

KANSAS HERPETOLOGICAL SOCIETY NEWSLETTER NO. 79

February 1990

ANNOUNCEMENTS

1990 KHS Field Trip Planned for Weekend of 4-6 May

The annual KHS field trip has been set for the weekend of 4-6 May 1990. The location will be Hodgeman County, Kansas.

The first organized field count will leave from the State Lake located about four miles to the southeast of the city from Jetmore at 0900 hrs, Saturday, 5 May. The legal location of the lake is Sections 14-15, Township 23S, Range 23W. The lake (which is dry) is located on Rock Creek.

Very primitive camping is available at the location of the lake. Since there is no water at the lake, finding a spot to camp should not be a problem. Also, there is no fee for camping at this dry lake.

A motel is available in Jetmore along with several places to eat, drink, and buy other much wanted supplies. Fuel is also available in Jetmore. Jetmore is the largest city in Hodgeman County.

More information about this field trip can be obtained by contacting KHS Field Trip Chairman Larry Miller at 524 North Osage Street in Caldwell, Kansas, 67022 (phone (316)845-2680, evenings) or Susan Neal at Rt. 1, Box 132, Jetmore, Kansas, 67854 (phone (316)357-8448 evenings). Larry can provide information about actual field trip plans. Susan can provide information about just what is available in Jetmore, Kansas.

Citizen Band radio channel 4 will be monitored by those with CB radios during the spring adventure. Mark all calendars for the weekend of 4-6 May 1990, and plan to be in Hodgeman County.

Kansas Endangered & Threatened Species Law Threatened by Economic Developers

The following three documents, obtained by the KHS, are important, and should be read by all KHS members interested in conservation of Kansas wildlife:

Resolution: Revise the Kansas Threatened Species List to Remove Peripheral Species

WHEREAS: The state of Kansas has adopted a list of threatened and endangered species for some wildlife that has been determined to be in peril, and

WHEREAS: Several species living in border counties next to Missouri have been declared threatened simply because they exist in a narrow band of counties where suitable habitat is present, but are not threatened or endangered in adjacent states, and

WHEREAS: Having a T & E designation by the State of Kansas is creating hardships on communities trying to construct the Bone Creek reservoir in Crawford County where peripheral species have been declared endangered by the state and communities are being required to purchase several hundreds of acres for mitigation in addition to the nearly 1300 acres needed for the reservoir itself, and

WHEREAS: 14,000 people are depending on the Bone Creek Reservoir being build (sic) and supplying them with a high quality water at reasonable rates to replace the polluted water they must now consume which comes from the Roubidoux formation nearly 1000 feet below the surface, and

WHEREAS: The ground water (sic) cannot be cleaned up of all its impurities which are naturally occurring and present a past, present, and future threat to these 14,000 people both young and old alike who must consume it daily, and

WHEREAS: The lives of 14,000 people should be of greater concern to state legislators and state agencies than the Broadhead Skink, the Northern Redbelly Snake, the Central Newt, and the Eastern Spotted Skunk when consideration is made that they are in abundance in Missouri and states to the east of Kansas,

THEREFORE BE IT RESOLVED, that the Kansas Legislature and the Governor of Kansas review the necessity of keeping the above named (sic) species on the Kansas threatened and endangered species list and act accordingly to remove them as threatened species, and

BE IT FURTHER RESOLVED the Legislature advise the Kansas Wildlife and Parks (sic) to drop the requirement for the Public Wholesale Water Supply District #11 from having to mitigate for the above four listed species on the Bone Creek Reservoir.

....from The Southeast Kansas Rural Conservation District

Resolution No. 1. Revise the Kansas Threatened Species List to Remove Peripheral Species and Their Habitats

WHEREAS, the state of Kansas has adopted a list of threatened species giving them and their habitats special protection even though these species may or may not exist in Kansas, and

WHEREAS, several of these species, which may or may not exist in Kansas have been declared threatened because they exist in a narrow band along the eastern border with Missouri and the southern border with Oklahoma. Typically, these bands may only be one county or less in width and at places only reach into Kansas 10 miles from Missouri, These same peripheral species exist in numbers not threatened in adjoining states and actually have habitat ranges that cover the southeastern 1/4 to eastern 1/2 of the United States (See maps); and

WHEREAS, these peripheral species and their habitats having a threatened designation in Kansas are now and will in the future cause financial and other hardships upon water supply projects, small watershed projects to control local flooding and industrial development much needed in southeast Kansas; and

WHEREAS, the people and industry of southeast Kansas are in need of quality water and protection from flooding which can only be provided by surface water impoundments such as the the Bone Creek (sic) Project which would provide water for more than 14,000 people who are now drinking well water that does not or will not meet the Kansas standards for drinking water; and

WHEREAS, the lives, health, property and potential of the people of southeast Kansas have greater value than these threatened peripheral species of wildlife and their habitat, which may or may not exist in Kansas, but do exist in adjoining states and many other states in the eastern United States; and

THEREFORE, BE IT RESOLVED, that the Kansas legislature and the Governor of Kansas revise the Kansas Threatened and Endangered Species Act to remove peripheral species such as the Northern Redbelly Snake, Broadhead Skink, Western Earth Snake and that are listed as threatened because they may or may not exist on the very edge of their historical habitat that happens to fall in a very narrow band along the very eastern edge of Kansas;

BE IT FURTHER RESOLVED, the legislature make its intent known to the Kansas Department of Wildlife and Parks to drop any current mitigation demands placed upon water supply and/or flood control projects affected by these peripheral species.

....from The Kansas Association of Conservation Districts

Editor's Note: Three outdated range maps for the Broadhead Skink, Redbelly Snake, and Smooth Earth Snake from Conant's (1975) Peterson Field Guide follow here.

