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Description of two new species of *Calodromus* Guérin-Méneville, 1832 from Peninsular Malaysia (Coleoptera: Brentidae, Cyphagoginae)

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Abstract
Calodromus mantillerii n. sp. and *Calodromus goosseni* n. sp. from Perak (Malaysia) are described on two single male specimens. The new taxa are closely related to *Calodromus insignis* (Senna, 1895) but can be easily distinguished by the very different shape of the first tarsal article of the male hind legs. A key for the identification of the males of the three known species of the *Calodromus insignis* group is provided. A new locality record of *Calodromus insignis* from Malaysia is also given.

Key words: Brentidae, *Calodromus*, new species, locality record, Malaysia.

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Introduction

In 1895 Senna described a new genus and species of Brentidae from Sumatra (Tambang Salida, legit J.L. Weyers): *Allaedromus insignis* Senna, 1895. The main character of this new taxon was the peculiar shape of the strongly modified first tarsal article of the male posterior legs, as in the character of the closely related genus *Calodromus* Guérin-Méneville, 1832.

Senna (1895) justified the creation of the new genus *Allaedromus* mainly by the shortness of the first metatarsal article, shorter than femur, while in all the other species of *Calodromus* this article is always longer (usually much longer) than femur. Heller (1910) considered this character probably not sufficient for keeping the genus *Allaedromus* and Damoiseau (1964) finally placed it in synonymy with *Calodromus*; this statement was accepted in subsequent catalogues of Brentidae and papers on *Calodromus* (Damoiseau 1971, Sforzi & Bartolozzi 2004, Bartolozzi 2011; Orbach & Bartolozzi 2017, 2018).

During his entomological research in Peninsular Malaysia, the first author collected in Perak two interesting male specimens of *Calodromus* showing short first metatarsal article. A careful study of these specimens and their comparison with the holotype of *Calodromus insignis* revealed that they belong to two species new to science, herein described.

Material and methods

Photos of the full bodies and of the hind legs were taken with Microscope Leica M205 C and dedicated software Leica Z-stac LAS V4 3.

The specimens of the new taxa were compared to the holotype of *Calodromus insignis* Senna, 1894 from Naturalis Biodiversity Center, Leiden (Holland).

The examined material is deposited in the following collections (acronyms):

LKCNHM Lee Kong Chian Natural History Museum (ex Raffles Museum), National University of Singapore, Singapore
MZUF Zoology Section of the Natural History Museum, University of Florence, Italy
RMNH Naturalis Biodiversity Center, Leiden, Holland

Results

The genus *Calodromus* belongs to the brentid subfamily Cyphagoginae Kolbe, 1892 and to the tribe Cyphagogini Kolbe, 1892. The main character of the species belonging to this genus is the striking form of the posterior legs, whose femora, tibiae and mainly tarsi can assume incredible shapes, strongly different in both sexes.

Damoiseau (1971) and Sforzi & Bartolozzi (2004) listed in this genus 11 and 12 species respectively, but recent findings (Bartolozzi 2011; Orbach & Bartolozzi 2017, 2018) increased the number of the known species to 16. Thanks to the two new species described below, the number of species of *Calodromus* now reaches 18.

***Calodromus mantillerii* sp. n.** (Figs 1, 2A)

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Diagnosis. *Calodromus mantillerii* sp. n. is closely related to *Calodromus insignis* having the first tarsal article of the male hind legs shorter than femur, but can be distinguished for the totally different shape of this article (Figs 2A, 2C).

Description. Male. Body light brown, elongate, parallel sided (Fig. 1). Head subrectangular, slightly convex, indistinctly separated from the neck; rostrum shorter than head, flat; metarostrum parallel sided, mesorostrum laterally concave, prorostrum slightly narrower than metarostrum, its anterior margin slightly concave medially; mandibles very small, directed downwards; underside of head slightly sulcate medially at base, with thin golden erect hairs under eyes; eyes large, oval, not very prominent; temples about as long as eye diameter; antennae short, with the last three articles enlarged; article 11 slightly shorter than the two preceding ones together.

Fig. 1 – *Calodromus mantillerii* n. sp., habitus.

