




A view of one of the streams draining the forests on Cerro Celaque in the Montaña de Celaque, Departamento de Ocotepeque, Honduras. Most specimens of the new species described in the following study were collected along this and other similar streams. The background mountain slope demonstrates the steep conditions occurring below the peak of Cerro Celaque.  © James R. McCranie



Specific status of the Montaña de Celaque Honduran frogs previously referred to as *Plectrohyla guatemalensis* (Anura: Hylidae: Hylinae)

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ABSTRACT: I describe a new species of hylid frog of the genus *Plectrohyla* from the isolated Montaña de Celaque in southwestern Honduras, which previously was referred to as *P. guatemalensis*. The new species differs from *P. guatemalensis* by the presence of yellowish olive-green dorsal surfaces that lack distinct darker dorsal markings in both sexes, mostly smooth dorsal surfaces in adult males and a tendency for less tuberculate dorsal surfaces in adult females, a smaller prepollex in males, a tendency for smooth midventral surfaces in adult males, and both sexes reaching a smaller adult size. This description brings the total number of recognized species of *Plectrohyla* to 19.

Key Words: Cloud forest, isolated population, new species, Spike-thumbed Hylid, southwestern Honduras

RESUMEN: Describo una nueva especie de rana arborícola del género *Plectrohyla* de la aislada Montaña de Celaque en el suroeste de Honduras, que anteriormente se había referido como *P. guatemalensis*. La nueva especie se difiere de *P. guatemalensis* por la presencia de una coloración amarillenta verde-oliva en las regiones dorsales que también carecen de marcas más oscuras en ambos sexos, con las superficies dorsales mayormente lisa en machos adultos y una tendencia hacia una reducción de tubérculos en las superficies dorsales en hembras adultas, un prepollex más pequeño en machos, una tendencia hacia tener las superficies midventrales más lisas en machos adultos, y en ambos sexos alcanzando un tamaño adulto más pequeño. Esta descripción lleva el número total de especies reconocidas de *Plectrohyla* a 19.

Palabras Claves: Bosque nublado, especie nueva, Hílido de Dos Espinas, población aislada, suroeste de Honduras

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INTRODUCTION

In his splendid review of the hylid frogs of Middle America, Duellman (1970: 580) diagnosed *Plectrohyla guatemalensis* Brocchi (1877) as a large species (76 mm snout–vent length [SVL]) with a weakly to strongly tuberculate dorsum, and males with a bifid prepollical spine. Duellman and Campbell (1992: 1) considered “*P. guatemalensis*” as a composite of species, and described two new species (*P. acanthodes*, *P. teuchestes*) that formerly were included under *P. guatemalensis*. Duellman and Campbell (1992) also included a population from El Cusuco, in the department of Cortés, a region of northwestern Honduras, as part of their concept of the newly recognized *P. teuchestes*. Subsequently, McCranie and Wilson (1998) described the Cusuco population as a new species, *P. exquisita*.

Consequently, Duellman (2001: 1,067) redefined *P. guatemalensis* as a moderately small species (less than 60 mm SVL) with tuberculate dorsal surfaces and males with a bifid prepollical spine. Further, Duellman (2001: 1,069) noted that the “skin on the dorsum has numerous, closely approximated round tubercles.” Based on my data and other observations (published in McCranie and Wilson, 2002; McCranie and Castañeda, 2007), I believe that Honduran populations of *P. guatemalensis* remain a composite of species. Further, McCranie (2015) noted that the Montaña de Celaque population likely deserved species recognition, a position based in that males from Montaña de Celaque, located in the northern portion of the Cordillera de Celaque, lacked strongly tuberculate dorsal surfaces as adults, unlike those of other populations of *P. guatemalensis*, including from Honduras. Previously, I thought the paler ventral surfaces of individuals (see Duellman, 2001; McCranie and Wilson, 2002; McCranie and Castañeda, 2007) might be diagnostic of what could be a new species, but upon closer examination for this study that character did not hold true.

