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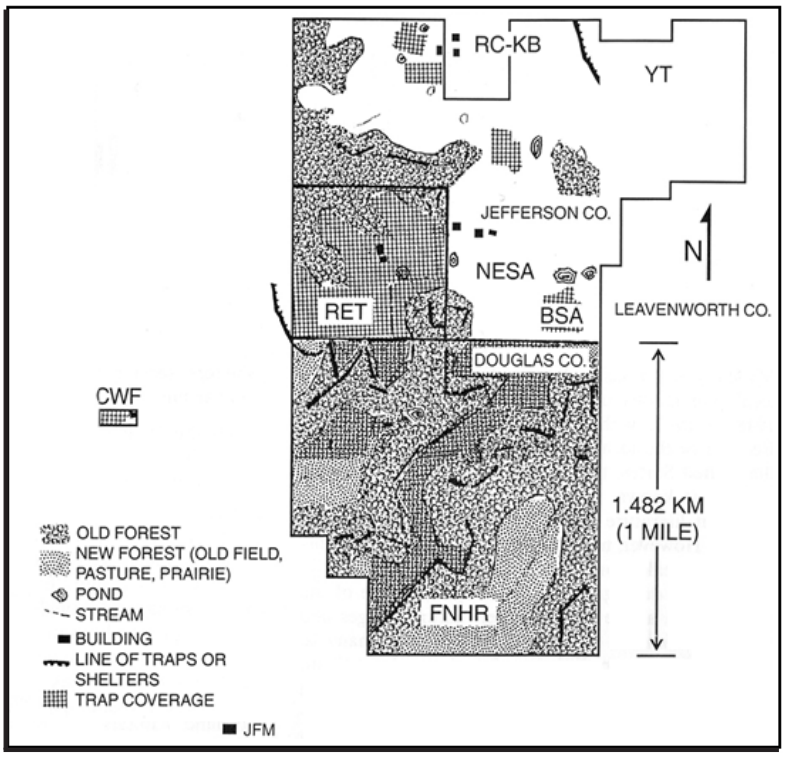

Published by the Kansas Herpetological Society

Kansas Herpetological Society

KANSAS HERPETOLOGICAL SOCIETY OFFICERS FOR 2003

Front Cover: Map of the most ecologically studied site on earth. The tracts comprise the KU Ecological Reserves, where Henry S. Fitch has conducted unprecedented mark-and-recapture studies from 1948 to the present. Reprinted from *A Kansas Snake Community: Composition and Change over 50 Years,* by Henry S. Fitch and published by Krieger Publishing Company, Malabar, Florida (1999).

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Journal of Kansas Herpetology

NUMBER 7 — SEPTEMBER 2003

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ARTICLES

Kansas Herpetological Society
30th Annual Meeting

8–9 November 2003

Science Hall
Emporia State University
Emporia, Kansas

If you wish to present a paper, email the title, abstract, and your address or institutional affiliation to KHS President Greg Sievert at sievertg@emporia.edu (or send same via US mail to his address; see inside front cover of the Journal of Kansas Herpetology). In addition, please email your title and institutional affiliation to Joe Collins (jcollins@ku.edu) for inclusion on the web site. The deadline is 1 October 2003. Generally, talks are restricted to twenty minutes or less. Detailed programs will be available at the registration table.

All scientific paper sessions for the KHS 30th Annual Meeting will be held in the Emporia State University Science Building (see the ESU campus map on page 4) on the Emporia State University campus, Emporia, Kansas, on 8–9 November 2003. Those planning to attend should check the KHS web site at

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

to obtain up-to-date information about speakers and motel availability.

Registration is at the door with the KHS Treasurer on Saturday and Sunday: Students (6th through 12th Grade) $5.00 per person; all others $10.00 per person.

The annual KHS auction will be held on Saturday night (8 November) near Emporia, Kansas, at the Ross Natural History Reservation (maps will be provided at the meeting). All proceeds from the auction go to the KHS. Refreshments will be free.

Live Exhibit. A live exhibit of native Kansas herpetofauna will be assembled, and will be available for viewing and photographing on Saturday and Sunday.

Program

Saturday, 8 November 2002

8:00 am Registration for both days: Mary Kate Baldwin (KHS Secretary) and Eric Kessler (KHS Treasurer) in the main foyer at ESU Science Building (see the ESU Campus Map), Emporia State University, Emporia, Kansas. Free coffee and donuts will be available.

8:45 am Welcome by Greg Sievert (KHS President)

Scientific Paper Session 1 in Room 72 of the ESU Science Building, Emporia State University

9:00 am KEYNOTE SPEAKER: *Steven J. Beaupre, University of Arkansas, Fayetteville*. Topic: *From Climate Change to Climbing Snakes: Long Term Studies on Timber Rattlesnakes in the Ozarks.*

9:45 am Paper presentations until 10:30 am

Scientific Paper Session 2 in Room 72 of the ESU Science Building, Emporia State University

10:40 am Paper presentations until 11:40 am

11:40 am to noon KHS Group Photograph taken by Larry L. Miller (Kansas Heritage Photography, Wakarusa)

LUNCH: noon to 1:20 pm at the restaurant of your choice

Scientific Paper Session 3 in Room 72 of the ESU Science Building, Emporia State University

1:20 pm Paper presentations until 4:00 pm

4:00 pm KHS General Business Meeting

KHS President Greg Sievert presiding in Room 72 of the ESU Science Building, Emporia State University

Introduction of current KHS officers by Greg Sievert
KHS Treasurer's Report for 2003 by Eric Kessler
KHS Secretary's Report for 2003 by Mary Kate Baldwin
KHS Editor's Report for 2003 by Travis W. Taggart
The 31st Annual KHS Meeting at Manhattan, Kansas, in November 2004 by President-Elect Eva Horne.

Election of KHS Officers for 2004. The KHS Nominating Committee offers the following slate of candidates:

For President
Eva Horne, Kansas State University, Manhattan, Kansas; serving as president-elect during 2003, she automatically assumes the KHS presidency on 1 January 2004

For President-Elect
Jay Kirk, Friends University, Wichita, Kansas
David Oldham, Labette County Community College, Parsons, Kansas

For Treasurer (unopposed)
Eric Kessler, Blue Valley North High School, Overland Park

For Secretary (unopposed)
Mary Kate Baldwin, Topeka Collegiate School

Announcement of the results of the KHS election by the Elector, Mary Kate Baldwin

Presentation of the Howard Kay Gloyd-Edward Harrison Taylor Scholarship for 2003 by Robert Powell (KHS Awards Committee Chairperson)
Presentation of the Alan H. Kamb Grant for Research on Kansas Snakes for 2003 by Robert Powell (KHS Awards Committee Chairperson)

DINNER: 5:00 pm to 6:30 pm at the restaurant of your choice

6:30 pm KHS Auction and Social at the Ross Natural History Reservation. At approximately 6:45 pm, the presentation of *The Suzanne L. & Joseph T. Collins Award for Excellence in Kansas Herpetology* for 2003 by Kelly Irwin (Arkansas Game & Fish Commission) will take place. The recipient of The Collins Award receives a commemorative certificate and a check for $1000.00.

At approximately 7:00 pm, the KHS Auction will be conducted at the Ross Natural History Reservation by Joseph T. Collins, ably assisted by KHS Secretary Mary Kate Baldwin and KHS Treasurer Eric Kessler, and featuring many excellent books and other items (of questionable value). The KHS takes cash, credit cards, and checks. Be sure and get a bidding number before the auction commences. Bid vigorously, and support the KHS.

Sunday, 9 November 2003

8:30 am Registration for participants that did not register on Saturday: Mary Kate Baldwin (KHS Secretary) and Eric Kessler (KHS Treasurer) in the main foyer at the ESU Science Building, Emporia State University, Emporia, Kansas. Free coffee and donuts will be available.

