European Journal of Taxonomy 110: 1–19
http://dx.doi.org/10.5852/ejt.2015.110

ISSN 2118-9773
www.europeanjournaloftaxonomy.eu
2015 · Constant J.

Research article

urn:lsid:zoobank.org:pub:50EA798C-FC19-4420-954E-C679B421CFD5

The Lanternfly genus *Polydictya* (Hemiptera: Fulgoromorpha: Fulgoridae) from Sulawesi and neighbouring islands, with the description of three new species

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Abstract. The species of the genus *Polydictya* Guérin-Méneville, 1844 from Sulawesi and adjacent islands are reviewed and three new species are described: *P. bantimurung* sp. nov. (Sulawesi), *P. basirubra* sp. nov. (Sulawesi, Wowoni and Buton) and *P. pelengana* sp. nov. (Peleng). An identification key for the 6 species recorded in the area is given. *Habitus*, detailed illustrations and a distribution map are provided for all species. The male genitalia of the three new species are illustrated and described, and the male genitalia of *P. thanatos* Chew Kea Foo, Porion & Audibert, 2010 are figured and described for the first time. The genus *Polydictya* now contains 24 species.

Keywords. Indonesia, lanternbug, Fulgoroidea, Homoptera, planthopper.

Constant J. 2015. The Lanternfly genus *Polydictya* (Hemiptera: Fulgoromorpha: Fulgoridae) from Sulawesi and neighbouring islands, with the description of three new species. *European Journal of Taxonomy* 110: 1–19. http://dx.doi.org/10.5852/ejt.2015.110

Introduction

The genus *Polydictya* was erected by Guérin-Méneville (1844) to accommodate one species, *Eurybarchis* (sic!) *basalis* Hope, 1843, described from Silhet (Myanmar) and mentioned from Penang Island (Malaysia) by Guérin-Méneville (1844). Species were progressively added to the genus (Bourgoin 2014).

The genus *Thaumastodictya*, described by Kirkaldy (1902) based on one species, *T. krisna* Kirkaldy, 1902 from Sri Lanka, was synonymized under *Polydictya* by Distant (1906a). Lallemand (1959, 1963), Nagai & Porion (1996, 2004), Constant & Pham (2008), Constant (2009, 2010) and Chew Kea Foo *et al.* (2010) more recently added new species and proposed nomenclatural changes within the genus.

The genus presently contains 21 species (Bourgoin 2014). It is distributed in the Oriental region: from Sri Lanka it extends over northern India, Thailand, Vietnam and southwards to Sulawesi and its adjacent islands.

One species, *P. crassa*, was described from "South Celebes" (Distant 1906b). It was the only species known from Sulawesi until the recent descriptions of *P. katsurakoae* Nagai & Porion, 1996 and *P. thanatos* Chew Kea Foo, Porion & Audibert, 2010.

The study of recent material in the collections of BMNH, MNHL and RBINS led to the discovery of three new species which are here described, illustrated and keyed together with the three previously decribed ones.

Materials and methods

Type specimens of all species have been examined. The male genitalia were dissected as follows: the pygofer was cut from the abdomen of the softened specimen with a needle blade, then boiled for about one hour in a 10% solution of potassium hydroxide (KOH). The phallic complex was dissected with a needle blade and all pieces examined in ethanol, the whole placed in glycerine for preservation. Observations were done with a Leica MZ8 stereo microscope. Pictures were taken with a Canon EOS 300 D camera with Sigma DG Macro lens and optimized with Adobe Photoshop CS3. The inflation of the phallus was not done due to the difficulty to obtain good and replicable results, and because it is not indispensable to separate the species in the genus *Polydictya*.

For the transcription of the labels of the types, the wording on each single label is limited by square brackets.

The measurements were taken as in Constant (2004) and the following abbreviations are used:

BF = breadth of the frons
BTg = breadth of the tegmen
BV = breadth of the vertex
LF = length of the frons
LT = total length
LTg = length of the tegmen
LV = length of the vertex

Acronyms used for the collections (name of the curator in parentheses):

BMNH = Natural History Museum, London, United Kingdom (M. Webb)
EUM = Ehime University Museum, Matsuyama, Japan (H. Yoshitomi)
MHNL = Muséum d'Histoire naturelle de Lyon, France (H. Labrique, J. Clary and C. Audibert)
MNHN = Museum national d'Histoire naturelle, Paris, France (T. Bourgoin and A. Soulier)
RBINS = Royal Belgian Institute of Natural Sciences, Brussels, Belgium (W. Dekoninck)

Results

Class Hexapoda Blainville, 1816
Order Hemiptera Linnaeus, 1758
Suborder Auchenorrhyncha Duméril, 1806
Infraorder Fulgoromorpha Evans, 1946
Superfamily Fulgoroidea Latreille, 1807
Family Fulgoridae Latreille, 1807

Genus ***Polydictya*** Guérin-Méneville, 1844

Polydictya Guérin-Méneville, 1844: 358. Type species: *Polydictya basalis* (Hope, 1843) by monotypy.
Thaumastodictya Kirkaldy, 1902: 307. Type species: *Polydictya krisna* Kirkaldy, 1902 by original designation (junior synonym of *Polydictya pantherina* Gerstaecker, 1895, see Nagai & Porion 1996).

Polydictya – Walker 1851: 289 (list of species). — Stål 1866: 135 (key). — Atkinson 1885: 155 (described). — Distant 1888: 487 (compared to *Myrilla* Distant, 1888). — Karsch 1890: 63 (compared to *Anecphora* Karsch, 1890). — Gerstaecker 1895: 10 (compared to *Holodictya* Gerstaecker, 1895). — Kirkaldy 1902: 307 (compared to *Thaumastodictya* Kirkaldy, 1902). — Melichar 1903: 71 (erroneous synonymy with *Chalia* Walker, 1858). — Distant 1906a: 199 (key to Oriental genera), 215 (described, senior synonym of *Thaumastodictya*). — Kirkaldy 1907: 59 (note on publication date). — Schmidt 1907: 113 (compared to *Myrilla*, copied from Distant 1888). — Jacobi 1910: 101 (compared to *Coelodictya* Jacobi, 1910). — Schmidt 1912: 71 (compared to *Coelodictya* and *Holodictya*, comments on species). — Lallemand 1963: 7 (key to genera), 14 (key to species). — Nagai & Porion 1996: 13 (list of species, synonymies). — Constant & Pham 2008 (notes). — Constant 2009 (notes, key to species with hind wings red basally). — Constant 2010 (notes).
Thaumastodictya – Melichar 1903: 71 (description). — Distant 1906a: 215 (junior synonym of *Polydictya*).

The characters defining the genus were given by Lallemand (1963), i.e., head broad, slightly narrower than the pronotum; frons as long as broad, not carinate, largely rounded dorsally, broadened above clypeus and strongly broader than the latter; vertex at least 4 times broader than long, excavate; tegmina at least 2.5 times longer than broad, densely reticulate; clavus closed with vein A1+A2 extending up to sutural margin; hind wings almost entirely reticulate; anterior tibiae as long as femora, sometimes slightly foliaceous; hind tibiae with 4–6 lateral spines.

