

DESCRIPTION OF A NEW SALAMANDER FROM ARKANSAS WITH NOTES ON AMBYSTOMA ANNULATUM.

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AMONG some specimens recently received from Hot Springs, Ark., through Messrs. H. H. and C. S. Brimley, there are two species of salamanders which are interesting in the highest degree, as one represents a new species of *Desmognathus*, while the other is the second specimen of *Ambystoma annulatum*, the first one which with certainty establishes this species as North American, as the locality of the type and hitherto unique specimen is unknown.

DESMOGNATHUS BRIMLEYORUM, new species.

Diagnosis.—Mandibular alveolar margin continuous and completely toothed; tail compressed, keeled, finned; a tubercle in canthus oculi; 14 costal folds; gular fold absent, or very faint; parasphenoid patches not separated anteriorly; vomerine series, when present, long and oblique; underside pale with faint dusky mottling, if any.

Habitat.—Hot Springs, Ark.

Type.—U. S. National Museum No. 22157.

Description.—Head rather large; body long and slender; tail shorter than head and body; limbs short, when adpressed not meeting by four or four and a half costal interspaces; digits short, variable in proportion, but outer finger usually considerably reduced.

Costal grooves, including the axillary and inguinal, 14; gular fold absent, or but feebly indicated; a vertical groove behind the angle of the mouth, and another a little distance in front of fore limb, the former connected with the posterior angle of the eye, all very faint; a well-marked papilla in the angle of the eye; a vertical groove from nostril to edge of lip.

Maxillary and mandibular teeth small, numerous, and continuous almost to the angle of the mouth, all very blunt, except those on the premaxillaries, which are sharp and pointed; vomerine teeth, when present, in two long series posteriorly nearly parallel but diverging anteriorly outward toward the choanæ, from which they are separated

by about the same distance as from the parasphenoid patches; the latter are quite continuous anteriorly, diverging backwardly, consequently forming one apparently heart-shaped patch.

Outline of lower mandible, seen from below, rounded, with no anterior narrowed prolongation.

Tail nearly cylindrical at base, tapering to a point and becoming compressed posteriorly, with a keel, or low fin, along the upper median line.

Color variable; above, grayish-clay color, becoming pinkish on the tail, more or less overlaid with dusky spots or mottlings; sides darker, usually with a series of light spots; underside pale, mostly uniform, sometimes mottled with very indistinct gray on the belly.

Dimensions of largest specimen.—Total length, 128 mm.; snout to vent, 72 mm.; vent to tip of tail, 56 mm.; fore limbs, 13 mm.; hind limbs, 17 mm.; snout to fore limbs, 21 mm.; width of head, 12 mm.

Variation.—Among the specimens examined there is but little difference, except that in the larger ones the vomerine teeth are missing, a rather common thing among the species of this genus.

The larger specimens are also duskier and less distinctly marked. The young specimens have brighter colors and more definite markings; thus there is a double series of dusky spots down the middle of the back and another double series on the sides, more or less inclosing the lateral series of light spots, which therefore appear ocellated; there is also a light line from eye to angle of mouth.

Comparison with other species.—Having referred this interesting novelty—which I dedicate to Messrs. H. H. and C. S. Brimley, from whom the Museum has obtained much interesting material—to the genus *Desmognathus*, I need hardly remark that the vertebræ are opisthocœlous and that the premaxillaries are fused together. It will therefore only need comparison with the three species of the genus hitherto recognized, viz, *D. ochrophæa*, *D. fusca*, and *D. nigra*. From the former it is at once distinguished by the shape of the tail, as well as by well-marked differences in the mandibular dentition. From *D. nigra* it can easily be told apart by the number of the costal grooves, not to mention size and color.

From all, including *D. fusca*, it differs in the almost complete obliteration of the gular fold, and from the latter, with which it has the general proportions and external habitus in common, by the faintness of the grooves of the sides of the face and neck, as well as by the absence of the marked glandular swelling on the sides of the neck, so characteristic of *D. fusca*. The whole outline of the head, moreover, is different, it being more rounded and proportionally wider, resembling much more that of *Plethodon glutinosus* than a *Desmognathus*. The maxillary and mandibular alveolar margins are straight, not undulating, and the anterior glandular prolongation of the lower lip is absent. Finally, the palatal dentition is considerably different.

In *D. fusca* the vomerine teeth when present are few, forming two

short arched series behind the choanæ, slightly oblique, converging behind, while the parasphenoid patches are separate their entire length; in *D. brimleyorum* the vomerine series are much larger, nearly parallel posteriorly, diverging anteriorly, while the parasphenoid patches are united in their anterior portion. The latter appears also to be a larger species, although not so large as *D. nigra*, while the coloration approaches closely that of *D. fusca*, except that the lower parts are considerably paler.

AMBYSTOMA ANNULATUM, Cope.

This species was described by Prof. Cope from a single specimen in the U. S. National Museum (No. 11564), the origin of which was unknown. It was consequently not even known with certainty that the species was North American. It was therefore highly interesting to receive from Messrs. Brimley a well-preserved specimen collected at Hot Springs, Ark., thus establishing the habitat of this striking species.

A direct comparison with the type specimen shows the peculiar coloration to be identical, with the trifling exception that in the type the light cross-band from arm to arm is interrupted on the middle of the back, while in the new specimen it is continuous, like the other cross bands. A pale cross band between the eyes, not mentioned in Prof. Cope's description, is present in both specimens. The new specimen is comparatively fresh, and the ground color appears to have been black, the cross bands silvery gray.

There are several structural differences, however, between the two specimens. Thus, in the new specimen, the tail is shorter and somewhat compressed terminally; the vomerine series are longer and extend mesially farther forward. The fourth toe is comparatively shorter.

With only two specimens at hand, the exact locality of one of which is unknown, these differences do not seem important enough to warrant a specific separation, in view of the striking identity of the color pattern, which is absolutely unique in the genus.



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