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Centrolene ritae Lutz is a senior synonym of *Cochranella oyampiensis* Lescure and *Cochranella ametarsia* Flores (Anura: Centrolenidae)

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Abstract

A detailed comparison of all characters described for *Centrolene ritae* Lutz shows that it is a senior synonym of *Cochranella oyampiensis* Lescure and *Centrolenella ametarsia* Flores. The holotype of *C. ametarsia* is designated as neotype of *C. ritae*.

Keywords. Amazonia, Guianas, taxonomy, *Vitreorana*

Resumen

Una comparación detallada de todos los caracteres descritos para *Centrolene ritae* Lutz muestra que ésta es un sinónimo senior de *Cochranella oyampiensis* Lescure y *Centrolenella ametarsia* Flores. El holotipo de *C. ametarsia* es designado como neotipo de *C. ritae*.

Palabras Clave. Amazonia, Guayanas, taxonomía, *Vitreorana*.

Bertha Lutz described *Centrolene ritae* in Lutz & Kloss [1] based on one specimen collected at "Benjamin Constant, Alto Solimões", in the western Amazonian lowlands of Brazil. She diagnosed *C. ritae* by the form of tongue, amount of webbing between fingers, absence of humeral spine, presence of teeth on the process of vomers, thickness of arms, dark dorsal spots, and "enormous discs". The holotype of *Centrolene ritae* was formerly deposited at the Museu Nacional, Universidade Federal do Rio de Janeiro, Brazil (MNRJ) but is lost or destroyed [1, 2], (J. Pombal pers. comm. 2013). New specimens have not been reported in the scientific literature, and all subsequent herpetologists have recited Lutz's remarks about the size of discs to differ *C. ritae* from all known species of glassfrogs [3–7].

Lynch [8] proposed that *Cochranella resplendens* Lynch & Duellman was a synonym of *Centrolene ritae*, but Cisneros-Heredia & McDiarmid [3] rejected that hypothesis because *C. resplendens* does not exhibit diagnostic characters described for *C. ritae*, such as dark dorsal spots and exposed prepollex. Cisneros-Heredia & McDiarmid [3] and Guayasamin et al. [7] suggested that *C. ritae* and *Centrolenella oyampiensis* Lescure (including its synonym *C. ametarsia* Flores; now *Vitreorana oyampiensis*) probably refer to the same species, but they did not make any formal synonymy due to the supposedly differences in size of discs and snout form.

Bertha Lutz presented the description of *Centrolene ritae* in Portuguese and English, but they are not mutually equivalent (the Portuguese version usually provides more details). In the absence of the holotype, I studied both texts. A detailed comparison of all characters described for *C. ritae* shows that it is conspecific with *Vitreorana oyampiensis*. Special comments are needed for two characters that have confused previous authors:

- Size of discs: Lutz was particularly impressed by the size of discs of *Centrolene ritae*, comparing them with those of *C. geckoideum* in the following terms: "discos grandes, espatulados, como os de *Centrolene geockoideum* [*sic*]... discos de dedo semelhantes aos discos enormes de *Centrolene geckoideum*, que levou Espada a comparer o seu gênero a *Rhacophorus*... discos extremadamente largos e espatulados, os laterais com o dôbro do diâmetro timpânico", a free translation of which is: "large discs, spatulate, like those of *Centrolene geckoideum* ... discs of fingers similar to the enormous discs of *Centrolene geckoideum*, which made Espada to compare his genus to *Rhacophorus*... very large

