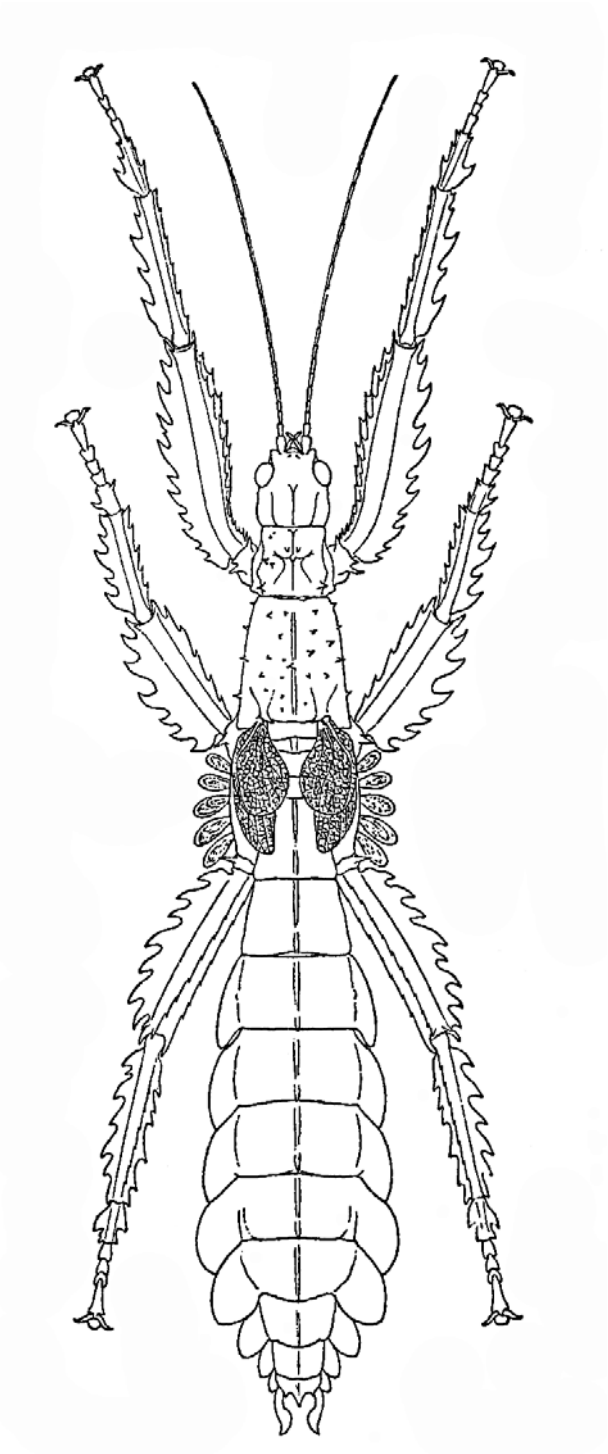
Printed ISSN 0966-0011
Online ISSN 1750-3329

PHASMID STUDIES

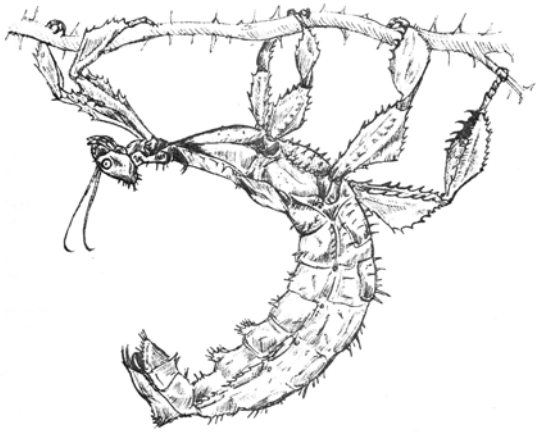
Volume 17, number 2.
June 2009.

Editor: Dr. P.E. Bragg.



Produced by the Phasmid Study Group

The Phasmid Study Group.



The Phasmid Study Group (PSG) was formed in 1980 to foster the study of phasmids. The group currently has several hundred members worldwide. The membership ranges from young children to professional entomologists. The PSG holds regular meetings and presents displays at all the major entomological exhibitions in the U.K. The PSG places emphasis on study by rearing and captive breeding and has a panel of breeders who distribute livestock to other members. The PSG produces two publications which are issued free to members.

The Phasmid Study Group Newsletter is issued quarterly and contains news items, livestock information, details of exhibitions and meetings, and a variety of short articles on all aspects of phasmids.

Phasmid Studies is issued on-line and in print. PSG members wishing to receive printed copies should submit a request to the Membership Secretary; electronic copies may be downloaded from the PSG website. Typically *Phasmid Studies* is produced biannually, in March and September. It contains longer articles on all aspects of phasmids, with an emphasis on natural history, captive breeding, taxonomy, and behavioural studies. Each issue contains abstracts of papers from other recent publications. Electronic copies of *Phasmid Studies* are deposited in the following libraries: British Library, U.K.; Hope Library, Oxford University Museum of Natural History, UK; Nottingham University Library, UK.; Naturhistorisches Museum Wien, Austria; Nationaal Natuurhistorische Museum, Leiden, The Netherlands.

Phasmid Study Group Website: http://phasmid-study-group.org/

Details of membership may be obtained from the **Treasurer and Membership Secretary, Paul Brock, 2 Greenways Road, Brockenhurst, Hampshire, SO42 7RN, U.K.**
Annual subscription rates are currently: U.K. £12.00; Europe £14.00; Worldwide £15.00.

Phasma.

This is a Dutch-Belgian group with similar aims to the Phasmid Study Group. It produces a quarterly newsletter, *Phasma*, which is published in Dutch. Regular meetings are held in Belgium or the Netherlands.
Phasma Website: www.phasma.eu

Details of *Phasma* may be obtained from **Kristien Rabaey, Nieuwpoortkeiweg 39, B-8630 Veurne, Belgium.**
Email: kristien.rabaey@skynet.be

Contributions to *Phasmid Studies*

1. Articles are welcome from anyone and the editor is prepared to offer advice and help to contributors. The editor would like to encourage people with no previous experience to write articles for *Phasmid Studies*.
2. Articles are usually reviewed by independent referees before acceptance.
3. Articles are accepted for publication in *Phasmid Studies* on the understanding that they may be translated and reproduced in *Phasma*.
4. Authors will be provided with a pdf file of their paper for distribution.
5. Contributions should be addressed to: **Dr. P.E. Bragg, 8 The Lane, Awsworth, Nottinghamshire, NG16 2QP, U.K.** or emailed to **Pbragg@aol.com** with "Phasmid Studies" in the subject box.

Instructions to authors

Articles for publication in *Phasmid Studies* may be submitted in printed form or by email, however if submitted by email authors are advised to contact the editor in advance. Refer to a recent copy of *Phasmid Studies* for layout of articles. In particular the following points should be noted.

1. The title should be followed by the author(s) name and address, an abstract, a list of key words, an introduction (if necessary), the main article, and finally a list of references.
2. The abstract should briefly summarise the article. For short articles one or two sentences should suffice; for longer articles the abstract should not exceed 400 words.
3. A list of key words should be given. These should cover the main topics in the article but there should not be more than 25 key words.
4. All titles and headings should be in bold print and not underlined. The main title and all side-headings should be aligned on the left hand side of the page. If the article is lengthy major headings may be created by using centred headings in bold print.
5. Paragraphs should be indented using a single tab setting (not character spaces).
6. The full stop at the end of sentences should be followed by a **double** space. Full stops not at the end of a sentence should be followed by a single space.
7. Scientific names should be in italics. On the first usage names should be given in full, followed by the name of the author. On subsequent occasions the genus should be abbreviated to a single letter followed by a full stop, and the author should be omitted.
8. English, not American, spellings should be used throughout.
9. Numbers between one and ten should be spelled out while numerals should be used for 11 and above; the exceptions to this are where measurements are involved, or in descriptions of insects, in both cases numerals may be used throughout.
10. Where measurements are given a space should not be left between numerals and units e.g. 6mm, not 6 mm.
11. References in the text should include the author and date, and page number if appropriate, these should be given in the form Smith (1982: 123), or (Smith, 1982: 123). In the references section, the names of authors and the volume numbers of journals should be printed in bold. Journal titles and book titles should be given **in full** (not abbreviated) and should be printed in italics.
12. Illustrations must have printed (not handwritten) labels.
13. Drawings should be in black ink and on separate sheets of paper, not with the text of the article. The size of reproduction will usually be determined by the editor. Usually drawings look better when reduced to about half their original size and contributors should bear this in mind. Scale lines must be used, not the magnification of the original drawing.
14. Proofs will be sent to the author to be checked before publication.
15. The abbreviation *PSG* may be used to refer to the *Phasmid Study Group*; with this exception, the full titles should be used for all organisations and publications.
16. Electronic submissions should be IBM compatible. Files should be in *Word 97-2003*, or a compatible format; if written on a non-compatible word processor, the file should be saved as *Dos Text* or as an ASCII file. Images should be submitted as separate files in Bit Map (BMP) or TIFF or JPEG format.
17. If the word processor used does not have a table facility then tables of measurements etc. should be laid out using tab settings (not character spaces).
18. Where museums are abbreviated standard codens should be used, as defined in Arnett, R.H., Samuelson, G.A. & Nishida, G.M. (1993) *The insect and spider collections of the world*. [second edition] Sandhill Crane Press, Gainesville, Florida. [Codens are available online at http://hbs.bishopmuseum.org/codens/].

Phasmid Studies

Volume 17, number 2.

Contents

Cover illustration: *Cotylosoma dipneusticum* Wood-Mason, 1878 – drawing by Woodhouse, 1895.

Biographies of Phasmatologists – 9. Morgan Hebard.

P.E. Bragg, 8 The Lane, Awsworth, Nottinghamshire, NG16 2QP, U.K. Email: pbragg@aol.com

Abstract

Morgan Hebard (1887-1946) came from a very wealthy American family and was able to devote his life to the study of Orthoptera. He built up a huge collection of orthopteroid insects at the Academy of Natural Sciences of Philadelphia. He described over 800 new species of orthopteroids; this included 44 new species, and ten new genera of phasmids. His life and phasmid work is outlined.

Key words

Phasmida, Phasmatologist, Morgan Hebard**,** Biography, Academy of Natural Sciences of Philadelphia.

Morgan Hebard (1887-1946)

Morgan Hebard was born on 23rd February 1887 in Cleveland, Ohio, USA. His forename came from his maternal grandfather, David Morgan, a Welshman who emigrated to the USA as a young man and made his fortune in the iron and steel industry. His father, Charles Samuel Hebard, came from a wealthy, well-connected American family and had a Congressman as a grandfather; the family fortune was grounded in the lumber trade.