Identification key to the species of *Polydictya* from Sulawesi and neighbouring islands

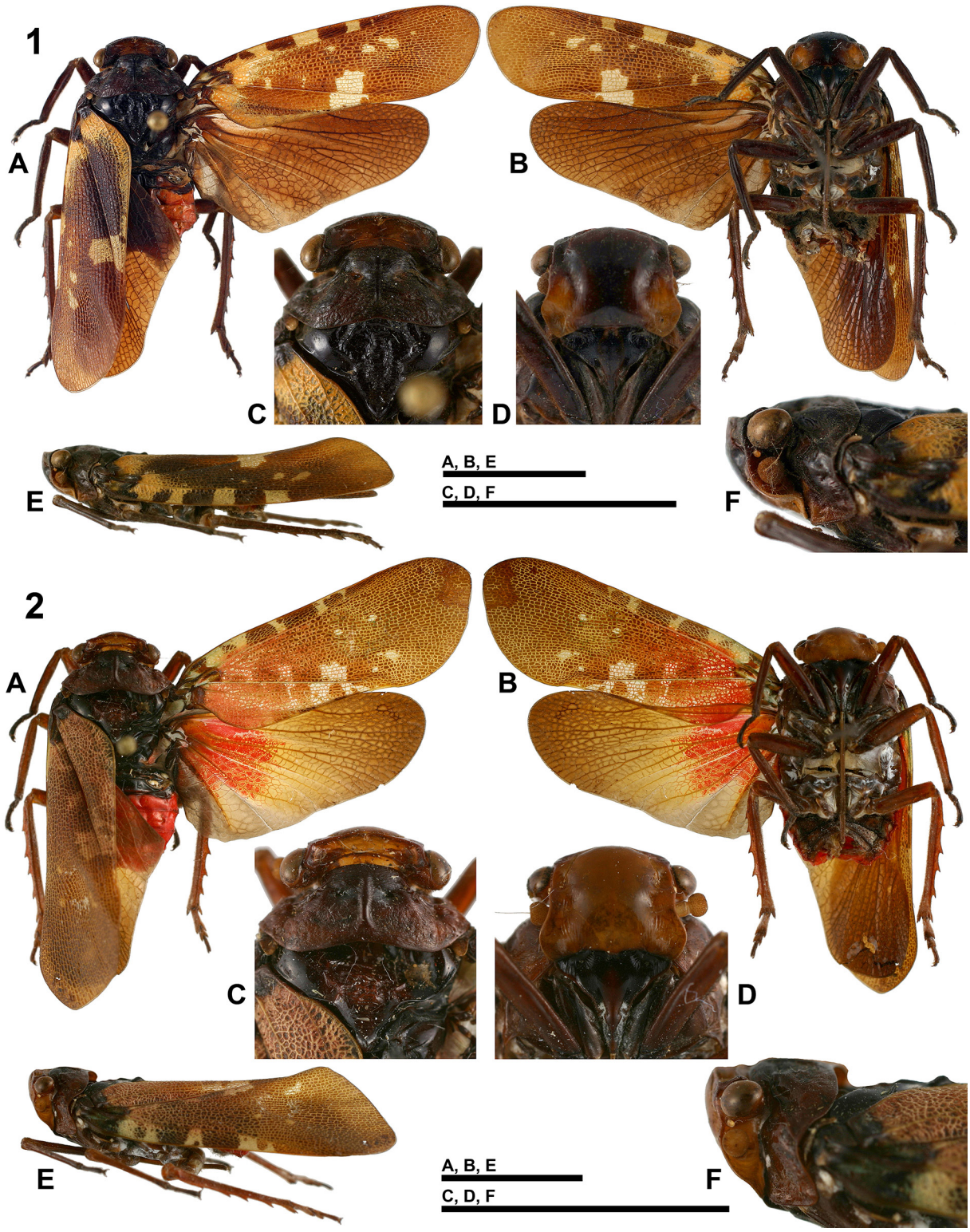
1. Dorsum of abdomen black (Figs 5A, 6A) 2
– Dorsum of abdomen red or brown (Figs 3A, 4A) 3

2. Tegmina dark olivaceous brown with small whitish spots along costal margin, claval suture and disc (Fig. 5A); frons and vertex yellow brown (Fig. 5C–D); anterior tibiae slightly laminate (Fig. 5A–B)..... ***Polydictya pelengana*** sp. nov.
– Tegmina black with irregular white tranverse bands (Fig. 6A); frons and vertex red brown (Fig. 6C–D); anterior tibiae slender, not laminate (Fig. 6A–B)..... ..... ***Polydictya thanatos*** Chew Kea Foo, Porion & Audibert, 2010

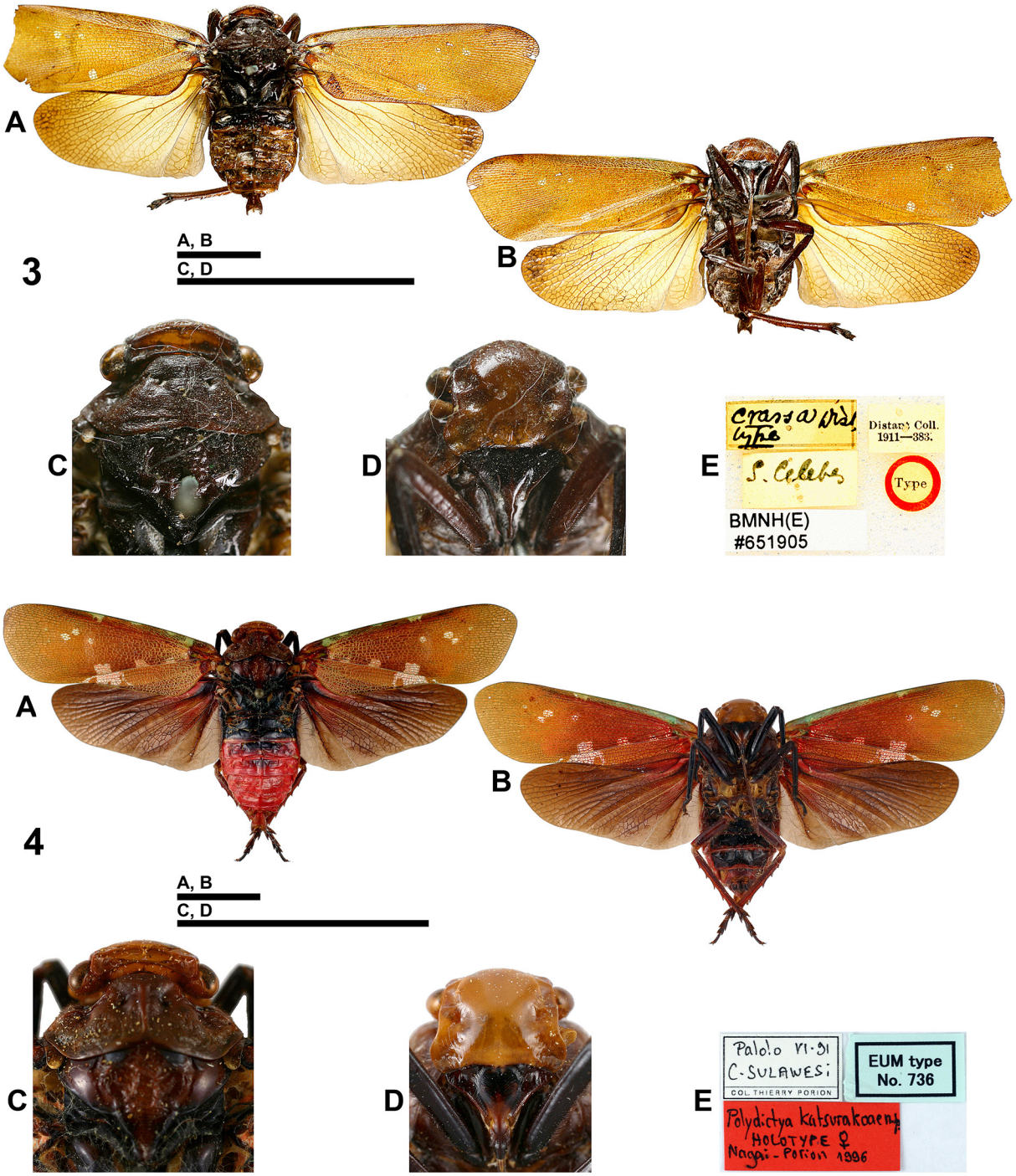
3. Frons and vertex unicolorous (Figs 3C–D, 4C–D)..... 4
– Frons black-brown with baso-lateral angles yellow brown (Fig. 1C–D) .... ***Polydictya bantimurung*** sp. nov.

4 Hind wings basally without large bright red patch (Figs 3A, 4A)..... 5
– Hind wings with a large basal bright red patch (Fig. 2 A)..... ***Polydictya basirubra*** sp. nov.

