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A new dusty lacewing genus and species (Neuroptera: Coniopterygidae) from Cretaceous Burmese amber

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Abstract: *Paranimboa groehni* gen. et sp. n. is described from Cretaceous Burmese amber. The unforked vein Rs of the new genus indicates a relation with the recent genus *Nimboa* (subfamily Coniopteryginae).

Introduction

Thousands of pieces with insect inclusions of Cretaceous amber from Myanmar are housed in different museums (Grimaldi et al. 2002) and private collections. Though the order Neuroptera takes only a small minority of this amount, it seems to have a considerable diversity. The family Berothidae dominates this group, with more than a dozen described species (Makarkin 2015), but e. g. the Osmylidae (Myskowiak et al. 2016), Psychopsoidea (Engel & Grimaldi 2008, Lu et al. 2016), Sysiridae (Makarkin 2016) and Myrmeleontidae (Huang et al. 2016) are also represented. As regards Coniopterygidae, two species and a genus were hitherto described from such material (Engel 2004). The present work was carried out on the basis of two very well preserved dusty lacewing specimens included in the same Burmese amber piece.

Material and methods

The material investigated housed now in the private collection of Carsten Gröhn, Glinde, Germany, but in the future it will be deposited in the Geologisch-paläontologisches Museum der Universität Hamburg.

The two studied coniopterygid specimens are embedded in a polished amber piece about 27 × 9 × 6 mm, together with a few small insect fragments, several excremental pellets of some relatively larger insect, and a small spider.

As the wing venation regards, we follow the generally accepted terminology of Killington (1936) – including the abbreviations, with exception of jugal vein (J), which is not mentioned in this work. Nomenclature of the male terminalia same as in comprehensive work of Meinander (1972).

In the case of the cross-veins and some characteristic points of the wings the distance from the wing base is given in hundredths of the total length of the wing. Denotation of this unit is „ca", from the latin words „centesime" = hundredth (used widely, e. g. in „centimetre") and „ala" = wing. The photograph of the fossilized insects was taken by Carsten Gröhn. The used camera was Canon EOS 450D, attached to Zeiss binocular miroscope, with Luminar lens.

Systematic part

Paranimboa gen. n.

Type species by present designation *Paranimboa groehni* sp. n.
Description. Small bodied coniopterygids. Head distinctly higher than long. Frons between the antennae well sclerotized. Maxillary and labial palpi have structure characteristic in the

family. The number of the antennal segments is low; in the case of the known species it is 20. Flagellar segments are longer than wide. Eyes rather large, appearing much higher than wide.

Wings elongated: almost three times as long as wide. There are two distinct costal cross-veins. Radial cross-vein situated basally of the cross-vein-like part of Sc_2. Longitudinal vein Rs unforked, fork of M situated rather close to the distal edge of the wing (especially in the fore wing). Basal part of M and R seemingly cross each other. (Really these are coalesced for a short distance.) Cross-vein Rs-M bit M on stem in the fore wing, and near to the fork (either apically or basally of it) in the hind wing. Distal cross-vein M-Cu_1 is right, situated in the apical half in the fore wing, oblique, and placed about at the middle in the hind wing. Cu_2 runs very near to Cu_1. Longitudinal veins Cu_1, Cu_2, A_1 and A_2 of fore wing, and Cu_1, Cu_2, and A_1 of hind wing long; even A_2 of fore wing, and A_1 of hind wing ending near to the middle of the wing. Cross-vein Cu_1-Cu_2, as well as proximal and distal cross-veins between Cu_2 and A_2 distinctly developed. Anal cross-vein bit A_1 between the above mentioned two cross-veins.

Legs long and slender. Thorax and some parts of terminalia heavily sclerotized. Pregenital part of abdomen without plicatures, and seems to have also a relatively strong sclerotization.

In male genitalia ectoproct arched and strongly sclerotized. Gonarcus well developed, broad, with long, bent outwards caudal projection. Hypandrium small, end of parameres separated. Penis slightly sclerotized, and attached to the hypandrium.

Remarks: Bacause of the absence of plicatures and the structure of wing venation the new genus clearly belongs to the subfamily Coniopteryginae. The unforked Rs indicates a relation with the recent genus *Nimboa*. I suppose that the identical structure of this vein of *Nimboa* and *Paranimboa* is not a homoplasy, because of presence of a similarity also in the male genitalia, namely, the similar position of the penis sclerite. However, there are significant differences between the recent genus *Nimboa* and the new Cretaceous genus.

The main distinctive features of *Paranimboa* gen. n. are:

the elongated wings;

the enlarged length of the cubital and anal veins;

presence of distinct Cu_1-Cu_2 and distal Cu_2-A_1 cross-veins;

well developed gonarcus;

separate endings of parameres.

