

Indian Spider Wasps (Hymenoptera: Vespoidea: Pompilidae): After A Century

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Introduction :

Spider wasps form one of the interesting and important group of insects. With about 4000 worldwide extant species (Resh and Carde, 2004) pompilids represent about 16.11% of the world vespoids. Indian pompilid seems to have received very little importance after Bingham (1897). He (op. cit.) described 141 species under 7 genera. But this work presently has only historical importance. Notable contributions on the Indo-oriental pompilids have been made by Wahis (1992, 1999). Other available published work in the Indian scenario is of Gupta (1995 & 1997). In the former paper the author reported 24 pompilids of the genera *Aporus* Spinola, *Auplopus* Spinola, *Macromeris* Lepeletier, *Pompilus* Fabricius and *Salius* Fabricius, from Western Himalaya. In his second paper he reported 3 pompilid species: *Aporus cotesi* Cameron, *Auplopus blandus* (Guerin) and *A. tinctus* (Smith) from the World Heritage site- Nandadevi Biosphere Reserve, Uttarakhand. It is worthwhile to raise a doubt on the status of *Salius* Fabricius (aggregate of some Pepsini genera) and Cameron's *Aporus* spp as the figure prompt to guess all such species under *Tachygetes* because of two submarginal cells instead of three. This might be true for the species of Gupta. However in none of these works the taxa were described and/or illustrated.

We during 2001-2003, have recorded twelve pompilid species under seven genera belonging to subfamilies Pepsinae and Pompilinae from the forests of Buxa Tiger Reserve [BTR] 26°65' N, 89°580' E and Jaldapara Wildlife Sanctuary [JWLS] (Latitude: 25° 58' to 27° 45' N, Longitude: 89° 08' to 89° 55' E) both in the confluence of Eastern Himalayas. Key to subfamilies, genera and description of species with suitable illustrations are given. Two of the species, *Auplopus bimaculatus* (Smith) and *Leptodialepis cameroni* (Banks) are reported as new to India. A new combination *Leptodialepis zelotypus* was erected for *Salius zelotypus* BINGHAM Bhattacharjee et. al. (2011, 12).

The collection localities of the species both in BTR and JWLS reflect the predominance of the species over plains than in the hills. Premonsoom period seems to be ideal for finding the wasps since all the species could be recorded during this time.

Materials and Methods:

Spider wasps were collected between 8 am- 12 noon from different beats of JWLS by sweep net. Collection and preservation of the samples were done following Alfred and Ramakrishna (2004). The wasps were studied and illustrated under stereo microscope Zeiss (SV6). The taxa were perceived sensu Shimizu (1996 a, b), Wahis (1992, 1999, 2003). The materials are in the deposition of Entomology Laboratory, Department of Zoology, University of Calcutta.

Abbreviations used:

TL=Total Length; WL=Wing Length; UID: Upper interocular distance: Distance between upper eye margins; MID: Median interocular distance: Distance between eyes in the middle of face
LID: Lower interocular distance: Distance between lower margins of eyes; coll.= Collector; BTR: Buxa Tiger Reserve; JWLS: Jaldapara Wildlife Sanctuary.

FAMILY : POMPILIDAE Kohl, 1884

Diagnosis: Small to large wasps; antenna 12 segmented in female, 13 segmented in male; maxillary palp 6 segmented; labial palp 4 segmented; pronotum freely articulating with metanotum, anterior collar usually well developed, pronotal lobes reaching tegula and covering the 1st thoracic spiracle; prosternum sunken between bases of fore coxae except for its anterior section; mesepisternum with a median straight oblique sulcus; fore wing usually with 10 closed cells, hind wing with 2 closed cells and a jugal lobe; legs usually slender and elongate, each pair of coxae large and contiguous; fore tibia with single, straight calcar; mid and hind tibia with 2 spurs slightly dorsally flattened; abdominal segments 6 in female, 7 in male; spiracles exposed on 1st and 2nd terga but those on terga 3-6 or 7 often concealed by the preceding tergum; each tergum overlapping its corresponding sternum laterally.

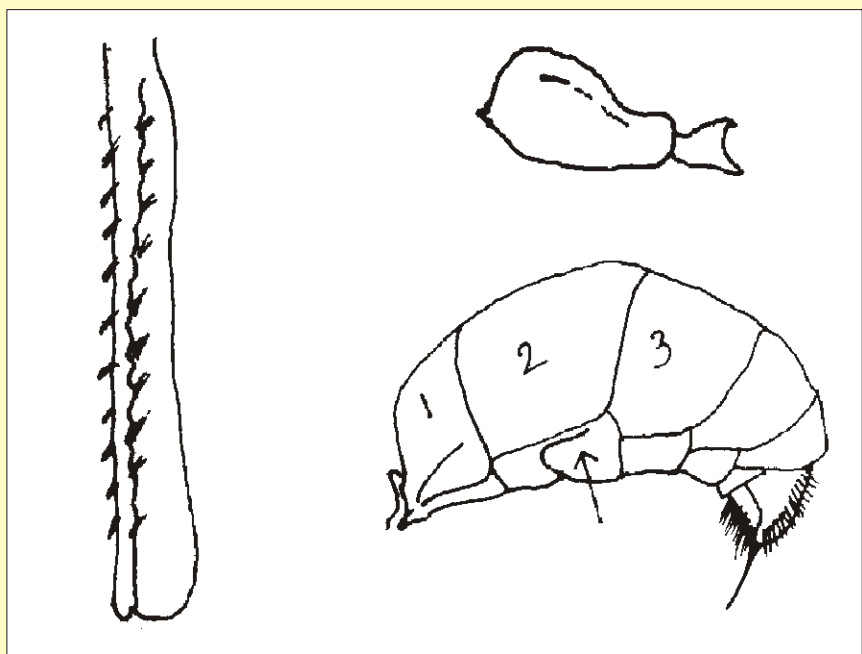
Key to Subfamilies

1. Apical spines of hind tibia almost of equal length, sub parallel, not splayed out ; 2nd sternum in female with sharp, transverse groove; dorsal inner margin of hind coxa in profile smoothly round, not much raised; hind tibia in female dorsally often with 1 or 2 rows of scale like teeth or serrate carina (Fig.1)

..... Pepsinae Lepeletier

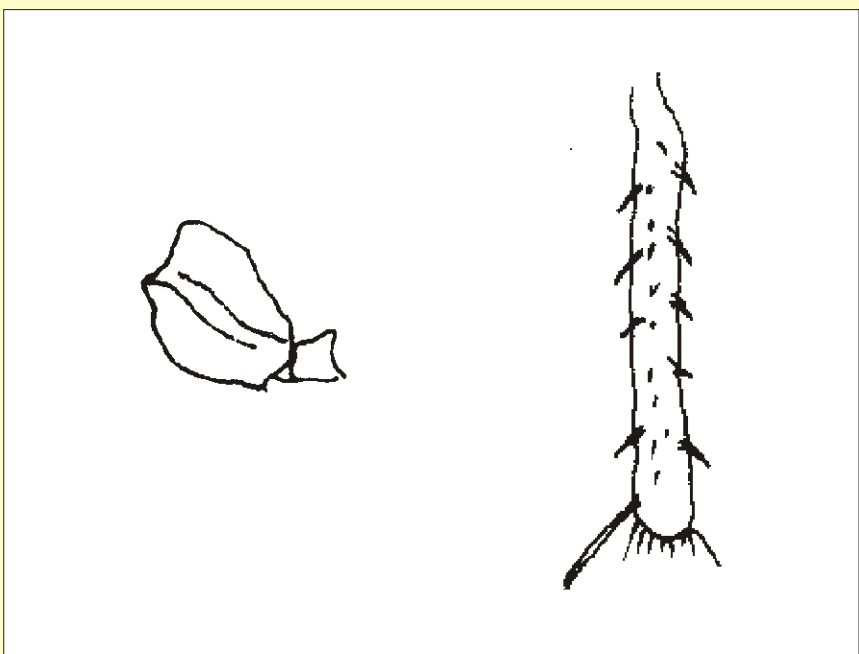
Apical spines of hind tibia of unequal length, irregularly spaced and more or less splayed out ; 2nd sternum in female without a sharp, transverse groove; dorsal inner margin of hind coxa in profile not smoothly round, distinctly raised or somewhat lamellate ; hind tibia in female dorsally without 1 or 2 rows of scale like teeth or serrate carina (Fig. 2)

..... Pompilinae Latreille



(Fig.1)

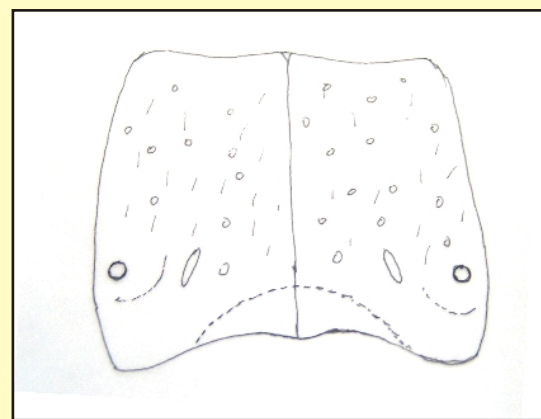
①



(Fig.2)

Key to Genera of Subfamily Pepsinae

1. Mesoscutum with 2 distinct, lateral tubercle (Fig. 3), shaped in the form of mammae; body black with a brilliant bluish effulgence *Macromeris* Lepeletier
- Mesoscutum without any lateral tubercle; body black or otherwise, without any brilliant bluish effulgence 2
2. Abdomen petiolate (Fig. 4); propodeum shagreened, densely punctate or finely transversely rugose *Auplopus* Spinola
- Abdomen not petiolate; propodeum not shagreened 3
3. Inner margins of eyes convergent above and below (Fig. 5); vertex convex above; pronotum depressed along posterior margin, with a much swollen shoulder; all tarsal claws bifid..... *Cyphononyx* Dahlbom
- Inner margins of eyes convergent above and parallel or divergent below (Fig.6); vertex scarcely convex above; pronotum slightly depressed along posterior margin, without a much swollen shoulder; all tarsal claws unidentate *Leptodialepis* Haupt



MESOSTERNUM Laterally with distinct tubercle.