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and spatulate discs, laterals with double the tympanic diameter". I think that Lutz's perception about "enormous" discs was misrepresentative. Lutz & Kloss [1]:661 provided the following measurements (in millimetres) for the holotype of *C. ritae*: "tympanum, 0,5... disks, 1". One-millimetre discs are not impressive, being equal or even smaller than those usually reported for other small glassfrogs. Specimens currently assigned to *V. oyampiensis* have tympanum diameter (TY) = 0.25–0.56 mm (0,39 ± 0,08 mm, n = 8), third finger disc width (F3W)= 0.35–0.69 mm (0,50 ± 0,13 mm, n= 8), and F3W/TY = 0.88–1.88. Although the measurements and ratio do not match exactly—but are close to—those reported by Lutz; several factors may have affected the precision of her data and her description: (i) limitation of measurements: the smallest size difference reported by Lutz & Kloss [1] was 0,5 mm for any description; thus the resolution of their measurement tool was equal to the full size of the tympanum of *C. ritae*. Accuracy and precision of measurements at that scale are expected to be low, and minor variations or errors would represent large ratio differences; (ii) comparison with *C. geckoideum*: By 1952, *C. geckoideum* was poorly known, with only four available references: the short original description by Jiménez de la Espada [9], the drawings presented by Jiménez de la Espada [10], Boulenger's [11] short account based on the original description, and Noble's [12] brief comments (the first one to report snout-vent length of the species). Lutz & Kloss [1] cited the last three, but must have had access to all because the comparison between *C. geckoideum* and *Rhacophorus* was in Jiménez de la Espada [9]. Consequently, Lutz's knowledge and mental image of *C. geckoideum* was based on very limited data; and as such, her comparisons should be appraised with caution; (iii) age of specimen: the lower lip of the holotype of *C. ritae* was "slightly emarginate in the middle and with a slight horizontal bolster beneath", suggesting that it was a juvenile (a notch in the lower lip is usually present in juvenile glassfrogs [3]). Juvenile glassfrogs may have the tympanum slightly smaller (in size and in proportions) than adults; (iv) preservation bias: the tympanum is very sensitive to preservation effects, and some specimens may present distorted tympana [3].

- Form of snout: Lutz described the snout of *Centrolene ritae* as "Focinho redondo, truncado entre as narinas, declive em frente, com loros altos e canto rostral apagado. Contôrno oral em semicirculo", a free translation of which is: "Snout round, truncate between nares, declivous in front, with high loreal region and rather indistinct canthus rostralis. Outline of mouth semicircular". The expression "declive em frente" has puzzled some authors [7] and was probably the reason why Lynch [8] thought that *C. ritae* was conspecific with *Cochranella resplendens*—a species with sloping snout strongly inclined anteroventrally. However, when comparing how B. Lutz used the phrase "declive em frente" to describe other frogs, it is clear that she used it for fairly round snouts, only slightly curved anteroventrally (e.g., *Phyllomedusa ayeaye* Lutz [13, 14]). When adapted to current terminology for glassfrogs (i.e., [3]), the snout of the holotype of *C. ritae* could be better described as snout subovoid in dorsal view, and round and slightly curved anteroventrally in lateral view. The snout of most individuals currently assigned to *V. oyampiensis* that I have seen alive is rounded in lateral view; however, most preserved specimens show it round and slightly anteroventrally curved. The curvature is always minor, but it has been observed even in specimens that had a round snout in life. For example, the holotype of *C. ametarsia* was described as having a round snout in profile [4], but at present, the specimen shows a slight anteroventral curve (see [6]: Fig. 3). Probably a preservation effect is involved, due to the delicate bone structure of the skull of this small glassfrog.

In the absence of any evidence to support their distinction as different taxa, I place *Cochranella oyampiensis* Lescure and *Centrolenella ametarsia* Flores as synonyms of *Centrolene ritae* Lutz. Since the holotype of *C. ritae* is no longer extant, a name-bearing type is needed to define the nominal taxon objectively (ICZN 1999: Art. 75). To provide nomenclatural stability, it is reasonable to choose the holotype of its new junior synonym, *C. ametarsia*, as neotype (ICZN 1999: Art. 76), especially since their type-localities are close to each other. Therefore, I designate specimen MCZ A96522 (adult male, 17.5 mm snout-vent length) as neotype of *Centrolene ritae* Lutz, 1952. The neotype was collected at the headwaters of Rio Caiwima, tributary of Rio Amaca-Yacu, 70 km NNE of Puerto Nariño, department of Amazonas, Colombia (ca. 140 km NNW of Benjamin Constant).

