Zootaxa 2322: 1–83 (2009)
www.mapress.com/zootaxa/

Monograph

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

ZOOTAXA

2322

On certain species of the genus *Phyllium* Illiger, 1798, with proposals for an intra-generic systematization and the descriptions of five new species from the Philippines and Palawan (Phasmatodea: Phylliidae: Phylliinae: Phylliini)

FRANK H. HENNEMANN[1], OSKAR V. CONLE[2], MARCO GOTTARDO[3] & JOACHIM BRESSEEL[4]

[1]*Kirchdell 24, 67661 KL-Hohenecken, Germany. E-mail: Hennemann@phasmatodea.com, Website: www.Phasmatodea.com*
[2]*Goldbachweg 24, 87538 Bolsterlang, Germany. E-mail: Conle@phasmatodea.com Website: www.Phasmatodea.com*
[3]*Department of Evolutionary Biology, University of Siena, Via Aldo Moro 2, I-53100 Siena, Italy. E-mail: m-gottardo@libero.it*
[4]*Kardinaal Sterckxlaan 37, 1860 Meise, Belgium. E-mail: joachimbresseel@hotmail.com*

Magnolia Press
Auckland, New Zealand

Accepted by B. Mantovani: 8 Oct. 2009; published: 22 Dec. 2009

Frank H. Hennemann, Oskar V. Conle, Marco Gottardo & Joachim Bresseel
On certain species of the genus *Phyllium* Illiger, 1798, with proposals for an intra-generic systematization and the descriptions of five new species from the Philippines and Palawan. (Phasmatodea: Phylliidae: Phylliinae: Phylliini)
(*Zootaxa* 2322)

83 pp.; 30 cm.

22 Dec. 2009

ISBN 978-1-86977-451-6 (paperback)

ISBN 978-1-86977-452-3 (Online edition)

FIRST PUBLISHED IN 2009 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: zootaxa@mapress.com

http://www.mapress.com/zootaxa/

ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

Table of contens

Abstract

Thirteen species of *Phyllium (Phyllium)* Illiger, 1798 are studied and (re)described in detail with emphasis on those species which exhibit more or less well developed alae in the females and those occurring in the Philippine Islands and on Palawan. Amongst these five new species are described and illustrated from both sexes and the eggs: *Ph. (Ph.) ericoriai* Hennemann, Conle, Gottardo & Bresseel **n. sp.** from the Philippine Islands of Luzon, Marinduque and Batan, *Phyllium philippinicum* Hennemann, Conle, Gottardo & Bresseel **n. sp.** from the Philippine Island of Luzon, *Phyllium mindorense* Hennemann, Conle, Gottardo & Bresseel **n. sp**. from the Philippine Island of Mindoro, *Phyllium mabantai* Bresseel, Hennemann, Conle & Gottardo **n. sp.** from the Philippine Island of Mindanao and *Ph. (Ph.) gantungense* Hennemann, Conle, Gottardo & Bresseel **n. sp.** from Palawan.

Ph. (Ph.) celebicum de Haan, 1842 is re-described with the male and egg described and illustrated for the first time. It is shown to be restricted to Sulawesi and Ambon with all records from continental Asia based on misidentifications mostly relating to *Ph. (Ph.) westwoodii* Wood-Mason, 1875. All Philippine records of *Ph. (Ph.) celebicum* de Haan relate to *Ph. (Ph.) ericoriai* Hennemann, Conle, Gottardo & Bresseel **n. sp.**.

Both sexes and the eggs of *Ph. (Ph.) westwoodii* Wood-Mason, 1875 are re-described and illustrated and a survey is provided of its intraspecific variability. This species was misinterpreted by most former authors and is here shown to be widely distributed in southern continental Asia having so far been recorded from the Andamans, Myanmar, Thailand, Laos, Kamputchea, S-China, N-Vietnam, Sumatra and the Riouw Archipelago.

The holotype of *Phyllium (Ph.) siccifolium* (Linné, 1758) is described in detail for the first time with illustrations provided. This, the type-species of the entire family Phylliidae, is shown to have been misinterpreted by almost all previous authors and the distribution to be in fact restricted to the Moluccas (Ambon, Ceram, Halmahera, Sula Islands and Banggai). Ambon is shown to be most likely the type-locality of *Ph. siccifolium*. Records from Peninsular Malaysia have proven to relate *to Ph. (Ph.) hausleithneri* Brock, 1999 and Philippine material erroneously referred to as "*Ph. siccifolium*" by various authors is *Ph. (Ph.) philippinicum* Hennemann, Conle, Gottardo & Bresseel **n. sp.**. *Ph. (Ph.) tobeloense* Größer, 2007 from Halmahera (Moluccas) is shown to represent a junior synonym of *Ph. siccifolium* (**n. syn.**).

Comparison of the Malayan *Ph. (Ph.) hausleithneri* Brock, 1999 with Malayan specimens previously referred to as „*Ph. siccifolium*" has revealed these to be the same species which shows considerable variation concerning to the shape of the abdomen in females. *Ph. (Ph.) hausleithneri* is characteristic for the conspicuous blue interior marking on the meso- and metacoxae. Both sexes and the eggs as well as the remarkable variation of females are illustrated.

