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New Records of Vertebrates in Southwestern Arkansas

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The smaller secondary roost site is located 50-53 m from the entrance on the west side of Hwy 122. The floor is nearly level and generally has 1-2 cm of water flowing over it. The lack of the ceiling dome and the narrowed dimensions of the drain downstream make this site prone to flooding. The flat ceiling is slightly eroded with exposed reinforcing rods and a deep crack between ceiling sections that is used as a hibernation site by 20-30 gray bats. Ceiling holes at the primary site are also used in this manner. Natural caves chosen as hibernacula have high humidity and an average temperature of 7-10 degrees Celsius (Barbour and Davis, 1969). The bats may choose a site 10-15 degrees warmer in the fall and then remain there as the temperature drops to the 0-5 degree Celsius range. In the same manner, temperatures in the storm drain drop gradually as days get colder. In the coldest months, temperatures may fall to 8.5 degrees or below. They do not remain stable, however, as they would in a cave. On warm days temperatures rise. Under these conditions, the bats do not remain torpid but become active, move about, and may emerge to feed.

Maternity colonies prefer caves near a river or reservoir over which the adults feed. Few are located more than 4 km from a major body of water. Forested lands are also used as forage areas by newly volant young and by adults on their way to the water (Tuttle, 1976). The maternity colony at Newark is also located near several bodies of water: the White River 4.5 km to the south, the Black River 7 km to the east, and Dota Creek 3 km to the northeast. Upon emergence, most members of this colony appear to head northeast toward Dota Creek, the closest water source, foraging in the trees as they go. Others, however, feed in the area and use the storm drain as a night roost.

Disturbance to colonies is one of the major causes of the decline in gray bat populations (Tuttle, 1979). The storm sewer population, estimated in both 1989 and 1990 to be close to 8000, appears to be stable, however, disturbance to the Newark colony is a real threat because it is located in a town. Children have been known to kill the bats as they emerge from the west entrance. The fear of snakes thought to live in the drain and fear of the bats themselves have kept people away from the maternity roost site, although children do play in the west drain entrance. Noise from people, street traffic, and trains does not seem to affect the colony, as it has been returning to this roost for many years.

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NEW RECORDS OF VERTEBRATES IN SOUTHWESTERN ARKANSAS

The vertebrate fauna of southwestern Arkansas is less well known than that of other regions of the state; this possibly reflects the distance of the region from major universities. The geographic area is located almost entirely within the West Gulf Coastal Plain natural division (Foti, 1974). Recent work relative to the vertebrate fauna of the southwestern quadrant of Arkansas has alleviated some of the regional bias in information on vertebrates (Baker, 1985; James and Neal, 1986; Robison and Buchanan, 1988; Robison *et al.*, 1983; Sealander and Heidt, 1990; Sewell, 1981; Steward *et al.*, 1986, 1989a,b). This report documents new records of distribution and provides notes on natural history of selected vertebrates from southwestern Arkansas.

Field collections and observations were made by the authors and students at Henderson State University. Fishes were obtained by use of seines, amphibians and reptiles by overturning cover materials or driving down roads on rainy evenings (with the exception of a turtle caught on a trotline), and mammals were collected as road-killed specimens or by use of museum special or Sherman traps. Birds were recorded photographically.

Specimens of fishes were fixed in 10% formalin and stored in 40% isopropanol. Amphibians and reptiles were preserved in the same manner as fishes, or preserved by use of a freeze-dryer. Specimens of mammals were prepared as standard skins and skeletons. All specimens were deposited in the collection of vertebrates at Henderson State University.

Class: Osteichthyes

Most published studies of the distribution of fishes in southwestern Arkansas have focused on the Ouachita River drainage, reviewed by Baker (1985) and Robison *et al.* (1983). Studies based in the Red River drainage are few. Sewell (1981) reported fishes of the upper Saline River (above Dierks Lake) and Cloutman and Olmsted (1974) surveyed fishes of the Cossatot River. Robison and Buchanan (1988) mapped additional records from thesis work (Cokern, 1979; Etheridge, 1974; Johnson, 1978). The following species represent new records within the Red River drainage.

