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Front Cover: An adult Common Map Turtle (Graptemys geographica). Photograph by J. Daren Riedle, recipient of The Collins Award in 2007 for best image.

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KHS BUSINESS

RESULTS OF THE KHS 2010 SPRING FIELD TRIP

A near-record 170 KHS members and their friends, families, and colleagues gathered at the Gobbler's Knob Campground at Fall River State Park in Greenwood County in southeastern Kansas to spend the weekend of 23–25 April 2010 turning rocks, lifting logs, and searching the streams for snakes, lizards, turtles, and assorted amphibians in Greenwood and Elk counties. And they were stunningly successful, as the following list attests:

GREENWOOD COUNTY	
Species	Number
<i>Amphibians</i>	
American Toad.....	±100
Blanchard's Cricket Frog.....	41
Boreal Chorus Frog.....	±50
Gray Treefrog complex.....	15
Plains Leopard Frog.....	±73
Bullfrog.....	6
Southern Leopard Frog.....	±70
Great Plains Narrowmouth Toad.....	1
<i>Reptiles</i>	
Eastern Collared Lizard.....	17
Five-lined Skink.....	1
Great Plains Skink.....	45
Northern Prairie Skink.....	4
Ground Skink.....	1
Western Slender Glass Lizard.....	3
Eastern Racer.....	8
Prairie Kingsnake.....	1
Speckled Kingsnake.....	7
Milk Snake.....	1
Gopher Snake (aka Bullsnake).....	2
Western Rat Snake.....	2
Ground Snake.....	2
Flathead Snake.....	96
Ringneck Snake.....	33
Plainbelly Water Snake.....	8
Diamondback Water Snake.....	1
Western Ribbon Snake.....	6
Common Garter Snake.....	1
Lined Snake.....	2
Massasauga.....	1
<i>Turtles</i>	
Northern Painted Turtle.....	3
Eastern River Cooter.....	2
Ornate Box Turtle.....	13
Slider.....	9
Subtotal	
33 species.....	±625 specimens

ELK COUNTY	
Species	Number
<i>Amphibians</i>	
American Toad.....	11
Blanchard's Cricket Frog.....	12
Boreal Chorus Frog.....	1
Bullfrog.....	5
Southern Leopard Frog.....	15
Great Plains Narrowmouth Toad.....	47
<i>Reptiles</i>	
Eastern Collared Lizard.....	10
Five-lined Skink.....	7
Great Plains Skink.....	39
Ground Skink.....	22
Six-lined Racerunner.....	46
Western Slender Glass Lizard.....	9
Eastern Racer.....	9
Prairie Kingsnake.....	1
Speckled Kingsnake.....	18
Milk Snake.....	4
Coachwhip.....	4
Great Plains Rat Snake.....	4
Gopher Snake (aka Bullsnake).....	1
Western Rat Snake.....	7
Ground Snake.....	16
Flathead Snake.....	77
Western Worm Snake.....	5
Ringneck Snake.....	266
Plainbelly Water Snake.....	10
Diamondback Water Snake.....	1
Western Ribbon Snake.....	17
Common Garter Snake.....	11
Lined Snake.....	10
Rough Earth Snake.....	1
Copperhead.....	12
Timber Rattlesnake.....	5
Massasauga.....	2
<i>Turtles</i>	
False Map Turtle.....	2
Eastern Box Turtle.....	4
Ornate Box Turtle.....	1
Slider.....	6
Subtotal	
37 species.....	718 specimens
GRAND TOTAL	
42 species.....	±1,343 specimens

Participants for the spring 2010 KHS field trip were: Laura Acuff, Dan Almanza, Kristi Ashenfelter, Melissa Ashenfelter, Tonie Ashenfelter, Laura Baldwin, Mary Kate Baldwin, Reese Barrick, Don Beeker, Peter Berg, John Bolin III, Katie Boreas, Gerard Brungardt, Luke Brungardt, Tom Brungardt, Josh Burch, Nathan Burch, Mike Caron, Chada Carpenter, Dan Carpenter, Nathan Carpenter, Alli Cipriani, Buddy Claibourn, Mason Claibourn, Joseph T. Collins, Suzanne L. Collins, Benni Coulter, Grayson Coulter, Madison Coulter, Max Coulter, Olivia Cowin, Christian Cox. Alison Davis, Prashant Deshmukh, Dustin Dougherty, Kathy Ellis, John Entz, Judy Entz, Laura Erbe, Tray Erbe, Shelly Evans, Angela Gatton, Ivy Gatton, John Gatton, Ty Gatton, Jason Garnsey, Brett Gibson, Carol Gibson, Rene Gloschen, Tyler Gloschen, Eweleen Good, Max Good, Veronica Greene, James Gubanyi, Julian Gubanyi, Shellie Hadley, Alan Harbers, Dalton Harbers, Jodie Hearlson, Clayton Hibbard, Nick Hibbard, David Humenczuk, Andres Jarrett, Greg Jarrett, Dan Johnson, Grace Anne Johnson, Kimberly Jones, Matt Jones, Zackhande Kahan, Gary Keller, Jacob Keller, Eric Kessler, Owen Kessler, Rebecca Kessler, Len Kinder, Crystal Klaiang, Amanda Klammer, Dan Krull, Greg Larson, Luke Larson, Max Larson, Olaf Larson, Luis Lopez, Brandon Low, Judy Low, Jerry Lowry, Jess Magana, Isaiah Malls, Dexter Mardis, Josh Marshall, Nathan Marshall, Steve Marshall, Chris McMartin, Justin Michels, Larry L. Miller, William Miller, Rick Mitchell, Darren Moats, Dan Morrow, Ben Myers, Zach Myers, Steven Nagle, David Oldham, Robin Oldham, Tag Oldham, Israel Ornelas, Jesus Orona, Sonali Patro, Mohan Perumal, Erica Peterson, Jeff Phillippi, Mike Pingleton, Hank Pitschmann, Justin Pitschmann, Ron Pitschmann, Jade Reed, Jared Reed, Austin Rice, Savannah Ryan, Curtis J. Schmidt, Derek Schmidt, Ashley Schwagerl, Danni Shay, Marcy Shay, Pat Shay, Andrew Shipman, Lenn Shipman, Kaylee Shoaf, Klare Shoaf, Lee Shoaf, Melissa Shoaf, Ryan Shofner, Greg Sievert, Lynnette Sievert, Bryce Signer, Charlotte Signer, Jordan Signer, Antwain Smith, Bryce Smith, Easton Smith, Ian Sneld, Carl Solomon, Hailey Solomon, Pearl Sonnen Schein, Katie Solomon, Greg Stephens, George Stevenson, Charlie Stiebben, Bruce Taggart, Jesse Taggart, Megan Taggart, Travis W. Taggart, Bill Thomson, Sara Unruh, Johnathan VanCampen, Bill Welch, Brady Wellman, Luke Westerman, Arin White, Erin White, Taylor White, Garrett Wilkinson, Victor Wilkinson, Claire Williams, Jacob Williams, Jerry Williams, Jessica Williams, Sue Williams, Kaelyn Yeoman, Amy Zavala, and Georgio Zavala.

