SPIXIANA	47	1	105–108	München, Dezember 2024	ISSN 0341-8391

Scientific note

A second look on the identity of *Chamaeleon johnstoni affinis* Sternfeld, 1912

(Squamata, Chamaeleonidae)

Wolfgang Böhme

Sternfeld (1912) described a new subspecies of "*Chamaeleon*" (currently *Trioceros*) *johnstoni*, viz. *C. j. affinis*, based on two specimens (syntypes) stored in the Natural History Museum in Berlin (ZMB). One of them, an adult female, stems from the "Urwald hinter den Bergen am Nordwestufer des Tanganyika" (= primary forest behind the mountains northwest of [Lake] Tanganyika), the other, a juvenile male, came from the "Irumu-Mavambi Urwald" (= forest), situated on the northwestern shore of Lake Tanganyika in the Ituri region, Democratic Republic of Congo (DRC). Of these, only the adult female (ZMB 22377, Fig. 1) is extant (Bauer et al. 2006), thus becoming lectotype status (Böhme 2023). The distinguishing characters were said to be ca. 10 rows of enlarged roundish plate scales on the flanks and hardly indicated horns in the (lost) juvenile male paralectotype. Besides that Sternfeld's nomen *affinis* was preoccupied by the much older homonym *Chamaeleo affinis* Rüppell, 1843, it was moreover synonymized by Schmidt (1919), despite its 7 years older publication, with his newly described species *Chamaeleon ituriensis*, a decision based mainly on the provenance of the young male from the Ituri region rather than on the bigger and much stouter female (ZMB 22377) figured by Sternfeld. Therefore, possibly because he suspected that the syntypes may have represented different species, he referred Sternfeld's name "with considerable hesitation and only tentatively to his new species *ituriensis*". Bauer et al. (2006) also commented that Schmidt (1919) "questioningly included *C. j. affinis* in the synonymy of his new name, *C. ituriensis*". The differences pointed out by Schmidt (1919) concerned (1) the much stouter habitus of body and limbs which is obvious if one compares his and Sternfeld's illustrations (see Böhme 2023: fig. 1) and (2) the different outline of the snout (concave rather than convex or straight).

Fig. 1. Lectotype of *Chamaeleon johnstoni affinis* Sternfeld, 1912: ZMB 22377) (= *Trioceros johnstoni* [ssp.?]). Taken from Sternfeld (1912).

These doubts had led me to re-examine the type specimens of both nomina and to document their morphology photographically (Böhme 2023: figs 1A and 3 for *C. johnstoni affinis*, and fig. 2 for *C. ituriensis*. Their distinctly different habitus argues clearly against conspecifity and consequently against their synonymization. Unfortunately, the juvenile male paralectotype from the Ituri region is lost, making it impossible to verify Schmidt's statement (1919) that Sternfeld's (1912) short description would render it indistinguishable from his *ituriensis* males from Medje, Ituri, DRC.

After my study on the partly questionable synonyms of *Trioceros ituriensis* had appeared (Böhme 2023), I became aware of four chameleons in the Bavarian State Collection of Zoology in Munich (ZSM) which were catalogued as *T. ituriensis*, two of them (ZSM 892–893/2014) stemming from the Irangi Station, Kivu Nord, DRC, collected by Dieter Fuchs on 15.02.1986. They correspond well with Schmidt's

Wolfgang Böhme, Leibniz-Institute for the Analysis of Biodiversity Change (LIB), Museum Koenig, Adenauerallee 127, 53113 Bonn, Germany; e-mail: w.boehme@leibniz-lib.de

Fig. 2. Male (**A**) and female (**B**) of *Trioceros johnstoni* (Boulenger, 1901), (not *T. ituriensis* Schmidt, 1919!): ZSM 19/1921/1–2, from northwest of Lake Tanganyika. Photo by Michael Franzen.

(1919) description, and also with more vouchers from the Irangi Forest of the Museum Koenig collection in Bonn (ZFMK) which were also regarded as typical *T. ituriensis* by Tilbury (2018).

The other two Munich specimens identified as *T. ituriensis* (ZSM 19/1921/1–2, Fig. 2A, B), were received from the Viennese herpetologist Franz Werner before 1920 and were labelled as stemming from the "Urwald nordwestlich des Tanganjika-Sees" (= primary forest northwest of Lake Tanganyika), i. e. from the same area from where Sternfeld (1912) had described his female *C. johnstoni affinis*! Although Franz Werner had good relationships to Gustav Tornier of the Berlin Museum (see Werner 1902), it is unlikely that the two specimens reported were also part of the results of the German Central Africa expedition, because Sternfeld (1912) expressively mentioned only the two specimens cited above. So it is likely that they reached Munich via Vienna, where the collector Grauer had also deposited specimens

Fig. 3. Male (**A**) and female (**B**) of *Trioceros johnstoni* (Boulenger, 1901): ZFMK 63206 and 63211 from Nyakalengijo, Rwenzori, Uganda. Photo by Morris Flecks.

from his East Africa expeditions, including the type material of *Chamaeleon graueri* Steindachner, 1911 (= *Trioceros johnstoni* Boulenger, 1901).