As presently understood, *P. guatemalensis* is a wide-ranging species that occurs in various isolated populations extending from southeastern Chiapas, Mexico, to east-central Honduras, including Guatemala and El Salvador. Based on data I gathered from various Honduran populations, and from examining published images of several other populations, especially from Guatemala, I contend that several distinct evolutionary species remain masquerading under the nominal form *P. guatemalensis*. The purpose of this contribution is to present the results of a recent and more thorough morphological investigation (tissues from pertinent specimens were not available to me) into the Montaña de Celaque population previously assigned to *P. guatemalensis*, by comparing specimens from this area with those from other populations of *P. guatemalensis* from Honduras, as well as a single specimen from the department of Sololá, Guatemala. This department borders the eastern portion of the department of Chimaltenango, Guatemala, which contains the type locality of *P. guatemalensis*. Fifteen of the 16 specimens of the proposed new species are from upper elevations (1,900–2,500 m) on the eastern slope of Montaña de Celaque, whereas the remaining specimen is from a similar elevation (1,900 m) on the western slope.

METHODS

I examined all adult and a few subadult specimens of the new species described herein from the KU and USNM collections, as well as a series of *Plectrohyla guatemalensis* in the USNM collection (Appendix 1). I was unable to examine a specimen in the UTA collection, which I previously examined in the 1990s, but based on the initial examination tentatively include it here as a paratype of the new form. Additionally, I saw an image of a live male *Plectrohyla* said to be from Cerro Celaque (L. Porras, pers. comm) that showed strongly tuberculate dorsal surfaces, but could not locate the specimen in the museum collections I examined.

I made all measurements with dial calipers (© Mitutoyo 20–1) to the nearest 0.1 mm, with the aid of a dissecting microscope. The abbreviations used are as follows: DW (third finger disc width), EL (eye length), EW (width of upper eyelid), FL (foot length, distance from proximal edge of inner metatarsal tubercle to tip of longest toe), FIL (finger I length, from base of distal subarticular tubercle to tip of digit); HL (head length), HW (head width), IOD (interorbital distance at midlength of upper eyelid), OSL (outer prepollex spine length, from base to tip); PL (prepollical length from base of beginning of inner spine to outer base of outer spine), SHL (shank length), SL (snout length, distance from anterior edge of orbit to tip of snout), SVL (snout–vent length), and TPL (tympanum length). In Appendix 1, I list the comparative specimens examined for this work. The color names and numeric codes for describing the color in life are from Smithe (1975–1981). The museum acronyms follow those used by Sabaj (2016).

Along with various colleagues (see Acknowledgments), I made four collecting trips to Cerro Celaque, at elevations between 1,900 to 2,500 m: 25–27 April 1982; 1–4 August 1985; 31 July–3 August 1990; and 6–7 May 1997. No individuals of the new species were seen on the last trip. Also, four trips were made to El Chagüitón, Ocotepeque, the new species' second known locality at the following times: 25 May 1980; 4 August 1982; 4 August 1987; and 20 July 1995. During these trips, only one specimen of the new species was collected (1982 trip).

Brocchi (1882: plate XII) included drawings of at least one of the two male syntypes of *P. guatemalensis*. The drawings show the strongly tuberculate dorsal surfaces and the large male prepollex (but inaccurately drawn and not useful for this study) of one syntype from the type locality population from Chimaltenango, Guatemala. Comparative data for previously described species of *Plectrohyla* are from Duellman (2001), personal data published in McCranie and Wilson (2002), and the data reported herein. Presently, most specimens of *P. guatemalensis* from Guatemala are on loan for another study, and thus unavailable for me to examine.

SYSTEMATICS


Plectrohyla calvata sp. nov.

Figs. 1, 3, 5, 7

Plectrohyla guatemalensis: Duellman and Campbell (1992: 6 [in part]); Duellman (2001: 1,067 [in part]); McCranie and Wilson (2002: 298 [in part]); McCranie and Castañeda (2007: 171 [in part]); McCranie (2015: 359 [in part]).



Fig. 1. The smooth, dark, and unmarked dorsal surfaces of the male holotype (USNM 523191) of *Plectrohyla calvata* sp. nov., in alcohol. SVL = 46.6 mm.

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Holotype: National Museum of Natural History (USNM) 523191, an adult male from the eastern slope of Montaña de Celaque (14°32'N, 88°40'W; datum WGS 84), elevation 2,020 m asl, Departamento de Lempira, Honduras, collected by James R. McCranie, Kenneth L. Williams, and Larry D. Wilson on 1 August 1990.

