A SURVEY OF THE HERPETOFAUNA OF THE UPPER DES PLAINES RIVER VALLEY, LAKE COUNTY, ILLINOIS

Charles L. Bushey[1]

ABSTRACT

A survey of the herpetofauna of the Des Plaines River Valley in Lake County, Illinois was conducted on lands owned by the Lake County Forest Preserve District during the years 1974-1977. Identification of species was by recognition of breeding calls and observation of live trapped specimens. A list of 29 species and two subspecies historically inhabiting the study area was compiled and is presented with a list of species found during the survey. Twenty-five species, two subspecies, and intergrades between those subspecies were currently found to inhabit the river valley. Two species, Pseudemys scripta elegans *and* Terrapene c. carolina, *were believed to be "pet releases".*

INTRODUCTION

This paper is a herpetofaunal survey of the upper Des Plaines River Valley in Lake County, Illinois. Previously published herpetofaunal surveys that included the Des Plaines River in Lake County, were primarily annotated species lists (Cope 1900, Necker 1939, Schmidt and Necker 1935). Smith (1961) and Pope (1964) provided life histories and general distributional information for the herpetofauna in the region covered by this survey, based on both previous records and extensive collecting.

The immediate purpose of this survey was to determine the current status of species occurring in the various habitats along the river valley, and to note areas of population concentration and general abundance of individual species. The survey was restricted to lands owned by the Lake County Forest Preserve District along the approximate 35 mile length of the river valley within the county. The data presented were primarily collected from April through October 1975 in a concentrated effort for the Forest Preserve District. Personal observations and collections from the years 1974, 1976, and 1977 have also been included. Herpetofaunal nomenclature follows Smith (1961).

The eastern limit of the river valley is formed by the Park Ridge and Deerfield Moraines (Willman 1971), which in the southern part of the county has a vegetation cover dominated by oak-hickory *(Quercus alba/Carya ovata)* association. Sugar maple-basswood *(Acer saccharum/Tilia americana)* association occupies sections of the eastern floodplain that have remained undisturbed by agricultural and urban pressures. A narrow strip of silver maple-black willow-green ash *(Acer saccharinum/Salix nigra/Fraxinus pennsylvanica)* association forms the riparian habitat along both sides of the river. The west side, formerly prairie (Moran 1978), was intensively farmed until the study area was purchased by the Forest Preserve District. Much of this acreage is now in various stages of old field and secondary succession. The shallow river valley rises on the western edge to the Tinley Groundmoraine and sections of the Park Ridge Moraine. In the northern third of the county the forests fade and are replaced by expanses of fields with scattered bur oak *(Quercus Macrocarpa)* on the moraines, and wetlands of degraded prairie and reed canary grass on the floodplains. Urban development within the river valley, and particularly the floodplain, is not extensive and has to this date been primarily restricted to a few communities. Sand and gravel open-pit extraction has been practiced throughout the river valley, especially in the northern half of the county (Larsen 1973).

[1]Present address: Botany Department, Southern Illinois University, Carbondale, Illinois 62901

METHODS

Salamanders were found and studied throughout the survey by overturning logs and decaying vegetative material. Salamanders were also live trapped with the aid of a drift fence around a breeding pond (Stebbins 1954).

Frogs and toads were observed throughout the survey and hand or net capture was attempted for closer investigation. A survey of breeding sites was conducted along the entire length of the river valley on several evenings in late May. Ponds and wet areas where the amphibians were expected to congregate were identified and mapped. Identification of herpetofauna was made by spring breeding call and was noted as either a few individuals or a chorus. Evening walks through forested areas were also conducted with identification again by breeding call.

Turtle data were collected through observation, hand capture, and live trapping. Live trapping was conducted with traps as described by Conant (1975) except constructed from Hardware cloth. Trapping was conducted from 20 May through 15 October 1975 at nine locations. These sites were chosen to represent a number of different habitat types along the river, as well as to cover the entire length of the river within the county. All turtles captured were marked by a distinctive notch in the edge of a lower right marginal to aid in identification of recaptured individuals.