While the two females ZMB 22377 and ZSM 19/1920/2 (Fig. 2B) agree in general habitus, stoutness and head shape, they differ a bit in the relative size of the plate-like flank scales which are slightly bigger in Sternfeld's lectotype. Since they are nearly equal-sized in the associated male ZSM 19/1921/1 (Fig. 2A), they corroborate the reliability of their locality data. Sternfeld's concept to distinguish his specimen of "*C. johnstoni affinis*" from what was

known under the name *C. johnstoni* Boulenger, 1901 was therefore justified in respect to the different flank scalation observed in topotypic *Trioceros johnstoni* from Rwenzori, Uganda, where these enlarged plate-like flank scales are reduced or nearly absent, as seen in Fig. 3A, B (see also the descriptions in Sternfeld (1912) and de Witte (1965), the text and illustrations in Tilbury (2010, 2018). Sternfeld's specific assignment becomes even more likely as the topotypic male (Fig. 2A) has the three well developed horns on its head which are missing in *T. ituriensis* males. The only comprehensible reason for Schmidt (1919) to synonymize Sternfeld's name (based on a hornless female) with his *ituriensis* was the possession of enlarged flank scales also in the latter species, as shown in Böhme (2023: figs 1B, 2, and 4 to 7). They are also distinct in a further *ituriensis* specimen found in the Natural History Museum in Stuttgart (SMNS 08357), originating from the Irangi Forest, DRC.

Chamaeleon johnstoni affinis should thus definitely be removed from the synonymy list of *Trioceros ituriensis* where it figured since Schmidt's (1919) paper, repeated by de Witte (1965), Klaver & Böhme (1997), Tilbury (2010, 2018) and Glaw (2015). Given the inherent unreliability of relative size of external morphological characters such as tubercles in making definite taxonomic decisions, more material is needed to decide whether Sternfeld's name *affinis* is taxonomically justified and should, due to its homonymy with *C. affinis* Rüppell, 1843, consequently be renamed by a nomen novum. This would, however, require also a critical view on the type material of *Chamaeleon graueri* Steindachner, 2011, and *Chamaeleo johnstoni crenulatus* Laurent, 1951, if possible including a phylogenetic analysis – an issue for a separate note. But the two ZSM specimens clearly demonstrate that *Chameleon johnstoni affinis* Sternfeld, 1912 is conspecific with *Trioceros johnstoni*, as also suggested by Mertens (1966), and not with *T. ituriensis*.

Acknowledgements. Thanks are due to Michael Franzen (ZSM), Morris Flecks (ZFMK), Alexander Kupfer (SMNS) and Frank Tillack (ZMB).

References

Bauer, A. M., Böhme, W. & Günther, R. 2006. An annotated catalogue of types of chameleons (Reptilia: Squamata: Chamaeleonidae) in the collection of the Museum für Naturkunde der Humboldt-Universität zu Berlin. Mitteilungen aus dem Museum für Naturkunde, Zoologische Reihe 82 (2): 268–281.

Böhme, W. 2023. Documenting synonymies in *Trioceros ituriensis* (Schmidt, 1919) with remarks on sexual dimophism in chameleons (Squamata, Chamaeleonidae). Revue Suisse de Zoologie 103 (2): 251–264.

De Witte, G. 1965. Les Caméléons de l'Afrique centrale. Annales du Musée Royale de l'Afrique Centrale, Sér. In-8°, Sciences Zoologiques 142: 1–215, 12 pls.

Glaw, F. 2015. Taxonomic checklist of chameleons (Squamata: Chamaeleonidae). Vertebrate Zoology 65 (2): 167–246.

Klaver, C. J. J. & Böhme, W. 1997. Chamaeleonidae. Pp. i–xv + 1–85 in: Wermuth, H. & Fischer, M. (eds). Das Tierreich/The Animal Kingdom, Teilband/Part 112. Berlin (De Gruyter).

Mertens, R. 1966. Liste der rezenten Amphibien und Reptilien. Chamaeleonidae. Pp. i–x + 1–37 in: Wermuth, H. et al. (eds). Das Tierreich, Lieferung 83. Berlin (De Gruyter).

Schmidt, K. P. 1919. Contributions to the herpetology of the Belgian Congo, based on the collections of the American Congo Expedition, 1909–1915. Bulletin of the American Museum of Natural History 39: 384–624.

Sternfeld, R. 1912. Lieferung 9: Reptilia. Pp. 197–279 in: Schubotz, R. (ed.). Wissenschaftliche Ergebnisse der deutschen Zentral-Afrika-Expedition 1907–1908 unter Führung Adolf Friedrichs, Herzogs zu Mecklenburg, Band 4, Zoologie II. Leipzig (Klinkhardt & Biermann).

Tilbury, C. 2010. Chameleons of Africa. An atlas including the chameleons of Europe, the Middle East and Asia. 831 pp., Frankfurt am Main (Chimaira).

– – 2018. Chameleons of Africa. An atlas including the chameleons of Europe, the Middle East and Asia. 643 pp., second edition, Frankfurt am Main (Chimaira).

Werner, F. 1902. Prodromus einer Monographie der Chamäleonten. Zoologische Jahrbücher, Abteilung Systematik, Geographie und Biologie der Tiere 15 (3/4): 295–456, pls 15–27.