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The first species of the subgenus *Physoclivina* KULT, 1959 outside equatorial Africa (Coleoptera: Carabidae: Clivinini)

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A b s t r a c t : The new African species *Clivina dostaliana* nov.sp. of the subgenus *Physoclivina* KULT, 1959 is described and illustrated. It is the first species of the subgenus known to occur in the South of Africa. Notes and pictures on how to separate this species from the other three members of the subgenus are provided. A key to the four species is proposed.

K e y w o r d s : *Clivina*, *Physoclivina*, Africa, new species, key to species.

Introduction

More than eighty years ago a peculiar *Clivina* species was described exhibiting conspicuously swollen pleurae of the pronotum and Burgeon gave reference to this character by the name *Clivina physopleura* (BURGEON, 1935). Kult reiterated the specific naming and erected the subgenus *Physoclivina* for this species (KULT 1959). Two years ago two more species were described (DOSTAL 2015). All the three species are known to occur along the equatorial belt in Africa from the South of Sudan, Burkina Faso, the République of Côte d'Ivoire, and over parts of the Democratic Republic of Congo up to Zambia.

The subgenus has been treated well and intensively by DOSTAL (2015) including illustrations of two new described species.

During checking of undetermined material of the Museum Berlin, Basel, Tervuren, and the authors collection there was *Physoclivina* material discovered. The material represents further records to a described species but also a new species occurring outside equatorial Africa. This species is described in this contribution and additional faunistic data are provided. In addition, the key to the species given in DOSTAL (2015) is newly taken to include the new species.

Material and methods

For comparison, type and other material of the described species was investigated. So, it was possible to base the investigation on the holotype and 19 paratypes of *C. physopleura* BURGEON (MRACT), paratypes of *C. donabaueriana* DOSTAL and *C. bulirschi* DOSTAL (all CDW), and six specimens of *C. bulirschi* DOSTAL (NHMB, MFNB, CBB).

In general, terms, descriptions of characters and methods were based on BALKENOHL (2001).

Specimens were examined with stereomicroscopes Leica M205-C and Reichert-Jung Polyvar. Measurements were taken using an ocular micrometer calibrated with an objective micrometer. All specimens investigated were measured. Body length was measured from the apex of the longer mandible in closed position to the apex of the longer elytron. The length of the pronotum was measured along the median line including the flange-like base, and the width was determined at the widest part. The length of the elytra was measured from the anterior basal tip at middle of the reflexed lateral margin to the tip of the apex of the longer elytron. The elytral width was measured at maximum width of both elytra and represents the general width of the specimen. Arithmetic means (\bar{X}) are provided for the values.

The genitalia dissected were mounted on transparent celon cards and embedded in polyvinylpyrrolidon. After clearing overnight, these cards were fixed on an object slide and used under the microscope. Descriptions were made from the genitalia with transmitted respectively top light (Reichert-Jung Polyvar microscope; used magnification 80-500 times). Dissected specimens are indicated separately under material as males and females, respectively.

Photographs were taken with a 5-megapixel Jenoptic core 5 digital camera either through the stereomicroscope Leica M205-C using a motorised focussing drive and diffused light with Leica hood LED5000 HDI, or for the Polyvar microscope using the drive manually. All pictures are composites, processed and optimized by using Imagic Client software and enhanced with CorelDRAW Graphics Suite X5.

The complete information given on the labels are displayed in the description chapters of the new species verbatim as they appear.

The material is deposited in the following collections:

CBB Coll. Michael Balkenohl, Bonstetten near Zürich, Switzerland
 CDW Coll. Alexander Dostal, Wien, Austria
 MFNB Museum für Naturkunde Berlin, Germany
 MRACT Musée Royal de l'Afrique Centrale, Tervuren, Belgium
 NHMB Naturhistorisches Museum Basel, Switzerland.

Taxonomy

Genus *Clivina* LATREILLE, 1802

Subgenus *Physoclivina* KULT, 1959

Type species: *Clivina physopleura* BURGEON, 1935 by original designation.

The Subgenus *Physoclivina* is recognizable by the following characters: Small sized (2.5–3.5 mm), conspicuously cylindrical shape of the habitus, labrum six-setose, with carinae on the frons of the head in form of an inverted V, swollen pleura with the tumidity more or less visible in dorsal view, on the elytron striae one and two are free at the base, no dorsal pores on the third interval and no scutellar striole on the disc of the elytron, and at the mesotibia without a subapical seta furnished spur. At the margin of the abdominal sternum the two setigerous punctures are widely separated.

***Clivina physopleura* BURGEON, 1935 (Figs 1, 5)**

Clivina physopleura BURGEON, 1935: 151.

Clivina physopleura BURGEON, 1935, KULT, 1959: 176.

Clivina physopleura BURGEON, 1935, BASILEWSKY, 1952: 7.

