

# KANSAS HERPETOLOGICAL SOCIETY NEWSLETTER NO. 102



DECEMBER 1995



## ANNOUNCEMENTS

### SNAKES AVAILABLE TO GOOD HOME

The Animal Care Unit is attempting to place several native Kansas snakes to qualifying educational institutions. Species available are all non-venomous and include Plains Garter Snakes, Texas Ratsnakes, Prairie King Snakes, Yellowbelly Water Snakes, etc. These are all long-term captives from Kansas in good health. As the exact localities from which the animals were collected is unknown, all of these specimens are non-releasable. Anyone interested in possibly adopting one of these snakes should contact Nancy Schwarting, Animal Care Unit, Malott Hall, University of Kansas, Lawrence 66045 or call her at 913-864-5587 weekdays.

### KHS MEMBERS INVITED TO FOLLOWING FIELD TRIPS

Members of the KHS and their interested friends are invited to attend either or both of the below listed field trips being planned for April 1996. Contact Larry L. Miller, 840 S.W. 97th Street, Wakarusa, Kansas 66546, phone 913-836-2119 for more information.

SATURDAY, 13 APRIL 1996

Annual Sumner County, Kansas herp count. This is the oldest annual herp count in the State of Kansas. Animals such as Blind Snakes and Checkered Garter Snakes have been found in the count area located about 50 miles southwest of Wichita along the Oklahoma border.

SATURDAY, 20 APRIL 1996

Join members of the Topeka Audubon Society for a joint field trip to be conducted in the Osage, Shawnee, and Douglas County area of northeast Kansas. The trip will include a visit to Camp Creek Wetlands located about 10 miles east of Wakarusa, Kansas.



### PUBLICATION SCHEDULE

The publication schedule for the KHS Newsletter has been changed somewhat beginning with this issue. The Newsletter will now be published in March, June, September, and December rather than February, April, August, and November. This change has been made to bring the publication schedule more in line with events that occur through the year.

— EMR

## KHS BUSINESS

### 22ND ANNUAL KHS MEETING A SUCCESS

The 22nd annual meeting of the Kansas Herpetological Society was held November 4-5 at the University of Kansas in Lawrence, Kansas. Over 70 people registered for the meeting, with appearances by distinguished life members Henry S. Fitch (Lawrence) and Hobart M. Smith (Boulder, Colorado). A wide variety of topics were addressed during the paper sessions, including two papers dealing with the decline of amphibian populations, a review of the 1995 KHS field trips, a report by Henry Fitch on the Prairie Rattlesnakes taken by the Sharon Springs rattlesnake roundup, and many others. John Lokke (Nebraska) presented the keynote address, "Decline of the Timber Rattlesnake in Nebraska," an historical narrative incorporating original artwork. Copies of the meeting program (with abstracts) are available from the Reber's.

During the business meeting and election, Karen Graham (Wichita) was voted president-elect and Karen Toepfer was re-elected secretary-treasurer. Members also decided that the KHS executive council should pursue dividing the secretary-treasurer office into two separate offices, treasurer and recording secretary. This would substantially ease the burden placed on the current (and future) secretary/treasurer. It would also add a sixth voice to the executive council. The current plan is to revise the KHS constitution during the coming year, publish the proposed revisions (probably in the September 1996 Newsletter), and have a vote of the membership at the 23rd annual meeting.

Following the elections, KHS awarded the Gloyd-Taylor Scholarship to KHS member Kembra Howdeshell of Emporia. Kembra is currently pursuing research on the effects of environmental estrogens on the reproductive success of Leopard Frogs, and she presented a paper on her research to date at this year's KHS meeting. Congratulations, Kembra.

The KHS executive council has also (finally) selected a logo. The design was submitted by Gregory Walters, and I believe it will suit our needs quite well.

Following Saturday's paper sessions, many people enjoyed the live reptile and amphibian exhibit and photography workshop led by veteran KHS member Larry Miller. Among the Kansas reptile and amphibian species present were Eastern and Western Hognose Snakes, Great Plains Rat Snakes, assorted aquatic turtles, Eastern and Ornate Box Turtles, Western Slender Glass Lizards, and Tiger Salamanders. Exotic animals included a beautiful Rosy Boa from the Hutchinson Zoo, compliments of Charlotte Poepperling, and a Longnose Snake from Arizona.

Saturday evening the KHS held its annual benefit auction. With the help of our notorious auctioneer Joe

Collins, assisted by Mary Crouch and Emily Moriarty, and piano music courtesy of Hank Guarisco and Emily, many generous donations of herp stuff, and of course the wallet lubricant provided by selfless microorganisms, KHS raised over \$1100 for its treasury (the third largest amount raised at a KHS auction), all gladly received and accounted for by Treasurer Karen Toepfer, with the skilled assistance of Suzanne L. Collins.

In all, we had an enjoyable and successful meeting, and I extend my thanks to all those who contributed their time and effort to make the meeting work. I am also thankful for the opportunity to serve as KHS president this past year, and I look forward to many more years of involvement in KHS.

David Reber  
KHS President

### SSAR MEETING IN LAWRENCE 1996

As noted in a previous edition of this Newsletter, the annual meeting of the Society for the Study of Amphibians and Reptiles will be held at the University of Kansas next July. KHS has agreed to establish and maintain an exhibit of live Kansas herps for photography at this meeting and I will be coordinating this effort. At this time, I am putting out a call for volunteers to collect and maintain specimens until the meeting and for volunteers to help run the exhibit. Anyone who is interested in assisting with this endeavor should contact me as soon as possible for details.

We would like to have Kansas specimens of every species of amphibian and reptile known to occur here. However, unless you have the appropriate collecting permits from the Kansas Department of Wildlife and Parks, all taxa listed as species-in-need-of-conservation, threatened, or endangered should *not* be collected. Those wishing to collect specimens should be prepared to maintain them alive and in good condition at their own facilities until the time of the meeting, as I do not have the space, time, or facilities to hold specimens prior to the meeting.

— EMR

### NEW ADDRESSES

Two KHS Executive Council members have recently changed addresses. Please note them as follows: David Reber, 1097 East 1400 Road, Lawrence, Kansas 66046; Eric Rundquist, 725 Connecticut, Lawrence, Kansas 66044. Phone numbers remain the same for both. In addition, the e-mail address for Eric is now also different. In addition to the old address of Prattler@aol.com, he may be reached at trattler@kuhub.cc.ukans.edu.

## KHS BRINGS YOU GREAT NEWS OF THE WORLD

### TEENS CAPTURE DANGEROUS WESTERN DIAMONDBACK RATTLER

Michael Moriarty, a Lawrence 15-year-old, reached out slowly with a four-foot pair of tongs to capture a Western Diamondback Rattlesnake [*Crotalus atrox*] slithering along the roadway's pavement last weekend.

The two-foot snake is an Oklahoma or Texas native, but somehow wound up in Kansas. Joseph Collins, Kansas University herpetologist, believes snakes are sometimes released by careless owners in Kansas from their indigenous territories.

"No venomous snake that is not native should be brought into the state of Kansas," he said Sunday, as he carefully clasped the striking snake with metal tongs.

"It points out a reason that we need some kind of law against turning dangerous animals loose."

There is no legislation or Kansas [Department of Wildlife and Parks] regulations against bringing animals into the area, Collins said.

Michael and his sister, Emily, a Lawrence high school senior, were participating in the annual field trip last weekend sponsored by the Kansas Herpetological Society. The two found the snake as they were searching for wildlife by slowly cruising along the roadways after sundown. The group, which studies amphibians and reptiles, was visiting Horse Thief Canyon in Ellsworth County.

