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## A new *Glyptobasis* MACLACHLAN, 1873 from India (Neuroptera: Ascalaphidae)

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**Abstract:** *Glyptobasis sonjae* sp. n. is described from India and compared to *Glyptobasis dentifera* (WESTWOOD, 1847), *Glyptobasis nugax* (WALKER, 1853), *Glyptobasis nigrifrons* KIMMINS, 1949, *Glyptobasis weelei* KIMMINS, 1949, and *Glyptobasis spinicornis* van der WEELE, 1909 from India and Sri Lanka.

**Key words:** taxonomy, new species, owlfly, Ascalaphinae, Asia.

### INTRODUCTION

The owlfly fauna of the Oriental area is extremely rich in species (van der WEELE 1909, SZIRÁKI 1998, NEW 2003), and fauna research has become more intensive in the last 20 years (eg. ÁBRAHÁM 2008a, b, 2016, 2023, HASSAN & LIU 2021, MICHEL 2005, SURYANARAYANAN *et al.* 2023, WANG *et al.* 2018) from a taxonomic point of view. Our knowledge of the distribution of the species is in directly proportional to the amount of research in the area and is very incomplete (OSWALD 2024).

We started to study the owlfly fauna of India in the last few years (SURYANARAYANAN *et al.* 2022, 2023), and it soon became clear that even faunistic research is impossible without revising and checking of the type specimens. CHANDRA & SHARMA (2010) compiled the latest checklist, according to which there are 32 species in 25 ascalaphid genera in the fauna of India.

While studying the Ascalaphidae fauna, we first revised the genus *Bubopsis* MACLACHLAN, 1898 in India. SURYANARAYANAN *et al.* (2022) checked the only one described species, (*Bubopsis rubrapunctata* GHOSH, 1981) from this genus. At the same time, a species belonging to the genus *Bubopsis* was also found in the northwestern area of India (Rajasthan) (SURYANARAYANAN *et al.* 2023), namely *Bubopsis zarudnyi* MARTYNOVA, 1926.

The revision work was continued in the genus *Glyptobasis*, which is typically an Oriental genus and its range extends from Pakistan via India and Nepal to Sri Lanka in the south and Myanmar in the east. For this work, we examined type material preserved in several

European collections (MCSN, Genoa, Italy; NHMUK, London, UK; OUMNH, Oxford, UK). We have established that there are very few collected materials not only in the major historical collections but even in India. One of the reasons for this is that in India they do not compile collection materials for religious reasons, their older collections have been destroyed or are in very poor condition due to preservation deficiencies.

Searching for faunistic data for the revision of the genus, I determined specimens in several collections, from which the publication on the genus was completed (SURYANARAYANAN *et al.* 2024). After submitting the manuscript, I learned that two *Glyptobasis* specimens were revealed in one of the Hungarian collections. During the taxonomic checking, a new species was found in the genus again.

The purpose of the paper supplementing the previous revision is to describe the new species and to compare it with the taxonomic results already published.

## MATERIAL AND METHODS

The habitus photos were taken by Canon EOS 6DM2 digital camera equipped Canon macro lens 100 mm and a flashlight system (Godox MS 300). Later, the layers of photos were processed with stacking and Adobe Photoshop software.

According to traditional methods, the caudal part of the abdomen was removed, treated with a 10% KOH solution, and heated for 15 minutes. After cooling, it was rinsed in distilled water. For taking photos, the genitalia were placed in glycerin in a Petri dish. Finally, each genitalia was transferred into glycerine in a microvial for preservation.

Abbreviations of the collections:

MCSN – Museo Civico de Storia Naturale "Giacoma Doria", Genoa, Italy,

NHMUK – The Natural History Museum, London, UK,

OUMNH – Hope Entomological Collections, University Museum, Parks Road, Oxford, UK.

## TAXONOMY

*Glyptobasis sonjae* sp. n.

