



A New Plethodontid Salamander (Genus *Bolitoglossa*) from Venezuela with Redescription of the Ecuadorian *B. palmata* (Werner)

Author(s): Arden H. Brame, Jr. and David B. Wake

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annuli correspond to two dorsal half-annuli. The segments of the first are commonly referred to as temporal and postocular and about middorsally on the frontals. The second body annulus culminates dorsally in the pair of enlarged parietals. The third annulus ascends in a plane normal to the long axis and is only differentiated by a wider than normal pair of middorsal segments. ANSP 13022 shows a posterior extension (by fusion) of the last labials beyond the angulus oris. ANSP 13021 has some asymmetric fusions in the parietal regions.

The chin is characterized by a small symphyseal, very large second infralabials, large malars, a pair of anteriorly pointed first postgenials, and a variable number of second postgenials filling the gaps along the posterior edge of the first row. There is no postmalar row, but the segments immediately posterior to the malars are fused.

The second, third, fourth, fifth, and sometimes the sixth body annuli are slightly narrowed. Asymmetries are few and restricted to the midventral line and the level of the cloaca. The numbers of dorsal and ventral half-annuli are equal. The lateral sulci are clearly marked from four lengths behind the head to the cloaca. The dorsal and ventral sulci are indicated only by aligned raphes, with the ventral sulcus a common site of folding.

The cloaca is preceded by four large central and two small lateral segments, except in ANSP 13021 where there are only four (possibly five). The autotomy constriction is expressed by a narrowed annulus of reduced diameter, posterior to which autotomy has taken place in AMNH 62155.

The middorsal segments are slightly longer

than wide, those along the midventral line two to three times as wide as long, with considerable change from front to rear.

Range.—East-central Mato Grosso into central Goiaz.

Locality records.—BRASIL: Mato Grosso: Chapada (Dunn and Piatt, 1936); ANSP 13019–22. Goiaz: Annapolis (1000 m) AMNH 62155.

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DEPARTMENT OF BIOLOGY, THE UNIVERSITY OF BUFFALO, BUFFALO 14, NEW YORK.

A New Plethodontid Salamander (Genus *Bolitoglossa*) from Venezuela with Redescription of the Ecuadorian *B. palmata* (Werner)

ARDEN H. BRAME, JR. AND DAVID B. WAKE

A distinctive species group within the genus *Bolitoglossa* is recognized for the first time. This group (the *B. palmata* group) is represented only by two South American species: *Bolitoglossa palmata* and *B. orestes*. The Venezuelan, *B. orestes*, is described for the first time and the Ecuadorian, *B. palmata*, is revived from the synonymy of *B. altamazonica*

following the first examination of the lectotype since Werner's 1897 description.

The *Bolitoglossa palmata* group differs from all other members of the genus in having a very short snout and rounded widely flattened digits. The two species in the group differ from each other in color, numbers of vomerine teeth, and maximum adult size.

THE salamander fauna of South America has long been considered depauperate, principally because herpetologists have been handicapped by inadequate material. We have been fortunate in having had the opportunity to examine approximately 200 specimens and have discovered a number of previously unrecognized forms. Among them is a Venezuelan species, closely related to *Bolitoglossa palmata* (Werner) of Ecuador, that with *palmata* forms a group distinct from all other members of the genus.

Acknowledgments and abbreviations.—We gratefully acknowledge the assistance of the following curators and museums: J. C. Battersby and Alice G. C. Grandison of the British Museum of Natural History (BM); Neil T. Richmond, Carnegie Museum (CM); Norman E. Hartweg and Charles F. Walker, University of Michigan Museum of Zoology (UMMZ); Charles M. Bogert and Richard G. Zweifel, American Museum of Natural History (AMNH); Ernest E. Williams, Museum of Comparative Zoology (MCZ); L. Forcart, Naturhistorisches Museum, Basel (NMB); L. D. Brongersma, Rijksmuseum van Natuurlijke Historie, Leiden (LM); J. Eiselt, Naturhistorisches Museum Wien (NMW); we also thank J. Eiselt for borrowing and in turn, loaning to us, the important single existing syntype of *B. palmata* from the Zoologisches Institut der Universität, Wien (ZIUW). We especially thank Jay M. Savage for encouragement, valuable criticism and advice.

This new species is a diminutive form, the smallest in South America. In allusion to its habitat in the mountainous areas of western Venezuela, it may be known as

*Bolitoglossa orestes*¹ sp. nov.

