

# KANSAS HERPETOLOGICAL SOCIETY NEWSLETTER NO. 92

MAY 1993

## ANNOUNCEMENTS

### TAYLOR BOOK NOW AVAILABLE

We are pleased to announce that the special Edward H. Taylor publication that we have been working on for some time is now available. Entitled *The Lizards of Kansas*, this volume is the Masters thesis that Dr. Taylor submitted to the University of Kansas in 1916 upon his return from the Philippines. *The Lizards of Kansas* also contains two illuminating forewords by Hobart M. Smith and Joseph T. Collins. These two forewords greatly enhance the value of this new publication and reveal hitherto unknown facets of Taylor's professional development.

This publication is Taylor's first since his death in 1978 and will likely be the last by him. As this is a *one-time only* printing (only 400 copies), the value of the publication will only increase. All students of Taylor will surely want to add this publication to their libraries and others will find it provides a fascinating glimpse into Taylor's early background. This softbound volume with illustrations is available for \$9 to KHS members, \$10 to non-members, all postpaid. Kansas residents add 4.5% sales tax. Send orders to Karen Toepfer, KHS Secretary/Treasurer, 303 West 39th Street, Hays, Kansas 67601. Please send checks or money orders only made out to "Kansas Herpetological Society."

### NEW PERIODICAL

The International Herpetological Symposium, Inc. announces the publication of *Herpetological Natural History*, a peer-reviewed journal devoted to all aspects of natural history of amphibians and reptiles.

The editorial staff of this new journal is seeking original papers that provide new theoretical and/or empirical insights within the broad topics of behavior, ecology, evolution, and life history. Field and laboratory studies are welcomed. Review papers that synthesize previous studies will also be considered. Papers will appear as either feature articles or notes and a book review section will be added in forthcoming issues.

Those wishing to submit manuscripts or wanting information should contact Gordon W. Schuett, General Editor, Herpetological Natural History, Department of Zoology and Physiology, University of Wyoming, Laramie, Wyoming 82071.

*Herpetological Natural History* will be published twice a year and authors can expect accepted papers to be published within six to 12 months. Subscription is \$20 per year.

Payment, by check or money order in U.S. dollars, should be made out to *International Herpetological Symposium, Inc.* and sent to David Hulmes, Treasurer, International Herpetological Symposium, Inc., 361 Van Winkle Avenue, Hawthorne, New Jersey 07506.

### ANNOUNCING

## Amphibians and Reptiles in Kansas Third Revised Edition

BY JOSEPH T. COLLINS

WITH PHOTOGRAPHS BY SUZANNE L. COLLINS

An extensive update, this revised edition completely replaces the earlier versions and includes, for the first time, 96 stunning color photographs of salamanders, frogs and toads, turtles, lizards, and snakes, as well as an impressive collection of black-and-white photographs. Includes an account of the newly discovered Cottonmouth and, adopting the Evolutionary Species Concept, recognizes as species the Red River Mudpuppy, the Southern Prairie Skink, and the Great Plains Rat Snake. For each kind of Kansas amphibian and reptile, this handsome field guide lists the standard common name, current scientific name, characters for identification, size, range in Kansas, habits and habitats, breeding, food, and endangered or threatened status when relevant. The bibliography includes more than 1,300 entries, and is probably the most complete for any comparable work in the United States. A detailed key is included for use in the classroom.

Published by the The University of Kansas Museum of Natural History and distributed by the University Press of Kansas. Sponsored by Western Resources, the Kansas Department of Wildlife & Parks, and the Kansas Biological Survey. Available July 1993. ca. 430 pages, 93 color photographs, 103 black-and-white photographs, 94 maps, and 43 figures. Paper ISBN 0-89338-043-1 \$19.95; cloth ISBN 0-89338-044-X \$29.95. Shipping and handling add \$2.50 for first book and .50 for each additional. Kansas residents add 5.9% sales tax. Order from: **University Press of Kansas, 2501 West 15th Street, Lawrence, Kansas 66049-3904.** Credit cards accepted—call (913) 864-4155.

## ASSISTANCE IN RESEARCH REQUESTED

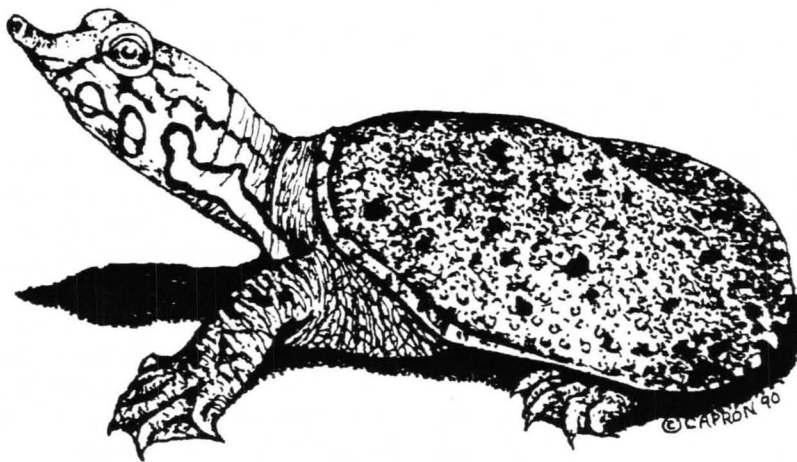
Sorin Damian of McGill University in Canada is asking for assistance for a joint project on comparative breeding behavior, evolutionary significance of sexual behavior, and hybridization in a number of North American salamander species. He is trying to obtain 1-3 ready-to-spawn pairs of the following genera or species: *Batrachoseps*, *Gyrinophilus palleucus*, *G. subterraneus*, *Haideotriton wallacei*, *Eurycea tridentifera*, *E. junaluska*, *E. nana*, and *E. lucifuga*; *Typhlotriton spelaeus*; *Siren intermedia*; *Pseudobranchius striatus*; *Necturus punctatus* and *N. alabamensis*; *Ambystoma macrodactylum* and *A. platineum*; southern populations of *Desmognathus ochrophaeus*; *Plethodon neomexicanus*, *P. stormi*, *P. wehrlei*, *P. yonahlossee*, *P. larselli*, *P. dunni*, *P. elongatus*, *P. fourchensis*, *P. vandykei*, *P. vehiculum*, *P. lucifuga*, *P. punctatus*, *P. richmondi*, *P. serratus*, and *P. shenandoah*; *Amphiuma pholeter*, *Dicamptodon copei*; *Hydromantes brunus*; and *Typhlomolge rathbuni*. Anyone wishing to assist in this project should contact Mr. Damian at Oncology Department, McIntyre Medical Science Building, Room 717, 3655 Drummond, McGill University, Montreal H3G1Y6 CANADA; phone 514-398-8366. As a number of these salamanders have restricted ranges and may be state or federally protected, only legally acquired specimens should be offered for use in this study.

