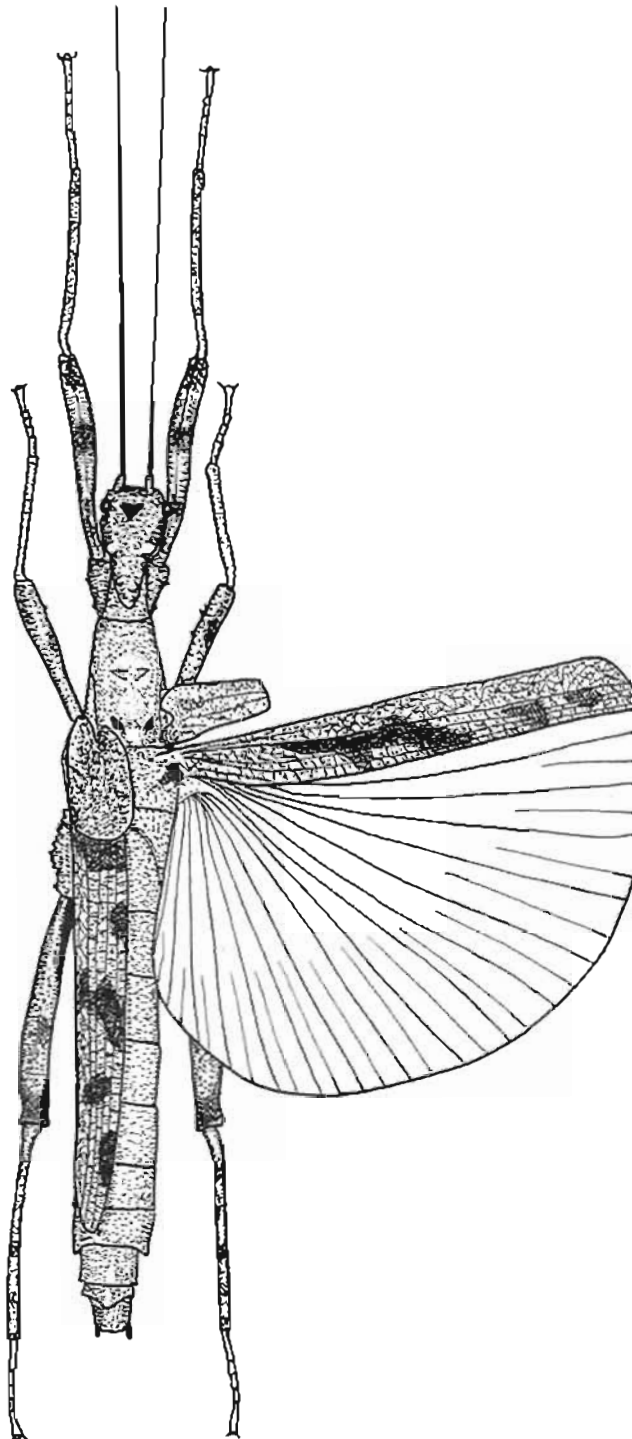


PHASMID STUDIES.

volume 13, numbers 1 & 2.
September 2005.

Editor: P.E. Bragg.



Published by the Phasmid Study Group.

Contents

Phasmids from Sabah Robert Bradburne	1
A reassessment of some Bornean Lonchodinae and Aschiphasmataidae, with some lectotype designations, new synonyms, and the description of two new species P.E. Bragg	11
<i>Haplopus</i> Burmeister, 1838, replacement name for <i>Aplopus</i> Gray, 1835 (Phasmatodea). Oliver Zompro	30
A new species of the genus <i>Baculofractum</i> , the first record of the genus from Borneo. P.E. Bragg	31
Reviews and Abstracts Phasmid Abstracts	38

Phasmids from Sabah

Robert Bradburne, 26 Royal Avenue, Tonbridge, Kent, TN9 2DB, UK.

Abstract

This paper describes a trip to six locations in Sabah, Borneo, during October 2003. A total of around 20 species of stick insects were found at four of these locations, including an undescribed species found at 3300m on Mount Kinabalu. The most commonly encountered species in the lowland forest were *Lonchodes* spp., *Haaniella* spp., and *Asceles margaritatus*.

Key words

Phasmida, Borneo, Sabah, Sukau, Kinabalu, Danum Valley, *Haaniella*, *Asceles*, *Prosentoria*, *Necroscia*, *Presbistus*, *Carausius*, *Phenacephorus*, *Dinophasma*.

Introduction

In October 2003 I travelled to Sabah in North Borneo to spend two weeks searching for the wildlife of the region. Our group stayed in six locations, four of which yielded many species of phasmid. The rainy season had started early and therefore it frequently rained all afternoon, and often into the night. However, this did not seem to stop the insects from being active, although it did at times make moving through the jungle quite a challenge. All identifications and sizes given in this article are from photographs taken on the trip, and therefore must be viewed with a degree of caution.

Our first location (where we found no phasmids) was just outside the capital Kota Kinabalu, next to the sea in a largely agricultural region. One of the trees at the Lodge where we stayed showed significant feeding damage, but after much hunting this turned out to be due to a large (1.5cm) yellow weevil rather than stick insects. The second area we visited was a small, remote coral island in the Turtle Islands National Park. Unsurprisingly, we did not find any phasmids there either.

Sukau, Kinabatangan River

Although we spent two nights here, it was only safe to go out on one of these due to the heavy wind and rain. We spent three hours investigating a limestone hill which rose around 100m above the river. It was raining quite heavily, but phasmids were still quite active. *Asceles margaritatus* Redtenbacher, 1908 nymphs and adults were reasonably common here on low growing vegetation. Another flying species was also found that bore superficial resemblance to *A. margaritatus*, but was less robust and had wings to the end of its abdomen (figure 1). We also found one male sub adult Lonchodinae species which I could not identify from the picture taken.

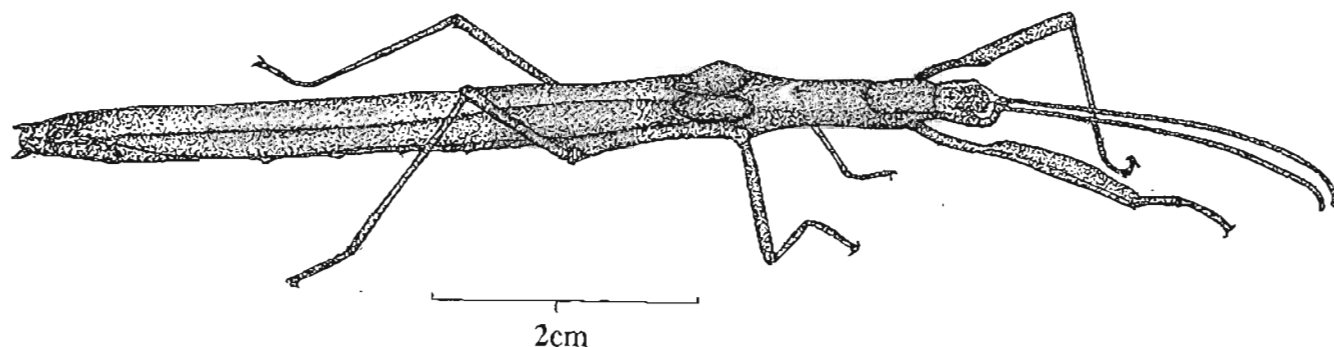


Figure 1. Adult female found on low-growing vegetation at Sukau. Mottled all over in light and dark browns and dark greens.

The most common insects however were *Haaniella echinata* Redtenbacher, 1906. The majority of these were nymphs of varying sizes, although we did find an adult female near the end of our trail. One sub-imaginal female gave a very good defensive display when disturbed, showing off clearly her bright red rear leg patches and blue abdominal coloration. I was impressed by the size of the insects, which seemed significantly larger than the ones I had seen in culture. The largest female that we found, however, looked very different from the other *H. echinata* females that we had found. It was a pale creamy colour all over the thorax and abdomen, with darker brown legs (figure 2). From its general shape, and the tip of the abdomen, it looked much more like the *Haaniella saussurei* Kirby, 1904 shown in plate 3B in Bragg (2001), although this species is not recorded from the Sukau region in Bragg (2001). On further examination, Phil Bragg has suggested from what is visible of the

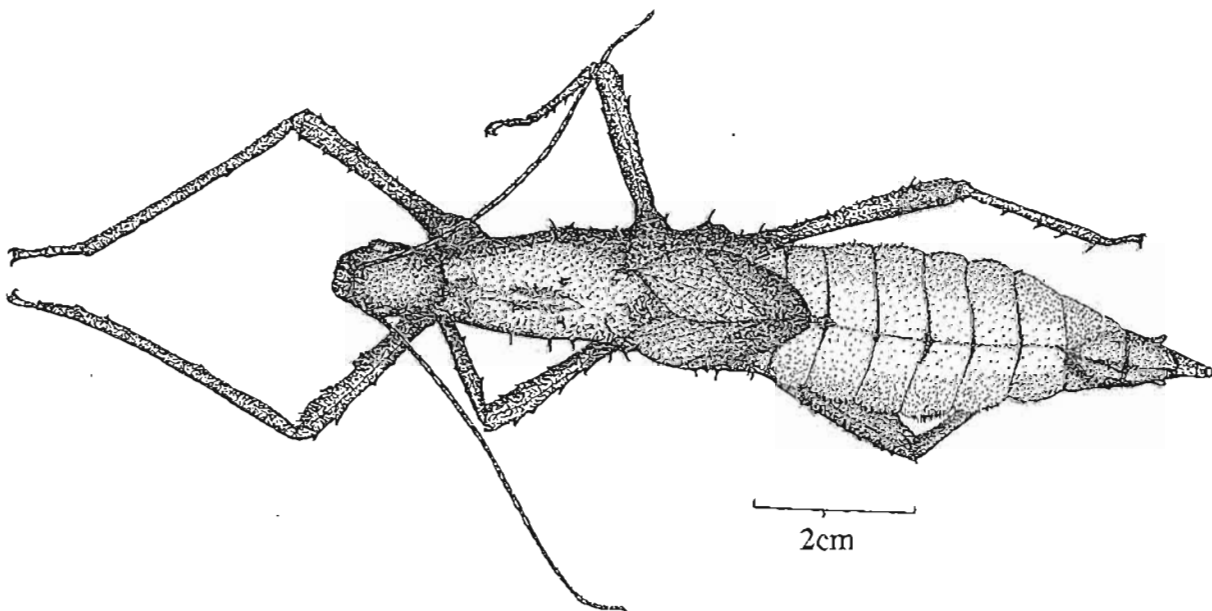


Figure 2. Adult female *Haaniella* sp. found at Sukau.

mesonotal spines on the photograph that it probably is *H. echinata* (Bragg pers. comm.).

The return to our lodge necessitated climbing through the canopies of two fallen trees and wading knee deep through water, and so, with further heavy rain the following day and night we were unable to do any further insect hunting at Sukau.

Danum Valley

We had three nights based at the Borneo Rainforest Lodge to explore this extraordinary piece of virgin rainforest with a very enthusiastic guide. Leeches were extremely numerous by day and night, so extra vigilance was needed by the group as we pushed through the wet undergrowth. We saw phasmids during the day here, the first of which I caught on our first afternoon walk (in the rain!). This was a small almost black flying male (5.5 cm long) with a crest of fine spines on the back of its head and a clear white stripe across its forewings (figure 3). It has been suggested to me that this is *Paradiacantha fusca* Redtenbacher, 1908 (Bragg, pers. comm.).

On our first night walk along the paths around the lodge we found a *Prosentoria arrogans* Brunner von Wattenwyl, 1907 male with curved "horns" on his head and later, a female with straight "horns" of the same species (figures 4-8). The females were more similar to those described by Bragg (Bragg 2001) as *Prosentoria* sp. from "Niah", especially

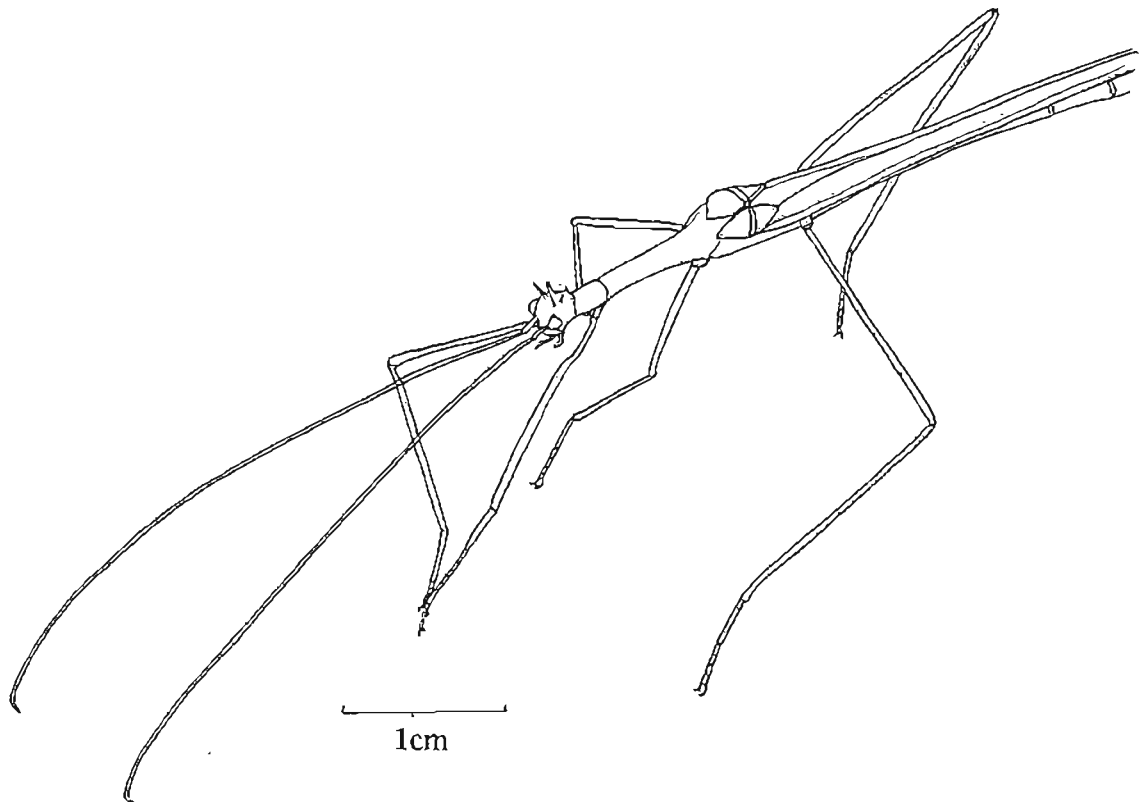


Figure 3. *Paradiacantha fusca* male found just outside the Borneo Rainforest Lodge in Danum Valley.

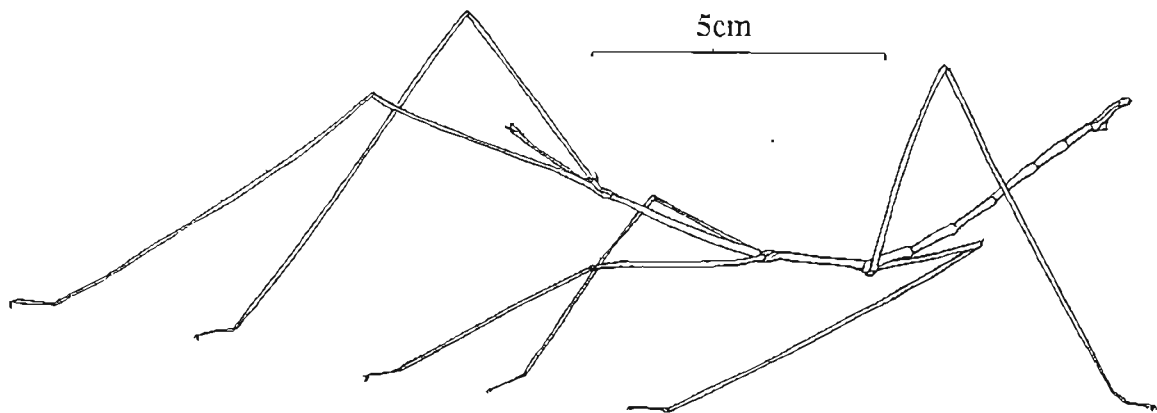
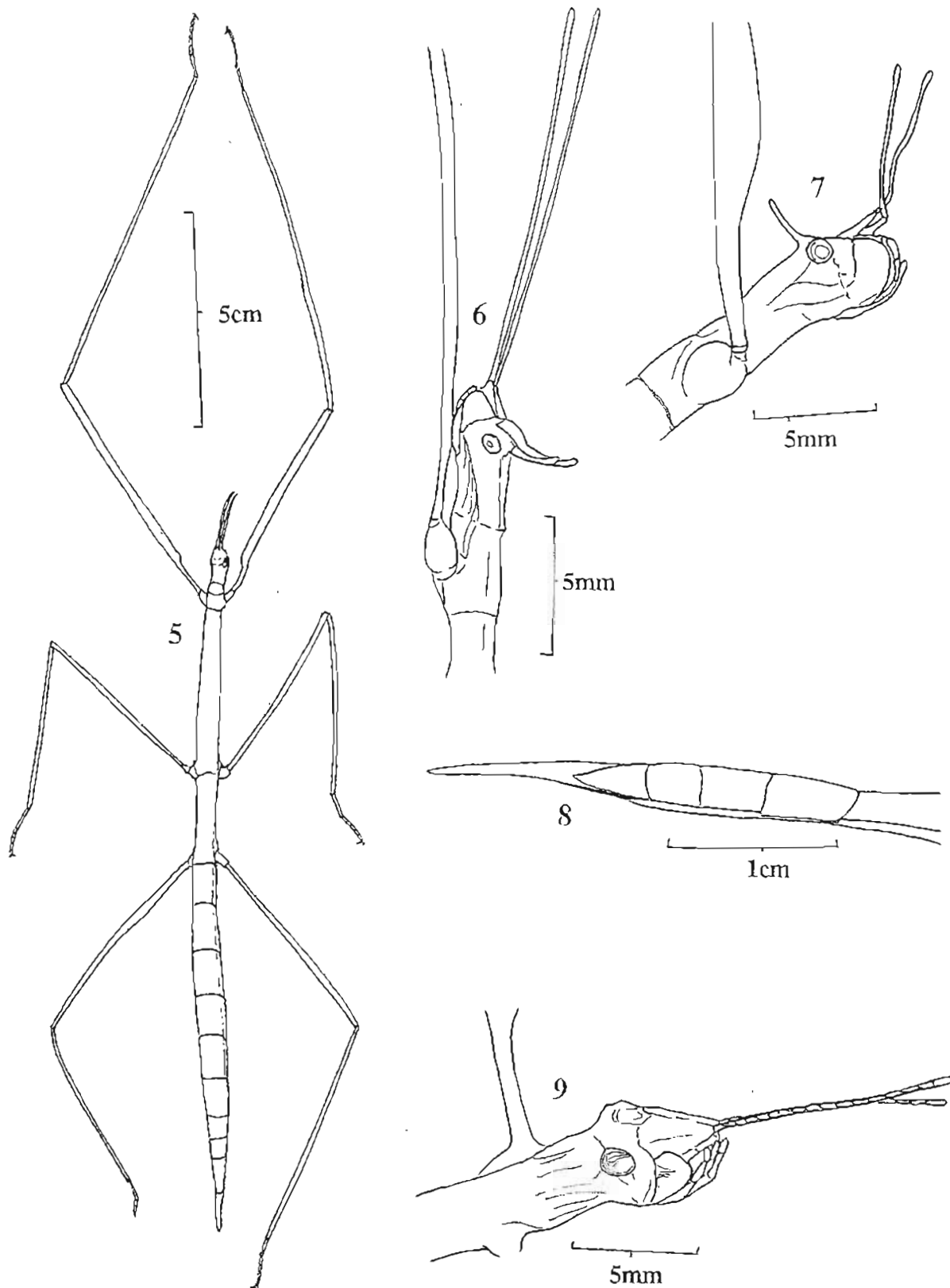


Figure 4. Adult male *Prosentoria arrogans* found on paths at Danum Valley.

with their longer, more slender shape and finer operculum (compare figure 8 with figure 19, female from Mt Kinabalu). We also once again found *A. margaritatus* adult males and females on very low growing vegetation and a couple of *H. echinata* nymphs (much less common than at Sukau). Much more numerous here were *Lonchodes* species, of which I think we found five during our stay. We never found males and females together and therefore I have not attempted to identify any of the males found. All of the female insects that we found were adults on this first night and diagnostic features that are visible on the photographs suggest they may have been some of *L. hosei* (the most common), *L. rusticus*, *L. thami*, *L. malleti* or *L. amaurops*. However, with the large amount of variation seen,



Figures 5-8. *Prosentoria arrogans* found on paths at Danum Valley.

