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## DESCRIPTION OF TWO NEW SPECIES OF THE GENUS *BLACUS* NEES (HYMENOPTERA: BRACONIDAE: BLACINAE) FROM INDIA

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### ABSTRACT

Two new species of the Braconidae belonging to the genus *Blacus* Nees of the subfamily Blacinae. viz. *Blacus (Blacus) etawahiana* Shamim spp. nov. and *Blacus (Ganychorus) sharifi* Shamim spp. nov. are described and illustrated. These species have been compared with their nearest allied species.

**Keywords:** Hymenoptera, Braconidae, Blacinae, *Blacus*, subgenus, new species, India.

### INTRODUCTION

The Blacinae Foerster is a cosmopolitan subfamily of Braconidae with five tribes, 14 genera and 214 species known in the world (Yu et al. 2012). Out of which only one tribe Blacini Foerster and one genus *Blacus* Nees is reported from India. Genus *Blacus* Nees includes nine subgenera *Artocrus* Van Achterberg 1976, *Contochorus* Van Achterberg 1976, *Electroblacus* Brues 1933, *Ganychorus* Haliday 1835, *Hysterobolus* Viereck 1913, *Ischnotron* Van Achterberg 1976, *Leioblacus* Van Achterberg 1976, *Neoblacus* Ashmead 1900, and *Tarpeion* Van Achterberg 1976. Twenty species are reported from India running in five subgenera viz. *Blacus kashmiriensis* Ahmad 2009; *Blacus humilis* (Nees 1811); *Blacus instabilis* Ruthe 1861; *Blacus imitator* Papp 1985; *Blacus (Contochorus) turbidus* Papp 1985; *Blacus (Ganychorus) brevicrenulatus* Van Achterberg 1988; *Blacus (Ganychorus) hadrolophus* Van Achterberg 1988; *Blacus (Ganychorus) hayati* 2008; *Blacus (Ganychorus) indicus* Ahmad & Shujaiddin 2001; *Blacus (Ganychorus) mischocytus* Van Achterberg 1976; *Blacus (Ganychorus) setosifrons* Van Achterberg 1988; *Blacus (Ganychorus) topali* Papp 1985; *Blacus (Ganychorus) nitidus* Haeselbarth 1973; *Blacus (Hysterobolus) fuscitibialis* Van Achterberg 1988; *Blacus (Tarpeion) votrus* Papp 1985;

*Blacus (Tarpeion) concors* Papp 1993; *Blacus (Tarpeion) bicolor* Van Achterberg 1988; *Blacus (Tarpeion) apicalis* Van Achterberg 1976; *Blacus (Tarpeion) antennalis* Van Achterberg 1988; *Blacus (Tarpeion) albiventris* Van Achterberg 1988. It is the largest group of the subfamily, and its members are solitary koinobiont endoparasitoids of important phytophagous beetle larvae; few Diptera and other insect orders are certainly erroneous (Haeselbarth, 1973; Van Achterberg, 1988; Shaw and Huddleston, 1991). In the present work, two new species of the genus *Blacus* Nees i.e. *Blacus (Blacus) etawahiana* Shamim spp. nov., and *Blacus (Ganychorus) sharifi* Shamim spp. nov. are described and illustrated.

### MATERIAL AND METHODS

The specimens were collected using a sweeping net. Photographs were taken with the help of a digital camera attached to a Stereozoom binocular (Nikon-SMZ1500). Measurements of slide-mounted parts and card mounted specimens were taken with the help of an ocular micrometer (linear side of 100 divisions) placed in the eye piece of the Stereozoom microscope. The divisions of the ocular micrometer were converted to millimeters. The terminology and venation follows Van Achterberg (1993) and surface sculpture follows Eady (1968). Abbreviations used in the text are: ZDAMU= Zoology Department, Aligarh Muslim University; AOL= Anterior ocellar line (distance between the inner edges of anterior and lateral ocellus); POL= Posterior ocellar

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line (distance between the inner edges of lateral ocellus); OOL= Ocello ocular line (distance from the outer edge of a lateral ocellus to the compound eye); OD= Ocellus diameter; F: Flagellomere. The type material has been deposited in the Insect Collection, Department of Zoology, Aligarh Muslim University, Aligarh (ZDAMU).

