

**Wildlife Preservation Fund Grant #01-046W
A Herpetological Survey of Knox County, Illinois.
Final Report**

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Introduction

Knox County located in the western part of central Illinois is an area of 716.13 km that contains diverse and varied habitat, including a flood plain, wetlands, deciduous forest and grassland in a matrix of primarily agricultural land. Of special note is the fact that Knox County contains the second oldest restored prairie in the nation (A History of Green Oaks 1999). Notwithstanding the fact that the county contains 1654 impoundments (total acreage = 2796) and 312 miles of streams the herpetological fauna remains basically unknown (Bureau of Economics and Business Resources 1999, Smith 1961).

Intensive herpetological surveys of the area are non-existent and most distribution records appear incidental. Supporting this observation is the significantly higher number of amphibians and reptiles recorded in the surrounding counties, Peoria County with 28 recorded species, Fulton County with 30 recorded species, and Henry County with 23 recorded species (Illinois Natural History Survey (INHS) Amphibian and Reptile Database 2000). In contrast, only 16 species of amphibians and reptiles have been recorded from Knox County as of April 2000. Of these 16 species the majority are either unsubstantiated written records with no voucher specimens, or records dating to the first half of the previous century (Smith 1961, Phillips *et al.* 1999, INHS Amphibian and Reptile Database 2000).

It is therefore obvious that an intensive survey of the amphibians and reptiles of Knox County is long overdue. This project will greatly increase our knowledge of the diversity, abundance, and distribution of this often-neglected vertebrate group. In addition, the occurrence of at least one endangered (*Sistrurus catenatus*), and one threatened (*Hemidactylium scutatum*), species in the county increases the urgency of, and need for, this project.

I believe that this project can significantly contribute to the conservation of the amphibians and reptiles of Knox County. Not only through clarifying the distribution and composition of herpetological communities which will necessarily influence any future management decisions, but also through the collection of valuable specimens which are central to further, and future, studies.

Materials and Methods

A total of 9 collecting trips were made to Knox County during the 2000-2001 field season. Each trip was between 2-3 days in duration with an average of 378.77 miles being traveled per trip. Searches were conducted by foot and vehicle, and any amphibian and reptile species found were captured by hand, net, or trap. All capture localities were recorded on USGS 15' topographic maps using the *Illinois Gazetteer* as the reference. At least one specimen of each species were sacrificed following the *Guidelines for the Use of Live Amphibians and Reptiles in Field Research* compiled by the American Society of Ichthyologists and Herpetologists (ASIH), The Herpetologists League (HL), and the Society for the Study of Amphibians and Reptiles (SSAR). These specimens were prepared in 10% formalin and preserved in 50% isopropyl alcohol following the standard protocol. These voucher specimens serve as a tactile record of species occurrence and are all now housed in the INHS Amphibian and Reptile collection located in Champaign, Illinois. The initial project excluded any threatened or endangered species, however, one specimen of the Four-toed salamander (*Hemidactylium scutatum*) was collected after consultation with INHS staff and the Illinois Endangered Species Board under an Illinois Department of Natural Resources (IDNR) Endangered and Threatened Species Permit # 00-20S. A special permit was obtained from the IDNR Division of Natural Heritage for work in the Snake Den Hollow Fish and Wildlife Area (SDH). Dr. Stuart Allison and Joe Diveney gave permission and facilitated entrance to Green Oaks (GO), the biological field station of Knox College. All other specimens were collected under a general scientific permit, # A01.0162, from IDNR.

Results

A total of 19 species of amphibians and reptiles were found during this project, of these 20 specimens were collected, 1 specimen was photographed, and 1 specimen observed. The majority of these species were captured, preserved and are now represented in the INHS collection by voucher specimens.

