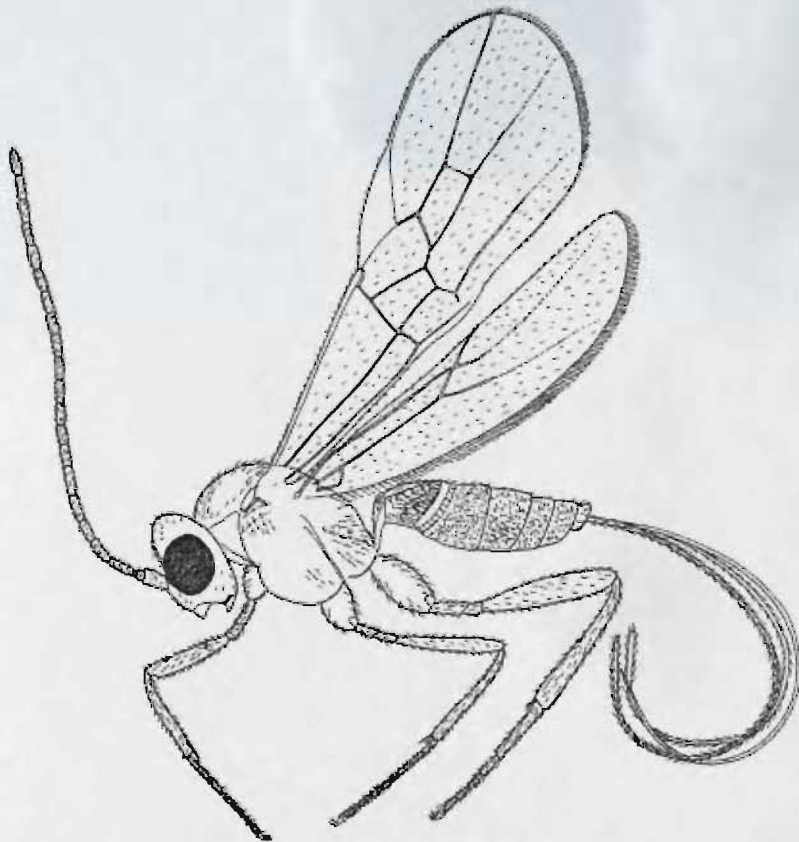


**A REVIEW OF *BRACON* SPECIES OF INDIA  
WITH A KEY TO INDIAN SPECIES**

**M. Sheeba and T. C. Narendran**



**ZOOLOGICAL SURVEY OF INDIA**



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WITH A KEY TO INDIAN SPECIES**

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## INTRODUCTION

Fabricius erected the genus *Bracon* in 1804 with the type species *Ichneumon minutator* Fabricius, 1798. It is a cosmopolitan and one of the largest known genera of Braconidae currently containing 822 valid species (Dicky Sick Ki Yu, 2012). Many members of this genus are parasitoids of pest insects. This includes *B. gelechidiphagus* (Ramakrishna Ayyar) which is parasitic on *Pectinophora gossypiella* Saud., and *Phthorimaea blapsigona* (Meyr) and *B. greeni* Ashmead on many insect pests such as *Adisura atkinsoni* Moore, *Alcides affaber* L., *Earias fabia* Stoll., *Heliothis obsoleta* L., *Rabila frontalis* Wlk. Some of them are used in biological control programs. The relevant citations include Fabricius (1804), Smith (1860), Westwood (1882), Bingham (1901), Cameron (1906a & b), Szepilgeti (1906) and Papp (1999, 2000). Only 13 species have been so far reported from India. In this paper we describe 12 new species of *Bracon* from Kerala, India. A key to species of *Bracon* from India is also provided.

The terminology used in this paper is that of van Achterberg (1993).

## MATERIALS AND METHODS

Some Braconids were collected using sweep net and others by rearing of leaf galls and curated by the methods described by Narendran (2001). Observations were made under Leica MZ6 Stereozoom Microscope (Switzerland made) and the drawings were made using the drawing tube of the same microscope. The drawings were enlarged to appropriate size using the KB enlarger of model B2M. The type materials are deposited in the Department of Zoology, University of Calicut. (DZUC) and eventually will be transferred to Western Ghat Regional Station, Zoological Survey of India, Kozhikode (ZSIK), Kerala, India.

Abbreviations used: C+SC+R = Veins Costa, Subcosta and Radius; DZUC = Department of Zoology, University of Calicut; OD = Diameter of posterior ocellus; OOL = Ocellocular line; POL = Postocellar line.

## SYSTEMATIC ACCOUNT

### Genus *Bracon* Fabricius

*Bracon* Fabricius, 1804. *Systema Piezatorum*: 102. Type species designated by ICZN, Opinion, 162 (1945): *Ichneumon minutator* Fabricius, 1798.

*Braco* Wesmael, 1838. *Nouv. Mem. Acad. Sci. R. Bruxelles*, **11** : 7 (invalid emendation).

*Brachon* Agassiz, 1846. *Nomina Systematica Generum Hymenopterorum* (invalid emendation).

*Brazon* Schulz, 1911. *Zool. Annln.*, **4** : 60 (invalid emendation).

*Habrobracon* Ashmead (in Johnson), 1895. *Zool. Soc. Long. Proc.*: 324. Type species (designated by Viereck, 1914): *Bracon gelechia* Ashmead, 1889.

