Kansas and Oklahoma Chapters Co-Host Fracking Event in Medford, OK

On June 13, Sierra Club Chapters from Kansas and Oklahome joined together to discuss the surge in fracking in their two states and the earthquakes that have surprised and plagued them both. Fracking (hydraulic fracturing) is the technique of drilling into shale rock and injecting toxic chemicals into the rock to extract oil and gas. The toxic fluids are then withdrawn from underground. The practice is then to dispose these fluids into deep injection wells. The fluids have a high salt content, as well as chemicals, heavy metals, and radioactive material fluids into injection wells.

It is these injection wells that are the cause of the earthquakes in our Kansas and Oklahoma areas. Citizens and businesses have reported thousands of dollars in damage from the earthquakes.

“At a time when residents and business owners of Kansas and Oklahoma are left with thousands of dollars of damage caused by the swarms of earthquakes in our two states, we need our local and state governments to intervene and act immediately in developing and enforcing rules and regulations the oil and gas industry must abide by when conducting hydraulic fracturing and using injection wells,” said Barbara Vanhanken, chairwoman of the Oklahoma Sierra Club and Yvonne Cather, chairwoman of the Kansas Sierra Club.

Both chapters criticized the corporation commissions in both states for their lack of response to establish regulations to protect citizens from the earthquake onslaught. A moratorium is sought on fracking until such regulations can be put in place.

Vanhanken and Cather contend it is “business as usual” for the oil and gas industry as it continues drilling for oil and gas close to water sources and habitations. “It seems it is more important to protect the oil and gas industries that folks being hurt by their fracking activities.”

See Medford on page 9
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Let Us Now Praise Teachers

Field Notes from the DD…

By Robert F. Sommer
Director of Development, Kansas Chapter

“A teacher affects eternity.”

—Henry Adams

My column this quarter is dedicated to teachers—especially teachers in Kansas, where draconian cuts to school funding have only been exceeded in harshness by the lack of respect the Kansas Governor and his conservative acolytes in the Legislature consistently show toward teachers.

So, yes, let us now praise teachers. They do so much more than teach (when they’re not being forced to spend time testing, that is).

With your continuing support, the Kansas Sierra Club has taken a mighty step in support of teachers. For the past three years, we have awarded grants to Kansas teachers engaged in educating students about the climate crisis. Cumulatively we’ve supported teachers’ efforts with nearly $12,000 in grants. Considering how many challenges teachers face, it’s even more astounding to see how much energy and creativity they bring to their classrooms.

Also impressive is the range of projects they have undertaken, from art to science, from the classroom to the outdoors, from Kansas all the way to Washington, D.C.

Take, for example, Sterling High School science teacher Dan Whisler. In 2013, the Kansas Chapter supported an equipment purchase for Dan’s students to participate in the statewide KidWind Project. His students not only won the Kansas competition, but they were selected to go to Washington for the national competition, for which we also provided support. And now here’s the result, in Dan’s own words:

"With all of the support you have helped provide for our projects I wanted to share this exciting news with you. Taryn Gillespie, one of the students you helped send to Washington, D.C., last spring for the National KidWind Challenge, is getting ready to graduate next week, but her school year won’t quite be over yet. She and I will soon be headed to Washington again! Taryn submitted a project application in the National Energy Education Development (NEED) Project Youth Awards Program describing our energy-related work with our KidWind and SHS Chevy Volt Projects. Her application was selected not just as the state of Kansas winner, but also for national recognition as the National Outstanding Energy Engineering and Design Project. The support you and everyone else in the Sierra Club provided played a big role in helping to make this happen! Thank you!

And how about 2014 recipient Doug Moles of Shawnee Mission West High School, whose students are building an urban vegetable
Mercury Contamination in Kansas

By Craig Volland

Craig Volland is Chair of the Air Quality Committee. Stephen Leake, who recently retired as an aeronautical engineer with NASA in Washington, DC. collated the data and produced the graphics; Conservation Chair, Duane Schrag, has also provided statistical analysis for this work. See full color version online at www.Kansas.SierraClub.org

Introduction.

The problem of mercury contamination in fish was given a higher profile in Kansas in 2013 when KDHE upgraded its fish consumption advisory for sensitive individuals (women who are pregnant, may become pregnant or are nursing; and children under twelve years). KDHE warned that these persons should lower their consumption of predatory fish at the top of the food chain in our state’s lakes and streams, like largemouth bass, to one meal per month. Previous advice had been one meal per week. This article will examine the contamination of fresh water fish in Kansas by methyl mercury, a very potent neurotoxin.

Sources of Contamination.

Elemental mercury and certain inorganic mercury compounds are emitted into the air by various industrial sources, especially the incineration of domestic, medical and industrial waste, the production of cement, and the combustion of coal. Another major source is artisanal (small-scale and dispersed) gold mining in developing countries. Because mercury in the atmosphere is so mobile in its gaseous form, it can travel throughout the globe before falling out in one form or another. Mercury can also be released directly into streams by certain factories, sewage treatment plants, waste landfills and mine tailings. In a future article, I may examine the extent to which elevated measurements in Kansas may be related to local sources.