Clivina physopleura BURGEON, 1935, BASILEWSKY, 1967: 1734.

Clivina physopleura BURGEON, 1935, BASILEWSKY, 1969: 326.

Clivina physopleura BURGEON, 1935, LORENZ, 2005: 145.

Clivina physopleura BURGEON, 1935, DOSTAL, 2015: 28.

O c c u r r e n c e : Confirmed with many records from the Democratic Republic of the Congo but also from the South of Sudan and Zambia.

R e m a r k s : Two times the subgenus was treated as genus (BASILEWSKY 1967, 1969) but without genus description or taxonomic statement. *Physoclivina* might indeed deserve genus level due to some very specific characters. But at the current point in time I refrain from taxonomic action.

The holotype and 19 paratypes located in MRACT have been investigated as well as specimens from the author's collection. The holotype served for the pictures provided. To complete the series of habitus-pictures for all member of the subgenus, a picture has been added to this contribution as well.

***Clivina donabaueriana* DOSTAL, 2015**

Clivina donabaueriana DOSTAL, 2015: 28.

O c c u r r e n c e : Several localities in the West and the South-East of Senegal.

R e m a r k s : Well described and illustrated by DOSTAL (2015). The paratype investigated exactly fits with the description.

***Clivina bulirschi* DOSTAL, 2015 (Fig 6)**

Clivina bulirschi DOSTAL, 2015: 33.

N e w r e c o r d s : Three specimens: Elfenbeinküste, Kafolo/Comoè 28.4.1988 leg. F.-T. Krell (MFNB/CBB); one specimen: GTZ Camp bei Kafolo/ Comoè 28.IV.1988 9°37'N/4°20'W (NHMB); two specimen: Côte d'Ivoire, Parc Nat. Comoé, L204 N8°43,668', W3°50,637' 28.VI.95 leg. Krell, at light, 595 ft. (CBB).

O c c u r r e n c e : Recorded from the South and South-West of Burkina Faso as well as from the North-East of the République of Côte d'Ivoire.

R e m a r k s : Well described and illustrated by DOSTAL (2015). The paratype investigated exactly fits with the description.

***Clivina dostaliana* nov.sp. (Figs 2-4, 7-9)**

T y p e m a t e r i a l : Holotype: ♂, with labels and data: blue, printed "NAMIBIA-Exp.ZMB 1992 Kavango: Gelukkie Kavango-Ufer, 18°03'S/21°08'E. 1.III.92 leg. M. Uhlig" (MFNB). Paratypes: 5♀♀: same data as holotype (MFNB, CBB).

E t y m o l o g y : The species is dedicated to Dr. Alexander Dostal (Vienna) and is expressed as Latinised adjective.

D i a g n o s i s : A medium sized, cylindrical species, with a row of six short but big and a second row with smaller setae arising from tubercle-like punctures at the mesotibia,

and small clypeal wings separated from middle part by small obtuse notches. Distinguished from the other species of the subgenus by the flattened eyes (dorsal view) and the reduced shape of the eye in lateral view, and by the supraantennal plates which are as broad as the eyes. Moreover, the shape of the median lobe of the aedeagus and the structure of the internal sac is different.

D e s c r i p t i o n :

Measurements: Body length 2.85–2.95 mm (\bar{x} = 2.92 mm*), width 0.7–0.72 mm (\bar{x} = 0.71 mm*), ratio length/width of pronotum 1.19–1.24 (\bar{x} = 1.21*), ratio length/width of elytra 2.26–2.42 (\bar{x} = 2.32*); (*n = 6).

Colour: Shiny. Red-brown. Legs, antennae and mouthparts yellow, front femur brown, apex and margin of mandible darker, supraantennal plates translucent yellowish.

Head (Figs 3, 4): Less than a quarter narrower than pronotum. Clypeus straight anteriorly, wings small, not as advanced as clypeus, separated from clypeus by small obtuse notches; supraantennal plates wide, margins convex; clypeus, wings, and supraantennal plates with small reflexed margin. Supraantennal plates with carina posteriorly extending up to mid-eye level, anteriorly separated from wings by obtuse-angled notches. Frons with distinct carina in form of an inverted "V", prolonged anteriorly as keel, with second but curved carina anteriorly, with some longitudinal wide rugae between carinae and on posterior part of frons. Supraorbital carinae relatively short, separated from eyes by supraorbital furrows, each with two supraorbital setae. Neck laterally with few punctures of moderate size. Eyes distinctly flattened, as high as supraantennal plates, shape in lateral view is remindful of a truncated pyramid. Genae indistinct. Antenna short, just reaching mid-length of pronotum, segments five to ten wider than long. Labrum straight anteriorly, with irregular reticulation, five-setose. Mandible moderately curved, also towards apex, arcuate at apex, finely margined in apical half. Apical segment of maxillary palpomere securiform, pointed at apex, terminal segment of labial palpomere bottle like, slender apically. Mentum with median tooth developed a pointed slender knob, not as projecting anteriorly as lateral lobes. Lateral lobes finely carinate, surface with irregular reticulation.