The collection of specimens resulting from this project represents 11 new county records, four pre-1980 record updates, and four recent record updates. In addition, the

following publications, resulting directly from this project, are either in press or being prepared:

- 1) **Meyer, M. J.**, J. A. Crawford, and S. Allison. 2001/2002. Geographic Distribution. *Hemidactylium scutatum*. Herpetol. Rev. (in preparation)
- 2) Petzing, J. E., J. E. Mui, M. J. Dreslik, C. A. Phillips, D. B. Shepard, J. A. Crawford A. R. Kuhns, **M. J. Meyer**, T. G. Anton, E. O. Moll, J. G. Palis, D. Mauger. 2001/2002. New County Records for Amphibians and Reptiles in Illinois. Herpetol. Rev. (in press)
- 3) Crawford, J. A., and **M. J. Meyer**. 2001/2002. New Amphibian and Reptile County Records from Stark and Knox Counties Illinois. Herpetol. Rev. (in preparation)

In conclusion, this project increases the number of known amphibian and reptile species from Knox County from 15 to 25 species.

Discussion

The 19 species of amphibians and reptiles collected during this project, include representatives of two salamander species, six frog and toad species, four turtle species, and seven snake species. A summary of the species collected follows. The historic distribution, nomenclature, and common names follow the INHS Amphibian and Reptile database and Phillips et al. 1999.

Order Caudata

1. *Ambystoma texanum* (Smallmouth Salamander)
New county record. Numerous egg masses observed at GO Field Station, Victoria, IL. All egg masses in grassland ponds. Identification based on eggs raised through metamorphoses. Voucher specimen still in author's collection to be deposited in the INHS collection.
2. *Hemidactylium scutatum* (Four-toed Salamander)
New county record. Only known from a verified sighting, first voucher specimen from this relic population. Voucher collected under IDNR Endangered and Threatened Species Permit # 00-20S (copy attached).

Numerous individuals and egg masses of this species were observed at GO in various seeps. Voucher specimen INHS 17233.

Order Anura

3. *Bufo americanus* (American Toad)

Update of a pre-1980 record. Numerous individuals observed and mating calls heard at a variety of sites across the county. Common species. Voucher specimen from SDH, 2nd parking lot on footpath. This specimen is in the author's collection and is to be deposited in INHS collection.

4. *Acris crepitans* (Cricket Frog)

Update of a pre-1980 record. Numerous individuals observed throughout county. Voucher specimen from SDH, 2nd parking lot, in creek. This specimen is in the author's collection and is to be deposited in INHS collection.

5. *Hyla chrysoscelis/versicolor* complex (Grey Treefrog)

New county record. Heard and seen in suitable habitat across the county. Especially common in the vicinity of GO and the SDH boat ramp area. Voucher specimen collected at the GO gate pond. INHS 17354.

6. *Pseudacris triseriata* (Western Chorus Frog)

New county record. Numerous choruses heard at a variety of sites. Voucher specimen from GO, Lake Sharvey, picnic area. INHS 16871.

7. *Rana blairi* (Plains Leopard Frog)

New county record. Three specimens collected at various sites in SDH. Also observed at other sites. Voucher specimens INHS 16870 (SDH, 2nd Parking Lot, on ridge), INHS 17237 (SDH, Boat ramp), and one specimen (SDH, 2nd Parking Lot, creek) in the author's collection to be deposited in the INHS collection.

8. *Rana catesbiana* (Bullfrog)

Update of a pre-1980 record. This species is common across the county. Numerous calls heard from a variety of wet habitats. Voucher specimen

collected at GO, Lake Sharvey, picnic area. In the author's collection to be deposited in the INHS collection.

Order Testudines

9. *Chelydra serpentina* (Snapping Turtle)

New county record. This species were sighted on at least three occasions. Specimens were captured with hoop traps using sardines as bait. Two breeding age specimens were captured, photographed, and released at GO, Little John pond. Photos to serves as voucher in the INHS collection.

10. *Chrysemys picta* (Painted Turtle)

New county record. Collected at GO, Little John pond. Numerous other individuals observed at ponds and other bodies of water across the county. INHS 17240.

11. *Trachemys scripta* (Slider)

New county record. Observed at SDH. Voucher specimen (shell only) in the display collection at the SDH site office.

12. *Apalone spinifera* (Spiny Softshell)

New county record. Observation only. This species was twice observed in atypical habitat (ponds at SDH). A Voucher specimen was not captured in spite of numerous trapping attempts.

