A Survey of the Amphibians and Reptiles of Pulaski Co., Illinois

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Pulaski County, located within the Coastal Plains/Shawnee Hills Natural Division of southern Illinois, is 201 square miles in size and has a population of 7,348 (United States Census Bureau, 1999). It is one of the Illinois counties with the most remaining natural area. Of Illinois' 102 counties, it ranks third in area covered by swamps (0.7%), fourth in bottomland forest (7.7%), fifth in wetlands (9.6%), and tenth in perennial stream coverage (1.1%). Furthermore, 25% of the county is grasslands (Illinois Land-Use Clearinghouse, 2002). The Cache River defines much of its Northern and Western borders while the Ohio River binds the majority of the southern and eastern border.

Despite the apparent abundance of suitable habitat, Pulaski Co. appears to be relatively depauperate of herpetofauna in comparison with adjacent counties. Only 39 species are documented from Pulaski County (Appendix I), while adjacent counties contain an average of 57 species (Union Co., 67; Alexander Co., 60; Johnson Co., 57; and Massac Co., 45) (Phillips et al, 1999). There are 37 species found in at least one adjacent county not documented from Pulaski County.

Materials and Methods:

I made five trips to Pulaski County from 28 September 2002 to 30 June 2003. Surveys occurred at peak activity times: fall for reptiles and early breeding salamanders, late winter/early spring for salamanders and frogs, late spring/early summer for frogs and reptiles. Survey methods included road cruising (night for frog choruses and day for dead on road (DOR) specimens, general encounter surveys, visual encounter surveys in areas that were deemed likely to contain herpetiles, and trapping for turtles and salamanders with baited hoop traps and minnow traps, respectively. I documented the exact location of encountered reptiles and amphibians with a Garmin 12XL GPS with

waypoint averageing. Search effort and numbers of individuals seen were documented. I estimated frog chorus size.

When possible, Dead on Road (DOR) specimens were utilized as vouchers. All collection locations were recorded in UTM coordinates using a Garmin 12 XL Global Positioning System (GPS) in map datum NAD 83. For voucher preparation, all live-caught amphibians were anesthetized by submersion in MS-222. The inhalant halothane was used for reptiles. Tissue samples were taken from most aenesthetized specimens. Entire specimens were fixed/preserved in 10% formalin and are stored in 70% ethanol. Tissue samples were placed directly in to cold storage (-80 C). Specimens will be deposited in the Amphibian and Reptile Collection of the Illinois Natural History Survey, Champaign, Illinois.

Results:

A total of 30 species of amphibians (15) and reptiles (15) were documented in Pulaski County during this survey (Appendix 1). Eleven of 15 reptile species encountered during this survey were found DOR (Figure 1, Table 1). Eight species encountered DOR were not documented via any other survey method.

Of the 15 amphibians found, 8 were frogs and 7 salamanders. Two species of frog (*Pseudacris crucifer* and *P. triseriata*) and three species of salamander are county records (*Ambystoma maculatum, A. opacum,* and *A. talpoideum*). The 15 reptile species split to 9 snakes, 5 turtles and 1 lizard. Three species of snakes are county records (*Agkistrodon contortrix*, *Coluber constrictor*, and *Nerodia rhombifer*). Additionally, soft-shell turtles (*Apalone*) were observed basking at a site in Pulaski Co. However, two species of this genus occur in Illinois, the smooth softshell *A. mutica* and Spiny softshell,

A. spinifera. I was unable to capture and correctly identify the species observed but neither has been previously documented from Pulaski County.

A total of 55 specimens were vouchered from this survey (Table 2). Tissues from 21 of the specimens were placed into the Illinois Natural History Survey Tissue Collection for future genetic work (Table 3). Tissue was taken from all county record amphibians. All reptile specimens were encountered DOR and therefore unsuitable for tissue samples.

Below is a list of the species encountered within Pulaski Co. by site with GPS coordinates. I have only listed sites where multiple visits were made to conserve space. The majority of additional encounters can be found in Table 1.