## RESULTS AND DISCUSSION

***Blacus (Blacus) etawahiana* Shamim spp. nov. (Figures: 1-7)**

**Body length:** 4.6mm; **Forewing:** 2.3mm.

**Head:** Width of head in dorsal view 1.16 times its length and height; occipital carina complete; eyes sparsely setose, length of eye in dorsal view 1.3 times its width and also temple; temple smooth; length of posterior side of stemmaticum 1.2 times its lateral side; OOL:POL:AOL:OD= 10:8:5:2; width of vertex 1.4 times its length, smooth, setose; frons 1.6 times its height, sparsely punctate, sparsely setose, median carina of frons runs upto the face; face 1.6 times its height, rugulose, sparsely setose, tentorial pit deep, small; intertentorial line 1.6 times tentorio-ocular line; length of malar space 2 times basal width of mandible; clypeus 2.5 times its height, convex, smooth, sparsely setose; antennal segments 17; length of F<sub>1</sub> 1.2 times F<sub>2</sub>; length of F<sub>1</sub>, F<sub>2</sub>-F<sub>3</sub>, F<sub>4</sub>-F<sub>14</sub> and F<sub>15</sub> 2.5 times, 2 times, 1.5 times and 2.5 times their widths respectively.

**Mesosoma:** Length of mesosoma 2.2 times its width and 2 times its height; pronotal side reticulate rugose; precoxal sulcus deep, wide, rugose; mesopleuron anterodorsally some striations, remaining wrinkled, sometimes sparsely punctate, remotely setose; notauli wide, anteriorly crenulate, posteriorly reticulate rugose, with mid longitudinal carina; middle lobe of mesoscutum densely setose, lateral lobes sparsely punctate, densely setose; scutellar sulcus deep, without median longitudinal carina; side of scutellum reticulate rugose; scutellum convex, smooth, sparsely setose, area around the carinate and convex; propodeum without tubercles, reticulate rugose, medially weakly carinate.

**Legs:** Hind coxa rugose, densely setose; length of hind femur, tibia and basitarsus 6 times, 10 times and 5 times their width respectively; length of hind tibial spurs 0.2 times hind basitarsus.

**Forewing:** Length of forewing 3 times its width, pterostigma 5 times its width, length of vein 1-R1 1.8 times length of pterostigma; vein SR1+3-SR straight; r: 2-SR: SR1+3-SR = 4:10:3; 1-CU1: 2-CU2: 3-CU3 = 3:9:2;

M+CU shorter than 1-M; hind wing 6 times its width; 1M: 1-r-m: 2-SC+R= 9:5:2.

**Metasoma:** Length of metasoma 1.87 times its width and 2.5 times its height; length of first metasomal tergite 1.6 times its apical width; apical width 1.5 times its basal width; somewhat reticulate rugose; dorsope present; remaining tergites smooth, sparsely setose; length of ovipositor sheath 0.27 times forewing; ovipositor short, apically pointed.

**Colour:** Black except legs, mandibles yellowish brown; ovipositor, wing veins, second tergites brownish yellow; ocelli yellowish transparent, ovipositor brown.

**Type material:** Holotype, female, INDIA: Uttar Pradesh, Etawah, 26° 47' N 79° 02' E 14, 23. iv. 2011, Coll. M. Shamim. (ZDAMU). Deposited in Insect collection, Department of Zoology, A.M.U. Aligarh (ZDAMU).

Paratypes, 3 females, same as holotypes. INDIA: Uttar Pradesh, Etawah, 26° 47' N 79° 02' E 14 22. v. 2007. Coll. M. Sharif (ZDAMU). Deposited in Insect collection, Department of Zoology, A.M.U. Aligarh (ZDAMU).