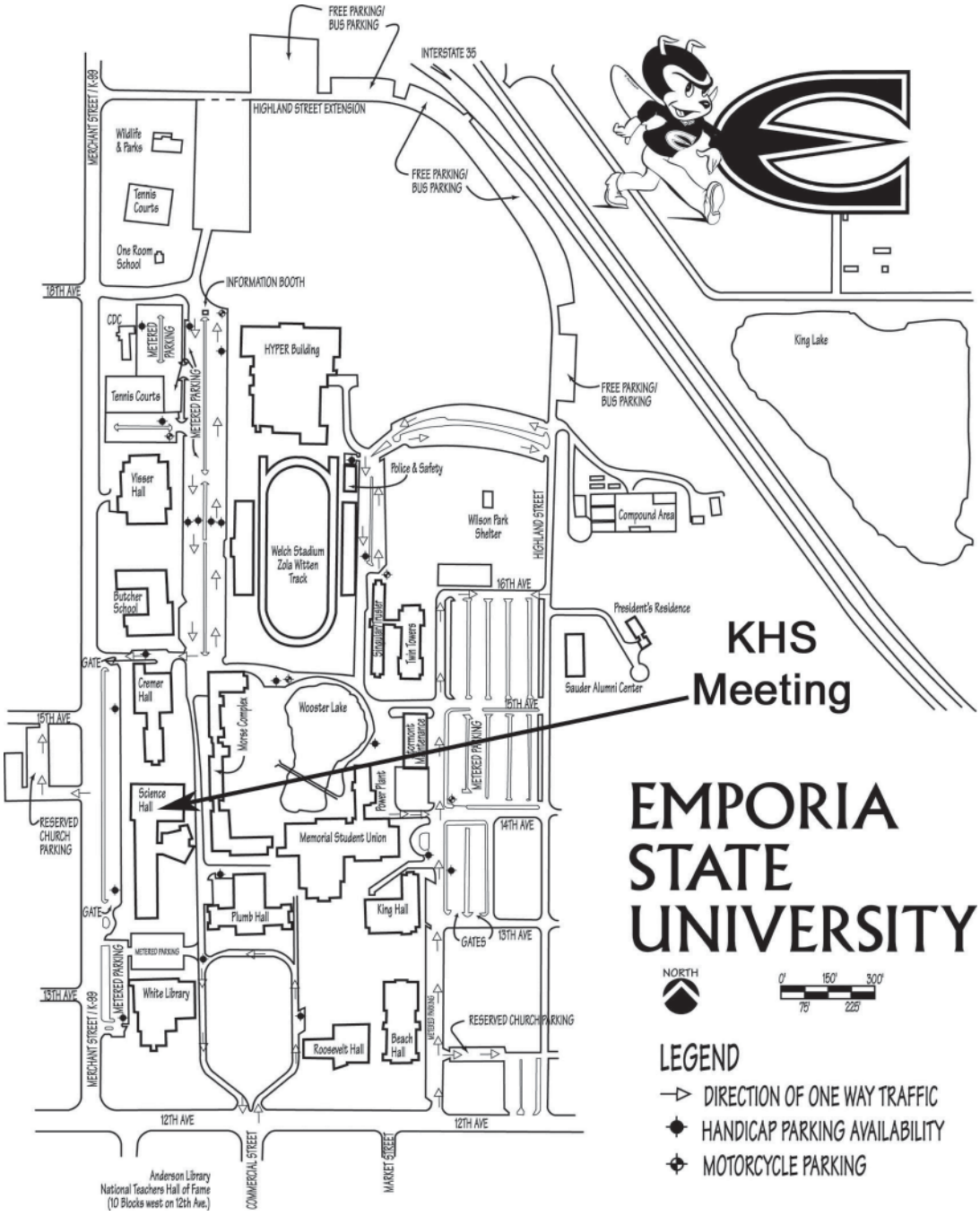
Scientific Paper Session 4 in Room 72 of the ESU Science Building, Emporia State University

9:00 am Paper presentations until noon (or earlier)

Have a safe trip home. See you in November 2004 in Manhattan, Kansas, for the 31st Annual KHS Meeting.

30th Annual Meeting Committee
Greg Sievert, Chairperson

Note: *The Suzanne L. & Joseph T. Collins Award for Excellence in Kansas Herpetology* will be given at this KHS 30th Annual Meeting in Emporia, Kansas, to the KHS member judged to have taken the best photograph of a native species of the Kansas herpetofauna. The KHS Awards Committee will select the recipient from entries at the meeting (see page 5 of this issue). During odd-numbered years (photography competition), only KHS members are eligible. During even-numbered years (scientific presentations or publications), candidates are strongly encouraged to join the KHS, because preference will be given to KHS members.



Once again, the KHS will meet in Emporia this November. The above map of the Emporia State University campus is furnished to help you find your way. Additional information and maps are available online at the KHS web site (see page 2 of this issue).

FALL KHS FIELD TRIP AT LEAVENWORTH COUNTY

The fall 2003 KHS field trip will be at Leavenworth County State Lake located in Leavenworth County in northeastern Kansas. The dates of the field trip are 11–12 October 2003. Although many participants will arrive the afternoon and evening of Friday, 10 October (look for the big KHS sign at the lake), the first organized foray will begin at 9:00 am on Saturday, 11 October. The second organized event will begin at 2:00 pm on Saturday, 11 October. The final organized survey will take place at 9:00 am on Sunday, 12 October. The meeting place for the field trips will be Leavenworth County State Lake, which is located approximately one mile north and three miles west of Tonganoxie. Please contact Jay Kirk, KHS Field Trip Chairperson (see inside front cover) for information about the availability of motels in Tonganoxie, as well as camping, restrooms, showers, and electrical hookups, and whether open campfires are permitted. This information will be posted on the KHS web site as it becomes available.

As with all KHS field trips, FRS channel 4 will be monitored. The Leavenworth County field trip will be the only official fall KHS field trip for 2003. There is a strong possibility that we will have access to the Fort Leavenworth Military Reservation on the morning of 11 October. Start making plans now to attend this exciting Society event.

KHS SCHOLARSHIP & GRANT DEADLINES

Individuals are reminded that the deadline is 15 September 2003 for submission of applications for the *Howard K. Gloyd-Edward H. Taylor Scholarship* and the *Alan H. Kamb Grant for Research on Kansas Snakes.* Self-nominations for the *Gloyd-Taylor Scholarship* are encouraged. Submissions for both the scholarship and grant should be sent to the Chairperson of the KHS Awards Committee (see inside front cover).

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 renewed, and will support the KHS and its many fine programs. Also, you will be eligible for KHS awards, grants, and scholarships.

KHS PHOTOGRAPHY COMPETITION

KHS members are invited to participate in a competitive exhibit of photographs of native Kansas amphibians, turtles, and reptiles, all of which will be candidates for *The Suzanne L. & Joseph T. Collins Award for Excellence in Kansas Herpetology.* The competing photographs will be featured and available for viewing near Room 72 in the Science Hall at Emporia State University from 10:00 am to 4:00 pm on Saturday, 8 November 2003. Photographers should plan to have their images set up *no later than* 10:00 am on that same date. All photographers exhibiting must be KHS members, and each photographer is limited to five (5) images. The photographer chosen as the 2003 recipient of *The Collins Award* must be present to receive it.

Images will be judged on originality, technical excellence, composition, color, action, drama, and overall impact. Entry to the competition constitutes agreement by the photographer to allow the winning photograph to be published by the KHS on its web site or in publicity releases. Entrants retain all other rights to the future use of their winning photograph. Prints must be mounted on stiff board for display purposes (no frames) and should be no larger than 11 x 16 inches. The back of each photograph must bear the photographer's name, address, telephone number, and entry number (1–5). The identity of the photographer will not be revealed to the members of the KHS Awards Committee. Photographers are responsible for their entries at all times. The KHS assumes no responsibility or liability for any photographic entries.

PAPERS ELIGIBLE FOR *THE COLLINS AWARD* IN 2004

The program for the KHS 30th Annual Meeting will be held at ESU Science Building, *Emporia State University,* Emporia, Kansas, on 8–9 November 2003. Presenters wishing to be considered for *The Suzanne L. & Joseph T. Collins Award for Excellence in Kansas Herpetology* for 2004 should so indicate with their submission.

OF INTEREST

KANSAS ANURAN MONITORING PROGRAM

The *Kansas Department of Wildlife and Parks* (Pratt), in cooperation with the *Sternberg Museum of Natural History,* Fort Hays State University (Hays), and *The Center for North American Herpetology* (Lawrence), is pleased to announce the launching of the KANSAS ANURAN MONITORING PROGRAM (KAMP) web site, effectively immediately at

http://www.cnah.org/kamp/

KAMP was established in 1998 by the Kansas Department of Wildlife & Parks (KDWP) through a grant from their Chickadee Checkoff funds to Joseph T. Collins of The Center for North American Herpetology in Lawrence, Kansas. With the encouragement, cooperation, and advice of Ken Brunson (KDWP), Collins organized and operated a volunteer effort of individuals who monitored the choruses of Kansas frogs, treefrogs, spadefoots, and toads over many routes across Kansas each spring and summer from 1998 through 2002. The data accumulated during those five years will eventually appear in its entirety on the KAMP web site. In addition to graphs showing chorusing strength and annual time span for singing activity for all species, the web site features color images by wildlife photographer Suzanne L. Collins, call recordings compliments of Keith Coleman, and a map by species of each site monitored, as well as access to information about routes and volunteers that ran them. Earlier this year, KDWP approached Travis Taggart (Sternberg Museum of Natural History) and requested that he organize and display the KAMP data online; the results of his excellent effort can be viewed at the above web site.

Travis Taggart is currently developing an interactive component to the KAMP web site that will permit past volunteers to log on and continue to monitor these interesting amphibians, starting in January 2004. In addition, Kansans interested in joining the volunteer effort will be permitted to acquire a new route of their own. Each individual will be able to enter her or his data online, and watch as the information on their route (and all the other KAMP routes) accumulates and builds through time.

