

Three new centrolenid frogs from Ecuador

By

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Mit 3 Abbildungen

(Eingegangen am 23. Februar 1960)

While working in the British Museum (Natural History) during the summer of 1959, I had occasion to study all of the material of centrolenid frogs from the northern Andes that is at present in that Institution. Since no less than four of

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the Andean forms are described from Ecuador, I had to pay particular attention to specimens from that country. Among these specimens were representatives of three species that are surely nondescript so I take this opportunity of supplying descriptions for them. These three, with the four previously known ones, now raise the total known Centrolenidae from that country to seven.

I am grateful to Dr. JAMES A. PETERS, who has agreed to my publishing on these new species prior to his completion of his survey of the herpetofauna of Ecuador. Miss ALICE G. C. GRANDISON has me in her debt, not only for permission to study the material in the British Museum, but also for numerous other courtesies that helped make my stay in London both pleasant and profitable. Mr. CHARLES M. BOGERT of the American Museum of Natural History has speedily made specimens in his care available to me. The drawings are from the pen of Miss ESTHER COOGLE. My wife, OLIVE B. GOIN, served as a faithful assistant during my stay at the British Museum and contributed appreciably to what I was able to accomplish there. Travel to London was made possible in part by a Grant from the Permanent Science Fund of the American Academy of Arts and Sciences, and in part by a Grant (G-5628) from the National Science Foundation. To all of these I am grateful.

Cochranella petersi, sp. nov.

Type. B.M. 1902. 5.27.24, Adult female, Rio Durango, N. W. Ecuador.

Diagnosis. A *Cochranella* without vomerine teeth but with the fingers extensively webbed and with the disks on the toes very slender for a *Cochranella*, not more than half covering the distinct tympanum.

C. petersi can be distinguished from all Ecuadorian *Cochranella* except *cochranae*, *griffithsi* and *buckleyi* by the absence of vomerine teeth. From all of these it can be distinguished by having the web reach the penultimate phalanges of the second, third, and fourth fingers.

Description of type. Vomerine teeth absent; choanae small, rounded, separated by three times their own diameter; tongue one-half as wide as mouth-opening, broadly rounded, its posterior border fused and unnotched. Snout short, rounded when viewed from above, nearly truncate in profile, the upper jaw extending but slightly beyond lower; nostrils more lateral than superior, but slightly projecting, their distance from end of snout about one-half that from eye, separated from each other by an interval equal to their distance from eye. Canthus rostralis slightly defined; loreal region concave and oblique, the upper lip flaring out below it. Eye large, very prominent, its diameter equal to its distance from nostril; interorbital distance nearly twice the width of upper eyelid, which is relatively narrow and less than distance between nostrils. Tympanum distinct, about one-fourth the diameter of eye, separated from eye by a distance nearly equal to two-thirds its own diameter. Fingers webbed at base between first and second, web extending from base of disk of second to middle of antepenultimate phalanx of third and from middle of penultimate phalanx

of third to base of disk of fourth; fourth considerably longer than second, not quite reaching to disk of third which covers about two-thirds the tympanic area; no projecting rudiment of a pollex; no humeral spine detectable by palpation. Toes extensively webbed, the web extending to base of disk of all except fourth, on which it extends to the base of the penultimate phalanx; third and fifth toes subequal, disk of fourth covering about one-half the tympanic area; a distinct, oval inner and a smaller, very indistinct rounded outer metatarsal tubercle; no tarsal ridge; no dermal appendage on heel. Body somewhat elongate for a centrolenid, in post-axillary region a little narrower than greatest width of head; when hind leg is adpressed, heel reaches well beyond tip of snout; when limbs are laid along the sides, knee reaches axilla; when hind legs are bent at right angles to body, heels overlap greatly. No patagium present. Skin of upper parts smooth; a rather narrow indistinct glandular ridge passes above upper part of tympanum; skin of throat and chest, smooth, that of belly finely granular; no traces of a skinfold across the chest; no vocal sac. Skin of head not coossified with skull, roof, of skull not exostosed.