Most importantly, the Kansas Herpetological Society wishes to sincerely thank Ed Markel for permission to conduct the herpetofaunal count on his beautiful land in Elk County, and also give our appreciation to Travis W. Taggart for contacting Mr. Markel and arranging the trip to his property. In addition, Kimberly Jones generously arranged with her parents to allow the Society access to her property in northwestern Greenwood County; to her we are most grateful. The excellent media coverage of this event was due to the extraordinary efforts of KHS Publicity Chairperson Robin Oldham. The Society owes Robin much thanks for helping to build these surveys into major state events.

DANIEL MURROW, KHS Field Trip Chairperson, 8129 Perry, No. 37, Overland Park, Kansas 66204.

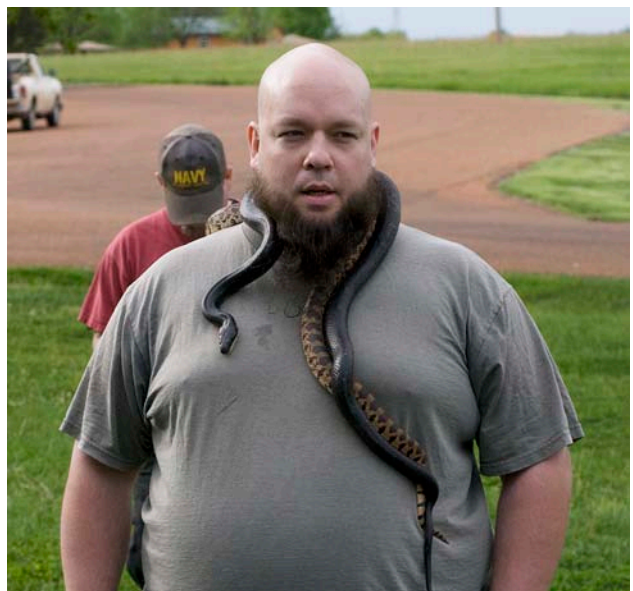
IMAGES FROM THE KHS 2010 SPRING FIELD TRIP



(L-R) KHS President Kathy Ellis, KHS Media Chairperson Robin Oldham, and Joe Collins share a story of past field trips. Note Robin's pink video cam. Photograph by Suzanne L. Collins, CNAH.



KHS President-elect Derek Schmidt checks the registration sheets, making sure all is up-to-date. Photograph by Suzanne L. Collins, CNAH.



KHS Field Trip Chairperson Dan Murrow always carries out his duties with enthusiasm, and sometimes gets really wrapped up in his work. Photograph by Suzanne L. Collins, CNAH.



Most of the 170 participants at the 2010 KHS Spring Field Trip showed up for the traditional Saturday morning group photograph. As you can see, many had not yet had their morning cup of coffee. Photograph by Suzanne L. Collins, CNAH.



Robin Oldham shows off one of her many talents, as a teacher, demonstrating to the younger contingent the best way to firmly hold an elongate serpent. Note Robin's pink video cam. She is really into movies. Photograph by Suzanne L. Collins, CNAH.



Ground Snakes (*Sonora semiannulata*), while not abundant, were about in sufficient numbers to satisfy the graduate students from the University of Texas at Arlington. They got their quota. Photograph by KHS member Grace Anne Johnson.



As is often the case on KHS field trips, the Milk Snake (*Lampropeltis triangulum*) is a highly sought prize after all that rock-lifting. Five were found during this survey, including this big beauty. Photograph by Suzanne L. Collins, CNAH.



KHS Past-President John Lokke (the tall one) and Jill Lokke (always fronting him) are shown here with students from Friends University in Wichita. (L-R): Dexter Mardis, Amanda Klammer, Veronica Greene, and Shellie Hadley. Photograph by Suzanne L. Collins, CNAH.



Many of the 170 participants at the 2010 KHS Spring Field Trip remained overnight for the traditional Sunday morning group photograph. Some were simply unable to leave picturesque and stimulating *Gobbler's Knob* camp site . . . excessive orange juice will do that. Photograph by Suzanne L. Collins, CNAH.



KHS member Travis W. Taggart (Sternberg Museum of Natural History, Fort Hays State University) displays the proper technique for hooking and holding a large venomous Timber Rattlesnake (*Crotalus horridus*), while bystanders watch with caution and respect. This big example was one of the five Timber Rattlesnakes found on the Saturday morning survey. Photograph by Suzanne L. Collins, CNAH.



Only four Great Plains Rat Snakes (*Pantherophis emoryi*) were discovered on the Society Spring Field Trip. These graceful serpents, one of three known species in the genus, are always a favorite with the field trip participants. Photograph by former KHS first-daughter Grace Anne Johnson.



Not to be outdone by Dad, Jesse Taggart made a move on his first Copperhead; intervention by Granddad Bruce saved the day. Photograph by Suzanne L. Collins, CNAH.

KHS ANNUAL MEETING CALL FOR PAPERS

The KHS 37th Annual Meeting will be held at the Topeka Zoo, Topeka, Kansas, on 6–7 November 2010. Participants wishing to present a talk should contact Kathy Ellis with their title and institutional address, at kathyshidler@yahoo.com no later than 1 October 2010. Copies of the title and institutional address should also be sent to Joe Collins (jcollins@ku.edu) for posting on the KHS web site meeting program. Individuals using US mail should send this information to both Ellis and Collins (see inside front cover). Presenters wishing to be considered for *The Suzanne L. & Joseph T. Collins Award for Excellence in Kansas Herpetology* (to be awarded in 2012) should so indicate with their submission; the award is \$1000.00. Students wishing to be considered for *The George Toland Award* of \$200.00 should also indicate with their submission. Details about the meeting are on the KHS web site.

CALL FOR KHS 2010 HERPETOFAUNAL COUNTS

KHS members are reminded to send their spring and summer (1 April to 30 June 2010) herpetofaunal counts to the associate editor (see below) as soon as possible. All such counts will be published in the September issue of the *Journal of Kansas Herpetology*. Counts must have been conducted during April, May, and June of 2010 only, and must list locality, date, participants, and complete address of the author. Additional data such as time span and weather can be submitted, and will be included as space permits. Counts should be sent as email text to

jcollins@ku.edu

KHS SCHOLARSHIP & GRANT DEADLINES

Members are reminded that the deadline is 15 September 2010 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 Dan Fogell, Chairperson of the KHS Awards Committee (see inside front cover). Both the scholarship and grant awards are \$300.00 each this year.

KHS FALL FIELD TRIP TO NORTON COUNTY IN OCTOBER

The 2010 Annual Fall KHS Field Trip will be held at Prairie-Dog State Park, Keith Sebelius Reservoir, in Norton County in north-central Kansas. KHS members and any other interested individuals will gather as early as Friday evening, 1 October 2010, at Prairie-Dog State Park. Electric hookups and heated

showers are available. Camping is available. There are restaurants and motels in the town of Norton (6 miles from Prairie Dog State Park). Participation in KHS field trips is free to anyone interested in amphibians, reptiles, and turtles.

When arriving, look for the large KHS sign at Prairie-Dog State Park. Herpetofaunal counts begin at 9:00 am at the designated campsite on Saturday and Sunday, 2-3 October 2010. The field trip adjourns at noon on Sunday, 3 October 2010.

More information will be posted, as it becomes available, on the KHS web site at

<http://www.cnah.org/khs/FieldTripInfoFall.html>

For more details, contact:

Daniel G. Murrow, KHS Field Trip Chairperson
(see inside front cover)

KHS 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 grants, scholarships, awards and other programs. This list recognizes donations received through 1 June 2010.

