

## **Taxonomic notes on *Pseudoclivina* KULT, 1947 and *Afroclivina* KULT, 1959 (Coleoptera: Carabidae: Scaritinae: Clivinini), with description of *Pseudoclivina puchneri* sp.n. from Tanzania**

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### Abstract

*Pseudoclivina puchneri* sp.n. from Tanzania is described and differentiated from the other species of *Pseudoclivina* KULT, 1947. The most striking differences are a dense gross puncturation of the pronotum, a unique character within the genus, and numerous longitudinal ridges on the frons. *Afroclivina* KULT, 1959 is a new synonym of *Pseudoclivina*, *Pseudoclivina muelleriana* (KULT, 1959) is a new combination for *Afroclivina muelleriana* KULT, 1959. Three species are transferred from *Clivina* LATREILLE, 1802 to *Pseudoclivina*: *Pseudoclivina bohemanni* (PUTZEYS, 1861) comb.n., *Pseudoclivina calida* (PUTZEYS, 1866) comb.n., and *Pseudoclivina testacea* (PUTZEYS, 1846) comb.n. A catalogue of *Pseudoclivina* species is added.

Key words: Coleoptera, Carabidae, Scaritinae, Clivinini, *Pseudoclivina*, *Afroclivina*, *Clivina*, new species, new synonymy, new combination, catalogue, Africa, Tanzania.

### Zusammenfassung

*Pseudoclivina puchneri* sp.n. aus Tansania wird beschrieben und von den anderen *Pseudoclivina*-Arten differenziert. Die auffälligsten Unterschiede stellen der dicht und grob punktierte Halsschild und die zahlreichen Längskieile der Stirn dar. Ersteres Merkmal ist einzigartig innerhalb der Gattung. *Afroclivina* KULT, 1959 wird als neues Synonym zu *Pseudoclivina* KULT, 1947 gestellt, *Pseudoclivina muelleriana* (KULT, 1959) ist eine neue Kombination für *Afroclivina muelleriana* KULT, 1959. Drei Arten, die bisher in der Gattung *Clivina* LATREILLE, 1802 gestanden sind, gehören ebenfalls zu *Pseudoclivina*: *Pseudoclivina bohemanni* (PUTZEYS, 1861) comb.n., *Pseudoclivina calida* (PUTZEYS, 1866) comb.n. und *Pseudoclivina testacea* (PUTZEYS, 1846) comb.n. Ein Katalog der *Pseudoclivina*-Arten wird beigelegt.

### Introduction

Hitherto, the genus *Pseudoclivina* KULT, 1947 consisted of seven species: According to LORENZ (2005: 145) three species are distributed in Africa and eastern Asia, respectively; and one species has been recently described from Australia (BAEHR 2008: 21-22). Two African species have additional subspecies. In this study one new species is described, and *Afroclivina muelleriana* KULT, 1959 is transferred to *Pseudoclivina*, as well as three

species hitherto placed in *Clivina* LATREILLE, 1802. *Pseudoclivina* comprises now twelve species (see catalogue at the end of this article).

All African taxa are difficult to distinguish because of their high variability and lack of suitable characters. They are more or less uniformly black to piceous, with distinct elytral striae and a more or less smooth surface without any remarkable characters. The new species is remarkably different from all other hitherto known species by the dense puncturation of its surface and the longitudinal carinae of the head.

### Material and methods

Preserved specimens are used, which are mounted on commercially available paper cards or pinned with minute-needles, which are put into a small block of well dried *Piptoporus betulinus* pulp, carried by a normal insect pin, as commonly used for preservation of "Microlepidoptera". The abdomen is removed and mounted, ventral side up, beside the specimen, for easier investigation of the abdominal characters. Male and female genital organs were dissected and also glued to the cards beneath the specimens from which they were removed.

Label data for examined material are given in full, with exact label wording, except for the date format, which is transcribed to the format "dd.mm.yyyy".

The species description is based on the most distinguishing external characters as defined by BAEHR (2008: 9).