"We thought it was a pretty big snake for a Massasauga rattlesnake [*Sistrurus catenatus*], which is what you normally see in that area," Emily said Sunday from her home where she and her brother keep a number of frogs, turtles, lizards and snakes.

After the snake was examined by experts, the Moriarty's found out they were the first to capture this type of rattlesnake in the area alive.

The diamondback is much larger than Kansas rattlers and has a distinctive black and white [tail].

"These snakes can get very big, up to seven feet long, which means a lot more venom than most Kansas rattlesnakes," [Collins] said.

Kansas doctors may be caught off guard if they are required to treat someone bitten by the diamondback. Instead of acting immediately, doctors may assume the bite is from a less potent native snake.

The snake has been given to an Emporia State University graduate student, who will study the speed of the rattle (sic).

— *Lawrence Journal World*, 2 October 1995  
(Submitted by Suzanne L. Collins, Lawrence)

**Ed. Note:** According to personnel at Kanopolis Reservoir, this is not the first Western Diamondback Rattlesnake that has been captured in the area in the past few years. It appears that some person or persons is deliberately releasing this dangerous non-native snake in Kansas.

### GATOR STORY ISN'T A LOAD OF 'CROC'

An alligator found in a Ulysses golf course pond found a home Wednesday - the tropical exhibit of Great Bend's Brit Spaugh Zoo.

"He's swimming around with a couple of turtles right now," said conservation officer Bruce Peters, Kansas Department of Wildlife and Parks. "He looks pretty happy to me."

How the 3-foot, 9-inch alligator came to be on a Kansas golf course is anyone's guess, but Don Huslig, zoo supervisor, doubts the animal was indigenous to the state.

"It had to be somebody's pet," Huslig said. "It's healthy and well fed and it handled well when I took it out of the cage."

But how did it get onto the golf course?

"Maybe it escaped," Huslig said. "but more likely somebody thought it would be OK to turn it loose, which it wasn't. The alligator would never have made it through the winter."

Whether the animal is actually a "he" or a "she" has yet to be determined, Peters said. "Everything's inside a 'gator, so someone's going to have to do an up-close examination, and I'm certainly no expert."

The alligator was captured by Peters and conservation officer B. J. Thurman Tuesday morning. A golfer had reported seeing the animal, and a course official notified the Ulysses animal control department, Peters said.

The animal control officer called the Wildlife department, Peters said.

The conservation officers showed up on the course, net in hand, though still slightly skeptical about their prey.

"I thought of calling the media," Peters said. "But I wanted to make sure it was actually an alligator, and not a big fish or bullfrog."

But once the two officers had the animal in their net, they could tell it wasn't a frog, Peters said.

"We didn't see him until we pulled up the seine," he said. "The 'gator definitely wanted back into the water."

But it would be a day before the animal swam again. The officers cautiously taped his toothy snout (putting a minimum of tape directly onto the animal's skin) and Peters started trying to find a new home for the animal.

"I tried the Garden City Zoo, but they didn't have the proper facilities, so I called the Great Bend Zoo," Peters said.

After a night spent in a wire cage in Peter's truck and three quick trips to area elementary schools, the alligator arrived at Great Bend, ready to share a pond with three red-eared pond-sliders.

The animal is calm now, but he certainly wasn't when pulled from the golf course pond, Peters said.

"He was quite a handful when we captured him," he said. "I hope I don't have to do that again. I'd rather move skunks."

— *The Hutchinson News*

(Submitted by Larry Zuckerman, Pretty Prairie)

## SNAKES BY THE BUSHEL

Mr. J. M. Beeson, a railroad contractor, gives the Atchison, Kansas, *Patriot* some particulars regarding the unearthing of an immense den of rattlesnakes, adders, and racers in Kansas. In the extension of a road from Beloit to Cawker City the line passes through the town of Glen Elder. A short distance from this place, on the Solomon river, is a steep and rocky bluff, about fifty-five feet high, a large portion of which had to be blasted away to make room for the road-bed. While the excavation was in progress, a blast of nitro-glycerine caps and giant powder tore off an unusually large part of the bluff, and down the declivity there came writhing and rolling a bunch of snakes, which Mr. B. says was almost as large as a barrel. They were of different varieties, rattlesnakes predominating with racers, adders, garters, &c. When first disturbed from their warm bed they were active and dangerous, but coming out into the severe cold they were soon completely harmless, and were killed by the men without much trouble, or covered up in the dump of earth and stone. But this was only the beginning. Every day and every blast, after this first batch appeared, brought out another huge bundle of these reptiles. Every hour a moving, writhing lump came rolling down the hill, only to separate at the foot, and what escaped the shovel and pick of laborers crawled off to get covered up in the dump. Thousands of them were unearthed and killed, and each blast sent out more, making this place far outrival the famous snake den of Concordia. Not a single case of snake bite occurred, notwithstanding it was sometimes almost impossible to avoid stepping on them. There were no unusual monsters among them, the great majority being as large around as a man's wrist, and about three or three and a-half feet long. The farmers for miles around say this was the regular winter den of these venomous creatures, and that during the fall the snakes which have been seen have been headed in the direction of these bluffs. It is said to have been one of the most remarkable sights ever

looked upon, and hundreds from the surrounding country went to see them.

*Holt County (Missouri) Sentinel, 18 July 1879*

(Submitted by Tom R. Johnson, Jefferson City, Missouri)

## A RARE FROG TURNS INTO GREEN MONSTER FOR AUSSIE OLYMPICS

With the toe of her rubber boot, Barbara Sanders probes an oil-slicked mud puddle. A tiny frog, no bigger than a thumb, stirs in the slime.

As habits go, this one's a pit: an abandoned brick quarry so desolate, trash-filled and foul that it was used as the location for the post-holocaust desert outpost, Bartertown, in the Mad Max movie "Beyond Thunderdome."

But the real horror story began when Mel Gibson moved out and the Green and Golden Bell Frog moved in. The tiny amphibian is an endangered species so rare here in the state of New South Wales that molesting one draws a penalty of up to two years in jail and a fine of about \$150,000.

That's bad news for Sydney, which is trying to build an Olympic Games complex in and around the pit. Not just any Olympics complex, either, but one touted as an environmental showpiece. The year 2000 Summer Games are supposed to be a model of site regeneration and ecological sensitivity, where spectators will arrive by public transport and get snacks from edible plates. Athletes will be housed in a village with passive-solar design and graywater recycling. Stadiums will be constructed with materials salvaged from demolished buildings.

Thus, mashing an endangered species under bulldozers is a little out of place in this green utopia. The frog has already caused the relocation of a tennis center and a baseball park and is complicating work all over the almost 2,000-acre site.

To make matters worse, the frog's distinctive green and gold stripes happen to be Australia's national sporting colors, which has given the frog a small but enthusiastic fan club pushing to have it named official Olympic mascot. So far, Australia's famous furry marsupials are front-runners for the honor. But Ms. Sanders, the site biologist, thinks the amphibians have Olympian qualities: "The frogs are good at long-jumping and high-jumping . . . What's the alternative? A koala that sleeps all day?" Worse, many koalas suffer from venereal diseases and seem to get high from their diet of gum leaves. "I suppose," sighs Ms. Sanders, reconsidering, "that gives them something in common with a lot of famous athletes."

No one noticed the frogs until 1993, when an ornithologist studying the effects of development on the site's migrating birds heard the bell frog's distinctive duck-like croak among the cheeps and whistles. "I think you could

say we had a mixed reaction" to the discovery, says Kim McCallum, manager of environmental programs at the site. Ecologists were jubilant to find a healthy breeding population of the rare frog; planners and builders felt something like landlords who learn they have unknowingly signed a lease with litigious real-estate attorneys.