Dimensions. Head and body, 23.7 mm.; head length, 7.5 mm.; head width, 7.9 mm.; femur 13.5 mm.; tibia 14.2 mm.; heel-to-toe 18.0 mm.

Color in alcohol. Ground color a dark cream with numerous, very fine, pepper-like fleckings of lavender, particularly on the top of the head and in the tympanic region. The dorsal fleckings occur on the dorsal side of both the upper and lower arms but not the hands, and on the dorsal side of all the leg segments and the feet. The ventral surfaces are immaculate. The upper eyelids are whitish.

This species is named for Dr. JAMES A. PETERS, in recognition of his significant contributions to our knowledge of the herpetofauna of Ecuador.

Cochranella cochraeae, sp. nov.

Type. B.M. 1912. 11.1.68, Adult female, El Topo, Rio Pastaza, Eastern Ecuador, 4200 feet, H. G. Palmer, coll.

Diagnosis. A *Cochranella* without vomerine teeth and without webs between the fingers. The tympanum is small (one-fifth diameter of the eye) and the dorsal pattern consists of scattered, white-centered, deep purple ocelli on a lavender background.

This species can be distinguished from all the *Cochranella* now known from Ecuador except *petersi*, *griffithsi*, and *buckleyi* by the absence of vomerine teeth. From all of these it can be distinguished by the complete absence of webs between the fingers and by the presence of dorsal ocelli.

Description of type. Vomerine teeth absent; choanae moderate, rounded, separated by about three times their own diameter; tongue

one-half as wide as mouth-opening, broadly rounded, its posterior border free and truncate but without a notch. Snout very short, rounded when viewed from above, truncate in profile, the upper jaw not extending appreciably beyond lower; nostrils more lateral than superior, not projecting, their distance from end of snout about one-half that from eye, separated from each other by an interval equal to about their distance from eye. Canthus rostralis not pronounced; loreal region concave and oblique, the upper lip flaring out below it. Eye very large, very prominent, its diameter half again as great as its distance from nostril; interorbital distance about width of upper eyelid, which is in turn about equal the distance between nostrils. Tympanum distinct, about one-fifth the diameter of eye, separated from eye by a distance about equal to its own diameter. Fingers without webs, fourth longer than second, just reaching to base of disk of third which is twice the diameter of the tympanum; no projecting rudiment of a pollex; no humeral spine palpable. Toes less than one-half webbed, the web on fourth toe reaching only to the base of the antipenultimate phalanx, and to the base of the penultimate phalanx on the third and fifth; third and fifth toes subequal, disk of fourth half again as large as the tympanic area; an indistinct oval inner but no apparent outer metatarsal tubercle; no tarsal ridge; no dermal appendage on heel. Body not elongate, in post-axillary region distinctly narrower than greatest width of head; when hind leg is adpressed, heel reaches well beyond tip of snout; when limbs are laid along the sides, knee nearly reaches axilla; when hind legs are bent at right angles to body, heels overlap markedly. No patagium present. Skin of upper parts, smooth; a rather swollen glandular area encircling upper part of tympanum; skin of throat and chest, smooth, that on posterior portion of belly uniformly and very finely granular; no traces of a skinfold across the chest; adult female, no vocal sac present. Skin of head not coossified with skull, roof of skull not exostosed.

Dimensions. Head and body, 27.2 mm.; head length, 8.5 mm.; head width, 10.0 mm.; femur, 16.1 mm.; tibia, 17.4 mm.; heel-to-toe, 21.7 mm.

Color in alcohol. Ground color a clear cream. Top of head and dorsum, top of forearms and shanks sprinkled with minute specks which are indistinguishable to the naked eye, together with a scattering of these specks on the dorsal surfaces of the thighs and feet. These specks, light purple in color, give the dorsal surfaces of the specimen a lavender hue. This lavender dorsal surface is overlain by distinct, white-centered, deep purple ocelli. There are about three dozen of the ocelli scattered about on the top of the head and dorsum, a little more concentrated anteriorly. There are three similar ocelli on the dorsal surface of each thigh and each shank. There are none on the

anterior appendages or the feet. The upper eyelids are deep lavender in color. The ventral surfaces are immaculate.

