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Front Cover: A digital illustration of an adult Copperhead (*Agkistrodon contortrix*) by Travis W. Taggart (Sternberg Museum of Natural History, Fort Hays State University, Hays, Kansas 67601), based on an image by Suzanne L. Collins (The Center for North American Herpetology, 1502 Medinah Circle, Lawrence, Kansas 66047).

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KHS BUSINESS

REPORT ON THE KANSAS HERPETOLOGICAL SOCIETY 29th ANNUAL MEETING

The *Kansas Herpetological Society* held its 29th Annual Meeting at Nichols Hall, University of Kansas West Campus, in Lawrence, Kansas, on 1–3 November 2002. Over 90 participants (Fig. 1) attended scientific paper sessions to listen to 25 talks on amphibians, turtles, and reptiles by scientists and students from across the nation.

During its business meeting, the KHS voted Eva Horne (Kansas State University) as president-elect (Fig. 2), Eric Kessler (Blue Valley North High School) as treasurer, and Mary Kate Baldwin (Topeka Collegiate School) as secretary. Greg Sievert (Emporia State University) currently is president-elect and takes office as president on 1 January 2003. Suzanne L. Collins (Lawrence) served as president during 2002, and hosted the meeting this year.

During the Society business meeting, Robert Powell (KHS Awards Committee Chairperson) announced that Nicole Palenske, a graduate student at Emporia State University, was this year's recipient of the *Howard K.*

Gloyd-Edward H. Taylor Scholarship (Fig. 3). The scholarship of \$100.00 honors the memory of two great herpetologists (and KHS Distinguished Life Members) with strong ties to Kansas. Gloyd was born in Ottawa, Kansas, and attended both Kansas State University and the University of Kansas, and Taylor graduated from Garnett (Kansas) High School and was a biology faculty member for many decades at the University of Kansas, Lawrence. In addition, Powell awarded the *Alan H. Kamb Grant for Research on Kansas Snakes* to Chris Hutson, a student at Tabor College, Hillsboro, Kansas (Fig. 4). The grant honors the memory of long-time KHS member Al Kamb of Lawrence. Mr. Kamb passed away in 1998.



Figure 1. Group photograph of participants at the *Kansas Herpetological Society* 29th Annual Meeting held 1–3 November 2002 at Nichols Hall, University of Kansas in Lawrence, Kansas. Photograph courtesy of Olin Karch.



Figure 2. Eva Horne, Kansas State University, Manhattan, was elected KHS president-elect for 2003 by the Society membership at the 29th annual meeting in Lawrence. Eva will serve as president in 2004, and will host the KHS 31st annual meeting that year. Photograph by Suzanne L. Collins.

Also during the KHS business meeting, Karen Toepfer (Figure 5) was presented by KHS President Suzanne L. Collins with the Society's *Bronze Salamander Award*, the highest honor given by the KHS. Karen was so recognized for her dedicated decade of service as KHS treasurer.

Following the KHS General Business Meeting, the Society's Executive council met in Executive Session.

At the start of the Saturday night KHS auction, John F. Cavitt, professor at Weber State University, Ogden, Utah (Fig. 6), was chosen as the fifth recipient of *The Suzanne L. and Joseph T. Collins Award for Excellence in Kansas Herpetology*. Cavitt was selected for this honor by the KHS Awards Committee, which judged his 2000 paper entitled *Fire and a Tallgrass Prairie Reptile Community: Effects on Relative Abundance and Seasonal Activity*, published in the *Journal of Herpetology* (Volume 34, number 1: 12–20) to be the best on the Kansas herpetofauna during the years 2000 and 2001. For his stellar research, Dr. Cavitt was given a commemorative plaque and a check for \$1,000.00 by Robert Powell, member of the Board of Directors of *The Center for North American Herpetology*. *The Collins Award* is the largest biological award given annually in the state of Kansas, and the largest annual presentation made nationally for research on (even-numbered years) or photography of (odd-numbered years) amphibians, turtles, and reptiles. Judges for *The Collins Award* in 2001 were David Edds (Emporia State University), Travis W. Taggart (Fort Hays State University), and Gregory Sievert (Emporia State University).

The Saturday evening KHS auction (Figs. 10–14) netted about \$1,300.00 for the Society treasury, spurred in part by the excellent offering of original artwork by Eva Horne, generous donations of publications by Stanley Rasmussen (Lawrence) and Richard Montanucci (Clemson, South Caro-

lina), and also by the hard work of auction assistants Sarah Bellows-Blakely, Emily Heronemus, and Laura Gunderson, who so ably assisted KHS auctioneer Joe Collins.

Following the Sunday morning scientific paper session, two other KHS meeting attendees were recognized as the fourth annual recipients of *The Big Croaker Awards*, sponsored by the Kansas Department of Wildlife and Parks and the *Kansas Amphibian Monitoring Program*. Established in 1999, the awards this year were given to those individuals that monitored choruses of frogs and toads with diligence and excellence during the spring of 2002. James E. Gubanyi, Topeka, Kansas, (Fig. 7) and Robin Oldham, Oswego, Kansas (Fig. 8), were each given a commemorative certificate and a check for \$100.00 by Ken Brunson, representing the *Kansas Department of Wildlife and Parks*, which sponsored the *Kansas Amphibian Monitoring Program*. Each spring for the last five years, about ninety KAMP volunteers censused choruses of amphibians on over eighty 15-mile routes across Kansas, establishing information that will eventually be used to produce an *Amphibian Breeding Atlas* booklet and an on-line web site.

Featured speaker at the three-day event was Frank Burbrink (College of Staten Island, CUNY; Fig. 9). Frank spoke about North American snake phylogeography, particularly his DNA research as it applied to the genus *Elaphe*. His talk was well received and generated much interest about the future of snake systematics.

Speakers for the scientific paper sessions on Saturday included (in order of presentation): Pamela Simmons (Avila College, Kansas City, Missouri, on *Ameiva* natural history on Grenada), Henry S. Fitch (University of Kansas, on litter size in *Thamnophis sirtalis*), George R. Pisani (University of Kansas, on visual acuity in certain Kansas snake



Figure 3. Nicole Palenske, graduate student at Emporia State University, accepts the *Howard K. Gloyd-Edward H. Taylor Scholarship* from KHS Awards Committee Chairperson Robert Powell (left). Photograph by Suzanne L. Collins.



Figure 4. Chris Hutson, student at Tabor College, Hillsboro, Kansas, receives the *Alan H. Kamb Grant for Research on Kansas Snakes* from KHS Awards Committee Chairperson Robert Powell (left). Photograph by Suzanne L. Collins.

species), Travis W. Taggart (Sternberg Museum of Natural History, Hays, on why dead herps make great dots on maps), Joseph T. Collins (Kansas Biological Survey, Lawrence, on the herpetofauna of St. Vincent National Wildlife Refuge, Florida), Angela Babbit (Emporia State University, on digestive efficiency in *Hyla chrysoscelis*), Eli Greenbaum (University of Kansas, on herpetological field work in Guinea, West Africa), Walter E. Meshaka (State Museum of Pennsylvania, Harrisburg, on snake reproduction in southern Florida), Hugo Alamillo (University of Kansas, on tail autotomy in *Amphisbaena*), John F. Cavitt (Weber State University, Ogden, Utah, on fire and a tallgrass prairie reptile community), Kenneth B. Chance (Emporia State University, on winter microhabitat selection by *Rana catesbeiana*), Eva Horne (Kansas State University, on orange epaulettes on *Crotaphytus collaris*), Chad Whitney and Brandon DeCavele (Johnson County Community College & Maple Woods Community College, respectively, on Red Milk Snakes in northeastern Kansas), Scott Sharp (DeSoto High School, on snakes of the KU biotic succession area), Jennifer B. Pramuk (University of Kansas, on results of a phylogenetic analysis of DNA investigating New World *Bufo*), and John E. Simmons (University of Kansas, on habitat alteration in Paraguay).

