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NOTES ON LIZARDS OF THE GENUS *DICRODON*

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At the request of Dr. Doris M. Cochran, Curator of Reptiles and Amphibians at the United States National Museum, I engaged to identify certain lizards collected by Dr. Allan R. Holmberg in the course of his ethnological investigations in Peru in 1947. His specimens came from the Chao Valley, just south of the Virú Valley, in the Department of Libertad, in which latter valley archaeological studies have been made for Chicago Natural History Museum by Dr. Donald Collier. Considerable collections of reptiles from the desert segment of Peru have accumulated in Chicago Natural History Museum. Some are from Talara, collected by my friend of many years, Dr. Axel Olsson, while he was stationed as geologist at the north Peruvian oil field, and by Colin C. Sanborn, formerly Curator, Division of Mammals, during his stay there as naval attaché during World War II; others are from the Hacienda Chiclin, obtained through the courtesy of Señor Constante Larco Hoyle when I was entertained at the Hacienda in 1939; and still others are from southern Peru, obtained by myself in the course of the Museum's Magellanic Expedition of 1939. I had reported upon the snakes of the Peruvian coastal region (with Warren F. Walker) in 1943, and it was probably for this reason that Dr. Cochran turned to me for the identification of the Holmberg lizards. It did not occur to either of us that this might require anything more than the routine comparison with specimens already identified in the reference collection.

When the five well-preserved specimens of lizards arrived, they were at once recognized as belonging to the genus *Dicrodon*, of the family Teidae. *Dicrodon* is characteristic of and confined to the coastal regions of Peru and southwestern Ecuador. There are two

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very distinct species of the genus in current museum collections. The northern one, *lentiginosus* Garman 1892, was described from southwestern Ecuador, at the northern end of the desert region. A southern one, *heterolepis* Tschudi 1845, comes from southern Peru. Both look a good deal like typically lacertiform and moderate-sized representatives of the genus *Ameiva*, which occurs throughout the more humid regions of Central and South America. Boulenger, in 1885, did not have a specimen of *guttulatum* at hand. Both species of *Dicrodon* are distinguished by having strongly two-cusped teeth, the axis of the tooth being crosswise of the jaw. In this character *Dicrodon* resembles the genus *Tejus* of the northern Argentine. *Tejus*, in turn, is distinguished by having only four toes on the hind foot. *Dicrodon heterolepis* is sharply distinguished by the larger size of the posterior dorsal scales, which are flat, keeled, and imbricate, whereas the scales of *guttulatum* are small, granular, and juxtaposed.

Turning to the literature, I was astonished to discover that the *Dicrodon guttulatum* described by Duméril and Bibron in 1839, and the type of their genus *Dicrodon*, had never again been reported. When it was discovered that the five specimens from the Chao Valley cannot be referred either to *lentiginosus* of authors or to *heterolepis*, the natural suggestion was that it might represent the long-lost *guttulatum*. The original description of *Dicrodon guttulatum*, however, is not explicit as to the very characteristics that distinguish the Chao Valley form from the north Peruvian and Ecuadorian species, of which the most conspicuous is the ring of scales surrounding the enlarged oculars. I accordingly sent sketches of the two types of ocular region (cf. fig. 11) to our colleague, Dr. Jean Guibé, Curator of Reptiles at the Museum National d'Histoire Naturelle in Paris. He assures me that the oculars of the well-preserved type of *guttulatum* are definitely like those of the lizards hitherto referred to *lentiginosus* and not at all like those of the Chao Valley series. We are thus forced to the conclusion that *lentiginosus* Garman and the form subsequently described by G. K. Noble from the Talara region as *barbouri* are clearly referable to *guttulatum*, and that the Chao Valley form represents a distinctive third species of *Dicrodon*. This may be known as:

Dicrodon holmbergi, new species

Type.—United States National Museum no. 127823, adult male, collected in 1947 in the lower part of the Chao Valley, Libertad, Peru, by Allan R. Holmberg.

