

## A TAXONOMIC STUDY ON THE GENUS *ANTERHYNCHIUM* DE SAUSSURE (HYMENOPTERA: VESPIDAE: EUMENINAE) FROM INDIAN SUBCONTINENT

P. GIRISH KUMAR

Zoological Survey of India, M- Block, New Alipore,  
Kolkata, West Bengal- 700 053, India  
E- mail: kpgiris@gmail.com

### INTRODUCTION

Saussure, 1863, proposed the name *Anterhynchium* for division I of genus *Rhynchium* Spinola in Saussure, 1852. Vecht, 1963, designated *Ryghium synagroides* Saussure, 1852, as the type species. The genus *Anterhynchium* de Saussure is distributed at Australian, Ethiopian, Oriental and Palearctic Regions of the world. Forty four species are recorded under this genus from the world (GBIF Data Portal webpage) of which five species namely *Anterhynchium* (*A.*) *abdominale* (Illiger), *A.* (*A.*) *mellyi* (de Saussure), *A.* (*Dirhynchium*) *coracinum* Vecht, *A.* (*D.*) *flavolineatum* (Smith) and *A.* (*D.*) *flavomarginatum* (Smith) are recorded from Indian subcontinent. All the species from Indian subcontinent are herewith described in detail. The male of the species *Anterhynchium* (*Dirhynchium*) *coracinum* Vecht is described here for the first time. The subspecies *A.* (*D.*) *flavomarginatum curvoimaculatum* (Cameron), 1903, is synonymized under the nominate species *A.* (*D.*) *flavomarginatum* (Smith). Several new distributional records are also reported in this paper.

### MATERIAL AND METHODS

This study is based on about 108 specimens present in the Hymenoptera Section of the Zoological Survey of India, Kolkata. All the specimens were properly preserved and added to the 'National Zoological Collections' of the

Hymenoptera Section of the Zoological Survey of India, Kolkata (NZSI).

*Abbreviations used for the Museums:* BMNH = British Museum (Natural History), London, England; MHNG = Muséum d'Histoire Naturelle, Genève, Switzerland; MP = Muséum National d'Histoire Naturelle, Paris, France; NZSI = 'National Zoological Collections' of Zoological Survey of India, Kolkata, India; OUM = Oxford University Museum, Oxford, U. K.; UZMC = Universitetets Zoologiske Museum, Copenhagen, Denmark; ZMB = Zoologisches Museum der Humboldt Universität, Berlin, Germany.

*Abbreviations used for the terms:* F1-F2 = Flagellar segments 1 to 2; H = Head; M = Mesosoma; OOL = Ocellocular distance; POL = Post ocellar distance; SI-SVII = Metasomal sternites I to VII; TI-T2 = Metasomal tergites 1 to 2.

### RESULTS

#### Genus *Anterhynchium* de Saussure

1863. *Anterhynchium* de Saussure, *Mém. Soc. Phys. Hist. Nat. Genève*, 17 (1): 205, name for division I of genus *Rhynchium* Spinola in de Saussure, 1852, *Ét. Fam. Vesp.*, 1: 103, and de Saussure, 1855, *loc. cit.* 3: 175. Type species: *Ryghium synagroides* de Saussure, 1852, by subsequent designation of van der Vecht, 1963, *Zool. Verh., Leiden*, 60: 73.
1904. *Anterrhynchium* Dalla Torre, *Genera Insect.*, 19: 33 (incorrect spelling of *Anterhynchium* de Saussure).

**Diagnosis:** Clypeus of female pear-shaped, usually somewhat constricted before the narrow and slightly emarginate apex (Fig. 3); mandibles of female on inner side with four rather broad and irregularly shaped teeth, the basal tooth emarginate at apex, in the male the inner side of the mandible often considerably modified; palpal formula 6:4 (maxillary palpi with 6 segments and labial palpi with 4 segments); vertex of female with shallow post-ocellar fovea; pronotum with complete transverse carina, its anterior surface smooth, without median pits or impressions; mesoscutum and scutellum (Image 24) densely punctate throughout; tegula not evenly rounded posteriorly, emarginated adjoining parategula and shorter than parategula at apex (fig. 5); axillary fossa narrowed, slit-like; metanotum with a horizontal part, and a usually somewhat longer declivous part, the transition often not sharply indicated, more or less distinctly marked by an irregularly crenulate ridge, not projecting over propodeum, not flat but angled, not bidentate; propodeum without horizontal part behind the metanotum, the declivity at base with a more or less elongate triangle, bordered on each side by a groove, the lower half with more or less distinct median carina, which is gradually dilated towards the apex; propodeum without apical spines above the valvulae; forewing (Fig. 2) with second recurrent vein never very close to the second intercubital vein, third sub marginal cell separated from apex of marginal cell by about its own length, second sub marginal cell not petiolate, prestigma half or more the length of the pterostigma; abscissae I+ 2 of radial vein shorter than 3 + 4; first intercubital vein steep to moderately oblique; outer vein of third discoidal cell almost straight to moderately curved; anal vein of hindwing usually with short appendage running from the submedian cell in the direction of the preaxillary excision. Midtibia with 1 spur; mid femora of male not distinctly emarginate at base; metasoma (Images 4, 7 & 20) not petiolate, segment I with width more than half that of segment II, much less than twice as long as wide; T1 not transversely carinate; dilated part of SI bordered anteriorly by an arcuate carina;

transverse basal groove of SII not distinctly costate; male SVII without tubercles; digitus volsellaris of male genitalia (Image 17) longer, pubescent, at base with short black denticles.

**Distribution:** Australian, Ethiopian, Oriental and Palearctic Regions.

**Key to species/subspecies of the genus  
*Anterhynchium* de Saussure from Indian  
subcontinent**

(Modified from Vecht, 1963)

1. Narrow basal part of first gastral sternite smooth (Fig. 1), or with only a narrow median band of fine short and shiny transverse striae; gastral tergites only finely punctate at base; mandibles of male deeply emarginate on inner side near the middle. Subgenus *Anterhynchium* s. str. .... 2
- Narrow basal part of first gastral sternite densely transversely striate over almost its entire width (Fig. 6); third and following gastral tergites very coarsely punctate at base (visible only when the segments are unusually extended); mandibles of male not deeply emarginate on inner side. Subgenus *Dirhynchium*. .... 4
2. Basal two thirds of second gastral tergite distinctly punctate, except in the middle, the interspaces generally larger than the punctures. .... *mellyi* (de Saussure).
- Basal two thirds of second gastral tergite very finely and shallowly punctate, the interspaces everywhere much larger than the punctures. *abdominale* (Illiger)..... 3
3. Gaster (Image 4) mostly red except the following black markings: a narrow transverse band at the apex of first gastral tergite, a spot on the middle of posterior apex of the second tergite and sternite (sometimes third, fourth and fifth tergites and sternites also), last tergite and sternite usually entirely black..... *abdominale abdominale* (Illiger)
- Gaster (Image 7) entirely black (in some specimens the apical margins of the second and following tergites, as well as the sides of the

- first and second are partly blackish brown)...*abdominale bengalense* (deSaussure)
4. Mesoscutum (Image 24) posteriorly very densely punctate, the interspaces showing a tendency to run into irregular longitudinal striae; gaster (Image 22) black except first and second gastral tergites with narrow pale yellow apical band, both narrow yellow apical bands complete. ....*flavomarginatum* (Smith)
    - Mesoscutum posteriorly more sparsely punctate, here several interspaces at least as large as the diameter of the punctures. .... 5
  5. Gaster black (Image 11) (in some specimens only first gastral tergites with narrow pale yellow medially interrupted apical band, in some other specimens first and second gastral tergites with narrow pale yellow medially interrupted apical band); thorax with sparse yellowish white markings (Image 11); wings brown with violaceous reflections; temple strongly punctured; lower metapleuron with rugose punctures and irregular transverse striations; declivity of propodeum bordered dorsally by a somewhat strong irregular carina.....*coracinum* Vecht
    - Gastral tergites with yellow apical bands (Image 20), the bands on tergites 1 and 2 dilated laterally; thorax extensively marked with yellow (Image 18); wings fusco-hyaline, darkest at anterior margin of forewing; temple not strongly punctured; lower metapleuron almost smooth with very fine punctures and irregular striations; declivity of propodeum without such carina dorsally.....*flavolineatum* (Smith)

**Subgenus *Anterhynchium* de Saussure s. str.**

*Diagnosis:* Narrow basal part of first gastral sternite smooth, or with only a narrow median band of fine short and shiny transverse striae; gastral tergites only finely punctate at base; mandibles of male deeply emarginate on inner side near the middle.