Exposure and Health Impacts.

When deposited to land or water, inorganic forms can be transformed by anaerobic bacteria into methyl mercury that bio-accumulates up the food chain. This process is called methylation. Methyl mercury is found at dangerous levels in both freshwater and saltwater animals. People can be exposed by eating fish they catch themselves in Kansas lakes and streams and by eating any fish they obtain from the grocery store or eat in restaurants. This article will deal only with methyl mercury in fish in Kansas water bodies, but health impacts are assessed from total exposures estimated from all sources.

In Kansas, exposure may be higher for low-income subsistence anglers and sports fishers. There is also a population of Native Americans who have a cultural affinity for consuming locally caught fish. In northern Oklahoma this is so important that tribes have employed their own mercury monitors that also help assess deposition into Kansas.

Methyl mercury is particularly dangerous because it can cross the blood-brain barrier and moves through the placenta in pregnant women to concentrate in the fetus. The fetus is considered the most sensitive “receptor” of mercury contamination.

Methyl mercury causes mental retardation and decrements in memory, attention, language and visual-motor skills in childhood. The current threshold value set by EPA for sensitive populations, to allow one fish meal per week, is only 0.23 parts per million (ppm).

Recent research indicates that there is little margin of safety in this value before subtle neurotoxic effects arise. Conversely, however, the consumption of fish also proffers some important health benefits. The high levels of omega-3 fatty acids in many fish species significantly aids brain development in the fetus. Thus health authorities face a difficult challenge in educating the public on who should eat how much of which species of fish.

Sources of Data for This Study.

We now have a good idea of where the bulk of the mercury is deposited in Kansas from a series of monitors that measure mercury in precipitation. In 2007, the Kansas legislature provided funds for a period of five years to set up six wet deposition monitors around the state, more than almost any other state. The first full year of data was generated for 2009. The 2014 legislature authorized KDHE to reduce the number of monitors to four. As shown in Figures 1 & 2, wet deposition is highly correlated to rainfall and varies greatly from year to year. Hence we have chosen to base our analysis on a five-year average.

Mercury also falls to earth as dry deposition, being absorbed by plant life, especially trees, or just landing on soil in particle form. When plants die or leaves fall, the mercury can eventually find its way into water bodies. Studies in other states suggest that dry deposition comprises about 40% of the total, possibly less in areas with scant trees, like Kansas.
We obtained data on mercury in fish from 2009 to 2013 from KDHE’s Fish Tissue Contaminant Monitoring Program (http://www.kdheks.gov/befs/fish_tissue_monitoring.htm).

In the past the standard protocol was to collect three to five individual fish of a certain species and cut filets that were blended together for analysis. This gave an average value for the chemical of interest but could obscure much higher values in the mix. In the past few years KDHE has taken small “plugs” of flesh from large predator fish that are analyzed separately. This has greatly expanded the database and revealed some alarmingly high mercury levels in certain large predator fish, like largemouth bass. Still for many species, the database is rather small due in part to the high cost of collecting and processing samples and having them analyzed by a specialized laboratory.

**Kansas Results.**

Figure 3 shows the 2009 to 2013 average of wet deposition of mercury in Kansas. The location of monitors in both Kansas and northern Oklahoma are also shown, and they give a remarkably good picture of the gradient in deposition from east to west. The darker red color indicates higher deposition. It is similar to the precipitation gradient across the state and shows higher levels toward the southeast that generally extend throughout the southeast U.S. (See Reference No.1 on pg 7)

While one would expect fish contamination values to also follow this same pattern, we were unable establish a good correlation. We found a number of anomalies where values were low in certain high deposition areas to the southeast, and values were high in central Kansas where one would expect reduced fish contamination.

Many variables affect how much of the inorganic mercury, that gets into a water body or watershed, is actually converted to methyl mercury that moves up the food chain. This will be discussed below. The other possible cause of these anomalies is the influence of local sources of mercury pollution.

One well-known variable is that older and larger fish tend to be more contaminated with mercury. This makes sense because older fish have been eating contaminated lower-level biota for a longer period of time. Clint Goodrich, who manages KDHE’s fish monitoring program, has conducted a limited but highly enlightening study on this point. He obtained a large number of plug samples from largemouth bass in two lakes in eastern Kansas, Lake Shawnee near Topeka and Lone Star Lake near Lawrence. Figures 4 shows his results for fish length, which of course is highly correlated to fish age:

**Figure 4: Mercury contamination and length (millimeters) of largemouth bass**

We observe a fairly tight correlation with fish length in each lake, but a substantial difference between lakes that are only about 20 miles apart. As we will demonstrate later, there are also substantial differences between fish species, especially between predators and bottom-feeders.

