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A new *Pygoplatys* (*s. str.*) from Lombok Island, Indonesia (Hemiptera, Heteroptera, Tessaratomidae)

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Abstract. – *Pygoplatys* (*Pygoplatys*) *dupuisi* n. sp. (Hemiptera, Heteroptera, Tessaratomidae) is described from the Island of Lombok, Indonesia. This brings the number of species of the genus *Pygoplatys* Dallas, 1851, to thirty-two. A revised key to species of the nominotypical subgenus is given.

Résumé. – **Un nouveau *Pygoplatys* (*s. str.*) de l'île de Lombok, Indonésie (Hemiptera, Heteroptera, Tessaratomidae)**. *Pygoplatys* (*Pygoplatys*) *dupuisi* n. sp. (Hemiptera, Heteroptera, Tessaratomidae) est décrit de l'île de Lombok, en Indonésie. Ceci porte le nombre des espèces du genre *Pygoplatys* Dallas, 1851, à trente-deux. Une clé révisée des espèces du sous-genre nominatif est proposée.

Keywords. – Tessaratominae, taxonomy, morphology, identification key, Oriental Region.

Tessaratomidae Stål, 1864, is a family of tropical and subtropical Pentatomoidea which includes many large and colourful species of true bug. The main characters of the family are the exposed spiracles of the second abdominal segment, antennae with four segments (five in some genera, but in this case the third segment is shorter than the first) and the generally small size of the head. There are presently 260 species in the family (Rolston *et al*., 1993; Magnien, 2022), some of which are the largest species in the superfamily Pentatomoidea. Except for a few species (the Afrotropical and Neotropical genus *Piezosternum* Amyot & Audinet-Serville, 1843), Tessaratomidae are denizens of the Old World and Australasia. The bugs of this family are phytophagous and have been observed on a large variety of plants, especially on dicotyledonous trees [see Magnien (2022) for biological interactions]. Up to now, 92 species belonging to 23 genera of the subfamily Tessaratominae are known from Indonesia. Of these, only nine species are known from the Lesser Sunda Islands, with just three species recorded from Lombok [one of which, *Tessaratoma papillosa* (Drury, 1770), is a probable misidentification].

Pygoplatys Dallas, 1851, belongs to the subtribe Tessaratomina Stål, 1864, of the subfamily Tessaratominae Stål, 1864. It includes species ranging in size from small (12 mm) to large (30 mm and more). They all share a trapeziform shape, with apex of abdomen rounded in male specimens, toothed in female specimens. Each laterotergite VII has one tooth, each laterotergite VIII has two teeth, and tergite IX has four teeth, thus making a row of ten teeth, almost in a line. The only exception is the female of *Pygoplatys* (*s. str.*) *validus* Dallas, 1851, the ten teeth being not in a line due to the strong concavity of the body apex (Magnien *et al*., 2008). This row of ten teeth at the apex of the abdomen is a unique feature among the Tessaratominae. The male genitalia are characterized by a phallus with two pairs of conjunctival processes, the ejaculatory reservoir strongly curved basally, S-shaped in the middle, and strongly tapering apically. The external genitalia of females are characterised by laterosternites IX being completely fused. The sclerotized rings of posterior wall of vagina are

lacking or indistinct. Maternal care involving egg guarding and nymphal phoresy has been observed in at least seven different species of the genus (Gogala *et al*., 1998; Magnien *et al*., 2008).

The genus *Pygoplatys* has been divided into two subgenera (Stål, 1871), as follows.

– *Pygoplatys*: head in front of eyes moderately sinuose, mandibular plates apically converging, never armed with a tooth or a distinct angle at base.

– *Odontoteuchus* Stål, 1871: mandibular plates armed with a tooth or at least a distinct angle at base, strongly sinuose, apically parallel.

Pygoplatys is the most species rich genus of the family now including 31 species, 21 in the nominotypical subgenus and 10 in the subgenus *Odontoteuchus*. The genus is distributed from India to Moluccas, but the highest diversity of species is found in Borneo and the Philippines.

Examination of series of Tessaratomidae coming from Lombok Island in the Lesser Sunda Islands (Indonesia) revealed the existence of an unknown species belonging to the nominotypical subgenus.