Speakers for the scientific paper sessions on Sunday morning included: Steve Wahle (Kansas State University, on the herpetofaunal of Gulf County, Florida), Christopher Hutson (Tabor College, Hillsboro, Kansas, on herpetology at Tabor College), Jason T. Moore (Topeka Zoo, on challenges to research in zoos), David S. McLeod (University of Kansas, on the herpetofauna of southern Thailand),



Figure 5. At the annual meeting, KHS President Suzanne L. Collins presents the *Bronze Salamander Award* to Karen Topefer of Olathe, Kansas. This award, the highest honor bestowed by the Society, was given to Karen for her decade of dedicated efforts as KHS Secretary-Treasurer; such moments can be emotional. Photograph by Joseph T. Collins, Kansas Biological Survey.

Jason T. Moore (Topeka Zoo, on a Komodo Dragon bite and its treatment), and Joseph T. Collins (Kansas Biological Survey, on the fifth and final year of the Kansas Amphibian Monitoring Program).

Abstracts for many of these talks appear elsewhere in this issue of the *Journal of Kansas Herpetology*.

Meeting Chairperson and KHS President Suzanne L. Collins deserves the enthusiastic thanks and appreciation of the entire KHS membership for putting together one of the society's more memorable meetings. The KHS further thanks Marty Birrell and her stalwart staff for allowing the as-



Figure 6. John F. Cavitt, professor at Weber State University, Ogden, Utah, receives his commemorative plaque and a check for \$1000.00. Dr. Cavitt was chosen the recipient of *The Suzanne L. & Joseph T. Collins Award for Excellence in Kansas Herpetology* for 2002. Photograph by Suzanne L. Collins.

sembled members of the KHS access to the creatures exhibited at the Lawrence Prairie Park Nature Center and for hosting the Friday night social. And, of course, we cannot let go unnoticed the diligent and untiring efforts of Mary Kate Baldwin (KHS Secretary) and Eric Kessler (KHS Treasurer); both kept us afloat, financially and through their dedicated work (Figure 15). Finally, our thanks to the University of Kansas—attendance was substantially bolstered at the meeting when eight students, staff, and faculty from KU presented papers at this meeting. Hopefully, other colleges and universities in Kansas and neighboring states will try to make such a showing at future meetings.

In 2003, the Society will meet in Emporia (talks and coffee, free beer and auction) under the auspices of Greg Sievert, who will serve as KHS President during that year. For more precise information on the 30th Annual Meeting of the KHS on 8–9 November 2003, bookmark and regularly check the KHS meeting web site (updated constantly as new information becomes available from the KHS President) at

<http://www.ku.edu/~khs/AnnualMeetingInfo.html>



Figure 7. James Gubanyi of Topeka, Kansas, was the first of two recipients of *The Big Croaker Award* for 2002, sponsored by the *Kansas Department of Wildlife and Parks* as part of the *Kansas Amphibian Monitoring Program*. A commemorative certificate and check for \$100.00 were presented to him on the occasion of the 29th annual meeting of the *Kansas Herpetological Society* on Sunday morning, 3 November 2002. Photograph by Suzanne L. Collins.



Figure 8. Robin Oldham of Oswego, Kansas, was the second recipient of *The Big Croaker Award* for 2002, sponsored by the *Kansas Department of Wildlife and Parks*. During the spring of 2002, she and her family diligently listened for calling frogs. Here, Robin receives a certificate and check for \$100.00 from Ken Brunson, *Kansas Department of Wildlife & Parks*. Photograph by Suzanne L. Collins



Figure 9. Frank Burbrink (front left) was the keynote speaker at this year's meeting. Here he is joined by a crowd in the foyer of Nichols Hall. From left: Dan Murrow, Frank Burbrink, Walter Meshaka, Joe Collins, Chad Whitney, and Travis Taggart. Brandon DeCavele is kneeling. Photograph by Suzanne L. Collins.



Figure 10. Ruth and Roy Engeldorf are off to west Texas, but couldn't resist one more KHS auction. Photograph by Suzanne L. Collins.



Figure 11. At the traditional KHS auction, conducted on Saturday night, longtime KHS member Sarah Bellows-Blakely displayed a prized item eagerly sought by the pliant crowd. Photograph by Suzanne L. Collins.



Figure 12. Riveted by the hypnotic spell cast by the auctioneer, Dan Fogell (left), John and Julie Tollefson, and Wade Hoss (rear) were mesmerized into spending good money on bad things. Photograph by Suzanne L. Collins.

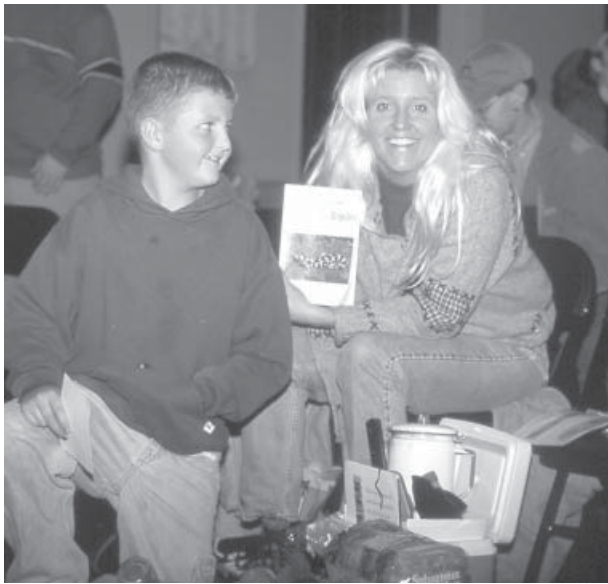


Figure 13. William "Quaid" Brown did very well at the KHS auction. Shown here with his mother, Jill Gustin, Quaid had access to much ready cash, and made the best of it. The KHS sincerely hopes that Quaid will be in attendance at the auction next year in Emporia. Photograph by Suzanne L. Collins.



Figure 14. Another auction went well, thanks to the efforts of our volunteers. From left, Laura Gunderson, Emily Heronemus, and Sarah Bellows-Blakely display some of the items that were offered to the assembled KHS members. Everything sold, and once again the KHS will probably be able to hold dues at their current rate, thanks to the generosity of the bidders. Photograph by Suzanne L. Collins.



Figure 15. Mary Kate Baldwin (KHS Secretary) and Eric Kessler (KHS Treasurer) kept track of all the important things. These two KHS officers were of vital importance in making our Society annual meeting and auction a huge success. Our sincere thanks to them both. Photograph by Suzanne L. Collins



ABSTRACTS OF PAPERS PRESENTED AT THE 29TH ANNUAL MEETING OF THE
KANSAS HERPETOLOGICAL SOCIETY, 2-3 NOVEMBER 2002,
NICHOLS HALL, UNIVERSITY OF KANSAS, LAWRENCE.

Tail Autotomy in Six Species of Amphisbaena (Amphisbaenia, Reptilia) from the Antilles.

Relative to other groups of reptiles, little is known about the biology of the amphisbaenids, presumably because they are difficult to collect and are encountered infrequently. Though many published works of C. Gans and others document some aspects of the biology of amphisbaenids, the caudal region has been studied only superficially. This is surprising because tail autotomy structures in the amphisbaenids seem to be different from other squamates. Herein I describe morphology of the fracture plane involved in caudal autotomy in six amphisbaenids (*Amphisbaena caeca*, *A. fenestrata*, *A. gonavensis*, *A. manni*, *A. schmidti*, and *A. xera*).

Hugo Alamillo, Natural History Museum, University of Kansas, Lawrence, Kansas 66047.

Fire and a Tallgrass Prairie Reptile Community: Effects on Relative Abundance and Seasonal Activity.

Few intensive studies have been conducted on reptile populations of the tallgrass prairie. In addition, the effects of fire on these populations are also largely unknown. I established drift fence arrays connected to funnel traps to study the community composition and seasonal activity of reptiles found on the Konza Prairie Research Natural Area located near Manhattan, Kansas. This design also gave me the opportunity to examine the response of reptile populations to a spring wildfire. A total of 657 individuals representing twelve species were captured from 1994-1996. The results suggest that one species, *Coluber constrictor*, may respond negatively to recent fire.

John F. Cavitt, Department of Zoology, Weber State University, Ogden, Utah 84408.