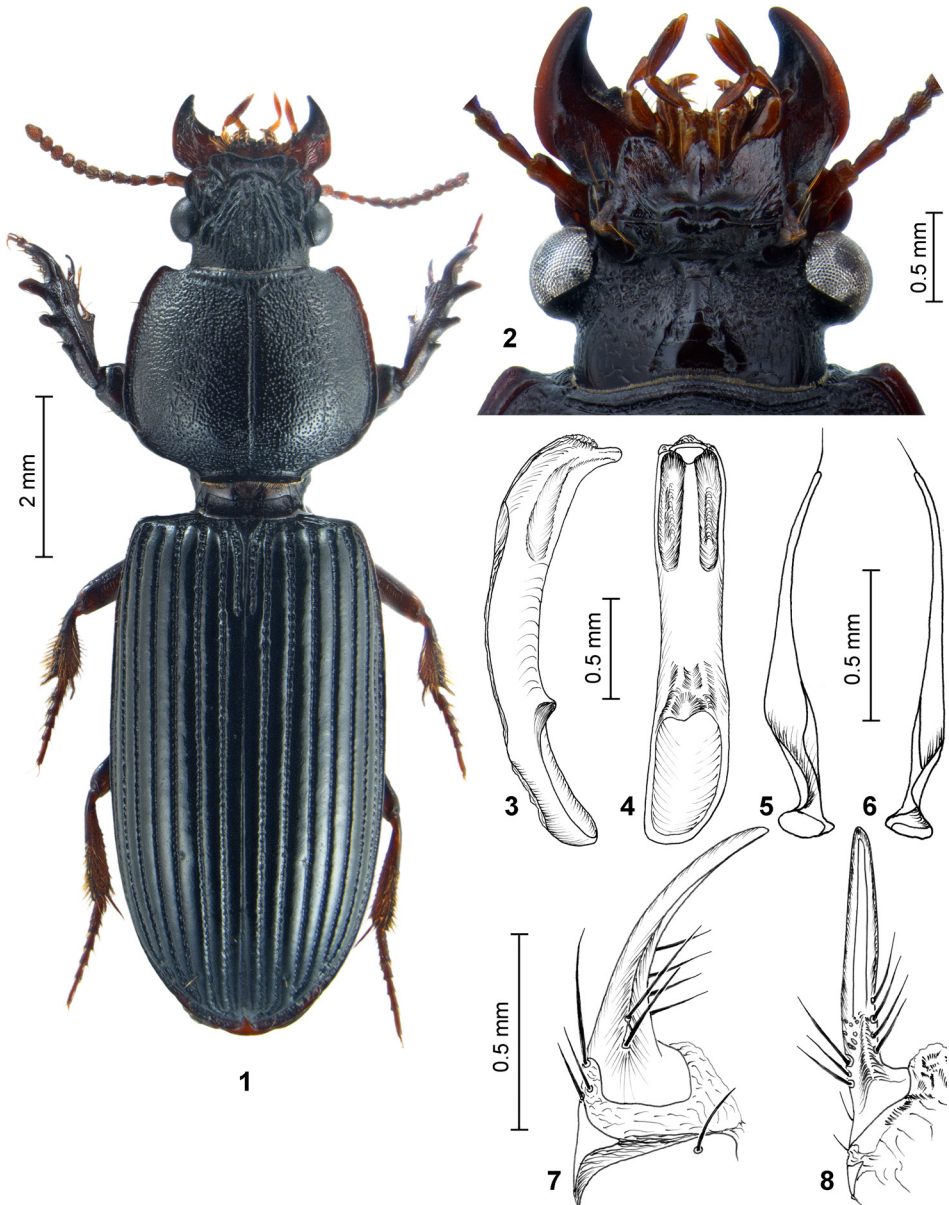
Measurements were taken with a calibrated Leica ocular scale at absolute magnifications of 24.4× for pronotal length and width, and 9.7× for all other measurements. L = total body length in mm, from apex of mandible to apex of elytra. W = maximum body width in mm (situated at apical third of elytra). PL = maximum pronotum length, measured along median line from base of anterior bristle fringe to base of posterior one. PW = maximum pronotum width, measured normal to midline (situated near posterior angles). P-LW = length-width-index of pronotum (length : width); if the value is smaller than 1, it means that the pronotum is wider than long, for values above 1: the pronotum is longer than wide. E-LW = length-width-index of both elytra, same as previous. Dl, Dr = number of dorsal setiferous punctures in third interval of left (Dl) and right side (Dr), respectively, including the preapical puncture. For statistics, see Table 1.