Threatened and Endangered Species

Listing a species as threatened or endangered shall be on that basis alone and not on the basis of "rarity". The law should not permit encroachment upon economic agricultural practices. Scientific data supporting the inclusion of a species shall receive wide dissemination to landowners and private organizations representing the rights of these landowners. Any agency, organization or person requesting a rare, threatened or endangered classification to be placed on any species (sic), or requesting critical habitat designation, should be required to provide and fund an environmental impact report with emphasis on the economic impact of the action.

....from The Kansas Farm Bureau

Editor's Note: The previous three documents contain extremely alarming proposals as regards the future of several species of threatened and endangered Kansas amphibians and reptiles. It is absolutely vital that the Kansas Endangered Species Act be maintained in its present form and free from such obvious politically and economically motivated machinations as proposed by the aforementioned groups. I call upon all KHS members to contact your state representatives and senators to let them know in no uncertain terms that you oppose these proposals. For out-of-state members, please contact Governor Mike Hayden at the State Capitol, Topeka, Kansas, 66612. We will be following this story very closely and future editions of this newsletter will keep you informed of events as they occur.



KHS BUSINESS

**Kansas Herpetological Society
Treasurer's Report
Fiscal 1989
(1 January - 31 December)**

Balance on hand 1 January 1989.....\$1595.96

Income 1989

Dues, Regular.....1254.00
Dues, Foreign.....32.00
Dues, Contributing.....285.00
Auction781.00
Meeting Registration.....142.00
Donations.....473.31
Interest87.99
Video Tape Sales KHS Field Trip10.00

Total3065.30

Expenditures 1989

Printing KHS Newsletter 75196.05
Printing KHS Newsletter 76212.71
Printing KHS Newsletter 77250.52
Printing KHS Newsletter 78300.34
Postage KHS Newsletter 75148.17
Postage KHS Newsletter 76208.74
Postage KHS Newsletter 77225.65
Postage KHS Newsletter 78255.25
Annual Meeting Expense.....83.07
Secretary-Treasurer Expense235.99
Bank Charges.....11.72
Miscellaneous.....7.33

Total2135.54

Balance on hand 31 December 1989.....\$2525.72

Respectfully submitted,

Olin Karch
KHS Secretary-Treasurer
1 January 1990



KHS BRINGS YOU GREAT NEWS OF THE WORLD

Turtle War

There's a war brewing in southern Sumner County, and we want to declare our allegiance right now: we're on the side of the kids and the turtles.

It seems some grown-ups in Caldwell have been putting down the sixth grade Caldwell Elementary School students who turned a class project into a statewide campaign in 1986. The project was to have the Legislature declare the ornate box turtle the Kansas state reptile. The students, led by teacher Larry Miller, went on to launch a political blitzkrieg the like of which hadn't been seen in Topeka in many years.

As a result, Kansas today has an official state reptile, and it is the wonderfully suited ornate box turtle. Because of its wide distribution, the box turtle - like the other state symbols, the western meadowlark (the state bird), the native sunflower (the state flower), the bison (the state mammal), the eastern cottonwood (the state tree), and the honeybee (the state insect) represents the entire state. It has become another point of Kansas pride.

This all happened because of Aaron Lowe and Tammy Wittum and Misty Thompson and Mandy Struble and Kirt Bocox and all those other civic-minded students who refused to succumb to adult pessimism, and kept promoting their project until it became law. Caldwell was recognized as the "Ornate Box Turtle Capitol of the World", and local pride should have blossomed.

For the most part, it did. Now, however, some latecoming adult "boosters" are saying they want their community to be known for more than box turtles, and are trying to put kids in their place. Some sickies are letting it be known to the students how they like to "pop" turtles they find sunning on roadways. One insensitive lout took to wearing a T-shirt with the kids' box turtle on it, but with a slash drawn through it.

"The Friends of the Ornate Box Turtle", a support group, now is rightly up in arms, parents are demanding the big kids (that is, 30- and 40-year-olds) stop picking on their youngsters, and an uneasy silence reigns at Caldwell Elementary, where it all began.

This is truly unfathomable. The naysayers could be right, though. Perhaps Caldwell shouldn't be known as the Ornate Box Turtle Capitol of the World. Perhaps it should be known as the Grown-up Bully Capitol of the World instead.

— Wichita Eagle 25 November 1989

Turtlemania Controversy Brings Town Out of its Shell

One of the first indications all was not well in the Ornate Box Turtle Capitol of the World came when someone changed the "today's special" sign at a local restaurant to read: turtle soup.

Then buttons began showing up at the high school picturing a turtle with a tire tread running over its shell.

The final insult came at the homecoming football game in October - the biggest event of the year in Caldwell - when City Attorney Lee Johnson, who didn't want to talk about it, showed up wearing a turtle T-shirt with a red slash drawn through it.

"Very poor taste", said Cleda Baker, founder of Friends of the Ornate Box Turtle Society, who accused Johnson of backstabbing and putting down Caldwell.

In Caldwell, it's hard to be neutral about turtles.

This is the town whose sixth-grade class won the fight to have the ornate box turtle named the official state reptile in 1986, even after top legislators said it couldn't be done. (Thirty-three days later, the governor was in Caldwell, signing the turtle bill into law).

This is the town where some residents have had it with turtles.

"Enough is enough", said Susan Niebaum, mother of two.

"It's become turtle mania", said Lynda White, a clerk at the Little Stop, a local gathering place. "You get tired of turtles. The whole town is not turtles."

The town is dividing into pro- and anti-turtle forces over this shy, harmless creature that grows a little larger than an adult's palm. The *Terrapene ornata ornata*, as it is known in scientific circles, is found throughout Kansas, eats berries and insect, and lives to age 100.*

The school itself is trying to stay out of the controversy, although the 19 sixth-graders, in effect, made it possible.

The students spent a year writing to legislators, lobbying in Topeka, and staging news conferences on behalf of the box turtle, as part of a class science and government project.