A Telemetric Study of Winter Microhabitat Selection by the Bullfrog, Rana catesbeiana, in East-Central Kansas.

The overwintering behavior and ecology of Bullfrogs are poorly understood. Much of the evidence concerning the winter habitat stems from chance encounters of overwintering ranids or descriptions of the disappearance and reappearance of frogs in late fall and spring. I collected 12 adult Bullfrogs (>90g) from a pond located on the property of Wolf Creek Nuclear Operating Corporation in Coffey County, Kansas. I implanted a 4.5 g G3 transmitter (AVM Instrument Company, Ltd.; Livermore, CA) into the peritoneal cavity of each frog. Frogs were located once a week until the transmitters no longer signaled. I recorded ten habitat variables at each frog's location and at 3 points (< 1m, 1-4m, and >4m) in the vicinity of the frog's location. Principle Components Analysis was conducted on the habitat variables. Most frogs overwintered in <0.5 m of

water and traveled only short distances between samples. Kenneth B. Chance, Lynnette Sievert, and Derek Zelmer, Department of Biological Sciences, Emporia State University, Box 4050, Emporia, Kansas 66801.

Mite Infestations of Eastern Collared Lizards in the Tallgrass Prairie.

Parasitic infestation can lead to many consequences for the host, including effects on health, stamina, and behavior. Heavily parasitized lizards may not be able to hold territories or attract mates. We conducted an investigation of ectoparasite loads on populations of Eastern Collared Lizards from artificial (reservoir dams) and natural (Konza Prairie Biological Station) habitats in northeastern Kansas. Eastern Collared Lizards are sexually dimorphic and males visibly advertise to females and other males from atop rocks. At our study sites, both males and females were infested with a larval stage of the chigger, *Eutrombicula cinnabaris*, which form dense, bright orange patches, containing hundreds of individuals just above and behind the host's shoulders. We found no correlation between mite densities and body condition of hosts for either males or females. Males showed slightly more variation in number of mites per mmSVL (min = 0, max = 13.7) than did females (min = 0.8, max = 9.6). Males had significantly more mites per mmSVL than did females and lizards from artificial sites had significantly more mites per mmSVL than did those from Konza Prairie. This study provides interesting implications for future studies into behavioral interactions between males and between males and females, which could vary due to differences in individual parasite loads.

Eva Horne and Adam Martin, Division of Biology, Kansas State University, Manhattan, Kansas 66506.

The Herpetofauna of St. Vincent National Wildlife Refuge, Florida.

A survey of the herpetofauna of St. Vincent National Wildlife Refuge, Franklin County, Florida, is presented, showing images of the types of habitat and the variety of amphibians, turtles, reptiles, and crocodylians found on this island in the Gulf of Mexico.

Joseph T. Collins, Kansas Biological Survey, University of Kansas, Lawrence, Kansas 66047.

Herpetology at Tabor College.

A report on the status of the herpetology program at Tabor College in Hillsboro, Kansas, including a profile of the newly formed Tabor Herpetological Society.

Christopher Hutson, Biology Department, Tabor College, Hillsboro, Kansas 67063.

Introduction to the Herpetofauna of Southern Thailand.

In January 2002, a preliminary faunistic survey was made of Khao Sok National Park, Surat Thani, Thailand. Khao Sok is situated within a transition zone between the Indo-Chinese and Sundaic sub-regions, and consequently the fauna represents a unique blend of both areas. More than twenty species of amphibians and ten species of reptiles were observed during seven days of field work. Southern Thailand is a biologically rich region which has been poorly studied.

David S. McLeod, *Natural History Museum, University of Kansas, Lawrence, Kansas 66045.*

The Reproductive Life of Snakes in Subtropical Southern Florida.

Gonadal cycles of nineteen species of snakes from southern Florida were examined and compared to those of northern counterparts to test predictions of extended breeding seasons and clutch production of southern populations. For all but three species, the spermatogenic cycle shifted from a mid summer peak as in northern populations to a midwinter peak. For all of the species, vitellogenesis began earlier in the season and lasted longer in southern Florida. Southern Florida clutch sizes were smaller in three species, larger in five species, and similar to northern populations in three species. With few exceptions, north temperate snake species released from climatic constraints from the centers of their geographic ranges responded with profound shifts in reproductive ecology. In conjunction with selection for novel habitats in a youthful southern Florida, these partial pre-mating isolation mechanisms could have accelerated the formation of region-specific forms of southern Florida.

Walter E. Meshaka, Jr., *Section of Zoology and Botany, State Museum of Pennsylvania, 300 North Street, Harrisburg, Pennsylvania 17120-0024, and James N. Layne, Archbold Biological Station, P. O. Box 2057, Lake Placid, Florida 33862.*

Preliminary results of a phylogenetic analysis of mitochondrial DNA data investigating relationships of New World Bufo (Anura: Bufonidae).

Among anurans, the relationships of the true toads of the genus *Bufo* are particularly poorly understood. Although some aspects of the biology and systematics of toads of the genus have been studied in depth, an evolutionary synthesis of the entire genus has not yet emerged. There are approximately 205 species of *Bufo*, and more than 74 of these occur in the Neotropics. To investigate the relationships among *Bufo*, with an emphasis on South American species, approximately 1000 base pairs of 12S and 16S mitochondrial DNA data were sequenced, aligned, and analyzed in PAUP*. A diverse sampling of *Bufo* from South, Central, and North America, as well as a sample of Old World species and other bufonid genera are included in

the preliminary analysis. The results of phylogenetic analyses will be presented and discussed.

Jennifer B. Pramuk, *Natural History Museum & Biodiversity Research Center and Department of Ecology and Evolutionary Biology, The University of Kansas, Lawrence, Kansas 66045.*

Forest of Sunflowers—Is Paraguay Turning Into Kansas?

The Atlantic Forest of southeastern Brazil, eastern Paraguay, and northeastern Argentina is one of the most endangered habitats in the Neotropics, and one of the most threatened in the world. In 1996 and 2000, staff and students from the Natural History Museum & Biodiversity Research Center of the University of Kansas and the Museo Nacional de Historia Natural del Paraguay participated in biodiversity inventories of two areas of Atlantic Forest in Paraguay to identify areas suitable for national parks. The Atlantic Forest of Paraguay is being clear cut and fragmented at a very rapid rate, primarily for agricultural use. This will result in the loss of many endemic plant and animal species. Our surveys found that the diversity of the herpetofauna in this region has already been greatly reduced. The remaining forest fragments are not likely to be self-sustainable, because forest fragments do not retain their diversity due to the reduced sizes of animal and plant populations. Forest fragments require extensive management to remain viable, particularly when surrounded by agricultural development.

John E. Simmons, *Natural History Museum & Biodiversity Research Center and Museum Studies Program University of Kansas, Lawrence, Kansas 66045.*

The Natural History of Ameiva ameiva on Grenada, with notes on interactions with sympatric Anoles.

On Grenada in June 2002, we examined aspects of population biology, thermoregulation, foraging behavior, and habitat use in a small population of *Ameiva ameiva* and foraging behavior of sympatric *Anolis richardii* and *A. aeneus* to test the hypothesis that the Anoles would adjust their foraging behavior and spend more time on the ground in the absence of *Ameiva*. We also examined the structural habitat use and diet of the Anoles in order to evaluate possible structural and dietary niche partitioning between the two species of Anoles.

Pamela M. Simmons, Brian T. Greene, Kate E. Williamson, Robert Powell, and John S. Parmerlee, Jr., *Avila University, Kansas City, Missouri 64145.*

Dead Herps Make Great Dots.

Every year, as we drive the highways and back roads of Kansas, a wealth of biological information is passed by in the form of road-killed specimens. With a little bit of work, these specimens can become part of invaluable scientific collections. Many aspects of making such a collection will

be discussed, including judging the quality, feasibility, and importance of collecting particular specimens. A brief overview of field preservation techniques and museum curation practices will be followed by a discussion of putting what we've learned to practice, through the implementation of a county-wide herpetofaunal census during KHS field trips, with a subsequent preservation workshop.