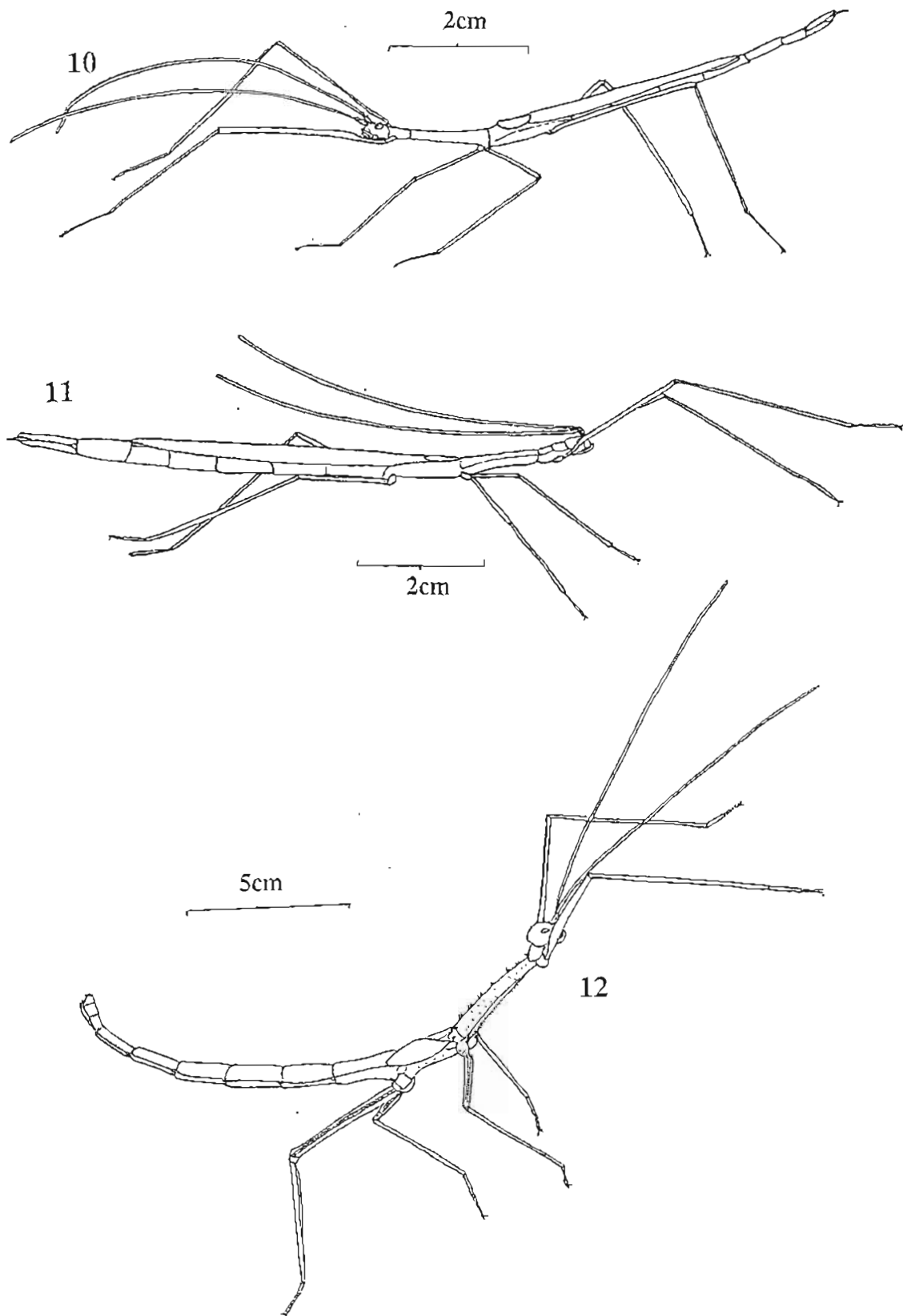
5. Adult female (a dull green colour, although brown colour forms were also found here).

6. Head of male showing curving "horns".

7. Head of female found at night showing similar, forward-curving horns.

8. Dorso-lateral view of female's abdomen.

9. Head of female found in daytime, without horns.



Figures 10-12. Phasminids found at Danum valley.

10. Adult male *Necrosia* sp.

11. Adult female *Necrosia* sp.

12. Sub adult female, possibly a *Diesbachia* species found feeding on giant gingers.

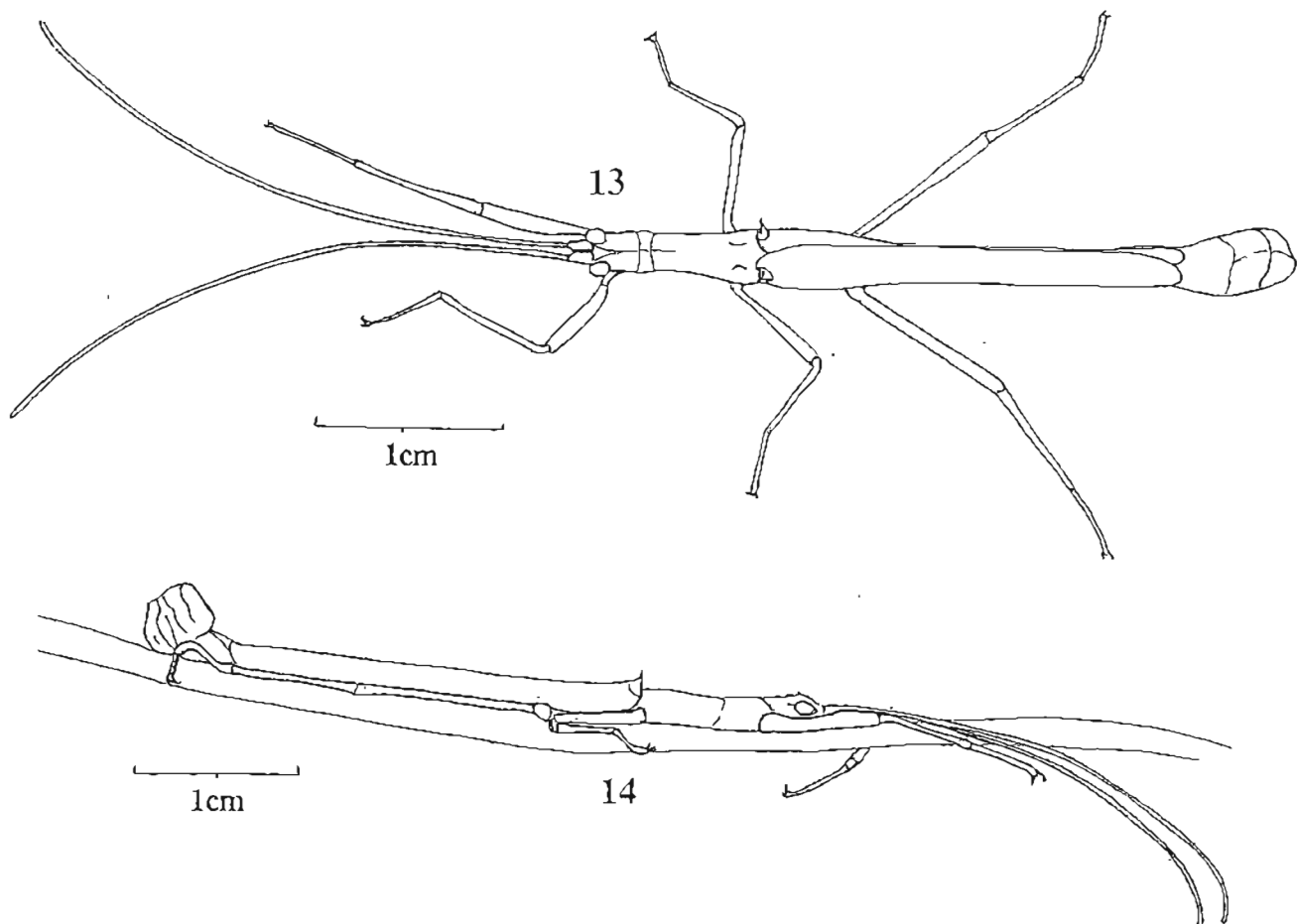
without actual specimens, verification of these suggestions is not possible.

In addition, we found adult males and females of *Necroscia* sp. (figures 10-11) on vegetation around head height at the edge of the road. The insects were a very vivid green colour, with red eyes and white to very pale pink wings. One female was parasitised by small red mites clinging to some of the joints on her abdomen and thorax.

The most impressive insect found during the night was a female nymph of what was possibly a *Diesbachia* sp. (Bragg, pers. comm.). Our guide had told me that the "really big insects" lived on the giant ginger that grew in that region by the roadside. Feeding damage on the plant gave this sub adult female (figure 12) away. She was already 18cm long and was a brilliant green colour all over, with pinkish red spines on her thorax and pink eyes. The nymph most closely fits the description of *Diesbachia sophiae* Redtenbacher, 1908, although it seemed to be too big to mature into this species (recorded as being only 14cm long). Although we searched the surrounding gingers very carefully, we did not find another example of this species during our stay at Danum.

The following morning our guide had found another *P. arrogans* at the lodge. However, this specimen was completely devoid of "horns" (figure 9).

The second night we were taken on a night drive and therefore had little time for insect spotting. A brief walk along the road however turned what looked like up a *Lonchodes modestus* Brunner von Wattenwyl, 1907 female which was nearly black with white markings



Figures 13-14. Male *Presbistus* sp.?

13. Dorsal view.

14. Lateral view showing large abdominal "club" and resting position on a small stick.

and vivid red hind femurs, a small female *H. echinata* nymph and a bright green male *Necroscia* sp.

The next morning we trekked for seven hours through virgin forest. We saw few animals, but 2km away from the Borneo Rainforest Lodge I did find a small flying stick insect (figures 13-14) which was beautifully camouflaged, being mottled green and brown. Its large club-shaped abdomen suggests it was a *Presbistus* species, although it may only be safe to say it was within the Aschiphasmatini.

That night I was keen to go up to the aerial walkway to look for insects 50m up in the canopy (hoping for *Phyllium* spp.). However, all that we found was one small flying species several meters away that I could not identify. On returning to the ground and the road into the lodge, however, we were more successful.

I found an adult female *Haaniella* sp. which looked a different overall shape from *H. echinata* (but it was impossible to verify this from the photograph), as well as *Phenacephorus auriculatus* Brunner, 1907, a male and female *Necroscia* sp. (figures 10-11) and a female *Lonchodes* sp.

Given more time I am sure we would have found many more phasmids. Our guide did search for leaf insects until midnight for us but found none, but even so, the diversity at Danum was well worth exploring.

Kinabalu Park

We had factored in an extra day at Kinabalu National Park to help us to acclimatise to the altitude before climbing the mountain. This gave two nights for phasmid hunting before the climb. We were staying just outside the park but ate in the restaurant there in the evening. Therefore our first outing was along the road that runs past the staff quarters back to the "Kinabalu Balsam Restaurant". Opposite the staff bungalows we found several brown *Carausius chani* Hausleithner, 1991 (the adult female had a large tubercule on her 5th abdominal segment) feeding on a low growing plant with large, very thick, leathery leaves. The road then cuts through a small section of forest for about 50m. Here we found adult females of both the micropterous and macropterous forms of *A. margaritatus* (figures 15-18). We also found a female *Phenacephorus spinulosus* Hausleithner, 1991 on the low growing vegetation.

The following evening, I was keen to follow the Silau Silau trail for a short distance as we had walked along it during the day and it seemed safe to walk it in the dark. On descending to the river, we spotted a male

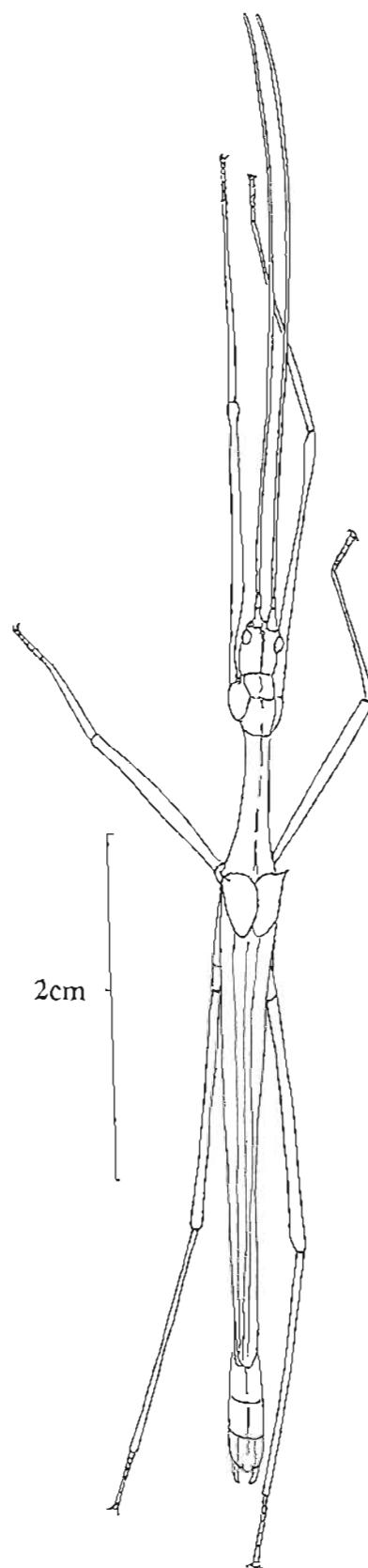
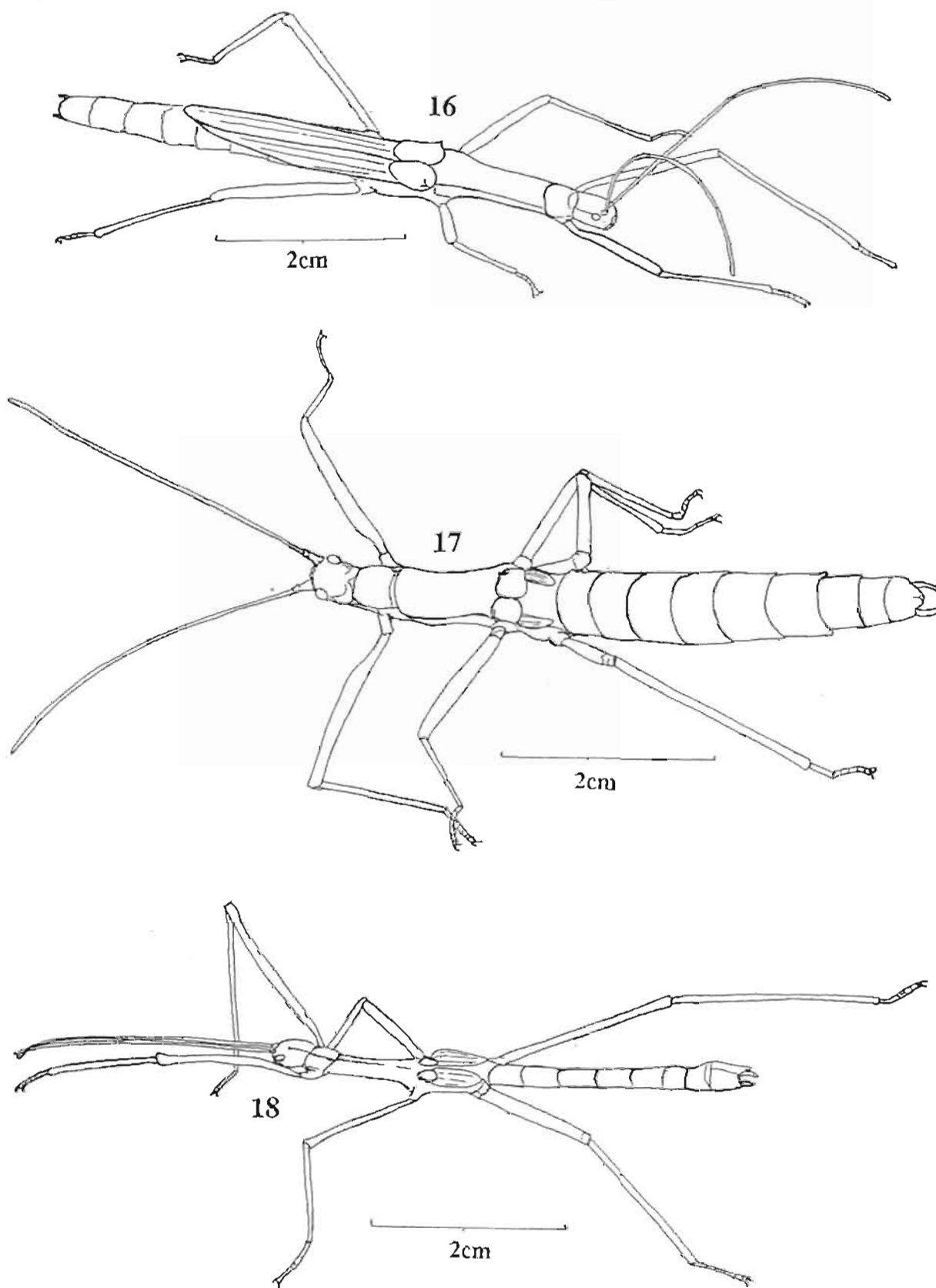
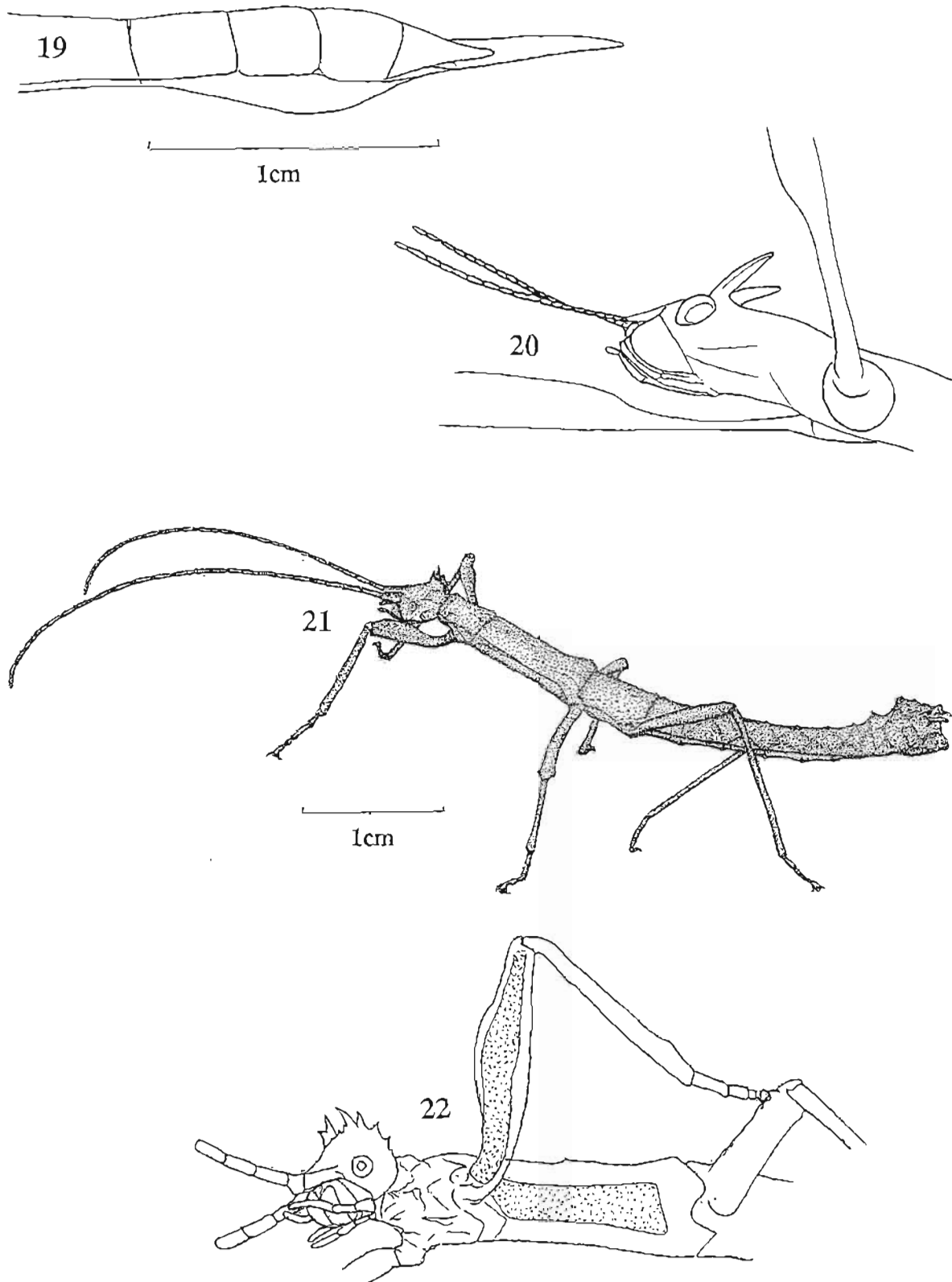