Material and methods

This study is based upon a male specimen. The pygophore was dissected in water after clearing in cold 10% KOH solution for about one day. The phallus was inflated with the use of forceps. To avoid osmotic crushing, genitalia were transferred to a 10% glycerol/water solution and left to evaporate at ambient temperature. Examination of genitalia was conducted in glycerol using a semi-covered cavity slide. Habitus photographs were taken with an Olympus OM D camera, using focus bracketing. Pictures of genitalia were made with a Tucsen GT 12 camera on a Paralux microscope. Macro- and microphotographies have been assembled with the sofware HeliconFocus.

Indices. – Ocular index = D/(D-W); ocellar index = Di/(De-Di); interocellar index : Di/(W-De). D, diatone; W, width of frons; De, extraocellar distance; Di, intraocellar distance.

Taxonomy

***Pygoplatys* (*Pygoplatys*) *dupuisi* n. sp.** (fig. 1-2)

http://zoobank.org/NomenclaturalActs/207B2CF5-EDED-43D0-9AA8-0DB98CA5A8FC

Holotype: ♂, West slopes of Mt. Rinjani Lombok, Indonesia [printed] // *Pygoplatys* (*s. str.*) *dupuisi* / Holotype Ph / Magnien det 2021 [red, printed] (Muséum national d'Histoire naturelle, Paris, France).

Diagnosis. – *Pygoplatys dupuisi* n. sp. belongs to a group of species characterised by strong truncated humeral processes. Among its closest relatives, *Pygoplatys kerhzneri* Magnien, 2008, *P. tenangau* Magnien, Smets, Pluot-Sigwalt & Constant, 2008, *P. validus* Dallas, 1851, and *P. obtusus* Blöte, 1945, this species can be recognized by being the smallest (less than 20 mm), with humeral processes blunt and almost perpendicular to body axis, not projecting forward, and the uniformity of its dark reddish-brown dorsal coloration, save for the lighter hue of corial veins.

Description. – *Habitus*. Overall dark reddish brown. Antennae light reddish brown, 4th antennal segment light orange; membrane of hemelytron dark brown yellowish, slightly lighter that the hemelytron disk; ventral side of the same hue as the dorsal on the sternum, deep reddish for the abdomen; spiracles black-rimmed; legs reddish.

Head. Mandibular plates triangular, slightly concave, rounded at apices, antenniferous tubercles not visible from above, tylus shorter than and completely enclosed in the mandibular plates; 1st antennal segment not reaching apices of mandibular plates, 2nd and 3rd segments cylindrical, 3rd somewhat longer