### Taxonomy

#### *Pseudoclivina puchneri* sp.n. (Figs. 1 - 7)

**Material examined:** Holotype (male): Tanzania, Prov. Shinyanga, Str. zw. Kahama u. Ushirombo, Kahama-forest, Umg. Mwendakulima, 1200 m, S 03°45' O 032°22', 20.-22.11.2011, leg. A. Puchner, coll. Puchner (Oberdanegg); Paratypes: 1 female, same data as holotype, coll. Dostal (Vienna); 1 female, Tanzania, Prov. Shinyanga, Str. zw. Kahama u. Ushirombo, Kahama-forest, Umg. Kweni, 1250 m, S 03°44' O 032°20', 16.11.2011, leg. A. Puchner, coll. Puchner (Oberdanegg); 1 female, Tanzania, Prov. Shinyanga, Str. zw. Kahama u. Ushirombo, Kahama-forest, Umg. Wendele, 1200 m, S 03°45' O 032°24', 15.-22.11.2011, leg. A. Puchner, coll. Puchner (Oberdanegg); 1 female, Tanzania, 10 km N of Itingi, 11.12.2006, Werner leg., in coll. Dostal (Vienna).

**Recognition:** A large *Pseudoclivina* species which is extremely remarkable by the dense, coarse puncturation of the pronotum and the converging frontal ridges.



Figs. 1 - 7: *Pseudoclivina puchneri* sp.n.: (1) Habitus of holotype (male), dorsal view (antennomeres 3 - 11 of right antenna reconstructed from left side); (2) Head of paratype (female), ventral view; (3 - 6) Genitalia of holotype (male): (3) Median lobe, left lateral view; (4) median lobe, ventral view; (5) left paramere, ventral view; (6) right paramere, ventral view. (7, 8) Left stylomere of ovipositor of paratype (female), lateral and medial view.

Tab. 1: Statistics of *Pseudoclivina puchneri* sp.n. (n = 5). For definition of measurements see text. Given are values for holotype, minimum (Min) and maximum (Max) value, arithmetical mean (Mean), and standard deviation (SD).

	P-LW	E-LW	L (mm)	W (mm)	PL (mm)	PW (mm)	DI	Dr
Holotype	0.80	1.94	11.23	3.30	2.48	3.10	2	2
Min	0.80	1.91	9.37	2.78	2.01	2.46	1	1
Max	0.82	2.00	11.54	3.45	2.54	3.12	2	2
Mean	0.81	1.95	10.88	3.21	2.37	2.92	1.60	1.60
SD	0.01	0.04	0.88	0.29	0.22	0.28	0.55	0.55

Description: Measurements (see also Tab. 1): length 9.37 - 11.54 mm, width 2.78 - 3.45 mm.

Color: Unicolorous dark brown to piceous. Annexes, except front legs, lighter, reddish-brown.

Microsculpture glossy. Head, pronotum and elytra with very fine, microscopic puncturation between gross punctures. Labrum, elytral lateral channel, declivity at humeri, and abdominal sternum 1 completely microreticulated; sternum 2 partly microreticulated. Palpomeres glossy, with distinct microreticulation.

Head (Figs. 1, 2): Antenna short; antennomeres 5 - 10 transverse, distinctly wider than long; antennomeres 3 - 11 pubescent; antennomeres 4 to 10 glossy in middle and less densely pubescent than on sides. Mandibles short; left mandible marginally broader than right one; inner edge of left mandible slightly rounded, of right one straight; both with short basal tooth and acute apex, shortly bent inwards; both in basal part with more or less distinct ridge, ending at base of apical third, between this ridge and outer edge with oblique wrinkles; outer border of mandible basally strongly bent inwards. Anterior margin of labrum slightly convex, with 7 setae. Middle part of clypeus more produced than its lateral wings; anterior margin concave, somewhat upturned, not bordered; middle part and wings both bordered at sides; middle part divided from wings, and the latter from supraantennal plates; basal border to frons built by an anteriorly convex ridge, laterad of this ridge with one pair of setae; surface glossy, without microsculpture and wrinkles, except microscopic fine punctures. Outer margin of supraantennal plate unbordered and convex, surface with two more or less distinct longitudinal ridges and smaller irregular wrinkles. Frons basally with about 10 longitudinal ridges; ridges anteriorly converging and confluent, surface between ridges glossy, with punctures and wrinkles; anteriorly with irregular wrinkles at side. Supraorbital sulcus deep, bearing two supraorbital setae. Supraorbital ridge short, high, and convex. Neck not constricted, continuously punctured; eye spherical, strongly produced laterally. Postorbital area and neck forming a right angle.