Holotype.—BM 1905.5.31.103; an adult fe-

¹ The name, *orestes*, is derived from the Greek word meaning mountaineer.

male from Culata, 9,810 feet (3,000 meters), Cordillera de Mérida, Estado de Mérida, Venezuela, collected by W. F. H. Rosenberg.

Paratypes.—VENEZUELA: Estado de Mérida; BM 1905.5.31.95–102, same data as holotype; LM 4506, NMB 2671, and AMNH 10557–60, Culata, all collected by Rosenberg; MCZ 2605, Culata, collected by Sr. Briceño; CM 10086, Mérida, collected by Rosenberg; BM 1904.6.30.18, Mérida; AMNH 10555–56, Chama, 6,540 feet (2,000 meters), collected by Rosenberg; BM 1905.5.31.105–107, 108 (2 specimens), Fugueros, 11,450 feet (3,500 meters), (Estado de Mérida?); NMW 9179:1–4 and 9181:1–4 (total of 8 specimens), Culata and Chama, also collected by Rosenberg.

Diagnosis.—A member of a species group characterized by relatively short snout and limbs and by a distinctive foot shape (Fig. 2, A). The species is distinguished from all other South American salamanders by the small size of adults (31.4–39.7 mm in snout-vent length for males; females, 30.3–46.9 mm), small number of vomerine teeth in adults (7–15) and in the great abundance of tiny guanophores ventrally.

Description of the holotype.—Adult female, rounded snout very short and blunt; nostril small, labial protuberances small; canthus rostralis very short, rounded. Snout-vent length 7.1 times head width; snout-vent length 5.1 times snout-gular fold length. Horizontal postorbital groove extending posteriorly from eye, as small depression, for 1.8 mm, sharply preceding ventrally and extending across gular area parallel to and 2.7 mm anterior to gular fold. Vomerine teeth 7–8, extending only to lateral border of internal nares. Maxillary teeth 13–16, extending posteriorly to level of center of eyeball. Three premaxillary teeth, none piercing lip. Tail 0.68 times snout-vent length; ovoid in

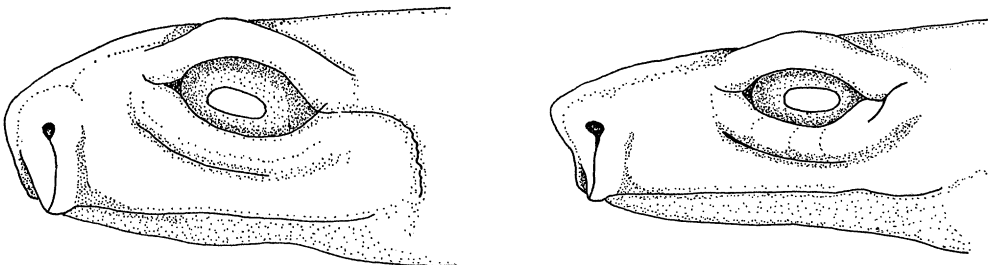


Fig. 1. Left—CM 13118, *Bolitoglossa palmata*, female. Right—UMMZ 113871 (4499), *Bolitoglossa borburata*, Aragua, Estado de Aragua, Venezuela, female. Line indicates 1 mm.

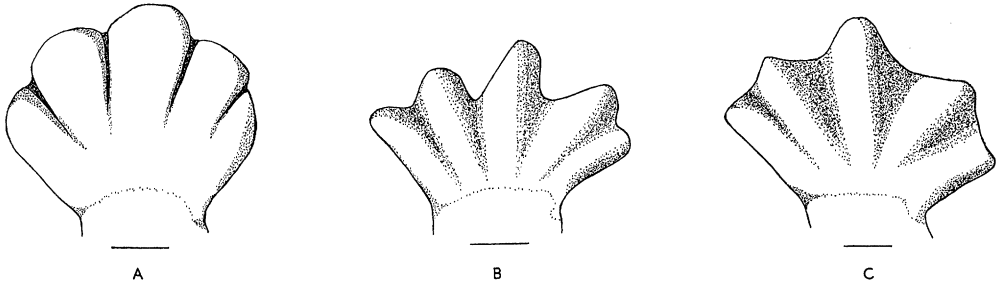


Fig. 2. A—Left foot, CM 13118, *Bolitoglossa palmata*. B—Left foot, AMNH 20388, *Bolitoglossa adspersa*, Bogotá, Colombia, female. C—Left foot, UMMZ 113871 (4499), *Bolitoglossa borburata*, Aragua, Estado de Aragua, Venezuela. Line indicates 1 mm.