GENUS : *MACROMERIS*

(Fig.3)



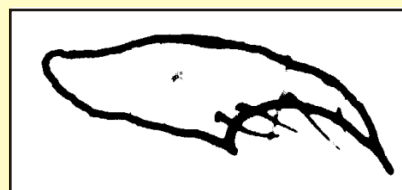
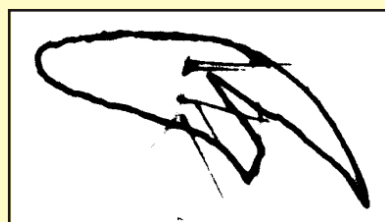
GENUS : *CYPHONONYX*

(Fig.5)



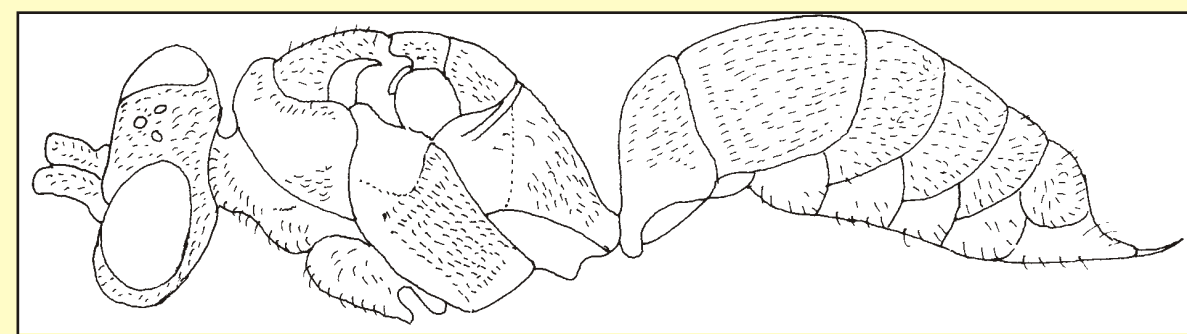
GENUS : *LEPTODIALEPIS*

(Fig.6)

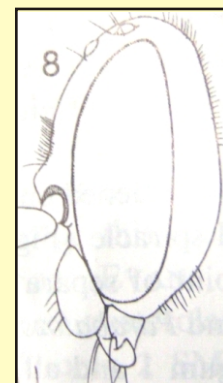


Key to Genera of Subfamily Pompilinae

1. Frons with distinct, blunt median tubercle (Fig.7) just above the antennal socket; propodeum laterally produced into hump or tooth (Fig.8) ... *Tachypompilus* (Fabricius-Bingham)
- Frons without any tubercle above the antennal socket; propodeum laterally without hump or tooth..... 2
2. Postnotum arcuately broadened on each side of midline and constricted opposite propodeal spiracle; 1st abdominal segment with scale like pubescence; inner eye margins strongly convergent above and divergent below *Batozonellus* Arnold
- Postnotum transverse, band like, with nearly parallel margins or broadened at midline; 1st abdominal segment without scale like pubescence; inner eye margins neither convergent above nor divergent below; propodeum without distinct large, concave posterior face or teeth on sides *Anoplius* Dufour



(Fig.4)



FRONS TUBERCULATE

(Fig.7)



PROPODEUM Laterally produced into hump or tooth

(Fig.8)

DESCRIPTION OF SPECIES UNDER SUBFAMILY PEPSINAE

Auplopus bimaculatus (SMITH)

1859 *Pompilus* (*Agenia*) *bimaculata* SMITH - Cat. Hym. Insects coll at Celebes by Mr. A.R. Wallace, J. Linn. Soc. Lond. 3:13.

1966 *Auplopus bimaculatus* (SMITH) - BALTAZAR, A Cat. Philippines Hym. (with Bibliography, 1758-1963), Pac. Insects Monograph 8, Pompilidae: 312. 1992 *Auplopus bimaculatus* (SMITH) - WAHIS, Notes fauniques de Gembloux 25: 44, 53-54, synonymy, key, figs.

Description (♀): Measurements: TL: 13; WL: 10/6; UID: MID: LID= 20:40:33. Black, the clypeus except a midlongitudinal band in the middle, mandibles, antennae above yellow; body finely punctate; entirely clothed with silvery pubescence, erect hairs sparse on head, abundant on sides of thorax and propodeum; head triangular, somewhat convex; frons broad, midlongitudinally inconspicuously sulcate; vertex narrow, ocelli in triangle, ocellar area raised, distance between posterior ocelli greater than distance between anteroposterior ocelli; eyes convergent above and parallel below; antennae closely set, downwardly placed slightly above clypeal margin, segment 3:4 = 1:2, 3rd segment 4.8 x as long as wide; clypeus rectangular, very convex, apical margin broad, laminate; labrum slightly exposed, medially deeply notched, surface hairy; mandibles narrow, hairy; malar space almost reduced; tempora narrow; maximum eye width 4.25 x maximum temporal width; thorax quadrate, elongate, convex; pronotum, broad, anteriorly sloping; mesoscutum quadrate, lateral margins oblique, laminate; tegula broad, convex, margin round; mesoscutellum broad, round; metanotum narrow, round; postmetanotum narrow, shining, transversely striate; propodeum broadly elongate, descending, medially transversely striate; abdomen elongate, narrow, conical, 2nd segment broader, sting exerted; wing clear, hyaline, with metallic reflection; with 3 submarginal cells, 2nd receiving 1st recurrent nervure slightly beyond middle of base whereas 3rd receives 2nd recurrent nervure slightly before middle of base; apex of discoidal cell acute; nervures and stigma brown; fore legs with 1 pectinate and mid leg with 2 pectinate spurs, (hind leg broken); tibia of mid leg on outer surface with small, scattered spines; claws simple with a basal tooth.

Material examined: 1♀ , 07.vi.01, Jaldapara; JWLS; West Bengal; India; coll. Sumana Saha; 1♀ , 17.iv.02, Panbari; BTR; West Bengal; India; coll. Samrat Bhattacharjee.

Distribution: India (West Bengal), Myanmar (BINGHAM 1897; WAHIS 1992).

Cyphononyx confusus DAHLBOM

1845 *Cyphononyx confusus* DAHLBOM - Tabula Examinations Synoptica Speciorum Pompilidarum: 461.

2003 *Cyphononyx confusus* DAHLBOM- WAHIS, Notes fauniques de Gembloux 51: 60-62, synonymy, distribution.

Description (♀): Measurements: TL: 22; WL: 20/ 11; UID: MID: LID= 57:68:56. Black, the head except the ocellar area, 2 spots above antennae, and a spot below antennae, mandibular apex, gena, back of head, pronotum except the sides, mesoscutum, mesoscutellum, metanotum except lateral areas, part of femur, tibia, basal 3 tarsal segments brownish yellow; pubescence golden yellow; head round, swollen, micropunctate; frons broad, squarish, with scattered, brown, erect hairs, with a median sulcation running down from anterior ocellus to gibbous interantennal area; vertex narrow, transverse, with a few erect, fulvous hairs, ocellar area raised, ocelli well developed, in triangle, posterior ocelli separate by a greater distance than anteroposterior ocelli; eyes broad, slightly convergent posteriorly; antennae fulvous, apical segments tawny, flagellar segment 3:4= 1.5:1, 3rd segment 5 x as long as wide; clypeus broad, convex, basally sinuate, apically inwardly curved, apical margin narrowly brownish, surface with very few scattered, erect, brown hairs; labrum convex, apical margin round with stiff, erect hairs; mandibles long, crossing each other, surface grooved, shining, finely striate, with single tooth; malar space reduced; tempora 1/3rd width of eye; thorax long, swollen; pronotum with broad, median sulcation, bilobed, apical margin shallowly curved inwards, surface with few stiff, brown hairs; mesonotum subquadrate, parapsidal furrows extending a little beyond half of mesoscutum, inwardly with a distinct carina extending more than half of its length, lateral margins strongly reflexed and slightly margined; tegula convex with concave outer margin; mesoscutellum broad, medially strongly raised, laterally lamellate; metanotum narrow, medially swollen, laterally broad, strongly striate, surface with few long brown hairs; propodeum stout, quadrate, strongly transversely striate, surface laterally emarginate, medially longitudinally sulcate, apically strongly reflexed and margined; propodeal orifice round; abdomen with coppery effulgence, about as long as thorax, pear shaped, basally sloping, surface with small, scattered punctures, apical segments with long hairs; wings brownish yellow, with 3 submarginal cells, 2nd receiving 1st recurrent nervure beyond middle of base whereas 3rd receives 2nd recurrent nervure a little before middle of base; apex of discoidal cell acute; nervures and stigma brown; posterior tibia outwardly serrate; claws bifid.