Etymology: The name of the new genus shows its relation with the recent coniopterygid genus *Nimboa*.

***Paranimboa groehni* sp. n. (Figs 1–4)**

Syntypes: Two males. Locality and horizon: Burmese amber, Northern Myanmar, Kachin State, Mitkyin discrict, Tanai, Hukawng Valley; Upper Cretaceous, lowest Cenomanian.

Description. Length of the body cca. 1.3 mm. Shape and sclerotization of the head, shape of eyes, as well as the structure of palpi as in the description of the genus. Antennae 0.9 mm, 20 segmented, dark brown. Scape and pedicel swollen, median flagellar segments about 2 times as long as wide.

Length of the fore wing 1.6-1.7 mm, of hind wing 1.3-1.4 mm. The elongated wings 2.7-2.9 times as long as wide. Wing membrane has a brownish tint, which in both wings is lighter along the cubital veins. Veins of the fore and hind wing medium brown. Radial cross-vein oblique; its distance from the base 77-80 ca in the fore wing, and 66-70 ca in the hind wing. (For explanation of the unit „ca" see the part „Material and methods".) Fork of M is rather

Fig. 1. Syntypes of *Paranimboa groehni* sp. n. Scale: 0.8 mm; A = specimen „A", B = specimen „B"

close to the tip of the fore wing (77 ca from the base), while its position in the hind wing is at 63 ca. Basal cross-vein M-Cu_1 situated at 33 ca in the fore wing, and 13 ca in the hind wing, while the distal one is at 63 ca in the fore wing, and at 44 ca in the hind wing. In the case of the fore wing the Cu_1 ending at 79 ca, while Cu_2 very close to this: at 77 ca. The distinct cubital cross-vein of this wing situated at 54 ca. In the case of the hind wing the Cu_1 ending

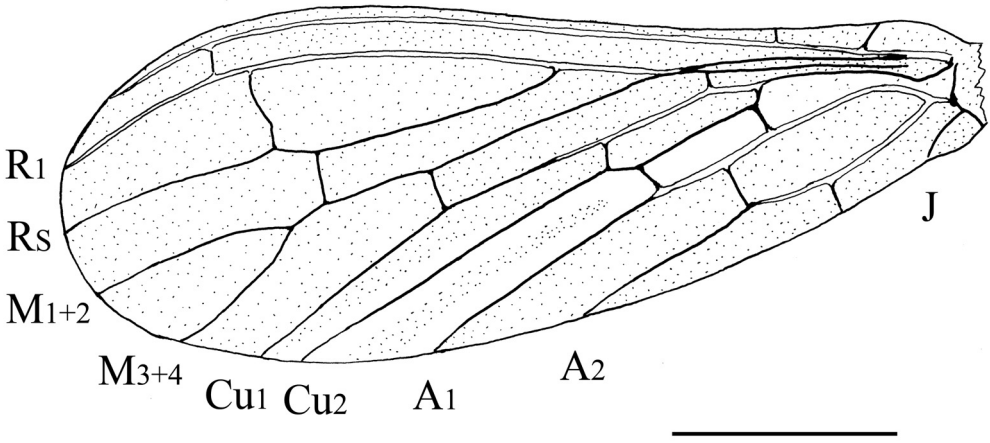

Fig. 2. Fore wing of Paranimboa groehni sp. n. – on the basis of specimen „A"

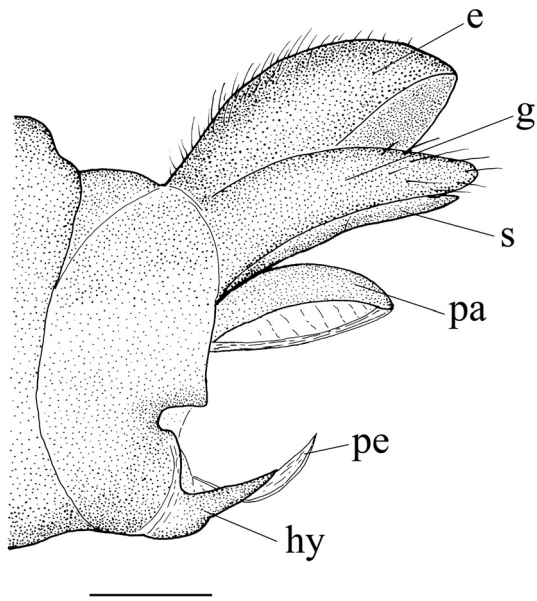

Fig. 3. Male genitalia of *Paranimboa groehni* sp. n., lateral view – on the basis of specimen „B". Scale: 0.04 mm; e = ectoproct, g = gonarcus, hy = hypandrium, pa = paramere, pe = penis, s = stylus