**1. *Anterhynchium (Anterhynchium) abdominale* (Illiger)**

There are two distinct colour forms are

present under this species which have usually been regarded as different species by many old workers. Vecht (1963) treated these two colour forms as two subspecies of *A. abdominale* (Illiger) such as *A. (A.) abdominale abdominale* (Illiger) and *A. (A.) abdominale bengalense* (de Saussure). Both of them are very close to each other in their structure and sculpture. But the colours of metasoma of these two forms are distinctly different. The metasoma of *A. abdominale* is predominantly orange-red with some black markings but the metasoma of *A. bengalense* is entirely black. While studying a large collection from different localities of the Indian subcontinent, I found that these forms are not geographically segregated. So, it requires further studies for the confirmation of species status of each colour form. For the time being I am following the concept of van der Vecht and considering them as two colour forms (subspecies) of the same species.

*Diagnostic characters:* This species differ from all other Indian subcontinent species of this genus by the following combination of characters: clypeus with weak punctures, from the middle of clypeus to apex with few irregular longitudinal striations; narrow basal part of first gastral sternite smooth (Fig. 1); gastral tergites only finely punctate at base; basal two thirds of second gastral tergite very finely and shallowly punctate, the interspaces everywhere much larger than the punctures; mandibles of male deeply emarginate on inner side near the middle.

**(a). *Anterhynchium (Anterhynchium) abdominale abdominale* (Illiger)**

(Figs. 1-2; Images 1-6)

1802. *Vespa abdominalis* Illiger, *Magaz. Insektenk*, 1: 192, "Bengalen" (? ZMB).
1804. *Vespa transversa* Fabricius, *Syst. Piez.*: 257, "Tranquebar" (UZMC).
1852. *Rhygchium dichotomum* de Saussure, *Et. Fam. Vesp.*, 1: 116, male, female, "Indes Orientales" (MP).
1852. *Rygchium transversum*; de Saussure, *Et. Fam. Vesp.*, 1: 117, pl. XIV fig. 7, (female; ? Madagascar; Indes Orientales).
1855. *Rhynchium abdominale*; de Saussure, *Et. Fam. Vesp.*, 3: 172 (syns.: *R. transversum* (Fabricius); *R. dichotomum* de Saussure is a variety).

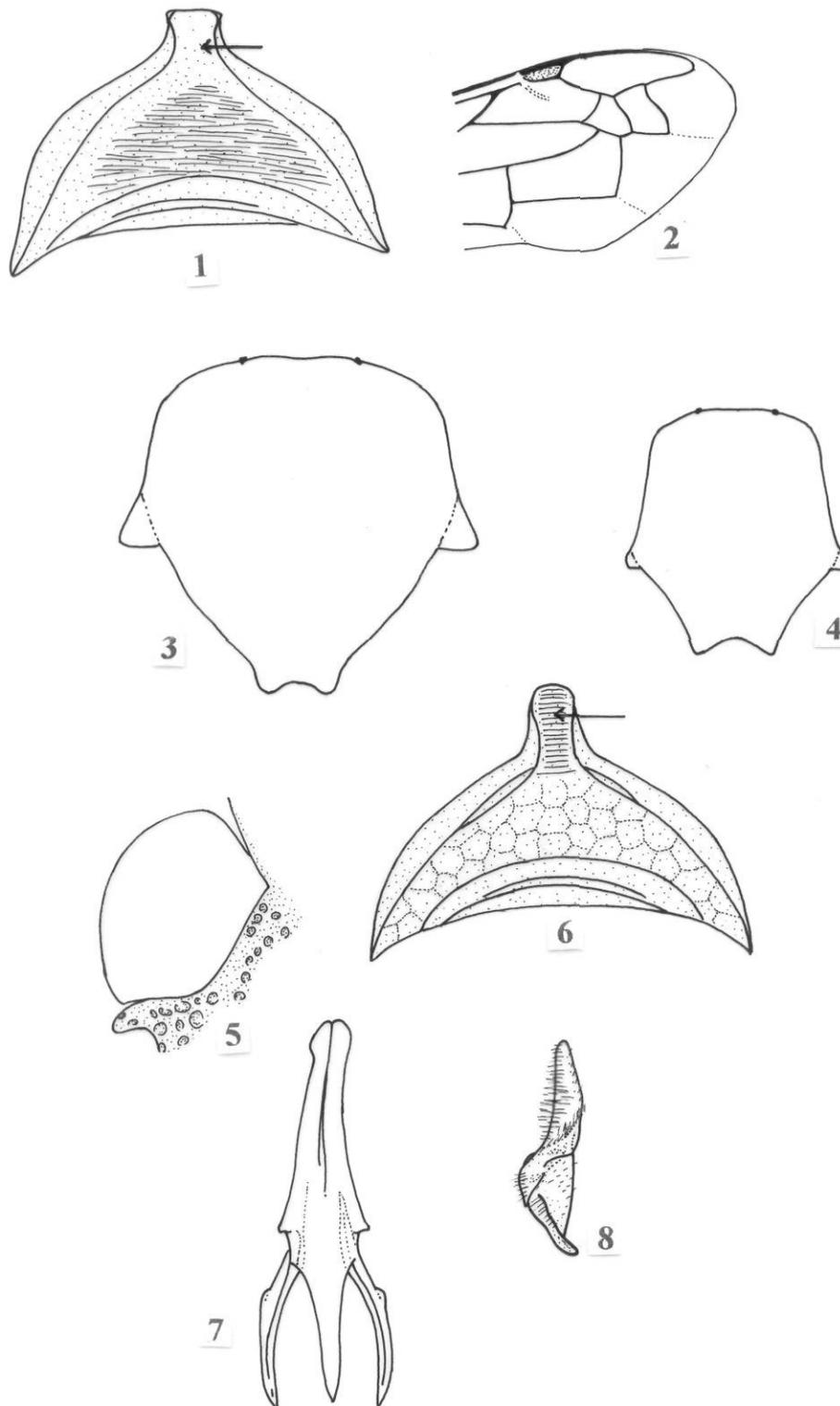


Fig. 1: *Anterhynchium (Anterhynchium) abdominale abdominale* (Illiger) Female first gastral sternite; Fig. 2. *A. (A.) abdominale abdominale* (Illiger) Male apical half of Forewing (Courtesy, Vecht, 1963); Fig. 3. *A. (Dirhynchium) coracinum* Vecht Female clypeus; Fig. 4. *A. (D.) coracinum* Vecht Male clypeus; Fig. 5. *A. (D.) coracinum* Vecht Male tegula and parategula; Fig. 6. *A. (D.) coracinum* Vecht Male first gastral sternite; Fig. 7. *A. (D.) flavomarginatum* (Smith) Male aedeagus (Courtesy, Vecht, 1963); Fig. 8. *A. (D.) flavomarginatum* (Smith) Male Volsella (Courtesy, Vecht, 1963).

1855. *Rhynchium abdominale* var. *dichotomum*; de Saussure, *Et. Fam. Vesp.*, 3: 172.
1857. *Rhynchium transversum*; Smith, *Cat. Hym. Brit. Mus. V, Vesp.*: 48 (?Madagascar).
1918. *Odynerus abdominalis*; Bequaert, *Bull. Am. Mus. Nat. Hist.*, 39: 292 (in subgenus *Rygchium*; cat.).
1963. *Anterhynchium abdominale*; van der Vecht, *Zool. Verh., Leiden*, 60: 75, fig. 5e (forewing) (Calcutta, Walayar forest, Cinchona, Ceylon).

*Female*: Body length (H+M+T1+T2) 12-14.5 mm; Forewing length 12-14 mm. Head and mesosoma black; metasoma (Image 4) dull orange-red with variegated black markings as follows: the basal segment with a transverse black apical band (in some specimens, the black colour on T1 more pronounced and in few specimens T1 completely black), T2 with or without a transverse black spot in the middle of its apical margin (in few specimens, the black colour is more pronounced), the remaining segments usually orange-red except last segment black, gastral sternites usually orange-red with varying degree of black colour except last segment entirely black. Brown colouration as follows: ventral side of antenna and tarsal segments (sometimes black). Wings dark fuscous with purple reflections.