Initially, Ms. McCallum and her team thought it would be easy enough to create alternative frog habitats. Unlike many endangered species, the frogs are prolific breeders, laying about 5,000 eggs – up to triple the output of the average frog. At one time, the bell frog was so common that it was dissected in university biology classes. Then, Sydney's urban sprawl began destroying mangrove swamp habitat, and the frog with it. Today, perhaps 1,000 of the amphibians live in the wilds of New South Wales.

The Olympic site is fringed with remnant mangrove stands, "so we thought we could build alternative ponds and make some corridors so the frogs could get there safely," Ms. McCallum says. Site engineers set to work on about 20 ponds and "toad tunnels," complete with tiny safety fences that direct the frogs to culverts that run under the roads.

Almost two years later, the scientists – "every frog person in Sydney, just about," says Ms. McCallum – have discovered there is a bit more to it. The frogs need ponds that don't connect with other waterways because a fish, introduced into Sydney in 1925 to dine on mosquito larvae, likes to dine on bell frogs as well. And the depth of the brick pit seems to offer protection from predatory birds.

The frogs also have a taste for trashy decor. "You look under a nice rock and there's nothing there," says Ms. Sanders, examining the underside of a rusty chassis. "Then you pick up a piece of rotten old plastic and there's five frogs going 'Hey, put it back.' It's a problem, because you can't exactly leave old car tires dumped around the site."

Instead, scientists are working on what they have dubbed "designer rubbish" – slightly less unsightly shelters emulating the nonporous characteristics of the junk the frogs seem to like. To prevent overzealous trash-haulers from removing them, each is stamped: "University of Sydney Field Trial Do Not Disturb."

So far, the frogs have mostly shunned the customized ponds. But they did move into the demolition site of a former slaughterhouse slated to be the Games' money-making commercial hub.

"That kind of behavior started putting the development people offside and giving the frog a bad name," Ms. McCallum says. After some soul-searching, her team decided that the brick pit, where the frogs were breeding, was the critical habitat, and work on the commercial site could go ahead, carefully. But the law is on the frogs' side, and the Olympic authority still is waiting for scientists to figure out if there are grounds for an exception to the tough endangered-species rules.

Even if they get a green light, says Ms. McCallum, "no frog on this site will just be squashed." Scientists will try to relocate them before the bulldozers roll. So far, the only known death happened last Christmas, when a frog somehow got into the site offices during the holiday break. "We came back and there it was, all dried out on the floor," says Ms. McCallum. "It was obviously a suicide." Even that frog didn't die in vain. Its corpse was rushed to the Australian Museum for genetic research.

To keep track of the frogs, and keep them out of harm's way, scientists are fitting each frog with a tiny transponder. Placing the transponder was a puzzle in itself. "They don't have a waist, so you can't strap it on them, and their skin is too sensitive for anything external," Ms. Sanders explains.

After consultation with animal ethicists, Michelle Christy, a terrestrial ecologist, has devised a way to inject minute transponders into the air pockets on the frogs' sides. Placing the first transponder, Ms. Christy admits to nerves. "You're holding one of only 1,000 frogs in your hand and you're jabbing it with a huge needle," she says.

So far, she has tagged only 36 frogs out of an estimated 300 on the site. That's because finding them isn't easy. The best time has turned out to be around 2 a.m. in the middle of electrical storms. The reason: Warm, wet nights spur the frogs to hop about and mate.

The scientists will only deem their work successful if a large population of frogs can be lured into a new pond and breed there successfully for two seasons. "Otherwise," says Ms. McCallum, "we can't touch the brick pit." Ant that will literally leave a big hole in Sydney's meticulously planned Olympic park.

But Ms. Sanders, for one, hasn't got a problem with that. "Don't think of it as a pit," she says. "Think of it as the Green and Golden Bell Frog theme park."

*The Wall Street Journal*, 2 August 1995.  
(Submitted by George Pisani, Lawrence, Kansas)



## FEATURE ARTICLES

### HERPETOLOGICAL MICROBIOGEOGRAPHY OF KANSAS I: QUANTITATIVE SUMMARY

KIRK REICHARD\*, TODD DUNCAN\*\*, HOBART M. SMITH\*, AND DAVID CHISZAR\*\*\*

*Departments of EPO Biology\*, Geography\*\* and Psychology\*\*\**

*University of Colorado*

*Boulder, Colorado 80309*

Accretion of geographical records for any taxonomic group demands at least two types of scholarship. On the one hand, we must have summaries of collection localities, as these inform us about details of geographic range that are needed by those interested in explaining correlations between taxa and habitat characteristics and by those concerned with the management of taxa and habitats. On the other hand, as biogeography continues its developments into a predictive science, our responsibility is not only to organize and describe what is already known but also to construct rationales that generate reasonable predictions for future fieldwork and of chronological trends in dispersal or range retraction (e.g., Smith and Chiszar, in press). In our view, these dual efforts are equally incumbent upon microbiogeographers as upon island biogeographers or those who focus on continental or oceanic areas. While conceptual issues vary among these levels of analysis, each level demands theoretical attention. To this end, we argue that "county record hunting" is not only a form of fieldwork that herpetologists enjoy, but is also a type of predictive science, although this latter point has been recognized infrequently.

Consider the dot map in Collins (1993) for the Yellow Mud Turtle (*Kinosternon flavescens*) in Kansas. This taxon is unknown from Haskell and Lane counties, yet the turtle occurs in all counties bordering them. Based on this information plus knowledge of land use patterns as well as climatological and topographic data, there is every reason to expect *K. flavescens* to be present in Haskell and Lane counties (and in several other Kansas counties). Such expectations are tantamount to predictions.

In hypothetico-deductive theoretical parlance, a prediction is usually seen as a conclusion of a syllogistic argument with theoretical propositions, axioms, or corollaries serving as premises. Rarely do microbiogeographers state their expectations in such formal language, but this should not obscure the facts that formal arguments could be constructed and that fieldwork often amounts to the testing of hypotheses. The present article represents an attempt to

codify herpetological microbiogeographic hypotheses for Kansas in a quantitative sense. First, we studied each county, noting all taxa known to occur in them by referring to Collins (1993), *Herpetological Review* and the *KHS Newsletter*. Second, for each county we listed all additional taxa not currently known from them but nevertheless likely to be present using reasoning similar to that described earlier for *K. flavescens*. These analyses produced the values shown in Table 1, where it can be seen that 1,121 predictions are made for future fieldwork in Kansas. These assertions contain no new state records, only new county records for taxa already known in Kansas. Several state record predictions can easily be added, however, and readers are referred to Collins (1993, pages 281–284) for a conservative list of these.

Several points emerge from Table 1. Most important is the fact Kansas counties vary enormously in their potential for yielding new records, with ten counties predicted to yield 20 or more records and with 25 counties predicted to yield five or fewer new records. Hence, Table 1 can serve as a guide to favorable hunting grounds, so to speak.

The values in the "known" and "probable" columns appear to be inversely correlated, such that counties currently known to possess rich herpetological assemblages are relatively unlikely to yield new records, while counties currently known to have low herpetological diversity are likely to yield many new records. Hence, our present county-by-county visions of herpetofaunal assemblages are flawed in the sense that low values are often not a reflection of ecological reality; rather they reflect low levels of fieldwork in past years. This point is of obvious interest to animal managers and warrants closer inspection. The inverse correlation between "known" and "probable" values for all Kansas counties is shown in Figure 1, and can be quantified in several ways. For example, the regression equation is  $P = 21.35 - 0.29K$ , where  $P$  = number of new records expected for a county and  $K$  = number of herpetological taxa currently known from the county. This relationship is statistically significant ( $r = -0.54$ ,  $df = 103$ ,  $p <$

Table 1. Number of herpetological taxa currently known from each of the 105 counties of Kansas plus the number of additional taxa that probably occur in each county but are currently unreported.

