Cicadas spreading by island or by spreading the wings. Historic biogeography of the dundubiine cicadas of the Southeast Asian continent and archipelagos

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The genus *Platylomia* was erected by Stål (1870) as a subgenus of *Cosmopolata* Stål, 1866, to accommodate the single species *Cicada flavida* Guérin-Méneville, 1834, that was distinguished from the species of *Cosmopolata* sensu stricto by a broader thorax and more undulating lateral margins of the thorax. Distant (1905) raised *Platylomia* to generic level, redefined it and gave the following diagnosis: head as broad as or broader than anterior margin of mesonotum; head as long as or just shorter than distance between eyes; pronotum as long as distance between anterior margin of mesonotum and "base" of cruciform elevation; lateral margin of pronotal collar always with a tooth that usually is pointed; abdomen much longer than length of head, pronotum and mesonotum; timbal organs completely covered; rostrum just reaching between to beyond posterior coxae; opercula curved to the lateral part of the abdomen, elongate with a proximal constriction and a rounded or attenuate apex; tegmina and wings hyaline but often infuscate on veins.

Based on these diagnostic characters, a large variety of species has been gathered in the genus *Platylomia*, notwithstanding the fact that not all species fully fit the diagnosis, and that a lot of variation can be observed in the structure of the genitalia (compare e.g. Hayashi 1978: fig. 24 [*P. saturata* (Walker, 1858)] and fig. 4 below).

The genus *Platylomia* is currently placed in the subtribe *Dundubiini* of the tribe *Dundubiini* together with the genera *Orientosaltaria* Kato, 1944, *Dundubia* Ameyo & Serville, 1843, *Macreosmia* Kato, 1925, *Meimuna* Distant, 1905, *Haphea* Distant, 1905, *Ayetha* Distant, 1905, and *Khimbya* Distant, 1905 (Duffels & Van der Laan 1983). The genus contains about 35 species (Metcalfe 1963; Duffels & Van der Laan 1985; Beuk 1996) from the Southeast Asian mainland, the Greater Sunda Islands, Sulawesi, and the Philippines. The genus has not yet been subject of a phylogenetic study and it is not clear whether it represents a monophyletic unit or not. However, it appears that at least some monophyletic groups within *Platylomia* can be recognised. In the present paper the species of one such group are revised and the 'Platylomia radha group' is introduced to accommodate them. The group at present comprises six species (including one new) distributed with certainty in India, Bhutan, Nepal, Indo-China (Burma, Thailand, Laos, Cambodia, Vietnam), Peninsular Thailand, China, and Taiwan. Records from Japan could not be confirmed.

This paper is part of a study into the phylogeny and biogeography of *Platylomia* and the other genera of the *Dundubiini*. The results from the phylogenetic reconstruction below are too preliminary to draw

**REVISION OF THE RADHA GROUP OF THE GENUS**

**PLATYLOMIA STål, 1870 (HOMOPTERA, CICADIDAE)**


The name *radha* group is proposed for a monophyletic group of six species of the genus *Platylomia* Stål, 1870. The species are found in India, Bhutan, Nepal, Indo-China, Peninsular Thailand, China, and Taiwan. Five species are redescribed (*P. bisuculatus* (Matsumura, 1907), *P. lochi* (Distant, 1882), *P. ficulnana* (Distant, 1892), *P. pendeleburyi* Moulttton, 1923, and *P. radha* (Distant, 1881)) and one species (*P. madisch;i*) is described as new. *P. operculata* Distant, 1913, and *P. similis* (Distant, 1888) are brought into synonymy with *P. radha*. Leptocotylae are designated for *Dundubia bocki*, *Cosmopolata ficulnana*, *P. operculata*, *D. radha*, and *D. similis*. A key to the males and distribution maps of the species are presented. The features characterising the *P. radha* group and the relations between the species in the group are briefly discussed.

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Key words. – *Platylomia; radha* group; phylogeny; taxonomy; new species; Southeast Asia.
any conclusions about the biogeography of this group.

**Material and methods**

References in the literature to species treated below were checked whenever possible. Older references were traced using Metcalfe (1963) and Duffels & van der Laan (1985). References that could not be checked are marked with an asterisk (*).

The following abbreviations were used for collections mentioned in the descriptions:

- **BMNH** Natural History Museum, London (former British Museum Natural History)
- **BPRM** Bernice P. Bishop Museum, Honolulu
- **CASC** California Academy of Sciences, San Francisco, California
- **FOYP** Forest Office of Yunnan Province, China
- **INSB** Institute Royale des Sciences Naturelles de Belgique, Bruxelles
- **IZU** Institut für Zoologie der Universität Innsbruck, Innsbruck
- **MCZ** Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts
- **MNHN** Muséum National d’Histoire Naturelle, Paris
- **MSN** Museo Civico di Storia Naturale ‘G. Doria’, Genova
- **NHMS** Naturhistoriska Riksmuseet, Stockholm
- **NSMT** National Science Museum (Natural History), Tokyo
- **NWAS** Museum of Entomology, North-western Agricultural University, Yangling, Shaanxi
- **OPU** Osaka Prefecture University, Osaka
- **SEMK** Snow Entomological Museum, Lawrence, Kansas
- **SNU** Saitama University, Urawa
- **TARI** Taiwan Agricultural Research Institute, Taichung
- **USNM** United States National Museum, Smithsonian Institution, Washington D.C.
- **UZMK** Universitàts Zoologische Museum, Kopenhagen
- **ZFMK** Zoologisch Forschungsinstitut und Museum Alexander Koenig, Bonn
- **ZMAN** Instituut voor Systematiek en Populatiebiologie (Zoologisch Museum), Amsterdam


The locations of several collection sites of L. Fea were determined with Gastro (1904).

Arrows in illustrations point to certain important features mentioned in the descriptions or other parts of the text.

PAUP 3.1.1 was used to perform the cladistic analysis to study the relationships between the species of the *P. radha* group.

Descriptions were made from numerous specimens from collections. It should be noted that many species when alive or freshly collected will be green rather than ochreous or brownish.

Measurement were made using a sliding calliper. Most specimens measured were selected at random or all available specimens were measured but sometimes specimens were selected to include extremes of both ends of the range of variation.

**Phylogeny of the *P. radha* group**

A preliminary phylogenetic analysis was carried out to investigate the relationships within the *P. radha* group. Three outgroups were used for this analysis: two distant relatives, viz. *Meimuna mongolica* (Distant, 1881) and *Platylomia tokisiana* (Jacobi, 1905), and one closer relative, viz. *Platylomia flavida* (Guérin Méneville, 1834). The characters used are discussed below and the matrix is given in table 1.

1. — Shape of tergite 3: 0, longer laterally than medially; 1, virtually equally long laterally and medially.

In the *P. radha* group and *P. flavida* tergite 3 is virtually equally long laterally and medially, and the anterior margin of tergite 3 is virtually straight. In all other species of the *Dundubia* species, except those of the *Dundubia terpsichore* group (see Bloem & Duffels 1976: fig. 1) and *Platylomia lerus* (Walker, 1858) from Sri Lanka, tergite 3 is considerably longer laterally than medially and the anterior margin of tergite 3 is distinctly concave.

2. — Posteralateral and posterior spots on pronotal collar: 0, present; 1, absent.

The basic pattern in the *Dundubia* consists of several pairs of markings on the pronotal collar, usually an anterolateral pair, a posteralateral pair and a posterior pair. Relative positions and sizes vary and often all three pairs are present though one may be less distinct. In a number of groups one or more spots are reduced or even absent, for example, in most species of *Dundubia* all spots are absent (see also Overmeer & Duffels 1976, Beuk 1996). The posteralateral and posterior spots are absent only in some
groups and several not-closely related species (e.g., *P. amicta* (Distant, 1889) and relatives, *P. radha* group and *Platylomia viracens* Distant, 1905).

3. Shape of timbal covering: 0, shorter than broad; 1, as long as or longer than broad.

In the *Dundubia* the timbal coverings are usually shorter than broad at the base. The timbal coverings are as long as or longer than broad at base in the species of the *P. radha* group and in several other species (e.g., in species of *Aola* Distant, 1905). However, the character of this feature is not identical in the *P. radha* group and the other species. In the species of the *P. radha* group the timbal coverings are elongated and the timbal organs are almost completely covered. In the other species the timbal coverings are narrowed medially and the timbal organs are thus partly exposed.

4. Central fasciae pronotal disc; 0, wholly or partly developed and black; 1, present as dot on posterior margin of disc or weakly developed and brown.

Similar to the markings on the pronotal collar the basic pattern in the *Dundubia* consists of an elaborate pattern of dark markings on the pronotal disc. The pattern of markings usually consists of darkening of the lateral margins, dark fasciae on the oblique figures and dark central fasciae. In some groups these markings are strongly reduced so that at most the central fasciae are distinct but even these can be wholly or partly absent, e.g., in most species of *Dundubia* (see also Overmeer & Duffels 1976, Beuk 1996).

In some species of the *Dundubia* the transverse part of the suture between the pronotal disc and pronotal collar is darkened while the markings on the disc are otherwise mostly reduced. It is possible that the dark dot on the posterior margin of the disc is a remainder of this transverse darkening and not a remainder of the central fasciae. In that case the results of the analysis carried out here do not change because then character state 1 would read 'absent or only weakly developed and brown.'

5. Shape uncus lobes: 0, gradually narrowing from bases onwards (fig. 37); 1, rather abruptly narrowing near bases (figs. 4, 16).

In the *Dundubia* the shape of the uncus lobes ranges from two more or less flat lobes to a rather complex three-dimensional structure. Irrespective of this shape there usually is a gradual narrowing from near the basal part of the uncus towards the distal margin of the uncus lobes even though the lobes may broaden again distally. In only few species there is a more abrupt narrowing near the basal part of the uncus.

The analysis (exhaustive search) resulted in a single most parsimonious tree (tree length 5; CI = 1.0, RI = 1.0) which is given in fig. 1. The tree given shows the two distant relatives in a basal polytomy.

There are some conclusions that can be drawn from this preliminary analysis. The elongation of the timbal coverings (character 3 state 1) is a synapomorphy for the species of *P. radha* group. Within the *P. radha* group *P. radha*, *P. bocki* and *P. ficulnea* are grouped together on the basis of the more abrupt narrowing of the uncus lobes near their bases (character 5 state 1). These species are indeed very similar as is also clear from the descriptions below. Most characters that can be used to separate these species (markings on tegmina, shape of opercula) do not have much phylogenetic significance (see also Beuk 1996).

The clade with *P. radha* is placed in polytomy with *P. pendleburyi* and *P. malickyi* because they share the (almost) complete reduction of the central fasciae.
(character 4 state 1). Whether this is a good synapomorphy should become clear after further analysis of other groups in the Dundubiaaria since this character state can also be found in most species of *Dundubia* (see also Beuk 1996).

Only tentative conclusions can be drawn about the phylogenetic position of the *P. radhia* group. Within *Platylenia* it appears that *P. flavida* is a close relative since it shares a synapomorphy with the *P. radhia* group: the shape of tergite 3 (character 1 state 1). *P. flavida* may constitute the sistergroup of the *P. radhia* group. From the analysis it would appear that the absence of the posterolateral and posterior markings on the pronotal collar (character 2 state 1) would also be a synapomorphy for the clade *P. flavida* + *P. radhia* group but as remarked above this state also occurs in *Dundubia* and it might indicate a relationship between this clade and *Dundubia*.

**Taxonomy**

*Platymenia Stål, 1870*

*Cosmogisraria* subg. *Platymenia* Stål, 1870. Type-species (by monotypy): *Cicada flavida* Guérin-Méneville, 1834

*Platymenia* Distant (1905) [raised to generic level]

The *Platymenia radhia* group

**Diagnosis**

Large cicadas: $\delta$: 40.0-56.5 mm, $\Omega$: 38.0-48.0 mm. Body generally ochraceous brown, head and thorax with some darker markings. Opercula unicolorous brownish, only darkened in lateroproximal corner, male opercula elongate. Dorsal part of abdomen usually darker than head and thorax. Timbal coverings of male elongate, at least as long as broad at base. Pygofer rather narrow; basal part of uncus short, narrower than maximum width uncus, and little globose.

