Revision of the mirine plant bug genus
*Philostephanus* Distant and allies (Heteroptera: Miridae: Mirinae: Mirini)*

Tomohide Yasunaga & Michael D. Schwartz

The East Asian mirine plant bug genus *Philostephanus* Distant, 1909 is revised. Twenty-three species are recognized, including 9 new species from Japan, Taiwan, Thailand, Nepal, and Indonesia (Sumatra). Synapomorphies of the female genitalia uniquely define the genus as a monophyletic group. *Arbolygus* Kerzhner, 1979 is proposed as a junior synonym of *Philostephanus*, thus forming twelve new combinations: *P. ailaensis* (Lu & Zheng), *P. difficilis* (Lu & Zheng), *P. fulvus* (Jakovlev), *P. glaber* (Kerzhner), *P. himalayicus* (Lu & Zheng), *P. longustus* (Lu & Zheng), *P. pronotalis* (Zheng & Liu), *P. renae* (Lu & Zheng), *P. rubripes* (Jakovlev), *P. tibialis* (Lu & Zheng), *P. ulmi* (Kerzhner), and *P. wuzhiensis* (Lu & Zheng). *Lygus variegatus* Poppius, 1914 is transferred to *Philostephanus*. Each of the fourteen known species of *Philostephanus* is diagnosed and redescribed. A new genus *Orientocapsus*, regarded as a close relative of *Philostephanus*, is proposed to accommodate two Chinese species and three new species from Japan, Taiwan, and China. *Liocapsus* Poppius, 1915, also related to *Philostephanus*, is diagnosed and contains four species; one from Nepal and two from Taiwan are described as new. Keys are provided to distinguish all known species of *Philostephanus*, *Orientocapsus*, and *Liocapsus*. The genus *Mahania* Poppius, 1915, incorrectly synonymized with *Philostephanus*, is restored, and a single representative, *M. elongata* Poppius, 1915 is redescribed. Lectotypes are designated for *Lygus variegatus*, *Liocapsus brevirostris*, *Mahania elongate*, and *Philostephanus vitaliter*. The phylogeny of *Philostephanus* species and relative outgroup taxa is discussed.

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*Contribution from a Cooperative Program between JICA Senior Volunteers and Natural History Museum, TU.

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Philostephanus
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quently, Poppius (1915) erected the genus
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Material and methods
More than 2,000 preserved specimens were exam-
ined. Depositories of the material cited in the text
are provided under museum abbreviations below.
Type material of all the known species was examined,
however the genitalia of the types of three Chinese
species described by Lu & Zheng (1998a), P. renae,
P. wuzhiensis, O. picinus, could not be studied. The
genitalia of these species are kept separately and not
attached to the specimens by microvials.
All measurements in the text are given in millimi-
ters. In the synonymic lists, only selected references
are cited for each taxon; for further information, see
catalogs of Carvalho (1959), Kerzhner & Josifov
(1999), and Schuh (1995). In the text and figures
many morphological abbreviations are used to facili-
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The mirine plant bug genus Philostephanus was pro-
posed by Distant (1909) to accommodate a single
Indian species, P. vitaliter Distant, 1909. Subse-
quently, Poppius (1915) erected the genus Mahania
for another Indian species, M. elongata Poppius,
1915. Carvalho (1952) synonymized Mahania with
Philostephanus, providing the latter genus with two
nominate species (Schuh 1995).
Kerzhner (1979) proposed Arbolygus as a subgenus of
Lygocoris Reuter, 1896, to accommodate six East
Asian species (type species: Calocoris rubripes Ja-
kovlev, 1876). Miyamoto (1987) raised Arbolygus
to generic status. Josifov (1985), Kerzhner (1988a),
Zheng & Liu (1992), and Lu & Zheng (1998a) de-
scribed twelve additional species of Arbolygus from
Korea, Russian Far East, and China. Recently, Yasu-
naga (1998) transferred four species of Arbolygus to
Castanopides Yasunaga, 1992. Currently Arbolygus is
represented by 15 East Asian species that are remark-
ably similar in overall appearance to Philostephanus
vitaliter.

During our studies to clarify the fauna of Phi-
lostephanus, 23 species were recognized. Of these,
nine new species are required to accommodate speci-
mens from Japan, Taiwan, Thailand, Nepal, and
Sumatra. Arbolygus is proposed as a junior synonym of
Philostephanus; herein we transfer twelve species
of Arbolygus to Philostephanus. Two Chinese species,
Arbolygus picinus Lu & Zheng, 1998 and A. zhangi
Lu & Zheng, 1998, and three undescribed species
from Japan, Taiwan, and China were found to rep-
resent a new genus closely related to Philostephanus;
we propose a new genus, Orientocapsus, to accom-
modate the five East Asian species.
The monotypic genus Mahania Poppius, 1915 pre-
viously synonymized with Philostephanus (Carvalho
1952), is restored and redefined. This genus has no
synapomorphies with Philostephanus. Its single rep-
resentative, M. elongata Poppius, is redescribed, and
a lectotype is designated.
The monotypic genus Liocapsus Poppius, 1915 was
also found to be a relative of Philostephanus, based on
the external similarity and modified female genital
structure, and two undescribed species from Taiwan
were recognized as additional members of Liocapsus.
All the treated taxa are diagnosed, and described or
redescribed. Keys are provided to distinguish the spe-
cies of Philostephanus, Orientocapsus, and Liocapsus.
Morphology and terminology of the genitalia and
the phylogeny are discussed for Philostephanus and
its outgroup taxa.

Photographs provided in this paper were made with