

**A new *Pygoplatys* from Mindanao Island, Philippines
(Hemiptera: Heteroptera: Tessaratomidae)**

**Nový druh rodu *Pygoplatys* z ostrova Mindanao, Filipíny
(Hemiptera: Heteroptera: Tessaratomidae)**

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Abstract. *Pygoplatys* (*Odontoteuchus*) *streittoi* sp. nov. (Hemiptera: Heteroptera: Tessaratomidae) is described from the Island of Mindanao, Philippines. This brings the number of species of the genus *Pygoplatys* Dallas, 1851 to thirty-one. Illustration of the three last instars of nymphs is given. A revised key to species of the subgenus is given.

Résumé. *Pygoplatys* (*Odontoteuchus*) *streittoi* sp. nov. (Hemiptera: Heteroptera: Tessaratomidae) est décrit de l'île de Mindanao, aux Philippines. Ceci porte le nombre des espèces de ce genre *Pygoplatys* Dallas, 1851 à trente et une. Les trois derniers stades des juveniles sont illustrés. Une clé révisée des espèces du sous-genre est proposée.

INTRODUCTION

Tessaratomidae is a family of tropical and subtropical Pentatomoidea including large and colourful true bugs. The main characters of the family are the exposed spiracle of the second abdominal segment, the antennae with four segments (five in some genera, but in this case the third one is shorter than the first) and the generally small size of the head. There are presently 253 species in the family (Rolston et al. 1994, Magnien 2017), some of which are the largest species in the superfamily Pentatomoidea. Except for a few species (the Afrotropical and Neotropical genus *Piezosternum* Amyot & Serville, 1843), Tessaratomidae are denizens of the Old World and Australasia. The bugs of this family are phytophagous, they have been observed on a large variety of plants, especially on dicotyledonous trees (see Magnien 2017 for biological interactions). Up to now, 19 species belonging to 5 genera of the subfamily Tessaratominae are known from the Philippines.

Pygoplatys Dallas, 1851 includes species ranging in size from small (12 mm) to large (30 mm and more). They all share a trapeziform shape, with the 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 *P. (Pygoplatys) validus* Dallas, 1851, the ten teeth being not in line due to the strong concavity of the body apex (see Magnien et al. 2008). This row of ten teeth at the apex of the abdomen is a unique feature among the Tessaratomini. The male genitalia are characterized by a phallus with two pairs of conjunctival processes, an ejaculatory reservoir which is strongly curved at the base,

S-shaped in the middle, and strongly tapering at the apex. The external genitalia of females are characterized by laterosternites IX completely fused. The sclerotized rings of the 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* s. str.: 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 the Moluccas, but the highest diversity of species occurs in Borneo and the Philippines.

Examination of series of Tessaratomidae coming from the Philippines revealed the existence of an unknown species belonging to the subgenus *Odontoteuchus* Stål, 1871. With nine species in the archipelago, this discovery confirms the Philippines as a hotspot of *Pygoplatys* biodiversity.

MATERIAL AND METHODS

This study is based on a series of 61 specimens, males, females and immatures. Pygophore and female abdomen were dissected in water after clearing in cold 10% KOH solution for about one day. The phallus was inflated with the aid of forceps. To avoid osmotic crushing, genitalia have been transferred to a 10% glycerol/water solution, left to evaporate at ambient temperature. Examination of genitalia was conducted in glycerol using a semi-covered cavity slide. Pictures of habitus were taken with an Olympus OM D camera, using focus bracketing. Pictures of genitalia were made with a Tucson IHS 1000 on a Paralux microscope. Macro- and micrographs have been assembled using the CombineZP software.

