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Redescription of *Camptorhinus rubicundus* FAUST, 1899 and its tentative placement in Ithyporini (Coleoptera: Curculionidae: Molytinae)

KRYSTIAN NIEDOJAD

Department of Biodiversity and Evolutionary Taxonomy, Faculty of Biological Sciences, University of Wrocław, Przybyszewskiego 63/77, 51-148 Wrocław, Poland, email: k.n.camptorhinini@wp.pl

ABSTRACT. *Camptorhinus rubicundus* FAUST, 1899, a species known from Madagascar is shown to be incorrectly assigned to the genus *Camptorhinus* SCHÖNHERR. Construction of pectoral canal is a main feature that differs this species from any of other *Camptorhinus* SCHÖNHERR representatives and indicates affiliation to Ithyporini. *Camptorhinus rubicundus* (FAUST, 1899) is redescribed. Digital photographs of diagnostic features of the species are included; lectotype is designated.

Key words: entomology, taxonomy, redescription, Coleoptera, Curculionidae, Cryptorhynchinae, *Camptorhinus*, Madagascar.

INTRODUCTION

During my studies on *Camptorhinus* SCHÖNHERR I examined all species originally assigned to the genus or transferred from other genera. Combination of two diagnostic features for the genus: pectoral canal enclosed posteriorly within prothorax and claws free was formerly established by SCHÖNHERR (1826) and supported by many later authors, i.e., MORIMOTO (1978). However, misunderstanding of the first feature, which is difficult to examine without very careful observation, and morphology consonant with that of Ithyporini (rarely other groups) resulted in placing newly described species within incorrect genus. Those problematic taxa can be divided into three groups. The first one comprises species formerly described in genus *Camptorhinus* SCHÖNHERR and transferred to other genera, like *Acicnemis reversus* (WALKER) transferred to the genus *Acicnemis* LACORDAIRE by MARSHALL (1930). The second group contains species

transferred to newly created genera, for example *Camptorrhinus perrieri* FAIRMAIRE became type species of genus *Paracamptorrhinus* established by HUSTACHE (1922). Last group consists of species that were incorrectly assigned to *Camptorhinus* but are constantly classified within the genus. One of them is *Camptorhinus rubicundus* FAUST, 1899. FAUST in description of this species focused mainly on scaling, ignored the structure of pectoral canal and indicated newly described species as the largest representative of the genus. However, construction of pectoral canal clearly shows its affiliation to Ithyporini and it is necessary to investigate relationship of this species with Ithyporini taxa. According to ALONSO-ZARAZAGA & LYAL (1999) Ithyporini are classified in the subfamily Molytinae while Camptorhinini is one of the tribes that represents subfamily Cryptorhynchinae. LYAL *et al.* (2007) indicated close relationship between *Camptorhinus* and Ithyporini based on the following features: lack of sclerolepidia and presence of similar elytro-tergal stridulatory device, while OBERPRIELER *et al.* (2007) noticed that almost all Molytinae have stout tibial unci, helpful to stabilize position of beetle during boring holes in wood (adaptation for oviposition). Similar unci and construction of apical parts of tibiae are observed in *Camptorhinus* species. *C. rubicundus* superficially resembles other *Camptorhinus* species in general body shape and scaling, however construction of pectoral canal does not support classification within the genus. In other *Camptorhinus* species pectoral canal is well developed at whole length of prothorax, enclosed posteriorly and not exceeded to mesosternum, while in the redescribed species it is well developed only before fore coxae and opened posteriorly as in Ithyporini. Redescription of *C. rubicundus* is important for taxonomical studies on Ithyporini and appropriate classification of this species is needed to be established. According to Alonso-Zarazaga & Lyal (1999) tribe Ithyporini is represented in Madagascar and adjacent East Africa by several genera, which have never been worked out. A new generic placement of *Camptorhinus rubicundus* FAUST and investigation of its relationships should be preceded with a thorough review of Palearctic Ithyporini and is not proposed herein.

METHODS

The photographs were taken using a camera Nikon CoolPix 4500 combined with stereoscopic microscope Nikon SMZ1500 and idealized with graphic software. The measurements of specimens were taken using ocular with a micrometer scale. Metric values, presented as sets of indices (mean values in brackets) are given in millimeters.