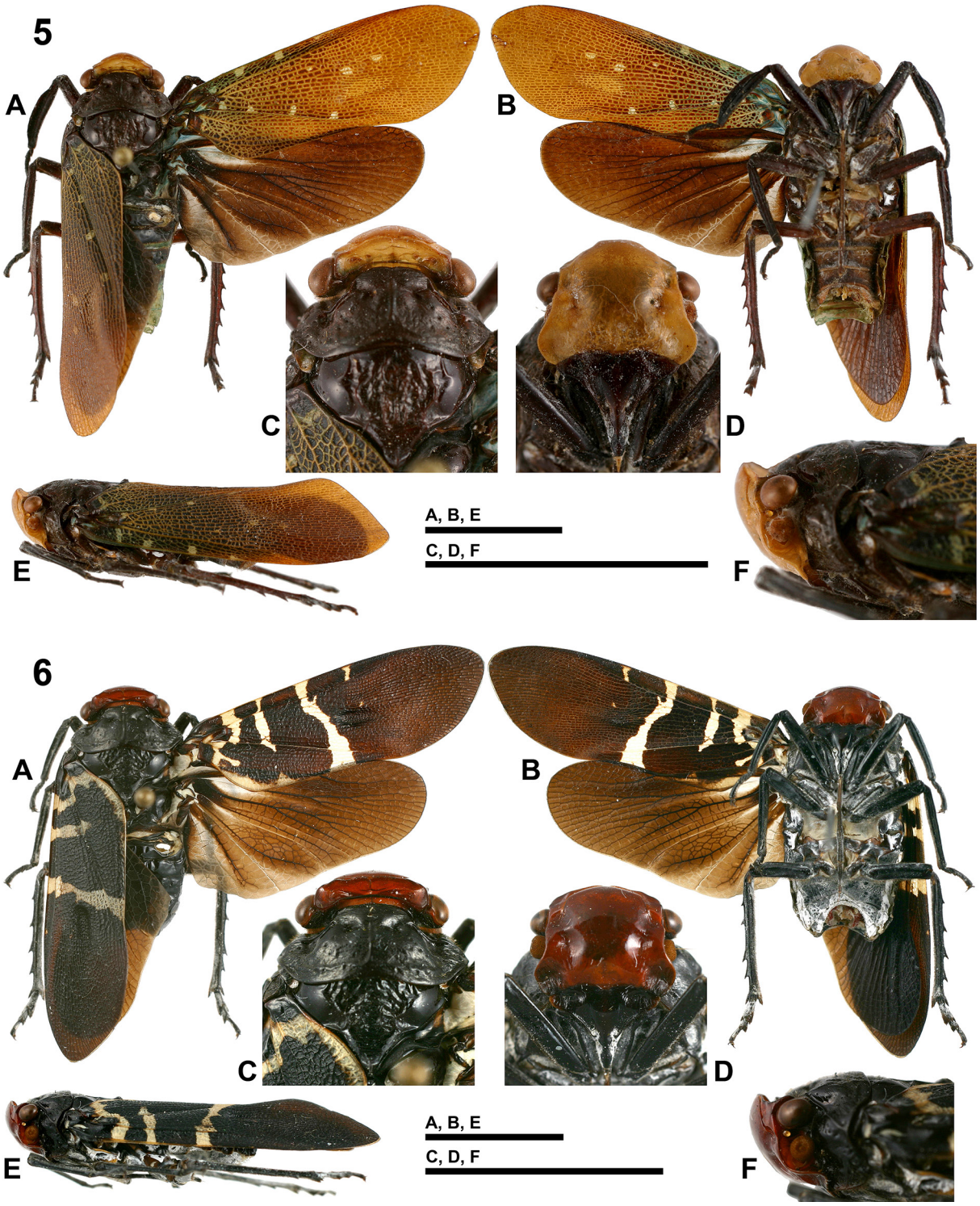
5. Tegmina nearly unicolorous, brown with a small whitish spot along claval suture and 3 small spots on disc of membrane, no spot along costal margin (Fig. 3A) and not tinged with red ventrally (Fig. 3B); tegmina slightly broader: LTg/BTg = 2.72 ..... ***Polydictya crassa*** Distant, 1906
– Tegmina brown, tinged with reddish ventrally (Fig. 4B), and with whitish spots: large one at apex of clavus, 3 along claval suture, 3–4 along costal margin and 3 on disc of membrane (Fig. 4A); tegmina slightly narrower: LTg/BTg = 2.86..... ***Polydictya katsurakoae*** Nagai & Porion, 1996



Figs 1–2. 1. *Polydictya bantimurung* sp. nov. **2**. *Polydictya basirubra* sp. nov. **A**. Habitus, dorsal view. **B**. Habitus, ventral view. **C**. Vertex, pro and mesonotum, dorsal view. **D**. Frons, normal view. **E**. Habitus, lateral view. **F**. Head and prothorax, lateral view. Scale bars = 10 mm.



Figs 3–4. 3. *Polydictya crassa* Distant, 1906. **4**. *Polydictya katsurakoae* Nagai & Porion, 1996. **A**. Habitus, dorsal view. **B**. Habitus, ventral view. **C**. Vertex, pro and mesonotum, dorsal view. **D**. Frons, normal view. **E**. Labels. Scale bars = 10 mm.



Figs 5–6. 5. *Polydictya pelengana* sp. nov. **6**. *Polydictya thanatos* Chew Kea Foo, Porion & Audibert, 2010. **A**. Habitus, dorsal view. **B**. Habitus, ventral view. **C**. Vertex, pro and mesonotum, dorsal view. **D**. Frons, normal view. **E**. Habitus, lateral view. **F**. Head and prothorax, lateral view. Scale bars = 10 mm.

Polydictya bantimurung sp. nov.
urn:lsid:zoobank.org:act:CB4E8FA9-FDC8-4197-AA6E-1E09DCBBF292
Figs 1, 7–8

Diagnosis

(1) Tegmina brown, with whitish spots: large one at apex of clavus, 2 small ones along claval suture and 3–4 on disc of membrane; external margin of clavus and 3–4 patches along costal margin, pale greenish yellow (Fig. 1A); (2) hind wings without basal red patch (Fig. 1A); (3) frons regularly rounded in dorsal view, not projecting anteriorly (Fig. 1C), dark brown with ventro-lateral angles yellow-brown (Fig. 1D); (4) anterior tibiae not laminate (Fig. 1A–B); (5) abdomen red dorsally (Fig. 1A); (6) genital segments dark brown.

Etymology

The species epithet refers to the type location, Bantimurung, and is treated as a noun in apposition.

Type material

Holotype

♂: [Coll. I.R.Sc.N.B., Sulawesi, Bantimurung, 4°54'S 119°45'E, Gift J. Constant, I.G.: 32.561] (RBINS).

Paratypes

2 ♂♂, 4 ♀♀: [Bantimurung, Sulawesi, 6.02, Coll. thierry PORION] (MHNL). Note: "6.02" on the labels of the paratypes stands for June 2002.

Description

Measurements and ratios. LT: ♂ (n = 3): 24.7 mm (23.9–25.1);♀ (n = 4): 29.0 mm (28.0–29.5); LTg/BTg = 3.24; BV/LV = 5.4; LF/BF = 0.70.

Head. Black-brown with ventro-lateral angles of frons yellow-brown (Fig. 1D, F); vertex curved and deeply grooved transversely with lowest point in middle, with all 4 margins carinate (Fig. 1C); frons slightly visible from above (Fig. 1C), convex, smooth, subquadrate with impressed, S-shaped longitudinal groove along lateral margin, starting in front of eye (Fig. 1D); clypeus narrower and shorter than frons, brown apically (Fig. 1D); labium elongate, surpassing coxae (Fig. 1B); antennae yellow-brown with scape cylindrical, elongate; pedicel bulbous (Fig. 1F).

Thorax. Black-brown with lateral pleura of pronotum yellow-brown along ventral margin; mesonotum darker than pronotum (Fig. 1C, F); pro-, meso- and metasternites brown (Fig. 1B); pronotum with transverse wrinkles, longitudinal carina and pair of impressed points on disc; mesonotum smooth with disc wrinkled; scutellum impressed on disc and with apex elevated (Fig. 1C); tegulae dark brown with posterior half yellow-brown (Fig. 1C, F).