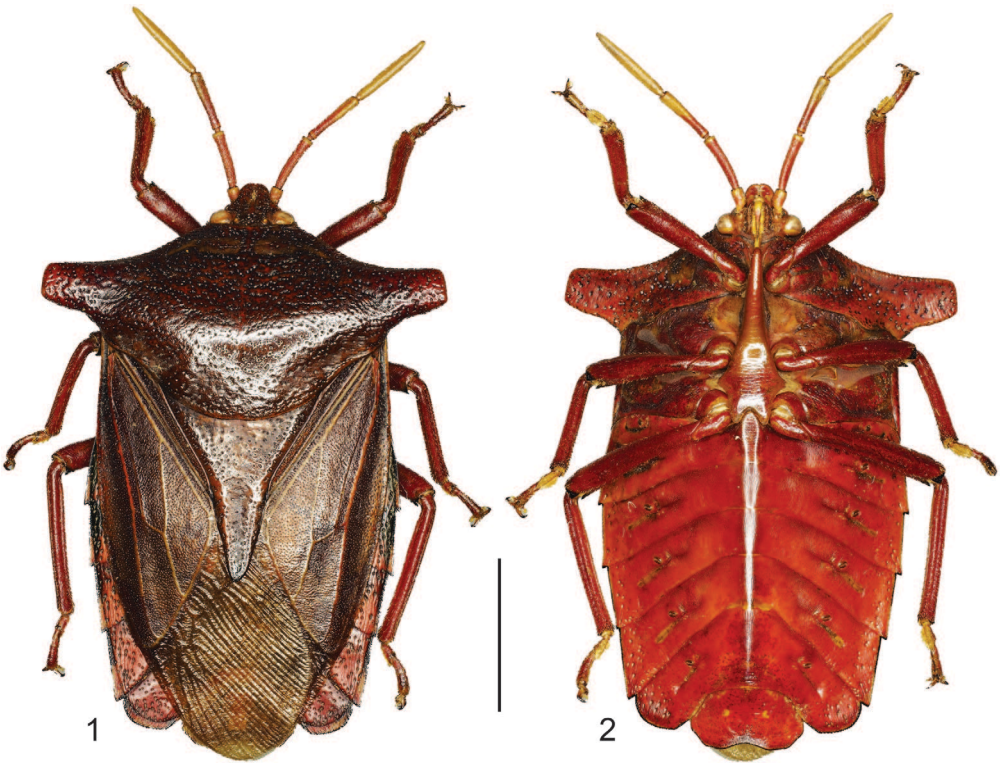

Fig. 1-2. – *Pygoplatys dupuisi* n. sp., habitus. – **1**, Dorsal view. – **2**, Ventral view. Scale 5 mm.

than the 2nd, 4th fusiform and approximately 1.5× as long as 2nd; pilosity dense, length of hairs about one sixth of antennal segment diameter; rostrum short, slightly surpassing anterior coxae.

Pronotum. Antero-lateral margins regularly concave, anterior margin with a short tooth behind the eyes, anterior margin straight, posterior margin convex, covering about one third of the scutellum length; anterior calli smooth, of a somewhat lighter hue, with a few punctation in the middle; processes transverse, surpassing the abdomen width by little less than 30 %; disk furrowed with deep, rough and irregular punctation, lighter on posterior part; sternal process long, apex blunt, surpassing the fore coxae, reaching the anterior margin of prosternum; femora simple, unarmed; first segment of tarsi swollen, with a brush of adhesive hairs on the ventral surface, second and third segments cylindro-conical, first and second segments subequal in length, third longer.

Scutellum triangular, with a lanceolate, grooved, post-frenal part; punctation lighter than on the pronotum disk.

Hemelytra. Punctation of corium fine and regular, veins yellowish; membrane with five basal cells, the fifth much larger, veins strong, parallel.

Abdomen. Posterior margin of pygophore in normal position surpassing the posterior margins of segment VII.

Genitalia. Pygophore (fig. 7) widening posteriorly, posterior margin polygonal with a shallow middle concavity, posterior opening with a straight process anterior to the sensorial lobe of paramere on each side, hypandrium short, apically angular; apophysis of paramere (fig. 4) regularly curved inwards, sensorial lobe small, triangular, with very long setae. Phallobase (fig. 3) with long sclerotized plates, hook shaped, protruding dorsally, conjunctiva with two pairs of processes, one sclerotized in latero-ventral position, scythe-shaped, with a tooth in the middle of the dorsal edge (fig. 5), the other membranous in postero-dorsal position; vesica very long, ejaculatory reservoir strongly bent at base, S-shaped in the middle, and strongly tapering at the apex.

