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New species of the genus *Arhytinus* Bates. 3rd supplement to the “Revision of the genus *Arhytinus* Bates”

(Coleoptera, Carabidae, Platynini)

Martin Baehr

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Four additional new species of the platynine genus *Arhytinus* Bates, 1889 are described: *A. weigeli*, *A. vietnamensis*, and *A. maximus*, all from North Vietnam, and *A. flavomarginatus* from Malaysia. The new species are incorporated into the most recent key to the genus in Baehr (2012).

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Introduction

Since the revision of the genus *Arhytinus* Bates, 1889 (Baehr 2010) and the description of additional species (Baehr & Schmidt 2010, Baehr 2012) again a few new species of this genus were sent for identification. These are described in the present paper and their male genitalia are figured if available.

The genus *Arhytinus* presently includes 43 described species that are distributed from southern India through Nepal, Burma, Thailand, Vietnam, southern and central China, Taiwan, the Philippine and Indonesian Archipelagos including the Moluccas, to New Guinea and surrounding Islands of the Bismarck Archipelago, but the genus is not yet known from Australia. In the present paper four new species are added to this number.

Apart from very few species, specimens of *Arhytinus* are extremely rare in collections, and of many species only the holotype is known, or the species are only recorded from a single locality. The reasons for this apparent rarity are unknown, although they may be rather due to inadequate sampling methods and efforts than to the rarity of specimens in nature. Accordingly, of three of the four species described as new in the present paper only the holotypes are available and the fourth species is known from the

type locality only. Fortunately of two of these species males are available, which gives the opportunity to describe these properly, because the male aedeagus in *Arhytinus* is very characteristic in most species due to the common presence of varied numbers, and different positions, of teeth or spines in the internal sac, and to the variously denticulate apex of the aedeagus. The holotype of the third species is a female, but this specimen is by far the largest ever detected in the genus, and it is sufficiently different in certain characters of its external morphology from related species to allow a proper description and differentiation. The fourth species, even when only females are known, is also reasonably easily introduced into the key, because it is well differentiated by certain character states from all similarly sized and shaped species.

Material and methods

The genitalia were removed from specimens relaxed for a night in a jar under moist atmosphere, then cleaned for a short while in hot 10% KOH. The habitus photographs were obtained by a digital camera using ProgRes CapturePro 2.6 and AutoMontage and subsequently were edited with Corel Photo Paint X4.

Measurements were taken using a stereo microscope with an ocular micrometer. Body length has been measured from the apex of the labrum to the apex of the elytra. Length of pronotum was measured along midline, width of base of pronotum was measured at the basal angles or in the case these are rounded, at the position of the posterior lateral seta.

Data of examined material are given in full length and the exact labelling was used, including all ciphers, notes of determinators and curators, and printed labels. Also original spelling of the date of collecting is used. A slash / with a blank before and after it denotes a new label, two blanks mark a new line on the same label.

Types and material are stored in the working collection M. Baehr in Zoologische Staatssammlung, München (CBM), the private collection of D. Wrase, Berlin (CWB), and the Naturkundemuseum, Erfurt (NME).

Taxonomy

Genus *Arhytinus* Bates, 1889

Arhytinus Bates, 1889: 278. – For additional references see the paper of Baehr (2012).

Type species: *Arhytinus bembidioides* Bates, 1889, by monotypy.

Diagnosis. Genus of the tribe Platynini. Medium-sized to very small species (in tribe), characterized by usually short and wide body shape, absence of the mental tooth, cordiform prothorax, more or less short and wide, oval-shaped and posteriad widened elytra with well impressed and commonly distinctly punctate or crenulate striae and usually rather iridescent surface due to superficial microreticulation of very fine, transverse lines. Commonly the 3rd interval is asetose, rarely unisetose. Even when the external characters are quite similar throughout the genus, the male aedeagi are very differently shaped and structured: the apex commonly is uni- or bidenticulate and they usually bear one or several strongly sclerotized teeth, or spines, or spinose plates of different size and shape in the apical part of the (inverted) internal sac.

The relationships of this peculiar genus are not yet settled, as Baehr (2010, 2012) and Baehr & Schmidt (2010) stated, and explanation of their relations would require a much better knowledge of the relations within the numerous Oriental-Papuan platynine genera.

In the descriptions the following character states common to all species are not further mentioned: clypeus bisetose; labrum 6-setose; palpi sparsely pilose; mentum edentate; mandibles elongate, evenly curved; scutellary stria elongate, situated in 1st interval, scutellary pore and seta present; elytral striae complete and usually well impressed; apical margin

of the elytra evenly rounded, not sinuate; series of marginal punctures consisting of 16–19 punctures and setae which are slightly interrupted in middle; apex of elytra with two setiferous punctures at each side close to the suture; metathoracic wings present; metepisternum elongate, c. twice as long as wide at anterior margin; terminal abdominal sternum in the male bisetose, in the female quadrisetose; legs slender and elongate; basal tarsomeres of meso- and metatarsi canaliculate on both sides; 5th tarsomeres with or without 1–2 very short and inconspicuous setae on the lower surface which are very difficult to detect; 1st–3rd tarsomeres of male protarsus biserially squamose.

Arhytinus weigeli, spec. nov.

Figs 1, 5, 9

Examined types. Holotype: ♂, VIETNAM, N, Ninh Binh Pr., 90 km SW Hanoi, Cuc Phuong NP, primate rescue centre, 25.IV. / 2013, 190 m, 20°14'24" N 105°42'53" E, leg. A. Weigel, light trap (CBM).

Etymology. The name is a patronym in honour of the collector, Andreas Weigel.