Pronotum: Slightly convex on disc (lateral view). Cylindrical, longer than wide. Lateral margin nearly straight in dorsal view, sigmoid in lateral view. Anterior angles rounded off by reflexed lateral margin. Reflexed lateral margin smooth. Lateral channel narrow, slightly widened at level of anterior setigerous punctures. Anterior and posterior setigerous punctures situated in marginal channel. Posterior angle not visible. Pleura visible in dorsal view. Anterior margin excised. Anterior transverse line distinct, not reaching anterior angles. Median line sharp, running over level of anterior transverse line but not joining, nearly reaching anterior margin. Distinctly joining basal constriction. Basal constriction moderately wide, flange with sharp carina. Disc usually without bigger punctures (in two paratypes unilaterally with few paralateral punctures), with indistinct longitudinal basal impression bilaterally. Surface with transverse wrinkles.

Elytra: Cylindrical, two and a third times longer than wide. Marginal channel running over rounded humerus up to level of third stria without joining striae at base, with umbilical setigerous punctures widely interrupted at middle, though two to three punctures are missing. Reflexed margin smooth. No humeral tooth. Striole missing, basal tubercle with setigerous puncture distinct, situated at declivity of first stria, Striae one and two free at base, all striae deep, punctuate-striate, stria one joining stria seven at apex, stria two ending

free at apex, striae three and four and five and six joining at apex. Intervals distinctly convex, seventh carinate apically. No setigerous punctures on interval three. Surface shiny, with some indistinct wrinkles.

Hind wings: Fully developed.

Lower surface: Pleura distinctly swollen postero-laterally, with transverse wrinkles and isodiametric reticulation (160 times). Proepisternum and abdominal sternite covered with isodiametric to imbricate reticulation. Basal abdominal sternites with isodiametric reticulation, last three sternites shiny, with few microscopic punctures. Abdominal sternum with the two marginal setae widely separated. No differences observed among sexes.

Legs: Protibia with strong digitation, with two big, one smaller and one minute lateral preapical denticles, surface with longitudinal reticulation, apical spine as long as spur, movable spur ensiform, acute at apex, tarsomeres sturdy. Mesotibia without setae on the inner side, dorso-laterally with row of six big and short setae arising from tubercle-like punctures, preapical seta furnished spine missing.

Male genitalia (Fig 7, 8): Median lobe moderately slender, moderately arcuate in dorsal view, slightly more curved at middle, nearly straight in lateral view, tip of apex rounded like an elongated spoon. Surface of apical third dorsally with over a dozen of fine striae pointing apically. Internal sac at the beginning of apical third with 6 teeth pointing basally, basal sclerite distinct, V-shaped. Parameres conspicuously asymmetrical, somewhat distorted, each with one short preapical seta.

Female genitalia (Fig 9): Coxostyli thin, hyaline. Terminal one like a flattened club, with two setae in the middle part. Basal one broad, velum-like.