I name this form in honor of Dr. DORIS M. COCHRAN so that a species of this genus may bear her name.

Cochranella griffithsi, sp. nov.

Type. B.M. 1940. 2.20.4, Adult female, Rio Saloya, Ecuador, 4000 feet, C. S. Webb, coll.

Paratype. B.M. 1940. 2.20.3, Adult female with the same data as the type.

Diagnosis. A *Cochranella* without vomerine teeth, with the fingers webbed at base. The tympanum is small but distinct and the disks of the fingers are large, that of the third finger being three times the diameter of the tympanum.

It can be distinguished from all Ecuadorian *Cochranella* except *buckleyi*, *petersi*, and *cochranae* by the absence of vomerine teeth. From *petersi* it can be distinguished by the reduced webbing between the fingers; from *cochranae* by having a trace of web between the fingers and by lacking ocelli; and from *buckleyi* it can be distinguished by having the toes more fully webbed and by not having a sharp line of demarcation between the dark dorsal and light ventral ground color.

Description of type. Vomerine teeth absent; choanae moderate, rounded, separated by about three times their own diameter; tongue three-fourths as wide as mouth-opening, broadly rounded, its posterior border free and truncate but not notched. Snout short, rounded when viewed from above, truncate in profile, the upper jaw not extending appreciably beyond lower; nostrils lateral, slightly projecting, their distance from end of snout about one-half that from eye, separated from each other by an interval equal to about their distance from eye. Canthus rostralis slightly defined; loreal region concave and somewhat oblique, the upper lip flaring out below it. Eye large, prominent, its diameter one-third again as great as its distance from nostril; interorbital distance about equal to width of upper eyelid, which is in turn about equal the distance between nostrils. Tympanum distinct, about one-sixth the diameter of eye, separated from eye by a distance nearly equal to its own diameter. Fingers webbed at base between two and three, and three and four, fourth finger considerably longer than second, reaching to middle of disk of third which is about three times the tympanic diameter; no projecting rudiment of a pollex; no humeral spine palpable. Toes slightly more than one-half webbed, the web reaching the base of the penultimate phalanx on fourth toe and the middle of the penultimate phalanx on toes two, three, and five; third and fifth toes subequal; disk of fourth nearly twice the diameter of the tympanum; a very indistinct, oval inner and no

apparent outer metatarsal tubercle; no tarsal ridge; no dermal appendage on heel. Body not elongate, in post-axillary region a little narrower than greatest width of head; when hind leg is adpressed, heel reaches well beyond tip of snout; when limbs are laid along the sides, knee and elbow considerably overlap; when hind legs are bent at right angles to body, heels overlap appreciably. No patagium present. Skin of upper parts smooth; skin apparently quite delicate, torn behind left eye and above left shoulder in this specimen. A glandular ridge encircling upper part of tympanum; skin of undersides smooth; no trace of a skinfold across the chest; adult female, no vocal sac. Skin of head not coossified with skull, roof of skull not exostosed.

Dimensions. Head and body, 23.7 mm.; head length, 7.7 mm.; head width, 8.4 mm.; femur, 12.6 mm.; tibia, 13.2 mm.; heel-to-toe, 17.2 mm.

Color in alcohol. To the naked eye this is a cream colored frog with a dorsum of a lavender hue. Under magnification it can be seen that there is a faint ground color of lavender dorsally with thickly spaced specks of black which gives the dorsum its darker tone. These minute black specks are absent on top of the upper arms and are thinly scattered indeed on top of the thighs. There are a few specks just a little larger than the rest on the middle of the back and on top of the head. The ventral surfaces are immaculate.

The paratype, B.M. 1940. 2.20.3, is also a gravid adult female. This specimen differs from the type in only two respects — it is slightly smaller in size (head-body, 20.0 mm.) and there is a vestige of a humeral spine. This is but a slight projection and is only detectable by careful palpation.