cross section with little lateral compression; moderately constricted at base. Post-iliac gland well marked. Limbs short; when appressed to sides of trunk five and one-half costal folds remain uncovered; snout-vent length 6.1 times right fore limb; snout-vent length 5.5 times right hind limb. Webbing of hand and foot not complete; tips of digits rounded, dorsoventrally flattened, free from web. Digits moderately robust, joined to one another almost to tips by thin web. Fingers in order of decreasing length: 3,2,4,1; toes in order of decreasing length: 3,4,2,5,1.

Measurements in millimeters: Head 6.2; snout-gular fold (head length) 8.7; head depth at posterior angle of jaw 4.0; eyelid length 2.5; eyelid width 1.3; anterior rim of orbit to snout 2.4; horizontal orbital diameter 1.8; interorbital distance 2.0; distance between vomerine teeth and parasphenoid tooth patch 0.6; snout to fore limb 11.2; distance separating internal nares 1.4; distance separating external nares 1.9; snout projection beyond mandible 0.4; snout to posterior angle of vent 44.4; snout to anterior angle of vent 41.2; axilla-groin length 26.0; tail length 30.3; tail width at base 3.8; tail depth at base 4.0; fore limb length 7.3; hind limb length 8.0; width of right hand 2.7; width of right foot 3.2.

Coloration: Dorsum of head and trunk blackish with dorsolateral broken stripes of bay or light brown. A few light dashes mid-dorsally near base of tail. Venter gray-black with numerous tiny guanophores covering ground color from gular region to base of tail. A few tiny guanophores on dorsum of trunk and tail with many on snout and eyelids. Limbs black with a few patches of light brown dorsally. Conspicuous light flesh-colored post-iliac spots.

Variation.—The 35 specimens of *Bolito-*

glossa orestes available range from 25.3 to 46.9 mm in snout-vent length, and are apparently sexually dimorphic in size; nine adult males average 37.7 mm and 13 adult females average 42.2 mm in snout-vent length. The largest male measures 39.7 mm in snout-vent length; the largest female, 46.9 mm. *B. orestes* reaches sexual maturity at a remarkably small size. Hedonic (mental) glands and papillate vent walls are present in a male of 31.4 mm snout-vent length.

B. orestes has fewer vomerine teeth than other members of the genus in South America. The relationship of size to total number of vomerine teeth is indicated in Fig. 3 for *B. orestes* and *B. adspersa*, a Colombian species with which *B. orestes* has been confused.

As is evident from the accompanying graph (Fig. 4), the snouts of *B. orestes* and *B. palmata* are shorter than those of other South American *Bolitoglossa*.

Short limb length is characteristic of the entire series and distinguishes *B. orestes* from other Venezuelan and Colombian forms. The number of costal folds left uncovered when the fore and hind limbs are appressed to the body varies from 3 to 5½, with a mean of 4. The relation of hind limb length to snout-vent length is indicated in Fig. 5. Pertinent measurements and tooth counts for the entire series of *B. orestes* are listed in Table 1.

Most specimens agree with the type in coloration. In some small specimens and in a few of the adults, a broad tan band is present dorsally, extending from the head posteriorly onto the tail. In some large specimens the band is interrupted (broken up into patches and spots) with the darker pigment predominant. A few large specimens are uniformly dark dorsally with no indication of lighter color. All of the specimens