## NEW PUBLICATION

This year's edition of the Slavens' amphibian and reptile inventory is now available. Titled *Reptiles and Amphibians in Captivity; Breeding, Longevity, and Inventory; Current January 1, 1992*, it lists for \$30 softbound, \$40 hardbound. Add \$3 for U.S. postage, \$4 overseas. To receive a copy of this invaluable inventory of captive herps, send check or money order to Frank L. Slavens, P.O. Box 30744, Seattle, Washington 98103.

## 17TH ANNUAL INTERNATIONAL HERPETOLOGICAL SYMPOSIUM

This year's IHS will be held in Miami Beach, Florida at the Marco Polo Hotel from 17-20 June. The program this year is quite diverse and includes speakers from the academic, zoo, and amateur herpetological world. Such well-known herpetologists as Sherman Minton, Peter Pritchard, Bill Branch, Steve Hammack, Bill Zeigler, Anslem de Silva, and Jeannette Covacevich are listed on the program. Full registration for the three-day session is \$125. Those wanting additional information should contact Richard A. Ross, MD; President, IHS, Inc.; c/o Institute for Herpetological Research, P.O. Box 2227, Stanford, California 94309.



## KHS BUSINESS

### THIS AND THAT

I am pleased to announce that this issue carries the first peer-reviewed scientific paper in the history of KHS. It is particularly gratifying to me that the paper was written by KHS charter member and former KHS president George Pisani and Honorary Life Member Henry S. Fitch. As the paper is a rather comprehensive review of the rattlesnake slaughters in Oklahoma and in light of the recent controversy over a similar event here, it is especially timely. I think you will find it most interesting.

I noted some time ago that I would occasionally be accepting certain papers for peer-review and we currently have a couple of such papers in that process. However, I want to stress that this will not be the norm for this Newsletter and that any and all authors are encouraged to submit their writings on any herpetological topic. The only thing I am concerned about is the quality of papers that appear in the KHS Newsletter. I believe that standard of excellence has long been established and adhered to.

By the time you receive this Newsletter, the first KHS field trip of the year will be over. Fortunately, for those who were unable to attend the first trip (which includes yours truly), there is another trip this year to the Fort Riley Military Reservation near Junction City on 5-6 June. Refer to your previous Newsletter for details. As this event will occur on national Conservation Day and participants will be attempting to survey how well Fort Riley is conserving its herp populations, please try to participate.

Finally, don't forget to do your annual Herp Counts, if you haven't already done so. Since (at the time of this writing) Spring appeared to be a little reluctant to present itself in full force, the spring herping season may be a little compressed, so get out there and start counting! The same goes for the Amphibian Population Census! Send Herp Counts to Joseph T. Collins, Museum of Natural History-Dyche Hall, University of Kansas, Lawrence, Kansas 66045 and send census forms to me.

—EMR

### GLOYD-TAYLOR SCHOLARSHIP AVAILABLE

KHS is soliciting nominations for its new scholarship, the Gloyd-Taylor Award in Herpetology. The scholarship is named in honor of two of Kansas' greatest herpetologists, Howard K. Gloyd and Edward Harrison Taylor.

Nominations for this award are open to any individual and any student enrolled in an accredited educational institution in Kansas or any KHS member enrolled in any accredited educational institution outside of Kansas. Stu-

dents from primary through university are eligible. Nominations should include typewritten details, not to exceed two pages, of the nominee's qualifications, plus name and address of the nominee and nominator. Qualifications include, but are not limited to, academic record, herpetological activities, and future plans in herpetology. Self-nomination is excluded.

All nominations should be submitted to KHS President Dr. David Edds, Division of Biological Sciences, Box 4050, Emporia State University, Emporia, Kansas 66801, phone (316)341-5622 no later than 1 June of this year. The KHS Executive Council will make the final decision and announce the scholarship winner at the KHS annual meeting, at which time all nominees and nominators will be recognized. If no qualified students are nominated, no award will be made.

Those wishing to contribute to the scholarship fund should send their contributions to KHS Secretary/Treasurer Karen Toepfer and note that the contribution is specifically for the Gloyd-Taylor scholarship fund. All contributions are tax-deductible.

### EDITORIAL: AND NOW FOR THE BAD NEWS

Well, folks, we lost the first battle in the Sharon Springs rattlesnake slaughter mess (it actually occurred) and we have now lost the second battle. Yes, Senate Bill No. 137 (a number that should live in infamy) passed with flying colors and has been signed by La Guv, so it is now entirely legal to go out and massacre rattlesnakes in the state of Kansas. In fact, the bill was amended in the State House and will exempt this year's hunt so that a law that was supposed to go into effect next year goes into effect immediately. It will also allow "hunters" to take not five, not ten, not fifteen, but **thirty** rattlesnakes. There is no delicate way to put this: *we got screwed*. The snakes got nailed even worse.