<https://zoobank.org/NomenclaturalActs/310F19EA-E7A9-4781-AB4E-2276D0DAED63>

(Figs. 1–2)

*Material examined:*

Holotype ♂ INDIA, mer.[idional] / Karnataka, vic.[inity] Chikkaballapur (ca. 50km NNE Bengaluru), 25.8. 1998 leg. H. Möhle

Paratype ♂ as holotype.

Type material is preserved in the Ludvig-collection, Hungary.

*Diagnosis:* Medium-sized species. The characteristic base colour of the body is brown, with a broad, bright yellow longitudinal stripe stretching dorso-medially. The antenna of the male is curving at the base and reaching the pterostigma. The wings taper strongly towards the base. There is a triangular lobe at the anal area of the front wing. Venation is predominantly brown. The wings are transparent (but in the case of older specimens they can be discoloured reddish-brown). The clypeus and labrum are bright yellow. In the lateral view, a wide bright yellow band is visible both on mesothorax and metathorax. The extension of the ectoproct of males is as long as the length of sternite 9, thick directed caudo-ventrally. The caudal process characteristic of the gx9 and gx11 complex is visible, it is evenly curved and has a pointed tooth-like protrusion on the inner margin.

*Measurements:* Antenna 24-25 mm long, forewing: 32-33 mm long, 8 mm wide, hindwing: 29-30 mm long, 6.5 mm wide; abdomen 15-16 mm long.

*Head:* (Figs: 1B–D). Vertex bright yellow with long soft brownish hairs. Very thin brown stripe runs along epicranial suture. Frons brown with dominantly brownish soft hairs on upper and medial parts but long dense pale hairs on lower lateral corners. Gena brown near frons while bright yellow near the eye, hairless. Clypeus dominantly bright yellow with indistinct small brownish spots laterally. Stiff black hairs in row just below upper margin, otherwise hairless. Labrum bright yellow with stiff black hairs curved to mouthpart on ventral margin. Mandible yellow to brown with dark brown apex with long soft dark brown hairs laterally. Maxillae and labial palpi yellow to brown, at the joins with some short stiff brown setae. Postorbital sclerite and occiput yellow, hairless. Eye brown, divided with a suture-like inflection transversally; upper part little larger than the lower part. Antenna (Figs: 1E–F) sinusoid curved at base extending to pterostigma of fore wing. Scape greatly enlarged, yellowish brown, covered with long soft dense pale hairs intermingled with brownish ones. Pedicel yellowish brown with long pale hairs on distal margin. Flagellar segments yellow to brown with distal brown ring. Segment 1 as long as segment 2-3 together, segment 3-5 with longer strong spines, segments 6-12 with small protrusions and short black bristles, other segments nodulated also with short black bristles. Club black fusiform covered with short smoothing and black setae.

*Thorax:* (Figs: 1C–D). Pronotum narrow, dominantly brown with wide longitudinal bright yellow stripe and with flexed upwards margins and long soft and pale hairs. Lateral projection brown with long brown to dark brown hairs. Cervical sclerite yellow. Notum colour and pattern dominantly as pronotum with sparse soft pale hairs. Sides dominantly brown with two wide bright yellow bands below wings. Short sparse and pale hairs on lateral sides of meso- and metathorax.

*Legs:* (Fig: 1D). Short, strong and reddish brown. Coxae with long soft pale hairs. Femora as long as tibiae with long stiff black bristles. Tibial spurs black, as long as segment 1 and 2 together on fore and middle legs, and as long as segment 1 on hind leg. Tarsal segment 1-4 subequal, segment 5 as long as segment 1-4 combined on fore and middle legs. Segment 1 twice longer than segment 2 on hind leg. All segments with stiff black setae. Claws black, as long as tibial spurs.

*Wings:* (Fig: 1A). Longer than abdomen in resting position. Membrane transparent without brown or dark brown markings (often with reddish-brown discolouration in older age of specimens). Wings strongly tapered in basal part. Forewing with distinct triangular lobe at anal area. Pterostigma rhomboid-shaped and brown with five dark brown cross-veins. Venation dense yellow to dark brown from basal area to apical area. Apex of wings subacute. Apical area beyond Sc+R with three rows of cells in both wings. Nine cross-veins before origin of Rs in forewing, 6-7 cross-veins before origin of Rs in hindwing. Anal margin of hindwing with long soft pale hairs.