For more information about KAMP, contact:

Ken Brunson
(620) 672-5911
kenb@wp.state.ks.us

Travis W. Taggart
(785) 650-0865
ttaggart@fhsu.edu

Joseph T. Collins
(785) 749-3467
jcollins@ku.edu

ERIN DUGAN RECOGNIZED

Seaman (USD 345) high school student, Erin Dugan, was recently presented with the Grand Champion Award for her display project and verbal presentation about the study of herpetology. The award was made during the annual Shawnee County 4-H Fair that was held in Topeka, Kansas, the week of 21–27 July 2003. Her project included information about Kansas herpetofaunal counts, non-native lizards, the *Kansas Herpetological Society, The Center for North American Herpetology,* and the study of herpetology in general. It included her detailed field notes covering the KHS Wilson County and Sumner County herpetofaunal counts for 2003, along with notes about non-native species of lizards established in Topeka. Also included were notes and photographs about an educational program on Alligator Snapping Turtles she attended at Northern Hills Junior High School on 13 March 2003. Congratulations to Erin.

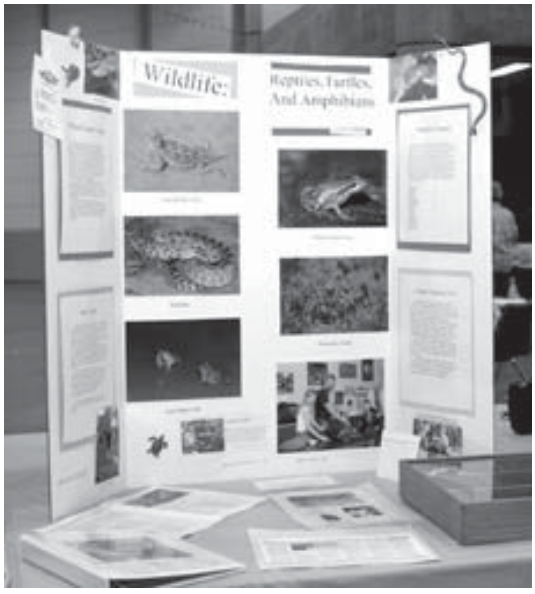


Figure 1. The award-winning herpetological display by Erin Dugan. Photograph by Larry L. Miller, Kansas Heritage Photography, Wakarusa, Kansas.

HERPETOFAUNAL COUNTS

The Kansas Herpetologial Society encourages both its members and non-members to sally forth across our state each year during April and May to conduct herpetofaunal counts. The results of these forays are reported in the September issue of the Journal of Kansas Herpetology. Compiled below are the counts for 2003.

COFFEY COUNTY HERP COUNT 1

On 4–5 April 2003, I conducted a Coffey County herpetofaunal count by road-cruising from 10:00 pm to 12:15 am. The following species were observed:

American Toad 1
Western Chorus Frog 10
Cope's Gray Treefrog 1
Crawfish Frog 1
Plains Leopard Frog 1
Bullfrog 1

Eastern Racer 1
Western Rat Snake 1
Plains Garter Snake 1
Graham's Crayfish Snake 1

Total

10 species ..... 19 specimens

ANDREW BURR, 902 South 7th Street, Burlington, Kansas 66839.

COFFEY COUNTY HERP COUNT 2

On 17 May 2003, we conducted a Coffey County herpetofaunal count from 8:00 am to 10:00 am at a site 5 mi E of Rt. 75 on 24th Road (NW 1/4 Sec. 20, T19S, R16E). Participants were Andrew Burr, Calley Burr, & Randy Ponder. The following species were observed:

Common Snapping Turtle 1

Northern Prairie Skink 1
Common Kingsnake 1
Plainbelly Water Snake 1

Total

4 species ..... 4 specimens

ANDREW BURR, 902 South 7th Street, Burlington, Kansas 66839.

COWLEY COUNTY HERP COUNT 1

The 15th annual herpetofaunal count from Cowley County took place on 26 April 2003 at a location in the Flint Hills east of Winfield. The survey occurred between 10:00 am and 2:00 pm, and primarily consisted of rock turning. The mid-survey temperature was 20°C. The stream water temperature was 15°C. The day was mostly sunny with winds of 10–15 mph from the south. The entire area had been burned three weeks prior to the survey. Two days prior to the survey, several inches of rain fell on the area. All of the intermittent streams in the survey area were flowing. The pond was full. Participants were: Sharon Fredin, Jack Greider, Ruth Greider, Joyce Lent, Robert Previtera, Jenny Previtera, Al Volkmann, Glynda Volkmann, & Stan Wiechman. They observed the following:

Smallmouth Salamander 1
American Toad 1
Great Plains Narrowmouth Toad 7
Northern Cricket Frog 87
Bullfrog 3
Plains Leopard Frog 3

Slider 3

Eastern Collard Lizard 6
Great Plains Skink 12
Six-lined Racerunner 1
Western Slender Glass Lizard 1
Ringneck Snake 29
Flathead Snake 17
Eastern Racer 12
Coachwhip 1
Milk Snake 2
Western Ribbon Snake 1
Common Garter Snake 5
Lined Snake 1

Total

19 species ..... 193 specimens

AL VOLKMANN, 1650 Melrose Lane, Wichita, Kansas 67212.

COWLEY COUNTY HERP COUNT 2

A second Cowley County herpetofaunal count was conducted on 3 May 2003 from 10:00 am to 5:00 pm at Arkansas City and areas east on Rt. 166, then on Rt. 15 to Kansas/Oklahoma line, then north to Dexter, SW toward Arkansas City, then in the area of Camp Horizon (bluffs of the Arkansas River). Participants were: Jill Lokke, John Lokke, & David Wickell.

Northern Cricket Frog (chorusing) ..... ±100
Plains Leopard Frog (chorusing) ..... ±100
Bullfrog 1
Great Plains Narrowmouth Toad 2

Ornate Box Turtle 3

Eastern Collared Lizard 5
Great Plains Skink 5
Western Slender Glass Lizard 1
Ringneck Snake 8
Common Kingsnake 1
Great Plains Rat Snake 1
Western Rat Snake 2

Total

12 species ..... ±229 specimens

JILL LOKKE & **JOHN LOKKE**, 835 Spaulding, Wichita, Kansas 67203.

DOUGLAS COUNTY HERP COUNT

On 3 May 2003, we observed amphibians, turtles, and reptiles from 10:30 am to 12:30 pm on SW 1/4 Section 2, T15S, R17E, in southwestern Douglas County, Kansas. Participants: Bessie Bauer, John Bauer, Joseph T. Collins, Suzanne L. Collins, Garold Sneegas, & John Stoklosa. We observed or heard the following:

Western Chorus Frog (chorusing) ..... ±50
Plains Leopard Frog (chorusing) ..... ±50

Common Snapping Turtle 1
Painted Turtle 2
Ornate Box Turtle 7

Five-lined Skink 1
Great Plains Skink 7
Ground Skink 1
Prairie Kingsnake 1
Common Kingsnake 2
Plainbelly Water Snake 1
Common Garter Snake 1
Massasauga 2

Total

13 species ..... ±126 specimens

JOSEPH T. COLLINS, Higuchi Hall, Kansas Biological Survey, University of Kansas, Lawrence, Kansas 66047.

LOGAN COUNTY HERP COUNT

A herpetofaunal count was conducted on 16 May 2003 from 10:00 am to noon in the western half of county south of US Rt. 40. Participants were: Suzanne L. Collins, Travis W. Taggart, & Joseph T. Collins. The following were observed:

Plains Spadefoot 1
Great Plains Toad 1
Green Toad 2

Northern Painted Turtle (basking) 4
Ornate Box Turtle 3

Prairie Lizard 2
Six-lined Racerunner 2
Plains Blackhead Snake 1
Eastern Racer 3
Bullsnake 1

Total

10 species ..... 20 specimens

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

OSAGE COUNTY HERP COUNT

On 28 April 2003, James Gubanyi & Keith Coleman conducted an Osage County herpetofaunal count 1.5 miles east of Melvern Dam from 12:30 am to 2:30 am.

American Toad ..... ±30
Northern Cricket Frog ..... ±25
Western Chorus Frog ..... ±35
Cope's Gray Treefrog ..... ±35
Plains Leopard Frog ..... ±30
Bullfrog 6

Northern Painted Turtle 1
Great Plains Skink 2

Total

8 species ..... ±164 specimens

JAMES E. GUBANYI, 2501 Burnet Avenue, Topeka, Kansas 66614.

FORT RILEY HERP COUNT

The 2003 Fort Riley herpetofaunal survey took place on 7 May 2003. The conditions were fairly optimal with the previous night's lows in the 50s and a nice sunny day reaching up into the 70s. The 2003 survey produced 27 species compared to 29 species in 2002. In 2003, ±251 individual specimens were recorded compared to ±479 in 2002. The 2003 survey produced two species that had not previously been verified on Fort Riley. The Five-lined Skink and the Northern Prairie Skink were both previously unrecorded species on the Fort. Participants were: Nicole Gerlanc, Chris Hase, Jeff Keating, Dan Mulhern, Mark Neely, Chris Newell, Brian Simmons, Shawn Stratton, Gibran Suleiman, Vernon Tabor, Ricky Trexler, Rick Upshaw, & Jimmy Ward. The following species were observed:

Barred Tiger Salamander 1
Woodhouse's Toad 2
Northern Cricket Frog ..... ±21
Western Chorus Frog ..... .±16
Plains Leopard Frog 26
Bullfrog 5
Great Plains Narrowmouth Toad 12

Common Snapping Turtle 5
Painted Turtle 2
False Map Turtle 12
Slider 24
Softshell (species undetermined) 9

Eastern Collard Lizard 15
Great Plains Skink 13
Northern Prairie Skink 1
Five-lined Skink 2
Ground Skink 1
Six-lined Racerunner 10
Ringneck Snake 57
Plains Blackhead Snake 1
Eastern Racer 3
Great Plains Rat Snake 2
Western Rat Snake 1
Milk Snake 6
Northern Water Snake 1
Common Garter Snake 1
Copperhead 2

Total

27 species ..... ±251 specimens

GIBRAN SULEIMAN, Conservation Division, Fort Riley Directorate of Environment and Safety, Fort Riley, Kansas.