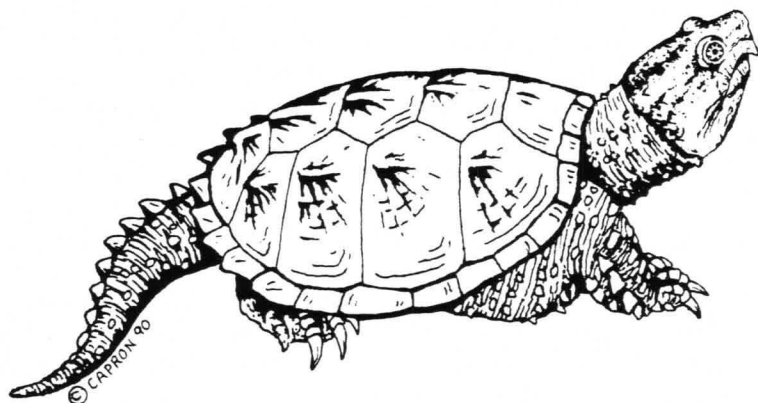
I have never been so mad in all my years about the way a conservation issue has been handled in this state. This bill is easily, in my estimation, the most anti-conservation piece of legislation ever passed in Kansas and sets a precedent that jeopardizes all future conservation issues for years to come. You see, it is apparent to me now that all you have to do, if you don't like the fact that a certain piece of law is based on sound biological principles and has been constructed on the advice and consultation of acknowledged experts, and it affects your ability to put a few extra bucks in your pocket, well, all you have to do is get a legislator in your hip pocket, write the bill for them, have them work their deals in Topeka, and, bingo, you can do

whatever the hell you want to do. Conservation be damned! So much for natural Kansas, people; the dollar rules. So much for the agency that is supposed to be protecting the wildlife resources of this state (do you think that Wildlife and Parks took a stand opposing this legislation? Think again). It is a mighty sad state of affairs and it disgusts me that the good people of Kansas are so ill-represented by their elected and non-elected officials.

So, what to we do now? Well, there really isn't much we can do at this point, although the KHS Executive Council is examining certain approaches. I'll tell you what I plan on doing, though. As long as there is a rattlesnake slaughter in Wallace County, that area will never see a penny of my money. I plan on writing letters to the Sharon Springs and Colby Chambers of Commerce to that effect. I will also tell them that I plan on recommending to everyone I know that they do the same thing. I may even send copies of those letters to every herpetological and conservation organization I can think of and let them know that, should their members happen to be passing in the vicinity of Sharon Springs along I-70 (or any other road in the area), it is probably a good idea to not buy anything in Wallace County or from Colby (the home town of the Senator who wrote and sponsored the original bill) until their members reach the Colorado line. Better gas up at Oakley, folks.

Certain folks in Sharon Springs organized this event to try to raise a few extra bucks because agriculture there has gone in the dumper. When they eliminate their roundup or change it to a non-destructive event, I will be happy to contribute to their economy. I will wait as long as it takes and as those who know me well can testify, I can be one stubborn SOB.

—EMR





## KHS BRINGS YOU GREAT NEWS OF THE WORLD

### RATTLESNAKE HUNT BECOMES A LEGISLATIVE ISSUE

Call it a rattlesnake fight.

But the only fangs being bared are among humans.

A group that sponsors an annual rattlesnake hunt in Wallace County wants to legalize the sale of rattlesnake meat and skins and to let out-of-state people to hunt them more cheaply. Its members say the hunt helps their economy.

Several environmental groups say the hunt is a slaughter and a misuse of a natural resource.

In the middle is the legislature, which is considering a bill—requested by the Sharon Springs Rattlesnake Roundup Committee—to make legal the sale of hunted rattlesnakes. A snake can bring as much as \$35. The bill would also lower the fees for out-of-state hunters.

The measure has passed the Senate and is being considered by the House Energy and Natural Resources Committee.

Sarah Walker, roundup committee member, said the event promotes preservation. "It has been proven over and over that until man considers something in nature a useful resource, he will not practice conservation and good management," she said.

The Department of Wildlife and Parks agrees.

"We will have the ability to manage the resource through regulation," said Department spokesman Darrell Montei.

But opponents say the bill could lead to uncontrolled destruction of the Prairie Rattlesnake population.

"A lot of people don't like snakes, and this sort of preys on that attitude," said Joyce Wolf, lobbyist for the Kansas Audubon Council.

Bill Craven, lobbyist for the Kansas Sierra Club, said the bill's proponents incorrectly link the killing of rattlesnakes to economic development.

"Roundups are extended tailgate parties disguised as economic development," Craven said.

—Wichita Eagle, 16 March 1993  
(submitted by N. O. Gutz, Neutral)

### SNAKES IN THE CAPITAL

It came as a complete surprise to Eagle Eye when the Kansas Senate recently passed and sent to the House a bill that would allow the meat, rattlers[sic] and other parts of Prairie Rattlesnakes taken in the annual Sharon Springs rattlesnake roundup to be sold. We had no idea that Wallace County rattlesnakes were considered contraband in the

first place.

One phone call to the far western reaches of the state revealed how the legalization legislation came into being.

"We have a lot of rattlesnakes here in Wallace County, and we thought they might make a good way to get people to come here," explained Judie Withers, a Sharon Springs rancher who helped organize the town's first hunt last year. "We had the idea, but then found out it was against the law to sell not only the meat but any part of a rattlesnake. That makes it complicated to have a snake hunt."

The bill wouldn't go into effect until after the second annual hunt takes place on May 1 and 2, but Withers is hopeful about selling rattlers from future roundups.

"The only vote against it in the Senate was cast by the senator who represents Lawrence," Withers said. "The reason being that the herpetologists are in the area."

Jim Marlett, assistant director of the Sedgwick County Zoo and one of the more herpetologically hip people in this area, agreed that "in general, rattlesnake hunts are ill-thought of in most zoos," but he was reluctant to criticize the Sharon Springs hunt specifically. He noted that the Wallace County event has not been accused of using the more objectionable techniques practiced at other hunts, adding that "in the end, we just like to emphasize that any exploitation of wildlife ought to be done very carefully."

Wichita Eagle, 23 February 1993  
(submitted by Professor Spaulding, Mars)

### LETTER TO THE EDITOR

After reading the recent snakes article in The Eagle "Eagle Eye", I find the quotes from an herpetologist incredible to say the least. I can understand why an economically depressed county would attempt anything to bring in bucks. Certainly, many visitors would flock to Wallace County to save the innocent people and rodents from the wrath of the prairie rattler. If the law is changed, then the hungry masses will find sustenance in snake steaks. And remember, everyone wants snakeskin belts and boots and the obligatory 1993 rattlesnake roundup T-shirt for the proper image!

If Jim Marlett believes "exploitation of wildlife ought to be done carefully," does that mean we should carefully exploit everything? What about the other predators or rodents such as hawks and owls? Why should he care about "objectional [sic] techniques" of snake hunting if the ultimate object is to kill the snake?