Head. - Postclypeus brown to castaneous, slightly darker dorsally and usually paler on anteromedial spot, little swollen. Ant Clypeous brownish, sometimes darkened on lateral surfaces. Vertex brownish, usually darker on vertex lobes and with dark brown to black markings in area of ocelli and often along posterior margin. Rostrum brownish, darkened at tip only; reaching between to distinctly beyond hind coxae but never further than halfway sternite 1.

Thorax. - Pronotum slightly to distinctly broader than head, brown to castaneous but sometimes with greenish tinge. Pronotal disc with dark brown to black pattern ranging from small split medial spot at transverse part of pronotal suture to more elaborate pattern including central fasciae and transverse bands just posterior of anterior margin and on transverse part of pronotal suture. Pronotal collar broad, medium length 0.2-0.3 times the median length of pronotal disc; posterior margin black; lateral part of collar with darker brown to blackish markings that may be connected with transverse band on pronotal suture; anterolateral corner with lateral tooth. Mesonotum ochraceous brown to brown, sometimes with greenish tinge on paler parts, occasionally posterior half partly castaneous; disc with pattern of narrow fasciae consisting at least of paramedian fasciae, lateral fasciae usually absent. Cruciform elevation concolorous with mesonotal disc or slightly paler. Area enclosed by arms of cruciform elevation and parts of mesonotal disc occasionally with waxy coating. Kaleptimeral lobe usually longer than broad at base.

Tegmina and wings. - Tegmina hyaline to brownish hyaline, always with indistinct brownish reticulation along distal margin and sometimes in apical cells; tegmina either without markings, or with markings on second, third, fifth, and seventh apical cells and at apices of longitudinal veins in apical cells, or intermediate; basal cell partly fumose. Wings hyaline to pale brownish hyaline, infuscate along very narrow strip posterior of first anal vein.

Legs. - All legs ochraceous to brownish with varying dark pattern on fore legs, mid tibiae and tarsi, and hind tibiae and tarsi. Fore femur posteroventrally with middle spine shorter than proximal spine; proximal spine slender, middle spine more pointed than proximal spine, often broadened at base and thus more triangular; distal spine short but distinct, either pointed or blunt, sometimes also broadened at base. Hind tibiae with 3-5 anterodorsal spines and 2-6 anteroventral spines, occasionally with single anterior spine.

Male operculum. - Operculum rather variable in length and shape, reaching from anterior margin of fifth to just beyond posterior margin of seventh abdominal segment; ochraceous to brown but sometimes with greenish tinge and sometimes partly covered with waxy coating, some parts near lateroproximal corner dark brown to black. Medial margin weakly convex for short distance proximal of constriction, distal of constriction convex for at least some distance. Apex lateral of midline, rounded or angularly rounded to gullly-shaped. Lateral margin convex for short distance proximal of constriction, concave at level of timbal covering, distal of constriction convex but often straight or sometimes even concave on distal third.

Male abdomen. - Abdomen 1.2-1.5 times as long as head and thorax together. Dorsal part of tergites brownish to dark castaneous but usually paler laterally, tergites 3-7 either with or without darker spots
near lateral margin; sternites and ventral parts of tergites paler than dorsal parts but sometimes less so on segments 6-7. Tergites usually with a pattern of waxy coating and/or whitish dusting. Posterior margins of tergites (5) 6-7 with spinules. Sternite 7 with very shallow to rather deep posteromedial emargination. Timbal covering brownish to castaneous but sometimes with greenish tinge, about 1.0-1.3 times as long as wide.

Male genitalia. — Yellowish brown to dark brown. Basal pygofer lobes narrow and ridge-like to broad and rounded. Basal part of uncus little globose, short, and rather narrow. Uncus lobes short and gradually narrowing distally or first narrowing and then somewhat broadening distally; distal margin ranging from smooth and sinuous to adorned with lobule or triangular projections; laterodistal corner produced to varying extend; lateral margin distally sometimes adorned with dorsal (inner) flange or with one or more small triangular projections.

Female operculum. — Operculum greenish to brownish and often darkened lateroproximally; reaching little beyond anterior margin of segment 3, only little curved around abdomen laterally.

Female abdomen. — Abdomen 0.9-1.1 times as long as head and thorax together, castaneous brown to largely blackish dorsally but paler laterally and ventrally, tergites 3-6 (7) either with or without darker spots near lateral margin. Tergites usually with pattern of waxy coating and/or whitish dusting. Posterior margins of tergites (3) 4-8 with short dark spines but only laterally on tergite (3) 4-5, on tergite 6 either only laterally or along whole length, on tergite 7 along whole length and on tergite 8 only medially. Sternite 7 with angular to angularly rounded posteromedial emargination, sometimes in median lobe.

Female genitalia. — Pygofer brownish to dark castaneous or blackish; distal part of ovipositor sheath dark castaneous to blackish. Dorsal margin of pygofer in lateral view weakly concave and with slight bump at base of caudodorsal beak; ventral margin somewhat stronger convex. Ovipositor sheath short, at most reaching little beyond apex of caudodorsal beak.

**Key to the males of the Platylomia radha group**

1. Tegmina with distinct markings on basal veins of second, third, fifth, and seventh apical cells, and at apices of longitudinal veins of apical cells (when in doubt both alternatives can be followed)...

2. Tegmina with indistinct markings only on basal

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Fig. 2. Localities of *P. radha*. 
veins of second and third apical cells or without markings

2. Tegmina distinctly brownish infuscate along veins. Tergites 5 and 6 completely covered with whitish dust obscuring ground-colour of tergites.

--- P. bidivocalis ---
Tegmina at most slightly infuscate along veins. Tergites 5 and 6 at least partly without whitish dust

3. Opercula attenuate at apex and long, reaching to anterior margin of sixth abdominal segment or further (fig. 27) --- P. ficulnea ---
Opercula rounded at apex and short, at most reaching to anterior margin of sixth abdominal segment (figs. 20, 34, 49)

4. Distal part of opercula diverging from abdomen, so well visible in dorsal view. Uncus lobes gradually narrowing towards distal margin (fig. 45).

Larger species: body length more than 50 mm.

--- P. pendehuryi ---
Distal part of opercula close to abdomen, if divergent then not broadly rounded at apex. Uncus lobes distally slightly broader than at about halfway from bases (figs. 16, 30). Smaller species: body length less than 50 mm

5. Apices of opercula variable in shape, distal third of opercula gradually narrowing or attenuate (figs. 11-13); operculum usually reaching further than halfway sixth abdominal segment, if shorter than narrowed towards apex and medial concave area shallow (fig. 11) --- P. radha ---
Apices of opercula rounded and at most little narrowed, opercula reaching no further than anterior margin of sixth abdominal segment (figs. 20, 34)

6. Transverse part of pronotal suture with narrow black band may not be connected to markings on lateral part of pronotal collar. Distal part of operculum broad, narrowing little towards apex (fig. 20).

Distal margins of uncus lobes convex near mediodistal corner and concave near laterodistal corner; laterodistal corner angular to slightly pointed (figs. 16, 19). Margins of uncus lobes at most with one or two small wart-like outgrowths (fig. 19) --- P. bocki ---
Transverse part of pronotal suture with broad black band that is connected to markings on lateral part of pronotal collar. Distal part of operculum narrowing somewhat towards apex (fig. 34). Distal margin of uncus lobes with medial lobe that carries two small distal projections at its distal margin (figs. 30, 33). Lateral margin near laterodistal corner with several short, pointed projections (figs. 30-31, 33) --- P. melichyi ---

--- P. radha ---

Chapter 2

Playtolmena radha (Distant, 1881) (figs. 2, 4-15)

Dundubia radha Distant, 1881: 634. - Lectotype d (here designated) of Dundubia radha Distant: 'Type' [printed on round label with red margin], 'Mauro / Hills' [handwritten], 'radha / Dis.' [Distant's handwriting], 'Distant Coll. / 1911-383.' [printed].


Dundubia similis Distant, 1888a: 292. - Lectotype d (here designated) of Dundubia similis Distant: 'Type' [printed on round label with red margin], 'Sikkin' [handwritten], 'similis / Dis.' [Distant's handwriting], 'Distant Coll. / 1911-383.' [printed]. Syn. n.
Cosmidspania similis. - Distant 1889: 45; Distant 1890: pl. V figs. 10-10b; Distant 1892b: xii.
Cosmidspania radha. - Distant 1889: 46, pl. IV figs. 9-9b; Distant 1890: 54; Distant 1892b: xii; Noualhier 1896: 254; Distant 1897: 17; Noualhier & Martin 1904: 179.

 PLAYTOLMENI SIMILIS. - Distant 1906a: 102; Distant 1906b: 61; Distant 1912: 49; Paiva 1919: 372; Mouton 1923: 98 [partim, unspotted tegmina], 102-103 [partim; Sikkim, Assam], 167 [partim; Sikkim, Assam]; Kato 1932: 166; Mertcalf 1963: 625.


PLAYTOLMENI OPERADUATA. Distant, 1913: 559. - Lectotype d (here designated) of Playtolmena operaduata Distant: 'Type / H.T.' [printed in round label with red margin], 'Indo-China. / (R. Vitalis)' [printed], 'Playtolmena / operaduata / type Dis.' [Distant's handwriting], '1913-222.' [printed]. Syn. n.

Nou: Mouton 1923: 98 [partim; faint infuscations on tegmina], 100, 102-103 [partim; Thailand], 167 [partim; Thailand] (undescribed species of Playtolmena).

P. radha is the most widespread species of the P. radha group and displays the largest amount of variation in body size, shape of the opercula, and shape of the distal part of the uncus lobes. Specimens with attenuate opercula resemble P. frut but can readily be recognised by the absence of distinct markings on the tegmina. Specimens with more rounded opercula mostly resemble P. bocki.

P. radha appears to be very closely related to P. bocki. The main differences can be found in the opercula and the male genitalia. The opercula of P. radha are short or long but always narrowed near the apex or even attenuate, whereas those of P. bocki are short and broad almost to the apex. The male genitalia differ in the shape of the pygofer and the uncus. The basal pygofer lobes are smaller in P. radha and reach not as far posteriorly between the lateral margins of the pygofer as in P. bocki (compare figs. 4 and 16). The ventral (outer) surface of the uncus lobes has a
ridge running roughly from the mediiodistal corners to the medial part of the basal part of the uncus. In *P. radha* this ridge is much lower and smoother than in *P. bocki*. The uncus lobes of *P. radha* have a distinct flange of variable shape on the lateral margin, whereas in *P. bocki* the lateral margins are smooth or (occasionally) provided with one or two small wart-like outgrowths. *P. bocki* is generally smaller than *P. radha*, the largest specimens of *P. bocki* being about the same size as the smallest specimens of *P. radha*.

**Description**

Body brownish to castaneous, often with some parts of head and thorax lighter, mesonotum with median and paramedian fasciae partly developed, tegmina without markings but basal veins of second and third apical cells occasionally almost imperceptibly infuscated. Opercula very variable in shape, ranging from relatively short and almost rounded at apex to long and almost gullly-shaped at apex.

**Head.** Postclypeus brown to light castaneous, sometimes paler on area anterior of frontoclypeal suture and ventrally along lateral margin and at clypeal suture; little swollen, in dorsal view about as long as distance between frontoclypeal suture and anterior margin of pronotum. Anteclypeus brownish. Vertex brownish but somewhat darker on lateral part and on supra-antennal plates; posterior margin with pair of black spots close to eyes; part posterior of eyes with black marking, either rounded or extending to and along posterior margin of eye; area of ocelli with darker brown to black marking that encloses anterior ocel-lus and reaches laterally as far as lateral ocelli. Genae ochraceous, lori darkened along suture with clypeus. Frontoclypeal suture semicircular but median part almost straight, much broader than distance between lateral margins of lateral ocelli. Rostrum brownish, darkened at tip only; reaching halfway between hind coxae to posterior margin of hind coxae.