Material examined: 1♀, 26.iv.02, TEC; JWLS; West Bengal; India; coll. Samrat Bhattacharjee. 1♀, 13.vi.01, Gadadhar; BTR; West Bengal; India; coll. Samrat Bhattacharjee.

Distribution: Cambodia, India (West Bengal), Pakistan, Sri Lanka, Vietnam (WAHIS 2003).

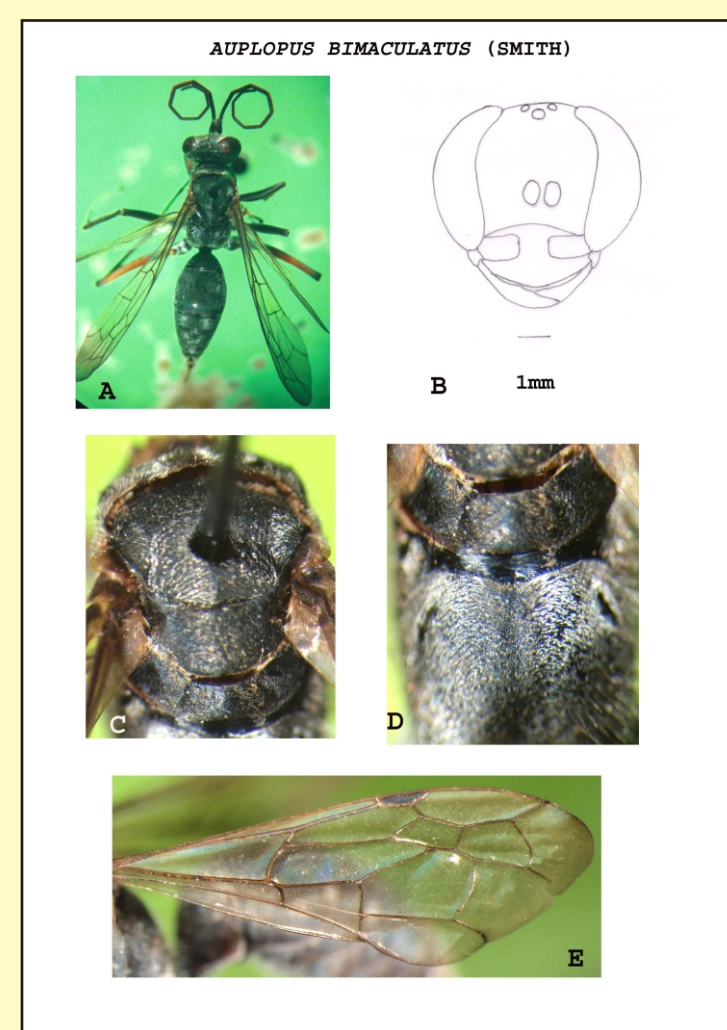


Fig. 9 A-E : *Auplopus bimaculatus* (SMITH): (A) general habitus (B) head - front face (C) thorax from dorsal (D) propodeum from dorsal (E) fore wing.



Fig.10 A-E : *Cyphononyx confusus* DAHLBOM: (A) general habitus (B) head - front face (C) thorax from dorsal (D) propodeum from dorsal (E) fore wing.

Cyphononyx peregrinus (SMITH)

1875 Priocnemis peregrinus SMITH - Trans. Ent. Soc.: 37.

1949 Cyphononyx peregrinus (SMITH) - van der VECHT, Treubia 20 (2): 282-285.

Description (♀): Measurements: TL: 16; WL: 15/ 10; UID: MID: L1D= 40:65:70. Black, the head except a broad band on vertex, 2 spots at the back of antennae, apex of mandibles, pronotal surface, a mark on and the lateral margins of mesoscutum, the tegulae, a broad, square spot on the scutellum, the legs except coxa, trochanter, base of femur, metatarsus and claws brownish yellow; pubescence golden yellow, coppery over abdomen; head round, micropunctate with a few hairs; frons squarish, elongate, shallowly depressed above the antennae, with a brown midlongitudinal sulcation descending from anterior ocellus to between the antennae, deeply grooved at the middle, between 2 black spots; vertex transverse, ocellar area raised, ocelli in triangle, posterior ocelli separate by a greater distance than anteroposterior ocelli, anterior ocellus large; eyes slightly convergent posteriorly; antennae downwardly placed, flagellar segment 3:4= 1.6:1, 3rd segment 5 x as long as wide; clypeus convex, apically nearly straight; mandibles long, surface carinate, basally striate, with few long hairs, with a small tooth; labrum flat, apical margin with stiff hairs; malar space reduced; tempora convergent behind the eyes, 3/4th width of eye; thorax long, swollen; pronotum with median sulcation giving 2 lateral round gibbous lobes, surface and apical margin with plumose pubescence; mesoscutum subquadrate, parapsidal furrows extending a little beyond the middle, inwardly with 2 strong carina extending more than beyond the middle, laterally sloped and margined; tegula convex, lateral margin round; mesoscutellum broad, medially raised; metanotum 'V' shaped, apically transversely striate; propodeum long, surface rough, transversely striate, laterally carinate, apically reflexed and strongly margined; propodeal orifice round; abdomen elongate, 2nd segment broad with round lateral margins, apical segment with hairs; wings dark fuscous, with brilliant, coppery effulgence, densely pubescent; with 3 submarginal cells, the 2nd receiving 1st recurrent nervure beyond middle of base whereas 3rd receives 2nd recurrent nervure a little before middle of base; apex of discoidal cell acute; stigma and nervures brown; claws bifid.

Material examined: 1♀, 24.vi.03, Jaldapara; JWLS; West Bengal; India; coll. Samrat Bhattacharjee.

Distribution: Cambodia, India (West Bengal), Pakistan, Sri Lanka, Vietnam (WAHIS 2003).

Leptodialepis cameroni (BANKS)

1938 Cyphononyx cameroni BANKS - Proc. Ent. Soc. Wash.: 237.

1999 Leptodialepis cameroni (BANKS) - WAHIS, Notes fauniques de Gembloux 36: 95-106.

Description (♀): Measurements: TL: 24; WL: 19/ 12; UID: MID: LID= 23:31:31. Black, head except a transverse band on the vertex, clypeus, labrum, pronotum except in the middle, mesoscutum, mesoscutellum, legs yellowish brown, occiput burnt brick red, antennae fulvous, gradually fuscous from the distal half to apical segment- the last 3 segments deep fuscous, malar space brownish, legs fusco brownish; head and thorax with plumose golden pubescence, abdomen with white cinerous pubescence; head flat, somewhat elongate, transversely rugose; frons elongate, squarish, shallow, with a distinct median groove running from base of anterior ocellus to between antennae; vertex transverse, ocellar area raised, a depression present between the posterior ocelli; eyes convex, broadly convergent posteriorly; antennae downwardly placed, flagellar segment 3:4= 37:26, 3rd segment 7 x as long as wide; clypeus broad, rectangular, convex, lateral margins oblique, with some stiff hairs; labrum with round apical margin; mandibles long, crossing each other, mandibular base carinate, with 1 strong tooth, apical margin with stiff long hairs; malar space narrow; tempora 1/3rd width of eye; pronotum transverse, broad, midlongitudinally depressed, bilobed; mesoscutum subquadrate, narrowing posteriorly; mesoscutellum broadly 'U' shaped, midlongitudinally depressed, more so posteriorly; metanotum broad, medially raised; propodeum gradually sloping postriorly, transversely striate, propodeal orifice round; abdomen long narrow, 2nd segment with a distinct groove ventrally, apical segment with long brown hairs; wings yellow, with coppery effulgence, nervures brown, apical margin narrowly fuscous, with 3 submarginal cells, 2nd smaller than the 1st and 3rd receives 1st recurrent nervure much beyond middle of base whereas the 3rd one receives 2nd recurrent nervure before middle of base; apex of discoidal cell acute; claws simple with a small tooth before the middle.

Material examined: 1♀, 06.vi.03, Mantharam; JWLS; West Bengal; India; coll. Sumana Saha.

Distribution: China, India (West Bengal), Malaysia, Myanmar, Taiwan, Thailand, Vietnam (WAHIS 1999).

Leptodialepis zelotypus (BINGHAM) comb.nov.

1896 Salius zelotypus BINGHAM - J. Bomb. Nat. Hist. Soc: 201.

1897 Salius zelotypus BINGHAM - Fauna Brit. India: 135.

Description (♀): Measurements: TL: 37; WL: 21/ 15; UID: MID: LID= 24:31:42. Body chocolate brown, a midlongitudinal band on the vertex, mandibles at apex, mesoscutum at sides, mesoscutellum and metanotum at sides, a midlongitudinal band on propodeum, base and apex of 1st abdominal segment, apical margins of the remaining segments broadly black; pubescence silky brownish yellow; head triangular, densely pubescent; frons broad with a midlongitudinal line running down from anterior ocellus to between the antennae; vertex transverse, ocelli in triangle, posterior ocelli separated by a greater distance than anteroposterior ocelli; antennae downwardly placed [antennae broken]; clypeus convex; labrum exposed, apically round with stiff hairs; mandibles long, crossing each other, apically with a blunt tooth, surface polished, deeply grooved, margin with stiff hairs; malar space almost reduced; tempora narrow, eye width 2.8 x temporal width; thorax elongate, pronotum anteriorly sloping, bilobed, parapsidal furrows extending tegular margin, laterally carinate, sides lamellate; mesoscutellum band like, medially swollen; metanotum 'V' shaped, sides carinate, medially tuberculate; propodeum broad, gibbous, transversely striate, orifice round; abdomen elongate, fusiform, apically hairy; wings dark brown, with 3 submarginal cells, 2nd receiving 1st recurrent nervure almost at the end of base whereas 3rd receives 2nd recurrent nervure before middle of base, apex of discoidal cell acute, nervures brown; claws simple, basally toothed.