Chestnut Hills Nature Reserve (figures 2, 3) **E:** 0317284 **N:** 4118988

27 September 2002
Search time: 2 hours 40 min
Desmognathus fuscus (>40)
Terrapene carolina (1) male
Acris crepitans (2)
Rana sphenocephala (5)
Plethodon glutinosus (2)

12 March 2003
Search time: 1 hour 30 min
E. cerrigera (1)
D. fuscus (10)
P. feriarum (~7) small chorus

2 May 2003
Search time: 45 min
P glutinosus (2)
T. carolina (1) adult male

30 June 2003
Search time: 2 hours
D. fuscus (7)
B. fowleri (4) near Ohio River
T. carolina (3) 1 male, 2 female
Eumeces fasciatus (1) under metal near Ohio R.
Diadophis punctatus (3) in rotting logs

Section 8 Woods **E:** 0321351 **N:** 4130604

27 September 2002
nothing encountered

28 September 2002
Search time: 2 hours
Ambystoma opacum (2)
Hyla avivoca (1)

Big Creek North x Butter Ridge Road (Figures 4, 5, 6) **E:** 0310746 **N:** 4130341

28 September 2002
Search time 1 hour 20 min

Acris creptians
Rana spenocephala
Bufo fowleri
Apalone sp.
Trachemys scripta

29 October 2002
Search time: 1 X 40 min

Rana clamitans (1)
Acris crepitans (5)

12 March 2003 (Figure 6)
Search time:1 hour

P. triseriata (>50)
P. crucifer (>50)

1 May 2003
Search time: 30 min

P. glutinosus (2) under tin

29-30 June 2003
Trap time: 44 baited hooptrap hours (figure 5)

No captures in hoop traps
R. sphenocephala (6)
T. scripta (10) basking
Apalone sp. (2) basing on bank
Eumeces fasciatus (1)

Remnant Cypress Slough: NW of Perks **E:** 0310749 **N:** 4130332

29 October 2002:
Search time: 3 hours

Collected:
Ambystoma texanum
Ambystoma maculatum
Ambystoma talpoideum
Acris crepitans
Pseudacris triseriata
Terrapene carolina (Shell only)

Encountered:
Thamnophis sirtalis (dead)
Ambystoma opacum (female on nest)

12 March 2003

Collected:

A. maculatum:
A. texanum
T. scripta
P. triseriata
P. crucifer
R. sphenocephala
R. catesbeiana

Encountered:

P. triseriata (>100)
H. crucufer (>100)
A. texanum (4)
A. maculatum (6)
Acris crepitans (1)
C. serpentine (1)
R. sphenocephala (~20)
R. catesbeiana (~10)

Discussion:

Despite the apparent abundance of suitable habitat on paper, it was difficult to find acceptable locations to search for reptiles and amphibians. Only one species of

snake was encountered alive in the field. Three Ringneck snakes, *Diadophis punctatus*, were found under rotten logs within Chestnut Hills Nature Reserve on 30 June 2003. All other snakes found during this survey were DOR.

Many specimens of *Pseudacris* were collected during this study. It was previously believed that the species of chorus frog inhabiting Pulaski Co. was the Upland Chorus frog, *Pseudacris feriarum*. However, the majority of specimens in this study keyed out to the Western Chorus frog, *P. triseriata*. The systematics of the genus *Pseudacris* is currently under investigation at the University of Texas. Additional tissue samples from these specimens were sent to Texas in the hopes that we will soon have a better understanding of which species occurs in southern Illinois.

The two state listed species found during this survey were previously known from the county (Phillips et al 1999). Both species were found in protected areas. Dusky salamanders, *Desmognathus fuscus*, were encountered in great numbers within Chestnut Hills Nature Reserve. Many females were found on nests during the fall search (occasionally 2-3 females on nests under the same rock). One Bird-voiced treefrog, *Hyla avivoca*, was found in Section 8 Woods. The individual was a recent metamorph indicating that some individuals had successfully bred at the site in 2002.

Summary:

This survey increased the known number of species inhabiting Pulaski Co. from 39 to 48 (Appendix 1). While this is a significant increase in the number of species known, there are undoubtedly additional species inhabiting the county that have not been documented. Additional surveying of Pulaski Co. is warranted to expand the species list.