Travis W. Taggart, Sternberg Museum of Natural History, Fort Hays State University, Hays, Kansas 67601.

Observable abundance of herpetofauna on properties owned and protected by the Florida Department of Environmental Protection, in Gulf County, Florida.

A survey was conducted on both past and recently purchased properties by the Florida Department of Environmental Protection (FDEP), from 9 June 2002 to 23 June 2002. These properties serve as a buffer-zone for the protection of inland communities in and around Gulf County, Florida, against tropical storms and hurricanes. The reason for the survey was to obtain an idea of the abundance and types of amphibians, turtles, reptiles and crocodylians located on the properties for future projects and for the preservation of these diminishing habitats.

Steve Wahle, Division of Biology, Kansas State University, Manhattan, Kansas 66506.

The Red Milk Snake in Northeastern Kansas.

Red Milk Snakes (*Lampropeltis triangulum sypila*) were observed this year in Anderson, Douglas, Linn, Miami, Franklin, Jefferson, Johnson and Wyandotte Counties. Population density, color variation, size, and habitat were recorded for each snake found. Habitat for the snake varied across all eight counties; all surface cover was utilized by this taxon, including tin, boards, logs, cement, asphalt, and rocks. Methods used for finding Red Milk Snakes were rock-flipping, hiking, and turning all forms of cover in the field. Tin and boards were also placed in ideal habitat in the winter of 2001, and produced serpents in the spring of 2002, showing that these snakes will readily use any surface litter in their habitat.

Chad Whitney, Johnson County Community College, Overland Park, Kansas, and Brandon DeCavele, Maple Woods Community College, Kansas City, Missouri.



DONORS

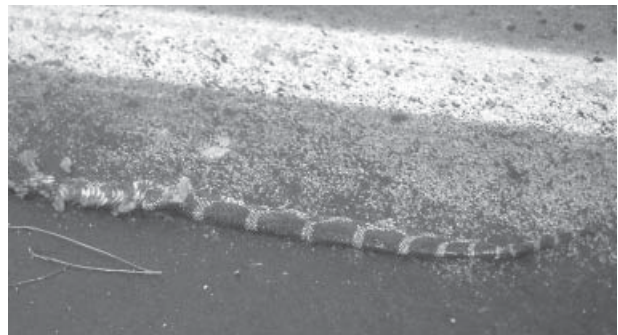
Few tributes are so lasting or honor individuals so well as donations. The *Kansas Herpetological Society* is privileged to carry on the aims and goals of the Society through its awards, grants, and scholarships. This list recognizes donations received through November 2002.

*The Howard K. Gloyd/Edward H. Taylor
Scholarship*

Mary Kate Baldwin

*The Joseph B. Slowinski Award
for Excellence in Snake Systematics*

Suzanne L. Collins
Stanley Rasmussen



A road-killed Common Kingsnake (*Lampropeltis getula*) observed on US Rt. 98 just west of Apalachicola, Franklin County, Florida, on 19 June 2002 by Suzanne L. & Joseph T. Collins. It would have made a great dot on a map, but there wasn't much to save, so they didn't. Too bad they didn't have a vial of ethanol for tissues. Photograph by Suzanne L. Collins.

TIME TO PAY YOUR 2003 DUES

Send your calendar 2003 dues (\$15.00 regular, \$20.00 contributing) to:

Mary Kate Baldwin
KHS Secretary
5438 SW 12th Terrace Apt. 4
Topeka, Kansas 66604

Your attention to this matter will ensure that the delivery of your *Journal of Kansas Herpetology* will be uninterrupted, and will support the KHS and its many fine programs. Also, you will be eligible for KHS awards, grants, and scholarships.

KHS EXECUTIVE COUNCIL

Minutes

September 28, 2002 6:00 pm
Washington, Kansas, City Park

Officers attending: Mary Kate Baldwin, Mark Ellis, Eric Kessler, Travis W. Taggart, Suzanne L. Collins presided. Committee Chairs attending: Robin Oldham, Jay Kirk, and Joseph T. Collins. In the hopes that a quorum might be present, KHS President Suzanne Collins distributed a brief agenda.

Item 1. Annual Meeting: Suzanne Collins gave an update about plans for the annual meeting. The Lawrence City Commission granted official permission to serve beer for the Friday night social at the Prairie Park Nature Center. The other venues, Nichols Hall at KU and the Union Depot, are reserved.

Stan Rasmussen, a school friend of Joseph B. Slowinski, offered to donate his family's collection of herpetological publications to the KHS auction, provided half of the funds raised are donated to The Slowinski Award, administered by The Center for North American Herpetology. Suzanne Collins agreed to divide the publications and display approximately half at a table as a silent auction. The silent auction proceeds would be donated to The Slowinski Award. The rest of the publications would be auctioned and the proceeds would go the KHS.

Item 2. *Standard Common and Current Scientific Names for North American Amphibians, Turtles, Reptiles, and Crocodylians Fifth Edition*: In 1997, The Center for North American Herpetology sent a gratis copy of the fourth edition of this checklist to all members of KHS. CNAH purchased and provided copies of the 1997 publication and all materials and labor related to the mailing. KHS reimbursed CNAH for postage at that time. In early September 2002, The Center for North American Herpetology once again obtained and sent a gratis copy of the new fifth edition of this checklist to all members of KHS. In keeping with precedent, it was moved and seconded (Ellis/Baldwin) to reimburse CNAH for postage for the current mailing of the fifth edition (\$243.80). Motion approved unanimously.

Item 3. Tabor College Request: Suzanne Collins presented a series of email messages from Chris Hutson, President of the Tabor College Herpetological Society. He requested some financial help in buying cages for the Tabor College herpetofaunal collection. He also requested use of the KHS logo to advertise KHS activities. The Council charged Suzanne with responding to him by encouraging him to apply for the Kamb Grant as a source for possible funding,

and to refer him to Robin Oldham so they can coordinate media and publicity releases related to KHS. (Note: An email response was sent to Chris Hutson.)

Item 4. KHS Herpetofaunal Counts: There was extensive discussion about the methodology of recording KHS herpetofaunal counts. The number of individual counts submitted has been declining. Presently, counts are sent to various individuals, who collect them, edit them, and send them to Eric Rundquist, who then sends them to the Editor as a manuscript. With the new structure of the *Journal of Kansas Herpetology*, this methodology appears to be complex and redundant, and could be streamlined by having counts submitted directly to the Editor of the *Journal of Kansas Herpetology*. It was moved and seconded (Taggart/Baldwin) that the KHS Editorial Office be assigned the sole responsibility for compiling and publishing any KHS herpetofaunal counts, including both official herpetofaunal counts made at sponsored KHS field trips and specific counts submitted by individuals, and that this responsibility become effective immediately. Motion approved unanimously.

The Council requested that the KHS President write Eric Rundquist a letter thanking him for his past services in compiling this information.

New Business:

Item 5. It was moved and seconded (Baldwin/Taggart) that the KHS Executive Council endorse the editorial decision and policy of the KHS *Journal of Kansas Herpetology* and the KHS website of adopting the *common names only* used in the 2002 publication, *Standard Common and Current Scientific Names for North American Amphibians, Turtles, Reptiles, and Crocodylians (Fifth Edition)* by Joseph T. Collins and Travis W. Taggart. Motion approved unanimously.

Item 6. Topeka Zoo: Mark Ellis reported that a curator at the Topeka Zoo asked if members of their staff could pre-register for the KHS annual meeting. This would allow him to pay from Zoo funds so staff would not have to be reimbursed. Eric Kessler will provide an invoice to the Zoo for payment. The Prairie Park Nature Center also pays in advance for their staff.

Meeting was adjourned at 7:00 pm.

RESULTS OF THE KHS 2002 FALL FIELD TRIP

In late September 2002, KHS members traveled to Washington County, Kansas, to search for amphibians, turtles, and reptiles found in the north-central part of the state as part of the annual KHS Fall Field Trip. Many gathered at the lovely Washington City Park on Friday night, and at 9:00 am on Saturday morning a stunning 76 individuals were present for the herpetofaunal count.