**Variables affecting Mercury Uptake.**

Dozens of studies have looked at how mercury moves up the food chain and why fish contamination can vary from one water body to the next. We have listed in the Appendix the more important factors for the ecological setting in Kansas. In general, however, contamination varies with the amount of mercury associated with dissolved organic carbon that enters a water body, the type of water body, ie. stream, river or lake, the size of the watershed and
the degree to which it is forested. Higher levels of methylation are associated with increased water level fluctuation and the presence of wetlands. Stream watersheds will retain a reservoir of mercury in leaf litter and soil that will wash out over a much longer period of time than in lake watersheds. Water bodies that contain a richer food web will actually cause mercury inputs to be diluted as predators add more weight. In general higher acidity of the water is linked to greater uptake of mercury.

Understanding the Complexity at a Glance.

This is all very complex, so we decided to present some of the fish contamination data in a way that one can assess the risk from a simple graphic. We selected largemouth bass because it is a popular game fish and a predator for which we have the most data. Freshwater Drum is also a predator fish in Kansas that can become quite large and shows up more frequently in streams. We selected catfish and carp as the most common bottom feeding species in streams that can also grow quite large. In each of the graphs that follow we show the 0.23 ppm threshold of mercury (Hg) that triggers the stricter consumption advisory. Where available we have also shown the minimum “keep” length of the species established by the Kansas Department of Wildlife, Parks and Tourism (KDWPT). Each data point represents an individual or composite fish sample obtained in the years 2009 ...2013.

Figure 5

Here we see that 46% of the largemouth bass sampled in Kansas lakes, and almost all of the individuals large enough to keep, will exceed the maximum safe consumption level for sensitive individuals. A significant number of these fish will contain three times the threshold level. Also alarming is the presence of extremely high levels of contamination in largemouth bass as small as 7 inches.

The largemouth bass in streams tend to be smaller on average. In fact, if we assume that the KDHE collection procedure is reasonably random, few largemouth bass caught in streams would meet the minimum keep length set by the KDWPT. That’s just as well, since fifty-four percent (54%) of them exceed the safe consumption level. That’s a higher percentage than those in lakes. Again, a significant number will contain three times the unsafe threshold value.

Figure 6

Figure 7

Figure 8
Freshwater drum tend to grow larger in streams than largemouth bass, but the mercury contamination values are modestly lower. Nonetheless, 37% of these fish were contaminated above the safe consumption level. There is no minimum keep length.

Bottom feeders, catfish and carp in this case, are contaminated to a significantly lower level than predator fish. However, they grow much bigger, so if the KDHE collection procedure can be considered reasonably random. Only in 2013 did KDHE begin to use the individual plug technique on catfish and carp. Prior to then samples were blends of filets from three to five individuals. Thus, more elevated individual values than shown in this graph are likely out there in Kansas streams. It would be wise to consider any of these fish in excess of 18 inches to be of elevated risk to sensitive individuals. The KDWPT does not list a minimum keep length for carp and catfish in streams; however a few fishing lakes maintain a 15-inch limit.

Conclusions

Atmospheric mercury deposition exhibits a strong diminishing gradient from east to west across Kansas that is consistent with the gradient in rainfall. The highest deposition in the state is in the southeast and is linked to high wet deposition throughout the southeast U.S.

However there is not a strong correlation between mercury deposition and fish mercury contamination values in central and eastern Kansas. This is most likely due to the large number of geophysical and ecological variables that control how much of the deposited mercury is actually methylated and taken up the food chain. It could also relate to local mercury emission sources. There is local evidence of a strong correlation of mercury contamination with fish age and size within the same water body.

However, data from the years 2009 to 2013 reveals:

-- some alarmingly high concentrations of methyl mercury in large, predator fish;
-- contamination levels ranged up to three times the safe consumption threshold for sensitive populations such as pregnant women and young children;
-- nearly all of the largemouth bass large enough to keep exceed the safe consumption level.

These values support the recent upgrade of KDHE’s consumption advisory for those individuals to one meal per month.

Recommendations

KDHE’s guidance is based on EPA recommendations that are subject to controversy, and we would go a step further and recommend that sensitive individuals avoid the consumption of largemouth bass and other large predator fish altogether that are harvested from Kansas lakes and streams. They should instead obtain desirable nutrients from carefully selected marine fish (http://www.ewg.org/research/ewgs-good-seafood-guide).

In addition, we would recommend that sensitive individuals avoid eating catfish and carp that are larger than 18 inches in length. Other Kansas citizens, such as subsistence anglers who eat a lot of locally caught fish, should rely more on the smaller fish in their catch.

We would urge the state legislature to continue to fully support both KDHE’s fish monitoring program and the monitoring for mercury deposition. We would also urge both EPA and KDHE to increase surveillance and control of local sources of mercury emissions both large and small.

References:


Appendix

Geophysical and Ecological Variables in Mercury Uptake

1. Type of water body: Streams & Rivers: Methylation of inorganic mercury and uptake in biota is correlated to both the quantity of mercury in the stream flow and dissolved organic carbon to which it is attached when washed in from the watershed. Streams have much greater watershed-, and length- to surface-area ratio than lakes. Streams have much greater water level fluctuation than lakes (see below). Streams may have different productivity of the food web. In-stream methylation peaks during warm, low flow periods, but there is less input of both inorganic and methyl mercury forms during such periods. Stream watersheds will retain a reservoir of mercury in leaf litter and soil that will wash out over a much longer period of time than in lake water sheds.