*Donation to KHS for the
Henry S. Fitch-Dwight R. Platt Award
for Excellence in Field Herpetology*

In Memory of

Ray E. Ashton, Jr.
(1945–2010)

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(1926–2010)

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(1943–2009)

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(1909–2009)

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by

Suzanne L. & Joseph T. Collins

OF INTEREST

IN MEMORIAM
RAY E. ASHTON, JR.
(1945–2010)

JOSEPH T. COLLINS & GEORGE R. PISANI

Kansas Biological Survey
University of Kansas

2101 Constant Avenue, Lawrence, Kansas 66047

Ray E. Ashton, Jr., a well-known herpetologist who specialized in Gopher Tortoise conservation and operated a research and conservation facility devoted to them in Archer, Florida, died on 11 March 2010 of pancreatic cancer. He was 64. Ray was head of the Ashton Biodiversity Research and Preservation Institute, a 200-acre preserve near Watermelon Pond in southwestern Alachua County.

Ray was born in Middletown, Ohio, on 30 March 1945 and came of age in herpetology at an auspicious time in the Buckeye state. During his teenage years in southwestern Ohio, he soon met an astonishing number of budding herpetologists from across that state, like-minded folks whose interest in these animals was so intense and so compelling that, to this day, they are often referred to (sometimes affectionately, sometimes otherwise) as *The Ohio Mafia*, a group that was instrumental in the formation of the *Society for the Study of Amphibians and Reptiles*, today the largest academic herpetological organization in the world. And Ray was one of them, pursuing undeterred, with a single-minded purpose, the knowledge necessary to have a notable career in herpetology that spanned nearly a half century.

After graduating from Lemon-Monroe High School in Middletown in the early 1960s, Ray received a master's degree in biology in 1971 from Miami University in Oxford, Ohio, with a thesis entitled *A Study of the Movements, Home Range, and Winter Behavior of *Desmognathus fuscus* (*Rafinesque*)*. He went on to write many scientific articles as well as handbooks to the reptiles, turtles, crocodilians, and amphibians of Florida, and in 2008 published his best-known work, *The Natural History and Management of the Gopher Tortoise, *Gopherus polyphemus* (Daudin)*, co-authored with his wife, colleague, best friend, and close companion, Pat. He was also co-owner of *Ashton, Ashton and Associates*, an environmental consulting firm that specializes in sustainable and environmentally sound projects with an emphasis on ecotourism, tourism, greenways, parks, museums, and similar developments.

Ray also served on a *Florida Fish and Wildlife Conservation Commission* panel that helped draft guidelines for the protection of Gopher Tortoises, classified as a threatened species in the state. His conservation efforts also took him around the world and across the nation. He was one of the founders of a number of state herpetological organizations, including those in North Carolina and Florida, and was a charter member of the *Kansas Herpetological Society*.

Ray Ashton served as education director at two state museums [in Lawrence, Kansas, at the KU Museum of Natural History (KUMNH) and in Raleigh, North Carolina, at the State Museum of Natural Science]. Hired by KUMNH

Director Philip S. Humphrey in September 1971 to develop the nascent Public Education program at the Museum, Ray brought much energy and expertise to the task. He quickly took the program in new directions, and worked to establish relationships with area and state educators that greatly expanded the formerly underutilized resources of the Museum into a significant area and state educational center. He was one of the speakers at the first annual meeting of the KHS in Topeka in 1974. In May 1975, he left KU to take a similar education position at the North Carolina State Museum of Natural Science in Raleigh.

His mother, Betty, wife Patricia, children Kevin and Elizabeth, and grandchild Xander survive Ray. In lieu of flowers, please send donations to the Ashton Fund at

SunTrust Bank
14420 West Newberry Road
Newberry, Florida 32669-2765

The *Kansas Herpetological Society Executive Council* extends its sympathies to the family and friends of Ray Ashton, particularly to Patricia. Ray was a champion of all wildlife, and a fun person to be with in the field; his passing is a great loss to us all. In the future, many a Gopher Tortoise will safely walk a Florida sand ridge because Ray was alive and watchful in protecting them.



A high school yearbook image of Ray E. Ashton, Jr. Compliments of Kraig Adler, Cornell University.

NOTES

HISTORY AND DISTRIBUTION OF THE WESTERN GREEN LACERTA, *LACERTA BILINEATA*
(REPTILIA: SQUAMATA: LACERTIDAE), IN TOPEKA, KANSAS

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Three non-native species of lizards are known to be established and maintaining breeding populations in Kansas. They are the Italian Wall Lizard, Western Green Lacerta, and Mediterranean Gecko. The Italian Wall Lizard (*Podarcis siculus*) was observed in Topeka, Kansas, as early as 1962 (JEG pers. observ.) and has spread widely throughout the city from its original colonization at 21st Street and Gage Boulevard. The species is now known to have migrated north to the Topeka Zoo and west to Fairlawn Avenue (JEG & JTC pers. observ.). The Mediterranean Gecko (*Hemidactylus turcicus*), discovered in 2005 (Hare, 2006), has a more restricted range in Lenexa (Johnson County), Kansas, where it lives on the walls of a number of warehouses.

The Western Green Lacerta (*Lacerta bilineata*) was first recorded in Kansas from within the city limits of Topeka by Collins (1974), based on a single specimen (KU 153040) obtained on 22 July 1973 by Vincent von Frese, then a keeper at the Topeka Zoological Gardens. Since that initial report, numerous articles have referenced this lizard in Kansas (Smith and Kohler 1977; Behler and King 1979; Collins 1982; Clarke 1986; Conant and Collins, 1991; Collins and Collins 1993; Gubanyi 1996; Miller 1997; Conant and Collins, 1998; Deichsel and Miller 2000; Gubanyi 2000a, 2000b, 2001; Corti and Lo Cascio 2002; Gubanyi 2002, 2003; Bartlett and Bartlett 2006; Taggart 2006; and Burke and Deichsel, 2008), but none has detailed its distribution within the city of Topeka.

Through the efforts of one of us (JEG), a compilation of known Topeka localities for the Western Green Lacerta (based on both preserved specimens and sightings by JEG and colleagues since 1962) was mapped (Figure 1). The distribution of *Lacerta bilineata* appears to be much more restricted than that of the other non-native lizard (*Podarcis siculus*) found in Topeka. The group of seven dots noted on the map by an arrow is the point of origin of the population of Western Green Lacertas in Topeka. The lizards escaped or were released from a biological supply house called Quivira Specialties Company that was founded in 1944 and located at 40101 West 21st Street in Topeka. The director and owner of Quivira Specialties Company was the late Dr. Charles E. Burt, who received his doctoral degree from the University of Michigan.