With the help of gracious land-owners in the area, and led by KHS Field Trip Chairperson Mark Ellis and his indispensable helpmate, Kathy Shidler, we spent a great weekend collecting and observing numerous herpetological species over three counties. Three new county records were found, and are reported elsewhere in this issue. The complete count for 27–29 September 2001 is listed below. The list of field trip participants was lost, and for this we apologize. We promise to do better this coming spring.

Washington County

Species	Number Observed
<i>Frogs</i>	
Woodhouse's Toad	4
Plains Leopard Frog	22
Northern Cricket Frogs	±400
Bullfrogs	±10 larvae & 10 adult
<i>Turtles</i>	
Ornate Box Turtle	2
Painted Turtle	1
<i>Lizards</i>	
Eastern Collared Lizard	2



Rocky hillsides were eagerly sought by participants of the KHS Fall Field Trip. KHS members caught many snakes on this hillside in northern Clay County, Kansas, just south of Washington County. Photograph courtesy of Olin Karch.

Snakes

Eastern Racer	12
Gopher Snake	2
Common Garter Snake	12
Ringneck Snake	13
Northern Water Snakes	7
Lined Snake	1
Western Rat Snake	6
Common Kingsnake	1
Massasauga	1

TOTAL

16 species ±496 specimens

Clay County

Snakes

Great Plains Rat Snake	1
Prairie Kingsnake	2
Plains Garter Snake	1

TOTAL

3 species 4 specimens

Marshall County

Snakes

Western Rat Snake	1
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TOTAL

1 species 1 specimen

GRAND TOTAL

19 species ±501 specimens



Eastern Racers were an abundant component of the herpetofauna of Washington County, Kansas. Many were caught and released. Shown here are both adults and juveniles. Photograph courtesy of Olin Karch.



Searching for amphibians in aquatic situations is irresistible to most KHS members and field trip participants. Here, a young herpetologist stalks a creature along a roadside ditch in Washington County, Kansas. Photograph courtesy of Suzanne L. Collins.



Eric Kessler and his band of merry herpers were always eager to hit the road, particularly at night when creatures were out and about. They are shown here, hanging near the car, ready to go at a moment's notice. Night life during the KHS fall field trip to Washington County, Kansas, took on a new meaning for these folks. Photograph courtesy of Suzanne L. Collins.



Flailing for frogs is another delightful pastime on KHS field excursions. This Washington County roadside ditch saw a lot of net action during the 2002 fall field trip. Photograph courtesy of Olin Karch.



Students like to examine the catch up close. Here, a group of them handle one of the many serpents found during the KHS fall field trip to Washington County, Kansas. Photograph courtesy of Olin Karch.



Tanner Gravenstein from Meriden thinks Gopher Snakes are way cool, and easily handled this big one. This was one of two examples of this species found on the KHS fall field trip to Washington County, Kansas. Photograph by Suzanne L. Collins.



Finding a Massasauga is never easy, but Robin Oldham's sharp eyes spotted this little serpent along the dam at the state lake during the KHS fall field trip to Washington County, Kansas. Photograph by Olin Karch.



The Sunday morning group were the hard core herpers, and were rewarded for their persistence when they found the only Massasauga during the KHS fall field trip to Washington County, Kansas. Photograph by Suzanne L. Collins.

GEOGRAPHIC DISTRIBUTION & SIZE MAXIMA

Refer to *Journal of Kansas Herpetology* 3: 13 (2002) for instructions on how to submit to this section and style requirements.

HYLA CHRYSOSCELIS (Cope's Gray Treefrog). **KANSAS:** SUMNER CO: Sec. 6, T35S, R2W. 5 September 2002. Quinci Leighton Ward. KU Color Slide 11888. Verified by Larry L. Miller New county record (Collins, 1993. *Amphibians and Reptiles in Kansas*. Third Edition. Univ. Press of Kansas, Lawrence. xx + 397 pp.).

Submitted by **LARRY L. MILLER**, 840 SW 97th Street, Wakarusa, Kansas 66546.

PSEUDACRIS TRISERIATA (Western Chorus Frog). **KANSAS:** KINGMAN CO: Sec. 3, T27S, R8W. 14 June 2002. Keith Coleman. Sternberg Museum of Natural History, Fort Hays State University (MHP 7250). Verified by Joseph T. Collins. New county record (Collins, 1993. *Amphibians and Reptiles in Kansas*. Third Edition. Univ. Press of Kansas, Lawrence. xx + 397 pp.).

Submitted by **KEITH COLEMAN**, 2424 Cedarwood Avenue, Lawrence, Kansas 66046.

CROTAPHYTUS COLLARIS (Eastern Collared Lizard). **KANSAS:** WASHINGTON CO: Co: Sec. 32, T4S, R5E, N39.65556, W96.89628. 28 September 2002. Russell Toepfer and Evan Mielke. Sternberg Museum of Natural History, Fort Hays State University (MHP 7365). Verified by Joseph T. Collins. New county record (Collins, 1993. *Amphibians and Reptiles in Kansas*. Third Edition. Univ.

Press of Kansas, Lawrence. xx + 397 pp.).

Submitted by **EVAN MIELKE**, 4708 Woodland Drive, Lawrence, Kansas 66049.

LAMPROPELTIS GETULA (Common Kingsnake). **KANSAS:** WASHINGTON CO: Sec. 29, T1S, R3E. 1 October 2002. Travis W. Taggart. Sternberg Museum of Natural History, Fort Hays State University (MHP 7355). Verified by Curtis Schmidt. New county record (Collins, 1993. *Amphibians and Reptiles in Kansas*. Third Edition. Univ. Press of Kansas, Lawrence. xx + 397 pp.).

Submitted by **TRAVIS W. TAGGART**, Sternberg Museum of Natural History, Fort Hays State University, Hays, Kansas 67601.

THAMNOPHIS RADIX (Plains Garter Snake). **KANSAS:** CLAY CO: Co: Sec. 17, T6S, R3E. N39.55057, W97.10844. 27 September 2002. Suzanne L. Collins & Joseph T. Collins. Sternberg Museum of Natural History, Fort Hays State University (MHP 7342). Verified by Travis W. Taggart. New county record (Collins, 1993. *Amphibians and Reptiles in Kansas*. Third Edition. Univ. Press of Kansas, Lawrence. xx + 397 pp.).

Submitted by **SUZANNE L. COLLINS**, The Center for North American Herpetology, 1502 Medinah Circle, Lawrence, Kansas 66047.

LACERTA BILINEATA (Western Green Lacerta) **KANSAS:** SHAWNEE CO: Topeka, 23rd Street & Burnett Road. 4 September 1999. James Gubanyi. Sternberg Museum of Natural History, Fort Hays State University (MHP 7248, sex undetermined). Verified by Travis W. Taggart. New maximum size for Kansas of 8 7/8 inches total length.

Submitted by **JAMES E. GUBANYI**, 2501 Burnett Avenue, Topeka, Kansas 66614.

ARIZONA ELEGANS (Eastern Glossy Snake). **KANSAS:** MORTON CO: Sec. 35, T33S, R42W. 1 June 2002. Phillip Cass. Sternberg Museum of Natural History, Fort Hays State University (MHP 7244, female). Verified by Mark Ellis. New maximum size for Kansas of 46 1/4 inches (Collins, 1993. *Amphibians and Reptiles in Kansas*. Third Edition. Univ. Press of Kansas, Lawrence. xx + 397 pp.).

Submitted by **SUZANNE L. COLLINS**, The Center for North American Herpetology, 1502 Medinah Circle,

Lawrence, Kansas 66047, and **JOSEPH T. COLLINS**, Kansas Biological Survey, 2021 Constant Avenue, Lawrence, Kansas 66047.

THAMNOPHIS PROXIMUS (Western Ribbon Snake). **KANSAS:** EDWARDS CO: Sec. 5, T24S, R18W. 2 June 2002. James Gubanyi and Keith Coleman. Sternberg Museum of Natural History, Fort Hays State University (MHP 7243, female). Verified by Curtis Schmidt. New maximum size for Kansas of 39 1/2 inches (Collins, 1993. *Amphibians and Reptiles in Kansas*. Third Edition. Univ. Press of Kansas, Lawrence. xx + 397 pp.).

