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A new species of the genus *Arhytinus* Bates, 1889 from Vietnam. 7th supplement to the “Revision of the genus *Arhytinus* Bates”

(Coleoptera, Carabidae, Platynini)

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Another new species of the platynine genus *Arhytinus* Bates, 1889 is described from North Vietnam: *A. punctibasis*, spec. nov. In a revised key it is differentiated from the very similar and probably closely related species *A. vietnamensis* Baehr, 2014, *A. weigeli* Baehr, 2014, and *A. gerstmeieri* Baehr, 2016 from Vietnam, and *A. yunnanus* Baehr, 2012 from south-western China.

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Introduction

The genus *Arhytinus* Bates, 1889 presently includes 52 described species that are distributed from southern India through Nepal, Burma, Thailand, Vietnam, southern and central China, Taiwan, the Philippine and Indonesian Archipelagos including Sulawesi, Timor, and the Moluccas, to New Guinea and surrounding Islands of the Bismarck Archipelago, but it is not yet recorded from Australia. The genus has been recently revised (Baehr 2010), but since the revision several additional species have been described from various countries (Baehr & Schmidt 2010, Baehr 2012, 2014a, 2014b, 2016, Baehr & Reid 2017). Thanks to the collecting efforts of A. Weigel (Wernburg) in North Vietnam, another new species of this genus has been detected, that is described in the present paper.

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 the species described as new in the present paper only the holotype is available.

Although most species of this genus are quite similar in body shape and surface structure, identification and distinction of species is reasonably easy, because of some differences in shape of pronotum and elytra, structure of the elytral striae, and, most important, of striking differences in overall shape of the aedeagus, its apex, and structure of the internal sac, in most species. Actually in many species the aedeagus either bears a hook-shaped apex of various shape and/or a various number of differently shaped sclerotized teeth or spines in the internal sac, which often render the aedeagi of externally very similar species surprisingly different.

Methods

Measurements were taken using a stereo microscope with an ocular micrometer. Body length was measured from apex of labrum to apex of elytra. Length of pronotum was measured from mid of apex to the most advanced part of base. Length of elytra was measured from the most advanced part of the humerus to the very apex.

In the taxonomic survey standard methods are used. For dissecting the genitalia, the specimen was relaxed overnight in a jar under moist atmosphere and then cleaned for a short while in 10 % KOH. The habitus

photograph was obtained by a digital camera using ProgRes CapturePro 2.6 and AutoMontage and subsequently was edited with Corel Photo Paint 14.

The holotype is stored in the working collection of the author at Zoologische Staatssammlung, München (CBM).

Taxonomy

Genus *Arhytinus* Bates, 1889

Arhytinus Bates, 1889: 278. – Baehr 2010: 7; 2012: 42; 2014a: 220; 2014b: 238; 2016: 150; Baehr & Schmidt 2010: 43; Baehr & Reid 2017: 430.

Type species: *Arhytinus bembidioides* Bates, 1892, by monotypy.

Diagnosis. Medium-sized to very small species (in tribe Platynini), characterized by short and wide body shape; absence of the mental tooth; rather cordiform prothorax; short and wide, oval-shaped and posteriorly 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. Most commonly the 3rd interval is asetose, rarely unisetose. Even when the external characters are remarkably similar throughout the genus, the male aedeagus is quite differently shaped and structured and may or may not bear a bidentate apex, and commonly it bears one or several strongly scerotized teeth, or spines, or spinose plates, of different size and shape in the apical part of the (inverted) internal sac.

Additional information about characters and taxonomic status of the genus can be found in Baehr (2010, 2012).

Arhytinus punctibasis, spec. nov.

Figs 1, 2

Holotype: ♂, “N-VIETNAM, Cao Bang Prov. vic, Tinh Tuc, Son Dong Nui, Pia Oac Nature Res., 850–1300 m, 09.–15.V.2014, 22°37.55'N, 105°52.98'E, leg. A. Weigel by light” (CBM).

Etymology. The name refers to the densely and coarsely punctate basis of the pronotum.

Diagnosis. A medium sized species, distinguished from the most similar species by combination of relatively wide pronotum with coarsely punctate basis and faintly concave lateral margin in front of the rather obtuse basal angle, distinct and narrow, pale translucent lateral margins of pronotum and elytra and suture of the elytra, distinctly crenulate elytral striae and convex intervals, and stout aedeagus with

bidentate apex and one large and one small spine in the internal sac.