Material examined: 1♀, 23.vi.03, Jaldapara; JWLS; West Bengal; India; coll. Dinendra Raychaudhuri. 1♀, 18.iv.02, Rajabhatkhowa; BTR; West Bengal; India; coll. Samrat Bhattacharjee.

Distribution: India (West Bengal), Myanmar (BINGHAM 1897).

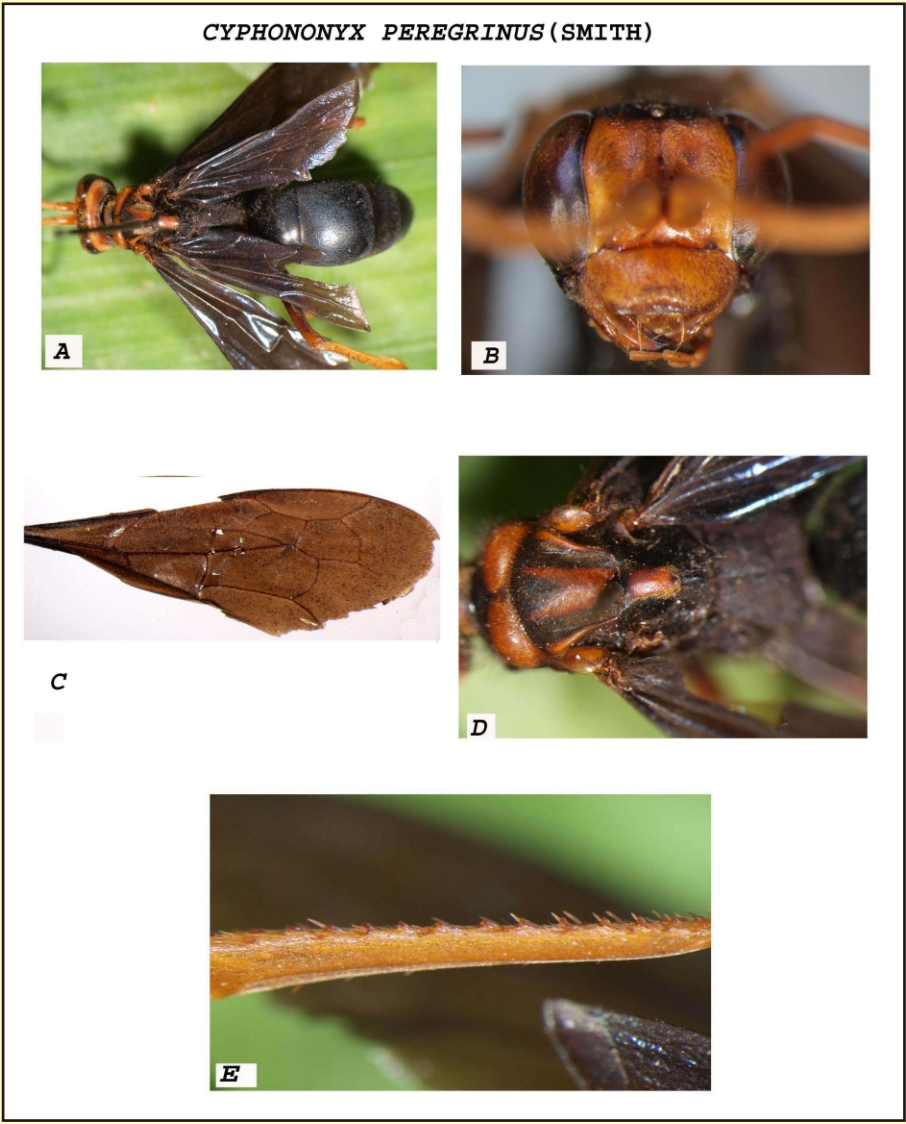


Fig. 11 A-E : Cyphononyx peregrinus (SmiTh): (A) general habitus (B) head - front face (C) fore wing (D) thorax from dorsal (E) hind tibia showing arrangement of spines.



Fig. 12 A-E : Leptodialepis cameroni (BANKS): (A) general habitus (B) head - front face (C) propodeum from dorsal (D) thorax from dorsal (E) fore wing.

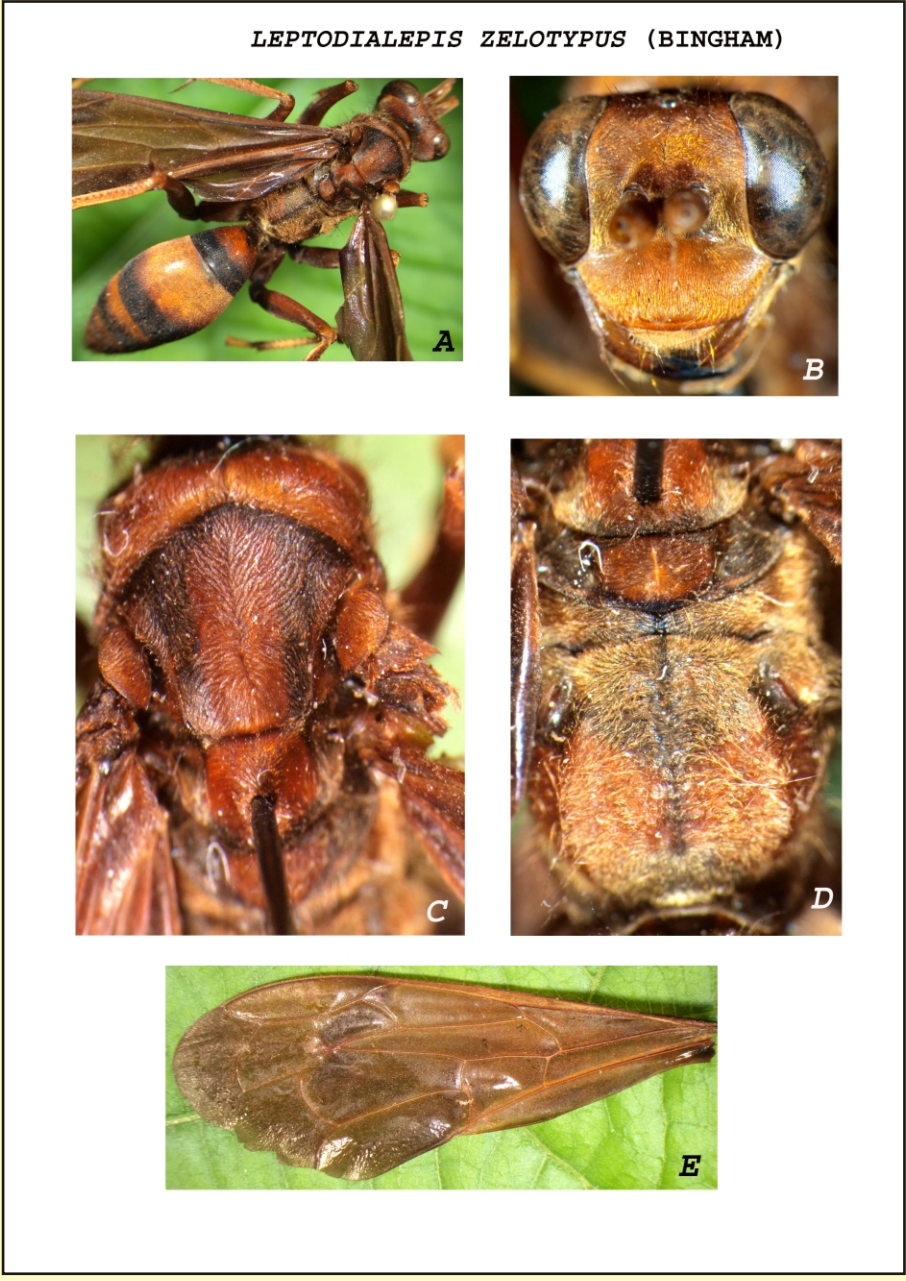


Fig. 13 A-E : Leptodialepis zelotypus (BLNGHAM): (A) general habitus (B) head - front face (C) thorax from dorsal (D) propodeum from dorsal (E) fore wing.