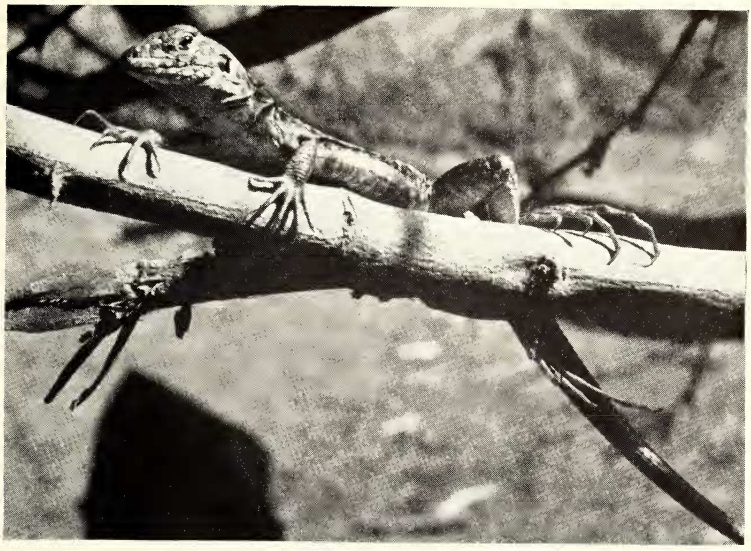

FIG. 10. Upper: Adult specimen of *Dicrodon holmbergi* on branch of algarrobo tree. Lower: Male, right, and female, left, of *Dicrodon holmbergi*. Photographs by A. Guillén.

Diagnosis.—A species of *Dicrodon* with small granular scales on the posterior part of the back, and with a ring of small scales completely surrounding the supraoculars (fig. 11).

Description of type.—Habitus of a lacertiform teid, tail 70 per cent of the total length; head large, snout not elongate; limbs well-

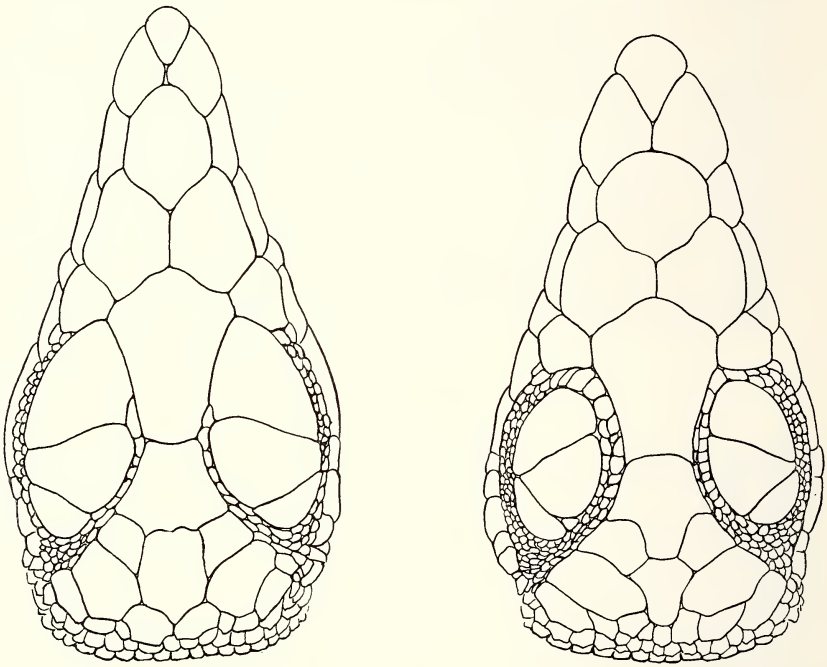

FIG. 11. Dorsal views of heads of *Dicrodon guttulatum*, CNHM 41576 (left), and *Dicrodon holmbergi*, USNM 127823 (right), showing the distinctive difference in the circlets of scales bordering the supraoculars.

developed, fingers five, toes five; fingers and toes with long compressed claws.

Viewed from above, the rostral about three times as long as the internasal suture; a single post-internasal, slightly longer than broad; suture between prefrontals shorter than that between internasals; anterior loreal half as large as the posterior, with a portion on the upper surface of the snout reaching the post-internasal; a large anterior frontal, with an enlarged scute, perhaps the first supraocular, wedged between frontal, prefrontal, superciliaries, and circumsupraoculars on each side; a ring of circumsupraoculars in a single row of enlarged scales (3 to 5) at the anterior inner border

followed by about 5 scales in two rows adjacent to the frontals and with smaller scales in three rows adjacent to the superciliaries; superciliaries 8; supraoculars 3; the posterior frontal in contact with the occipital and two post-frontals; enlarged parietals relatively small, widely separated by the occipital, with a row of enlarged scales behind parietals and occipital, behind which are two additional transverse rows of slightly enlarged scales; enlarged upper labials 6–6 to a point beneath the middle of the eye; lower labials 5–5 to same level; sub-labials 9–9; lower eyelid with a row of 4 enlarged scales in the middle.