The following abbreviations are used:

BL – body length (from base of rostrum to end of elytra)

R/P – rostrum/pronotum length ratio

PL/W – pronotal length/width ratio

EL/W – elytral length/width ratio

E/P – elytral/pronotal length ratio

T1/F1 – fore tibia/femur length ratio

T3/F3 – hind tibia/femur length ratio

F3/E – hind femur/elytra length ratio

Type labels are quoted literally, each separate in quotation marks. Type material is deposited in Senckenberg Naturhistorische Sammlungen, Dresden.

***Camptorhinus rubicundus* FAUST, 1899**

Camptorhinus rubicundus FAUST, 1899: 1.

Camptorhinus robicundus FAUST, 1899: 17. Incorrect spelling in original description, as evidenced by primary spelling of specific name in the same publication, multiple designations on labels as “rubicundus” and its meaning, which is related to general reddish color of adults clearly show that published specific name was an editorial error. According to the provisions of ICZN, 4th ed. it is about to be considered as inadvertent error (Art. 32.5).

Camptorhinus rubicundus HUSTACHE, 1924: 427, 428.

TYPE MATERIAL

Lectotype, male (present designation): “Moramanga Sikora”; “rubicundus Faust”; “Type”; “Coll. J. Faust Ankauf 1900” (Fig. 8). Paralectotype, female: same labels as lectotype.

Lectotype is designated from series of syntypes to preserve the stability of nomenclature by selecting one specimen as name-bearing type of the taxon.

ADDITIONAL MATERIAL STUDIED

♀: “Tananariva Madagascar”; “*Camptorhinus rubicundus* Fst.”; “Heller det.”; “Samml. K. F. Hartmann Ankauf 1941. 1”.

REDESCRIPTION

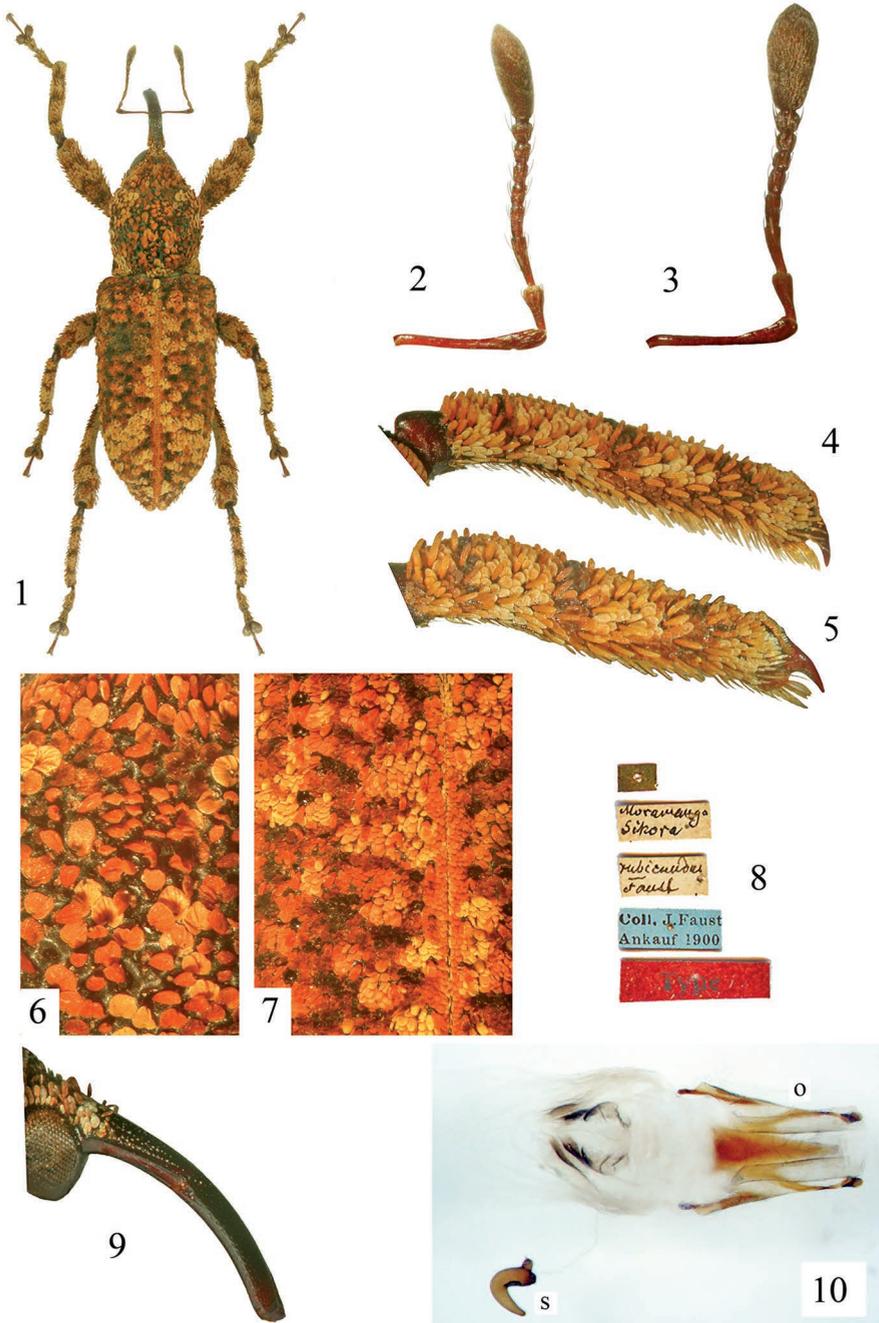
Male (Fig. 1)

