ABSTRACT

A study of distribution, taxonomy, and ecology of herpetofauna of Hardeman County, Tennessee, was conducted from the spring of 1968 through the autumn of 1971. Twenty-six species of amphibians (13 salamanders, 13 frogs and toads) and 45 species of reptiles (9 turtles, 8 lizards, 28 snakes) were collected in, or reported from, the county.

INTRODUCTION

Various investigators have reported limited collections of herptiles from Western Tennessee, that area of the state including all or part of 21 counties west of the Tennessee River (Troost, 1836, 1844; Rhoads, 1895; Blanchard, 1922; Dunn, 1926; Parker, 1937, 1939, 1947, 1948; Sinclair, 1950a, 1950b; Gentry, 1955, 1956). Parker (1948) conducted the most extensive work; he reported 78 taxa from Western Tennessee, including 23 species from Hardeman County. Nine additional species have been reported from the county (Gentry, 1955, 1956; Mittleman, 1946; Rossman, 1958).

The purpose of this study was to obtain data on distribution, taxonomy, and ecology of herptile species in Hardeman County, Tennessee (Figure 1). The study was conducted from the spring of 1968 through the autumn of 1971.

DESCRIPTION OF THE STUDY AREA

Hardeman County is located in the upper plateau region of southwestern Tennessee near the headwaters of the Big Hatchie River. The river provides the principal drainage for the area and flows through the county from the southeast to the northwest. The county contains 1,696 km² and has a mean elevation of 156 m. The northwestern portion of the county is in the West Tennessee Plain (Floyd, 1965); and geologic formations consist of sand, silt, gravel, and clay of Tertiary age. The remainder of the county is in the West Tennessee Uplands Province and consists of geologic formations of Cretaceous and Tertiary gravel, sand, silt, and clay. Much of the county is covered by a thin superficial layer of loess. The county is located in the oak-tuliptree-beech communities of the Western Mesophytic Forest Region of the Mississippi Embayment (Braun, 1950).

The area has a temperate continental climate with pronounced seasonal variations in both temperature and precipitation (Vaiksnoras, 1968). Dickson (1960) reported climatological data for Hardeman County: mean annual precipitation, 132 cm; mean temperatures, January max 32 F, January min 32 F, July max 92 F, July min 68 F. Precipitation is generally evenly distributed, although prolonged dry periods are common in summer and autumn. Local flash floods may occur during heavy thunderstorms.

MATERIALS AND METHODS

Collecting was done during all seasons of the year, both during the daytime and at night, and under a variety of weather conditions. Sample areas represented a variety of herptile habitats. Standard techniques for collecting, preserving, and storing specimens were employed (Conant, 1958; Martof, 1956). Representative specimens were deposited in the Memphis State University Museum of Zoology (MSUMZ). The study also included records of specimens in the Field Museum of Natural History, Chicago, the University of Michigan Museum of Zoology (UMMZ), the Memphis State University Museum of Zoology, and personal collections of Dr. Glenn Gentry and Mr. Malcolm Parker, and literature accounts of Hardeman County specimens.

RESULTS AND DISCUSSION

During the study 26 species of amphibians (13 salamanders, 13 frogs and toads) and 45 species of reptiles (9 turtles, 8 lizards, and 28 snakes) were recorded. Total specimens deposited in the MSUMZ was 621; amphibians 446, and reptiles 175. Numerous additional specimens were observed or captured and then released. *Phrynosoma cornutum* and *Crotalus adaman-
etus*, although recorded from the county, were considered transports from their normal ranges. Apparent hybridization between two species of toads, and intergradation between two subspecies of turtles and two subspecies of snakes were noted.

ANNOTATED CHECK LIST OF AMPHIBIANS AND REPTILES OF HARDEMAN COUNTY, TENNESSEE

common names are those suggested by the American Society of Ichthyologists and Herpetologists (Conant, 1956), except for nomenclature changes made since the 1950s. The following changes are in accord with the working list of the Herpetological Information Systems of the American Museum of Natural History (1970).