County	Known	Probable	Total	County	Known	Probable	Total
Allen	47	14	61	Linn	48	12	60
Anderson	53	10	63	Logan	29	1	30
Atchison	40	11	51	Lyon	54	11	65
Barber	57	0	57	Marion	33	18	51
Barton	43	5	48	Marshall	32	6	38
Bourbon	48	15	63	McPherson	36	11	47
Brown	22	14	36	Meade	46	2	48
Butler	48	8	56	Miami	53	12	65
Chase	49	5	54	Mitchell	41	1	42
Chautauqua	52	7	59	Montgomery	57	9	66
Cherokee	68	7	75	Morris	37	19	56
Cheyenne	26	3	29	Morton	32	1	33
Clark	48	4	52	Nemaha	19	22	41
Clay	28	24	52	Neosho	42	17	59
Cloud	25	19	44	Ness	31	13	44
Coffey	41	23	64	Norton	23	10	33
Comanche	48	9	57	Osage	45	12	57
Cowley	61	3	64	Osborne	33	9	42
Crawford	55	18	73	Ottawa	29	11	40
Decatur	12	24	36	Pawnee	26	22	48
Dickinson	29	11	40	Phillips	26	8	34
Doniphan	39	7	46	Pottawatomie	41	5	46
Douglas	59	1	60	Pratt	44	5	49
Edwards	21	16	37	Rawlins	21	9	30
Elk	46	12	58	Reno	37	11	48
Ellis	46	0	46	Republic	22	12	34
Ellsworth	38	6	44	Rice	28	18	46
Finney	22	20	42	Riley	53	1	54
Ford	36	12	48	Rooks	35	7	42
Franklin	55	9	64	Rush	36	8	44
Geary	42	13	55	Russell	44	0	44
Gove	30	4	34	Saline	35	4	39
Graham	30	13	43	Scott	22	18	40
Grant	23	18	41	Sedgwick	45	13	58
Gray	29	19	48	Seward	31	8	39
Greeley	19	19	38	Shawnee	47	7	54
Greenwood	59	5	64	Sheridan	29	8	37
Hamilton	33	7	40	Sherman	16	12	28
Harper	46	13	59	Smith	19	18	37
Harvey	40	10	50	Stafford	32	10	42
Haskell	17	31	48	Stanton	19	15	34
Hodgeman	25	12	37	Stevens	11	27	38
Jackson	28	23	51	Sumner	56	1	57
Jefferson	42	6	48	Thomas	12	20	32
Jewell	25	17	42	Trego	43	4	47
Johnson	47	8	55	Wabaunsee	46	6	52
Kearny	29	5	34	Wallace	26	0	26
Kingman	32	18	50	Washington	24	8	32
Kiowa	44	4	48	Wichita	22	19	41
Labette	47	9	56	Wilson	53	3	56
Lane	23	11	34	Woodson	52	1	53
Leavenworth	43	10	53	Wyandotte	39	10	49
Lincoln	30	14	44				

0.01), indicating that about 30% of the variance in our expected values is associated with variation in current knowledge and, therefore, previous effort. The remaining variation in expected values derives partly from ecological variation in Kansas counties, such that some herpetologically depauperate counties are truly so, while others appearing to be relatively depauperate are not. We must also acknowledge that some of our predictions may be wrong,

introducing error into the system. It would be handy to partition the 70% of unexplained variation in expected values into the component attributable to ecological determination and the component attributable to error, but unfortunately this cannot be done with present data. Our guess, however, is that only about 10-20% of this variation derives from error, leaving at least 50% of the variation attributable to ecological determinants and to closely re-

**Figure 1**

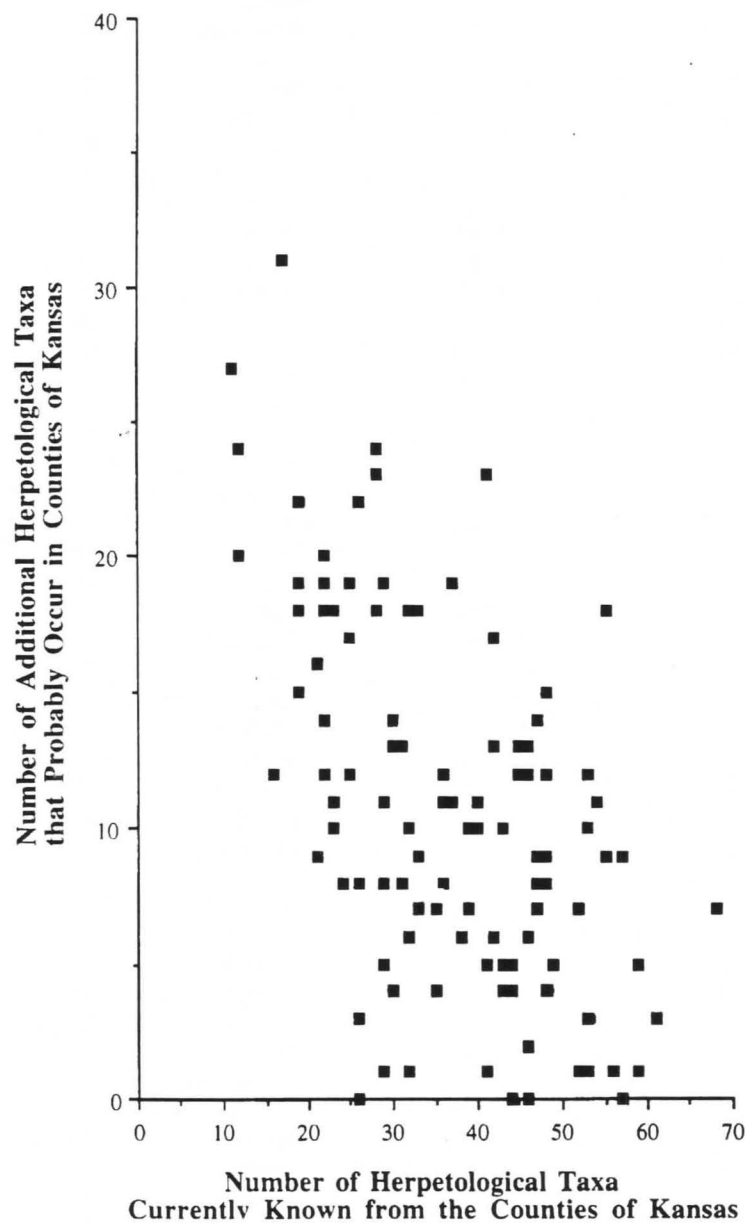


Figure 1. Scatter diagram plotting the number of taxa expected (but not yet known) for Kansas counties against the number of taxa currently documented for those counties. Raw data are presented in Table 1 and the regression equation is given in the text.



lated factors (i.e., some taxa exist in very low population densities and may be nocturnal or otherwise hard to find, causing them to remain unknown even in counties that have been studied extensively).