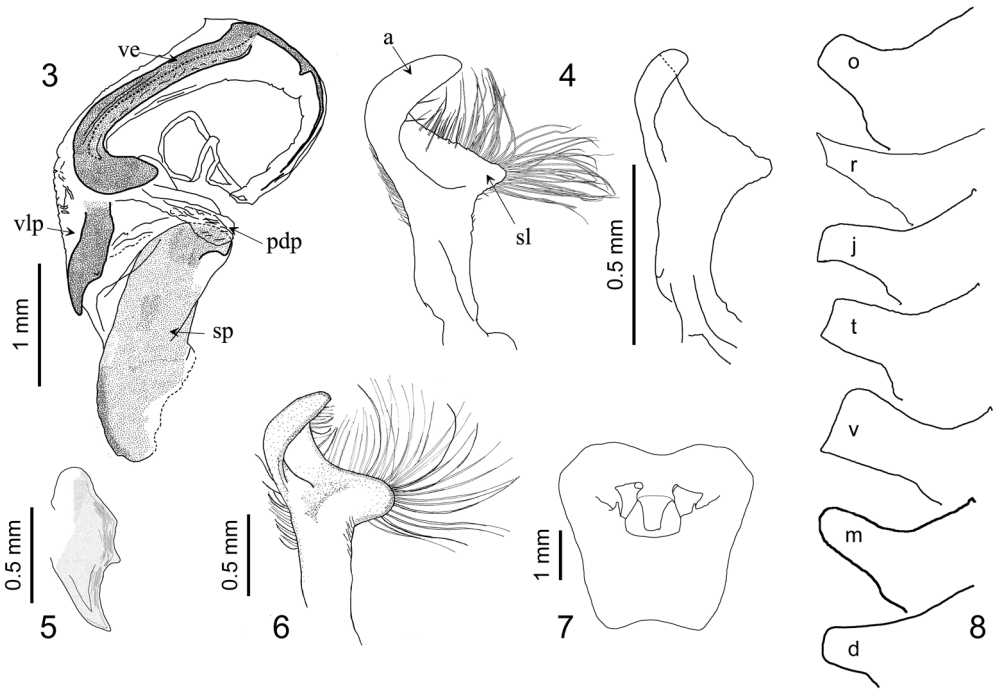

Fig. 3-8. – *Pygoplatys spp.* – **3-5**, *P. dupuisi* n. sp. : **3**, phallus, lateral view; **4**, left paramere; **5**, ventro-lateral processes of phallus. – **6**, *P. kerzhneri* Magnien, left paramere. – **7**, *P. dupuisi* n. sp., pygophore, dorsal view. – **8**, Comparative diagram of humeral processes of the pronotum (abbreviations: a, apophyse; d, *P. dupuisi* n. sp.; j, *P. jordii* Magnien; m, *P. montanus* Distant; o, *P. obtusus* Blöte; pdp, membranous postero-distal processes of conjunctiva; r, *P. minax* Vollenhoven and *P. ralandii* Ellenrieder; sl, sensorial lobe; sp, sclerified plate of the phallobase; t, *P. kerzhneri* Magnien and *P. tenangau* Magnien, Smets, Pluot-Sigwalt & Constant; v, *P. validus* Dallas; ve, vesical; vlp, sclerified ventro-lateral processes. Scales : 3, 7: 1 mm; 4-6: 0,5 mm.

Measurements. Body length: 19.0 mm; pronotum width: 13.7 mm; length of antennae: 7.5 mm; length of antennal segments I to IV (mm): 0.6: 1.9: 2.1: 2.9. Ocular index: 1.8, interocellar index: 6.50, ocellar index: 4,01.

Etymology. – This species is dedicated to the memory of Professor Claude Dupuis, one of the most renowned heteropterists of the last century.

Host plant. – Unknown.

Distribution. – Known only by the type from Lombok Island.

Discussion. – The new species belongs to a group of species of *Pygoplatys* (*s. str.*) fitted with truncated humeral processes. Up to now, it consists of nine species: *Pygoplatys montanus* Distant, 1900 (Borneo), *P. obtusus* Blöte, 1945 (Borneo), *P. minax* Vollenhoven, 1868 (Borneo, Malaysia, Thailand), *P. ralandii* Ellenreieder, 1862 (Sumatra), *P. merinjakensis* Distant, 1914 (Borneo), *P. jordii* Magnien, 2011 (Borneo), *P. tenangau* Magnien, Smets, Pluot-Sigwalt & Constant, 2008 (Sumatra), *P. kerzhneri* Magnien, 2008 (Borneo) and *P. validus* Dallas, 1851 (Borneo).

It is noticeable none of these species (save one) has been found outside Borneo or Sumatra, whereas *P. dupuisi* is found on an island nearly 500 km south of Borneo. In direct comparison, it can be easily separated from all these species, by its colour, its size, its shape and characters outlined above, but possesses two characters that set it apart from all other species in the group.

First, the shape of the humeral processes. A comparative diagram of the processes shapes is given (fig. 8). *Pygoplatys dupuisi* is the only species with processes really perpendicular to

body axis, all the other have a more or less forwards projected apex, the furthest rearwards point of the anterior pronotal margin never being at the apex.

The second character lies in the shape of the parameres (fig. 4), which have a very small triangular sensorial lobe whereas all other species[1] have a well-developed lobe, clearly protruding from the external margin of the parameres. A picture of the left paramere of *P. kerzhneri* Magnien, 2008 is given for comparison (fig. 6)

It can also be noted that *P. dupuisi* has a really dark overall hue, a character shared only with three other species of the group, *P. tenangau*, *P. kerzhneri* and *P. validus*, which are all larger or much larger and have the posterior angle of the processes acute.

