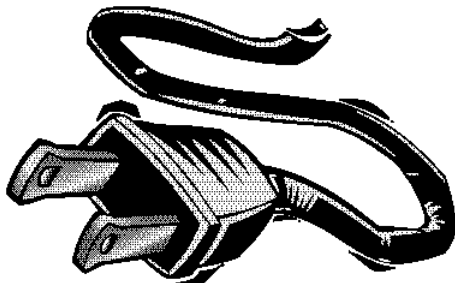
On the other hand,

environmentalists are hoping to get some environmentally friendly provisions enacted as part of the re-examination of the electric industry that the debate over restructuring has produced. The major themes are

encouraging use of renewable energy sources, especially wind and photovoltaic generation, and reducing the consumption of fossil fuel. Policies that reduce the need for fossil fuel consumption prevent pollution.

## NET METERING

Homeowners who invest in solar power from photovoltaic cells or a small wind generator at their home soon discover that Missouri has no law about how utilities should deal with



continued on page 16... **Deregulation**

**Deregulation** continued from page 15 the situation of a residential ratepayer who might be able to run their electric meter backward a few hours a month. Commonsense would lead us to expect that one could get a credit for home generated electricity, that the credit would be deducted from the bill for electricity consumed, and that the utility would tally up a balance sheet per month, or perhaps per quarter. This concept is called net metering.

Net metering legislation has passed in other states, usually establishing a system for credit to residential ratepayers for generation from renewable sources they have installed, and has usually dealt with two other issues that can bedevil solar and wind power enthusiasts: insurance and interconnection requirements.

Some utilities have demanded huge amounts of liability insurance as a prerequisite for connecting small-scale generation to their system. Also, they can impose difficult equipment requirements for making an interconnection between a home and their supply grid. Net metering legislation usually creates reasonable standards for both issues.

The Solar Energy Industries Association (SEIA) has developed a model law for net metering and interconnections standards. If such legislation was enacted in our state, it would be a significant step toward encouraging widespread use of solar and wind power in Missouri.

### **GREEN CHOICE and GREEN CERTIFICATION**

Some enlightened consumers want to purchase "Green Power," that has been generated from a renewable source and are willing to pay a small premium to their utility, perhaps \$5 a month, to get it. A related issue is "How much pollution is associated with the electricity supplied by a specific retailer?" since each supplier will probably have a mix of coal, natural gas, nuclear, and perhaps renewable generation in the electric power they supply. The Sierra Club

will push for "truth in advertising" provisions that inform consumers about how much pollution is associated with the electricity they purchase, and also for big utilities to be required to provide their customers a "Green Choice" option. UtiliCorp is now offering a Green Power option for wind power in their Missouri and Kansas service areas.

### **RENEWABLE PORTFOLIO STANDARD**

We need to end reliance on fossil fuels and nuclear generation sources, and develop sustainable alternatives for supplying electricity. The necessary technologies are in place. But the playing field is not level — fossil fuels get government subsidies and tax incentives in a variety of ways, plus moneys for research and technological development. Oil exploration subsidies, federally funded research, and legal structures that favor established industry are in place and ongoing.

One way of aiding renewable sources and enabling sustainable types of generation is to establish a requirement that a small percentage of the market be given to sustainable, renewable sources of electricity. Most proposals increase the requirement incrementally for 15 or 20 years, to a target of about 7.5% of the market. Establishing such a requirement would be a major boost to developing new sustainable generating capacity which will then have a secure market. Once utility scale renewable sources are established, they could eventually supplant current fossil fuel power sources.

A requirement that a small percentage of the electricity sold be generated by renewable sources has been termed a Renewable Portfolio Standard (RPS). States that have already passed a RPS have included wind and solar power, and sometimes biomass and hydropower as forms of generation that meet the requirement. Generation from burning biomass has become controversial because the emissions from burning can be harmful. Big dams for hydroelectric



generation can also have a major environmental impact, which makes them questionable as desirable sources of electric power.

#### LEGISLATIVE ACTIVITY

The legislature's Joint Interim Committee on Telecommunications and Energy held monthly hearings in the fall of 1999 on topics pertaining to electric restructuring. Senator Wayne Goode drafted a bill on the subject, and has solicited comments from interested parties. Also, last session Senator Goode introduced a bill creating a revised tax structure that would accommodate electric industry restructuring, which passed the Senate.