**Thorax.** Pronotum slightly to distinctly broader than head. Pronotal disc brownish, anterior margin and often medial area paler; disc immediately posterior of anterior margin with dark brown to black transverse band that is usually broadly interrupted medially; central fasciae usually not developed except for two brownish triangular markings with their base at pronotal suture; transverse part of pronotal suture with dark brown to black band that is broadest medially and continues laterally to level of markings on lateral part of pronotal collar. Pronotum collar usually paler than pronotal disc and with black posterior margin that broadens slightly in postlateral corners; anterolateral part of collar with darker marking between lateral margin and pronotal suture, marking darkest at suture and often connected with band on transverse part of pronotal suture; anterolateral cor-
Figs. 4-10. *Platylomia radha* (Distant, 1881), male. – 4, pygofer and uncus in ventral view, Jingkawkaskan; 5, pygofer and uncus in right lateroventral view, Jingkawkaskan; 6, pygofer in dorsal view, Doi Inthanon; 7, uncus in right lateroventral view, Doi Inthanon; 8, uncus in right lateroventral view, Tonkin; 9, uncus in right lateroventral view, Ceylan; 10, uncus in right lateroventral view, lectotype *P. radha*. 
ner with small but distinct lateral tooth; posterolateral corner rounded but sometimes part of margin only weakly convex. Mesonotum ochraceous brown to brown, sometimes even castaneous; median fascia variable, from almost indistinguishable to blackish; paramedian fasciae on anterior half of disc black, narrow near anterior margin of disc then broadening and slightly curved medially, on posterior half usually present as distinct black or indistinct brownish markings of varying size in front of cruciform elevation; anterior margin of disc with dark brown to blackish triangular markings immediately lateral of mesonotal fissures; lateral fasciae absent. Cruciform elevation ochraceous brown to dark brown, concolorous with or paler than mesonotal disc. Katepimeral lobe (fig. 15) shorter than broad at base, apex rounded. Surface of katepimeral lobe concave along dorsal margin, dorsal margin thus curved outwards; surface covered with short, waxy hairs. Apex of katepimeral lobe reaching over base of operculum but sometimes only just.

Tegmina and wings. — Tegmina almost entirely hyaline with indistinct brownish reticulation along distal margin and sometimes in apical cells; basal veins of second and third apical cells rarely with almost indistinguishable infuscation; basal cell yellowish fumose on anterior half. Veins of tegmen brownish, darker on most cross veins and parts where veins meet or split. Wings hyaline. Veins of wings brownish, medial vein and veins close to wing margin dark.

Legs. — Legs ochraceous to brownish. Fore femora ochraceous, posteroventrally with darkened longitudinal stripe; tibiae slightly darker than femora except on dorsal surface; tarsi brownish. Mid femora ochraceous; tibiae brownish, slightly darker at base and on apical third, especially ventrally; tarsi brown. Hind femora ochraceous, slightly darkened anteriorly; tibiae often little darker than femora, dark brown at joints with femora; tarsi brownish. Fore femur with gap between middle and distal posteroventral spines shallow and broad. Hind tibia with two dorsal spines and usually four but occasionally only three anteroventral spines; spines brownish.

Male operculum (figs. 11-13). — Operculum rather variable in length and shape, reaching about halfway
fifth abdominal segment to just beyond posterior margin of seventh abdominal segment, 2.2-3.0 times as long as maximum width of constriction; ochraceous to brown and frequently some parts covered with waxy coating, area of lateroproximal corner and usually also part of lateral margin dark brown to black but with ochraceous spot on margin just distal of lateroproximal corner. Medial margin distal of constriction convex to apex but near apex often less convex or almost straight, margin on distal third frequently appearing concave because surface becomes weakly concave along margin. Apex of operculum lateral of midline and variable in shape: either apex rounded to angularly rounded with operculum gradually narrowing distally (fig. 11), or angular with surface concave along both medial and lateral margin (fig. 13) and then often divergent from abdomen. Lateral margin distal of constriction convex but often less convex or almost straight near apex, margin on distal third frequently appearing concave because surface becomes weakly concave along margin. Constriction at about 0.3 of length of operculum, lateral concavity longer and deeper than medial concavity and at deepest point often almost angular, broadest part of operculum distal of constriction 1.3-1.5 times as wide as minimum width in constriction. Distance between opercula at constrictions about 0.8-1.1 times as wide as minimum width in constriction. Opercula at point of closest approximation separated for a distance of 0.5-0.7 times maximum width between opercula at constrictions. Operculum close to abdomen but distal half well removed from abdomen when apex gullly-shaped; surface only weakly convex in longitudinal direction or concave along margins on distal third, surface more strongly convex in transverse direction, especially on distal third.

Male abdomen. — Abdomen about 1.3-1.5 times as long as head and thorax together. Dorsal part of tergites brownish to castaneous, often somewhat darkened along posterior margins; sternites and ventral parts of tergites paler than dorsal parts but less so towards genitalia. Tergite 1 laterally and tergite 2 paramedially usually with white waxy coating, tergite 3 with dense whitish dust close to lateral margin, tergite 4 usually with smaller area of whitish dusting at posterior margin, some dusting present on tergites 5-7 but without distinct pattern, tergite 8 completely covered with whitish dust. Posterior margin of tergite 7 with many short dark spines, of tergite 6 and occasionally also of tergite 5 with few spines on lateral part. Sternite 7 with shallow to very shallow postero medial emargination. Timbal covering (fig. 14) brownish to castaneous, about 1.0-1.1 times as long as wide; medial margin virtually straight, convergent with lateral margin; mediiodistal corner, distal margin and laterodistal corner rounded; lateral margin almost straight.

Male genitalia (figs. 4-10). — Brown; dorsal part of pygofer somewhat darker than ventral part; uncus lobes usually darker along lateral and distal margin. Basal pygofer lobes broad and rounded (figs. 4-5); hairs on anteriormarginal margin of pygofer erect, not very long and continuing on pygofer surface enclosed by anteriormarginal margin, hairs shorter on apices of basal lobes, towards medial part of anteriormarginal margin and on surface enclosed by anteriormarginal margin; pygofer surface anterior of medial part of anteriormarginal and lateral of anteriormarginal margin with scattered hairs, dorsolateral surface covered with many short hairs. Dorsal part of pygofer as in fig. 6. Basal part of uncus small, little globose and narrower than maximum width uncus (figs. 4-5); near bases of uncus lobes usually with some thick erect hairs and several thinner hairs more mediadly, occasionally only very few hairs present. Uncus lobes (figs. 4-5, 7-10) short; medial margin weakly concave and curved dorsal (inwards) along whole length; mediiodistal corner rounded and also slightly curved dorsal (inwards); distal margin weakly concave; laterodistal corner (figs. 7-10) produced and pointed to varying extend, tip directed anterodorsal (inwards) to lateral; lateral margin strongly curved medially close to base, distal part of uncus lobe then gradually broadening towards distal margin or narrow for some distance and broadening more abruptly near distal margin; lateral margin near laterodistal corner with flange of irregular shape. Ventral (outer) surface of uncus lobes with longitudinal grooves near anterior margin and each uncus lobe with indistinct ridge from mediiodistal corner almost to basal part of uncus where ridges nearly meet. Bases of uncus lobes laterally usually with numerous strong erect hairs both on dorsal (inner) and ventral (outer) surfaces, those on dorsal surface shorter except for occasional very long hairs.

Female operculum. — Operculum brownish, darker basally and along medial margin, lateral margin castaneous. Lateral margin distal of lateroproximal lobe weakly convex to weakly concave; laterodistal corner angularly rounded; distal margin weakly convex but often concave for very short distance near laterodistal corner; mediiodistal corner broadly rounded; medial margin short and convex; lateral and medial margin of each operculum virtually parallel.

Female abdomen. — Abdomen about as long as head and thorax together. Dorsal part of tergites castaneous brown but tergites 1-3 little paler, posterior margins of tergites darkened, tergites without darker spots near lateral margins; sternites and ventral parts of tergites paler than dorsal parts. Tergite 2 and anterior margin of tergite 3 with white dusting laterally
but dusting often rubbed off, dusting on other tergites without distinct pattern. Posterior margins of tergites 4-5 with some short dark spines laterally, of tergite 6 with spines along whole length except medially, of tergite 7 with spines along whole length, of tergite 8 with scattered spines medially. Sternite 7 with angular to angularly rounded postero medial emargination.

Female genitalia. - Dorsal part of pygofer almost castaneous, remainder brownish; distal part of ovipositor sheath castaneous. Dorsal margin of pygofer shorter than three preceding segments, in lateral view weakly concave; ventral margin weakly convex. Ovipositor sheath reaching almost as far as or short distance beyond apex of caudodorsal beak; anal valve not reaching as far as caudodorsal beak.

Measurements in mm (♀: n = 6). - Body length: δ: 44.5-56.5 (51.5 ± 3.1) (n = 12), Ψ: 38.5-44.5 (40.9 ± 1.4); head width: δ: 12.6-15.3 (14.2 ± 0.7) (n = 12), Ψ: 13.3-15.0 (14.0 ± 0.6); maximum pronotum width: δ: 12.8-16.8 (15.3 ± 0.8) (n = 11), Ψ: 14.7-16.3 (15.2 ± 0.5); tegmen length: δ: 44.5-62.5 (56.6 ± 3.0) (n = 12), Ψ: 53.3-61.5 (57.0 ± 2.7).

Variation

P. radha shows considerable variation in several characters but there seems to be hardly any geographic pattern. The characters showing variation are body colour, body length, length of operculum, shape of apex of operculum, and shape of lateral discal corner of uncus lobe. The general pattern is that smaller specimens with shorter opercula and opercula with more rounded spicules (fig. 11) tend to come from the northwestern part of the range of P. radha. However, larger specimens with longer, attenuate opercula (as in fig. 13) have also been found in that part of the range (see Hayashi 1978: fig. 20). Smaller specimens are also found in the central part of the range and specimens with more angularly rounded opercula (compare fig. 12) are found in the eastern part of the range.

Variations in shape of lateral discal corner of uncus lobe (figs. 7-10) and variations in colour show no geographic pattern at all. Differences in colour are probably due to different circumstances in killing and preserving specimens.

Distribution (fig. 2)

P. radha has a wide distribution and is recorded from southern parts of the Himalayas (Bhutan; India: Assam, Sikkim; Nepal) through Indo-China (Burma, Cambodia, Laos, Thailand, Vietnam) to southern China in the east (Hainan, Sichuan, Yunnan). A number of records in the literature are doubtful. The record from Madras (Distant 1881, 1890, 1906a; Atkinson 1884) could not be confirmed and may have been caused by wrong location of the type locality in the Madras Presidency. Since the nearest locality is more than 1,500 km away the accuracy of this old record is questioned. Moulton’s (1923) record of P. similis from Khao Luang, just south of the Kra Isthmus on the Malay Peninsula refers to a yet undescribed species of Platylomia.

Synonomy

Examination of the lectotypes of P. radha and P. similis has shown that they differ in several aspects. The lectotype of P. similis is smaller and paler than the lectotype of P. radha, its opercula are shorter and not attenuate, its timbal covering is more triangular, and the shape of the distal margin and lateral discal corner of the uncus lobes is different. The lectotypes of P. radha and P. operculata are more resembant. The lectotype of P. operculata is a little larger and darker than lectotype of P. radha, its opercula are a little longer and the spicules of the opercula are narrowed and not attenuate. The lectotype of P. operculata is damaged by museum beetle and its genitalia are partly destroyed. The remains of the genitalia are identical to those of the lectotype of P. radha.