**Etymology:** The new species is named after locality of type specimen.

The new species *Blacus (Blacus) etawahiana* Shamim spp. nov. resemble *Blacus (Blacus) kashmiriensis* Ahmad, 2008. However, it differs in having (1) malar space 2 times basal width of mandible (Malar space 1.2 times basal width of mandible in *kashmiriensis*) (2) first metasomal tergite rugose (first metasomal tergite anteriorly half smooth to uneven, its posterior half rugose to longitudinally rugose in *kashmiriensis*) (3) length of F<sub>1</sub> and F<sub>2</sub> 2.5 times and 2 times their widths respectively (length of F<sub>1</sub> and F<sub>2</sub> 3 times and 2.5 times their widths respectively in *kashmiriensis*) (4) length of ovipositor sheath 0.27 times forewing (length of ovipositor sheath 0.13 times forewing in *kashmiriensis*) (5) face rugulose, sparsely setose (face smooth in *kashmiriensis*). The new species *Blacus (Blacus) etawahiana* Shamim spp. nov. resembles *Blacus (Blacus) nivalis* Achterberg, 1988. However, it differs in having (1) face length of ovipositor rugulose (face smooth in *nivalis*) (2) Propodeum without tubercles, surface of propodeum reticulate rugose, medially weakly carinate (propodeum tubercles minute, indistinct, surface of propodeum largely smooth, with some superficial sculpture in *nivalis*) (3) length of ovipositor sheath 0.27 times forewing (length of ovipositor sheath 0.19 times forewing in *nivalis*) (4) hind coxa rugose (hind coxa smooth in *nivalis*).