Lower surface of head (Fig. 2): Gula glossy, microreticulated at sides. Ventral surface of head besides gula microreticulated and grossly punctured. Submentum with four setae. Median tooth of mentum triangular, at base with one pair of seta (sometimes setae missing); sides of mentum wings more or less straight, slightly constricted anteriorly; anterior margin of mentum wings truncated; mentum with a distinct prebasal torus; basal suture with deep, round, paramedian foveae on each side; mentum wings without border, except on inner side next to median tooth, surface glossy with distinct microreticulation. Apex of glossa triangular, acute, bisetose. Penultimate labial palpomere bisetose at inner edge; last labial palpomere spindle-shaped, widest about middle, as long as penultimate

one. Last maxillary palpomere spindle-shaped, not or very slightly constricted to base, widest about mid-length.

Pronotum (Fig. 1) convex, with distinct declivity to base,  $0.80 - 0.82\times$  as long as wide (Tab. 1). Surface glossy, with traces of microreticulation above base between postangular setae, completely, densely punctured and wrinkled. Anterior angle somewhat produced forward. Posterior angle with small denticle, not breaking through outline of pronotum. Base and sides finely bordered, with broad lateral channel about twice as wide as basal channel between posterior angle and peduncle. Basal channel above peduncle narrow. Anterior transversal sulcus oblique, deep, interrupted several times, joining anterior edge in front of lateral fifth. Median line deeply impressed as groove anteriorly, constricted towards base and reaching base as simple and fine line. Epipleura narrow. Prosternum and proepisternum glossy, with fine microreticulation, with scattered gross punctures; prosternum with deep transversal furrow along anterior margin; prosternal process between procoxae unbordered, anterolaterally with traces of a border, without setae; suture between prosternum and episternum very fine.

Elytra (Fig. 1):  $1.91 - 2.00\times$  as long as wide (Tab. 1), subparallel, strongly convex from side to side, subcylindrical, with strong vertical basal declivity: Surface glossy, smooth, without microreticulation except at basal declivity, lateral channel and interval 8. Base finely bordered from humerus to peduncle, above peduncle unbordered. Scutellar striole long, deeply engraved and distinctly punctured, between scutellar striole and suture with short, sharp, longitudinal strip; scutellar pore present at the end of first stria, with very fine, central tubercle; striae straight, deeply engraved, deeper at base than at apex, with regular gross punctures becoming somewhat finer from base to apex; stria 8 not engraved, but punctured, at same level as lateral channel, distinct in apical half, rather indistinct at humerus; striae 1 - 5 free at base, striae 1 - 3 deeply engraved through basal edge, ending near peduncle, striae 4 and 5 ending at basal edge. Basal declivity without tubercles, with slight elevation at beginning of interval 3, indistinct pores without setae at the beginning of striae 2 - 4. Interval 6 somewhat, intervals 7 and 8 strongly narrowed at base and elevated to keels for a short distance; intervals convex, flattened towards apex, intervals 3, 5, and 7 joining at apex, interval 8 strongly narrowed apically, bent inwards to apex beneath lateral channel, separating the latter as a small and short ridge from apically widened stria 7.

Legs (Fig. 1): Anterior tibia with four teeth, proximal denticle small, triangular; upper surface with microreticulation and distinct longitudinal sulcus. Anterior basal tarsomere conically shaped, not incised or petiolate, about as long as the following tarsomeres 2 - 4 together, with about five to seven setae on its dorsal surface in distal half. Upper edge of mesotibia dentate, with distinct setiferous spur distally. Meso- and metatibia at inner side setose.