SHAWNEE COUNTY HERP COUNT

On 19 April 2003, James & Marla Gubanyi conducted a Shawnee County herpetofaunal count in and around the town of Wakarusa from 9:30 pm to 11:30 pm. Beginning temperature was 56°F; ending temperature was 48°F; rain and cloudy. The following species were observed:

American Toad ..... ±6
Western Chorus Frog ..... ±100
Plains Leopard Frog ..... ±10
Bullfrog 4

Total

4 species ..... ±120 specimens

JAMES E. GUBANYI, 2501 Burnet Avenue, Topeka, Kansas 66614.

INDIAN CREEK HERP COUNT

Science students at Northern Hills Junior High School (USD 345) started a tradition on Earth Day, 22 April 2003, by conducting the first herpetofaunal count in and along Indian Creek near their school, located in northern Shawnee County, Kansas (Figure 1). During the one hour survey (12:30 pm to 1:30 pm), the group collected by hand and with nets. Participants in the first count were: Robert Ladner, Sean Scott, Brandon Williams, Heather Cohee, Annie Smith, Bailey Zobel, Paul Cox, Jacob Stauffer, Elisabeth DeVader, Kelsea Pepper, Amanda Huguenin, Kelsey Kendall, Erin Dugan, Nicole Rosencutter, Liz Smith, Michelle Kozubek, Debra Bush, & Larry L. Miller.

Western Chorus Frog (calling) 3
Northern Cricket Frog 25
Bullfrog (tadpoles) 38

Western Rat Snake 3
Common Garter Snake 1

Total

5 species ..... 70 specimens

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

Figure 1. Michelle Kozubek and Annie Smith of Northern Hills Junior High School compare some of the tadpoles they seined during the Indian Creek herpetofaunal count with some small minnows (snake food) they also collected at the same time. Photograph by Larry L. Miller, Wakarusa, Kansas.

SUMNER COUNTY HERP COUNT

The 27th annual Sumner County herpetofaunal count was held on private land near Caldwell, Kansas, the evening of 1 May 2003 and during the day of 2 May 2003 (Figure 2). Participants along with the institution or agency they represented, when applicable, were: Robert Ladner, Sean Scott, Brandon Williams, Josh Shughart, Heather Cohee, Annie Smith, Bailey Zobel, Paul Cox, Jacob Stauffer, Elisabeth DeVader, Kelsea Pepper, Amanda Huguenin, Kelsey Kendall, Erin Dugan, Nicole Rosencutter, Liz Smith, Michelle Kozubek, Debra Bush, Larry L. Miller, Kori Drane, Heather Williams, Stan Williams (all Northern Hills Junior High School, Topeka, Kansas), Jessica Lang, Nicolene vanSittert, Jamie Williams, Chris Curtis, Taylor (Kal) Inscore, John McMurtie, Jeff Smyl, Donna Cooper (all Hays High School, Hays, Kansas), Trey Hall, Travis Isaacs, Sammy Moore, Molly Bostwick, Amanda Emrick, Amanda Moore, Brooke Moore, Karla Ward, Quinn Ward, Quinci Ward, Kelsi Ward, Nina Ward, Colten Ward, Darin Ward, Cory Ward, Carson Ward, Devan Whaley, Ashlynn Lebeda, Dalton Whaley, Dawna Whaley, Awayla Kelly, Cecily Jamison, Lexi Rice, Logan Rice, Mason Teeter, David Teeter, Mike Lebeda, Katie Lebedia, Branden Lebeda, Brad Lebeda, Autumn Koehler, Seth Koehn, Brittnee York, Rev. Jim Jones, Weigand Guerra, Kearstin Burns, Kyle Johnson, Jared Shaffer, Whitney Rohrbaugh, Matt Roth, Aaron Cripe, Lee LaNier, Luke LaNier, Velta Glenn, Dakota Davis, Luke Loutzenhiser, Donna Loutzenhiser, Grant Feely, Gail Feely (all Unified School District 360, Caldwell, Kansas), Martin B. Capron (Capron Illustrations, Oxford, Kansas), & Carol Laue (Kansas Department of Wildlife and Parks). The following were observed:

Great Plains Toad 1
Northern Cricket Frog 10
Spotted Chorus Frog 1
Plains Leopard Frog 2
Bullfrog 1
Great Plains Narrowmouth Toad 14

Common Snapping Turtle 1
Ornate Box Turtle 1

Eastern Collard Lizard 1
Lesser Earless Lizard 11
Texas Horned Lizard 4
Prairie Lizard 89
Southern Prairie Skink 8
Six-lined Racerunner 101
Ringneck Snake 129
Blackhead Snake 1
Western Rat Snake 1
Coachwhip 4
Ground Snake 52
Northern Water Snake 1
Lined Snake 4

Total

21 species ..... 437 specimens

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

WAKARUSA HERP COUNT

Suzanne L. Miller & Larry L. Miller conducted a herpetofaunal count the afternoon of 31 May 2003, near Colby Creek north of Wakarusa in Shawnee County, Kansas. The methods of searching included walking several nature trails and turning a few rocks and boards during the afternoon. Total time spent searching was approximately 30 minutes. Species observed were:

Figure 2. Students from the Northern Hills Junior High School herpetology class that participated in the 27th annual Sumner County herpetofaunal count on 1–2 May 2003. Their teacher, Larry L. Miller, organized the first event and has participated in all 27 counts to date. Photograph by Stan Williams, Topeka, Kansas.

Plains Leopard Frog 3
Bullfrog 2

Ornate Box Turtle (Figure 3) 2
Great Plains Skink 1
Ringneck Snake 28
Eastern Racer 2
Western Rat Snake 1
Milk Snake 1
Common Garter Snake 2

Total

9 species ..... 42 specimens

LARRY L. MILLER & **SUZANNE L. MILLER**, 840 SW 97th Street, Wakarusa, Kansas 66546.

Figure 3. An adult Ornate Box Turtle found on the Wakarusa, Kansas, herpetofaunal count. Photograph by Larry L. Miller, Kansas Heritage Photography, Wakarusa, Kansas.

NOTES

LARGE NORTHERN WATER SNAKE *(NERODIA SIPEDON)* FROM KANSAS

The heaviest *Nerodia sipedon* previously recorded from Kansas had a maximum weight of 480 grams, according to Fitch (1982) (in Collins, 1993. Amphibians & Reptiles in Kansas. Third Edition. Univ. Press Kansas. xx + 397 pp.) The longest unvouchered specimen of *Nerodia sipedon* previously reported from Kansas had a total length of 1,270 mm, according to Henry Fitch (pers. comm. 2002). A preserved (vouchered) specimen (KU 288637) measuring 1,208 mm was collected by James Gubanyi on 21 October 1998, and is the offical state length record.

On 23 June 2003 at 1600 CDST, I collected a large female *Nerodia sipedon* (Figure 1) at Reservoir 2 of the Nelson Environmental Studies Area [University of Kansas Field Station and Ecological Reserves (KSR)], Jefferson County, Kansas. Myself, Henry Fitch, and George Pisani made a search of this small reservoir that afternoon after receiving a tip from NESA station manager Galen Pittman regarding this snake's whereabouts. After looking under a small boat that did not yield the specimen, I walked out on a plank that extends 5 m out into the water. About halfway out, I noticed a disturbance in the water 1 m to the south and saw a large *Nerodia sipedon* sitting among the reeds. Using tongs, I secured the specimen, brought it to shore, and placed it in a plastic bucket. The snake was then taken to the Fitch residence for further observation.

The following day, Joseph T. Collins weighed the snake (Figure 1), which turned out to be an astonishing 1165 grams, over 2.4 times heavier than the previous state record. Henry Fitch then measured the snake and recorded a total length of 1,243 mm, just 27 mm shorter than a specimen previously collected by Scott Sharp at NESA on 22 April 2002. The snake I collected was later X-rayed to record the number of embryos it was carrying, which ended up being over 40. While it was under anesthetic, George Pisani measured this snake at 1,271 mm total length, a state maximum size by a mere 1 mm. Since our two snakes were so close in length, Scott and I decided to share the unvouchered state record for length. Finally, one week after its capture, this remarkable specimen of *Nerodia sipedon* was released back at Reservoir 2, where it will hopefully continue to flourish as it obviously has for so many years.