A convenient summary of our work is shown in Figures 2, 3 and 4 which map the currently known, expected and total herpetological diversities, respectively, by shading the counties in proportion to their diversity values. In a future newsletter we will present matrices that list currently known and expected herpetological taxa for each of the 105 Kansas counties. Perhaps herpetologists a century hence will be able to evaluate the accuracy of our predictions and, thus, the accuracy of the implicit theoretical considerations upon which they are based. In any case, we conclude that current knowledge of county-by-county herpetological diversity in Kansas is about 77.5% complete (sum of the "known" column of Table 1 divided by the sum of the "total" column).

#### ACKNOWLEDGMENT

This article is based on a presentation at the 22nd Annual Meeting of the Kansas Herpetological Society (November 4-5, University of Kansas, Lawrence, Kansas). We thank the officers of the Society for putting us on the program, and we thank the editors of the Newsletter for inviting us to prepare this written version.

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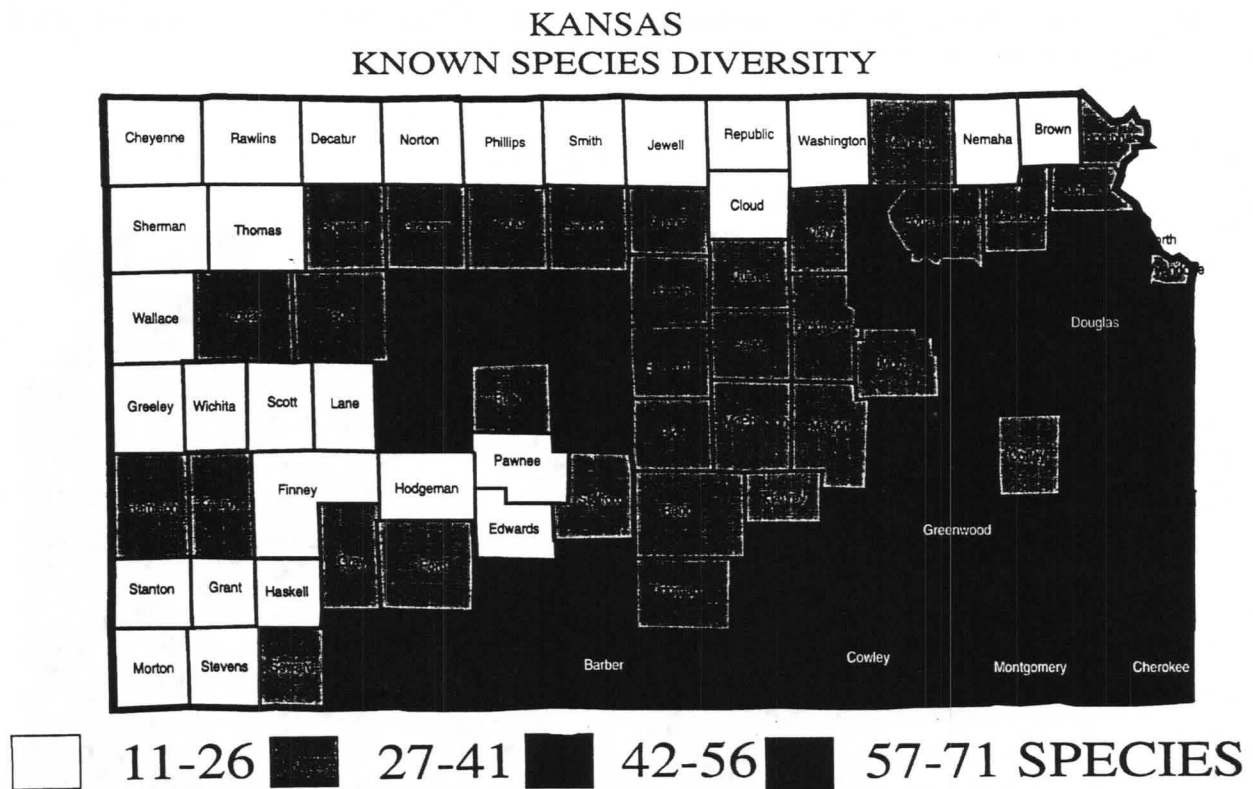


Figure 2. Map of Kansas showing herpetological species diversity as currently known for each county.

### KANSAS PROBABLE SPECIES DIVERSITY

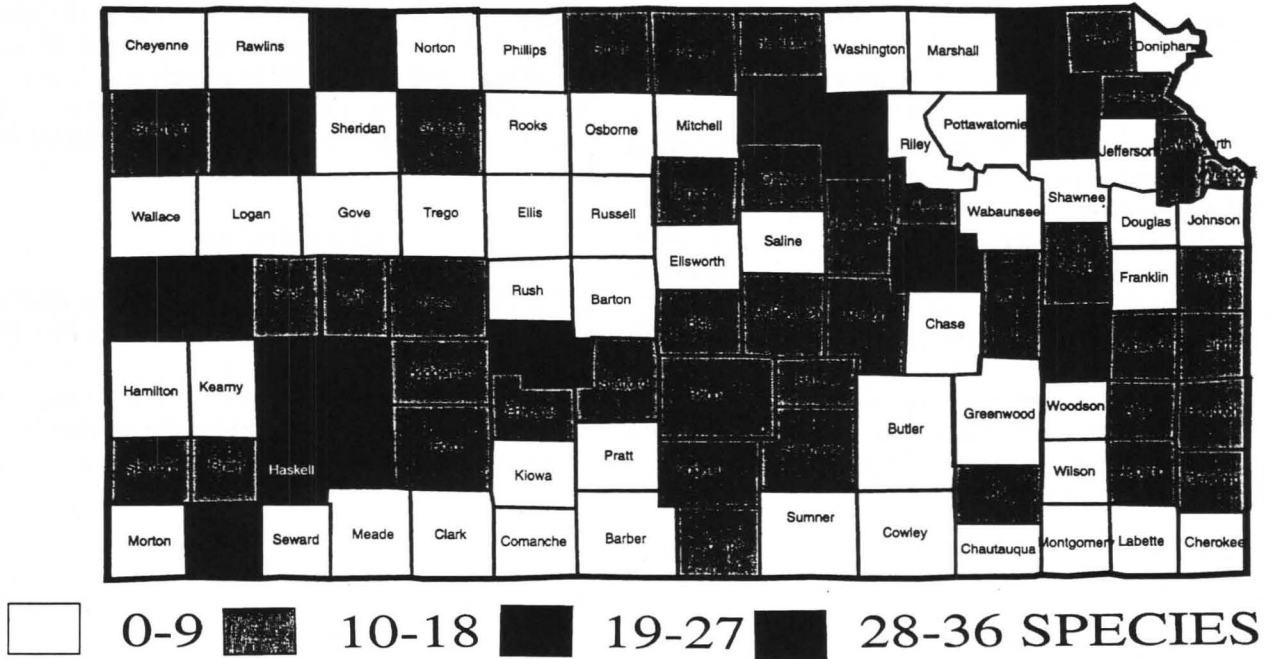


Figure 3. Map of Kansas showing the number of additional taxa we expect to be discovered in each of the counties. This map might be used as a guide to the selection of destinations by county-record hunters.