Order Squamata: Suborder Serpentes

13. *Coluber constrictor* (Racer)

New county record. Voucher specimen dead on road at 1800E, 1.7 mile south of Victoria. INHS 17421.

14. *Elaphe vulpina* (Fox Snake)

Update of post-1980 record. Numerous dead individuals of this species were observed on roads across the county. Life specimens captured at GO under cover objects in prairie habitat. Voucher specimen dead on road at Rt. 180, 0.3 miles west of 2250N. INHS 17362.

15. *Lampropeltis triangulum* (Milk Snake)

New county record. Only one specimen found during duration of study. Voucher specimen is a female with eggs collected live on a dirt road (Snake Den Road (1700N), 0.9 miles south of 1950E). INHS 17360.

16. *Nerodia sipedon* (Northern Water Snake)

Update of post-1980 record. One of the more common snakes in Knox County. Numerous individuals observed in suitable habitat across the county. Voucher specimen dead on road (N1250, 0.5 miles east of 2100E). Not catalogued due to state of decomposition.

17. *Storeria dekayi* (Brown Snake)

Update of pre-1980 record. Fairly common species, live specimens were collected from GO; numerous dead individuals found on county roads. Voucher specimens INHS 17231 (GO, Lake Sharvey, picnic area under woodpile with *Storeria occipitomaculata*); INHS 17363 (dead on road, 1900N, 0.8 miles east of 1450E).

18. *Storeria occipitomaculata* (Redbelly Snake)

Update of post 1980 record. Voucher specimen INHS 17232 collected at GO, Lake Sharvey, picnic area under woodpile with *Storeria dekayi*.

19. *Thamnophis sirtalis* (Common Garter Snake)

Update of a post 1980 record. Numerous individuals observed at SDH and GO. Common species in prairie and grassland habitat. Voucher specimen INHS 17239 (dead on road, N2200, 0.2 miles west of 2000E).

I believe that further surveys of this county will yield additional species. Most likely are new records for the Testudines and the Ranid frogs. However, this will only result from additional intensive long-term surveys. Finally, an updated list of all the amphibians and reptiles found in Knox County as of July 2001 are attached.

Acknowledgements

I would like to acknowledge the Illinois Department of Natural Resources Wildlife Preservation Fund and the Illinois Chapter of the Wild Turkey Federation for

funding this project. Knox College, Dr. Stuart Allison, and Joe Deviney for permission and access to the Green Oaks Biological Field Station. IDNR Division of Natural Heritage, Mr. Rick Knisely, and his staff for permission and access to the Snake Den Hollow Fish and Wildlife Area. The Illinois Natural History Survey, Dr. Chris Phillips, and John Petzing for helping confirm and processing specimens. Lastly, John Crawford and Karyla K. Trester for invaluable assistance in the field.

Literature Cited

- A History of Green Oaks*. 1999. Knox College: knoxweb@knox.edu. Online @<http://www.knox.edu/knox/knoxweb/academic/biology/home.html>
- Bureau of Economic and Business Resources. 1999. *Illinois Statistical Abstract*. College of Commerce and Business Research. University of Illinois, Urbana-Champaign.
- INHS Amphibian and Reptile Database*. 2000. Illinois Natural History Survey: Center for Biodiversity. Online @<http://ellipse.inhs.uiuc.edu/INHSCollections/Herpsearch.html>
- Phillips, C. A., R. A. Brandon, and E. O. Moll. 1999. *Field Guide to the Amphibians and Reptiles of Illinois*. Illinois Natural History Survey Manual 8. Urbana-Champaign.
- Smith, P. W. 1961. *The Amphibians and Reptiles of Illinois*. Illinois Natural History Survey Bulletin 28(1) November 1961.

