

A new species of *Supraserphites* Rasnitsyn & Öhm-Kühnle from Burmese amber (Hymenoptera, Serphitidae: Supraserphitinae)

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Burmese amber continues to provide a plethora of unexpected fossils, with its extraordinarily rich and speciose mid-Cretaceous fauna of Arthropoda and particularly of Hymenoptera (Ross, 2015; Rasnitsyn *et al.*, 2017; Li *et al.*, 2018; Rasnitsyn and Öhm-Kühnle, 2018a, b; Zhang *et al.*, 2018a–d). Among these specimens, there are abundant, minute and specialized wasps of the superfamily Serphitoidea, the wasp described in the present paper, in which characters of both Serphitidae and Archaeoserphitidae appear.

Serphitoid wasps form, along with their most closely related superfamily Mymarommatoidea, a specialized clade of parasitic wasps belonging to the infraorder Proctotrupomorpha. This clade was highly successful during the Cretaceous but today is almost fully extinct (Gibson *et al.*, 2007; Engel, 2016; Rasnitsyn & Öhm-Kühnle, 2018b). The recently described *Supraserphites draculi* Rasnitsyn & Öhm-Kühnle, 2018b was ascribed to a subfamily of its own, which (similar to *Archaeoserphites melqarti* Engel, 2016 from the older Lebanese amber, in the family Archaeoserphitidae Engel, 2016) is basal with respect to the remainder of Serphitoidea (Engel, 2016; Rasnitsyn & Öhm-Kühnle, 2018b). Unfortunately, the unique specimen of *S. draculi* is imperfectly preserved, with many features of its body invisible or distorted. Herein, we describe a new species belonging to the same genus, and originating from the same amber deposit, which provides additional information about the morphology of Supraserphitinae.

Material and methods

The methods employed here are identical to those employed in Rasnitsyn & Öhm-Kühnle, 2018 b. The holotype has been trimmed and polished in a tiny amber

block with unparalleled skill and preciseness by the late Ekaterina Sidorchuk (cf. Sidorchuk & Vorontsov, 2018). We dedicate the new species and this paper to her, in order to appreciate the great value of her work for the study of amber and palaeoentomology. Also, we hereby commemorate her untimely and heartbreaking departure (more about Katya Sidorchuk is presented elsewhere in this issue).

The holotype is deposited in the Öhm-Kühnle collection maintained permanently at the A.A. Borissiak Paleontological Institute, Russian Academy of Sciences, Moscow, coll. no. 5620. All taxonomic acts established in the present work have been registered in ZooBank (see below), together with the electronic publication LSID:

Systematic palaeontology

Order Hymenoptera Linnaeus, 1758

Suborder Vespina Laicharting, 1781

Infraorder Proctotrupomorpha Latreille, 1802

Superfamily Serphitoidea Brues, 1937

Family Serphitidae Brues, 1937

Subfamily Supraserphitinae Rasnitsyn & Öhm-Kühnle, 2018.

Genus *Supraserphites* Rasnitsyn & Öhm-Kühnle, 2018.

***Supraserphites sidorchukae* Rasnitsyn & Öhm-Kühnle, sp. nov.**

Etymology. Commemorates untimely departure of Dr. Ekaterina (Katya) Sidorchuk, brilliant and promising paleoacarologist and paleoentomologist in general, and expert in scientific amber micro-preparation.

Holotype. Female, PIN no. 5620/7; complete specimen, somewhat compressed but otherwise well preserved.

Locality and horizon. Hukawng Valley, Kachin

State, Myanmar; lowermost Cenomanian or uppermost Albian, mid-Cretaceous.

Diagnosis. Robust insect with relatively short wings and legs (forewing less than twice as long as mesosoma,

hind tibia shorter than head—opposite of type species); basal vein (1-RS & 1-M) strongly bent (but weakly so in type species), 2r-rs crossvein closer to apical margin of pterostigma, and 3r cell much shorter.