*Head*: 1.05x as wide as long in front view (Image 1); clypeus pear-shaped, somewhat constricted before the narrow and emarginate apex, maximum width 1.05x length medially, with weak punctures, from the middle of clypeus to apex with few irregular longitudinal striations; mandibles on inner side with four rather broad and irregularly shaped teeth, the basal tooth emarginate at apex; labrum elongate rounded at apex; interantennal space almost smooth with few weak punctures; a short but distinct strong carina is present at the middle of interantennal space; frons closely, strongly and rugosely punctured, the diameters of the punctures greater than the distance between the punctures; ocular sinus with weak punctures; area between the antennal toruli and inner eye margin smooth; POL 0.84x OOL (Image 2); diameter of anterior ocellus 2.11x longer than the distance between anterior ocellus and posterior ocelli; vertex with moderately strong punctures except at shallow post ocellar

fovea and area towards occipital carina less punctured; temple with moderately strong punctures, 1.11x narrower than eye in profile (measured through its ocular sinus); interocular distance 0.89x greater on vertex than at clypeus; occipital carina strong, complete and narrowed ventrally. Antenna (Image 3) 2.40x farther from each other than from eyes; antennal scrobe granulately punctured; scape 1.81x as long as F1, 3.88x as long as wide; pedicel 0.37x F1, 0.92x as long as wide; F1 1.77x as long as F2, 2.10x as long as wide; flagellar segments slightly widening towards apex except last segment; apical antennal segment 1.17x as long as wide.

*Mesosoma*: Anterior face of pronotum smooth without punctures; pronotal carina strong and almost reaching the lateral margin of pronotum; posterior face and lateral sides of pronotum, mesoscutum and scutellum strongly, closely and rugosely punctate, scutellum smooth at lateral sides with indistinct weak traces of longitudinal striations, mesoscutum 0.98x as long as wide; metanotum gibbous, strongly and irregularly punctate basally, smooth apically; lateral side of propleuron almost smooth, ventral side smooth with scattered punctures; mesopleuron rugosely punctured except epicnemium and posterior margin smooth; epicnemial carina distinct, complete; upper metapleuron smooth posteriorly and distinctly punctate anteriorly, lower metapleuron smooth with irregular weak transverse striations at lateral sides. Propodeum vertical, concavo-truncate posteriorly, declivity of propodeum not bordered dorsally by a somewhat strong irregular carina, dorsolateral margin of propodeum ending posteriorly with a sharp teeth-like projection, the triangular area at the base of propodeum as long as wide, bordered on each side by a deep groove, punctures on dorsolateral area strong and rugose, posterior concave area of propodeum with irregular transverse striations, lateral sides of propodeum transversely striated with few rugose punctures at upper and posterior sides. Tegula not evenly rounded posteriorly, emarginated adjoining parategula and shorter than parategula at apex; axillary fossa narrowed, slit-like. Midtibia with 1

spur. Forewing (Fig. 2) length 2.83x its maximum width, prestigma 0.71x pterostigma.

*Metasoma* (Image 4): T1 1.55x as wide as long, 0.89x as wide as T2; T1 almost smooth with minute scattered punctures on lateral sides; basal two thirds of T2 very finely and shallowly punctate, the interspaces everywhere much larger than the punctures, coarsely punctate near the apical margin; visible part of remaining tergites except last tergite with distinct punctures; the narrow basal part of S1 smooth (Fig. 1), posterior transverse area of S1 rather irregularly transversely striate, S2 and visible part of remaining sternites except last sternite with distinct punctures; last tergite and sternite almost smooth with few fine scattered punctures.

*Male* (Image 5): Body length (H+M+T1+T2) 9-12 mm; Forewing length 9.5-12 mm. Colour pattern is almost same as that of female except clypeus almost entirely yellow with the lateral and apical margins black and scape in front yellow. Head (Image 6) 1.23x as wide as long in front view; interocular distance 1.19x greater on vertex than at clypeus; clypeus more elongate and the apex between two teeth more deeply emarginated than female, width 1.04x length medially; POL 1.15x OOL; antenna with the last segment hooked apically and almost reaches the apex of tenth antennal segment in curved position; apical tip of aedeagus rounded, parallel spines elongate without hairs. Other characters almost same as in female.

*Material examined*: INDIA: Delhi: Delhi University campus, 3 ♀ & 4 ♂, 4.ix.1954 (2 exs.), 23.ix.1962 (1 ex.), 30.vi.1971 (1 ex.), 20.ix.1976 (3 exs.), Coll. V. K. Gupta & Party, NZSI Regd. Nos. 13253/H3 to 13259/H3. Jharkhand: Ranchi, 1 ♂, date of collection unknown, Coll. W. H. Irwine, 13260/H3. Karnataka: Bengaluru, 1 ♀ & 2 ♂, date of collection unknown, Coll. J. Cameron, 13261/H3 to 13263/H3. Kerala: Thiruvananthapuram, 1 ♂, April 1888, name of collector unknown, 13264/H3. Odisha: Ganjam district, Balighai, 1 ♀, 20.viii.1911, Coll. F. H. Graveli, 13265/H3. Sikkim: exact locality not

known, 1 ♀, August, 1897, Coll. Dudgeon, 13266/H3. Tripura: West Tripura district, Teliamura, 1 ♀ & 1 ♂, 20.v.1978, Coll. J. K. Jonathan & Party, 13267/H3 & 13268/H3; Baramura, 1 ♀, 22.v.1978, Coll. J. K. Jonathan & Party, 13269/H3; Dhalai district, 6 ♀ & 4 ♂, 26.v.1978, Coll. J. K. Jonathan & Party, 13270/H3 to 13279/H3. Uttar Pradesh: Jhansi, 1 ♂, 2.viii.1905, Coll. Brunetti, 13280/H3; Rae Bareilly district, Malikmau, 1 ♂, 13.ix.2006, Coll. M. Sil & Party, 13281/H3; Chitrakoot, 1 ♂, 22.x.2007, Coll. S. Sheela & Party, 13282/H3; Ghaziabad district, Chaprola, 1 ♀, 16.xi.2007, Coll. S. I. Kazmi & Party, 13283/H3. West Bengal: Kolkata, 4 ♀ & 8 ♂, date of collection and name of collectors unknown, 13284/H3 to 13295/H3; Kolkata environs, 3 ♂, 17.vii.1904, Coll. Brunetti, 13296/H3 to 13298/H3; Kolkata, 3 ♀ & 5 ♂, 13.ix.1906 (1 ex.), 19.ix.1907 (3 ex.), 26.ix.1907 (2 exs.), 18.x.1907 (2 exs.), name of collectors unknown, 13299/H3 to 13306/H3; Murshidabad, 2 ♀ & 1 ♂, date of collection and name of collectors unknown, 13307/H3 to 13309/H3; Purulia district, Adra, 1 ♀, 2.x.1909, Coll. J. T. Jenkins, 13310/H3; S-24 Parganas district, Sunderbans Biosphere Reserve, Sagar Islands, 1 ♂, 17.vi.1977, Coll. R. C. Basu & Party, 13311/H3; Paschim Medinipur district, Rajbari, 1 ♀, 3.x.1983, Coll. A. K. Hazra & Party, 13312/H3; Purulia district, Ajodhya Hills, 1 ♂, 4.xi.1985, Coll. M. Dutta & Party, 13313/H3; Purba Medinipur district, Tamluk, 1 ♀, 13.viii.1988, Coll. B. C. Das & Party, 13314/H3. PAKISTAN: Karachi, 1 ♀, date of collection unknown, Coll. Cumming, 13315/H3.

*Distribution*: India: Chhattisgarh, Delhi (new record), Jharkhand (new record), Karnataka (new record), Kerala, Odisha (new record), Rajasthan, Sikkim, Tamil Nadu, Tripura (new record), Uttar Pradesh, West Bengal. Elsewhere: Myanmar, Pakistan, Sri Lanka. *Nest*: See Krombein, 1991.

(b). *Anterhynchium* (*Anterhynchium*)  
*abdominale bengalense* (de Saussure)  
(Image 7)

1852. *Rygdium argentatum* (Fabricius); Saussure, *Ét. Farn. Vesp.*, vol. 1, p. 115 ("Les Indes Orientales. Le Bengale") [misidentification].