Sincere thanks are expressed to Galen Pittman, (KSR Station Manager/Biologist) for indicating the existence of this snake. Special thanks also go to Nancy Schwarting (University of Kansas Animal Care Unit) for performing X-rays on the reptile.

Submitted by **MIKE ZERWEKH**, Nelson Environmental Studies Area, University of Kansas, Lawrence, Kansas 66044 (email: mzerwekh@ku.edu).

Figure 1. From left to right, Scott Sharp, Henry Fitch, and Joe Collins examine the record Northern Water Snake *(Nerodia sipedon)* that weighed 1165 grams. Photograph by Suzanne L. Collins.

WESTERN RIBBON SNAKE REPRODUCTION

On 2 June 2002, a female specimen of the Western Ribbon Snake *(Thamnophis proximus)* was collected by myself and Keith Coleman in Section 5, T24S, R18W, Edwards County, Kansas. The specimen was eventually donated to Joseph T. Collins for deposition in the Sternberg Museum of Natural History, Fort Hays State University (MHP). While in his possession, the female gave birth to 26 young on 9 August 2002; twenty-five were born alive and healthy, while a single neonate was stillborn. The female parent (MHP 7243) and young were euthanized for preservation, but the neonates (MHP 7256-7280) were measured in a relaxed state just prior to fixation in formalin. The 26 young ranged in total length (snout-vent + tail) from 228 mm (9 inches) to 260 mm (10.25 inches), with a mean of 246 mm and a standard deviation of 6.4 mm.

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ARTICLES

STATUS OF THE EASTERN INDIGO SNAKE (*DRYMARCHON COUPERI*) ON ST. VINCENT NATIONAL WILDLIFE REFUGE, FRANKLIN COUNTY, FLORIDA

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Introduction

The Eastern Indigo Snake (*Drymarchon couperi*) was federally listed as a Threatened Species in 1978, under the Endangered Species Act of 1973 (Speake 1993). Eastern Indigo Snake population declines have been attributed primarily to habitat loss (Speake 1993). Additional losses have been attributed to commercial exploitation and incidental death from "gassing" of Gopher Tortoise (*Gopherus polyphemus*) burrows by rattlesnake hunters (Speake 1993). Eastern Indigo Snakes formerly ranged across the southern portions of Alabama, Georgia, Mississippi, and South Carolina and throughout Florida (Speake 1993). Stable populations of this snake require large tracts of undisturbed land. With continuing land development and intensive pine monoculture throughout the southeastern United States, available lands to harbor viable populations of this reptile continue to diminish.

In 1976, researchers with the U.S. Fish and Wildlife Service, Alabama Cooperative Research Unit (ACRU), Auburn, Alabama initiated efforts to reestablish populations of the Eastern Indigo Snake within its historic range. These efforts were continued as part of the Endangered Species Recovery Plan after the snake was federally listed in 1978. St. Vincent Island, a unit of St. Vincent National Wildlife Refuge (SVNWR) located in the Gulf of Mexico near the town of Apalachicola, Franklin County, Florida (Figure 1), was selected as a site for establishing a population of these reptiles. This selection was based on its relative isolation, extent of protected habitat, (4,990 hectares = 12,360 acres) (see Speake et al. 1978), existence of a resident *Gopherus polyphemus* colony, a prescribed fire program, and the presence of a documented, diverse herpetofauna (see Appendix 1). Although St. Vincent Island is within the historic range of the Eastern Indigo Snake, no specimens had been recorded from the island previously.

Beginning in December 1998, a collaborative relationship was forged between USFWS personnel of SVNWR and The Center for North American Herpetology to initiate winter herpetofaunal surveys on the refuge. Two preliminary visits to the island were made in December 1998. General field collecting and observations were conducted in December 1999 and January 2000 and again in December 2000 and January 2001. In April 2001, field work was undertaken to search specifically for Eastern Indigo Snakes on St. Vincent Island, employing a variety of techniques (see Methods).

Synopsis of Eastern Indigo Snake Ecology and Natural History

As the longest snake species in North America, the Eastern Indigo Snake averages 1.5–2.1 meters (5–7 ft.) in total length, with a record length of 2.63 meters (8.6 ft.) (Conant and Collins 1998). This large, smooth scaled, diurnal snake is shiny bluish to purplish-black in color; the throat, chin, and sides of head may be white, red, coral, or pinkish in color. This snake is a commensal in *Gopherus* burrows and uses them as a retreat during periods of cold winter weather and extreme summer heat. Northern populations are specifically associated with *Gopherus* burrows on

xeric sand ridges in the winter months (Moler 1992). In the warmer months, Eastern Indigo Snakes forage along the margins of wetlands. These snakes are opportunistic feeders and will consume a variety of prey, from small mammals, frogs, fish, hatchling turtles, birds, to snakes, including Cottonmouths *(Agkistrodon piscivorus)* and Eastern Diamondback Rattlesnakes *(Crotalus adamanteus).* Eastern Indigo Snakes are not constrictors, hence prey is captured, subdued, and consumed while still alive. During peak activity periods, home range size has been estimated at 50–100 ha (125–250 ac) (Moler 1992). In winter months, home ranges are restricted to less than 10 ha (25 ac) (Moler 1992) and snakes remain in close proximity to shelter (*Gopherus* burrows, stump holes, etc.). Mating takes place from November to April and 5–10 eggs are laid during May or June. After an incubation of approximately 70–80 days, the eggs hatch. Hatchlings range from 432–609 mm (17–24 in.) in length (Conant and Collins 1998).

Materials and Methods

To survey for these large, diurnally active snakes, the use of drift fence/funnel trap arrays were employed (Fitch 1987). This technique has proven effective for sampling the Texas Indigo Snake (*Drymarchon corais*) (Irwin 1993). From 26–31 December 2000, a series of eleven drift fence/funnel trap arrays were installed in favorable habitats near an original stocking site (see History of Stocking Efforts), along the ecotone of cabbage palm-live oak forest and dune ridges with active *Gopherus* burrows, along the margins of fresh water marshes and ponds, and in mesic cabbage palm-live oak hammocks. Drift fences consisted of 61 cm high by 9.1 m sections of commercially available silt fencing. Single-ended funnel traps were fashioned from ca. 4 mm x 4 mm mesh hardware cloth and placed at each end of the drift fences. Traps were checked at least once every 24 hours, and in many instances twice a day. Drift fences were activated from 2–29 April 2001.

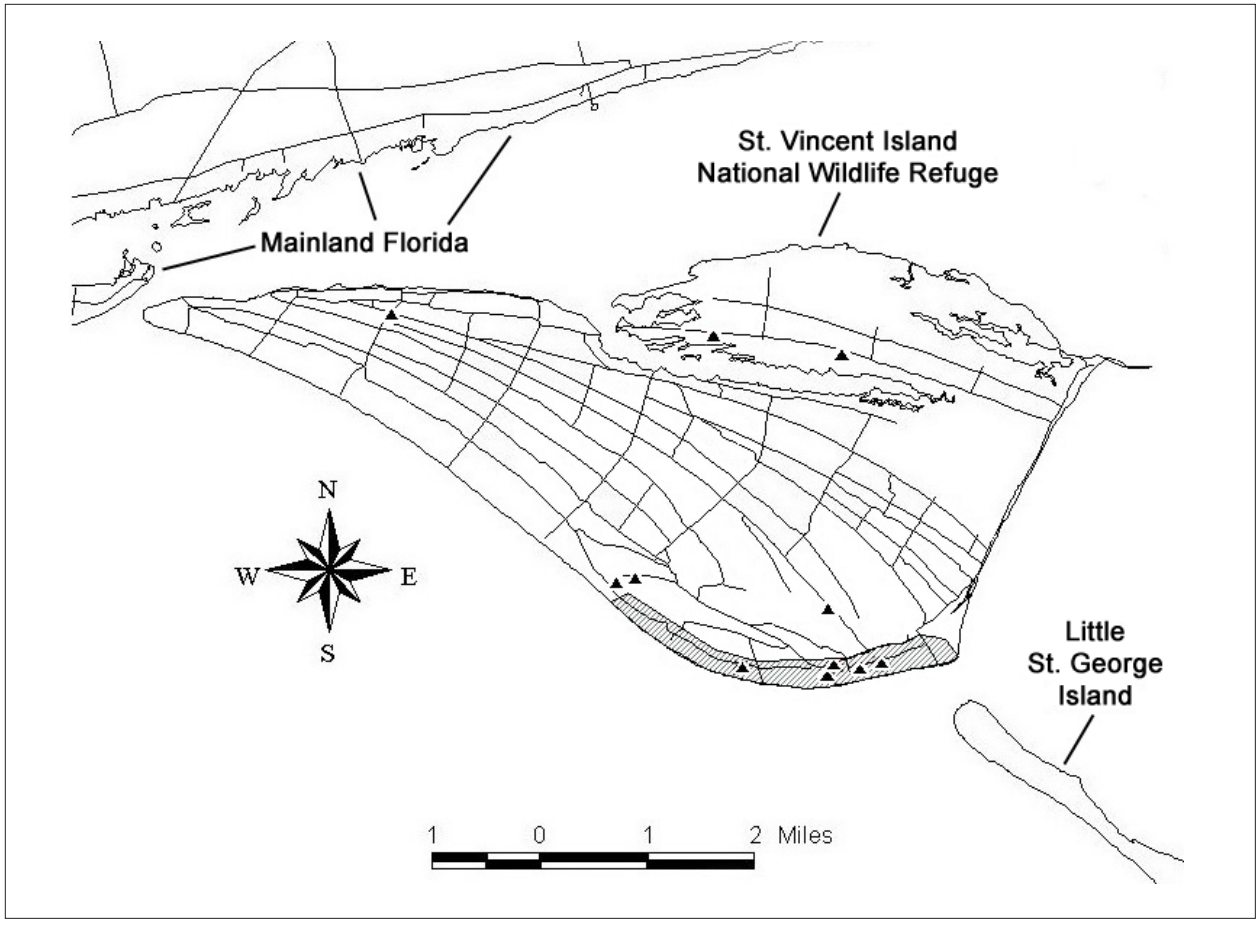

Figure 1. A map of St. Vincent Island National Wildlife Refuge, Franklin County, Florida. Lines on the island are sand or shell roads. Shaded area along the southeastern coast delineates an active colony of Gopher Tortoises *(Gopherus polyphemus).* Dark triangles indicate where fence lines and funnel traps were set during this study.