Tegmina. (Figs 1A–C). Dark brown with whitish spots on disc: one large, subquadrate at apex of clavus, 2 small ones along claval suture and 3–4 in a longitudinal row near nodal line; external margin of clavus and 3–4 large patches along costal margin, pale greenish yellow; costal and sutural margins subparallel, apex obliquely rounded.

Hind wings. (Fig. 1A–B). Entirely dark brown, broader than tegmina.

Legs. (Fig. 1A–B). All legs dark reddish brown with tarsi I and II darker; tibiae I and II slender; tibiae III with 4–5 lateral and 7 apical spines.

Abdomen. (Fig. 1A–B). Bright red dorsally with 2 basal tergites black; black-brown ventrally; genital segments dark brown.

Male genitalia. Pygofer, anal tube and gonostyli dark brown; pygofer higher than long, with posterior margin sinuate in lateral view and showing apically rounded conical process in middle (Fig. 8A–B); anal tube elongate, 2.36 times longer than broad, broader at ⅔ of total length, strongly curved ventrally near base (Fig. 8A–B); lateral margins sinuate (Fig. 8B) and apical margin strongly notched in dorsal view (Fig. 8C); gonostyli (Fig. 8A) elongate with posterior half much broader and strong subbasal constriction in lateral view; strong tooth directed antero-ventrally at half length; apical margin subquadrate; phallic

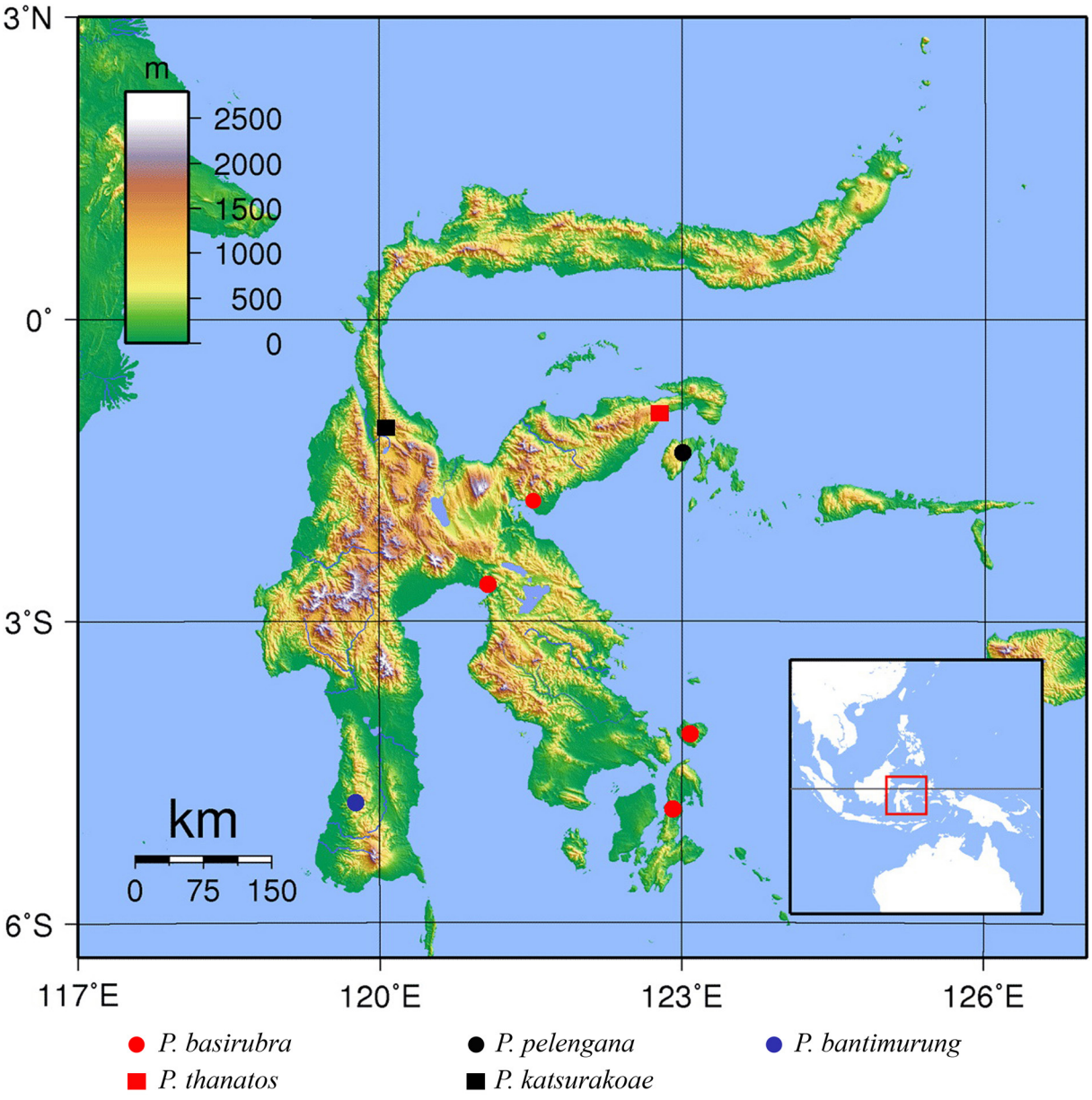


Fig. 7. Distribution map of the species of *Polydictya* Guérin-Méneville, 1844 of Sulawesi and neighbouring islands.

complex (Fig. 8D–E) with endosomal process of aedeagus laminate, slightly concave externally, showing irregular dorsal teeth along body, and apex strongly curved dorsally, hook-shaped.

Distribution

Known from South Sulawesi (Fig. 7).