Future surveys should include additional turtle trapping along Big Creek to determine which (or if both) species of *Apalone* occur within its banks.

Acknowledgements:

Thanks to Jim Waycuilis and Joseph R. Pitts for approving activities at Section 8 Woods and Chesnut Hills Nature Preserve, respectively. John Petzing and Chris Phillips provided access to historical records at the Illinois Natural History Survey and John Petzing assisted with tissue preparation and preservation. Finally, I thank John Crawford who assisted in the field on two trips.

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United States Census Bureau. 1999. accessed 04/04/02. <www.census.gov/population/estimates/county/co-99-1/99c1_17.txt

Figure 1. Locations of DOR reptiles found within Pulaski Co. during this survey

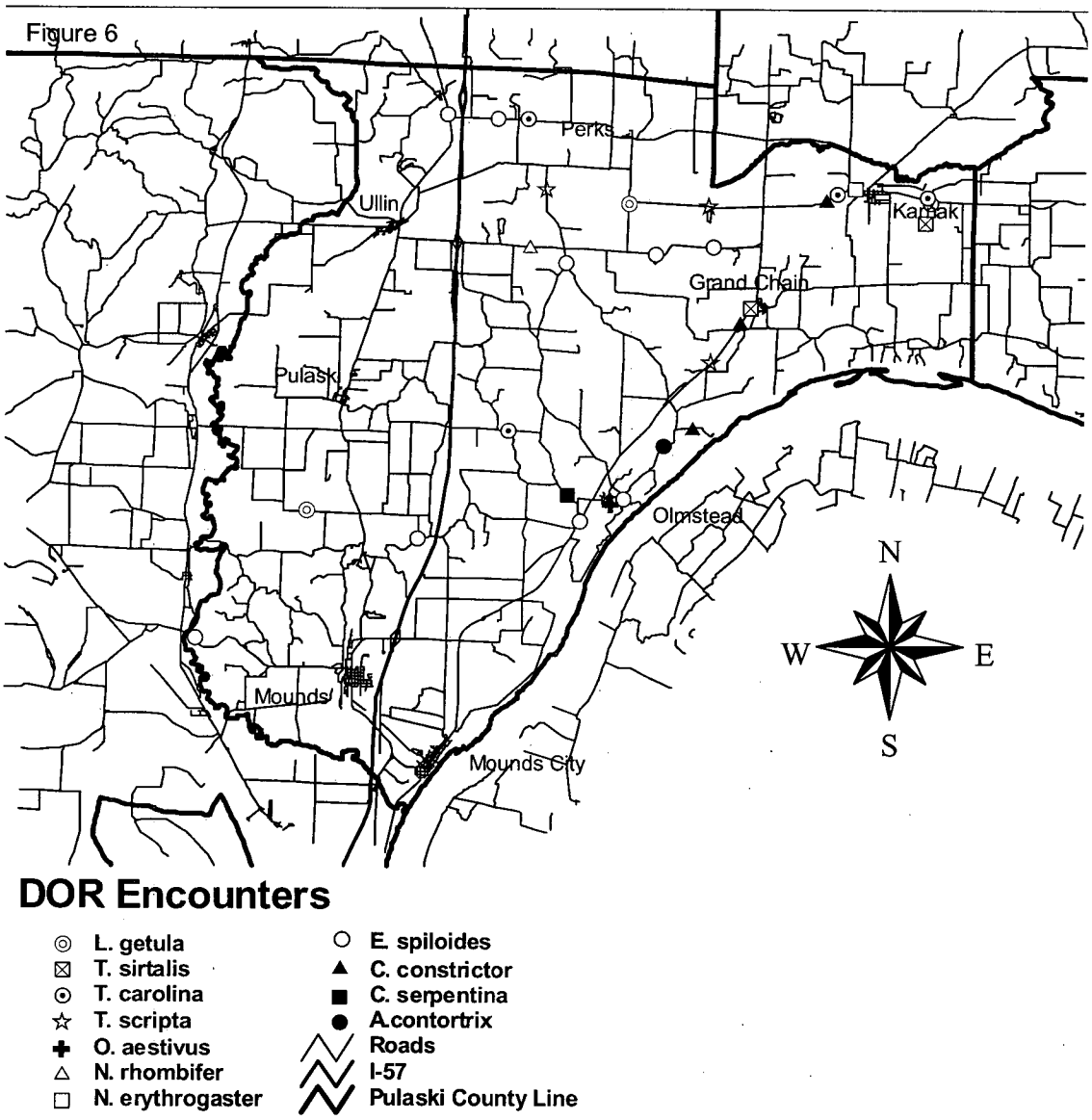

Table 1. GPS locations of Dead on Road (DOR) reptiles in Pulaski Co., IL

Species	Common Name	Easting	Northing
Chelydra serpentina	Snapping turtle	213121	4117122
Terrapene carolina	Eastern Box turtle	310774	4119686
		327261	4128748
		327148	4128978
		323639	4129083
		311463	4132018
Trachemys scripta	Red-eared slider	318591	4128643
		312233	4129296
		318749	4122419
Agkistrodon contortrix	Copperhead	316914	4119101
Coluber constrictor	Racer	319860	4123943
		318049	4119800
		323240	4128876
Elaphe obsoleta	Rat snake	313029	4126312
		318778	4126946
		310329	4132059
		308337	4132243
		307208	4115352
		298493	4111444
		316584	4126703
		313632	4116089
		315321	4116985
Lampropelits getula	Speckled kingsnake	302815	4116494
		302835	4116494
		315490	4128674
Nerodia erythrogaster	Plainbelly water snake	324329	4129355
Nerodia rhombifer	Diamondback water snake	311587	4127002