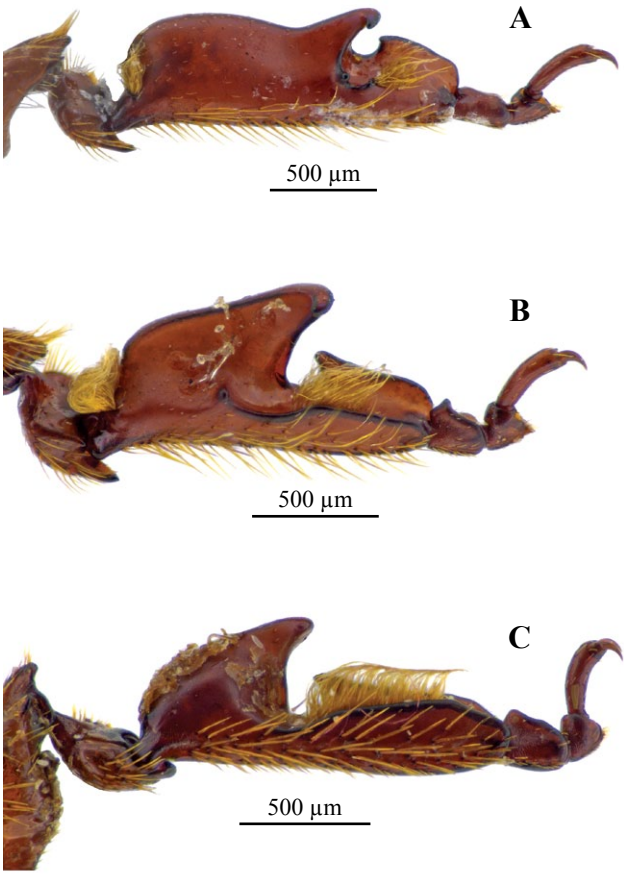

Fig. 2 – First tarsal article of male hind leg (lateral): **A**, *Calodromus mantillerii* sp. n.; **B**, *Calodromus goosseni* sp. n.; **C**, *Calodromus insignis* (Senna), Malaysia.

Prothorax elongate, parallel sided, strongly compressed laterally in front, flat on disc, where a thin medial groove is present from the base to the anterior elevation.

Elytra slightly longer than prothorax, interstriae larger than striae, interstria 2 present only basally.

Forelegs short; femora laterally compressed; tibiae shorter than femora, with a hair brush on the inner margin; tarsi short. Median legs smaller than forelegs, first tarsal article flattened, laterally compressed and enlarged, about as long as tibia. Hind legs long, but shorter that the entire body; femora strongly compressed basally and thickened distally, with a small sharp tooth on the inner side near apex and golden setae dorsally and distally; tibiae very short and thickened, ending with a small lamina and a sharp tooth inferiorly; first tarsal article (Fig. 2A) slightly shorter than femur, strongly thickened, with long scattered hairs below; upper and inferior sides of the thickened part subparallel for 2/3 of its length in lateral view; the superior part deeply incised distally, with a strong tooth directed inwards, a small tooth is present below the large one; apical tubercle absent; second tarsal article short, article three much shorter than two; onychium about as long as the two preceding articles together.

Underside of body almost flat, not punctuated; thin medial groove present on the metasternum.

Dimensions: body length 5.6 mm; body width (at elytra) 0.7 mm; length of the first metatarsal article of the hind legs 1.5 mm.

Material. Holotype ♂, Malaysia, Perak, Belum, Titiwangsa, 5 Apr 2015, at light, leg. L.F. Cheong (LKCNHM).

Etymology. We are glad to name this new species after our colleague Antoine Mantilleri from the Museum National d'Histoire Naturelle of Paris for his very important contributions to the knowledge of the Brentidae family.

***Calodromus goosseni* sp. n.** (Figs 2B, 3)

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Diagnosis. *Calodromus goosseni* sp. n. is closely related to *Calodromus insignis* and to *C. mantillerii* sp. n. having the first tarsal article of the male hind legs shorter than femur, but can be distinguished for the different shape of this article (Figs 2A, 2B, 2C).

Description. Male. Body light brown, elongate, parallel sided (Fig. 3). Head subrectangular, slightly convex, indistinctly separated from the neck; rostrum shorter than head, flat; metarostrum parallel sided, mesorostrum laterally concave, prorostrum slightly narrower than metarostrum, its anterior margin slightly concave medially; mandibles very small, directed downwards; underside of head shortly medially sulcate at base, small short carinae at sides of sulcus, thin erect golden hairs under eyes; eyes large, oval, not very prominent; temples about as long as eye diameter; antennae short, with the last three articles enlarged; article 11 slightly shorter than the two preceding ones together.