The prairie rattler is an integral part of the ecology. Maybe average conservationists should contact state rep-

representatives and the governor protesting the state sanction of the hunt.

(signed) Neal Harrison

—Wichita Eagle, 2 March 1993  
(submitted by L. M. Clobber, Lone Elm)

## LETTER TO THE EDITOR

In the Public Forum of March 2, Neal Harrison called me to task for statements regarding the Sharon Springs rattlesnake roundup.

For the record, I'm very angry about the Sharon Springs rattlesnake roundup. In rereading my comments, I can see how one might conclude otherwise. Please know that I abhor the concept of rattlesnake roundups.

In past years I have gone on record in the Public Forum protesting such events and have written letters to the Wichita Eagle expressing my discontent with coverage and promotion of rattlesnake roundups. My emotions on this subject are so strong that I must consciously restrain myself when discussing it. In my attempt to avoid sounding like a rabid dog, I erred and backed off too far.

Let me try again. 1) I think all rattlesnake roundups are bad, not just the one in Kansas. 2) Every zoo person I have known to express an opinion on the subject thinks rattlesnake roundups are bad. 3) Rattlesnake roundups aren't the only things we do which negatively [affect] the environment. We've got to start using our brains. We must approach our environment very carefully.

Finally, I am sure Mr. Harrison has, indeed, expressed his opinion on this issue to our state representatives and to anyone else with the power to take effective action. I invite every concerned Kansan to do likewise.

(signed) James H. Marlett

—Wichita Eagle, 20 March 1993  
(submitted by Cliff the Pope, Allendorph)

## RATTLESNAKE SALES

A bill allowing the harvest and sale of Prairie Rattlesnakes has been passed by both houses and now will go to Gov. Joan Finney.

The House passed the bill Thursday, and the Senate voted to concur Friday on House amendments to the bill. It is designed for the annual rattlesnake roundup in Sharon Springs.

—Wichita Eagle, 27 March 1993  
(submitted by Ralph Black, Climax)

## OLD STUFF

It Happened in Kansas 1, ca. 1939

Roy Welch, Lewis Landess, Ray Moore, and Joe Watson killed 62 rattlesnakes near Elkhart recently. Although it was unusually late to find snakes above ground, all of them were killed in the same spot.

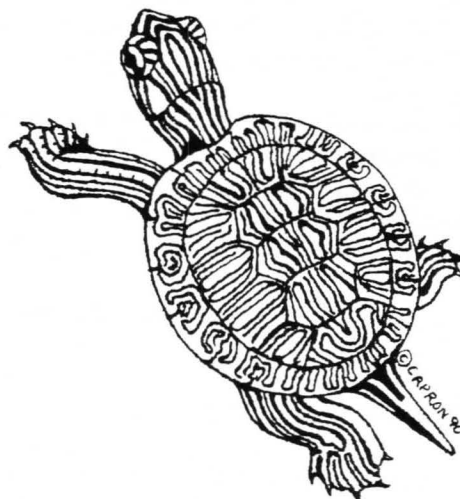
It Happened in Kansas 2, ca. 1940

Mice are not the only ones who like cheese. Mrs. C. A. Labe of Iola recently baited a mousetrap with generous portion of cheese and left it on her back porch. Next morning, she was surprised to find that the trap had killed a 20-inch Bullsake.

It Happened in Kansas 3, ca. 1948

Clyde Linscott and Gene Allison of Cherryvale recently captured a two-foot Iguana near their home. How this tropical lizard managed to get so far north remains a mystery.

— publications unknown  
(submitted by Marty Capron, Oxford)



## FEATURE ARTICLE I

### A SURVEY OF OKLAHOMA'S RATTLESNAKE ROUNDUPS

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#### Abstract

In Oklahoma, rattlesnake roundups have developed into sporting events that attract thousands of people and generate hundreds of thousands of dollars for sponsoring nonprofit agencies. Five Oklahoma towns, Apache, Mangum, Okeene, Waurika and Waynoka, sponsor annual roundups. The western diamondback rattlesnake, *Crotalus atrox*, is the species targeted. The annual harvest in the state amounts to perhaps 10,000 diamondbacks. Early maturity (third year), large annual litters, and dispersed population are traits that have permitted the diamondback to survive the heavy hunting pressure of the roundups. Currently, there are incipient signs of over-hunting. There is need for a regulatory group under the state's Department of Conservation to formulate and enforce rules preventing over-hunting and cruelty on a statewide basis. A large, live diamondback might bring more than \$20 to its captor, and its disassembled parts might bring several times that amount to the roundup sponsors. Although prices fluctuate, they have tended to rise. The roundups have become a firmly established tradition, but are opposed by conservation-minded individuals and organizations on grounds of cruelty, disruption of ecosystems, and risk to participants. Cruelty is involved in crowding the snakes into crates where they are kept for long periods with but little air and no water. Snakes are subject to dehydration and need to drink. Spraying dens with gasoline to flush out snakes with the toxic fumes, and sewing snakes' mouths shut so that people can safely be photographed handling them are also very cruel practices. An original goal of the roundups was to exterminate rattlesnakes, but sponsoring agencies have

come to regard them as an exploitable resource and have begun to propose and enforce conservation measures, including bag limits and lower size limits.

#### Introduction

Rattlesnake "roundups" are held in many parts of the United States and have involved several different species, especially the western and eastern diamondbacks (*Crotalus atrox* and *C. adamanteus*), the timber rattlesnake (*C. horridus*) and the prairie rattlesnake (*C. viridis*). Currently some 50 roundups are held annually (up to 30 in Texas, five in Oklahoma, four in Georgia, one in New Mexico, one in Alabama, one in Kansas, and about 12 in Pennsylvania (Williams 1990). The timber rattlesnake is the species hunted in Pennsylvania, where the state requires hunters to purchase a special permit and imposes a bag limit of two snakes per hunter per day. Nevertheless, this species is being decimated by over-hunting, much of it illegal. Poaching is rampant. At 75 per cent of the known dens, the snakes have been extirpated or reduced below the level considered viable. Taking reproductive females from their summer aggregations is a major cause for collapse of local populations (Brown 1993).