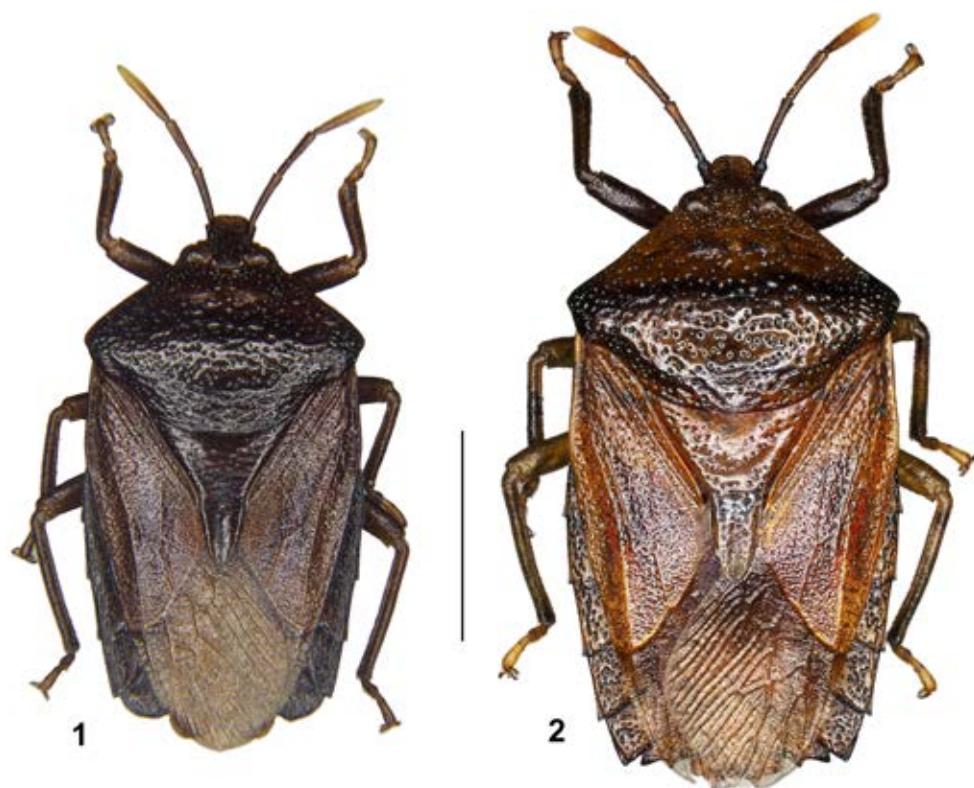
The specimens are deposited in the following collections:

JSMF	Jean-Claude Streito's private collection, Montpellier, France;
MNHN	Muséum national d'Histoire naturelle, Paris, France;
NMPC	National Museum (Natural History), Prague, Czech Republic;
PMPF	Philippe Magnien's private collection, Paris, France.

Pygoplatys (Odontoteuchus) streittoi sp. nov.

Type material. Holotype: ♂, 'May – Wao, Lanao del / Sur, Mindanao, Philip- / pines Via I. Lumawig [printed] / *Pygoplatys streittoi* / Holotype Ph / Magnien det 2017 [red, printed]' (MNHN). Paratypes: **PHILIPPINES: Mindanao:** same data as holotype, collected from April to November (1 ♀ – MNHN; 1 ♂ 1 ♀ – JSMF; 1 ♂ 1 ♀ – NMPC; 18 ♂♂ 20 ♀♀ – PMPF); Mount Apo, South Cotabato (1 ♂ – PMPF); Cotabato (1 ♂ 1 ♀ – PMPF); Zamboanga del Norte (1 ♂ – PMPF); Agusan del Norte, Esperanza (1 ♂ – PMPF); Bukidnon (2 ♂♂ 1 ♀ – PMPF). Immatures (non-types): same data as holotype, 9 specimens of instars 3 to 5 (PMPF).

Diagnosis. This species can be recognized at once by its very small size, the length not exceeding 14 mm for the male and 16 mm for the female, about 2 mm less than the smallest specimens of any other species in the genus, the simple shape of its pronotum, devoid of humeral process and about as wide as the abdomen, its relative slenderness, large head, overall brownish coloration. The sternal process is the shortest in the subgenus, it reaches at



Figs 1–2. *Pygoplatys streittoi* sp. nov., habitus. 1 – male; 2 – female. Scale 5 mm.

Obr. 1–2. *Pygoplatys streittoi* sp. nov., habitus. 1 – samec; 2 – samice. Měřítko 5 mm.

most the back of the anterior coxae, whereas it reaches at least to the middle of the anterior coxae to the posterior margin of head in all the other species of the subgenus, save for some specimens of *P. thoreyi* Dorn, 1863.

Description. Habitus (Figs 1–2). Overall dark brownish, the hemelytron of a somewhat lighter hue, particularly in the female. Antennae brownish, the apex of the 4th antennal segment yellow; membrane of hemelytron brown-yellowish, lighter than the hemelytron disk; ventral side pitch brown for the males, somewhat lighter for the female; spiracles yellow; femora and sternal process dark brown, tibiae of lighter hue and tarsi light brown.