To date, only nine preserved specimens of *Lacerta bilineata* were located in academic collections, all from

Shawnee County, Kansas. In chronological order by date of capture, they are (MHP = Sternberg Museum of Natural History, Fort Hays State University; KU = Natural History Museum, University of Kansas) as follow:

KU 153040 (39.04833°N, 95.67778°W) South Topeka. 22 June 1973. Collector: Vincent von Frese

MHP 7927 (39.0204°N, 95.7368°W) Topeka, 24th Street & Burnett Road. 2 August 1996. Collector: James E. Gubanyi

KU 224642 (39.0295°N, 95.7367°W) Topeka, at 4709 SW 21st Street. 29 June 1997. Collector: C. Bayless

KU 224643 (39.0262°N, 95.7305°W) Topeka, 2313 SW Moundview. 17 October 1997. Collector: H. Willyard

MHP 7248 (39.0257°N, 95.7361°W) Topeka, 23rd Street and Burnett Road. 4 September 1999. Collector: James E. Gubanyi

MHP 7923 (39.0288°N, 95.7271°W) Topeka, 21st Street & Mission. 22 April 2003. Collectors: James E. Gubanyi & Carl Michaels

MHP 10183 (39.02955°N, 95.724954°W) Topeka, SW of 21st Street & Gage Boulevard. 15 August 2004. Collector: Tyler Lambrecht

MHP 9745 (39.02934°N, 95.73301°W) Topeka, near 4600 block of 21st Street. 15 September 2004. Collector: Tyler Lambrecht

MHP 14719 (39.02955°N, 95.724954°W) Topeka, NW corner of 21st Street and Gage Boulevard. 6 September 2009. Collectors: Joseph T. Collins & Suzanne L. Collins. Juvenile.

Although the Western Green Lacerta has been known from Topeka, Kansas, since at least 1962 (JEG, pers. observ.), it was not verified until 1973, and has not spread much from the origin of its release/escape, although its numbers have apparently remained stable over that time. Its presence in Topeka for nearly half a century confirms that this lizard is breeding and is an established member of the Kansas herpetofauna. Factors limiting its colonization success, when compared to that of *Podarcis siculus*, are unknown.

Acknowledgements: We thank Curtis J. Schmidt, Travis W. Taggart, and Suzanne L. Collins for their helpful suggestions, and the many observers that assisted us in locating and recording lizards for this project. The list of known voucher specimens was obtained (in part) from the *Kansas Herpetofaunal Atlas*.

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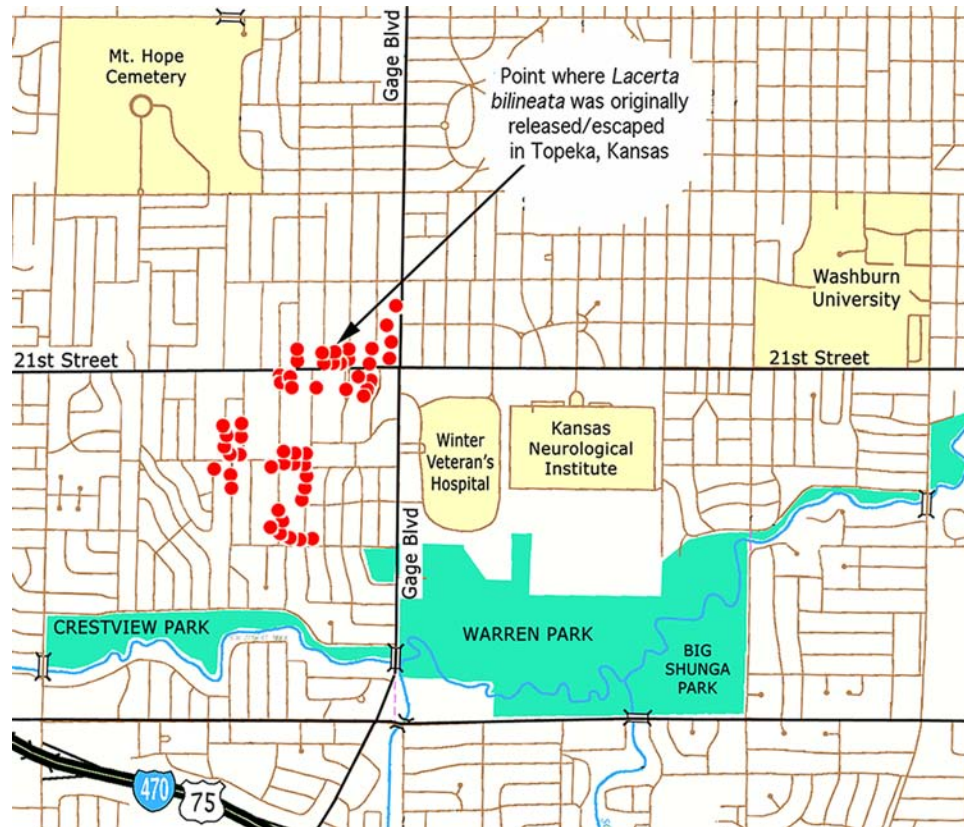


Figure 1. Distribution of the Western Green Lacerta (*Lacerta bilineata*) in urban Topeka, Shawnee County, Kansas. Dots represent localities where this species was observed by one of us (JEG) or for which there is a preserved voucher specimen in an institutional collection.

PALE MILK SNAKE (*LAMPROPELTIS TRIANGULUM MULTISTRATA*) CONSUMING A GREAT PLAINS SKINK (*PLESTIODON OBSOLETUS*)

The diet of the Milk Snake (*Lampropeltis triangulum*) is fairly well documented in eastern parts of its distribution in the United States, especially for *L. t. triangulum* and *L. t. sypila*, but relatively little data are known regarding diets of western and tropical subspecies (reviewed by Williams, 1988). The Milk Snake feeds on various taxa including small mammals, birds, reptiles, fish, and invertebrates throughout its distribution (Williams, 1988). To date, no information is known about the diet of *L. t. multistriata* for non-captive individuals (Williams, 1988: 88).

On 21 July 2009, we captured an adult *Lampropeltis triangulum multistriata* consuming a Great Plains Skink (*Plestiodon obsoletus*) in Hayes County, Nebraska (5.8 km W, 5.9 km S Wellfleet; 40.6994°N, 100.7978°W; NAD 83). Upon discovery under a large sheet of corrugated metal, about half the skink already was consumed by the snake. After capture, the snake (MHP 14677) regurgitated the skink (MHP 14701). Both individuals were kept as voucher specimens housed at the Sternberg Museum of Natural History, Fort Hays State University, Hays, Kansas (verified by Curtis J. Schmidt), because both represented new county records (Wright et al., in review). The specimen of *P. obsoletus* was motionless upon regurgitation, but after re-examination of the individual < 30 min later, the skink was alive and appeared completely healthy. The Milk Snake had a total length of 77 cm whereas the skink had a total length of 19.8 cm; both individuals were adults.

Skinks and other lizards are known from diets of other subspecies of the Milk Snake (see summary and references in Williams, 1988). In the literature, only one other study documents *Plestiodon obsoletus* (formerly *Eumeces obsoletus*) in the diet of this species (Fitch and Fleet, 1970). Of twenty-one natural food items, Fitch and Fleet (1970) documented a single tail of a juvenile *P. obsoletus* from a specimen of *Lampropeltis triangulum sypila* from northeastern Kansas. Our observation represents the first record of a complete *P. obsoletus* being consumed by a *L. triangulum*, assuming the snake would have finished swallowing the skink without our disturbance. We suspect the diet of *L. t. multistriata*, as well as other western and tropical subspecies, will have different dietary compositions of prey than eastern subspecies, reflecting differences in associations and abundances of prey species in other parts of their distributions.

We thank Tad and Teresa Wright for allowing us to search for herpetofauna on their property.

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ANOTHER POTENTIAL VICTIM OF MORTALITY BY IN-GROUND SWIMMING POOLS: THE RINGNECK SNAKE (*DIADOPHIS PUNCTATUS*)

In-ground swimming pools can mortally entrap wildlife. At least one case of entrapment of a Southern Leopard Frog (*Rana sphenocephala*; Telford et al. 2004) and extensive mortality of juvenile Bullfrogs (*Rana catesbeiana*; McCallum et al. 2008) are known. It is important that incidences of amphibian and reptile mortality involving swimming pools be reported so that the risk of these structures to herpetofaunal and other wildlife is better understood.