Paratypes (11; 5 adult males, 6 adult females): KU 209663–65, 209667, 209670–73, USNM 523192, UTA A-41747 (paratype status of this specimen tentative, as it could not be reexamined for this study), all with the same locality data as the holotype, except for coordinates ranging from 14°32'N, 88°40'W to 14°34'N, 88°39'W and collected at elevations from 1,930 m to 2,500 m from 25 to 26 April 1982, 1 to 3 August 1985, and 31 July to 3 August 1990; and KU 209674 was collected at El Chagüitón, Ocotepeque (14°30'N, 88°48'W) on the western slope of Montaña de Celaque, elevation 1,900 m, on 3 August 1985.

Referred specimens (4): KU 209668–69, USNM 523193, three subadult males from the type locality; and KU 209666, a juvenile female from the type locality.

Diagnosis: Morphologically, *Plectrohyla calvata* is most similar to *P. guatemalensis*, but differs most notably by the presence of largely smooth dorsal surfaces in adult males (Fig. 1; vs. dorsal surfaces distinctly tuberculate in adult males of *P. guatemalensis*; Fig. 2), and relatively less tuberculate dorsal surfaces in adult females (Fig. 3; vs. dorsal surfaces distinctly tuberculate in adult females of *P. guatemalensis*). Brocchi (1882) provided a drawing of one of the two male syntypes of *P. guatemalensis*, which shows the strongly tuberculate dorsal surfaces of that nominal form, and Duellman et al. (2016) provided a photograph of an adult male *P. guatemalensis* from Sololá, Guatemala, which also shows the strongly tuberculate dorsal surfaces. Sololá borders the department containing the type locality of *P. guatemalensis*. In addition to the figures included herein that compare those characters (especially Fig. 4 for *P. guatemalensis*), in the Remarks section below I point the reader to other published images that can be used to compare the dorsal skin texture of these two nominal forms. *Plectrohyla calvata* also differs



Fig. 2. A live adult male *Plectrohyla guatemalensis* (USNM 523195) from Pico Pijol, Departamento de Yoro, Honduras, showing the distinctly tuberculate dorsal surfaces and normally darker colored dorsal markings. SVL = 51.7 mm. © James R. McCranie

from *P. guatemalensis* by the presence of a slightly smaller prepollex in males (PL/FIL 0.75–0.94 in the six adult male paratypes vs. 0.95–1.21 in 12 adult male [KU 209675–76; USNM 343466–68, 343471–74, 343477, 343479, 343496] *P. guatemalensis* [compare Fig. 5 with Fig. 6]; all other proportions noted for *P. calvata* in the Variation section below show considerable overlap between *P. calvata* and other Honduran populations of *P. guatemalensis*), and thus are not diagnostic. Additionally, the dorsal surfaces of *P. calvata* are dark and lack distinct dorsal markings in both sexes (Fig. 3 [also see Fig. 7 for a subadult male]; vs. distinct dorsal markings present and usually a paler brown dorsum in both sexes in *P. guatemalensis*) and the midventral surfaces in males tend to be smoother (Fig. 5; vs. midventral surfaces usually coarsely areolate; Fig. 6), and *P. calvata* reaches a smaller size (maximum known SVL 48.5 mm in males, 47.3 mm in females vs. SVL 59.5 mm [KU 209685] in male, 55.3 mm [USNM 523202] in female *P. guatemalensis* from other Honduran populations). The SVL of one of the two known males from the geographically closest known population (Cerro El Pital, Honduras; USNM 523204) of *P. guatemalensis* measures 52.0 mm (vs. maximum known SVL of 48.5 mm for *P. calvata*). Guibé (1950) gave an SVL of 59.9 mm for one of the two MNHN syntypes (a male) of *P. guatemalensis*. The remaining species of *Plectrohyla* with bifid prepollices are *P. acanthodes* (Chiapas, Mexico, and western Guatemala), *P. exquisita* (northwestern Honduras), *P. hartwegi* Duellman (southeastern Chiapas, Mexico, to southwestern Honduras), *P. pokomchi* Duellman and Campbell (central and west-central Guatemala), and *P. teuchestes* (central Guatemala). All of these species, except for *P. pokomchi*, “are notably larger” (Duellman, 2001: 1,067) than *P. calvata*. The maximum known SVL for *P. calvata* is 48.5 mm, compared to 63.2 mm for *P. acanthodes*, 80.7 mm for *P. exquisita*, 76.7 mm for *P. hartwegi*, and 76.1 mm for *P. teuchestes*. *Plectrohyla pokomchi* differs from *P. calvata* by the presence of male vocal slits, a distinctively tuberculate dorsum, and red webbing on the hind limbs (vs. vocal slits absent, dorsal surfaces mostly smooth in adult males and relatively less tuberculate in adult females, and the presence of gray webbing in *P. calvata* on the hind limbs). *Plectrohyla hartwegi* and *P. psiloderma* McCranie and Wilson occur sympatrically with *P. calvata*. Above, I distinguished the former from *P. calvata*. The prepollices of both sexes of *P. psiloderma* are short, single, flat, and with a blunt distal end; thus, this species cannot be confused with *P. calvata*, with its bifid, curved, prepollical spines in both sexes.