Submitted by **JAMES E. GUBANYI**, 2501 Burnett Avenue, Topeka, Kansas 66614, and **KEITH COLEMAN**, 2424 Cedarwood Avenue, Lawrence, Kansas 66046.



NOTES

OSAGE COUNTY HERP COUNT I

On 20–21 April 2002, Jim Gubanyi led a herpetofaunal count in Osage County at the junction of U.S. Rts. 268 & 68 from 10:30 pm to 1:30 am. Participants: Jim Gubanyi & Keith Coleman.

Smallmouth Salamander	15
American Toad	7
Northern Cricket Frog	2
Western Chorus Frog	5
Cope's Gray Treefrog	6
Plains Leopard Frog	4
Lined Snake	1
Plainbelly Watersnake	1

Total

8 species 41 specimens

Submitted by **JAMES E. GUBANYI**, 2501 Burnett Avenue, Topeka, Kansas 66614.

OSAGE COUNTY HERP COUNT II

A herpetofaunal count was held on 18 May 2002 from 10:30 am to 1:30 pm at Osage County State Fishing Lake. Participants: Mary Kate Baldwin, Chuck Bratton, Joseph T. and Suzanne L. Collins, Donna Linton and Marc Linton, Larry L. and Suzanne L. Miller, William Millhuff, Julian Mullican, Chris Ochsner, Jim Ramberg, and Shane Ward.

American Toad	1
Northern Cricket Frog	±20
Plains Leopard Frog	4
Bullfrog	2
Painted Turtle	1
Ornate Box Turtle	1
Five-lined Skink	5
Eastern Racer	1
Common Garter Snake	1

Total

9 Species ±36 Specimens

Submitted by **LARRY L. MILLER**, 840 SW 97th Street, Wakarusa, Kansas 66546.

SHAWNEE COUNTY HERP COUNT

A herpetofaunal count was conducted in Shawnee County at an area near Colby Creek and E of 97th & Jordan Road (NE of Wakarusa) on 19 May 2002 from 8:00 pm to 10:30 pm. Temperature was 59° F with high humidity, Count methods consisted of visual observation and board and

rock turning. Participants: Larry L. Miller and Suzanne L. Miller.

American Toad	1
Northern Cricket Frog	3
Gray Treefrog (calling)	1
Plains Leopard Frog	8
Great Plains Skink	1
Ringneck Snake	9
Eastern Racer	1
Western Rat Snake	1
Milk Snake	1
Northern Water Snake	1
Common Garter Snake	2

Total

11 Species 29 Specimens

Submitted by **LARRY L. MILLER**, 840 SW 97th Street, Wakarusa, Kansas 66546.

SUMNER COUNTY HERP COUNT

A herpetofaunal count was held by Larry L. Miller south of Caldwell along the Oklahoma border on 20 April. Participants were Shane Adamson, Soniahena Arnett, Mary Kate Baldwin, Molly Bostwick; Kearstin Burns' Barre Cowen; Maura Crume; Dakota Davis; Gail and Grant Feely; Brae Halling; Danny Jackson; Keith and Zach Johnson; Corey Jones; Anthony, Awayla, and Tim Kelly; Autumn Koehler; Kati and Mike Lebeda; Whitney Marcum; Larry Miller; Krystal Richard; Jason Sebrins; Dylan Walta; Janeen Walters; Carli, Quinci, Quinn, Nina, Cory, Colten, and Darin Ward; Linda Williams; and Brittnee York.

Northern Cricket Frog	4
Great Plains Narrowmouth Toad	1
Ornate Box Turtle	1
Western Slender Glass Lizard	1
Prairie Lizard	3
Southern Prairie Skink	13
Six-lined Racerunner	3
Ringneck Snake	±60
Coachwhip	1
Common Kingsnake	1
Ground Snake	3
Western Ribbon Snake	1
Common Garter Snake	3

Total

13 Species ±95 Specimens

Submitted by **LARRY L. MILLER**, 840 SW 97th Street, Wakarusa, Kansas 66546.

ARTICLES

NATURAL HISTORY OF THE NIGHT SNAKE, *HYP SIGLENA TORQUATA*, IN KANSAS

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Collins (1993) states "Probably less is known about the natural history of (*Hypsiglena torquata*) than any other species in the state." Investigations since 1993 into the natural history of the herpetofauna of Barber County, Kansas, have revealed additional records of this species that disclose significant information about this species' natural history and population status in Kansas, which I report herein.

Methods

Data contained in this report have been gathered from both living and museum specimens at the University of Kansas, Museum of Natural History (KU). SV, tail, and TL were measured for both living and preserved specimens. Mass was recorded for living specimens. Preserved specimens were dissected to reveal stomach and intestinal contents, sex, and eggs. Live specimens were either probed or visually examined to determine sex. Gravid females were palpated to determine egg number but ovulating females were not so treated because of potential follicle rupture. Most live specimens were scale-clipped and released at exact capture sites to track growth rates and determine population status at study sites on the Alexander Ranch in Barber County, Kansas. No live specimens have been preserved during the course of my field studies.

Range

Hypsiglena torquata is currently known from 23 preserved specimens from Clark, Comanche, and Barber Counties. Miller (1987) states that this "snake may be discovered in more counties along the southern border of Kansas." To the west, it is possible that *Hypsiglena* may occur in southeastern Meade County but it is unlikely that this snake occurs east of Barber County, as suitable habitat does not exist to sustain this species in that area.

To the north, it is probable that this snake occurs in southeastern Kiowa County, as a specimen has been found

north of the Medicine Lodge River in adjacent Barber County. It may also occur in Red Hills outliers in Pratt and Kingman Counties, with Kingman being more likely than Pratt.

Sex Ratio

Of 33 specimens, living and preserved, examined during the course of this study, 16 were males and 17 were female, which is parity.

Size

Individuals captured in the course of this study have ranged from 161-334 mm in snout-vent length (SV). Adult males (n=5) ranged from 225-285 mm SV while adult females (n=6) have had SV's of 314-334 mm. Adult male tail length (T) ranged from 33-52 mm while female T ranged from 43-49 mm.

Preserved specimens ranged from 131-355 mm SV. Adult males (n=8) ranged from 201-270 mm SV with Ts of 49-61 mm. Two yearling males had SVs of 134 and 138 mm respectively, with Ts of 25 and 27 mm. Adult females (n=7) had SVs of 203-355 mm with Ts of 29-54 mm. Two yearling females had SVs of 131 and 136 mm respectively, with Ts of 19 and 20 mm. A single 2-year female had an SV of 160 mm with a T of 23 mm.

For all specimens, male T averages 20% of SV (range - 18.7-23.7%), while female T averages 15% of SV (range - 14.0-15.3%). This is a typical colubrid pattern, males having longer tails than females.

Adult males averaged 9.1 g mass (range 4.5-15.0 g) while adult females averaged 14.1 g mass (range 11.0-25.0 g).

Reproduction

Male-female pairs have been found as early as 1 May and as late as 26 May, although copulation has not been observed. Tennant (1984) reports a 10 May copulation for a Texas pair.

Ovulating females have been found as early as 13 May with gravid individuals having been found from 25 May–9 June. One preserved specimen (KU 189386), collected 3 May 1981, contained 3 well-developed, but unshelled, ova. Hibbard (1937) reported a gravid Kansas specimen on 12 June. However, of seven adult females found by me in the prime breeding period, only three have been gravid. In addition, only one preserved female collected during the reproductive period contained eggs. This may indicate a biennial breeding cycle, although the total data set is obviously too small to draw a definitive conclusion.

Gravid females have contained 2–5 eggs. Hibbard (1937) reports a clutch of four eggs for a Kansas specimen and Collins (1993) speculated that Kansas animals may lay 2–6 eggs. Dundee (1950) records a clutch of six from Oklahoma and Degenhardt et al. (1996) list a range of 3–6 eggs in New Mexico. Tanner and Ottley (1981) reported a clutch of nine eggs for a Sonora, Mexico specimen. This appears to be the maximum clutch size for this species.