Dorsum with small granular scales, about 106 across mid-body; ventral plates in regular series, in 8 longitudinal and 40 transverse rows; gulars on mid-line about 46; 4 rows of enlarged scales on the forearm; 6–8 rows of enlarged scales on the upper arm; 7–8 rows of enlarged scales across thigh; 4–5 across tibia; 36 lamellae beneath fourth toe; the small lateral row of scales on the posterior side of the toes angulate and projecting.

Coloration.—Color pattern much faded in preservative, dull greenish-gray above; belly brownish; a light stripe along sides extending from ear-opening to groin and along base of tail; dorsum with scattered small light spots, tending to form obscure dorsolateral lines; top of head and gular region light brown.

Measurements.—Total length 477 mm., tail 340 mm., arm 46 mm., leg 90 mm., snout to posterior border of ear 28 mm., greatest width of head 15 mm.

Notes on paratypes.—Three specimens, USNM nos. 127822, 127824, and 127825, are from the same locality as the type. Two are adult males, and one is an adult female. A hatchling juvenile, no. 127826, received with the same lot, is a specimen of *Dicrodon heterolepis*. No. 127822 agrees exactly with the type in the ocular ring character. The two others have the ring narrowly interrupted anteriorly, but have the frontal separated from the supraoculars, and all have the distinctive feature of four rows of enlarged scales on the forearm. The female specimen, no. 127825, has the color pattern well preserved, with a bold black band enclosing small white spots between the lateral and the dorsolateral light stripes, with another black band below the lateral stripe. The ground color of the back is a little lighter, with numerous light spots. The female specimen measures 97 mm. from snout to vent; tail incomplete.

Comparisons.—The new form is at once distinguished from *Dicrodon heterolepis* by its granular posterior dorsal scales. The

distinction from *guttulatum* lies especially in the complete or nearly complete ring of scales around the supraoculars, which, if incomplete anteriorly, separates the frontal from the anterior supraocular in *holmbergi,* whereas this scale is in contact with the frontal in 47 out of 49 specimens from Piura, and in 18 of 19 from Manta, Ecuador. I am unable to find any characters that would make possible the maintenance of the distinction between *Dicrodon lentiginosus* Garman (from Ecuador) and *Dicrodon barbouri* Noble (from Piura, Peru). This distinction was dropped by Burt and Burt in their check list of South American lizards (1933). The difference between *holmbergi* and *guttulatum* in the presence of four rows of enlarged ante-brachial scales instead of two, though perhaps somewhat difficult to define without both forms at hand, is quite as significant as the complete versus the incomplete ocular ring.

Range.—Dicrodon holmbergi is known positively only from the Chao Valley, Department of Libertad, Peru. It may be presumed to be the common species also in the Virú Valley to the north. Whether it extends northward in the coastal valleys of Lambayeque to meet the species *guttulatum* in Piura is a remaining problem. It is not impossible that *guttulatum* and *holmbergi* may be allopatric forms of the same herbivorous species of lizard.

The juvenile specimen of *Dicrodon heterolepis* received with the series of *holmbergi* is the only clue as to any actual overlap of habitat of the two species. In overall distribution, however, the range of *heterolepis* embraces that of both *guttulatum* and *holmbergi,* except that it is not yet recorded from Ecuador. *Dicrodon heterolepis* is known from the Department of Ica, far to the south of the known range of *holmbergi.*

Ecology.—Dr. Holmberg's interest in the use of lizards as food by the Indian population of the Virú and Chao Valleys led him to inquire in considerable detail concerning the habits of the species in question. These lizards are known locally as *cañanes.* They have the very sharp distinction from *Dicrodon heterolepis* of being herbivorous. The adults are said to be exclusively herbivorous, but it may be doubted that this applies to the juveniles. In fact, the stomach of a small specimen of *guttulatum* from Piura contains a large caterpillar. Perhaps the adults may take some insect food as well as algarrobo seeds and pods. *Dicrodon heterolepis* appears to be normally insectivorous.

Reference should be made to Dr. Holmberg's paper in Fieldiana, Anthropology (in press) for his account of the habits and behavior

of the species now named for him. The method of collecting the lizards for food is unique, and it is unusual to have so detailed an account of so remarkable a relation between a species of lizard and ancient and modern man.[1]

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[1] Dr. Holmberg's mention of "iguanas" in the literature cited by him must be presumed to apply to the large teid lizard *Tejovaranus flavipunctatus*. The true iguana is not known from coastal Peru, but in popular language "iguana" is used in the sense of "large lizard."