Measurements. BL: 11,1; R/P: 0.73; PL/W: 1.05; EL/W: 1.82; E/P: 2.25; T1/F1: 0.69; T3/F3: 0.67; F3/E: 0.6.

Integument black, well visible between scales on pronotum, third tarsomere and onychium. Pronotum with green metallic lustre, general coloration brown. Antennae, third tarsomere and onychium reddish, rostrum brown (except blackened lateral margins). Pronotum marbled: brown and orange, elytra with lighter sutural, basal and apical areas. Femora and tibiae covered with pale orange and yellow scales and brown scales that form three dorsal bands. Body covered with five different kinds of scales (Fig. 6, 7): round to oval adherent scales on pronotum; brownish, rod-like, long, obtuse scales on pronotum and elytral tubercles; round, small, adherent scales on elytra; larger, oval scales inside elytral punctures and slightly elongated, semi-erected, yellow scales on elytra.

Head dull, with strong microsculpture and dense scaling, adherent scales group near eye upper margin, integument hardly visible between scales. Head behind eyes over $2.5 \times$ wider than rostrum at base. Eyes weakly convex, eye diameter nearly $1.2 \times$ wider than rostrum at base. Upper margin of eye broadly round, lower margin terminated triangularly, with tip placed distinctly lower than rostrum.

Rostrum slender, distinctly shorter than pronotum, only slightly widened near base and at apex, without microsculpture, very shiny. Punctures in premedian part of



1-10. *Camptorhinus rubicundus* FAUST: 1 – male, dorsal view; 2 – male antenna; 3 – female antenna; 4 – male fore tibia; 5 – female fore tibia; 6 – scaling on pronotum; 7 – scaling on elytra; 8 – labels of lectotype; 9 – female rostrum, lateral view; 10 – female terminalia: o – ovipositor, s – spermatheca

rostrum shallow and elongated, from the mid-length very small and sparse. Scales present only at base of rostrum, most of them well erected. Costae short and poorly raised, present only in basal part of rostrum: one median and two pairs of lateral. Antennae inserted in the premedian part of rostrum. Rostrum in lateral view (Fig. 9) evenly and distinctly curved, scrobes slightly curved only at inferior margin, quite shiny, with delicate microsculpture.

Antennae slender (Fig. 2), flagellum composed of seven segments, scape weakly curved, almost as long as five basal segments of flagellum combined. Three first funicular segments distinctly longer than wide, second the longest, three following antennomeres longer than wide, last one spherical, pedicel clavate. Club elongated, longer than last four but shorter than last five funicular segments combined, sutures distinctly sinuated. Scape with setae only at apex, pedicel strongly setose, other antennomeres with protruding, pale brown or yellow setae, nearly as long as fourth segment of flagellum. Club covered with short, pale yellow setae.