1855. *Rhynchium bengalense* Saussure, *Ét. Fam. Vesp.*, vol. 3, p. 176, pl. 9 fig. 8, "Le Bengale" (MP).

1894. *Rhynchium argentatum* var. *bengalense*; Dalla Torre, *Cat. Hym.*, vol. 9, p. 43 (cat).

1963. *Anterhynchium abdominale bengalense*; van der Vecht, *Zool. Verh., Leiden*, 60: 76, (Bengal (Barrackpore), United provinces (Benares), Kerala (Walayar forest)).

**Female:** Body length (H+M+T1+T2) 13-14 mm; Forewing length 12-14 mm. Body black (sometimes ventral side of antenna, apical tarsal segments and lateral sides of tergites reddish brown except last segment). Wings dark fuscous with violet reflections.

**Male:** Body length (H+M+T1+T2) 11-11.5 mm; Forewing length 10.5-12 mm. Colour pattern is almost same as that of female except clypeus almost entirely yellow with the lateral and apical margins black and scape in front yellow.

**Material examined:** INDIA: Delhi: Delhi University Ridge, 1 ♂, 9.x.1975, Coll. V. K. Gupta & Party, NZSI Regd. No. 13316/H3. Tamil Nadu: Nagapattanam district, Mettupakkam, 1 ♂, 10.xi.1963, Coll. V. K. Gupta & Party, 13317/H3. Tripura: South Tripura district, Bankar, 1 ♂, 2.x.1977, Coll. N. Muraleedharan & Party, 13320/H3. Uttarakhand: Rishikesh, 1 ♂, 28.vii.1970, Coll. J. C. Trilock, 13321/H3; Almora district, Ranikhet, 1 ♂, 29.ix.2001, Coll. Animesh Bal & Party, 13322/H3; Pithoragarh district, Dharchula, 1 ♀, 26.ix.2004, Coll. B. Mitra & Party, 13323/H3. Uttar Pradesh: Bareilly, 1 ♀, 1.ix.1905, Coll. Brunetti, 13324/H3; Sultanpur district, Bahadurpur, 1 ♀, 17.ix.2006, Coll. R. S. Mridha & Party, 13325/H3. West Bengal: Kolkata, 2 ♀ & 2 ♂, date of collection and name of collectors unknown, 13327/H3 to 13330/H3. NEPAL: Katmandu, 1 ♀, date of collection and name of collector unknown, 13331/H3.

**Distribution:** India: Bihar, Delhi (new record), Kerala, Punjab, Rajasthan, Tamil Nadu (new record), Tripura (new record), Uttarakhand (new record), Uttar Pradesh, West Bengal.

**Elsewhere:** Nepal (new record). **Nest:** See Batra, 1979.

## 2. *Anterhynchium (Anterhynchium) mellyi* (de Saussure) (Images 8-10)

1852. *Rygchium mellyi* de Saussure, *Ét. Fam. Vesp.*, 1: 116, female, "Les Indes, La Chine" (MP and MHNG).

1855. *Rhynchium mellyi*; de Saussure, *Ét. Fam. Vesp.*, 3: 172 (description of male; China).

1929. *Odynerus mellyi*; Dover, *Bull. Raffles Mus.*, 2: 44 (in subgenus *Rygchium*; Rangoon).

1963. *Anterhynchium mellyi*; van der Vecht, *Zool. Verh., Leiden*, 60: 76 (China, Indo-China, Siam).

**Diagnostic characters:** This species differ from all other Indian subcontinent species of this genus by the following combination of characters: clypeus with weak punctures, from the middle of clypeus to apex with few irregular longitudinal striations; narrow basal part of first gastral sternite smooth; gastral tergites only finely punctate at base; basal two thirds of second gastral tergite distinctly punctate, except in the middle the interspaces generally larger than the punctures; mandibles of male deeply emarginate on inner side near the middle.

**Female (Image 8):** Body length (H+M+T1+T2) 14-15 mm; Forewing length 13.5-14.5 mm. Body black (sometimes apical tarsal segments reddish brown). Wings fuscous with purple reflections.

**Head:** 1.09x as wide as long in front view (Image 9); clypeus pear-shaped, somewhat constricted before the narrow and emarginate apex, maximum width 1.07x length medially, with weak punctures, from the middle of clypeus to apex with few irregular longitudinal striations; mandibles on inner side with four rather broad and irregularly shaped teeth, the basal tooth emarginate at apex; labrum elongate rounded at apex; interantennal space almost smooth with few weak punctures; a short but distinct strong carina is present at the middle of interantennal space; frons closely, strongly and rugosely punctured, the diameters of the punctures greater than the distance between the punctures; ocular sinus with weak punctures; area between the antennal toruli and inner eye margin smooth; POL 0.88x OOL; diameter of anterior ocellus 1.92x longer than the distance between anterior ocellus and posterior

ocelli; vertex with moderately strong punctures except at shallow post ocellar fovea and area towards occipital carina less punctured; temple with moderately strong punctures, 1.10x narrower than eye in profile (measured through its ocular sinus); interocular distance 0.90x greater on vertex than at clypeus; occipital carina strong, complete and narrowed ventrally. Antenna 2.04x farther from each other than from eyes; antennal scrobe granulately punctured; scape 2.02x as long as F1, 3.49x as long as wide; pedicel 0.35x F1, 0.83x as long as wide; F1 1.81x as long as F2, 2.05x as long as wide; flagellar segments slightly widening towards apex except last segment; apical antennal segment 1.27x as long as wide.

*Mesosoma*: Anterior face of pronotum smooth without punctures; pronotal carina strong and almost reaching the lateral margin of pronotum; posterior face and lateral sides of pronotum, mesoscutum and scutellum strongly, closely and rugosely punctate, scutellum smooth at lateral sides with distinct longitudinal striations, mesoscutum 0.96x as long as wide; metanotum gibbous, strongly and irregularly punctate basally, smooth apically; lateral side of propleuron almost smooth, ventral side smooth with scattered punctures; mesopleuron rugosely punctured except epicnemium and posterior margin smooth; epicnemial carina distinct, complete; upper metapleuron smooth posteriorly and distinctly punctate anteriorly, lower metapleuron smooth with irregular weak transverse striations at lateral sides. Propodeum vertical, concavo-truncate posteriorly, declivity of propodeum not bordered dorsally by a somewhat strong irregular carina, dorsolateral margin of propodeum ending posteriorly with a sharp teeth-like projection, the triangular area at the base of propodeum as long as wide, bordered on each side by a deep groove, punctures on dorsolateral area strong and rugose, posterior concave area of propodeum with irregular transverse striations, lateral sides of propodeum transversely striated with few rugose punctures at upper and posterior sides. Tegula not evenly rounded posteriorly, emarginated adjoining parategula and shorter than parategula at apex;

axillary fossa narrowed, slit-like. Midtibia with 1 spur. Forewing length 3.03x its maximum width, prestigma 0.7x pterostigma.

*Metasoma*: T1 1.69x as wide as long, 0.93x as wide as T2; T1 with distinct weak punctures; basal two thirds of T2 very finely and shallowly punctate, the interspaces everywhere much larger than the punctures, coarsely punctate near the apical margin; visible part of remaining tergites except last tergite with distinct punctures; the narrow basal part of S1 densely transversely striate, posterior transverse area of S1 rather irregularly transversely striate, S2 and visible part of remaining sternites except last sternite with distinct punctures; last tergite and sternite almost smooth with few fine scattered punctures.

*Male*: Body length (H+M+T1+T2) 12-12.5 mm; Forewing length 12 mm. Colour pattern is almost same as that of female except clypeus almost entirely yellow with the lateral and apical margins black (Image 10) and scape in front yellow. Head 1.17x as wide as long in front view; interocular distance 1.14x greater on vertex than at clypeus; clypeus more elongate and the apex between two teeth more deeply emarginated than female, width 1.20x length medially; POL 1.24x OOL; antenna with the last segment hooked apically and almost reaches the apex of tenth antennal segment in curved position; apical tip of aedeagus rounded, parallel spines elongate without hairs. Other characters almost same as in female.

*Material examined*: INDIA: Assam: North Cachar district, Dehangi, 1 ♂, 24.iv.1979, Coll. S.B. Roy & Party, NZSI Regd. No. 13380/H3. Karnataka: Bengaluru, 1 ♀ & 1 ♂, date of collection Unknown, Coll. Cameron, 13381/H3 & 13382/H3. Meghalaya: Garo Hills district, Dainadubi, 1 ♀, 13.v.1979, Coll. J.K. Jonathan & Party, 13400/H3.