Opheodrys aestivus	Rough green snake	314850	4116786
Thamnophis sirtalis	Common garter snake	320285	4124574
		327090	4127965

Table 2. Specimens collected during this survey

Amphibians

INHS #	Species
18694	*Ambystoma maculatum*
18816	Ambystoma maculatum
18695	*Ambystoma talpoideum*
18817	Ambystoma texanum
18696	*Ambystoma texanum*
18705	*Ambystoma opacum*
18710	*Ambystoma opacum*
18837	*Eurycea cirrigera*
18927	*Plethodon glutinosus*
18928	*Plethodon glutinosus*
18697	*Acris crepitans*
18804	*Pseudacris crucifer*
18805	*Pseudacris crucifer*
18806	*Pseudacris crucifer*
18807	*Pseudacris crucifer*
18808	*Pseudacris crucifer*
18809	*Pseudacris crucifer*
18818	*Pseudacris crucifer*
18819	*Pseudacris crucifer*
18820	*Pseudacris crucifer*
18821	*Pseudacris crucifer*
18822	*Pseudacris crucifer*
18823	*Pseudacris crucifer*
18824	*Pseudacris crucifer*
18825	*Pseudacris crucifer*
18698	*Pseudacris triseriata*
18810	*Pseudacris triseriata*
18811	*Pseudacris triseriata*
18812	*Pseudacris triseriata*
18813	*Pseudacris triseriata*
18814	*Pseudacris triseriata*
18815	*Pseudacris triseriata*
18826	*Pseudacris triseriata*
18827	*Pseudacris triseriata*
18828	*Pseudacris triseriata*
18829	*Pseudacris triseriata*
18830	*Pseudacris triseriata*
18626	*Rana catesbeiana*
18832	*Rana catesbeiana*
18679	*Rana clamitans*
18625	*Rana sphenocephala*
18831	*Rana sphenocephala*
18833	*Rana sphenocephala*
18834	*Rana sphenocephala*
18836	*Rana sphenocephala*

Reptiles

INHS #	Species
18706	*Eumeces fasciatus*
18765	*Chrysemys picta*
18996	*Chrysemys picta*
18835	*Trachemys scripta*
18993	*Trachemys scripta*
18784	*Agkistrodon contortrix*
18717	*Coluber constrictor*
18775	*Elaphe obsoleta*
17565	*Elaphe obsoleta*
17592	*Opheodrys aestivus*
?????	*Nerodia rhombifer**

