

2000

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C. Renn Tumilson

Henderson State University

Anthony Rocconi

Mississippi State University

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Recommended Citation

Tumilson, C. Renn and Rocconi, Anthony (2000) "Occurrence of a Second Subspecies of Box Turtle (*Terrapene carolina*), in Arkansas," *Journal of the Arkansas Academy of Science*: Vol. 54 , Article 32.

Available at: <http://scholarworks.uark.edu/jaas/vol54/iss1/32>

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Occurrence of a Second Subspecies of Box Turtle (*Terrapene carolina*) in Arkansas

Renn Tumblison*

Department of Biology
Henderson State University
Arkadelphia, AR 71999

Anthony Rocconi

Department of Veterinary Medicine
Mississippi State University
Mississippi State, MS 39762

*Corresponding Author

The three-toed box turtle (*Terrapene carolina triunguis*) is the subspecies generally accepted to occur west of the Mississippi River with a southeastern extension of the range east of the river into Mississippi and southern Alabama (Conant and Collins, 1998). The reported range of the eastern box turtle (*Terrapene carolina carolina*) extends westward into northeastern Mississippi and throughout most of Tennessee, but approaches Arkansas only in the northeast in the vicinity of Mississippi County (Conant and Collins, 1998). Carr (1952) indicated a zone of intergradation between these subspecies in western Tennessee and eastern Mississippi, but Conant and Collins (1998) indicated no zone of intergradation except with other subspecies in the extreme southeastern United States. A comprehensive examination of the distribution and taxonomy of box turtles in Arkansas is lacking at this time. The purpose of this paper is to document the discovery of a new subspecies for Arkansas.

Although the name *T. c. triunguis* implies three toes (on the hind foot), a few specimens are known to possess four toes. There is a tendency for the pattern of yellow spots on the carapace of the three-toed box turtle to be replaced by an even olive to horn color in adult specimens. The plastron generally is yellowish to horn colored with some dark markings evident in some specimens. Males have little to no concavity in the plastron. In contrast, *T. c. carolina* tends to retain a pattern of yellow spots on the carapace, often has a dark plastron, and has four toes. The rear lobe of the plastron of males has a distinct concavity (Carr, 1952; Conant and Collins, 1998).

On 26 April 1998, three specimens of box turtles, each of which possessed four toes, were collected at separate locations in southeastern Arkansas (Chicot County: Island 82, T14S R1W; Drew County: 2 mi. E Collins on Hwy 35, S32 T13S R4W; 4 mi. W Monticello on Hwy 4, S30 T12S R7W). The rear lobe of the plastron was concave on a male, and the plastrons were dark on the specimens. These traits are consistent with the appearance of the eastern box turtle and

atypical for the three-toed box turtle. The color pattern of the carapace was unusual for *T. c. triunguis*, having broad yellow blotches rather than narrow dashes or radiating lines (Fig. 1). However, this coloration is very similar to the pattern for *T. c. carolina* illustrated in various books (Carr, 1952; Ditmars, 1953; Martof et al., 1980; Ernst et al., 1994; Palmer and Braswell, 1995).

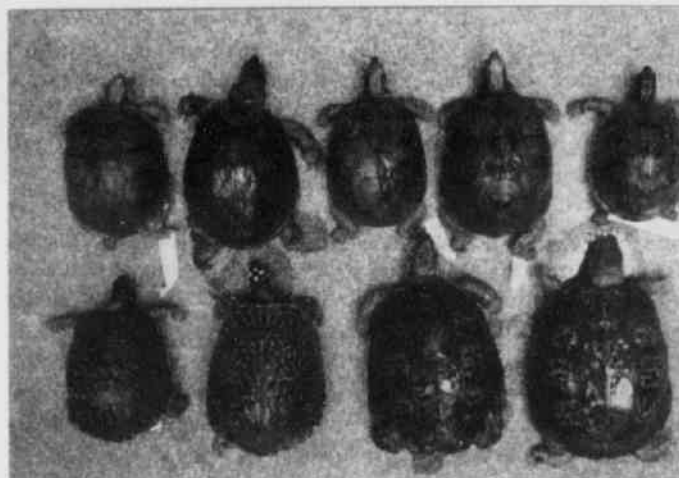


Fig. 1. A sample of sizes and patterns of adult box turtles from Arkansas, from the Henderson State University collection of vertebrates. Top row and two specimens on left of bottom row represent *Terrapene carolina triunguis*. Two specimens on right of bottom row represent *T. c. carolina*.

The new specimens from Chicot and Drew counties were appreciably larger than most three-toed box turtles in Arkansas, with an average carapace length of 149 mm (range 147-151) for the two specimens available for measurement. Carapace length averaged 114.3 mm (range 94-130) for a sample of 24 adult box turtles in the Henderson State University collection, which were obtained in 11

Arkansas counties (Ashley, Baxter, Clark, Dallas, Drew, Franklin, Garland, Hot Spring, Perry, Pike, Nevada). Of this sample, only one specimen had four toes on the hind foot (and it had been retained for that fact).

Carapace length for specimens of *T. c. triunguis* in Kansas normally range between 113-150 mm (Collins, 1993), and maximum lengths of 165 mm have been reported in Alabama (Mount, 1975) and Louisiana (Dundee and Rossman, 1989). Maximum carapace lengths of *T. c. carolina* have been given as 151 mm in Illinois (Smith, 1961), 165 mm in Alabama (Mount, 1975), and 156 mm in Virginia (Mitchell, 1994). Palmer and Braswell (1995) reported lengths of the 10 largest specimens (five of each sex, the largest being 152 mm) from North Carolina, which averaged 146.0 mm. Of these previous works, only Mitchell (1994) provided means for samples with males averaging 132.4 mm and females 130.1 mm. These values still are higher than the mean of 114.3 mm reported herein for Arkansas. However, the unusual specimens reported here are closer to these sizes, and are 35 mm longer than the average length of specimens measured from Arkansas reported herein.

The Gulf Coast box turtle, *Terrapene carolina major*, also has traits in common with the new Arkansas specimens: a concavity in the plastron and four toes on the hind foot. However, it contrasts by being considerably larger (carapace length up to 216 mm), having the pattern of adults almost obliterated, and having a flare to the posterior marginals that may produce an almost "gutter-like" appearance (Dundee and Rossman, 1989; Ernst et al., 1994; Conant and Collins, 1998).

Two of the new specimens have been examined also by Dr. S. Trauth at Arkansas State University. Based on his confirmation of the identification and data provided herein we conclude that the eastern box turtle, *T. c. carolina*, occurs in parts of southeastern Arkansas. This is based on the fact that three specimens were taken at separate locations and that all traits examined are consistent with the eastern subspecies. Normal three-toed box turtles occur sympatrically in the area. Whether our specimens may be hybrids is unclear, but no traits appeared to be intermediate to support that hypothesis. Dundee and Rossman (1989) noted that intermediates between *T. c. triunguis* and *T. c. major* seldom are seen because the two forms seem to be ecologically segregated.

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