*Distribution*: India: Assam (new record), Karnataka (new record), Meghalaya (new record), Uttar Pradesh, West Bengal. Elsewhere: China, Myanmar, Thailand, Vietnam (Tonkin).

Subgenus *Dirhynchium* van der Vecht

1963. *Dirhynchium* van der Vecht, *Zool. Verh., Leiden*, **60**: 74 (key), 77, subgenus of *Anterhynchium* de Saussure.

Type species: *Ancistrocerus flavopunctatus* Smith, 1852, by original designation.

*Diagnosis*: The narrow basal part of the first gastral sternite is densely transversely striate and rather dull. As a rule the declivity of the propodeum is bordered dorsally by a somewhat irregular carina, which forms a tooth on each side behind the postscutellum; these teeth are much closer together than the lateral, short, longitudinal carinae of the postscutellum. In some forms, however, these carinae show a tendency to disappear. The triangular area at the base of the propodeum is much longer than wide, bordered on each side by a deep groove.

3. *Anterhynchium (Dirhynchium) coracinum*

Vecht

(Figs. 3-6; Images 11-17)

1963. *Anterhynchium coracinum* Vecht, *Zool. Verh., Leiden*, **60**: 78 (key), 86, Female (subgenus *Dirhynchium*), Tenmalai, Travancore (BMNH); also from Nilgiri Hills, Devala.

*Diagnostic characters*: This species differ from all other Indian subcontinent species of this genus by the following combination of characters: the narrow basal part of the first gastral sternite is densely transversely striate; the triangular area at the base of the propodeum is much longer than wide, bordered on each side by a deep groove; sculptures on head and mesosoma moderately stronger; declivity of propodeum bordered dorsally by a somewhat strong irregular carina, which forms a tooth at the lateral end and another tooth behind each posterior angle of the convex part of the metanotum; metanotum and propodeum completely black; T1 usually with a broadly interrupted narrow yellow band posteriorly.

*Female* (Image 11): Body length (H+M+T1+T2) 12-14 mm; Forewing length 12-14 mm. Body black with some yellow and brown colourations. Yellow colouration as follows: a short and narrow transverse line at the base of the

clypeus (sometimes interrupted in the middle or absent), a spot at interantennal space, a mark on the upper portion of temple near to eye (usually reduced or disappear), scape in front, two transverse spots at the anterior margin of dorsal area of pronotum (sometimes absent); a spot on each side of dorsal lateral side of propodeum (usually absent), T1 with a broadly interrupted narrow band posteriorly (sometimes absent); T2 with a broadly interrupted narrow band posteriorly (in most cases it is absent). Brown colouration as follows: tegula on outer side, mid and hind femora at apex, tarsal spines and claws. Wings brown with violaceous reflections, veins dark brown. Body with rather sparsely to moderately dense fine silvery white pubescence.

*Head*: 0.99x as wide as long in front view (Image 12); clypeus (Fig. 3) pear-shaped, somewhat constricted before the narrow and emarginate apex, maximum width 1.02x length medially, with moderately deep rugose punctures, larger punctures on middle and smaller on sides, from the middle of clypeus to apex the interspaces showing to run into irregular longitudinal striae; mandibles on inner side with four rather broad and irregularly shaped teeth, the basal tooth emarginate at apex; labrum elongate rounded at apex; interantennal space almost smooth with few irregular weak punctures; a short but distinct strong carina is present at the middle of interantennal space; frons closely, strongly and rugosely punctured, the diameters of the punctures greater than the distance between the punctures; ocular sinus with weak punctures; area between the antennal toruli and inner eye margin smooth; POL 1.31x OOL; diameter of anterior ocellus 1.11x longer than the distance between anterior ocellus and posterior ocelli; vertex strongly punctured except at shallow post ocellar fovea and area towards occipital carina; temple strongly punctured, 0.76x narrower than eye in profile (measured through its ocular sinus); interocular distance 0.92x greater on vertex than at clypeus; occipital carina strong, complete and narrowed ventrally. Antenna (image 13) 2.96x farther from each other than from eyes; antennal scrobe granulately punctured;

scape 2.32x as long as F1, 4.95x as long as wide; pedicel 0.37x F1, 0.83x as long as wide; F1 1.68x as long as F2, 2.13x as long as wide; flagellar segments slightly widening towards apex except last antennal segment; apical antennal segment 1.22x as long as wide.

*Mesosoma*: Anterior face of pronotum smooth without punctures; pronotal carina strong and almost reaching the lateral margin of pronotum; posterior face and lateral sides of pronotum, mesoscutum and scutellum strongly, closely and rugosely punctate, mesoscutum 0.99x as long as wide; metanotum gibbous, strongly and irregularly punctate basally and separated from the posterior portion by an irregularly crenulate ridge at middle; lateral side of propleuron almost smooth, ventral side smooth with scattered punctures; mesopleuron rugosely punctured except epicnemium and posterior margin smooth; epicnemial carina distinct, complete; upper metapleuron smooth posteriorly and distinctly punctate anteriorly, lower metapleuron with irregular weak striations and few punctures. Propodeum vertical, concavo-truncate posteriorly, declivity of propodeum bordered dorsally by a somewhat strong irregular carina, which forms a tooth at the lateral end and another tooth behind each posterior angle of the convex part of the metanotum, the triangular area at the base of propodeum is much longer than wide, bordered on each side by a deep groove, punctures on dorsolateral area strong and rugose, posterior concave area of propodeum with irregular transverse striations, lateral sides of propodeum strongly rugose at upper half, weakly rugose to irregular transverse striations at lower half except at posterior margin, smooth. Tegula not evenly rounded posteriorly, emarginated adjoining parategula and shorter than parategula at apex; axillary fossa narrowed, slit-like. Midtibia with 1 spur. Forewing length 3.53x its maximum width, prestigma 0.76x pterostigma.

*Metasoma*: T1 1.43x as wide as long, 0.88x as wide as T2; T1, T2 and S2 with distinct punctures, the diameter of most of the punctures less than interspace; visible part of T3 to T5 with close

punctures, the diameter of most of the punctures greater than interspace; basal part of S3 to S5 with deep pit-like punctures, which are usually not visible externally; T6 and S6 with few scattered fine punctures; the narrow basal part of S1 densely transversely striate, posterior transverse area of S1 rather irregularly transversely striate to rugose.

*Male* (Described for the first time): Body length (H+M+T1+T2) 9-10 mm; Forewing length 9-10 mm. Colour pattern is almost same as that of female except clypeus almost entirely yellow with the lateral and apical margins black. Head (Image 14) 1.06x as wide as long in front view; interocular distance 1.25x greater on vertex than at clypeus; clypeus (Fig. 4) more elongate and the apex between two teeth more deeply emarginated than female, width 0.81x length medially; POL 1.56x OOL; occipital carina almost touching to the eye at the lower side; antenna (Image 15 & 16) with the last segment hook like, almost reaches the apex of tenth antennal segment in curved position; apical margin of SVII with spine-like stiff and stout hairs; genitalia as in image 17, apical tip of aedeagus rounded, parallel spines elongate without hairs. Other characters almost same as in female.

*Material examined*: INDIA: Delhi: Delhi University Campus, 1♀, 30.xi.1978, Coll. V.K. Gupta & Party, NZSI Regd. No. 13386/H3. Himachal Pradesh: Solan district, Kasauli, 1♀, 20.vi.1979, Coll. V.K. Gupta & Party, 13387/H3. Jammu & Kashmir: Srinagar district, Shalimar Garden, 1♀, 11.ix.1977, Coll. R.C. Basu & Party, 13388/H3; Anantnag district, Bijbehara, 5♀, 22.ix.1977, Coll. R.C. Basu & Party, 13389/H3 to 13393/H3. Meghalaya: East Garo Hills district, Songsak Reserve Forest, 1♀, 20.ix.1975, Coll. N. Muraleedharan & Party, 13394/H3; East Garo Hills district, Songsak Reserve Forest, 1♂, 6.v.1979, Coll. J.K. Jonathan & Party, 13395/H3. Sikkim: exact locality not known, 1♂, date of collection unknown, Coll. Knyvett, 13396/H3. Uttarakhand: Almora district, Someshwar, Kausani, 1♀, 18.x.2001, 13397/H3. West Bengal: Darjeeling district, Singla, 1♀, 1912, Coll. Lord

Carmichael, 13398/H3. PAKISTAN: Azad Kashmir, Muzaffarabad district, Jhelum Valley, 1 ♂, 10.vii.1916, Coll. H.T. Pease, 13399/H3.