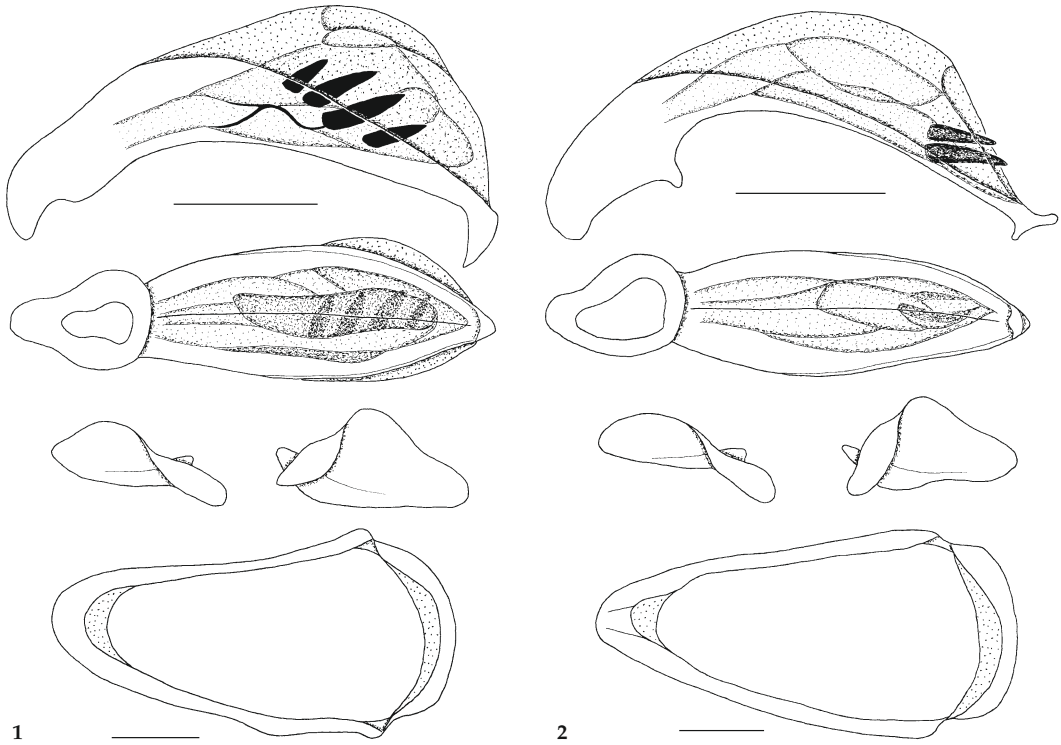
Diagnosis. A medium sized, very convex species, characterized by combination of absence of distinct pale lateral borders on pronotum and elytra, rather wide, barely cordiform pronotum, large, laterad moderately protruded eyes, well impressed, barely crenulate elytral striae, presence of four large spines in the internal sac of the aedeagus, and the very large, abruptly bent down apex of the aedeagus. Distinguished from the quite similar, syntopic *A. vietnamensis*, spec. nov. by inconspicuous margins of pronotum and elytra, narrower pronotum with narrower base, less protruded eye with less pronounced angle between orbit and neck, and more distinct microreticulation of pronotum and elytra.

Description

Measurements. Length: 4.9 mm; width: 2.15 mm. Ratios. Width/length of pronotum: 1.42; width of widest diameter/base of pronotum: 1.28; width base/apex of pronotum: 1.10; width pronotum/head: 1.22; length/width of elytra: 1.40.

Colour (Figs 5, 9). Black, elytra barely iridescent. Pronotum and elytra almost devoid of paler lateral margins. Labrum and mandibles dark reddish, palpi dirty yellow, antenna reddish throughout. Legs pale yellow, tarsomeres of middle and hind tarsi apically darker.

Head (Fig. 5). Comparatively large. Eye large, laterally moderately projected, orbit short, oblique, angle between orbit and neck moderate. Frontal



Figs 1-2. Male aedeagus, left side, lower surface, left and right parameres, genital ring. **1.** *Arhytinus weigeli*, spec. nov. **2.** *A. flavomarginatus*, spec. nov. Scale bars: 0.25 m.

furrows very shallow, slightly oblique, developed only immediately behind clypeal suture. Antenna moderately elongate, surpassing base of pronotum by almost two antennomeres, 6th antennomere slightly <2× as long as wide. Surface with distinct, moderately fine, isodiametric microreticulation, moderately dull.

Pronotum (Fig. 5). Rather wide, not cordiform, widest slightly behind apical third, dorsal surface moderately convex. Apex with shallow excision, apical angles slightly projected but widely rounded. Lateral border convex throughout but less so in basal third. Base rather narrow in comparison with diameter, slightly convex. Basal angles faintly, obtusely dentate, laterally not projected, c. 120°. Lateral margin very narrow in apical two thirds, in basal third widened and deplanate. Apex finely margined, base in middle indistinctly margined. Median line shallow but distinct, not attaining apex or base. Both transverse impressions shallow. Basal grooves wide, rather shallow. Anterior lateral seta inserted slightly in front of apical third and of widest diameter, and slightly removed from margin. Posterior lateral seta inserted at basal angle. Base with coarse, rather sparse, irregularly spaced punctures. Surface with

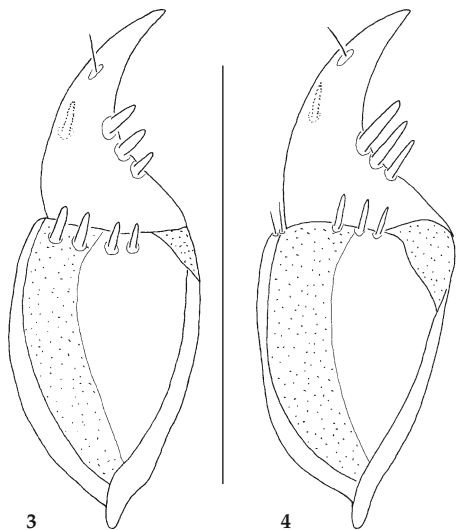
extremely fine and superficial, very transverse microsculpture which is composed of dense transverse meshes and lines, surface moderately glossy and slightly iridescent.