This species is dedicated to my friend, Dr. IVAR GRIFFITHS, of Birkbeck College, London, in recognition of his significant contributions to our knowledge of higher categories among the frogs.

Cochranella buckleyi Boulenger

1882. *Hylella buckleyi* Boulenger, Cat. Batrachia Salientia, p. 420, Pl. XXV, fig. 5 (Type locality, Intac, E. Ecuador).

Diagnosis. A *Cochranella* without vomerine teeth; with a web from the middle of the antipenultimate phalanx of the third finger to the base of the penultimate of the fourth; tympanum present but somewhat indistinct; dorsal ground color purple with a sharp line of demarcation between the dorsal and ventral ground colors.

It can be distinguished from all Ecuadorian *Cochranella* except *petersi*, *cochranae*, and *griffithsi* by the absence of vomerine teeth. From the former it can be distinguished by the reduced webbing on the fingers and toes; from *cochranae* by having a trace of web at the base of the fingers and by lacking dorsal ocelli and from *griffithsi* by

having the toes less webbed and by having a sharp line of demarcation between the dark dorsal and light ventral color.

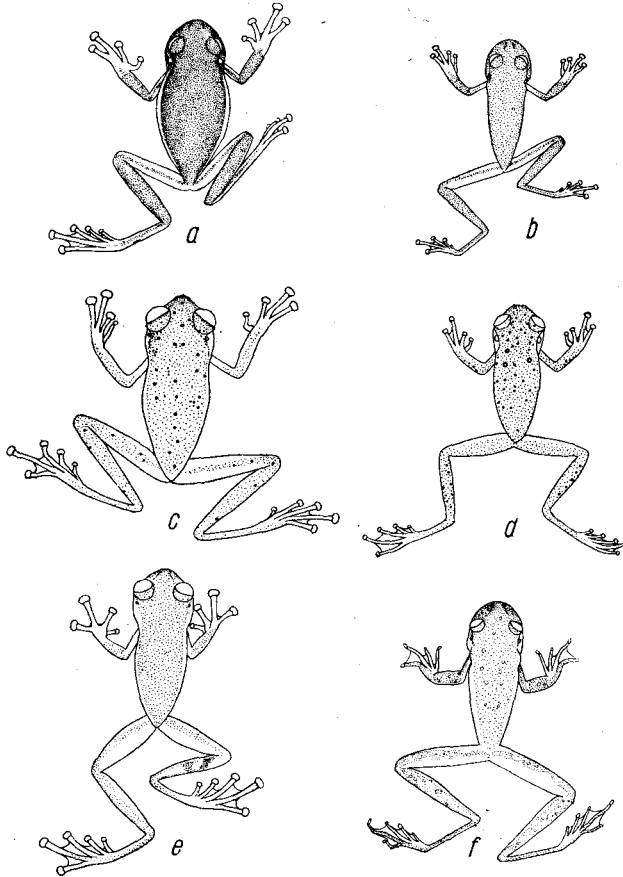


Fig. 1 a—f. a *Cochranella buckleyi*, Chicago Nat. Hist. Mus. 54 722, Colombia, Narino, Guitarillo; actual length, 33.2 mm. b *C. parabambae*, Chicago Nat. Hist. Mus. 81 362, Colombia, Meta, Serrania de la Macarena, Pico Renjifo; actual size, 26.1 mm. c *C. cochranae*, type, B.M.N.H. 1912. 11.1.68, Ecuador, Rio Pastaza, El Topo; actual length, 27.2 mm. d *C. ocellifera*, type (drawing made from notes, pencil sketches, and photographs of the type) B.M.N.H. 98.5.19.3 [1947.2.13.50], Ecuador, Paramba; actual length, 26.5 mm. e *C. griffithsi*, type, B.M.N.H. 1940.2.20.4, Ecuador, Rio Saloya; actual length, 23.7 mm. f *C. petersi*, type, B.M.N.H. 1902.5.27.24, Ecuador, Rio Durango; actual length, 23.7 mm.