On 15 January and 31 December 2000, *Gopherus* burrows, *n* = 12 and *n* = 15 respectively, were examined using a Sony WatchCam model FDM-402A burrow video camera, with a flat black and white monitor. The video camera was inserted into *Gopherus* burrows until it reached maximum equipment range (~6 m) or the camera was obstructed and could not be moved deeper.

As part of the ongoing winter herpetofaunal survey of the refuge, artificial shelters (*n* = 53), consisting of corrugated tin or plywood sheets, were scattered throughout the island in December 1999 and January 2000. These shelters were monitored throughout the survey period. Additional survey techniques were also employed, consisting of general field collecting (i.e., turning of logs, palm fronds, etc.), observation of surface active herpetofauna, and road-cruising of refuge.

History of Stocking Efforts

Speake (1990) summarized Eastern Indigo Snake repatriation efforts throughout the historic range of this species in Alabama, Florida, Georgia, Mississippi, and South Carolina, from 1976 to 1986. Tracts of land over 3,000 ha in size were considered to be suitable for repatriation, based on radio-telemetry work on adults by Speake et al. (1978). The stocked animals came from a variety of sources: hatchlings and juveniles from a captive breeding colony, wild caught adults, snakes confiscated by state or federal authorities, and snakes donated from various sources such as zoos. A total of 40 Eastern Indigo Snakes were released on St. Vincent Island between 1980 and 1982 (Speake 1990) (Table 1).

On 20 August 1980, personnel from ACRU and the Florida Game and Freshwater Fish Commission, Endangered Species Division, (ESD) released twenty Eastern Indigo Snakes on St. Vincent Island, consisting of two adults (one male and one female) and eighteen juveniles (sex undetermined). One year later on 26 August 1981, personnel from ACRU and ESD released one adult female and four juveniles. These snakes had been taken as evidence in an illegal wildlife trade investigation. On 1 September 1982, fifteen hatchlings were released; ten came from the Santa Fe Zoo, Gainesville, Florida, and five from the ACRU. All animals were released within the *Gopherus* colony located in the sand dunes along Dune Road on the southeastern corner of the island (Figure 1). Five sightings of Eastern Indigo Snakes were reported from various locations on the island in 1982, consisting of two adults and three juveniles, one of which was captured in a drift fence array (Christman 1984).

Table 1. Number of Eastern Indigo Snakes (*Drymarchon couperi*) released from 1980–1982 on St. Vincent Island, Franklin County, Florida.

	1980	1981	1982	Total
Adults	2	1	0	3
Hatchlings	18	4	15	37
Total	20	5	15	40

Post-Release Monitoring and Incidental Observations

Follow-up monitoring and survey efforts were undertaken between 1983 and 1990 (Speake 1990, see Table 2). These survey efforts were concentrated during the fall, winter, and spring months when snakes were expected to be found in association with *Gopherus* burrows on sand ridges. Monitoring methods for Eastern Indigo Snakes in *Gopherus* burrows included the use of a coaxial cable video camera, listening hoses (i.e., garden hose inserted into burrow), and a bionic ear device for sound amplification

Table 2. Post-release observations of Eastern Indigo Snakes (*Drymarchon couperi*) by D. Speake, USFWS refuge personnel, and hunter reports on St. Vincent Island, Franklin County, Florida. Date refers to survey dates by D. Speake; last survey in 1990. Data taken from refuge annual narrative reports 1980–2000.

Year	Date	Speake Observ	USFWS Observ	Hunter Observ	Total
1983	April	1	0	0	1
1984	Aug/Sep	0	2	0	2
1985	January	1	1	1	3
1986	February	2	0	0	2
1987	March	0	0	0	0
1988	February	1	1	0	2
1989	—	0	0	2	2
1990	March	0	0	0	0
1991	—	—	0	1	1
1992	—	—	0	0	0
1993	—	—	0	0	0
1994	—	—	1	1	2
1995	—	—	0	0	0
1996	—	—	0	2	2
1997	—	—	0	0	0
1998	—	—	0	0	0
1999	—	—	0	1	1
2000	—	—	0	1	1
Total	—	5	5	9	19

in burrows (Speake 1990). Active searching included traversing sand ridges on foot or in ATVs in search of active snakes or signs that might lead to a snake. Monitoring efforts from 1983 to September 1986 resulted in a total of 9.1 person days of search effort and a capture rate of 2.3 person days per capture. Between October 1986 and September 1989, 3.5 person days of search effort yielded a rate of 0.9 person days per capture (Speake 1990). No data were collected on movements, growth rates, and population dynamics, as originally envisioned, due to a lack of recaptures and limited amount of time spent on population monitoring (Speake 1990).

The following survey information was gleaned from SVNWR annual narrative reports. Survey efforts in 1983 produced one capture; a gravid adult female that was released in 1980. This individual had grown 102 mm, was 2032 mm in total length, and had gained 455 g in mass. Survey efforts in August and September of 1984 produced no Eastern Indigo Snakes. However, in January of 1985, 28 Gopher Tortoise burrows were surveyed using the burrow video camera and produced several observations. One Eastern Indigo Snake was captured and measured 1829 mm TL with a mass of 2.95 kg (sex not given). This individual was reportedly released in 1980 as a 457 mm TL hatchling. In addition, thirteen Gopher Tortoises, four Eastern Diamondback Rattlesnakes and one Pigmy Rattlesnake (*Sistrurus miliarius*) were observed. A *Gopherus* burrow survey in February 1986 located two adult Eastern Indigo Snakes, both weighing 3.4 kg and with total lengths of 2337 mm and 2108 mm. Survey efforts in March 1987 produced two shed skins of adult Eastern Indigo Snakes. Survey work on 3 February 1988, produced the last verifiable observation of an adult Eastern Indigo Snake on St. Vincent Island. The snake was released as a hatchling in 1980, and was 1829 mm in total length at the time of capture (sex not given). No burrow survey work was performed in 1989. The last video camera burrow survey was conducted by Speake in March 1990; no Eastern Indigo Snakes were found. It was suggested that, due to a warm winter, the snakes may have already dispersed from winter burrow refugia.

A total of five observations of Eastern Indigo Snakes by refuge personnel were reported between 1983–2000, the last occurring in 1994. However, none of these sightings were verified with either live animals or photographs. From 1985–2000, deer hunters reported nine sightings of Eastern Indigo Snakes in the months of November through January. Several of these reports were made by hunters who claimed to be familiar with this species. One of the most recent sightings, in 1999, was reported to have been 9 feet (2743 mm) in length. None of the observations by hunters were verified with either live animals or photographs. In the absence of a live specimen or good photograph to verify these reports, we consider these observations suspect, given the possibility that some of these observations could be misidentified Eastern Racers (*Coluber constrictor*) or Coachwhips (*Masticophis flagellum*). Despite maximum size differences, these black, diurnally active snakes are often mistaken for the similarly colored Eastern Indigo Snake (Speake 1993). It is interesting to note that no recent observations or evidence of the presence of *Drymarchon couperi* have been reported by professional biologists on the refuge staff.

Summary of Field Work 1999–2001

Surveys were were conducted for thirteen days during the period 24 December 1999–15 January 2000; no Eastern Indigo Snakes were observed during this time. On 15 January 2000, twelve *Gopherus* burrows were surveyed using a burrow video camera; five adult Gopher Tortoises were observed, but no Eastern Indigo Snakes were encountered. Between 19 December 2000 and 15 January 2001, surveys were conducted for a total of twelve days. On 31 December 2000, fifteen Gopher Tortoise burrows were surveyed using a burrow video camera; three adult Gopher Tortoises and two adult Eastern Diamondback Rattlesnakes were observed in burrows, but again no Eastern Indigo Snakes were located.