Some developments have indicated momentum toward the legislature passing electric industry restructuring in the forthcoming session. Last year AmerenUE had their own proposal about the new structure that they favored, with other big firms taking a different approach. Now AmerenUE has joined with the

approach of the Missouri Industrial Energy Consumers Association, made up of firms such as Boeing, Ford, GM, and Anheuser-Busch, and they are united in pushing for deregulation now.

On the other hand, Missouri presently has lower rates than states which have tried "deregulation," which encourages policy makers to proceed carefully, and avoid messing up a structure that is working acceptably in its present form. The association of rural electric cooperatives has opposed restructuring, and this is an election year, which tends to stymie controversial proposals.

Readers who want to follow developments on these issues can subscribe to the Green Report, which covers activities of the legislature, by contacting the Ozark Chapter office. More information on electric utility industry restructuring can be found in a previous Ozark Sierran article — go to [www.sierraclub.org/chapters/mo/sierran.htm](http://www.sierraclub.org/chapters/mo/sierran.htm), and select the February 1998 issue.

## Forest Service Roadless Area Policy Means Opportunity for the Mark Twain

by Caroline Pufalt

The Forest Service is proposing a new policy to establish protected roadless areas in national forests across the country. The initiative was signed by President Clinton in October and is in the planning stage now. This means an opportunity to protect roadless areas in the Mark Twain National Forest (MTNF) in Missouri. But in order to make this work best for Missouri several adjustments will need to be made to the initiative.

During the public comment period in December Missouri Sierrans

asked the agency to reduce the recommended size of a roadless area down from 1000 acres. Eastern forests like the MTNF are less likely to have large areas not already impacted by roads. Thus to protect and eventually build up our roadless areas, we would benefit from a smaller initial threshold.

We also asked the Forest Service to acknowledge seven areas already identified as candidates for roadless area protection. Those seven areas are currently identified by the agency as what are called "sensitive areas" and have been subject to minimal management impacts. The Lower Rock Creek area is one such candidate.

## TWENTY-HUNDRED GENERAL ASSEMBLY

### Next November's Political Races May Overshadow

#### Legislation

by Ken Midkiff, Chapter Director

There are two certainties about the upcoming session of the Missouri General Assembly: it will begin on January 5 and end on May 12. What happens in between those two dates is anyone's guess.

But several discussions with veteran legislators and legislative observers lead to the conclusion that few matters of major import will be seriously considered by the legislature. Why? Well, it is an election year, and politicians are reluctant to take stands on issues that will impact their re-election or election to a higher office. This is particularly the case if constituents' views are uncertain or unknown on an issue — making it unlikely that any new or highly controversial matters will make it out of committees.

And to add to this reluctance, the elections in November resonate up and down the electoral line.

#### ***POLITICS, AS USUAL AND OTHERWISE***

Topping the marquee banner is the race for the US Senate seat currently held by John Ashcroft. Ashcroft is seeking re-election, but running against him is the current, and quite popular, Governor of the State of Missouri, Mel Carnahan. Ashcroft has a dismal voting record in the scorebooks of conservation organizations, and also falls short in the areas of labor, education, and civil rights. Carnahan is usually viewed as moderate to progressive on most issues, but stands out as a strong supporter of education and women's rights issues, especially pro-choice. Beltway insiders are calling this race up for grabs.

Since the Governor is stepping down, that means that there will be a hotly contested gubernatorial race,

with current US Representative Jim Talent having declared on the Republican side and current State Treasurer Jim Holden for the Democrats. Which means that several current state senators will be running for Talent's seat instead of re-election for state senator, which in turn opens up those state senate seats which several more current state representatives will be looking to capture.

Lieutenant Governor Roger Wilson has announced that he will not seek re-election. Immediately upon this becoming public, at least four House and Senate leaders announced they would be putting their hats in this ring. Those seats will then become open, and more jostling will result.

State Senator Bill Clay has announced that he is running for the US House seat held by his father. While that outcome seems fairly certain, there will be a scramble by state house members for the vacated senate seat. And, of course, that will mean that those house seats will be up for grabs.

The bottom line is that the "Domino Effect" is alive and well in electoral politics. As noted, several of those looking at higher offices hold leadership positions in the state House and Senate. Their actions will be scrutinized by the media and the interested public in the coming legislative session. The typical reaction of a closely watched politician is to hunker down — to take no action that could be subject to criticism.

