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A new, peculiarly coloured *Anthicomorphus* Lewis, 1895 (Coleoptera: Anthicidae) from southern Vietnam

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Anthicomorphus langbiang sp. nov. from S Vietnam is described and illustrated. The new species is peculiar among all congeners primarily due to the unusual elytral pattern.

Key words: taxonomy, new species, ant-like flower beetles, Oriental Region

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INTRODUCTION

Anthicomorphus Lewis, 1895 is a small genus of Anthicini Latreille, 1819 (Anthicidae Latreille, 1819) distributed in the southern and eastern Palaearctic, Indian Subcontinent, Japanese Archipelago, China, mainland SE Asia, Philippines, Greater Sunda Islands, Wallacea, New Guinea towards the Solomon Islands and Micronesia (Telnov 2009, 2020). Six species and one subspecies are known from the Palaearctic (Telnov 2020), 32 – from the Oriental Region and Wallacea (Telnov 2021 and unpublished checklist), and another 12 from the Papuan Region (Telnov 2009) and tropical Pacific (Werner 1965). No comprehensive key to species exists for all species of this genus, and most of its species are known from original descriptions only.

The present paper is focused on the description of a new species, *Anthicomorphus langbiang* sp. nov., from southern Vietnam. Patterns and features of dorsal colouration of *Anthicomorphus* species are briefly discussed.

MATERIAL AND METHODS

Paired morphological structures are generally treated as singular in text. For morphological studies, a Leica S6D binocular stereomicroscope (Leica Microsystems, Wetzlar, Germany) was used. Habitus images were produced with a Canon EOS 5D SLR camera (Canon Co., Tokyo, Japan) and a Canon MP-E 65 mm macro lens (Canon Co., Tokyo, Japan). Genitalia were relaxed in KOH solution, mounted on microscope slides, and fixed in

dimethyl hydantoin formaldehyde (DMHF) for study and imaging; after the study, genitalia were mounted on same slides with corresponding specimens and fixed in DMHF. Genitalia were studied and imaged using an AmScope BH 200 light microscope (AmScope Co., Los Angeles, U.S.A.) with an attached external Sony DSC–WX100 (Sony Co., Tokyo, Japan) digital camera. Helicon Focus 7 software (Helicon Soft, Kharkiv, Ukraine) was used for image stacking. Further image manipulations were done using GNU Image Manipulation Program (GIMP).

Label text is reproduced *verbatim*. Labels, if more than one on the same specimen, are separated by a double slash. All type specimens of the new species are provided with a black framed label on red paper with "HOLOTYPUS" or "PARATYPUS". The discussed material is deposited at the Naturkundemuseum Erfurt, Germany (NME) and in the private collections of André Skale (ASC) in Gera, Germany and Dmitry Telnov (DTC) in Rīga, Latvia.

RESULTS

Anthicinae Latreille, 1819
Anthicini Latreille, 1819

***Anthicomorphus langbiang* sp. nov.** (Figs 1–3)
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Type material designated. Holotype ♂ NME: S-Vietnam, Lam Dong Pr., Lac Duong Distr., Bidoup Nui Ba national park, vic. station at Da Nhim river [printed] // 12°10'58"N, 108°40'48"E) to Deo Khane Pass (12°11'11"N, 108°42'53"E). 22.-26.IV.2024 1450-1650m.leg.A.Weigel LF [printed].
Paratypes 3 specimens. 1♀ NME: same label as holotype; 1♀ ASC & 1♀ DTC: S–Vietnam, Lam Dong Pr., Lac Duong Distr., Bidoup Nui Ba NP, 1450-1650 m, 22.-28.4.2024 leg. A. Skale [printed].

Fig. 1. *Anthicomorphus langbiang* sp. nov., holotype ♂. A – Habitus, dorsal view; B – ditto, left lateral view; C – ditto, dorsal forebody [not to scale].