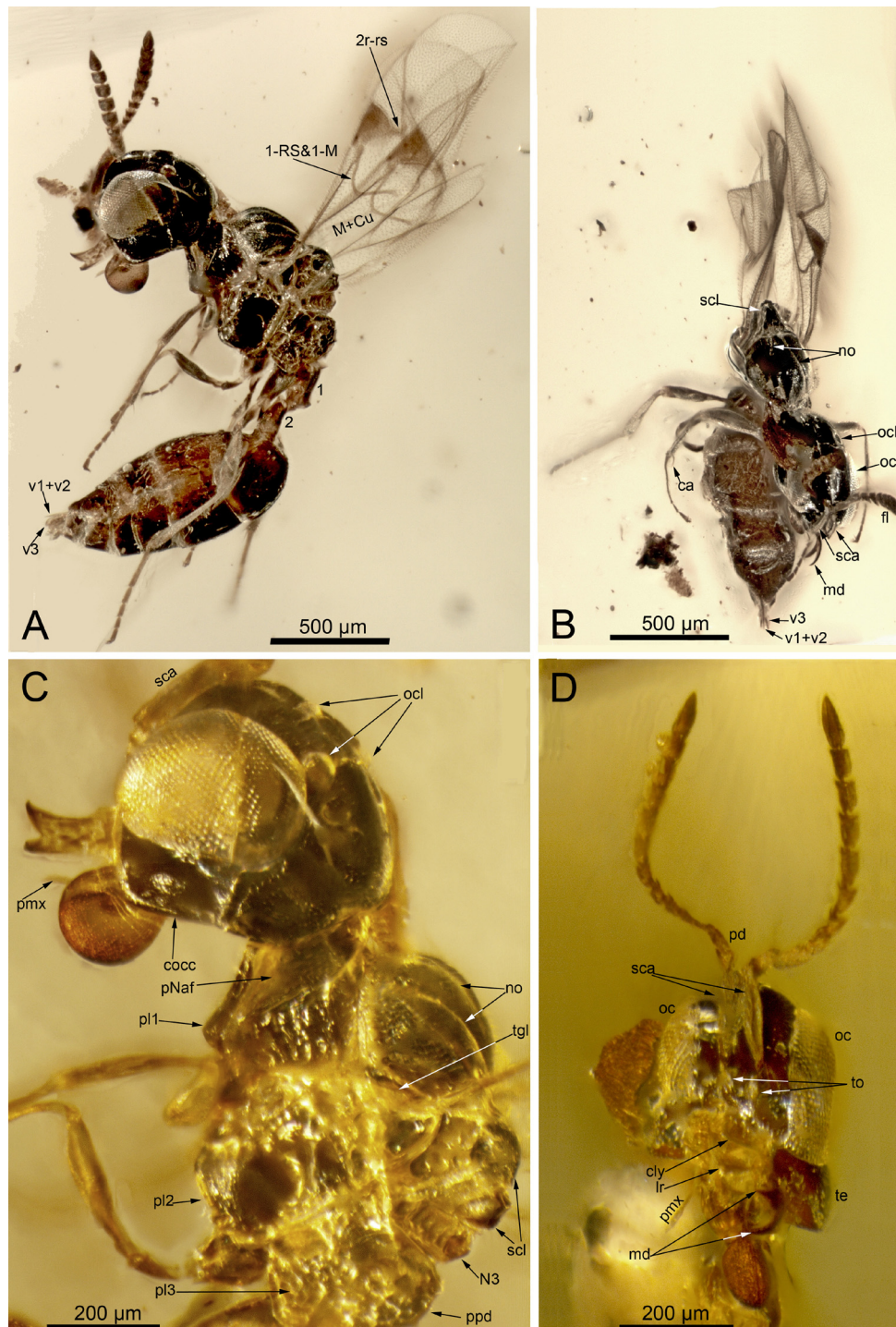


FIGURE 1. *Supraserphites sidorchukae* sp. nov., holotype, PIN no. 5620/7. **A**, General view, left side. **B**, Same, front view. **C**, Head and mesosoma, left view. **D**, Head and antennae, front view. Explanation of symbols: 1, 2—first and second petiolar segments, 1-RS & 1-M—basal vein, 2r-rs—second interrarial crossvein, ca—calcar (protibial spur), cly—clypeus, cocc—occipital carina, fl—flagellum, lr—labrum, M+Cu—mediocubital vein, md—mandible, N₃—metanotum, no—notauli, oc—eye, ocl—ocellus, pd—pedicel, pl₁, pl₂, pl₃—pro-, meso-, and metapleuron, pmx—maxillary palp, pNaf—anterior face of pronotum, ppd—propodeum, sca—scape, scl—mesoscutellum, te—temple, tgl—tegula, to—toruli, v₁+v₂—sting (1st and 2nd ovipositor valves), v₃—ovipositor sheath (3rd ovipositor valve).