Lakes: Proportionally more wet deposition of mercury will be captured in lakes than in streams, and this results in more rapid uptake in fish. This could be a big factor in the case of a large airborne mercury source in close proximity. Productivity at all levels of the food web is buffered more from precipitation extremes in lakes than in streams. Predator fish tend to grow much larger in lakes and be harvested more frequently.
Kansas Sierrans Join Thousands in St. Paul Protest Rally

Five thousand protesters traveled from all around the country to protest the proposed Tar Sands Sandpiper pipeline in St. Paul, MN. ExCom member Lori Lawrence and 350KC member John Kurmann were the primary organizer of the Kansas delegation attending the event. GREAT JOB!!

Kansans started out late Friday night, June 5, with a pick up in Wichita and picked up more folks in Lawrence, Kansas City, and Cameron, MO. Sierrans met young and old alike. Folks from all over the county. One of the hoped for results was to open up the eyes to the practices of companies who extract and ship crude oil from the northern Alberta oil sand fields.

Speakers addressed the media and crowds before and after the march, and were as diverse as the protesters. When all the officialdom was over, it was back to Kansas, arriving late Sunday night.

Organizers were pleased that so many came to protest the Tar Sands oil... the dirtiest of fossil fuels. Yet one more known reserve that must be left in the ground. Of all our known reserves of fossil fuels, scientists say we must leave 70% of those reserves in the ground if we are to stand a chance of averting the most severe ravages of the climate crisis. 🌍

Dedicated souls at breakfast after the long bus ride to St. Paul, MN
Medford, continued from page 1

Dr. Todd Halihan, a professor of geology at Oklahoma State University, spoke to about 100 citizens from both states interested in the topic. The film “Groundswell Rising” was also shown to the attendees.

Dr. Halihan provided a very informative review of the science and technique associated with fracking and the disposal of the waste fluids into the injection wells.

A video of Dr. Halihan’s talk to the group as well as an interview with him are available on the Kansas Chapter website at: http://kansas.sierraclub.org/?p=4774

Dr. Halihan provides answers using, dare we say it, science

100 citizens attended the Medford event

Jody Harlan, Oklahoma Chapter Sierra Club Conservation Committee Chair, and Yvonne Cather, Kansas Chapter Chair

Kansas Legislative Director Zack Pistora and Oklahoma Chapter Director Johnson Bridgewater

Lori Lawrence steps up to the mic for a little clarification
Holcomb 2 Coal Plant Status Still in Legal Limbo

Editor's note: Kansas Sierra Club and the “Planet Kansas” have had several inquiries as to the status of the Holcomb coal plant. While not much information, the below best describes its state of limbo.

After the Sierra Club won our challenge to the original permit in 2013, KDHE issued a new permit, virtually identical to the old one, and with the same flaws. We challenged the permit again and the case is pending before the Kansas Supreme Court. Both sides have filed briefs in the case and are waiting for the court to schedule argument.

Another issue surrounding the proposed coal plant is its status under EPA's proposed new rule on carbon emissions from power plants. It is unclear if or when EPA will rule on whether the new requirements will apply to Holcomb 2, i.e. as a new or existing plant.

Mercury, continued from page 7

2. **Fluctuating water levels and connection to wetlands:** These increase the rate and efficiency of methylation of inorganic mercury inputs. The filling of, or changes to the level of, water reservoirs can generate larger mercury levels in fish because newly flooded soils that harbor mercury make ideal methylation sites.

3. **Size of a watershed and its forest cover:** Trees are efficient scavengers of airborne mercury that subsequently enters a watershed in leaf fall. Soil and leaf litter form a reservoir of inorganic mercury and provide sites for mercury methylation. This mediates the input of mercury to water bodies. Thus, even after a local source is eliminated, the inflow of mercury from that source can persist for many years. Mercury inputs from uncontrolled foreign sources will continue, however.

4. **Productivity at base of food web,** i.e. “bloom dilution.” That’s where increased primary production of phytoplankton biomass, for example, dilutes methyl mercury inputs. That is, some of the mercury is not taken up, but instead returns to the sediment where it will either be re-suspended in the future or exits the system.

5. **Prey density, fish growth efficiency and seasonality:** The more body weight added per mass of prey, the less mercury concentration in the predator; the shortage of prey & slower growth tends to concentrate mercury in a predator. This effect can cause fish mercury levels to be higher in spring than in the fall. High density of prey can reduce energy expended to obtain food and increase growth efficiency, which decreases relative mercury accumulation.