Head. Mandibular plates narrow, rounded at apices, anteocular tooth very reduced, antenniferous tubercles visible from above, clypeus 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 shorter than the 2nd, 4th fusiform and by about 25% longer than 2nd; pilosity dense, length of hairs about one fourth of segment diameter; rostrum short, slightly surpassing anterior coxae.

Pronotum octagonal, antero-lateral margins straight, anterior end with a short tooth behind the head, anterior margin concave, posterior margin convex, covering about one third of the scutellum; anterior calli smooth, slightly marked; lateral margins transversally wrinkled; disk

furrowed with deep, rough and irregular punctation, lighter on anterior calli and posterior part; sternal process relatively short, apex blunt, not reaching posterior margin of fore coxae; 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 subequal in length, third longer.

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

Hemelytron. Punctation fine and regular; membrane with four basal cells, the fourth much larger, veins strong, parallel.

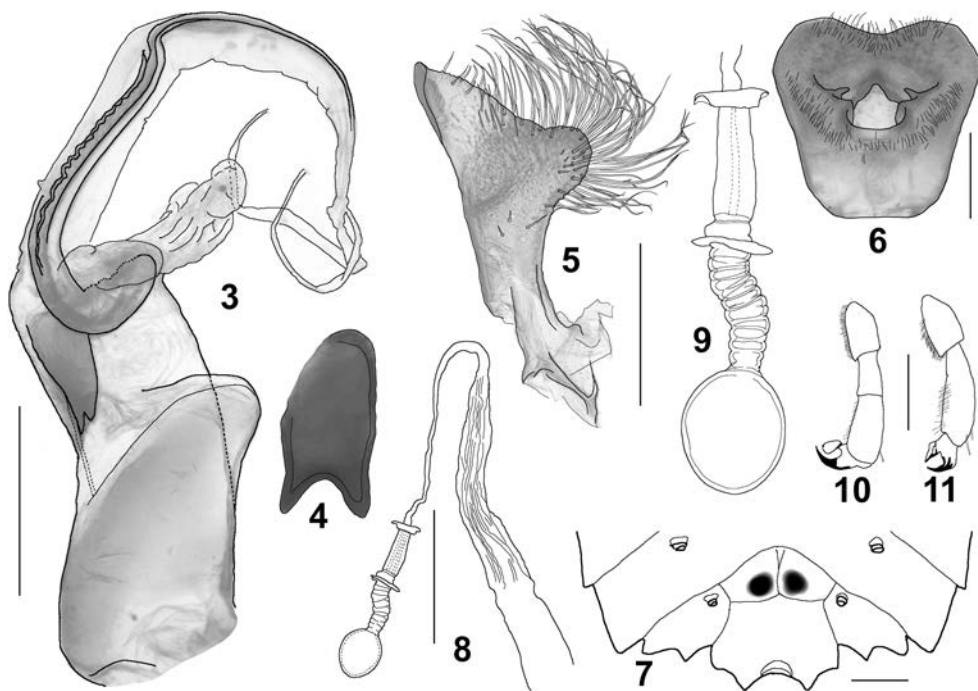
Abdomen. *Male.* Posterior margin of pygophore in normal position surpassing the posterior margins of segment VII. *Female.* (Fig. 7): ventral side finely granulated, teeth of laterotergites VII and VIII in line, laterotergites IX fused, with 2+2 teeth, apical one largely surpassing the subapical one. A black spot at the internal posterior angle of gonocoxite VIII.

Male genitalia (cf. Figs 3–6): pygophore (Fig. 6) widening posteriorly, posterior margin polygonal with a very shallow concavity, posterior opening with a straight process anterior to the sensorial lobe of paramere on each side; apophysis of paramere (Fig. 5) regularly curved inwards, not triangular, sensorial lobe with very long setae. Phallosome (Fig. 3) with 1+1 sclerotized protruding plates dorsally, conjunctiva with two pairs of processes, one sclerotized in antero-ventral position, symmetrically bifurcated (Fig. 4), and 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.