Hence, the prediction by "insiders" that not much will happen this coming session.

#### ***BUT, THERE WILL BE A LEGISLATIVE SESSION***

And some things MUST occur. A budget must be passed, for example. And the General Assembly must

determine how the income from the tobacco lawsuits is to be spent (or not) and this will occupy an inordinate amount of time as each piece of this huge pie will be cut in strange and mysterious ways.

While there is not much for environmental organizations to be concerned about in the tobacco settlement feud, budgetary matters will occupy some attention. We are always interested in a secure level of funding for the Department of Natural Resources, and this year there will be a move to readjust the fee structure for permits for wastewater discharges.

Permit fees provide a large portion of moneys for the programs of the Division of Environmental Quality, and the structure of wastewater fees is in dire need of restructuring. Some categories of permit holders pay too much, others not nearly enough; so some balancing is needed. Overall, however, as the number of wastewater dischargers increases, and as new and different categories have greater impacts than seen previously, the budgetary ability of the Division of Environmental Quality has not kept apace.

Consequently, the Ozark Chapter is joining with several industry and business groups to create equity and increase the total permit fee funding. Since the current fee structure expires at the end of 2000, the Legislature must take some action on this, even if it is only to renew the current fees — which is not a good choice.

One issue on the back burner — Utility Restructuring — while the focus of a lot of study and talk, seems

not to be quite “ripe” yet. A number of legislators are inclined to wait for the experiences of other states with “electric deregulation” before making any move. The results in those other states is definitely mixed, so the wait will apparently continue. After all, this is the “Show Me” state. When and if this issue starts to move, we will be ready to advance our positions.

No doubt there will be attempts to dig up and resuscitate some old bad legislative bills. Rep. Wayne Crump’s failed measures of last year are not quite dead yet; one would require a 2/3’s vote by the citizens on any ballot measure on Missouri Conservation Commission matters (trapping of otters and other critters was the impetus for this) and another would require General Assembly approval before any federal natural resource agency could purchase lands from private landowners. But, again, these are very controversial measures, and votes on matters of controversy are bad for election and re-elections.

Maybe it’ll be a quiet session. Or maybe I’m just hoping it will be...

NOTE: To keep up with goings-on in Jefferson City, the bi-weekly GREEN REPORT is available free. Well...almost free: you will be asked to become an active citizen, calling or writing your state senator, representative, or other elected or appointed official.

To subscribe — call (573)815-9250 or send e-mail to: tfolsom@mail.trib.net (That’s Terri Folsom, Chapter Administrative Assistant).



## Oh, say can you see...?

For the past five years, the Endangered Species Act, and the many species it seeks to protect, has been under attack by politicians backed by a powerful coalition of timber, grazing and mining interests as well as real estate developers. The Bald Eagle is a success story — won't you join the Sierra Club, and add your voice to the many thousands who want to ensure that our nation's unique natural heritage is protected?

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Contributions, gifts or dues to the Sierra Club are not tax deductible; they support our effective, citizen-based advocacy and lobbying efforts. Your dues include \$7.50 for a subscription to SIERRA magazine and \$1.00 for your Chapter newsletter.

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# OZARK CHAPTER SIERRA CLUB OUTINGS

*Be sure to check  
your GROUP  
newsletter  
for more or current  
outings!*

## Eastern Missouri Group

**Jan. 1 (Sat) Begin the millennium off right with Paul's world famous New Year's Day hike to Meramec State Park.**

Limited to 15 people. Paul Stupperich (314)429-4352.

**Jan. 7 (Fri) It's a new year and year 2000. Let's do a day hike!** 7.5 miles on a local trail. Some hills and rocky areas. Suzanne Smith (618)281-4762 (after 6:30 p.m., weekdays only).

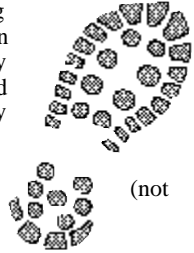
**Jan. 8 (Sat) Highway cleanup.** Come join us

for a refreshing walk looking for the refuse of the previous thousand years. Collect your own memorabilia. Diane DuBois (314)721-0594.

**Jan. 8 (Sat) New Members Winter Get-Acquainted Walk at Missouri Botanical Garden, 4344 Shaw.**

Snowed out last year, but let's try again! Button up your overcoat for this late morning hike for new and old members. See the garden in winter as we walk on the paved paths, see winter displays and

exhibits. Gather for optional snack following walk. Limit: twenty. This is a short-notice hike. Call day or early evening between January 2nd and January 7th please



(not

Tuesday evening).  
Co-leaders: Rebecca Selove and Marsha Armentrout (314)892-4279.