### KANSAS TOTAL SPECIES DIVERSITY

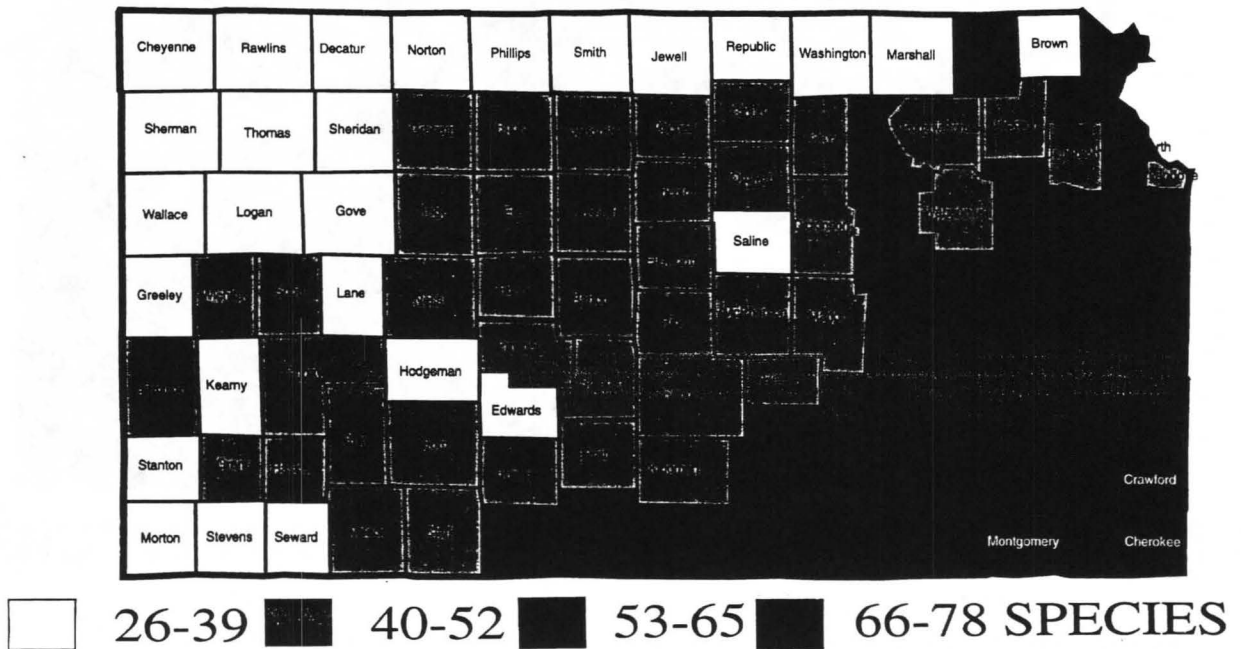


Figure 4. Map of Kansas showing our vision of herpetological species diversity for the counties when the rate of new county-record discoveries finally reaches zero. (Note that limitations in our graphics capabilities have forced us to use different legends for each of the maps.)

## ADDITIONAL KHS HERP COUNTS FOR 1995

ERIC M RUNDQUIST  
*Animal Care Unit, Malott Hall*  
*The University of Kansas*  
*Lawrence, Kansas 66045*

Due to the vagaries of the U. S. postal system and a lapsus on my part, several KHS amphibian and reptile counts were unavailable for this year's original manuscript (Rundquist 1995). Herein I add these additional amphibian and reptile counts. Please adjust your records accordingly. The final official count for this year is 51 species and 2430 specimens.

Five-lined Skink .....	25
Collared Lizard .....	8
Six-lined Racerunner .....	1
Western Worm Snake .....	1
Ringneck Snake .....	31
Racer .....	4
Common Kingsnake .....	1
Copperhead .....	1

### 1ST LYON COUNTY HERP COUNT

Daren Riedle conducted a herp count in Lyon County on 2 April 1995 at NW 1/4 Sec. 34, T17S, R13E from 1350-1500 hrs. Weather conditions were sunny and windy with a temperature of 76°F. Participants included Kembra Howdeshell. Verifier was Daren Riedle.

### Total

12 species ..... 84 specimens

Species	Individuals
Five-lined Skink .....	16
Ringneck Snake .....	7
Racer .....	1

### Total

3 species ..... 24 specimens

### 2ND LYON COUNTY HERP COUNT

On 21 April 1995, a second Lyon County count was held at two localities. The first locality was NE 1/4 Sec. 16, T20, R10 from 1400-1530 hrs. The second locality was NW 1/4 Sec. 34, T17S, R13E from 1630-1730 hrs. The weather was windy with temperatures in the mid 60s F. Participants were Daren Riedle, Neil Bass, and Boy Scout Troop 154 (Anthony Rolston, Matt Memichaels, Mike Powell, Chris Suchy, Joe Youngblood, Craig Rolston, Ben Brassart, Matt Fiddler, Ed Parker). Verifiers were Neil Bass and Daren Riedle.

Species	Individuals
American Toad .....	1
Ornate Box Turtle .....	3
Great Plains Skink .....	2
Northern Prairie Skink .....	2

### CHASE COUNTY HERP COUNT

A herp count was conducted in Chase County at two localities on 22 April 1995. The first area (SW 1/4 Sec. 30, T19S, R9E) was searched from 1430-1645 hrs. From 1800-1900 hrs, participants worked SW 1/4 Sec. 12, T19S, R6E. Participants were Neil Bass and Daren Riedle. Daren Riedle was the verifier.

Species	Individuals
Western Chorus Frog .....	1
Northern Cricket Frog .....	2
Bullfrog (tadpoles) .....	2
Woodhouse's Toad .....	2
Ornate Box Turtle .....	1
Collared Lizard .....	7
Northern Prairie Skink .....	1
Great Plains Skink .....	14
Lined Snake .....	1
Flathead Snake .....	3
Milk Snake .....	1
Common Garter Snake .....	1
Ringneck Snake .....	7
Racer .....	1
Great Plains Rat Snake .....	1

### Total

15 species ..... 45 specimens

1ST QUIVIRA NATIONAL WILDLIFE REFUGE HERP COUNT

John Rakestraw performed a herp count on 11 May 1995 from 0900-1200 hrs at Quivira National Wildlife Refuge, Stafford County. Temperatures were 50-65°F under sunny skies.

Species	Individuals
Western Chorus Frog (calling) .....	12
Ornate Box Turtle .....	1
Slider .....	8

Total

3 species ..... 21 specimens

DOUGLAS COUNTY HERP COUNT

While laboring under the burden of ongoing severe thunderstorms, Kristin Mitchell, Chris Hase, and Daren Riedle conducted a herp count at Clinton Reservoir from 1030-1130 hrs on 12 May 1995. Daren Riedle was the verifier.

Species	Individuals
Northern Cricket Frog .....	2
Five-lined Skink .....	1

Total

2 species ..... 3 specimens

1ST MONTGOMERY COUNTY HERP COUNTY

On 13 May 1995, Daren Riedle performed a herp county at Elk City Reservoir from 1730-1900 hrs. Conditions were sunny and mild with a high temperature of 86°F.

Species	Individuals
Northern Cricket Frog .....	1
American Toad (calling) .....	2
Ornate Box Turtle .....	1
Collared Lizard .....	3
Western Worm Snake .....	3

Total

5 species ..... 10 specimens

2ND MONTGOMERY HERP COUNT

Daren Riedle carried out a herp count at Montgomery County State Lake 1915-2015 hrs on 13 May 1995. Conditions were cool and wet with a temperature of 73°F.

Species	Individuals
Ringneck Snake .....	1
Western Worm Snake .....	5
Northern Water Snake .....	3
Copperhead .....	1

Total

4 species ..... 10 specimens

1ST STAFFORD COUNTY HERP COUNT

On 16 May 1995 from 0730-1100 hrs, John Rakestraw performed a herp count along Rattlesnake Creek near U.S. Hwy. 50. Temperatures ranged from 63-76°F under lightly overcast skies.

