

The Distribution of the American Toad, *Bufo americanus*, in North Central Effingham County, Illinois

John K. Tucker
Illinois Natural History Survey
1005 Edwardsville Road
Wood River, Illinois 62095, USA

ABSTRACT

The American toad, *Bufo americanus*, is reported for the first time from 7 locations in Effingham County, Illinois. Choruses of this toad were heard only in the north central portion of the county. The apparent absence of choruses in the south central portion of Effingham County is consistent with previously published distributional maps for the species.

INTRODUCTION

Smith (1961) noted that the American toad, *Bufo americanus*, has been found over much of Illinois with the exception of a portion of southeastern Illinois that contain Wabash border forests and southern division forests (Fig. 1). Absence of the species from this region in Illinois and neighboring Indiana (Minton, 1972) results in a roughly circular gap toward the center of the range of the species (Smith, 1961, fig. 62).

Although Smith (1961, fig. 62) had no records of *B. americanus* from Fayette or Effingham counties, he suggested that its range included the portion of Fayette County west of the Kaskaskia River but not Effingham County. Tucker (1994) confirmed the occurrence of the species in Fayette County. During the springs of 1991 through 1993, I traveled many roads through the northern half of Effingham County in search of *B. americanus* choruses to delineate the limits of the species range in the northwestern corner of the range gap. The results of that survey are reported herein.

METHODS

Surveys for toads were conducted during the springs of 1991, 1992, and 1993. I surveyed by automobile. During 1991, I surveyed many areas by stopping the automobile and listening for calling toads. If chorus were heard, I attempted to locate them and capture individual specimens for positive identification. From the results of the 1991 survey, I selected 17 sites (Fig. 2) for continued monitoring during subsequent years. Ten of these sites were ones where *Bufo americanus* were found in the 1991 survey. I also selected seven sites where *B. americanus* choruses were not found for continued monitoring. These latter sites had habitat that appeared suitable to me for *B. americanus* and were geographically close to known breeding chorus of the toad. I visited each of the 17 sites

at least once each spring in 1992 and 1993 at times when *B. americanus* was calling at one or more of the sites.

RESULTS AND DISCUSSION

I found choruses at the following localities (Fig. 1): dam and Wren Drive area of Lake Sara, 4.3 km W of Effingham (INHS 10940); Little Wabash River at junction with Ford Avenue, County Road 1175E; Little Wabash River at junction with US Route 40; Shoal Creek, 0.9 km E of junction with Ill. Route 32; Shoal Creek at junction with Ill. Route 32 (INHS 10941-45); North Fork of Shoal Creek at junction with County Road 2000N; Green Creek, 0.2 km S of County Road 1800N; Green Creek at junction with County Road 1400E; and Lake Pauline, 0.7 km W of Effingham. Voucher specimens are deposited in the collections of the Illinois Natural History Survey (INHS). The toads that I report herein are identifiable as *B. a. americanus* *x charlesmithi* intergrades using the criteria defined by Smith (1961).

The habitat at each of these sites is similar. It consists of bodies of water (streams, rivers, lakes, and ephemeral ponds and puddles) in close association with outlier prairies (Smith, 1961; Vestal, 1931). At each of the ten sites with choruses of *B. americanus*, the toads were found calling in open woods or savannah settings. The prairies themselves have been converted to agriculture. Toads were also found crossing roads within agricultural areas but no choruses were found in open treeless areas.

Bufo americanus was absent from other creeks near the areas where I found it. Lack of chorusing toads indicates either that they are not present or that they are present but were missed. I believe it is more likely that the species does not occur in these adjacent areas because the sites were all visited at least once per year during three consecutive years and at times when the species was in chorus at the other Effingham County sites.

Sites where no choruses were found are: Lily Creek at junction with US Route 40, T7N, R5E, sec. 4; Altamont Reservoir near Big Creek; Second Creek at junction with County Road 650E; Salt Creek at junction with Crystal Club Road, County Road 1600E; Salt Creek at junction with County Road 500N; Little Wabash River at junction with Ill. Route 37; and Little Salt Creek at junction with Ill. Route 33. The habitat at each of these locations appeared to me to be similar to habitats at sites where *B. americanus* were found.

Although *B. americanus* certainly ranges into areas such as Effingham County, I cannot explain why the range does not include other seemingly suitable areas such as the Salt Creek and Little Salt Creek areas of Effingham County (Fig. 2). These creeks drain outlier prairies (*sensu* Smith, 1961) just as do all of the other streams along which choruses of *B. americanus* were found.