Snakes were observed and hand captured if possible. Poisonous snakes were collected by use of Pillstrom Tongs.

During the 1975 herpetofauna survey, the Forest Preserve District was also conducting an aquatic survey of the river valley. Extensive seining to determine fish populations at times netted turtles and frogs. Data form these specimens were added to the herpetofauna survey. No members of Orders Caudata or Squmata were captured in this manner. All specimens captured during the surveys were released at point of capture after positive identification and recording of physical data.

RESULTS AND DISCUSSION

Salamanders

Salamanders were the first taxa to appear in the spring. At this early appearance the salamanders were moving toward breeding sites, and snow was often on the ground. Because of these early movements, the first efforts of the survey were directed toward live trapping at a breeding site.

The Blue-spotted salamander *(Ambystoma laterale)* was the only species of salamander collected during the 1975 live-trapping survey (Table 1). The drift fence surrounding a temporary pond was located in a second growth mixed white and red oak forest with a sugar maple understory (SE¼, SW¼, Sec. 26, T43N, R11E). The collection pits aligned with the drift fences were checked twice daily for specimens. Male Blue-spotted salamanders were the first to move toward the breeding pond and were first noticed on 15 April; the peak of the movement occurred on 20 April and movement of males ended on 25 April. Female movement started on 20 April, and peaked on 25 April. All movement in and out of the breeding pond ceased on 15 May. The drift fence was removed on 27 May. A total of 162 specimens of this species, 101 males and 61 females; were recorded entering the pond.

Blue-spotted salamanders were confined to the east side of the river in the southern third of the county. The species was common in mesic forest areas away from the immediate floodplain. The population appears to depend upon a few ponds that are large enough to contain water until the salamander's larvae are able to sustain themselves in the terrestrial environment. Most of the temporary ponds exist on property owned by the Forest Preserve District in Vernon (Sections 26,33) and Libertyville Townships (Section 34).

Spotted salamanders *(Ambystoma maculatum)* were only observed in mature portions of the oak/hickory association on the Deerfield Moraine in southern Lake County. Only two specimens were observed within the study area, both specimens were found under moist leaf litter in late September. Residents living near the study area on the moraine have accurately described specimens which they have found in basement window-wells, also during the autumn. This species is evidently common, but difficult to discover during most of the year.

The Tiger salamander was found in both the oak/hickory and sugar maple/basswood associa-

tions of the river valley, usually under logs or inside old stumps. This species is uncommon in the valley and, progressing northward, becomes increasingly difficult to find. Specimens were collected within the study area during the spring, late summer, and fall, particularly after heavy rains.

Neither the Central newt *(Notophthalmus viridescens louisianensis),* or the Four-toed salamander *(Hemidactylium scutatum)* were found during the survey. Pope (1964) refers to a single specimen of the Central newt captured in 1942 near the Des Plaines River in the extreme southern part of Lake County. The four-toed salamander is shown by Smith (1961) also to occupy the same region of the river valley. Both species are either quite rare, or no longer exist in these areas.

Frogs and Toads

The American toad *(Bufo a. americanus)* was the only member of the Order Salientia expected in the study area, and it inhabited ponds and wet areas along the entire length of the Des Plaines River. Thirty specimens were captured in drift fences set for salamanders, the earliest capture in this manner occurred on 18 April 1975. Scattered singing was heard that year throughout late April, peaked in mid-May and extended into early June.

Western chorus frogs *(Pseudacris t. triseriata)* were an abundant inhabitant of wetlands throughout the study area. Other species of frogs identified by both breeding call and observed specimens were: Blanchard's cricket frog *(Acris crepetans blanchardi),* Northern spring peeper *(Hyla c. crucifer),* and Eastern gray treefrog *(Hyla v. versicolor).* All were uncommon with scattered individuals heard singing during the spring near wet areas formed by a secondary perched water table in the oak/hickory forest upon the Park Ridge Moraine (Vernon Township, Sections 26, 33).

