

# A new species of *Phenacephorus* from Kalimantan (Insecta: Phasmida: Heteronemiidae: Lonchodinae)

P.E. Bragg

Bragg, P.E. 'A new species of *Phenacephorus* from Kalimantan (Insecta: Phasmida: Heteronemiidae: Lonchodinae).

Zool. Med. Leiden 69 (16), 29.xii.1995: 203-208, figs 1-5.— ISSN 0024-0672.

P.E. Bragg, 51 Longfield Lane, Ilkeston, Derbyshire, DE7 4DX, U.K.

Key words: Phasmida; Lonchodinae; *Phenacephorus parahaematomus*; *P. auriculatus*; Borneo; Brunei; Sabah; Kalimantan.

*Phenacephorus parahaematomus* spec. nov. is described and illustrated. The species is based on two male specimens which were collected in Borneo in 1925. The stout spines on the metanotum and general form closely resembles *Lonchodes haematomus* Westwood but *P. parahaematomus* has a spinose mound on the back of the head and spines on the pronotum and abdominal segments. Some new distribution data is given for *Phenacephorus auriculatus* (Brunner), and the egg is described and illustrated.

## Introduction

A recent review of *Phenacephorus* Brunner (Bragg, 1994) described two new species from Borneo, both were from the large Bornean collection in the collection of the Nationaal Natuurhistorisch Museum. This paper describes another new species, also from this collection, and transfers another species into the genus.

## Material and methods

In November 1994 specimens of a species of *Phenacephorus* were collected in Brunei and have since been successfully reared in the U.K. In May 1995 during a visit to RMNH a number of specimens of this species were found in the collection, in addition two males of another species were found amongst specimens of *Lonchodes hosei* (Kirby) and *Lonchodes haematomus* Westwood. The second species was found to be an undescribed species. Material in other collections is indicated by use of the following abbreviations: BMKB - Brunei Museum, Kota Batu, Brunei; BMNH - British Museum (Natural History), London; NHMW - Natural History Museum, Vienna, Austria; RMNH - Nationaal Natuurhistorisch Museum, Leiden, Netherlands. Material which is, or was at some stage, in the author's collection has an individual accession number prefixed by PEB-; unless otherwise indicated this material is currently in the author's collection. Measurements of eggs are given to the nearest 0.05 mm, insects to the nearest 0.5 mm.

*Phenacephorus auriculatus* (Brunner, 1907) comb. nov.

*Prisomera auriculatum* Brunner, 1907: 289. Syntypes ♂♂, ♀♀ (NHMW, 562). Brunei & Labuan.

*Lonchodes auriculatus*; Günther, 1932: 385.

*Carausius abbreviatus*; Bragg, 1992a: 134 [in part]; Bragg, 1992b: 10 [in part].

Material.— Kalimantan: [Midden O-Borneo], ♀ nymph (RMNH) H.C. Siebers 20.x.1925; ♀, 2 ♀♀

nymphs (RMNH) [unlabelled but from H.C. Siebers collection, presumably from the same locality].  
**Brunei:** Kota Batu, ♀ (BMKB) coll. M.J.S. 15.ii.1985; 2 ♀♀ (PEB-2457; PEB-2458), 2 ♂♂ (PEB-2459; PEB-2460), nymph (PEB-2255) coll. P.E. Bragg, Feeding on *Norrisia maior*, 02.xi.1994; Jalan Barakas, ♀ (BMKB) coll. J. Jones. 16.vi.1977; Temburong district, Bukit Belalong, 910 m, ♂ (PEB-995), 3 ♂♂ (BMKB, PEB-994; BMKB, PEB-996; BMKB, PEB-997) coll. P.E. Bragg, 10.viii.1991. **Sabah:** Kinabalu, 1000m, ♂ (RMNH) coll. Waterstradt. H. Rolle vend. 25.xi.1904 [labelled: *Phasgania abbreviata*, det. K. Günther]; Sandakan, 2 ♂♂ (BMNH, BM-96-197) C.V. Creagh; ♂ (BMNH, 95-140) 12.iii.1893; 5 miles South of Mt. Trus Madi, ♂ (BMNH, BM1978-48) 1800 ft, coll. M.E. Bacchus, 18-28.vii.1977.

Although originally described in *Prisomera* Brunner, 1907 (= *Lonchodes* Gray, 1835, not *Prisomera* Gray, 1835) the lobes on the head of the female distinguish this species from *Lonchodes*, placing it in *Phenacephorus* Brunner, 1907. The female is very similar to *P. spinulosus* (Hausleithner), but is larger. The male is similar to *Carausius abbreviatus* (Brunner), but smaller, and the swelling at the end of the abdomen is almost quadrangular not circular. The male specimens from Kuala Belalong and from Sandakan were previously misidentified as *C. abbreviatus* (Bragg, 1992a, 1992b). The male from Kinabalu was misidentified as *Phasgania abbreviata* by Günther and, although no record of this specimen has been published, it casts some doubt on the record of a male *abbreviatus* which Günther did publish (1935: 8).