Semotilus atromaculatus (Mitchell), the Creek Chub, Family Cyprinidae. One record taken from the Saline River was collected prior to 1960 (Robison and Buchanan, 1988). The present occurrence of the creek chub in the Saline River is confirmed by a single specimen from Howard County south of Dierks Lake near Bluff Creek, in March 1991.

The extreme headwaters of the Cossatot River provided the only other specimens of the creek chub from the Red River drainage (Cloutman and Olmsted, 1974). New records include a specimen taken in April 1991 from Bois d'Arc Creek (a tributary to the Red River) in Hempstead County, about 3 km southwest of the junction of Arkansas Highways 73 and 195. An additional specimen was collected in February 1991 in Little River County from the Little River just south of the dam forming Millwood Lake.

Centrarchus macropterus (Lacepede), the Flier Sunfish, Family Centrarchidae. Robison and Buchanan (1988) indicated records of the flier sunfish in the Red River drainage from Bodcaw Creek (Hempstead County) and Dorcheat Bayou (Columbia County). These streams enter the Red River in Louisiana. A specimen collected in March 1991 from Hempstead County represents the westernmost record for Arkansas and is marginal to the general species range. The location of collection (a tributary to Yellow Creek on Highway 32, about 4.5 km northeast of the Millwood Lake Dam) documents the flier sunfish in the Little River drainage.

Percina caprodes (Rafinesque), the logperch, Family Percidae. The logperch has been reported from the Little River and its tributaries, but previously only above Millwood Lake (Robison and Buchanan, 1988). A specimen collected in February 1991 from Little River below the dam for Millwood Lake (Little River County) is the most southern record in the Red River drainage of Arkansas.

Percina maculata (Girard), the Blackside Darter, Family Percidae. The only record of the blackside darter in the Red River drainage of Arkansas was collected prior to 1960 in Lafayette County from Bodcaw Creek (Robison and Buchanan, 1988). A specimen collected in March 1991 from Bois d'Arc Creek (a tributary to the Red River) in Hempstead County about 3 km southwest of the junction of Arkansas Highways 73 and 195 extends the range northwestward and closer to the channel of the Red River in Arkansas, and provides recent documentation of the presence of this darter in the Red River drainage.

Class: Amphibia

Knowledge of the distributions of amphibians and reptiles in Arkansas has not been coalesced since the review by Dowling (1957). Conant and Collins (1991) provided maps that include Arkansas distributions of amphibians and reptiles.

Eurycea quadridigitata (Holbrook), Dwarf Salamander, Family Plethodontidae. Dowling (1957) reported specimens from Lafayette and Miller counties in southwestern Arkansas. A specimen was collected in April 1991 near the reregulating dam on the Caddo River, in Clark County. The specimen was collected within a clump of mosses. This location represents the most northwestern record for the species (Conant and Collins, 1991), although unverified museum records may extend the range even farther north (S. E. Trauth, pers. comm.).

Scaphiopus holbrookii hurterii Strecker, Hurter's Spadefoot, Family Pelobatidae. Museum records compiled by M. V. Plummer and S. E. Trauth indicate that specimens have not been previously collected from Clark County. A specimen was collected near the campus of Ouachita Baptist University in Arkadelphia in February 1991.

Class: Reptilia

Micrurus fulvius tenere (Baird and Girard), Texas Coral Snake, Family Elapidae. The coral snake is secretive and is seldom collected. Dowling (1957) reported specimens from Nevada, Miller, Hempstead, and Ouachita Counties, and Robison (1972) added records for Lafayette and Union Counties. Because of the rarity of collection, we document another individual from Nevada County collected in October 1988. The specimen was found in a sandy area of a predominantly pine forest, located about 3 km west of Cale.

Cemophora coccinea copei (Jan), Scarlet Snake, Family Colubridae. The scarlet snake is very secretive and is typically associated with soils in which it can burrow. Thus, few records of its occurrence are available: Dowling (1957) reported the species from Pike County in southwestern Arkansas. Although the species probably occurs almost statewide, records are still uncommon (Reagan, 1974). A specimen was collected in June 1991 at Camp Clearfork in Garland County, about 5 km west of Crystal Springs off highway 270. A Clark County specimen was collected in Arkadelphia at the Physical Plant of Henderson State University in May 1992.