*Microbracon* Ashmead, 1890. *Bull. Colo. biol. Ass.*, **1**: 15. Type species (by monotypy): *Microbracon sulcifrons* Ashmead, 1890 (not *Bracon sulcifrons* Brulle, 1846; *Bracon sulcifronsior* Shenefelt, 1978).

*Amicoplidea* Ashmead, 1900. *Proc. U.S. natn. Mus.*, **23**: 118. Type species (By original designation): *Phylax palliventris* Provancher, 1880.

- Tropidobracon* Ashmead, 1900. *Proc. U.S. natn. Mus.*, **23**: 118. Type species (By original designation): *Braxcon gastroideae* Ashmead, 1889.
- Macrodyctium* Ashmead, 1900. *Proc. U.S. natn. Mus.*, **23**: 138. Type species (By original designation): *Bracon euurae* Ashmead, 1889 (= *Bracon angelesius* Provancher, 1880).
- Liobracon* Nason, 1905. *Ent. News*, **16**: 298. Type species (Designated by Viereck, 1914): *Bracon nuperus* Cresson, 1872.
- Seliodus* Brethes, 1909. *An. Mus. nac. Hist. nat. B. Aires*, **19**: 32. Type species (By original designation): *Seliodus testaceus* Brethes, 1909.
- Lovenzoa* de Stefani-Perez, 1909. *Marcelia*, **8**: 15-16. Type species (by monotypy): *Lorenzoa solani* de Stefani-Perez, 1909 (type from Eritrea) probably lost; synonymy based on original description only). Synonymized by van Achterberg & Polaszek, 1996.
- Kulczynskia* Niezabitowski, 1910. *Spraw. Kon. fizyogr. Krajow*, **44**: 65. Type species (By monotypy): *Kulczynskia aciculata* Niezabitowski, 1910. Synonymized by van Achterberg & Polaszek, 1996.
- Striobracon* Fahringer, 1927. *Opuscula braconologica*. 1. *Palaearktischen Region*. 4-6: 232. Type species (Designated by Tobias, 1959): *Ichneumon minutator* Fabricius, 1798.
- Glabrobracon* Fahringer, 1927. *Opuscula braconologica*. 1. *Palaearktischen Region*. 4-6: 281. Type species (Designated by Tobias, 1959). *Bracon variator* Nees, 1812.
- Orthobracon* Fahringer, 1927. *Opuscula braconologica*. 1. *Palaearktischen Region*. 4-6: 232. Type species (Designated by Tobias, 1959): *Bracon exhilator* Nees, 1834.
- Lucobracon* Fahringer, 1927. *Opuscula braconologica*. 1. *Palaearktischen Region*. 4-6: 238, 248. Type species (here designated): *Bracon lautus* Szeplegeti, 1901; existing designation of *Bracon suchorukovi* Telenga, 1936, is invalid because it was not included by Fahringer).
- Chivinia* Shestakov, 1932. *Zoo. Anz.*, **99**: 258. Type species (By monotypy): *Chivinia zimini* Shestakov, 1932. Synonymized by van Achterberg & Polaszek, 1996.
- Cyanopterocon* Tobias, 1957. *Ent. Obozr.*, **36**: 480. Type species (designated by Tobias, 1959). *Bracon sabulosus* Szepliget, 1896.
- Asiabracon* Tobias, 1957. *Ent. Obozr.*, **36**: 481. Type species (By monotypy): *Bracon quadrimaculatus* Telenga, 1936.
- Sculptobracon* Tobias, 1961. *Ent. Obozr.*, **40**: 660. Type species (By original designation): *Bracon burjaticus* Tobias, 1961.
- Pilibracon* Tobias, 1961. *Ent. Obozr.*, **40**: 662. Type species (By original designation): *Bracon disparilis* Tobias, 1961.

*Diagnosis:* Small to medium sized wasps; face more or less convex; median antennal segments more than 1.05x its width; mesoscutum partly glabrous; vein of fore wing shorter than vein 2-SR; fore wing vein 3-SR more than 1.60x length of vein r, usually less than 1.20x vein r; fore wing vein 2-SR+M shorter; vein CU1a of fore wing far below level of vein 2-CU1; vein 1r-m of hind wing short; tarsal claws simple or with lobe; propodeum with or without median carina; second tergite without distinct V-shaped area or grooves

medioanteriorly; second and third tergites without anterolateral grooves; sculpture of tergites highly variable (smooth to rugose); ovipositor distinctly extended beyond apex of metasoma, with a preapical dorsal notch and its lower valve with minute teeth.

**Biology:** The genus *Bracon* contains (partly gregarious) idiobiont ectoparasites of larvae belonging to Lepidoptera (Crambidae, Pyralidae, Tortricidae, Gelechiidae, Sesiidae, Coleophoridae, Gracillariidae and Cochylidae), Coleoptera (Curculionidae, Anobiidae and Bruchidae), Diptera (Cecidomyiidae, Lonchaeidae, Chloropidae, Tephritidae, Anthomyiidae, Agromyzidae and Scatophagidae) and less commonly also Hymenoptera (Cephalidae, Tenthredinidae, Eurytomidae and Cynipidae).