To include this new species, the key to the genus *Pygoplatys* given in Magnien (2011) and modified by Magnien (2012) is revised as follows.

1. Mandibular plates armed with a tooth ..... subgenus ***Odontoteuchus*** (see Magnien, 2017)
– Mandibular plates never armed with a tooth ..... subgenus ***Pygoplatys*** **2**
2. No humeral processes, at most the humeral angle slightly protruding **3**
– Humeral processes present, more or less developed **4**
3. Humeral angle acute, abdomen and pronotum of the same width; species known from Moluccas Islands ..... ***P. subrugosus*** Vollenhoven
– Humeral angle rounded, pronotum wider than abdomen; species known from Thailand and Laos .... ***P. auropunctatus*** Blöte
4. Humeral processes with acute apex **5**
– Humeral processes with truncated or rounded apex **13**
5. Forewings reddish brown, lighter veins contrasting strongly with the background **6**
– Forewings showing no particular contrast between vein and background **8**
6. Humeral processes projected forwards, nearly reaching the level of the apex of the head .... ***P. lunatus*** Distant
– Humeral processes perpendicular to body axis, not projected forwards **7**
7. Pronotum about two times wider than abdomen ..... ***P. lancifer*** Walker
– Pronotum about one and a half time wider than abdomen .... ***P. zonatus*** Stål, 1863 (syn.? ***P. forticornis*** Walker)
8. Humeral processes perpendicular to body axis **9**
– Humeral processes projected forwards **10**
9. Humeral processes less important, ratio of body length versus pronotum width about 3/2 .... ***P. ingenuus*** (Walker, 1868)
– Humeral processes more important, ratio of body length versus pronotum width about 4/3 .... ***P. bovillus*** Stål
10. Humeral processes less important, with a metallic green tinge on the rear part .. ***P. shelfordi*** Distant
– Humeral processes more important, no metallic tinge on the rear part **11**
11. Humeral processes projected forwards, surpassing head anteriorly ..... ***P. tauriformis*** Distant
– Humeral processes less projected forwards, not reaching fore margin of pronotum **12**
12. Abdomen margins parallel, abdomen about as wide as maximum width of forewings, pygophore of males clearly surpassing posterior margin of segment VII ..... ***P. firmatus*** (Walker)
– Abdomen margins convex, abdomen somewhat wider than maximum width of forewings, pygophore of males not reaching posterior margin of segment VII ..... ***P. acutus*** Dallas
13. Humeral processes perpendicular to body axis ..... ***P. dupuisi*** n. sp.
– Humeral processes pointing forwards **14**
14. Apex of humeral processes blunt **15**
– Apex of humeral processes with at least one clear angle **16**
15. Pronotum width surpassing abdomen width by one third, veins concolorous with the background .... ***P. montanus*** Distant
– Pronotum width surpassing abdomen width by less than one fourth, lighter hue of veins contrasting with the background ..... ***P. obtusus*** Blöte

[1] With the exception of *Pygoplatys merinjakensis* and *P. obtusus*, which are known to me only by the female types.

16. Humeral processes margins converging, truncature oblique .... ***P. minax*** Vollenhoven, 1868 (syn.? ***P. ralandii*** Ellenrieder)
– Humeral processes margins parallel, truncature straight **17**
17. Body length almost equal to width of pronotum ..... ***P. merinjakensis*** Distant
– Body length greater than width of pronotum, at least by 15% **18**
18. Length of antennae more than 0.55 times pronotum width ..... ***P. jordii*** Magnien
– Length of antenna less than half of pronotum width **19**
19. Lighter transverse stripe of pronotum including callosities .... ***P. tenangau*** Magnien, Smets, Pluot-Sigwalt & Constant
– Lighter transverse stripe of pronotum located behind the callosities **20**
20. Medium size (about 20 mm), lighter hue of veins contrasting with the background .... ***P. kerzhneri*** Magnien
– Larger size (about 30 mm), veins quasi concolorous ..... ***P. validus*** Dallas

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