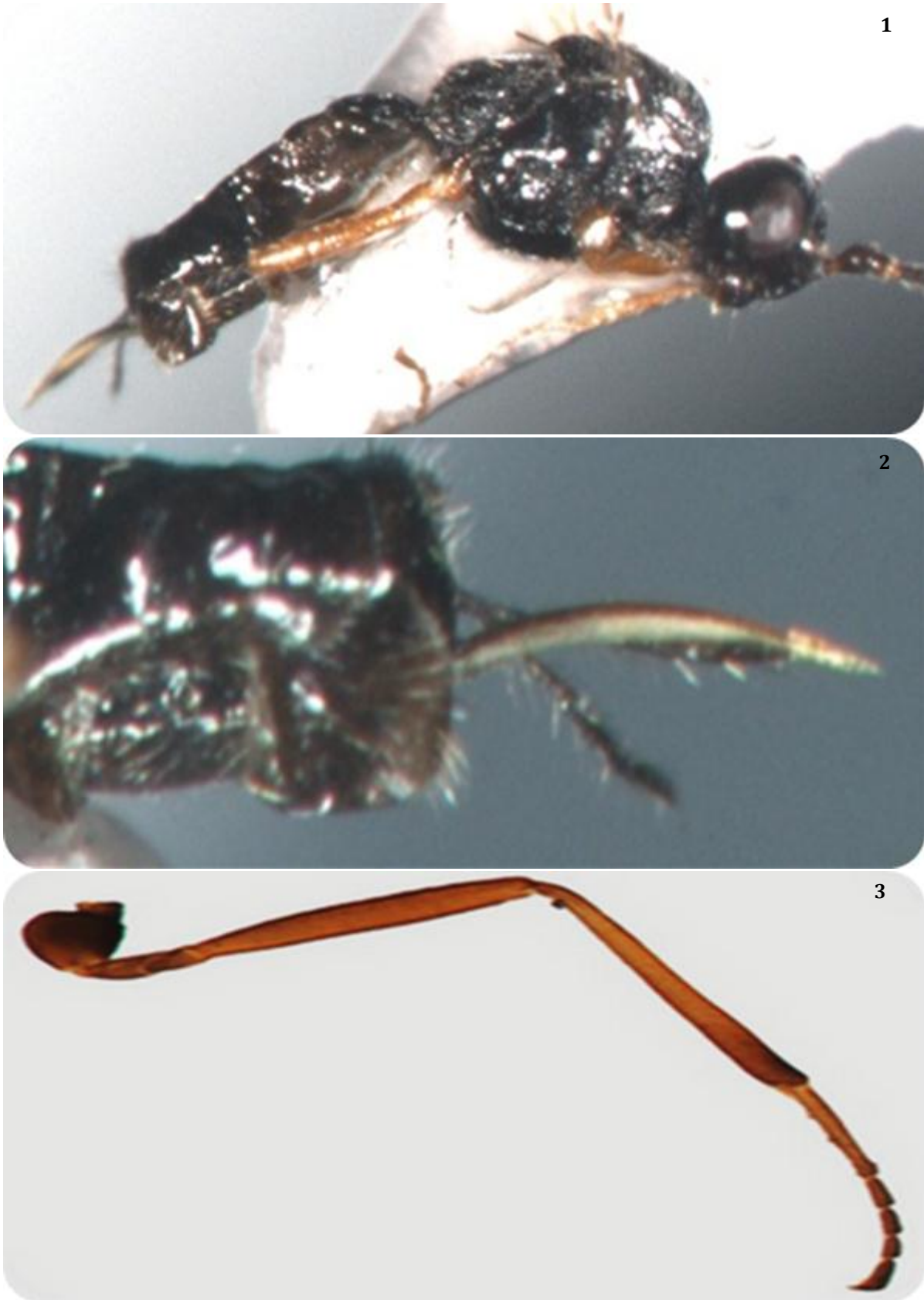


Figure (1–3). *Blacus (Blacus) etawahiana* Shamim spp. nov. (1) Whole body, (2) Ovipositor and sheaths, (3) Hind leg.



Figure (4–6) *Blacus (Blacus) etawahiana* Shamim spp. nov. (4) Hind wing, (5) Antenna, (6) Mesosoma in lateral view.

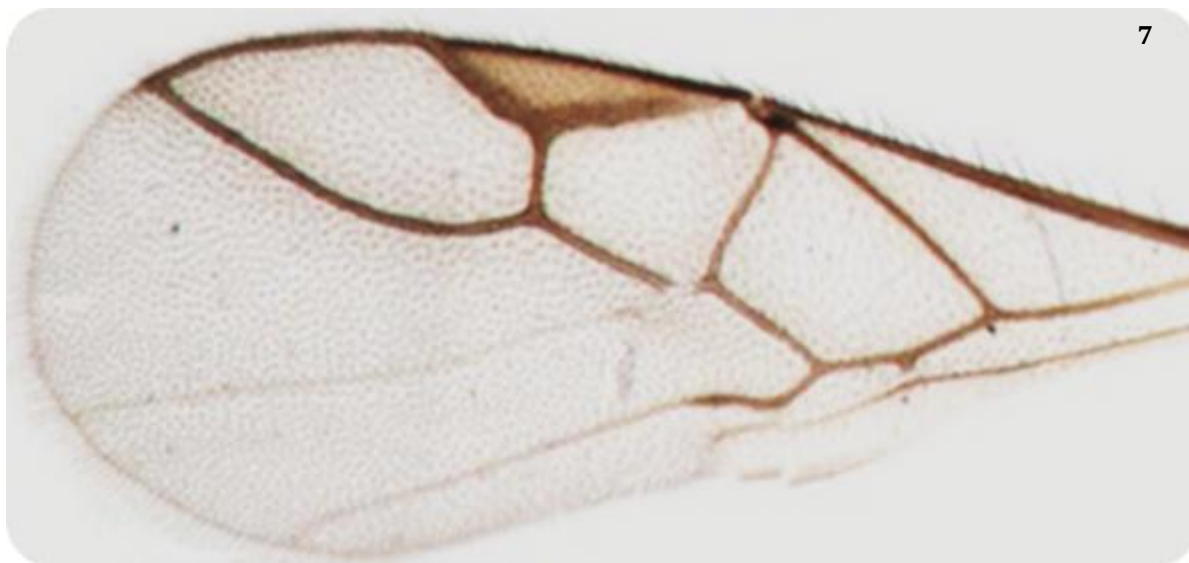


Figure 7. *Blacus (Blacus) etawahiana* Shamim spp. nov. Fore wing.