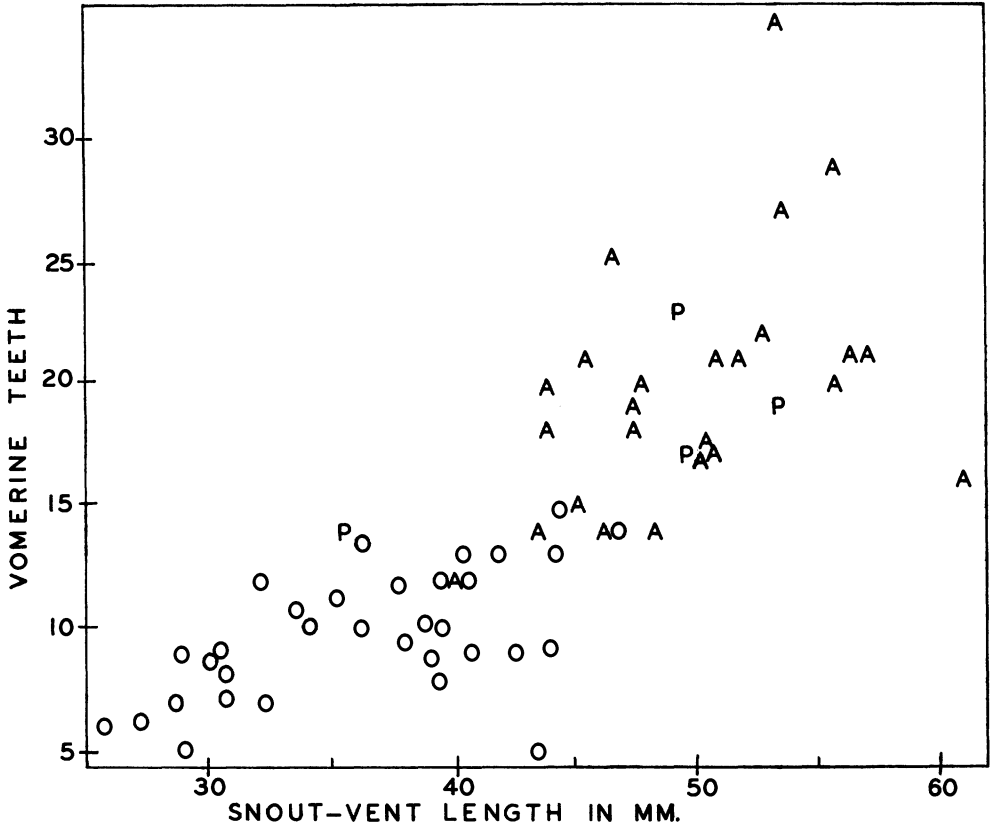


Fig. 3. Relation of total number of vomerine teeth to snout-vent length in three species of *Bolitoglossa*. A, *adspersa*; O, *orestes*; P, *palmata*.

have the characteristic speckling of guanophores ventrally; guanophores are sparsely scattered on the dorsum, being more apparent on the anterior portions of the head. The limbs are generally uniformly dark but occasionally tan spotting occurs on the dorsal and proximal portions.

Bolitoglossa palmata (Werner), closely related to *B. orestes*, is known only from the mountains of Ecuador. From the time of Dunn's 1926 monograph until now, *B. palmata* has been considered a synonym of *B. altamazonica* (Cope) of Ecuador, Peru, and Brazil, but a careful examination of the tiny (only existing) syntype reveals Werner's species to be distinct. A redescription of the species follows:

Bolitoglossa palmata (Werner)
Fig. 1; Fig. 2,A

Spelerpes palmatus Werner, 1897. Zool. Anz. 20:266, fig. 2.

Oedipus altamazonicus (part) Dunn, 1926.

Salamanders of family Plethodontidae, p. 396.

Lectotype.—ZIUW q43 (by present designation), a juvenile from "Cordillera" (Ecuador) collected by M. Wagler. Werner men-

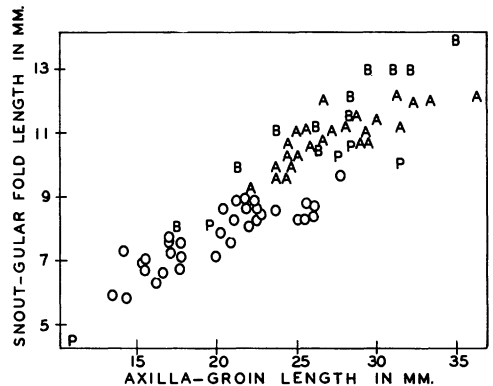


Fig. 4. Relation of snout-gular fold length to axilla-groin length in four species of *Bolitoglossa*. B, *borburata*; other symbols as in Fig. 3.