Pronotum very strongly rounded laterally, widest at one third length from anterior margin, narrowed evenly in basal and apical part, distinctly narrower than elytra. In lateral view strongly vaulted, except flattened anterior part. Keel absent, punctuation very distinct and dense, punctures deep and large, except anterior, marginal part of disc. Microsculpture very distinct, granular, pronotum dull. Erected scales group mostly near anterior margin and in the central part of disc. Posterior margin of pronotum evenly arcuated toward scutellum, hind angles of pronotum marked distinctly.

Scutellum rounded, densely covered with pale, slightly erected scales. Elytra widest before mid-length, almost parallel-sided, in lateral view weakly vaulted. Shoulders quite prominent, apices of elytra with slight sutural indentation. Each elytron with



11-14. *Camptorhinus rubicundus* FAUST: 11 – aedeagus with tegmen, dorsal view; 12 – aedeagus with tegmen, lateral view; 13 – male sternite VIII and IX; 14 – female sternite VIII

eleven, well raised intervals. Large, shiny tubercles present on different intervals, mainly on basal part of intervals 2-5, shoulders, posterior part of unpaired intervals and on almost whole external intervals (7-11); each tubercle with one erected, rod-like scale. Rows of punctures in anterior and median part of elytra as wide as intervals or slightly narrower, in apical part 2-3 × narrower than intervals. Punctures round, very deep in anterior and median part of elytra; color of scales at the bottom of punctures similar to adjoining intervals coloration.

Underside of body densely covered with adherent and slightly erected scales, largest on metaventricle, smallest on abdominal ventrites, in shape quite similar to semi-erected scales on elytra. Pectoral canal with very distinct ridge, deep, opened posteriorly and not limited by a postcoxal flange. First abdominal ventrite triangular with tip situated before hind coxae, third and fourth ventrites similarly long.

Legs quite slender. Fore coxae strongly separated from mid coxae, hind coxae well separated, distance between hind coxae distinctly larger than between mid coxae. All femora flattened in basal part, with single tooth nearly 3 × shorter than maximum width of femur, hind femora the longest. Fore femora over 1.4 × wider than rostrum at base. Tibiae almost straight, very slightly curved in basal part, without keels, uncus situated obliquely to tibia, large. All tibiae covered (except adherent scales) with erected, rod-like scales: shortest on upper margin and longest on lower margin, where also setose-like scales are present and form quite dense fringe, especially on fore tibiae (Fig. 4). Tarsi quite slender, longer than three fourths of tibiae, first tarsomere longer than second but shorter than second and third combined. Third tarsomere bilobed, very broad, with deep incision, onychium longer than first tarsomere. Claws free, simple. Scaling on first and second tarsomere dense, on third and onychium sparse, underside of first and second tarsomere with dense brush of setae.

Aedeagus (Fig. 11) quite broad, obtuse at apex, in lateral view (Fig. 12) distinctly curved and slightly thickened in mid-length of pedon, apodemes shorter than pedon, ventral side of apical part with quite long setae. Tegmen slender, with broad fork. Sternite VIII not divided, forms strongly chitinised, narrow band. Sternite IX (Fig. 13) widely forked, with additional, square process in the middle of fork, which is thus distinctly trifold and such structure does not appear in *Camptorhinini* sensu ALONSO-ZARAZAGA and LYAL (1999) where proximal end of sternite IX is always bifid.

Female

Measurements. BL: 7.4-9.2 (8.3); R/P: 0.72-0.73 (0.72); PL/W: 1.02-1.07 (1.04); EL/W: 1.86-1.91 (1.88); E/P: 2.36-2.52 (2.44); T1/F1: 0.74-0.78 (0.76); T3/F3: 0.59-0.61 (0.6); F3/E: 0.57-0.65 (0.61).

Rostrum very similar to male, punctuation of the premedian part more delicate, consisting of less elongated punctures. Antennae (Fig. 3) with stouter club, scape with strong microsculpture. Fore tibiae (Fig. 5) without fringe, only with few setose-like scales.

Ovipositor (Fig. 10) well sclerotised, distinctly narrowed toward apex, with stout, rod-like, setose gonostyli. Spermatheca c-shaped, extended apically into narrowing tip,

duct quite short and not twisted. Female sternite VIII (Fig. 14) with multisetose base, apex of apodeme with distinct plate.

DISTRIBUTION

Madagascar.

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