* specimen is currently being preserved at INHS and has not received a museum number

Table 3. Tissue samples collected during this survey

INHS#	Species	Tissue #
18837	*Eurycea cirrigera*	1188
18817	*Ambystoma texanum*	1189
18804	*Pseudacris crucifer*	1190
18805	*Pseudacris crucifer*	1191
18806	*Pseudacris crucifer*	1192
18807	*Pseudacris crucifer*	1193
18808	*Pseudacris crucifer*	1194
18809	*Pseudacris crucifer*	1195
18810	*Pseudacris triseriata*	1196
18811	*Pseudacris triseriata*	1197
18812	*Pseudacris triseriata*	1198
18813	*Pseudacris triseriata*	1199
18814	*Pseudacris triseriata*	1200
18815	*Pseudacris triseriata*	1201
18826	*Pseudacris triseriata*	1202
18827	*Pseudacris triseriata*	1203
18828	*Pseudacris triseriata*	1204
18829	*Pseudacris triseriata*	1205
18830	*Pseudacris triseriata*	1206
18927	*Plethodon glutinosus*	1260
18928	*Plethodon glutinosus*	1261

Figure 2. Chesnut Hills Nature Preserve (CHNP)

Figure 3. Sandstone stream bed, typical of *D. fuscus* habitat within CHNP

Figure 4. Big Creek Ditch

Figure 5. Location of baited hoop trap in Big Creek Ditch

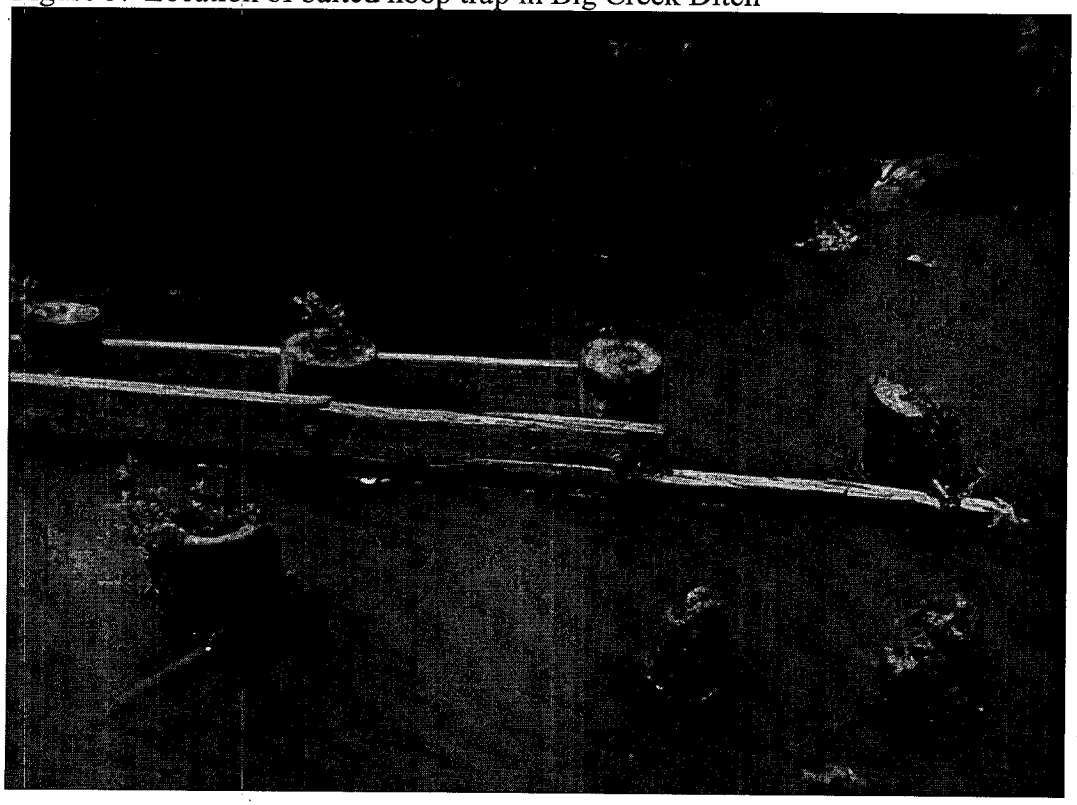

Figure 6. Small wetland East of Big Creek Ditch Levee

Appendix 1. Revised checklist of amphibians and reptiles of Pulaski Co., IL. Underlined species were observed during this study. Bold entries denote species added to the list from this survey.