The descriptions given by Brunner are accurate although they omit to mention the coloration. Females are uniformly mid brown or very dark brown; males are green with abdominal segments 7-10 orangy-brown, with some orangy-brown tints on the thorax where the legs join, on the apex of the femur, and around the tibial-tarsal joints. The only previous records for this species are those of the type species, Günther (1932: 385) only comments that the species was not known to him and lists the species as belonging in *Lonchodes* Gray on the basis of Brunner's original description.

Specimens collected in 1994 were feeding on small trees, *Norrisia maior*, belonging to the family Loganiaceae. In captivity they have fed on bramble (*Rubus* spec.), hawthorn (*Crataegus monogyna* Jacq.), pyracantha (*Pyracantha* spec.), raspberry (*Rubus idaeus* Linnaeus) and rose (*Rosa* spec.) in the family Rosaceae, and eucalyptus (*Eucalyptus gunnii* Hooker) in the family Myrtaceae. Eggs began to hatch after 95 days, having been incubated in a room with an average temperature in the region of 15°C.

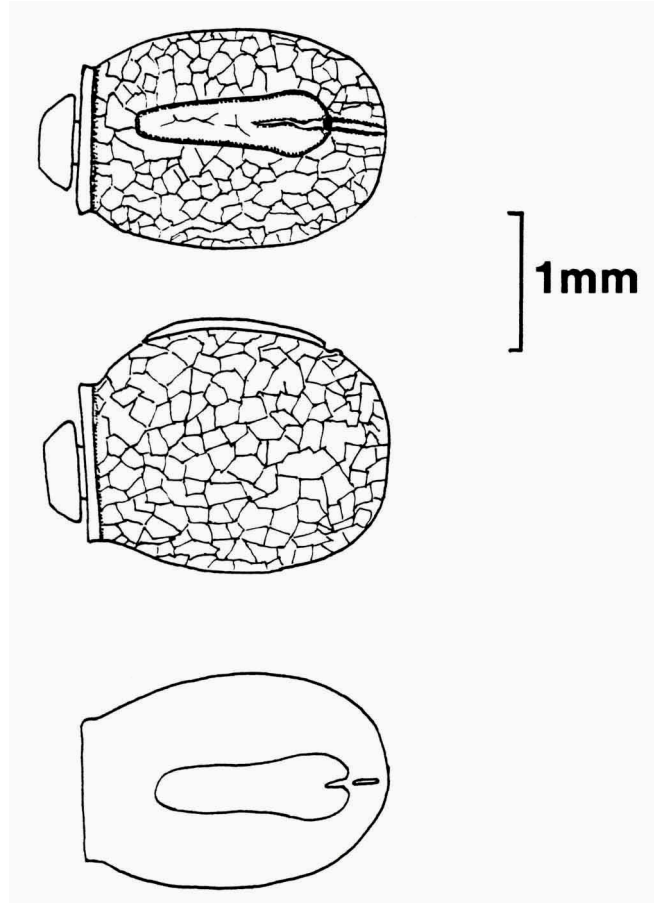
Both sexes rely on catalepsy as their main defence although, if disturbed at night, they occasionally attempt to walk away.

The egg (figs 1-3).— Capsule ovoid, length 2.30-2.45 mm, height 1.70-1.95 mm, width 1.45-1.65 mm, surface covered in a network of ridges. Micropylar plate a narrow oval, widening at polar end, cream coloured, with a longitudinal ridge running most of the length; a median line runs from the plate to the polar end of the capsule. Operculum almost circular (slightly higher than wide), flat, with a distinct capitulum. Capsule mid brown; ridges around the micropylar plate, median line, rim around the operculum, operculum, and capitulum black.

*Phenacephorus parahaematomus* spec. nov.

Material.— Holotype ♂ (RMNH), "Midden O-Borneo, H.C. Siebers, 15.ix.1925". Paratype ♂ (RMNH), "Midden O-Borneo, H.C. Siebers, 30.ix.1925".

Superficially this species resembles *L. haematomus* because of the distinctive



Figs 1-3, egg of *Phenacephorus auriculatus* (Brunner). 1, Dorsal view; 2, lateral view; 3, internal, showing micropylar plate.