**Distribution:** Cosmopolitan.

**Discussion:** This genus comes close to *Habrobracon* Ashmead in having hind tibia hardly swollen and with only a trace of lateral groove. However it differs from *Habrobracon* in having 1) fore wing vein 3-SR more than 1.9x vein r (fore wing vein 3-SR less than 1.5x vein r in *Habrobracon*) and 2) fore wing vein 2-SR+M shorter (fore wing vein 2-SR+M relatively longer in *Habrobracon*)

The genus also comes close to *Pycnobracon* Cameron in having fore wing vein 1-SR+M more or less straight or at most weakly angled or curved posteriorly after arising from 1-M but differs in the combination of characters given in diagnosis, mainly in median antennal segments more than 1.05x its width and third and fourth metasomal tergites without anterolateral areas.

#### Key to Indian Species of *Bracon* Fabricius

1. Metasomal tergites second, third and fourth strongly rugosely punctured and surface rough and reticulate dorsally; apical margin of first metasomal tergite, middorsal area of second and third tergites and basal triangular area on fourth tergite dark; remaining parts of metasoma pale fulvous..... *B. trypaeniphaga* (Ramakrishna Ayyar)
  - Characters not as above, partly or completely different or in different Combination .....2
2. Metasomal tergites coarsely reticulate punctate; first to fifth metasomal tergites black dorsally; black colour being interrupted along median dorsal line of third to fifth by a pale white ridge, dark area on fifth segment confined to its basal half only; remaining parts pale whitish yellow.....*B. carpomyiae* (Ramakrishna Ayyar)
  - Characters not as above, partly or completely different or in different Combination .....2
3. Fore wing vein 3-SR more than 2.3x r; third and fourth tergites with faint dark marks apicomediaally.....*B. gelechidiphagus* Ramakrishna Ayyar
  - Characters not as above, partly or completely different or in different combination...4
4. Scape 2/3 more longer than pedicel; propodeum large with transverse carina posteriorly; eyes hairy; notauli extends to posterior part of mesoscutum; metanotum carinate anteriorly .....*B. fletcheri* Silvestri

- Characters not as above.....5
- 5. Mesosoma impunctate; legs thickly covered with pale hair; wings bright yellow to near stigma; first cubital cell with a large triangular hyaline spot; first tergite smooth with a few apicomedial longitudinal keels; remaining tergites strongly rugosely punctured; second tergite with a stout central keel reaching near to apex; other tergites have a stout transverse keel at base which become wider at sides and are crenulated .....*B. ingratus* Cameron
- Characters not as above .....6
- 6. Mesosoma (at least partly) sculptured; length 1.80 - 4.60mm .....7
- Mesosoma smooth and shiny completely; length 2.0 - 10.0mm .....18
- 7. Mesoscutum smooth and shiny; fore wing vein 3-SR 2.0x r (Fig.26); length 2.95mm; propodeum smooth and shiny; second tergite rugose, submedially foveate with median triangular area extending to posterior end of tergite; remaining tergites rugose with crenulate posterior transverse groove (Fig.26); frons shagreen; ovipositor with dorsal nodus; ovipositor sheath 0.75x fore wing.....*B. molycaon* sp. nov.
- Mesoscutum sculptured; fore wing vein 3-SR as long as to a little less than 4.0x r; vertex smooth, punctate or shagreen .....8
- 8. Apical half of mesonotum slightly rough; notauli absent; metanotum without carinae; vein m-cu reaching to first cubital cell; cu-a interstitial; metasoma rough and elliptical; first tergite obtuse and triangular, as long as broad at its posterior end with a cross furrow parallel with side margin; second tergite transverse, longer than third, with a feeble carina in middle; second suture slightly and minutely carinate; hypopygium does not reaching apex of metasoma; ovipositor shorter than metasoma..... *B. daphnephilae* Szepliget.
- Characters not as above, partly or completely different or in different combination.....9
- 9. Notauli faintly marked; mesonotum convex, smooth and rough in posterior half; scutellum and metanotum smooth; metanotum with a posterior carina; cu-a leading to 1-M; second suture crenulate; second tergite as long as broad, hardly longer than third; hypopygium reaching tip of metasoma; ovipositor longer than body .....*B. cecidobius* Kieffer.
- Characters different from above.....10
- 10. Mesoscutum punctate; propodeum smooth and shiny .....11
- Mesoscutum shagreen; propodeum variable .....14
- 11. Metasoma shagreen; ovipositor as long as metasoma; notanli shallow and hairy; length 2.75mm.....*B. incarnatus* Remakrishna Ayyar.
- Metasoma not shagreen; ovipositor shorter or as long as metasoma; other characters different from above.....12