Lower surface: Peduncle grossly punctured. Mesosternum finely punctured, without setae. Elytral epipleura between base and apical end of metepisternum about twice as wide as at midlength of elytra, finely bordered, glossy, basal wide portion microreticulated, with row of punctures near middle and along border to episternum. Metepisternum with outer margin about  $1.6\times$  as long as anterior one, strongly constricted towards apex, glossy, with scattered gross punctures, anteriorly strongly bordered. Metasternum smooth and glossy in the middle, at sides with scattered gross punctures, between mesocoxae triangular, distinctly bordered, with some fine punctures, in central part with two paramedian, slender triangles of microreticulation, without setae. Meso- and metacoxa



bisetose. Abdominal sterna glossy, sternum 1 completely, and 2 partly microreticulated, sterna 4 - 6 with small band of microreticulation along base and with transversal sulcus; sterna 3 - 5 with paramedian seta at each side, 1 - 5 grossly punctured at sides, finer punctured towards middle, smooth in middle, with microscopic puncturation. Anal sternum densely and grossly punctured at side, finely punctured towards middle, at side with some flat wrinkles; apex smooth, with microscopic punctures; lateral margins each with two setae, widely distant from each other in both sexes.

Male genitalia: Median lobe of aedeagus (Figs. 3, 4) slightly convex, dorsally not closed; apex strongly bent inwards; top triangular; apical third with central ridge. Parameres (Figs. 5, 6) long and slender, left one about twice as wide as right one, both with one seta at apex.

Female genitalia: Stylus 2 (Figs. 7, 8) tall, slender, slightly bent inwards, blade-like; apex acute, laterally with two big setae and dorsally with three smaller ones; inner margin ventrally with four large setae; connection between stylomeres 1 and 2 membranous.

Geographical distribution: Tanzania.

Collecting circumstances: At light (A. Puchner, pers. comm.).

Specific epithet: Latinized noun, genitive case, an eponym based on the surname of my friend, colleague and collector of the new species, Alfred Puchner, a well-known Africa specialist.

Differential diagnosis: The new species is a typical representative of *Pseudoclivina* (KULT 1947: 30-32) by the following characteristics: scapus unisetose; maxillary fissure extending posteriorly beyond base of mentum; elytron with deep lateral channel extending from humerus to apex, separating inner elytral intervals from lateral margin, and with continuous row of umbilical pores along entire length of marginal channel; inner side of meso- and metatibia setose; antenna pubescent on antennomeres 3 - 11, with antennomeres 4 - 10 glossy and less densely pubescent in the middle; ligula narrow and slender; supraorbital setae not originating from tubercles; lateral parts of clypeus not strongly produced anteriorly; anterior edge of clypeus slightly concave; pronotum with anterior transversal furrow; scutellar striole distinct; and left mandible with one basal tooth only.

There are some characters of the new species, which differ from the morphology of characters of the other African species, e.g., the more or less distinct second lateral longitudinal carina on the left mandible, which is interpreted as a stronger oblique wrinkle. At the right mandible this character is less distinct and clearly assignable to a wrinkle. In comparison with other species of *Pseudoclivina*, the middle part of the clypeus is distinctly separated from its wings by a longitudinal ridge and the longitudinal tubercle at base of interval 3 is indistinctly marked.

From all other species of *Pseudoclivina*, the African as well as the Asian ones, *P. puchneri* sp.n. significantly differs by the unique dense and gross puncturation of the pronotum. Longitudinal ridges of the frons, as richly developed in *P. puchneri* sp.n., are also found in *P. senegalensis* (DEJEAN, 1831) and in "*Afroclivina*" *muelleriana* KULT, 1959, both differing from *P. puchneri* sp.n. by the reduced number of frontal wrinkles to about five, the lack of a dense pronotum puncturation, and the small body size. In the Oriental Region, *Pseudoclivina costata* ANDREWES, 1929, striking by its longitudinal frontal wrinkles, differs from the new species by its 6-setose labrum and the lacking dorsal

pores in elytral interval 3. Two African species of the *Clivina* (*Leucocara*) *rugiceps* species group, *C. sculptilis* (PUTZEYS, 1866) and *C. rugiceps* (KLUG, 1832), bear longitudinal frontal wrinkles, too, but are otherwise not closely related. They differ, e.g., in the absence of a mesotibial spur and in setiferation of the anal sternum (two marginal setae on each side in close proximity in both sexes).

