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Corrections to the Eucnemidae chapters in "Die Käfer Mitteleuropas, Larven" volumes 2, 4 (Coleoptera: Eucnemidae)

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Abstract

The larval descriptions and keys in the Eucnemidae chapters of the volumes L 2 and L 4 of "Die Käfer Mitteleuropas" (KLAUSNITZER 1994, 1997) are discussed. Refinements and corrections are presented and the key is partly rewritten. The larva depicted as that of *Hylochares cruentatus* (GYLLENHAL) is in fact that of *Hylochares populi* BRÜSTLE & MUONA. The larval description of *Microrhagus pyrenaeus* BONVOULOIR is shown to be based on an error.

Introduction

The publication of the series "Die Käfer Mitteleuropas" has been a landmark of great importance in European entomology and the larval volumes are certainly indispensable to coleopterists, especially in Central Europe. This being the case, users should report any problems observed in this monumental work and, whenever possible, try to offer corrections. While using the larval volumes dealing with the family Eucnemidae (KLAUSNITZER 1994, 1997), I noticed a few unfortunate errors. They stem from undetected problems in the original papers Klausnitzer had consulted.

The majority of the illustrations Klausnitzer used came from BURAKOWSKI (1991).

The eucnemid larvae have unusual structures usually referred to with special terms. I have used the terms introduced in MUONA (2010). The "spinose patch" (Fig. 3) refers to microtrichia-rich skin regions used for locomotion inside the wood. They have been called "microtrichial patch" in English and "Samtplatten" in German. The smooth patches, which act as excretory organs (MUONA & TERÄVÄINEN 2008) are called "areoles" (Fig. 3), they have been called "Stützoval" and "Hornplatte" in German.

Results

1. *Hylochares cruentatus* (GYLLENHAL) (Figs. 1–2)

This species was included in Klausnitzer's key on the basis of information given in BURAKOWSKI (1991). Klausnitzer did cite KANGAS & KANGAS (1944) as well, but Burakowski's illustration, which Klausnitzer used, shows large spinose patches on the abdomen of the larva. As shown by BRÜSTLE & MUONA (2009), these structures do not exist. They were not present in the illustrations of KANGAS & KANGAS (1944), but Burakowski interpreted them as existing from the written description in KANGAS & KANGAS (1944). However, KANGAS & KANGAS (1944) tried to describe triangular areoles instead of spinose patches. The larva of *Hylochares* has no spinose patches. On the abdomen it has large areoles ventrally and tiny ones dorsally. The

absence of the spinose patches reflects the biology of the species; the larvae actually bore through the wood contrary to most eucnemids (MUONA & BRÜSTLE 2008).

KANGAS & KANGAS (1944) claimed that the *Hylochares* larva had no antennae. This is an error, the typically structured eucnemid antennae are present laterad to the mandibular insertions in deep pockets (Fig. 2). This error is very likely the source to Klausnitzer's cryptic statement suggesting Eucnemidae larvae may lack antennae altogether.

The larval description in KANGAS & KANGAS (1944), taken directly to BURAKOWSKI (1991) and KLAUSNITZER (1994) is based on the larva of *Hylochares populi* BRÜSTLE & MUONA, 2009. The larvae of the two species are extremely similar, however. The beetles collected in the 1800s in the vicinity of Gdansk have not been checked, but they are likely to belong to *H. populi* as well. *Hylochares cruentatus* breeds in willows, not aspen, and is this far only known from Finland (MUONA & BRÜSTLE 2008). All studied samples from outside Finland have turned out to be *H. populi*.

Fig. 1: *Hylochares cruentatus*. Larvae in hard wood of *Salix pentandra*. Vantaa, Finland.

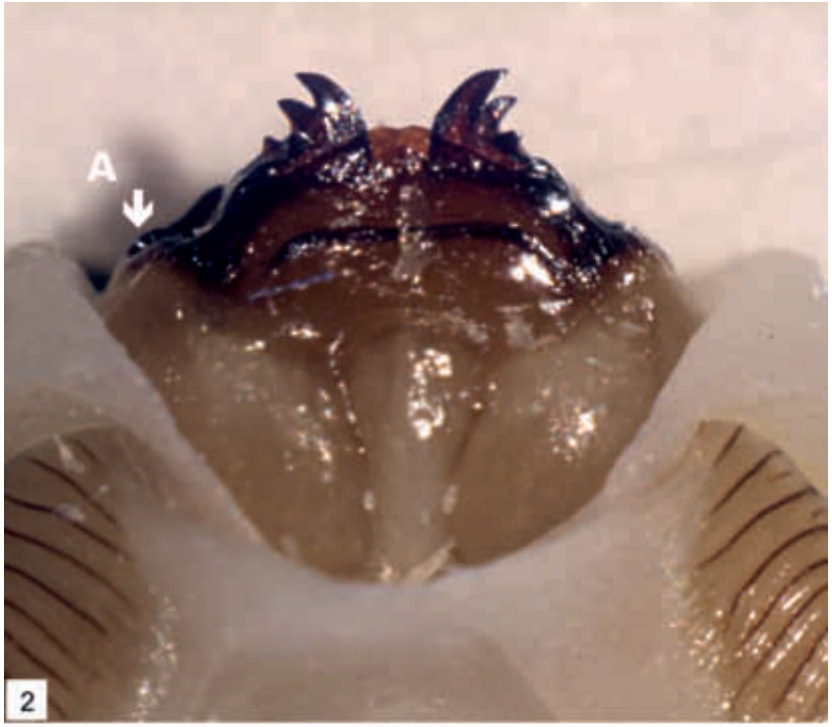
2. *Thambus friwaldskyi* BONVOULOIR and the genus *Hylis* GOZIS