Description

Measurements. Length: 5.0 mm; width: 2.15 mm. Ratios. Width/length of pronotum: 1.49; width of widest diameter/base of pronotum: 1.26; width base/apex of pronotum: 1.08; width pronotum/head: 1.35; length/width of elytra: 1.46.

Colour (Figs 1, 2). Black, elytra rather iridescent. Pronotum and elytra with narrow and inconspicuous, pale rufous translucent margins, elytra also with pale red suture. Labrum and mandibles dark red to reddish-piceous, antenna, palpi, and legs bright yellow.

Head (Fig. 1). Of average size. Eye very large, laterally well projected, orbit very short, oblique. Frontal furrows barely perceptible. Antenna moderately elongate, surpassing base of pronotum by two antennomeres, 6th antennomere about 1.8 × as long as wide. Surface with fine though distinct, isodiametric microreticulation, moderately glossy.

Pronotum (Figs 1, 2). Comparatively wide, very slightly cordiform, widest slightly behind apical third, dorsal surface moderately convex. Apex rather deeply excised, apical angle slightly projected but widely rounded. Lateral border evenly convex in anterior half, very slightly convex also in basal half, faintly but perceptibly concave near base. Base rather wide in comparison with diameter, in middle straight, laterally convex. Basal angle obtuse, laterally not projected, slightly > 110°. Lateral margin in anterior part narrow, in basal third widened and deplanate. Apex finely margined, base margined except in middle. Median line shallow but distinct, not attaining apex nor base. Both transverse impressions barely perceptible. Basal grooves shallow. Anterior lateral seta inserted at apical quarter, well in front of widest diameter, and slightly removed from margin. Posterior lateral seta inserted at basal angle. Base and posterior third of lateral margin with coarse, moderately dense, irregularly spaced punctures. Surface with extremely fine and very superficial, very transverse microsculpture which is composed of dense, transverse meshes and lines, visible only at high magnification, surface glossy and rather iridescent.

Elytra (Fig. 1). Of average shape, moderately elongate, gently oviform, dorsal surface convex though slightly depressed on disk. Lateral margin slightly convex in basal half, then evenly convex. Striae well impressed, coarsely crenulate almost towards apex, intervals gently convex. 3rd interval asetose. Microreticulation extremely fine and superficial, barely recognizable even at very high



Fig. 1. *Arhytinus punctibasis*, spec. nov. Habitus. Body length: 5.0 mm.

magnification, composed of finest transverse lines. Surface very glossy, with distinct iridescent lustre.

Male genitalia (Fig. 3). Genital ring large, rather symmetric, triangular, with fairly narrow, rounded apex. Aedeagus short and wide, little curved in basal part, lower surface very slightly concave throughout, carinate in middle, but not striolate. Apex triangular, acute at tip, bidentate, directed horizontally backwards, the lower tooth larger and recurved. Internal sac with one large tooth-like sclerite on the left side and a small one on the right side, and with several moderately sclerotized folds, which usually possess slightly more sclerotized margins. Both parameres large and apical convex, the left one rather triangular.

Female gonocoxites. Unknown.

Variation. Unknown.

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

Collecting circumstances. Collected at light in the lower montane zone, probably in rain forest.

Relationships. This species belongs to a group of similarly sized and shaped species which so far are recorded from North Vietnam and south-western China, and which differ slightly in shape and surface



Fig. 2. *Arhytinus punctibasis*, spec. nov. Head and pronotum.

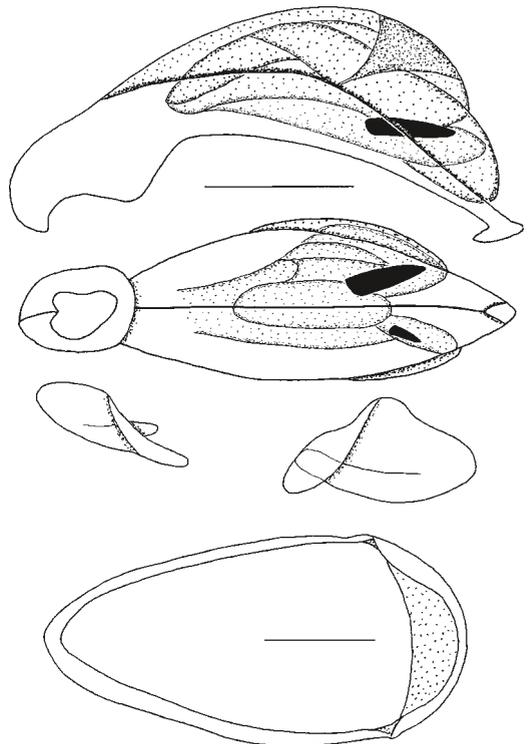


Fig. 3. *Arhytinus punctibasis*, spec. nov. Male genitalia: aedeagus, left side and lower surface, right and left parameres, genital ring. Scale bars: 0.25 mm.

structure of pronotum and elytra, also in shape of the aedeagus and number and shape of spines or teeth in the internal sac.