Fig. 3. An adult female paratype of *Plectrohyla calvata* sp. nov. (USNM 523192) in life, showing the relatively few dorsal tubercles and the dark dorsal ground color. SVL = 43.6 mm.

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Description of holotype: Adult male (reexamined for this study; Fig. 1) with SVL of 46.6 mm; SHL 24.5 mm, 52.6% of SVL; FL 23.8 mm, 51.1% of SVL; HL 14.5 mm, 31.1% of SVL; HW 14.8 mm, 31.8% of SVL: snout semicircular in dorsal aspect, rounded in lateral profile; SL 5.9 mm, 40.7% of HL; vertical rostral keel absent; snout mostly smooth, but with a few scattered tiny tubercles; top of head flat, mostly smooth, with a few scattered tiny tubercles present; canthal ridge nearly angular; IOD 5.4 mm, 36.5% of HW, 110.2% of EL; interorbital area flat, smooth; loreal region slightly concave; pupil horizontally elliptical; palpebral membrane translucent, unpatterned; nostrils protuberant, directed laterally, situated about two-thirds the distance between anterior border of orbit and tip of snout; anterior edge of orbit to rostral distance 3.0 mm, 61.2% of EL; internarial distance 5.3 mm; EL 4.9 mm, 90.7% of IOD; EW 5.3 mm, 35.8% of HW, 98.1% of IOD; lips not flared; supratympanic fold weakly developed; and external tympanum absent.



Fig. 4. A live adult female *Plectrohyla guatemalensis* (USNM 523198) from 2.5 km NNE of La Fortuna, Departamento de Yoro, Honduras, showing the distinctly tuberculate dorsal surfaces and normally darker colored dorsal markings. SVL = 52.3 mm. © James R. McCranie

Arms robust, forearm slightly heavier than upper arm; weak transverse dermal fold present on upper surface of wrist; vertical dermal fold absent on elbow; widely separated tiny tubercles form a row along posterior ventrolateral edge of forearm; axillary membrane absent; finger discs broadly expanded; FIL 3.7 mm; DW 2.6 mm, 53.1% of EL; disc covers on fingers rounded (even); disc pads on fingers broadened; subarticular tubercles on fingers round, globular, including distal subarticular tubercle on Finger IV; supernumerary tubercles absent on fingers; palmar tubercle elevated, ovoid; accessory palmar tubercles present, round, globular; prepollex distinctly enlarged, with two curved spines, outer spine largest; prepollex not bearing excrescences; PL 2.8 mm, 0.8% of FIL; relative length of fingers $I < II < IV < III$; webbing basal between fingers I–II, remaining webbing formula $II\ 2^+ - 3^+ III\ 3^- - 2^+ IV$; lateral keels present on unwebbed portions of fingers; OSL 2.4 mm, 0.7% of FIL; heels broadly overlapping when hind limbs held at right angles to body; vertical dermal fold absent on heel; dermal ridge absent along posterior ventrolateral edge of tarsus; inner tarsal fold distinct, extending full length of tarsus; subarticular tubercles on toes round, globular; supernumerary tubercles absent on toes; plantar tubercles small, round, barely raised; inner metatarsal tubercle ovoid, elevated, visible from above; outer metatarsal tubercle indistinct; relative length of toes $I < II < V = III < IV$; toe discs broadly expanded, slightly smaller than those on fingers; disc covers on toes rounded (even); disc pads on toes broadened; webbing formula of feet $I\ 3/4 - 2\ II\ 3/4 - 2^+ III\ 3/4 - 2^+ IV\ 2^+ - 3/4 V$; and lateral keels present on unwebbed portions of toes.