**Species Collected in, or Reported from, the Hatchee River**

**Amblyopsis tridactylum Cuvier, Three-toed Cogee Eel.** One specimen was unearted during the construction of a dam. Another specimen was observed eating tadpoles of *Rana sp.* in a submerged burrow 90 to 120 cm from the shore of a pond in Muddy Creek Bottoms. Fishermen reported having caught them on hooks baited with Amblyopsis operculum in sloughs and backwaters of the Hatchee River.

**Necturus maculosus lusitanianus** (Rafinesque), Red River Waterdredge. This species was not observed in large numbers of waterdredges were caught in fish traps in the main channels of the Hatchee River inlets in 1970. In late November 1970, one male and one female were collected from these inlets.

**Siren intermedia nettingi** Goiin, Western Lesser Siren. Specimen was collected in October 1969, buried in muck 3.7 m from a creek.

**Notophthalmus viridescens lusitanianus** (Walter/De Kay), 1969, a larval form was found in a small pool in a spring-fed stream. A second specimen, the Red Eft stage, was taken in March 1970, from bottom of a small pond.

**Amblyopsis jeffersonianum** (Green), Jefferson Salarander. Geist (1955) reported a larval form of this species was found in a small pool in bottom of a creek. The specimen was not available for examination. Most distribution maps do show an extension as far southward as Tennessee (Conant, 1956; Whitaker, 1968; Uzelt, 1967; Cochran and Goin, 1970). Bishop (1943) noted the species occurred throughout south of the general range may be A. texanum or some other species.”

**Amblyopsis marcellus** (Shaw), Spotted Salarander. The single specimen was unearted during the construction of a dam.

**Amblyopsis thorni** (Matthes), Smallest-mouth Salarander. Two specimens were taken from beneath rocks near an old barn, and one was taken beneath drift in bottom of Muddy Creek Bottoms.

**Amblyopsis opacum** (Gravenhorst), Marbled Salarander. Relatively abundant, specimens were taken either from beneath rotting logs in swampy bottoms, or from under old boards near barns or outbuildings.

**Desmognathus fuscus fuscus** (Green), Northern Dusky Salarander. Common throughout the county, all specimens collected were taken between March and August, from litter and boards at the edge of, or in, very shallow, trickling run-off from the banks of streams.

Two separate series of D. fuscus collected from southeastern Hardeman County closely resembled the holotypic description of *D. f. conicus* Reiss, Spotted Dusky Salarander. Rossman (1958) first described this subspecies and reported two specimens from the northwestern portion of the county; these are now in the Chicago Academy of Science Museum. General body size was similar to that of *D. f. fuscus*. A series of 12 specimens was collected in 1970 from south central Tennessee near a shallow, clear, spring-fed stream which flowed through a 1.8 to 2.1 m natural tunnel; most smaller specimens were captured inside the tunnel. The species *Eurycea bicolata* clarki were taken at the same site. A second series of specimens was collected in July 1969 along the edge of a clear spring in Cypress Creek bottoms. *Plethodon glutinosus glutinosus* (Green), Slimy Salarander. This is the most ubiquitous salamander in the county and was found in a wide variety of habitats. *Plethodon glutinosus* collected during this study were distinct in appearance and behavior. They resembled *P. g. grobmanni* Allen and Neill. Sinclair (1955b) reported specimens collected from Shelby County, Tennessee, over 644 km from the previously known range (Georgia and Florida). All specimens collected were taken from beneath brush or leaf litter in damp, sandy humus. The ground color of the body was brownish-black sprinkled with iridescent bronze blue-green flecks; the head appeared gold-bronce in the light. *P. g. glutinosus* is black with white to grayish-white flecks scattered over the body. *P. g. grobmanni* is very slender, but not as jumpy as *P. g. glutinosus* not slimy like the latter. From 14 specimens collected, mean body measurements were: costal groove 14.21; costal interstices between the toes of adult; limbs 1.14; snout to vent length 36.07 mm; tail length, computed on the basis of nine individuals with tails intact, 28.66 mm.