Figure 1. Morgan Hebard.

His early interest in entomology was Lepidoptera, an interest that developed as he encountered different species in various parts of the country. The family had their main home in Philadelphia, but also had a winter home in Georgia, and a summer home in Michigan; in addition they spent several weeks per year in Florida. He was privately tutored until the age of 17 when he went to Asheville School in North Carolina, followed by Yale University from where he graduated in 1910.

He first met James Abram Garfield Rehn in 1903 when he was identifying some of his Lepidoptera at Philadelphia Museum; at the time Rehn was a student working on Orthoptera in the museum. Encouraged by Rehn, Hebard developed an interest in Orthoptera (including cockroaches, mantids, and phasmids) and Dermaptera and they wrote their first joint paper on Orthoptera that they found in Georgia and Florida (Rehn & Hebard, 1905).

After graduating from Yale, Hebard worked in the banking industry for a year; thereafter he devoted his time to entomology. Hebard and Rehn had a long-term aim of producing a monograph of North American Orthoptera. To this end Hebard financed fifteen years of field trips lasting from six weeks to three months for himself and Rehn, they amassed over 100,000 specimens of Orthoptera. In addition they made trips to Jamaica, Panama and Colombia; Hebard also visited Cuba and the Bahamas, and in his University vacations he had twice visited Europe. From the outset Hebard was developing the Hebard Collection, which was maintained in the Philadelphia Museum and was formally transferred to the museum in 1945. To supplement his own collecting Hebard purchased collections of material from many parts of the world, particularly Central and South America, and one particularly large collection from the Philippines.

At Yale Hebard was in the shotgun team, and was also said to be a good shot with both rifle and revolver. In 1913 Hebard married Margaret Claxton and they had two sons and a daughter. In the First World War he became a lieutenant in the Signal Corps and later

transferred to Military Intelligence, all his time in the army was served in the USA. In his 40s Hebard developed severe arthritis that restricted his movement and limited his entomological work. He was Curator of Insects at the Academy of Natural Sciences of Philadelphia for several years but did not accept any payment for the post.

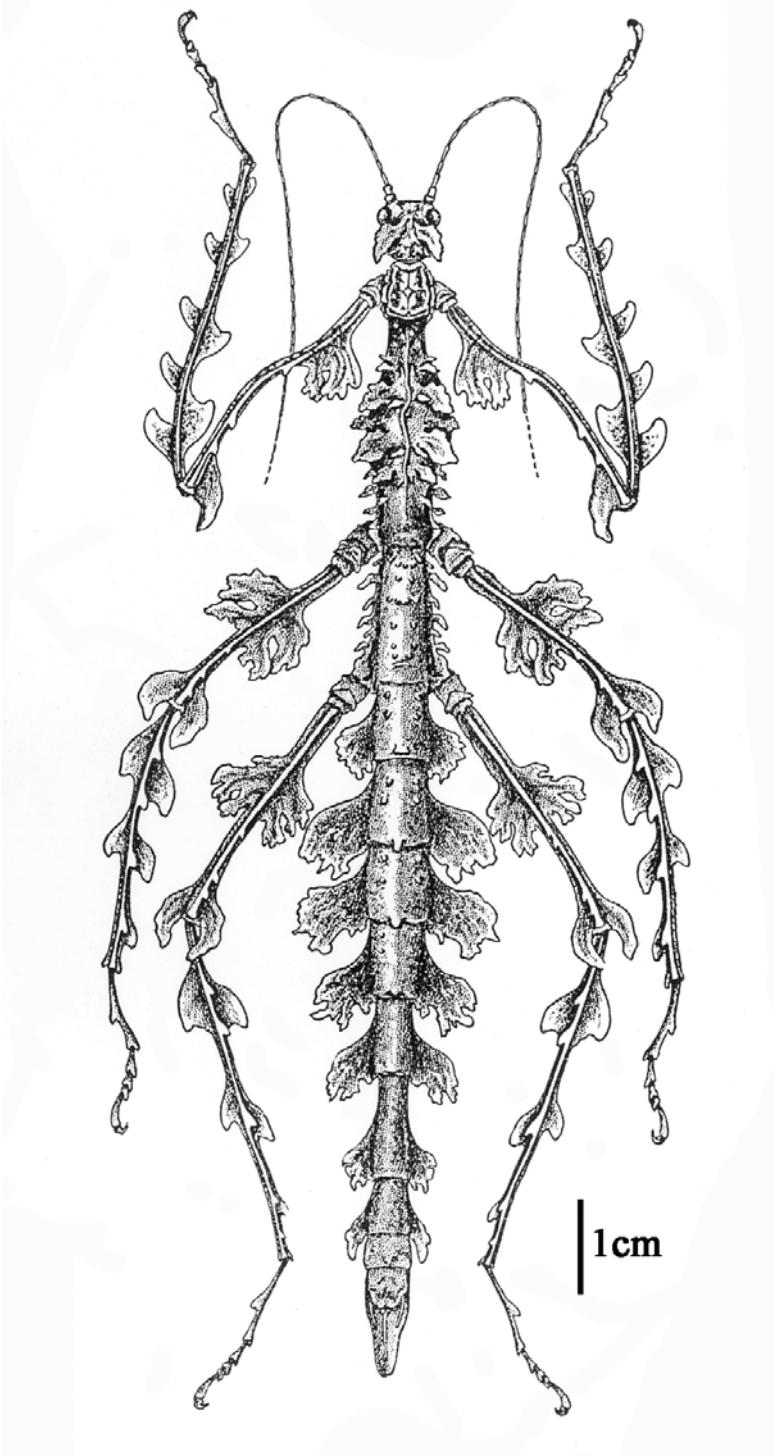


Figure 2. *Trychopeplus thaumasius* Hebard, 1924. From Hebard's plate 6 figure 8.

Hebard wrote 197 papers on Orthoptera and Dermaptera, either on his own or with Rehn. The publications listed at the end of this biography are restricted to papers that deal

with phasmids or are specifically mentioned for other reasons; some publications that only record known species from a new area have been omitted.

Hebard was particularly interested in cockroaches, but also did work on other orthopteroids from many parts of the world. The Hebard Collection of Orthoptera grew to about 250,000 specimens by the time he formally transferred it to the Academy of Natural Sciences of Philadelphia in 1945. It filled 2400 cabinet drawers and included over 3000 type specimens of species he had either described, or purchased from other collections, or exchanged.

Morgan Hebard died at the age of 59 in Philadelphia from a heart attack on 28th December 1946. An extensive obituary was published by his friend and colleague J.A.G. Rehn (1948).

Genera and species named after Hebard

Morgan Hebard was involved in the descriptions of about 800 species of orthopteroids, so it is not surprising that 40 orthopteroid species have been named after him; but only one is a phasmid. The following list gives an idea of the scope of these names.

Phasmid: *Ilocano hebardi* Rehn & Rehn, 1938.

Mantids: Three species, and two genera: *Hebardia* Werner, 1921 & *Hebardiella* Werner, 1924.

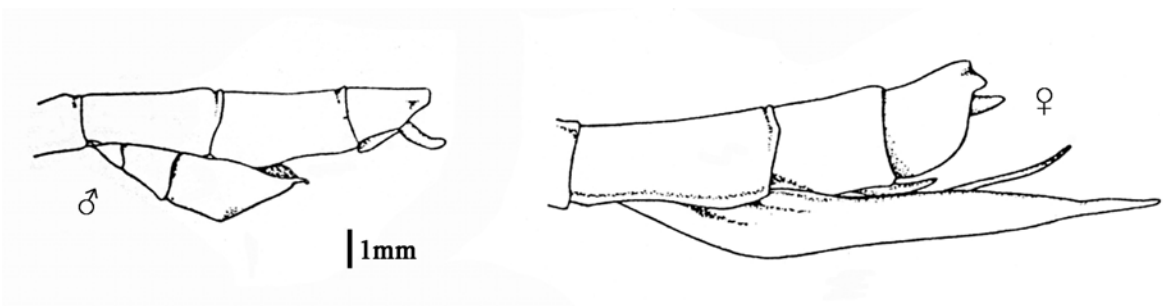
Cockroaches: Eight species, and four genera: *Hebardina* Bei-Bienko, 1938, *Hebardula* Uvarov, 1939, *Euhebardula* Princis, 1953 (a replacement name for *Hebardula* Princis, 1950).

Orthoptera: 28 species, three genera: *Hebardacris* Rehn, 1952, *Hebardiniella* Chopard, 1932, (emendation of *Hebardinella* Chopard, 1932), *Hebarditettix* Günther, 1938.

Phasmid work

Hebard described 44 new species on his own and nine as co-author with J.A.G. Rehn. He described six new genera on his own and four as co-author with Rehn. Although he worked on Orthoptera from many parts of the world, all his new species of phasmids are from North, Central, or South America.

In his first paper to deal with phasmids Hebard was highly critical of Brunner (1907) & Redtenbacher's (1906 & 1908) work: "It is indeed deplorable that, with so many species before them, these authors have made virtually no effort to study and discuss these problems in a scholarly and scientific manner" (Hebard, 1919: 158); "As a whole, we can definitely state that the *Insektenfamilie der Phasmiden* is the greatest retrograde step made in recent years, away from true scientific study of the order Orthoptera" (Hebard, 1919: 159). He later remarks "It did not seem possible that so pretentious a work ....., could actually be so carelessly executed, superficial and unsatisfactory" (Hebard, 1919: 162).



Figures 3 & 4. *Pseudobacteria pastazae* Hebard, 1924. Modified from Hebard's plate 7, figures 1 &2. The original illustrations were scaled as 3x life size.

Hebard also criticises the scarcity of illustrations in Brunner & Redtenbacher's monograph. All but two of the new species described by Hebard were illustrated (the exceptions: *Dyme carrikeri* Hebard, 1919 and *Anisomorpha monstrosa* Hebard, 1932). However, many of Hebard's illustrations consist of only one view of the apex of the abdomen; as such, they are useful for distinguishing species, but only when one has already decided to which genus the specimen belongs. For *Isogoras chocoensis* Hebard, 1921 the only illustration is a single fore-wing (fig 5). His illustrations were usually printed with the size indicated in the caption e.g. "life size", or "3x" etc. (figs 3 & 4), or occasionally "much enlarged" (fig 7). Where I have reproduced examples of his illustrations in this paper I have added scale lines to those for which he gave a precise magnification.