The Green frog *(Rana clamitans melanota)* was found along the entire river edge and was the most abundant herpetofaunal species observed in the river valley. Bullfrogs *(Rana catesbeiana)* were also observed along the entire river edge, but only as very scattered individuals.

A less common species, the Pickerel frog *(Rana palustris)* was only observed and captured once during this study. The specimen was captured in a low area near the river, a little south of the Wisconsin state line (Newport Township, Section 10).

Only a single specimen of the Eastern wood frog *(Rana s. sylvatica)* was heard singing in mature oak/hickory forest on the Park Ridge Moraine with the Ryerson Conservation Area (Vernon Township, Section 26). This specimen was heard during the evening of 12 April near a small temporary pond.

Turtles

A total of 128 turtles was captured during the live trapping portion of the turtle survey. Previous papers have discussed the various food habits of the turtles and it was known that the Western painted turtle *(Chrysemys picta belli)* is primarily herbivorous and insectivorous in its food habits. Fritsch (1940) also mentioned that this species was probably not a habitual scavenger. The results of this trapping technique, which used chunks of Carp as bait, show that all the species recorded, except the Eastern box turtle *(Terrapene c. carolina),* are scavengers to some degree.

Common snapping turtles *(Chelydra s. serpentina)* and Eastern spiny softshells *(Trionyx s. spinifer)* were trapped or observed in all areas of the river. The Common snapping turtle appears to be the most abundant species of the order Testudines, and also the largest. One specimen of this species had a carapace length of 353 mm. The Eastern and Western painted turtles *(Chrysemys picta marginata, C. picta belli)* also occur the entire length of the river. The intergrade, *Chrysemys picta marginata X belli,* was captured in all traps and the abundance of the intergrade demonstrates extensive interbreeding between the two subspecies that occur in the study area.

Three species of turtles were found to have very limited ranges within the river valley. Blanding's turtles *(Emydoidea blandingi)* were found only at the northern end of the river valley. Two specimens were observed, a male captured in a shallow portion of the river in a degraded prairie (Newport Township, Section 27). The Red-eared turtle *(Pseudemys scripta elegans)* was represented in the far-southern part of the river (Vernon Township, Section 26) by a single female specimen. This specimen was most likely a pet release; the species had not been previously known from the Des Plaines River in Illinois. Necker (1939) recorded a single specimen at Orland Park in Cook County. Two male specimens of the Eastern box turtle *(Terrapene c. carolina),* also con-

sidered to be pet releases, have been observed in the sugar maple/basswood forest within the Ryerson Conservation Area. The closest indigenous population of this species to the study area is in Porter County of Northwest Indiana (Pentecost and Vogt 1976).

Lizards and Snakes

Nine of the eleven species previously known as occurring within the river valley (Cope 1900, Necker 1939, Schmidt and Necker 1935) were found still to be present. Based on this survey only the Chicago garter snake *(Thamnophis sirtalis semifasciata)* appears to be common the length of the valley. Two specimens of Graham's water snake *(Natrix grahami)*, observed on the river bank at either end of the county (Newport Township, Section 15; Vernon Township, Section 26), were the only representatives of the water snakes. The Western fox snake *(Elaphe v. vulpina)* was found with scattered populations in the northern half of the study area in both oak forest and grassland habitats. An Eastern milk snake *(Lampropeltis t. triangulum) and a Eastern plains garter snake (Thamnophis radix)* were each represented by a single specimen on the west side of the river (Libertyville, Township, Section 15); both were found in old field habitat and are evidently uncommon. The Northern redbellied snake *(Storeria o. occipitomaculata)* occupied forested areas in the southern half of the valley. De Kay's snake *(Storeria dekayi wrightorum)* was also common in the southern half of the valley, but it only occurred in or near the oak/hickory association along the Park Ridge Moraine. Several specimens of the Western smooth green snake *(Opheodrys vernalis blanchardi)* were collected in an old field habitat on the west side of the river (Vernon Township, Section 33). This was the only location where this species was found and is evidently the site of a small colony. The Eastern massasauga *(Sistrurus c. catenatus)* occupied grassland and old field habitats as well as oak forest edges in the southern end of the valley (Vernon Township, Sections 26, 33). The rattlesnakes were uncommon within this limited area, even though the species tends to congregate and may appear to be common near den sites (Bushey 1978, Wright 1941).