### The position of *Afroclivina* KULT, 1959

According to KULT (1959: 174, 218) the genus *Afroclivina* is closely related to *Pseudoclivina* and only different from it by "... mesotibiae and metatibiae without hairs, with few setae only." In fact, there is a certain reduction of the setae on the inner side of meso- and metatibia, which may be observed also in other small *Pseudoclivina* species, e.g., in *Pseudoclivina senegalensis* (DEJEAN, 1831). When examining the holotype of the type species, *Afroclivina muelleriana* KULT, 1959, I have found only a very slight reduction of the setae on the inner sides of meso- and metatibia. Other important characters are identical: antenna pubescent on antennomeres 3 - 11, with antennomeres 4 - 10 glossy and less densely pubescent in middle; ligula narrow and slender; left mandible with one basal tooth only; supraorbital setae not originating from tubercles; lateral parts of clypeus not strongly produced anteriorly and anterior edge of clypeus slightly incised to concave; pronotum with anterior transversal furrow; elytra with distinct scutellar striole, and elytral striae 1 - 5 free at base. Therefore, I believe that *Afroclivina* is a new synonym of *Pseudoclivina*.

### Catalogue of the species of *Pseudoclivina*

Notes: BALKENOHL (2001: 18-19) mentions *Pseudoclivina arunachalensis* (SAHA & BIWAS, 1985) from India. It was originally described in *Clivina* and indeed it is a representative of *Clivina* subgenus *Eoclivina* KULT, 1959.

*Clivina bohemanni* PUTZEYS, 1861, *Clivina calida* PUTZEYS, 1866, and *Clivina testacea* PUTZEYS, 1846 are also transferred to *Pseudoclivina* KULT, 1947, in accordance with KULT (1947: pp. 30-31) and after the author's observations. Clarification of synonymy is the issue of further investigations.

#### Genus *Pseudoclivina* KULT, 1947

= *Afroclivina* KULT, 1959, **syn.n.**

<i>assamensis</i> (PUTZEYS, 1846) [ <i>Clivina</i> ]	India (south and east)
<i>australiana</i> BAEHR, 2008	Australia
<i>bohemanni</i> (PUTZEYS, 1861) [ <i>Clivina</i> ] <b>comb.n.</b>	South Africa
(replacement name for <i>Clivina angustata</i> BOHEMAN, 1848, nec AHRENS, 1830)	
<i>calida</i> (PUTZEYS, 1866) [ <i>Clivina</i> ] <b>comb.n.</b>	Sudan
<i>costata</i> (ANDREWES, 1929) [ <i>Clivina</i> ]	India (Madras)
<i>grandis</i> (DEJEAN, 1826) [ <i>Clivina</i> ]	
<i>grandis grandis</i> (DEJEAN, 1826)	South Africa, Namibia, Zambia, Democratic Republic of Congo, Sudan?
<i>grandis nigra</i> KULT, 1959	Tanzania, Kenya, Ethiopia
<i>mandibularis</i> (DEJEAN, 1831) [ <i>Clivina</i> ]	Senegal

<i>memnonia</i> (DEJEAN, 1831) [ <i>Clivina</i> ] = <i>indica</i> (PUTZEYS, 1846) = <i>rugosifrons</i> (NIETNER, 1856) = <i>recta</i> (WALKER, 1858)	India, Sri Lanka, Myanmar, North Vietnam, Cambodia, Sumatra, Java, Borneo (BALKENOHL 2001: 19)
<i>muelleriana</i> (KULT, 1959) [ <i>Afroclivina</i> ] <b>comb.n.</b> <i>puchneri</i> sp.n.	Tanzania Tanzania
<i>senegalensis</i> (DEJEAN, 1831) [ <i>Clivina</i> ] <i>senegalensis senegalensis</i> (DEJEAN, 1831) <i>senegalensis kassaica</i> BASILEWSKY, 1948	Senegal, Sierra Leone Democratic Republic of Congo
<i>testacea</i> (PUTZEYS, 1846) [ <i>Clivina</i> ] <b>comb.n.</b>	Senegal

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