*Abdomen:* Tergite 1 split dorsally brown with long soft pale hairs. Other tergites brown with longitudinal wide bright yellow stripes dorsally, and brown bands on both sides laterally. Tergites 1-3 with long soft pale hairs. Other tergites only with short sparse brown to black hairs. Sternites with longitudinal brown stripes and with yellow pattern laterally. Sternite 1-2 with long pale hairs.

*Terminalia and genitalia:* (Figs: 2A–D). Male. In lateral view, tergite 9 sub-rhomboid-shaped, yellow with brown pattern and short brown setae. Ectoproct stout with obtuse distal

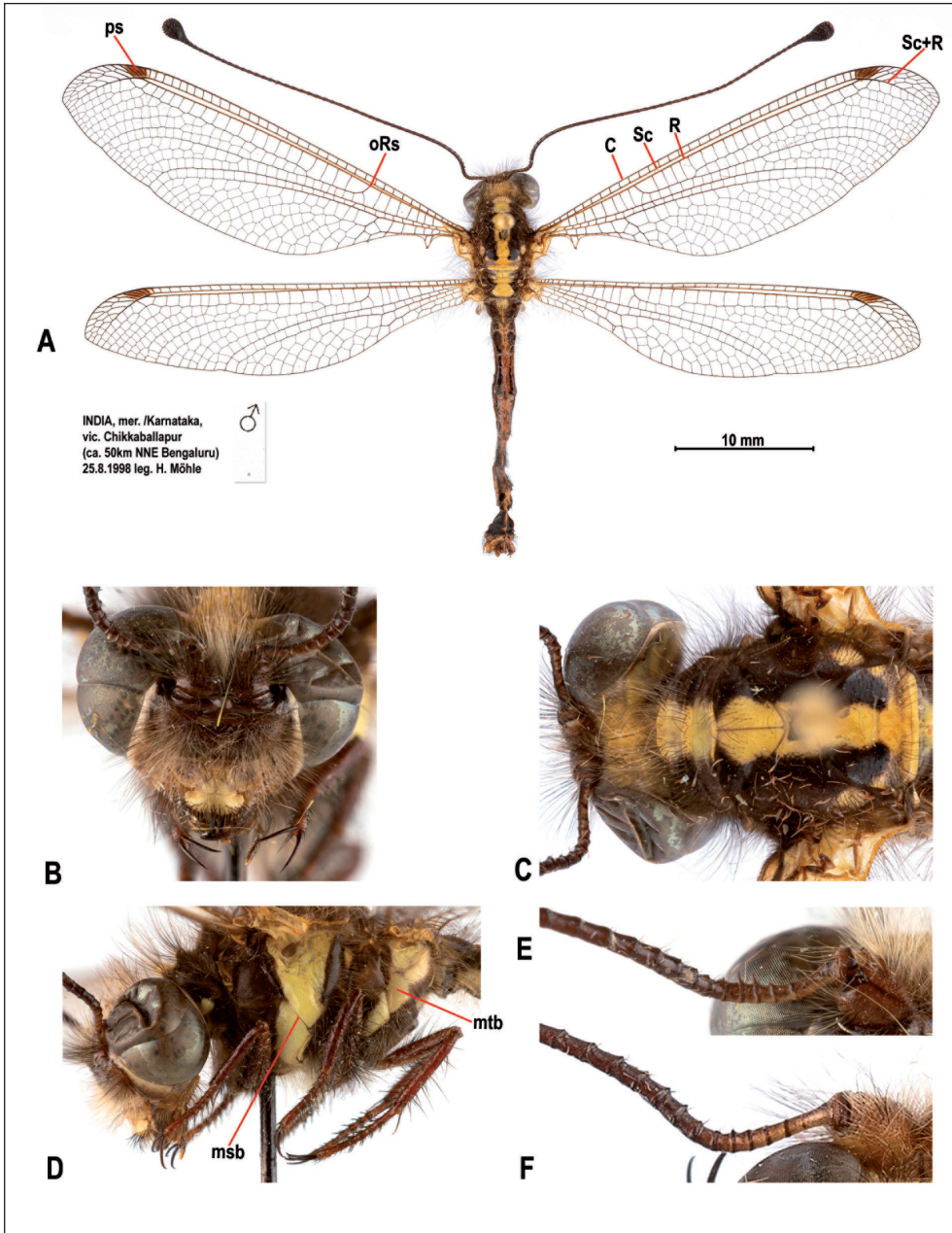


Fig. 1. Holotype male of *Glyptobasis sonjae* sp. n. A – habitus, B – Head in frontal view, C – Vertex and thorax in dorsal view, D – head, thorax and legs in lateral view, E – Antenna in dorsal view, F – The same, in frontal view.

Abbreviations: C – Costa, Sc – Subcosta, R – Radius, Sc+R – Subcosta + Radius, oRs – origin of radial sector, ps – pterostigma, msb – mesothoracic band, mtb – metathoracic band.