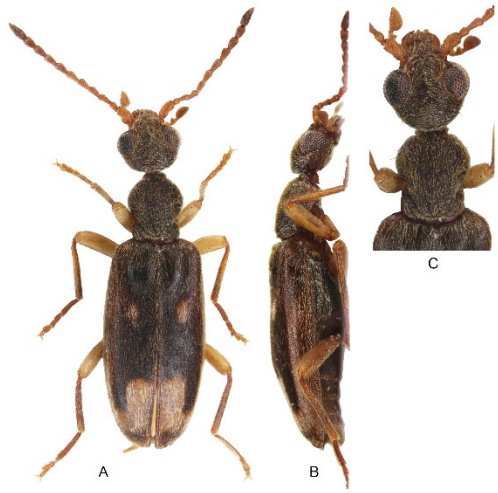

Fig. 2. *Anthicomorphus langbiang* sp. nov., paratype ♀. A – Habitus, dorsal view; B – ditto, right lateral view; C – ditto, dorsal forebody [not to scale].

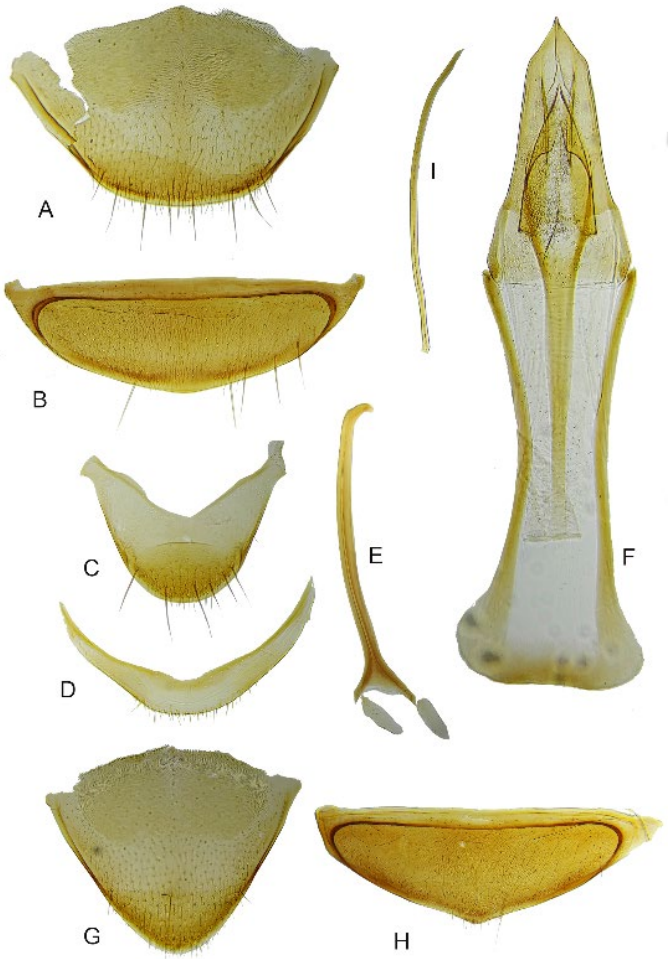

Fig. 3. *Anthicomorphus langbiang* sp. nov., terminalia and genitalia. A – Holotype ♂, tergite VII, dorsal view; B – ditto, sternite VII, ventral view; C – ditto, tergite VIII, dorsal view; D – ditto, sternite VIII, ventral view; E – ditto, sternite IX; F – ditto, aedeagus; G – Paratype ♀, tergite VII, dorsal view; H – ditto, sternite VII, ventral view; I – ditto, sternite IX [not to scale].

Derivatio nominis. Toponymic. Named after the Lang Biang Plateau where this species occurs.

Measurements, holotype male, total body length 4.1 mm; head length 0.9 mm, head width across compound eyes 0.8 mm, pronotal length 0.9 mm, maximum pronotal width across anterior lobe 0.7 mm, minimum pronotal width 0.4 mm, elytral length 2.3 mm, combined maximum elytral width across postmedium 1.2 mm. Selected female paratype, total body length 4.7 mm; head length 0.9 mm, head width across compound eyes 0.75 mm, pronotal length 0.9 mm, maximum pronotal width across anterior lobe 0.75 mm, minimum pronotal width 0.4 mm, elytral length 2.9 mm, combined maximum elytral width across postmedium 1.4 mm.