Leptodialepis (Nyctalosalius) himalayensis (CAMERON)

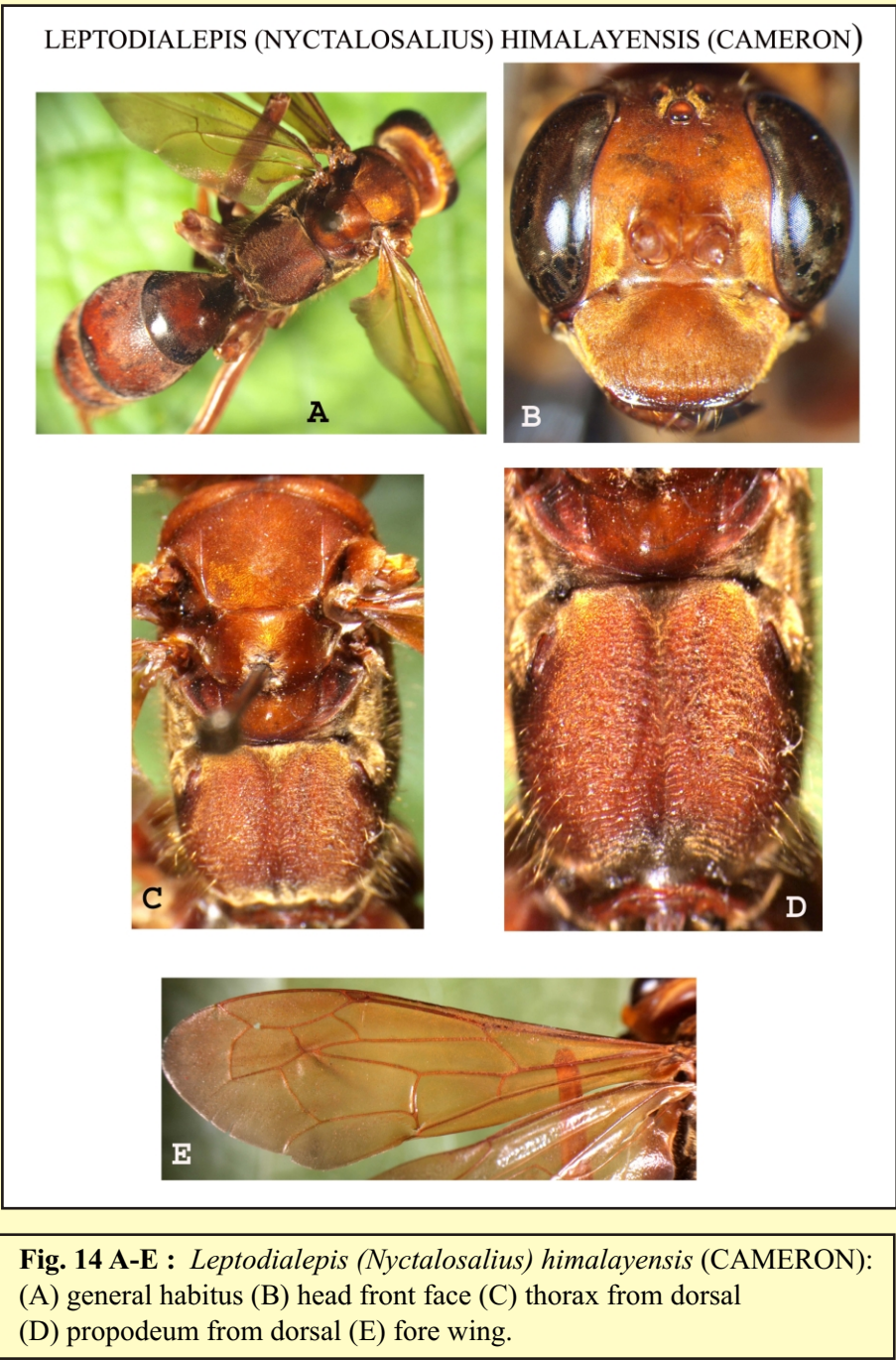
1902 *Salius himalayensis* CAMERON - J. Straits Br. Royal Asiatic Soc: 240.

2003 *Leptodialepis (Nyctalosalius) himalayensis* (CAMERON) - WAHIS, Notes fauniques de Gembloux51: 59-70.

Description (♂): Measurements: TL: 16; WL: 14/10; UID: MID: LID= 28: 35: 32. Black, the head except the ocellar area and 2 broad lines above the antennae, the clypeus, the mandibles except apex, the antennae except the apical segments, the apical half of pronotum, part of mesoscutum, mesoscutellum and metanotum medially, propodeum submedially, some spots on abdomen, the legs except the intermediate and posterior coxae and claws brownish yellow; pubescence shining golden yellow, on abdomen bluish; head round, somewhat elongate, micropunctate; frons small, with a median sulcation running down from anterior ocellus to between the antennae; vertex transverse, ocellar area strongly raised, ocelli well developed, in a triangle; eyes posteriorly convergent; antennae long, slightly bent, placed over raised surface, flagellar segment 3:4= 10:9, 3rd segment 5 x as long as wide; clypeus convex, surface with a strong oblique carina, anterior margin reflexed, laminate; labrum flat, with round apical margin, with stiff hairs; mandibles carinate, crossing each other, with 2 teeth at apex; malar space reduced; tempora broad behind the eyes, 1/5th width of eye; thorax elongate, surface swollen; pronotum round, medially shallowly sulcate, submedially bilobed, anteriorly sloped; mesoscutum subquadrate, parapsidal sutures ending before basolateral margin, lateral margins raised, lamellate; mesoscutellum broad, medially swollen; metanotum narrow, laterally carinate, medially slightly raised; propodeum quadrate, surface rough with transverse striations, laterally with long, golden hairs, apical margin nearly straight, slightly reflexed; propodeal orifice round; abdomen elongate, lateral margins of 2nd segment round, apical segment with hairs; wings flavohyaline, having purplish effulgence, with subapical fuscous cloud, submarginal cells 3, 2nd receiving 1st recurrent nervure slightly beyond middle of base whereas the 3rd receives 2nd recurrent nervure before middle of base; nervures and stigma brown; apex of discoidal cell acute; tibia and tarsi with small spines; fore and mid legs with bifid claws, hind leg with simple claw bearing a small tooth.

Material examined: 1♂, 07.vi.01, Malangi; JWLS; West Bengal; India; coll. Dinendra Raychaudhuri.

Distribution: India (Assam, West Bengal) [WAHIS 2003].



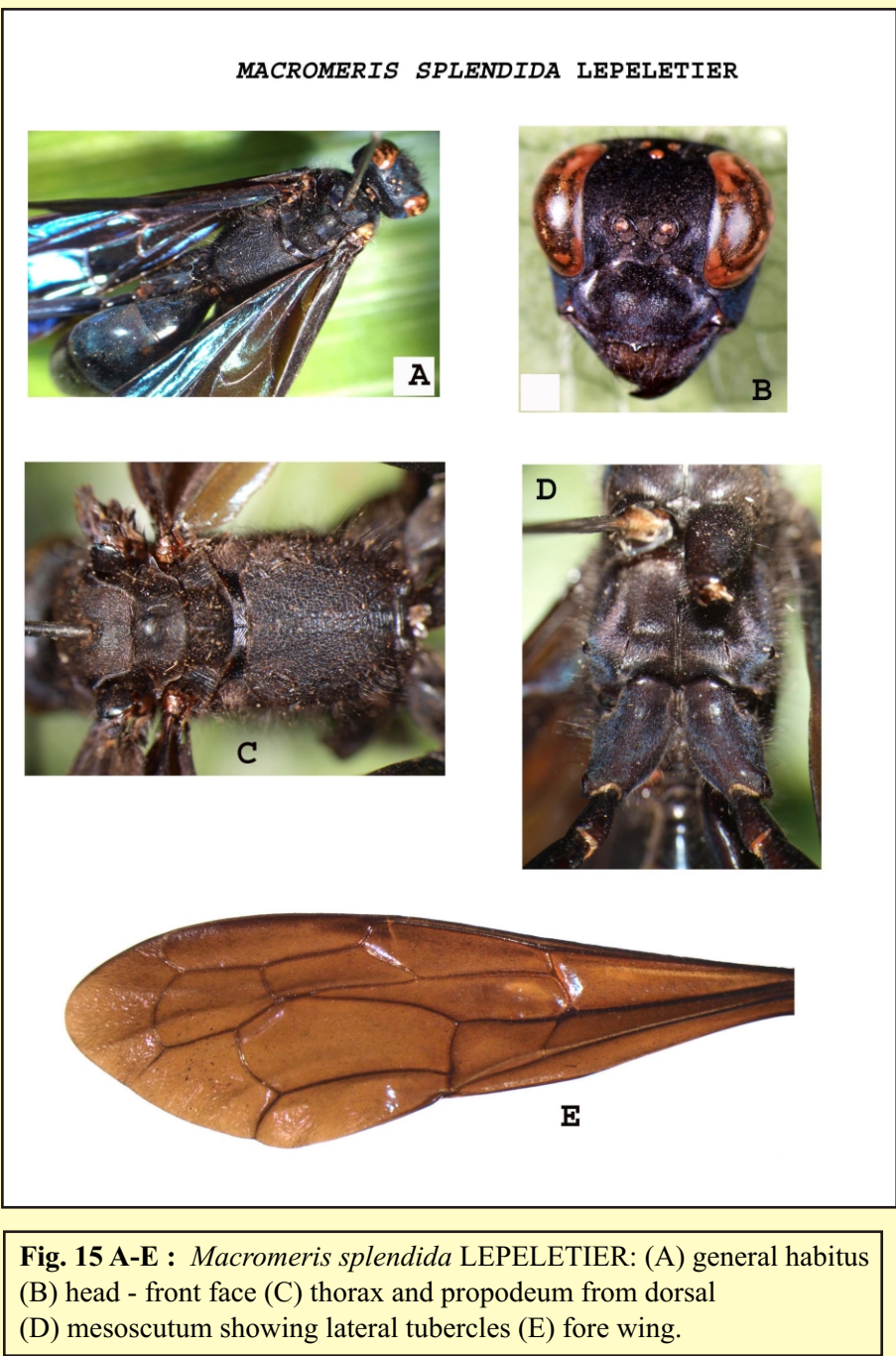
Macromeris splendida LEPELETIER

1831 *Macromeris splendida* LEPEL. - Guer. Mag. Zool. Hym. 3: 463.