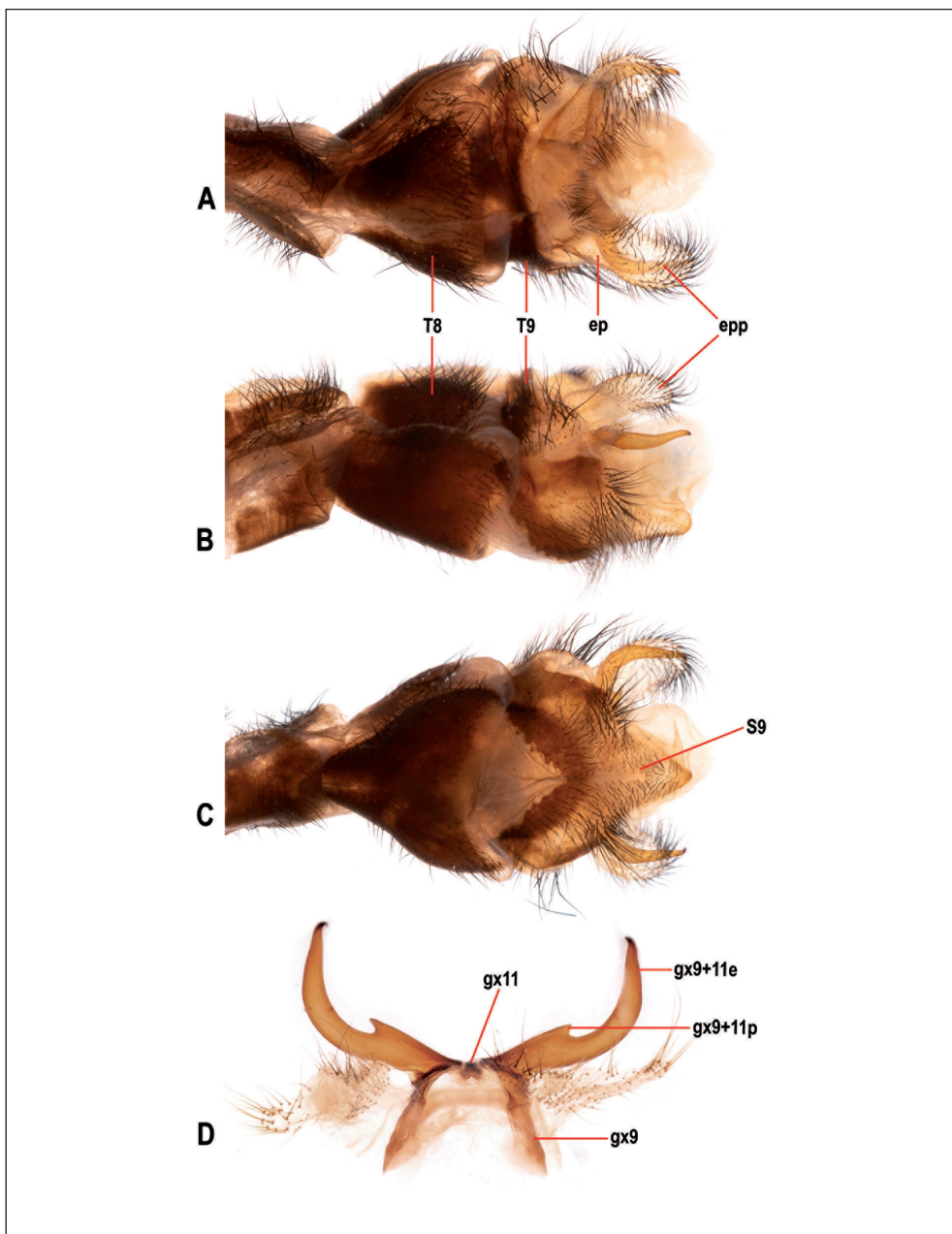


Fig. 2. *Glyptobasis sonjae* sp. n. Male terminalia and genitalia in dorsal view; **B** – The same, in lateral view; **C** – The same, in ventral view; **D** – Gonocoxites 9+11 complex in ventral view.

*Abbreviations:* T8 and T9 – tergite 8, and 9, ep – ectoproct, epp – caudo ventral ectoproct processus, S7 and S9 – sternite 7, and 9. gx – gonocoxites, gx9+11p – gonocoxites 9+10 processus, gx9+11e – gonocoxites 9+10 extension.

apices, curved ventrally and inwardly; yellow with brown pattern and with stiff black setae. In ventral view, sternite 9 yellow with central acute lobe and with short sparse setae, and lateral lobes obtuse with long dense brown setae. Gonocoxites, gx9 and gx11 complex (gonarcus-parameres complex) as in Fig. 2D in ventral view.

Paratype male as holotype, no significant morphological differences.

Female and larva: Unknown.

*Distribution:* Known only from India (Karnataka state).

*Etymology:* The specific name, *sonjae* refers to a common female name, Sonia (originally a Greek name, meaning wisdom), who is the daughter of the owner of the type specimens.

*Comments:* The morphological difference between male and female specimens of *Glyptobasis* species is usually insignificant. In general, males are slightly smaller in size than females. It is a well-known phenomenon that the wings of older specimens are often discolored. This feature is characteristic in the case of related genera *Protacheron* van der WEELE, 1909, *Acheron* LEFÉBVRE, 1842, *Ascalohybris* SZIRÁKI, 1998.