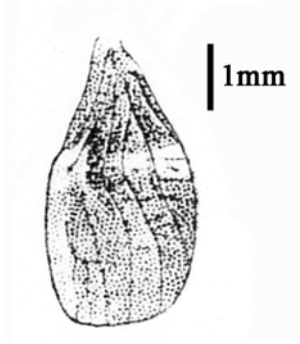


Figure 5.
Isogoras chocoensis Hebard, 1921

Hebard's work is a significant and valuable contribution to our knowledge of New World phasmids.

Lists of genera, species and subspecies described by Hebard

New genera (in alphabetical order)

Acanthometriotes .....Hebard, 1924: 139.
Aploploides.....Rehn & Hebard, 1938: 49.
Brachyelena .....Hebard, 1933**a**: 31.
Ceratites .....Rehn & Hebard, 1909: 126.
Holcoides .....Hebard, 1919: 148.
Libethroidea .....Hebard, 1919: 170.
Litosermyle .....Hebard, 1919: 171.
Manomera .....Rehn & Hebard, 1907: 283.
Pseudoceroys .....Hebard, 1922**b**: 354.
Rhabdoceratites .....Rehn & Hebard, 1912**a**: 232.

New species described by Hebard alone

Hebard, 1919

apolinari (Bacteria) .....161, pl. 19.10, 19.11.
atrata (Anisomorpha) .....145, pl. 20.6.
carrikeri (Acanthoclonia) .....143, pl. 20.4 & 20.5.
carrikeri (Dyme) .....174.
colombiae (Bostra) .....159, pl. 22.5 & 22.6.
cortex (Planudes) .....155, pl. 22.2, 22.3 & 22.4.
eupeplum (Pseudophasma) .....152, pl. 22.1.
forceps (Holcoides) .....148, pl. 21.2, 21.3 & 21.4.
insalubris (Libethra) .....166, pl. 23.3.
inusitata (Libethroidea) .....170, pl. 23.7 & 23.8.
ocanae (Litosermyle) .....172, pl. 23.9 & 23.10.
robustum (Pseudophasma) .....151, pl. 21.6.
spinicollis (Libethra) .....164, pl. 23.1 & 23.2.
strangulata (Acanthoclonia) ..141, pl. 20.1, 20.2 & 20.
taeniatum (Pseudophasma) .....150, pl. 21.5.
viridis (Stratocles) .....146, pl. 21.1.

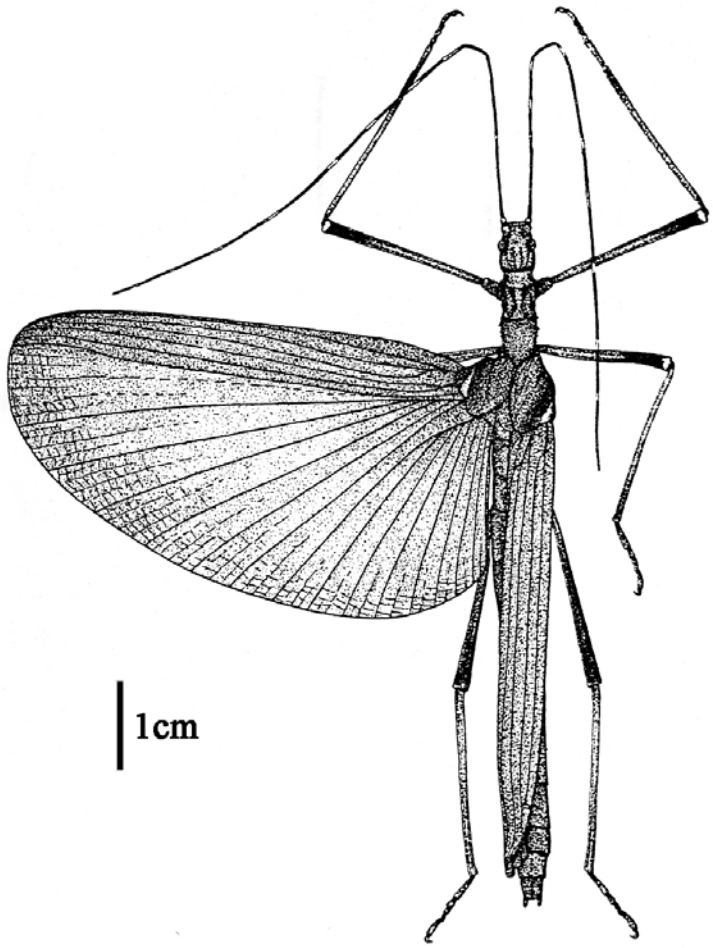


Figure 6. *Pseudophasma eupeplum* Hebard 1919, taken from plate 22 figure 1.

Hebard, 1920
chumash (Timema) .....130, figs 2.

Hebard, 1921
chocoensis (Isagoras) .....164, pl. 9.27.

Hebard, 1922a
erythropleura (Diapheromera) ..... 192, pl. 7.12-14

Hebard, 1922b
annulicornis (Brizoides) ..... 348, pl. 14.1 & 14.2.
ariadne (Prisopus) ..... 352, pl. 14.3-8.
harroweri (Pseudoceroys) ..... 355, pl. 15.1& 15.2.
panamae (Libethra) .....356, pl. 14.9 & 15.3-4.

Hebard, 1924
annulicornis (Dyme) ..... 145, pl. 6.6 & 6.7.
camposi (Libethra) ..... 143, pl. 6.3-5.
crassus (Acanthometriotes) .....139, pl. 5.17.
esmeraldas (Pseudophasma) ..... 136, pl. 5.15 & 5.15.
infumata (Holca) .....135, pl. 5.13.
pastazae (Pseudobacteria) ..... 150, pl. 7.1-3.
spicatus (Paraprisopus) .....141, pl. 6.1.
thaumasius (Trychopeplus) ..... 148, pl. 6.8 & 6.9.

Hebard, 1932
monstrosa (Anisomorpha) .....214.
oaxacae (Heteronemia) ..... 217, pl. 17.1-3.

Hebard, 1933a
apolinari (Isagoras) ..... 37, pl. 2.10-11.
chopardi (Isagoras) .....37, pl. 2.13.
ecuadoricus (Isagoras) .....37, pl. 2.12.
flavidum (Pseudophasma) .....33, pl. 2.9.
hirsuta (Brachyelena) .....32, pl. 2.8.
metae (Libethra) .....39, pl. 3.3.
straminea (Libethra) .....38, pl. 3.2.

Hebard, 1933b
magnifica (Dyme) ..... 123, pl. 6.7 & 6.8.

Hebard, 1934
torquata (Diapheromera) ..... 281, pl. 20.1-3.
hesperus (Parabacillus) ..... 286, pl. 20.5-6.

Hebard, 1937
ritensis (Timema) .....349, pl. 21.1.
velii eucnemis (Diapheromera) [ssp.] ... 350, pl. 22.1-2.

Rehn & Hebard, 1909
covilleae (Diapheromera) ..... 126, fig. 5.
tenuis (Pseudosermyle) ..... 121, figs. 2-4.

Rehn & Hebard, 1914
brachypyga (Manomera) ..... 385, fig. 2 & 4.

Rehn & Hebard, 1938
stenocephalum (Aploploides) ..... 49, pl. 4.18-21.
annulipes (Clonistria) ..... 47, pl. 3.12 & 3.13.
bicoloripes (Clonistria) ..... 43, pl. 3.7, 3.8 & 3.9.
latebricola (Clonistria) ..... 42, pl. 3.5 & 3.6.
monticola (Clonistria) ..... 45, pl. 3.10 & 3.11.
dominicae (Lamponius) ..... 38, pl. 3.3 & 3.4.

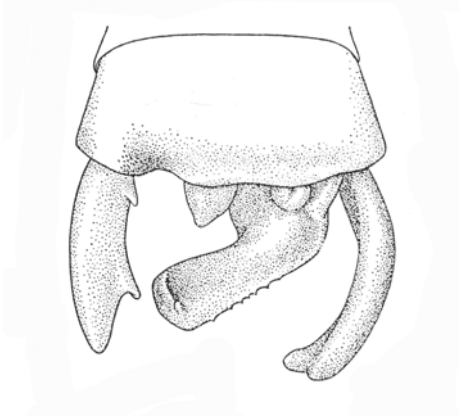


Figure 7.
Timema ritensis Hebard, 1937 plate 21 figure1 – scale given by Hebard as “much enlarged”.

Figure 8. PSG 122, *Anisomorpha monstrosa* Hebard, 1932.

Species in culture

Two species described by Hebard are listed on the Phasmid Study Group's culture list. One of these, PSG 98 *Parabacillus hesperus* Hebard, 1934 has not been in culture for many years; it may never have been in culture: in the early days of the PSG species were allocated a number when they were being maintained in captivity, before it was known if they would breed successfully. The other culture is PSG 122, *Anisomorpha monstrosa* Hebard, 1932; this is a junior synonym of *Anisomorpha paromalus* (Westwood, 1859) but it was being reared under Hebard's name for several years before the synonym was recognised.

References

Brunner von Wattenwyl, K. (1907) *Die Insektenfamilie der Phasmiden*. Vol. **2**. Wilhelm Engelmann, Leipzig.

Hebard, M. (1919) Studies in the Dermaptera and Orthoptera of Colombia. I. Dermaptera and Orthopterous Families Blattidae, Mantidae and Phasmidae. *Transactions of the American Entomology Society*, **45**: 89-179, plates 16-23.

Hebard, M. (1920) The genus *Timema* Scudder, with the description of a new species, (Orthoptera, Phasmidae, Timeminae.). *Entomological News*, **31**: 126-132.

Hebard, M. (1921) Studies in the Dermaptera and Orthoptera of Colombia. Part II. *Transactions of the American Entomological Society*, **47**: 107-169, pl. 7-10.

Hebard, M. (1922**a**) Dermaptera and Orthoptera from the state of Sinaloa, Mexico. *Transactions of the American Entomological Society*, **48**: 192-195, pl. 7.

Hebard, M. (1922**b**) Studies in the Mantidae and Phasmatidae of Panama (Orthoptera). *Transactions of the American Entomological Society*, **48**: 327-362.

Hebard, M. (1923) XV Expedition of the California Academy of Sciences to the Gulf of California in 1921. *Proceedings of the Californian Academy of Science,* (4)**12**(15): 319-340.