Examination of further collection material under P. radha, P. similis and P. operculata has shown that several characters show variation. The characters given by Distant (1888a, 1913) to distinguish P. similis and P. operculata from P. radha (colour, shape of operculum) are two of these characters (see discussion of variation above). The three species in fact represent different forms of the same species. Since there are no characters that seem to justify a separation of P. similis and P. operculata from P. radha, P. similis and P. operculata are herewith synonymised with P. radha.

Remarks

In the descriptions of Dwukibia radha, D. similis and P. operculata neither holotypes were designated nor were the numbers of specimens upon which the descriptions were based mentioned. No lectotype designations were published subsequently. For this reason the presence of labels on specimens indicating type status cannot be considered valid type designations. For each of the three species it applies that specimens belonging to the type series should be considered syntypes and lectotypes have to be designated (ICZN Recommendation 73F).

The type material of P. radha was stated to originate from 'Madras Presidency; Masuri [Mussoorie] Hills' in India (Distant 1881: 684) but it is not clear whether Distant referred to two localities or to one locality (wrongly locating the Mussoorie Hills in the Madras Presidency). Since later publications (Distant 1889; 1906a) only refer to a specimen from the Madras Presidency in Distant's collection, the latter
may have been the case (see also under Distribution). No specimen from the Madras Presidency could be found to the specimen from Mussoorie is designated as the lectotype.

P. simili was described from 'Sikkim' on the basis of material in Distant's collection. There are several males from Sikkim at the BMNH but only one male is from Distant's collection and corresponds with the size mentioned for P. simili in the original description. This male is designated as the lectotype.

P. operculata was described from 'Indo-China'. Only one male in the BMNH that may have belonged to this type series is available. This specimen is designated as the lectotype.

Platylomia radha group

Platylomia bocki (Distant, 1882) (figs. 3, 16-22)

Dunduhia bocki Distant, 1882: 159. - Lectotype δ (here designated) of Dunduhia bocki Distant: 'Type / H.T.' (printed in round label with red margin), 'Indo-China. / (R. Vitellia.)' [printed], 'Platyomia / operculata / spiss / Dist.' [Distant's handwriting], '1913-22.' [printed].

Cosmopetala bocki. - Distant 1889: 45, pl. IV figs. 11-11b; Distant 1892b: xii.

Platylomia bocki. - Distant 1906b: 66; Distant 1912: 48; Moulton 1923: 98; Kyoto 1932: 166; Mentzaf 1963: 615.

Although *P. bocki* was described in a paper on Sumatran cicadas and the type locality is stated to be Sumatra (Distant 1882), Moulton (1923) already pointed out that this specimen could have come from either Sumatra or Siam (Thailand). Considering that the other specimens of *P. bocki* are all from continental Southeast Asia and the fact that no other species of the *P. radha* group was ever found on Sumatra it seems most likely that the specimen was collected in Thailand. *P. bocki* is a typical species of the *P. radha* group and very closely related to *P. radha*. The main differences are discussed under *P. radha*.

Description

Body brownish with some parts on head and thorax lighter, mesonotum with median and paramedian fasciae partly developed, the tegmina without markings except for the often infuscated basal veins of second and third apical cells. Opercula relatively short and broad at apex, apical margin either broadly rounded or even partly straight.

Head. - Very much resembling *P. radha*. Vertex as in *P. radha* but marking on area of ocelli always distinctly black; part posterior of eyes without black marking.

Thorax. - Pronotum as in *P. radha*, but general pattern of paler and darker brown parts more distinct; central fasciae usually not developed. Lateral part of pronotal collar with darker brown marking between lateral margin and pronotal suture, marking darkest at suture and often connected with transverse band on pronotal suture, anterolateral corner not darkened; anterolateral corner occasionally bidentate. Mesonotum ochraceous brown to brown; median fascia narrow, broadest on posterior half of mesonotum, usually black and distinct but sometimes brown and rather indistinct; paramedian fasciae on anterior half of disc as in *P. radha*, on posterior half of disc present as black markings of varying size anterior of cruciform elevation; mesonotal fissures ochraceous brown; narrow black triangular markings immediately lateral of mesonotal fissures at anterior margin of disc always distinct and small; lateral fasciae absent; posterior margin with black spots lateral of anterior arms of cruciform elevation that occasionally merge with markings anterior of cruciform elevation. Cruciform elevation ochraceous to brown, paler than mesonotal disc. Posterior margin and median depressions of cruciform elevation often with dense whitish coating. Kayepininal lobe (fig. 22) mostly as in *P. radha*, apex reaching over base of operculum.

Tegmina and wings. - Tegmina and wings mainly as in *P. radha*. Infuscations on basal veins of second and third apical cells of tegmina usually quite distinct though not very dark, usually more distinct on basal vein of third apical cell. Apices of longitudinal veins of apical cells occasionally with almost indistinguishable spots.

Legs. - Fore legs ochraceous to brownish; femora ochraceous, anterodorsally, posterodorsally and posterovertrally with darkened longitudinal stripes that usually are connected by dark apical ring; tibiae brownish, dorsal surface with ochraceous stripe from base almost to apex; tarsi brownish. Mid legs brownish; tibiae with dorsal surface and apical quarter darkened; tarsi dark brown. Hind legs ochraceous; tibiae slightly to distinctly darkened dorsally at base and on apical fourth; tarsi ochraceous to brown. Fore femur with gap between middle and posterovertral disal spines rounded and not very narrow. Hind tibiae sometimes with only two anteroventral spines.

Male operculum (fig. 20). - Not very long, reaching from about anterior margin of fifth to anterior margin of sixth abdominal segment, 2.1-2.2 times as long as maximum width distal of constriction; ochraceous to brown, sometimes with greenish tinge, area around lateroproximal corner and usually also part of the lateral margin dark brown to black but latero-proximal corner itself ochraceous. Medial margin distal of constriction convex but occasionally for some distance in distal half almost straight. Distal margin convex, sometimes straightening medially, usually no distinct apex present. Lateral margin distal of constriction convex to spex but occasionally almost straight about halfway. Constriction at about 0.4 of length of operculum, lateral concavity longer and deeper than medial concavity and at deepest point almost angular, broadest part of operculum distal of constriction 1.5-1.7 times as wide as minimum width in constriction. Distance between opercula at constrictions about 1.2-1.4 times as wide as minimum width in constriction. Opercula at point of closest approximation separated for a distance of 0.3-0.4 times maximum width between opercula at constrictions. Operculum close to abdomen, surface of operculum both proximal and distal of constriction convex thus creating impression of transverse fold at level of constriction.

Male abdomen. - Abdomen as in *P. radha* but slightly paler, about 1.2-1.3 times as long as head and thorax together. Dorsal part of tergites brownish to castaneous, tergites often somewhat darkened along
Figs. 16-22. *Platylimia bocki* (Distant, 1882), male. – 16, pygofer and uncus in ventral view, lectotype; 17, pygofer and uncus in right lateroventral view, lectotype; 18, pygofer in dorsal view, Vieng Vai; 19, uncus in anterior view, lectotype; 20, abdomen and right operculum in lateroventral view, Khao Yai; 21, right timbal covering, Khao Yai; 22, right katepimeral lobe, Khao Yai.
Platy limia radha group

posterior margins; sternites and ventral parts of tergites paler than dorsal parts but less so towards genitalia. Tergite 2 with small paramedian areas of whitish dusting on posterior margin, tergites 3-4 with small lateral areas of whitish dusting on anterior margin, tergite 8 with thin whitish dusting, dusting on other tergites without distinct pattern. Posterior margin of tergite 7 with many short dark spinules, of tergite 6 and occasionally also of tergite 5 with few spinules on lateral part. Sternite 7 with shallow postero medial emargination. Timbal covering (fig. 21) as in P. radha, ochraceous to ochraceous brown, about 1.1-1.3 times as long as wide; lateral margin almost straight to weakly convex.

Male genitalia (figs. 16-19). - Brown, dorsal part of pygofer somewhat darker than ventral part; uncus lobes usually darker than remainder of uncus. Basal pygofer lobes (figs. 16-17) almost as in P. radha but reaching further back of lateral margins of pygofer; hairs on anteroventral margin of pygofer mostly short and erect but intermixed with longer hairs, hairs decreasing in length towards basal lobes and continuing on pygofer surface enclosed by anteroventral margin; pygofer surface anterior and lateral of anteroventral margin with scattered hairs. Dorsal part of pygofer as in fig. 18. Basal part of uncus small, little globoso and narrow (figs. 16-17), near bases of uncus lobes with occasional short erect hairs. Uncus lobes (figs. 16-17, 19) with medial margin weakly concave; mediodistal corner rounded; distal margin convex near mediodistal corner, concave near laterodistal corner; laterodistal corner angular to slightly pointed; lateral margin strongly curved medially close to base and uncus lobe then broadening slightly towards distal margin, lateral margin usually smooth near laterodistal corner but occasionally with one or two small wart-like outgrowths. Each uncus lobe on ventral (outer) surface with curved broad ridge from mediodistal corner almost to basal part of uncus where ridges nearly meet (fig. 19). Surface of uncus lobes covered with short erect hairs along margins, especially medial margin; ventral (outer) surface with very few hairs; dorsal (inner) surface with strong erect hairs at bases of uncus lobes. Uncus with some strong erect hairs laterally where uncus lobes and basal part of uncus are joined.

Female operculum. - Operculum brownish, darker on lateral margin close to lateroproximal corner. Lateral margin weakly concave distal of lateroproximal lobe; laterodistal corner angularly rounded; distal margin weakly concave on lateral half, weakly convex on medial half; mediodistal corner broadly rounded; medial margin short and weakly convex; lateral and medial margin of each operculum convergent from base.

Female abdomen. - Abdomen little shorter than head and thorax together. Dorsal part of tergites castaneous; sternites and ventral parts of tergites little paler. Tergites without darker spots near lateral margin. Tergites with thin whitish dusting but without distinct pattern. Posterior margins of tergites 3-5 with some short and slender dark spines laterally but spines continuing more medially on tergite 5, posterior margins of tergites 6-7 with more numerous and longer spines along whole length, of tergite 8 with scattered long spines medially. Sternite 7 with angularly rounded postero medial emargination.

Female genitalia. - Dorsal part of pygofer almost castaneous, ventral part more brownish; distal part of ovipositor sheath dark castaneous brown. Dorsal margin of pygofer shorter than three preceding segments, in lateral view weakly concave; ventral margin weakly convex. Ovipositor sheath not reaching as far as apex of cadudoral beak; anal valve not reaching as far as ovipositor sheath.

Measurements in mm (♂: n = 5; ♀: n = 1). - Body length: ♂: 43.5-47.0 (44.7 ± 1.0), ♀: 39.5; head width: ♂: 13.0-13.9 (13.6 ± 0.3), ♀: 14.0; maximum pronotum width: ♂: 13.8-15.0 (14.5 ± 0.4), ♀: 15.0; tegmen length: ♂: 52.5-55.5 (54.1 ± 1.1), ♀: 54.0.

Distribution (fig. 3). - P. bocki is distributed throughout Indo-China (Laos, Thailand, Vietnam) and southern China.

Remarks
Moulton (1923: 101) already pointed out that the 'Type ♂ and only known specimen' was labelled as cited above. Since both the locality label and the identification label are Distans's, this specimen is designated as lectotype.