The species of *Glyptobasis* are very similar to each other, so KIMMINS (1949) described several species during a revision based on the examination of the genital organs. Extremely little data on their distribution is known, and due to their great similarity to each other, their distribution in India is uncertain and a complete faunistic and revision is also needed. SURYANARAYANAN *et al.* (2024) provided a revision including an identification key. On the basis, both old collection material and newly collected specimens can be redetermined. Determining *Glyptobasis* species from photos is not possible!

The genus *Glyptobasis* was spread only in the southwestern part of the Oriental area, in the west and north its area is well-defined by the Eurasian mountain system. So far, it has been documented from west to east in Pakistan, India, Nepal and Myanmar, as well as Sri Lanka in the south. During its most recent revision (SURYANARAYANAN *et al.* 2024) the number of known species became five, one species, *G. denticornis* KIMMINS, 1949 was synonymized.

*Glyptobasis sonjae* sp. n. can be easily distinguished from *Glyptobasis dentifera* (WESTWOOD, 1847), *Glyptobasis nugax* (WALKER, 1853), *Glyptobasis nigrifrons* KIMMINS, 1949, *Glyptobasis weelei* KIMMINS, 1949 based on the broad bright yellow lateral bands on the meso- and metathorax, as well as the bright yellow coloration of the clypeus and labrum. Examination of the male terminalia and genitalia (the shape of the ectoproct and the gx9 and gx11 complex) distinguishes it even more clearly from the other species, compared with KIMMIN's (1949: Figs. 8–9) figures.

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