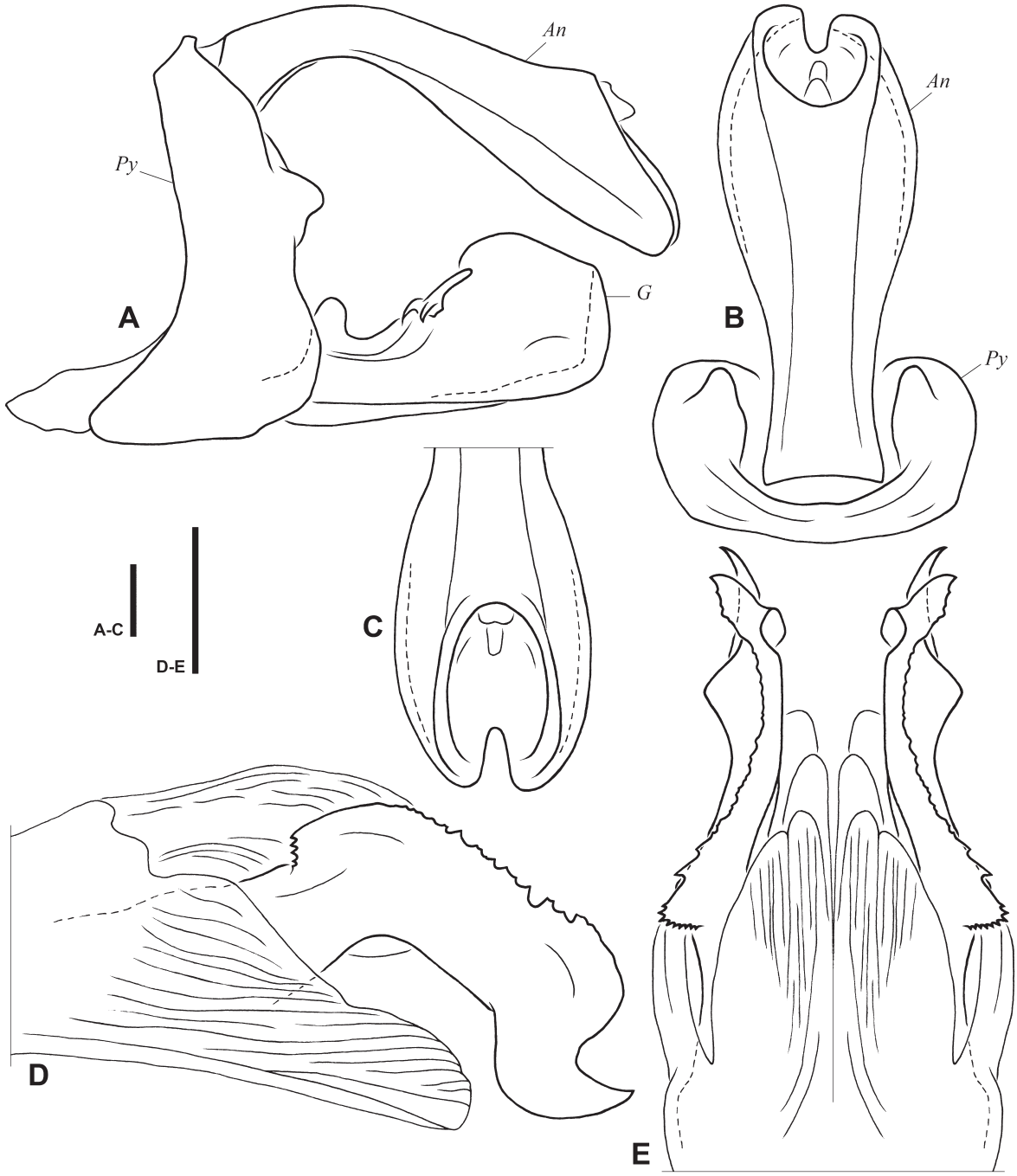


Fig. 8. *Polydictya bantimurung* sp. nov., ♂ genitalia. **A**. Pygofer, anal tube and gonostylus, left lateral view. **B**. Anal tube and pygofer, dorsal view. **C**. Apex of anal tube, postero-dorsal view. **D**. Phallic complex, lateral view. **E**. Phallic complex, dorsal view. *An* = anal tube; *Py* = pygofer; *G* = gonostylus. Scale bars = 1 mm.

Polydictya basirubra sp. nov.
urn:lsid:zoobank.org:act:10E93C3A-660E-46B5-B5C6-ECB86F8F62F8
Figs 2, 7, 9

Polydictya katsurakoae – Nagai & Porion 2002: 9 (record from Wowoni Island) [erroneous identification].

Diagnosis

(1) Tegmina brown, tinged with reddish ventrally on basal half (Fig. 2B), and with whitish markings: irregular one at apical half of clavus, 3 along claval suture, 4–5 along costal margin and 3–4 on disc of membrane (Fig. 2A); (2) hind wings with a large basal bright red patch (Fig. 2A); (3) frons regularly rounded in dorsal view, not projecting anteriorly (Fig. 2C), yellow-brown (Fig. 2D); (4) anterior tibiae not laminate (Fig. 2A–B); (5) abdomen red dorsally (Fig. 2A); (6) genital segments red.

Etymology

The species epithet is formed by the words *basis, -is* (Latin) = base, and *ruber, -bra, -brum* (adj., Latin) = red, and refers to the bright red patch at the base of the posterior wing.

Type material

Holotype

♂: [Wowoni Island, Indonesie, 09/2001, Coll. Alain Chaminade] (MHNL).

Paratypes

3 ♂♂, 2 ♀♀: 1 ♀: [Wowoni, X.02, Indonesie, Coll. Alain Chaminade] (MHNL); 1 ♂ [Wowoni Island, Indonesie, 09/01, Coll. thierry PORION] (MHNL); 1 ♂: [Malili, X.95, Sulawesi, Col. Thierry Porion] (MHNL); 1 ♀: [Buton Island, S.E. Sulawesi, Coll. thierry PORION] [Coll. T. PORION, Muséum de Lyon] (MHNL); 1 ♂: [Sulawesi Tengah: Nr. Morowali, Ranu River Area, 27.i.-20.iv.1980] [M.J.D. Brendell, B.M. 1980-280] (BMNH).

Coordinates of localities

Wowoni Island: 4°08′S 123°06′E; Buton Island: 5°03′S 122°53′E; Malili 2°38′12″S 121°5′27″E; Ranu River Area: 1°50'30"S 121°29'30"E.

Description

Measurements and ratios. LT: ♂ (n = 3): 26.7 mm (25.5–28.3); ♀ (n = 2, extrapolated): 30.0–31.1 mm; LTg/BTg = 2.61; BV/LV = 6.13; LF/BF = 0.75.

Head. Yellow-brown with clypeus dark brown to black-brown with paler median line (Fig. 2C–D, F); vertex curved with all margins carinate, and deeply grooved with lowest point in middle (Fig. 2C); frons slightly visible from above (Fig. 2C), convex, smooth, subquadrate, with impressed S-shaped longitudinal groove along lateral margin, starting in front of eye (Fig. 2D); clypeus narrower and shorter than frons (Fig. 2D); labium elongate, dark brown, surpassing hind coxae (Fig. 2B); antennae yellow-brown with scape cylindrical, elongate, and pedicel bulbous (Fig. 2D, F).

Thorax. (Fig. 2C, F). Dark brown with pronotum and sometimes disc of mesonotum paler yellow-brown; pronotum coriaceous with smooth median carina and 2 impressed points on anterior half of disc; mesonotum smooth with disc irregularly wrinkled and transverse wrinkles on scutellum; apex of scutellum elevated; tegulae dark brown with apex pale yellow-white.

Tegmina. (Fig. 2A–B, E). Brown with red hue on corium, more conspicuous ventrally; 4 subquadrate to rectangular pale yellow spots along costal margin; irregular yellow-white markings on disc along claval

joint and on clavus, and 2 spots on disc aligned longitudinally near nodal line; largest spot usually at apex of clavus; tegmina slightly broadening from base to apex and with apex oblique.

Hind wings. (Fig. 2A–B). Brown with antero-basal bright red patch covering about ¼ of total surface and not reaching posterior margin; broader than tegmina.

Legs. (Fig. 2A–B). All legs reddish-brown; tibiae I and II slender; tibiae III with (4–)5 lateral and 7 apical spines.