"It is not a kid problem at all", said David Monson, superintendent of the Caldwell school district. "As I see it, it's an adult problem. I have my feelings. But I must remain neutral on this issue."

"The kids are very embarrassed about it", said Amy Shoffner, whose daughter was one of the sixth-grade students who helped make the turtle a state symbol. "I would like to see the turtle become part of history instead of the silly bickering one or two people are getting going."

Even those involved have a hard time explaining exactly what the controversy is about or how it began.

All agree on one point: It's gotten way out of hand.

The trouble goes beyond mere turtles. It is about freedom of expression, economics, the town's image, personality clashes, and, perhaps, a series of bad jokes that went a little too far.

It is also about protecting the students' self-esteem and, finally, protecting the turtle itself.

Some say the controversy started when the pro-turtle forces tried to replace the school mascot, the blue jay, with the turtle.

"Untrue", Baker said. "I have been a Caldwell Blue Jay for 54 years and I will always be a Caldwell Blue Jay."

Some say it has been simmering for years and that a few teachers have ridiculed the turtle in front of students.

Others say things heated up this summer when "turtle popping" was rumored to be a favorite sport among some adults in town. Pro-turtle forces report having found bodies of turtles that were shot or "popped" by cars and pickups.

In Kansas, killing an ornate box turtle is punishable by a maximum fine of \$500 and six months in jail.

The reports of turtle killings and turtle-ridicule have drawn outrage from Joe Collins, author of "Natural Kansas".

"Anybody who would kill anything wantonly was got to be ignorant", Collins said. "I really hate to see children given that kind of role model."

The turtle society is receiving letters of support and sympathy from turtle lovers in Texas and Illinois.

"This is disturbing to me", grumbled Dave Lowe, an insurance agent in Caldwell. Town leaders, he said, have worked hard on Caldwell's image only to get national attention "over a turtle war".

It's the image that Baker wants to help.

Turtle activist Baker wants the turtle to do for Caldwell what Boot Hill has done for Dodge City.

She envisions a Turtle Day celebration featuring the Great American Turtle Race and reptile displays each April 14, the fourth (sic) anniversary of the signing of the turtle bill.

Many say she is exploiting the turtle by selling turtle T-shirts, turtle belt buckles, turtle bumper stickers, turtle hats, and turtle buttons at her thrift shop, where she keeps three pet turtles.

Civic leaders, including the new mayor, want to keep promoting the town as the "border queen town on the Chisholm Trail".

The town has had that slogan for years and hasn't done much with it, said Tom Countryman, who owns a liquor store in town. He said he decided, after several hours of soul-searching, to speak out on behalf of the turtle.

As for the students, they'd rather stay out of it.

"We would like for the arguing to stop", said Corey Black, a freshman at the high school. "It just goes on and on and on."

— Wichita Eagle 5 December 1989

Editor's Note: Box turtles do not live to 100 years. Thirty to thirty five years is the average life expectancy of this species.

Loss of Amphibians Alarming Scientists

Populations of frogs, toads, and salamanders appear to be declining mysteriously in many places around the world, and scientists fear that the dramatic disappearance of the amphibians may be a sign of widespread environmental degradation of some unknown kind.

For several years, there have been rumors and scattered reports that frogs and toads appear to be far less common than they once were. More recently, field biologists have begun documenting precipitous declines, sometimes measuring from 50 percent to 90 percent, and local extinctions in a variety of settings, from tropical forests to temperate mountain lakes.

"We are very concerned", said David Wake of the University of California at Berkeley. "There seems to be something going on. Something we don't yet understand."

Some researchers suspect acid rain. But others think that the crashing populations could be caused by pesticides, viruses, hard winters or dry summers. In some locations, frogs and other amphibians may have been wiped out by introduced competitors such as fish. The animals may also have been exploited for food or even by scientists themselves, who collect specimens for research.

Populations of frogs, toads, and salamanders often rise and fall naturally. But the scientists are concerned because the animals in many locales do not appear to be rebounding. They are especially concerned because many of these local extinctions are occurring in relatively pristine habitats such as national parks and biological reserves.

"Amphibians are disappearing and we're not sure why", said Roy McDiarmid, a herpetologist with the U.S. Fish and Wildlife Service and the National Museum of Natural History.

To unravel the mystery of the disappearance, and to better document how extensive the decline is, the researchers have rushed to organize a meeting early next year entitled "Declining Amphibian Populations -- A Global Phenomenon?"

In the past few years, researchers have witnessed severe reductions and local extinctions throughout Central and South America, Europe, and North America.

"Decline is very evident and very rapid in Europe", said Hansjurg Hotz of the University of Illinois in Urbana. Hotz said that the decline was most dramatic in Central and Northern Europe.

Jay Savage of the University of Miami said that the trend in the tropical Western Hemisphere was also toward fewer animals and local extinctions. Savage himself has watched a brilliantly colored amphibian called the golden toad falter in the cloud forests of Costa Rica.

Others have seen marked declines of salamanders in Mexico, toads in Peru, and of several species of frogs in Brazil. Some of the most precipitous declines have been observed in North America, particularly in the West.

"What we're seeing is a decline of all native frogs from British Columbia to southern California to the Rocky Mountains in the east", said Andrew Blaustein of Oregon State University, who has watched numbers of the Western Spotted Frog and the Cascades Frog drop in Oregon.

"There is a strong feeling in the West that amphibians are taking a nosedive", said David Bradford of the University of California at Los Angeles.

Where hundreds of Yellow-Legged Frogs once crowded the shoreline of mountain lakes in the the Kings Canyon and Sequoia national parks in California, Bradford finds few frogs today. Only one of the 38 lakes that Bradford has surveyed has Yellow-Legged Frogs.

Stephen Corn and Bruce Bury of the U.S. Fish and Wildlife Service's National Ecological Research Center in Colorado have documented dramatic declines of the Boreal Toad and the Leopard Frog in the Rocky Mountains.