Specimens from Ecuador examined. Four as follows: American Museum of Natural History 13 530, Rio Zamora, Sabanilla; AMNH 17 464, Cinincay; AMNH 20 141, Llave Pongo; and AMNH 20 504, Paramo.

A search for the cotypes in the British Museum produced one bottle, B.M. 80. 12.5.201 [1947. 2.22.55], in which there was soup and a few bones, and another bottle, B.M. 78. 1.25.16 [1947. 2.22.54] with the original label, alcohol, and a note that the type had been X-rayed in 1951, but no specimen. A search in the other bottles of centrolenids did not turn up the missing specimen.

The above diagnosis is based on two well preserved specimens [B.M. 1903. 10.30.24 and 1905. 5.31.94] from Escorial, Venezuela, at an altitude of 3000 M. These were identified by BOULENGER in 1903 as his *Hylella buckleyi*, and are so labeled by BOULENGER in his own handwriting. (The 1905 specimen was catalogued after BOULENGER identified it.) These two specimens fit BOULENGER's description and figure extremely well.

Notes. In addition to the morphological and pattern differences mentioned above, *Cochranella buckleyi* has a different habitus from other Andean species of this genus and can usually be recognized at a glance. The other species seem to have somewhat slender, tapering bodies, while *buckleyi* gives the appearance of being wide and flattened. In preservation, at least, its mid-body is usually definitely flattened dorsoventrally and is more often than not wider than the head. The other northern Andean forms with dark purple dorsa (including *antioquiensis* which is not yet recorded from Ecuador) have more slender, graceful-looking bodies that are not flattened dorso-ventrally and are seldom, if ever, wider than the head.

Cochranella parabambae Boulenger

1898. *Hyla parabambae* Boulenger, Proc. Zool. Soc. London, p. 125, Pl. XVII, fig. 2 (Type locality, Paramba, N.W. Ecuador).

Diagnosis. A *Cochranella* with vomerine teeth and with the fingers webbed to the bases of the penultimate phalanges of the second, third, and fourth fingers. The tympanum is distinct and is about two-thirds the diameter of the disk of the third finger.

It can be distinguished from all Ecuadorian *Cochranella* except *ocellifera* by the presence of vomerine teeth. From *ocellifera* it can be distinguished by the lack of discrete pencil-like black spots and ocelli on the back.

Specimens from Ecuador examined. The type, B.M. 98. 4.28.163 [1947. 2.13.13], Paramba; B.M. 1912, 11.1.69-70, El Topo, Rio Pastaza.

Cochranella ocellifera Boulenger

1899. *Hyla ocellifera* Boulenger, Ann. Mag. Nat. Hist. Ser. 7, Vol. 3, p. 277, pl. XII, fig. 4 (Type locality: Paramba, N.W. Ecuador).

Diagnosis. A *Cochranella* with vomerine teeth and with webs extending from the base of the penultimate phalanx of the third finger to the middle of the penultimate phalanx of the fourth. Tympanum present but small and indistinct. Somewhat lavender above with no sharp line of demarcation between the dorsal and ventral ground

color. Numerous black dots and a few white-centered ocelli on the dorsum.

The presence of teeth separates this from all Ecuadorian *Cochranella* except *parabambae* from which it can be distinguished by the ocelli-like spots and the pencil-like black dots on the back.

Specimens from Ecuador examined. The type, B.M. 98. 5.19.3 [1947. 2.13.50] from Paramba.

Centrolene geckoideum Espada

1872. *Centrolene geckoideum* Espada, An. Soc. España, Vol. 1, p. 87 (Type locality, Rio Napa, Ecuador).

Diagnosis. A large centrolenid (adult males attain head-body length of 77.0 mm.) with vomerine teeth and with enlarged projecting humeral spines.

It can be immediately distinguished from all others by its large size and by the presence, in males, of large, protruding humeral spines that have their tips projecting well beyond the integument and fitting into antra in the enlarged forearms. Recent fresh specimens of *C. geckoideum* from Colombia differ from all *Cochranella* that I know by having the digital disk of the third finger large enough to cover the eye, whereas a feature of *Cochranella* is the large eye — much larger than the digital disks. *Centrolene* is also a short-legged form, with the heel of the adpressed leg reaching only to the eye while in *Cochranella* it reaches or surpasses the tip of the snout.