At ~10:00 am on 14 April 2010, we found a small (TL = 241 mm, BM = 3.48 g) Ringneck Snake (*Diadophis punctatus*) in the skimmer/filter basket of a medium-sized in-ground swimming pool at a private residence located along Forest Brook Lane in Texarkana, Texas (33.49 N, 94.08 W, NAD 1983). The snake had fallen into the pool and then made its way into the filter basket where it became entrapped. Had we not looked in the basket, this snake would surely have drowned. This appears to be the first report of entrapment of a Ringneck Snake in an in-ground swimming pool, thus adding to the list of species at risk when such structures remain uncovered or do not contain devices to allow entrapped animals to escape.

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ARTICLES

THE HERPETOFAUNA OF LETTERKENNY ARMY DEPOT, SOUTH-CENTRAL PENNSYLVANIA: A STARTING POINT TO THE LONG-TERM MONITORING AND MANAGEMENT OF AMPHIBIANS AND REPTILES

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Abstract: We surveyed the herpetofauna of the Letterkenny Army Depot (LEAD), Franklin County, in south-central Pennsylvania during May to September of 2003 and 2004, using a variety of techniques: cover boards, drift fences, pit falls, funnel traps, and road cruising. We identified 15 species of amphibians and 14 species of reptiles. The most abundant amphibian was the American Toad (*Anaxyrus americanus*) with 34.7% of total amphibian captures, followed by the Bronze Frog (*Lithobates clamitans*), with 21.8%. The most abundant reptile was the Eastern Box Turtle (*Terrapene carolina*), which yielded 62.0% of the total reptilian captures, followed by both the Five-lined Skink (*Plestiodon fasciatus*) and the Eastern Racer (*Coluber constrictor*) with 5.3% each. Endangered or threatened species such as the Eastern Mud Salamander (*Pseudotriton montanus*), Bog Turtle (*Clemmys muhlenbergii*), Eastern Redbelly Turtle (*Pseudemys rubriventris*), and Rough Green Snake (*Ophedrys aestivus*), although historically present in this region, were not detected in our study. This effort was the first standardized and comprehensive assessment of species composition and abundance of amphibians and reptiles at LEAD. Although it is likely that past anthropogenic disturbances have detrimentally affected the herpetofauna of this site, the current monitoring effort and management plan are positive signs for the future. Our findings underscore the importance of continued monitoring for a more complete inventory, with special attention being paid to assessing the status of sensitive species and the potential for colonization of exotic species currently known to be in Pennsylvania.

Introduction

Pennsylvania is home to 77 species of amphibians and reptiles, all but one of which are native (Hulse et al., 2001). For millennia, amphibians and reptiles worldwide have endured pervasive negative consequences from anthropogenic activities, such as agricultural, industrial, and urban development (Mitchell et al., 2008). But even when natural habitats have been deeply impacted by anthropogenic factors, such as destruction, pollution, and fragmentation, they might still provide suitable refugia for native herpetofauna (Mifsud and Mifsud, 2008). In Pennsylvania, Letterkenny Army Depot (LEAD) is a large and relatively protected site conducive to long-term community assemblages and natural history studies.

A species list of the herpetofauna is the logical first step in a long-term monitoring project of this segment of the biota begun by Pablo Delis at LEAD in 2002. Thus, the objectives of our research were to characterize the current herpetological community at this mid-size Department of Defense parcel of forests, field, and aquatic systems located in the

Kittatinny Mountains ridge and Cumberland Valley of south-central Pennsylvania. Specifically, we determined species composition and relative abundance of the amphibians and reptiles. We wanted to compare the herpetological community currently present at the site with that expected from prior literature (Felbaum, 1995; Hulse et al., 2001; Tetra Tech, Inc. 2001; Shaffer, 1999). It is our intention that this study will provide a first step in bringing to light the data necessary for the understanding and management of the herpetofauna in this large and protected natural resource.

Study Area

Letterkenny Army Depot (LEAD) is located in Franklin County, south central Pennsylvania. It is a federally-owned parcel of approximately 7,000 ha in area, located Latitude 39°58'N and Longitude 77°42'W. This holding is composed of mild hills and valleys that range 180 to 309 m in elevation with a variety of wetlands such as creeks, reservoirs, and vernal pools. The vegetation is dominated by mixed deciduous forest and by disturbed meadows that are impacted by

agricultural and other human activities (Figure 1). Most of our fieldwork was conducted in the buffer zone of LEAD otherwise known as Zone II, located in the northwest sector of the installation at the base of North Mountain along the Kittatinny ridge of the Blue Mountain range. Federal protection, and the combination of relatively pristine areas located alongside heavily disturbed sites, makes this area an ideal study site for long-term field studies with resource management implications.

Materials and Methods

Data Collection: Our study took place from May of 2003 to September of 2004. To estimate the presence and relative abundances of the herpetofauna, we used a combination of passive trapping, active trapping, and diurnal/nocturnal unevenly spaced transects throughout the year to maximize success. We deployed six trap arrays, which are combinations of 6 m drift fences, 20-L bucket pitfall traps, and 50 cm x 25 cm x 25 cm funnel traps (Heyer et al. 1994), randomly distributed throughout the available natural areas at LEAD Zone II. We also distributed aluminum sheets (1 m x 2.75 m) as cover boards in specific transects, at disturbed and undisturbed locations.

We conducted surveys on foot and by road cruising along separate transects on sunny and rainy days and on rainy nights during spring-winter. Late spring, summer, and early fall were surveyed more often than other times of the year. Diurnal walking transects consisted of following routes where we turned logs, inspected depressions or crevices, and caught, when possible, individual animals to confirm identification. Walking transects alternated in early hours of the day, at noon, and in the evenings to account for behavioral differences in target species. Transects covered at least 10% of the surface area of interest as per recommendations by Heyer and coworkers (1994). Nocturnal anuran chorus surveys took place sporadically on rainy nights, especially in the interval between late spring and early fall. We listened for at least three minutes in key locations to detect the presence of calling males. We identified species and recorded rough estimates of abundance as per the method of Delis (2001). We employed dip netting and seining in the various wetlands to determine the presence of amphibian larvae and the presence of exclusively aquatic species. For some species, and when logistically feasible, captured individuals were measured, weighed, assessed with respect to their reproductive status, occasionally photographed, and permanently marked following standard biological tech-