"We sense there is something wrong", Bury said. "The frogs aren't here anymore. We don't know why these animals are going down or why they are not recovering."

The mystery of the disappearing frogs is complicated by the fact that in some areas, researchers have found no declines. Researchers who work in Borneo and East Africa, for example, report no detectable downward spiral.

"There are just a helluva lot of unanswered questions", McDiarmid said.

— Wichita Eagle 14 December 1989

Lizard Resistance May Ease Ant Sting

The discovery of a substance in horned lizards that protects them from the poisonous bites of harvester ants may lead to the development of an ant venom antidote for humans, scientists say.

Bites of the quarter-inch ants can paralyze and kill small animals. In humans, they are at least painful, at worst life-threatening because of anaphylactic shock, an allergic reaction in some people.

The ants live in the western and southeastern United States and are most abundant in deserts.

Resistance to snake venom is not uncommon among mammals and lizards, but the horned lizard's immunity to the ants' venom is the first known case of a vertebrate's ability to resist the venom from arthropod prey.

The lizards are a big predator of the ants, using their long sticky tongues to capture the ants, then swallowing them whole.

Their protection from bites comes from a substance in the blood, which was discovered by scientists in Arizona working for the American Museum of Natural History and the Southwestern Biological Institute.

By examining the structure of the blood factor and how it works, researchers hope to develop a venom antidote for humans.

— Wichita Eagle 12 November 1989
(Submitted by Justin Hatcher, Caldwell, Kansas)



FEATURE ARTICLES

Kansas Herpetological History Threatened - What Can be Done?

By

**Larry Miller
524 North Osage Street
Caldwell, Kansas 67022**

The citizens of Caldwell, Kansas heard from people around the world after Governor John Carlin traveled to the town of 1200 on 14 April 1986 and signed a bill making the Ornate Box Turtle the official state reptile of Kansas. Those people wanted to know more about the town which successfully promoted the popular Ornate Box Turtle to the status of an official state symbol. Most citizens of Caldwell were proud that their town had been a part of the historic event. Most of the students of the Caldwell school district, their teachers, and parents were delighted to have the town known for such positive and unique way for the first time in the history of Kansas. What more could the town ask for?

Most of the people of Caldwell expected more positive things to come from the hard campaigning of 1986. During October of 1986, Mayor Aubra H. Pierce of Caldwell signed a proclamation honoring the citizens involved with the state reptile project, honoring the turtle, and proclaiming Caldwell the "ORNATE BOX TURTLE CAPITOL OF THE WORLD". During the spring of 1989, Martin Capron of Oxford, Kansas traveled to Caldwell and used his art skills to paint a large Ornate Box Turtle on the wall of a downtown building. It quickly attracted lots of attention. Celebrations were also held each April starting in 1987 to honor the turtle.

Many people around the country were shocked during late 1989 when news reports started appearing indicating that all was not well in the "ORNATE BOX TURTLE CAPITOL OF THE WORLD". News of the Caldwell City Attorney wearing a shirt with a picture of an Ornate Box Turtle with a slash drawn through it to the homecoming football game, reports of a few of the teachers in the Caldwell school system promoting the killing of turtles, other reports of the same teachers making fun of the students who were involved

with the 1986 project, and even reports from citizens claiming they witnessed others kill turtles, have shown up in newspapers from around the country since late 1989.

It must be pointed out that those involved with the killing of turtles and the negative actions taken toward turtles appear to be in a very small minority in Caldwell. Most of the citizens of Caldwell continue to be very proud of the state reptile. Most feel that the people who have promoted the killing of turtles and made fun of a Kansas symbol are either jealous of those who accomplished so much a few years ago, afraid the popularity of the Ornate Box Turtle might even have an impact on what people think of other reptiles (a few in Caldwell associate all reptiles with snakes and consider snakes evil), or are ignorant people who have nothing better to do than make fun of what others have accomplished and (would) destroy anything they do not understand.

There are a few things the people reading this article can do that might have some impact on what is going on in Caldwell. They can write letters expressing their views to select groups in Caldwell.

Some people now feel that the turtle is a bad image for Caldwell and that all reference to this animal should be banned. Others seem to feel teachers at the school should not be allowed to keep any reptile in their classroom. These people may be using the turtle to get other animals, such as kingsnakes, banned from the classrooms. There have been complaints from a few people (mostly teachers) about harmless species of snakes which are being kept by several teachers this year. Once again, this may be due to the fact that teachers who keep reptiles are popular with students and/or the fact that some people consider all reptiles evil.

Now back to writing letters. Concerned herpetologists might have an impact on the city of Caldwell by writing a letter to the Caldwell Chamber of Commerce pointing out that there are those who like turtles and that some of these people might even travel to Caldwell and spend money on items such as T-shirts, belt buckles, etc. if the city promoted the fact that it is the "BOX TURTLE CAPITOL OF THE WORLD". (By the way, a number of people have already traveled to Caldwell to buy souvenirs and visit the town just because of what has been in the papers about the controversy.) The Chamber's address is P.O. Box 42, Caldwell, Kansas, 67022.

A letter to the Caldwell School Board might also be of value. Such a letter might point out the importance keeping harmless reptiles in the classroom and how keeping such animals might help teach young people a respect for all forms of life. The letter could relate to the Ornate Box Turtle controversy and/or the fact that the writer has read this article. Keep letter to the school board positive. The address is: Caldwell Board of Education, U.S.D. 360, 21 North Osage Street, Caldwell, Kansas, 67022.

A letter also might be written to the Caldwell City Commission expressing concern that the Caldwell City Attorney has been making fun of the very symbol that created such a positive image for Caldwell a few years ago. The address is: Caldwell City Commission, City Building, Caldwell, Kansas, 67022.