Specimens from Ecuador examined. None. The only extant specimens that I am aware of are a somewhat dried up specimen

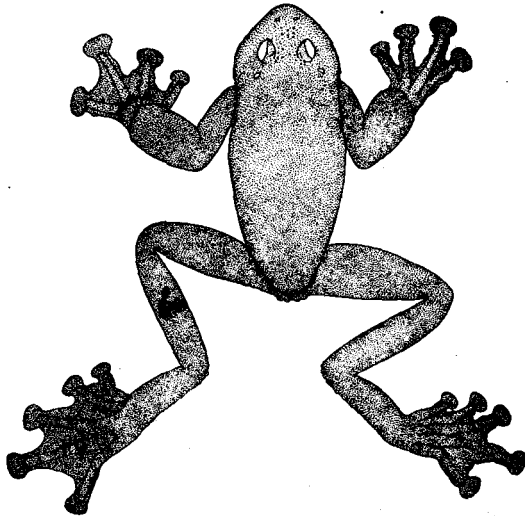


Fig. 2. *Centrolene geckoideum*, Chicago Nat. Hist. Mus. 69 704, Colombia, Antioquia, Urrao, Pavamo Frontino; actual head-body length, 74.0 mm.

from Medellin, Colombia, in the American Museum (AMNH 1383) and six fresh, well preserved specimens from Urao, Pavamo Frontino, Antioquia, Colombia, in the Chicago Natural History Museum (CNHM 69703-08).

Tentative Key to the Known Centrolenidae of
Ecuador

- 1 Size small (maximum head-body about 35.00 mm.); no pronounced, protruding humeral spine in the male; eye much larger than disk of third finger..... 2
- 1' Size large (maximum head-body 77.0 mm.); a pronounced, protruding humeral spine in the male; disk of third finger large enough to cover eye *Centrolene geckoideum*
- 2 Vomerine teeth present..... 3
- 2' No vomerine teeth present 4
- 3 Dorsal pattern of discrete, pencil-like, black marks together with a few scattered, white-centered ocelli *Cochranella ocellifera*
- 3' Dorsum lavender to the naked eye and without distinct, pencil-like, black marks and white-centered ocelli *Cochranella parabambac*
- 4 Fingers webbed at base or more..... 5
- 4' Fingers without a trace of a web *Cochranella cochranae*
- 5 Webbing of fingers not reaching the base of penultimate phalanx of the second, third, and fourth digits 6
- 5' Webbing reaching the base of the penultimate phalanx of second, third, and fourth fingers *Cochranella petersi*
- 6 A sharp line of demarcation between the dark dorsal and light ventral color; webbing on fourth toe not reaching base of penultimate phalanx *Cochranella buckleyi*
- 6' No sharp line of demarcation between dorsal and ventral ground color; webbing on fourth toe reaching to base of penultimate phalanx *Cochranella griffithsi*

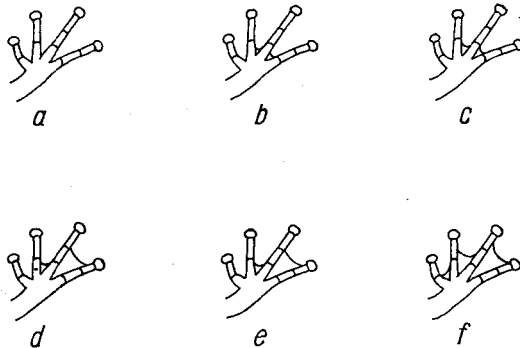


Fig. 3 a-f. Diagram illustrating amount of finger webbing in Ecuadorian *Cochranella*.
a *C. cochranae*, b *C. buckleyi*, c *C. griffithsi*, d *C. ocellifera*, e *C. parabambac*, f *C. petersi*