Female genitalia. External genitalia (Fig. 7) as in the other species of the genus (see Magnien et al. 2008), 9th laterotergites surpassing the apex of abdominal segment VII by about the third of its length. Spermatheca (Fig. 8): apical receptacle (Fig. 9) ovoid, connected to the intermediate part (pumping region) by a long distinctly tubular neck about as long as the intermediate part; intermediate part with well-developed proximal and distal flanges; spermathecal duct bipartite: posterior part wide and folded on the first two thirds, lanceolate, anterior part long and thin, about as long as the folded part.

Measurements (mean (minimum–maximum)). *Males* (n = 8): body length: 12.8 mm (12.2–13.7); pronotum width: 6.1 mm (6.1–6.8); length of antennae: 5.2 mm (5.0–5.5); mean length of antennal segments I to IV (mm): 0.6: 1.4: 1.3: 1.9. *Females* (n = 5): body length: 15.2 mm (13.7–15.9); pronotum width: 7.8 mm (6.7–8.3); length of antennae: 5.5 mm (5.3–5.7); mean length of antennal segments I to IV (mm): 0.6: 1.6: 1.4: 1.9.

Immatures. The third to fifth-instar nymphs of *P. streittoi* sp. nov. are here illustrated (Figs 12–17) from dry specimens. As it is generally the case in Tessaratominae, nymphs are very flat in all known instars. Body almost rectangular in the three last instars. General coloration: strongly contrasting between yellow and black in the third and fourth instar, light to dark brown in the fifth, dorsally and ventrally; the third and the fourth instar differ in the distribution of the yellow patterns, the most conspicuous being the entirely yellow tergite VII of the 4th instar, save a central black spot. Outer margin of thorax and abdomen serrate, bearing very short setae. Dorso-abdominal scent glands open between terga III–IV, IV–V, V–VI; strongly prominent yellow bulge bearing the median and posterior glands. In male and female the fifth instars (Figs 14–15) are conspicuously different, in the shape of the posterior angle of the abdominal segment VII, much more rounded in the male, and the presence of a medial groove in sternite VIII of the female (Figs 16–17).



Figs 3–11. 3–10 – *Pygoplatys streittoi* sp. nov. 3 – penis, lateral view; 4 – right sclerotized antero-ventral process; 5 – left paramere; 6 – pygophore, dorsal view; 7 – apex of abdomen, female, ventral view; 8 – spermatheca; 9 – intermediate part and apical receptacle of spermatheca; 10 – tarsus. 11 – *Pygoplatys berendi* Magnien, 2011, tarsus. Scale bars: Figs 3, 6, 7, 8, 10, 11: 1 mm; Fig. 5: 0.5 mm.

Obr. 3–11. 3–10 – *Pygoplatys streittoi* sp. nov. 3 – penis, pohled z boku; 4 – pravý sklerotizovaný antero-ventrální výběžek; 5 – levá paramera; 6 – pygofor, dorzální pohled; 7 – apex zadečku, samice, ventrální pohled; 8 – spermatéka; 9 – střední část a apikální receptakulum spermatéky; 10 – tarsus. 11 – *Pygoplatys berendi* Magnien, 2011, tarsus. Měřítka: Obr. 3, 6, 7, 8, 10, 11: 1 mm; Obr. 5: 0,5 mm.

Measurements (mean). 3th instar: 8.2 mm; 4th instar: 9.1 mm; 5th ♂ instar: 9.8 mm; 5th ♀ instar: 12.5 mm.

Etymology. This species is dedicated to our friend and colleague Jean-Claude Streito, in recognition of the tremendous work he is doing as manager of the Faune de France series.

Host plant. Unknown.

Distribution. All the specimens are recorded from northern regions of Mindanao Island.