Figure 15.
Asceles margaritatus male of macropterous form.



Figures 16-18. *Asceles margaritatus*:
16. Female of macropterous form.
17-18. Micropterous form, 17. female, 18. male.



Figures 19-22.

- 19-20. Adult female *Prosenoria arrogans* found at Kinabalu National Park Headquarters. Olive green in colour. 19. Abdomen. 20. Head showing leaf-like "horns".
- 21-22. An undescribed species found at 3300m on Mount Kinabalu, close to the Laban Rata Rest Hut. 21. Lateral view. 22. View showing extensive red patches on the thorax and front legs (stippled regions).

Phenacephorus sp., but once we were on the trail itself we found no further insects at all and turned back after about 400m. Instead we took the cut through at the top of the Silau Silau trail from the main road up to the Balsam Restaurant. This was a much less used path with lots of low growing vegetation. We found a nymph of *Necroscia* sp. and on the same bush (which had ressellated, hairy leaves) an adult female *Dinophasma kinabaluense* Bragg, 2001. Further up the path I was very pleased to find an adult female *Lonchodes harmani* Bragg and Chan, 1993 hanging from some higher growing plants, followed by a *P. arrogans* female, this time with clear leafy projections pointing backwards from her head (figure 20). This was a much stockier specimen than those found at Danum Valley, with a much deeper operculum (compare figure 19 with figure 8). We found a couple of small brown Lonchodinae males which I could not identify, and a male of the micropterous form of *A. margaritatus* (figure 18). Possibly the highlight of the evening, however, was finding an adult female *Haaniella scabra* Redtenbacher, 1906 with an egg in her ovipositor ready to be laid. She was at the base of a small shrub, virtually on the leaf litter and therefore was possibly descending to try to find a suitable oviposition site.

The following morning we climbed from 1600m to the Laban Rata resthouse (3300m) through thick cloud, where we remained for the afternoon. We then started our ascent of the summit (4095m) at 0230 the following morning. Having done the first 100m of the climb we entered a grove of ericaceous bushes which were a little taller than head height. I found a small stick insect feeding on these bushes which was unlike any that I had read about in *Phasmids of Borneo* (Bragg 2001). The insect was very pretty, with extensive red patches under its forelegs and thorax (figures 21-22), but rough and mossy above (rather reminiscent of *Creoxylus spinosus* Fabricius, 1775). I thought that this might be a new species, but since have found from Phil Bragg that he has it in his collection already and is in the process of describing it (Bragg pers comm.).

We left the mountain that day and headed for Poring Hot Springs to recuperate. Having got up at 0200, we were tired and so went out immediately after dark (1930) and only found two stick insects on the Langanan Waterfall trail, a male *H. echinata* nymph and a male *A. margaritatus* (macropterous form). The following day we visited the butterfly farm to see their captive *Phobaeticus?* sp. (very long, yellow eyes in the male) and *Haaniella* specimens (the only *Haaniella* we could see in fact was a dead one which had been set out on the top of the log, presumably for easy viewing!). A huge thunderstorm that evening effectively closed our insect viewing chances for the trip, but having already found around 20 species, including one at 3300m, I was content to call it a night.

Reference

Bragg, P.E., (2001) *Phasmids of Borneo*. Natural History Publications (Borneo), Kota Kinabalu.

A reassessment of some Bornean Lonchodinae and Aschiphasmatidae, with some lectotype designations, new synonyms, and the description of two new species

P.E. Bragg, 8 The Lane, Aysworth, Nottinghamshire, NG16 2QP, UK.

Abstract

A visit to the natural history museums in Vienna and Dresden, along with photographs kindly sent to me, and some cultured specimens have enabled a reassessment of some of the Bornean species of Lonchodinae. The male of *Lonchodes rusticus* (Brunner, 1907) is described and illustrated. Seven new synonyms have been identified: *Prisomera morbosum* Brunner, 1907 is a junior synonym of *Lonchodes imitator* (Brunner, 1907); *Prisomera indefinitum* Brunner, 1907 is a junior synonym of *Lonchodes rusticus* (Brunner, 1907); *Lonchodes infrequens* Brunner, 1907 is a junior synonym of *Lonchodes jejunos* (Brunner, 1907); *Phenacephorus parahaematopus* Bragg, 1995 is a junior synonym of *Phenacephorus sepilokensis* Bragg, 1994; *Lonchodes hosei herberti* Bragg, 2001 and *Carausius collega* Brunner, 1907 are both junior synonyms of *Lonchodes cultratolobatus* (Brunner, 1907) n.comb.; *Prisomera rubrifemur* Brunner, 1907 is almost certainly a junior synonym of *Lonchodes modestus* (Brunner, 1907). The syntype series of several species described by Brunner (1907) have been found to contain more than one species: lectotypes are designated for six species of Lonchodinae. Two new species are described from Kinabalu National Park, Sabah: *Lonchodes bushelli* n.sp. and *Dinophasma viridis* n.sp. *Presbistus fragilis* Seow-Choen, 2000 is transferred to *Necroscia* Audinet-Serville, 1838 and renamed *Necroscia ischnotegmina* nom.nov. *Xylobistus* Zompro, 2004 is a new synonym of *Dinophasma* Uvarov, 1940.

Key words

Phasmida, Phasmatodea, Borneo, new synonyms, lectotype designations, *Lonchodes bushelli* n.sp., *Dinophasma viridis* n.sp., *Necroscia ischnotegmina* nom.nov., *Xylobistus*.

Introduction

The publication of *Phasmids of Borneo* (Bragg, 2001) cleared up many of the problems surrounding Bornean Lonchodinae. However, a few problems remained because I had not seen all the type material, and the opposite sexes of some species were unknown. A combination of events: visits to two museums, the collection of living material and examination of some photographs, has resulted in this paper which clarifies a number of issues. *Prisomera indefinitum* Brunner, 1907 was omitted from my book because the locality was wrongly recorded in Brunner's (1907) publication.

In May 2001 I visited Dresden Museum (SMTD) and located a pair of *Lonchodes rusticus* (Brunner, 1907) in the collection, prior to this only three females had been recorded, and the male was unknown (Bragg, 2001: 492). This material was taken to Vienna for comparison with type material at NHMW. Confirmation that the male and female had been correctly associated was obtained by examination of material reared by Mark Bushell. As a result a new synonym has been identified.

In 2002 I visited Vienna Museum (NHMW) and examined the type material of the Bornean species housed there. As a result of that visit it became clear that some lectotype designations would be necessary to avoid possible confusion in the future. It is well known that Brunner and Redtenbacher described species from series which have since been shown to comprise more than one species; recently Zompro (2004) described the three new species *Pseudodatames bicornutus*, *Xylobistus braggi*, and *Planispectrum javanense*, all based on material included with other species by Redtenbacher (1906). Examination of the type material of Bornean Lonchodinae in Vienna has shown that in several cases the material of one "species" is actually made up of two or three species mixed together. In each case there is an available name, so no new names are required, but lectotype designations are necessary to ensure stability of the names. There are also species which I had not been able to examine previously because of the reluctance of the museum to post material.

Some photographic evidence has led to two new synonyms being identified. While working on my book I requested the loan of *Carausius cultratolobatus* Brunner, 1907 from

Genova (MCSN) but was unable to borrow the specimen because the museum was in the process of moving to a new building. I have since been able to examine photographs of the specimen and can confirm it is a synonym of a species described in my book. Recently I have received a photograph of a mating pair of *Phenocephorus* which shows two species which I described are in fact male and female of the same species.

While at Kinabalu Park in 2001 I collected new material of Aschiphasmatidae, including *Dinophasma viridis* n.sp. Comparison of this new species and type material of *Xylobistus braggi* Zompro, 2004 shows they belong in the same genus and Xylobistinae is not a valid subfamily. While in Singapore in 2001 I examined the type material of the West Malaysian species *Presbistus fragilis* Seow-Choen, 2000 and found it has placed in the wrong suborder: it belongs in Necrosciinae.

In the following lists the lay-out of the data for Brunner's type specimens is shown as it is on the labels, with italics used to indicate hand-written words. The labels which have just a number are blue and the number refers to the museum's catalogue; all other labels are white. LT refers to lectotype, PLT to paralectotype and HT to holotype; new designations are indicated in bold print. Complete synonymies are not given: only the original name and new synonyms are listed.

Aschiphasmatidae

Dinophasma Uvarov, 1940

Dinophasma Uvarov, 1940: 173 (type species *Phasma guttigera* Westwood, 1859).

Xylobistus Zompro, 2004: 73 (type species *Xylobistus braggi* Zompro, 2004) **new synonym**.

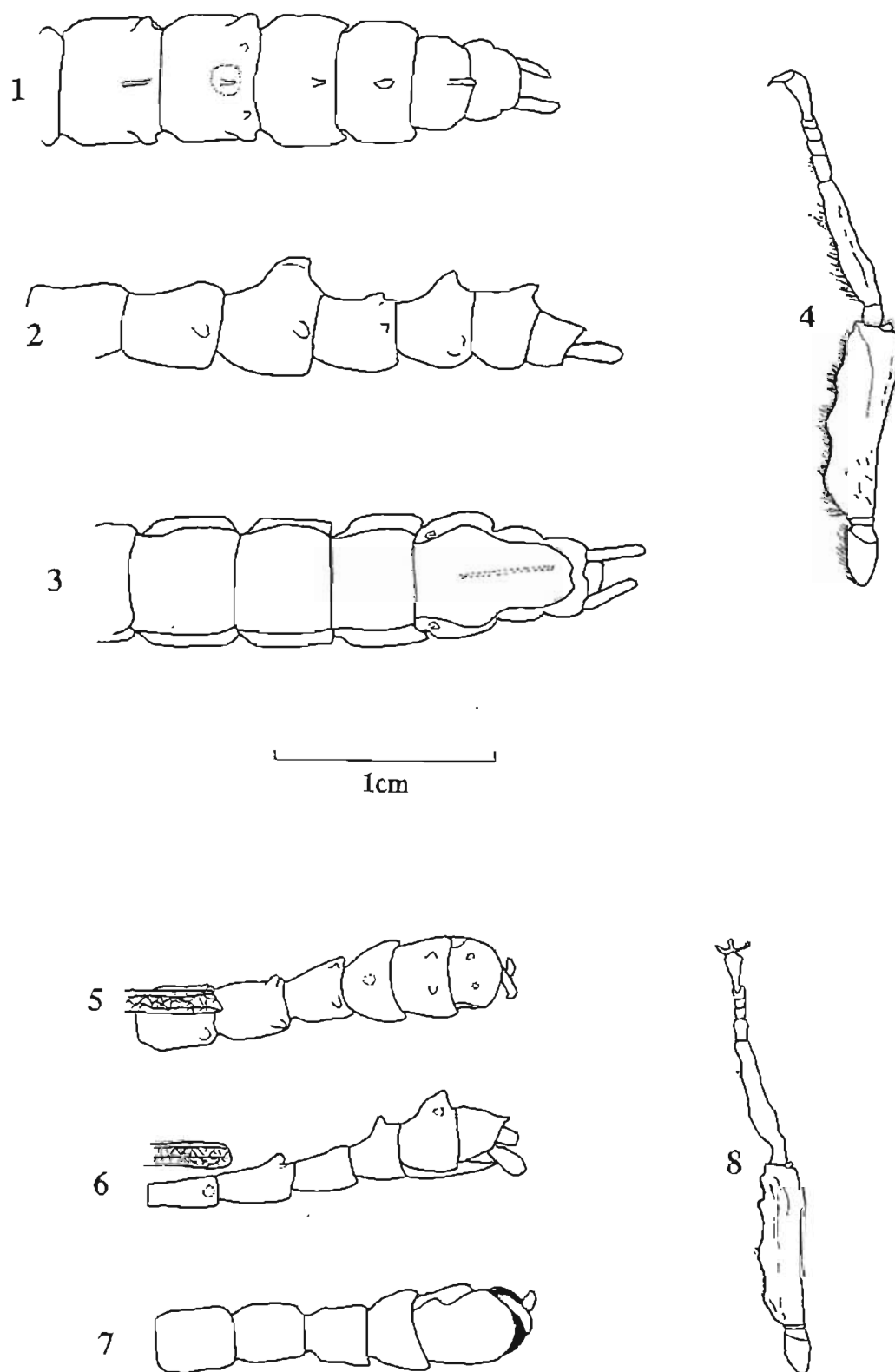
Dinophasma braggi (Zompro, 2004) (figs 1-8)

Xylobistus braggi Zompro, 2004: 73, figs 32a-b (♂), 32c (♀).

The undulating lamina on the femora means *Dinophasma viridis* n.sp. keys out to the genus *Xylobistus* Zompro, 2004 using Zompro's (2004: 71) key to Aschiphasmatidae. However, the lobes on the thorax and abdomen, pectinate ungues, and general body shape clearly place *viridis* in *Dinophasma* Uvarov, 1940; the mesonotal spine of the male is typical of that found in *D. guttigerum* and the mesonotal lobe of the female appears to be just a more swollen version of that found in *guttigerum*.

The tufts of long setae and the undulating lamina on the femora of *viridis*, and the spiniform elytra in the female are similar to those in *Xylobistus braggi* Zompro, 2004, the type species of *Xylobistus*. Examination of the two paratype females of *X. braggi* shows that they do have pectinate ungues, contrary to the description given by Zompro. However, the pectination is extremely fine and can only just be seen under high magnification (50x), and only then if viewed from the correct angle. In contrast, the pectination in *D. viridis* is clearly visible at lower magnification (10x). Abdominal segments 5-9 of the female of *X. braggi* each have an obvious dorsal lobe or swelling and the mesonotum and metanotum each have a slight swelling on the posterior margin; the metanotum has lobes similar to those in *viridis* (fig 15). The male of *X. braggi* has a mesonotal spine and lobes on some abdominal segments (fig 6), it is distinguished from *viridis* because it lacks a triangular lobe on the pronotum.

Xylobistus braggi is therefore transferred to the genus *Dinophasma* and the genus *Xylobistus* Zompro becomes a synonym of *Dinophasma* Uvarov.



Figures 1-8. *Dinophasma braggi*

1-4. Female: dorsal, lateral & ventral views of abdomen and left fore leg.

5-8. Male: dorsal, lateral & ventral views of abdomen and left fore leg.

***Dinophasma mjobergi* Bragg, 2001**

Frank Hennemann kindly gave me a pair of this species which were collected in 2003.