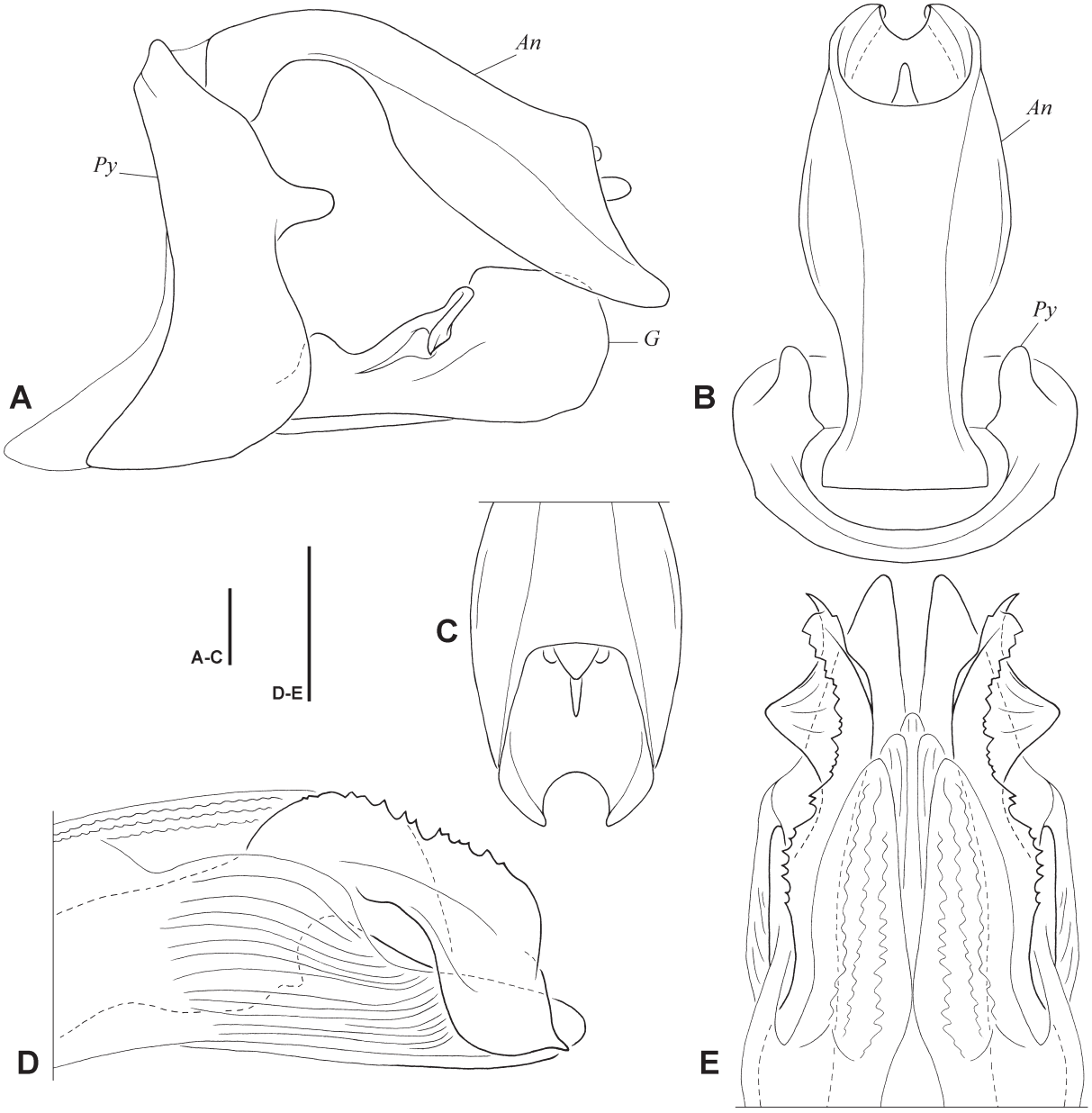


Fig. 9. *Polydictya basirubra* sp. nov., ♂ genitalia. **A**. Pygofer, anal tube and gonostylus, left lateral view. **B**. Anal tube and pygofer, dorsal view. **C**. Apex of anal tube, postero-dorsal view. **D**. Phallic complex, lateral view. **E**. Phallic complex, dorsal view. *An* = anal tube; *Py* = pygofer; *G* = gonostylus. Scale bars = 1 mm.

Abdomen. (Fig. 2A–B). Bright red with 2 basal tergites black; black ventrally; genital segments bright red.

Male genitalia. Pygofer, anal tube and gonostyli bright red; pygofer higher than long, with posterior margin sinuate in lateral view and showing digitiform process in middle (Fig. 9A–B); anal tube elongate, 2.26 times longer than broad, broader at half of total length, strongly curved ventrally near base (Fig. 9A–B); lateral margins sinuate (Fig. 9B) and apical margin strongly notched in dorsal view (Fig. 9C); gonostyli (Fig. 9A) elongate with posterior half much broader and strong subbasal constriction in lateral view; strong tooth directed antero-ventrally at half length; apical margin broadly rounded; phallic complex (Fig. 9D–E) with endosomal process of aedeagus laminate, slightly concave externally and with ventral margin laterally projecting subapically, showing irregular dorsal teeth along body and with apex pointed postero-ventrally.

Distribution

Known from Central, South and South East (Buton and Wowoni Islands) Sulawesi (Fig. 7).

Polydictya crassa Distant, 1906
Figs 3, 7

Polydictya crassa Distant, 1906b: 26 (Type in BMNH).

Polydictya crassa – Schmidt 1912: 72 (comparative note with other *Polydictya* species). — Metcalf 1947: 86 (catalogued). — Lallemand 1963: 18 (key, description). — Nagai & Porion 1996: 13; 2004: 31 (listed).

non Polydictya crassa – Nagai & Porion 2004: 7, pl. 2 fig. 13 (erroneous notes on distribution, illustration of *habitus*, misidentification of *Polydictya pelengana* sp. nov.).

Diagnosis

(1) Tegmina brown with a small, whitish spot along claval suture and 3 small, whitish spots on membrane (Fig. 3A); (2) hind wings without basal red patch (Fig. 3A); (3) frons regularly rounded in dorsal view, not projecting anteriorly (Fig. 3C), brown (Fig. 3D); (4) anterior tibiae slightly laminate (Fig. 3B); (5) abdomen not black dorsally (brown in the single specimen known, but it is possible that the original colour faded due to preservation in a fluid, e.g., ethanol) (Fig. 3A); (6) genital segments brown (same remark as under 5).

Type material examined

Holotype

♀: [S. Celebes] [crassa Dist. Type] [Distant Coll. 1911—383] [Type] [BMNH(E) #651905] (BMNH).

Measurements and ratios

LT (extrapolated): ♀ (n = 1): 30.0 mm; LTg/BTg = 2.72; BV/LV = 4.46; LF/BF = 0.79.

Distribution

The species was described from southern Sulawesi ("S Celebes") without specific locality.

Polydictya katsurakoae Nagai & Porion, 1996
Figs 4, 7

Polydictya katsurakoae Nagai & Porion, 1996: 13 (listed), 28 (description), pl. 2, fig. 29 (*habitus* illustrated).

Polydictya katsurakoae – Chew Kea Foo *et al.* 2010: 59 (comparative note).

non Polydictya katsurakoae – Nagai & Porion 2002: 9 (erroneous record from Wowoni Island based on specimens of *P. basirubra* sp. nov.).

Diagnosis

(1) Tegmina brown, tinged with reddish ventrally, and with whitish spots: large one at apex of clavus, 3 along claval suture, 3–4 along costal margin and 3 on disc of membrane (Fig. 4A–B); (2) hind wings without basal red patch (Fig. 4A); (3) frons regularly rounded in dorsal view, not projecting anteriorly (Fig. 4C), yellow-brown (Fig. 4D); (4) anterior tibiae not laminate (Fig. 4B); (5) abdomen red dorsally (Fig. 4A); (6) genital segments red.

Type material examined

Holotype

♀: [Palolo, VI.91, C. Sulawesi, Col. Thierry Porion] [*Polydictya kasturakoae* n. sp., Holotype ♀, Nagai-Porion 1996] [EUM type No. 736] (EUM)

Paratype

1 ♀: [Palolo, VI.91, C. Sulawesi, Indonesia, Col. Thierry Porion] [*Polydictya kasturakoae* n. sp., Paratype ♀, Nagai et Porion 1994] (MHNL).

Coordinates of type locality

Palolo: 1°39'S 119°54'E.

Notes

The holotype and paratype were erroneously stated to be males in the original description (Nagai & Porion 1996).

Nagai & Porion (1996) stated that the paratype was deposited in MNHN but it is currently in MHNL as most specimens of Thierry Porion's collection.

Measurements and ratios

LT (extrapolated): ♀ (n = 2): 31.2–31.6 mm; LTg/BTg = 2.86; BV/LV = 7.56; LF/BF = 0.72.

Distribution

Known from Central Sulawesi (Fig. 7).

Polydictya pelengana sp. nov.
urn:lsid:zoobank.org:act:CD1E96F8-8487-4ED1-BC2F-820CC17B37CA
Figs 5, 7, 10

Polydictya crassa – Nagai & Porion 2004: 7 (notes), pl. 2 fig. 13 (*habitus* illustrated) [erroneous identification].

Diagnosis

(1) Tegmina dark olivaceous brown with small, whitish spots: 2–4 along claval suture, 4 along costal margin and 2 on disc of membrane (Fig. 5A); (2) hind wings without basal red patch (Fig. 5A); (3) frons slightly projecting anteriorly in dorsal view (Fig. 5C), yellow-brown (Fig. 5D); (4) anterior tibiae slightly laminate externally (Fig. 5A–B); (5) abdomen black dorsally (Fig. 5A); (6) genital segments black.

Etymology

The species epithet refers to the type locality, Peleng Island.

Type material

Holotype

♂: [Coll. I.R.Sc.N.B., Indonesia, Peleng Isl., iii.2004, exchange S. Jakl, I.G.: 31.970] (RBINS).