Elytra (Fig. 9). Of average shape, rather short, slightly oviform, dorsal surface convex. Humeral area comparatively wide, lateral margins in basal half slightly oblique and very slightly convex, then evenly convex. Striae deeply impressed, barely crenulate, intervals distinctly raised, convex throughout. 3rd interval impunctate. Only very fine and extremely superficial traces of microreticulation recognizable at high magnification, composed of finest transverse lines. Surface glossy, with slightly iridescent lustre.

Male genitalia (Fig. 1). Genital ring large but rather narrow, slightly asymmetric, triangular, with wide, rounded apex. Aedeagus wide and rather short, lower surface straight in apical two thirds, carinate in middle, not striolate. Apex very large, suddenly bent down in an almost right angle, acute at tip. Internal sac with four large, strongly sclerotized teeth. Both parameres large, the left one obtusely convex at apex, the right triangular at apex.

Female gonocoxites. Unknown.

Variation. Unknown.



Figs 3–4. Female gonocoxites 1 and 2. Scale bars: 0.25 mm. 3. *Arhytinus vietnamensis*, spec. nov. 4. *A. maximus*, spec. nov.

Distribution. North Vietnam: Known only from the type locality.

Collecting circumstances. Sampled in light trap at rather low altitude.

Relationships. The species belongs to a group of medium sized, convex species which possess a various number of spines or teeth in the internal sac and usually have an unidentate apex of the aedeagus.

Arhytinus vietnamensis, spec. nov.

Figs 3, 6, 10

Examined types. Holotype: ♀, VIETNAM, N, Ninh Binh Pr., 90 km SW Hanoi, Cuc PhuongNP, primat rescue centre, 25.IV. / 2013, 190 m, 20°14'24" N 105°42'53" E, leg. A. Weigel, light trap (CBM). – Paratypes: 2 ♀♀, same data (CBM, NME).

Etymology. The name refers to the occurrence of this species in North Vietnam.

Diagnosis. A medium sized, very convex species, characterized by combination of presence of distinct pale lateral borders on pronotum and elytra, rather wide, barely cordiform pronotum, large, laterad markedly protruded eyes, well impressed, and barely crenulate elytral striae. Distinguished from the quite similar, syntopic *A. weigeli*, spec. nov. by conspicuously yellow margins of pronotum and elytra, wider pronotum with wider base, more protruded eye with more pronounced angle between

orbit and neck, and less distinct microreticulation of pronotum and elytra.

Description

Measurements. Length: 4.4–4.8 mm; width: 1.95–2.2 mm. Ratios. Width/length of pronotum: 1.47–1.50; width of widest diameter/base of pronotum: 1.23–1.26; width base/apex of pronotum: 1.07–1.12; width pronotum/head: 1.23–1.28; length/width of elytra: 1.36–1.38.

Colour (Figs 6, 10). Black, elytra very slightly iridescent. Pronotum and elytra with distinct but narrow reddish or dirty yellow margin. Labrum and mandibles dark reddish, palpi dirty yellow, antenna reddish though 1st or 1st and 2nd antennomere(s) very slightly paler. Legs pale yellow, all tarsomeres apically darker.

Head (Fig. 6). Comparatively large. Eye very large, laterally markedly projected, orbit extremely short, oblique; angle between orbit and head pronounced. Frontal furrows barely perceptible. Antenna moderately elongate, surpassing base of pronotum by slightly less than two antennomeres, 6th antennomere c. 1.75 × as long as wide. Surface with distinct, moderately fine, isodiametric microreticulation, moderately dull.

Pronotum (Fig. 6). Rather wide, not cordiform, widest slightly behind apical third, dorsal surface moderately convex. Apex with shallow to moderately deep excision, apical angles slightly projected but widely rounded. Lateral border convex throughout but less so in basal third. Base rather narrow in comparison with diameter, slightly convex. Basal angles obtuse or very faintly, obtusely dentate, laterally not projected, c. 120°. Lateral margin moderately narrow in apical two thirds, in basal third widened and deplanate. Apex finely margined, base in middle not or indistinctly margined. Median line shallow but distinct, not attaining apex or base. Both transverse impressions barely perceptible. Basal grooves wide, rather shallow. Anterior lateral seta inserted slightly in front of apical third and of widest diameter, and slightly removed from margin. Posterior lateral seta inserted at basal angle. Base and basal third of lateral explanation with coarse, moderately dense, irregularly spaced punctures. Surface with some irregular striae in apical half, with traces only of extremely fine and superficial, very transverse microsculpture that is barely perceptible even at very high magnification, surface glossy and slightly iridescent.

Elytra (Fig. 10). Of average shape, rather short, slightly oviform, dorsal surface convex. Humeral area comparatively wide, lateral margins in basal half slightly oblique and slightly convex, then evenly convex. Striae deeply impressed, very finely crenu-



5



6



7



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Figs 5–8. Head and pronotum. 5. *Arhytinus weigeli*, spec. nov. 6. *A. vietnamensis*, spec. nov. 7. *A. flavomarginatus*, spec. nov. 8. *A. maximus*, spec. nov.

late, intervals distinctly raised, convex throughout. 3rd interval impunctate. Very fine and extremely superficial traces of microreticulation composed of finest transverse lines even at very high magnification barely recognizable. Surface very glossy, with slightly iridescent lustre.

Male genitalia. Unknown.

Female gonocoxites (Fig. 3). Gonocoxite 1 with

4 moderately elongate, rather stout ensiform setae at the apical rim in middle of the ventral surface; gonocoxite 2 curved, moderately elongate, with acute apex, with one moderately elongate dorso-median ensiform seta at middle, three rather short but stout ventro-lateral ensiform setae of slightly decreasing size towards base, and a single preapical nematiform seta originating from a pit.

Variation. Little variation noted, apart from minor differences in proportions of prothorax and of shape of its basal angle.

Distribution. North Vietnam: Known only from the type locality.