During April 2001, survey work specifically targeting Eastern Indigo Snakes was conducted on St. Vincent Island, employing drift fence arrays, artificial shelters, burrow camera surveys, and general diurnal and nocturnal collecting (see Methods). All four techniques proved successful in capturing amphibians, turtles, reptiles, and crocodilians (see Appendices 2 and 3). However, this survey effort failed to produce any Eastern Indigo Snakes, despite 4,546 trap-hours and 938 person-hours. It should be noted that seventeen Eastern Racers *(Coluber constrictor)* were captured in drift fence arrays (Appendix 2). This snake was quite common throughout the island, and might account for many (if not all) of the hunter observations made from 1989 to 2000.

Discussion

Previous attempts to establish a population of *Drymarchon couperi* on St. Vincent Island may have been influenced by variables such as the presence of feral livestock, climatic extremes, or an as yet unquantified limiting factor precluding natural occur-

rence on the island. Feral hogs (*Sus scrofa*) have been established on St. Vincent Island for decades. These animals originated from free ranging livestock of European settlers, and from intentional releases for the purpose of providing hunting opportunities. This exotic species can and does have serious impacts on native flora and fauna. During the survey period 1999–2001, we observed evidence of feral hog impact on ephemeral wetlands and forest floor understory plant communities. Areas as large as 50 x 50 m or greater were found where hogs had rooted up the vegetation and soil to the extent that the area had the appearance of being mechanically plowed. Hogs are omnivores, and their diet includes a wide range of plants and animals. All manner of small vertebrates are consumed—amphibians, turtles, reptiles, young crocodilians, birds, and mammals, including other hogs, armadillo (*Dasypus novemcinctus*), and fawns of white-tailed deer (*Odocoileus virginianus*) (Hellgren 1993). Therefore, the impact of this species on terrestrial and ephemeral wetland herpetofauna deserves serious consideration. During our survey work, we did not observe significant numbers of Water Snakes (*Nerodia*) or Cottonmouths (*Agkistrodon piscivorus*), taxa that inhabit the margins of freshwater habitats where feral hogs are known to forage. These snake species could potentially be a significant part of the diet of Eastern Indigo Snakes (Moler 1992) on St. Vincent Island, and may have been seriously depleted by feral hogs prior to the introduction attempt. In addition, the potential exists that hogs prey on eggs and juveniles of Eastern Indigo Snakes. Furthermore, feral hogs are predators of the eggs and young of Gopher Tortoises and marine turtles, taxa that are known to nest on the island. Thus, feral hogs negatively impact the herpetofauna of St. Vincent Island, either directly as predators and/or indirectly through habitat destruction and competition for food.

Eastern Indigo Snake releases from 1980–1982 occurred during and just after severe drought conditions on St. Vincent Island. A rainfall deficit of 163 cm (64 in.) was recorded from 1976 through 1981. The average annual precipitation on St. Vincent Island for the past 25 years (1976–2000) is just over 140 cm (55 in.). Drought conditions may have reduced potential prey species such as Water Snakes (*Nerodia*) and Cottonmouths (*Agkistrodon piscivorus).* The habit of feral hogs feeding at wetland ecotones may have suppressed already low prey densities even further. Thus, the extreme environmental conditions during 1980–1982 may have played a role in preventing the establishment of Eastern Indigo Snakes on St. Vincent Island.

Although the Eastern Indigo Snake has never been reported as occurring on St. Vincent Island, the island is only 400 meters from the mainland at Indian Pass. It is possible that the Eastern Indigo Snake has an aversion to brackish or hyper-saline waters, thus preventing immigration from mainland populations.

Recommendations

On 30–31 May 2001, a meeting was attended by representatives from over 15 state and federal agencies, non-governmental organizations, and the timber industry in Yulee, Florida, to discuss means of protecting the Eastern Indigo Snake. This meeting reflected the need for continued efforts at restoring Eastern Indigo Snake populations in the southeastern United States.

St. Vincent Island appears to contain suitable habitat for the Eastern Indigo Snake. We think that if any extant population of this species persisted on St. Vincent Island, our survey effort should have produced evidence of its presence. Therefore, our results suggest that the stocking effort failed.

Future attempts to establish a viable population of the Eastern Indigo Snake (*Drymarchon couperi*) on St. Vincent Island might be considered once again. If such efforts are considered, we suggest that the feral hog population first be substantially reduced or eliminated altogether. Reduction or elimination of feral hogs on St. Vincent Island would also eliminate predation on the state and federally protected Gopher Tortoise and marine turtles. Habitat conditions and prey densities are part of an ongoing study by us, and the data derived therefrom will be considered in future repatriation efforts. We think St. Vincent Island should serve as a refugia for Eastern Indigo Snakes, because available mainland habitat continues to decrease due to ever-increasing human population and unchecked human development and its attendant environmental destruction.

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Lenerose, Jo Lewis, Emily C. Moriarty, Kelli Muddle, Jamie Pastika, River Pullins, Beth Ronco, Abby Smith, Anne Swinford, Jimmie Sylvester, Travis W. Taggart, Francis Thoennes, Sarah Tillman, and Britney Willadsen. We also thank Dan Garlick for generously allowing us to use his burrow camera system. Finally, we thank Marie and Joey Romanelli; Joey's reliable boat shuttled us off the island across the shark-infested waters of Indian Pass after many a full day of field work, and we were most grateful.

Literature Cited

Blaney, R. M. 1971. An annotated check list and biogeographic analysis of the insular herpetofauna of the Apalachicola region, Florida. Herpetologica 27(4): 406–430.

Christman, S. P. 1984. Natural history of St. Vincent Island, Florida. Progress Report No. 1, covering the period January 1983–December 1983. Unpubl. Report. Denver Wildl. Res. Center, Ecol. Section, Gainesville, Florida. 25 pp.

Conant, R. and J. T. Collins. 1998. *Peterson Field Guide to Reptiles and Amphibians of Eastern and Central North America. Third edition expanded.* Houghton Mifflin Co., Boston. 616 pp.

Fitch, H. S. 1987. Collecting and life history techniques. Pp. 143–164. *In* R. A. Seigel, J. T. Collins, and S. S. Novak (eds.), *Snakes: Ecology and Evolutionary Biology*. Macmillan Publishing Co., New York.

Hellgren, E. C. 1993. Biology of Feral hogs (*Sus scrofa)* in Texas. pp. 50–57. *In* Hanselka, C. W. and J. F. Cadenhead (eds.). *Feral Swine: A compendium for resource managers.* Texas Agricultural Extension Service, Texas A&M University System, College Station, Texas.

Irwin, K. J. 1993. A preliminary survey, with management recommendations, of the herpetofauna of the Lower Rio Grande Valley National Wildlife Refuge. Unpubl. Final Rept. U. S. Fish Wildl. Serv. 41 pp.

Lewis, T. E. and J. T. Collins. 2000. Geographic distribution: *Regina rigida*. Herpetol. Rev. 31(3): 187.

Lewis, T. E. and K. J. Irwin. 2001. Geographic distribution: *Macrochelys temminckii*. Herpetol. Rev. 32(4): 274

Lewis, T. E., L. K. Irwin, and K. J. Irwin. 2001. Geographic distribution: *Pseudemys nelsoni*. Herpetol. Rev. 32(2): 117.

Means, D. B. and S. P. Christman. 1998. Geographic distribution: *Farancia abacura*. Herpetol. Rev. 29(3): 177.

Means, D. B. and T. E. Lewis. 1997. Geographic distribution: *Amphiuma means*. Herpetol. Rev. 28(1): 47.

Moler, P. E. 1992. Eastern Indigo Snake *Drymarchon corais couperi*. pp. 181–186. *In* P. E. Moler (ed.). *Rare and Endangered Biota of Florida, Volume III, Amphibians and Reptiles.* Univ. Press Florida, Gainesville.

Peacock, T. and T. E. Lewis. 2000. Geographic distribution: *Deirochelys reticularia*. Herpetol. Rev. 31(2): 110–111.

Speake, D. W. 1990. Evaluation of Eastern Indigo Snakes restocking attempts. Cooperative Agreement No. 14-16-0009-1550, Research Work Order No. 5. Unpubl. Final Rept. U. S. Fish Wildl. Serv. 9 pp.

Speake, D. W., J. A. McGlincy, and T. A. Colvin. 1978. Ecology and management of the Eastern Indigo Snake in Georgia: A progress report. Pg. 64–73. *In* R. Odom and L. Landers (eds.) Proc. Rare and Endangered Wildl. Symp., Georgia Dept. Nat. Resources, Game and Fish Div. Tech. Bull., WL 4.

Speake, D. W. 1993. Indigo snake recovery plan revision. U.S. Fish and Wildlife Service, Atlanta, Georgia. 27 pp.

Appendix 1. Over the past thirty years, surveys and incidental collections have clarified the herpetofaunal diversity of St. Vincent (Island) National Wildlife Refuge (Blaney 1971, Christman 1984, Means and Lewis 1997, Means and Christman 1998, Peacock and Lewis 2000, Lewis and Collins 2000, Lewis and Irwin 2001, Lewis, Irwin, and Irwin 2001). Forty-one species were recorded during our surveys from 1998 to date. Those species denoted with an asterisk (*) were not observed by us during the course of our work. Those species denoted with a double asterisk (**) were not observed by us and are considered of questionable occurrence and in need of verification.