Herpetological Fauna of Knox County, Illinois as of July 2001

Order Caudata

<i>Ambystoma texanum</i>	Voucher (Current Study)
<i>Hemidactylium scutatum</i>	Voucher (Current Study)

Order Anura

<i>Bufo americanus</i>	Voucher (Current Study)
<i>Acris crepitans</i>	Voucher (Current Study)
<i>Hyla chrysoscelis/versicolor</i>	Voucher (Current Study)
<i>Pseudacris triseriata</i>	Voucher (Current Study)
<i>Rana blairi</i>	Voucher (Current Study)
<i>Rana catesbiana</i>	Voucher (Current Study)

Order Testudines

<i>Chelydra serpentina</i>	Voucher (Photo)
<i>Chrysemys picta</i>	Voucher (Current Study)
<i>Trachemys scripta</i>	Voucher (Current Study)
<i>Apalone spinifera</i>	No Voucher (Observation)

Order Squamata: Suborder Sauria

<i>Ophisaurus attenuatus</i>	Voucher (Pre-1980)
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Order Squamata: Suborder Serpentes

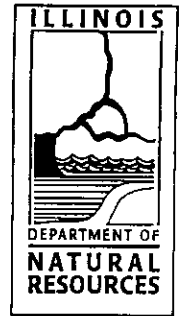
<i>Coluber constrictor</i>	Voucher (Current Study)
<i>Elaphe vulpina</i>	Voucher (Current Study)
<i>Heterodon platirhinos</i>	Voucher (Pre-1980)
<i>Lampropeltis triangulum</i>	Voucher (Current Study)
<i>Nerodia sipedon</i>	Voucher (Post-1980)
<i>Opheodrys vernalis</i>	Voucher (Pre-1980)
<i>Storeria dekayi</i>	Voucher (Current Study)
<i>Storeria occipitomaculata</i>	Voucher (Current Study)
<i>Thamnophis radix</i>	Voucher (Pre-1980)
<i>Thamnophis sirtalis</i>	Voucher (Current Study)
<i>Virginia valeriae</i>	Voucher (Post-1980)
<i>Sistrurus catenatus</i>	Voucher (Post-1980)

Issued: 03/15/2001

Expires: 12/31/2001

Authorization is hereby granted, under Section 5/3.22, Chapter 520 and Section 5/20-100, Chapter 515 of the Illinois compiled Statutes to:

Permit Number: A01.0162
Last Name: Meyer First Name: Mathys
Business Name: Illinois State University Dept. of Biological Sciences
Street Address: Campus Box 4120
City: Normal State: IL Zip Code: 61790-4120



for strictly scientific, educational or zoological purposes, to take the Illinois fauna identified below subject to the following provisions:

Provisions: May collect aquatic life (except threatened and endangered species) statewide by any method.

I agree to the following provisions and terms of this Scientific Permit:

Approved: Director, Dept. Natural Resources

Permittee's Signature: [Signature]
(Permit not valid unless signed)

By: [Signature]
Director Office of Resource Conservation

TERMS FOR SCIENTIFIC PERMIT

1. Under no circumstances shall a scientific permit be used in lieu of sport or commercial licenses.
2. All taking shall be performed by or under the direct supervision of the permittee. Permittee must be present with persons involved in actual taking.
3. All gear left unattended must be tagged bearing name and scientific permit number of permittee.
4. Permittee must be at least eighteen (18) years of age.
5. Permits are not transferable and PERMITTEE SHALL CARRY PERMIT AT ALL TIMES WHEN TAKING FAUNA.
6. Agency, Company or Institution listed on the application is responsible for the taking activities and reports of the individual issued this permit.
7. Scientific permits will not be valid for taking any species appearing on official State List of Endangered and Threatened Vertebrate Species of Illinois (see attached Administrative Rule, Part 1010) without specific written approval from the Department of Natural Resources.
8. A Federal Permit is required for the taking of species protected by the Federal Government in addition to the State Scientific Permit.
9. The Division of Wildlife Resources may require special conditions or provisions on any Scientific Permit.
10. Use of rotenone or any other toxic materials for taking must have special written approval from the Department of Natural Resources and may need a variance from the Illinois Environmental Protection Agency.
11. By January 31 of next year, an annual report of the permittee's activities must be submitted to the Division of Wildlife Resources. In addition, the permittee shall submit a copy of all written reports, etc. that result from the permitted activity. Permits will be renewed on after these annual reports and appropriate publications have been received.
12. Any permit may be revoked or suspended at any time by the Department of Natural Resources.
13. Permits expire December 31 each calendar year, unless otherwise specified.