♂ (PEB-3462) SABAH, Crocker range, F.H. Hennemann & O. Conle, 24.iii.2003.

♀ (PEB-3461) SABAH, Crocker range, F.H. Hennemann & O. Conle, 27.iii.2003.

The eggs of this species were previously unknown. I have removed some eggs from the body of the female, one of these is covered in setae so is obviously fully developed. The eggs are much closer to spherical than those of *D. guttiger* or *saginata* or *kinabaluense*. Length 3.8mm, height 2.8mm, width 2.2mm.

***Dinophasma viridis* n.sp.**

The general appearance and body proportions of this species are similar to the other species of *Dinophasma* which have winged males: *D. guttiger* (Westwood), *D. saginatum* (Redtenbacher), and *D. ruficornis* (Redtenbacher). When alive this species is easily distinguished from others by the distinctive green and black coloration. Preserved females can be distinguished by the arrangement of dorsal lobes on the body (which are consistent in the two specimens), in particular the mesonotal lobe is constricted at the base and dilated in the middle. Preserved males may be distinguished by the presence of an undulating lamina on the femora, combined with a triangular lobe on the posterior margin of the pronotum.

Material

Holotype: ♀ with eggs (BMNH, PEB-3155) Sabah, Kinabalu N.P. Silau Silau trail. P.E. Bragg, 03.viii.2001.

Paratypes: ♂ (BMNH, PEB-3156) data as holotype; ♂ penultimate instar nymph (PEB-3157) Sabah, Kinabalu N.P. Silau Silau trail. P.E. Bragg, 15.viii.2001; ♀ ([FH-J0346-1) N-Sabah. Mt Kinabalu Park, near Head Quarters, Silau-Silau trail. 1550m. Hennemann & Conle, 04-08.viii.1996.

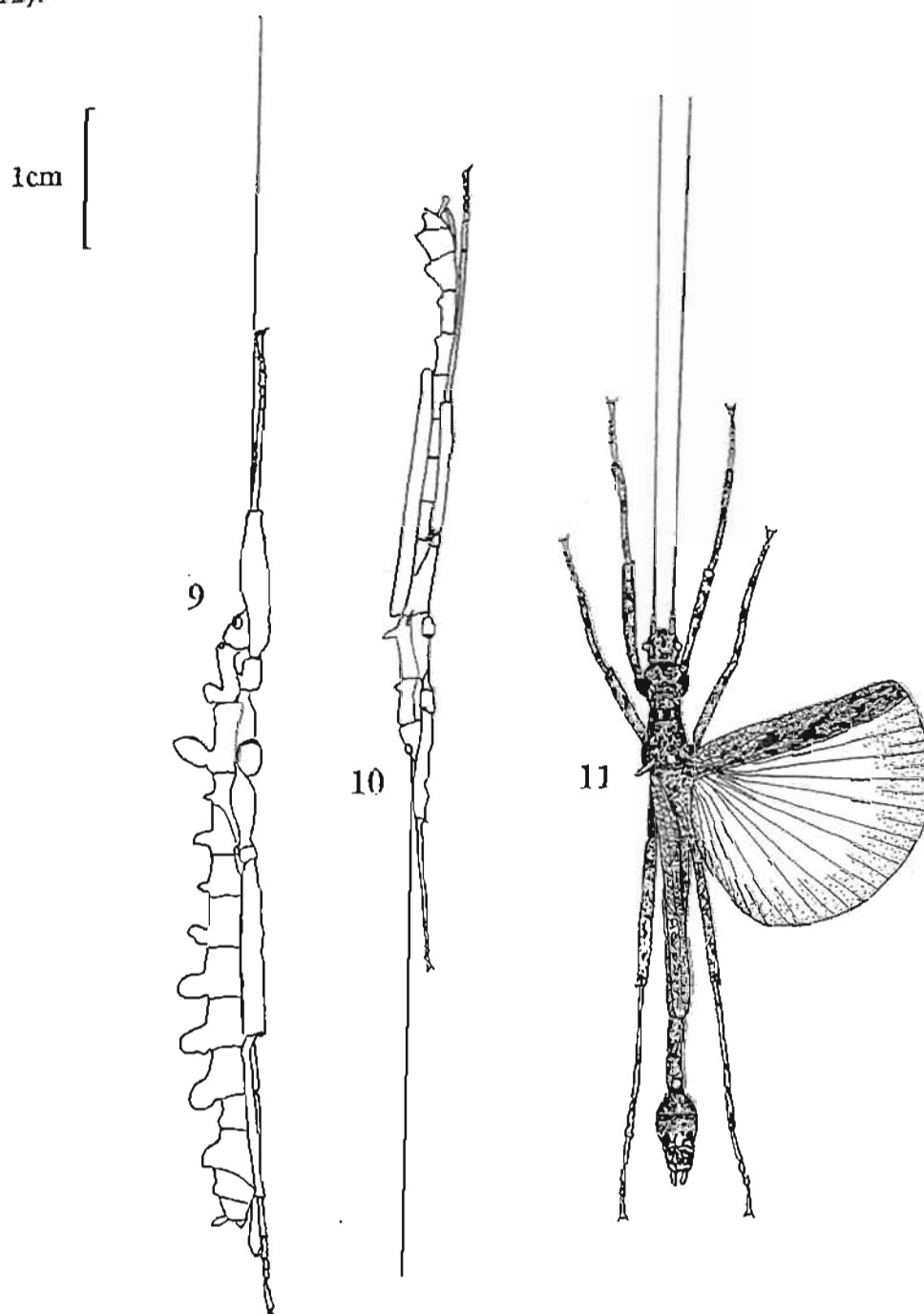
The adult male was found on an adjacent bush within a metre of the holotype female.

Female (figs 9, 12-16)

Holotype with ventral surface of body pale brown, rest of body, and legs and antennae, mottled green and black; green and black present in about even quantities. The holotype has retained the original coloration, although the green has faded slightly. The female paratype was originally preserved in alcohol and has consequently lost its original colouring: it has a uniformly pale brown ventral surface, the rest of the insect is light brown, mottled with dark brown or black. Body very finely setose, with long setae on ventral margins of thoracic pleurites and on lateral margins of abdominal terga. Legs densely setose; all femora, tibiae and coxae with some tufts of very long setae. Body length (including operculum): holotype 47mm, paratype 48mm; full measurements of the holotype are given in table 1.

Head wider than long, posterior hidden by pronotum. Pronotum constricted in the middle, posterior and anterior wider than long, anterior swollen, posterior margin with very obvious lobe. Mesonotum widening towards posterior, posterior margin as wide as length of mesonotum; posterior margin with large lobe shaped like a broad spear-head: a narrow base, a dilated mid section and apex narrowing to a point. Metanotum shorter than median segment; metanotum and abdominal segments 1-9 each with a laterally compressed lobe on posterior margin; lobes increase in size from metanotum to abdominal segment 6 except for segment 2 which is of similar size to metanotal lobe, lobes on 7th and 9th small, 8th large,

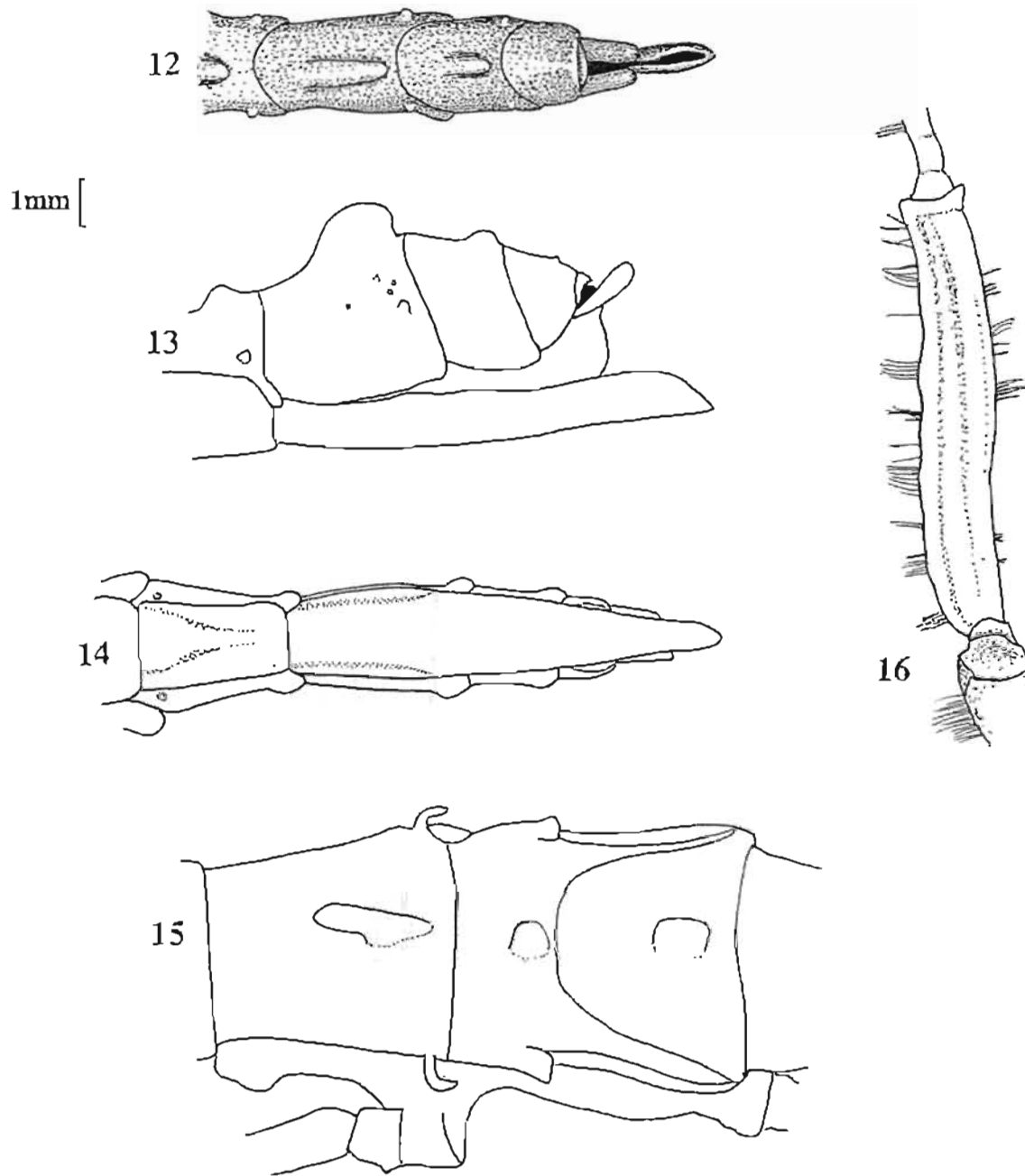
segment 10 without lobe. Apex of 10th segment rounded, lamina supraanalis very small. Cerci projecting beyond the end of the abdomen, straight, cylindrical, apex rounded, base narrowed. Operculum long, slender, apex laterally compressed, almost forming a tube (see fig 12).



Figures 9-11. *Dinophasma viridis* n.sp.

9. Female: lateral view. 10-11. Male: lateral & dorsal views.

Hind legs reaching just beyond apex of abdomen. Fore femur with a slightly undulating lamina on the ventro-posterior carina; similar, but much smaller, undulations are present on the ventro-anterior carinae of the mid and hind legs. Both ventral carinae hind femora and ventro-anterior of mid leg each with two minute spines near the apices; ventro-posterior of



Figures 12-16. *Dinophasma viridis* n.sp., female.

12-14. Apex of abdomen, dorsal, lateral & ventral.

15. Mesonotum and metanotum, dorso-lateral view. 16. Left fore femur.

mid femur and ventro-anterior of fore femora each with one extremely minute spine. Mid and hind tibiae with a ventral undulating lamella. All ungues clearly pectinate. Elytra spine-like, curved. On the metanotum are what may be vestigial hind wings present as small fleshy lobes, about half the length of the elytra (fig 15).

Adult male (Figs 10-11 & 17-20).

Body coloration and setae as in female holotype; wings with costal region similarly mottled in green and black but also with pale brown in place of some of the green, anal region

transparent with margin translucent brown; elytra green with a longitudinal black line. Body length 39mm, full measurements in table 1.

Head about as long as wide. Pronotum slightly longer than wide, posterior margin with small triangular lobe. Mesonotum with spine-like lobe on posterior margin. Metanotum, abdominal segments 1-5 without lobes; segments 6-10 with small lobes on posterior margins (10th very small). Segment 8 widening, 9th narrowing, 10th of uniform width (segments 6-7 appear to have been laterally compressed during preservation). Posterior margin of 10th segment rounded, with a slight indentation at the apex. Cerci project downwards and backwards, slightly curved, almost triangular in cross-section, apices rounded with small spine on the interior surface of the apex. Poculum broad, flat, apex rounded.

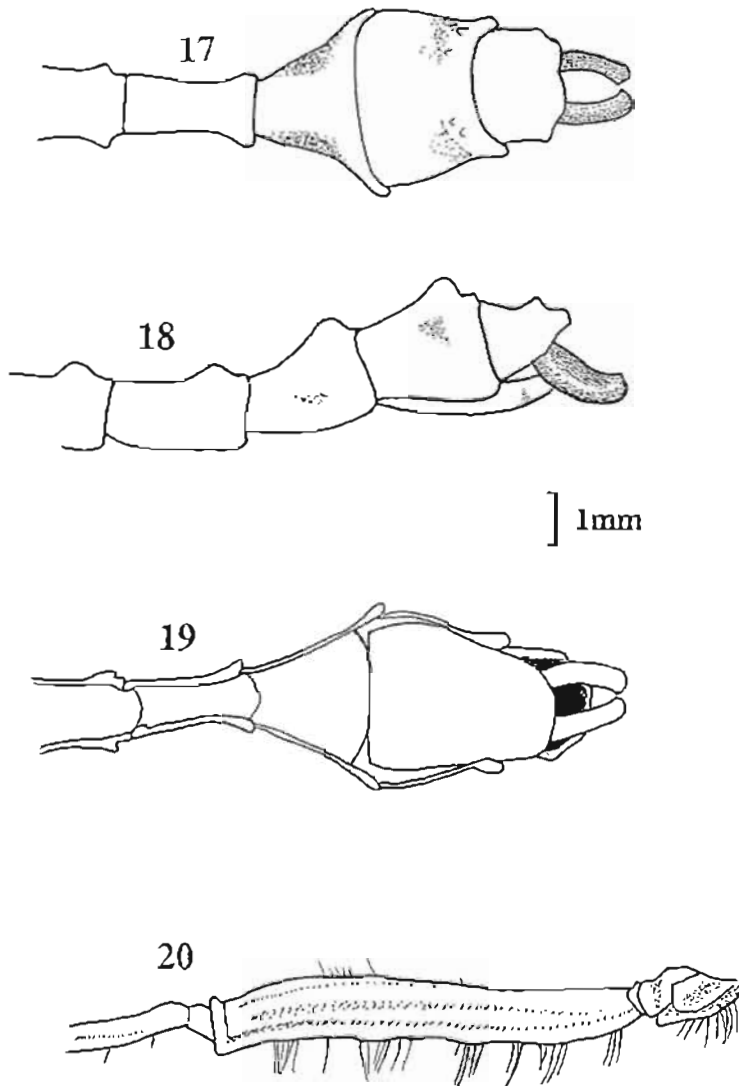
Hind legs reaching just beyond end of abdomen. All femora with lamella as in female; small ventral lamina present on mid and hind tibiae. Fore femur with two extremely minute spines on ventro-anterior carina; mid femur with one extremely minute on ventro-posterior, and 2-3 on ventro-anterior; hind femora with four minute spines on ventro-anterior and two on ventro-posterior carina.

Elytra long, slender, of uniform width, about one third of the length of the mesonotum. Wings reach to just beyond the end of 5th abdominal segment.

Male nymph

Colouration as in adult; the anal region of the wing bud is green with black blotches. The abdomen of the specimen is shrunk and distorted; body length about 34mm, wing buds 4.5mm.

Egg: not known.



Figures 17-20. Male *Dinophasma viridis* n.sp.

17-19. Abdomen of male: dorsal, lateral and ventral.

20. Left fore femur.

Table 1. <i>Dinophasma viridis</i> n.sp. measurements in mm.					
	♀ HT	♂		♀ HT	♂
Total	47	39	Fore femur	9.0	8.0
Antennae	43	38	Fore tibia	7.5	7.0
Head	3.5	2.5	Fore tarsus	6.5	5.0
Pronotum	4.5	3.0	Mid femur	7.5	6.0
Mesonotum	5.0	4.0	Mid tibia	7.5	6.0
Metanotum	2.0	2.0	Mid tarsus	4.5	4.0
Median segment	3.5	3.5	Hind femur	12.0	10.0
Elytron	0.7	1.4	Hind tibia	12.5	11.0
Wing	-	17.5	Hind tarsus	7.5	6.5

Presbistus fragilis Seow-Choen, 2000

This species does not belong in Aschiphasmatidae: see *Necroscia ischnotegmina* **nom.nov.** below (page 29).

Lonchodinae

With the exception of *Carausius cultratorobatus* Brunner, which is transferred to *Lonchodes*, the species below are arranged alphabetically within the genera used in *Phasmids of Borneo*; one previously undescribed species, *Lonchodes bushelli* is included. Although it is recognised that some should probably be placed in other genera, a thorough revision of the suborder would be required to correctly assign all the species.

Carausius abbreviatus (Brunner, 1907)

Dixippus abbreviatus Brunner, 1907: 280.

Data for the NHMW types in Bragg (2001: 419) was taken from Brunner (1907: 281) and is incorrect. Brunner recorded the NHMW specimens as coming from Kina Balu; the correct data is as follows:

LT ♂ Selected here.	Brunei, Borneo Staudinger	Collectio Br.v.W.	det. Br.v.W. <i>Dixippus</i> <i>abbreviatus</i> Br.	23.380
PLT ♂	Brunei, Borneo Staudinger	Collectio Br.v.W.	det. Br.v.W. <i>Dixippus</i> <i>abbreviatus</i> Br.	20.850

Carausius sanguineoligatus (Brunner, 1907)

Dixippus sanguineoligatus Brunner, 1907: 280.

There are three syntypes in NHMW, all male but of two species. One lacks the end of the abdomen, but is selected as the lectotype of *sanguineoligatus* because the other two are both identical to *Carausius chani* (Hausleithner, 1991).

