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## A New Veracruzian Salamander

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Recent collections made in Mexico by Mr. Walter W. Dalquest<sup>\*</sup> for the Museum of Natural History of Kansas University contain a series of salamanders belonging to the genus *Bolitoglossa*, from the lowlands of southern Veracruz. The species is regarded as new and is herewith described.

The specimens were collected at night on the lower edge of a great limestone cliff, the exposed section of the outcrop being "nearly one hundred feet in thickness." Individuals occupy the small nooks and crannies in the limestone in the daytime and at night they move about the face of the cliff presumably in search of food. They are not or only slightly disturbed by the light and are captured with comparative ease.

No other species of salamanders, except *Bolitoglossa platydactyla* (Gray), has been taken in the immediate vicinity of the type locality; however, *Bolitoglossa rufescens* probably occurs also. The little-known *Bolitoglossa yucatanana* (Peters) may occur in this area, as it occupies terrain in limestone regions of the Yucatán peninsula. The differences from this form are discussed later, since the two forms seemingly belong in the same section of the genus.

### *Bolitoglossa veracruzis* sp. nov.

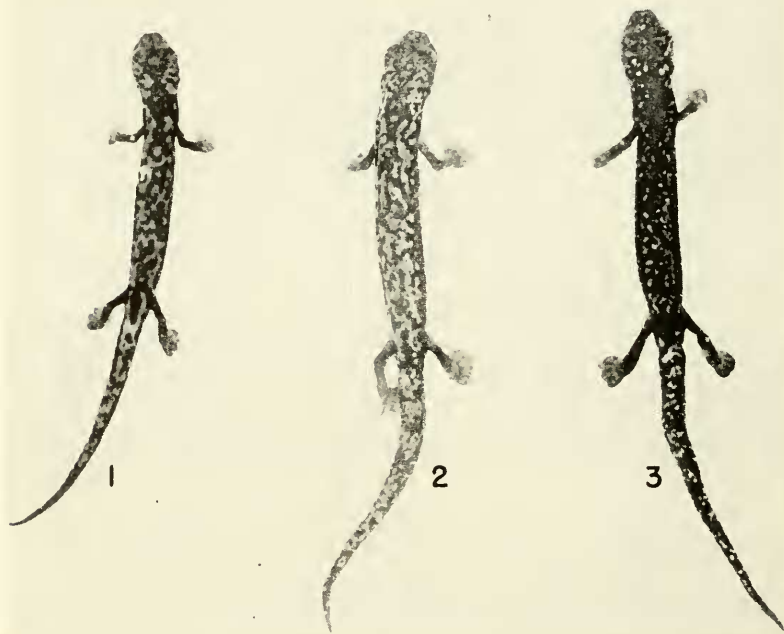
*Type*.—U.K.M.N.H. No. 26941; collected at a point 35 km. SE of Jesús Carranza (Santa Lucretia), elev. approx. 350 feet, Veracruz, Mexico, April 6, 1949. Walter W. Dalquest, collector.

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*Paratypes*.—U.K.M.N.H. Nos. 26933-26940; 26942-26953; same date, locality and collector.

*Diagnosis*.—A medium salamander, maximum known length (snout to end of vent), 55 mm.; in adults, width of head in head-body length 5.5-6.25 times; length of head in head-body length 5 to 5.7 times; costal grooves 13, counting one in axilla and one in groin; tail with a strong basal constriction; tail less than head-body length; hand and foot palmate, spread widely, somewhat emargi-



*Bolitoglossa veracruzis* sp. nov.

Fig. 1, UKMNH No. 26953 paratype. Fig. 2, No. 26938 paratype. Fig. 3, No. 26941 type. All from 35 km SE of Jesús Carranza (Santa Lueretia), Veracruz. (elev. approx. 350 ft.) (See text for actual size).

nate between digits; vomerine teeth usually in a single continuous or in a somewhat irregular row, 12-19 in number, curving back slightly and nearly meeting mesially; four premaxillary teeth pierce lip in males.

*Description of the type*.—Head broad, depressed, the snout truncate protruding beyond mouth more than 1 mm.; in dorsal profile the end of snout slightly concave between the subnarial

swellings; seen in lateral profile there is an emargination of the line of upper lip immediately behind subnarial swellings; latter somewhat bulbous, slightly pendant; canthus rostralis not present, the snout rounded, the lores sloping gradually to lip; eye rather large, slightly longer than median length of snout; width of an eyelid contained in interorbital distance approximately  $1\frac{1}{2}$  times; no orbitolabial groove; posterior parts of eyelids concealed under a short diagonal fold; line of the mouth forming an angle under posterior part of eye; a postorbital groove faintly indicated; a verticle groove indicated back of jaw angle which may be traced on side of head and on throat; an ample gular fold, very slightly curved across neck, scarcely traceable on the sides of neck; elevation made by the posterior part of the epibranchial cartilage, passes above arm to second costal groove; nostrils small; skin on head porous; musculature of the posterior part of head and beginning of neck causing distinct and regular elevations of the skin dorsally and laterally; skin on lateral costal folds with some longitudinal wrinkling; the upper parts of the costal grooves form zig-zag lines reaching to near the median dorsal line; about 25 caudal grooves discernible; tail quadrangular in cross section; an indistinct groove on under surface of tail.