TABLE 1. DATA ON *Bolitoglossa orestes* and *B. palmata*

		Snout-Vent Length	Axilla-Groin	Head Width	Hind Limb Length	Fore Limb Length	Snout-Cular Fold	Vomerine Teeth	Maxillary Teeth	Tail Length
<i>Bolitoglossa orestes</i>										
BM 1905.5.31.95	♂	39.7	21.9	6.0	8.3	8.0	9.0	12	20	32.2
BM 1905.5.31.105	♂	39.3	21.0	6.2	8.4	7.8	9.0	10	22	32.1
LM 4560	♂	39.3	22.0	5.7	7.9	—	8.2	8	18	31.7
AMNH 10557	♂	39.0	22.0	6.0	8.7	7.3	8.8	9	27	—
AMNH 10559	♂	38.7	22.6	5.5	8.0	7.5	8.6	10	22	—
BM 1905.5.31.96	♂	38.2	20.6	5.9	8.1	7.9	8.8	12	26	31.2
BM 1905.5.31.99	♂	36.0	20.3	5.6	7.7	7.2	7.9	10	14	29.2
NMW 9179:4	♂	34.0	18.6	5.5	7.8	7.7	7.7	—	7	26.0
NMW 9179:3	♂	33.8	18.9	5.2	7.6	7.2	7.4	10	15	27.7
NMW 9181:1	♂	33.5	18.4	5.4	6.4	6.2	7.4	11	17	27.7
MCZ 2605	♂	32.0	16.9	5.5	6.9	6.8	7.1	7	13	26.9
CM 10086	♂	31.4	16.0	4.9	6.3	6.2	7.3	9	9	23.2
BM 1905.5.31.107	♀	46.9	28.0	7.1	9.2	8.7	9.9	14	26	36.4
BM 1905.5.31.102	♀	44.7	25.5	6.0	8.8	8.2	8.4	—	—	33.2
BM 1905.5.31.103	♀	44.4	26.0	6.2	8.0	7.3	8.7	15	29	30.3
BM 1905.5.31.97	♀	44.1	26.1	6.2	8.0	7.8	8.5	13	30	29.2
AMNH 10555	♀	44.0	25.8	6.3	8.7	7.8	8.9	9	26	30.9
BM 1904.6.30.18	♀	43.2	25.4	6.0	9.0	8.6	8.4	—	—	30.8
AMNH 10558	♀	42.7	25.8	6.6	8.2	7.8	8.8	9	26	—
BM 1905.5.31.104	♀	41.9	23.8	6.0	7.8	7.3	8.6	13	26	27.2
AMNH 10556	♀	40.7	22.5	6.3	8.3	7.3	8.7	9	18	31.2
BM 1905.5.31.101	♀	40.4	22.1	5.8	7.8	7.4	8.8	12	22	26.8
BM 1905.5.31.98	♀	40.3	22.7	6.0	7.9	7.7	8.4	13	20	32.3
NMW 9179:1	♀	38.5	21.4	5.9	7.4	7.2	7.8	8	18	27.7
NMW 9179:2	♀	36.9	20.0	5.8	7.1	6.8	6.9	13	19	23.2
AMNH 10560	♀	35.0	20.6	4.8	7.0	6.9	7.7	11	16	—
BM 1905.5.31.100	♀	30.3	17.5	4.8	6.3	5.9	6.8	7	6	18.6
NMB 2671		32.0	17.6	5.2	6.7	—	7.1	12	25	25.7
NMW 9181:4		31.1	17.4	4.7	6.2	5.8	6.3	8	7	21.9
BM 1905.5.31.106		30.6	16.4	5.0	6.2	5.6	6.7	8	10	19.0
NMW 9181:2		29.2	15.7	5.0	5.7	5.3	6.8	7	5	18.5
BM 1905.5.31.108a		28.9	15.3	4.8	7.0	6.2	7.1	9	13	22.2
BM 1905.5.31.109		28.9	15.1	4.7	6.0	5.8	6.8	5	6	18.8
NMW 9181:3		27.9	15.0	4.7	5.5	5.3	5.5	6	1	21.1
BM 1905.5.31.108b		25.3	13.1	4.5	5.8	5.5	5.9	6	8	13.8
<i>Bolitoglossa palmata</i>										
UMMZ 84735	♂	35.6	19.8	5.9	8.0	7.5	8.2	14	24	—
UMMZ 84735	♀	53.3	31.8	7.5	11.2	10.2	10.2	19	47	42.0
UMMZ 84735	♀	49.8	28.7	7.0	10.0	9.4	10.8	17	43	—
CM 13118	♀	49.4	27.7	7.1	9.8	9.0	10.3	23	40	—
ZIUW q43		20.2	10.8	3.2	4.0	—	4.4	—	—	15.3

tioned only Ecuador as the type locality. The lectotype, however, bears on its associated tag: "Cordillera, Ecuador," so we designate this as the revised type locality.