LT ♂ Selected here.	Coll. Br.v.W. Kina Balu, Borneo Staudinger	det. Br.v.W. <i>Dixippus</i> <i>sanguineoligatus</i>	20.843	
PLT ♂	Coll. Br.v.W. Kina Balu, Borneo Staudinger	det. Br.v.W. <i>Dixippus</i> <i>sanguineoligatus</i>	19.589	<i>C. chani</i> (Hausleithner, 1991) det. P.E. Bragg, 2002
PLT ♂	Coll. Br.v.W. Kina Balu, Borneo Staudinger	det. Br.v.W. <i>Dixippus</i> <i>sanguineoligatus</i>	25.632	<i>C. chani</i> (Hausleithner, 1991) det. P.E. Bragg, 27.iii.2002

***Lonchodes bushelli* n.sp.**

Holotype: ♀ (BMNH, PEB-3283) SABAH, Kinabalu N.P., Liwagu Trail (Power station end). P.E. Bragg, 26.viii.2001.

Paratypes: all same locality and collector as holotype: 2♂♂ (PEB-3191 & PEB-3192) 15.viii.2001; 2♂♂ (PEB-3193 & PEB-3194) 17.viii.2001; ♂ (BMNH, PEB-3210), ♀ (PEB-3211), ♀ nymph (PEB-3233), ♂ nymph (PEB-3234), ♀ (PEB-3390) 26.viii.2001.

Female (figs 21, 23-29)

Head, body and legs almost uniformly mid or dark brown. Body rugose, densely granulose, and may or may not have large lobe-like tubercles on the thorax and abdomen. Mid femur, mid tibia and fore tibia with dorsal lobes. Antennae not quite reaching to end of fore tarsi. Body length 56-61mm (Holotype 61mm); full measurements in table 2.

Head rectangular, 1.6 times longer than wide, slightly raised between the eyes. Antennae with basal segment broad, flattened; second segment short, cylindrical; remainder filiform. Pronotum almost rectangular, 1.4 times longer than wide, anterior margin slightly concave, posterior may have a multi-branched lobe. Mesonotum with a longitudinal carina which continues along the metanotum and abdomen as far as half way along the 3rd segment. Mesonotum widening evenly, with a longitudinal carina, with a row of rounded tubercles on the lateral margins and a few scattered randomly; posterior margin may have a bifurcate lobe. Metanotum and median segment of equal width, the junction between the two segments is marked by a lobe or at least a bulge in the longitudinal carina; both segments may have a multi-branched lobe. Meso- and meta-pleura with a row of rounded tubercles. Meso- and metasternum tuberculate. The abdomen widens slightly to the 5th segment, narrowing thereafter. Posterior margin of abdominal segments 2-4 may have small tubercles. 5-9 may have large swollen lobes (figs 22 & 27-29) or small tubercles. Large rounded tubercles are present on the sides of the 6th segment. Segments 2-6 approximately as long as wide and of similar size; 7th wider than long, shorter than 6th; 8th-10th of decreasing length. Lamina supraanalis wider than long. Segments 10 and 11 with a longitudinal carina. Postero-lateral margins of anal segment serrated (fig 23). Abdominal sternites tuberculate. Seventh sternite with a distinct praeopercular organ (fig 25). Operculum rugose and tuberculate, apex slightly pointed.

All legs with corresponding femur and tibia of equal length. Hind tibiae just reaching end of abdomen. Fore and mid femora rugose. Fore femur compressed and curved at the base; with a small triangular lobe near the apex of the ventro-posterior carina, dorso-anterior carina with an undulating lamina, medio-ventral carina very distinct, dorso-posterior only visible at anterior. Fore tibia with dorso-posterior and dorso-ventral carinae fused, except at anterior end, and forming an undulating lamina; medio-ventral carina forming a low-lying

lamina. Mid femur with a triangular lobe and one or two small teeth near the apex of the ventro-posterior and ventro-anterior carinae; dorso-posterior carina with a large lobe near the apex, dorso-anterior with a small lobe near the base (the dorso-posterior carina is not distinguishable on basal third of mid femur). Mid tibia with the two dorsal carinae fused on the basal third and forming a lobe; dorsal carinae distinct on rest of tibia, dorso-anterior with a small lobe near the apex. Hind femur laterally compressed, ventro-posterior with a triangular lobe at the apex, ventro-anterior with a smaller, flatter lobe. Tarsi all with first tarsomere less than the combined length of 2nd and 3rd.

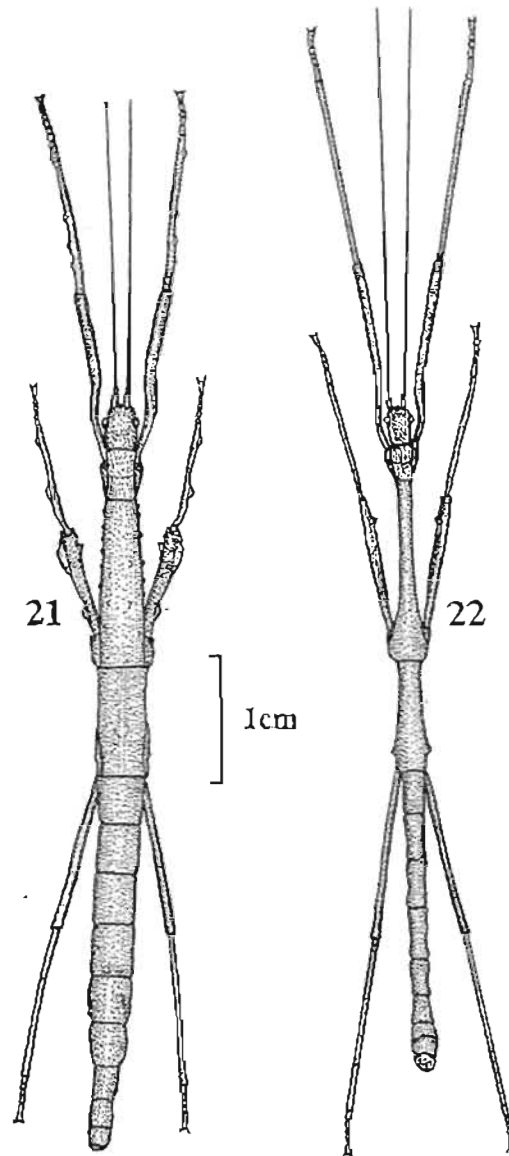
Holotype with lobes or tubercles on posterior of pronotum, mesonotum, metanotum, and abdominal segments 1-8: these are particularly large on pronotum and abdominal segments 5-8 (see fig 29). Lobes are clearly present on the tibiae and body of the female nymph (body length 42mm).

Male (figs 22 & 30-33)

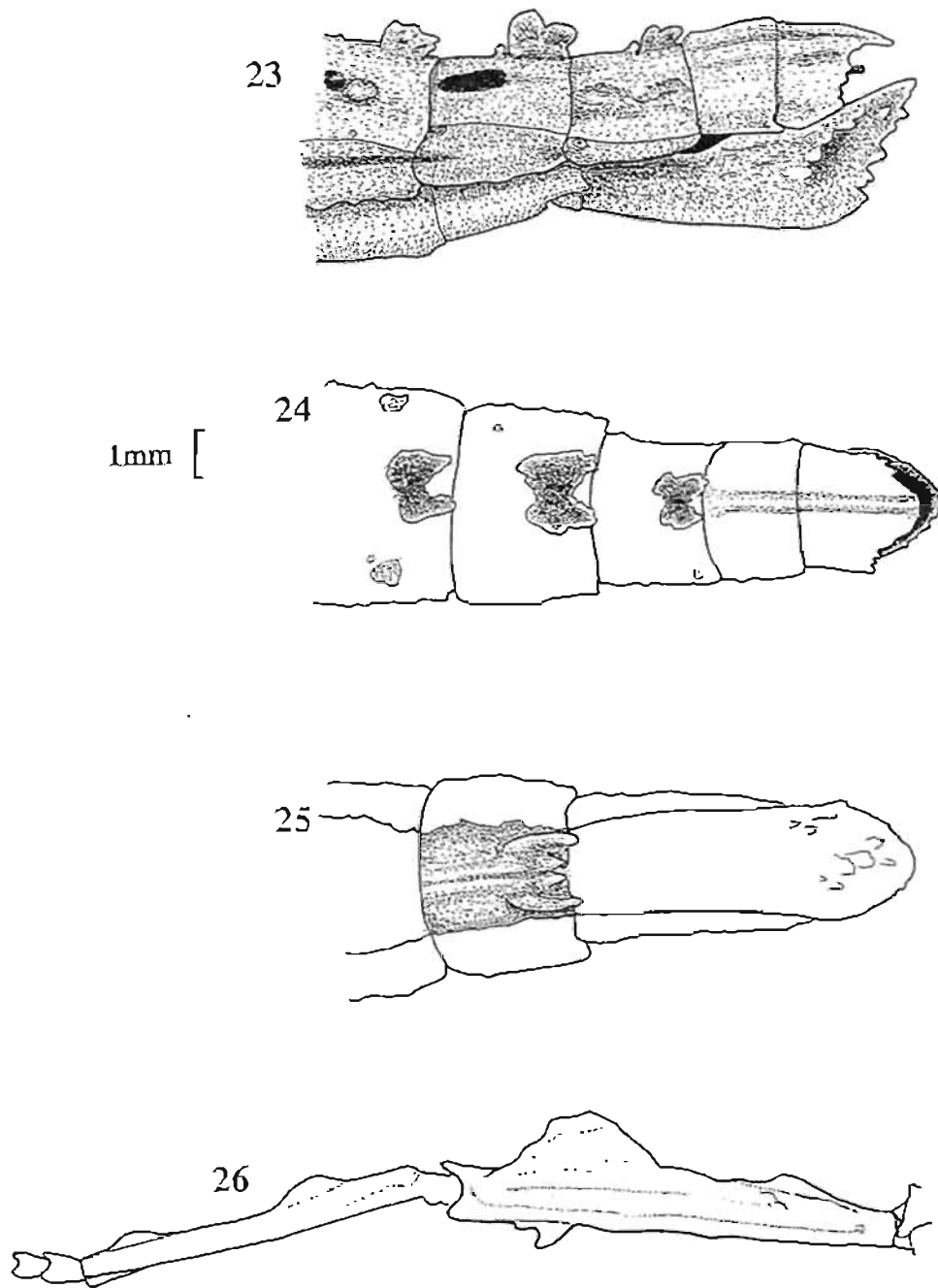
Body very dark green, legs reddish, eyes pale cream, antennae greenish-brown. Head, body and legs very densely granulose. Body of almost uniform width except for pleura projecting at leg joints. Antennae reaching the end of the fore tarsi. Body length 50-52mm; table 2 gives full measurements for a 52mm specimen.

Head rectangular, 1.5 times longer than wide, slightly raised between the eyes but without spines. Pronotum of similar width to head, 1.3 times longer than wide, anterior half raised in the middle, posterior margin curved. Mesonotum 8 times longer than wide, very slightly dilated at posterior; with some swollen granules causing a slightly tuberculate appearance. Metanotum and median segment only distinguishable with difficulty, median segment half as long as metanotum; posterior half of metanotum and median segment 15-20% wider than anterior half of metanotum. Abdominal segments 2-6 of similar length and width, slightly more than twice as long as wide, width equal to anterior half of metanotum; 7th only two thirds the length of 6th and widening, length about equal to width of posterior margin; 8th and 9th of equal length, both wider than long, 9th narrowing slightly; 10th triangular, longer than wide, divided longitudinally. Cerci not visible dorsally, flattened. Poculum short, deep, setose.

All legs with corresponding femur and tibia of equal length. Hind tibiae reaching well beyond end of abdomen. Fore femur compressed and curved at the base; with a small



Figures 21-22. *Lonchodes bushelli* n.sp.
21. Female. 22. Male.

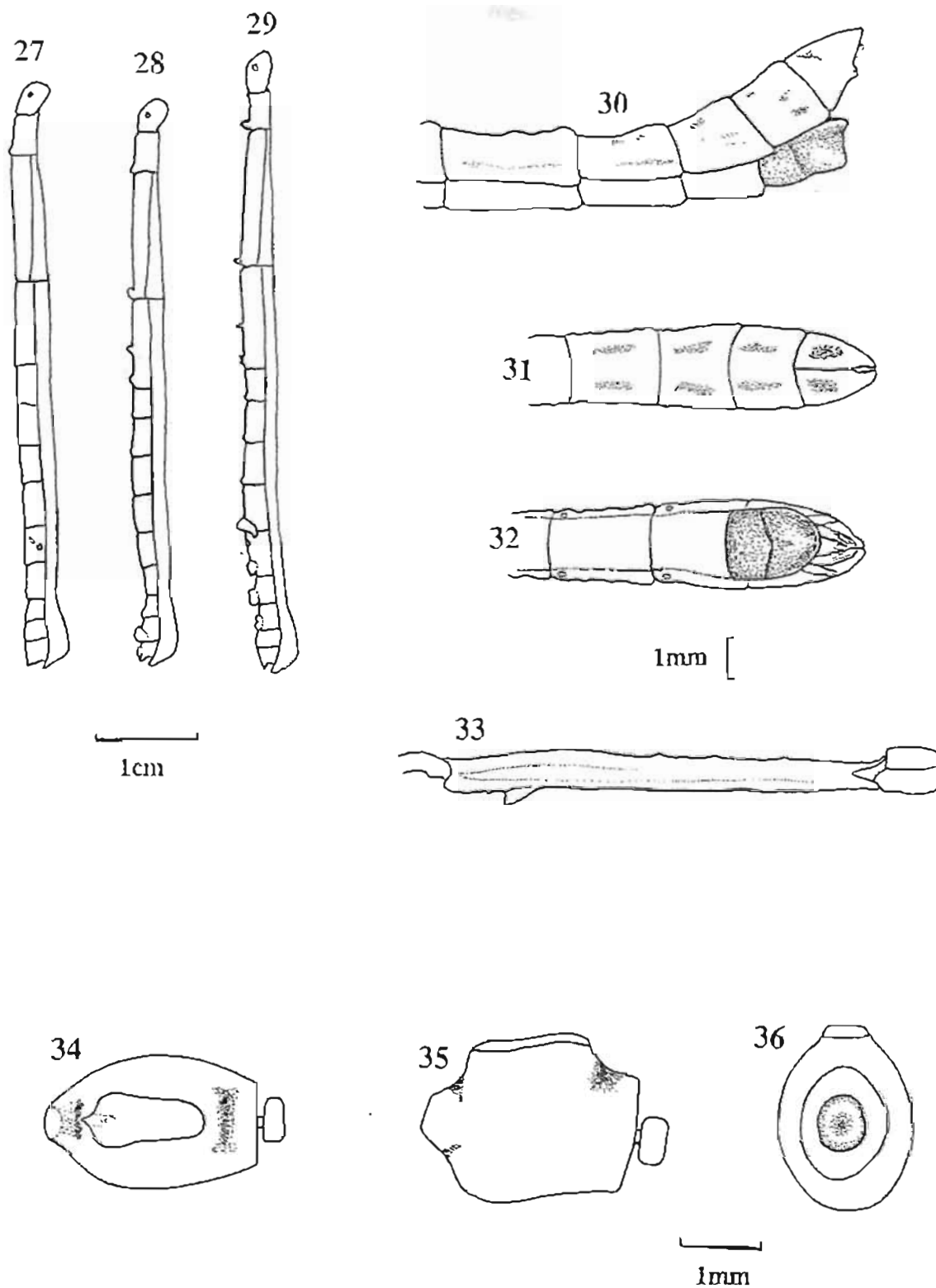


Figures 23-26. *Lonchodes bushelli* n.sp. Female.

23-25. Apex of abdomen: lateral, dorsal and ventral views.

26. Mid femur and tibia.

triangular lobe near the apex of the ventro-posterior carina, ventro-medial carina distinct, dorso-posterior becoming indistinct near the base. Ventro-posterior and ventro-anterior carinae of mid femur each with a triangular lobe and a small tooth near the apex; dorso-posterior carina with a low-lying lobe near the apex. Carinae of fore femur and all tibiae setose, mid and hind femora with very few setae. Dorsal carinae of fore tibiae fused except at apex, ventro-medial very distinct. Fore tarsi with first tarsomere slightly longer than combined length of 2nd and 3rd, mid and hind with basal tarsomere slightly shorter than combined length of 2nd and 3rd.



Figures 27-36. *Lonchodes bushelli* n.sp.

27-29. Females: lateral views.

30-33. Male: abdomen and mid femur.

34-36. Egg: dorsal, lateral, and opercular views.

Egg (figs 34-36)

Capsule and operculum pale brown, micropylar plate pale cream, capitulum yellowish cream. Capsule ovoid with a large micropylar mound and polar mound. Capsule and operculum rugulose, covered in a fine network of raised ridges. Capsule without an opercular collar. Length 2.8mm (3.1mm including capitulum), height 2.0mm, width 1.6mm.

The egg is very similar to *Lonchodes rusticus* (Brunner).

Comments

This species seems to be relatively common on the upper part of the Liwagu trail at Mt Kinabalu Park. It has not been found in the area close to the park head quarters despite considerable collecting by C.L. Chan over many years, and about 15 nights collecting by myself in four visits over a 10 year period. In captivity in the UK it fed on bramble and I reared one female nymph to adult in 2001. Mark Bushell collected more specimens in 2003 and reared them in the UK; unfortunately a sustainable culture was not established.

Table 2. Measurements of <i>Lonchodes</i> (mm)			
	<i>rusticus</i> ♂	<i>bushelli</i> ♀	<i>bushelli</i> ♂
Body length	72	61	52
Antennae	34	24	31
Head	3.5	4	3
Pronotum	3	3.5	2.5
Mesonotum	18	14	13
Metanotum	7	5	6
Median segment	7	4.5	3
Fore femora	17	12	13.5
Fore tibiae	17	12	14
Fore tarsi	5	4	4
Mid femora	13	9.5	9.5
Mid tibiae	10	8	9.5
Mid tarsi	4	3.5	3.5
Hind femora	15	12.5	12.5
Hind tibiae	15	11.5	13
Hind tarsi	4	4	4

***Lonchodes cultratolobatus* (Brunner, 1907) n.comb.**

Carausius cultrato-lobarus Brunner, 1907: 273.

Lonchodes hosei herberti Bragg, 2001: 462, figs 178, 179a-c, 180a-b & pl. 1E. new synonym.

Carausius collega Brunner, 1907: 273. new synonym.

Having examined two photographs of the holotype of *cultratolobatus* there is no doubt that it is the same species as *Lonchodes hosei herberti*. The type material of *Carausius collega* has been destroyed but Brunner (1907: 125) described it as "slightly different" from *C. cultratolobatus*; since the latter species is very variable it is very likely to be a synonym.

Lonchodes imitator* (Brunner, 1907)Dixippus imitator* Brunner, 1907: 279, pl.12.7a.*Prisomera hosei* Brunner, 1907: 286 [not *hosei* Kirby, 1896] new synonym.*Prisomera morbosum* Brunner, 1907: 290, new synonym.