Description (♀): Measurements: TL: 24; WL: 26/ 16; UID: MID: LID= 55:55:48. Black, shining, with bluish pubescence all over except the antennae; wholly finely striate, with shallow scattered punctures; head elongate, somewhat triangular; frons shallow, broad, medially with a small sulcation just above the antennae; vertex broad, transverse, ocelli yellow and in triangle, ocellar area weakly raised, temple broad behind the eyes; eyes convex, very slightly convergent above; antennae downwardly placed slightly above clypeus, flagellar segment 3:4 = 2.5:1.5, 3rd segment 7.2 x as long as broad; clypeus convex, transverse, subhexagonal, studded with dense black hairs, apical margin emarginate, with small medial tooth, basal margin medially slightly inwardly curved; labrum brown, apical margin notched, studded with brown stiff hairs; mandibles broad, punctate, apical margin straight, with a small blunt tooth at base; malar space large; tempora about 4/7th width of eye; thorax long, swollen, pronotum broad, transverse, medially sulcate, bilobed; mesoscutum subquadrate, with parapsidal sutures running from base to about half the length, lateral margins strongly raised, lamellate, ventrally with 2 distinct, lateral tubercles shaped in the form of mammae (Fig.7D), with 2 lateral tubercles; tegula convex with round apical margin; mesoscutellum broad, medially slightly raised; metanotum transverse, narrow, band like, medially longitudinally depressed, submedially strongly raised, entirely with fine striations; propodeum subquadrate, surface strongly rugose, striate punctate, posteriorly narrowed, gently sloped, laterally with a pile of long black hairs, propodeal orifice round; abdomen smooth, shining, tapering at both ends, 2nd segment apically with a brown transverse band, entirely clothed with coppery pubescence, apical segment punctate, marginally with long black hairs; wings dark, fuscous, with brilliant, coppery effulgence, with 3 submarginal cells, 2nd receiving 1 st recurrent nervure beyond middle of base whereas 3rd receives 2nd recurrent nervure before middle of base; apex of discoidal cell acute; stigma and nervures black; tibia and tarsi with very few spines; claws simple with a large median tooth.

Material examined : 1♀ , 07.vi.01, Jaldapara; JWLS; West Bengal; India; coll. Samrat Bhattacharjee. 1♀ , 28.iv.03, Nimati; BTR; West Bengal; India; coll. Samrat Bhattacharjee.

Distribution: India (Andaman, Assam, West Bengal), Malayan region, Myanmar (BINGHAM 1897).



DESCRIPTION OF SPECIES UNDER SUBFAMILY POMPILINAE

Anoplius (Arachnoproctonus) beatus (CAMERON)

Pompilus beatus CAMERON 1891 - Mem. Proc. Manchester Literary Phil. Soc. 4: 457, 473.

Pompilus beatus CAMERON 1897 - Bingham Fauna Brit. India: 164.

Anoplius (Arachnoproctonus) beatus (CAMERON) - WAHIS 2006 - Notes fauniques de Gembloux 59 (1): 37-45

Description (♀): TL: 11; WL: 8/6; UID: MID: LID: 13: 19: 17. Black, shining, with abdominal segment 1 excepting base, segment 2 and basal 2/3rd of abdomen orangish; body finely striate all over; head somewhat triangular with a very few scattered hairs; frons medially slightly convex with an inconspicuous groove running down to the antennal bases; vertex slightly raised at the ocellar area, ocelli in triangle, distance between posterior ocelli more than the distance between anteroposterior ocelli; antennae downwardly placed just above the clypeus, scape and pedicel striate, flagellar segment 3:4= 12:5, 3rd segment 4 x its width; eyes convex, slightly convergent above; clypeus broad, rectangular, sides oblique, apical margin medially slightly incurved, posteriorly sloped, surface with adpressed pubescence; labrum medially notched with stiff brown hairs; mandibles long, crossing each other, surface strongly grooved, margin with 2 strong teeth; malar space reduced; tempora about ½ width of eye; thorax somewhat elongate, swollen; pronotum transverse, nearly straight, anterolateral angles obtusely round; mesoscutum subquadrate, posterior half raised; mesoscutellum broad, V shaped, narrowing posteriorly; metanotum transverse, weakly arched; propodeum broad, gibbous, gradually sloped posteriorly; metasoma elongate, parallel sided, convergent apically; wings fuscous brown, clothed with small hairs, with 3 submarginal cells, 2nd and 3rd receive 1 recurrent nervure each in the middle; apex of discoidal cell acute; fore leg with 1 pectinate spur, mid and hind legs with 2 unequal spurs; claws simple, with a small tooth near the middle.

Material examined: 1♀, 24.iv.02, Sissamara, JWLS; West Bengal; India; coll. Sumana Saha. 1♀, 26.iv.02, Panbari, BTR; West Bengal; India; coll. Samrat Bhattacharjee.

Distribution: India (Assam, Karnataka, Meghalaya, West Bengal), China, Indonesia, Malaysia, Myanmar, Philippines, Taiwan, Vietnam (BINGHAM 1897; WAHIS 2006).

Anoplius (Arachnoproctonus) beatus (Cameron)

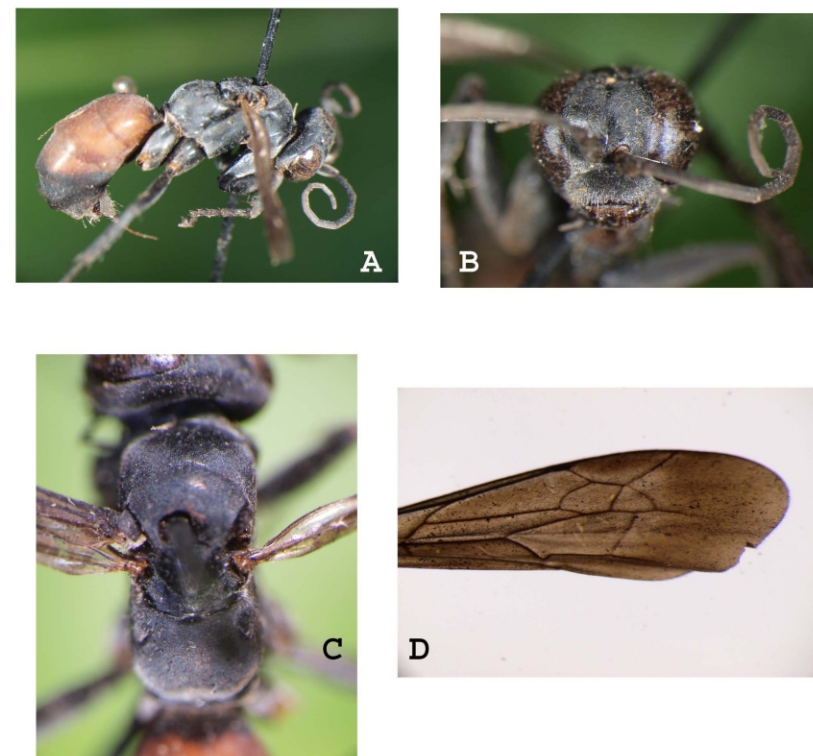


Fig. 16 A-D : *Anoplius (Arachnoproctonus) beatus* (CAMERON): (A) general habitus; (B) face from front; (C) thorax from dorsal; (D) fore wing.

Anoplius (Orientanoplius) canifrons (SMITH)

Pompilus canifrons SMITH 1855 - Cat. hym. ins. coll. Brit. Mus. Part III. Lond.:146.

Anoplius (Orientanoplius) canifrons (SMITH) – DAY 1974, Bull. Brit. Mus. (Nat. Hist.) Ent. Lond.: 382-387.

Description (♀): TL: 12; WL: 12/7; UID: MID: LID: 23: 50: 47. Black, the labrum and mandibles brown black; body covered with sparse white brown pubescence; head round, micropunctate, shallowly convex; frons squarish with an inconspicuous medially impressed line running down from anterior ocellus to between antennae; vertex comparatively narrow, slightly convex, ocellar area slightly raised, ocelli in triangle, distance between posterior ocelli more than distance between anteroposterior ocelli; temple broadly convergent behind the eyes; antennae somewhat downwardly placed just above clypeus, flagellar segment 3:4= 37:31, 3rd segment 7.5 x as long as wide; eyes slightly convergent anteriorly, medially slightly emarginate; clypeus broad, convex, apical margin slightly incurved, basal margin medially outwardly produced, sides bent inwardly; labrum brown black, apical margin notched; mandibles long, narrow, with a basal tooth; malar space reduced; tempora about ½ width of eye; thorax elongate, convex, laterally compressed; pronotum broad, anteriorly sloping, apical margin roofed, surface with whitish cinerous pubescence; mesoscutum subquadrate, parapsidal sutures extending more or less upto middle, lateral margins oblique, reflexed; tegula convex, laterally slightly expanded; mesoscutellum V shaped, medially raised, elongate; metanotum narrow in the middle, broad laterally, medially tuberculate; propodeum broad, quadrate, gibbous, apical and lateral margins slightly reflexed and laminate; propodeal orifice round; metasoma elongate, slightly longer than mesosoma, sides parallel; segments 2-4 with basal band of cinerous white pubescence, apical segment with long hairs; basal segment shallowly sloping towards propodeum; tibia and tarsi spinose; fore leg with 1 broad, flattened, pectinate spur, mid and hind legs with 2 pectinate unequal spurs; claws simple, with a small medial tooth; wings dark, fuscous with coppery effulgence, with 3 submarginal cells, 2nd one receiving 1st recurrent nervure near end of base whereas 3rd one receives 2nd recurrent nervure slightly beyond middle of base; apex of discoidal cell acute; stigma and nervures black.