12. Metasoma coarsely punctured and punctures form irregular longitudinal striae especially on first four tergites.....*B. pongamiaensis* Shenefelt  
 — Characters different from above.
13. First tergite with carina towards posterior border; remaining tergites smooth and shiny; vein r as long as 3-SR; notauli not distinct; antenna 15-18 segmented; length 2-2.5mm.....*B. melleus* Ramakrishna Ayyar .  
 — First tergite rugosoreticulate with anterior smooth median posterior area; second tergite aciculate rugosoreticulate; third tergite aciculatorugose; fourth to sixth tergites with anterior smooth area and transverse groove basally; fourth and fifth tergites aciculatorugose apically; sixth tergite shagreen apically; vein r 0.62x 3-SR; notauli distinct; antenna 28 segmented; length 3.04mm.....*B. stom* sp. nov.
14. Propodeum areolate at extreme apex; first tergite 2.0x its width at apex; antenna 25-27 segmented; length 2.0 -3.0 mm .....*B. lefroyi* (Dudgeon & Gough).  
 — Propodeum carinate; other characters different from above.....15
15. First tergite granulate with raised median area; second to fourth tergites minutely seticulate; fore wing vein 3-SR 2.30x r; fourth to sixth tergites with faintly crenulated anterior transverse groove (Fig.30).....*B. procnis* sp. nov.  
 — Metasoma shagreen; fore wing vein 3-SR 1.50 - 2.90x r.....16
16. Metanotum and propodeum with long mid longitudinal carina; frons without median longitudinal groove (Fig.11); cu-a vertical slightly antefurcal; hypopygium not extending beyond apex of metasoma; 3-SR 2.75x r; 1-SR 0.31x 1-M (Fig.10); 2-SR slightly sinuate; ovipositor 0.73 mm .....*B. daris* sp. nov.  
 — Metanotum with anterior median carina; propodeum with posterior median carina; frons with median longitudinal groove; fore wing vein cu-a slightly postfurcal; hypopygium extending beyond apex of metasoma; fore wing vein 2-SR straight; ovipositor more than 1.0mm.....17
17. First tergite 0.63x its width at apex; fore wing vein 3-SR 2.88x r (Fig.1); vein 1-SR 0.25 x 1-M; ovipositor 1.17mm; antenna with 28 segments; length 3.66mm.....*B. agathon* sp. nov.  
 — First tergite 1.20x its width at apex; fore wing vein 3-SR 1.55x r (Fig.4); vein 1-SR 0.17 x 1-M; ovipositor 1.86mm; antenna with 23 segments; length 3.55mm.....*B. charien* sp. nov.
18. Head smooth and shiny; face closely and distinctly but not strongly punctured and sparsely covered with pale long hairs; frons with a narrow longitudinal furrow; first tergite stoutly, irregularly longitudinally striolated apicomediaally; second tergite coarsely, irregularly, rugosely punctured, irregularly longitudinally striolated mediobasally, lateral depression striated at bottom; length 9-10mm .....*B. punjabensis* Cameron.  
 — Characters not as above, partly or completely different.....19
19. Fore wing vein 3-SR 3.0x or more r; antenna 24-25 segmented; frons shagreen or smooth and shiny.....20

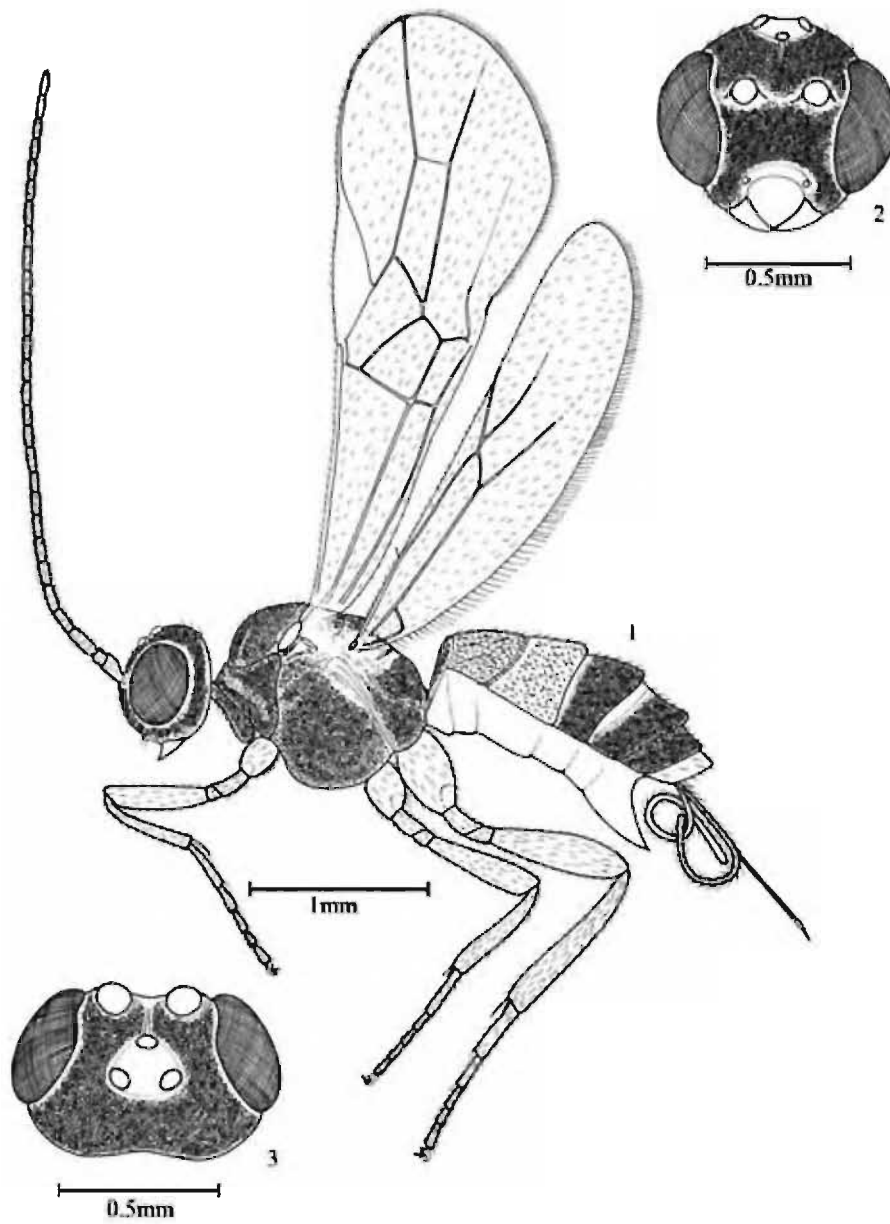
- Fore wing vein 3-SR less than 3.0x r; antenna with 18-32 segments; frons smooth, shiny to faintly reticulate.....21
- 20. Metasoma shagreen; fore wing vein 3-SR 3.0x r; head smooth; length 2.5 – 3.0mm .....*B. greeni* Ashmead
- Surface of First reticulate, rugose posteriorly; second tergite rugose-reticulate with median triangular carina and lateral grooves; third to fourth tergites rugose-reticulate, remaining tergites shagreen (Fig.13); fore wing vein 3-SR 3.17x r; length 3.60mm .....*B. decor* sp. nov.
- 21. Fore wing vein 3-SR more than 2.0x r; vein 2-SR straight; antenna with 21 - 32 segments.....22
- Fore wing vein 3-SR less than 2.0x r; vein 2-SR slightly sinuate, rarely straight; antenna with 18-24 segments.....23
- 22. Length 3.44 mm; antenna with 32 segments; ovipositor 1.58mm; metanotum with anterior median carina; ovipositor with dorsal nodus and five ventral teeth; hypopygium slightly extending beyond tip of metasoma (Fig.7); ovipositor 0.46 x forewing.....*B. dachaon* sp. nov.
- Length 2.4 mm; antenna with 21 segments; ovipositor 2.24 mm; metanotum without median carina; ovipositor with dorsal nodus and four ventral teeth; hypopygium not extending beyond tip of metasoma (Fig.29); ovipositor 1.06 x forewing .....*B. nexperon* sp. nov.
- 23. Propodeum with posterior median longitudinal carina extending beyond middle of propodeum; metanotum without median carina; ovipositor with dorsal nodus and four ventral teeth; vein 1-SR 0.55x 1-M (Fig.44); ovipositor sheath 0.56x forewing.....*B. koridor* sp. nov.
- Propodeum with posterior median carina not extending to middle of propodeum; other characters not as above, partly or completely different.....24
- 24. Hypopygium extending beyond tip of metasoma; vein 1-SR+M straight (Fig.17); ovipositor sheath 0.87x fore wing; 1-SR 0.46x 1-M.....*B. heteron* sp. nov.
- Hypopygium not extending beyond tip of metasoma; vein 1-SR+M slightly sinuate (Fig.20); ovipositor sheath 0.37x fore wing; 1-SR 0.35x 1-M.....*B. keralense* sp. nov.