The syntype series of *imitator* comprises three species. All three females are *Carausius chani* (Hausleithner) as previously recorded for one I had previously examined (Bragg, 2001: 422). Two of the males are not the same species as the lectotype (designated in Bragg, 2001: 240), they appear to be *Lonchodes jejunos* (Brunner, 1907). Data labels for the males only are given below.

LT ♂	Coll. Br.v.W. Kina Balu, Borneo Staudinger	Det. Br.v.W. <i>Dixippus</i> <i>imitator</i> Br.	20.564
PLT ♂	coll. Br.v.w. Borneo Fritvaldski	det. Br.v.W. <i>Dixippus</i> <i>imitator</i> Br.	11.024
PLT ♂	Coll. Br.v.W. Borneo Boucard ded.	det. Br.v.W. <i>Dixippus</i> <i>imitator</i> Br.	10.039

The holotype of *Prisomera morbosum* Brunner, which I had not previously examined, was tentatively synonymised with *Lonchodes hosei* (Kirby, 1896) by Günther (1932: 376). The specimen is a male nymph, which is clearly not a synonym of *L. hosei* (Kirby) but probably of *Lonchodes imitator* (Brunner, 1907). Borneo is misspelt Boneo on the data label.

HT ♂ nymph	Coll. Br.v.W. Kina Balu, Boneo Staudinger	Det. Br.v.W. <i>Prisomera</i> <i>morbosum</i>	20.841
---------------	-------------------------------------------------	-----------------------------------------------------	--------

I have examined the four NHMW specimens identified as *Prisomera hosei* by Brunner (1907: 286). There are two adult females and two nymphs. I have not checked the identity of the nymphs but the adults are clearly not *Lonchodes hosei* (Kirby, 1896) but are females of the lectotype of *imitator* Brunner. Brunner's misidentification of *hosei* helps to explain why the culture PSG 29, *Lonchodes imitator* (Brunner), was originally identified by Hausleithner (1984), using the NHMW collection, as *Lonchodes hosei*.

Lonchodes jejunos* (Brunner, 1907)Dixippus jejunos* Brunner, 1907: 278.*Lonchodes infrequens* Brunner, 1907: 261 new synonym.*Dixippus imitator* Brunner [PLT ♂♂ only, not LT and not PLT ♀♀] new synonym.

LT ♀
Selected
here.

Coll. Br.v.W. <i>Borneo</i> <i>Frivaldski</i>	det. Br.v.W. <i>Dixippus</i> <i>jejunus</i> Br.	LECTOTYPE <i>det. P.E. Bragg, 27.iii.2002</i>
-----------------------------------------------------	-------------------------------------------------------	---------------------------------------------------------

The lectotype has had eggs removed from the abdomen, presumably by Hausleithner (described in Hausleithner, 1989: 102, figs 2e-f) but there is no label on the specimen to indicate this.

I have only briefly checked the identity of the other Bornean paralectotypes: all appear to be the same species, although some of the males are rather dirty which makes determination difficult. In addition to the Bornean material, there is a female from Sumatra. This specimen appears to be *Lonchodes brevipes* Gray, 1835: it is clearly not the same species as the lectotype.

PLT ♀

W.-Sumatra Fruhstorfer	Collectio Br.v.W.	det.Br.v.W. <i>Dixippus</i> <i>jejunus</i> Br.	25.339	<i>L. brevipes</i> Gray, 1835 <i>det. P.E. Bragg, 27.iii.2002</i>
---------------------------	----------------------	------------------------------------------------------	--------	----------------------------------------------------------------------

Lonchodes infrequens Brunner, 1907 presents a number of problems. There are two males in the NHMW collection labelled by Brunner as *infrequens*. Neither agree exactly with the measurements given by Brunner. One has a telescoped abdomen and an apparent length 84mm, this is probably Brunner's 82mm male. Brunner recorded a length of 110mm for a female, but the female was not described and there is no female in the collection; the second male is 101mm. It seems likely that the record of female 110mm is a typographic or transcription error for the 101mm male. Both males are identical to *L. jejunus* (Brunner, 1907). The 101mm specimen is selected as the lectotype because it is in better condition. The blue label on the lectotype should probably read 13.833. The data for *infrequens* is as follows:

LT ♂
Selected
here.

coll. Br.v.W. <i>Borneo</i> <i>Grabowski</i>	det. Br.v.W. <i>Lonchodes</i> <i>infrequens</i> Br.	13833
coll. Br.v.W. <i>Borneo</i>	det. Br.v.W. <i>Lonchodes</i> <i>infrequens</i> Br.	22.771

PLT ♂

Lonchodes modestus (Brunner, 1907)

Prisomera modestum Brunner, 1907: 268.

Prisomera rubrifemur Brunner, 291 new synonym?

The two types of *modestus* are very clearly different species, it is difficult to believe that Brunner associated these two specimens! One belongs with the adjacent species in the cabinet drawer, it is possible that the specimen strayed across the dividing line and was then mislabeled.

The lectotype has had eggs removed from the abdomen, presumably by Hausleithner

(described in Hausleithner, 1989: 102, fig 3g) but there is no label on the specimen to indicate this. The mid legs of the lectotype agree with my illustrations (Bragg, 2001: figs 194d & 194g). The paralectotype has also had the abdomen cut open.

LT ♀ Selected here.	S. Borneo Fruhstorfer	Collectio Br.v.W.	det. Br.v.W. <i>Prisomera modestum</i>	22.448
PLT ♀	Coll. Br.v.W. Kina Balu, Borneo Staudinger	det. Br.v.W. <i>Prisomera modestum</i>	20.565	

Prisomera rubrifemur Brunner is almost certainly the male of *modestus*; however, when I visited NHMW I did not have any male specimens of *modestus* with me to make a direct comparison.

Lonchodes rusticus (Brunner, 1907)

Prisomera rusticum Brunner, 1907: 288, pl. 13.2 (♀).

Prisomera indefinitum Brunner, 1907: 290, pl. 13.3 (♂) new synonym.

Prisomera indefinitum was omitted from *Phasmids of Borneo* because Brunner (1907: 290-291) states "Ins. key." as the locality. The correct data is as follows:

HT ♂	Coll. Br.v.W. Kina Balu, Borneo Staudinger	det. Br.v.W. <i>Prisomera indefinitum</i>	20.840
------	--------------------------------------------------	--------------------------------------------------	--------

This new synonym is based on a direct comparison of the holotypes of *indefinitum* and *rusticus* in NHMW with a pair of *rusticus* which I had borrowed from Dresden museum; the latter were later compared with captive bred material.

Previously unrecorded material:

♀ (SMTD) NORD-BORNEO. Waterstradt.

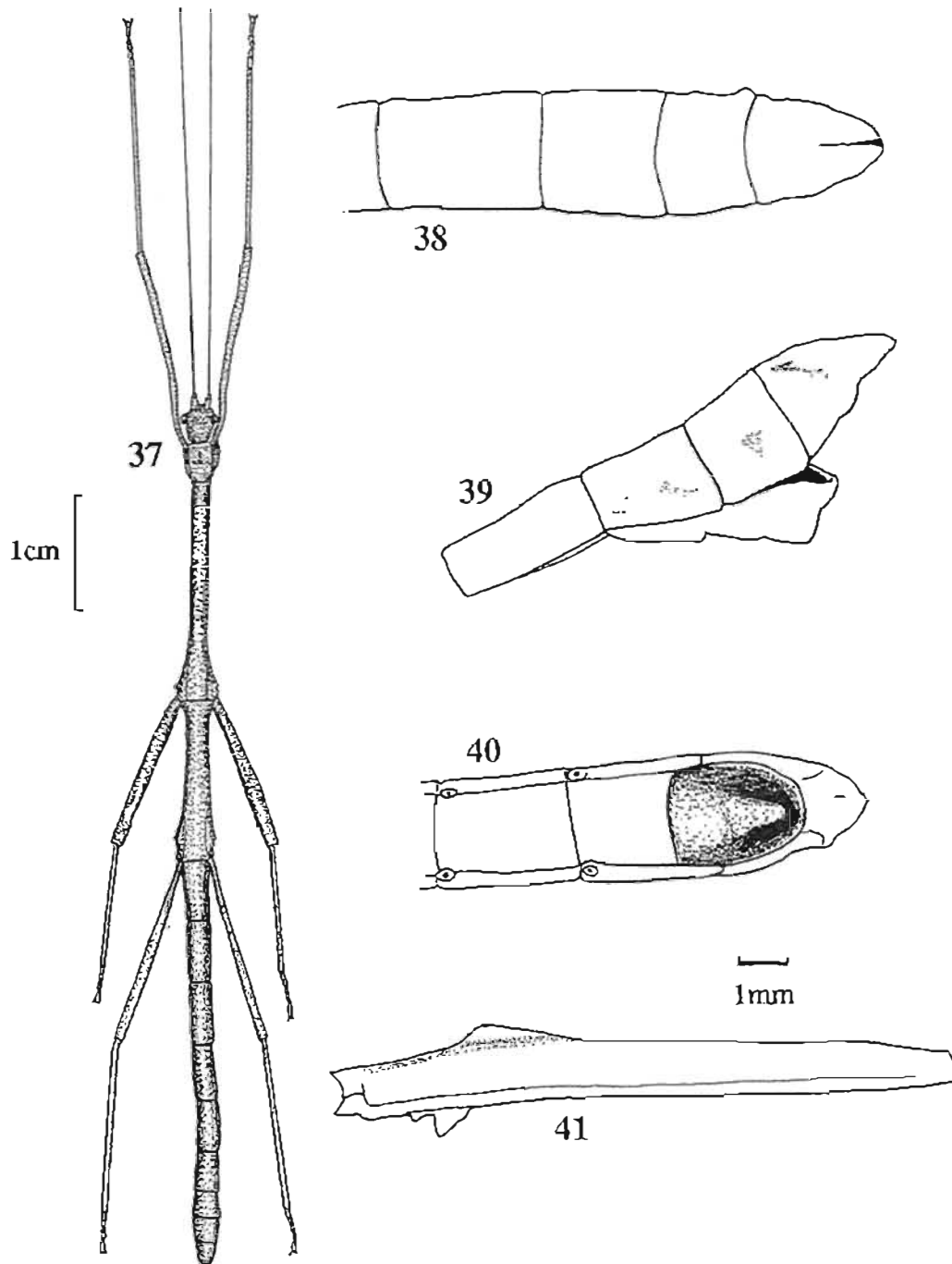
♂ (SMTD) BRUNEI.

2♀♀ (PEB-3333 & PEB-3334), 2♂♂ (PEB-3335 & PEB-3336) SABAH, Kinabalu Park, Silau Silau Trail. Captive reared by Mark Bushell in 2003 from stock collected 24.viii.2001.

Both SMTD specimens bear a small label which reads "1934 6", and both have determination labels by K. Günther, the male's: "*Lonchodes rusticus* Br.", the female's: "*Lonchodes hosei* Kby. *P. rusticus* Redt."

Description of the male (figs 37-41)

Whole insect mid-brown to reddish-dark brown, legs darker than body; densely granulose and slightly rugulose; abdomen and femora more rugulose than thorax; thorax with a few very small black tubercles; carinae of legs setose. Body length 67-72mm. full measurements in table 2.



Figures 37-41. *Lonchodes rusticus* (Brunner), Male.

37. Dorsal view. 38-40. Abdomen, dorsal, lateral and ventral views. 41. Mid femur.

Head 1.4 times longer than widest point, narrowing at the rear, with a bispinose ridge between the eyes, and with four tubercles at the posterior of the head. Antennae with basal segment flattened and widened, second segment shorter and cylindrical, remainder slender and rather indistinctly segmented.

Pronotum rectangular, as wide as rear of head, 1.5 times longer than wide. Mesonotum of almost uniform width: only slightly wider at anterior and posterior. Metanotum wider than mesonotum. Mesonotum and metanotum slightly tuberculate. Metanotum and median segment gradually widening, joint between these segments distinguishable only with difficulty,

combined length about six times the width at mid point. Pro-, meso-, and metapleura dilated where the legs join the body. Thoracic sternites densely granulose. Abdomen of uniform width except segments 8 & 9 which are very slightly wider. Abdominal tergites and sternites becoming increasingly rugulose. Abdominal segments 2-6 of equal length, slightly more than twice as long as wide; 7th shorter, only 1.5 times longer than wide; 8th and 9th short, wider than long, 8th widening towards the posterior, 9th narrowing; 10th longer than 9th, triangular, indistinctly divided along its length. Poculum short, rugose and setose. Cerci flattened, well hidden under the abdomen.

Fore and hind legs with tibia and corresponding femur of equal length, mid leg with tibia shorter than femur. Hind legs reaching only slightly beyond the apex of the abdomen. Fore femur compressed and curved at the base; with a triangular lobe near the apex of the ventro-posterior carina, a small tooth may also be present. Mid femur swollen, dorso-posterior carina with a lobe near the apex (fig 41); ventro-posterior and ventro-anterior each with a triangular lobe and 2-3 minute teeth near the apex. Hind femur laterally compressed, with two small teeth near the apex of the two ventral carinae. Tarsomeres 1-4 of decreasing length, first tarsomere about one third of the tarsal length.

Comments

My specimens of both sexes reared from Kinabalu Park are smaller (♂ 67mm, ♀ 74 & 76mm) than the SMTD specimens (♂ 72mm, ♀ 83mm); Brunner gives 69mm as the length of *indefinitum*. The SMTD female is comparable with C.L. Chan's specimens (83 & 84mm) from Moyog (Bragg, 2001: 492). Measurements in table 2 are for the SMTD specimen.

Phenacephorus auriculatus (Brunner, 1907)

Prisomera auriculatum Brunner, 1907: 289.

The two syntypes are different species and belong in different genera. The female is selected as the lectotype. The male belongs in *Carausius cristatus* Brunner, 1907; it has most of its legs damaged and some missing.

LT ♀ Selected here.	Brunei, Borneo Staudinger	Collectio Br.v.W.	det. Br.v.W. <i>Prisomera</i> <i>auriculatum</i>	18.933
PLT ♂	Coll. Br.v.W. <i>Labuan, Borneo</i> <i>Schlister</i>	det. Br.v.W. <i>Prisomera</i> <i>auriculatum</i>	19.258	

Phenacephorus sepilokensis Bragg, 1994

Phenacephorus sepilokensis Bragg, 1994: 235. figs 1, 6, 7, 10 & 20.

Phenacephorus parahaematomus Bragg, 1995: 204. figs 4-5. new synonym.

C.L. Chan of Kota Kinabalu, Sabah recently showed me a photograph of a mating pair of phasmids taken at Sepilok by Julien Panchout, a French student studying orchids. The photograph is of excellent quality and clearly shows that *parahaematomus* is the male of *sepilokensis*.

Necrosciinae

Necrosia ischnotegmina nom.nov.

Presbistus fragilis Seow-Choen, 2000: 43, plate 118a-b (♂).

The illustrations of this species (Seow-Choen, 2000: plate 118a-b) show an insect with body proportions unlike any member of the Aschiphasmataidae. I therefore examined the paratype material in Francis Seow-Choen's collection during a visit to Singapore in 2001; the tibiae do not have an area apicalis, and the unguis are not pectinate. The species cannot belong in the Aschiphasmataidae since it clearly belongs to the Anareolatae, it is a member of the Necrosciinae and at present is best placed in the genus *Necrosia* Audinet-Serville, 1838.

The name *Necrosia fragilis* (Seow-Choen, 2000) is a secondary homonym of *N. fragilis* (Redtenbacher, 1908) and therefore requires a replacement name. I rename this species *Necrosia ischnotegmina* nom.nov. in recognition of the slender fore wings.

Summary

The males and females of the majority of Bornean Lonchodinae are now known. Both sexes and eggs are known for all species of *Carausius*, *Phenacephorus*, and *Stheneboea* (listed as *Prisomera* in Bragg, 2001). Two *Lonchodes* are still only known from the female: *dajak* (Günther) and *sigillatus* (Brunner). Two are only known from the males, although both are possible synonyms: *L. haematopus* (Westwood) is almost certainly a junior synonym of *amauropus* (Westwood) (Bragg, 2001: 447, 455), *L. sodalis* (Kirby) is a possible senior synonym of *L. harmani* Bragg & Chan (Bragg, 2001: 460, 495). The holotype of *Prisomera rubrifemur* Brunner requires checking with known male of *L. modestus* (Brunner) to confirm the synonymy.

Almost all the Bornean species of Lonchodinae have been reared in captivity, although, as in the case of *Lonchodes bushelli*, a successful culture may not always be established. The Aschiphasmataidae are rarely maintained in captivity; only three Bornean species, all in the genus *Dinophasma*, have been reared.

Acknowledgements

I thank C.L. Chan, Julien Panchout, Frank Hennemann, and Oskar Conle for providing photographic material. Thanks also to Oliver Zompro for comments on the manuscript, to staff at NHMW, SMTD and F. Seow-Choen for providing access to their collections, and to Kinabalu Park staff for permission to collect phasmids.

References

- Bragg, P.E. (1994) A review and key to the genus *Phenacephorus* Brunner (Insecta: Phasmida: Heteronemiidae: Lonchodinae), including the description of two new species. *Zoologische Mededelingen Leiden*, 68: 231-248.
- Bragg, P.E. (1995) A new species of *Phenacephorus* from Kalimantan (Insecta: Phasmida: Heteronemiidae: Lonchodinae). *Zoologische Mededelingen Leiden*, 69: 203-208.
- Bragg, P.E. (2001) *Phasmids of Borneo*. Natural History Publications (Borneo), Kota Kinabalu, Sabah.
- Brunner von Wattenwyl, K. (1907) *Die Insektenfamilie der Phasmiden*. Vol. 2. Leipzig.
- Günther, K. (1932) Revision des Genus *Lonchodes* Gray. *EOS Madrid*, 8: 367-389.
- Hausleithner, B. (1984) Zur Systematik der Gattung *Lonchodes* Gray und die Erstbeschreibung des Weibchens von *L. haematopus* Westwood (Phasmatoidea). *Entomologische Zeitschrift*, 94(11): 157-160.
- Redtenbacher, J. (1906) *Die Insektenfamilie der Phasmiden*. Vol. 3. Leipzig.
- Seow-Choen, F. (2000) *An illustrated guide to the stick and leaf insects of Peninsular Malaysia and Singapore*. Natural History Publications (Borneo), Kota Kinabalu, Sabah.
- Zompro, O. (2004) Revision of the genera of the Areolatae, including the status of *Timema* and *Agathemera* (Insecta, Phasmatoidea). *Abhandlungen des Naturwissenschaftlichen Vereins in Hamburg* 37.

***Haplopus* Burmeister, 1838, replacement name for *Aplopus* Gray, 1835 (Phasmatodea).**

Oliver Zompro, Max-Planck-Institut für Limnologie, Arbeitsgruppe Tropenökologie, August Thienemannstraße 2, 24306 Plön, Germany.