**Jan. 8-9 (Sat-Sun) Celebrate the new millennium on our fifth annual winter backpack trip.** Where we go will depend on driving conditions. In past trips we have had temperatures of 70 degrees and sunny or 12 degrees with 6 inches of snow. Bob Gestel (636)296-8975, or Paul Stupperich (314)429-4352.

**Jan. 8-9 (Sat-Sun) Glade restoration.** Learn about Missouri's natural history while helping to restore an original landscape of unique ecological value at Washington State Park. Come one day or both; option to stay overnight in the park. Penny Holtzmann (314)487-2738.

**Jan. 15 (Sat) Day hike at**

**Cuivre River State Park**  
Get out and shake off the winter blues. If you wanted to hike around the lake at the reunion in September, but didn't get the chance, this is another opportunity. This is a four mile hike with possible lunch afterwards. Kathy Wodell (636)240-0675.

**Jan. 16 (Sun) Trace Creek day hike.** We will spend a day exploring the Trace Creek Trail and learning about the Ozark Trail. Exploratory hike, six to eight miles. Paul Stupperich (314)429-4352.

**Jan. 22-23 (Sat-Sun) Trail maintenance on the Blair Creek section of the Ozark Trail.** We have made good progress on the trail work so far and will return to working on the Himont connector loop. Bob Gestel (636)296-8975 or Paul Stupperich (314)429-4352.

**Jan. 29 (Sat) Vacation slide and video show.** Bring photos, slides, or videos of your vacation. Everyone welcome to pot luck dinner. Bring \$2.00 and a dish to share. Diane Favier (314)894-5549 (before 9 p.m.).

**Jan. 29-30 (Sat-Sun) Pack and paddle weekend.** Ten mile float Saturday on the lower St. Francis with car

*continued on next page*

# Outings Continued

camping that evening at Sam A. Baker State Park. Thirteen mile hike on Mudlick Trail on Sunday. This is an extreme weekend, not for the faint of heart. Stephen Finch (314)644-2553.

**Feb. 5 (Sat) Superfund site. Tour of Department of Energy Weldon Spring Remedial Action Site.**

Come see how one billion dollars is being spent to clean up contaminated uranium processing plant. Presentation and tour of ongoing activities features waste disposal cell, trail link to KATY Trail and Interpretive Center for DOE site. If weather permits we will ride to waste disposal cell. Space limited, must respond by Sunday, Jan. 30. George Behrens (314)821-0247 (after 6 p.m. weeknights, all day weekends).

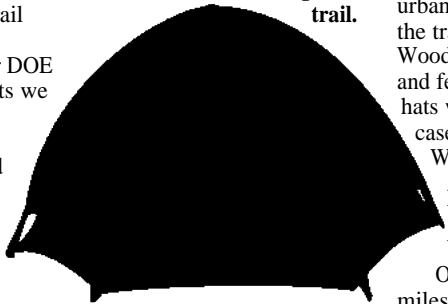
**Feb. 6 (Sun) Outing Leaders Workshop.** If you have ever considered being an outings leader, come find out what is involved in leading a successful outing. Learn from our pros. Ann Eggebrecht (314)725-1560.

**Feb. 6 (Sun) Day hike/continental breakfast at Queeny Park.** Energetic walk on wooded trails and some pavement. We will walk to a continental breakfast with fruit, muffins, and hot water provided by the leader. BYO tea bag. Nancy Carrol (636)225-8057.

**Feb. 6 (Sun) Come out of the cold and enjoy spring in full bloom at the Missouri Botanical Garden with an insiders tour to**

**experience the rich fragrance and blooms of the temperate house, the tropical warmth and lushness of the Climatron, and camellias at peak bloom in the Linnean House.** Brunch possible afterward. Susan Farrington (636)583-0948, or leave a message at (314)577-5100 x 402.

**Feb. 12 (Sat) See part of Jefferson Barracks County Park near Telegraph Road and I-255 and walk about three miles on the paved hiking trail.**



This is a late morning short notice hike that is somewhat dependent on weather. Please call between February 4th and 11th during day or early evening. (Not Tuesday evening). Marsha Armentrout (314)892-4279.