Fig. 5. The prepollex condition and relatively smooth chest region of a male *Plectrohyla calvata* sp. nov. (KU 209674) in alcohol. Note the shape of the prepollex and the relatively smooth chest and adjacent ventral surface. PL = 3.0 mm. The arrow points to basal beginning of prepollex. © James R. McCranie



Fig. 6. The prepollex condition and coarsely aerolate chest region of a male *Plectrohyla guatemalensis* (USNM 343484) from Parque Nacional La Muralla, Departamento de Olancho, Honduras, in alcohol. PL = 3.5 mm. © James R. McCranie

Vent opening directed posteroventrally near upper level of thighs, skin surrounding vent coarsely areolate; skin of dorsal surfaces mostly smooth, with some tiny, widely separated tubercles present on posterior one-third of body; skin of throat and chest essentially smooth, that of outer edge and posterior two-thirds of belly and ventral surface of thigh coarsely areolate; tongue ovoid, slightly free posteriorly; vomerine tooth patches on elevated, medial, nearly transverse ridges; transverse ridges located at posterior level of ovoid choanae, tooth patches separated by distance slightly less than width of either patch; maxillary teeth spatulate, some anterior teeth enlarged; and vocal slits and sac absent.

No color notes in life of the holotype are available.

Color in alcohol of the holotype: dorsal surfaces of head, body, and limbs olive gray without darker brown markings, flanks paler gray than dorsum, also without distinct darker markings; anterior surface of thigh pale gray, posterior thigh surface olive gray; belly and ventral surface of thigh pale grayish brown; chin and throat region cream with pale gray tone medially on throat.

Variation: The measurements and proportions of the entire type series of six males and six females are as follows (one specimen not reexamined for this study): SVL 43.0–48.5 mm ($\bar{x} = 45.6 \pm 2.2$) in males, 40.5–47.2 mm ($\bar{x} = 44.3 \pm 2.3$) in females; SHL/SVL 50.0–52.6% in males, 47.5–53.3% in females; FL/SVL 46.4–51.1% in males, 43.6–49.4% in females; OSL/FIL 65.3–96.6% in males; PL/FIL 74.7–93.8% in males; HL/SVL 28.4–31.1% in males, 29.9–31.9% in females; HW/SVL 29.3–31.8% in males, 30.6–32.4% in females; EW/IOD 98.1–118.6% in males, 95.1–117.8% in females; and IOD/EL 97.8–117.8% in males, 86.8–111.9% in females. An external tympanum is absent in all males, but visible in two females (KU 209673, USNM 523192); thus, TPL/EL 41.5–42.9% and DW/TPL 105.6–113.6% in these two. The outer prepollical spine is much better developed in males than females.

The color in life of an adult female paratype (USNM 523192), based on images (Fig. 3), was as follows: dorsal ground color Yellowish Olive-Green (50) without any distinct markings; axillary and groin regions and adjacent inner surface of thigh Pratt's Payne's Gray (88); supratympanic longitudinal bar Olive-Brown (28); dorsal portions of inner finger discs Pratt's Payne's Gray; and upper half of pupil golden brown with dark brown reticulations, lower half Dark Brownish Olive (129). Also based on images, the color in life of a subadult male (USNM 523193; Fig. 7) was as follows: dorsal ground color a slightly paler shade of Brownish Olive (29) with some Apple Green (61) dorsolateral and lateral spots on body; supratympanic longitudinal bar dark brown; and dorsal color of finger discs not paler than dorsal ground color of body. A photograph of the above-described adult female paratype (USNM 523192) appears in McCranie and Wilson (2002), and also is included herein (Fig. 3).

Little color variation in alcohol is evident among the paratypes, as all are similar in color and pattern to that described above for the holotype.



Fig. 7. A live subadult male of a referred specimen of *Plectrohyla calvata* sp. nov. (USNM 523193). SVL = 33.2 mm.