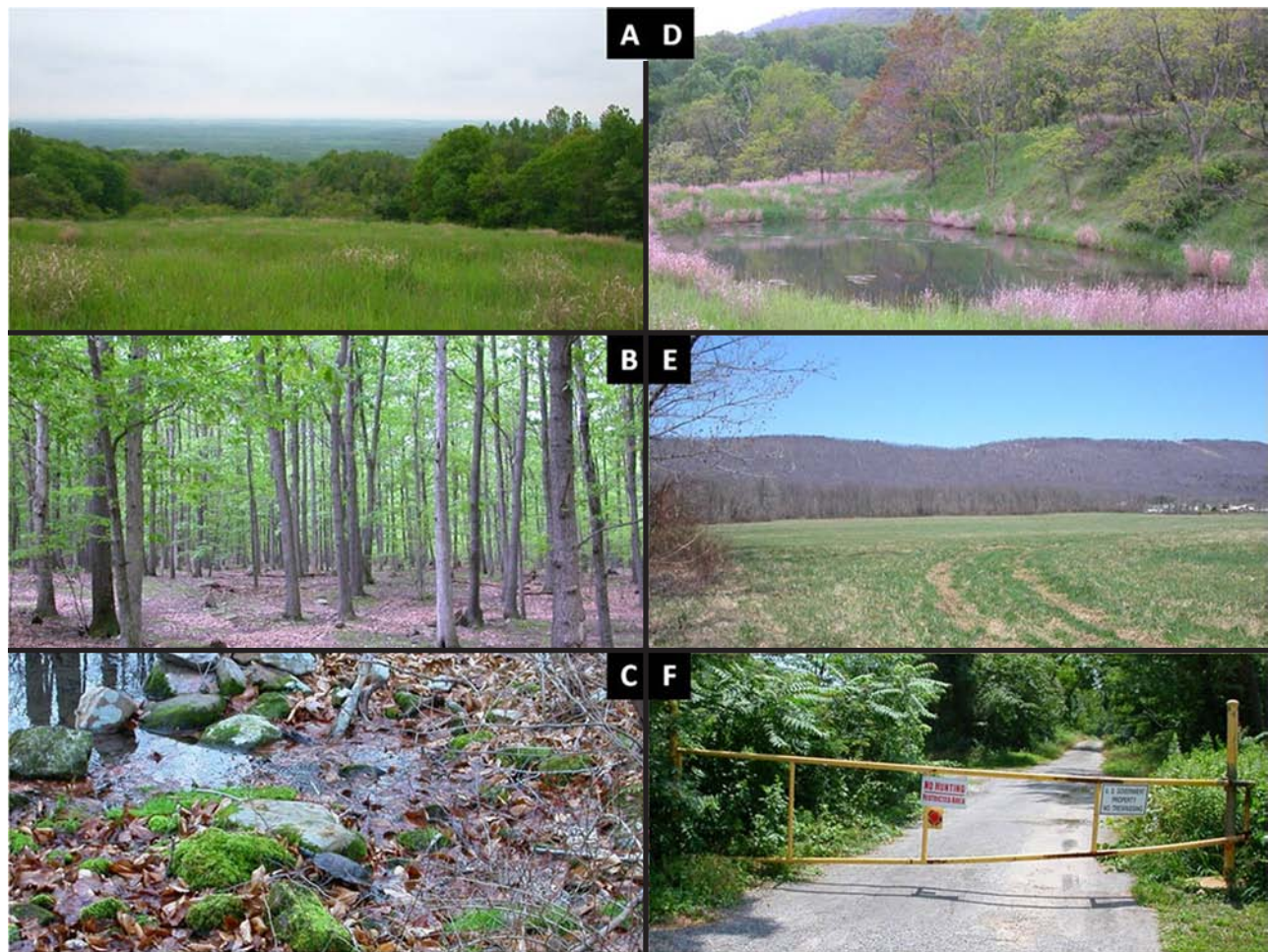


Figure 1. Some of the views and habitats characteristic of Letterkenny Army Depot (LEAD) Zone II, south central Pennsylvania. A = open meadows, B = deciduous temperate forest, C = springs and creeks, D = vernal pools, E = agricultural fields, F = roads and fences.

niques (Heyer et al., 1994). All marked individuals were released at their capture sites. Vouchers of selected species are deposited in the Section of Zoology and Botany of the State Museum of Pennsylvania, Harrisburg.

Data Analysis: Species composition was derived from pooling together all species encounters from all the different techniques employed during this survey. We compared our findings with those expected from prior literature (Hulse, et al., 2001; Tetra Tech, Inc. 2001; Mark Zimmerman, Unpubl. data). We assessed the amphibian and reptile communities by using lists of species richness and species composition. To determine relative abundance, we used only the records obtained in traps and on timed walking/driving transects. We divided the total number of individuals of a given species for the whole duration of this survey by the total number of encounters of all of the species of both the amphibians and reptiles separately. We are aware of the weaknesses and biases of this rough analysis but also realize that, in spite of its limitations, these data provide sufficient estimates of richness and evenness for comparison with long-term, targeted, and rigorous demographic accounts of the herpetological community at this location.

Results and Discussion

In the 16 months of our study, we detected 15 species of amphibians (Table 1) in Zone II of LEAD. Based on captures only, the two most abundant amphibians were the American Toad (*Anaxyrus americanus*) (Figure 2), with 34.7% of total amphibian captures ($n = 709$), and the Bronze Frog (*Lithobates clamitans*) with 21.8% (Figure 3). Comparatively, our species list for amphibians represented 78.9% of the 19 amphibians reported from LEAD during 2000–2002 (Zimmerman, Unpubl. data), 52.0% of the 25 species predicted to occur at LEAD by the Integrated Natural Resources Management Plan (INRMP) (Tetra Tech, Inc. 2001), and 60.0% of the 25 species reported from Franklin County (Hulse et al., 2001). The Bullfrog (*Lithobates catesbeianus*) was detected exclusively and sporadically through male calls. Because no individuals were captured, this species was excluded from the relative abundance analyses.



Figure 2. A rusty colored American Toad (*Anaxyrus americanus*), a common morph in our experience at this site, had the highest relative abundance among amphibians at Letterkenny Army Depot, Zone II, in south-central Pennsylvania during our 2003–2004 survey.

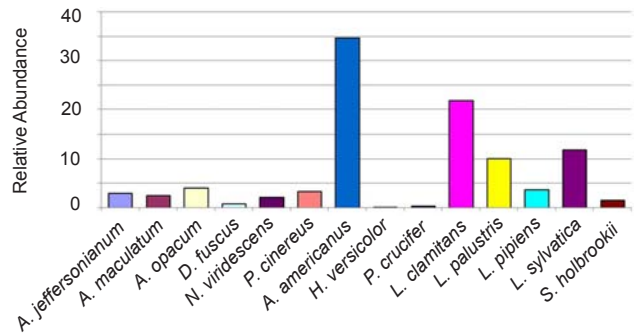


Figure 3. Percent relative abundance of amphibian species, in percent encounter per total number of individuals sighted ($n = 709$) at LEAD, Zone II, in south-central Pennsylvania during 2003–2004.