Collecting circumstances. Sampled in light trap at rather low altitude.

Relationships. The species belongs to a group of medium sized, convex species which possess a various number of spines or teeth in the internal sac and usually have an unidentate apex of the aedeagus. Although the male genitalia of this species are unknown, it is very similar to the syntopic *A. weigeli*, spec. nov., and seems to be closely related to that species.

Arhytinus flavomarginatus, spec. nov.

Figs 2, 7, 11

Examined types. Holotype: ♂, MALAYSIA (Pahang State) Cameron Highlands, forest around Tanah Rata, 1.XI.1990, Guillaume de Rougemont (CWB).

Etymology. The name refers to the rather conspicuous yellow margin of pronotum and elytra of this species.

Diagnosis. A medium sized, rather depressed, parallel-sided species, distinguished from similarly sized species by combination of wide, but not very conspicuous, pale lateral borders on pronotum and elytra, wide, not cordiform pronotum, large, laterad well protruded eyes, well impressed but barely crenulate elytral striae, presence of two large spines in the internal sac of the aedeagus, and the triangular, oblique, bidentate apex of the aedeagus.

Description

Measurements. Length: 5.1 mm; width: 2.1 mm. Ratios. Width/length of pronotum: 1.52; width of widest diameter/base of pronotum: 1.24; width base/apex of pronotum: 1.09; width pronotum/head: 1.30; length/width of elytra: 1.49.

Colour (Figs 7, 11). Head dark piceous, pronotum and elytra piceous, elytra rather iridescent. Pronotum and elytra with rather wide but moderately conspicuous, reddish lateral margins. Labrum and mandibles red, palpi and antenna pale reddish. Legs pale reddish.

Head (Fig. 7). Comparatively large. Eye very large, laterally well projected, orbit short, oblique. Frontal furrows large and shallow, circular, developed only immediately behind clypeal suture. Antenna rather elongate, surpassing base of pronotum by slightly > two antennomeres, 6th antennomere

c. 2.25 × as long as wide. Surface with distinct, rather fine, slightly superficial, isodiametric microreticulation, and with scattered fine, barely perceptible punctures, moderately dull.

Pronotum (Fig. 7). Wide, barely cordiform, widest slightly in front of middle, dorsal surface rather depressed. Apex fairly deeply excised, apical angles projected but widely rounded. Lateral border in apical two thirds convex, in basal third oblique and straight. Base rather wide in comparison with diameter, slightly convex. Basal angles very obtusely dentate, laterally not projected, c. 120°. Lateral margin anteriorly narrow, in basal third widened and deplanate. Apex finely margined, base not margined. Median line shallow but distinct, almost attaining apex and attaining base. Anterior transverse impression barely perceptible, posterior transverse impression shallow. Basal grooves wide, shallow. Anterior lateral seta inserted at apical third, slightly in front of widest diameter, and slightly removed from margin. Posterior lateral seta inserted at basal angle. Basal grooves and posterior third of lateral margin with fairly coarse, rather sparse, irregularly spaced punctures. Surface with some very fine, irregular wrinkles and with traces only of extremely fine and superficial, very transverse microsculpture that is barely perceptible even at very high magnification, surface glossy and slightly iridescent.

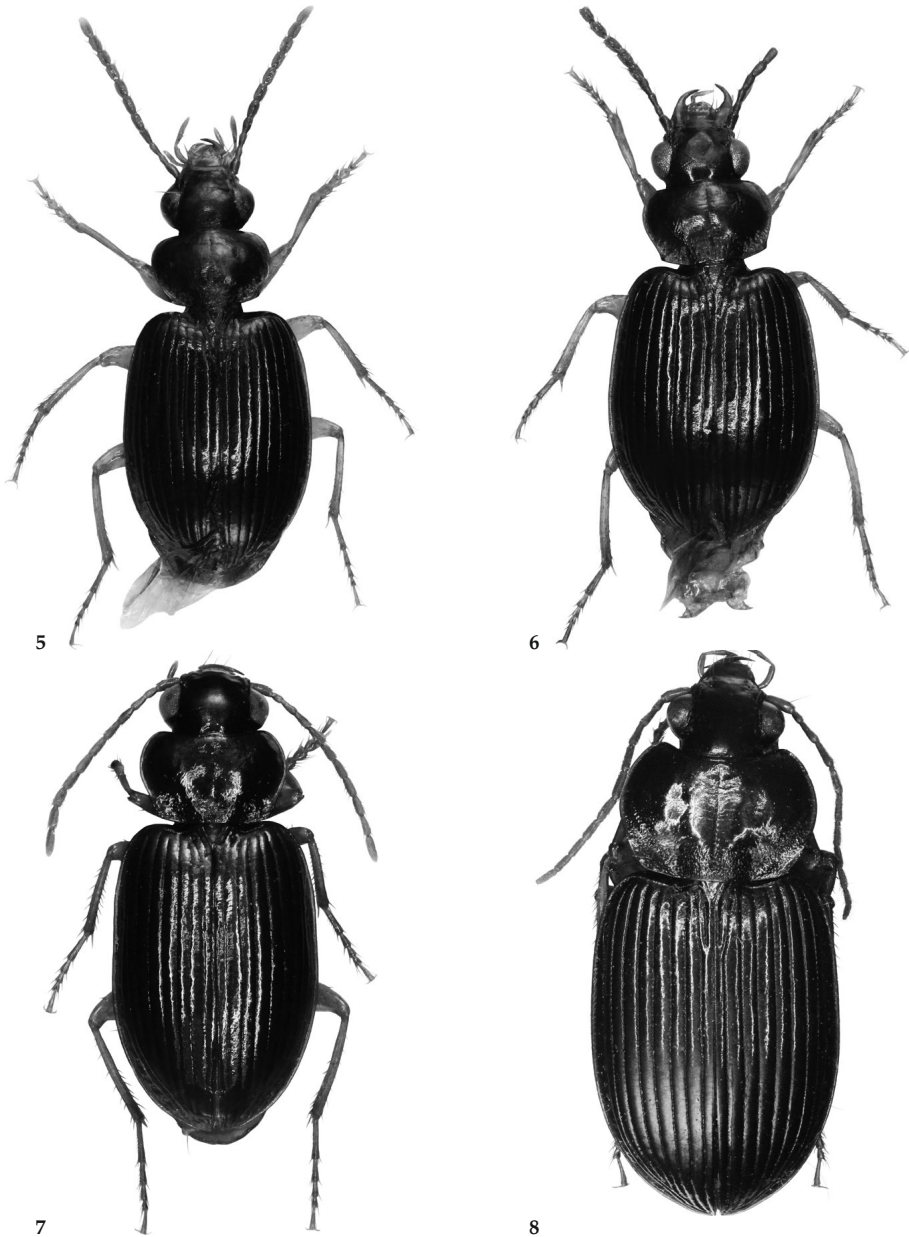
Elytra (Fig. 11). Of average shape, comparatively elongate, not oviform, dorsal surface moderately convex and slightly depressed on disk. Humeral area comparatively wide, lateral margins in basal half straight, then evenly convex. Striae deeply impressed, barely crenulate, intervals distinctly raised, convex throughout. 3rd interval impunctate. Traces of extremely fine and extremely superficial microreticulation barely recognizable even at very high magnification, composed of finest transverse lines. Surface very glossy, with distinct iridescent lustre.