Paratypes

1 ♂, 5 ♀♀: 1 ♂: same data as holotype (RBINS); 1 ♀: [Coll. I.R.Sc.N.B., Indonesia, Peleng Isl., ix.2012, gift from B. Kneubühler, I.G.: 32.427] (RBINS); 1 ♂: [Peleng, Apr. 2003] (MHNL); 1 ♂: [Peleng, 3.03, Coll. Alain Chaminade] (MNHL); 1 ♂: [Peleng, III.03, Coll. thierry PORION] [*Polydictya crassa* ♂, Coll. thierry Porion] (MHNL); 1 ♂: [Peleng, III.03, Coll. thierry PORION] (MHNL); 1 ♂: [Peleng Isld, 3.03, Coll. thierry PORION] (MHNL). Note: "3.03" and "III.03" on the labels of the paratypes stand for March 2003.

Coordinates of type locality

Peleng Island: 1°24′S 123°10′E.

Description

Measurements and ratios. LT: ♂ (n = 5): 28.7 mm (27.2–30.0); ♀ (n = 1): 29.7 mm; LTg/BTg = 2.80; BV/LV = 4.57; LF/BF = 0.71.

Head. Pale yellow-brown (Fig. 5C–D); vertex strongly curved and deeply grooved with lowest point in middle and with all margins carinate (Fig. 5C); frons slightly visible from above (Fig. 5C), strongly convex, smooth, subquadrate with sides projecting laterally basally and with impressed C-shaped groove along lateral margin, starting in front of eye (Fig. 5D); clypeus subtriangular, narrower and shorter than frons, black-brown (Fig. 5D); labium elongate, black-brown, surpassing hind coxae (Fig. 5B); antennae pale yellow-brown with scape cylindrical, slightly elongate and pedicel strongly bulbous (Fig. 5D, F).

Thorax. (Fig. 5C, F). Dark brown to black-brown; pronotum irregularly wrinkled with smooth longitudinal carina and 2 strongly impressed points on anterior half of disc; mesonotum with disc wrinkled and sides smooth; scutellum impressed basally, elevated apically and slightly transversely winkled; tegulae brown with apex pale yellow-brown.

Tegmina. (Fig. 5A–B, E). Dark brown to black-brown with olivaceous green hue on basal half, more conspicuous ventrally; veins and veinlets yellow-brown, maybe olivaceous green in living specimens; 3–4 small, yellow-white spots along costal margin, 2–4 along claval joint and 2 longitudinally aligned on disc near nodal line; costal and sutural margin subparallel; apex oblique with apico-sutural angle broadly rounded.

Hind wings. (Fig. 5A–B). Dark brown to black-brown with a basal milky-white elongate patch along costal vein; broader than tegmina.

Legs. (Fig. 5A–B). Dark reddish brown to nearly black; anterior legs darker; tibiae I slightly foliaceous externally; tibiae II slender; tibiae III with 4–5 lateral and 7 apical spines.

Abdomen. (Fig. 5A–B). Tergites black with membranous joints greenish; sternites brown; genital segments black-brown.

Male genitalia. Pygofer, anal tube and gonostyli black-brown; pygofer higher than long, with posterior margin sinuate in lateral view (Fig. 10A–B); anal tube elongate, 1.95 times longer than broad, broader at ⅗ of total length, strongly curved ventrally near base (Fig. 10A–B); lateral margins sinuate (Fig. 10A) and apical margin excavate in dorsal view (Fig. 10C); gonostyli (Fig. 10A) elongate with posterior half broader and strong subbasal constriction in lateral view; strong tooth directed antero-ventrally at half length; apical margin rounded; phallic complex (Fig. 10D–E) with endosomal process of aedeagus laminate,

slightly concave externally and with ventral margin laterally projecting subbasally; dorsal margin rounded in lateral view and nearly smooth, showing few slightly marked teeth near base and near apex.

Distribution

Known from Peleng Island off Central Sulawesi (see map Fig. 7).

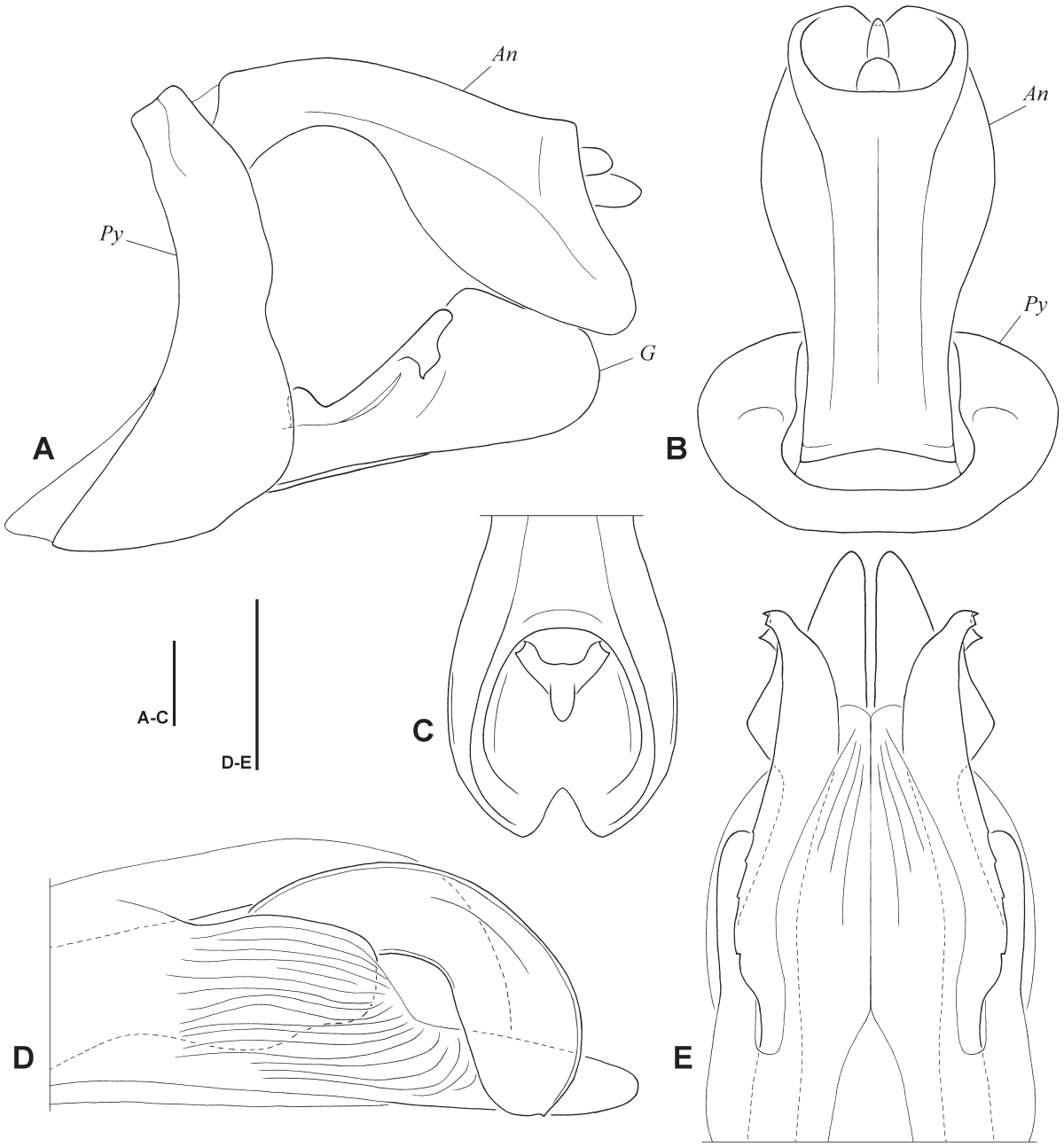


Fig. 10. *Polydictya pelengana* sp. nov., ♂ genitalia. **A**. Pygofer, anal tube and gonostylus, left lateral view. **B**. Anal tube and pygofer, dorsal view. **C**. Apex of anal tube, postero-dorsal view. **D**. Phallic complex, lateral view. **E**. Phallic complex, dorsal view. *An* = anal tube; *Py* = pygofer; *G* = gonostylus. Scale bars = 1 mm.

Polydictya thanatos Chew Kea Foo, Porion & Audibert, 2010
Figs 6, 7, 11.

Polydictya thanatos Chew Kea Foo, Porion & Audibert, 2010: 59 (described); pl. 4 figs 1-3 (*habitus* and details of head).