Hebard, M. (1924) Studies in the Dermaptera and Orthoptera of Ecuador. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **76**: 109-248, pl. 5-8.
Hebard, M. (1925) The Orthoptera of South Dakota. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **77**: 42-44.
Hebard, M. (1929) The Orthoptera of Colorado. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **81**: 303-309.
Hebard, M. (1932) New species and records of Mexican Orthoptera. *Transactions of the American Entomological Society,* **58**: 2012-371, pls. 17-21.
Hebard, M. (1933**a**) Studies in the Dermaptera and Orthoptera of Colombia. Supplement to papers one to five. *Transactions of the American Entomological Society*, **59**: 31-41, pl. 2-3.
Hebard, M. (1933**b**) Notes on Panamanian Dermaptera and Orthoptera. *Transactions of the American Entomological Society*, **59**: 103-144, pl. 6 & 7.
Hebard, M. (1934) Studies in Orthoptera which occur in North America north of the Mexican boundary. *Transactions of the American Entomological Society*, **60**: 281-293. pl.20.
Hebard, M. (1935) Orthoptera of the upper Rio Grande valley and the adjacent mountains in northern New Mexico. *Proceedings of the Academy of Natural Sciences of Philadelphia,* **87**: 45-82.
Hebard, M. (1937) Studies in Orthoptera which occur in North America, north of the Mexican boundary. VII. Notes & a new species of *Timema*, *Transactions of the American Entomological Society*, **63**: 347-354, pl. 21 & 22.
Hebard, M. (1943) The Dermaptera & Orthopterous families Blattidae, Mantidae and Phasmidae of Texas. *Transactions of the American Entomological Society,* **68**: 239-311, pl. 12 & 13.
Redtenbacher, J. (1906) *Die Insektenfamilie der Phasmiden*. Vol. **1**. Wilhelm Engelmann, Leipzig.
Redtenbacher, J. (1908) *Die Insektenfamilie der Phasmiden*. Vol. **3**. Wilhelm Engelmann, Leipzig.
Rehn, J. A. G. (1948) Morgan Hebard (1887-1946) [Obituary]. *Entomological News*, **59**: 57-69.
Rehn, J.A.G. & Hebard, M. (1905) The Orthoptera of Thomas County, Georgia, and Leon County, Florida. *Proceedings of the Academy of Natural Sciences, Philadelphia*, **56**: 774-802.
Rehn, J.A.G. & Hebard, M. (1907) Orthoptera from Northern Florida. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **59**: 279-391.
Rehn, J.A.G. & Hebard, M. (1909) An Orthopteroid reconnaissance of the south western United States. Part II. New Mexico and western Texas. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **61**: 111-175.
Rehn, J.A.G. & Hebard, M. (1912**a**) A new name in Orthoptera. *Entomological News*, **23**: 232.
Rehn, J.A.G. & Hebard, M. (1912**b**) Fixation of single type (Lectotype) specimens of species of American Orthoptera. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **64**: 60-128.
Rehn, J.A.G. & Hebard, M. (1914) On the Orthoptera found on the Florida Keys & in extreme southern Florida. II. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **66**: 373-376, 384-388.
Rehn, J.A.G. & Hebard, M. (1938) New genera and species of West Indian Mantidae and Phasmidae (Orthoptera). *Transactions of the American Entomological Society*, **64**: 33-55, pl. 3-4.

A spectacular new species of *Ophicrania* Kaup, 1871, from Mindanao, Philippines (Phasmatodea, Phasmatidae, Platycraninae).

Joachim Bresseel & Mark Bushell.

Joachim Bresseel, Kardinaal Sterckxlaan 37, 1860 Meise, Belgium. joachimbresseel@hotmail.com
Mark Bushell, 43 Bradford Road, Trowbridge, Wiltshire, BA14 9AN, UK. alienmarky@btinternet.com

Abstract

A new species of *Ophicrania* Kaup, *Ophicrania sagittarius* **n. sp.** from Mindanao Philippines as well as its eggs are described and illustrated for the first time together with notes on the food plant and habitat. The species differs from all other species in the genus by the striking colour and the absence of wings.

Key words

Ophicrania sagittarius **n. sp.**, Platycraninae, Philippines, Mindanao, Mount Apo, *Pandanus.*

Introduction

Species belonging to the tribe of the Platycranini are only rarely found, this is mainly due to their arboreal way of life and the close relation with their food plant where they blend in perfectly. Recently a revision of the genus *Megacrania* Kaup, 1871 was published (Hsiung, 2007), a revision at species level of the genus *Ophicrania* is desperately required as well. The last time a new *Ophicrania* species was described, was by Brock in 1999 and like many other *Ophicrania* species, it is only known from one sex. The last description based on both sexes was by Günther in 1937 but Günther misplaced this species, as well as *Ophicrania meridionalis* Günther, 1932. The correct names should be *Graeffea leveri* (Günther, 1937) **comb. n.** and *Graeffea meridionalis* (Günther, 1932) **comb. n.**

The first *Ophicrania* egg was described as early as 1871 by Kaup, the founder of ootaxonomy. Kaup stated: "Dieses Ei ist das sonderbarste, welches ich kenne, und, trügt mich mein Schlufs nicht das alle Eier von einem und demselben Genus sich in der allgemeinen Forn ähnlich sehen müssen" [This egg is the most peculiar egg that I know, and, unless I am very much mistaken, eggs belonging to a same genus have to look alike in shape]. Indeed, as Kaup stated, all *Ophicrania* eggs look alike and can be distinguished by the clear median line from *Megacrania* Kaup, 1871 (Sellick, 1997).

Including this new species, 19 species of *Ophicrania* are known at present. Nine species occur in the Philippines.

Checklist of Philippine species belonging to *Ophicrania*

Below an alphabetical list of *Ophicrania* species so far recorded from the Philippine Islands is presented. The known distribution given is based on literature sources (Bruner, 1915; Otte & Brock, 2005) and collection of the authors. Many species are only known from one locality and many of the localities aren't detailed. Most of the time only the island or just Philippines is mentioned on the labels.

1. *Ophicrania brunni* (Redtenbacher, 1908: 378) [*Arrhidaeus*]
   [Samar: Palapa]
2. *Ophicrania nigricornis* (Stål, 1877: 41) [*Arrhidaeus*]
   [Philippine Islands]*
3. *Ophicrania nigroplagiatus* (Redtenbacher, 1908: 376) [*Arrhidaeus*]
   [Luzon]
4. *Ophicrania nigrotaeniatus* (Redtenbacher, 1908: 377) [*Arrhidaeus*]
   [Luzon: Valle de Bulusan]
5. *Ophicrania palinurus* (Westwood, 1859: 135 pl. 2: 6) [*Necroscia*]
   [Luzon: Quezon National Park]
6. *Ophicrania sagittarius* **sp. n.**
   [Mindanao: Mount Apo, Tampakan]

7. *Ophicrania stygius* (Westwood, 1859: 192 pl. 2: 3) [*Necroscia*]
   = *Ophicrania stali* (Kirby, 1896: 741) [*Arrhidaeus*]
   [Albay, N.E. Luzon]
8. *Ophicrania vittipennis* (Stål, 1875: 85) [*Arrhidaeus*]
   [Luzon]
9. *Ophicrania viridinervis* (Stål, 1875: 85, pl. 17: 2) [*Arrhidaeus*]
   [Luzon: Sierra Madre]

* Bragg (2001) also recorded this species from Sabah and Sarawak, but the material was badly damaged so there are doubts whether this is really the same species.

Abbreviations used :
BMNH: British Museum of Natural History, London, England.
IRSBN: Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium.
JB: private collection Joachim Bresseel, Meise, Belgium.
MB: private collection Mark Bushell, Wiltshire, England.
MG: private collection Marco Gottardo, Ferrara, Italy.
HT: holotype.
PT: paratype.
SMI: Sagittarius mines inc.

Ophicrania sagittarius n. sp.

Material
HT, ♂ : Philippines, Mindanao, Mount Apo, Lake Agko, 16.III.2008, ex coll. JB (IRSNB)
PT [2 ♂♂, 1 ♀, 1 egg]: ♀ Philippines, Mindanao, Mount Apo, Lake Agko, 16.III.2008, ex coll. JB (IRSBN); ♂ Philippines, Mindanao, Mount Apo, Lake Agko, 16.III.2008, ex coll. JB (BMNH); 1 egg Philippines, Mindanao, Mount Apo, Lake Agko, III.2008, ex collection MB (IRSBN) ; ♂ Philippines, Mindanao Island, Mt. Apo, 1300 m, 27.III-10.IV.2006, leg. R. Cabale, collection MG

Figure 1. Male holotype mating with female paratype.

Diagnosis
Atypical *Ophicrania* species because it lacks wings in which it differs from the type species *Ophicrania striaticollis* Kaup, 1871 as well as by its smaller size and striking colours.
The most closely related species appears to be *Ophicrania apterus* (Redtenbacher, 1908) from Papua New Guinea. Only the female is known of this species. Although its name suggests the total lack of wings, it still possesses small scale-like tegmina. All the types of *O. apterus* (Redtenbacher, 1908) are lost, but the authors examined a specimen out of the collection of Frank H. Hennemann. *O. apterus* is differently coloured: a white dorsal longitudinal line

reaching from head till the end of the abdomen.

The most closely related Philippine species is *Ophicrania nigricornis* (Stål, 1877). The female has developed tegmina, but the alae are not visible. The male is fully winged. Heads and bodies of both sexes are coloured orange and black.

Furthermore this is the first *Ophicrania* species described that occurs with certainty on the island of Mindanao and with both sexes completely wingless.

Etymology

This species is named after the Sagittarius Mines, Inc. (SMI) for their efforts to study and breed stick insects in their field trials (Tampakan, Mindanao, Philippines) and create environmental and biodiversity awareness within the community.

Description

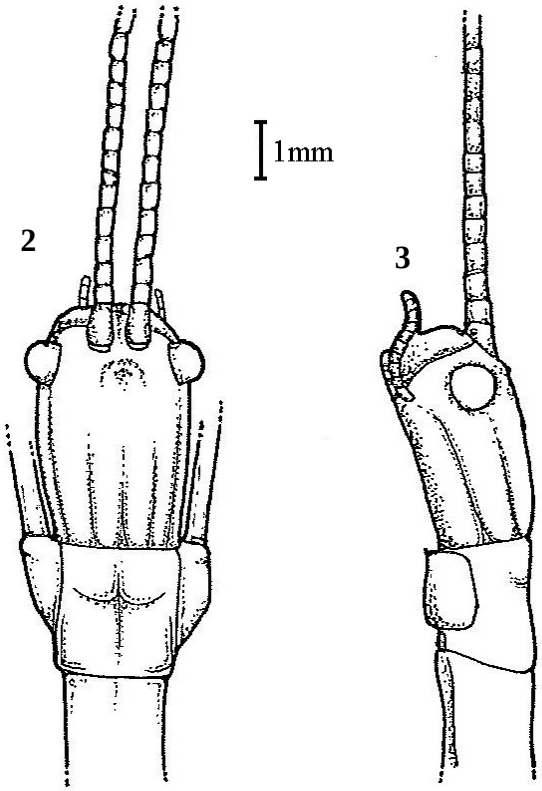
All colouration taken from photographs of live specimens.