Abstract

The well-known genus *Aplopus* Gray, 1835 (Phasmatodea) has been found to be preoccupied by *Aplopus* Dejean, 1821 (Coleoptera: Curculionidae). It is replaced by *Haplopus* Burmeister, 1838.

Key words

Phasmida, Phasmatodea, *Aplopus* Dejean, 1821, *Aplopus* Gray, 1835, *Haplopus* Burmeister, 1838, *Haplopus* Schoenherr, 1840.

***Aplopus* Gray and *Haplopus* Burmeister**

Aplopus (Phasmatidae: Cladomorphinae: Cranidiini) is a well known name for a genus of Caribbean stick insects. Its colourful species are popular with enthusiasts. Unfortunately the name has to be replaced. Alonso-Zarazaga & Lyal (1999) catalogued the weevil genera of the world and listed both spellings used in Phasmatodea, *Aplopus* and *Haplopus*, as genera of Coleoptera: Curculionidae. Dejean (1821: 86) introduced *Aplopus* as a genus of Coleoptera: Curculionidae in his catalogue of the beetles in his collection as a nomen nudum. Villa & Villa (1833: 23) used it as a valid taxon, making it available according to article 11:5 of the ICZN (1999). Both acts antedate Gray's (1835: 34) introduction of *Aplopus* as a genus of Phasmatodea. Burmeister (1838: 576) emended *Aplopus* to *Haplopus* based on the pronunciation of the greek original (ἀπλώω). This was an unjustified emendation then (ICZN, 1999: Article 32: 5), but is an available name (ICZN, 1999: Article 19.1) as a junior objective synonym (ICZN, 1999: Article 33.2.3) of *Aplopus* Gray, and according to article 50.5 Burmeister is the author of this oldest available synonym. The first reviser was de Haan (1842: 127) who used it as the valid name for the genus (followed by most subsequent authors, with the notable exceptions of Rehn, Hebard and Karny).

Since *Aplopus* Gray, 1835 is a junior homonym of *Aplopus* Dejean, 1821 it has to be replaced. *Haplopus* Burmeister, 1838 is an available synonym and thus becomes the valid name for the genus. *Haplopus* was also introduced by Schoenherr in 1840, also as a genus in Curculionidae (it has *Haplopodus* Marshall, 1946 as an available synonym).

Acknowledgments

The author wants to thank Dr. Phil Bragg and Judith Marshall for helpful discussions on the manuscript.

References

- Alonso-Zarazaga, M. A. & Lyal, C. H. C. (1999) *A world catalogue of families and genera of Curculionoidea (Insecta: Coleoptera) (Excepting Scolytidae and Platypodidae)*. Entomopraxis, Barcelona.
- Burmeister, H. (1838) *Handbuch der Entomologie*. Volume 2. Berlin.
- Haan, W. de (1842) *Bijdragen to de kennis der Orthoptera*. - In: Temminck, C. J. *Verhandelingen over de natuurlijke Geschiedenis der Neerlandsche overzeesche Bezittingen*. 2: 95-138.
- Dejean, M. (1821) Catalogue de la collection de Coléoptères de M. le Baron Dejean. Crevot, Paris.
- Gray, G.R. (1835) Synopsis of the species of insects belonging to the family of Phasmidae. Longman, Rees, Orme, Brown, Green & Longman, London.
- International Commission on Zoological Nomenclature (1999) *International code of zoological nomenclature*. The International Trust for Zoological Nomenclature 1999, c/o The Natural History Museum, London.
- Villa, A. & Villa, G.B. (1833) *Coleoptera Europae dupleta in collectione Villa quae pro mutua commutatione offerri possunt*. Mediolani.

A new species of the genus *Baculofractum*, the first record of the genus from Borneo.

P.E. Bragg, 8 The Lane, Aysworth, Nottinghamshire. NG16 2QP, UK.

Abstract

The genus *Baculofractum* Zompro, 1995, was based on a single species, *Carausius insignis* Brunner, 1907, from Sumatra. A new species is described from Borneo. The new species is one of the longest members of the Necrosiinae and is based on six specimens, including both sexes and eggs, which have been collected over a period of more than 100 years.

Key words

Phasmida, Phasmatodea, Necrosiinae. *Baculofractum shelfordi* n.sp., Borneo.

Introduction

The genus *Baculofractum* Zompro, 1995 was previously monotypic and known only from Sumatra; a new species has been found in Borneo. The type material of the new species, which includes both sexes and eggs, is contained in four collections and has been collected over a period of more than 100 years. The new species has a wide distribution within Borneo. The female is one of the longest insects currently placed in the Necrosiinae. Unlike the type species, there is a considerable difference in the length of the two sexes.

Baculofractum Zompro, 1995

Type species *Carausius insignis* Brunner, 1907. by original designation.

Brunner described his species in the genus *Carausius* Stål, 1875, a genus to which the female has a strong resemblance. *Baculofractum* may be distinguished from *Carausius* by the more slender legs in the female, by the presence of wings in the male, and by the lack of a capitulum on the egg.

When I collected a nymph of the new species in 1993, I also provisionally assigned it to *Carausius*, but chose not to describe it in my treatment of the Bornean Lonchodinae (Bragg, 2001: 415). With the discovery of specimens in the collection of the Forestry Research Centre, at Sepilok in Sabah (FRCS), it became clear that these specimens belong in Necrosiinae. Although the new species lacks a deep operculum, one of the diagnostic features of the genus, it is best placed in *Baculofractum* at present.

The females of the new species can be readily distinguished from *Baculofractum insignis* by its shape (*insignis* females are relatively fat), and by the flat operculum. Males are distinguished by absence of elytra. The female has a carina expanded into a lamina on the fore femora, but not as pronounced as in *B. insignis*: a small lamina is present in males of both species, but again it is larger in *insignis*.

Baculofractum shelfordi n.sp.

Material

Holotype: ♀ and eggs (FRCS) Sabah, Imbak valley, base camp, 13-07-2000, Dr Arthur, Momin & Richard.

Paratypes: ♂ (FRCS) Sabah, Imbak valley, base camp, 13-07-2000, Dr Arthur, Momin & Richard; ♀ & 1 egg (FRCS) Sabah, Telupid, H.S. Tawai. Jun-julai [19]94, Ento: Staff; ♀ (CUMZ) Sarawak. May 1892; ♀ nymph (PEB-2000) Kalimantan Tengah, Palangkaraya. Found by Timbang Effendy. 03.09.1993; ♀ nymph (SMSM-240) Simanggang. May 28th 1909

[or '99 - see note below].

Notes on material

FRCS: H.S. Tawai (H.S. = Hutan Simpan) is Tawai Forest Reserve, N005° 39' E117° 13'. The specimen from Tawai was collected in June-July 1994 by members of the FRCS Entomology Department.

The Imbak valley base camp was at N005° 06' 23" E117° 015' 51, adjacent to the Imbak waterfall. The elevation of the camp was 200-250m. The vegetation of the area is of riverine dipterocarp forest dominated by *Dryobalanops beccarii* Dyer or 'kapur merah'. The collectors were Dr A.Y.C. Chung, Momin Binti, and Richard L. Ansis.

SMSM-240: Simanggang is now known as Bandar Sri Aman, N001°10' E111°27'. The date is hand written and the year appears to read 1909, however the one and zero are so small the year could be '99 (for 1899). Like many of the SMSM collection, the specimen has suffered from being kept in humid conditions until the relatively recent use of air conditioning in the museum; consequently it is in poor condition.

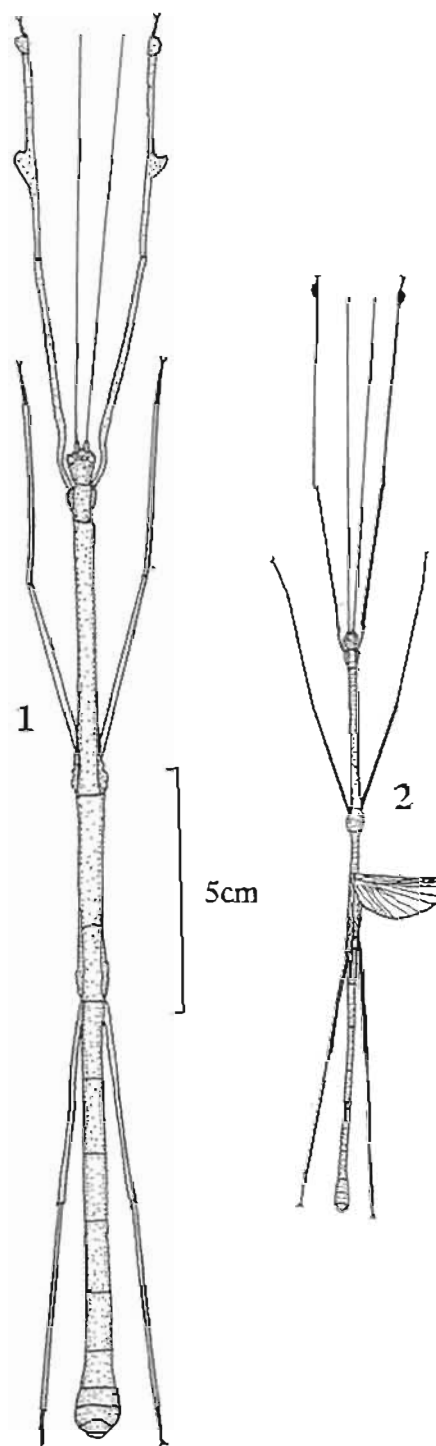
PEB-2000: The specimen was kindly given to me by Timbang Effendi who found it near his house during my collecting trip in 1993.

Adult female (figs. 1, 3-7)

Almost uniformly mid brown, but with apices of tubercles darker brown. Body long and slender, uniformly covered with prominent granules or small tubercles, except for the head and pronotum. Completely wingless. Fore tibiae strikingly lobed.

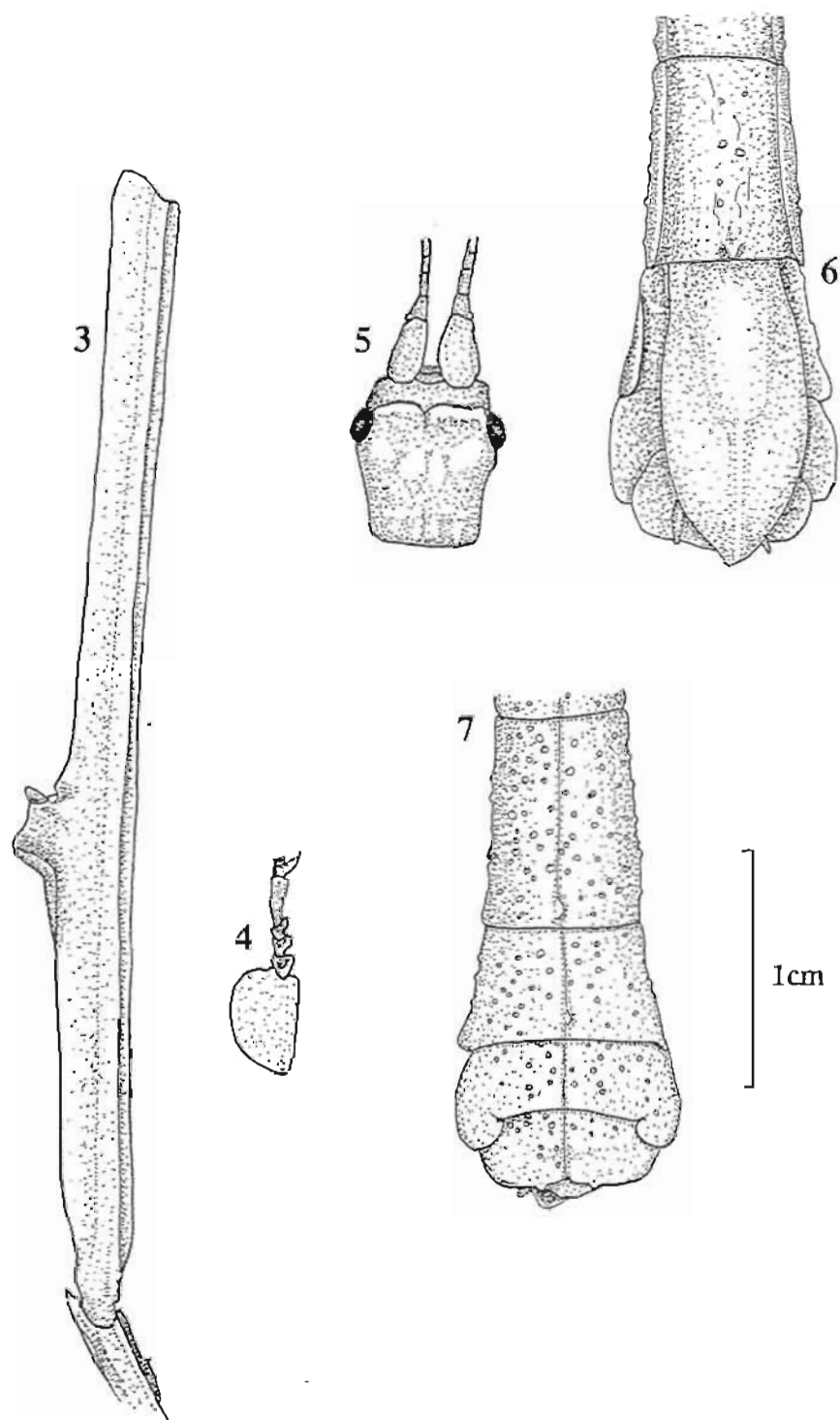
Head longer than wide, narrowing at the rear; with two transverse lobes between the eyes, and four tubercles forming a semicircular ridge on the top of the head (fig 5). Antennae almost as long as the fore legs; basal segments very flattened and broadened; second segment short, the base with a small blunt tubercle on the outer margin; remainder indistinctly segmented, segmentation becoming clearer near the apex.

Pronotum almost twice as long as wide, almost rectangular, lacking granules or



Figures 1-2. *Baculofractum shelfordi* n.sp.

1. Female holotype. 2. Male.



Figures 3-7. *Baculofractum shelfordi* Holotype female.

3. Left fore tibia. 4. Fore tarsus. 5. Head. 6-7. Apex of abdomen, ventral and dorsal views.

tubercles, with a few indentations. Mesonotum very long, about twelve times longer than width of mid point, widening gradually towards the posterior; uniformly finely tuberculate, with a fine longitudinal carina, and with a slightly raised swelling on the posterior margin. Metanotum half as long as the mesonotum, but of similar width. Median segment about three

fifths of the length of the mesonotum, narrower, with the metapleura clearly visible dorsally. Meso and metapleura tuberculate. Mesosternum with longitudinal carina, otherwise smooth. Metasternum tuberculate.

Abdominal segments 1-6 of similar length, and roughly three times longer than wide. Segments 7-9 widening considerably, 9th almost twice as wide as 1-6. Segment 7 only slightly more than half as long as 6th; 8th only slightly more than half the length of 7th; 9-10 of similar length to 8th. Apex of 10th almost straight, with only very slight serrations. Lamina supraanalis very small, rounded. Abdominal sternites 2-7 tuberculate. Operculum about twice as long as wide, almost flat except at centre of the basal half (fig 6). Cerci small, more or less hidden dorsally. blunt, flattened.

All legs with the femur and tibia of almost equal length. All legs with dorso-anterior carina of femur rotated into a ventral position and then the femur and tibia are laterally compressed. Femora and tibiae of mid and hind legs lacking any major lobes or spines; fore tibiae strikingly lobed.

Fore femora basally compressed; dorso-posterior carina expanded into a serrated lamina beyond the base; ventro-posterior carina with a lobe near the apex bearing three small spines, the apex of the carina projects forwards over the joint as a spine-like lobe. Apex of both posterior carinae with spine-like lobes projecting over the femoral-tibial joint. Fore tibiae with a large dorsal lamina which is expanded as a lobe just before the mid point (fig 3). Fore tarsi with large lobe on the basal tarsomere (fig 4), first tarsomere longer than 2-4 combined, almost as long as 2-5.

Mid femur with a minute spine near the apex of the ventro-posterior carina. Mid tarsus with basal tarsomere about equal length as 2-4 combined.

Hind legs reaching just beyond the apex of the abdomen. Ventro-posterior carina of hind femur with two or three minute spines near the apex. Hind leg with basal tarsomere about 1.5 times longer than combined length of 2-4.

Both adult paratypes are more tuberculate than the holotype; the CUMZ specimen in particular has large rounded tubercles on the mesonotum and metanotum. The FRCS paratype has right fore and right mid legs missing; the CUMZ specimens has all its legs but the pro and mesothorax have been quite badly damaged by pests, the head is held on by a pin. The lengths are as follows: holotype 200mm, FRCS paratype 169mm, CUMZ paratype 172mm; full measurements of the holotype are given in table 1.

Table 1. <i>Baculofractum shelfordi</i> n.sp., measurements in mm				♀ HT	♂
	♀ HT	♂	Fore femur	46	33
Total length	200	119	Fore tibia	46	36
Antennae	85	68	Fore tarsus	9	6
Head	6.5	3	Mid femur	39	24
Pronotum	7	4	Mid tibia	35	26
Mesonotum	53	32	Mid tarsus	8.5	6
Metanotum	25	10.5	Hind femur	45	25
Median segment	15	10	Hind tibia	46	31
Hind wing	-	18	Hind tarsus	10	6

Adult male (figs 2, 8-9)

Whole insect appears uniformly mid brown, although under magnification dark streaks can be seen; the anal region of the wing is translucent light brown. Body and legs long and slender, body with a few large granules or small tubercles becoming more dense towards the apex of the abdomen. Hind wings short, no elytra. Fore tibiae without lobes, basal tarsomere clearly lobed. The specimen has had the right fore leg glued back on, resulting in quite a quantity of glue on the head.

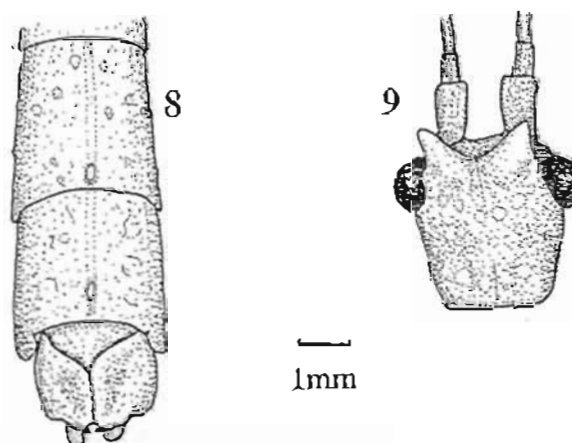
Head longer than wide, narrowing at the rear. With a pair of spines between the eyes (fig 9), and four tubercles on the back of the head. Antennae almost as long as the fore legs; basal segment flattened and broadened; second segment short, the base with a small blunt tubercle on the outer margin; remainder indistinctly segmented, segmentation becoming clearer near the apex.

