

## A Metamorphic Aggregation in Tadpoles of *Bufo*<sup>1</sup>

ARTHUR N. BRAGG, University of Oklahoma, Norman

In former papers (1, 2, 3) I have emphasized aggregation of the tadpoles of the savannah spadefoot, *Scaphiopus hurterii* Strecker at and near metamorphosis and I once witnessed a mass migration to the bank from such an aggregation (4). So far as I know, no one has reported such aggregations for other kinds, although feeding schools have been reported among younger tadpoles of several species (5). The nearest thing to it so far seen is apparently my own observations on *Rana berlandieri* (1).

On May 15, 1949, I found a metamorphic aggregation of the tadpoles of the dwarf American toad (*Bufo terrestris charlesmithi* Bragg.<sup>2</sup> In a shallow arm of a deep pool in a gravel pit beside U.S. Highway 270 in the valley north of Rich Mountain, east of Page, LeFlore county, Oklahoma, the tadpoles formed so dense a mass (approximately 3 ft. X 5/6 ft. in shallow water near shore) that the bottom of the pool beneath them was invisible. A few animals (two were found) had already metamorphosed but most of the others were in various stages of transformation. Some had all four legs; many more had not yet developed the front pair externally but gave every evidence that their emergence was imminent. A few were not in active transformation. There were no tadpoles elsewhere in the pool.

The tadpoles had plenty of room and much of the shallow arm in which they occurred appeared comparable to the specific place in it where they were; algae, sedges, and grass were about equally distributed and the depth of water did not vary greatly. Since I could find nothing in the environment to account for the aggregation, I tentatively concluded that it was a social aggregation somewhat comparable to those observed in *Scaphiopus*. I have delayed publication for some time in hope of again seeing this or a similar phenomenon in order to test the conclusion. Having had no success, I recognize that observations in later years may force alteration of it.

### LITERATURE CITED

1. BRAGG, ARTHUR N. 1944. Breeding habits, eggs, and tadpoles of *Scaphiopus hurterii*. *Copeia* 1944: 230-241.
2. ————. 1945. Breeding and tadpole behavior in *Scaphiopus hurterii* near Norman, Oklahoma, Spring, 1945. *The Wasmann Collector* 6:69-78.
3. ————. 1950. Observations on *Scaphiopus*, 1949 (Sallentia: *Scaphiopodida*). *The Wasmann J. Biol.* 8:221-228.
4. ————. 1951. Mass movement at metamorphosis in the savannah spadefoot, *Scaphiopus hurterii* Strecker. *Proc. Oklahoma Acad. Sci.* 31: 26-27.
5. RICHMOND, NEIL. 1947. Life history of *Scaphiopus holbrookii* (Harlan), Part I: Larval development and behavior. *Ecology* 28:53-67.

<sup>1</sup>Contribution from the Department of Zoology and the Oklahoma Biological Survey, University of Oklahoma, Norman.

<sup>2</sup>This is the animal formerly reported in Oklahoma under the name of *Bufo americanus americanus* or *B. terrestris americanus*. Elsewhere I am describing it as a new subspecies.