Male (figs. 1-5 & 11)

Whole body with a shiny appearance and wingless. Measurements see table 1.

Head: Much longer than wide, uniformly deep blue-green, with a raised oval area between the eyes. Mouthparts orange. Antennae orange and consisting of 20 segments. Scapus flattened, pedicellus short and almost spherical. Following segments slightly setose. Third segment as long as scapus and pedicellus combined. Segment IV as long as third, then gradually becoming longer until segment XIII, segment XIV-XVII again shorter. Last segment again longer with a darker end.

Thorax: Completely shiny orange and smooth. Prothorax shorter than head, pronotum with a median transverse groove. Mesothorax longer than head and prothorax combined. Cylindrical in cross section, smallest diameter in the centre. Metathorax short with a lateral raised area which reaches the metacoxae.

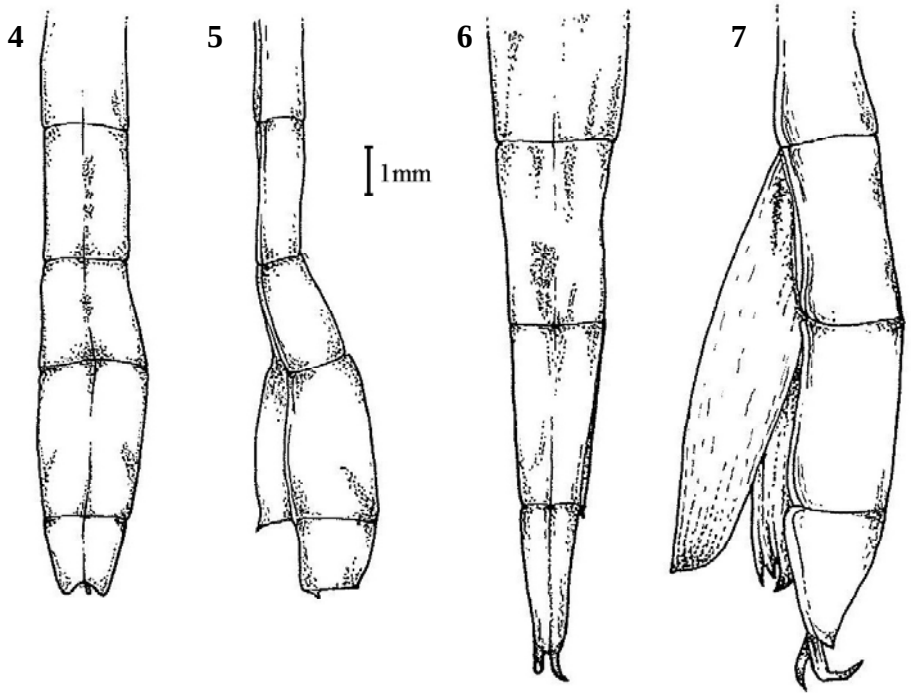


Figures 2-3. Male head and prothorax: **2.** dorsal view, **3.** lateral views.

Legs: Greenish- blue with a setose ventral area, carinae indistinct. Profemora curved and compressed basally. Ventral part bearing two small spines; one apically and one subapically. Mesofemora as profemora, but shorter and ventral spines more distinct. Metafemora with three spines, the first one not as distinct as the two following. Tibia compressed laterally and with a spine at the apex. Tarsomeres greenish- blue with orange colouration at apexes, pretarsus dark orange. Probasitarsus very long, longer than all tarsomeres combined. Third tarsomere about two thirds as long as second. Fourth tarsomere very short. Fifth tarsomere widened latero- apical. Meso- & metaprobasitarsus about as long as following tarsomeres. Basitarsi and al tarsomeres with a very small spine at the apex.

Claws curved, arolia large reaching the end of the claws.

Abdomen: Same colouration as thorax. Median segment smooth and separated from thorax by a transverse depression at the end of the metanotum and by lateral ridges. Segment II about one third longer than median segment. Segment II-VI more or less from the same length. Segment VII a bit shorter than proceeding segments. Segment VIII – X with a distinct ridge dorso- medially. Segment VIII half as long as segment VII, segment IX slightly longer than VIII and segment X shorter again with apically a short division postero- medially. Cerci short, slightly exceeding the last segment. Poculum rounded with a carina ventro-medially.



Figures 4-7. Apices of abdomens.
4. Male, dorsal view. **5.** Male, lateral view. **6.** Female, dorsal view. **7.** Female, lateral view.

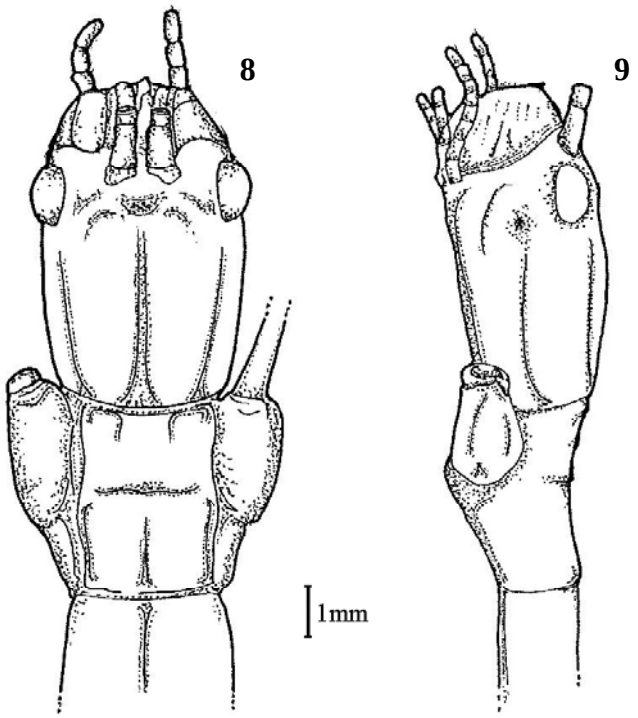
Female (figs. 1, 6-10)

Differently coloured and broader body than in male, the specimen has lost much of its original colouration during preservation. Measurements see table 1.

Head: Typically for the subfamily very large, colour deep blue-green with black cheeks. Anterior half of head a slightly darker green-blue. Mouth-parts orange. Eyes orange with a raised oval area between the eyes and a depression posterior and anterior of this area. Vertex possessing three longitudinal depressions. One median depression reaching from the raised oval area between the eyes till the start of the pronotum. Two other depressions, each starting at the posterior side of the eye and ending at the sides of the pronotum. The cheeks possess a pseudoforamen under the posterior side of the eye, just above the lateral black markings. Antennae broken but examined before damage. Antennae orange, a bit longer than head and prothorax combined, consisting of scapus, pedicellus and 19 following segments. Scapus flattened, pedicellus short and almost spherical. Following segments slightly setose. First segment about as long as scapus. Segment II & III decreasing length, segments IV-VII increasing again in length. After segment VII gradually reducing in size till segment XVIII,

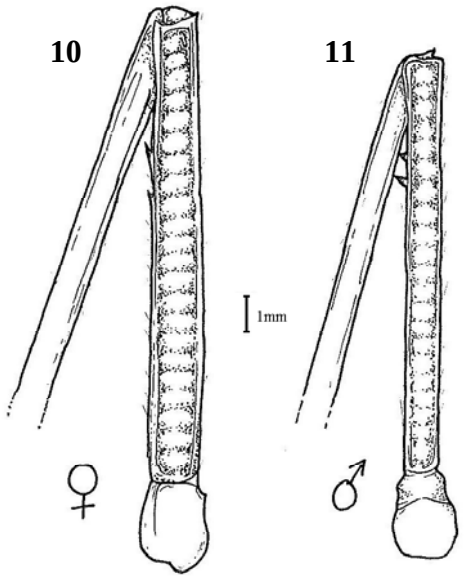
last segment as long as segment XVII & XVIII combined.

Thorax: Dorsal surface of thorax blue-green with orange longitudinal markings on metanotum. Edges of all dorsal segments orange. Ventral surface uniform orange. Prothorax shorter than head, pronotum with a median transverse and longitudinal groove forming a cross. Mesothorax smooth and about four thirds the length of the head and prothorax combined. Cylindrical in cross section, smallest diameter in the centre. Metanotum about as long as pronotum with a lateral raised area that reaches the metacoxae.



Figures 8-9. Female head and prothorax. **8.** dorsal view. **9.** lateral view.

Legs: Greenish-blue with small scattered patches of blue-black and with a setose ventral area, carinae unlike male distinct but unarmed. Apexes of all leg segments with small area of orange colouration. Only one foreleg present. Profemur compressed and curved basally, almost triangular in cross-section, bearing one small spine subapically. Mesofemora shorter, bearing three successive spines subapically. Metafemora reaching the end of abdominal segment V, bearing four successive spines subapically. Tibia all unarmed. Probasitarsus very long, longer than all tarsomeres combined. Basitarsi and all tarsomeres with a very small spine at the apex. Tarsomeres gradually reducing in size. Claws curved, arolia large reaching the end of the claws.



Figures 10-11. Left metafemur. **10.** Female, **11.** male.

Abdomen: Deep blue-green with orange-brown mark on dorsal surface of abdominal segment VIII. Edges of all dorsal segments with orange edges. Ventral surface of abdomen uniform orange with connecting tissue between dorsal and ventral plates a slightly darker orange. Median segment a bit longer than metanotum. Separated from the thorax by a transverse depression at the end of the metanotum and by lateral ridges.

Segment II about one third longer than median segment. Segment II-VII more or less from the same length. Segment VIII slightly shorter than segment VII and segment IX slightly longer than segment VII. Segment X with a dorsomedial ring and rounded posteriorly. Cerci orange and about as long as last segment. Operculum not passing last segment, with a black pit on both sides anteriorly. Praeopercular organ indistinct.