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Distribution and habitat: Adults of *Plectrohyla calvata* were collected (see Methods) at elevations from 1,900 to 2,500 m in the Lower Montane Moist Forest formation, as discussed by Holdridge (1967). Most specimens, including the holotype, were collected at night on broadleaf vegetation overhanging small streams, but one appeared to be sleeping on a rock above the water level in a small, shaded stream during the afternoon, and another was calling (even though this species lacks vocal slits and a sac) during the day from inside a bromeliad growing on a pine tree about 2 m above the ground. The last mentioned specimen was found at a considerable distance from the nearest stream and at a higher elevation (2,500 m) than the others (see introductory page image for view of the area). Tadpoles believed to be of *P. calvata* were found in small streams at elevations between 1,930 and 2,020 m, and others were found at a considerably lower elevation (1,400 m) in the Río Arcágual below the park's visitor center. This last locality is in gallery forest, which is similar to that of the Premontane Wet Forest formation of Holdridge (1967). No adults of *P. calvata* were seen at the lower elevation. Away from the site where the lower elevation tadpoles were seen, the remaining forest along the Río Arcágual is open pine forest, which resembles the Premontane Moist Forest formation of Holdridge (1967). Tadpoles were usually seen on the bottom and on rocks in side pools of the Río Arcágual, as well as in small streams. They were active at night, and thus more easily seen than when they were stationary during the day. Flashlights seemed to startle them and made most move a short distance when illuminated.

Adults of *P. calvata* were collected on three of the four trips to Cerro Celaque on the eastern slope of Montaña de Celaque during the months of April, July, and August. Neither adults nor tadpoles were found on a trip in May of 1997, the last one I made to the region and during which I intended to collect tissues. Numerous tadpoles were present during the first three trips. Several trips were made to the El Chagüitón site on the western slope of Montaña de Celaque, but only one adult was found in August, in a bromeliad growing on a mostly denuded tree about 2.5 m above the ground in a swampy pasture. The tree was located at the edge of a flat area that quickly sloped downward toward a small stream. *Plectrohyla* tadpoles were not found at the El Chagüitón site.

In addition to not finding adults or tadpoles of *P. calvata* on the last trip taken to the higher elevations of Montaña de Celaque (in May of 1997), the tadpoles of the congeneric *P. psiloderma* encountered at that time showed deformed mouthparts. That disturbing scenario is similar to that reported for other moderate to intermediate elevation localities in Honduras, where stream relying anurans have disappeared or have declined drastically after the discovery of deformed tadpoles. Thus, additional fieldwork is necessary at higher elevations of Montaña de Celaque to determine the current status of the anuran populations.

Figure 8 shows the collecting localities for *P. calvata*, as well as those for the closely related *P. guatemalensis* from Honduras.

The northern, eastern, and western slopes of Montaña de Celaque predominately are covered by broadleaf forest at the higher elevations, but these forested areas are isolated from one another by elevations lower than 1,000 m. The town of Gracias (elev. 750 m), in the department of Lempira, lies in the valley of the Río Arcágual and only 9 km to the northeast of one of the *P. calvata* collecting localities. The headwaters of the Río Arcágual are at the higher elevations (> 2,500 m) of Montaña de Celaque. The terrain north and northwest of Montaña de Celaque in the valley of the Río Cospa (< 1,000 m) lies only about 10 km from sites where the *P. calvata* were collected. The headwaters of the Río Cospa drain the northern and northwestern slopes of Montaña de Celaque. Terrain below 1,000 m in elevation is found only about 7 km to the east and 12 km to the southeast of Montaña de Celaque, in river valleys drained by their headwaters. South and southeast of Montaña de Celaque, elevations below 1,000 m are found in the valley of the Río Mocal, of which some are located only 10 km to the south and southeast from where *P. calvata* has been found. Continuous terrain above 1,800 m in elevation connects the Montaña de Celaque collecting sites in the department of Lempira with that of El Chagüitón (the second known locality for the new species; only 7 km WSW of the Montaña de Celaque sites), in the department of Ocotepeque. About 12 km to the west of El Chagüitón, all of the terrain lies at an elevation below 1,000 m. Most of the terrain along the southwestern slopes of Montaña de Celaque lies at elevations above 1,700 m, thus providing a corridor that connects those slopes with the northern slopes of Cerro El Pital in the department of Ocotepeque. The southwestern slopes of Montaña de Celaque, however, are dominated by drier pine-oak forest, and thus areas that support cloud or broadleaf forests are found at considerably higher elevations than those on the northern, eastern, and western slopes. Consequently, the drier and open pine-oak forest, unlike the mesic broadleaf forest on the other slopes, dominates the southwestern and

Pacific drainages of Montaña de Celaque. The drier forest seems to disrupt the habitat corridor between Montaña de Celaque and the northern slopes of Cerro El Pital. Based on their strongly tuberculate and paler and distinctly marked dorsal surfaces, the few *Plectrohyla* available from Cerro El Pital strongly resemble *P. guatemalensis* (see image of a male *P. guatemalensis* from that site in Köhler et al., 2005).