***Blacus (Ganychorus) sharifi* Shamim spp. nov. (Figures: 8-15)**

**Body length:** 6.5mm; **Forewing:** 2.3mm.

**Head:** Width of head in dorsal view 1.2 times its length and 1.1 times its height; occipital carina complete; eyes remotely setose, length of eye in dorsal view 1.6 times its width; stemmaticum almost as long as its lateral side; OOL: POL: OD= 12:8:3; width of vertex 1.4 times its length, smooth, sparsely setose; frons 1.3 times its height, smooth, densely setose; face 1.4 times its height, smooth, sparsely setose, tentorial pit deep; intertentorial line 3 times tentorio-ocular line; length of malar space 2 times basal width of mandible; clypeus 2.5 times its height, convex, smooth, sparsely setose; antennal segments 20; length of  $F_1$  1.8 times  $F_2$ ; length of  $F_1$ ,  $F_2$ ,  $F_3$  - $F_4$ ,  $F_5$ - $F_{10}$ ,  $F_{11}$ - $F_{17}$  and  $F_{18}$  4.5 times, 3 times, 2.5 times, 2 times, 1.5 times and 3 times their widths respectively.

**Mesosoma:** Length of mesosoma 2.3 times its width and 2.1 times its height; pronotal side reticulate, setose; precoxal sulcus wide, striate; mesopleuron medially convex, smooth, sparsely setose; notauli deep, anteriorly crenulate, posteriorly with indistinctly mid longitudinal carina; middle lobe of mesoscutum convex, smooth, setose, lateral lobes densely setose; scutellar sulcus deep, with one median longitudinal carina; side of scutellum striate; scutellum convex, smooth, sparsely; medio-posterior depression small; metanotum crenulate; propodeum antero- medially smooth and remaining reticulate, median carina absent.

**Legs:** Hind coxa smooth; length of hind femur, tibia and basitarsus 6.1 times, 10 times and 8 times their width respectively; hind femur shorter than tibia; hind tibia as long as combined lengths of tarsal segments; length of hind tibial spurs 0.21 times hind basitarsus.

**Forewing:** Length of forewing 3 times its width, pterostigma 3 times its width; length of vein 1-R1 1.4 times length of pterostigma; vein SR1+3-SR straight; r: 2-SR: SR1+3-SR = 3:9:12; 1-CU1: 2-CU2: 3-CU3 = 4:8:3; M+CU shorter than 1-M; hind wing 5.3 times its width; 1M: 1-r-m: 2-SC+R= 8:4:2.

**Metasoma:** Length of metasoma 3.4 times its width and also its height; length of first metasomal tergite 2.7 times its apical width; medially longitudinally striate; remaining tergites smooth, sparsely setose; length of ovipositor sheath 0.6 times forewing; ovipositor apically pointed; hypopygium setose.

**Colour:** Black except face, ovipositor sheath, precoxal sulcus yellowish brown; clypeus, mandibles basally, ovipositor, second tergite, legs, maxillary palp, labial palp yellow; mesoscutum, scutellum, remaining tergites brownish yellow; ocelli transparent, ovipositor brown; eyes grayish; wing veins brown.

**Type material:** Holotype, female, INDIA: Uttar Pradesh, Etawah, 26° 47' N 79° 02' E 14, 23. iv. 2011, Coll. M. Shamim. (ZDAMU). Deposited in Insect collection, Department of Zoology, A.M.U. Aligarh (ZDAMU).

Paratypes, 3 females, same as holotypes. INDIA: Uttar Pradesh, Etawah, 26° 47' N 79° 02' E 14 20. iv. 2008. Coll. M. Shamim & M. Sharif (ZDAMU). Deposited in

Insect collection, Department of Zoology, A.M.U. Aligarh (ZDAMU).

**Etymology:** The species is named in memory of my late father, Mohammad Sharif, who collected these braconid parasitoids.