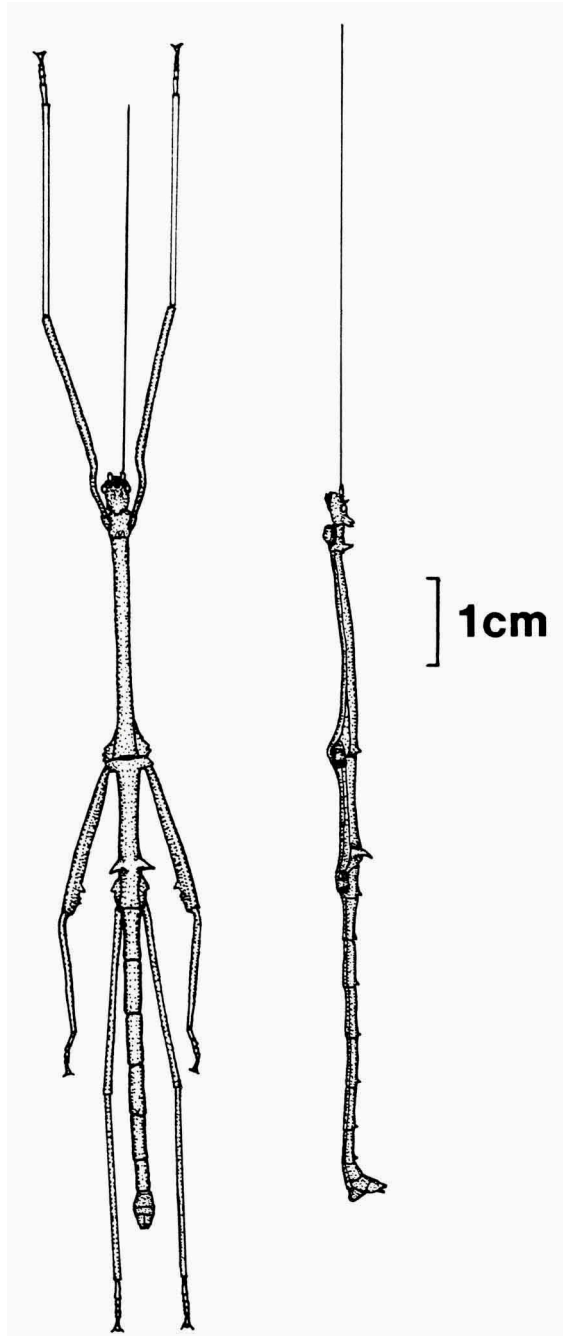
spines on the metanotum, however the back of the head is clearly conical and spinose, placing it in *Phenacephorus*. The size and general form is similar to *P. nieuwenhuisi* Bragg, from which it is distinguished by the spines on the mesonotum, the pronotum and on the abdominal segments.

The holotype lacks hind tarsi, the paratype lacks fore legs, both specimens have broken antennae.

Male (figs. 4-5).— Whole of body and all femora granulate, head, thorax and mid femora densely granulate. Uniformly mid brown except for dark green at the bases of all femora and tibiae. Measurements are given in table 1.

Head with two spines between the eyes, back of the head conical with several small spines. Antennae broken but probably longer than the fore legs in life, of uniform thickness beyond the second segment; basal segment slightly flattened, second segment almost as wide as long, first two segments about twice the width of the rest.

Pronotum with a transverse indentation at about the mid point, and a pair of upright spines on the hind margin. Mesonotum of uniform width, widening just



Figs 4-5, *Phenacephorus parahaematomus* spec. nov. 4, Holotype, dorsal view (with hind tarsi based on those of the paratype); 5, paratype, lateral view (legs omitted).

Table 1. Measurements of *Phenacephorus parahaematomus* spec. nov.

Lengths (mm)	Holotype	Paratype
Total	89	87
Antennae	>43	>58
Head	4	4
Pronotum	3	3
Mesonotum	26.5	25.5
Metanotum	14	13
Median Segment	4	4
Fore femora	25	-
Fore tibiae	26	-
Fore tarsi	7	-
Mid femora	19	18
Mid tibiae	15	15
Mid tarsi	5.5	5
Hind femora	22.5	22.5
Hind tibiae	25	24
Hind tarsi	-	7

before the posterior. Metanotum wider than mesonotum, with two large, robust spines on the lateral margins at the posterior. Median segment about one third of the length of the metanotum, with a small posterior pointing spine on the posterior margin (three spines in the paratype).

Segments 2-5 of uniform width, 6th very slightly wider, 7th widening considerably, 9-10 narrowing. Hind margin of segment 5 with a compound structure composed of several spines or tubercles; holotype with two large fused median spines and two small lateral spines; paratype with a median broad tubercle and two small and several minute lateral spines. Hind margin of segments 2-7 armed with at least a small tubercle or up to four spines; holotype with three spines on segment 2, remainder each with one tubercle; paratype with four spines on segments 6-7, three spines on segment 2, two spines and a tubercle on segment 3, a tubercle only on segment 4. Poculum deep, angular. Cerci curved, blunt ended.

Mid femora considerably thickened. All femora armed with small spines on the underside near the apices, one obvious pair and one or two much smaller more apical pairs. Dorsoposterior carina of mid femora with a minute and very indistinct lobe and tubercle on the upper surface close to the apices (tubercles larger in the paratype). All tibiae without lobes, carinae of fore tibiae distinctly setose. All tarsi short, without lobes, except for a very small triangular lobe on the first tarsomere of the fore tarsi.

The paratype differs from the holotype only in the arrangement of spines on the abdomen, by having smaller spines on the pronotum and 5th abdominal segment, and by having a distinct tubercle on the dorsoposterior carina of the mid femora.

#### Acknowledgements

The foodplant of *P. auriculatus* was identified by the Brunei Forestry Department at the request of Brunei Museum.

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Received: 1.vi.1995

Accepted: 14.vi.1995

Edited: C. van Achterberg