The Department of Natural Resources is an equal opportunity employer.

APPLICATION AND PERMIT FOR RESEARCH
 IN ILLINOIS STATE PARKS, FISH & WILDLIFE, FORESTS, CONSERVATION AND RECREATION AREAS
 Provide information to extent known and pertinent. Use extra sheets if necessary.

APPLICANT

NAME, POSITION, ADDRESS & PHONE NO. MATTHYS J. MEYER (Graduate Student) ILLINOIS STATE UNIVERSITY DEPT. BIO. SCIENCES NORMAL, IL 61790-4120 TEL (309) 438-3090	GENERAL FIELD OF INTEREST, PROFESSIONAL QUALIFICATIONS, & INSTITUTIONAL AFFILIATION Herpetology, BA. BIOL (KNOX COLLEGE) MSc (IN PROGRESS ISU)
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PROPOSED VISITS AND ACTIVITIES

NAME OF SITE & COUNTY SNAKE DEN HOLLOW, STATE FISH & WILDLIFE AREA KNOX COUNTY, IL	FREQUENCY & LENGTH OF VISITS ONCE A WEEK DURING FIELD SEASON FOR APPROX. 4 HRS	DURATION OF PROJECT - WITH DATES 5/01/2000 - 29/11/2001
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GENERAL DESCRIPTION OF ACTIVITIES (INCLUDING NUMBER IN PARTY AND USE OF EQUIPMENT IN STATE FACILITY) ATTACHED

OBJECTIVE OF PROJECT (attach a copy of project plan)
 ATTACHED

METHODS & PROCEDURES
 ATTACHED

RECORDS TO BE KEPT
 Voucher specimen, field logs, & photographs (both site & species)

COLLECTING (INCLUDING CAPTURE & RELEASE)

SPECIES OR MATERIAL	NO. OF SPECIMENS	DISPOSITION OF SPECIMENS
UNKNOWN SEE OBJECTIVE	UNKNOWN	ILLINOIS NATURAL HISTORY Survey collect

METHODS OF COLLECTING

NET, HAND, TRAP

OTHER DISTURBANCES TO BE MADE

NONE

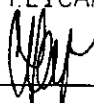
OTHER PERTINENT INFORMATION (list all collecting or banding permits held)

Scientific Permit # A00.016Z (1/19/00 - 12/31/2000)

Submit Application to: ILLINOIS DEPARTMENT OF NATURAL RESOURCES
 DIVISION OF NATURAL HERITAGE
 524 S. SECOND STREET
 SPRINGFIELD, IL 62701-1757

APPLICANT'S SIGNATURE

DATE

 MATTHYS J. MEYER

4/13/2000

Permission is granted for carrying on a special activity within the IL State Park System subject to the conditions specified in the above application, including the following conditions:

ILLINOIS DEPARTMENT OF NATURAL RESOURCES
BY W. E. McLean 28 February 2001
W. E. McLean DATE 10 May 2000
PERMIT EXPIRES ON: 31 December 2001 RENEWAL:
31 December 2000
SITE MANAGER Richard A. Krinsky DATE 10-5-00

The holder of this permit is subject to the RULES FOR MANAGEMENT OF ILLINOIS STATE PARKS, FISH & WILDLIFE, CONSERVATION AND RECREATION AREAS, except as stipulated on page one.

This permit is valid for a period of one year, or less if specified. The permit may be modified, suspended, or revoked by the Department at any time.

The holder of this permit shall submit an annual report to the Department including the following information:

1. Names of facilities visited and dates of visits.
2. Number of specimens and species collected by date and area.
3. Disposition of specimens.
4. Types, dates, and locations of disturbances made on state areas.

The permit holder shall provide the Department with copies or reprints of theses or publications derived from this research.

The permit holder must obtain permission from the site manager before commencing permitted activities even though the Department's approval may be given on this form.

*Future permits will not be issued until this requirement is met.



