

THE WATER DOGS (NECTURUS) OF NORTH CAROLINA

By C. S. BRIMLEY

Water dogs are salamanders of rather large size, which may be distinguished from all other tailed amphibians by the combination of persistent external gills with four-toed hind feet, the former character distinguishing them from the great majority of salamanders, while the latter separates them from all the forms with permanent gills.

There are only two species in the genus (and family) both of which are confined to North America and both of which occur in North Carolina. These two species are the common water dog (*Necturus maculosus*) which is spotted with black above, and often below also, and the Carolina water dog (*Necturus punctatus*) which is wholly without dark markings. The former species is much the larger, northern specimens reaching a length of 15 inches or over, while the average adult of *punctatus* is not apt to be over 6 inches long, the matter of size is however somewhat confused by the fact that the larger species is represented in North Carolina by a form which is not a great deal larger than the adults of the smaller one.

The smaller species (*N. punctatus*) is found only in the lower courses of the rivers of North and South Carolina, and until last autumn was known in this state only from the vicinity of Wilmington. However Mr. W. B. Mabee and I did considerable roadside collecting in November and December of last year (1923) and very materially added to its North Carolina range. The first we caught were during November when on our way to Willard, we stopped at Mingo Creek and did considerable dipping in the creek and its backwaters to see what we could find. Among other things we found ditch fishes, pygmy perch, and a number of apparently larval salamanders which we did not then recognize but which later proved to be the young of this species; on our way back we picked up one or two more in a small creek near Clinton. Later in the month we caught a number more in Buffalo Creek near Wendell (Wake county). All of the specimens so far taken were small, none being over $2\frac{1}{2}$ inches long and some not half that length. A later trip in December into Harnett county, gave us a few more small ones, and one adult (6 inches long) from Upper Little River, near Bunlevel, and a still later one to Little River, near Wendell, contributed four more adults and several young. The adults were

all found where bunches of dead leaves or other trash had caught in the water against the bank, while most of the young were caught by persistent dipping in rather deep water, but some, particularly the Mingo Creek specimens, were in shallow water. The animal is brown above, whitish beneath and the only markings are round whitish dots which are sparsely present on the body but more plentiful around the edges of the tail fin. The young look a great deal like the larvae of the red salamanders of the genus *Pseudotriton* and *Gyrinophilus* and it is rather curious that these in their late larval stages have practically the dentition of *Necturus* and according to Cope are identical in osteological characters except that they lack the intercalary bone between the exoccipital and the skull.

It may be noted here that the discovery of this species at Mingo Creek, Clinton, and Bunlevel materially increased our knowledge of its range in the Cape Fear drainage, but the finding of it in Little River, and in its tributary, Buffalo Creek, added an additional river system to its range, as it had never before been taken in any tributary of Neuse river.

The larger species (*Necturus maculosus*) has a much wider range, extending throughout the Great Lake region, northern New York State, the Mississippi Valley and the Atlantic Coast from Louisiana to North Carolina. Northern specimens attain an extreme length of at least 15 inches and weight of half a pound, while the North Carolina specimens seldom exceed $7\frac{1}{2}$ inches, and weigh less than two ounces when adult. That these small specimens are not merely young is indicated by the fact that no larger ones appear in my recorded list of over forty specimens from the vicinity of Raleigh, collected between 1894 and 1924. Also they all have the ground color of the underparts wholly pale, never at all darkened, as is often wholly or partially the case with the large northern form. Young specimens of the northern form are said to be striped with black, but the smallest of ours that I have seen (measuring only about $3\frac{1}{2}$ inches in length) was spotted exactly like larger specimens. In view of these facts it would seem fairly apparent that the dwarf form occurring at Raleigh is a geographical variant or subspecies of the true *maculosus*, and I propose for it the name *Necturus maculosus lewisi*, the subspecific name being given in honor of Mr. Frank Bartto Lewis from whom I received the greater part of my specimens. Type will be deposited in U. S. National Museum (No. 6868, C. S. Brimley, coll.; taken Feb. 25, 1921, in Neuse River, near Raleigh, by F. B. Lewis).

Most of the water dogs taken at Raleigh have been caught on hook and line in early spring, and those that I have data on were all caught in running, not still water. Mr. Mabee and I caught some half a dozen of this form while dipnetting in Neuse River near Raleigh during the past December and we noticed that while we caught them among trash, often in small backwaters, it was always where the main stream of the river was swift and not where it was sluggish.

Besides Raleigh, *maculosus* has also been taken at Kinston, Tarboro and Chapel Hill, but I have not seen specimens from any of these other localities.

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