Referred material.—CM 13118; an adult

female from between Baeza and Archidona, 6,540 feet (2,000 meters), Cordillera de Guacamayo, Provincia de Napo-Pastaza, Ecuador, collected in December, 1935 by Philip W. Hershkovitz. UMMZ 84735 (3 speci-

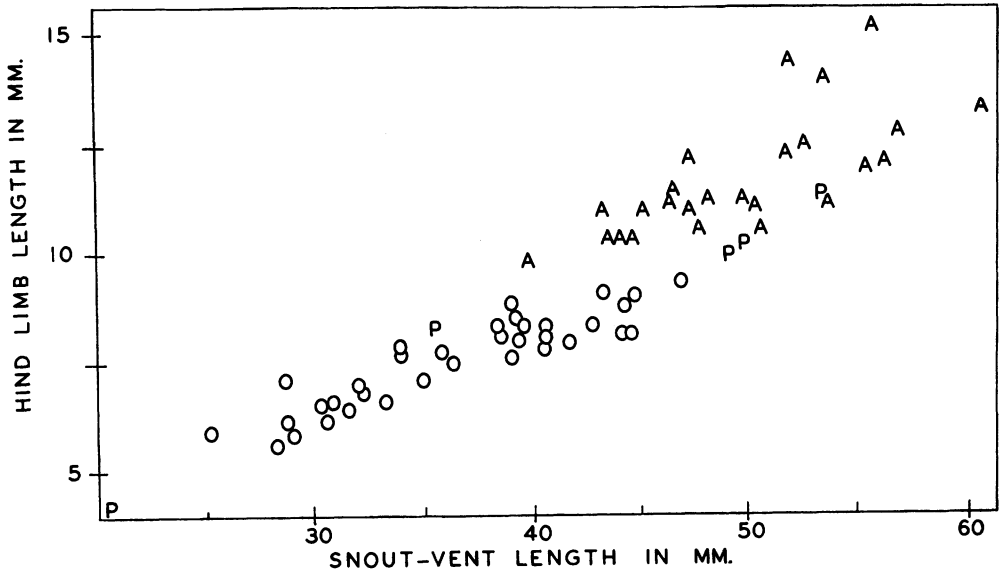


Fig. 5. Relation of hind limb length to snout-vent length in three species of *Bolitoglossa*. Symbols as in Fig. 3.

mens) same locality data as CM individual, collected in October and December, 1935, by Hershkovitz.

Diagnosis.—A member of a species group characterized by relatively short snout and limbs and by a distinctive foot shape (Fig. 2,A). Distinguished from the only other species of this group (*B. orestes*) by larger adult size (35.6–53.3 mm snout-vent length), larger number of vomerine teeth (14–23), and different color pattern.

Description of lectotype.—Juvenile, sex not known, rounded snout very short and blunt, nostril small; canthus rostralis very short, rounded. Snout-vent length 6.3 times head width; snout-vent length 4.6 times snout-gular length. Vomerine, maxillary, and dentary teeth mostly knocked out (mouth badly mutilated), anterior portion of mandible missing. Premaxillary teeth one. Tail ovoid in cross section with little compression at base becoming slightly compressed posteriorly. Post-iliac gland not evident. Limbs relatively short; when appressed to sides of body, 2 costal folds remain uncovered. Snout-vent length 5 times hind limb length. Webbing of hands and feet nearly complete; tips of digits rounded, dorsoventrally flattened, somewhat free from web. Digits moderately robust, joined to one another almost to tips by thin width of web. Fingers in order of decreasing length: 3,4,2,1; toes in order of decreasing length: 3,4,2,5,1.

Measurements in millimeters: Head width 3.2; snout-gular fold 4.4; head depth at posterior angle of jaw 2.0; anterior rim of orbit to snout 1.7; horizontal orbital diameter 1.2; snout to forelimb 5.9; distance separating external nares 1.0; snout to posterior angle of vent 20.2; axilla-groin length 10.8; tail length 15.3; fore limb length 3.8; hind limb length 4.0.