Material examined. - CHINA: Cheli [Yunjinghong], Yunnan, 550 m, 30.iv.1957, 1 ♂ (izas); Emel [Emet Shun], Sichuan, 500 m, 22.vii.1974, 1 ♂ (izas); Jinghong [Yunjinghong], Yunnan, 3.v.1991, 1 ♂ (izas); Mengla, Yunnan, 30.iv.1984, 1 ♂ (izas); Menghun, Yunnan, 10.v.1984, 1 ♂ (izas); Yashun, Yunnan, 1600 m, 4.v.1991, 1 ♂ (izas); Yiwbubanna, Yunnan, 650 m, 1.v.1964, 4 ♂ (izas); Yunnan, 5.v.1957, 1 ♂ (su); VIETNAM: Cochinchine, 1787, Pierre, 1 ♂, 1 ♀ (mnhc); Hanoi: Hanoi, 1♂ (mnhc); Luang Namtha [Lauang Namtha], N. Laos, 4.v.1994, Y. Miyake, 4 ♂ (su); Luang Prabang, Pan Hau Kei [Ban Houay Kao], 17.iii.1920, 1 ♂ (mnhc); Phu Langka, Chao Yai NP, 800 m, 14.v.1988, M.G. Allen, 2 ♂ (mnhc); Phu Yai NP, 850 m, 19.vi.1988, T.W. Harman, 1 ♂ (mnhc); Phu Yai, Nakhon Nayok [Nakhon Nayok], ca. 800 m, 14.vi.1983, Kuroko, Morituri, Arita & Yoshiyusa, 1 ♂ (opu); Phu Pha Palace [Phuphaling Palace], Changmang [Chang Mai] Prov., North Thailand, v.1983, Y. Komura, 1 ♂ (su); same data, 15.vi.1983, 1 ♂ (opu); Saraburi [Sar Buri], 15.v.1973, Y. Yoshiyusa, 1 ♂ (su); LOCALITY UNCERTAIN: Sunam or Siam, Bock, 1♂ lectotype (mnhc).
Figs. 23-29. *Platydomia ficulnea* (Distant, 1892), male, paralectotype Karen Hills. — 23, pygofer and uncus in ventral view; 24, pygofer and uncus in right lateroventral view; 25, pygofer in dorsal view; 26, uncus in anterior view; 27, abdomen and right operculum in lateroventral view; 28, right timbal covering; 29, right katepimeral lobe.
Platylomia fuscilinea (Distant, 1892) (figs. 3, 23-29)

*Cossyphoria fuscilinea* Distant, 1892a: 102. - Lecotype d (here designated of *Cossyphoria fuscilinea* Distant: 'Caria Ghech / 1300-1400 m / L. Fes II-III.88' [printed] and 'Cossyphoria / fusciline / type Dist.' [Distant's handwriting].

*Cossyphoria fuscilinea* - Distant 1892b: 154, xii, pl. XV figs. 21-21a; Fes 1897: 608. *Platylomia fuscilinea* - Distant 1906a: 106; Distant 1906b: 61; Distant 1912: 49; Kato 1932: 166; Liu 1940: 115; Metcalfe 1963: 617.

**P. fuscilinea** is closely related to *P. radha* and *P. bochi* but can easily be distinguished from both species by the presence of the markings on the tegmina. *P. fuscilinea* and *P. radha* are the only species of the *P. radha* group with attenuate apices of the opercula. The structure of the genitalia of both species is also very similar but in *P. fuscilinea* the basal pygofer lobes are narrower and the uncus lobes do not have a flange on the lateral margin but occasionally they have a small pointed protuberance.

**Description**

Body brownish to castaneous with some parts of head and thorax lighter; mesonotum with median and paramedian fasciae partly developed; tegmina with infascinations at basal veins of second, third, fifth, and seventh apical cells, and at apices of longitudinal veins of apical cells. Opercula broad and attenuate at apex.

**Head.** - Postclypeus and antclypeus brown; postclypeus little swollen, in dorsal view about as long as distance between frontoclypeal suture and anterior margin of pronotum. Vertex brown but lateral parts, central part of supra-antennal plates, part posterior of eyes and area enclosed by ocelli darker; posterior margin with pair of dark brown spots close to eyes. Genae and lori brown. Frontoclypeal suture as in *P. radha*. Rostrum as in *P. radha*, reaching posterior margin of hind coxae.

**Thorax.** - Pronotum distinctly broader than head. Pronotal disc brown but sometimes with greenish tinge, anterior margin and medial area paler; disc immediately posterior of anterior margin between paramedian lobes with indistinct to dark brown transverse band that is broadly interrupted medially; central fasciae not developed except for two brownish triangular markings with their bases at pronotal suture; transverse part of pronotal suture with black band that does not continue laterally to level of markings on lateral part of pronotal collar. Anterolateral part of pronotal collar concrescent with pronotal disc, remainder of paler than disc; posterior margin black and sometimes broadening slightly in posterior corners; anterolateral corner angular or with small but distinct lateral tooth; posterolateral corner rounded. Mesonotum brown, somewhat darker on posterior half of disc and sometimes with greenish tinge on paler parts; median fascia brown, concrescent with posterior half of disc so indistinguishable there; paramedian fasciae on anterior half of disc castaneous and running immediately medial of mesonotal fuscaces, narrow near anterior margin of disc then broadening and slightly curved medially; mesonotal fuscaces slightly paler than remainder of mesonotal disc; anterior margin of disc with castaneous triangular markings immediately lateral of mesonotal fuscaces; lateral fuscaces absent. Cruciform elevation concrescent with anterior half of mesonotal disc but anterior arms sometimes paler. Katepimeral lobe (fig. 29) shorter than broad at base; apex rounded. Surface of katepimeral lobe concave in dorsoventral direction and convex in longitudinal direction; surface covered with short, almost Waxy hairs, margins with slightly longer, fine hairs. Apex of katepimeral lobe just reaching over base of operculum.

**Tegmina and wings.** - Tegmina almost entirely hyaline with indistinct brownish reticulation along distal margin and in apical cells; basal veins of second, third, fifth, and seventh apical cells with distinct brown infuscation, infuscation on base of third apical cell often continuing on anterior basal vein of fourth apical cell; apices of longitudinal veins of apical cells with rounded dark brown spots; basal cell almost completely yellowish fumose except for very narrow hyaline strip along posterior margin. Veins of tegmen ochraceous to brownish but sometimes with greenish tinge, darker along cordial fold, on most cross veins, and on distal of forks in veins. Wings hyaline except for very narrow strip posterior of first anal vein. Veins of wings brownish but sometimes with greenish tinge, medial vein and veins close to wing margin darker.

**Legs.** - Fore legs brownish; femora posteroventrally with darkened longitudinal stripes; tibiae slightly darkened distally; tarsi slightly darkened, especially distally. Mid legs brownish; tibiae brownish, slightly darkened at base and darkening slightly on distal half towards apex; tarsi little darker than femora. Hind legs brownish; tibiae little darker than femora but less so on band at about one fifth from base; tarsi little darker than femora. Fore femur with gap between middle and distal posteroventral spines shallow and not very broad. Hind tibiae with three dorsal spines and four anteroventral spines; spines brownish.

**Male operculum (fig. 27).** - Operculum broad and attenuate at apex, reaching between anterior and posterior margin of sixth abdominal segment, about (2.5) 2.9 times as long as maximum width distal of constriction; brown but sometimes slightly darker on distal part, lateral margin in lateraloproximal corner dark brown to black but lateroproximal corner itself paler. Medial margin distal of constriction smoothly
convex to apex, on distal third appearing concave because of shape of apex. Apex of operculum gullishly-shaped, lateral of midline, and divergent from abdomen. Lateral margin distal of constriction first convex but concave on distal third. Constriction at 0.3-0.4 of length of operculum, medial concavity very shallow, lateral concavity longer and only slightly deeper than medial concavity, broadest part of operculum distal of constriction 1.1-1.3 times as wide as minimum width in constriction. Distance between opercula at constrictions 0.5-0.7 times as wide as minimum width in constriction. Opercula at point of closest approximation separated for a distance of 0.5-0.6 times maximum width between opercula at constrictions. Operculum close to abdomen on proximal part, distal half slightly divergent from abdomen; surface convex in longitudinal direction near medial and lateral margins only, surface more strongly convex in transverse direction, especially on distal third.

Male abdomen. - Abdomen 1.4-1.5 times as long as head and thorax together. Dorsal part of tergites brown to castaneous with anterior margins of tergites 1-3 and posterior margins of tergites 1-2 ochraceous, posterior margins of tergites 4-6 dark brown, lateral parts always paler; sternites and ventral parts of tergites ochraceous to brownish. Dorsal part of tergites 3-4 (5) with dense white pilosity in anterolateral corners, tergite 4 with paramedian, transverse oblong spots of white dusting close to anterior margin. Posterior margin of tergite 7 with many short dark spinules, of tergite 6 with longer spinules along whole length but few medially, of tergite 5 with few spinules on lateral part. Sternite 7 with postero-emargination considerably deeper than in P. radha. Timbal covering (fig. 28) brownish to castaneous, about as long as wide; medial margin weakly convex; distal margin rounded; lateral margin weakly convex to straight.

Male genitalia (figs. 23-26). - Ochraceous brown; dorsal part of pygofer somewhat darker. Basal pygofer lobes (fig. 23) as in P. radha but not as broad and reaching further between lateral margins of pygofer; hairs on anteroventral margin of pygofer and on pygofer surface enclosed by anteroventral margin as in P. radha but slightly shorter and interspersed with occasional long hairs; hairs on outer surface of pygofer as in P. radha. Dorsal part of pygofer as in fig. 25. Basal part of uncus short, little globose and narrower than maximum width uncus (fig. 23), near bases of uncus lobes usually with erect hairs but these hairs shorter and thinner than in P. radha. Uncus lobes (figs. 23-24, 26) short; medial margin, medio-distal corner and distal margin in P. radha, without pointed protuberances; laterodistal corner somewhat produced and bluntly pointed, tip directed to anterior; lateral margin strongly curved medially at base, uncus lobe narrower about halfway to distal margin, lateral margin weakly convex from narrowest point in uncus lobe to laterodistal corner; lateral margin sometimes with small pointed protuberance near laterodistal corner. Ventral (outer) surface of uncus lobes virtually smooth. Bases of uncus lobes with erect hairs laterally but only very close to base of uncus and with few erect thick hairs on lateral margin; dorsal (inner) surface with scattered erect thick hairs; ventral (outer) surface with short fine hairs on distal half only.

Female. - Unknown.

Measurements in mm (δ: n = 4). - Body length: δ: 47.0-55.5 (52.0 ± 3.0); head width: δ: 13.5-15.2 (14.5 ± 0.6); maximum pronotum width: δ: 14.7-16.5 (15.7 ± 0.6); tegmen length: δ: 54.5-62.0 (59.1 ± 2.3).

Distribution (fig. 3). - This species is so far only recorded from Burma and India (Assam) but the record from Assam (Distant 1906a) could not be confirmed.

Remarks. - Cosmopsaitria ficulnea was described from an unknown number of specimens from 'Carin Ghecu' and 'Karen Hills'. The type series of P. ficulnea consists of four males, two males at both the BMNH and the MSNG. One male in each of these collections bears a type label but neither can be considered to be a lectotype as this was not mentioned with the description nor was a lectotype designation ever published. The specimen at MSNG with Distant's type label is designated as lectotype. The other three males are labelled as paralectotypes.

Material examined. - BURMA: Ghecu, Carin, 1300-1400 m, ii-iii.1888, L. Féraud, 1 δ lectotype and 1 δ paralectotype Cosmopsaitria ficulnea Distant (MSNG); same data, 1 δ paralectotype (BMNH); Karen Hills, Doherry, 1 δ paralectotype (BMNH).