Species unplaced in the key (for want of details) are *B. aculeator* (Fabricius), *B. femorator* (Fabricius), *B. laminator* (Fabricius) and *B. richei* Brulle. The species *Bracon todi* described by Sathe *et al.* (2003) is an unavailable name as per the latest code of zoological nomenclature since the authors have not mentioned the type depository in their publication.

*Bracon agathon* sp. nov.

(Figs. 1-3)

*Holotype*: Female: Length of body 3.66 mm, of antenna 3.56 mm, of fore wing 3.32 mm and of ovipositor 1.17 mm.



**Figs. 1-3 :** *Bracon agathon* sp. nov.- Female: Fig. 1. Body Profile; 2. Head anterior view; 3. Head dorsal view.

*Head:* width 1.13x and 1.77x its median length in anterior (Fig.2) and dorsal (Fig.3) views respectively; antenna 28 segmented; length of third segment 1.17 x fourth; third, fourth and penultimate segments 2.90, 3.0 and 3.33 x their width, respectively; apical segment acuminate; frons, surface of stemmaticum, vertex, temple, face and malar space shagreen; frons flat with median shallow groove and hairy laterally (Fig.3); OOL: OD: POL = 6: 5: 6.5; stemmaticum slightly raised above vertex, surrounded by shallow groove; vertex sparsely hairy mediodorsally and moderately hairy along outer margin of eye; eyes glabrous, slightly emarginate; length of eye in dorsal view 2.94 x temple; temple hairy; face hairy and without a ridge dorsally; width of face 2.23x its height; intertentorial distance 2.0x tentorioocular distance; width of hypoclypeal depression 0.45x maximum width of face; occipital flange narrow; malar space as long as basal width of mandible.

*Mesosoma* (Fig. 1): Length of mesosoma 1.20x its height; pronotum laterally with a faintly crenulate groove; pronotum, mesoscutum, scutellum, propleuron, mesopleuron, metapleuron and propodeum, shagreen (Fig.1); mesoscutum hairy along notauli anteriorly and densely hairy posteriorly; notauli distinct without crenulations; scutellar sulcus wide with 9 carinae; metanotum smooth with anterior median carina; propleuron and metapleuron hairy; mesopleuron hairy except dorsally and medially; pleural sulcus narrow and smooth; propodeum sparsely hairy medially, densely hairy laterally and with a median posterior carina; propodeal spiracle oval, small and medially situated; fore wing (Fig.1) vein 1-SR 0.25x 1-M and continuous with it; ratio of length of fore wing veins: r:3-SR: SR1 = 8:23:31; vein 3-SR 2.88x r; 1-SR+M slightly sinuate; SR1 straight; cu-a vertical, slightly postfurcal; 2-SR straight; 2-SR : 3-SR : r-m = 12.5 : 23: 7.5; m-cu converging to 1-M posteriorly, 0.50x 1-M; hind wing (Fig.1) vein SC + R1 straight and 1.50x 1r-m; hind coxa shagreen; tarsal claws with basal lobe produced into tooth; length of femur, tibia and basitarsus of hind leg 3.65, 6.75 and 4.67x their width, respectively; length of hind tibial outer and inner spurs 0.29 and 0.43x hind basitarsus.