6. **pH (acidity) of water:** Acidic water increases methylation rates. Some fish prey are negatively affected by acidic conditions such that productivity is reduced. This causes reduced predator growth efficiency and higher accumulation of mercury.
Even though the Paul and Margaret Miller water garden and campsite dedication in May got rained on, over half of the attendees stayed to celebrate Paul and Margaret Miller's contribution to Sierra Club and to the community of Wichita, Kansas. Umbrellas were held over the food to protect it while Bill Cather (outdoor chef) continued to cook the feast! A big Thank You to the 30 people who attended that make up the members of the ProKan Recycling Center, of the Miller’s church and of the Southwind Group of Sierra Club.
Teachers, continued from page 3

garden. He described their progress in a recent email:

In the last 2 months we’ve made some impressive progress. We were granted a 30’ x 30’ plot for our urban garden here at Shawnee Mission West. I had my neighbor (a 78 year old farmer named Jim) plow up the space. Then we spent a weekend working 80 bags of compost into the soil. We have eight 3’ x 30’ beds, with 1’ wide paths between in which we’ve laid down a straw layer for walking, watering, weeding. I ordered seeds, and 2 weeks ago we planted spring lettuce, kale, carrots, turnips, radishes, peas, onions and potatoes…. I encourage you to come on by and see the progress! I can’t thank you enough for the generous grant we were awarded. The kids have made the most of what they were given.

So now a drum-roll for the 2015-16 academic year recipients of Kansas Sierra Club Environmental Grants for Kansas Primary and Secondary Teachers:

- **Tracy Collins**, an art teacher at Clearwater Middle School, for her project entitled “Reduce Your Footprint”
- **Eryn Norton Moland**, a science teacher at Perry-Lecompton High School. Her project is called “Energy, Engineering, and You!”
- **Maggie Schmerge**, who teaches first and second grades at St. John School in Lawrence, for her project: “Making the Connections: Natural Resources, Renewable Energy, and Climate Change”

Here’s the full roster of past grant recipients:

2013:

- Nicki Burnett, Baldwin City School, Baldwin School District
- Joanna Farmer, Metro Meridian High School, Wichita School District
- Misty Lambeth, Countryside Elementary School, Olathe School District
- Scott Schwartz, Hope Street Academy, Topeka School District
- Leslie Sheldon, Rolling Ridge Elementary, Olathe School District
- Blake Smith, Maize South High School, Maize School District
- Dan Whisler, Sterling High School, Sterling School District

2014:

- Kristan Langton, Mill Creek Middle School, Desoto School District
- Doug Moles, Shawnee Mission West High School, Shawnee Mission School District
- Candace Stewart, Frontier Trail Middle School, Olathe School District

The 2015 Education Grants Subcommittee included Elaine Giessel, Dave Kirkbride, Craig Wolfe, and Bob Sommer (Chair).

If you needed to feel good about something today, feel good about this. We’re supporting some great teachers doing some great work—and to paraphrase Henry Adams, there’s no telling how far it will go.
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It’s the Smart Thing To Do!!

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“In order to end our dependence on dirty energy, we need as many Americans as possible to switch to clean energy like rooftop solar. This is a high priority for the Kansas Sierra Club. We are urging all of our members in Kansas to work with Cromwell Solar to find out if solar is right for them. Every home that goes solar gets us one step closer to our goal of a clean energy economy.” — Kansas Sierra Club Chair Yvonne Catlin

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The Backwards Brain Bicycle:
- Clues to Changing Minds and
- Stopping Human-Caused Extinction

Eating as Though the Earth Matters column

By Judy Carman

One extinction every seven minutes

What caused the extinction of the great dinosaurs? No one knows for sure, but we do know it’s not the same cause that is currently leading to one species of plant or animal becoming extinct every 7 minutes. That’s the figure we hear from the United Nations Environment Programme. And this time we are the cause.

Meanwhile, the G7 Summit committed to reducing fossil fuels by the end of the century. The Environment News Service in their June 8, 2015 article “G7 Leaders promise ‘urgent’ climate action,” stated “Leaders of the G7 nations today pledged to take ‘urgent and concrete action’ on climate change this year, including a new legally-binding climate agreement to be hammered out at the UN Climate Summit in Paris in December.

“In a communiqué issued at the end of the G7 meeting in Kruen, the leaders said they are committed to cutting greenhouse gas emissions by 40 to 70 percent by 2050, compared to 2010 levels, and decarbonizing their economies by the end of the century.” So let’s see, at the rate of one species every 7 minutes for the next 85 years, who will remain? What species will still be here? Can human beings even survive with nature so out of balance?

Clearly, we cannot sit back and wait for Big Gov and Big Industry to save us. While we are applauding them for their efforts, we have to proceed with the belief that we can, ourselves, turn this ship around. But how do we convince the general population that they have the power to do this?

What can we do to stop it?

I recently watched a Youtube called “Backwards Brain Bicycle”—a video produced by “Smarter Every Day.” It’s short and well worth the time to watch. In it Dustin challenges himself to learn to ride a bike that is modified so that if you turn the bike handles to the left, the wheel turns to the right. He thought it would be a cinch to learn how to ride it, but it took him 8 months to alter his neural pathways through practicing 5 minutes each day. He talks about learning a “deep truth” through this experiment. He proposes that our thinking becomes very rigid especially as we grow older. We may want to change something in our thinking, but it takes tremendous effort, and we have to really want to change. Something has to make us think it is worth it to go to the effort to change. Simply put, Dustin says, “Knowledge is not understanding.” We often think we understand when in fact we are simply operating from pre-programed assumptions that we haven’t yet questioned. What we think seems like the truth, but is it?