Platyxelosia maticky sp. n. (figs. 3, 30-36)

Type material. - Holotype δ: 'Thailand 24.6.-1.5.1989 / Changmai Zoo Lichtsalle / 400m, 98°57'E, 18°49'N / Chantaramongkol & Malicky' (IZUI). - Paratypes: VIETNAM: 6 km S. of Dalat [Da Lat], 1400-1500 m, 9.vi-7.vii.1961, N.R. Spencer, 1 δ (BPBM); Datanla, Dalat [Da Lat], S. Vietnam, 22.v.1992, 1 δ (BMNH); LAOS: Ban Van Eue, Vientiane Province, 15-31.v.1965, 1 Φ (BPBM); same data, 15.v.1966, native collector, 1 δ (BMNH); Muong Lakhon, 1878, J. Harmand, 1 δ (MNHN); Muong Om [Muang Horn], Luang Prabang [Louangphrabang], 17.v.1920, R.V. de Salava, 1 δ
Platylomia radha group

( бαδναs); Sen Kam, Haut Mekong, 29.v.1918, R.V. de Salva z a, 1 ♀ (BMNH); Vieng Vai, Haut Mékong, 23.v.1918, R.V. de Salva z a, 1 ♀ (BMNH); THAILAND: Amphoe Muang Chiang-mai [Chiang Mai], 24.iv.1973, Y. Yoshi yas, 3 ♀ (SU); same data, 25.iv.1973, 1 ♀ (SU); Bang Khun Klang, Doi Inthanon, 18°32'N 98°32'E, 1200 m, 27.iv.1989, Chantaramongkol & Malicky, light trap, 1 ♀ (SU); Chiang Dao, Chiang Mai, 1 ♀, 1 ♀ (SU); Chiang Mai, 23.iv.1976, S. Saito, 1 ♀ (SU); Chiangmai [Chiang Mai] Zoo, 23.49'N 98°57'E, 400 m, 17-24.iv.1989, Chantaramongkol & Malicky, light trap, 4 ♀ (SU); same data, 2 ♀ (ZMA); same data, 24.iv-1.v.1989, 4 ♀ (SU); Chiangmai [Chiang Mai], 22.v.1952, D. & E. Thurman, 1 ♀ (UAS); Doi Su r hep, Chiang Mai, Thailand, 1.v.1984, T. Endo, 1 ♀ (SU); Doi Surhe p, East slope, 15.vi.1962, E.S. Ross & D. Cavagnaro, 1 ♀ (CAS); Mae Sa, Chiang Mai, 2.v.1984, T. Endo, 1 ♀, 1 ♀ (SU); Phu Khieo Wildlife Sanctuary, Khon San, Chaiyaphum Province [Changwat Chaiyaphum], N.E. Thailand, 16°30'N 101°46'E, 800 m, evergreen rain forest, at light, 13-15.v.1988, M.J.D. Brendell, 1 ♀ (BMNH); Wiang Pa Pao, Chiang Rai Prov., 2-10.v.1990, 1 ♀ (SU); BURMA: Maymyo, 29.iv.1901, 1 ♀ (BMNH); Mayno, v.1910, H.L. Andrews, 1 ♀ (BMNH).

Other material examined. — CHINA: Dale, Yunnan, 1650 m, 31.vi.1991[7], 1 ♀, 1 ♀ (SZAS); Jingdong [Jinping], Yun nan, 1200 m, 29.v.1956, 1 ♀ (SWA); Lincang, Yun nan, 1110 m, 24.iv.1957, 1 ♀ (POY); Menghe chessen, Yun nan, 1200-1300 m, 24.iv.1957, 1 ♀ (SZAS); Nefu, Yun nan, 1350 m, 2.v.1980, 1 ♀ (POY); Shuangjiang [Mengmeng], Yun nan, vi.1977, 1 ♀ (POY); Simao, Yun nan, 1350 m, 11.v.1957, 1 ♀ (SZAS); Xishuangbanna, Yun nan, 750 m, 1 ♀ (SZAS); Yun nan, vi.1953, 1 ♀ (SWA); THAILAND: Phu Rua, Loei, c. 800 m, 15-19.viii.1987, S. Morishita, T. Sa ito, Y. Arita & Y. Yoshiyasu, 1 ♀ (UAS); EXACT LOCATION UNKNOWN: S. Annam, 1918, C.B. Kloss, 1 ♀ (BMNH).

P. mali kyi and P. bocki are the smallest species of the P. radha group but P. malikyi can easily be distinguished from P. bocki by the presence of at least some distinct markings on the tegmina and the more elaborate light-dark pattern on the pronotum and mesonotal disc. P. malikyi displays a large amount of variation in the markings on the tegmina but some distinct markings are always present. The pronotum and mesonotal disc also show considerable variation in the degree of darkening; in some cases the black posterior margin of the pronotal collar and the black band across the transverse part of the pronotal suture completely enclose the pale area on the posterior part of the pronotal collar.

**Description.**

Body ochraceous brown to castaneous brown with darker pattern on head and thorax, ventral parts paler than dorsal parts; opercula short and rounded at apex; legs predominantly brownish. Tegmina usually with markings at basal veins of second, third, fifth, and seventh apical cells, and at apices of longitudinal veins of apical cells.

**Head.** — Postclypeus brown to castaneous but paler along clypeal suture and lateral margins, dorsal part usually somewhat darker than ventral; postclypeus little swollen, in dorsal view about as long as distance between frontoclypeal suture and anterior margin of pronotum. Antennal segmental color of ventral part of postclypeus or somewhat darkened on lateral surfaces. Vertex brownish to castaneous but paler on supra-antennal plates and area posterior of supra-antennae plates, pale parts sometimes extending as far as posterior margin; area around ocelli with black marking that just or just not reaches frontoclypeal suture anteriorly, marking posteriorly usually not reaching posterior margin of vertex but if reaching margin then enclosing brown spot medially at margin and extending laterally towards eyes along margin; posterior margin with pair of black spots close to eyes. Genae ochraceous brown to brown but darker just below antennae. Supra-antennal plates with one or more curved grooves, posterior groove joins lateral part of frontoclypeal suture. Frontoclypeal suture semicircular to distinctly trapezoidal, medial part much broader than distance between lateral margins of lateral ocelli. Rostrum ochraceous brown to brown, darkened at tip only, reaching almost to distinctly beyond posterior margin of hind coxae but never further than halfway sternite 1.

**Thorax.** — Pronotum slightly to distinctly broader than head. Pronotal disc mainly brownish to castaneous, anterior margin and area enclosed by central fascia paler, central fascia darker and sometimes almost blackish, broadening posteriorly and forming distinct dark brown to black triangular spots that usually meet at posterior margin of disc; disc immediately posterior of anterior margin with dark brown to black transverse band that is interrupted medially and narrows laterally, band at level of interruption connected with central fasciae; transverse part of pronotal suture with dark brown to black band that is connected with central fasciae; medial part of band largely on disc, lateral part largely on collar. Pronotal collar ochraceous brown to brown with black posterior margin that broadens in posterior corners, lateral part collar occasionally entirely dark except anteriorly; collar lateral of disc darker, sometimes with exception of area around lateral tooth; dark area on lateral part of collar always connected with dark band on transverse part of pronotal suture and occasionally also connect-
Figs. 30-36. *Platylomia malickyi* sp. n., male, paratype Muong Om. – 30, pygofer and uncus in ventral view; 31, pygofer and uncus in right lateroventral view; 32, pygofer in dorsal view; 33, uncus in right anterolateral view; 34, abdomen and right operculum in lateroventral view; 35, right timbal coverings; 36, right katapimeral lobe.
Platylomia radha group

Legs. — Fore legs ochraceous to brownish; femora posteroventrally with darkened longitudinal stripe, apically with dark brown ring that may be interrupted dorsalily, anterior and anteroventral surface often somewhat darkened; tibiae brown, dorsal surface with paler stripe on basal quarter to half; tarsi brown. Mid legs ochraceous brown; femora sometimes darkened anteriorly and posteriorty at apex; tibiae darkened dorsally at base and on apical quarter; tarsi brown. Hind legs ochraceous; femora sometimes with very indistinct dorsal stripes; tibiae darkened dorsally at base and with darker ring just before apex; tarsi ochraceous brown. Fore femur with gap between middle and distal posteroventral spines shallow to deep, narrow.

Male operculum (fig. 34). — Not very long, reaching just beyond anterior margin of fifth to just beyond anterior margin of sixth abdominal segment, 2.1-2.3 times as long as maximum width distal of constriction; ochraceous to brown, lateral margin darkened close to latero proximal corner of operculum. Medial margin distal of constriction convex but occasionally less convex for some distance in distal third. Apex of operculum rounded, only rarely with a tendency to be slightly angular, tip from just medial to just lateral of midline. Lateral margin distal of constriction strongly convex to apex. Constriction at 0.4-0.5 of length of operculum, lateral concavity longer and deeper than medial concavity, broadest part of operculum distal of constriction 1.4-1.6 times as wide as minimum width in constriction. Distance between opercula at constrictions about 1.0-1.1 times as wide as minimum width in constriction. Opercula at point of closest approximation separated for a distance of 0.4-0.5 times maximum width between opercula at constrictions. Surface of operculum convex except at level of constriction thus creating impression of transverse fold at level of constriction.

Male abdomen. — Abdomen about 1.2-1.3 times as long as head and thorax together. Dorsal part of tergites unicolorous brownish to castaneous; sternites and ventral parts of tergites somewhat paler. Lateral parts of tergites 2-4 with thin whitish dusting, dusting on other tergites without distinct pattern. Only posterior margin of tergite 7 with short dark spinules. Sternite 7 with very shallow postero medial emargination. Timbal covering (fig. 35) brownish, paler than dorsal part of tergites, about 1.0-1.2 times as long as wide; medial margin virtually straight; mediolateral corner, distal margin and laterodistal corner rounded; lateral margin almost straight, convergent with medial margin.

Male genitalia (figs. 30-33). — Pygofer brown to castaneous on dorsal side, remainder paler; uncus brown to castaneous, often paler on basal part and ad joining part of uncus lobes. Basal pygofer lobes (fig.
narrower than and not as broadly rounded as in *P. radlice*, hairs on anteroventral margin of pygofer erect and not very long, decreasing in length only little towards basal lobes and continuing on pygofer surface enclosed by anteroventral margin, pygofer surface anterior of medial part of anteroventral margin with scattered hairs. Dorsal part of pygofer as in fig. 32. Basal part of uncus short, little globose and narrower than maximum width uncus (figs. 30-31), near bases of uncus lobes with occasional short erect hairs.

Uncus lobes (figs. 30-31, 33) broad; medial margin weakly concave to straight; medioldistal corner rounded, occasionally with short blunt spine on dorsal (inner) side; distal margin with narrowing lobe on lateral half, apical margin of lobule curved dorsal (inwards) and two-tipped, each tip broad and very short, lateral margin of lobule often with short blunt spine that is curved dorsal (inwards); laterodistal corner angular, usually with two short but pointed protruberances and often a third one more proximal on lateral margin; lateral margin shallowly concave. Ventral (outer) surface of uncus lobes with short grooves running toward lateral margins of distal lobules. Ventral (outer) surface of uncus lobes with many short, thin erect hairs on proximal half and several thicker erect hairs close to basal part of uncus; dorsal (inner) surface of uncus lobes with long, thick erect hairs near lateral margin on proximal half, otherwise with many short, thin erect hairs, especially close to margins.

Female operculum. — Operculum pale brownish, lateral margin dark brown to black except at lateroproximal lobe. Lateral margin evenly convex distal of lateroproximal lobe; laterodistal corner angularly rounded; distal margin weakly concave to evenly convex; medioldistal corner broadly rounded; medial margins short and convex and strongly divergent.

Female abdomen. — Abdomen 0.9-1.0 times as long as head and thorax together. Dorsal part of tergites castaneous brown but on tergites 1-2 paler, posterior margins darker, tergites 3-6 with indistinct darker spots near posterolateral margin; sternites and ventral parts of tergites paler but less so on segments 6-7. Tergite 2, lateral parts of tergites 3-4 and medial parts of tergites 5-7 with thin whitish dusting. Posterior margins of tergites 3-6 with short dark spins laterally, of tergite 7 with more numerous and longer spins along whole margin, of tergite 8 with scattered ejects except laterally, medial spins more slender than paramedial spins. Sternite 7 with angular postero medial margination.

Female genitalia. — Lateral and ventral part of pygofer brownish, dorsal part more castaneous but paler along mid-line; distal part of ovipositor sheath castaneous. Dorsal margin of pygofer shorter than three preceding segments, in lateral view weakly concave; ventral margin weakly convex. Ovipositor sheath reaching as far as apex of caudodorsal beak; anal valve not reaching as far as caudodorsal beak.