Description. Holotype male (Figs 1, 3). Dorsal forebody dark brown. Elytra generally dark brown dorsally, broadly pale brown laterally, a paired small elliptical spot posteriad to postbasal transverse impression (isolated from pale brown lateral area of elytron) and a large common preapical subrectangular spot which is narrowly connected at its posterior extent to pale brown lateral area of each elytron yellow to yellowish brown (always distinctly paler than brown lateral portion of elytron); elytral apex dark brown (Fig. 1A). Mouthparts and antenna yellowish, three to four terminal antennomeres slightly darkened. Legs yellowish to yellowish rufous, tibia darkened in distal half, metathoracic legs generally slightly darker than pro- and mesothoracic pair. Ventral forebody and mesosternum pale brown, metasternum black-brown, abdomen brown to dark brown. Head elliptical, slightly longer than wide, slightly convex in dorsal aspect, subopaque. Labrum subtruncate at anterior margin. Frontoclypeal suture not indicated. Compound eye large, nearly holoptic, strongly protruding from lateral and dorsal outline of head, about 1.8× as long as strongly converging tempus. Head base narrow, rounded. Head dorsal punctures dense, moderately deep. Intervening spaces much narrower than puncture diameters, smooth and moderately glossy. Dorsal cranial setae yellowish to golden, dense, appressed, in part effectively concealing dorsal sculpture of head, arranged transversely on vertex, pointed longitudinally anteriad along inner eye margin and obliquely anteriorly along median portion of frons. Antenna exceeds midlength of metasternum when directed posteriad, not thickened apically. Basal antennomere elongate and thickened, asymmetrically cylindrical, impressed at posterior edge facing compound eye, about 2.5× as long as second antennomere. Second antennomere short, hardly longer than wide. Third antennomere, longest among antennomeres 2–10, about 3.2× as long as second antennomere, hardly longer than fourth antennomere. Antennomeres 4–10 thickened distally, slightly asymmetrical (distal portion widened somewhat disproportionally stronger at one lateral edge). Penultimate antennomere distinctly longer than wide. Terminal antennomere elongate, asymmetrical, apically pointed, about 1.8–1.9× as long as penultimate antennomere, slightly shorter than combined length of antennomeres 9–10. Penultimate maxillary palpomere subtriangular, with strong lateral lobe at anterior margin. Terminal maxillary palpomere scalene triangular. Mandible strongly widened at basal portion. Pronotum longer than wide, slightly narrower than head across eyes, shortly truncate medially at anterior margin. Pronotal disc subopaque, nearly flat in dorsal aspect. Dorsal outline of pronotum hourglass shaped, lateral margins strongly constricted laterally postmedium, those of anterior lobe rounded laterally, of posterior lobe – slightly widened towards base. Anterior pronotal rim and antebasal sulcus distinct, wide dorsally, laterally and ventrally. Pronotal dorsal and lateral punctures larger and less regularly shaped than those on head. Intervening spaces much narrower than puncture diameters, smooth and moderately glossy. Pronotal setae yellowish to golden, dense, appressed, in part effectively concealing dorsal sculpture of pronotal disc, directed posteriad or (on lateral constriction area) – obliquely medio-posteriad. Some significantly longer erect tactile setae present on disc and lateral sides. Scutellar shield small, lanceolate, apically slightly pointed, moderately glossy, with short setae. Elytra elongate, about 1.9× as long as wide, widest around midlength, dorsally slightly convex in apical two thirds. Postbasal transverse impression shallow but distinct. Humerus broadly rounded but distinct, humeral callosity weakly developed. Apical sutural angle rounded. Elytral surface moderately glossy and smooth, dorsal punctures