“Truth is truth no matter what you think about it.”

For example, millions of people may “know” that the rate of extinction is astronomically high, but they may not “understand” that. As Dustin puts it, “Truth is truth no matter what you think about it.” So one of the reasons we have so much trouble convincing people to take personal actions to save the planet and all who live here is because of these rigid neural pathways that lead people to contribute to planetary destruction and refuse to acknowledge our part in it. On my walks on country roads, I find broken beer bottles, half eaten burgers in paper bags, half empty pop in plastic glasses with straws, and, of course, plastic grocery bags—all tossed out windows of cars speeding down the road. And I see new tossed trash every day. Most of these people are young enough to have heard the “Don’t Litter” message in grade school. What happened? Maybe it’s a rigid thought pattern from pre-industrial, pre-plastic-bag tribal days when your only discards were nut shells, fruit peelings, ropes made from vines, and temporary biodegradable dwellings. Drop it anywhere and who cares! But one thing we know—it is definitely a deeply furrowed pathway in brain pathways that says it’s still ok to litter.

What people can do (and can stop doing) to cause extinction

As important as the littering problem is, especially to the animals who die eating it, it pales in comparison to the impact of eating products from animal agriculture. Let’s think about habitat destruction and extinction of species while considering these facts:

• In the “developed” world 65% of total agricultural land is used for livestock feed according to the Food and Agriculture Organization of the UN (FAO).
• When you combine pasture and feed acres, we are up to 80% of total agricultural land. (FAO)
• Sixty percent of U.S. pasture is being overgrazed and, therefore, eroding. It takes 500 years to replace one inch of soil lost to erosion, according to the American Journal of Clinical Nutrition. They also point out that 90% of cropland in the U.S. loses soil at 13 times the rate that would be sustainable.
• The EPA reports that agriculture in the U.S. has impaired the water quality of 59% of all rivers; 31% of all lakes, ponds and reservoirs; and 15% of all estuaries. The damage is coming from siltation, pathogens, toxic herbicides, toxic fertilizers, mountains of manure, and oceans of ammonia from animal urine. Manure contains oxygen demanding substances, ammonia, disease, odorous compounds, salts, metals, antibiotics, pesticides and hormones, to name a few. In their “Potential Environmental Impacts of Animal Feeding Operations” they state, “Manure’s oxygen demand and ammonia content can result in fish kills and reduced biodiversity…” along with “salinization and disruption of the ecosystem.”
• According to the USDA, there were 60,200 hog and pig
operations in 2012 in the U.S. We all know what that means.

- We all know that bison, elk, prairie dogs, wolves, coyotes and many other animals are being mercilessly killed because they interfere with the profits of agricultural operations, many of whom use public lands for their business. Even if they somehow escape the ranchers’ guns and poisons, their habitat is terribly compromised by the overuse and destructive nature of animal agriculture.

**As Always—the Good News**

As I’ve said in every article I’ve written for this column, animal agriculture is one area in which we human beings can have the most massive and immediate impact on saving the earth, the species who are facing extinction, and—oh yes—ourselves. We can gain knowledge from reading those statistics, but can we understand what is really happening here? More importantly, can we change our rigid brain patterns and help others do so along with us, and can we do it in time? It is hard to change those brain pathways that have been passed along by genes, traditions, and lifestyles for generations. But it can be done. Whether we are learning to ride a Backwards Brain Bicycle or understanding that animal agriculture is so destructive that it must be stopped—we have the capacity to do it. This profit-driven behemoth is exterminating millions of species; polluting land, water, and air; and causing immense suffering to the farm animals themselves, the wild animals whose habitats are invaded or destroyed, and to us because of all the illnesses caused by animal agriculture and by eating its products.

Imagine freeing up 80% of total “agricultural” land from animal agriculture and eliminating the pollution, erosion, desertification, deforestation caused by it. If we look at the chart below, we see that we can obviously grow enough plant food for people on a lot less than that 80%. If you figure you can feed an average of 15 people a plant based diet on 2.5 acres and only one on a meat based diet on the same amount of land, then we would need only one fifteenth of the land to feed people. The rest of that land can be returned to its natural state and provide healthy ecosystems for those who need them so desperately if they are to survive.

*See chart to right.*

On Vox.com a National Geographic Map (2014) shows that “55 percent of the world’s crop calories are actually eaten directly by people. Another 36 percent is used for animal feed. And the remaining 9 percent goes toward biofuels and other industrial uses.” However in the United States, only 27 percent of crop calories are eaten by people, while more than 67 percent of crops are fed to farmed animals. Ethanol and other biofuels make up some of the remainder. Twelve calories of a chicken require 100 calories of grain. The same amount of grain produces only 3 calories of meat from a cow.