At present no cogent explanation exists to account for the gap in the range of *B. americanus*. The gap includes portions of Illinois, Indiana, and Kentucky (Conant and Collins, 1991). Before considering possible reasons for the gap, it is appropriate to review the systematics of *B. americanus* in this region. Smith (1961), Minton (1972), and Conant and Collins (1991) recognize two subspecies, *B. a. americanus* and *B. a.*

charlesmithi. The former race is a large toad (largest Illinois specimen 90 mm in snout vent length, Smith, 1961) whereas the latter is often referred to as the dwarf race (largest Illinois specimen 69 mm in snout vent length, Smith, 1961). Besides differences in size, these toads also differ in ventral coloration. Typical specimens of *B. a. americanus* have a moderately to heavily spotted or blotched ventral area whereas specimens of *B. a. charlesmithi* have the venter nearly spotless.

Toads identified as *B. a. americanus* (see Conant and Collins, 1991, for a recent survey) occur along the northern border of the range gap whereas the southern border is occupied by toads identifiable as *B. a. charlesmithi*. In Illinois, Smith (1961) restricted the range of *B. a. charlesmithi* to the Shawnee Hills Section and bordering Coastal Plain Province. He suggested that a broad intergrade zone was present between the two races in west central Illinois (Fig. 1). This intergrade zone falls in the Springfield Plain and a portion of the Mt. Vernon Hill Country (Smith, 1961). Smith (1961) restricted the range of typical *B. a. americanus* to areas of Illinois north and east of the Shelbyville Moraine and glacial plains such as the Galesburg Plain in western Illinois. The range gap itself in Illinois is coincident with the Mt. Vernon Hill Country of Smith (1961).

Each of these physiographic regions have broad characteristics that may have some implications concerning the range gap. The area occupied by *B. a. americanus* and *B. a. americanus x charlesmithi* hybrids is characterized by relatively little relief (with notable exceptions) and much of the presettlement vegetation was prairie or prairie dissected by gallery forests along the streams draining it particularly north and east of the Shelbyville Moraine. Border areas south and west of this moraine have more extensive development of forests but significant prairie outliers were present (Vestal, 1931; Smith, 1961). The area occupied by *B. a. charlesmithi* on the other hand is characterized by high relief (again with notable exceptions) and was mostly forested.

Previous attempts to explain the *B. americanus* range gap have suggested that competition with *B. woodhousei fowleri* (Minton, 1972) or that abiotic factors such as temperature and rainfall (Smith, 1961) may account for the range gap. Since *B. americanus* (both subspecies) and *B. w. fowleri* are widely sympatric in other areas of Illinois (Smith, 1961) and the United States (Conant and Collins, 1991), the first explanation seems to me to be unlikely. Furthermore, there is evidence (Brown, 1970) that both toads have adapted their body sizes in response to sympatry rather than one or the other being excluded. No studies have been published testing Smith's speculations of the importance of abiotic factors in the distributions of the two subspecies. Finally, Brown (1970) suggested that the hiatus was due to historical factors related to separation of the two races of *B. americanus* during the Pleistocene. This hypothesis is also untested. The cause of the range gap will remain unclear until further detailed studies of the distribution of the species in Illinois and Indiana are conducted.

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LITERATURE CITED

- Brown, L. E. 1970. Interspecies interactions as possible causes of racial size differences in the toads *Bufo americanus* and *Bufo woodhousei*. *Tex. J. Sci.* 21(3):261-267.
- Conant, R. and J. T. Collins. 1991. *A Field Guide to Reptiles and Amphibians* [of] Eastern and Central North America, Third edition. Houghton Mifflin Co., Boston. 450 pp.
- Minton, S. A. Jr. 1972. Amphibians and reptiles of Indiana. *Ind. Acad. Sci. Mon.* 3. v + 1-346 pp.
- Smith, P. W. 1961. The amphibians and reptiles of Illinois. *Ill. Nat. Hist. Surv. Bull.* 28:1-298.
- Tucker, J. K. In press. Distributional note: *Bufo americanus*. *Herpetol. Rev.* 25(1):32.
- Vestal, A. G. 1931. A preliminary vegetation map of Illinois. *Ill. State Acad. Sci. Trans.* 23(3):204-217.

Figure 1. The distribution of *Bufo americanus* in Illinois. Stippling redrawn from Smith (1961, Fig. 62).

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Figure 2. The distribution of *Bufo americanus* in Effingham County in relation to prairie outliers. Prairie outliers redrawn from Smith (1961, Fig. 4); Southern division forests predominate in areas without diagonal hatching.

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