*Metasoma* (Fig. 1): Length of first tergite 0.63x its apical width; first and fourth to sixth tergites shagreen; first tergite with a raised median area posteriorly, sides crenulate; glymma shallow, narrow and smooth; dorsolateral carina of first tergite complete; second tergite rugose, reticulate submedially with an anterior median triangular area; third tergite rugose; suture between second and third tergites crenulate; fourth to sixth tergites with anterior transverse groove; all tergites hairy; ovipositor with dorsal nodus and with two ventral teeth; ovipositor sheath 0.37x fore wing and covered with long hairs; hypopygium extending beyond tip of metasoma and apically acute.

*Colour:* Yellow. Eye black, outer rim yellow; ocelli shining yellow; antenna tip of mandible, stemmaticum, claws and ovipositor sheath brown; wing veins and stigma pale brown; ovipositor orange.

*Male:* Unknown

*Host:* Unknown

*Distribution:* India (Kerala)

*Etymology:* Species name is taken from the Greek adjective "agathon" meaning good.

*Material examined:* Holotype: ♀, INDIA: Kerala, Kollam Dt., Neendakara (8°56'N 76°32'E), Sumodan, 22.ii.1989. Paratypes: ♀s, Kerala, Palakkad Dt., Malampuzha (10°53'N 76°46'E), Sumodan, 10.xii.1987; Kerala, Palakkad Dt., Walayar (10°1'N 76°1'E), Sumodan, 8.i.1988.

*Discussion:* This new species comes close to *B. lefroyi* in having mesoscutum and propodeum shagreen. However it differs from *B. lefroyi* in having 1) propodeum with a median posterior carina (propodeum without median carina at extreme apex, areolate in *B. lefroyi*); 2) apical width of first tergite 1.25x its basal width (apical width of first tergite 2.0x its basal width in *B. lefroyi*); 3) width of second tergite 3.3x its length (width of second segment 4x its length in *B. lefroyi*); 4) third tergite 1.44x second (third tergite a little longer than second in *B. lefroyi*).

This new species also comes close to *B. charien* sp. nov. in having metanotum with anterior median carina; propodeum with posterior median carina; frons with median longitudinal groove; cu-a slightly postfurcal; 2-SR straight and hypopygium extending beyond apex of metasoma. However, in addition to characters mentioned in the key it differs from *B. charien* in having 1) fore wing vein 1-SR 0.25x 1-M (fore wing vein 1-SR 0.17x 1-M in *B. charien*); 2) mesoscutum hairy along notauli (mesoscutum moderately hairy except midlobe anteriorly posteromedially and lateral lobes medially in *B. charien*); 3) first tergite completely shagreen (first tergite smooth with rugose, raised median posterior area in *B. charien*) and 4) second and third tergites rugoseretulate (second and third tergites aciculatorugose, laterally shagreen in *B. charien*).

#### *Bracon carpomyiae* (Ramakrishna Ayyar)

*Bathyaulax carpomyiae* Ramakrishna Ayyar, 1928. *Mem. Dept. Agric. Indian Ent. Ser.* 10. 147.

*Bracon carpomyiae* (Ramakrishna Ayyar). Synonymized by Dicky Sick Ki Yu, 2012.

*Diagnosis* : Female: Head transverse; notauli distinct, with faint punctures and hairy, lobes smooth and shiny; scutellar sulcus crenulate; medially smooth and shiny with a median longitudinal carinated groove; metasomal tergites coarsely reticulate punctate especially in black area; ovipositor long; head and mesosoma light testaceous; central lobe of mesosoma shining dark brown with light and dark median longitudinal line; legs pale yellow; hind tibiae and tarsi infuscated; first to fifth metasomal tergites black dorsally; black colour being interrupted along median dorsal line of third to fifth by a pale white ridge, dark area on fifth segment confined to its basal half only; remaining parts pale whitish yellow; Mesosoma and metasoma

*Male:* Similar to female.

*Host:* *Carpomyia vesuviana* Costa.

*Distribution:* India (Tamil Nadu).

*Discussion:* This species comes close to *B. trypaeniphaga* (Ramakrishna Ayyar) in notauli distinct, lobes smooth and shiny and scutellar sulcus crenulate. However it differs from *B. trypaeniphaga* in having 1) Metasomal tergites coarsely reticulate punctate (Metasomal tergites second, third and fourth strongly rugosely punctured and surface rough and

reticulate in *B. trypaeniphaga*); 2) First to fifth metasomal tergites black dorsally; black colour being interrupted along median dorsal line of third to fifth by a pale white ridge, dark area on fifth segment confined to its basal half only; remaining parts pale whitish yellow (Apical margin of first metasomal tergite, middorsal area of second and third tergites and basal triangular area on fourth tergite dark; remaining parts of metasoma pale fulvous in *B. trypaeniphaga*)

*Remarks:* The above diagnosis is based on the original description by Ramakrishna Ayyar (1928).