Letters do make a difference. Everyone reading this article should feel free to share it with friends. Also, more information can be obtained by calling me at 1(316)845-2680 most evenings between 1900-2230 hrs.

Editor's Note: Larry Miller was the teacher of the sixth grade class that succeeded in getting the Ornate Box Turtle declared the official state reptile of Kansas. He has also kept reptiles in his classroom for nearly 20 years with no incidents (from them. People, on the other hand, have been a problem since 1986).

EDITORIAL

Yes, folks, we got trouble. We got trouble right here in River City. That starts with "T" and that rhymes with "T" and that stands for — Turtle. As in box turtle, the Kansas State Reptile.

It seems some paragons of nincompooery in Caldwell have chosen to return to some of the characteristics for which Caldwell was known in the wild and woolly days of the the great cattle drives: venality, low-mindedness, and meanness of spirit. While it is true that Caldwell was known as a border queen town then, it was also known as a bordello queen town, too. I doubt that is the type of image Caldwell's city fathers wish to promote. What the hell is wrong with honoring a symbol that displays so many of the good characteristics for which the vast majority of Caldwell and Kansas citizens are known: tenacity, durability, resiliency, and the ability to endure, survive, and thrive in the face of innumerable hardships?

Apparently, some folks, including the city attorney, have forgotten or never appreciated the lesson of making the box turtle a symbol of this state. The point was not in anointing a "state reptile." It could have just as easily been a state cow, a state bat, or a state rock. The point was teaching children how to learn to be good citizens, how to get involved in governmental processes, how to gain some tools with which to survive in all this craziness when they become vested citizens in this society. The point was a dedicated teacher, who truly cares about the education and welfare of his students, giving them a marvelous, close-up view of that world and and teaching them that they could win in the face of odds against them. The point was in teaching those children to respect, conserve, and preserve a tiny portion of our natural world, a world which is rapidly disappearing.

Perhaps the saddest part of this whole mess is that those very children are now learning another part of how society works, that venal, mean side that all too often surfaces when some boob feels that only he or she knows how things should really be run. This is a side of humanity that these children, at their age, should not have to witness. Perhaps later. But not now.

So, shame on you Lee Johnson, and shame on all the rest of you who have chosen to follow his example. Stop this silly, trivial bickering and take a load off. The box turtle does not deserve it and your children most certainly do not deserve it.

— Eric M. Rundquist

A Non-Scientific (Behavioral) Approach to Reptile Reproduction

By

**Frank Retes
Tucson, Arizona**

(The following is an edited transcript of a talk given on April 18, 1989, at the monthly meeting of the Tucson Herpetological Society)

This will be pretty much an open discussion. I'll start with what I think are the key elements in breeding snakes and lizards. One essential thing in reproduction is to work with sexual pairs, not just any male-female pair. Even long-time keepers have the problem of not having sexual pairs. Another thing is that, for some of the rarer animals, we don't know what the breeding size is, and what we need are adult-sized animals. When black-headed pythons were first being kept, 90% of the animals in captivity were sub-adults, but people had them on an adult schedule and were feeding them once a week or once every fourteen days and hoping they would reproduce. In fact as juveniles, they simply were not yet ready to reproduce and should have been fed more often.

Another thing is to have compatible pairs. Just because you have two Blackhead Pythons, a male and a female, does not mean that they are compatible. Individual reptiles may have different breeding rhythms in the wild. Some of these animals with large ranges cycle differently in different parts of their range. They'll react differently if you treat them with the same hibernation or photoperiod, even though they are both the same species. So you have to get a sexual pair that is compatible.

Now let's move on to "cycling". You have to let the animal know what season or time of the year it is. You can do this through "hibernation", through photoperiod, or through feeding schedules where you just feed them more heavily at one time of year. You can cut off their feeding first and later lead into what I call "conditioning" (i.e. increased food intake). I found out that with fish, amphibians, and reptiles the key thing is to condition the females. They have to be well fed at the right times, and this has to do with getting them to cycle when you want them to. In fisheries they condition the animals, but they can't get them to cycle without using hormones. Hormones can also be used with amphibians, but we don't yet know how to do that successfully with reptiles. So we coordinate the timing of the conditioning with the cycling of the animal. You can have problems with southern and northern hemisphere animals: you have your weather and cycles here and their weather and cycles there, and how do you get them to breed here? That gets to be fun.

Q: How do you "condition" your female snakes?

A: Mainly by feeding them heavily in the fall and after hibernation. Colubrids, for example, form their ova in the wintertime when they're in hibernation, and in the spring the ova develop and ripen. If you put the snakes into hibernation in the winter and drop their temperatures and then bring them back up, just feed the females heavily when they start feeding. If you don't do this, the ova don't ripen. One of the things I do is feed them a lot of food items more often. When you feed them on a schedule of once a week or once every ten days, it's very hard to get a female to produce a lot of young or sometimes even to produce young at all. In the wild they feed every day if they can.

Q: Why would there be a problem with southern hemisphere animals if in the southern hemisphere they breed on increasing day length or whatever; wouldn't they do the same thing here?

A: Yes and no. When I first started breeding southern hemisphere pythons, I hibernated them in our winter and brought them out in our spring, thinking they would breed in our spring and have young that would hatch or be born live during our summer. It worked with the first few pythons I did that with. If you cycle them strongly enough, it can work. But somehow they have the ability to know what's happening in their world outside. A lot of the problems that people have had with pythons catching colds while hibernating is a result of hibernating them too strongly at temperatures that are too cold. For some animals like Carpet Pythons and Blackhead Pythons, you can drop their temperature and do all the things that you're supposed to do to them, and the males may still cycle at a different time than the females. I've never had that problem with colubrids, where the male will try to breed at one time of the year, and the female is cycling and producing ova at another time of the year. So there are problems where these animals fall victim to our summer and winter periods when these differ from the animal's origin. Of course in Tucson it is so hot that we have special problems keeping them cool.