Coloration: Now lost; specimen completely bleached white; however, Werner (1897) states the color of this specimen is (dorsally) light reddish brown with indis-

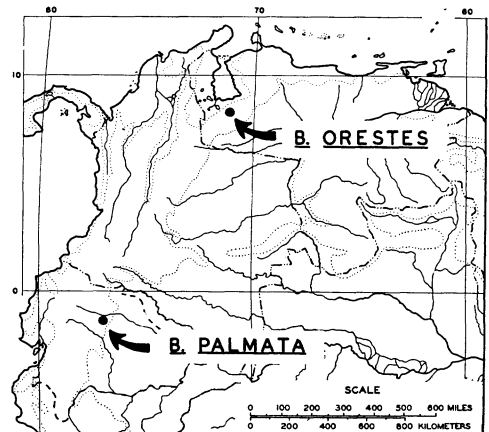


Fig. 6. Map of northwestern South America indicating locality records for *B. orestes* and *B. palmata*.

tinct dark lines, underside lighter, blackish brown with dirty ochre yellow arising from the rear area.

Because of the smallness and poor condition of the lectotype, it seems valuable to describe an adult specimen:

Description of adult.—CM 13118, female, snout-vent length 7.0 times head width; snout-vent length 4.8 times snout-gular fold length. Horizontal postorbital groove running posteriorly from eye 2.2 mm, then turning sharply ventrally. Vomerine teeth 11–12, extending about one narial diameter lateral to lateral border of internal narial opening. Maxillary teeth 18–22, extending posteriorly to level of center of eyeball. Three premaxillary teeth, none piercing lip. Dentary teeth (total) 58. Tail partly regenerated; moderately constricted at base. Limbs short; when appressed to sides of body five costal folds remain uncovered. Snout-vent length 5.5 times right fore limb; snout-vent length 4.8 times right hind limb. Webbing of hand and foot not complete; tips of digits rounded, dorsoventrally flattened, somewhat free from web. Digits moderately robust, joined to one another almost to tips by thin web. Fingers in order of decreasing length: 3,4,2,1; toes in order of decreasing length: 3,4,2,5,1.

Measurements in millimeters: Head width 7.1; snout-gular fold 10.3; head depth at posterior angle of jaw 4.8; eyelid length 3.0; eyelid width 1.7; anterior rim of orbit to snout 2.8; horizontal orbital diameter 2.1; interorbital distance 1.3; distance between vomerine teeth and parasphenoid tooth patch 0.6; snout to fore limb 13.8; distance separating internal nares 1.7; distance separating external nares 2.2; snout projection beyond mandible 0.8; snout-posterior angle of vent 46.4; axilla-groin length 27.7; tail length (partially regenerated) 29.3; tail width at base 4.7; tail depth at base 4.7; fore limb length 9.0; hind limb length 9.8; width of right hand 3.3; width of right foot 4.0.

Coloration: Dorsal and lateral surfaces of head and trunk more or less uniformly tan to reddish tan. Venter rich dark brown with a few tan dashes and spots. Sharp demarcation between dorsolateral lighter color and ventral darker color along ventrolateral line from fore limb to hind limb. Tail above darker than trunk; uniform dorsal color breaking up into patches and spots ventrally and ventrolaterally. No post-iliac spot evi-

dent. Legs mottled, with darker color of venter prevailing over lighter dorsum coloration.

Variation.—Pertinent measurements and tooth counts for the five specimens of *B. palmata* are listed in Table 1. *B. palmata* has been included on the accompanying graphs (Figs. 3–5), showing the short snout characteristic also of *B. orestes*, and illustrated in Fig. 1.

B. palmata is a short-legged form. The number of costal folds not covered when the limbs are appressed to the sides of the body is 2, 3½, 5, 4, and 4½, in the smallest to largest specimens, respectively.

RELATIONSHIPS

Bolitoglossa orestes and *B. palmata* share several striking characters, including shape and shortness of snout, foot shape, short limbs, and body proportions. The shapes of the head, hands, and feet separate these two species as a distinct group (*B. palmata* group) from all other members of the genus. *Bolitoglossa palmata* is easily distinguished from *B. orestes* by its larger adult size, larger number of vomerine and maxillary teeth, and color pattern. The two species differ from the relatively short-snouted *Bolitoglossa colonnea* (Dunn), of southern Central America in lacking the characteristic raised interorbital dermal ridge of that species, presence of maxillary teeth, in the nature of the digital webbing (*B. colonnea* has feet like those illustrated for *B. borburata*, see Fig. 2,C), and in coloration.