Reading these facts and figures is part of creating new neural pathways, new ideas, innovative ways to save the earth, and most importantly, a desire to do so. As activists, we need to share what we know. When people argue or deny what we are saying, they are responding to brain pathways that have been laid down for generations. It’s hard to try new things, to ride a different kind of bicycle, but if we are going to stop this destruction dead in its track, we can. Adopting a plant based diet is the simplest, most far reaching, and most powerful action we can take.

Yes, it helps the earth for us to ride our bikes more (even backwards bikes) and not to litter, but the benefits to causing the extinction of the T-Rex of Animal Agriculture are vastly more far-reaching and healing. Let’s cause the extinction of destruction instead of the extinction of living beings who share this earth with us.

© 2015, Judy Carman, M.A., is author of Peace to All Beings: Veggie Soup for the Chicken’s Soul and co-author of The Missing Peace: The Hidden Power of our Kinship with Animal; 2014 winner of the Henry Spira Grassroots Animal Activist award; and owner of a truck and a car powered by used veggie oil and house powered by solar. Her primary websites are circleofcompassion.org and peacetoallbeings.com.

“To be hopeful in bad times is not just foolishly romantic. It is based on the fact that human history is a history not only of cruelty, but also of compassion, sacrifice, courage, kindness. What we choose to emphasize in this complex history will determine our lives. If we see only the worst, it destroys our capacity to do something. If we remember those times and places—and there are so many—where people have behaved magnificently, this gives us the energy to act, and at least the possibility of sending this spinning top of a world in a different direction. And if we do act, in however small a way, we don’t have to wait for some grand utopian future.

The future is an infinite succession of presents, and to live now as we think human beings should live, in defiance of all that is bad around us, is itself a marvelous victory.”

Howard Zinn
Chapter & Group Leaders

Groups are the local body of the Kansas State Chapter

Chapter Executive Committee
Officers, Committee Chairs
*Elected ExCom member; **Appointed ExCom member,
***Group Representative to Chapter, ****Officer/Committee Chair, or Contractor

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Wakarusa Group - New ExCom!!
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Courtney Schwartzbeck*, Secretary, 316-461-5830, schwartzbechkcourt@gmail.com
Travis Robinett*, Outings coordinator, arrowhead_t@aol.com
Randy Kidd**, Executive Committee member, drrkidd@gmail.com
General Meetings

General public is welcome to attend

Kanza Group (Kansas City)
Tuesday, July 14, 6:45 pm
New Member Fair
6:45 pm - Meet, Greet, and Gather
7:00 pm - We have called this event Sierra Club 101, New Member Fair, and Meet the Sierra Club. Whatever you call it, this is a GREAT way to find out about Sierra Club, why you should be proud to be a member, and, just Maybe, find a place where you can join in to be part of the solution. Food - We are going all out and will provide some great healthy food, so skip dinner and join the fun.
Contact - Gail Shafton, (913) 909-3127, gail@shafton.com
Where - Overland Park Lutheran Church, 7810 W. 79th St. 8 blocks west of Metcalf at Lowell. Park on north side.

Kanza Group (Kansas City)
Monday, August 3, 6:30 pm
The Climate Crisis for People of Faith.
6:30 pm - Meet, Greet, and Gather.
7:00 pm - In a joint meeting with the Kanza Group and Sustainable Sanctuary, the topic of the climate crisis for people of faith will be discussed. There will be a film and a panel discussion. A representative from Catholicism and Protestantism will be on the panel. In light of the Pope's recent encyclical on climate change, the moral landscape of the climate crisis will be a powerful tool for those of us addressing this issue.
Where - Village Presbyterian Church, 6641 Mission Rd, Prairie Village, KS
Contact - Gail Shafton, (913) 909-3127, gail@shafton.com

Kanza Group (Kansas City)
September General Meeting To be Determined.
Contact - Gail Shafton, (913) 909-3127, gail@shafton.com

Topeka Group
Tuesday, July 28, 7:00 pm.
Meeting to be Determined
6:30 pm - “Meet, Greet and Gather”
7:00 pm - Topic to be determined
Where - Topeka Shawnee County Public Library Marvin Auditorium 101C, 1515 SW 10th Ave., Topeka, KS.
Contact - Gary Anderson, (785) 246-3229; gjanderson1963@hotmail.com

Topeka Group
Tuesday, August 25, 7:00 pm.
Meeting to be Determined
6:30 pm - “Meet, Greet and Gather”
7:00 pm - Topic to be determined
Where - Topeka Shawnee County Public Library Marvin Auditorium 101C, 1515 SW 10th Ave., Topeka, KS.
Contact - Gary Anderson, (785) 246-3229; gjanderson1963@hotmail.com

Topeka Group
Tuesday, September 22, 7:00 pm.
Meeting to be Determined
6:30 pm - “Meet, Greet and Gather”
7:00 pm - Topic to be determined
Where - Topeka Shawnee County Public Library Marvin Auditorium 101C, 1515 SW 10th Ave., Topeka, KS.
Contact - Gary Anderson, (785) 246-3229; gjanderson1963@hotmail.com