In Texas alone, the harvest has been alleged to reach half a million western diamondbacks annually (Williams 1990) but this estimate seems excessively high. The Sweetwater, Texas, roundup, alleged to be the world's largest, draws an average of 25,000 visitors and harvests 5,000 to 8,000 western diamondbacks, with a total weight of 10,000 to 13,000 pounds (Cox and Meinzer 1991). The original motive for rattlesnake roundups was to extermi-

nate the snakes, and their elimination or drastic reduction locally often was accomplished, but over time the recreational aspects of snake hunting have taken precedence over the desire to exterminate. A traditional point of view—that snakes are evil and must be killed—is changing, and a substantial segment of the public recognizes that these reptiles play important roles in ecosystems, preying to a large extent on small mammals that may be agricultural pests. Increasing numbers of people have come to admire snakes and to consider them a part of the nation's wildlife heritage that should be preserved. The pro-snake faction includes a militant minority that lobbies for legislation, stages demonstrations to protest roundups, and deplores cruelty in catching, confining, and butchering the snakes. This group also uses an ecological argument, pointing out the disruption of food webs involved in the mass removal of snakes from ecosystems.

Persons who organize rattlesnake roundups or participate in them represent a third point of view. They regard the snakes as an exploitable resource, enjoy the sport of hunting them, and recognize their potential value in fundraising for individuals and communities. Although such persons may not actually like snakes, they wish to maintain a perennial supply of them, and consequently the diamondback's perceived status is changing more and more to that of a game animal.

Oklahoma's rattlesnake roundups, extending back more than 50 years, have become a part of the state's tradition, and the hunts have been highly successful in terms of perennial sustainability, large numbers of participants, and the economic rewards that they generate. The western diamondback (*Crotalus atrox*) is the species hunted, although occasionally prairie rattlesnakes, timber rattlesnakes, and various nonvenomous species are taken in relatively small numbers. Between us, we attended all five Oklahoma roundups in 1988, one in 1987 and two in 1989. Separate reports have been prepared based on the examination of 1,011 live diamondbacks and a smaller sample of their internal organs (Fitch and Pisani 1993, Pisani and Stephenson 1991, Stephenson and Pisani 1991). The present report is concerned with the history of the roundups, their organization, and their economic, ecological and sociological bearing.

## Results

### TIMING AND PERSONNEL OF SNAKE HUNTS

At each Oklahoma roundup rattlesnakes are accumulated in three stages. The formal roundups are three-day events (Friday through Sunday) during which aspiring snake hunters, some from distant places, are registered, charged a fee, equipped for the field, guided by local experts to areas where snake dens can be found, and supervised in the finding, capture, and bagging of the

quarry. Before the roundup weekend, experienced local hunters, familiar with the terrain and with the places where snakes can be found, are active in the field whenever the weather is mild enough to trigger the snakes' emergence from hibernation. At Apache in 1988, we were told by one participant that about ten professional snake catchers furnish most of the rattlesnakes for the event, and that these individuals differ considerably in their degree of commitment and success. A second participant claimed that only three hunters (of whom he was one) brought in most of the snakes.

Many other snakes are those caught far from the roundup where they are used, and are purchased in large lots by wholesale dealers, and shipped in for the event. Certain residents of southwestern Kansas have brought large collections of prairie rattlesnakes to the Oklahoma roundups. This was illegal because in Kansas the possession limit was five (and a hunting license was required to take them). Because of the shorter and milder winters to the south, Texas diamondbacks emerge from hibernation earlier than those in Oklahoma, on average, and many are captured and shipped to Oklahoma for the roundups there. Likewise, in Oklahoma many rattlesnakes originally taken in southern roundups at Waurika, Apache, and Mangum are shipped north for the roundups at Waynoka and Okeene. Individual snakes may be used in several roundups held on successive weekends. The Fountain Reptile Manufacturing Company of Colorado Springs has been a major purchaser, and eventually, after being used for live display and butchered for meat, its diamondbacks are used for snake-skin products, such as belts, hat bands and boots. At the Waurika roundup in 1988 we were told that the sponsors had contracted for and received 800 pounds of *C. atrox* from Texas in order to assure having plenty on hand during the event. When we arrived for the roundup at Okeene on 7 April 1989, there were ten crates of diamondbacks on hand, each containing about 33 snakes and, we were told, with a combined weight of about 300 pounds. The weekend hunting was expected to yield some 500 pounds more. At Apache on 21 April 1989, as the roundup began, there were already rattlesnakes on hand amounting to approximately 500-600 pounds. Most of these had been brought in by a contractor and were of unknown provenance.

A spirit of rowdy fun and alcoholic bravado that formerly characterized the roundups has been largely suppressed. Illustrating horseplay which was once common, Mickey (1963) described an incident at the Waynoka roundup nearly 30 years ago, as follows: "Harold Newman, Marion Manning and Rolos Harmon held on to a six-foot diamondback [!] and gave him a drink of snake medicine [whiskey]... The first drink did nothing. The second drink put the rattler in high gear and he became unmanageable. He was tossed toward the author who fell backward into a cactus bed along with his camera... The rattler was re-



trieved thoroughly plastered and sleepy, while the author spent the next six hours removing cactus spines.”

On recent roundups, using liquor and carrying firearms have been discouraged because of the high risk of accident. However, competitive bagging (“speed sacking,” see below) at the Waurika event is still a high-risk activity. Competitors choose to dispense with normal safety precautions in order to shave time from their performance, and bites are frequent. As a concession to safety, the snakes used are small ones much less liable to deliver a mortal bite than are full adults. One or more bites are sustained during a typical roundup. An ambulance and physician are kept on standby. Victims are rushed to the local hospital and treated with antivenin, and most recover without lasting debilitation. Some have survived multiple bites and proudly display scars and amputations.