Salamanders (1)

Two-toed Amphiuma ..... *Amphiuma means*

Frogs (11)

Southern Cricket Frog ..... *Acris gryllus*
Oak Toad ..... *Bufo quercicus*
Southern Toad ..... *Bufo terrestris*
Eastern Narrowmouth Toad ..... *Gastrophryne carolinensis*
Green Treefrog ..... *Hyla cinerea*
Pine Woods Treefrog ..... *Hyla femoralis*
Squirrel Treefrog ..... *Hyla squirella*
Little Grass Frog ..... *Pseudacris ocularis*

Bullfrog ..... *Rana catesbeiana****
Pig Frog ..... *Rana grylio*
Southern Leopard Frog ..... *Rana sphenocephala*

Turtles (15)
Florida Softshell ..... *Apalone ferox*
Loggerhead ..... *Caretta caretta**
Green Turtle ..... *Chelonia mydas**
Common Snapping Turtle ..... *Chelydra serpentina**
Chicken Turtle ..... *Deirochelys reticularia*
Leatherback ..... *Dermochelys coriacea**
Gopher Tortoise ..... *Gopherus polyphemus*
Eastern Mud Turtle ..... *Kinosternon subrubrum*
Atlantic Ridley ..... *Lepidochelys kempii**
Alligator Snapping Turtle ..... *Macrochelys temminckii*
Diamondback Terrapin ..... *Malaclemys terrapin**
Eastern River Cooter ..... *Pseudemys concinna***
Florida Cooter ..... *Pseudemys floridana*
Florida Redbelly Turtle ..... *Pseudemys nelsoni*
Eastern Box Turtle ..... *Terrapene carolina*

Lizards (5)
Green Anole ..... *Anolis carolinensis*
Six-lined Racerunner ..... *Aspidoscelis sexlineata*
Broadhead Skink ..... *Eumeces laticeps*
Eastern Glass Lizard ..... *Ophisaurus ventralis*
Ground Skink ..... *Scincella lateralis*

Snakes (26)
Cottonmouth ..... *Agkistrodon piscivorus*
Scarlet Snake ..... *Cemophora coccinea*
Eastern Racer ..... *Coluber constrictor*
Eastern Diamondback Rattlesnake ..... *Crotalus adamanteus*
Eastern Indigo Snake ..... *Drymarchon couperi***
Eastern Corn Snake ..... *Pantherophis guttatus*
Eastern Rat Snake ..... *Pantherophis alleghaniensis*
Mud Snake ..... *Farancia abacura*
Rainbow Snake ..... *Farancia erytrogramma***
Eastern Hognose Snake ..... *Heterodon platirhinos**
Southern Hognose Snake ..... *Heterodon simus**
Scarlet Kingsnake ..... *Lampropeltis elapsoides**
Common Kingsnake ..... *Lampropeltis getula**
Coachwhip ..... *Masticophis flagellum*
Gulf Salt Marsh Snake ..... *Nerodia clarkii**
Plainbelly Water Snake ..... *Nerodia erythrogaster**
Southern Water Snake ..... *Nerodia fasciata*
Florida Green Water Snake ..... *Nerodia floridana*
Rough Green Snake ..... *Opheodrys aestivus*
Glossy Crayfish Snake ..... *Regina rigida*
Black Swamp Snake ..... *Seminatrix pygaea**
Pigmy Rattlesnake ..... *Sistrurus miliarius*
Brown Snake ..... *Storeria dekayi**
Eastern Ribbon Snake ..... *Thamnophis sauritus*
Common Garter Snake ..... *Thamnophis sirtalis*
Rough Earth Snake ..... *Virginia striatula*

Crocodilians (1)
American Alligator ..... *Alligator mississippiensis*

Total Possible Species: 59

Appendix 2. Herpetofaunal captures in eleven drift fence/funnel trap arrays (see Figure 1) on St. Vincent (Island) National Wildlife Refuge, Franklin County, Florida, from 2–29 April 2001.

Species	Number
Broadhead Skink *(Eumeces laticeps)*	28
Six-lined Racerunner *(Aspidoscelis sexlineata)*	18
Eastern Racer *(Coluber constrictor)*	17
Southern Leopard Frog *(Rana sphenocephala)*	10
Southern Toad *(Bufo terrestris)*	3
Green Treefrog *(Hyla cinerea)*	3
Green Anole *(Anolis carolinensis)*	2
Coachwhip *(Masticophis flagellum)*	2
Eastern Ribbon Snake *(Thamnophis sauritus)*	2
Oak Toad *(Bufo quercicus)*	1
American Alligator *(Alligator mississippiensis)*	1
Common Garter Snake *(Thamnophis sirtalis)*	1
Eastern Diamondback Rattlesnake *(Crotalus adamanteus)*	1
Pigmy Rattlesnake *(Sistrurus miliarius)*	1
Total	
14 species	90 individuals

Appendix 3. Herpetofaunal captures under artificial shelters (n = 53) on St. Vincent (Island) National Wildlife Refuge, Franklin County, Florida, from 2–29 April 2001.

Species	Number
Two-toed Amphiuma *(Amphiuma means)*	4
Six-lined Racerunner *(Aspidoscelis sexlineata)*	4
Southern Leopard Frog *(Rana sphenocephala)*	3
Green Treefrog *(Hyla cinerea)*	2
Eastern Narrowmouth Toad *(Gastrophryne carolinensis)*	1
Broadhead Skink *(Eumeces laticeps)*	1
Ground Skink *(Scincella lateralis)*	1
Pigmy Rattlesnake *(Sistrurus miliarius)*	1
Total	
8 species	17 individuals

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.

Membership

All interested persons are invited to become members in the Society. Membership dues per calendar year are $15.00 (U.S., Regular), $20.00 (*outside* North America, Regular), and $20.00 (Contributing) payable to the KHS. Send all dues to: KHS Treasurer (see inside front cover). All members are entitled to participate in Society functions, have voting privileges, and are eligible for Society grants and scholarships. They receive copies of the *Journal of Kansas Herpetology*, as well as other publications co-sponsored by the Society, either gratis or at a discount.

Editorial Policy

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).

The Howard K. Gloyd-Edward H. Taylor Scholarship

The Gloyd-Taylor Scholarship is presented annually by the Kansas Herpetological Society to an outstanding herpetology student. Nominations for this award are open to any KHS member enrolled in an accredited educational institution in Kansas or any KHS member enrolled in any accredited educational institution outside of Kansas. The scholarship is $100.00 and is awarded on the basis of potential for contributing to the science of herpetology. Students from grade school through university are eligible.

Nominations should include typewritten details of the nominee's qualifications, plus name and address of the nominee and nominator. Self-nomination is encouraged. If self-nominated, a letter of reference from an academician is required.

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.

Applicants may include an optional appendix with photographs, awards, newspaper articles, reports written by the student, or other documents relevant to herpetological activities.

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

The Alan H. Kamb Grant for Research on Kansas Snakes

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.

The KHS Awards Committee will entertain proposals for research on Kansas snakes. The proposal must be limited to ten typed pages, and should include, but not be limited to the following: title, name of researcher, contact information, abstract, introduction and justification, objectives or hypotheses, materials and methods, significance of research and possible results, literature cited, timetable, and proposed budget. The research must be conducted on one or more native Kansas snake species. Additionally, a majority of the field work or observations must be proposed to occur in Kansas, or the data must be proposed to be collected, at least in part, on Kansas specimens.

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.

The Suzanne L. & Joseph T. Collins Award for Excellence in Kansas Herpetology

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.

The Collins Award shall be presented no more than once each year. The Award may not be divided, but must be presented in full to a single individual. The Award consists of a trust-in-perpetuity, owned and invested by the *The Center for North American Herpetology*, and part of the interest from the trust is annually forwarded to the *Kansas Herpetological Society*, should they choose to make an award in that year.

Recipients of *The Collins Award* are chosen by the *Kansas Herpetological Society Awards Committee.*

In even-numbered years, the Award is bestowed upon an individual who, in the *preceding* two calendar years, had published a paper of academic excellence on the systematics, ecology, or conservation of a native species of Kansas amphibian, turtle, and/or reptile in the *Journal of Kansas Herpetology*, *Transactions of the Kansas Academy of Science*, *Herpetological Review*, or the *Journal of Herpetology*, and/or presented a lecture of excellence on the systematics, ecology, or conservation of a native species of Kansas amphibian, turtle, and/or reptile at the KHS Annual Meeting. To qualify for the Award, a portion of the field work or observations must have occurred in Kansas, or the systematic data must have been based in part on Kansas specimens. *In odd-numbered years*, the Award is bestowed upon an individual who was chosen the best in a juried competition featuring the art of photography in portraying amphibians, turtles, and/or reptiles, said competition to take place under the auspices and on the occasion of the annual meeting of the *Kansas Herpetological Society.* To qualify for the Award, the art work must portray a species native to Kansas.

The Collins Award is minimally $1000.00, and is neither a grant nor a scholarship. No nominations or applications can be made for it.

KHS Web Site: http://www.ku.edu/~khs/

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