*Distribution:* India: Delhi (new record), Himachal Pradesh (new record), Jammu & Kashmir (new record), Kerala, Meghalaya (new record), Sikkim (new record), Tamil Nadu, Uttarakhand (new record), West Bengal (new record). Elsewhere: Pakistan (new record).

4. *Anterhynchium (Dirhynchium) flavolineatum*  
(Smith)  
(Images 18-21)

1857. *Odynerus flavolineatus* Smith, *Cat. Hym. Br. Mus.*, 5: 60, male, Java (BMNH, type no 18.454).

1897. *Rynchium flavolineatum*; Bingham, *Fauna Br. India, Hym.*, 1: 353 (key), 360, male (Sskim; Tenasserim; Java.).

1963. *Anterhynchium flavolineatum flavolinatum*; van der Vecht, *Zool. Verh., Leiden*, 60: 78 (key), 84 (subgenus *Dirhynchium*; Malaya; Borneo; sumatra; Java; Sumba; Flores).

*Diagnostic characters:* This species differ from all other Indian subcontinent species of this genus by the following combination of characters: the narrow basal part of the first gastral sternite is densely transversely striate; the triangular area at the base of the propodeum is much longer than wide, bordered on each side by a deep groove; this species is comparatively smaller than other species; sculptures on head and thorax are not so stronger compared to other species; declivity of propodeum not bordered dorsally by a carina, a large sub ovate yellow spot on each side of propodeum; broad yellow stripe on all tibiae; gastral tergites except last segment with apical yellow bands, the bands on T1 and T2 dialated laterally.

*Female* (Image 18): Body length (H+M+T1+T2) 10-13 mm; Forewing length 10.5-13.5mm. Body black with some yellow and brown colourations. Yellow colouration as follows: clypeus except apical and lateral sides (in some specimens yellow markings reduced), a spot at interantennal space, a spot at the ocular sinus, a mark on the upper portion of temple near to eye (sometimes reduced or disappear), a line on the

front of the scape, two spots on dorsal side of pronotum (sometimes reduced), a mark on tegula posteriorly (sometimes absent), a mark on parategula (sometimes absent), a transverse band on metanotum, a large sub ovate spot on each side of propodeum, a spot on mesopleuron under the base of forewing (sometimes absent), s spot on mid and hind coxa (sometimes absent), a broad stripe on femora in front (sometimes reduced or absent), a broad stripe on tibiae on outside, gastral tergites except last segment with apical bands, the bands on T1 and T2 dilated laterally, S2-S4 with a spot on postero-lateral corner (sometimes absent on S4). Brown colouration as follows: apical antennal segments, tegula partly and apical tarsal segment. Wings fusco-hyaline, darkest at anterior margin of forewing, veins dark brown. Body with rather sparsely to moderately dense fine silvery white pubescence.

*Head:* 1.02x as wide as long in front view (Image 19); clypeus pear-shaped, somewhat constricted before the narrow and emarginate apex, maximum width 0.86x length medially, with moderately deep rugose punctures, larger punctures on middle and smaller on sides, from the middle of clypeus to apex the interspaces showing to run into irregular longitudinal striae; mandibles on inner side with four rather broad and irregularly shaped teeth, the basal tooth emarginate at apex; labrum elongate rounded at apex; interantennal space almost smooth with few irregular weak punctures; a short but distinct strong carina is present at the middle of interantennal space; frons closely, strongly and rugosely punctured, the diameters of the punctures greater than the distance between the punctures; ocular sinus with weak punctures; area between the antennal toruli and inner eye margin smooth; POL 1.11x OOL; diameter of anterior ocellus 1.30x longer than the distance between anterior ocellus and posterior ocelli; vertex strongly punctured except at shallow post ocellar fovea and area towards occipital carina; temple somewhat weakly punctured, 0.86x narrower than eye in profile (measured through its ocular sinus); interocular distance 0.99x greater on vertex than at clypeus; occipital carina strong,

complete and narrowed ventrally. Antenna 3.02x farther from each other than from eyes; antennal scrobe granulately punctured; scape 2.30x as long as F1, 4.62x as long as wide; pedicel 0.30x F1, 0.65x as long as wide; F1 1.55x as long as F2, 1.95x as long as wide; flagellar segments slightly widening towards apex except last segment; apical antennal segment 1.03x as long as wide.

*Mesosoma*: Anterior face of pronotum smooth without punctures; pronotal carina strong, reaching up to the level of pronotal spiracle; posterior face and lateral sides of pronotum, mesoscutum and scutellum strongly, closely and rugosely punctate, mesoscutum 0.97x as long as wide; metanotum gibbous, strongly and irregularly punctate basally and separated from the posterior portion by an irregularly crenulate ridge at middle; lateral side of propleuron almost smooth, ventral side smooth with scattered punctures; mesopleuron rugosely punctured except epicnemium and posterior margin smooth; epicnemial carina distinct, complete; upper metapleuron smooth posteriorly and distinctly punctate anteriorly, lower metapleuron almost smooth with irregular weak striations and few punctures. Propodeum vertical, concavo-truncate posteriorly, declivity of propodeum not bordered dorsally by a carina, dorsolateral margin of propodeum somewhat carinate, ending posteriorly with a sharp teeth-like projection; the triangular area at the base of propodeum is much longer than wide, bordered on each side by a deep groove, punctures on dorsolateral area strong and rugose, posterior concave area of propodeum with irregular transverse striations, lateral sides of propodeum strongly rugose at upper half, weakly rugose to irregular transverse striations at lower half except at posterior margin, smooth. Tegula not evenly rounded posteriorly, emarginated adjoining parategula and shorter than parategula at apex; axillary fossa narrowed, slit-like. Midtibia with 1 spur. Forewing length 3.34x its maximum width, prestigma 1.07x pterostigma.

*Metasoma* (Image 20): T1 1.26x as wide as long, 0.91x as wide as T2; T1, T2 and S2 with distinct punctures, the diameter of most of the punctures

less than interspace; visible part of T3 to T5 with close punctures, the diameter of most of the punctures greater than interspace; basal part of S3 to S5 with deep pit-like punctures, which are usually not visible externally; T6 and S6 with few scattered fine punctures; the narrow basal part of S1 densely transversely striate, posterior transverse area of S1 rather irregularly transversely striate to rugose.

*Male*: Body length (H+M+T1+T2) 9.5 mm; Forewing length 9 mm. Colour pattern is almost same as that of female except clypeus almost entirely yellow. Head (Image 21) 1.05x as wide as long in front view; interocular distance 1.27x greater on vertex than at clypeus; clypeus more elongate than female, width 0.84x length medially; POL 1.09x OOL; genitalia with volsellar digitus much less tapering towards the tip; Other characters almost same as in female.

*Material examined*: INDIA: Arunachal Pradesh: Papumpare district, Chimpu, 2 ♀ & 1 ♂, 12.iv.2001, Coll. S. Sheela & Party, NZSI Regd. Nos. 13220/H3, 13459/H3 & 13460/H3; West Siang district, Malinithan, 1 ♀, 30.ix.2001, Coll. B. Mitra & Party, 13221/H3. Meghalaya: East Garo Hills district, Songsak Reserve Forest, 1 ♀, 20.ix.1975, Coll. N. Muraleedharan & Party, 13222/H3. Sikkim: exact locality not known, 1 ♀, May, 1912, name of collector unknown, 13223/H3. West Bengal: Darjeeling district, Singla, 2 ♀, July 1912, Coll. Lord Carmichael, 13224/H3 & 13225/H3.

*Distribution*: India: Arunachal Pradesh (new record), Meghalaya (new record), Sikkim, West Bengal (new record).

*Elsewhere*: Borneo, Indonesia (Java, Flores, Sumatra, Sumba and Wallace), Malaysia (Mt. Ophir), Myanmar and Taiwan.