#### *ECONOMICS OF THE ROUNDUPS*

Rattlesnake roundups have developed as commercial enterprises designed to attract a large clientele by offering excitement, arousing curiosity, and playing on the widespread public fear of snakes. Hunting and capturing live rattlesnakes provides the central theme, and a competitive element is introduced by offering awards for certain categories of snakes (largest, heaviest bag, recapture of specially marked specimens). Special attractions are the “snake pit”, an enclosure open on top where viewers can look down on hundreds of live diamondbacks, and the butcher shop where a team can be observed at work decapitating, skinning and gutting snakes, and cutting up carcasses for human consumption. In the snake pit, daredevil performers may display feats such as crawling into a sleeping bag containing one or more live rattlesnakes. At the butcher shop, spectators may be invited to wield the axe in decapitating snakes, or a knowledgeable lecturer may discuss and demonstrate aspects of snake anatomy and physiology. Numerous shops and booths along the main street offer a variety of curios and souvenirs, specializing in snake products such as boots, purses, belts, key cases, and hatbands. Popular souvenir items are freeze-dried snake carcasses mounted in striking position with mouth open and fangs erect. In 1988, such mounts of first-year snakes usually cost about \$15. A comparable mount of an adult cost about \$35, but most often only the head and neck of an adult snake were preserved. The booths and shops featuring such snake products also offered a wide variety of other non-snake items, including knives and other implements, ornaments and curios.

Organized contests of various sorts have added zest to the gatherings. Especially notable are the snake-sacking contests. Each contestant is provided with a sack and snake-stick and three small rattlesnakes, which can be urged into favorable positions before the starting signal. Then there is a race to bag all three and secure the bag with

a knot in the fastest time. Two contestants were bitten at the 1988 Waurika roundup that we attended. Various other contests may include boat races, shooting matches, tomahawk and knife throwing, and, on a more staid note, golf, and dancing. Each roundup hosts a carnival. Organized entertainment may include a reunion of veteran snake hunters, a dinner with talks and films featuring earlier roundups, and a Saturday night dance.

Hotels, motels, and restaurants are filled to capacity on roundup weekends, and almost every business establishment in the town profits from the great influx of visitors. At each roundup the annual harvest is typically from 1,500 to 3,000 diamondback rattlesnakes. However, there is much fluctuation in snake numbers from year to year. If the weather is cold and overcast, relatively few snakes will be above ground and searching will be less thorough, resulting in a meager harvest. Perhaps such “bad years” have saved local populations from extirpation. Klauber (1956) describing the Okeene and Waynoka hunts in the early 1950s, stated that the annual catch at each was 1,500 to 3,000 snakes, and that participants numbered several thousand. These figures suggest that there has been little change over a 35-year period. There is some evidence to the contrary. At Okeene, we were told that the roundup formerly yielded many more snakes than it has yielded in recent years, with an annual harvest of as many as 12,000. Even with improved transportation and increased attendance, the take has evidently undergone some decline. Local people blame the reduction on deterioration and shrinkage of habitat rather than on over-hunting. Probably both habitat change and hunting pressure are involved. It is remarkable that each of the roundups has been able to maintain an annual harvest of thousands of snakes without collapse of the local population. Studies by Campbell et al. (1989) at Texas roundups and Warwick et al. (1991) in Oklahoma, demonstrate that steadily increasing numbers of hunters, and more efficient transportation extending into relatively remote areas are helping to maintain the catch from year to year. These studies have indicated that the snakes are being reduced to very low levels or totally eliminated from many more accessible places where they formerly were abundant.

Specific traits that have favored the survival of the western diamondback rattlesnake in Oklahoma are: 1) early maturity (normally in the third year); 2) apparent annual reproduction of females; and 3) large litters, averaging about 12 [with exceptionally as many as 40 (Klauber 1956)]. In 1988 we estimated that a typical four-foot (122 cm) diamondback purchased from the hunter for \$7 would be worth at least \$35 disassembled: \$12 for the meat, \$12 for the skin, \$5 for the rattles, \$15 for the mounted head, and \$1 for the gall bladder (used medicinally by certain Asian peoples). Thus, an estimated 10,000 diamondbacks harvested annually in Oklahoma might have been valued at

\$350,000 (in 1988). However, this is a fraction of the money generated by the roundups. Registration of participants and paid admissions to the snake pit, butcher shop and many other ancillary forms of entertainment (see below: "Provenance of Roundup Participants") raise the total amount of money taken. Sale of souvenirs and curios also provide income, while, finally, lodging and feeding thousands of visitors and filling their routine needs, swells the total. Undoubtedly, rattlesnake roundups benefit Oklahoma's economy by several million dollars annually.

The sponsoring organizations are nonprofit groups and income from the roundups benefits community projects. For instance, at Waynoka, beneficiaries have included Clapper Memorial Hospital, the Waynoka Nursing Home, Emergency Medical Technicians and Ambulance Service, KIDS, Inc., the city parks, and several church and school projects.

#### OKLAHOMA'S FIVE ROUNDUPS

The oldest Oklahoma roundup, Okeene's, began in 1939, Waynoka's began in 1945, Mangum's in 1955, Waurika's in 1961, and Apache's in 1981. Some ranchers regard rattlesnakes on the range as a constant hazard to humans and domestic animals, and would like to see them eliminated, but extermination of the snakes has ceased to be a major objective of the roundups. Excitement of the hunt, curiosity, and fascination with snakes are the three major incentives for participants, according to answers to

a questionnaire we administered in 1988 (discussed below in detail). Forty-six percent of questionnaire respondents came to the roundups exclusively as spectators, while 41 percent were participants (13 percent did not respond to the question).

Each roundup draws on an area of several hundred square miles to collect snakes, but much of the hunting is within 25 miles (40 km) of the sponsoring town. The Okeene hunt is mainly between the Cimarron and Canadian rivers and it overlaps the area of the Waynoka hunt. The latter hunt area has been mapped as a parallelogram about 37 miles (59.5 km) long and six (9.6 km) or more miles wide, bounded on the northeast by the Cimarron River from Edith in the north to Fonda in the south (Mickey 1963). The Waurika and Mangum hunts take place principally along the bluffs of the Red River, Waurika's farther east and Mangum's farther west, but broadly overlapping, and both drawing on areas on the south (Texas) side as well as on the north (Oklahoma) side. The Apache hunt overlaps both Waurika's and Mangum's in the Red River bluffs, but also includes the Wichita Mountains. See Figure 1 for graphic representation of the areas of these hunts.