elliptical, moderately deep and rather dense. Intervening spaces smooth and glossy, about twice as wide as puncture diameters, denser along suture. Elytral setae moderately long, rather dense, appressed, setae on dark background dark golden to brown (except for some pale golden setae on basal fourth), setae on paler background contrastingly paler golden to yellow. Scattered, longer erect tactile setae on elytral disc and lateral edges. Metathoracic wing fully developed (functional). Legs long and slender, densely setose. Tibial terminal spurs short, paired, strongly subequally long (spur at posterior tibial margin always short, inconspicuous). Penultimate tarsomere bilobate. Basal metatarsomere slightly longer than combined length of remaining metatarsomeres. Last visible abdominal tergite exposed, not concealed by elytra. Tergite VII subtruncate at posterior margin (Fig. 3A). Sternite VII rounded at posterior margin, here medially with two long and several somewhat shorter setae (Fig. 3B). Tergite and sternite VIII as in fig. 3C–D. Sternite IX with short arms (Fig. 3E). Aedeagus as in fig. 3F, inner sac without gonopore armature.

Sexual dimorphism. Female (Figs 2–3) slightly longer, compound eye about 2.6–2.7× as long as comparatively less strongly converging tempus. Female basal antennomere about 2.5× as long as second antennomere. Second antennomere hardly longer than wide. Third antennomere twice as long as second, about 1.3× as long as fourth antennomere. Terminal antennomere nearly twice as long as penultimate, antennomeres 9–10 nearly equally long. Female basal metatarsomere slightly longer than combined length of remaining metatarsomeres. Tergite VII narrowly rounded at posterior margin (Fig. 3G). Sternite VII subangulate medially at posterior margin, here with two long setae (Fig. 3H). Sternite IX rod-like (Fig. 3I).

Differential diagnosis. The new species is peculiar among all congeners primarily due to the elytral colouration and no similarly coloured *Anthicomorphus* species are yet known. *Anthicomorphus pasteuri* Pic, 1901 (Java, Sumatra) has the elytra ochre-coloured with large, irregularly][-shaped black to dark brown median spot expanding towards the lateral margins (but not touching them) at its anterior and posterior extent, narrower medially; the anterior margin of dark spot touches the base of elytra, the posterior margin subtruncate to slightly sinuous. *Anthicomorphus rufithorax* Pic, 1909 (Peninsular Malaysia, Singapore, Thailand, Vietnam) has the dorsal forebody pale and the elytra with the large dark median spot along the suture. *Anthicomorphus dohertyi* Pic, 1910 (New Guinea) and *A. serricornis* (Marseul, 1882) (Sumatra) are both dark rufous dorsally and ventrally, elytra with a large black spot leaving only shoulders, apex and a narrow lateral edge of each elytron rufous, at least the antennomeres 4–10 are black in these two species. *Anthicomorphus obscurus* Krekich-Strassoldo, 1928 (Thailand, Vietnam, unpublished record from Peninsular Malaysia) is significantly smaller and entirely dark brown except for the paler elytral apex). The new species, besides the colour pattern, is specific also in the combination of the following features: the intermediary antennomeres only slightly asymmetrical, not serrate, the head base not strongly prolonged posteriad, the dorsal forebody densely punctured, subopaque, the metasternum distinctly darker than the pro- and mesosternum, the shape of the aedeagus is different.

Ecology. Attracted to light at 1450–1650 m a.s.l. in a primary mid-montane rainforest.

Distribution. So far known from the Lang Biang Plateau (also known as Lâm Viên or Đà Lạt Plateau), southern Vietnam.

DISCUSSION

Previously, no comprehensive attempt was made to group and assess colour patterns within entire families of Coleoptera. General patterns and features of body colouration are not summarized for the family Anthicidae as well. However, an attempt was made to group the species of *Sapintus* Casey, 1895 from the Indo-Australian transition zone according to their colour patterns (Telnov 2014). Below I preliminary grouped the species of *Anthicomorphus* in accordance with their general dorsal colour patterns defining seven informal colour groups. Known subspecies are not considered in the assessment and colouration of legs and antennae is not considered but only that of dorsal head, pronotum and elytra (for one species also ventral colouration is used since the original description of its colouration is misleading, see below).