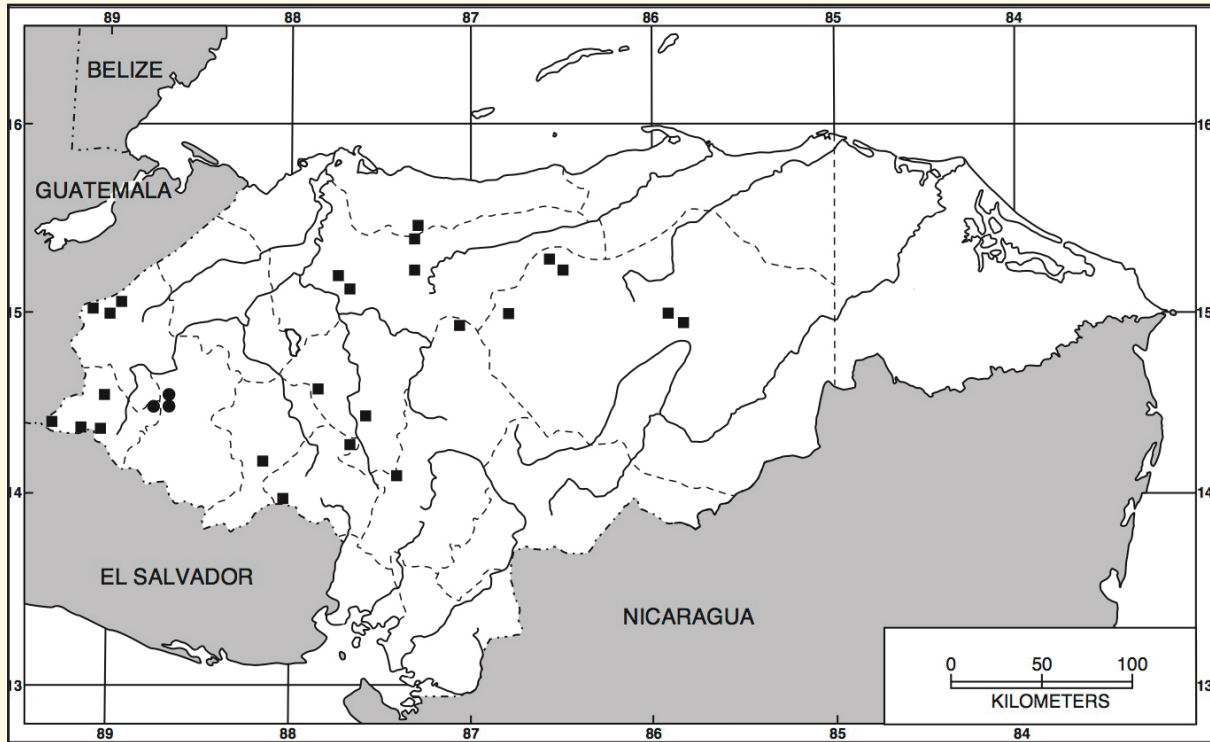


Fig. 8. Collecting localities for *Plectrohyla calvata* sp. nov. (circles), and Honduran localities for the closely related *Plectrohyla guatemalensis* (squares).

Remarks: A photograph of an adult female paratype of *Plectrohyla calvata* (USNM 523192) published in McCranie and Wilson (2002; plate 14C) also is included herein (Fig. 3). Images of the mostly smooth adult male and relatively smooth adult female dorsal surfaces, with their surfaces unmarked in *P. calvata* as opposed to those in various populations of *P. guatemalensis*, in which the dorsal surfaces are tuberculate and usually are marked, are found in Duellman and Campbell (1992; female, SVL 54.4 mm), Duellman (2001; Guatemalan frog a female; no SVL given; Honduran frog a female, SVL 52.3 mm), McCranie and Wilson (2002; plate 14B, female, SVL 52.3 mm), Wilson and McCranie (2004; female, SVL 55.3 mm), Köhler et al. (2005; male, SVL 52.0 mm), McCranie and Castañeda (2007; female, SVL 55.3 mm), Köhler (2011; no specimen data given, but a female), and Duellman et al. (2016, male, SVL 50.3 mm; also compare Figs. 1, 3, 5, 7 herein with Figs. 2, 4, 6). A drawing showing the strongly tuberculate dorsal surfaces of a male syntype of *P. guatemalensis* appears in Brocchi (1882). Tadpoles believed to represent *P. calvata* are extremely similar to those described for *P. guatemalensis* (McCranie and Wilson, 2002), but no images or descriptions of the tadpole of *P. calvata* have been published.

