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## Body Temperatures of *Bufo w. woodhousei*

GEORGE W. SCOTT and CHARLES C. CARPENTER, University of Oklahoma, Norman

An idea or concept of long standing has been that the body temperatures of poikilothermic vertebrates closely approximate that of their immediate environment. In recent years this concept has had to be altered in the advent of new knowledge indicating that many poikilotherms, reptiles in particular, exhibit some control over their body temperatures. This regulation is related to particular patterns of behavior and is termed behavioral thermoregulation.

To find out to what extent behavioral thermoregulation plays a part relative to amphibians, and to investigate body temperature—environmental temperature relationships for amphibians, were motivations for the following small study.

Woodhouse's toad (*Bufo w. woodhousei*) is very abundant in the immediate area of the University of Oklahoma Biological Station on Lake Texoma, Marshall County, Oklahoma. Their greatest period of activity occurs during the hours of darkness.

During late July and early August of 1955, the body temperatures (cloacal temperatures) were recorded for 100 different individuals captured on the campus of the station. Readings were taken, between dusk and about 11 p. m., using a quick-reading Schultheis thermometer (0°-50°C., 0.2°C gradations). The bulb of this thermometer is easily inserted out-of-sight into the cloaca of the toad. The ground surface temperature (thermometer laid on the ground) and air temperature (8 feet above surface) were also

recorded. Incidental to the temperature recording, all toads were individually marked (toe clipping), measured (snout-vent length), and their position on the campus recorded.

A total of 141 cloacal temperature readings for 100 individuals ranging in length from 35 mm. to 101 mm. (mean-5.73 mm.) ranged from 24°C. to 29°C. with a mean of 26.44°C. The mean air temperature was 30.1°C. (26.8°C.—32°C.) and the mean ground surface temperature was 29.05°C. (27.8°C.—30°C.).

The cloacal or body temperatures show a closer relationship to ground surface temperature (Fig. 1) than to air temperature. Yet, with one exception, all body temperatures were below those of the environment, and though the influence of environmental temperature change is generally indicated, we feel that the difference is enough to point towards the possibility of at least slight temperature control for the toad and also a possible preferred body temperature for activity. This preferred body temperature would approximate 26°C.

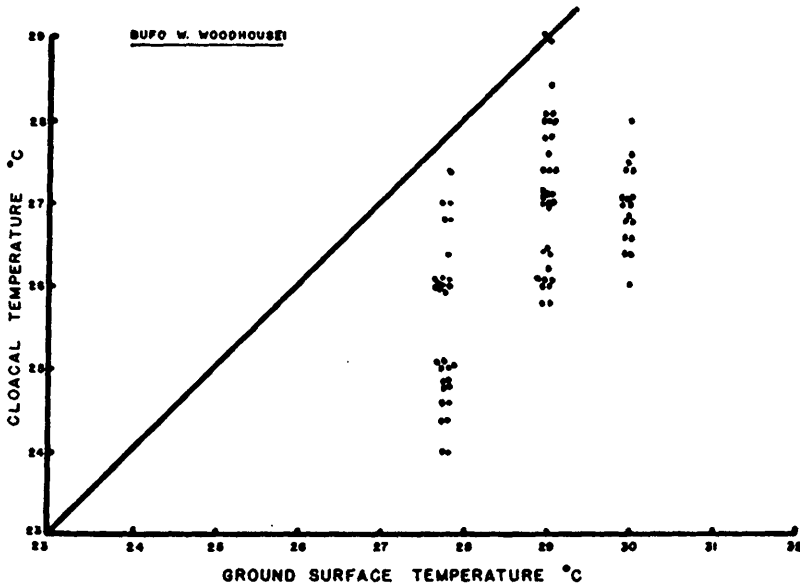


Fig. 1. Cloacal temperature—ground surface temperature relationships of *Bufo w. woodhousei*. University of Oklahoma Biological Station, Marshall County, Oklahoma. July-August 1955.

Possible means of thermoregulation in this toad would be by evaporation (for lowering temperature) and muscular activity (for raising temperature.)

Preferred body temperatures are known to be of ecological significance in reptiles and probably are similarly significant in toads. A comparison of the preferred body temperatures of different amphibians will give important information towards understanding ecological differences. Further investigation should be carried out over a longer period of time.