During that same study period, we detected 14 species of reptiles (Table 2) in Zone II. The most abundant reptile was the Eastern Box Turtle (*Terrapene carolina*), which accounted for 62% of the total captures of reptiles (Figure 4). The Five-lined Skink (*Plestiodon fasciatus*) and the Eastern Racer (*Coluber constrictor*) were the second most abundant reptiles at LEAD, during our study, each accounting for 5.3% of all reptile captures ($n = 56$). Comparatively, we found two

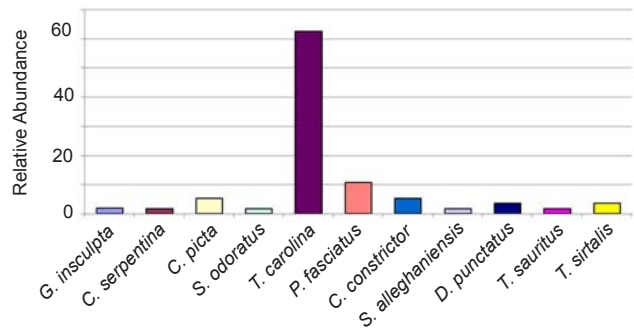


Figure 4. Percent relative abundance of reptile species, in percent encounter per total number of individuals sighted ($n = 56$) at LEAD, zone II, in south central Pennsylvania during 2003–2004.

more species than the twelve reported from LEAD during 2000–2002 (Zimmerman, unpubl. data), we found 56.0% of the 25 species predicted to occur at LEAD from the INRMP (Tetra Tech, Inc. 2001), and we found 63.6% of the 22 spe-

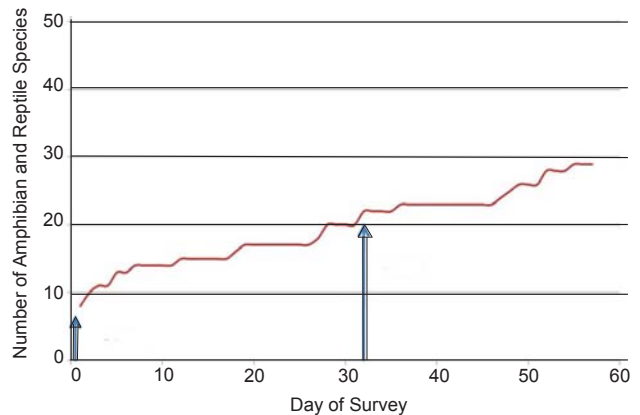


Figure 5. Daily cumulative number of species captured at LEAD, zone II, in south central Pennsylvania using all methods during 2003–2004.

Table 1. List of species of amphibians at Letterkenny Army Depot, Franklin County, Pennsylvania under different time and survey circumstances. The list of species, on the left, represents all the amphibians found in Pennsylvania (Hulse et al. 2001). Orange highlight indicates endangered species. 1 = amphibians present in Franklin County, Pennsylvania, and may be found in LEAD, Integrated Natural Resources Management Plan (Tetra Tech, Inc. 1999). 2 = amphibians in south-central Pennsylvania (Hulse et al., 2001), 3 = amphibians positively identified "in situ" by Mark Zimmerman during 2000-2002. 4 = amphibians positively identified "in situ" in the present survey 2003-2004. * = species considered endangered by the Commonwealth of Pennsylvania (Felbaum, 1995). ** = species considered threatened by the Commonwealth of Pennsylvania (Felbaum, 1995).

Scientific Name	1	2	3	4
Salamanders (21 species)				
<i>Cryptobranchus alleganiensis</i>	Y	N	N	N
<i>Necturus maculosus</i>	N	N	N	N
<i>Ambystoma jeffersonianum</i>	Y	Y	Y	Y
<i>Ambystoma maculatum</i>	Y	Y	Y	Y
<i>Ambystoma opacum</i>	Y	Y	Y	Y
<i>Notophthalmus viridescens</i>	Y	Y	Y	Y
<i>Aneides aeneus</i> **	N	N	N	N
<i>Desmognathus fuscus</i>	Y	Y	Y	Y
<i>Desmognathus monticola</i>	N	N	N	N
<i>Desmognathus ochrophaeus</i>	Y	Y	N	N
<i>Plethodon cinereus</i>	Y	Y	Y	Y
<i>Plethodon electromorphus</i>	N	N	N	N
<i>Plethodon glutinosus</i>	Y	Y	Y	N
<i>Plethodon hoffmani</i>	Y	Y	Y	N
<i>Plethodon wehrlei</i>	N	N	N	N
<i>Hemidactylium scutatum</i>	Y	Y	N	N
<i>Gyrinophilus porphyriticus</i>	Y	Y	N	N
<i>Pseudotriton montanus</i> *	N	N	N	N
<i>Pseudotriton ruber</i>	Y	Y	Y	N
<i>Eurycea bislineata</i>	Y	Y	Y	N
<i>Eurycea longicauda</i>	Y	Y	Y	N
Toads and Frogs (14 species)				
<i>Scaphiopus holbrookii</i>	N	N	N	Y
<i>Anaxyrus americanus</i>	Y	Y	Y	Y
<i>Anaxyrus woodhousii</i>	Y	Y	N	N
<i>Acris crepitans</i>	Y	Y	Y	N
<i>Hyla versicolor/Hyla chrysoscelis</i> complex	Y	Y	Y	Y
<i>Pseudacris brachyphona</i>	N	N	N	N
<i>Pseudacris crucifer</i>	Y	Y	Y	Y
<i>Pseudacris triseriata</i>	Y	Y	N	N
<i>Lithobates catesbeianus</i>	Y	Y	Y	Y
<i>Lithobates clamitans</i>	Y	Y	Y	Y
<i>Lithobates palustris</i>	Y	Y	Y	Y
<i>Lithobates pipiens</i>	N	Y	N	Y
<i>Lithobates sphenoccephalus</i>	N	N	N	N
<i>Lithobates sylvaticus</i>	Y	Y	Y	Y
Total (35 species)	25	25	19	15

cies reported from Franklin County (Hulse et al., 2001). The net increase of two species of reptiles from Zimmerman's data is explained by the detection of the Northern Water Snake (*Nerodia sipedon*), Eastern Ribbon Snake (*Thamnophis sauritus*), Timber Rattlesnake (*Crotalus horridus*), and Common Musk Turtle (*Sternotherus odoratus*) during our survey. In turn, we did not detect the Eastern Hognose Snake (*Heterodon platirhinos*) or the Spotted Turtle (*Clemmys guttata*) in Zone II. Interestingly, no Sliders (*Trachemys scripta*) were detected at LEAD despite the growing presence of this exotic species in Pennsylvania.

Based on our 16-month survey, the species list for LEAD contains just over one half of the expected species richness

in the region, and we consider this a preliminary estimate. The species not detected in Zimmerman's survey could be argued to have been no more or less remarkable than what we detected, such as the Bog Turtle versus the Eastern Spadefoot, as compared to the species that he did not find. Because the rate of species discovery in the region continued to increase over the duration of our study (Figure 5), we are confident that the gap in species expected versus those detected would be closed as more time and targeted techniques are used in the future. Thus, we believe that both Zimmerman's and our studies, best serve as snap shots subjected to sampling constraints. The differences between our survey and Zimmerman's are small and seem to us to be

Table 2. List of species of reptiles at Letterkenny Army Depot, Franklin County, Pennsylvania under different time and survey circumstances. The list of species, on the left, represents all the reptiles found in Pennsylvania (Hulse et al. 2001). Orange highlight indicates endangered species. 1 = reptiles present in Franklin County, Pennsylvania, and may be found in LEAD, Integrated Natural Resources Management Plan (Tetra Tech, Inc. 1999). 2 = reptiles in south-central Pennsylvania (Hulse et al., 2001), 3 = reptiles positively identified "in situ" by Mark Zimmerman during 2000-2002. 4 = reptiles positively identified "in situ" in the present survey 2003-2004. * = species considered endangered by the Commonwealth of Pennsylvania (Felbaum, 1995). ** = species considered threatened by the Commonwealth of Pennsylvania (Felbaum, 1995).