### ***Bracon cecidobius* Kieffer**

*Bracon cecidobius* Kieffer, 1905. *Ann. Soc. R. Sci. Med. Nat. Brux.*, **29**: 185-186.

*Diagnosis:* Female: Length 3.5mm. Head smooth, transverse in dorsal view, longer than broad in anterior view; antenna cylindrical and hairy, 25 segmented; pronotum narrow; mesonotum convex, brilliant, smooth, rough in posterior half, with a median and longitudinal but not very distinct carina located on anterior third; notauli faintly marked; scutellum and metanotum brilliantly smooth; metanotum with a median longitudinal carina not reaching anterior third; wings hyaline; radial cell closed, reaching apex of wing; stigma broad; fore wing vein cu-a leading to 1-M; hind wing with four hamuli; metasoma slightly arched, convex and rough on top; first tergite truncated triangle, 0.5x broad, with two anteriorly converging furrows and forms a triangular space; remaining tergites with anterior transverse groove; second suture crenulate; second tergite as long as broad, hardly longer than third and with an anterior median triangular area; hypopygium reaching tip of metasoma; ovipositor 4.1mm, longer than body.

*Colour:* Yellowish red. Propodeum, legs and metasoma pale yellow; antenna, stemmaticum and another spot between antenna, tip of mandibles, pronotum, a small spot in the middle of anterior edge of mesonotum, a longitudinal band on each side of mesonotum, postscutellum, metanotum and first tergite brilliant black.

*Male:* Unknown.

*Host:* Unknown.

*Distribution:* India (Bengal).

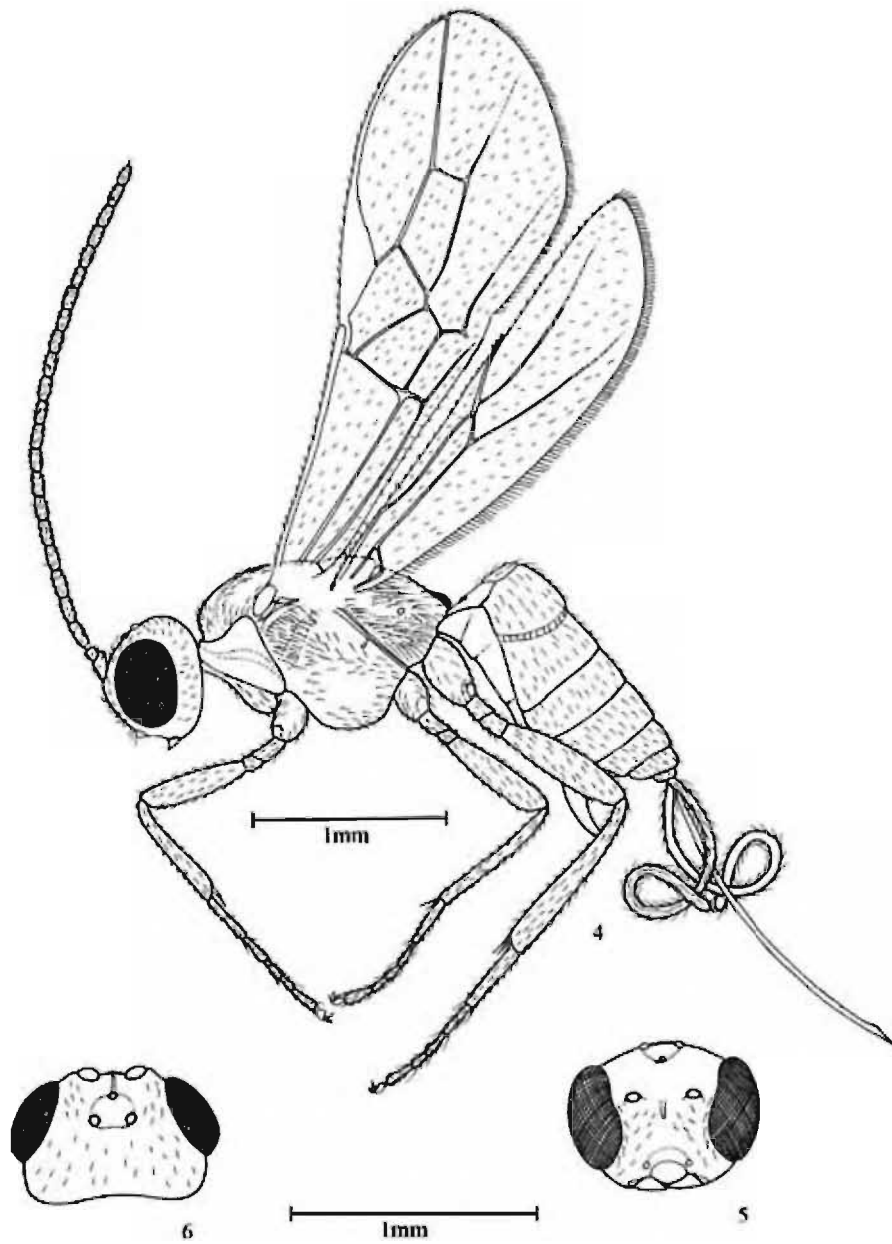
*Discussion:* *B. cecidobius* comes close to *B. daphnephilae* in having mesonotum rough in posterior half. However it differs from *B. daphnephilae* in having 1) Second tergite as long as broad (Second tergite transverse in *B. daphnephilae*) and 2) Hypopygium reaching tip of metasoma (Hypopygium does not reaching tip of metasoma in *B. daphnephilae*).