No lizards were observed or collected, although areas of suitable habitat were specifically searched for the Five-lined skink *(Eumeces fasciatus)* during the salamander and snake surveys. Cope (1900) recorded finding a specimen in Lake County, but not within the Des Plaines River Valley.

Due to the lack of previous information it is difficult to determine if any one species population has increased or decreased due to changes in the quality or quantity of available habitat. This survey only verified the occurrence of species living within the study area as of 1977 and the possibility exists of additional species either traveling, or being introduced into the area and establishing viable populations. The occurrence of pet releases has been demonstrated, and additional herpetofaunal species exist relatively near the river valley.

None of the species found during the herpetofaunal survey were listed by the Illinois Endangered Species Protection Board (1978), as either endangered or threatened within the state.

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Table 1. Herpetofauna of the Des Plaines River Valley in Lake County, Illinois and their observed habitats.

	Indigenous Species[1]	1974-1977 Survey	Observed Habitat[2]
Class Amphibia			
Order Caudata (Salamanders)			
Ambystoma laterale Hallowell	X	X	M,O
Ambystoma maculatum (Shaw)	X	X	O
Ambystoma tigrinum tigrinum (Green)	X	X	M,O
Notophthalmus viridescens louisianensis Wolterstroff	X		
Hemidactylium scutatum (Schlegel)	X		
Order Salientia (Frogs and Toads)			
Bufo americanus americanus Holbrook	X	X	M,O,RM,RG
Acris crepitans blanchardi Harper	X	X	O
Pseudacris triseriata triseriata (Wied)	X	X	O
Hyla crucifer crucifer Wied	X	X	M,O,OF,RG
Hyla versicolor versicolor LeConte	X	X	O
Rana catesbeiana Shaw	X	X	RM,RG,R
Rana clamitans melanota (Rafinesque)	X	X	RM,RG,R
Rana palustris LeConte	X	X	RG
Rana pipiens pipiens Schreber	X	X	RM,OF,RG
Rana sylvatica sylvatica LeConte	X	X	O

Class Reptilia

Order Testudines (Turtles)

Chelydra serpentina serpentina (Linnaeus)	X	X	R
Emydoidea blandingi (Holbrook)	X	X	RG,R
Terrapene carolina carolina (Linnaeus)		X	M
Chrysemys picta marginata Agassiz	X	X	R
Chrysemys picta bella (Gray)	X	X	M,R
Chrysemys picta marginata X bella		X	R
Pseudemys scripta elegans (Wied)		X	R
Trionyx spinifer spinifer LeSueur	X	X	R

Order Squamata (Lizards and Snakes)

Opheodrys vernalis blanchardi Grobman	X	X	OF
Elaphe vulpina vulpina (Baird & Girard)	X	X	OF,G
Lampropeltis triangulum triangulum (Lacépède)	X	X	OF
Thamnophis radix radix (Baird & Girard)	X	X	OF
Thamnophis sirtalis semifasciata (Cope)	X	X	O,OF,G
Storeria dekayi wrightorum Trapido	X	X	O,OF
Storeria occipitomaculata occipitomaculata (Storer)	X	X	M,O,OF
Natrix grahami (Baird & Girard)	X	X	RM,RG,R
Natrix septemvittata (Say)	X		
Natrix sipedon sipedon (Linnaeus)	X		
Sistrurus catenatus catenatus (Rafinesque)	X	X	O,OF,G

[1]Based on annotated list of species (Cope, 1900); (Necker, 1939); (Schmidt and Necker, 1935); and species range maps (Smith, 1961).

[2]Habitat codes: Forest; sugar maple/basswood (M), oak/hickory (O), riparian - silver maple/black willow/green ash (RM), Old Field; (OF), Grassland; mesic grassland (G), riparian - wet grassland (RG), River; (R).