Material Examined: 1♀, 26.iii.02, Jaldapara; 1♀, 28.iv.02, Dhaidhaighat, JWLS; West Bengal; India; coll. Samrat Bhattacharjee.

Distribution: Widely distributed throughout forests of Oriental region and Indonesia, extending into Queensland, Australia (DAY 1974).

Anoplius (Orientanoplius) canifrons (Smith)

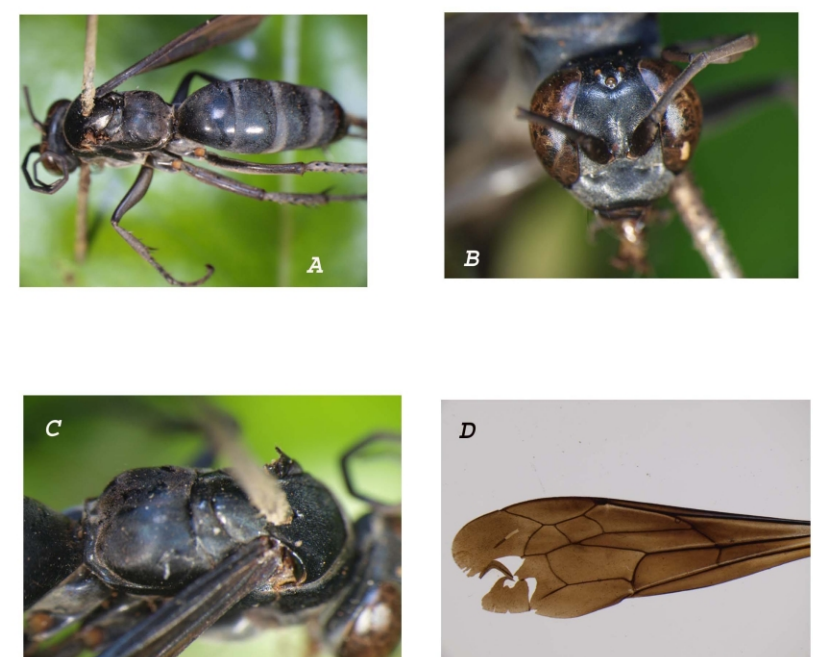


Fig. 17 A-D: *Anoplius (Orientanoplius) canifrons* (SMITH): (A) general habitus; (B) face from front; (C) thorax from dorsal; (D) fore wing.

Batozonellus annulatus (FABRICIUS)

Ichneumon annulatus FABRICIUS 1793 - Ent. Syst. II: 179.

Pompilus exortivus SMITH 1873 - Trans. Soc. Lond.: 188.

Description (♀): TL: 22; WL: 17/10; UID: MID: LID: 40:65:70. Black, the head except the labrum and mandibles at apex, the pronotum except an anterior median spot, mesoscutum except the basal margin and 2 lateral bands, mesoscutellum except its basal margin narrowly, metanotum excepting the sides brownish yellow, legs except the coxae, trochanter, base of femur and tarsal segments chocolate brown, abdomen with some oval spots on basal segment. A yellow transverse band at base of 2nd segment and the apex of apical 2 segments yellowish; pubescence golden yellow; head round, somewhat elongate, surface micropunctate and with small scattered punctures, beset with short black hairs, surface with reddish, plumose pubescence; frons broad, convex, area around antennae shallow, transversely striate, interantennal area raised, an inconspicuous line from anterior ocellus to between the antennae; vertex convex, transverse, with brownish hairs, ocelli somewhat anteriorly placed, anterior ocellus within a shallow depression, clearly visible from front, ocellar area not raised, ocelli in triangle, distance between posterior ocelli greater than distance between anteroposterior ocelli; eyes convex, convergent anteriorly; antennae downwardly placed, flagellar segments 3:4= 60:40, 3rd segment 3 x as long as wide; clypeus broad, convex, basolateral margin outwardly produced, middle of basal segment slightly curved outwards; labrum convex, somewhat inverted triangular shaped, surface with stiff hairs, apical margin arcuate; mandibles long, crossing each other, surface strongly carinate with stiff hairs, margin with 3 teeth; malar area very small, eye width 2.1 x temporal width; thorax long, swollen, midlongitudinally sulcate, submedially lobular; pronotum anteriorly sloping with long black hairs, apical margin round; mesoscutum subquadrate, lateral margins reflexed; tegula convex, apical margin round; mesoscutellum V shaped, medially swollen, lateral margin lamellate; metanotum medially narrow, laterally broad; propodeum quadrate, swollen, with long hairs, apically strongly margined; propodeal orifice round; metasoma about as long as mesosoma, convex, sides parallel, studded with silky white pubescence; wings fulvous, with apical margin fuscous, densely studded with golden pubescence, with 3 submarginal cells, 2nd one receives 1st recurrent nervure much beyond middle of base whereas 3rd one receives 2nd recurrent nervure a little beyond middle of base; apex of discoidal cell acute; stigma and nervures brown; fore leg with 1 spur, mid and hind legs with 2 equal pectinate spurs; claws simple, with a small tooth in the middle.

Material examined: 1♀, 28.iv.02, Dhaidhaighat; 1♀, 07.vi.02, Siltorsa; JWLS; West Bengal; India; coll. Dinendra Raychaudhuri.

Distribution: China, India (West Bengal), Japan, Myanmar (BINGHAM 1897).

Batozonellus annulatus (Fabricius)

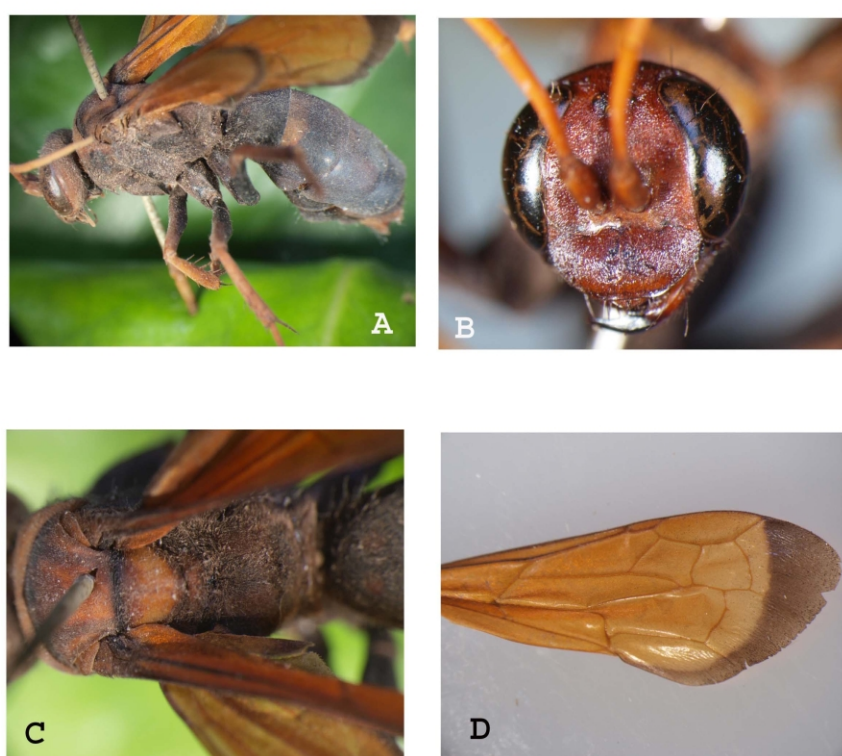


Fig. 18 A-D: *Batozonellus annulatus* (FABRICIUS): (A) general habitus; (B) face from front; (C) thorax, from dorsal; (D) fore wing.

Batozonellus maculifrons bracatus (BINGHAM)

Pompilus bracatus BINGHAM 1890 -J. Bomb. Nat. Hist. Soc. **5**: 236.

Pompilus bracatus BINGHAM 1897 - Fauna Brit. India: 164.

Description (♀): TL: 13; WL: 14/6; UID: MID: LID: 22:31:34. Black, the head except a mark descending from ocellar area to above the antennal base, the antennae except the apical flagellar 4th segment onwards, apical margin of clypeus, labrum except a spot in the middle, a broad median mark on the mesoscutum and oval spot on mesoscutellum, the legs except coxa, trochanter, base of femur, metatarsus yellowish brown; head round, micropunctate with some black scattered hairs; frons broad with a midlongitudinal line descending down from anterior ocellus to base of antennae; vertex small, ocellar area weakly raised, ocelli in triangle, distance between posterior ocelli more than distance between anteroposterior ocelli; eyes slightly convergent above; antennae well separate, pubescent, downwardly placed, flagellar segment 3:4= 20:19, 3rd segment 5 x as long as wide; clypeus broad, convex, rectangular, sides broadly round, laminate, anteriorly sinuate at the middle, posteriorly little produced at the angles, medially too; labrum round, with long stiff hairs; mandibles long, crossing each other with some long tawny hairs and a single tooth; malar space very much reduced; tempora 2 x width of eye; thorax micropunctate; pronotum arched, anteriorly straight, with angles broadly round, medially with a faint longitudinal black band, 2 oblique such bands extending from the middle to the lateral margin; mesoscutum subquadrate, posteriorly narrowing, laterally raised, laminate; mesoscutellum V shaped, laterally compressed; metanotum narrow, strongly arched; propodeum broad, little narrow posteriorly, medially deeply grooved, gradually sloped, thickly pilose with few long stiff, lateral hairs; metasoma narrowed at ends, black with metallic blue pubescence, apical 2 segments brownish yellow; wings fuscous with a bluish purple effulgence visible in certain lights, fore wing apically infuscated; with 3 submarginal cells, 2nd and 3rd receiving 1 recurrent nervure each beyond middle of base; apex of discoidal cell acute; fore leg with 1 pectinate tibial spur, mid and hind legs with 2 unequal simple spurs; claws simple, with single tooth a little beyond the middle.