Male genitalia (Fig. 2). Genital ring large and rather wide, almost regularly triangular, with wide, rounded apex. Aedeagus wide and rather short, lower surface strongly concave near base, straight in apical two thirds, carinate in middle, not striolate. Apex bidentate, oblique, though the upper tooth larger than the lower one, acute at tip. Internal sac with two large, rather strongly sclerotized teeth in apical part. Both parameres large, the left one obtusely convex at apex, the right one obliquely convex at apex.

Female gonocoxites. Unknown.

Variation. Unknown.

Distribution. Cameron Highlands, Malaysia: Known only from the type locality.



Figs 9–12. Habitus (body lengths in brackets). 9. *Arhytinus weigeli*, spec. nov. (4.9 mm). 10. *A. vietnamensis*, spec. nov. (4.5 mm). 11. *A. flavomarginatus*, spec. nov. (5.1 mm). 12. *A. maximus*, spec. nov. (11.6 mm).

Collecting circumstances. Little recorded. Holotype collected in “forest”.

Relationships. The species is quite unique in its body shape, but may be related to a group of medium sized species that possess a bidenticulate apex of the aedeagus.

Arhytinus maximus, spec. nov.

Figs 4, 8, 12

Examined types. Holotype: ♀, N-Vietnam, Cao Bangh Pr. vic. Vin Den, Nui Pia Oac Nat. Res., 900–1300 m 22°33'53" N, 105°52'53" E, 6–10.5.2013, R. Gerstmeier (CBM).

Etymology. The name refers to the remarkably large body size of this species.

Diagnosis. A very large, rather depressed species with unisetose elytra, distinguished from all other described species by major size and from most species by presence of the discal puncture and seta; most similar to *A. nepalensis* Baehr & Schmidt, 2010 in the wide prothorax which is also very wide in relation to head.

Description

Measurements. Length: 11.6 mm; width: 5.0 mm. Ratios. Width/length of pronotum: 1.56; width of widest diameter/base of pronotum: 1.32; width base/apex of pronotum: 1.23; width pronotum/head: 1.63; length/width of elytra: 1.50.

Colour (Fig. 8, 12). Glossy black, elytra slightly iridescent. Lateral margin of pronotum indistinctly and very narrowly dark reddish, lateral margin of elytra black. Labrum and mandibles dark reddish, palpi and antenna reddish, apical antennomeres very slightly darker. Legs reddish.

Head (Fig. 8). Comparatively small in relation to prothorax. Eye large, laterad well projected, orbit short, oblique, c. $\frac{1}{4}$ of length of eye. Mandibles elongate, narrow, evenly curved, apex very acute. Frontal furrows barely developed, circular. Antenna elongate, surpassing base of pronotum by about three antennomeres, 6th antennomere c. 3 × as long as wide. Surface with fine, slightly superficial, isodiametric microreticulation, moderately glossy.

Pronotum (Fig. 8). Very wide, not cordiform, widest almost at middle, dorsal surface rather depressed. Apex deeply excised, apical angles projected but widely rounded. Lateral border evenly convex throughout. Base wide in comparison with diameter, slightly convex. Basal angles almost rounded. Lateral margin anteriorly narrow, in basal third widened and deplanate. Apex finely margined, base not margined. Median line shallow but distinct, not attaining base but almost attaining apex. Anterior transverse impression shallow, posterior transverse impression not perceptible. Basal grooves wide and rather deep. Anterior lateral seta inserted slightly behind apical third, slightly in front of widest diameter, and slightly removed from margin. Posterior lateral seta inserted at basal angle. Base and posterior half of lateral margin with coarse, dense, slightly rugose punctures. Disk with a shallow impression at either side in middle, with extremely superficial traces of very transverse microsculpture which even at very high magnification is very difficult to see, surface glossy and slightly iridescent.

Elytra (Fig. 12). Of average shape, comparatively elongate, barely oviform, dorsal surface moderately

convex but slightly depressed on disk. Humeral area comparatively wide, lateral margins in basal two thirds almost straight, then evenly convex. Striae deeply impressed, at bottom very finely crenulate, even in apical half still perceptibly crenulate, intervals distinctly raised, convex throughout. 3rd interval on left elytron unipunctate, on right elytra with two punctures, punctures located in middle and adjacent to 2nd stria. Only extremely fine and extremely superficial traces of microreticulation recognizable at very high magnification, composed of finest transverse lines. Surface very glossy, with distinct iridescent lustre.