At Waurika and Okeene, the local chambers of commerce have been primary sponsors; the Apache Rattlesnake Association, Inc., sponsors the Apache roundup, and the Mangum event is sponsored by the Shortgrass Rattlesnake Association of that town. The several sponsoring agencies have somewhat different orientations and histo-

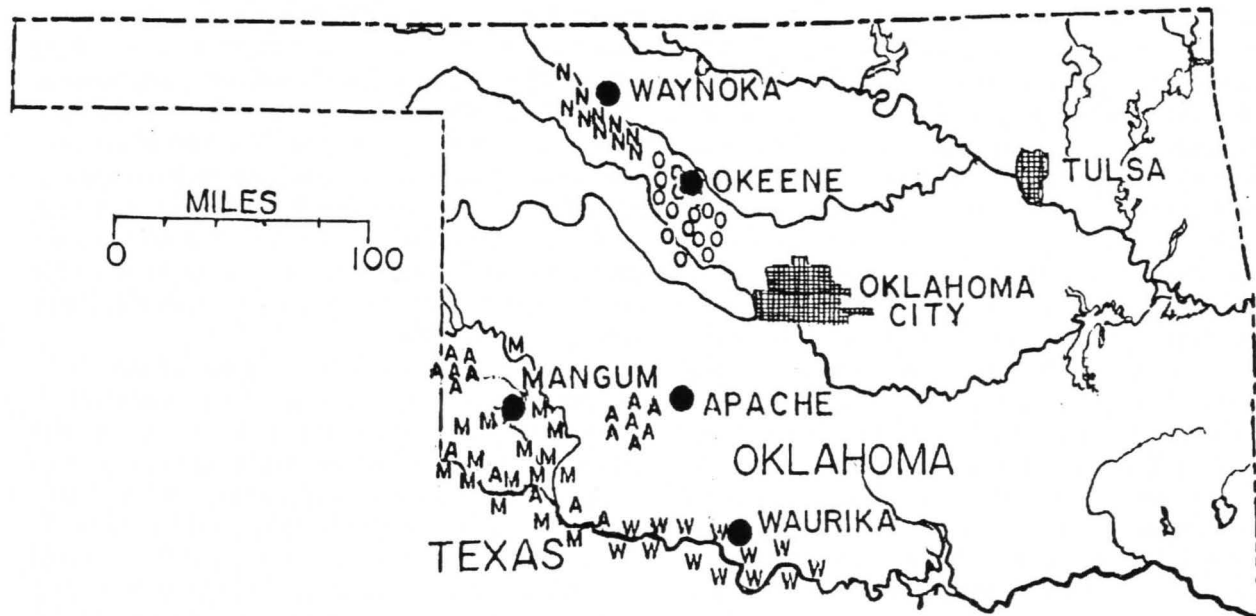


Figure 1. Map of Oklahoma showing location of rattlesnake roundups and areas of collection for the individual roundups. A=Apache, M=Mangum, N=Waynoka, O=Okeene, W=Waurika.

ries which have resulted in differences in the local events. The Waynoka roundup began as a social gathering of local ranchers on spring weekends, with snake killing as a form of recreation. The Waynoka Saddle Club became the sponsor of the event, which attracted increasing numbers of participants and spectators each year until more than 5,000 people gathered at the ranch which hosted the event. Many were armed with shotguns, and, at first, shooting snakes was customary. Later guns were banned because of the hazard to participants and because the snakes were found to be marketable alive. When the turnouts became too large to be hosted by local ranches, headquarters were shifted to the nearby town, with cooperation from the Chamber of Commerce (Mickey 1963).

The Okeene roundup features a "... den of death with professional handlers working among hundreds of deadly live diamondback rattlesnakes." Prize money is offered for the largest snakes brought in (\$200 first prize, \$125 second, \$75 third, \$50 fourth, \$50 fifth), and a bounty is paid on "branded" snakes brought in alive. Added attractions are "The World's Largest Traveling Reptile Show," and the butcher shop where fresh "rattlesnake steaks" can be purchased. Tongs, bags and other snake hunting equipment can be rented or purchased. Ancillary attractions include a golf tournament, and carnival rides. Stipulations for the hunts are that there shall be no gassing of dens, that no snakes shorter than 30 inches (76 cm) be taken, and that a bag limit of six snakes per hunter per day shall apply.

At the Mangum "Rattlesnake Derby" the main attractions, each with a separate admission fee, include the "snake pit" with hundreds of snakes on display, the butcher shop, and bus tours for those not caring to hunt (the tours visit typical den areas where experienced hunters demonstrate the finding and handling of rattlesnakes in the field), and the actual snake hunts (registration \$5 per person). During informal conversation with hunters at Waurika, GRP (in response to a question) was told that crowds are definitely not taken to active dens but to "salted", den-like areas. The major reason is to conceal the best hunting spots from the masses. Registered hunters are eligible for awards that include prizes up to \$200 for the most snakes; the most pounds, (first prize \$150); the longest snake (first prize \$200); and recapture of a specially marked snake (\$25). Ancillary events include a carnival, skydivers, daily concerts, and a Saturday night dance.

The Apache "Rattlesnake Festival" follows the usual pattern in having a snake pit and a butcher shop. It offers prizes of \$175, \$75, and \$50 for the longest snakes; \$125, \$75, and \$25 for the most pounds collected, and \$100 for a marked snake recaptured. Competitive Indian dances are held with prizes of up to \$200. Canoe races, tomahawk and knife-throwing contests and black powder shooting contests are featured, along with a flea market.

#### *THE ESCALATING PRICE OF RATTLESNAKE PRODUCTS*

In 1953 snake catchers at Okeene were paid 50¢ per pound for live snakes (Klauber 1956), but in 1960 the price had fallen to 10¢ per pound (Mickey 1963). Since then the price has tended to rise, but with fluctuations depending on demand versus supply and the general state of the economy. By 1987, the price had reached \$4 per pound. In 1988, \$3.50 per pound was the standard at all five roundups. In 1989, the price again underwent a sharp increase. Early in the season at Waurika some hunters received as much as \$10 or \$12 per pound for their snakes. At Okeene, the price declined to \$8 per pound and two weeks later at Apache, it seemed to stabilize at \$7.50.

The alleged cause of the 1989 increase was adoption of an improved method of tanning skins. This resulted in increased demand and competitive bidding among leading boot manufacturers (Justin, Nocona, Tony Lama). The 1989 price rise resulted in much increased hunting pressure. At each roundup, a dealer contracted for the entire lot of snakes brought in, and because of the enhanced value of skins, the price per pound of live snakes exceeded the price of dressed meat. In 1990 hunters received \$8 or \$9 per pound, but in 1991, the price had slipped back to \$6 per pound at Apache, \$5 at Mangum and Waurika, and \$4.50 at Waynoka.