Similarly strong variation is recorded and illustrated for females of the Javanese *Ph. (Ph.) jacobsoni* Rehn & Rehn, 1933. A brief discussion of its variability and distribution as well as a summary of the diagnostic features and illustrations of the females and eggs are presented.

The Philippine *Ph. (Ph.) bilobatum* Gray, 1843 is only known from the unique female holotype and all subsequent records appear to have been based on misidentified material. Subsequent records from Peninsular Malaysia relate to *Ph. (Ph.) hausleithneri* Brock, 1999 and records from Java have all proven to represent *Ph. (Ph.) jacobsoni* Rehn & Rehn, 1933.

The male allotype of *Ph. (Ph.) woodi* Rehn & Rehn, 1933 from the Philippine island of Mindanao is specifically distinct from the female holotype from Sibuyan Island and here designated as a paratype of *Ph. (Ph.) mabantai* Bresseel, Hennemann, Conle & Gottardo **n. sp.**. The diagnostic features of *Ph. (Ph.) woodi*, a species so far only known from the island of Sibuyan, are briefly summarized.

With emphasis on the Philippine fauna, a checklist and keys are provided for the nine species of *Phyllium* Illiger, 1798 presently known to occur in the Philippine Islands and Palawan.

Critical notes are presented on the current intra-generic systematization of *Phyllium* Illiger, 1798 along with an extended and more detailed distinction between the two subgenera contained, *Phyllium* Illiger, 1798 and *Pulchriphyllium* Griffini, 1898. Based on morphological features of the insects and eggs species-groups are suggested within both subgenus. *Phyllium (Phyllium)* is proposed to include the *siccifolium* species-group and *celebicum* species-group, whereas *Phyllium (Pulchriphyllium)* subdivides into the *bioculatum* species-group, *schultzei* species-group, *frondosum* species-group and *brevipenne* species-group. The latter two groups are shown to differ considerably from other members of the subgenus and do not belong in *Pulchriphyllium* (sensu stricto). Keys are provided for the distinction of the species-groups here proposed.

The *celebicum* species-group of *Phyllium (Phyllium)* is discussed in more detail and provisionally contains all those species in which females have developed alae, a fact overlooked for several species by previous authors. Eight species are here attributed to the *celebicum* species-group and keys are provided to distinguish these.

Five species are transferred from one subgenus to the other. *Phyllium drunganum* Yang, 1995 and *Ph. tibetense* Liu, 1993 from S-China are removed from the subgenus *Pulchriphyllium* and transferred to *Phyllium (Phyllium)* (**n. comb.**). *Ph. chitoniscoides* Größer, 1992 and *Ph. frondosum* Redtenbacher, 1906 from New Guinea as well as *Ph. keyicum* Karny, 1914 from they Key-Islands are removed from *Phyllium (Phyllium)* and transferred to the *frondosum* species-group of *Phyllium (Pulchriphyllium)* (**n. comb.**). *Ph. insulanicum* Werner, 1922 from the Key Islands is removed from synonymy with the New Guinean *Ph. frondosum* Redtenbacher, 1906 and synoynmised with *Ph. keyicum* Karny, 1914; differences between *Ph. frondosum* and *Ph. keyicum* are presented. The Philippine *Phyllium (Phyllium) pusillulum* Rehn & Rehn, 1933 is removed from the genus *Phyllium* Illiger, 1798 and transferred to *Microphyllium* Zompro, 2001, hence the valid name now is *Microphyllium pusillulum* (Rehn & Rehn, 1993 **n. comb.**).

Some taxonomically important features traditionally used for distinguishing the genera and species in the family Phylliidae are critically discussed. The present distinction of *Chitoniscus* Stål, 1875 and *Phyllium* Illiger, 1798 is shown to be problematic since research on the length relation of the meso-praescutum (anterior portion of the mesonotum in front of the tegmina) has revealed several species in *Phyllium* Illiger, 1798 that violate the generic description by having this clearly transverse and actually keying out to *Chitoniscus* Stål, 1875. The prosternal projection characteristic for *Chitoniscus* Stål, 1875 is shown to be also present in several members of *Phyllium* Illiger, 1798. Although the entire family Phylliidae was traditionally diagnosed by females having the antennae with nine segment, six species of *Phyllium (Phyllium)* Illiger, 1798 are here shown to have in fact ten antennomeres. Another interesting fact are the distinctly pectinate ungues (= claws) seen in *Ph. (Ph.) gantungense* **n. sp.** which have so far only been known to occur in the Old World areolate family Aschiphasmatidae.

Key words: Phasmatodea, Phylliidae, Phylliinae, Phylliini, *Phyllium (Phyllium)*, new species, Philippines, Palawan, descriptions, illustrations, eggs, intraspecific variation, intrageneric systematization, species-groups, distribution, keys