The new species *Blacus (Gonychorus) sharifi* Shamim spp. nov. closely resembles with *Blacus (Gonychorus) indicus* Ahmad & Shujauddin 2001. However, it differs in having (1) scutellum smooth (scutellum finely rugulose with its lateral carinae in *indicus*) (2) second and third metasomal tergite smooth, sparsely setose (second and third metasomal tergite finely rugulose in *indicus*) (3) hind tibia as long as combined length of tarsal segments (hind tibia shorter than combined length of tarsal segments in *indicus*) (4) length of ovipositor sheath 0.6 times forewing (length of

ovipositor sheath 0.2 times forewing in *indicus*) (5) length of  $F_5$ -  $F_8$  2 times its width (length of  $F_5$ -  $F_8$  2 times its width in *indicus*). The new species *Blacus (Gonychorus) sharifi* Shamim spp. nov. closely resembles with *Blacus (Gonychorus) annulatus* Achterberg 1988. However, it differs in having (1) antennal segments 20 (antennal segments 19 in *annulatus*) (2) hind coxa smooth (hind coxa with oblique carina and rugulose dorsally in *annulatus*) (3) length of first metasomal tergite 2.7 times its apical width; medially longitudinally striate; remaining tergites smooth (length of first metasomal tergite 1.7 times its apical width; medially reticulate rugose, laterally longitudinally rugose in *annulatus*). (4) length of ovipositor sheath 0.6 times forewing (length of ovipositor sheath 0.16 times forewing in *annulatus*).



Figure (8-9). *Blacus (Gonychorus) sharifi* Shamim spp. nov. (8) Head in ventral view, (9) Head in dorsal view.