Measurements in mm (d.: n = 5; 9.: n = 3). — Body length: d.: 40.0-43.0 (41.7 ± 0.8); 9.: 38.0-39.5 (38.8 ± 0.6); head width: d.: 12.3-12.8 (12.6 ± 0.1); 9.: 13.1-13.6 (13.5 ± 0.3); maximum pronotum width: d.: 12.9-13.9 (13.3 ± 0.3); 9.: 13.9-14.9 (14.5 ± 0.4); tegmen length: d.: 46.5-50.5 (48.7 ± 1.2); 9.: 51.0-54.5 (52.8 ± 1.2).

**Variation**

The markings on the tegmen show some variation. The spots on the apices of the longitudinal veins of the apical cells are very variable in size and can be present at all apical cells, or gradually weakening from the first to the seventh apical cell and almost be absent there, or very indistinct or absent altogether. Likewise can the markings on the basal veins of second, third, fifth, and seventh apical cells be indistinct and they can even be absent on the basal veins of the fifth and seventh apical cell. The tendency for reduction of wing markings is especially notable in the females from Burma. These specimens are also the specimens with the most extensive darkening on pronotum and mesonotum.

**Distribution** (fig. 3)

*P. malickyi* is known from Indo-China (Burma, Laos, Thailand, and Vietnam) and southern China (Yunnan).

**Etymology**

The species is named after Dr Hans Malicky who works on Trichoptera and who is one of the collectors of the series that constitutes half of the type material.

**Platyoptera bisovoculata** (Matsumura, 1907)  
(figs. 3, 37-44)


**Platyoptera bisovoculata** — Distant 1912: 49; *Matsumura 1913: 72, pl. IX fig. 2; Schumacher 1915a: 79; Schumacher 1915b: 111; Matsumura 1917: 198, 211; Sonan 1921: [165]; Kato 1925: 20, 44; Kato 1927: 28; *Matsumura 1930b: [15], pl. III fig. 2; Kato 1931: 51 [17], 64 [29]; Matsumura 1931: [1237, text figure]; Eshel 1932: [1704, fig. 3365]; Schmidt 1932: 126; Kato 1932: 206, 217, 328, pl. XXI fig. 4; pl. XXII fig. N; *Kato 1933a: pl.17 fig. 4, pl. 18 fig. 5; Kato 1933b: 11; Kato 1938a: 308; Kato 1938b: 18; Kato 1956: 96, 118, 122, 137; Matsumura 1965: 615; Ishida 1968: 3; Duffield & Van der Laan 1985: 120.

**P. bisovoculata** is the only species of the *P. radlice* group that does not occur on the mainland of the Southeast Asia or the Thai-Malay Peninsula. It can easily be distinguished from the other species of the group by the
brownish hyaline tegmina, the darker brown infuscation along the veins in at least the distal part of the tegmina, the extensive darkening on tertipes, and the pattern of white dusting on tertipes 3, 5, 6, and 8.

**Description**

Head and thorax brownish, abdomen more castaneous; pronotum with well developed central fasciae; mesonotum with well developed median and paramedian fasciae and with spot-like lateral fasciae; tegmina with markings on basal veins of second, third, fifth and seventh apical cells and on spines of longitudinal veins, but often all veins in distal part of wing somewhat infuscated. Oculi broad and not very long.

**Head.**—Postclypeus and anastomous ochraceous brown to brown, dorsal and anterior parts of postclypeus slightly darker except for antepronotal spot and small area at frontoclypeal suture; postclypeus little swollen, in dorsal view about as long as distance between frontoclypeal suture and anterior margin of pronotum. Vertex brownish, darker on vertex lobes except along eyes and darker on anterior part of supraantennal plates; posterior margin with pair of black spots close to eyes and posterior of eyes; ocelli enclosed in brownish to black marking, anterior margin of marking shallowly concave and generally not reaching fromoclypeal suture, lateral margins of marking either weakly convex or straight, and convergent posteriorly, posterior margin deeply and narrowly concave medially and (almost) reaching anterior margin of pronotum. Gena ochraceous, tori darkened along suture with clypeus. Protoclypeal suture trapezoid, median part only little broader than distance between lateral margins of lateral ocelli. Rostrum brownish, darkened at extreme tip only, reaching halfway between to posterior margin hind coxae.

**Thorax.**—Pronotum distinctly broader than head. Pronotal disc brownish but often with greenish tinge; disc immediately posterior of anterior margin often with dark brown to black, medially narrowly interrupted transverse band; central fasciae distinct and meeting on pronotal suture, sometimes continuing on anterior margin, fasciae broader near anterior and posterior margin of disc, narrow in between and often narrowly interrupted; anterior oblique line narrowly darkened; transverse part of pronotal suture with narrow to very narrow dark brown to black band that is often interrupted just lateral of central fasciae, band not continuing laterally across pronotal collar. Pronotal collar concolorous with or slightly paler than pronotal disc, posterior margin black; lateral part of collar with darker brown marking at pronotal suture at lateral lobe of disc; lateral margin at same level slightly darkened; anterolateral corner with blunt lateral tooth. Anterior margins of lateral and paramedian lobes, fissures between these lobes as well as pronotal suture often with extensive waxy coating. Mesonotum concolorous with pronotum; median fascia black and rather broad, narrowest at anterior and posterior margins of disc; paramedian fasciae on anterior half of disc black, narrow to very narrow and more brownish near anterior margin of disc, slightly curved towards central fascia medially, fasciae on posterior half usually present as black elongated markings in front of and sometimes extending on to anterior arms of cruciform elevation; anterior margin of disc with small blackish triangular markings immediately lateral of mesoventral fissures; lateral fasciae present only as black spots in posteroventral corners of mesonotal disc. Cruciform elevation concolorous with mesonotal disc, posterior margin narrowly black, anterior arms sometimes darkened. Mesoventral disc often with extensive waxy coating on anterior and lateral margins and in depressions of cruciform elevation. Katepimeral lobe (fig. 44) almost as in *P. radha*. Surface of katepimeral lobe concolorous along dorsal margin and dorsal margin thus curved outwards; surface covered with short, waxy hairs and margin with slightly longer hairs. Apex of katepimeral lobe just or just not reaching over base of operculum.

**Tegmina and wings.**—Tegmina brownish hyaline but especially along veins in distal and posterior part more brownish infuscated and with indistinct brownish reticulation along distal margin and sometimes in apical cells; basal veins of second, third, fifth, and seventh apical cells usually distinctly infuscated; spines of longitudinal veins of apical cells with indistinct dark brown spots; basal cell yellowish brown fumose except along posterior margin. Veins of tegmen brownish, darker in distal and posterior part. Wings brownish hyaline but paler than tegmina. Veins of wings dark brown, medial and cubital veins paler.

**Legs.**—Fore legs brownish; femora posteroventrally with darkened longitudinal stripe; tibiae posteriorly and ventrally slightly darkened, dorsally at base dark brown. Mid legs brownish, only tibiae slightly darkened dorsally at base and on apical quarter. Hind legs brownish, tibiae dorsally darkened at base and on apical quarter and tarsi. Fore femur with gap between middle and distal posteroventral spines shallow and broad. Hind tibiae with 3-5 anteroventral spines and 4-6 anteroventral spines, occasionally with single anterior spine.

**Male operculum (fig. 42).**—Operculum reaching about halfway fifth abdominal segment, 2.1-2.3 times as long as maximum width distal of constriction; brownish but distal part often somewhat darker, area of interproximal corner and usually also part of lateral margin into constriction dark brown to black but margin just distal of interproximal corner ochraceous for short distance; some parts covered with waxy coating, usually along margins. Median margin distal of
Figs. 37-44. *Platylemnia bivocalis* (Matsumura, 1907), male, Pingtung Hsien. — 37, pygofer and uncus in ventral view; 38, pygofer and uncus in right lateroventral view; 39, pygofer in dorsal view; 40, uncus in right anterolateral view; 41, uncus in anterior view; 42, abdomen and right operculum in lateroventral view; 43, right timbal covering; 44, right katepimal lobe.
Platylomia radha group

Constriction convex to apex but sometimes less convex to almost straight close to apex. Apex of operculum rounded, tip lateral of midline. Lateral margin distal of constriction first convex but on distal third almost straight or even weakly concave. Constrictions at 0.3-0.4 of length of operculum, lateral concavity longer and deeper than medial concavity, broadest part of operculum distal of constriction 1.4-1.6 times as wide as minimum width in constriction. Distance between opercula at constrictions about 1.0-1.5 times as wide as minimum width in constriction. Opercula at point of closest approximation separated for a distance of 0.7-0.9 times maximum width between opercula at constrictions. Operculum close to abdomen; surface of part distal of constriction convex.

Male abdomen. — Abdomen about 1.4 times as long as head and thorax together. Dorsal part of tergites dark castaneous but tergite 1, medial part of tergite 2, sometimes anteromedial part of tergite 3 and lateral parts of tergites 2-6 brownish; sternites and ventral parts of tergites pale castaneous brown. Tergite 1, anterior margin of tergite 3 except medially, tergites 5, 6 and 8 covered with white waxy coating. Posterior margin of tergite 7 with many dark spinules except at extreme lateral part. Sternite 7 with very shallow postero medial margination. Timbal covering (fig. 43) brownish, about 1.1-1.2 times as long as wide; medial margin straight to weakly convex; mediiodistal corner, distal margin and laterodistal corner rounded; lateral margin almost straight, convergent with medial margin.

Female genitalicia (figs. 37-41). — Yellowish brown; dorsal part of pygofer dark brown except on decollated part; uncus lobes darker at bases and along lateral and dorsal margins. Basal pygofer lobes (fig. 37) close to lateral margins of pygofer, narrow and ridge-like, rounded in lateral view (fig. 38); anteroventral margin of pygofer and pygofer surface enclosed by it mostly with short and erect hairs but basal lobes and parts of anteroventral margin leading to them with long erect hairs; pygofer surface anterior of medial part of anteroventral margin with scattered hairs; outer surface of pygofer on posterior half with numerous short hairs interspersed with scattered hairs that increase in length towards posterior margin. Dorsal part of pygofer as in fig. 39. Basal part of uncus rather broad, somewhat globose and with small postero medial knob that may or may not be distinct (figs. 37-38); surface near bases of uncus lobes with short and thick erect hairs. Uncus lobes (figs. 37-38, 40-41) short and gradually narrowing towards distal margin; medial margins curved dorsad (inwards), weakly concave near end-ago opening and weakly convex near mediiodistal corners or more or less parallel; mediiodistal corner angularly rounded to rounded and often slightly curved dorsad (inwards); distal margin slightly curved dorsad (inwards), weakly concave medially and close to laterodistal corner with short, pointed triangular projection; laterodistal corner produced into small, pointed projection; lateral margin evenly concave on distal half. Ventral (outer) surface of uncus lobes with short longitudinal grooves at distal margin, especially near mediiodistal corner, and often with transverse grooves about halfway to distal margin. Ventral (outer) surface of uncus covered with short erect hairs, these hairs more sparse on distal part; dorsal (inner) surface with more numerous and thicker hairs; bases of uncus lobes with long and thick erect hairs both on ventral and dorsal surface, those on dorsal (inner) surface somewhat shorter than those on ventral (outer) surface.

Female operculum. — Operculum greenish to brownish, narrowly dark at meracanthus and along lateral margin but anterior part of lateroproximal lobe brownish. Lateral margin weakly convex distal of lateroproximal lobe but sometimes weakly concave near laterodistal corner; laterodistal corner angular to angularly rounded; distal margin straight or concave for short distance; mediiodistal corner broadly rounded; medial margin straight, medial margins strongly divergent from bases of opercula.

Female abdomen. — Abdomen 1.0-1.1 times as long as head and thorax together. Dorsal part of tergites largely blackish, more brownish near lateral margins, tergites 1-2 brownish medially but in paler specimens also on tergites 3-5 and on anterior margins of tergites 2-3; tergites 3-7 with small brown spots laterally; sternites and ventral parts of tergites brownish. Tergites 1-3 with whitish dusting laterally, tergites 5-6 and 8 completely covered with white waxy coating. Posterior margins of tergites 3-6 with some short dark spines laterally, of tergite 7 with spines along whole length but fewer medially, of tergite 8 with scattered spines medially. Sternite 7 with angular to angularly rounded postero medial margination.

