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**A new species of the genus *Arhytinus* Bates, 1889 from Vietnam.
6th supplement to the “Revision of the genus *Arhytinus* BATES”
(Coleoptera, Carabidae, Platynini)**

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Abstract

Another new species of the platynine genus *Arhytinus* BATES, 1889 is described from North Vietnam: *A. gerstmeieri* sp. n. It is differentiated from the very similar and probably closely related species *A. vietnamensis* BAEHR, 2014 and *A. weigeli* BAEHR, 2014 from Vietnam and *A. yunnanus* BAEHR, 2012 from south-western China. Probably the new species is nearer related to *A. yunnanus* than to either of the Vietnamese species, although these occur in the immediate vicinity.

Zusammenfassung

Eine weitere neue Art der Platyninen-Gattung *Arhytinus* BATES, 1889 wird aus Nordvietnam beschrieben: *A. gerstmeieri* sp. n. Sie wird mit den sehr ähnlichen und vermutlich nächstverwandten Arten *A. vietnamensis* BAEHR, 2014 und *A. weigeli* BAEHR, 2014 aus Vietnam und *A. yunnanus* BAEHR, 2012 aus Südwestchina verglichen. Die neue Art ist vermutlich näher mit *A. yunnanus* verwandt als mit den beiden Arten aus Vietnam, obwohl diese in unmittelbarer Nachbarschaft vorkommen.

Introduction

The genus *Arhytinus* BATES, 1889 presently includes 51 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 known 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, in press).

Grace to the collecting efforts of Roland GERSTMEIER (München) 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.

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, 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 worked with Corel Photo Paint 14.

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

Genus *Arhytinus* BATES, 1889

Arhytinus BATES, 1889: 278. – BAEHR 2010: 7.

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

Diagnosis: Medium-sized to very small species (in tribe), characterized by short and wide body shape; absence of the mental tooth; rather cordiform prothorax; 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. 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 bidenticulate apex, and commonly it bears 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.

***Arhytinus gerstmeieri* sp. n.** (Figs 1, 2, 6)

H o l o t y p e ♀: “N-VIETNAM, Cuc Phuong NP, 22-24.5.2015, 20°17.572’N, 105°40.052’E, 280m, leg. R. Gerstmeier” (CBM).

E t y m o l o g y: The name is a patronym in honour of the collector, Roland Gerstmeier, München.

D i a g n o s i s: A medium sized species, distinguished from the most similar species by combination of relatively wide pronotum, indistinct and narrow, pale translucent lateral margins of pronotum and elytra, faintly sinuate lateral margin in front of the obtuse basal angle of the pronotum, and depressed and barely crenulate elytral intervals.

D e s c r i p t i o n:

Measurements: Length: 4.8 mm; width: 2.2 mm. Ratios. Width/length of pronotum: 1.54; width of widest diameter/base of pronotum: 1.28; width base/apex of pronotum: 1.04; width pronotum/head: 1.21; length/width of elytra: 1.38.

Colour (Figs 1, 2). Black, slightly iridescent. Pronotum and elytra with narrow and inconspicuous, pale reddish translucent margins. Labrum and mandibles, reddish-piceous, palpi dark yellow with slightly paler apices, antenna reddish-piceous, but 1st – 3rd antennomere slightly paler. Femora pale yellow, tibiae and tarsi very slightly darker.

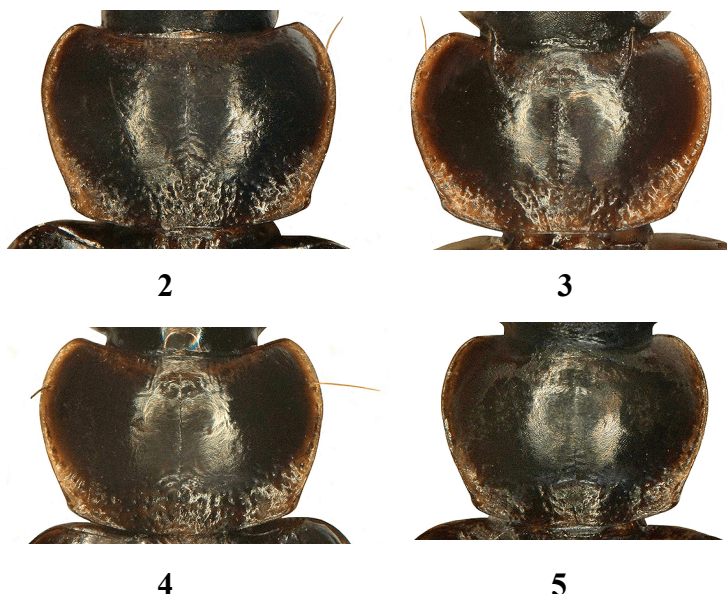
Head (Fig. 1). Of average size. Eye very large, laterally markedly projected, orbit extremely short, oblique. Frontal furrows small and shallow, circular, developed only immediately behind clypeal suture. Antenna short, surpassing base of pronotum by slightly more than one antennomere, 6th antennomere about 1.5 x 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 slightly excised, apical angle very slightly projected but widely rounded. Lateral border evenly convex in anterior half, very slightly convex also 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



Fig. 1. *Arhytinus gerstmeieri* sp. n. Habitus. Body length: 4.8 mm.

widened and deplanate. Apex finely margined, base not margined. 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 which are slightly confluent. 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 slightly iridescent.