Species	Individuals
Western Chorus Frog (calling) .....	14
Bullfrog .....	1
Yellow Mud Turtle .....	4
Ornate Box Turtle .....	1

Total

4 species ..... 20 specimens

2ND NATIONAL WILDLIFE REFUGE HERP COUNT

From 1230-1400 hrs on 18 May, a herp count was held by John Rakestraw at Quivira National Wildlife Refuge, Stafford County, near Little Salt Marsh. Temperature was 60°F under sunny skies.

Species	Individuals
Yellow Mud Turtle .....	3
Slider .....	2
Plains Garter Snake .....	1
Common Garter Snake .....	1

Total

4 species ..... 7 specimens

2ND STAFFORD COUNTY HERP COUNT

John Rakestraw conducted a road count west of St. John on 23 May 1995 from 2115-2215 hrs. Temperature was 50°F with light drizzle falling.

Species	Individuals
Plains Spadefoot (calling) .....	12
Great Plains Toad .....	3
Northern Cricket Frog (calling) .....	2
Spotted Chorus Frog (calling) .....	6
Western Chorus Frog (calling) .....	5
Plains Leopard Frog (calling) .....	3

Total

6 species ..... 31 specimens

2ND ANNUAL CHISHOLM CREEK PARK HERP COUNT

Led by Al Volkmann, a herp count was conducted at Chisholm Creek Park in Wichita, Sedgwick County on 27 May 1995 from 0930-1200 hrs. Primary survey activity was walking shorelines and areas adjacent to water bodies and trails. Skies were cloudy with winds up to 15 mph and a beginning survey temperature of 20°C. The survey was preceded by flood-producing rains the previous 24 hours with localized flooding in the park.

Participants were Sasha Enegren, Lisa Kellerby, Joyce Lent, Kathy Speer, Al Volkmann and Stan Wiechman.

Species	Individuals
Great Plains Narrowmouth Toad .....	1
Northern Cricket Frog .....	4
Bullfrog .....	4
Unidentified Frogs .....	5
Ornate Box Turtle .....	1
Painted Turtle .....	4

Slider .....	7
Diamondback Water Snake .....	8
Northern Water Snake .....	2
Graham's Crayfish Snake .....	4
Western Ribbon Snake .....	1

Total

10 species ..... 41 specimens

Verifiers were Al Volkmann and Stan Wiechman.

3RD QUIVIRA NATIONAL WILDLIFE REFUGE HERP COUNT

From 0730-1130 hrs, John Rakestraw performed a herp count at Quivira National Wildlife Refuge, Stafford County, on 29 May 1995 in the areas of Big Salt marsh and Little Salt Marsh. Temperatures ranged from 55-65°F.

Species	Individuals
Spotted Chorus Frog (calling) .....	3
Western Chorus Frog (calling) .....	2
Snapping Turtle .....	1
Yellow Mud Turtle .....	1
Ornate Box Turtle .....	3
Slider .....	5

Total

6 species ..... 15 specimens

LITERATURE CITED

Rundquist, E. M 1995. Results of the seventh annual KHS herp counts held 1 April-31 May 1995. Kansas Herpetol. Soc. Newsl. 101: 11-16.



# AN ESTIMATE OF NUMBERS OF PLAINS LEOPARD FROGS AT A SITE IN NORTHEASTERN KANSAS

EMILY C. MORIARTY  
1230 Wagonwheel Drive  
Lawrence, Kansas 66049

JOSEPH T. COLLINS  
The Center for North American Amphibians and Reptiles  
1502 Medinah Circle  
Lawrence, Kansas 66047

## INTRODUCTION

Based on Blaustein and Wake (1990), Griffiths and Beebee (1992) and Yoffe (1992), amphibians may be declining worldwide. For Kansas amphibian populations, no previous data exist to compare and test this assertion. We developed a relatively inexpensive technique to gather information on the numbers of amphibians, and we tested it on a site in northeastern Kansas.

## MATERIALS AND METHODS

We constructed a trap, consisting of a three-foot-square hail-screen enclosure, 30 inches tall, using 1/4-inch mesh (Fig. 1). In an area 600 by 40 feet along the southern shoreline of Camp Creek Marsh, Sec. 28, T13S, R17E, in southeastern Shawnee County, Kansas, we sampled amphibians at eighteen randomly selected sites from 1910 to 2050 hours. The transect graded from sparsely-vegetated damp mudflat (highest elevation) gently downward to five-inch deep water with thick aquatic vegetation (lowest elevation). Starting at the east end of the transect, a member of the field team randomly tossed the trap, snaring any amphibians in the one-meter square patch where the trap landed—this entrapment was carried out eighteen times moving westward to the far end of the transect. During each sample, the rest of the field team gathered around to hold the trap down, in order to try and prevent any escapes from under the edges. One team member then stepped into the trap and counted the frogs. All amphibians inside the trap were recorded and released.

## RESULTS OF TRAPPING EFFORT

Trap Sample 1	
<i>Rana blairi</i> .....	20
<i>Hyla chrysoscelis-versicolor</i> .....	1
Trap Sample 2	
<i>Rana blairi</i> .....	26
<i>Hyla chrysoscelis-versicolor</i> .....	2

Trap Sample 3	
<i>Rana blairi</i> .....	13
Trap Sample 4	
<i>Rana blairi</i> .....	47
<i>Hyla chrysoscelis-versicolor</i> .....	5
<i>Acris crepitans</i> .....	1
<i>Bufo woodhousii</i> .....	1
Trap Sample 5	
<i>Rana blairi</i> .....	34
<i>Bufo woodhousii</i> .....	1
Trap Sample 6	
<i>Rana blairi</i> .....	53
Trap Sample 7	
<i>Rana blairi</i> .....	17
Trap Sample 8	
<i>Rana blairi</i> .....	21
<i>Acris crepitans</i> .....	1
<i>Bufo woodhousii</i> .....	1
Trap Sample 9	
<i>Rana blairi</i> .....	7
<i>Hyla chrysoscelis-versicolor</i> .....	1
Trap Sample 10	
<i>Rana blairi</i> .....	14
<i>Hyla chrysoscelis-versicolor</i> .....	2
Trap Sample 11	
<i>Rana blairi</i> .....	16
<i>Hyla chrysoscelis-versicolor</i> .....	1
Trap Sample 12	
<i>Rana blairi</i> .....	8
<i>Hyla chrysoscelis-versicolor</i> .....	1
<i>Bufo woodhousii</i> .....	1

Trap Sample 13	
<i>Rana blairi</i> .....	41
Trap Sample 14	
<i>Rana blairi</i> .....	12
Trap Sample 15	
<i>Rana blairi</i> .....	50
<i>Hyla chrysoscelis-versicolor</i> .....	4
Trap Sample 16	
<i>Rana blairi</i> .....	19
Trap Sample 17	
<i>Rana blairi</i> .....	19
<i>Hyla chrysoscelis-versicolor</i> .....	2
Trap Sample 18	
<i>Rana blairi</i> .....	45
<i>Hyla chrysoscelis-versicolor</i> .....	7
<i>Bufo woodhousii</i> .....	1

#### CONCLUSIONS

Four species of amphibians, all previously reported from Shawnee County (Collins, 1993), were taken in during the trapping at Camp Creek Marsh, as follows: *Acris crepitans*, *Bufo woodhousii*, *Hyla chrysoscelis-versicolor*, and *Rana blairi*. All examples of these species taken in the trap were recently-metamorphosed or metamorphosing young. Samples sizes of *Bufo* were too small to provide an accurate assessment of population size, probably because they bred much earlier in the season and had left the proximity of the marsh. Sample sizes of *Acris* were also small—after we finished our sampling we observed that they became more abundant with the approach of darkness (2050 hours). Although consistent in our samples, metamorphosed *Hyla* had already left the marsh and were encountered in abundance on every low bush and plant in upland areas surrounding it. *Rana blairi* was the dominant metamorphosing anuran at Camp Creek Marsh during our study—it was so abundant that *nowhere* in the transect was it absent, large numbers of individuals leaping in wave after wave as we walked from sample site to sample site.