Q: Do you see a difference in first, second and third generation captive bred animals adjusting?

A: Yes, and that goes back to having compatible animals. Once you get captive hatched animals, you can successfully raise them, and most are very easy to breed. But getting compatible animals is the key thing. I always assume that my animals were designed to grow to adult size and then breed. Sometimes when they're sick, they can prove you wrong, and that's when Dr. Jarchow has to be called in to fix them up.

Q: What are the optimum temperatures when you're cycling these snakes; how far do you drop them, say, for a strong cycle?

A: I've taken Dumeril's Boas down as low as 40° or 45°F. and had no problems. In fact they were breeding at 45°. One of the things you need to do with pythons is take their cage temperatures down low, but always give them a place where they can get warmth if they need it. The Dumeril's didn't go to the heat pad till it got below 40°. Most pythons, if you drop the temperatures, will start copulating within two weeks. They breed when they're in hibernation. Actually its probably not really "hibernation", but when you drop their temperatures, that's when they cycle. Most boas are the same except for Rosy Boas, which I think are a little more colubrid-like in their behavior.

Q: Aren't those temperatures much lower than those encountered in the wild?

A: Some of the animals do face these extremes, but not all of them. *Chondropython* (Green Tree Python) is found both at low elevations with very warm temperatures, and in higher, cooler environments. So the same type of snake can experience various temperatures, and that's why you have different breeding conditions and rhythms for the same type of snake. That's why you have to try different things. If you haven't bred a particular animal, and don't have friends that have, you start with photoperiod, then hibernation, and then changing rhythms, and trying various other things.

Failure is only a method of learning, and there is no such thing as real failure unless you give up trying. If you can't breed an animal the first year or the second year, or the fifth year, you still can learn from your mistakes. One of my best friends, Ernie Wagner, never experiences failure. If he wants to breed something it might take him eight years, but if you talk to him, he'll always say "They're on the way". And they are! He will breed them and that's the attitude you need to take. If you fail one year, it's not a reason to get rid of the animals. You just learn

by questioning why you didn't succeed. Often, the key is to recognize unnatural behaviors and how they differ from the normal behavior of a healthy animal.

And that's what I want to talk about: recognizing things the animals are doing. When they don't feed, that could be normal. The animal could be trying to tell you that it's on its off cycle, and you have to be able to recognize that it's not sick. For example you might ask, "At what temperatures do I need to keep an animal?" Well, the animal will tell you if you just watch it carefully. If we see our animals are all in the front of their cages that tells us that the tape is too hot. If you put the heat source on a rheostat and keep running it down until the animals go to the heat pad then you have found out the correct temperature for that animal. One of the key things in hot climate areas, such as Arizona, is that we should keep animals cool with a hot place to go. They shouldn't be kept hot with a cool place to go.

Through the years we have found male colubrids to be especially sensitive to heat. Most colubrids kept over 82°, and any of the montane ones kept over 80°, have infertile eggs. Pythons are just as susceptible, maybe more so, to heat than are colubrids. Most male snakes exposed to high temperatures over a long period become sterile, and females so exposed can have their eggs "killed". The length of time of exposure to heat is important here. Colubrids can bask in 95° temperatures for short periods, but they have to be able to get away from that heat source and cool off. Also, colubrids may choose to go to a heat source if they can't hide while they are warming. A shy, timid animal won't go to a heat tape kept in the open even if the animal really needs the heat for its biological well being. So give the animal some options. Kingsnakes, for instance, like to get under something to get warm, while rattlesnakes like to get on top of something to get warm. So you look at the kind of snake you have and make your guesses. If you're trying to breed animals, you'll know when you're right because snakes react strongly to their environment, and their best reaction is reproduction.

Q: 1. You said getting females ready involves frequent feeding, perhaps giving them more food more often. Why do you think you don't ever see any fat females in the wild? 2. Is there such a thing as a snake being too fat? 3. Why don't you find many females in the wild if they are so busy being out and about feeding?

A: In captivity we do have a definite problem in overfeeding animals because they don't have the same daily activity as they do in the wild. A lot of the snakes don't move much, but they do have a daily routine of some amount of activity. In captivity they consume too many calories in acquiring sufficient amounts of vitamins and minerals, and don't get enough exercise to burn these extra calories off. When they are out of hibernation their metabolism is really pretty high and they move around every day. Colubrids in our area here in southern Arizona come out in March, go through reproductive behavior until the rains hit in July, and then the reproductive behavior is pretty much over. During this time, they have very well-defined territories and strong units or groups of animals. And yet, in order to get them fit enough to produce babies, you have to overfeed them and this means you have to provide them with exercise. In the wild, fit and well fed animals don't come up very much to be seen. The animals you see crawling around are usually sick and not very well fed. The reason I believe you don't find more animals out feeding is that they tend to stay out of sight and under cover where they live and wait for food to come to them.

Q: When they first come out of hibernation, what are the differences in how the males and the females act?

A: Well, first of all, some animals don't "hibernate". In my opinion, the animals here in southern Arizona don't hibernate. They don't have dens of large groups of animals like they do back east. What they do here is congregate in breeding groups. For example, at a Western Diamondback Rattlesnake "den" in Arizona, there are no juveniles, only large adult animals that are there to breed, so it's a breeding congregation. They come together in the fall to breed, they

may breed again in the spring, and then they disperse. The whole geographic area of southern Arizona is a little bit different, and since I've done most of my work here, I don't have a lot of experience with the denning behaviors found up north.

But for captive animals, it's probably a wise idea to bring your males out sooner than the females and you need to be sure the males are conditioned before you put them together with the females. In fact, for a lot of the colubrids, I don't even hibernate the males. I keep them fairly warm all winter.

Q: When is the time to bring the males and females together after hibernation?