Arm reaching middle of eye; hand palmate, tip of third finger webbed but extending forward as a slight triangle; tips of other fingers scarcely free; foot palmate, the edges with slight emarginations between tips of toes; lateral cloacal walls covered with papilla in male.

Tongue bolitoglossid; no trace of a sublingual fold; four premaxillary teeth penetrating edge of upper lip (one missing in type); vomerine teeth 14-15, in two transverse series, bending back a little and forming an angle mesially, the two series separated mesially by a distance equal to that between two teeth; paravomerine teeth tending to form a single patch narrowed anteriorly, expanded posteriorly with a slight median posterior notch; maxillary teeth small, 30-32; there is a hiatus anteriorly between maxillary and premaxillary series.

*Measurements in mm.*—Snout to end of vent 50; tail 46; width of head 8.0; length of head to behind jaw angle 10; length of head to gular fold 13.5; arm 12.3; leg 13; axilla to groin 26.5.

*Color and markings.*—Lavender-brown with irregular series of clay or fawn-colored spots scattered from snout to tail tip, the spots varying in size; spots small low on side; venter and under side of limbs and tail lighter lavender-brown, the individual chromato-

phores separate, with numerous small cream or yellow spots (not longitudinal); a small lighter glandular area behind insertion of thigh; a white line along lower edge of lower eyelid; limbs spotted like body; cloacal walls of males without pigment (female with cloacal walls pigmented).

TABLE OF MEASUREMENTS OF ADULT BOLITOGLOSSA VERACRUCIS

No.	Sex	Snout to end of vent	Tail length	Head width	Head length	Arm	Leg	Axilla to groin	Snout to gular fold
26940	♀	55	..	9	10.3	12.5	14	32	14
26941	♂	50	46	8	10	12.3	13	26.5	13.5
26942	♂	50	42	9	10	12.4	12	28	13
26938	♀	50	42	8.4	9.8	12.5	13.2	28	13
26947	♂	47.5	..	8	9.5	11.5	11.5	25.5	12.2
26939	♀	46	..	7.7	8	11	11	25	11.9

TABLE OF DATA ON BOLITOGLOSSA VERACRUCIS

No.	Sex	Costal grooves	Vomerine teeth	Maxillary teeth	Pre-maxillary
26940	♀	13-13	17-19	31-29	6
26941	♂	13-13	14-15	30-33	3 (+ 1)
26942	♂	13-13	14-13	35-29	4
26938	♀	13-13	19-17	37-39	6
26947	♂	13-13	12-14	27-26	5 (+ 1)
26939	♀	13-13	17-15	24-26	4

*Variation.*—The series of specimens range in size from 22-55 mm., snout-to-end-of-vent measurement. They vary considerably in color but this variation does not seem to have any relation to sex or age. Some of the younger specimens are largely fawn on the dorsal surfaces, with a few black flecks. Some of the young are colored much as are the adults. The costal grooves are 13 in all if one counts a groove in axilla and groin; occasionally a partial division is suggested in the last costal fold.

Dentition is lacking in the young but specimens above 45 mm. snout-to-vent length seem to have the adult dentition. The number of teeth in females is a little greater than in the males, there being normally six premaxillaries penetrating the gum in females and four normally in the males penetrating the upper lip. There seemingly is a higher count of vomerine teeth in females than in males as suggested by the table of data. The subnarial swellings are less bulbous and less pendant in females, and the cloacal wall has numerous pigmented folds instead of papilla. It is presumed that the considerable series taken in the same locality and at the same time contains specimens of fully grown animals. That some of the animals attain larger size than those given here is to be expected; I doubt, however, that this difference will be very considerable.

*Relationship.*—The salamanders here described belong in the genus *Bolitoglossa* and probably in the section of the genus that includes *Bolitoglossa odonelli* (Stuart), *Bolitoglossa mulleri* (Brocchi), and not impossibly also *Bolitoglossa yucatanana* (Peters). The two former species are mountain forms that differ from the one here described in having fewer teeth, shorter limbs in proportion to the axilla to groin measurements, a different basal coloration and different dorsal markings. Both are presumably larger species. The total length is 123 mm. for *odonelli*; for *mulleri*, as given by Stuart (1943), 145. The tail length of *odonelli* is practically that of head-body length (61-62 mm. in the type) and varying but little in the paratypes. Stuart has omitted several important characters from his description such as the presence of absence of the sublingual fold, the paravomerine teeth, the maxillary teeth, etc.

From *yucatanana* this form differs in being of smaller size, vomerine teeth not an "irregular patch of teeth," no ventral linear markings, markings not concentrated in two dorsolateral lines, long limbs in proportion to axilla-to-groin length (one to one and a half costal folds between adpressed limbs instead of five folds), snout depressed instead of "quite high," the tail shorter than body.

Stuart (1943)\* calls attention to my error in using *punctatus* when *mulleri* is intended, a curious error resulting from the dropping of a complete line of text. *Punctatus* definitely does not belong in this group.

\* While it is not pertinent I wish to call attention to a confusing error of Stuart, p. 16, where he states that Taylor has described *Bolitoglossa nigroflavescens* from Chiapas. This name has not been used by Taylor.

#### LITERATURE CITED

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