Male genitalia. Unknown.

Female gonocoxites (Fig. 4). Gonocoxite 1 with 3 moderately elongate, at apex acute ensiform setae at the apical rim in middle of the ventral surface and two small setae at the median rim; gonocoxite 2 curved, rather elongate, with acute apex, with one elongate dorso-median ensiform seta at middle, three elongate, stout ventro-lateral ensiform setae of slightly decreasing size towards base, and a single preapical nematiform seta originating from a pit.

Variation. Unknown.

Distribution. North Vietnam: Known only from the type locality.

Collecting circumstances. Little recorded. Holotype collected at median altitude.

Relationships. In body shape the species is similar to a group of relatively large species most of which lack any spines or teeth in the internal sac of the aedeagus, and which are believed to represent the most plesiotypic species of the genus (Baehr 2010). However, due to the unknown male genitalia, the relationships of the new species are not yet settled. It is distinguished from all described species by its very large body size.

Recognition

The new species are introduced in the most recent key to the genus (Baehr 2012). For better use, numbers of figures in Baehr (2010) are introduced as **B10**, those in Baehr (2012) as **B12**, and those in Baehr & Schmidt (2010) as **B&S**.

Arhytinus weigeli, spec. nov. and *A. vietnamensis*, spec. nov.

A. weigeli and *A. vietnamensis* can be followed on in the key to couplet 17, that must be altered as following:

17. Body length >5.1 mm; commonly larger. 18.
- Body length <4.9 mm, commonly smaller; when >4.6 mm long, either aedeagus with 3 or 4 large spines or a single spine on the left side, none on the right side (Fig. 1, **B10** fig. 18, **B&S** figs 14, 15), or with a single spine on the right side but with unarmed apex (**B&S** 15), or with two densely denticulate folds (**B&S** fig. 16), or basal angles of the pronotum almost rounded off (**B10** fig. 47). 30.
30. Legs dark reddish to pale brown; basal angles of pronotum very obtuse, lateral margins dark and regularly convex towards the basal angle (**B10** fig. 45); aedeagus narrow and elongate, apex not denticulate, only very slightly knobbed, with three small spiniform sclerites on the top of the right side and a small single spine at the base on the left side (**B10** fig. 24). Philippines.
..... *minimus* Jedlička, 1936
- Legs yellow; either basal angle of pronotum angulate and lateral margins at least slightly sinuate near angle, or basal angles very obtuse but pale; aedeagus variously shaped and with different number and position of spines (Fig. 1, **B10** figs 18–23, **B&S** figs 14–16, **B12** figs 1, 4), or aedeagus unknown. China, Taiwan, Vietnam, Philippines, Sumatra, Java, Borneo, Bali, Sulawesi, Moluccas, New Ireland. 31.
31. Lateral margins of pronotum not sinuate, basal angles almost rounded off (**B10** figs 43, 47, **B&S** fig. 11); **either** aedeagus with two large, posteriad curved spines at the left side (**B10** fig. 22), **or** with two large, densely denticulate folds (**B&S** fig. 16), **or** aedeagus unknown, in latter species either lateral margin of pronotum distinctly pale, of elytra dark (**B10** fig. 78) or base barely wider than apex (**B&S** fig. 12). Philippines, Moluccas, New Ireland. 32.
- Lateral margins of pronotum straight or slightly sinuate, basal angles distinct (Figs 5, 6, **B10** figs 40–42, 44, 46, **B&S** figs 9, 10, 12, **B12** figs 10, 13); **either** aedeagus with differently shaped and distributed spines (Fig. 1, **B10** figs 18–20, 23, **B&S** figs 14, 15, **B12** figs 1, 4), **or** aedeagus unknown, in latter species antenna dark (Fig. 13) or base of pronotum barely wider than apex (**B&S** fig. 12). China, Taiwan, Vietnam, Sumatra, Java, Bali, Borneo, Sulawesi. 34.
34. Aedeagus with spines only on the left side (Fig. 1, **B10** fig. 18, **B&S** figs 14, 15, **B12** figs 4); body length always >4.8 mm. China, Vietnam, Java, Sulawesi. 35.
- Aedeagus with spines on both sides (Fig. 1, **B10** figs 19–21, 23); body length usually <4.6 mm **or** when aedeagus unknown and body length >4.6 mm, elytral striae very finely crenulate. Taiwan, Vietnam, Sumatra, Java, Bali, Borneo. 38.
35. Pronotum very wide, ratio width/length 1.63 (**B&S** fig. 11); elytra short, ratio length/width 1.32 (**B&S** fig. 4); aedeagus with a small, oblique hook at apex, internal sac with a single spine (**B&S** fig. 15). Sulawesi.
..... *brendelli* Baehr & Schmidt, 2010
- Pronotum narrower, ratio width/length <1.58 (Fig. 5, **B10** fig. 40, **B&S** fig. 10, **B12** fig. 10); elytra longer, ratio length/width >1.39 (Fig. 9, **B10** fig. 40, **B&S** fig. 3, **B12** Fig. 16); aedeagus **either** with a small, oblique hook at apex and internal sac with three large, attached spines (**B10** fig. 18), **or** with a large, vertical lower hook at apex and internal sac with three large, attached spines (**B&S** fig. 14), or four large spines (Fig. 1), **or** aedeagus with unarmed apex and internal sac with two small spines (**B12** fig. 4). China, Vietnam, Java. 36.
36. Pronotum with narrower base (**B10** fig. 40); elytral striae very shallow, virtually impunctate; aedeagus with a small, oblique hook at apex and internal sac with three large, attached spines (**B10** fig. 18). Java. *lieftincki* Louwerens, 1951
- Pronotum with wider base (Fig. 5, **B&S** fig. 10, **B12** fig. 10); elytral striae deeper, at least in basal half finely punctate or crenulate; aedeagus **either** with a large, vertical lower hook at apex and internal sac with three large, attached spines (**B&S** fig. 14) or with four large spines (Fig. 1), **or** aedeagus with unarmed apex and internal sac with two small spines (**B12** fig. 4). China, Vietnam. 37.
37. Pronotum with wider base as compared with apex, ratio width of base/width of apex >1.10 (Fig. 5, **B&S** fig. 10); aedeagus with a large, vertical lower hook at apex and internal sac either with three large, attached spines (**B&S** fig. 14), or with four large spines (Fig. 1). Central China: Hubei, Vietnam. 37a.
- Pronotum with narrower base as compared with apex, ratio width of base/width of apex 1.05 (**B12** fig. 10); aedeagus with unarmed apex and internal sac with two small spines (**B12** fig. 4). South-western China: Yunnan.
..... *yunnanus* Baehr, 2012
- 37a. Elytra slightly longer, ratio length/width >1.42; pronotum wider, ratio width/length >1.55