Most of the type series of *B. orestes* was referred to *B. adspersa* (Peters) by Dunn (1926). *B. adspersa* is a larger species, with a typical *Bolitoglossa* head, differently shaped feet (Fig. 2,B), more vomerine teeth, longer limbs, and a distinctive color pattern consisting of reddish dashes on a dark dorsal ground color. There is no close relationship between *B. orestes* and *B. adspersa*. *B. orestes* differs markedly from the only other Venezuelan species, *B. borburata* Trapido, in size, shape of hands and feet (Fig. 2), shape of head, and color pattern. Apparently there is no close relationship between *B. orestes* and *B. borburata*.

B. palmata differs strikingly from other Ecuadorian salamanders, tentatively assigned to *B. altamazonica*, in characteristics of head, feet and in color pattern. These same differ-

ences apply to the *B. palmata* group as distinguished from *B. peruviana* (Boulenger) and *B. paraensis* (Unterstein). *B. lignicolor* (Peters) of southern Central America, being most closely related to *B. borburata*, shows few similarities with the *B. palmata* group.

REMARKS

We are unable to locate Fugueros, Venezuela, on maps available to us, but from the elevation (3,500 meters) listed with the specimens (BM 1905.5.31.105-108), it seems probable that they were collected in the Cordillera de Mérida in the general vicinity of Culata. No habitat information is available for either *B. palmata* or *B. orestes*.

The shape of the head in the new species is similar to that of *B. palmata* (Fig. 1, left) in essentials. The head of *B. borburata* (Fig. 1, right) is typical of other South American members of the genus. The distinctive hand shape of the *B. palmata* group

is seen nowhere else in the genus, but is strikingly similar to some members of the genus *Oedipina*.

Eight species of the genus *Bolitoglossa* are currently recognized from South America: *B. borburata* and *B. orestes* from Venezuela, *B. adspersa* and the questionable *B. andicola* from Colombia; *B. palmata* from Ecuador; *B. peruviana* from Peru; *B. paraensis* from Brazil; and *B. altamazonica* from Ecuador, Brazil, Peru, and Bolivia.

LITERATURE CITED

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DEPARTMENT OF BIOLOGY, UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES 7, CALIFORNIA.

The Taxonomic Status of the Salamander *Plethodon vandykei larselli*

DOUGLAS M. BURNS

Plethodon vandykei larselli is now considered to be a distinct species, *P. larselli*. It is distinguished by the following combination of features: Reddish ventral surfaces, 16 trunk vertebrae, one and one-half to three costal interspaces between tips of toes of

adpressed limbs, fifth toe on the hind foot with only one phalanx. *P. larselli* is known only from the lower Columbia River Gorge in Oregon and Washington and is found in and about lava talus slopes.

RECENT studies of *Plethodon vandykei larselli* Burns (1954), *P. v. vandykei* and related species have revealed that *larselli* should be classified as a separate species.

Plethodon larselli new combination

Holotype.—USNM 134129, adult male collected on the north slope of Larch Mountain, three miles from summit, on the Multnomah Falls Trail, Multnomah County, Oregon, by D. M. Burns, May 24, 1953.

Diagnosis.—A species of *Plethodon* characterized by its reddish venter and black lateral surfaces and having the following unique combination of features: markedly reduced fifth digit on the hind foot which usually possesses only one phalanx; 16 trunk vertebrae; one and one-half to three costal interspaces between tips of toes of adpressed limbs.

Description of the species.—In a series of

ten *Plethodon larselli* from Archer Falls, Wash., nine have 14 costal grooves bilaterally, and one has 13-14. The first costal groove is absent or poorly defined and was consequently not counted. Skeletal preparations of these ten plus one additional specimen reveal 16 trunk vertebrae in all specimens. Costal interspaces between tips of toes of adpressed limbs vary from one and one-half to three.

The toes are relatively short and partly webbed. Normally the fifth digit of the hind foot has only one phalanx. (One of eleven specimens has two phalanges in the left fifth digit.) The full phalangeal pattern of the hind foot is: 1, 2, 3, 3, 1. In the forefoot the phalangeal pattern is: 1, 2, 3, 2.

In eleven adult specimens the vomerine teeth vary from four to seven per row. These rows do not meet at the midline. The vomerine and parasphenoid teeth are clearly