Figs. 2-5. Pronotum. (2) *Arhytinus gerstmeieri* sp. n. (3) *A. yunnanus* BAEHR, 2012. (4) *A. vietnamensis* BAEHR, 2014. (5) *A. weigeli* BAEHR, 2014. All of same magnification.

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, in basal half very finely crenulate, in apical half barely crenulate, intervals almost completely depressed. 3rd interval asetose. Microreticulation extremely fine and superficial, barely recognizable even at very high magnification, composed of finest transverse lines. Surface very glossy, with distinct iridescent lustre.

Male genitalia. Unknown.

Female gonocoxites (Fig. 6). Gonocoxite 1 with 3-4 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. Unknown.

D i s t r i b u t i o n: North Vietnam. Known only from the type locality.

C o l l e c t i n g c i r c u m s t a n c e s: Little recorded. The holotype was collected at rather low altitude, probably in rain forest.

R e l a t i o n s h i p s: In view of the unknown male genitalia the relationships of the new species are somewhat uncertain, but in body shape and structure it is most similar to *A. yunnanus* BAEHR, 2012 from Yunnan, south-western China, less so to *A. vietnamensis* BAEHR, 2014 and *A. weigeli* BAEHR, 2014, which both likewise are recorded from North Vietnam and from localities close to the type locality of *A. gerstmeieri*.

Tab. 1. Comparison of measurements and ratios of *Arhytinus gerstmeieri* sp. n., *A. yunnanus* BAEHR, 2012, *A. vietnamensis* BAEHR, 2014. and *A. weigeli* BAEHR, 2014.

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 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>yunnanus</i>	1	4.9	1.58	1.27	1.05	1.24	1.39
<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

Key to the species related to *A. gerstmeieri* from Vietnam and adjacent China

(structure of aedeagus not mentioned, because it is unknown of *A. vietnamensis* and *A. gerstmeieri*)

- 1 Pronotum narrower, ratio width, length 1.42; pronotum and elytra without distinct pale margins (Fig. 5), 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 (Figs 1-4) and eye large and laterad markedly produced 2
- 2 Pronotum narrower, ratio width/length < 1.50 (Fig. 4); elytra dorsally more convex **and** intervals convex *A. vietnamensis* BAEHR, 2014
- Pronotum wider, ratio width/length > 1.54 (Figs 2.3); elytra dorsally more depressed; if in doubt, elytral intervals depressed and striae barely crenulate 3

- 3 Pronotum wider and shorter, ratio width/length 1.58, apex less concave; pronotum and elytra with distinct pale margins (Fig. 3); elytral intervals convex, striae distinctly crenulate *A. yunnanus* BAEHR, 2012
- Pronotum narrower and longer and shorter, ratio width/length 1.58, apex more deeply concave; pronotum and elytra with indistinct pale margins (Figs 1, 2); elytral intervals almost depressed, striae barely crenulate (Fig. 1) *A. gerstmeieri* sp. n.

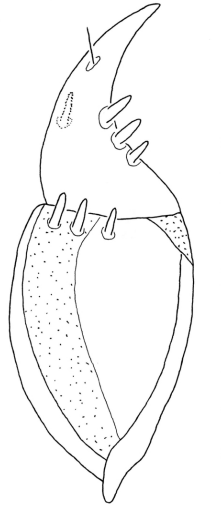


Fig. 6. *Arhytinus gerstmeieri* sp. n. Female gonocoxites. Scale bar: 0.25.

Remarks

Together with the mentioned three species from Vietnam and adjacent Yunnan, *A. gerstmeieri* apparently forms a group of very similar and most probably closely related species. Even when the male genitalia, which are highly characteristic in most species of *Arhytinus*, are only recorded from two of the four species, body size, body shape, and surface structure are so similar in all four species that their close relationship is very probable. If this opinion is true, then the question arises why four so closely related species 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. Rain forest living carabid beetles, however, are known for their general low dispersal power. However, certainly additional material is needed to fix the ranges of the species, and this may also gain additional evidence.

Another unsolved problem is the actual habits of the species and their mode of life. As mentioned in the introduction, we know almost nothing about ecology and behaviour of any species of *Arhytinus*. Therefore, the possibility of different habits and ways of life of the mentioned species likewise is an unsolved question open for speculation and further study.

Acknowledgements

I am indebted to Roland GERSTMEIER, München, for the kind gift of a number of interesting specimens which he collected recently in North Vietnam, including the new species described in the present paper.