:

Ophicrania sagittarius	HT, ♂ (IRSNB)	PT, ♂ (BMNH & MG)	PT, ♀ (IRSNB)
Body:	52.9	41.2 – 51.8	69.8
Head:	4.4	4.4 – 4.5	7.1
Pronotum:	3.0	2.8 – 2.9	3.8
Mesonotum:	11.2	10.4 – 10.6	14.2
Metanotum:	2.8	2.7 – 3.0	3.5
Median segment:	2.8	2.6 – 2.9	4.2
Profemora:	19.7	18.4 – 19.0	23.6
Mesofemora:	11.2	10.0 – 10.9	13.3
Metafemora:	15.2	14.3 – 14.9	17.0
Protibiae:	20.4	18.8 – 19.2	25.3
Mesotibia	11.0	10.3 -10.5	13.5
Metatibia	15.1	14.0 -15.2	17.0
Antennae:	16*	17.8 – 18.3	/

Table 1: measurements of *Ophicrania sagittarius* **sp. n.** [mm]. *few segments missing.

Eggs (fig. 12-13)
Description: Capitulum missing but conical like as in other *Ophicrania* species. Capsule also typical for the genus, laterally compressed and pitted all over the surface. Posterior part of ventral and dorsal side elevated, forming a 'split' polar area with an impression in the centre from lateral perspective. General colouration of capsule greyish to brown.

Micropylar plate small and shaped in the form of a raindrop, with in its centre a slightly elevated area. Micropylar cup present and slightly elevated. Micropylar plate coloured like capsule, except for the outer margin, the median line and the central region which are reddish brown.

Figures 12-13. Egg capsule.
12. dorsal view. **13.** lateral view.

Measurements (without capitulum): width 2mm; height: 2,1mm; length: 4,6mm.

Comments
The type specimens were found at Lake Agko Campsite, Mt. Apo, Mindanao, although they have also been found in Tampakan during field trials (pers. comm. B. Mabanta). The area is highland secondary rainforest with a large amount of biodiversity. When initially handled the insects produced a milky fluid from defensive glands located in the front corners of the prothorax. The scent of this fluid was reminiscent of peppermint, very similar to a number of *Megacrania* spp. The insects were in plain view on the upper surface of the leaves. The

combination of their bright colour with the defensive fluid produced, would suggest that this is a very effective deterrent against potential predators.

This species was found high up on pandan trees (*Pandanus* sp.; Pandanaceae); because of the considerable damage to these trees, it is probably their only foodplant. It is the first record of a species not belonging to the genus *Megacrania* that is found to feed on *Pandanus*. Recently, damage to pandan plants due to stick insects was reported from Panay island: unfortunately the specimens collected in Panay were lost, but a specimen from Bohol was identified "most probably" as *Megacrania batesii* Kirby, 1896 (Lit & Eusebio, 2008). Although according to Hsiung (2007) *Megacrania alpheus* (Westwood, 1859) is also present in the Philippines and the type locality (Ceylon) is probably in error.

Acknowledgements

Special thanks go out to Benjie Mabanta (Manila, Philippines) for making research on the Philippine Phasmatodea possible. Thanks to Ellen Caluwé (Londerzeel, Belgium) for accompanying and assisting the authors. Marco Gottardo (Ferrara, Italy) is thanked for providing measurements and data of his specimen. Thanks are due to Efren O. Sarmiento (Tampakan, Philippines), Claire Dacanay (Tampakan, Philippines), Jose Sebua (General Santos, Philippines) and Sagittarius Mines Inc. (SMI) for their help in Mindanao. Dr. Phil E. Bragg (Nottinghamshire, England) and Frank H. Hennemann (Kaiserslautern, Germany) are thanked for providing necessary literature, comments and data.

References

Clark-Sellick, J.T. (1997) Descriptive terminology of the phasmid egg capsule, with an extended key to the phasmid genera based on egg structure. *Systematic Entomology*, **22**: 97-122.

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

Brock, P. (1999) Stick and Leaf Insects of Peninsular Malaysia and Singapore . *Malayan Nature Society, Kuala Lumpur*.

Bruner, L. (1915) Preliminary catalogue of the orthopteroid insects of the Philippine Islands. *University studies of the University of Lincoln, Nebraska.* **15**(2):195-281.

Günther, K. (1929) Die Phasmoïden der Deutschen Kaiserin Augusta-Fluss-Expedition 1912/13. Ein Beitrag Zur Kenntnis der Phasmoïdenfauna Neuguineas. *Mitteilungen aus dem Zoologischen Museum, Berlin,* **14**: 600–747.

Günther K. (1932) Beiträge zur Systematik und Geschichte der Phasmoidenfauna Ozeaniens. *Mitteilungen aus dem Zoologischen Museum, Berlin*. **17**: 753-835.

Günther, K. (1937) Über einige Orthopteren von den Salomon-Inseln und von Vanikoro. *Mitteilungen der Deutschen Entomologischen Gesellschaft*. **8**(3):3-10.

Hsiung C. (2007) Revision of the genus *Megacrania* Kaup (Cheleutoptera: Phasmatidae). *Journal of Orthoptera Research*. **16**(2):207-221.

Kaup J.J. (1871) Ueber die Eier der Phasmiden. *Berliner Entomologische Zeitung*. **15**: 17-24

Lit, I.L. & Eusebio, O.L. (2008) A New Species of the Genus *Pharnacia* (Phasmatodea: Phasmatidae: Phasmatinae: Pharnaciini) on Mango Trees in Sibuyan Island with Notes on Stick Insects Found on Agricultural Crops. *The Philippine Agricultural Scientist*, **91**(2): 115-122.

Otte, D. & Brock, P. (2005): Phasmid Species File. Catalog of Stick and Leaf Insects of the World. *The Insect Diversity Association and the Academy of Natural Sciences*, Philadelphia.

Reviews and Abstracts.

Phasmid Abstracts

The following abstracts briefly summarise articles that have recently appeared in other publications, or articles published since 1992 that have only recently come to the attention of the editor. 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.

Note on *Phasma* numbers 69 & 70. Numbers 69 and 70 of *Phasma* were both marked "nummer 69" and both were dated "juni 2008". Volume 70 was published in August 2008 and had a photograph of *Phenacephorus sepilokensis* on the cover. In the abstracts below 70 is used for the second issue that was numbered 69.

Bote, H. (2008) Die Stabschrecke *Pharnacia ponderosa* Stål, 1877 – Haltung und Zucht. *Arthropoda,* **16**(2) 12-13. [in German]

Discusses rearing and breeding *Pharnacia ponderosa* Stål. The male, female, egg, and spermatophore are illustrated.

Bragg, P.E. (2008) The first description of the male and egg of *Syringodes rubicundus* (de Haan, 1842) (Phasmida: Diapheromeridae: Necrosciinae). *Zoologische Mededelingen Leiden*, **82**(24): 255-260.

The female of *Syringodes rubicundus* (de Haan, 1842) from Borneo is redescribed, and the egg and male are described and illustrated for the first time.

Bragg, P.E. & Zompro, O. (2008) Biografie van phasmatologen: Klaus Günther. *Phasma*, **18**(69) 14-19. [in Dutch].

Klaus Günther (1907–1975) was a prolific phasmid taxonomist. His life and phasmid work is outlined. He described 24 new genera and 146 new species or subspecies of Phasmida and illustrated most of those species. His arrangement of the families, subfamilies and tribes of phasmids (1953) remained almost unchanged for 50 years. [This is a Dutch translation of Bragg P.E. & Zompro, O. (2007) Biographies of Phasmatologists - 6. Klaus Günther. *Phasmid Studies*, **16**(2): 25-33.]

Brock, P.D., Hennemann, F.H. & Morgan, B. (2008) *Acanthomenexenus* Brock & Hennemann, a new genus of stick insect, following discovery of the stunning male of *Menexenus polyacanthus* from Sangihe (Phasmida: Diapheromeridae: Lonchodinae). *Le bulletin d'Arthropoda*, **36**: 3-15.

Variation in the female of Menexenus polyacanthus Dohrn, 1910 (Diapheromeridae: Lonchodinae) from Sangihe is commented on, and the egg and spectacular male are described and illustrated for the first time. This has resulted in transfer to a new genus Acanthomenexenus, where it is proposed that several former Menexenus species from Sulawesi belong.

Buckley, T.R., Attanayake, D. & Bradler, S. (2008) Extreme convergence in stick insect evolution: phylogenetic placement of the Lord Howe Island tree lobster. *Proceedings of the Royal Society, B.,* **1552**: 1-8.

The 'tree lobsters' are an enigmatic group of robust, ground-dwelling stick insects (order Phasmatodea) from the subfamily Eurycanthinae, distributed in New Guinea, New Caledonia and associated islands. Its most famous member is the Lord Howe Island stick insect *Dryococelus australis* (Montrouzier), which was believed to have become extinct but was rediscovered in 2001 and is considered to be one of the rarest insects in the world. To resolve the evolutionary position of *Dryococelus*, we constructed a phylogeny from approximately 2.4 kb of mitochondrial and nuclear sequence data from representatives of all major phasmatodean lineages. Our data placed *Dryococelus* and the New Caledonian tree lobsters outside the New Guinean Eurycanthinae as members of an unrelated Australasian stick insect clade, the Lanceocercata. These results suggest a convergent origin of the 'tree lobster' body form. Our reanalysis of tree lobster characters provides additional support for our hypothesis of convergent evolution. We conclude that the phenotypic traits leading to the traditional classification are convergent adaptations to ground-living behaviour. Our molecular dating analyses indicate an ancient divergence (more than 22 Myr ago) between *Dryococelus* and its Australian relatives. Hence, *Dryococelus* represents a long-standing separate evolutionary lineage within the stick insects and must be regarded as a key taxon to protect with respect to phasmatodean diversity.

Cliquennois, N. (2008) Révision des Anisacanthidae, famille endémique de phasmes de Madagascar (Phasmatodea : Bacilloidea). *Annales de la Société entomologique de France,* (N.S.), **44**(1): 59-85. [in French].

Review of Anisacanthidae, stick insects family endemic to Madagascar (Phasmatodea: Bacilloidea). The Malagasy family Anisacanthidae is subdivided into three groups: Anisacanthinae, Leiophasmatinae **n.subfam.** and Xerantherinae **n.subfam.** The Anisacanthinae include *Anisacantha* Redtenbacher 1906, *Paranisacantha* **n.gen.**, *Parectatosoma* Wood-Mason 1879, *Somacantha* **n.gen.** The Leiophasmatinae include *Leiophasma* Uvarov 1940 and probably *Amphiphasma* **n.gen**. The Xerantherinae include *Archantherix* **n.gen.**, *Cenantherix* **n. gen**., *Parorobia* Chopard 1952 and *Xerantherix* Brancsik 1893. *Pseudoleosthenes* Redtenbacher 1906 is transferred to the family Damasippoididae.