Virginia valeriae elegans Kennicott, Western Earth Snake, Family Colubridae. Dowling (1957) noted that specimens were known only from the highlands north of the Arkansas River, but that the species may be found over the state. A specimen was collected in August 1991 about 3 km west of Arkadelphia, Clark County, on a road connecting Arkansas Highways 8 and 51.

Macrolemys temminckii (Harlan), Alligator Snapping Turtle, family Chelydridae. Although this turtle has a statewide distribution, few specimens are available - possibly due to the large size the turtle may obtain and therefore the difficulty in preparation and storage. There is special concern for this species due to habitat losses and its vulnerability to shooting and capture in fishing nets and on trotlines. Dowling (1957) recorded a specimen from Hempstead County.

In April 1991, an individual was observed by RT in the Caddo River just below the reregulation dam for Lake DeGray, Clark County. Carapace length was estimated (visually) to be about 35 cm. A specimen from Clark County was obtained from a trotline in August 1991, in the Little Missouri River about 1.5 km northwest of the confluence of the Little Missouri and Ouachita Rivers. Carapace length for this specimen was 25 cm. An additional specimen, identified from a photograph in the possession of RT, was snagged in May 1990 by a fisherman in the Little River below the Millwood Lake Dam, Little River County. Researchers interested in status surveys should note the possibility that these turtles may congregate below dams to search for food.

Class: Aves

Anhinga anhinga (Linnaeus), Anhinga or "water turkey", Family Anhingidae. Anhingas are known as summer residents on a few swampy areas in the Mississippi Alluvial Plain and on the West Gulf Coastal Plain. Nesting has been reported in Jefferson County in southeastern Arkansas (Meanley, 1954) and in Hempstead, Lafayette, and Little River counties of southwestern Arkansas (James and Neal, 1986). Anhingas have been observed in Saline, Lonoke, Pulaski, and Hot Spring counties, but not in association with nests (James and Neal, 1986). Because of loss of habitat, James (1974) considered the Anhinga to be endangered as a breeding bird in Arkansas.

Nesting Anhingas were observed in Clark County during three successive years (1983 - 1985). The habitat was located in the Little Missouri bottoms approximately 8 km downstream from the Highway 67 bridge. Anhingas usually arrived around the middle of April, and nests were occupied by mid-May. Nest construction was not directly observed; however the same nests were reoccupied each year. Birds were observed on the nest during the third week of May. Clutch size was undetermined, but each of three nests observed in 1983 and 1984 produced two young. In 1985, three pairs attempted nesting with success in only one nest, which produced two young.

Young were being fed in two nests on 10 June 1983, but feeding of young was not observed in the third nest until 20 June. By 12 July, all young had fledged. No further attempts at nesting have been observed since 1985, although birds routinely have been sighted each year.

The most productive nest was in a large bald cypress (*Taxodium distichum*) located about 15 m from the nearest shoreline. The nest was on the lowest limb of the tree, about 10 m above the water, and water depth was one m. The other two nests were located in twin forks of a damaged cypress. These nests were about 60 m from the nearest shoreline and about 12 m above water, one nest slightly higher than the other.

Anhingas swim with the body submerged and must exit the water to dry their feathers before flying, making them vulnerable to predators. At least three alligators (*Alligator mississippiensis*) also occupied the cypress brake. Anhingas avoided alligators in part by hopping up inclined logs or debris to attain elevated positions. Inclined structure may be important as habitat when Anhingas and alligators are in association.

Class: Mammalia

Recent surveys have appreciably increased our knowledge of the distribution of bats, rodents, and carnivores of southwestern Arkansas (Steward *et al.*, 1986, 1989a,b). These studies examined the occurrence of 48 species of mammals in 21 southwestern counties. Sealander and Heidt (1990) document known distributions of other mammals.

Blarina carolinensis (Bachman), Southern Short-tailed Shrew, Family Soricidae. Sealander and Heidt (1990) indicated this shrew in most counties of southwestern Arkansas. A specimen collected in November 1991 near Malvern, Hot Spring County, represents a new county record.