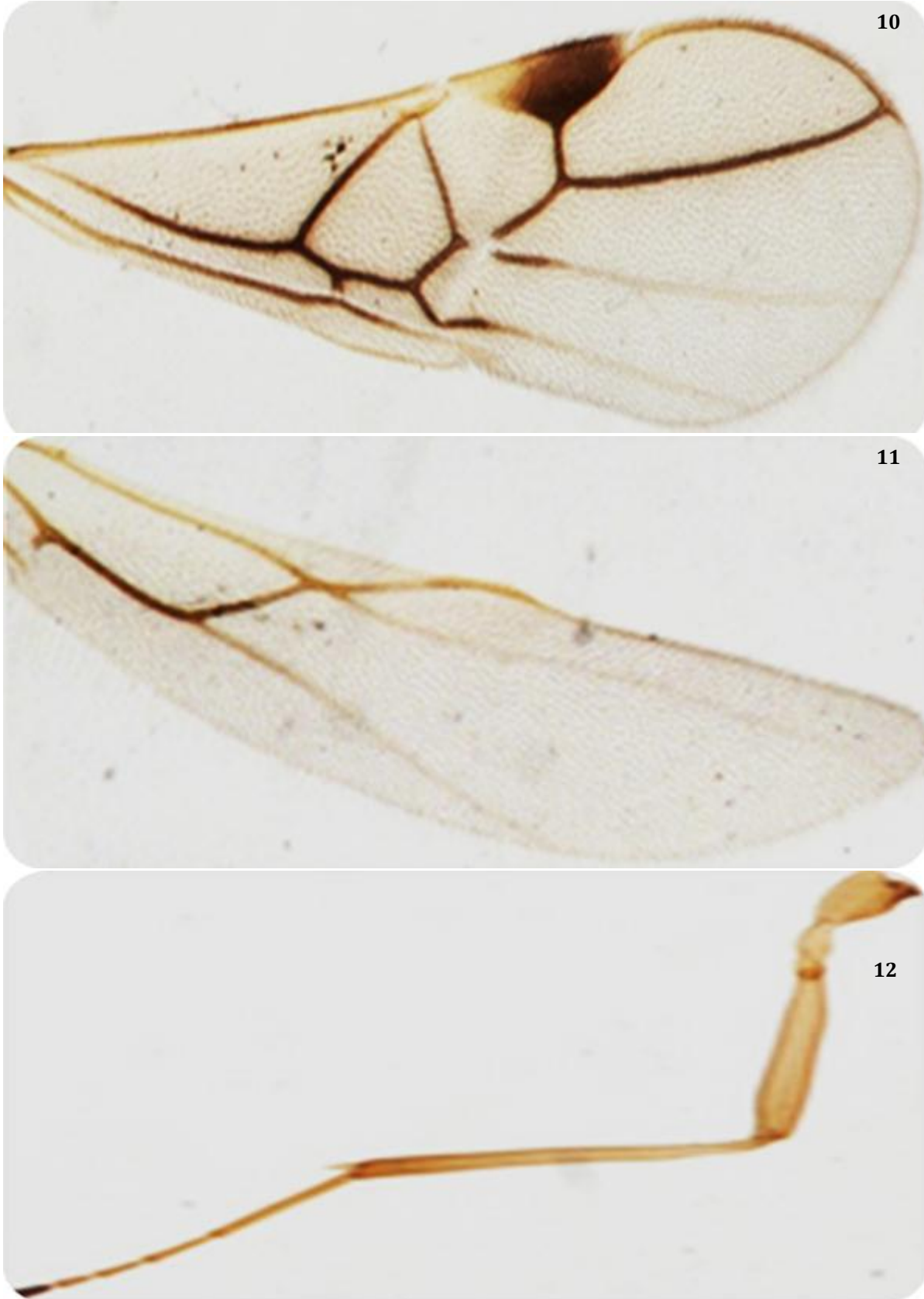
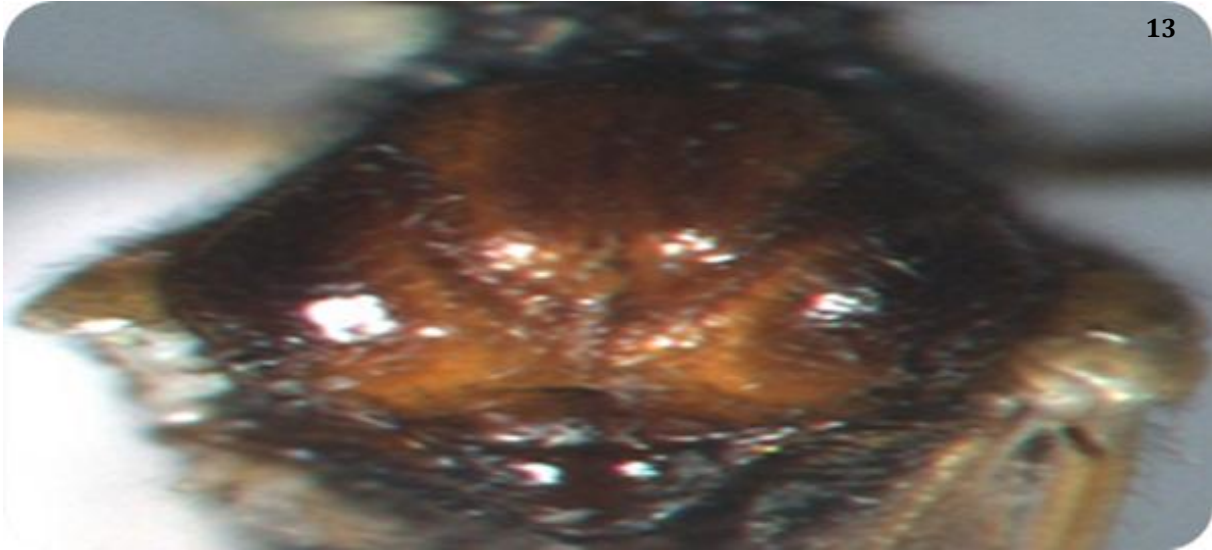


Figure (10–12). *Blacus (Gonychorus) sharifi* Shamim spp. nov. (10) Fore wing, (11) Hind wing, (12) Hind leg.



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(Figure (13–15). *Blacus (Gonychorus) sharifi* Shamim spp. nov. (13) Mesosoma in dorsal view, (14) Antenna, (15) Ovipositor and sheaths.



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