Etymology: The name *calvata* is formed from the Latin *calvatus* (bald) and suffix *-ia* (pertaining to) and refers to the relatively smooth dorsal surfaces of this form. The intended use of the name is as a feminine nominative adjective.

DISCUSSION

Plectrohyla calvata, differentiated from *P. guatemalensis* based on its relatively smooth dorsal surfaces, smaller male prepollices, and several other characters (as discussed above) apparently is confined to Montaña de Celaque in the northern portion of the Cordillera de Celaque, in the departments of Lempira and Ocotepeque, Honduras. I retain the Cerro Pital populations (KU 209682; USNM 523204, 523481) of the *P. guatemalensis* species group (known only from the Honduran side of Cerro Pital) in *P. guatemalensis*, because of the presence of tuberculate dorsal surfaces and distinct dorsal markings in males, and in reaching a larger size (52.0 mm SVL vs. 48.5 mm). The nearby Cerro de Montecristo population (USNM 573796), as well as other populations in the western portion of the department of Ocotepeque (KU 209675–81), also resemble *P. guatemalensis* based on the presence of tuberculate and darkly marked dorsal surfaces. The photograph of a male *P. guatemalensis* (KU 58834, SVL 50.3 mm) in Duellman et al. (2016) is of a specimen from the Guatemalan department of Sololá, which borders the department containing the type locality of *P. guatemalensis*, shows strongly tuberculate and distinctively marked dorsal surfaces.

Although tissues of *P. calvata* were not available to me, recently collected tissues of a *P. guatemalensis*-like population from a lower elevation site (1,200–1,400 m) on the northern slopes of Montaña de Celaque are being used in another study (J. Townsend, pers. comm.). The results of that study should test the conclusions presented herein, should that population turn out to be the same species as the high elevation form described herein.

I follow the suggested taxonomy of *Plectrohyla* presented by Duellman et al. (2016), in which 18 species in the genus were recognized. With the addition of *P. calvata*, that number now stands at 19. Nonetheless, a revision of Guatemalan populations of *Plectrohyla* is underway (J. Campbell, E. Smith, pers. comm.), and thus the number of species in the genus likely will rise.

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Appendix 1. Comparative specimens of *Plectrohyla guatemalensis* examined for this study. Their locality data, as well as that for other Honduran specimens previously examined, appear in McCranie (2006). Herein I provide locality data for the specimens collected since that publication, and which I examined.

HONDURAS (68 adults): KU 209674–82, 209685; USNM 343464–68, 343470–513, 343515–19, 523202, 523204. Recently collected *Plectrohyla guatemalensis*: USNM 573796 from Departamento de Ocotepeque, Las Hojas, Cerro Montecristo; USNM 581901 from Departamento de Francisco Morazán, Quebrada Cataguana.

GUATEMALA (1 adult male; see Methods): KU 58834 from Departamento de Sololá, 2.7 km W of Panajachel.



James R. McCranie is a self-taught herpetologist with a passion for fieldwork, who specializes on the taxonomy and systematics of the Latin American herpetofauna. His main area of interest is Honduras, where he has been conducting fieldwork since 1976. During his career, McCranie has authored or co-authored five books (a sixth book is in press) and nearly 300 peer-reviewed scientific publications, including the descriptions of about 95 new taxa, mostly from Honduras. In 2015, he retired from fieldwork in Honduras because of the unavailability of scientific collecting permits. During his countless trips to Honduras, Randy witnessed a time when extensive forests dominated the landscape; sadly, as a result of deforestation and fragmentation, many of these habitats no longer remain. Because of the lack of governmental effort to curb these practices, he believes that the country has reached the point of no return regarding the conservation of many of its once magnificent natural habitats.