Amphibians

Caudata

***Ambystoma maculatum* Spotted salamander**
***Ambystoma opacum* Marbled salamander**
***Ambystoma talpoideum* Mole salamander**
Ambystoma texanum Smallmouth salamander
Cryptobranchus alleganiensis Hellbender
Desmognathus fuscus Dusky salamander
Eurycea cirrigera Southern two-lined salamander
Eurycea longicauda Longtail salamander
Plethodon glutinosus Northern slimy salamander
Siren intermedia Lesser siren

Anura

Bufo fowleri Fowler's toad
Acris creptians Cricket frog
Hyla avivoca Bird-voiced tree frog
Hyla cinerea Green tree frog
Hyla versicolor-chrysoscelis Grey treefrog complex
***Pseudacris crucifer* Spring Peeper**
Pseudacris ferarium Upland chorus frog
Pseudacris triseriata Western chorus frog
Rana areolata Crayfish frog
Rana catesbeiana Bullfrog
Rana clamitans Green frog
Rana sphenocephala Southern leopard frog

Reptiles

Testudinidae

***Apalone* sp. Softshell turtle**
Chelydra serpentina Snapping turtle
Chrysemys picta Painted turtle
Terrapene carolina Eastern box turtle
Trachemys scripta Red-eared slider
Kinosternon subrubrum Eastern mud turtle
Sternotherus odoratus Stinkpot

Lacertilia: Sauria

Sceloporus undualtus Fence lizard
Eumeces fasciatus Five-lined skink
Eumeces laticeps Broad-headed skink
Scincella lateralis Ground skink
Cnemidophorus sexlineatus Six-lined racerunner

Lacertilia: Serpentes

***Coluber constrictor* Racer**
Diadophus punctatus Ringneck snake
Elaphe spiloides Central rat snake
Lampropeltis getula Common kingsnake
Nerodia erythrogaster Plainbelly watersnake
***Nerodia rhombifer* Diamondback watersnake**
Nerodia sipedon Northern water snake
Opheodrys aestivus Rough green snake
Thamnophis sauritus Eastern ribbon snake
Thamnophis sirtalis Common garter snake
***Agkistrodon contortrix* Copperhead**
Agkistrodon piscivorous Cottonmouth
Crotalus horridus Timber rattlesnake

New County Records for Amphibians and Reptiles from Pulaski County, Illinois

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The creation of the Illinois Herpetological Database and its subsequent publication (Phillips et al. 1999) has allowed Illinois herpetologists to quickly and easily determine areas in the state that require additional surveying. As a result, numerous contributions focusing on new records in Illinois have recently appeared in Herpetological Review. These studies have focused on state (Petzing et al. 2002; Petzing et al. 2000), regional (Crawford and Meyer 2002, Markezich and Beckett 2001), and county (Giazzon 2002) levels. Following this trend, we herein report new amphibian and reptile records from Pulaski County, located at the southern tip of Illinois. Specimens were collected during fall 2002 and spring 2003. All specimens were verified by Dr. C. A. Phillips and deposited in the Illinois Natural History Survey (INHS) herpetological collection. County records were verified by consulting published distributions in Phillips et al. (1999) and the Illinois Herpetological Database maintained at the Illinois Natural History Survey. The database contains information on Illinois amphibian and reptile species compiled from 30 U.S. collections as well as unvouchered records from herpetologists and other reliable sources. County level distribution data can be accessed from this database on the web at the following URL:

http://www.inhs.uiuc.edu/cbd/herpdist/herp.html

Caudata

Ambystoma maculatum (Spotted Salamander). Pulaski Co: 1.5 km NNW of Perks, IL in wooded wetland West of North Boundary Rd. (NAD 83 UTM Zone 16: N4132788m E314768m). 29 October 2002. A. R. Kuhns. Verified by C. A. Phillips. INHS 18694. ~~New county record.~~ Adult found under rotting log.