Prothorax elongate, parallel sided, strongly compressed laterally in front, flat on disc, where a thin medial groove is present from the base to the anterior elevation; short appressed yellow scales along sides.

Elytra slightly longer than prothorax, interstriae larger than striae, interstria 2 present only basally.

Forelegs short; femora laterally compressed; tibiae shorter than femora, with a hair brush on inner margin; tarsi short. Median legs smaller than forelegs, first tarsal article flattened, laterally compressed and enlarged, about as long as tibia. Hind legs long, but shorter that the entire body; femora strongly compressed basally and thickened distally, with a small sharp tooth on the inner side near apex and golden setae dorsally and distally; tibiae very short and thickened, ending with a small lamina and a sharp tooth inferiorly; first tarsal article (Fig. 2B) slightly shorter than femur, strongly thickened, with long scattered yellow hairs below and basally with a strong tuft of golden erect hairs directed upwards; thickened part triangularly elevated in the first half of the article in lateral view, ending with a strong tooth directed inwards; a small tooth is present below the large one; superior surface of the article longitudinally concave distally, with long golden hairs inside; apical tubercle absent; second tarsal article thickened, short, proximally elevated; article three slightly shorter than two; onychium about as long as the two preceding articles together.

Fig. 3 – *Calodromus goosseni* sp. n., habitus.

Underside of body almost flat, not punctuated; thin medial groove present on the metasternum.

Dimensions: body length 5.2 mm; body width (at elytra) 0.65 mm; length of the first metatarsal article of the hind legs 1.35 mm.

Material. Holotype ♂, Malaysia, Perak, Belum, Titiwangsa, 5 Apr 2015, at light, leg. L.F. Cheong (LKCNHM).

Etymology. This new species is dedicated to our colleague Jacques Goossens from the Institut Royal des Sciences Naturelles de Belgique (Brussels) for his contribution to the knowledge of the Coleoptera Brentidae.

***Calodromus insignis* (Senna, 1895)** (Figs 2C, 4)

Allaedromus insignis Senna, 1895: 180; Schönfeldt 1910: 4; Kleine 1926: 6; Kleine 1937: 107; Kleine, 1938: 17.
Calodromus ? *insignis*: Heller 1910: 177.
Calodromus insignis: Damoiseau 1964: 464; Damoiseau 1971: 6; Sforzi & Bartolozzi 2004: 338; Bartolozzi 2011: 379; Orbach & Bartolozzi 2017: 135; Orbach & Bartolozzi 2018: 102.

Fig. 4 – *Calodromus insignis* (Senna), Malaysia (MZUF), habitus.

We have been able to study the holotype of *C. insignis* (RMNH) and the second known specimen of this rare species (Fig. 4), collected in the following locality: Malaysia, Terengganu, Loh River Biodiversity Park, 40 km W Dungun, (04°41.0461'N – 103°00.539'E), at light, 1 July 2011, legit A. Bandinelli (MZUF). The first tarsal article of the hind legs of this male specimen (Fig. 2C) is identical to that of the holotype of *C. insignis*. This is the first record of the species for Malaysia.

Remarks. Inside the genus, *Calodromus insignis*, *C. mantillerii* sp. n. and *C. goosseni* sp. n. form a peculiar group, whose main character is the reduction in length of the first tarsal article of the male hind legs, which is not longer than femur. The first couplet of the key proposed by Orbach & Bartolozzi (2018) for the male *Calodromus* should be modified as follows, in order to include the two new species here described:

1. First tarsal article of the male hind legs not longer than femur 2
- First tarsal article of the male hind legs always much longer than femur 4
2. Proximal thickened part of the first tarsal article of the male hind legs about as long as 2/3 of the whole article (Fig. 2A) ..... *Calodromus mantillerii* sp. n.
- Length of the proximal thickened part of the first tarsal article of the male hind legs from 1/3 to 1/2 of the whole article 3
3. Base of the first tarsal article of the male hind legs without a thick tuft of yellow hairs; inner side of the triangular elevation of the first metatarsus convex (Fig. 2C) .... *Calodromus insignis* (Senna, 1894)
- Base of the first tarsal article of the male hind legs with a thick tuft of yellow hairs; inner side of the triangular elevation of the first metatarsus concave (Fig. 2B) .... *Calodromus goosseni* sp. n.

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