- (B&S fig. 10); internal sac with three large, attached spines (B&S fig. 14). Central China: Hubei. *gerdi* Baehr & Schmidt, 2010
- Elytra slightly shorter, ratio length/width 1.40; pronotum narrower, ratio width/length 1.42 (Fig. 5); internal sac with four large spines (Fig. 1). North Vietnam. *weigeli*, spec. nov.
38. Eyes large, laterally markedly projected (Fig. 6, B10 figs 41, 42, 73, B&S fig. 12); aedeagus **either** wide, with large, vertical or oblique, bidenticulate apex and three larger attached spines on the left side and two attached smaller spines on the right side (B10 figs 19, 20), **or** aedeagus narrow, with small bidenticulate apex and 7-8 single spines (B10 fig. 21), **or** aedeagus unknown. Vietnam, Sumatra, Borneo. 39.
- Eyes laterally less projected (B10 figs 44, 46, B12 fig. 13); aedeagus **either** with two very small spines on the left and a single small spine on the right side (B10 fig. 23), **or** aedeagus with four large spines on the left and two smaller spines on the right side (B12 fig. 1), **or** aedeagus unknown. Taiwan, Java, Bali. 42.
39. Elytral striae coarsely punctate **and** ratio length/width of elytra >1.40 (B10 fig. 73) **and** basal angles of pronotum angulate (B10 fig. 73); aedeagus narrow, with small apical teeth, with 7-8 dispersed single spines (B10 fig. 21). Borneo. *multispinosus* Baehr, 2010
- Elytral striae **either** finely punctate (Fig. 10, B10 figs 71, 72), **or** striae coarsely punctate, but then ratio length/width 1.35 (B&S fig. 6) and basal angles of pronotum rather obtuse (B&S fig. 12); aedeagus wide, with large lower apical tooth and internal sac with three large attached spines on left side and two attached spines on right side (B10 figs 19, 20), **or** aedeagus unknown. Vietnam, Sumatra, Borneo. 40.
40. Elytra short, ratio width/length <1.38; aedeagus unknown. Vietnam, Borneo. 40a.
- Elytra longer, ratio width/length 1.44, striae in basal half at most finely punctate (B10 figs 71, 72); aedeagus wide, with large lower apical tooth and internal sac with three large attached spines on left side and two attached spines on right side (B10 figs 19, 20). Sumatra, Borneo. 41.
- 40a. Pronotum with narrower base and very obtuse basal angles (B&S fig. 12), ratio diameter/base 1.31; elytral striae at least in basal half coarsely crenulate. Borneo. *angustibasis* Baehr & Schmidt, 2010
- Pronotum with wider base and distinctly angulate basal angles (Fig. 6), ratio diameter/base <1.26; elytral striae very finely crenulate. North Vietnam. *vietnamensis*, spec. nov.
- Arhytinus flavomarginatus*, spec. nov.**
- A. flavomarginatus* can be followed on in the key to couplet 17. that must be altered as following:
17. Body length >5.1 mm; commonly larger. 18.
- Body length <4.9 mm, commonly smaller; when >4.6 mm long, either aedeagus with 3 or 4 large spines or a single spine on the left side, none on the right side (Fig. 1, B10 fig. 18, B&S figs 14, 15), or with a single spine on the right side but with unarmed apex (B10 fig. 15), or with two densely denticulate folds (B10 fig. 16), or basal angles of the pronotum almost rounded off (B10 fig. 47). 30.
18. Body length 6.8 mm; pronotum with distinctly sinuate lateral margins and nearly rectangular basal angles, base in middle barely punctate (B&S fig. 8); elytra elongate, ratio length/width 1.52 (B&S fig. 2); aedeagus unknown. Malaysia. *hammondi* Baehr & Schmidt, 2010
- Body length <6.3 mm; pronotum with less distinctly sinuate lateral margins and more obtuse basal angles, if lateral margins slightly sinuate, base rather coarsely punctate (Fig. 7, B10 fig. 27); elytra shorter, ratio length/width <1.49; aedeagus variously shaped, or unknown. Distribution various. 19.
19. Eyes small and depressed, ratio width pronotum/head 1.45 (B10 fig. 32); aedeagus wide and compact, apex not denticulate, internal sac with four dispersed spiniform sclerites (B10 fig. 4). Taiwan. *nitescens* Baehr, 2010
- Eyes larger and more protruded, ratio width pronotum/head <1.35; apex of aedeagus bidenticulate (Fig. 2, B10 figs 1-4, 16, 17, B&S fig. 14, B12 figs 5, 6), **or** aedeagus unknown. Distribution different. 20.
20. Pronotum wide, markedly cordiform, with relatively narrow base, ratio widest diameter/width of base 1.32; eyes laterad more protruded (B10 fig. 27); elytral striae coarsely crenulate; body length 6.0 mm; aedeagus unknown. Borneo. *cordicollis* Baehr, 2010
- Pronotum less cordiform, with relatively wider base, ratio widest diameter, width of base usually <1.27, except *A. ludewigi* from New Britain