Time from mating to egg-laying (which I term latency and is not the same as gestation) for this species in Kansas remains unknown, although Dundee (1950) noted a female collected in Oklahoma on 5 June laid a clutch on 7 July, which indicates a latency period of no less than 33 days. A female found during this study that was ovulating on 13 May was found to be gravid on 9 June, a period of 28 days.

Hibbard (1937) states a 12 June egg-laying date and this remains the only such record for Kansas. Tennant (1984) reports that Texas *Hypsiglena* lay eggs from early April–late June and Fitch (1970) indicates the genus may have an extended reproductive period. Degenhardt, et al. (1996) report gravid females in New Mexico from late April–early September and Tanner and Ottley (1981) give a 28 August laying date, all of which corroborates Fitch's hypothesis. Degenhardt, et al. (1996) also indicate the possibility of multiple clutches. However, at least in Kansas and based on living and preserved specimens, the reproductive period appears to be much shorter, lasting from early May to mid-June.

Incubation period for Kansas animals also remains unknown. Tennant (1984) records 54 days for a Texas specimen and Tanner and Ottley (1981) report 59 days for a Sonora, Mexico specimen.

Diet

Hypsiglena torquata has been recorded as consuming a variety of lizards, occasional snakes, and amphibians from elsewhere in its range (Degenhardt, et al. 1996; Webb, 1970). In Kansas, Miller (1987) reports *H. torquata* consuming *Tantilla nigriceps* and Collins (1993) states that this snake “feeds principally on small lizards.”

Examination of gastrointestinal tracts from preserved specimens and fecal analysis of living specimens has

revealed the following prey species in Kansas: *Cnemidophorus sexlineatus*, *Sceloporus undulatus*, *Phrynosoma cornutum*, *Eumeces* sp. (either *E. obsoletus* or *E. obtusirostris*), and *Leptotyphlops dulcis*. In addition, considerable remains from orthopteran and coleopteran invertebrates were found in feces but it is likely that these are artifacts of lizard prey, and not snake prey as reported by Tanner and Banta (1966). However, these secondarily consumed arthropods may contribute caloric or mineral nutrition to *Hypsiglena torquata* individuals.

It is evident from the results of this study that *Hypsiglena torquata* is a reptile specialist in Kansas, with a preference for lizards. *H. torquata* is capable of immobilizing *C. sexlineatus* within 15 seconds of a bite (pers. obs.) and no doubt its venom is fully proficient in doing the same to other relatively unarmored species such as small *Crotaphytus* and *Phrynosoma*. Finding *Leptotyphlops* prey confirms Webb's anecdotal observation (1970).

Activity Period

The earliest date of seasonal activity I have observed is 1 May and the latest date is 26 September. Miller (1987) records a 3 May date and Collins (1993) quotes a late date of 21 October. The vast majority of my observations of this snake (11) have been in May, with two records in June, and one September record. Preserved Kansas specimens have been taken as early as 17 April and as late as 21 October. These specimens were collected in April (3), May (3), June (5), July (1), September (1), and October (1). It appears that *Hypsiglena* is late emerging relative to other reptile species in Kansas but may have a long overall activity period (seven months). Peak observed activity is late May to early June, after which specimens probably disperse to underground retreats with the onset of very warm, dry weather. Cooler weather associated with moisture and the presence of neonate prey after August may stimulate a return to surface activity. If this species does aestivate in Kansas, then its actual yearly activity period may only be 3–4 months.

Diel activity for this serpent is usually stated to be strictly nocturnal (Collins, 1993; Tanner and Banta 1966). Observations by me of specimens held briefly in captivity confirm this. Specimens only emerge from substrate retreats after full darkness and are active throughout the night.

Behavior

The Night Snake is an inoffensive animal, never attempting to bite. I have observed two interesting defensive behaviors, though.

On two occasions, and involving three individuals, captured snakes have assumed a tight, ascending coil, which formed a low cone, with the head hidden in the

center. All three individuals held this posture for several minutes, even allowing themselves to be turned upside down without uncoiling. All three snakes were found after unusually cold evenings and were relatively sluggish, and this posture may be related to the animals' relative inability to move. Price (1987) reports a similar behavior for a Texas specimen. I have seen photographs of *Hypsiglena* from as far away as California showing a similar pyramidal coil. However, the specimens were not hiding their heads in coils.

On another occasion on 6 May 1977, I placed an adult *Diadophis punctatus* with a similarly sized *Hypsiglena* from Clark County, Kansas. Upon being tongue-flicked and touched bodily by the *Diadophis*, the Night Snake immediately assumed a stiff, C-shaped coil with the head and tail bent inwards at 60° angles. The head was depressed into the substrate and the upper third of the body was slightly raised. The *Hypsiglena* then violently bridged the *Diadophis*, literally throwing it a couple of inches. This behavior was repeated every time the *Diadophis* touched the *Hypsiglena*.

A large (382 mm TL) adult female *Hypsiglena* captured on 13 May was subsequently recaptured on 9 June of the same year. In this time, the individual had traveled a distance of ca. 70 meters WNW of its previous capture site.

An adult male *Hypsiglena* was found on 29 May in contact association with an adult female *Sonora*. The *Sonora* was 21 mm longer and twice as heavy as the *Hypsiglena*, so it is doubtful that the *Hypsiglena* was seeking it as a prey item, although Degenhardt et al. (1996) postulate that *Sonora* is probable Night Snake prey in New Mexico.

Hypsiglena appears to be adverse to water contact. Specimens held briefly in captivity react violently to being placed into water bowls to drink, attempting to flee at the slightest contact with water. It is unknown whether this snake actually drinks or depends on prey for its water needs, as is known for many desert vertebrates.

Parasites

One specimen (KU 206236) contained numerous small nematode-like worms in the colon.

Habitat Preference

Hypsiglena discovered in the course of this study have always been associated with limestone outcrops of south, west, or north exposures at 1800–1920 feet elevation. Under rock soil pH at these sites has ranged from 6.9–7.0, whereas exposed surface soils have pH's of 5.8–5.9. Individual rocks chosen by *Hypsiglena* in this study generally are small- to medium-sized, although individuals may rarely choose large slabs. Miller (1987) reports finding two individuals hidden deeply within crevices in a large gypsum boulder. As this boulder appeared to have been the

only available cover in sub-optimum habitat, it is possible it was used as a temporary refuge for migrating individuals. On the other hand, since the individuals were a male-female pair, it may be that the male pursued the female into an atypical hiding spot. It is possible that *Hypsiglena* may use gypsum boulders for refuge on a regular basis but I believe this unlikely when more suitable habitat is available.

The limestone outcrops referred to herein lie at canyon rims in the deeply dissected topography of the Gypsum Hills and Red Hills provinces of Kansas. Sandstones also occur in these provinces and it is possible that *Hypsiglena* may use this material for cover. I have never found this snake in association with gypsum, marls, or marl-like limestones, or imbedded, soft sandstones.

Predators

There are no records of any predators feeding upon the Night Snake in Kansas and I have not observed predation on this species. However, there are a number of potential vertebrate predators that have been observed in the area and I list them here: Coyote, Badger, Red Fox, Striped Skunk, feral pig, Longtailed Weasel, Raccoon, Grasshopper Mouse, American Kestrel, Merlin, Prairie Falcon, Mississippi Kite, Cooper's Hawk, Sharp-shinned Hawk, Greater Roadrunner, Eastern Screech Owl, Burrowing Owl, Long-eared Owl, Loggerhead Shrike, Blue Jay, Black-billed Magpie, American Crow, Eastern Collared Lizard, Great Plains Skink, Common Kingsnake, Coachwhip, and Eastern Racer.

It is likely that invertebrates may be the most important predators of *Hypsiglena* in Kansas. I believe the most probable candidates are the centipede (*Scolopendra* sp.), the striped scorpion (*Centruroides vittatus*), black widow spider (*Latrodectus mactans*), and tarantula (*Dugesia hentzi*). All four are common to abundant in the area, known to take snake prey, and are primarily nocturnal. The scorpion and black widow are most likely to take neonate snakes due to their small size but the spider may take larger individuals because of its strong web and powerful venom. The tarantula and centipede are capable of consuming all size classes of Night Snake.