A: There are a lot of indicator signs to know when they are ready. A good healthy female colubrid, having been put into hibernation, should cycle two weeks after its first shed, or during the period two days before to two days after its second shed. If you know how to palpate an animal, you can feel the ova in the female. This can be done by letting the female crawl through your hand. This way you can feel the eggs and count them. Pythons and boas develop their eggs in clusters and you can feel them in the middle of the animal as a clump in the early stages, and later the ova spread all the way down in the animal's body. With colubrids, the ova spread out in the animal from the beginning. Another indicator of cycling for colubrids is regurgitation, which is a sign of hormonal change or impending death. A female kingsnake will regurgitate if fed on the day of her cycle and the next day she will be fine. So female snakes go through hormonal differences that cause noticeable changes. Males kept in the same room can detect this through pheromones and begin to actively and noticeably crawl around.

Q: When you have females that haven't bred for a couple of years, do you ever have problems with peritonitis due to their holding eggs or reabsorbing eggs year after year?

A: We've had animals that bred nicely as long-term captives which had not been breeding for years. At other times we find long term captives that we get to cycle but which cannot produce eggs. This is generally due to injury, most often to heat stress, and in such cases you may cause the death of the animal by breeding it.

Q: Do you think it's a bad idea to keep females by themselves and not breed them?

A: If you don't intend to breed them, don't cycle them. That doesn't mean that they won't lay eggs. At one time I kept kingsnakes at a constant 84° with constant light and temperature and yet they bred every eleven months, with about 60% successful breeding of the females. With a stronger cycling factor like hibernation you could expect a 95% breeding rate.

Q: How long does a cycle tend to last?

A: We don't know a whole lot about that. Based on my experience, I feel that it is about 10 to 14 days after the females first become receptive.

Q: After a female colubrid lays her eggs and if you want to double clutch her, is there a particular amount of time that you wait before you try this?

A: First of all, you can only set the stage by preparing her for double clutching, you can't make her double clutch. In captive animals, if you give them enough food and if the environment and metabolism are stable, the animal will automatically cycle again after the first clutch and this usually happens within a week after laying. They shed before they lay their eggs, and if they shed between breeding, they won't usually cycle again. I had one occasion where that was not true, but that was a rare instance. Note that females don't need to breed again in order to multi-clutch. They can lay good eggs in the following clutches without having been bred again.

Q: For multi-clutching snakes, their investment in the first clutch is only half of their reproductive budget for the year. Isn't it true that some snakes like rattlesnakes and pythons put so much investment into a single litter that it's hard for them to breed the next year?

A: Egg layers can generally breed year after year, while live bearers generally don't unless you're "re-energizing" them well and their metabolism is being well balanced. Reptiles can breed once, twice, three times a year, or they can breed once every ten years. I had a California Kingsnake (*Lampropeltis getula californiae*) which laid five giant eggs the first and second years I had her, eight good-sized eggs the third year, two clutches of eight smaller eggs the fourth year, two clutches of 12 eggs each in the fifth year, and the sixth year she laid two clutches of 15 eggs each. When she double clutched, the eggs were a lot smaller; but the babies were approximately the same size.

It seems that the faster you raise snakes to adult size, the better they reproduce. I have developed a goal or formula that says we should be able to grow the animals to halfway between average size and record size in captivity. The average kingsnake size is three feet, the record is five. So we set a goal of trying to raise them to be four feet. I set a size goal for each species. For 75% of the species I work with, I can actually achieve record lengths. That's because for captive snakes, we're dealing with optimum conditions.

Q: Could you tell us something about what constitutes good housing?

A: Probably the worst thing to have happened for those keeping snakes is the availability of plastic shoe boxes and it is because the animals have a behavioral need for something to do in their cage environment. We should create nice terrarium settings where the animals have a place to hide, a place to climb, and a place to do whatever that particular species wants to do. Yet, their cages don't need to be elaborate.

Another thing I do is related to the fact that snakes apply scent to the areas where they live. In captivity, one of the first things we do is keep the cages clean and remove almost everything the snakes have placed their scent on. The first thing most snakes do is scent their newly cleaned cages again. I've found, especially for "troubled" animals, that it is best to keep something in the cage with the animal with which it grew up. Sometimes, when you relocate juveniles to a new cage after they reach a certain size, they balk, and stop growing. It may take them up to four months or longer to get going again. If you keep a piece of wood, a log, or a hide box with them that is never washed clean, the snake's scent stays on it and the animal is more comfortable and will continue to grow, often reaching adult size in a year. This is one of the techniques I use. Snakes need a lot of security in various forms. They need a place to hide, and they need the reassurance of familiarity with their surroundings to know that they are where they belong. Otherwise stress is likely to result.

Q: Do you keep all your animals individually housed, or do you keep them in groups?

A: I keep them both ways. I learned the most about behavior when I used to keep animals together in groups. A lot of female colubrids like to be kept in groups of four or five. One interesting thing I observed was combat dancing in males, but we also have combat dancing in females related to territorial rights. Unless animals are kept in groups, you won't see many of these or other interesting behaviors.

Q: Do you leave pairs together for extended periods of time or should you separate them after a while?

A: Generally speaking, they will breed right away. If you've been housing males and females separately, you should put them together. It's interesting to note that if you put a male into a female's cage so that he is in her territory, the male is going to roam quite a bit before he becomes attracted to the female. But when you put the female in with him in his cage, he's going

to react to her immediately. Whenever some new factor is introduced into the male's territory, he's going to react. If it's food he's going to eat it, if it's a male he's going to combat with it, and if it's a female he's going to breed with it. Putting a female in a male's cage is one easy and quick way to see if a female is cycling or not. The male will immediately respond if she is. On the other hand, if you can tell by palpation that the female is cycling, and if the male ignores her when she's put into his cage, then I'd look for another male.

Q: Is there any way to keep an active snake like *Masticophis* (Whipsnake) from beating up its nose?