**Feb. 12-13 (Sat-Sun) Backpack to St. Francis Mts.** Route to be determined later. May involve cross country with possible straight up and straight down seat of pants no GPS navigation. Six-eight miles. No discussion of Sierra Club politics or internet usage allowed. George Behrens (314)821-0247 (after 6 p.m. week nights, all day weekends).

**Feb. 12-13 (Sat-Sun) Glade restoration at**

**Meramec State Park.** Use your muscles for a good cause while enjoying the warmth of big fires. Come one day or both. Penny Holtzmann (314)487-2738.

**Feb. 12-13 (Sat-Sun) Paddle one or two days on an easy river near Bourbon.** Heated cabin available for Saturday night. Colin Maag (314)721-7397.

**Feb. 19 (Sat) Second annual hard hat hike at Bluebird Park in Ellisville.** Enjoy a short hike of about two miles in this scenic urban park. This includes the trail through Klemberg Woods built by Virginia Day and fellow Sierrans. Hard hats will be required in case it hails. Kathy Wodell (636)240-0675.

**Feb. 20 (Sun) Bell Mountain day hike.** We will follow the Ozark Trail for four miles to a spectacular glade with a great view for a lunch stop. Eight miles. Paul



Stupperich (314)429-4352.

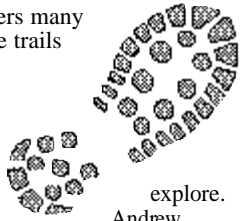
**Feb. 26-27 (Sat-Sun) Trail maintenance on the Blair Creek section of the Ozark Trail.** We will camp somewhere along beautiful Blair Creek and have common commissary on Saturday night. Bob Gestel (636)296-8975, or Paul Stupperich (314)429-4352.

# Outings Continued

## Thomas Hart Benton Group

**Jan. 16 (Sun) Crown Center Ice Skating, Kansas City, MO.** Bring your skates or rent them at the Ice Terrace at Crown Center on a winter Sunday afternoon. Steve Hassler (913)599-6028.

**Jan. 21-23 (Fri-Sun) Hercules Glades, Hilda, MO.** Enjoy an 8-mile backpacking trip over 2 short days in the Hercules Glades Wilderness about 15 miles east of Branson. The area also offers many side trails to



explore. Andrew Kolosseus (913)371-6629

**Jan. 28 (Fri) Gastronomic Outing.** Join us at the Canyon Cafe on the Country Club Plaza. Gale Burrus by January 23 (816)763-5120.

**Jan. 29 (Sat) Sunflower Nature Park, De Soto, KS.** If plans for Oz proceed, this may be your last chance for a peaceful hike in this small, well-designed park. Jim Horlacher (913)492-7818.

**Feb. 5 (Sat) Shutterbug Hike, Blue River Glades, Kansas City,**

**MO.** Professional nature photographer Kevin Sink shares his tips on a hike through the cliffs and glades along the Blue River. Limit: 20. Steve Hassler (913)599-6028.

**Feb. 12-13 (Sat-Sun) Perry Lake Winter Campout, Perry, KS.** This is our annual winter camping experience at Perry Lake. Falling temperatures will not deter us, but icy roads will. Scott Hooper (913)722-3882.

**Feb. 18 (Fri) Gastronomic Outing.** Come join us at Saigon 39 near 39th and State Line. Gale Burrus by February 13 (816)763-5120.

**Feb. 19 (Sat) Three Trails, Independence, MO.** Come along as we hike several trails on the river bluffs in

NE Independence. Steve Hassler (913)599-6028

**Feb. 26 (Sat) Beginner's Backpacking Workshop.** Come and find out what the fuss is all about. Dan Fuller (816)779-7284

**Mar. 3-5 (Fri-Sun) Caney Creek Wilderness, Mena, AR.** Our first visit to Caney Creek (featured in May '99 *Backpacker*) promises the best Ouachita National Forest has to offer. Bob Wilshire (913)384-6645

**Mar. 10 (Fri) Gastronomic Outing.** Join us at the Elbow Room, 7820 Quivira in Lenexa. Gale Burrus by March 5 (816)763-5120.

**Mar. 11 (Sat) Perry Lake, KS Trail Maintenance.** This will be our first Perry Lake Trail maintenance trip of the 2000's. Bring water, lunch, bow saw, and/or loppers. Steve Hassler, (913) 599-6028.



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