With increased demand for the snakes and their products, resulting in more intense hunting pressure, there is danger that in the near future the harvest will exceed the snakes' rate of natural replacement. As numbers of snakes decline, the demand for them is liable to escalate and rising prices will provide incentive for unremitting hunting pressure, which might eliminate the species from most of the areas where it still occurs.

This unwanted outcome can be avoided only by management practices that have proven effective for game animals in general. Such measures include: 1) creating reserves—areas of prime habitat where rattlesnakes are protected from exploitation, 2) imposing size limits (e. g., 2 foot [61 cm] length to protect first-year young, or 3-foot [91 cm] to also protect some second-year young), bag limits, season limits, and declaring a closed season when snake numbers are found to be declining. Special fees might be charged for a snake-hunting license. Monitoring of the hunts is needed to detect either a reduction in numbers of snakes or a shift toward younger age classes, both of which are indicative of stressed populations.

#### *CRUELTY AT THE ROUNDUPS*

Most of the snakes displayed and butchered at the roundups are captured days or even weeks beforehand by local hunters, are purchased by the local committee, and are transferred to wooden crates. Each crate usually contains about 30 rattlesnakes. Often one or more are found



dead, sometimes in an advanced stage of decay, when the snakes are finally removed from a crate to be displayed or butchered. Obviously, the crated snakes are subjected to various stresses. In some instances, death may result from suffocation of the semi-torpid snakes pinned beneath several layers of larger ones, but more often envenomation is the cause. Many bites are exchanged by the occupants of each crate, which are stressed by capture and rough handling to the extent that they are inclined to strike at any moving object. Although the snakes have a high degree of resistance to the venom of their own species, massive doses of venom (or even puncture wounds) in vital organs can cause mortality. When snakes are skinned in the butcher shops, many show evidence of one or more recent bites, with hemorrhage and histolysis, subcutaneously, intramuscularly, or intraperitoneally. Affected sections of the body are discarded, resulting in a considerable loss of salable meat.

The crated snakes lack access to water, and rattlesnakes need to drink. Their food needs are minimal so long as they are kept cool, but in warm spring weather there is weight loss and mortality. It is difficult to avoid stress and mortality in the crated snakes, crowded together in a confined space for long periods. However, damage and suffering can be minimized by storage in cool places, reducing the number in each box, and providing occasional water. Decreased damage or mortality would increase profits to sponsors, a pragmatic reason for humane practices.

The most cruel practice observed at the roundups was the sewing shut of mouths to prevent snakes from biting. Selected large diamondbacks were immobilized by refrigeration, then subjected to the operation. At some roundups, several such "fixed" snakes were kept at photography booths and customers could be photographed handling them for a fee of \$5.

At the butcher shops, snakes are killed by decapitation, but some animal-rights advocates maintain that this is an extremely cruel method, resulting in a painful and lingering death. A head, separated from the body, continues to manifest life by such reactions as opening the mouth at the approach of an object, biting at an object within reach, twitching the neck stub, contracting the pupil of the eye, and advancing and opening the end of the trachea. Biting may occur as long as 40 minutes after beheading (Klauber 1956). Depending on the temperature, as much as an hour may elapse before the separated head loses its ability to respond to external stimuli. Such a head shows evidence of stress. Upon dropping from the chopping block, a head will try with great vigor and animation to bite anything within reach, including the sawdust substrate. No practical alternatives to decapitation have been suggested. Since cold is an effective anesthetic for reptiles, the cruelty involved in decapitation might be mitigated by chilling the snakes in

ice water before butchering or dropping heads into ice water immediately after. This procedure would also render them more easily handled.

The practice of flushing snakes out from their denning retreats by spraying with gasoline, using a hand pump and a long tube inserted into the den, has been popular in the past as an efficient means of collecting. The irritating fumes cause the snakes to surface where they are easily captured. However, "gassing" is now generally condemned in Oklahoma. One objection is that animals too cold and sluggish to emerge are killed underground by the toxic fumes, and this applies to nonvenomous snakes and other vertebrate associates that share dens with the diamondbacks. Even the rattlesnakes that are flushed out and captured may have suffered irreparable lung and neurological damage (Williams 1990). It is claimed (and accepted by many event sponsors in Oklahoma) that "gassed" snakes are unfit for human food, having absorbed dangerous amounts of potentially carcinogenic hydrocarbons (Cox and Meinzer 1991). Although "gassing" is officially disapproved, some irresponsible hunters may still resort to it to increase their catch. We were told that Waynoka sponsors no longer accept snakes bearing a noticeable gasoline smell.

#### *PROVENANCE OF ROUNDUP PARTICIPANTS*

We distributed questionnaires (N=214) at the Waurika, Waynoka, and Okeene roundups in 1988 and these provided a profile of attendees. Most were out-of-town visitors from within a 200-mile (320 km) radius, were male, earned \$10,000-\$30,000 annually, and spent less than \$50 at the roundup, of which one-third was for souvenirs. Many persons attend more than one roundup in a season or return to the same roundup in successive years. Thirty-six percent of respondents came for only one day, 32 percent for two days, and 26 percent for three days, with somewhat different trends in the several roundups. The majority of those attending came as spectators rather than as active participants in the hunts. A high proportion of those attending came in family groups. There were many children in attendance.

At the Apache roundup on 22 April 1989, vehicle license plates were checked to try to determine where participants had come from. Of 311 license plates, 87% (270) were from Oklahoma, 6% (20) were from Texas, and 2% (5) were from Kansas. There were two cars from Alabama and just one each from Arizona, Arkansas, California, Colorado, Florida, Hawaii, Kentucky, Maine, Michigan, Missouri, Nebraska, Ohio, Pennsylvania and Tennessee. Some of the out-of-state license plates were probably those of soldiers temporarily stationed at nearby Fort Sill. There were Oklahoma cars from at least 28 counties: Caddo-65, Comanche-47, Oklahoma-25, Stephens-13, Grady-8, Jackson-6, Cotton-5, Craig-3, Okfuskee-3; King-