##### 5. *Anterhynchium* (*Dirhynchium*)

###### *flavomarginatum* (Smith) (Figs. 7-8; Images 22-24)

1852. *Rhynchium flavo-marginatum* Smith, *Trans. Entomol. Soc. Lond.*, (2) 2: 35, male, China (BMNH).

1857. *Odynerus nigrifrons* Smith, *Cat. Hym. Br. Mus.*, 5: 62, "North China (Shanghai)" (BMNH, type no. 18. 325).

1903. *Rhynchium curvumaculatum* Cameron, *Ann. Mag. Hist.*, (7) 11: 328, male, "Khasia Hills, Assam, leg. Rothney" (OUM).
1903. *Rynchium collinum* Cameron, *Ann. Mag. Nat. Hist.*, (7) 11: 329, male, female, "Khasia Hills, Assam, leg. Rothney" (OUM).
1936. *Odynerus flavomarginatus*; Liu, *Peking Nat. Hist. Bull.*, 11: 107 (cat.).
1963. *Anterhynchium flavomarginatum flavomarginatum*; van der Vecht, *Zool. Verh., Leiden* 60: 78 (key), 80, figs. 5f, 6b (in subgenus *Dirhynchium*; China; Sikkim).
1963. *Anterhynchium flavomarginatum curvumaculatum*, van der Vecht, *Zool. Verh., Leiden*, 60: 78 (key), 81 (in subgenus *Dirhynchium*; syn. *R. collinum*). New synonymy.

This is a polytypic species consists of 13 subspecies and widely distributed in southern and eastern Asia (Yamane, 1990). Out of this 13 subspecies, 2 subspecies are reported from Indian subcontinent, namely, the nominotypical subspecies *A. flavomarginatum flavomarginatum* (Smith) and *A. flavomarginatum curvumaculatum* (Cameron). The subspecies *A. flavomarginatum curvumaculatum* reported from Assam by Cameron in 1903 is similar to the nominotypical subspecies *A. flavomarginatum flavomarginatum* (Smith) except the postscutellum with yellow line (in *A. flavomarginatum curvumaculatum* postscutellum entirely black). This character is highly variable. I studied three female specimens from Sikkim in which one specimen with yellow marks on postscutellum strongly pronounced, in second specimen it is less pronounced and in the third specimen studied it is almost entirely absent. So, I consider that it will be no more than an individual colour variation. Thus, I propose to synonymize *A. flavomarginatum curvumaculatum* under the nominate species.

**Diagnostic characters:** This species differ from all other Indian subcontinent species of this genus by the following combination of characters: the narrow basal part of the first gastral sternite is densely transversely striate; the triangular area at the base of the propodeum is much longer than wide, bordered on each side by a deep groove; this species is comparatively larger than other species;

sculptures on head and thorax are stronger than other species; declivity of propodeum bordered dorsally by a somewhat strong irregular carina, which forms a tooth at the lateral end; narrow uninterrupted sub apical yellow lines on the posterior margins of T1 and T2.

**Female** (Image 22): Body length (H+M+T1+T2) 16-17 mm; Forewing length 17 mm. Body black with some yellow and brown colourations. Yellow colouration as follows: a medially interrupted transverse band on clypeus basally, a spot at interantennal space, a line on the front of the scape, an interrupted line (sometimes absent) on the pronotum, a mark on parategula (sometimes absent), a transverse band on metanotum, a spot on each side of dorsal lateral side of propodeum, another spot on dorsolateral angle of propodeum posteriorly, a spot on mesopleuron under the base of forewing, a narrow uninterrupted sub apical line on the posterior margins of T1 and T2, a spot on S2 at posterolateral corner. Brown colouration as follows: tegula mostly, all femora at apex and tarsal segments. Wings fusco-hyaline, iridescent in certain lights, veins dark brown. Body with rather sparsely to moderately dense fine silvery white pubescence.

**Head:** 1.06x as wide as long in front view (Image 23); clypeus pear-shaped, somewhat constricted before the narrow and emarginate apex, maximum width 1.09x length medially, with moderately deep rugose punctures, larger punctures on middle and smaller on sides, from the middle of clypeus to apex the interspaces showing to run into irregular longitudinal striae; mandibles on inner side with four rather broad and irregularly shaped teeth, the basal tooth emarginate at apex; labrum elongate rounded at apex; interantennal space almost smooth with few irregular weak punctures; a short but distinct strong carina is present at the middle of interantennal space; frons closely, strongly and rugosely punctured, the diameters of the punctures greater than the distance between the punctures; ocular sinus with weak punctures; area between the antennal toruli and inner eye margin smooth; POL 0.90x OOL; diameter of

anterior ocellus 1.32x longer than the distance between anterior ocellus and posterior ocelli; vertex strongly punctured except at shallow post ocellar fovea and area towards occipital carina; temple strongly punctured, 1.1x as wide as eye in profile (measured through its ocular sinus); interocular distance 0.91x greater on vertex than at clypeus; occipital carina strong, complete and narrowed ventrally. Antenna 2.13x farther from each other than from eyes; antennal scrobe granulate punctured; scape 2.48x as long as F1, 4.41x as long as wide; pedicel 0.26x F1, 0.61x as long as wide; F1 1.62x as long as F2, 1.85x as long as wide; flagellar segments slightly widening towards apex; apical antennal segment 1.08x as long as wide.

*Mesosoma* (Image 24): Anterior face of pronotum smooth without punctures; pronotal carina strong and almost reaching the lateral margin of pronotum; posterior face and lateral sides of pronotum, mesoscutum and scutellum strongly, closely and rugosely punctate, mesoscutum 1.01x as long as wide, posteriorly very densely punctate, the interspaces showing a tendency to run into irregular longitudinal striae; metanotum gibbous, strongly and irregularly punctate basally and separated from the posterior portion by an irregularly crenulate ridge at middle; lateral side of propleuron almost smooth, ventral side smooth with scattered punctures; mesopleuron rugosely punctured except epicnemium and posterior margin smooth; epicnemial carina distinct, complete; upper metapleuron smooth posteriorly and distinctly punctate anteriorly, lower metapleuron with irregular weak striations and few punctures. Propodeum vertical, concavo-truncate posteriorly, declivity of propodeum bordered dorsally by a somewhat strong irregular carina, which forms a tooth at the lateral end, the triangular area at the base of propodeum is much longer than wide, bordered on each side by a deep groove, punctures on dorsolateral area strong and rugose, posterior concave area of propodeum with irregular transverse striations, lateral sides of propodeum strongly rugose except at posterior area, smooth. Tegula not evenly rounded

posteriorly, emarginated adjoining parategula and shorter than parategula at apex; axillary fossa narrowed, slit-like. Midtibia with 1 spur. Forewing length 3.43x its maximum width, prestigma 1.03x pterostigma.

*Metasoma*: T1 1.52x as wide as long, 0.87x as wide as T2; T1, T2 and S2 with distinct punctures, the diameter of most of the punctures less than interspace; visible part of T3 to T5 with close punctures, the diameter of most of the punctures greater than interspace; basal part of S3 to S5 with deep pit-like punctures, which are usually not visible externally; T6 and S6 with few scattered fine punctures; the narrow basal part of S1 densely transversely striate, posterior transverse area of S1 rather irregularly transversely striate to rugose.

*Male*: Not studied. Body length (H+M+T1+T2) 9-12.5 mm; Forewing length 8.5-11.5 mm (Yamane, 1990). Almost similar to female except the clypeus almost entirely yellow and a line on the fore tibiae above yellowish white (Bingham, 1897); inner side of the mandible often considerably modified (Vecht, 1963); aedeagus as in figure 7; volsella as in figure 8.

*Material examined*: INDIA: Sikkim: Exact locality not known, 3♀, June 1912, name of collector unknown, NZSI Regd. Nos. 13383/H3 to 13385/H3.

*Distribution*: India: Assam, Sikkim, Uttarakhand, West Bengal. Elsewhere: Borneo, China and Myanmar.