Female genitalia. — Dorsal part of pygofer blackish but in paler specimens more brownish medially, especially at base of caudodorsal beak, remainder of pygofer brownish; distal part of ovipositor sheath blackish. Dorsal margin of pygofer just longer than two preceding segments, in lateral view weakly concave; ventral margin weakly convex. Ovipositor sheath reaching little though distinctly beyond apex of caudodorsal beak; anal valve distinctly not reaching as far as caudodorsal beak.

Measurements in mm (d: n = 6; 9: n = 5). — Body length: d: 47.5-51.5 (50.2 ± 1.3); 9: 39.5-44.0 (42.0 ± 1.2); head width: d: 13.3-14.5 (14.2 ± 0.4); 9: 13.5-14.0 (13.8 ± 0.1); maximum, pronotum width: d: 14.4-16.0 (15.5 ± 0.5); 9: 14.5-15.7 (15.1 ± 0.4); tegmen length: d: 50.5-57.5 (54.9 ± 1.8); 9: 50.0-55.5 (53.7 ± 1.8).
Figs. 45-51. *Platylomia pendleburyi* Moulton, 1923, male. — 45, pygofer and uncus in ventral view, holotype; 46, pygofer and uncus in right lateroventral view, holotype; 47, pygofer in dorsal view, Khao Luang; 48, uncus in anterior view, Khao Luang; 49, abdomen and right operculum in lateroventral view, Khao Luang; 50, right timbal covering, Khao Luang; 51, right katepimeral lobe, Khao Luang.
Platylomia radha group

Biological notes

Matsumura (1907) described the song of P. biocacalia as consisting of two calls, 'sha sha' and 'ho ho', that are called at the same time. He also stated that the adults often sit under Pandanus bushes.

Distribution (fig. 3)

Taiwan. The record from Japan is a misinterpretation by Metcalfe (1963) of data provided by Esaki (1932) and Kato (e.g. 1932, 1933b).

Remarks

The type material of P. biocacalia was not examined. The original description (Matsumura 1907) and subsequently published illustrations (Matsumura 1931; Esaki 1932; Kato 1932) leave no doubt that it is identical with the species described and illustrated here.


Platylomia pendubutyi Moulton, 1923
(figs. 3, 45-51)

Platylomia pendubutyi Moulton, 1923: 69, 98, 100, 103, 167, pl. V fig. 22-22a. - Holotype ♀: [printed on round label with red margin], "Peninsular Siam, / Nakon Sri Thaman / Khao Luang / 1300 FT. / April 1st 1922. / H.M. Moulton [printed except for latitude and date], "Platylomia pendubutyi / Type ♀ Moulton / 1922" [Moulton's handwriting] (BMNH) [examined].


P. pendubutyi is the only species of the P. radha group confirmed from Peninsular Thailand and is as yet restricted to that area. P. pendubutyi, P. radha, and P. ficulnea are the largest species of the P. radha group. P. pendubutyi can easily be distinguished from P. radha by the presence of distinct markings on the tegmina, and from P. ficulnea by the rounded and shorter opercula.

Description

Body brownish, medial part of tergites more castaneous; pronotum with small (sometimes split) median spot only; mesonotum with four black markings on posterior margin; tegmina with markings on basal veins of second, third, fifth, and seventh apical cells, and at apices of longitudinal veins. Opercula broad and not very long, divergent from abdomen.

Head. - Postclypeus and antclypeus brownish, dorsal part of postclypeus slightly darker except for small area at frontoclypeal suture; postclypeus little swollen, in dorsal view about as long as distance between frontoclypeal suture and anterior margin of pronotum. Vertex brownish but darker on vertex lobes, on lateral part of supra-antennal plates and posterior of eyes; area between ocelli blackish. Genae and lori brownish but sometimes with greenish tinge, upper part of genae slightly darker. Frontoclypeal suture and rostrum as in P. biocacalia.

Thorax. - Pronotum slightly to distinctly broader than head. Pronotal disc brownish but sometimes with greenish tinge, only marking consisting of small (sometimes split) medial spot at pronotal suture. Pronotal collar slightly paler than pronotal disc, sometimes with greenish tinge, posterior margin black; lateral part of collar with indistinct brown marking close to lateral margin of collar; anterolateral corneal point with lateral tooth at level of broadest point of pronotal disc; posterolateral corner rounded. Mesonotum slightly darker than pronotal disc; paramedian fascia on anterior half of disc brownish to blackish and narrow, especially at anterior margin of mesonotum, on posterior half of disc present as two black markings in front of anterior arms of cruciform elevation; anterior margin of disc either with or without triangular markings just lateral of mesonotal fissesures; lateral fascia very indistinct or present only as black spots near posterior margin of mesonotal disc. Medial part of cruciform elevation concolorous with pronotal collar, lateral part slightly darker. Kaeopterimal lobe (fig. 51) shorter than broad at base; apex angularly rounded. Surface of kaeopterimal lobe almost flat, only weakly concave along dorsal margin; surface covered with short, waxy hairs and margin with slightly longer hairs. Apex of kaeopterimal lobe just reaching over base of operculum.

Tegmina and wings. - Tegmina faintly yellowish hyaline with a brownish reticulate pattern between veins in distal and posterior part of the tegmina; basal veins of second and third apical cells with narrow brownish clouding along whole length, fifth and seventh apical cells and apices of longitudinal veins of apical cells with rounded brown spots; basal cell yellowish brown fumose except along posterior margin. Veins of tegmen brownish. Wings very faintly yellowish hyaline, very narrowly clouded posterior of first anal vein. Veins of wings brown, darker on basal part of medial vein and on veins close to wing margin.

Legs. - Fore femora brownish, slightly darker on posteroventral longitudinal stripe and on posterior surface near apex; tibiae dark brown but paler on dorsal surface of proximal three quarters; tarsi very dark
brown. Mid legs brownish; tibiae with blackish basal ring, dorsal surface dark brown on apical three quarters and ventral surface dark brown on apical two thirds; tarsi very dark brown. Hind legs brownish; femora ventrally darker at apex; tibiae with blackish basal ring. Fore femur with gap between middle and distal posteroventral spines deeper and narrower than in *P. bisocularis*.

**Male operculum (fig. 49).** – Operculum reaching halfway fifth abdominal segment, 2.6–2.9 times as long as maximum width distal of constriction; brownish but sometimes with greenish tinge, distal part sometimes darker, area of interoprosomal corner and lateral margin proximal of constriction dark brown to black and enclosing brownish spot on lateroprostomal lobe. Medial margin distal of constriction weakly convex to apex, medial margins almost parallel for some distance. Apex of operculum obtusely rounded. Lateral margin distal of constriction first convex but partly straight on distal third. Constriction at about 0.4 of length of operculum, medial concavity very shallow, broadest part of operculum distal of constriction 1.3–1.4 times as wide as minimum width in constriction. Distance between opercula at narrowest part of opercula about 1.5–1.9 times as wide as minimum width of opercula. Opercula at maximum width of distal part of opercula separated for a distance of about 0.9–1.0 times distance between opercula at narrowest part of opercula. Operculum close to abdomen proximal of constriction only and somewhat divergent from abdomen from level of constriction onwards; surface of part distal of constriction convex and in addition curved towards abdomen laterally.

**Male abdomen.** – Abdomen about 1.3–1.5 times as long as head and thorax together. Dorsal part of tergites dark castaneous, medially and laterally more brownish; tergites 2–7 laterally with darker brown spots near posterior margin; sternites and ventral parts of tergites brownish, slightly darker on posterior segments. Tergite 8 with thin whitish dusting, dusting on other tergites without distinct pattern. Posterodistal margin of tergites 5–6 sometimes with few small dark spinules laterally, of tergite 7 with dark spins along whole length. Stermite 7 with very shallow rounded posteromedial emargination. Timbal covering (fig. 50) brownish but sometimes with greenish tinge, 1.1–1.2 times as long as wide; medial margin straight; distal margin and laterodistal corner rounded; lateral margin weakly convex, convergent with medial margin.

**Male genitalia (figs. 45–48).** – Brownish; dorsal part of pygofer somewhat darker; uncus more castaneous at basal part and bases of uncus lobes. Basal pygofer lobes (fig. 45) and hairs on pygofer as in *P. bisocularis*, but basal lobes narrower. Dorsal part of pygofer as in fig. 47. Basal part of uncus short, narrower and less globose than in *P. bisocularis* (fig. 45–46), near bases of uncus lobes with occasional long and thick erect hairs. Uncus lobes (figs. 45–46, 48) short and gradually narrowing towards distal margin; medial margins curved dorsad (inwards), straight to concave; mediadistal corner smoothly rounded; distal margin straight but close to laterodistal corner with short, blunt triangular projection; laterodistal corner rounded but continuing into projection on distal margin; lateral margin weakly concave for most of its length but convex at base and near laterodistal corner. Ventral (outer) surface of uncus lobes almost void of grooves near mediadistal and laterodistal corners. Hairs on surface of uncus lobes as in *P. bisocularis* but less dense.

**Female operculum.** – Operculum brownish, darkened in lateroprostomal corner and along lateral margin. Lateral margin distal of lateroprostomal lobe first weakly convex but weakly concave near laterodistal corner; laterodistal corner angularly rounded; distal margin weakly convex; mediadistal corner rounded; medial margin short, straight, and divergent.

**Female abdomen.** – Abdomen about as long as head and thorax together. Dorsal part of tergites castaneous, laterally slightly paler, tergites 3–6 with small oblong spots laterally that almost form line; sternites and ventral parts of tergites brownish. Tergites with thin whitish dusting but without distinct pattern. Posterior margins of tergites 3–4 with few short dark spinules laterally, of tergite 5 with short dark spinules except medially, of tergites 6–7 with spinules along whole length but fewer medially on tergite 6, of tergite 8 with few short spinules medially. Sternite 7 with angular posteromedial emargination in median lobe.

**Female genitalia.** – Dorsal part of pygofer dark castaneous but more brownish medially and just anterior of caudodorsal beak, remainder of pygofer brown; caudodorsal beak and distal part of ovipositor sheath dark castaneous. Dorsal margin of pygofer about as long as four preceding segments, in lateral view weakly concave; ventral margin somewhat more convex. Ovipositor sheath reaching distinctly beyond apex of caudodorsal beak; anal valve reaching about halfway to apex of caudodorsal beak.

**Measurements in mm (♀: n = 3; ♂: n = 1).** – Body length: ♂: 51.0–55.5 (53.2 ± 1.6), ♀: 48.0; head width: ♂: 16.0–16.1 (16.1 ± 0.1), ♀: 16.2; maximum pronotum width: ♂: 16.2–17.6 (16.9 ± 0.5), ♀: 17.0; tegmen length: ♂: 63.0–64.5 (64.2 ± 0.9), ♀: 66.5.

**Distribution (fig. 3)**

*P. pendelburyi* is only known from the type locality on Peninsular Thailand. The records from Bangpy Island and Malay 'Archipelago' by Metcalf (1963) are misinterpretations of comments by Moulton (1923).
Remarks

The collection date on the holotype labels was misread as April 14th 1922 and cited as such by Moulton (1923: 100). No other material was mentioned explicitly in the description so that the other two specimens cannot be considered as paratypes, even though the female now examined was labelled as paratype and a female is mentioned in the description.

Material examined. — THAILAND: Khao Luang, Nakhon Si Thammarat [Nakho a Si Thammamt], 3500-4000 ft, 13.iii.1922, H.M. Pendlebury, 1 ½ (asovai); same data, 1 ½ (asovai); same data, 3300 ft, 1.iv.1922, H.M. Pendlebury, 1 ½ holotype Platylophia pendleburyi Moulton (asovai); same data, 2000 ft, 2.iv.1922, H.M. Pendlebury, 1 ½ (asovai).

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