Population Status

Although uncommon, *Hypsiglena* does not appear to be particularly rare in the Gypsum Hills. I have found this snake at four different localities on the Alexander Ranch. These localities occur over a three linear mile area. In addition, adequate habitat for this snake occurs at a least 11 other sites on the ranch. During a brief initial survey of the Turkey Creek Ranch north of Sun City in Barber County, one specimen of this species was discovered after a 45-minute search.

To date, I have located 14 individuals of this snake over a six-year period. Prior to beginning work on the Alexander Ranch, only 23 *Hypsiglena* specimens were known from Kansas over a 55-year period.

Over this same six-year period, I have discovered 12 specimens of *Diadophis punctatus*, 9 specimens of *Sonora semiannulata*, and only one specimen of *Crotalus viridis* on this ranch, all allegedly common species in this area. None of these species has any legal protection in the state and the latter species has undergone a massive population decline in the Gypsum and Red Hills provinces of Kansas over the past 11 years.

Cattle ranching activities do not appear to have a detrimental effect on this snake and intensive rangeland management may, in fact, enhance habitat and food sources for this snake.

Obviously, farming agriculture would have a deleterious effect on *Hypsiglena* but habitat suitable for this snake is never suitable for farming in the Gypsum Hills and Red Hills

There are two potential threats at this time to *Hypsiglena* populations in Kansas. One is a recent introduction of feral pigs to the area and the other is explosive growth and expansion of red cedars (*Juniperus* sp.) throughout the area over the past 40 years.

Of the two threats, I believe that pigs represent a minimal threat at this time. The feral pig population appears to have stabilized over the past two years in Barber County and is mostly confined to creek and river floodplains. Pig sign has been observed on the Alexander Ranch in *Hypsiglena* habitat on one date in two localities. These observations were made after a particularly harsh winter that may have forced pigs to forage in areas that they normally would not. It could not be determined if pigs were present when *Hypsiglena* were active.

The spread of the red cedar, on the other hand, may represent a real threat to *Hypsiglena* populations in certain areas of the Gypsum Hills. This tree has a tendency to emerge from creek floodplains and canyon bottoms and spread up to and enclose canyon ridgelines, which is primary *Hypsiglena* habitat. The enclosing cedar canopy removes open areas upon which the heliothermic prey of this snake depends. In other words, cedars drive out *Crotaphytus*, *Cnemidophorus*, and *Sceloporus*, the primary foods of *Hypsiglena* in this area.

The exact extent of cedar infestation in the Gypsum Hills is unknown at this time. A wildfire in 1993 destroyed most cedars in the southwestern 1/4 of Barber County and they have not returned since then. A controlled burn between the Sun City and Lake City Roads on the west and east and U.S. Highway 160 and the Medicine River Road on the south and north in 1997 eliminated a majority of cedars in that area. Smaller burns and active cedar cutting have occurred at a variety of localities in western Barber

County over the past six years. However, a large area of central Barber County appears to be increasingly threatened by cedar encroachment. If suitable Night Snake habitat occurs in this area, and it appears that it does, then these populations may be at risk. Cedar encroachment in the Red Hills provinces of Comanche and Clark Counties does not appear to approach that of central Barber County and I do not deem this a risk to *Hypsiglena* in those counties.

Cedars can easily be controlled with fire and subsequent intensive grazing management practices. Land so managed in this area is enhanced for all species, including the Night Snake.

Hypsiglena torquata is currently listed as a Threatened Species by the Kansas Department of Wildlife and Parks (KDWP). The primary factors in giving the species such status appear to be its limited range in Kansas (three counties) and small numbers of museum specimens at the time of listing, despite no actual evidence of a demonstrated threat to the snake.

Because the Night Snake appears to be more common than previously thought (in fact, more common than currently unprotected species) and no demonstrated threat (other than cedar encroachment in limited areas) has been proven to exist, I propose that *Hypsiglena torquata* be downlisted by KDWP from Threatened Species to Species-in-Need-of-Conservation (SINC). This status still affords the species legal protections and allows other workers to concentrate on other species whose populations may actually be threatened.

Summary

The Night Snake occurs in three Kansas counties and may yet be discovered in Kiowa (likely), Meade, Pratt, and Kingman Counties.

This species' sex ratio is at parity in Kansas.

The smallest specimen from the state is 131 mm snout-vent length with a tail length of 19 mm. The largest specimen is 355 mm snout-vent with a tail length of 54 mm. Tail length averages 20% of snout-vent length in males and averages 15% snout-vent length in females.

The reproductive period for this snake is late April-mid-June. Courtship may occur from late April-late May with ovulation occurring as early as 3 May. Egg-laying probably occurs from late May-mid-June with hatching sometime in mid-July-early August. There does not appear to be an extended reproductive period for this serpent in Kansas as may occur elsewhere in its range.

Hypsiglena prefers lizard prey here but also takes small snake prey.

This snake is active from mid-June to late October but is most active from May to mid-June. It appears to have an activity period of seven months in Kansas but its actual

activity period may only be 3–4 months if it aestivates.

The Night Snake never attempts to bite and engages in an unusual head-hiding behavior that is widespread in the species. It also exhibits an unusual bridging behavior. Specimens are capable of moving as much 2.6 ft per day. This snake may also not drink but gain water metabolically.

This snake prefers limestone outcrops at canyon rims but may rarely use gypsum rock for cover. It is possible that it uses sandstone cover if available.

Potential predators include a number of mammals, birds, reptiles, and invertebrates. It is likely that invertebrates are the most significant predator on this serpent.

The Night Snake is more common than previously thought. The only current threats to this species appear to be feral pigs and red cedar invasion, both of which are minimal in the overall context of this snake's range in Kansas. I recommend that *Hypsiglena torquata* be downlisted from *Threatened Species* to *Species-In-Need-of-Conservation*.

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The Kansas Herpetological Society

The *Kansas Herpetological Society* is a non-profit organization established in 1974 and designed to encourage education and dissemination of scientific information through the facilities of the Society; to encourage conservation of wildlife in general and of amphibians, turtles and reptiles in Kansas in particular; and to achieve closer cooperation and understanding between herpetologists, so that they may work together in common cause.

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The *Journal of Kansas Herpetology*, issued quarterly, publishes peer-reviewed manuscripts and notes dealing with the biology of amphibians, turtles and reptiles. Manuscripts should be submitted to the Editor no later than the 10th of the month prior to the month of issuance. All manuscripts become the sole possession of the Society, and will not be returned unless arrangements are made with the Editor. Pen and ink illustrations and photographs are also welcomed. Illustrations and photographs will be returned to the author only upon request. The *Journal of Kansas Herpetology* uses the common names standardized nationwide by Collins & Taggart (2002).

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Nominations should include, but are not limited to, academic record, herpetological activities, and future plans in herpetology. Academic record should address schools attended and an indication of academic performance in each (e.g., grade point average, teacher evaluations, courses completed). Herpetological activities should include a brief narrative that details experiences and activities that demonstrate a long-term interest in herpetology, and documents accomplishments in herpetological study. Future plans in herpetology should include a statement, not to exceed one-page, written by the student about his/her future interests and plans.

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KHS members only are eligible to apply for The Alan H. Kamb Grant for Research on Kansas Snakes. The recipient of the grant (minimally \$100.00) will be selected by the KHS Awards Committee. If no qualified proposals are submitted, no award will be made for that year.

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Proposals should be sent to the KHS Awards Committee Chair, and must be postmarked by 15 September. The grant recipient will be announced at the annual meeting in November. New applications will be accepted after 1 January of the following year.

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Conditions and Stipulations: The Award shall be known, presented, and portrayed as the *Suzanne L. & Joseph T. Collins Award for Excellence in Kansas Herpetology* and may not be changed for any reason, nor added to or merged with any other award, prize, or gift. The Award is established in recognition of the scientific and photographic achievements of Suzanne L. Collins and Joseph T. Collins, whose life-long study and conservation of the native amphibians, turtles, and reptiles of Kansas is amply demonstrated in their extensive and excellent writings and photography, both academic and popular, about these animals.

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