**Pseudotriton ruber vicinus** Bishop, Southern Red Salamander. One specimen was captured from beneath a log on a steep incline where a small stream trickled down. This individual was taken at Rogers Springs Lake in a low seepage area adjacent to the lake.

**Eurycea longicauda guttulata** (Holbrook), Three-lined Salarander. This abundant salamander was frequently found in a considerable distance from water. It was often observed at night moving alongside roads or across the forest floor.

**Eurycea bilaevata cirrigera** (Green), Southern Two-lined Salamander. This species was abundant in shallow, clear, running water, usually near the edge of a spring or stream and always close to roots, logs, rocks.

**Bolbotherus americana** Holbrook, American Toad. Found scattered throughout the county, all specimens captured during the day came from beneath a logs, boards, and other debris in rich soil near barns. Those collected at night were taken from a breeding congres at Chickasaw State Forest. During the winter 50-75 cm deep near the weed-choked edge of Lake LaFol. *Hyla crucifer* was heard in the same area and *Acris gryllus* was taken at a very rare toad in a low grassy area. Hybridization with *B. woodhousii* *Iowleri* occurs in the study area and five of the species exhibited characteristics of both species. These were included with the American Toad because they are very close to a closer affinity to *A. americana*. 

**Bolbotherus woodhousii iowleri** Hicksley, Fowler's Toad. One of the most populous amphibians in the county, specimens were captured as they moved about during the day and during evening hours. Five specimens showed characters of *B. a. americanus* but they more closely resembled *B. a. iowleri* and were therefore included with the latter.

**Hyla crucifer crucifer** West, Northern Spring Peeper. In spring, the breeding population pipping call could be heard in most areas of the county. Specimens were common on emergent vegetation of lakes and ponds.

**Hyla versicolor versicolor** Le Conte, Eastern Gray Treefrog. This frog was relatively common in bottomlands. A breeding chorus was found in April 1969, in a small pond farm, Jackson County. A second chorus was collected in June 1969, in a small, muddy stock pond. Current distribution maps for *H. v. versicolor* have been questioned by several investigators, and a proposal has been made that names *H. chrysoscelis* as the species occurring in Hardeman County (Blair, 1958; Johnson, 1961, 1966; Ralif, 1968). However, *H. v. versicolor* was the designation applied during this study.

**Hyla arvica arvica** Vosick, Western Bird-voiced Treefrog. One individual was heard calling in the flooded area below the dam at Rogers Springs Lake. Most of the specimens were captured as they moved about in shallow vegetation of trees on a rainy night in May 1948, in the Hatchee Bottoms.

**Hyla cinerea cinerea** (Schneider), Green Treefrog. Familar to most throughout the county, this frog does not seem to move about much. The specimen was captured at night in a honey sucker thicket on a ridge above a ravine. 

**Gastrophryne carolinensis carolinensis** (Holbrook), Eastern Narrow-mouthed Toad. Several specimens were collected in June from beneath boards or rotten logs near farmsteads along the county. Specimens were discovered at Pratt Lake the night of 24 June 1969. *Acris gryllus gryllus* (Le Conte), Southern Cricket Frog. Common throughout the county. This species was frequently seen throughout the county. *Acris crepitans crepitans* Baird, Northern Cricket Frog. Found throughout the county, these tiny frogs preferably toad in areas where they are sympatric with *A. gryllus*, since the two species are morphologically similar. Habitat selection was observed in cricket frogs collected at Rogers Springs Lake. *A. c. crepitans* was always found in the water close to shore, or on nearby vegetation. *A. gryllus* was found in drained areas and temporary roadsides near the lake. *A. c. crepitans* was more numerous than *A. g. gryllus* in places where both occurred.

**Trionyx spiniferus** Le Sueur, Spiny Softshell Turtle. This turtle rarely leaves the water and is difficult to catch. Several were observed in Porters Creek. Accordin.
ing to Webb (1973) Hardeman County is in the area of interspecies-divergence between T. s. spiniferus LeSueur and T. s. asper (Agassiz).

Anolis carolinensis carbonellusi Voight, Carolina Anole. Reliable records came from Easay Springs in the southeastern part of the county. No specimens were taken during this study, although it is known that this species ranges in Hardeman County.