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Buchbesprechungen

LESCHEN R.A.B. & R.G. BEUTEL (Eds): **Handbook of Zoology. Coleoptera Vol. 3. Morphology and Systematics (Phytophaga)**. – De Gruyter, Berlin, 2014. 675 S.

Dies ist nun der dritte und abschließende Band des Handbuchs für Zoologie, Coleoptera Band 3, und beinhaltet die phytophagen Überfamilien Chrysomeloidea und Curculionidea. Genau gesagt betrifft es alle Käferfamilien um die (klassischen) Cerambycidae (Bockkäfer), Chrysomelidae (Blattkäfer) und Curculionidae (Rüsselkäfer) herum, insgesamt wohl 14 Familien. - Ein geplanter 4. Band wurde (?vorläufig) verschoben.

Beginnen wir mit der Einleitung, der “molekularen Phylogenie und Evolution der Coleoptera” - dies ist etwas enttäuschend. Kein einziger Stammbaum, der wenigsten “eine” (zumindest veraltete) Situation über die Verwandtschaftsverhältnisse der Superfamilien zeigt. Über die Stellung der Coleoptera im System der Endopterygota wagt sich der Autor nicht hinaus; die ungeklärte Position der Adephaga, Archostemata, Myxophaga und Polyphaga verursacht allenfalls “Stirnrunzeln” - und das soll wirklich der Stand der Dinge sein? Die “Evolution” der Coleoptera - allein schon, wie alt sind denn nun die ältesten Käfer möglicherweise - wird uns nicht wirklich erschlossen. Die Referenzenliste stoppt bei 2012 (klar, irgendwann muss Schluss sein), ein Grund, warum z.B. die Analyse der Cleroidea von Gunter et al. (2013) nicht mehr berücksichtigt werden konnte. – Letztendlich macht dies deutlich, dass die molekulare Phylogenie der Käfer noch ganz anfänglich in den “Kinderschuhen steckt”.

Was dann abgeliefert wird, ist erfreulich übersichtlich, informativ, grafisch ziemlich gut illustriert und bietet eine umfassende Informationsquelle über Systematik und Biologie der Käferfamilien und -unterfamilien. Mit am vollständigsten und damit am informativsten, was sowohl Systematik, Morphologie und Biologie (z.B. Blattroller bei den Rüsselkäfern) betrifft, sind die Artikel über Vesperidae, Cerambycidae, Attelabidae (für mich die beste Familiendiagnose in diesem Buch) und Entiminae.

Insgesamt gesehen, ein hervorragender 3. Band, der die Reihe der Coleoptera (vorläufig) würdig abschließt.

R. Gerstmeier

SCHMIDT-RHAESA A. (Ed.): **Handbook of Zoology. Gastrotricha and Gnathifera. Vol. 3.** – De Gruyter, Berlin, 2015. 354 S.

Der dritte Teil der “Gastrotricha, Cycloneuralia and Gnathifera” behandelt die Taxa Gastrotricha und Gnathifera. Die Gastrotricha sind phylogenetisch gesehen eine “mysteriöse” Gruppe, die trotz verwandtschaftlicher Beziehungen eher zwischen den Gastrotricha und Cycloneuralia stehen, seitens ihrer DNA aber eine ganz andere Geschichte erzählen. Da clustern die Gastrotricha nämlich mit den Spiralia, oft nahe zu platyzoischen Gruppen; letztendlich behandelt der Autor die Gastrotricha in einer gewissen isolierten Weise.

Die Gnathifera vereinigen Tiergruppen, die morphologisch und ökologisch auf den ersten Blick sehr ungleich wirken. Große und kleine bzw. freilebende oder parasitäre Organismen zeigen eine Anzahl morphologischer Differenzen. Unter dem Strich sind es Besonderheiten des Kiefernapparates und der Struktur der Epidermis, die den Schlüssel zum Verständnis der Gnathiferen-Verwandtschaft lieferten. Dies betrifft in besonderem Maße Rotifera und Acanthocephala, die als einigendes Merkmal die syncytische Epidermis teilen. Die meisten offenen Fragen betreffen aber die direkten verwandtschaftlichen Beziehungen zwischen Rotifera und Acanthocephala – das letzte Wort scheint hier noch nicht gesprochen zu sein. Dieser Band beinhaltet morphologische Systematik und Phylogenie vom Feinsten, gespickt mit fantastischen Zeichnungen, Mikrofotografie, Farbfotos, übersichtliche Tabellen und Stamm-bäumen (basierend auf morphologischer Analyse) – ein Höhepunkt in der Erforschung dieser leider oft viel zu wenig beachteten Tiergruppen. Vielleicht hätte man die ökologische Bedeutung noch etwas deutlicher hervorheben können, aber ansonsten bleiben keine Wünsche offen.

Ein klassischer, aber nichtsdestotrotz toller und immens wichtiger Band in der Reihe “Handbuch der Zoologie”, der hoffentlich zu einer größeren Beachtung dieser interessanten Tiere führt.

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