Scientific Name	1	2	3	4
Turtles (14 species)				
<i>Chelydra serpentina</i>	Y	Y	Y	Y
<i>Sternotherus odoratus</i>	Y	Y	N	Y
<i>Kinosternon subrubrum</i>	N	N	N	N
<i>Clemmys guttata</i>	Y	Y	Y	N
<i>Glyptemys insculpta</i>	Y	Y	Y	Y
<i>Clemmys muhlenbergii*</i>	Y	N	N	N
<i>Terrapene carolina</i>	Y	Y	Y	Y
<i>Emydoidea blandingii</i>	N	N	N	N
<i>Graptemys geographica</i>	Y	Y	N	N
<i>Chrysemys picta picta</i>	N	N	N	N
<i>Chrysemys picta marginata</i>	Y	Y	Y	Y
<i>Pseudemys rubriventris**</i>	Y	N	N	N
<i>Apalone spinifera</i>	N	N	N	N
<i>Apalone mutica</i>	N	N	N	N
Lizards (4 species)				
<i>Sceloporus undulatus</i>	Y	Y	N	N
<i>Plestiodon anthracinus</i>	Y	N	N	N
<i>Plestiodon fasciatus</i>	Y	Y	Y	Y
<i>Plestiodon laticeps</i>	N	N	N	N
Snakes (20 species)				
<i>Nerodia sipedon</i>	Y	Y	N	Y
<i>Storeria dekayi</i>	Y	Y	N	N
<i>Storeria occipitomaculata</i>	Y	Y	N	N
<i>Thamnophis sauritus</i>	Y	Y	N	Y
<i>Thamnophis sirtalis</i>	Y	Y	Y	Y
<i>Thamnophis brachystoma</i>	N	N	N	N
<i>Heterodon platirhinos</i>	Y	Y	Y	N
<i>Diadophis punctatus</i>	Y	Y	Y	Y
<i>Coluber constrictor</i>	Y	Y	Y	Y
<i>Liochlorophis vernalis</i>	Y	Y	N	N
<i>Opheodrys aestivus</i>	N	N	N	N
<i>Scotophis alleghaniensis</i>	Y	Y	Y	Y
<i>Lampropeltis triangulum</i>	Y	Y	Y	Y
<i>Clonophis kirtlandii</i>	N	N	N	N
<i>Carphophis amoenus</i>	N	Y	N	N
<i>Regina septenvittata</i>	N	N	N	N
<i>Virginia valeriae</i>	N	N	N	N
<i>Agkistrodon contortrix</i>	Y	N	N	N
<i>Crotalus horridus</i>	Y	Y	N	Y
<i>Sistrurus catenatus</i>	N	N	N	N
Total (38 species)	25	22	12	14

best explained by sampling biases in timing or technique.

We are optimistic in that the current habitat use at LEAD, and especially within Zone II, where this survey took place, seems to be compatible for a well represented Pennsylvania native herpetofauna. Zone II has not been subjected to harsh alterations experienced by the rest of LEAD for over a decade. In fact, a minimum harvesting of secondary growth deciduous forest, marginal and low impact agricul-

tural practices, few and barely utilized roads, strong restrictions in access, and Natural Resources Office monitoring at the base, have been fostering better conditions for the future of the site.

In our opinion, however, it is critical that long-term efforts to survey and monitor the status of species composition and abundance of the amphibians and reptiles at LEAD be continued. The focus on endangered or threatened spe-

cies should be matched with robust studies of demographic trends in apparently common, or safe, species such as the Pickerel Frog, the Eastern Racer, or the Eastern Box Turtle. Future conservation endeavors, should also contemplate the need to enact several habitat restoration efforts, including wetlands, critical to amphibians and aquatic reptiles. For the future, and as more ambitious goals, we may consider desirable species reintroductions, potentially, including the sensitive species historically expected in the region, for instance the Eastern Mud Salamander, the Bog Turtle, the Eastern Redbelly Turtle, and Rough Green Snake.

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About the Kansas Herpetological Society

The KHS 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 the herpetofauna of Kansas in particular; and to achieve closer cooperation and understanding between herpetologists, so that they may work together in common cause. 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 Secretary, 5438 SW 12th Terrace Apt. 4, Topeka, Kansas 66604.

KHS Meetings

The KHS holds an annual meeting in the fall of each year. The meeting is, minimally, a two day event with lectures and presentations by herpetologists. All interested individuals are invited to make presentations. The annual meeting is also the time of the Saturday night social and fund-raising auction.

Field Trips

The KHS hosts two or more field trips each year, one in the spring and one in the fall. Field trips are an enjoyable educational experience for everyone, and also serve to broaden our collective understanding of the distribution and abundance the amphibians, reptiles, and turtles in Kansas. All interested persons are invited to attend.

Editorial Policy

The Journal of Kansas Herpetology, currently issued quarterly (March, June, September, and December), publishes all society business.

Submission of Manuscripts

As space allows, *JKH* publishes all manner of news, notes, and articles. Priority of publishing is given to submissions of Kansas herpetological subjects and by KHS members; however all submissions are welcome. The ultimate decision concerning the publication of a manuscript is at the discretion of the Editor. Manuscripts should be submitted to the Editor in an electronic format whenever possible. Those manuscripts submitted in hard copy may be delayed in date of publication. Manuscripts should be submitted to the Editor no later than the 1st 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. In the interest of consistency and comprehension, the KHS Executive Council voted that the common names used in *JKH* will follow the latest edition of standardized common names as organized by CNAH (www.cnah.org; Collins and Taggart, 2009), which are also used in the prior and current editions of *Amphibians and Reptiles in Kansas* (currently Collins and Collins, 1993) and the *Peterson Field Guide* (Conant and Collins, 1991, 1998).

Reprints & Artwork

JKH publishes original peer-reviewed submissions under the Articles and Notes sections. Upon review, acceptance, and publication, Portable Document File (PDF) copies are provided gratis to the author on request. Figures and photographs submitted with manuscripts are welcome, but must be sized appropriately by authors for this journal's column sizes (i.e., 19.5 or 39 picas wide). Particular attention should be paid to reduction of text on the figures.

Societal Awards, Grants, and Recognitions

Distinguished Life Members

Individuals selected as *Distinguished Life Members* are chosen by the KHS Executive Council based on their distinguished published research papers on Kansas herpetology.

Bronze Salamander Award

Established in 1987, this Award is presented to those individuals whose efforts and dedication to the Kansas Herpetological Society go far beyond the normal bounds. The recipients of this Award have given exemplary service to the KHS, and are presented with an elegant bronze sculpture of a Barred Tiger Salamander.

The Howard K. Gloyd - Edward H. Taylor Scholarship

The Gloyd-Taylor Scholarship is present annually by the Kansas Herpetological Society to an outstanding herpetology student. The scholarship is a minimum of \$300.00 and is awarded on the basis of potential for contributing to the science of herpetology. Students from grade school through university are eligible.

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 will be selected by the KHS Awards Committee. A minimum award of \$300 is given annually.

The George Toland Award for Ecological Research on North American Herpetofauna

This CNAH Award was established in recognition of the scientific career of George Fredrick Toland, whose life-long interest in amphibians, reptiles, and turtles was passed on to so many of his students. The recipient of this award will be selected by the KHS Awards Committee. A minimum award of \$200 is given annually at the end of the KHS meeting.

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

This CNAH Award was 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, reptiles, and turtles of Kansas is amply demonstrated in their extensive and excellent writings and photography, both academic and popular, about these animals. 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 native species of Kansas amphibian, reptile, and/or turtle and 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, reptiles, and/or turtles. *The Collins Award* is minimally \$1,000.00, and is neither a grant nor a scholarship. No nominations or applications can be made for it.

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