Material examined : 1♀ , 26.vi.03, Mantharam, JWLS; West Bengal; India. coll. Samrat Bhattacharjee; 1♀ , 26.vi.03, Nimati, BTR; West Bengal; India. coll. Samrat Bhattacharjee

Distribution : India (Sikkim, West Bengal), Myanmar (BINGHAM 1897).

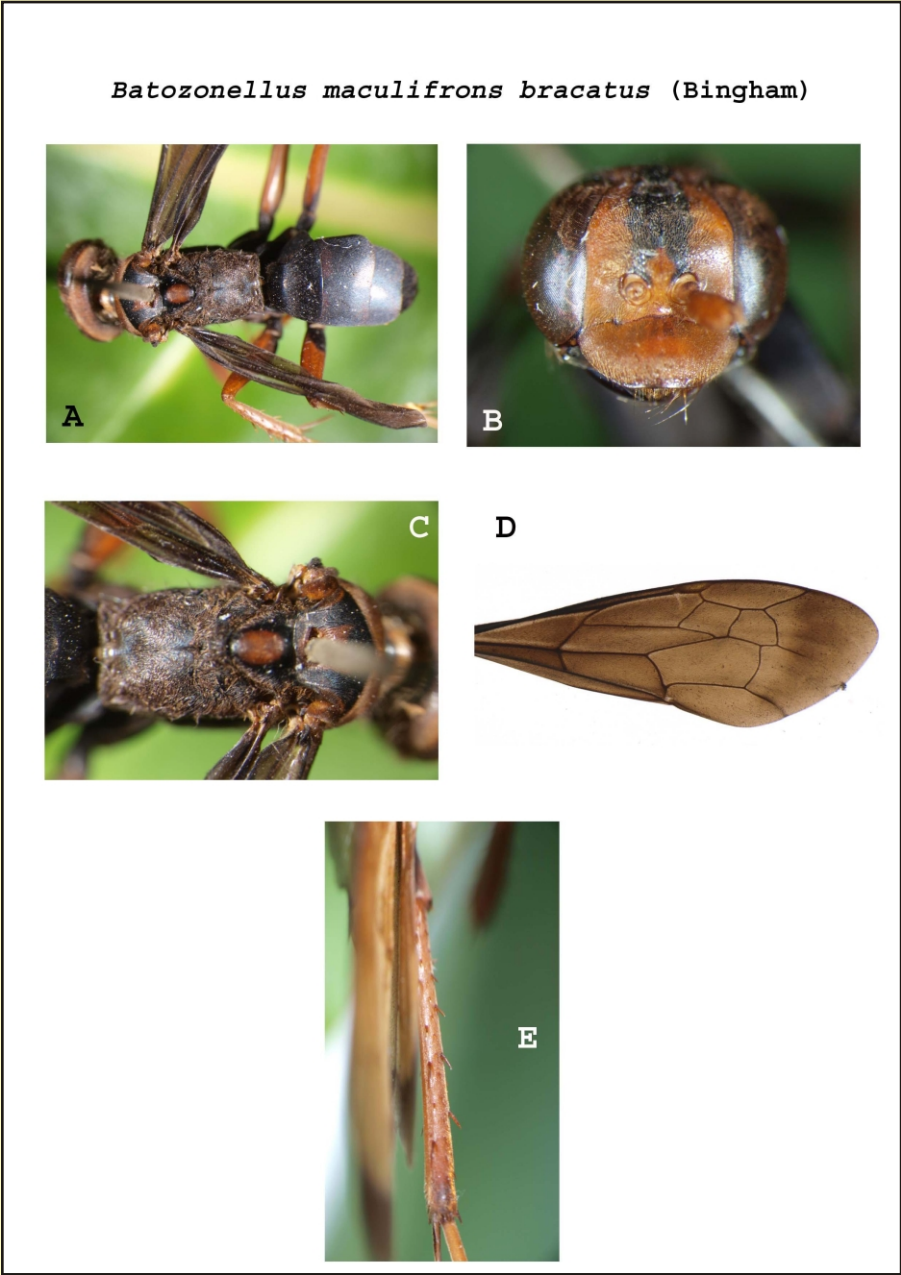


Fig. 19 A-E: *Batozonellus maculifrons bracatus* (BINGHAM): (A) general habitus; (B) face from front; (C) thorax from dorsal; (D) fore wing; (E) hind tibia.

Tachypompilus analis (FABRICIUS - BINGHAM 1897)

Sphex analis FABRICIUS 1871 - Ent. Syst. ii: 209.

Pompilus analis (FABRICIUS - BINGHAM 1897) - 1897. Faun. Brit. India: 150.

Salius pavianus SAUSSURE1904 - 199-200 (syn. by WAHIS 2006).

Tachypompilus analis (FABRICIUS) - WAHIS 2006, Notes fauniques de Gembloux **59** (1): 44.

Description (♀): TL: 16; WL: 11.5/ 8.5; UID: MID: LID: 33:42:41. Black, with blue metallic reflection in certain light, metasomal segments III-VI and sting orange; body with fine silvery, shining pubescence, hairs sparse, scattered, specially on sides of head, mesoscutum and apical metasomal segments; head somewhat transversely round, frons broad, elongate; vertex narrow, ocellar area slightly raised, distance between posterior ocelli more than distance between anteroposterior ocelli; eyes slightly convergent above; antennae close, placed just above the clypeal margin, flagellar segment 3:4=21:19, 3rd segment about 4 x its width; clypeus convex, apical margin slightly reflexed; labrum concealed beneath clypeus; mandibles elongate, crossing each other; malar space reduced; tempora broad, about 1/5th diameter of eye; thorax elongate, pronotum broad, rather swollen; mesoscutum subquadrate, mesoscutellum medially triangularly raised; metanotum narrow, band-like curved; propodeum apically roundly excavate; metasoma elongate, convex; wings transparent with 3 submarginal cells, 2nd one receiving 1st recurrent nervure beyond middle of base while 3rd one receives 2nd in the middle of base, apex of discoidal cell acute; fore leg with 1 pectinate spur, mid leg without any spur while hind leg with 2 unequal pectinate spurs, claw simple, basally toothed.

Material examined : 1♀, 26.iv.02, Jaldapara, JWLS; West Bengal; India. coll. Samrat Bhattacharjee.

Distribution : Cambodia (SAUSSURE et al. 1904), India, Sri Lanka, Myanmar (BINGHAM 1897).

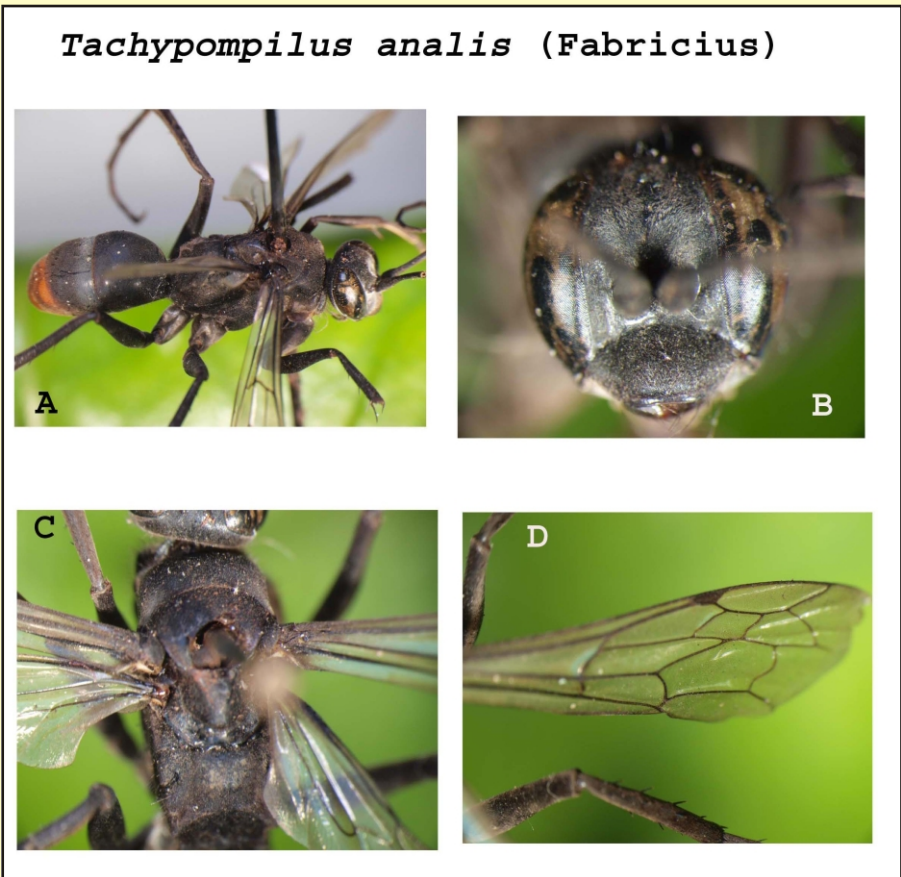


Fig. 20 A-D: *Tachypompilus analis* (FABRICIUS): (A) general habitus; (B) face from front; (C) thorax from dorsal; (D) fore wing.

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