Southwind Group (Wichita)
Summer Meetings are To be Determined.
Sierra Club Outings

General public is welcome to participate

Below is the combined list of all outings by the Kansas Chapter and Groups. Please contact the outing leader listed after the description by phone or e-mail before attending any of these activities. For trips requiring physical exertion, leaders need to know your ability and condition. Sierra Club policy also requires participants to sign a liability waiver or acknowledgement of risk prior to departing the trailhead. Outings organizers have a Meetup webpage for the latest outings updates at: http://www.meetup.com/KC-Sierra-Club-Outings/. Outings are also listed at http://kansas.sierraclub.org/outings/.

Sat Jun 27, 9:00 am. Hike through Native Prairie Grasses & Wildflowers, Prairie Center, Olathe, KS
Join us on a leisurely hike through the 300-acre Prairie Center to identify wildflowers and prairie grasses in bloom on an early summer morning. We’ll also review the current status of the prairie ecosystem. As chiggers and ticks are abundant during this time, please wear long pants with insect repellent. Suggested donation $3. Limited to 12 participants. Kanza. Mike Miller, (913) 362-2600, mrmiller1@mindspring.com

Tues Jul 7, 6:30 pm. Green Building Tour and Evening Walk through Native & Formal Gardens, Kansas City, MO
Tour inside the Anita Gorman Discovery Center to learn about energy efficient design and then outside to see their native gardens as well as the nearby formal Kaufman gardens. This will be a leisurely walk of about one hour inside and one hour outside. Kanza. Eileen McManus, (816) 523-7823, eileen4250@sbcglobal.net

Sun Jul 12, 9:00 am. Prairie Romp at Jerry Smith Park, Kansas City, MO.
Please join us (and bring your furry friend if you have one) on a short romp through the prairies at Jerry Smith Park, a former farm turned park and preserve just south of the Martin City neighborhood. This will be a short hike of less than 2 miles, but make sure to bring sunscreen and extra water due to the anticipated weather. Kanza. Steve Hassler, (913) 707-3296, hassler@planetkc.com

Sat Jul 18, 10:00 am. Elk River Wind Farm Tour
Come tour the Elk River Wind Farm just south of Beaumont to learn about clean energy in Kansas, followed by a 3-4 mile hike through the tallgrass prairie being conserved by the land owners. Wakarusa. Travis Robinett, (512) 775-4040, travis.robinett@gmail.com

Clinton Lake State Park
Hike the Blue Trail at Clinton Lake State Park to the public beach, where we will relax, swim, and have lunch before making the hike back, an 11-mile round trip. Wakarusa. Travis Robinett, (512) 775-4040, travis.robinett@gmail.com

Sun Aug 9, 9:00 am. Dog-Friendly Hike at Shawnee Mission Park, Lenexa, KS
Bring your dog for a short fun summer hike and splash. We’ll meet in the parking lot at Shelter 8 and hike east as far as we like, then return through the off-leash area and stop by the dog beach before returning to the parking lot. $3 donation requested. Kanza. Steve Hassler, (913) 707-3296, hassler@planetkc.com

Sat Sep 12, 9:00 AM (Time Tentative). Backpacking 101 Class Series, Blue Springs, MO
Try backpacking and/or learn more about it as we cover gear from head to toe. The series consists of two 6-hour classes (9/12 & 10/10), an optional shakedown hike (10/18), and a backpacking trip (10/23-25) near Columbia. Participation in both classes ensures a place on the backpack trip. Cost is $50 per person with participation limited to 25 people (registration required). Current Sierra Club members may also borrow from a selection of good quality lite weight gear at no extra charge. Kanza. Paul Gross, (816)228-6563, wildwoodp@hotmail.com
Sierra Club Outings

General public is welcome to participate

Some nice shots from the 2015 Missouri Wilderness Backpack Series: Hercules-Glades Wilderness
Calendar of Events

Summary of all Kansas Chapter Events

Below is a listing of all General Meetings, Outings, and Committee Meetings for the Kansas Chapter and Groups. For specific information, see General Meetings page 17 and Outings page 18. For the latest update on events, go to http://kansas.sierraclub.org/calendar/

Out. Tues Jul 7, 6:30 PM. Green Building Tour and Evening Walk through Native & Formal Gardens, Kansas City, MO. Kanza. Eileen McManus, (816) 523-7823, eileen4250@sbcglobal.net

Out. Sun Jul 12, 9:00 AM. Prairie Romp at Jerry Smith Park, Kansas City, MO. Kanza. Steve Hassler, (913) 707-3296, hassler@planetkc.com

GM. Tues Jul 14, 6:30 PM. New Member Fair. Kanza. Gail Shafton, (913) 909-3127, gail@shafton.com

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GM. September TBA. September General Meeting TBA. Kanza. Gail Shafton, (913) 909-3127, gail@shafton.com

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