A: I don't know how to do this and that's why I don't keep them. One reason I select certain types of snakes to keep is that they require small territories and you can house them reasonably. Others that require a lot more room can be kept also, but it's more costly and difficult. For example, I would say that a Sonoran Mountain Kingsnake, *Lampropeltis pyromelana*, in nature has a small base range of probably about six square yards, while *Masticophis* probably wanders over a territory of a hundred square yards or more. So you have to give *Masticophis* a completely different environmental feel in its cage than you would a "pyro". A lot can be done via illusion in building a cage environment to make the snake feel more at home in what is actually a very tiny territory. One thing is to let the snake see an open expanse of well lighted territory while the snake itself is in an area that is relatively densely packed with shelter and dark hiding places. Some of the more widely ranging animals need that and it may be possible to do this in a relatively small cage space.

Q: Do you use tricks like making hide boxes with little screened areas, partitions and compartments in it for the snakes to use?

A: Yes. There are many things you can do for your own enjoyment and for the comfort of the snake. One trick I've used with a Blair's Kingsnake (*Lampropeltis blairi*)* is to have a pile of shale rock pieces in the cage above a heat tape. The snake would go up to the top of the pile where it was coolest, I would feed it and it would then go down into the rocks where the heat tape made it warm. When it came up on top of the rocks again, I fed it again and the pattern would repeat. That snake was always ready to feed when it was on top of the rocks. Another thing most snakes like is to have a tight area that they can barely wedge themselves into and poke their heads out. This makes them feel very secure. Leave a couple of old sheds around since that also makes them feel comfortable.

Q: In the case of more secretive colubrids that you never see, how can you tell when a female is ready to cycle?

A: If you really never can see the animal, you probably don't have the right environment set up, or the animal is not healthy. A healthy animal will usually come out to take food in the daytime if you present it. One example of how important it is to present the animal with the right environment is illustrated by an experience I had with some California Kingsnakes. A female I had laid eggs and then began to crawl endlessly. I thought she was going to kill herself by never resting and I prepared to release her into the wild. I threw a snake bag in the cage, and she immediately crawled into the bag and didn't stir for two weeks. When she poked her head out again she began feeding. What she needed at that time, and what I didn't have for her at first, was a suitable hiding place.

Q: Do you have any preferences about what kind of hiding box to use?

A: Actually, I'm developing into an advocate of black plastic trash bags. Snakes seem to love plastic. In fact one of my favorite tricks I used to catch snakes in California was to lay out black plastic in the spring. In fact, for nesting boxes, I'll take a black plastic trash bag and put some potting medium in it and set it in a box with a piece of glass over it (just stay away from redwood and cedar shavings). When I put this in the cage with a gravid female, she'll usually go

right in it and lay eggs. It's nice and dark and it holds some humidity. Snakes can tell if rock crevices or soil is too porous and loses too much moisture, and if she feels it will, she won't lay her eggs there. It's also very important not to disturb a snake while it's laying its eggs.

The better the nest, the quicker a snake will lay its eggs and the better the chance the mother will develop a second clutch. Although books on this subject often say that laying will take place about seven to 14 days after shedding, I've had them lay the day after. If they go more than two weeks after shedding before they lay, you are in trouble. Also, the statement "when you have a gravid female moving around the cage and you can see bulges from her ova, she is about ready to lay eggs," is false. What it really means is "She is about to die". In the wild they develop and drop eggs very fast. Nonetheless there is great variability in breeding behavior among various types of snakes. For example, "pyros" have a communal nest, and a bunch of them will lay eggs in the same place. For Thayer's Kingsnake (*Lampropeltis thayeri*)** which is closely related, you don't find this behavior.

Q: Should we use the offspring produced by our breeding successes to reintroduce animals into the wild?

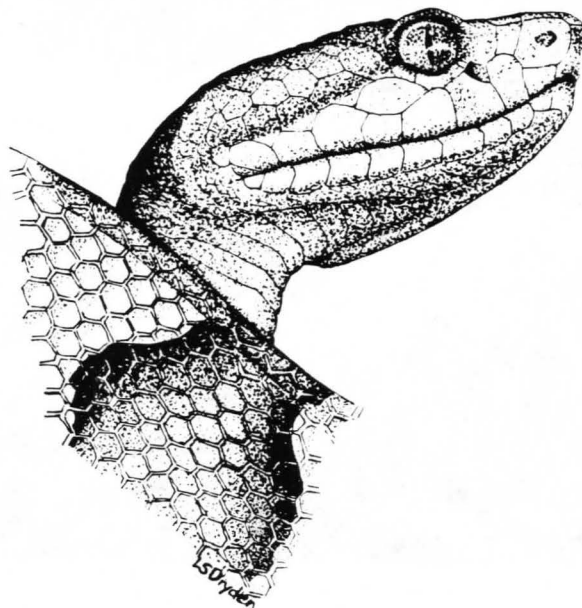
A: No. Except for certain scientifically controlled programs where a habitat is being regenerated and a number of individuals have been removed for the express purpose of being returned there, it is not a good idea to release any captive bred snake into the wild. The key to keeping a wild population of animals going is to protect their habitat, and in certain cases to limit over-collecting. Generally, most captive bred animals are no longer "natural" creatures, and are the result of at least some degree of domestication or modification of the ancestral form. This can occur in remarkably few generations, and in the wild, it lets snakes adapt very readily to environmental changes. What should be done with captive raised snakes is to use them for one's own enjoyment or sell them to collectors to reduce the collecting demand on wild populations.

— from the Tucson Herpetological Society Newsletter 2(6):47-50 (1989)

**Editor's Note:* The correct common and Latin names for this snake are Gray-Banded Kingsnake (*Lampropeltis alterna*).

***Editor's Note:* The correct Latin name for this snake is *Lampropeltis mexicana thayeri*. "Variable Kingsnake" might be a better common name.

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David Wheeler 3/1/88