Ambystoma opacum (Marbled Salamander). Pulaski Co: Section 8 Woods Nature Preserve (NAD 83 UTM Zone 16: N4130604m E321351m) 28 September 2002. J. A. Crawford and A. R. Kuhns. Verified by C. A. Phillips. INHS 18710. ~~New county record.~~ Adult male found under rotting log. An *A. opacum* was also encountered on the same day 7.2 km East of this site (NAD 83 UTM Zone 16: N4129961m E:328500m) and 6.9 km NW (NAD 83 UTM Zone 16: N4132788m E314768m) of this site in a wooded wetland northwest of Perks on 29 October 2002.

Ambystoma talpoideum (Mole Salamander). Pulaski Co: 1.5 km NNW of Perks, IL in wooded wetland West of North Boundary Rd. (NAD 83 UTM Zone 16: N4132586m E314733m). 29 October 2002. A. R. Kuhns. Verified by C. A. Phillips. INHS 18695. ~~New county record.~~ Adult found under natural wood cover.

Anura

Pseudacris crucifer (Spring Peeper). Pulaski Co: 1.5 km NNW of Perks, IL in wooded wetland West of North Boundary Rd. (NAD 83 UTM Zone 16: N4132580m E314740m) 12 March 2003. A. R. Kuhns and J. A. Crawford. Verified by C. A. Phillips. INHS 18818. ~~New county record.~~ A large chorus of this species was calling. On the same evening we also collected this species from a chorus 4.5 km WSW of this site at an ephemeral pool along Big Creek (NAD 83 UTM Zone 16: N4130341m E310746m).

Pseudacris triseriata (Western Chorus Frog). Pulaski Co: 1.5 km NNW of Perks, IL in wooded wetland West of North Boundary Rd. (NAD 83 UTM Zone 16: N4132839m E314773m). 29 October 2002. A. R. Kuhns. Verified by C. A. Phillips. INHS 18998. ~~New county record.~~ One individual found on leaf litter. Large chorus heard on 12 March 2003 at this site. On the same evening we collected this species from a chorus 4.5 km WSW of this site at an ephemeral pool along Big Creek (NAD 83 UTM Zone 16: N4130341m E310746m).

Serpentes

Agkistrodon contortrix (Northern Copperhead). Pulaski Co: 3 km NE of Olmstead near Chestnut Hills Nature Preserve (NAD 83 UTM Zone 16: N4119101m E316914m). 27 September 2002. A. R. Kuhns and J. A. Crawford. Verified by C. A. Phillips. INHS 18784. ~~New county record.~~ Adult male found Dead on Road (DOR).

Coluber constrictor (Eastern Racer). Pulaski Co. 4.4 km NE of Olmstead at North entrance to Olmstead Lock and Dam (NAD 83 UTM Zone 16: N4119800m E318049m).

28 September 2002. A. R. Kuhns and J. A. Crawford. Verified by C. A. Phillips. INHS 18717. ~~New county record.~~ Juvenile found DOR. Additional individuals were observed DOR 4.5 km NNE (NAD 83 UTM Zone 16: N4123943m E319860m) on 01 May 2003 and 8.6 km NNE of this site (NAD 83 UTM Zone 16: N4126703m E323240m) on 29 June 2003.

Nerodia rhombifer (Diamondback Watersnake). Pulaski Co. 2.9 km East of I-57 on Shawnee College Road (NAD 83 UTM Zone 16: N4127002m E311587m). 29 June 2003. A. R. Kuhns. Verified by C. A. Phillips. INHS 19032. ~~New county record.~~ DOR. Two DOR individuals were found at this site with the first on 01 May 2003. Because of the poor condition of both specimens, only the head and neck of the second individual was vouchered.

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