#### SUMMARY

The genus *Anterhynchium* de Saussure from Indian subcontinent is reviewed, recognizing 5 species in the subcontinent. An illustrated key to species/subspecies of the genus from Indian subcontinent is provided. Detailed description of each species is provided. The male of the species *Anterhynchium* (*Dirhynchium*) *coracinum* Vecht is described here for the first time. The subspecies *A. (D.) flavomarginatum curvoimaculatum* (Cameron), 1903, is synonymized under the nominate species *A. (D.) flavomarginatum* (Smith). The subspecies *Anterhynchium* (*Anterhynchium*) *abdominale*

*abdominale* (Illiger) is reported here for the first time from Delhi, Jharkhand, Karnataka, Odisha and Tripura. The subspecies *A. (A.) abdominale bengalense* (de Saussure) is reported here for the first time from Delhi, Tamil Nadu, Tripura and Uttarakhand. This species is recorded here for the first time from Nepal. The species *A. (A.) mellyi* (de Saussure) is reported here for the first time from Assam, Karnataka and Meghalaya. The species *A. (D.) coracinum* Vecht is so far recorded from its type localities in south India such as Tenmalai (Kerala) and Devala (Tamil Nadu). In the present study, the extended distribution of this species to Delhi, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand and West Bengal is newly recorded. This species is herewith recorded for the first time from Pakistan also. The

species *A. (D.) flavolineatum* (Smith) is herewith recorded for the first time from Arunachal Pradesh, Meghalaya and West Bengal.

#### ACKNOWLEDGEMENTS

The author is grateful to Dr. K. Venkataraman, Director, Zoological Survey of India, Kolkata, Dr. Kailash Chandra, Additional Director & Officer-in-Charge of Entomology Division (A), Zoological Survey of India, Kolkata and Dr. Gaurav Sharma, Officer-in-Charge, Hymenoptera Section, Zoological Survey of India, Kolkata for providing facilities and encouragements. The author sincerely thanks Shri. Mridul Purakayastha, IT Assistant (Data Entry), ENVIS Centre on Faunal Diversity, Zoological Survey of India, Kolkata for editing photos.

#### REFERENCES

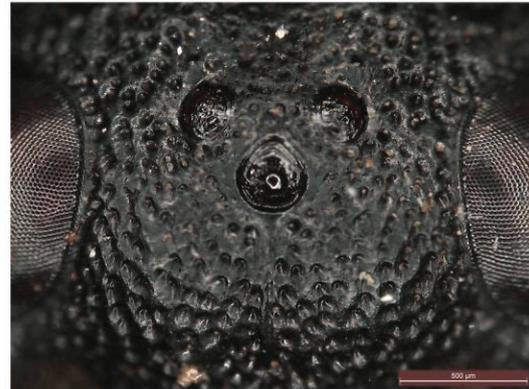
- Batra, S. W. T. 1979. Nests of the eumenid wasp, *Anterhynchium abdominale bengalense*, from a termite mound in India. *Oriental insects*, **13** (1-2): 163-165.
- Bequaert, J. C. 1918. A revision of the Vespidae of the Belgian Congo based on the collection of the American Museum Congo Expedition, with a list of Ethiopian diplopterous wasps. *Bull. Am. Mus. Nat. Hist.*, **39**: 1- 384.
- Bingham, C. T. 1897. *The Fauna of British India, including Ceylon and Burma, Hymenoptera*, I. Wasps and Bees: 579+ i- xxix. Taylor and Francis, London.
- Cameron, P. 1903. On some new Genera and Species of Parasitic and Fossorial Hymenoptera from the Khasia Hills, Assam. *Ann. Mag. Nat. Hist.*, (7)**11**: 313-336.
- Dalla Torre, K.W. Von. 1894. Catalogus Hymenopterorum **9**, Vespidae (Diploptera): 1-81. Leipzig.
- Dalla Torre, K. w. 1904. Vespidae, *Genera Insectorum*, **19**: 1-108.
- Dover, C. 1929. Wasps and bees in the Raffles Museum, Singapore. *Bull. Raffles Mus.*, **2**: 43-70.
- Fabricius, J. C. F. 1804. *Systema Piezatorum Secundum, Ordines, Genera, Species, Adiectis Synonymis, Locis, Observationibus, Descriptionibus*. Brunschweig, XIV+[15]-[440]+[1]-30pp.
- GBIF (Global Biodiversity Information Facility) Data Portal Webpage. <http://data.gbif.org/search/taxa/Subancistrocerus/>. Accessed on 16.08.2012.
- Illiger, K. 1802. Neue Insekten. *Magazin für Insektenkunde*, **1** (1-2): 163-208.
- Krombein, K. V. 1991. Biosystematic Studies of Ceylonese Wasps, xix: Natural History Notes in Several families (Hymenoptera: Eumenidae, Vespidae, Pompilidae, and Crabronidae). *Smithsonian Contributions to Zoology*, **283**: 1-41.
- Liu, C. L. 1936. A bibliographic and synonymic catalogue of the Vespoidea of China, with a cross-referring index for the genera and species (1). *Peking Nat. Hist. Bull.*, **11**: 91-114.
- Saussure, H. De. 1852-53. *Monographie des Guepes Solitaires ou de la Tribu des Eumeniens*. Etudes sur la famille des Vespides. I- Paris, 6-50-286 pp.+ 21 pls.

- Saussure, H. De. 1855-56. Supplement a la monographie des Eumeniens, in Etudes, etc. III, pp. 132-352, II Pls.
- Saussure H. De. 1863. Melanges Hyménoptérologiques II. *Mémoires de la Société de Physique d'Histoire Naturelle de Genève*, 17 (1): 171-244, pl. 2.
- Smith, F. 1852. Descriptions of some hymenopterous insects captured in India, with notes on their economy, by Ezra T. Downes, Esq. who presented them to the honourable East India Company. *Ann. Mag. Nat. Hist.* 9 (2): 44- 50.
- Smith, F. 1857. Catalogue of Hymenopterous insects in the collection of the British Museum. 5: 1-147.
- Vecht, Van Der, J. 1963. Studies on Indo-Australian and East Asiatic Eumenidae (Hymenoptera: Vespoidea). *Zoologische Verhandelingen Leiden*, 60: 1-116.
- Yamane, S. 1990. A revision of the Japanese Eumenidae (Hymenoptera, Vespoidea). *Insecta matsumurana. Series Entomology, New series*, 43: 1-189.

PLATE I



1



2



3



4



5



6

Images 1-6 : *Anterhynchium (Anterhynchium) abdominale abdominale* (Illiger); Images 1-4 Female; Image 1 Head front view; Image 2 Head dorsal view showing ocellar area; Image 3 Antenna; Image 4 Gaster. Images 5 & 6 Male; Image 5 Body profile; Image 6 Head front view.

## PLATE II



7



8



9



10



11



12

Image 7 : *Anterhynchium (Anterhynchium) abdominale bengalense* (de Saussure) Female Gaster. Images 8-10. *Anterhynchium (Anterhynchium) mellyi* (de Saussure); Images 8 & 9 Female. Image 8 Body dorsal view; Image 9 Head front view; Image 10 Male Head front view. Images 11 & 12. *Anterhynchium (Dirhynchium) coracinum* Vecht Female, Image 11 Body profile; Image 12 Head front view.

PLATE III



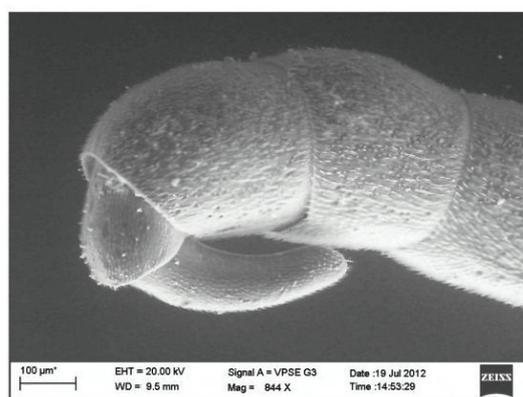
13



14



15



16



17



18

**Images 13-17: *Anterhynchium (Dirhynchium) coracium* Vecht.** Image 13 Female Antenna. Images 14-17 Male. Image 14. Head front view; Image 15 Antenna; Image 16 Apical antennal segments; Image 17 Genitalia. Image 18 *Anterhynchium (Dirhynchium) flavolineatum* (Smith) Female Body profile.

## PLATE IV



19



20



21



22



23



24

Images 19-21 : *Anterhynchium (Dirhynchium) flavolineatum* (Smith). Images 19 & 20 Female. Image 19 Head front view; Image 20 Gaster; Image 21 Male Head front view. Images 22-24. *Anterhynchium (Dirhynchium) flavomarginatum* (Smith) Female. Image 22 Body dorsal view; Image 23 Head front view; Image 24 Mesosoma dorsal view.