i. Entirely dark coloured species, black or brown (including variations of these colours), reddish brown or reddish black; elytra without distinct paler or darker markings: 12 species (*A. aeneipennis* (Pic, 1915), *A. badeng* Telnov, 2021, *A. brunneus* Telnov, 2009, *A. foveicollis* (Motschulsky, 1863), *A. hirtulus* Krekich-Strassoldo, 1929, *A. infuscatus* Krekich-Strassoldo, 1925, *A. lividifemur* Krekich-Strassoldo, 1928, *A. niponicus* Lewis, 1895, *A. obscurus* Krekich-Strassoldo, 1928, *A. optatus* Bonadona, 1981, *A. rufescens* Krekich-Strassoldo, 1925, *A. semiopacus* Pic, 1923);

ii. Entirely pale to reddish species: 12 species (*A. biakensis* Telnov, 2009, *A. diversicornis* (Pic, 1914), *A. glaber* Krekich-Strassoldo, 1925, *A. greensladei* Telnov, 2009, *A. martini* Telnov, 2009, *A. moluccanus* Telnov, 2009, *A. moultoni* Krekich-Strassoldo, 1914, *A. pacificus* Werner, 1965, *A. rufus* Krekich-Strassoldo, 1925, *A. sulcatipennis* Pic, 1915, *A. theresae* (Pic, 1896), *A. weigeli* Telnov, 2009);

iii. Forebody darker than elytra, the latter with or without darker markings: five species (*A. cruralis* Lewis, 1895, *A. consimilis* Krekich-Strassoldo, 1925, *A. mamillatus* (Pic, 1914), *A. puberulus* (Marseul, 1877), *A. tonkineus* Pic, 1940);

iv. Head, pronotum, in some taxa also narrow basal area of elytra pale, rest of elytra contrastingly darker: 11 species (*A. bicoloratus* Krekich-Strassoldo, 1929, *A. borneensis* (Pic, 1910), *A. fumeoalatus* Krekich-Strassoldo, 1925, *A. legenyem* Telnov, 2009, *A. mertoni* Pic, 1910, *A. montanus* Krekich-Strassoldo, 1925, *A. rufopubescens* Telnov, 2009, *A. sanguinolentus* Krekich-Strassoldo, 1928, *A. siamensis* Krekich-Strassoldo, 1928, *A. subelongatus* Pic, 1910, *A. suppeditus* Telnov, 2009);

v. Venter pale, dorsum dark with ‘olive green shine’: one species (*A. olivaceus* Pic, 1943), only known from the type material, the original description of the colouration is misleading (‘rufescens, supra nigro-olivaceus’ (Pic 1943)) and the type material was not studied.

vi. Dorsally and ventrally reddish species with large black spot occupying most of elytra, anterior and posterior elytral portion narrowly reddish, lateral portion reddish or black: two species (*A. dohertyi*, *A. serricornis*);

vii. Forebody dark or pale, elytra pale or dark with variably shaped, usually irregular dark or pale markings: seven species. The colour patterns within this group can be more detailed described as follows:

vii.i. Dark forebody, ochre elytra with entirely or partially dark area along suture: three species (*A. himalayanus* Telnov, 2010, *A. mimicus* Telnov, 2016, *A. suturalis* Lewis, 1895);

vii.ii. Pale forebody, ochre elytra with entirely or partially dark area along suture: one species (*A. rurithorax* Pic, 1909);

vii.iii. Rufous body, common scutellar and paired latero-median dark spots on elytra: one species (*A. atronotatus* Pic, 1922);

vii.iv. Dark forebody, ochre elytra with irregular, somewhat] [shaped dark marking, elytral base, apex and lateral margins pale: one species (*A. pasteuri*);

vii.v. Dark forebody, elytra dorsally dark, laterally brown, paired small spot on elytral disc in anterior half, common preapical subrectangular spot which is narrowly connected posteriorly to brown lateral area of each elytron: one species (*A. langbiang* sp. nov.).

So far, the dorsal colour pattern as that in *A. langbiang* sp. nov. is unique, one of most peculiar and complex in the entire family of Anthicidae. The functional and evolutionary meaning of this patterns to be clarified.

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