Sceloporus undulatus kyacichus (Green), Northern Fence Lizard. Common throughout the county, it was frequently seen along roads and streams throughout the county, and at old sawmill sites. Specimens were collected from beneath logs and boards in cool evening and morning hours from late spring through early autumn.

Phrynosoma cornutum (Harlan), Texas Horned Lizard. This lizard is mentioned in the earliest accounts of Texas reptiles (Troost, 1836, 1844). Endley (1954) reported "one or two" specimens from Chester County, which is nearly adjacent to Hardeman County. The senior author collected one in Shelby County in 1960. Although not collected during this study, there were reliable reports of this species from Piney Creek Bottoms and from near Middleton. This lizard is not native to Tennessee; the nearest portion of its range is in western Arkansas (Schmidt, 1953). Records of occurrence are considered to be based on individuals transported from their native range.

Scolopax mexicana (Say), Ground Skink. These reptiles were mostly collected near barns, and from under leaf litter in forest. A gravid female was taken beneath a leaf littered surface in June 1969. It was kept alive and fed ant pupae and termites. It laid five eggs during the first week in July 1969, all of which hatched in late August.

Amphisita fuscata (Linnaeus), Five-lined Skink. A common lizard of the county, it was often found around woodpiles, old barns, and frequently in pine forest beneath logs.

Amphisita lacteata (Schneider), Broad-headed Skink. Extremely wary to capture, these animals were observed in several areas of the county and were collected from beneath the bark of rotting trees or stumps.

Coenodipsos sexlineatus sexlineatus (Linnaeus), Six-lined Racerunner. These animals were found in and around woodpiles and near sawmill sites throughout the county.

Ophiurus arizonensis (McCoey), Eastern Slender Glass Lizard. At the time Smith (1946) published his Handbook of Lizards, only one species, O. centralis, was recognized from North America. Now, three species of glass lizards are recognized in the eastern United States. Most current sources indicate O. arizonensis as the only species found in Hardeman County. However, the three species of glass lizards are described in detail in the eastern United States. Most current sources indicate O. arizonensis as the only species found in Hardeman County. However, the three species of glass lizards are described in detail in the eastern United States.

Ameiurus nebulosus (Baird and Girard, 1854). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Ameiurus melas (Baird and Girard, 1854). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Ameiurus carpinus (Walbaum, 1792). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Coho salmon (Oncorhynchus kisutch). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Atlantic salmon (Salmo salar). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Esox lucius (Linnaeus, 1758). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Largemouth bass (Micropterus salmoides). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Smallmouth bass (Micropterus dolomieu). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Yellow perch (Perca flavescens). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Bluegill (Lepomis macrochirus). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

White crappie (Périgalbus flavescens). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Black crappie (Périgalbus nigromaculatus). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Green sunfish (Lepomis cyanellus). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Channel catfish (Ictalurus punctatus). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Red catfish (Ictalurus furcatus). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Brown bullhead (Ictalurus nebulosus). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Redhorse (Moxostoma macrolepidota). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Spotted sucker (Catostomus stearneri). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.

Carp (Cyprinus carpio). This species was not found in Hardeman County according to the 1958 and 1959 surveys. However, it is possible that the species could be found in the vicinity of the county, as it is known to occur in neighboring counties.


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**In Memoriam**

**WALTER FRANKLIN POND (1885-1974)**

**WALTER B. JONES**

*Alabama Geological Survey*  
*Tuscaloosa, Alabama*

Walter F. Pond, former Tennessee State Geologist, died October 25, 1974, in Hot Springs, Arkansas. He served as State Geologist from 1927-1945 and in 1934 he was president of the Tennessee Academy of Science. From the beginning, Pond was active in Academy affairs, presenting a talk on the geology of Reelfoot Lake during 1927, his first year in Tennessee.

Born in Greenfield, Massachusetts, on June 23, 1885, Pond had an unusually long and varied career in Geology. More detailed summaries of his career will appear in The *Proceeding of The Geological Society of America* and in The *Bulletin of The American Association of Petroleum Geologists*. 