Conle, O.V. Hennemann, F.H. & Perez-Gelabert, D.E. (2008) Studies on neotropical Phasmatodea II: Revision of the genus *Malacomorpha* Rehn, 1906, with the descriptions of seven new species (Phasmatodea: Pseudophasmatidae: Pseudophasmatinae). *Zootaxa,* **1748**: 1-64.

The genus *Malacomorpha* Rehn, 1906 is revised at the species-level, based upon examination of all necessary type-material and extensive material housed in ANSP, CMNH and USNM mainly collected on nine expeditions to the Dominican Republic, including collections at 280 sites distributed throughout the country. A re-description of the genus and detailed descriptions of all 13 known species are provided. Seven new species are described and illustrated: *Malacomorpha bastardoae* **n. sp.**, *M. macaya* **n. sp.**, *M. hispaniola* **n. sp.**, *M. minima* **n. sp.**, *M. multipunctata* **n. sp.** & *M. obscura* **n. sp.** from Hispaniola and *M. sanchezi* **n. sp.** from Puerto Rico. The eggs of *M. bastardoae* **n. sp.**, *M. cyllarus* (Westwood, 1859), *M. jamaicana* (Redtenbacher, 1906), *M. multipunctata* **n. sp.**, *M. obscura* **n. sp.**, *M. sanchezi* **n. sp.**, and *M. spinicollis* (Burmeister, 1838) are described and illustrated, those of the four latter species for the first time. According to the original description and distribution *Phasma graveolens* King, 1867 is obviously a synonym of *M. cyllarus* (Westwood, 1859), and not a

synonym of *Anismorpha buprestoides* (Stoll, 1813) as stated by previous authors (**n. syn.**). A lectotype is designated for *Phasma spinicollis* Burmeister, 1838.

The newly described species, *M. longipennis* (Redtenbacher, 1906) and *M. hispaniola* **n. sp.** in particular, prove the genera *Pseudolcyphides* Karny, 1923 (Type-species: *Phasma spinicollis* Burmeister, 1838) and *Alloeophasma* Redtenbacher, 1906 (Type-species: *Anophelepis poeyi* Saussure, 1868) to be synonyms of *Malacomorpha* Rehn, 1906 (**n. syn.**). Consequently, the type species of both genera are here transferred to *Malacomorpha* Rehn, 1906 (**n. comb.**). The genus now contains apterous, brachypterous and pterous species restricted to the Greater Antilles and Bahamas.

Eilmus, S. (2008) Bermerkungen zur Regeneration eines Beines anstelle einer Antenne bei Phasmiden. *Arthropoda,* **16**(1): 83.

A brief review of antennae regeneration in phasmids.

Eusebio O.L., Lit , I.L. & Vorkel, I. (2004) First description of the male of *Phasmotaenia elongata* Zompro & Eusebio (Phasmatodea: Phasmatidae) with notes on its host plants and a revised key to the species of *Phasmotaenia* Navas. *Philippinne Agricultural Scientist,* **87**(2): 191-195.

The stick and leaf insects are interesting arthropods especially in the tropics but they are not well known in the Philippines. They are classified under the order Phasmatodea and include some pest species. Stick and leaf insects are large to very large chewing insects and are known to many as "masters of camouflage" because of their remarkable resemblance to sticks or leaves. A recently discovered species, *Phasmotaenia elongata* Zompro and Eusebio, was described based on adult females, nymphs and eggs collected from pine trees in Benguet. No male was available at the time it was described as new to science.

Accurate descriptions of all forms and stages of stick insects are important in identifying individuals in the field and in museum collections. They allow us to differentiate males from females, which is vital in studying how the organism reproduces and behaves sexually. These aspects of stick insect biology are, in turn, essential in further researches, whether for pest management, in case of potential pests, or for biodiversity conservation, especially for species that are found only in the Philippines or those that are endangered.
More recently, a male from Benguet province, the type locality of *P. elongata,* was collected on agoho, *Casuarina equisetifolia* L. The male of *P. elongata* differs from that of *P. lanyuhensis* Huang & Brock, a species from Taiwan, in having longer antennae, shorter appendages found at the tip of the abdomen and a smaller body size. The definition of the genus *Phasmotaenia* is modified to accommodate new information from the Philippine species, and a taxonomic key to its known species is provided to facilitate their identification.

Fritzsche, I. (2008) Zur Entdeckung von *Malacomorpha guamuhayaense* Zompro & Fritzsche, 2008. *Arthropoda*, **16**(1): 38. [in German].

An account of the discovery of *Malacomorpha guamuhayaense* Zompro & Fritzsche, 2008.

Ghiselli, F., Milani, L., Scali, V., & Passamonti, M. (2007) The *Leptynia hispanica* species complex (Insecta Phasmida): polyploidy, parthenogenesis, hybridization and more. *Molecular Ecology*, **16**(20) 4256-4268.

The *Leptynia hispanica* stick insect species complex includes bisexuals, triploid and tetraploid parthenogenetic populations, suggesting that polyploidy has played a central role in the evolution of this complex. An analysis of karyotype, mitochondrial DNA (cox2) and nuclear DNA (ef1-alpha) markers was carried out to clarify phylogenetic relationships and

microevolutionary/phylogeographical patterns of the *L. hispanica* complex. Our analyses suggested a subdivision of bisexual populations into four groups, tentatively proposed as incipient species. Moreover, triploids and tetraploids showed two independent origins, the latter being more ancient than the former. From ef1-alpha analysis, triploids showed hybrid constitution, while the hybrid constitution of tetraploids is likely, but more data are needed. We suggest that *L. hispanica* is a case of 'geographical parthenogenesis' with parthenogenetic strains colonizing large peripheral ranges, and bisexuals confined to glacial refuge areas. Moreover, the age, wide distribution and competitive advantage of polyploids over diploids, demonstrate their significance in the evolution of the *L. hispanica* species complex.

Größer, D. (2008) First description of a new species of *Chitoniscus* Stål, 1875 since 100 years (Phasmatodea: Phylliidae). *Arthropoda,* **16**(1): 32.

A new species of *Chitoniscus* Stål, 1875 (Insecta: Phasmatodea: Phylliidae) and its egg are described and figured from Sarramea, New Caledonia, for the first time: *Chitoniscus sarramaeansis* Größer, n.sp.

Größer, D. (2008) Erstnachzucht einer *Chitoniscus*-Art: *Chitoniscus sarramaeansis* Größer, 2008. *Arthropoda,* **16**(1): 33-35. [in German]

Describes the rearing of *Chitoniscus sarramaeansis* Größer, 2008.

Größer, D. (2008) Interessante Arten der Wandelnden Blätter aus Borneo (Phasmatodea). *Arthropoda,* **16**(2): 86. [in German]

Comments on some *Phyllium* spp. from Borneo.

Hennemann, F.H. & Conle, O.V. (2009) Studies on the genus *Phasmotaenia* Navás, 1907, with the descriptions of five new species from the Solomon Islands, a revised key to the species and notes on its geographic distribution (Phasmatodea: "Anareolatae": Phasmatidae *s. l.*: Stephanacridini). *Zootaxa,* **2011**: 1–46.

The genus *Phasmotaenia* Navás, 1907 (type-species: *Taeniosoma sanchezi* Bolívar, 1897) is currently known only from the Philippine Islands and Taiwan, but here shown to extend eastwards as far as to the Solomon Islands, Northern New Guinea and even Fiji. A taxonomic review of the genus, and updated keys to the species are presented.

The type-species of *Phasmotaenia* Navás, 1907, *P. sanchezi* (Bolívar, 1897) from Luzon, Philippines is shown to have been misinterpreted by previous authors. This has resulted in the description of the here revealed junior synonym *Phasmotaenia elongata* Zompro & Eusebio, 2000 (n.syn.). A survey of the intraspecific variation of *P. sanchezi* (Bolívar, 1897) is provided along with illustrations of the holotype. *Phasmotaenia australe* (Günther, 1933) from the Solomon Islands is removed from synonymy with *Phasmotaenia godeffroyi* (Redtenbacher, 1908). From Micronesia and shown to be a distinct and valid species. Both species are transferred to *Phasmotaenia* Navás, 1907. Examination of the paratypes of *P. australe* (Günther, 1933) has revealed these to represent two different species distinct from the holotype, one of which is described as new herein (*P. guentheri* n.sp.). The male of *P. australe* is described and illustrated for the first time, and re-descriptions are presented of the female and egg along with notes on its considerable intraspecific variability. *Stephanacris laeviceps* Hennemann & Conle, 2006 from New Guinea (Mt. Doorman) and *Hermarchus inermis* Redtenbacher, 1908 from Fiji are transferred to *Phasmotaenia* Navás, 1907. A lectotype is designated for *Hermarchus inermis* Redtenbacher, 1908.

Five new species from the Solomon Islands are described and illustrated: *P. bukaense* n.sp. (Buka Id.), *P. guentheri* n.sp. (Makira Id.), *P. salomonense* n.sp. (Bougainville Id. & Santa Isbel Id.), *P. spinosa* n.sp. (Malaita Id.) and *P. virgea* n.sp. (New Georgia Id.). While

the females and eggs of all five species are recognized, the males of *P. guentheri* n.sp., *P. bukaense* n.sp. and *P. salomonense* n.sp. remain as yet undescribed.

The genus now contains eleven described species and the geographic distribution is shown to extend from Lanyuh Island southeast of Taiwan and the Philippines over Micronesia, New Guinea and the Solomon Islands as far as Fiji in the east. This interesting distributional pattern is briefly discussed under the aspect of biogeography and taking the geology of the concerned regions into account. A modified and extended description of the genus *Phasmotaenia* Navás, 1907 and differentiation from related genera is provided along with updated keys to the eleven species currently known. Two further so far unnamed species from the Philippines (Luzon) and the Solomon Islands (Guadalcanal) are recognized but not formally described.

Hsiung, C.C. (2001) Megacrania species in Indonesia (Cheleutoptera: Phasmatodea). Journal of Orthoptera Research **10**(2): 293-301.

Two new species of *Megacrania* Kaup are described and compared with other related species. There are now three confirmed species in Indonesia. *Megacrania brocki* Hsiung from Key and Obi Islands, and *M. rentzi* Hsiung from Tandjjong, Borneo are compared with *M. wegneri* Willemse from Obi, *M. alpheus* Bates (mislabelled as 'Ceylon'), *M. batesii* Kirby from Bismark Is. and *M. tsudai* Shiraki from Taiwan.