- Pronotum narrower and longer, ratio width/length 1.54, apex more deeply concave; pronotum and elytra with indistinct pale margins; elytral intervals almost depressed, striae barely crenulate. *A. gerstmeieri* Baehr, 2016

**Revised key to the species related
to *Arhytinus punctibasis*
from Vietnam and adjacent China**
(aedeagus unknown of *A. vietnamensis* and
A. gerstmeieri)

1. Pronotum narrower, ratio width/length 1.42; pronotum and elytra without distinct pale margins, and eye comparatively small and laterad moderately produced. *A. weigeli* Baehr, 2014
 - Pronotum wider, ratio width/length > 1.47, commonly more; if < 1.50, pronotum and elytra with distinct pale margins and eye large and laterad markedly produced. 2.
2. Pronotum narrower, ratio width/length < 1.50; elytra dorsally more convex **and** intervals convex. 3.
 - Pronotum wider, ratio width/length > 1.54; elytra dorsally more depressed; if in doubt, elytral intervals depressed and striae barely crenulate. 4.
3. Elytra shorter, ratio length/width < 1.38; apex of pronotum little concave; elytral striae only finely crenulate. *A. vietnamensis* Baehr, 2014
 - Elytra longer, ratio length/width 1.46; apex of pronotum deeply concave (Figs 1, 2); elytral striae coarsely crenulate; apex of aedeagus bihamate, internal sac with one large and one small spine (Fig. 3). *A. punctibasis*, spec. nov.
4. Pronotum wider and shorter, ratio width/length 1.58, apex less concave; pronotum and elytra with distinct pale margins; elytral intervals convex, striae distinctly crenulate. *A. yunnanus* Baehr, 2012

Remarks

Together with the four recently described species from Vietnam and adjacent Yunnan, *A. punctibasis* forms a group of very similar and certainly closely related species. Even when the male genitalia, which are highly characteristic in most species of *Arhytinus*, are only recorded from three of the five species, body size, body shape, and surface structure are so similar in all species that their close relationship is very probable. Apparently the quite restricted common area of the five species forms a hotspot of occurrence but not of morphological diversity of the genus. If this opinion is true, then the question arises why five so closely related species could evolve and can occur in a limited area and moreover in very close neighbourhood. Perhaps this could be evidence of very restricted ranges of these species which, although they are able to fly, occur in rain forest, most probably in montane forest. Rain forest living carabid beetles, however, are known for their general low dispersal power. Unfortunately, as in most species of this genus, the material is too limited as to enable us to fix the actual ranges of the species. Therefore, additional systematic exploration of the area would be needed for further elucidation of this astonishing multitude of related species.

Again the new species does not or little add to the unsolved question about the actual habits of the species and their mode of life. Apparently, all these recent discoveries give us only an indication of the occurrence and diversity of species, but no additional information about these.

Table 1. Comparison of measurements and ratios of *Arhytinus yunnanus* Baehr, 2012, *A. vietnamensis* Baehr, 2014, *A. weigeli* Baehr, 2014, *A. gerstmeieri* Baehr, 2016, and *A. punctibasis*, spec. nov.

N = number of measured specimens; l = body length in mm; w/l pr = ratio width/length of pronotum; d/b pr = ratio width widest diameter/base of pronotum; b/a pr = ratio width base/apex of pronotum; pr/h = ratio width pronotum/head; l/w el = ratio length/width of elytra.

	N	l	w/l pr	d/b pr	b/a pr	pr/h	l/w el
<i>gerstmeieri</i>	1	4.8	1.54	1.28	1.04	1.21	1.38
<i>punctibasis</i>	1	5.0	1.49	1.26	1.08	1.35	1.46
<i>vietnamensis</i>	3	4.4-4.8	1.47-1.50	1.23-1.26	1.07-1.12	1.23-1.28	1.36-1.38
<i>weigeli</i>	1	4.9	1.42	1.28	1.10	1.22	1.40
<i>yunnanus</i>	1	4.9	1.58	1.27	1.05	1.24	1.39

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