Plecotus rafinesquii Lesson, Rafinesque's Big-eared Bat, family Vespertilionidae. This big-eared bat has been collected in Calhoun, Columbia, Dallas, Grant, Lafayette, Little River, Nevada, Ouachita, and Union counties of southwestern Arkansas (Steward *et al.*, 1986). Typical roosting habitat includes barn lofts, attics, and old buildings (Sealander and Heidt, 1990). A Clark county record was obtained in November 1987 about nine km southeast of Gurdon. The specimen was taken from a covered brick well in which it was roosting.

Tamias striatus (Linnaeus), Eastern Chipmunk, Family Sciuridae. The chipmunk is generally found in deciduous forests with rocky outcrops or piles of wood or rock which it uses for cover and as lookout posts. These requirements limit the distribution of the chipmunk in southwestern Arkansas, and specimens have been reported from Garland, Pike, and Polk counties - all within the Ouachita Mountain region (Sealander and Heidt, 1990; Steward et al., 1989a). A specimen was collected in October 1991 in Clark county, about 3 km west of Arkadelphia near a road connecting Arkansas Highways 8 and 51. The specimen was taken from a wooded area but without the typical rock present, and the location is slightly inside the Gulf Coastal Plain portion of Clark County. Chipmunks also have been observed in Clark County 5 km west of Hollywood (off Highway 26) in forest habitats about 3 km south of rocky areas. These individuals were observed during a control burn, having been smoked out of a hollow log.

Oryzomys palustris (Harlan), Marsh Rice Rat, Family Muridae. The marsh rice rat typically occupies wet habitats. Records indicate the presence of this rodent in 10 southwestern Arkansas counties (Steward et al., 1989a). Two new county records are reported here. In January 1992, two specimens were collected in Clark County near a beaver swamp about 5 km west of Arkadelphia off Highway 51. Three specimens also were collected in Hot Spring County in January 1992. These specimens were taken from a field adjacent to Drowning Slough located about 6 km southwest of Malvern.

Meotoma floridana (Ord), Eastern Woodrat, Family Muridae. The woodrat occurs statewide (Sealander and Heidt, 1990) but has been reported in southwestern Arkansas from nine counties only (Steward et al., 1989a). Over a three year period, 10 specimens have been collected from a barn located about 4 km west of Arkadelphia off a road connecting Highways 8 and 51. These specimens represent a new county record for Clark County.

Reithrodontomys fulvescens (J. A. Allen), Fulvous Harvest Mouse, Family Muridae. This mouse occurs statewide (Sealander and Heidt, 1990) and has been reported in southwestern Arkansas from 14 counties (Steward et al., 1989a). A Clark County record was collected near a beaver swamp about 5 km west of Arkadelphia off highway 51, in January 1992.

Ochrotomys nuttalli (Harlan), Golden Mouse, Family Muridae. The golden mouse has been reported from 11 southwestern Arkansas counties (Steward et al., 1989a). A Clark County record was taken about 5 km west of Arkadelphia off highway 51, in January 1992.

Microtus pinetorum (LeConte), Woodland Vole, Family Muridae. This vole has been reported from 13 southwestern Arkansas counties (Steward et al., 1989a). A Clark County record was collected near a beaver swamp about 5 km west of Arkadelphia off Highway 51, in February 1992.

Ondatra zibethicus (Linnaeus), Muskrat, Family Muridae. The distribution map of Sealander and Heidt (1990) indicated no specimens from southwestern Arkansas. Steward et al. (1989a) also failed to obtain specimens to document their presence, although reports by local people suggested their occurrence. A specimen collected in January 1983 about 19 km southeast of Arkadelphia documents the muskrat in Clark County.

Mustela vison (Schreber), Mink, Family Mustelidae. The mink is a semi-aquatic species occurring statewide (Sealander and Heidt, 1990); however Steward et al. (1989b) was able to document their occurrence in only five counties of southwestern Arkansas. A road-killed specimen collected on Highway 67 near the Arkadelphia city limits provides a Clark County record.

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