



## A Comparison of the Density of *Terrapene coahuila* and *T. carolina*

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*Journal of the Ohio Herpetological Society*, Vol. 4, No. 4. (Dec. 14, 1964), p. 105.

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*Journal of the Ohio Herpetological Society* is currently published by Society for the Study of Amphibians and Reptiles.

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A COMPARISON OF THE DENSITY OF *TERRAPENE COAHUILA* AND *T. CAROLINA*.

Most species of box-turtles are extremely buoyant in water; however *Terrapene coahuila* Schmidt and Owens, a semiaquatic form (for details of habitat and habits see Webb, Mickley and Craddock, 1963, Southwestern Nat. 8: 89-99), is not only capable of submerging but can remain submerged for some time. With this in mind the density of two specimens each of *Terrapene carolina major* Agassiz (purchased) and *T. coahuila* (Cuatro Ciénegas, Coahuila, Mexico) was compared.

Density was calculated by weighing a turtle, then submerging it and measuring the volume of water displaced, and finally by determining the weight/volume ratio. The turtles were placed in a refrigerator approximately one hour before being measured in order to reduce their activity when submerged. The density of each turtle was determined twice and an average of the two densities obtained was computed. Actually the results of each rerun were almost identical to the first.

TABLE 1.

| Species              | Size<br>carapace<br>length (mm) | Weight<br>(g) | Volume<br>(cm <sup>3</sup> ) | Density<br>(g/cm <sup>3</sup> ) |
|----------------------|---------------------------------|---------------|------------------------------|---------------------------------|
| <i>T. coahuila</i> ♀ | 145                             | 481           | 508                          | 0.95                            |
| <i>T. coahuila</i> ♂ | 148                             | 504           | 525                          | 0.96                            |
| <i>T. carolina</i> ♀ | 120                             | 342           | 430                          | 0.80                            |
| <i>T. carolina</i> ♀ | 114                             | 275           | 375                          | 0.73                            |

The above data indicate, as expected, that the semiaquatic *T. coahuila* has a higher density than the terrestrial form *T. carolina*.

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## USE OF BURROWS BY THE BLACK-BELLIED SALAMANDER.

Salamanders of the genus *Desmognathus* are often thought to be principally terrestrial and arboreal (for example, *D. ochrophaeus* and *D. wrighti*. Hairston, 1949, Ecol. Monog. 19(1): 47-73; and Organ, 1961, Ecol. Monog. 31(2): 189-220) existing by day beneath suitable shelter on the surface to emerge at night, or to be aquatic (for example, *D. monticola* and *D. quadramaculatus*) living in and around streams beneath suitable cover. It is well known to collectors of these animals, however, that regular use is often made of small burrows. For example, on several occasions I have observed specimens of *D. ochrophaeus*, *D. monticola*, and *D. quadramaculatus* using small burrows in the vicinity of wet rock faces. These salamanders sit with the head exposed, apparently in wait for food. I should like to make note of an observation which is unique in my experience and which is of interest in comparing *D. quadramaculatus* with other desmognathines.

On the night of 19 August 1964, Park Naturalist Thomas Savage and I examined a clay bank at the end of Little River Road above Elkmont, Great Smokey Mountains National Park, at an elevation of about 3200 ft. At one point on the bank there were several holes, about 3 feet above the road level and several feet from the nearest trickle of water. Three of these holes were occupied by large (74, 81, 90 mm S-V) *D. quadramaculatus* with only their heads exposed. Their position and behavior was remarkably similar to that of *Phaeognathus hubrichti* which I have observed in Alabama (cf. Valentine, 1963, Jour. Ohio Herpetol. Soc. 4(1-2): 49-54; Brandon, Copeia, in press) and peculiar for *D. quadramaculatus* which is usually associated with at least some trace of water (Organ, op. cit.).

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