- which has evenly convex lateral angles; eyes commonly laterally less protruded; elytral striae less coarsely crenulate, except *A. crenulipennis* from Borneo which is only 5.2 mm long and has a narrower prothorax; apex of aedeagus bidenticulate or unknown. Southern India, Sikkim, Burma, Thailand, Malaysia, Vietnam, China, Philippines, Malaysia, Sumatra, Java, Borneo, Sulawesi, New Britain. 21.
21. Body length 5.2 mm **and** elytral striae coarsely crenulate (**B10** fig. 69) **and** pronotum with slightly sinuate lateral margins and rather angulate basal angles (**B10** fig. 69) **and** aedeagus compact, lower surface markedly concave, apex horizontally bidenticulate, the upper tooth much larger than the lower one, internal sac with a single small spine on the left side (**B10** fig. 17). Borneo. *crenulipennis* Baehr, 2010
- Body length either larger **or** elytral striae less coarsely crenulate **or** pronotum with not sinuate lateral margins and with rather obtuse basal angles **or** aedeagus differently shaped (Fig. 2, **B10** figs 1–3, 16, **B&S** fig. 14, **B12** figs 5, 6). Southern India, Sikkim, Burma, Thailand, Malaysia, Vietnam, China, Philippines, Malaysia, Sumatra, Java, Borneo, Sulawesi, New Britain. 22.
22. Body length 5.2 mm **and** pronotum relatively narrow, ratio width/length 1.50 **and** lateral margins of pronotum and elytra with distinct pale margin (**B10** fig. 68) **and** apex of aedeagus sharply denticulate only on the lower side, internal sac with a small spine on either side (**B10** fig. 16). Sulawesi. *celebensis* Baehr, 2010
- Not all character states together present (Fig. 2, **B10** figs 1–3, **B&S** fig. 14, **B12** figs 5, 6). Southern India, Sikkim, Burma, Thailand, Vietnam, China, Philippines, Malaysia, Sumatra, Java, Borneo, New Britain. 23.
23. Body length > 6.0 mm **and** pronotum wide, ratio width/length > 1.58 **and** pronotum with rather narrow marginal channel, base variously punctate, but when coarsely punctate, marginal channel very narrow (**B10** figs 30, 31) **and** margins of pronotum and elytra barely pale (**B10** figs 52, 53); aedeagus unknown. Borneo, Philippines. 24.
- Body length various but when > 6.0 mm **either** pronotum narrower **or** pronotum with wide marginal channel **or** margins of pronotum and elytra distinctly pale; aedeagus variously shaped. Southern India, Sikkim, Burma, Thailand, Vietnam, China, Philippines, Malaysia, Sumatra, Java, New Britain. 25.
25. Elytra longer and parallel-sided, ratio length/width 1.49; pronotum and elytra with rather conspicuous pale margins (Fig. 11); basal angles of pronotum angulate (Fig. 7); aedeagus with oblique, bidenticulate apex and with two large spines on the left side (Fig. 2). Malaysia. *flavomarginata*, spec. nov.
- Elytra shorter and less parallel-sided, ratio length/width < 1.45 (**B10** figs 48, 50, 51, **B&S** fig. 3, **B12** figs 17, 18); pronotum and elytra usually without of with less conspicuous pale margins; when pronotum and elytra with rather conspicuous pale margins (**B10** fig. 51), basal angles of pronotum very obtuse to almost rounded (**B10** fig. 29); aedeagus differently shaped. Southern India, Sikkim, Burma, Thailand, Vietnam, China, Philippines, Sumatra, Java, New Britain. 25a.
- 25a. = 25. in Baehr (2012)

Arhytinus maximus, spec. nov.

A. maximus can be introduced in the key at couplet 1. that must be altered as following:

1. Body size > 11.5 mm; prothorax very wide, in middle 1.32 × as wide as at apex; elytra unipunctate; aedeagus unknown. North Vietnam. *maximus*, spec. nov.
- Body size < 9.5 mm; prothorax usually narrower, in middle < 1.28 × as wide as at apex; elytra unipunctate or without punctures; aedeagus varied. Distribution various but, if body size > 7.5 mm, not known from Vietnam. 1a.
- 1a. Body size major, length > 7.5 mm; apex of aedeagus denticulate or not, or unknown; if latter, yellow margins, at least on pronotum, conspicuous and wide, and elytra short. 2.
- Body size minor, length < 7.0 mm; apex of aedeagus usually denticulate, or unknown; if not denticulate (*A. yunnanus*, *A. nitescens*, *A. minimus*, *A. leytenensis*), with some scattered short spines (**B12** fig. 4, **B10** figs 4, 24), or with large, densely denticulate folds (**B&S10** fig. 16). 9.

Remarks

The species described as new in the present paper again demonstrate the high species diversity of the genus *Arhytinus* and, in particular, the diversity of shape and structure of the male genitalia. Even with the new additions, the number of actually existing species certainly is not even approximately recorded

and, moreover, it can be expected that additional species will be detected in areas from where no species yet have been recorded. However, the apparent rarity of the majority of the described species at present renders any considerations about taxonomic diversity and distribution difficult. To receive a more adequate impression of diversity and distribution of this genus, therefore sampling has to be much intensified and more adequate sampling methods should be applied.

Unfortunately, the species mentioned in the present paper again bear little information about their collecting circumstances and habits. Therefore the actual habits of most species of the genus remain obscure (Baehr 2010) and thus, methodical sampling presently is barely possible.

The systematic position of the genus *Arhytinus* still is obscure, because a general phylogenetic survey of the Oriental-Papuan Platynini has not yet been undertaken. Some characters of *Arhytinus* seem to represent plesiomorphic states, others could be interpreted as apomorphic. But even the apparent plesiomorphic characters are not unequivocal. At

any rate, in a future phylogenetic survey this genus probably will occupy a crucial position.

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