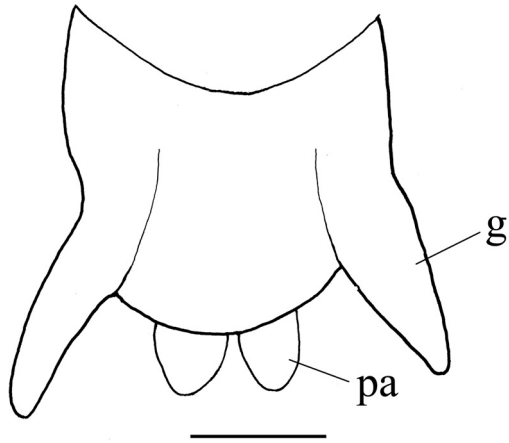

Fig. 4. Male genitalia of *Paranimboa groehni* sp. n., cca. dorso-caudal view – on the basis of specimen „A" (a schematic drawing). Scale: 0.04 mm; g = gonarcus, pa = paramere

at 68 ca, while Cu_2 – close to this also – at 65 ca. Position of the cubital cross-vein of the hind wing is at 25 ca. The distal cross-vein Cu_2-A_1 situated at 43 ca in the fore wing, and at 21 ca in the hind wing. The longitudinal vein Cu_2 ending at 77 ca in the fore wing, and 60 ca in the hind wing. Ending of A_1 situated at 64 ca in the fore wing, and 45 ca in the hind wing, while ending of A_2 is at 53 ca in the fore wing, and 26 ca in the hind wing. Besides, a very short jugal vein also is visible in the fore wing. The long, slender legs are light brown.

In the male genitalia (Figs 3-4) in lateral view a relatively light sclerite is visible below the caudal projection of the gonarcus. It may be interpreted as stylus. Only the caudal part of the paramere is visible. It consists of a membraneous internal plate, which is encountered by a relatively strong outer, and a narrow, hyaline inner edge.

For other features of the wing, and further characteristics of male genitalia see the description of the genus.

Etymology: I dedicate this new species to Carsten Gröhn, the outstanding expert and collector of ambers with insect inclusions.

Acknowledgements: I am indebted to Carsten GRÖHN (Glinde, Germany) for the possibility to examine the given amber piece, with the extremely well preserved coniopterygig specimens, and for his photograph.

References

ENGEL, M. S. (2004): The dustywings in Cretaceous Burmese amber (Insecta: Neuroptera: Coniopterygidae). – Journal of Systematic Palaeontology, 2: 133–136.

ENGEL, M. S. & GRIMALDI, D. A. (2008): Diverse Neuropterida in Cretaceous amber, with particular reference to the paleofauna of Myanmar (Insecta). – Nova Supplementa Entomologica, 20: 1–86.

GRIMALDI, D. A., ENGEL, M. S. & NASCIMBENE, P. C. (2002): Fossiliferous Cretaceous amber from Myanmar (Burma): its rediscovery and paleontological significance. – American Museum Novitates, 3361: 1–23.

HUANG, D., AZAR, D., ENGEL, M. S., GERROUSTE, R., CAI, C. & NEL, A. (2016): The first araripeneutinae antlion in Burmese amber (Neuroptera: Myrmeleontidae). – Cretaceous Research, 63: 1–6.

KILLINGTON, F. J. (1936): A monograph of British Neuroptera I. – Ray Society, London, 269 pp.

LU, X-M., ZHANG, W-W. & LIU, X-Y. (2016): New long-proboscid lacewings of the mid-Cretaceous provide insights into ancient plant-pollinator interactions. – Scientific Reports, 6: 25382. doi: 10.1038/srep25382.

MAKARKIN, V. N. (2015): A new genus of the mantispid-like Paraberothinae (Neuroptera: Berothidae) from Burmese Amber, with special consideration of its probasitarsus spine-like setation. – Zootaxa, 4007(3): 327–342.

MAKARKIN, V. N. (2016): Enormously long siphonate mouthparts of a new, oldest known spongillafly (Neuroptera, Sisyridae) from Burmese amber imply nectarivory or hematophagy. – Cretaceous Research, 65: 126–137.

MEINANDER, M. (1972): A revision of the family Coniopterygidae (Planipennia). – Acta Zoologica Fennica, 136: 1–357.

MYSKOWIAK, J., HUANG, D., AZAR, D., CAI, C., GARROUSTE, R. & NEL, A. (2016): New lacewings (Insecta, Neuroptera, Osmylidae, Nymphidae) from the Lower Cretaceous Burmese amber and Crato Formation in Brazil. – Cretaceous Research, 59: 214–227.

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