Hsiung, C.C. (2003) Two new species of Megacrania Kaup (Cheleutoptera: Phasmatodea) from the Admiralty Islands. Journal of Orthoptera Research **12**: 31-35.

Six specimens collected in the Admiralty Islands are described as two new species; four specimens are named *M. vickeri* Hsiung, the other two as *M. artus* Hsiung. They are compared with the most closely related species of *Megacrania, alpheus, batesii* and *rentzi.*

Hsiung, C.C. & Yang, J.T. (2000) Systematic study of Megacrania species of Australia (Cheleutoptera: Phasmatodea). Journal of Orthoptera Research **9**: 71-75.

The single *Megacrania* species of Australia is described and compared with *M. tsudai* Shiraki, *M. wegneri* Willemse and the lectotype of *M. batesii* Kirby, with the conclusion that it is *M. batesii*.

Hsiung, C.C. (2007) Revision of the genus *Megacrania* Kaup (Cheleutoptera: Phasmatidae). *Journal of Orthoptera Research*, **16**(2) 207-221.

The genus *Megacrania* Kaup is revised. Types or paratypes of all species were examined. Two new species, *Megacrania obscuris* and *Megacrania spina,* are described and illustrated. A key is given to the species.

Junker, R.R., Itioka, T., Bragg, P.E. & Blüthgen, N. (2008) Feeding Preferences of Phasmids (Insecta: Phasmida) in a Bornean Dipterocarp Forest. *The Raffles Bulletin of Zoology*, **56**(2): 445-452.

Stick and leaf insects (Phasmida) from 19 species (53 individuals) were collected in a lowland dipterocarp forest (Lambir Hills, Sarawak, Malaysia). Dual-choice tests were conducted to examine whether phasmids discriminate between young and old leaves of seven plant species. A second set of tests examined the preferences of phasmids for leaves from *Dryobalanops lanceolata* (Dipterocarpaceae) saplings versus leaves from the upper canopy of the same tree species. *Haaniella echinata* and other flightless species (Heteropterygidae and Lonchodinae) fed on nearly all plant species offered and showed significant preferences for old leaves in three plant species. In contrast, flying phasmids (Aschiphasmatinae and Necrosciinae) rejected leaves from most plants and did not show consistent leaf age choices.

H. echinata and flightless phasmids preferred canopy leaves from *D. lanceolata* over leaves from saplings, regardless of leaf age. Our results are consistent with the hypothesis that young leaves of some plant species are better defended against generalist herbivores than old leaves and that saplings are better defended than adult trees. Since upper canopy leaves were highly palatable to understorey phasmids, factors other than chemical defences must contribute to the low abundance of phasmids in forest canopies.

Klug, R. & Klass, K.D. (2007) The potential value of the mid-abdominal musculature and nervous system in the reconstruction of interordinal relationships in lower neoptera. *Arthropod Systematics and Phylogeny,* **65**(1): 73–100.

The mid-abdominal musculature and its innervation are compared for several lower neopteran "orders"; data on Embioptera and Mantophasmatodea are presented for the first time. For the sclerotisations, the musculature, and the nervous system of the mid-abdomen general descriptions are given, and general aspects of homologisation in these elements are explained; for the lateral muscles the distinction of three groups innervated by the T-, B-, or C-nerves is confirmed. Differences in the musculature and nervous system of the lower neopteran lineages are discussed and evaluated with regard to their phylogenetic implications. Conditions in Ephemeroptera, Megaloptera, and Zygentoma are partly included in the discussion. Several characters were found to be informative on interordinal relationships. Plecoptera have features probably plesiomorphic at the neopteran level: the origin of nerve A in front of the ganglion and the innervation of intrasegmental lateral muscles by nerve A; this may support the monophyly of a taxon comprising all other Neoptera. The hyperneural muscle found in many Dictyoptera also appears as a uniquely plesiomorphic structure (at the pterygotan level). The co-occurrence of two specific lateral muscles supplied by nerve B as well as certain subdivisions in the lateral muscles may support a clade Phasmatodea + Embioptera. We also point to character systems that appear informative on the internal phylogeny of order-level taxa, such as the relationships between nerves T and M in Plecoptera, the ventral musculature in Ensifera, the dorsal musculature in Dermaptera, and details of the hyperneural muscle in Dictyoptera. Besides the very low number of taxa studied so far, major problems still persistent in the use of mid-abdominal characters for phylogenetic work are (1) the insufficient knowledge on topographic homologies for the lateral cuticular areas of the mid-abdomen; (2) lacking knowledge on the neuronal structural level of the mid-abdominal nervous system; (3) difficulties in the homologisation of muscles and nerves between Pterygota and the apterygote Archaeognatha and Zygentoma, which are partly due to the presence of a system of non-cuticular tendons in the latter and limit outgroup comparison for Pterygota.

Köhn, J. (2008) Eine Mißbildung bei der Gespenstschrecke *Extatosoma tiaratum* (MacLeay, 1827), *Arthropoda*, **16**(1): 82.

Notes and photographs of an Extatosoma tiaratum which lost an antenna and regenerated it as a foot.

Lit, I.O. & Eusebio, O.L. (2008) First description of the male of Sungaya inexpectata Zompro, 1996 (Phasmatodea: Heteroptergidae: Obrimini). *Arthropoda,* **16**(2) 40-42.

The adult male of the stick insect *Sungaya inexpectatu* Zompro, 1996 is described for the first time. This is based on a collection of several individuals from the Province of Bataan (new locality record). This monotypic genus is so far known to be endemic to the Philippines, with the original material of the type speciess, *inexpectuta* collected from Sungay, Tagaytay City, Cavite Province. These two places are both on the western side of Luzon Island. The discovery of this species in the Lamao Forest Reserve, an area being

considered for eco-tourism, provides an insight that there may be more endemic species in that area and that future eco-tourism activities, if unavoidable, should place special considerations to ensure the survival and protection of species such as S. *inexpectata*.

Marske, K.A., Ivie, M.A. & Hilton, G.M. (2007) Effects of volcanic ash on the forest canopy insects of Montserrat, West Indies. *Environmental Entomology*, **36**(4): 817-825.

The impact of ash deposition levels on canopy arthropods was studied on the West Indian island of Montserrat, the site of an ongoing volcanic eruption since 1995. Many of the island's natural habitats have been buried by volcanic debris, and remaining forests regularly receive volcanic ash deposition. To test the effect of ash on canopy arthropods, four study sites were sampled over a 15-mo period. Arthropod samples were obtained using canopy fogging, and ash samples were taken from leaf surfaces. Volcanic ash has had a significant negative impact on canopy arthropod populations, but the decline is not shared equally by all taxa present, and total population variation is within the variance attributed to other aboitic and biotic factors. The affected populations do not differ greatly from those of the neighbouring island of St. Kitts, which has not been subject to recent volcanic activity. This indicates that observed effects on Montserrat's arthropod fauna have a short-term acute response to recent ash deposition rather than a chronic depression caused by repeated exposure to ash over the last decade.

Murányi, D. (2007) *Peruphasma marmoratum*, a remarkable new species of high montane Phasmatodea (Pseudophasmatidae: Pseudophasmatinae) from the Venezuelan Andes. *Zootaxa* **1398**: 57–67.

A remarkable new species of high montane Phasmatodea (Pseudophasmatidae: Pseudophasmatinae), *Peruphasma marmoratum* **sp.n**. from the Venezuelan Andes is described and illustrated from both sexes. The species of *Peruphasma* Conle & Hennemann, 2002, which were excluded by Zompro (2004) are confirmed as belonging to the genus. The new species differs from all other members of the genus by the presence of tubercles on the mesonotum. Affinities, ecological and distributional notes, and notes on other Anisomorphini from Venezuela are presented.

Simoens, R. & Rabaey, K. (2008) Onze siertuin-voedselplantentuin. Deel 2: Lente in de tuin! *Phasma*, **18**(69): 10-13. [in Dutch].

Foodplants in springtime. After a cold winter and a "winter-diet" for our phasmids finally spring came. The "winter-foodplants" get new growth but also "summer-plants" are re-growing and are getting ready to serve as foodplant and variation. Again, we try to take care of the ornamental value. Also certain weeds can be of use and as phasmid breeders we also see the ornamental value of those plants.

Simoens, R. & Rabaey, K. (2008) Aschiphasmatini of Diamanttakjes. *Phasma*, **18**(69): 20-22. [in Dutch].

Although giving common names to phasmids is not advisable because of confusion, the authors want to call all Aschiphasmatini "Diamond sticks". Two reasons are explained: their tiny shiny appearance and it's a nice name to make them more popular amongst phasmid breeders. For the moment five different species are kept in captivity but there is not much enthusiasm for these less known species. This article is a plea to breed Aschiphasmatini with breeding information.

Simoens, R. & Rabaey, K. (2008) Onze siertuin-voedselplantentuin. Deel 3: Zomer. *Phasma*, **18**(70): 5-6. [in Dutch]

Summertime offers a broad variety of foodplants. A lot of ornamental plants can be offered now so that winter foodplants can grow. We offer a "summer diet" with high quality value, although it is not known that phasmids care about the quality. Summertime is perfect; we may not forget the spiders and their cocoons of course. We think further ahead, wintertime is far away but it is now the time to prepare, especially collecting acorns to provide oak in winter. As we described in the previous P*hasma*-newsletters a lot of possible foodplants, we will now highlight the ornamental part.

Strybosch, J. (2008) Species report 17: PSG 118 *Aretaon asperrimus (Redtenbacher,* 1906). *Phasma*, **18**(70): 7-8. [in Dutch]

Aretaon asperrimus is a nice looking species and easy to breed in captivity. Originally the species was named *Obrimus asperrimus* Redtenbacher, 1906 and the first females were found at Mount Kinabalu (Sabah). Rehn & Rehn, 1938 changed the name to *Aretaon asperrimus.* They were found on several places: Tawau, Poring, Inanam, Ulu Moyog but also on the island of Palawan Philippines. This report is handy for breeders who are interested in culturing this species.

Zompro, O. (2008) Zur Entdeckung von *Sungaya inexpectata* Zompro, 1996. *Arthropoda*, **16**(2): 41. [in German].

An account of the discovery of *Sungaya inexpectata* Zompro, 1996 in the Philippines in 1995.

Zompro, O. & Fritzsche, I. (2008) A new phasmid from Cuba *Malacomorpha guamuhayaense* n.sp. (Phasmatodea: Pseudophasmatidae). *Arthropoda*, **16**(1): 36-37.

Malacomorpha guamuhayaense Zompro & Fritzsche, n.sp. (Phasmatodea: Pseudophasmatidae: Anisomorphini), is described from Cuba .