Using the average for all eighteen sites, we calculated 25.66 frogs per square yard. Based on this average, we estimated the total number of Plains Leopard Frogs in our 40 X 600 foot transect at 68,400. Eliminating the highest (Sample 6) and lowest (Sample 9) trap samples, we calculated 25.12 frogs per square yard, for a total number of 67,000. We consider these estimates to be conservative, because a number of frogs managed to escape under the trap each time we sampled.

#### ACKNOWLEDGMENTS

We wish to thank Carolyn Moriarty, Francis Thoennes, and John Thoennes for their assistance in the field.

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- Yoffe, Emily. 1992. Silence of the frogs. *New York Times Magazine*, December 13, 1992: 36–39, 64, 66, 76.

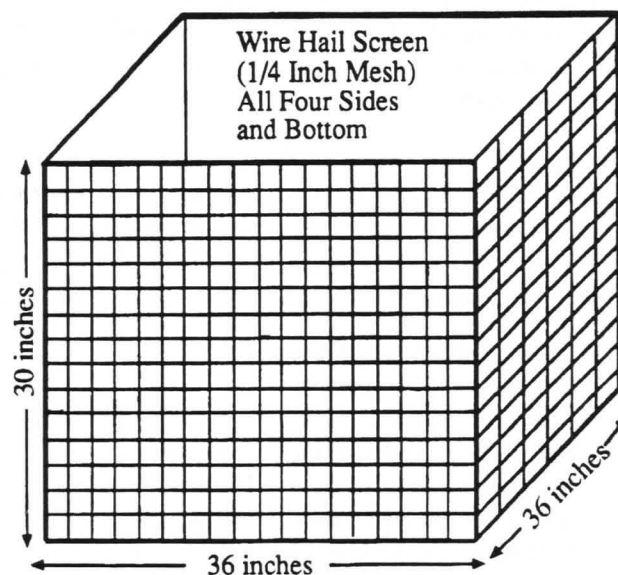


Figure 1. A diagram showing the size and configuration of the trap used in this study.

# AMPHIBIAN AND REPTILE COUNTS IN OHIO AND TENNESSEE

JOSEPH T. COLLINS  
*Herpetologist & Editor*  
*Natural History Museum*  
*University of Kansas*  
*Lawrence, Kansas 66045*

&

*Director*  
*The Center for North American Amphibians and Reptiles*  
*1502 Medinah Circle*  
*Lawrence, Kansas 66047*

During early August 1995, accompanied by various colleagues en route to the annual meeting of the Society for the Study of Amphibians and Reptiles in Boone, North Carolina, a count was made at two localities of all species of amphibians and reptiles observed by the four of us. Although the Kansas Herpetological Society has an ongoing program of such counts, few if any are available for other areas of the United States. The results of these two counts are reported here in the hope of stimulating others to undertake such observations in their respective areas. Common names are those of Collins (1991)

Locality 1. Ohio: U.S. Rt. 125 from Cincinnati to Shawnee State Forest, Scioto County, and return (8:30 am to 6:00 pm). 6 August 1995. Partly cloudy. Participants: Jerry D. Collins, Joseph T. Collins, Kelly J. Irwin, and Travis W. Taggart.

- Bullfrog (*Rana catesbeiana*) ..... 2
- Green Frog (*Rana clamitans*) ..... 2
- Pickerel Frog (*Rana palustris*) ..... 1
- Eastern Box Turtle (*Terrapene carolina*) ..... 6
- Five-lined Skink (*Eumeces fasciatus*) ..... 3
- Eastern Worm Snake (*Carphophis amoenus*) ..... 1
- Eastern Rat Snake (*Elaphe obsoleta*) ..... 1
- Northern Water Snake (*Nerodia sipedon*) ..... 1

Total

8 species ..... 17 specimens observed

Locality 2. Tennessee: Hamblen County: Panther Creek State Park (6:00 to 7:45 pm). 6-7 August 1995. Partly cloudy. Participants: Joseph T. Collins, Suzanne L. Collins, Kelly J. Irwin, and Travis W. Taggart.

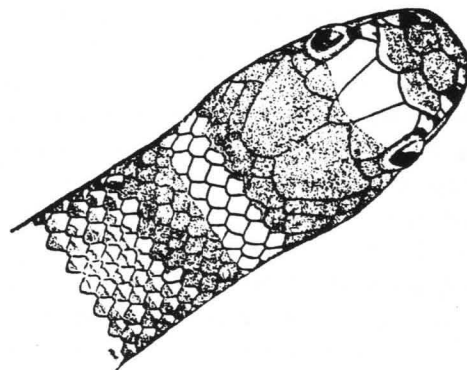
- Northern Dusky Salamander  
(*Desmognathus fuscus*) ..... 1
- Northern Slimy Salamander  
(*Plethodon glutinosus*) ..... 1
- Green Frog (*Rana clamitans*) ..... 2
- Eastern Box Turtle (*Terrapene carolina*) ..... 2
- Northern Water Snake (*Nerodia sipedon*) ..... 2

Total

5 species ..... 8 specimens observed

### LITERATURE CITED

Collins, Joseph T. 1990. Standard Common and Current Scientific Names for North American Amphibians and Reptiles. *SSAR Herp. Circ.* 19: 1-41.





## RIME OF THE AGING REDNECK

(with apologies to Samuel Taylor Coleridge, and to Steve Harris)

DAVID REBER

Hear the rime of the aging redneck  
see her eye as she stops one of three  
mesmerizes one of the wedding guests  
"stay here and listen to the nightmares of the prairie"

And the music plays on, the bride passes by  
steps into the snake pit  
and the redneck tells her tale...

From the South in the land of the snakes and sand  
From a place where redneck's reign  
through the grass and sand crawls on the rattlesnake  
moving to the north, hoping good luck to bring

And the redneck travels on, back to the north,  
through the sand and grass  
and the rattlesnake follows on

The redneck kills the snake of good omen  
her statemates cry against what she's done  
but when the rattling stops, they justify her  
and make themselves all part of the crime

Exploiting on and on and North across the prairie  
exploiting on and on and North 'till all are gone

Day after day, day after day  
she kept them in wood boxes  
as cleanly as a pile of scat  
from her favorite oxes

Gasoline, gasoline everywhere  
and all the snakes did shrink  
gasoline, gasoline everywhere  
but she won't give 'em a drop to drink!

The rattlesnake begins with it's vengeance  
a terrible curse of thirst has begun  
her statemates blame bad luck on the redneck  
about her neck the dead snake is hung

And the curse spreads on and on across the prairie  
and the thirst goes on and on for all to see

One by one, by the star-dogged moon  
too quick for groan or sigh  
each turned his face with a ghastly pang  
and cursed her with his eye

Four times fifty, tattooed and toothless  
(and she heard no sigh nor groan)  
with a heavy thump, a lifeless lump  
they dropped down, one by one

The curse it lives on in their eyes  
the redneck, she wished she'd died  
along with the prairie creatures, but they lived on  
so did she

And by the light of the moon  
she prayed for their beauty, not doom  
with heart she blesses them, good creatures  
all of them, too

The redneck's bound to tell of her story  
to tell her tale wherever she goes  
to teach the good word by her own example  
that we must be stewards of all that evolved

And the wedding guest is a sad and wiser man  
and the tale goes on and on and on...