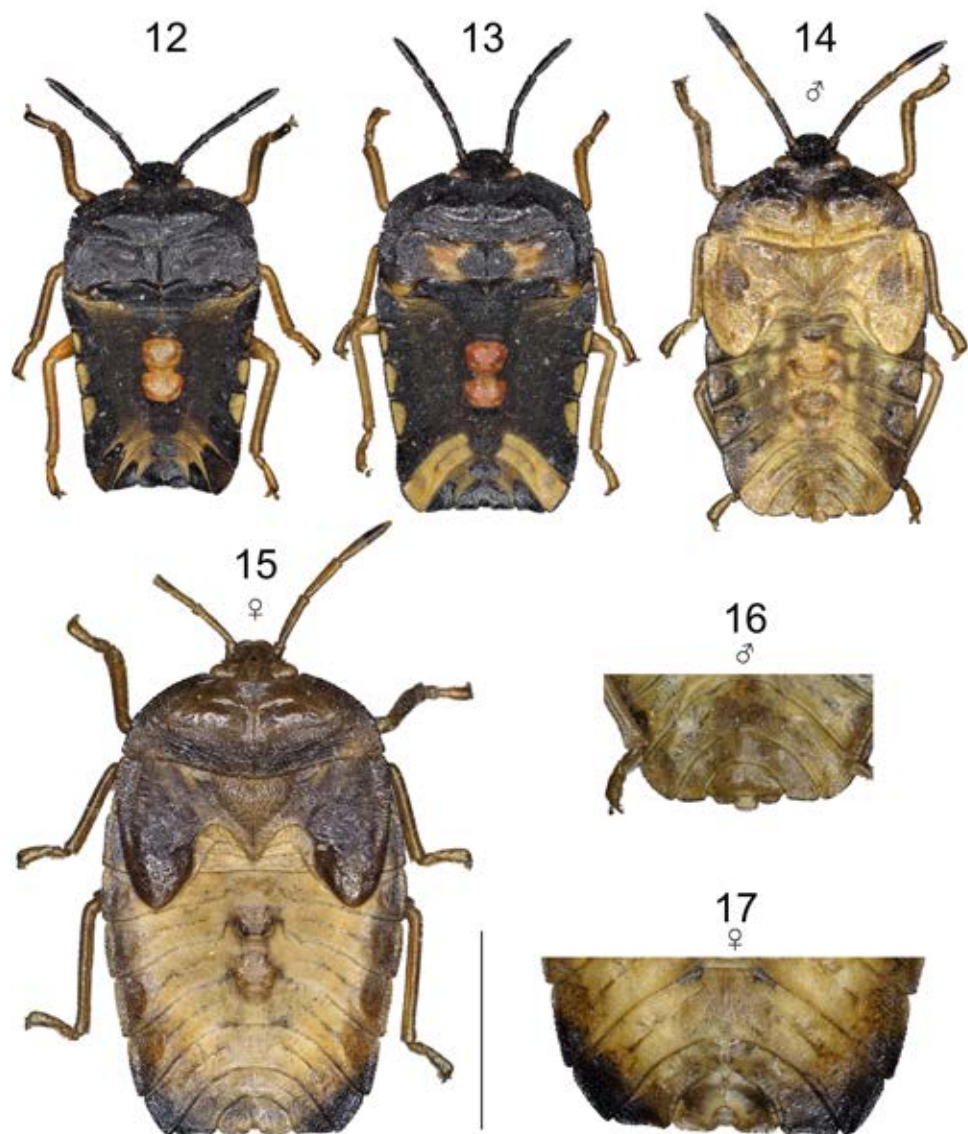
Differential diagnosis. The new species belongs to the species group of *Odontoteuchus* that lack humeral processes. Up to now this group consists of four species, *Pygoplatys* (*Odontoteuchus*) *berendi* Magnien, 2011 (Indonesia: Sulawesi), *P. (O.) celebensis* Breddin, 1901 (Indonesia: Sulawesi), *P. (O.) haedulus* Stål, 1871 (Philippines: Leyte, Mindanao), and *P. (O.) rosulentus* Stål, 1871 (Philippines). In its general habitus and its coloration, it is closer to *P. berendi* than to the other three which are larger (> 17 mm (♂), 19 mm (♀)), of much lighter hue, and with sharp humeral angles, largely surpassing the base of abdomen. The most conspicuous character to separate the two species is the tarsi. Like nearly all members of the subfamily Tessaratominae, *P. streittoi* has three-segmented tarsi (Fig. 10),

whereas *P. berendi* has two-segmented tarsi (Fig. 11), a character which was overlooked in the original description by Magnien (2011). There are several other characters which separate the two species. *Pygoplatys streittoi* sp. nov. has a much bigger head, which can be characterized by the ratio width of pronotum versus diatone which is generally less than 3.0 (in one extreme specimen at 3.2) for *P. streittoi*, more than 3.6 (3.6–4.0) for *P. berendi*, and the antocular tooth of the jugum is much less developed in *P. streittoi* than in *P. berendi*. *Pygoplatys streittoi* is also more slender with a ratio body length / pronotum width about 1.9 (1.85–1.92), only about 1.6 (1.61–1.65) for *P. berendi*. The pronotum of *P. berendi* is more transverse, its antero-lateral margin concave, with punctures of middle size, numerous, in small groups, leaving smooth areas, while *P. streittoi* has straight antero-lateral margin and more even and much coarser punctation.

