Decline in Toad Populations in Central Oklahoma[1]

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During approximately 18 seasons, I have observed the breeding congresses of local populations of the frogs and toads in and about Norman, Cleveland County, Oklahoma, and have taken extensive notes on all phases of their activities. The following comments from these observations, while not fully explained, seem worthy of record.

From 1936 to 1943 at all appropriate times and places toads could be heard in and about Norman in medium to large numbers, depending upon conditions prevailing. In one place, for example, just northwest of the city limits breeding individuals of *Bufo cognatus* Say were so abundant one night in 1938 that removal of over 400 males made no discernible difference in the sound made by the calls. It was a common experience in Norman to hear congresses of *B. woodhousii woodhousii* Girard on the Canadian River flood plain, two or three miles away, so numerous were the toads at times. Spadefoots (*Spea bombifrons Cope*) and small forms like *Microhyla carolinensis olivacea* Hallowell), *Pseudacris clarkii* Baird and *Ps. streckeri* W. & W. were also very abundant as judged by the numbers of calls heard. In 1941, heavy rains in late spring and early summer gave optimum conditions for breeding and thousands of young of the prairie forms emerged after the most successful breeding year known in this region (1).

Following this record-breaking year for amphibians there was a great expansion of human population accompanied by much building, road paving, and other improvements. By 1944, most of the commonly used amphibian breeding places had been destroyed and by 1945 few toads were to be found in Norman. They have now all but disappeared from the University of Oklahoma campus: whereas formerly each street light would have from one to ten *B. w. woodhousii* and an occasional *B. cognatus* on a summer night, now toads are rare. So in cruising the roads at night about Norman in 1952, I saw only three toads all summer, whereas in former times often as many as fifteen or twenty would be encountered in comparable time in the same region and under approximately the same conditions. In Norman also the spotted chorus frog, *Pseudacris clarkii* Baird has decreased in numbers. There seems to be no question but that the toad population has declined very markedly here since about 1945 and that this is correlated with a marked expansion in the human population.

In rural areas of the oak-hickory community in eastern Cleveland County, the dwarf American toad (*B. terrestris charlesmithi* Bragg) and *B. w. woodhousii* have also become scarce although the spadefoot of this region (*Scaphiopus hurterii* Strecker) and *Pseudacris triseriata* have not. The decline in the population of the dwarf American toad coincided with that of all forms about Norman but that of *B. w. woodhousii* in this region preceded by about two years the decline farther west.

No explanation has been found for the decline in the rural areas but its occurrence shows that some factor other than human activity probably was at work here. It may well be that the correlation with such activity about Norman is only significant partially as a causal factor: natural phenomena not now recognized may be more important.

LITERATURE CITED

1. BRAGG, ARTHUR *N.* 1942. On frog and toad abundance after heavy rainfall. Science 95:194-195.

[1] Contribution from the Department of Zoology and the Oklahoma Biological Survey, University of Oklahoma, Norman.