***Vitreorana ritae* (Lutz, 1952)**

Centrolene ritae Lutz in Lutz and Kloss, 1952 [1]: 658. Holotype at MNRJ, now lost. Neotype: MCZ A96522. Type locality: "headwaters of Río Caiwima, a tributary of the Río Amayaca-Yacu, ca. 70 km NNE Puerto Nariño, Amazonas, Colombia (approximately 3°20'S, 70°20'W)".

Centrolenella oyampiensis Lescure, 1975 [16]: 386. Holotype: MNHNP 1973.1673. Type locality: "village Zidok (Haut-Oyapock), Guyane française". **New synonymy**.
Centrolenella ametarsia Flores, 1987 [4]: 185. Holotype: MCZ A96522. Type locality: " headwaters of Río Caiwima, a tributary of the Río Amayaca-Yacu, ca. 70 km NNE Puerto Nariño, Amazonas, Colombia (approximately 3°20'S, 70°20'W)". **New synonymy**.

Diagnosis: (1) dentigerous process of the vomer with 1–3 teeth or lacking teeth; (2) snout round to subovoid in dorsal view, round to slightly curved anteroventrally in lateral view; (3) tympanum visible, moderate in size, its diameter 24.0–35.4% of eye diameter; tympanic annulus visible except for posterodorsal border covered by supratympanic fold; tympanic membrane differentiated and translucent, pigmented as surrounding skin; (4) dorsum shagreen; males and females lack spinules; (5) ventral skin granular, a pair of enlarged tubercles below the vent; (6) ventral parietal peritoneum white, covering $\frac{1}{4}$ to $\frac{1}{3}$ of anterior portion (conditions P2–P3); pericardium and gastrointestinal peritoneum white (condition V2); (7) lobed liver, hepatic peritoneum lacking an iridophore layer (condition H0); (8) humeral spines absent; (9) webbing between Fingers I–III absent, moderate between outer fingers; webbing formula: III (2^-–$2\frac{1}{3}$)—(1^+–2^-) IV; (10) webbing between toes moderate; webbing formula: I 1—(2^-–2) II (1–1^+)—(2–$2\frac{1}{4}$) III (1^+–$1\frac{1}{2}$)—2^+ IV (2–$2\frac{1}{3}$)—1V; (11) low ulnar fold and low inner tarsal fold present, without iridophores; outer tarsal fold absent; (12) nuptial pad Type-I in males; distinct prepollex; (13) Finger I longer than Finger II; (14) disc of Finger III moderate, its width 31.0–45.1% of eye diameter; (15) in life, dorsum green with small dark flecks; bones green; (16) in preservative, dorsum lavender with dark flecks; (17) iris background cream-yellow to yellow-green with abundant dark punctuations concentrated towards the pupil, but leaving a light pupillary ring, most individuals show fine dark reticulations; (18) melanophores covering dorsal surface of Fingers III and IV, absent from Fingers I and II; (19) males call from upper or underside of leaves [16]; single and double note advertisement call of 0.10–0.15 s duration, emphasized frequency of 4640–5160 Hz [17]; (20) fighting behaviour unknown; (21) eggs deposited on the upper or underside of leaves [16]; apparently no parental care [18], but see B. Zimmerman in [19]; (22) tadpoles at stage 25 with labial tooth row formula 0/1–2; oral disc small and ventral with one row of large marginal papillae laterally and posteriorly; upper jaw sheath wide and robust, lower jaw sheath wide, V-shaped, both hardly serrated and not arched; dorsum reddish brown, venter whitish, tail muscle reddish and tail fins transparent [18]; (23) 17–21 mm in SVL in adult males; 20–24 mm in SVL in adult females.

Examined specimens of *Vitreorana ritae*: Colombia: MCZ A-96522 (holotype of *C. ametarsia*), ICN 50846–47, ICN (JDL 24472). Ecuador: KU 175216, DFCH-USFQ D162, QCAZ 16652, QCAZ 22709, QCAZ 28138. French Guiana: MNHN 1973.1673 (holotype of *C. oyampiensis*); MNHN 1973.1674 (paratype of *C. oyampiensis*).

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