The larva of *Thambus* BONVOULOIR was included in KLAUSNITZER (1997) on the basis of MAMAEV (1976). The keys given in KLAUSNITZER (1997) were unnecessarily complex. Both *Thambus* and *Hylis* larvae have small urogomphi, but *Thambus* can be easily separated from *Hylis* by the following characters:

(1) head with outward projecting basal tooth (forward projecting in *Hylis*)

(2) head longer than wide (wider than long in *Hylis*)

(3) abdominal segments with warts laterally (without warts in *Hylis*)



Figs. 2–3: 2) *Hylochares cruentatus*. Larval head, ventral view, with deeply set antenna at right. M = left mandible, A = deep antennal pit. Vantaa, Finland; 3) *Microrhagus pygmaeus*. Larva with spinose patches and areoles.

All these features are illustrated in KLAUSNITZER (1994, 1997). Habitually the strongly chitinized, flat *Thambus* larva resembles that of *Dromaeolus barnabita* (VILLA).

3. The larval key

The legends of the illustrations in BURAKOWSKI (1991: Figs. 49–56) read: "..52 - Rhacopus (R.) sahlbergi (Mann.), R. (Dichodirrhagus) pyrenaeus (Bonv.), 54 – Clypeorhagus clypeatus (Hampe), …".

There is, however, an illustration numbered 53, but not listed in the legends! The obvious solution is proven in his key, where he cites Fig. 52 in connection with *R. sahlbergi* (page 41) and the "missing" Fig. 53 in connection with *R. pyrenaeus* (page 42). This unfortunate printer's error has misled Klausnitzer, who pictured the head of *R. sahlbergi* under the name *R. pyrenaeus* in KLAUSNITZER (1994: 206, Fig. 52). This would be a minor thing if it were not that "*Rhacopus*" *pyrenaeus* belongs to the genus *Microrhagus* DEJEAN and not to the genus *Rhacopus* HAMPE (MUONA 1993: 46). Also, as pointed out in MUONA (1993: 46), "*Rhacopus*" *attenuatus* (MÄKLIN) belongs to the genus *Dirrhagofarsus* FLEUTIAUX, not to *Rhacopus*.

The new key starting from the couplet 12 is as follows. The numbers I have used for figures refer to the figures in KLAUSNITZER (1994).

12. Head with bifid basal tooth and four teeth between antenna and basal tooth (Fig. 52) ……..
..... *Rhacopus sahlbergi* (MANNERHEIM)

12* Head with simple basal tooth and less than four lateral teeth (Figs. 33, 46, 47, 55, 61) 13

13. Mesothorax with divided spinose patches (Figs. 31, 32, 41, 42) 14

13* Mesothoracic spinose patch undivided (Figs. 50, 51, 53, 54, 58, 59) 15

14. Prothorax with rod-shaped sclerotizations (Figs. 41, 42, 46, 47). Areole between the two transverse mesothoracic spinose patches (Fig. 41) ..... *Dirrhagofarsus attenuatus* (MÄKLIN)

14* Prothorax with elongated triangular sclerotizations (Figs. 31, 32). Areole caudad of the two transverse mesothoracic spinose patches (Fig. 31, 32) ..... *Clypeorhagus clypeatus* (HAMPE)

15. Abdominal segment 8 dorsally with areole (Figs. 50, 58) 16

15* Abdominal segment 8 dorsally without areole (Fig. 53) ..... *Microrhagus pygmaeus* (FABRICIUS)

16. Abdominal segment 8 ventrally with areole, segment 9 constricted (Fig. 59) …….
..... *Microrhagus lepidus* (ROSENHAUER)

16* Abdominal segment 8 ventrally without areole, segment 9 evenly rounded (Fig. 51) …….
..... *Microrhagus pyrenaeus* BONVOULOIR

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