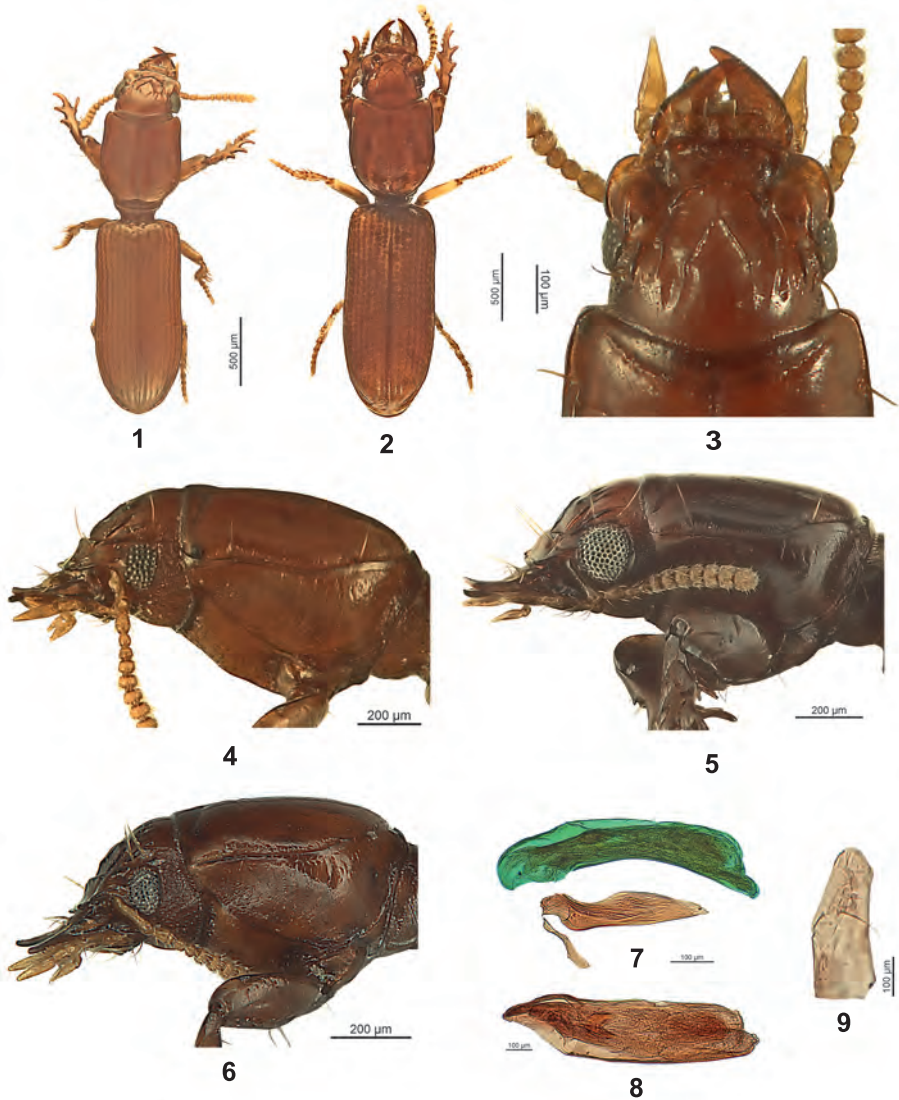
Variation: Variation noted on the pronotum which exhibits in two of the paratypes unilaterally few paralateral punctures. In other specimens the basal impression is more or less well visible, and the length of the median line on the pronotum differs after passing through the anterior transverse line.

Distribution: Known from the banks of the Kavango River in the North of Namibia.

Key to the species

- 1 Eyes convex in dorsal view, supraantennal plates not as wide as eyes (Fig. 1). Pronotum bilaterally with distinct paramedian and/or paralateral row or cloud-like group of punctures. Frons of head more or less smooth between the carinae 2
- Eyes flattened in dorsal view (Fig. 2, 3), supraantennal plates as wide as eyes, shape in lateral view like a truncated pyramid (Fig. 4). Pronotum without paramedian and/or paralateral punctures. Frons of head with longitudinal wide rugae between the carinae. Only 2-3 punctures laterally at neck level. V-like carina on the frons of head reaching posteriorly nearly up to neck level. Length 2.9 *dostaliana* nov.sp.
- 2 Eyes in lateral view semicircular (Fig. 6). Lateral channel of pronotum slightly widened at level of anterior setigerous puncture. Carinae on the frons of head robust, V-like carina prolonged over posterior eye level. 3
- Eyes in lateral view circular (Fig. 5). Lateral channel of pronotum distinctly widened at level of anterior setigerous puncture. Carinae on frons of head fine, V-like carina reaching up to posterior eye level. Length 2.5-2.7 mm *physopleura* BURGEON
- 3 Pronotum with group of longitudinal paramedian and paralateral punctures. Angle of V-like carina on frons anteriorly not sharp, somewhat rounded. With distinct group of punctures at neck level but interrupted at middle. Length 3.0 mm *bulirschi* DOSTAL

- Pronotum with group of longitudinal paralateral punctures. Angle of V-like carina on frons anteriorly truncated. Group of punctures at neck level nearly uninterrupted at middle. Length 3.3 mm *donabaueriana* DOSTAL



Figs 1-9: *Clivina* (subgenus *Physoclivina*) spp.: (1) *C. physopleura* BURGEON, holotype, habitus; (2) *C. dostaliana* nov.sp., holotype, habitus; (3-6) head and pronotum: (3) *C. dostaliana* nov.sp., dorsal view; (4) lateral view; (5) *C. physopleura* BURGEON, lateral view; (6) *C. bulirschi* DOSTAL, lateral view; (7) *C. dostaliana* nov.sp., holotype, aedeagus and parameres, dorsal view and (8) lateral view; (9) *C. dostaliana* nov.sp., female coxostyli.

Zusammenfassung

Die neue afrikanische Art *Clivina dostaliana* nov.sp. aus der Untergattung *Physoclivina* KULT, 1959 wird beschrieben und illustriert. Es ist die erste Art der Untergattung, die im südlichen Afrika vorkommt. Die Art wird differentialdiagnostisch von den anderen drei Vertretern der Untergattung abgegrenzt. Ein Bestimmungsschlüssel zu den vier Arten wird vorgestellt.

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