Description. Body dark as preserved, legs paler with femora darkened. Head, mesonotum and metasoma covered with short erect hairs, respective punctures minute and hardly visible. Head helmet-like, big and thick, highest in its anterior part, with big compound eyes almost touching mandibular bases; hind ocellus touching eye; clypeus straight apically; temples wide and widening toward mandibles; occipital carina complete at least below (not visible above). Antennae attached close to each other and to clypeal base, geniculate; with scape about half as long as flagellum; pedicel about as long as 2 basal flagellomeres together, narrowing distally; flagellomeres with distinct, narrow base but not fully bell-shaped, ultimate one subacute (proportions depending on perspective because antenna is compressed). Labrum long, subtriangular rather than truncate (as in type species). Left mandible long, bidentate, distinctly bent (more than in type species); right mandible not visible. Maxillary palp moderately long, with 3 elongate segments visible; labial palp not preserved. Pronotum of moderate medial length, with anterior face flat and delimited by low ridge, with posterodorsal lobe flat, hiding spiracle. Tegula distinct, not big. Mesoscutum with notauli percurrent, well-impressed, axilla not distinct, prescutellar depression crossed with several ridges; scutellum with deep transverse suture posterior to mid-length, smooth anterior to suture and rugose posteriorly, with rugae forming transverse crest. Metanotum comparatively long, convex in side view, longitudinally ridged. Propodeum comparatively small, roughly areolate (except possibly on medial surface). Legs comparatively short and thin; coxae small, except hind coxa elongate (longer than petiolar segments); trochanters elongate; trochantelli distinct; tibiae longer than respective femora; tibial spur formula 1:2:2; fore leg spur long, straight except somewhat bent apically, apex apparently simple; mid- and hind leg spurs short; basitarsus about as long as tarsomeres 2–4 together; tarsomere 4 elongate, claws weak, simple, arolium hardly longer than claw. Forewing short and densely pubescent, venation generally characteristic of *Serphites* Brues, with R, basal vein (1-RS&1-M), 1r-rs, RS, and Cu until angulation near claval fold tubular; other visible veins nebulous; RS distinctly thickened near junction with 2r-rs. Hind wing with only R and R₁ (up to hamuli) and very base of RS tubular; no nebulous veins; hamuli not visible well enough to be counted. Petiolar segments robust, first slightly longer than second, jointly 0.32x as long as forewing and slightly longer than hind tibia. Metasoma robust, 0.8x as long as forewing; terga gradually becoming shorter toward apex, somewhat overlapping respective sterna; with no distinct lateroterga; second sternum longest and penultimate shortest; ovipositor apex and rather thick sheath valvae slightly extending from apex of gaster, with no cercus visible.

Measurements (all values are in millimeters, and are to be considered as rough because of slight postmortem distortion of the fossil). Body length 2.65, forewing length 1.25, head length 0.55, head width 0.45, scape length 0.11, pedicel length 0.04, flagellum length 0.47, mesosoma length 0.72, hind femur length 0.28, hind tibia length 0.36, hind tarsus length 0.43, petiolar segments 1 and 2 are 0.21 and 0.19 long, respectively, gaster (metasoma behind petiolar segments) length 0.99.

Remarks. The new species visibly differs from the type species in having a more robust body and appendages, as well as in the stronger bent basal vein and the 2r-rs crossvein placed more distal at the pterostigma.

Discussion

Discovery of *Supraserphites* and subfamily Supraserphitinae has improved our understanding of the taxonomic and morphological diversity of the family Serphitidae as well as of the hymenopteran fauna of the mid-Cretaceous Burmese amber. Unfortunately, the unique type specimen known for the taxon was of poor preservational state, and consequently left some doubts and gaps in the original interpretation of the group. The present discovery of a closely related species with better preservation supports and adds details to that interpretation. The new species confirms a crucial feature of the genus: the 10-segmented flagellum. This flagellar count contrasts equally to that of Archaeoserphitidae (12-segmented); and all Serphitidae other than Supraserphitinae (i.e., Serphitinae and Microserphitinae, with 6–8-segmented flagella). The new species also demonstrates that the helmet-like head with a high, subvertical, anterior surface (similar to that of Archaeoserphitidae and not of Serphitinae and Microserphitinae), as well as comparatively long maxillary palps and mesoscutellum subdivided in two differently sculptured parts (unusual of all other Serphitoidea) indeed are features and not a result of distortion of the type specimen of the type species.

The new fossil wasp *Supraserphites sidorchukae* gen. sp. nov. confirms the inferences by the authors (Rasnitsyn & Öhm-Kühnle, 2018 b) based on the type species *S. draculi* from the same source deposits (Burmese amber) and supports the taxonomic placement of the subfamily Supraserphitinae on a wider morphological background.

Acknowledgements

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