Diagnosis

(1) Tegmina black with 3 irregular transverse white bands before apex of clavus, one small, white line on costal cell at nodal line, and scutellar margin of clavus whitish (Fig. 6A); (2) hind wings without

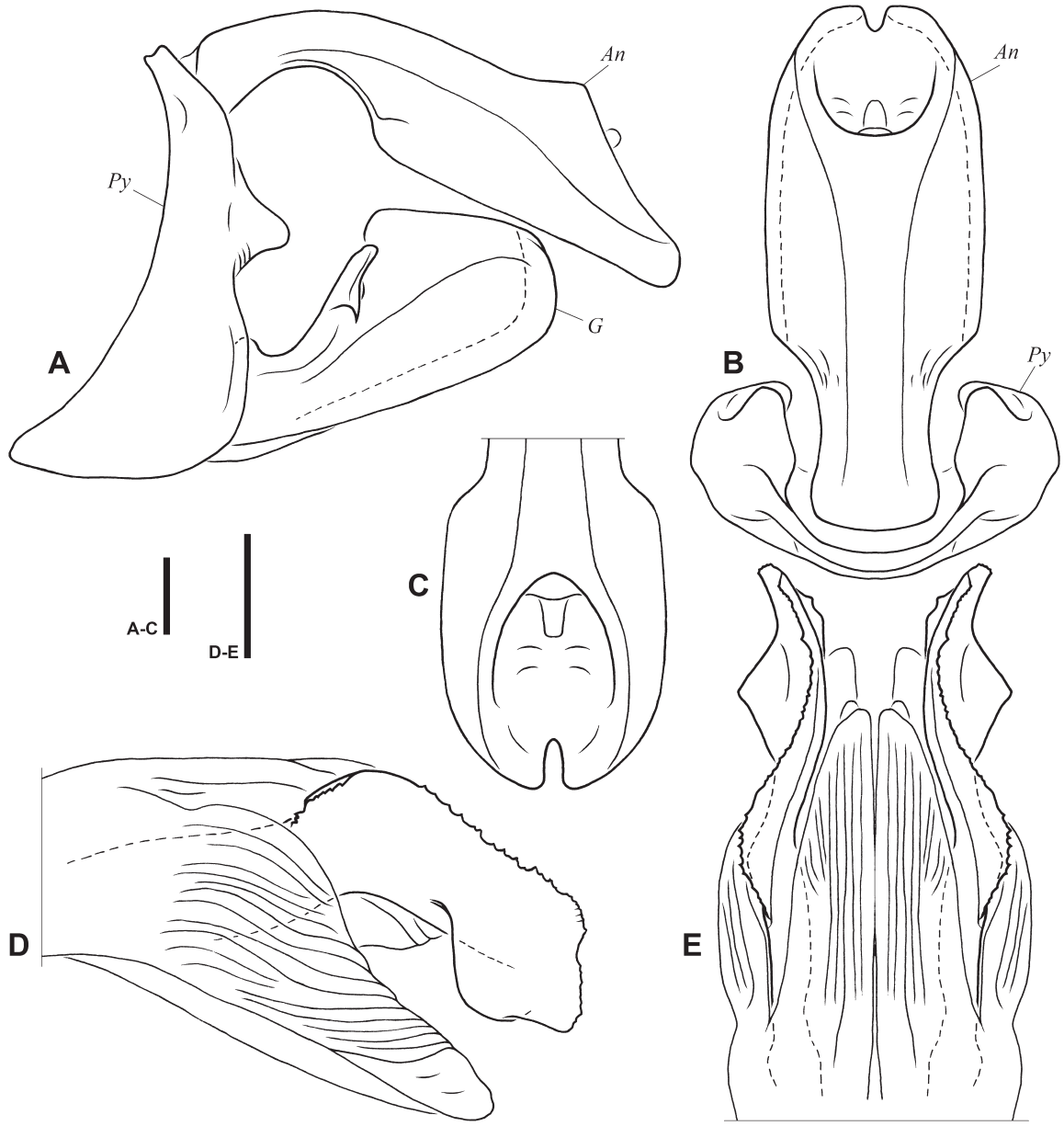


Fig. 11. *Polydictya thanatos* Chew Kea Foo , Porion & Audibert, 2010, male genitalia. **A**. Pygofer, anal tube and gonostylus, left lateral view. **B**. Anal tube and pygofer, dorsal view. **C**. Apex of anal tube, postero-dorsal view. **D**. Phallic complex, lateral view. **E**. Phallic complex, dorsal view. *An* = anal tube; *Py* = pygofer; *G* = gonostylus. Scale bars = 1 mm.

basal red patch (Fig. 6A); (3) frons regularly rounded in dorsal view, not projecting anteriorly (Fig. 6C), dark red (Fig. 6D); (4) anterior tibiae not laminate (Fig. 6A–B); (5) abdomen black dorsally (Fig. 6A); (6) genital segments black.

Type material examined

Holotype

♂: [C.E. Sulawesi, 15 Kms E. Luwuk, 300-600 m IV-2008] [*Polydictya thanatos* n. sp. S. Chew et T. Porion 2009, Holotype ♂] [Coll. Porion, 2010.54, Muséum de Lyon] (MHNL).

Paratype

1 ♂ [Indonesie, E-Sulawesi, Luwuk, 2.2009] [*Polydictya thanatos* n. sp. Paratype Mâle, S. Chew et T. Porion 2009] [Museum Paris MNHN (EH) 17722] (MNHN).

Coordinates of type locality

Luwuk: 0°55'48.32"S 122°47'45.96"E

Note

The description (Chew Kea Foo *et al.* 2010) mentions three more paratypes (two in Stanislav Jakl's collection and one in Thierry Porion's), which were not examined in the present study.

Measurements and ratios

LT: ♂ (n = 1): 27.5 mm; LTg/BTg = 2.93; BV/LV = 6.25; LF/BF = 0.79.

Male genitalia

Pygofer, anal tube and gonostyli black; pygofer higher than long, with posterior margin sinuate in lateral view and showing digitiform process in middle (Fig. 11A–B); anal tube elongate, 2.35 times longer than broad, strongly curved ventrally near base (Fig. 11A–B); sides subparallel on half of length in middle (Fig. 11B), apical margin notched in dorsal view (Fig. 11C); gonostyli (Fig. 11A) elongate with posterior half broader and strong subbasal constriction in lateral view; strong tooth directed antero-ventrally at half length; apical margin rounded; phallic complex (Fig. 11D–E) with endosomal process of aedeagus laminate, slightly concave externally and with ventral margin ventro-laterally projecting subapically; dorsal margin slightly curved laterally near base with irregular teeth, straight in lateral view and showing irregular teeth to apex; sinuate in dorsal view.

Distribution

Known from Central Sulawesi (Fig. 7).

Discussion

Considering that five of the six species of *Polydictya* from Sulawesi were described in the last twenty years, it seems likely that more species await discovery. The distribution map shows that large areas within Sulawesi and a number of neighbouring islands remain unexplored in terms of *Polydictya*. More field work should be conducted in those areas to document the insect fauna and make observations on the host-plants and biology of those insects. Although they are actively searched for by collectors, the feeding habits, larval stages and eggs remain unknown for all species treated in the present paper.

Acknowledgements

I thank all the curators listed above for the access to the material under their responsibility, Messrs Cédric Audibert, Joël Clary and Harold Labrique for their kindness and help during my visit at MHNL and Messrs Mick Webb and Max Barclay during my visit at BMNH. This study has benefitted from

funds from the European Union (Synthesys Project – Grant GB-TAF-1642) for a visit to the collection of BMNH in 2011 and from MHNL for a visit to its collections. I also thank my colleagues, Dr Patrick Grootaert and Mr Pol Limbourg (RBINS), and Prof. Thierry Bourgoin (MNHN) for their permanent support, Mr Thierry Porion for interesting discussions and Mrs Megan M. Critser for reviewing the language.

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Manuscript received: 12 June 2014
Manuscript accepted: 16 September 2014
Published on: 26 January 2015
Topic editor: Koen Martens
Desk editor: Charlotte Thionois