Pronotum one and a half times longer than wide, almost rectangular, lacking granules or tubercles, with a few indentations. Mesonotum very long, about twenty times longer than width of mid point (1.4mm), widened slightly at anterior and posterior; very sparsely finely tuberculate towards the lateral margins. Elytra are completely absent, but in the position normally associated with the musculature of elytra in other phasmids there is a pair of indentations that suggest the musculature may be present. Metanotum and median

segment each about one third of the length of the mesonotum. Metanotum sparsely finely tuberculate on lateral margins, median segment without tubercles. Dorsally the mesopleura are clearly visible at the point of attachment of the legs, the metapleura are clearly visible along the whole length of the median segment. Meso and metapleura tuberculate. Mesosternum with longitudinal carina, otherwise smooth. Metasternum tuberculate. Wings reaching to mid point of second abdominal segment.

Second abdominal tergite smooth, third very indistinctly tuberculate, remainder becoming increasingly tuberculate; eighth and ninth with small dorsal lobes on posterior margin. Abdominal segments 1-5 of similar length, 6th slightly shorter, 7th notably shorter (5.5mm) and widening slightly at the posterior; 8th and 9th shorter (c. 3mm) considerably widened, about as wide as long; 10th wider than long, with a distinct longitudinal carina. Apex of 10th with a pair of hooks. Abdominal sternites rugulose. Cerci extremely flattened, ends blunt. Poculum flattened, with a longitudinal carina.

Legs all long and slender, tibiae slightly longer than femora; femora and tibiae all laterally flattened with carinae similar to those of the female although the lamella on the fore femur is almost insignificant. Dorsal surface of fore tibia with a lamella about as high as the tibia, expanding slightly towards the apex, but without the large lobe found in the female. Fore femora with a dorsal spine-like lobe projecting over the femoral-tibial joint, mid and



Figures 8 & 9. *Baculofractum shelfordi* n.sp. male.

8. Apex of abdomen, dorsal view.

9. Head, dorsal view.

hind legs without such a lobe. Ventro-posterior carinae of all femora with a two small spines near the apex. Hind legs reaching just beyond the apex of the abdomen. Fore tarsi with large lobe on the basal tarsomere, the lobe is about three times the height of the tarsus and larger than the lamella of the tibia. Fore and hind tarsi with basal tarsomere about half the total length. Mid tarsus with basal tarsomere about two-fifths of the total length.

Female nymphs

The distinctive lobes on the fore tibiae of the adult female are clearly present in the two nymphs.

SMSM-240: length 90mm. Left hind leg missing, three legs repaired, left fore and right hind with tarsi missing. Whole insect almost uniformly dark brown. Second abdominal tergite with posterior lobe.

PEB-2000 length 127mm. Left fore leg missing. Whole insect greyish-brown, abdominal segments 2-5 discoloured (darkened) during preservation. Second abdominal tergite with posterior lobe.

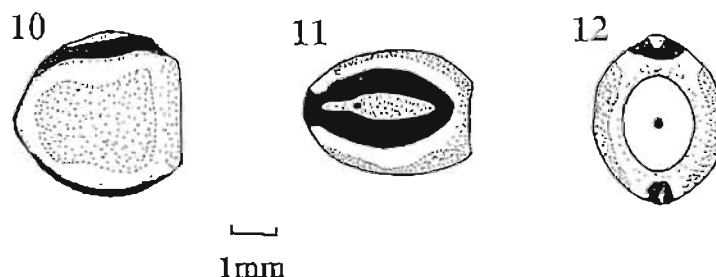
Eggs

Seven eggs are associated with the holotype; five have clearly been removed from the body post mortem, this is probably also true for the other two since all have an almost smooth surface. The following description is based on the two most strongly coloured eggs.

Capsule mid brown, with a broad black line circling the egg along the dorsal, polar and ventral edges, and with fine black mottling on the lateral surfaces; the micropylar plate is mid brown; the operculum is black. Capsule a laterally compressed sphere, slightly pointed at the polar end and with a flat opercular end. The operculum is oval, with a central depression. Micropylar plate a slightly raised band running most of the length of the dorsal surface. Capsule length 3.6mm, height 3.5mm, width 2.7mm; operculum width 1.3mm, height 1.8mm.

The FRCS paratype female has one egg associated with it (figs 10-12). This egg lacks the operculum (but has not hatched, contents are still present), but has a sculptured surface and more distinct colouring than the eggs from the holotype; in figure 12 a black dot marks the position of the opercular depression, determined by reference to the eggs from the

holotype female. The capsule is uniformly rugulose; the pattern of black lines is the same as on eggs from the holotype, but the lateral surfaces are dark brown and there is a pale brown, almost cream, coloured band between the black bands and the brown lateral patches. Although the paratype is 15% shorter than the holotype, and correspondingly thinner, the egg is almost identical in size: length 3.6mm, height 3.4mm, width 2.7mm.



Figures 10-12. Egg of *Baculofractum shelfordi* n.sp.
10. lateral view. 11. dorsal view, 12. opercular view.

Etymology

This new species is named after Robert W.C. Shelford, Curator of the Sarawak Museum from 1897 to 1905. Although better known for his extensive work on cockroaches, Shelford

is responsible for the majority of the museum's phasmid collection, and also for much of the general insect collection, very few specimens have been added since Shelford's departure. In addition to material remaining in the Sarawak Museum, a significant number of specimens from Shelford's collection went to Cambridge and Oxford universities when he returned to England. The Sarawak Museum (SMSM) and Cambridge University Museum of Zoology (CUMZ) each contain one specimen of the new species.

Comments

The length of the adult female is such that it is unlikely to be mistaken for any other described Bornean species. The only other insects of this length are members of the Phasmatinae which all have antennae shorter than their fore femora. The male is similar in general appearance to *Lopaphus borneensis* Bragg, 1995 but is about twice as large and has the prominent lobes on the fore tarsi. Although this species does not appear to be common, it does have a wide distribution, occurring in central Kalimantan, western Sarawak, and in Sabah (fig 13).

BORNEO



Acknowledgements

I am grateful to staff at SMSM, CUMZ, and FRCS for the loan of specimens, and to Dr Arthur Chung for providing me with additional information on the locality of the holotype.

Figure 13. Distribution map for *Baculofractum shelfordi* n.sp.

References

- Bragg, P.E. (2001) *Phasmids of Borneo*. Natural History Publications (Borneo), Kota Kinabalu, Sabah.
 Brunner von Wattenwyl, K. (1907) *Die Insektenfamilie der Phasmiden, volume 2*. Verlag von Wilhelm Engelmann, Leipzig.
 Zompro, O. (1995) *Baculofractum* n.gen. – ein neues Genus der Phasmida. *Entomologische Zeitschrift*, 105(24): 488-491.



A mating pair of the stick insect *Baculofractum shelfordi* n. sp.,
a new species from the Imbak Valley, Sabah.



Reviews and Abstracts.

Phasmid Abstracts

The following abstracts briefly summarise articles which have recently appeared in other publications. Some of these may be available from local libraries. Others will be available in university or college libraries, many of these libraries allow non-members to use their facilities for reference purposes free of charge.

The editor of *Phasmid Studies* would welcome recent abstracts from authors so that they may be included in forthcoming issues. In the case of publications specialising in phasmids, such as *Phasma*, only the longer papers are summarised.

Bresseel, J. (2005) *Aretaon (Trachyaretaon) breuckneri* PSG 255 (Henneman & Concle, 2005): een nieuwe Obrimi uit de Filippijnen. *Phasma*, **15**(57): 5-6.

Aretaon (Trachyaretaon) breuckneri is a large and beautiful Obriminid from Babuyan island in the Philippines. It was introduced by Ismael Lumawig who sent eggs to the author. This species is easy to rear and will soon be well established in culture. It accepts many food plants including bramble and ivy. [Editor's note: The names of the authors of *A. (T.) breuckneri* have both been spelt incorrectly in this article, they should read Hennemann & Conle.]

Cliquennois, N. (2003) Matériel typique des Phasmes de Madagascar (Insecta, Phasmatodea). *Bulletin de Phyllie*, **17**(3): 3-15.

A list of type material of stick insects from Madagascar including main data available for each species is established. *Pachymorpha distincta* Brunner von Wattenwyl, 1907 is transferred to the genus *Antongilia*. *Antongilia quadrituberculata* Chopard, 1952 is renamed *Antongilia chopardi* nom.nov. *Anisacantha vidua* Redtenbacher, 1906 is synonymised with *A. difformis* Redtenbacher, 1906. A lectotype is designated for each of the following species: *Antongilia distincta*, *Antongilia quadrituberculata*, *Antongilia simplex*, *Antongilia squamigera*, *Cirsia finoti*, *Leiophasma adusta*, *Leiophasma brevivalvis* and *Leiophasma concolor*.

Cliquennois, N. (2003) Notes sur les phasmes de l'archipel des Comores (Insecta, Phasmatodea). *Bulletin de Phyllie*, **16**(2): 7-9.

An outcome on the knowledge of phasmids from Comoros is established, including the report of two new species of *Leiophasma* from Mayotte and Anjouan islands and of another species from Mayotte attributed to the genus *Monandropoda*. Distribution and biology information is given on *Leiophasma* in Mayotte.

Cliquennois, N. (2004) À propos des Gratidiini: notes critiques (Phasmatodea, Anareolatae). *Bulletin de Phyllie*, **22**(4): 12-27.

The taxon Gratidiini is critically reviewed. A definition is suggested to better characterise the group. American, Malagasy and some Asian taxa are excluded from Gratidiini. Most of the remaining genera are briefly commented. The precedence of the genus *Clonaria* Stål, 1875 over *Gratidia* Stål, 1875 is asserted again, as is the validity of the genus *Paraclonaria* Brunner, 1893. *Gharianus* Werner, 1908 is transferred from Clitumnini to Gratidiini and *Gratidia madagassa* Brunner, 1907 to the genus *Antongilia* Redtenbacher, 1906.

Cliquennois, N. (2005) *Spathomorpha* n.gen.: un nouveau genre de Phasme de Madagascar (Phasmatodea, Anareolatae). *Bull. Soc. ent. France*, **110**(2): 113-124.

Two Madagascan species are included in *Spathomorpha* n.gen.: *S. adefa* n.sp. (designated the type species) and *S. lancettifer* (Brancsik, 1893) n.comb., transferred from the genus *Hyrtacus*. This new Malagasy genus has an uncertain taxonomic position. Hypothesis of relationship that seem the most plausible are discussed.

Hennemann F. & Conle, O.V. (2003) A new species of *Theramenes* Stål, 1875 (Phasmatodea: Heteropterygidae, Obriminiae, Obrimini) from Panay Island, Philippines. *Entomologische Zeitschrift*, **113**(4): 104-106.

Theramenes exiguus sp. nov. (Phasmatodea: Heteropterygidae) is described and illustrated from Panay Island, Philippines. The new species differs from the type-species of *Theramenes* Stål, 1875, *T. olivaceus* (Westwood, 1859), by being more slender and by the lower thoracic tubercles. It can be separated from *Theramenes mandirigma* Zompro & Eusebio, 2001, by the number of thoracic tubercles by its larger body size.

Hennemann F. & Conle, O.V. (2003) Notes on rarely known Phasmatodea from Sarawak with the description of two new species and studies on the genus *Gargantuoidea* Redtenbacher, 1908 (Orthoptera: Phasmatodea). *Mitt. Munch. Ent. Ges.*, **93**: 11-24.

A new species of the genus *Acacus* Brunner von Wattenwyl, 1907 (type species: *Bacteria sarawaca* Westwood, 1859), *Acacus braggi* sp.n., from Mt. Serapi in northwestern Sarawak is described and illustrated from both sexes and the eggs.

A discussion and determination keys, as well as a list of the known species of *Gargantuoidea* Redtenbacher, 1908 (type species: *Necroscia gargantua* Westwood, 1859) are provided. A new species from Matang in northwestern Sarawak, *Gargantuoidea matangensis* sp.n., is described and illustrated from the female sex. The egg of *Gargantuoidea triumphalis* Redtenbacher, 1908 is illustrated and described in detail. The genus *Necrosciodes* Karny, 1923 (type species: *Necroscia lampetia* Westwood, 1859) is found to represent a junior synonym of *Gargantuoidea* Redtenbacher, 1908 (syn.n.).

Prisomera portentosum Brunner von Wattenwyl, 1907 is transferred to the genus *Phenacephorus* Brunner von Wattenwyl, 1907 (type species: *Phenacephorus cornucervi* Brunner von Wattenwyl, 1907). The female and egg are described and figured for the first time. A redescription of the male is provided as well.

The holotypes of the two new taxa described in this paper (*Acacus braggi* sp. n. and *Gargantuoidea matangensis* sp.n.) are deposited in the collection of the Zoologische Staatssammlung München (ZSM), paratypes of the first are deposited in ZSM, coll. P. E. Bragg (England) and the first author's collection.

Hennemann F. & Conle, O.V. (2004) Revision of the tribe Achriopterini Bradley & Galil, 1977, with the description of a new genus, three new species and a new subspecies from Madagascar (Phasmatodea: Phasmatidae: Phasmatinae). *Mitt. Munch. Ent. Ges.*, **94**: 5-54.

The Malagasy and Comorian tribe Achriopterini Bradley & Galil, 1977 is revised on species level. A new diagnosis of the tribe and keys to distinguish the included genera are provided. A discussion and biogeography show Achriopterini Bradley & Galil, 1977 to be closely related to the Papuan tribe Stephanacridini Bradley & Galil, 1977 and furthermore, to show affinity to the Neotropical genus *Pterinoxylus* Audinet-Serville, 1838.

The new genus *Glawiana* gen. nov. is established for *G. glawi* sp. nov. from Southern Madagascar, which is designated as the type species. The new genus differs from *Achrioptera* Coquerel, 1861 by: the smaller size and stouter body; relatively shorter mesothorax; strongly globose and bi-lobed head and presence of prominent lobes on the dorsal carina of the meso- and metatibiae. The type-species *Glawiana glawi* sp. nov. is known from a unique female only.

A complete revision of the genus *Achrioptera* Coquerel, 1861 (Type-species: *Achrioptera fallax*

Coquerel, 1861) is provided alongside a new diagnosis of the insects and eggs and determining keys to the species. Redescriptions, measurements, synonymic listings, a literature review and illustrations are provided for all known species and maps show the known records of all taxa. The genus *Hovaspectrum* Rehn, 1940 (Type-species: *Hovaspectrum lobipes* Rehn, 1940) is found to be a synonym of *Achrioptera* Coquerel, 1861 (syn. nov.).

Two new species and a new subspecies of *Achrioptera* Coquerel, 1861 from Madagascar are described: *Achrioptera gracilis* sp. nov. from the female and *Achrioptera magnifica* sp. nov. and *A. punctipes cliquennoisi* ssp. nov. from both sexes and the eggs. *Achrioptera composita* Carl, 1913 and *Achrioptera intermedia* Redtenbacher, 1908 are synonymized with *Achrioptera punctipes* (Audinet-Serville, 1838) (syn. nov.).

The eggs of *Achrioptera punctipes* (Audinet-Serville, 1838) are redescribed and illustrated, those of *A. fallax* Coquerel, 1861, *Achrioptera magnifica* sp. nov. and *Achrioptera spinosissima* (Kirby, 1891) are described and illustrated for the first time. The egg of *A. punctipes cliquennoisi* ssp. nov. is shortly characterized. The newly discovered females of *Achrioptera fallax* Coquerel, 1861 and *Achrioptera impennis* Redtenbacher, 1908 and the still unknown adult male of *Achrioptera impennis* Redtenbacher, 1908 (so far only known from a penultimate instar nymph) are described and illustrated for the first time. A lectotype is designated for *Achrioptera pygmaea* Redtenbacher, 1908.

Hennemann, F. & Conle, O. (2005) Een expeditie in het onderzoekcentrum van Panguana (September-Oktober 2004). *Phasma*, **15**(57): 16-22.

This article reports on an expedition to the Amazonian rainforest in Peru. The authors travelled with four colleagues from the State Zoological Collections in Munich. The article includes colour photographs of six species of phasmids.

Simoens, R. (2005) *Pterinoxylus crassus* Kirby, 1889. *Phasma*, **15**(57): 7-9.

This article is a brief description of *Pterinoxylus crassus* based on a report by Langlois, Lelong, Rastel, Polidori & Dorel about their trip to Martinique in November 1998, plus some culture experience notes as *P. crassus* is now in culture again.

Zompro, O. (2004) A key to the stick-insect genera of the "Anareolatae" of the New World, with descriptions of several new taxa (Insecta: Phasmatodea). *Studies in Neotropical Fauna and Environment*, **39**(2): 133-144.

A key to the anareolate stick-insect genera (Insecta: Phasmatodea) of the New World (North, Central and South America) is provided. *Otocraniella flagelloantennata* gen. n. sp. n. and *Echetlus fulgens* n.sp. are described as new. A new genus, *Aplopocranidium* gen. n., is erected for *Bacteria waehneri* (Günther, 1940). *Baculum ramosum* (Saussure, 1861) is redescribed. New synonyms have been traced during the works on this study. *Hypocyrtus* (Redtenbacher, 1908) is a subjective junior synonym of *Gamponius* (Stål, 1875), *Steleoxiphus* (Rehn, 1907) of *Paraleptynia* (Caudell, 1904), and both *Abrachia* (Kirby, 1889) and *Ceratiscus* (Caudell, 1904) of *Baculum* (Saussure, 1861). The anareolate tribe Hesperophasmatini is recognized as a member of the Pseudophasmatidae: Xerosomatinae. A new tribe, Paraleptyniini tribe n., is introduced to encompass the anareolatae genera *Paraleptynia* (Caudell, 1904), *Xiphophasma* (Rehn, 1913) and *Parabacillus* (Caudell, 1903). A study of egg material showed these taxa to belong into Heteronemiidae.

Zompro, O. (2005) The first records of *Korinnis* Günther, 1932 from Thailand and from the Philippines, and the description of a new species of *Pharnacia* Stål, 1877 (Insecta: Phasmatodea). *Entomologische Zeitschrift*, **115**(2): 71-74.

Two new species of the poorly known Korinninae (Aschiphasmatoidea: Prisopodidae) are described for the first time. To date, the subfamily was endemic to Borneo. The new species extend the distribution of the subfamily into central Thailand (*K. axelpreckeri* sp. nov.) and the southern Philippines (*K. oriyeusebio* sp. nov.). The giant stick insect *Pharnacia kaiag* sp. nov. is described from the Philippines for the first time.