Despite the external similarity, the male genitalia of *P. streittoi* and *P. berendi* differ in the shape of pygophore and penis. The most conspicuous difference lies in the shape of the sensorial lobe of the paramere which is much more protruding in *P. berendi* (see Magnien 2011: Fig. 3(c)) than in *P. streittoi* sp. nov., which is more similar to those of *P. pluotae* Magnien, 2008 and *P. thoreyi*. Regarding the female genitalia, the main differences in the spermatheca are the relative length of the anterior part versus the posterior part of the ductus, 0.66 in *P. streittoi* sp. nov., 0.5 in *P. berendi*, and that of the folded part of the posterior ductus, 0.66 of its total length for *P. streittoi* sp. nov., 0.5 in *P. berendi*. *Pygoplatys streittoi* sp. nov. also displays a complete development of the two flanges of the intermediate part of the spermatheca, a character found within the subgenus *Odontoteuchus* only in *P. longiceps* Stål, 1871, *P. rideri* Magnien, 2008 and *P. raingeardi* Magnien, 2012 (Magnien 2008, 2012).

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

- 20 Tarsi three-segmented. 21
- Tarsi two-segmented. *P. berendi* Magnien, 2011
- 21 Humeral processes present, more or less developed. 22
- No real humeral processes, pronotum angular-octagonal. 26
- 22 Humeral processes projected forwards. 23
- Humeral processes transverse. 25
- 23 4th antennal segment longer than 2nd by more than 25%, apical denticulation of female abdomen reduced. 24
- 4th antennal segment longer than 2nd by only about 5%, apical denticulation of female abdomen deep.
- *P. rideri* Magnien, 2008
- 24 Smaller size (body length 18–21 mm (♂), 20–24 mm (♀)), unicolorous. *P. pluotae* Magnien, 2008
- Larger size (body length 21–23 mm (♂), 23–27 mm (♀)), bicolorous. *P. raingeardi* Magnien, 2012
- 25 Head in front of eye clearly longer than width of juga. *P. longiceps* Stål, 1871
- Head in front of eye shorter than width of juga. *P. thoreyi* Dohrn, 1863
- 26 Antero-lateral margin of pronotum concave. *P. haedulus* Stål, 1871
- Antero-lateral margin of pronotum almost straight. 27
- 27 Smaller (♂ < 14 mm, ♀ < 15 mm), pronotum punctation very coarse, coloration pitch brown.
- *P. streittoi* sp. nov.
- Larger (♀ > 18 mm), pronotum punctation thin, coloration light brown. 28
- 28 Second antennal segment 0.9× as long as width of head, humeral angle of pronotum very acute.
- *P. celebensis* Breddin, 1901
- Second antennal segment shorter than width of head by one third, humeral angle of pronotum almost a right angle *P. rosulentus* Stål, 1871



Figs 12–17. *Pygoplatys streittoi* sp. nov., immatures of 5th instar. 12 – 3rd instar; 13 – 4th instar; 14 – 5th instar (♂); 15 – 5th instar (♀); 16–17 – ventral view of apex of abdomen (16 – ♂, 17 – ♀).

Obr. 12–17. *Pygoplatys streittoi* sp. nov., larvy. 12 – 3. instar; 13 – 4. instar; 14 – 5. instar (♂); 15 – 5. instar (♀); 16–17 – ventrální pohled na apex zadečku 5. instaru (16 – ♂, 17 – ♀).

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SOUHRN

V této práci je popsán nový druh velekněžice rodu *Pygoplatys* Dallas, 1851, *P. (Odontoteuchus) streitoi* sp. nov. (Hemiptera: Heteroptera: Tessaratomidae), pocházející z filipínského ostrova Mindanao. Díky nově popsanému druhu se zvýšil počet popsáných zástupců rodu *Pygoplatys* na 31 druhů. Popis je ilustrován fotografiemi vzhledu obou pohlaví a larev tří posledních instarů spolu s kresbami diagnostických znaků na zadečku a pohlavních orgánech obou pohlaví. Rovněž je prezentován revidovaný určovací klíč podrodu *Odontoteuchus* Stål, 1871.