*Remarks:* The above diagnosis is based on the original description by Szepliget (1905)

### ***Bracon charien* sp. nov.**

(Figs. 4-6)

*Holotype:* Female: Length of body 3.55 mm, of antenna 3.05 mm, of fore wing 3.03 mm and of ovipositor 1.86 mm.



Figs. 4-6. : *Bracon charien* sp. nov. - Female : 4. Body Profile; 4. Head anterior view; 4. Head dorsal view.

*Head:* Width 1.3x and 1.72x its median length in anterior (Fig. 5) and dorsal (Fig. 6) views respectively; antenna 23 segmented; length of third segment 1.18x fourth, length of third, fourth and penultimate segments 2.35, 2.75, and 2.50x their width respectively; apical segment acuminate; frons shagreen, sparsely hairy laterally and with median longitudinal groove; OOL: OD: POL = 6:2:5; stemmaticum surrounded by a shallow groove; vertex, temple, face and malar space shagreen; vertex and temple moderately hairy; eyes glabrous, slightly emarginate; length of eye in dorsal view 2.67x temple; face with raised median area and sparsely hairy, width 2.11x its height; intertentorial distance 1.27x tentorioocular distance; width of hypoclypeal depression 0.37x maximum width of face; occipital flange narrow; malar space shagreen 0.57x basal width of mandible.

*Mesosoma* (Fig. 4): Length of mesosoma 1.42x its height, mesosoma and hind coxa shagreen; pronotum hairy laterodorsally; mesoscutum moderately hairy except mid and lateral lobes medially; notauli distinct not very deep; scutellum and propleuron densely hairy; mesopleuron hairy except dorsally and medially; pleural sulcus narrow, smooth, metapleuron thickly hairy; metanotum with anterior median carina; propodeum hairy, with short posterior carina and lateral carinae on either side, sparsely hairy anteromedially, densely hairy laterally; fore wing (Fig.4) vein 1-SR 0.17x 1-M and continuous with it; ratio of length of fore wing veins: r:3-SR : SR1 = 6:17:30.5; 1-SR+M straight; cu-a slightly postfurcal, vertical; 2-SR straight; 2-SR:3-SR: r-m = 11:17:8; 3-SR 1.55x r; m-cu 0.50x 1-M ; hind wing (Fig.4) vein SC+R1 1.90x 1r-m; tarsal claws with pointed basal lobe; length of femur, tibia and basitarsus of hind leg 4.0, 6.50 and 5.80x their width respectively; length of hind tibial outer and inner spur 0.24 and 0.34x hind basitarsus.

*Metasoma* (Fig. 4): Length of first tergite 1.20x its apical width; first tergite smooth with rugose, raised median posterior area; second and third tergites aciculatorugose, shagreen laterally; suture between second and third tergites wide and crenulate; fourth to sixth tergites shagreen; seventh tergite smooth and shiny; all tergites hairy; hypopygium extending beyond apex of metasoma (Fig.4); ovipositor sheath covered with long hairs 0.49x fore wing; ovipositor with dorsal nodus and three ventral teeth.

*Colour:* Yellowish brown. Eyes black with outer grey layer; antenna, stigma, veins, last tarsomere, claws, ovipositor sheath, and propodeum posteriorly brown; apex of third tergite with two submedian brown patches.

*Male:* Unknown.

*Host :* Unknown.

*Biology:* Unknown.

*Distribution:* India: Kerala.

*Etymology:* Species name is taken from the Greek adjective meaning graceful, neuter gender.

*Material examined:* Holotype: ♀, INDIA: Kerala, Malappuram Dist., Calicut University Campus (11°7'N 75°5'E), T.C. Narendran, 1989. Paratypes: 2♀s, data same as holotype.

*Discussion:* This new species comes close to *B. lefroyi* (Dudgeon & Gough) in having mesoscutum and propodeum shagreen. However, it differs from *B. lefroyi* in having 1)

propodeum with short posterior carina and lateral carinae on either side of it (propodeum without median carina except at extreme apex which is finely areolate in *B. lefroyi*); 2) apical width of first tergite 1.40x its basal width (apical width of first tergite 2.0x its basal width in *B. lefroyi*) and 3) third tergite as long as second (third tergite a little longer than second in *B. lefroyi*).

This new species also comes close to *B. agathon* sp. nov. in having metanotum with anterior median carina; propodeum with posterior median carina; frons with median longitudinal groove; cu-a slightly postfurcal; 2-SR straight and hypopygium extending beyond apex of metasoma. However, in addition to characters mentioned in the key it differs from *B. agathon* in having 1) fore wing vein 1-SR 0.17x 1-M (fore wing vein 1-SR 0.25x 1-M in *B. agathon*); 2) mesoscutum moderately hairy except midlobe anteriorly posteromedially and lateral lobes medially (mesoscutum hairy along notauli in *B. agathon*); 3) first tergite smooth with rugose; (first tergite completely shagreen in *B. agathon*) and 4) second and third tergites aciculatorugose, laterally shagreen (second and third tergites rugosereticulate in *B. agathon*).

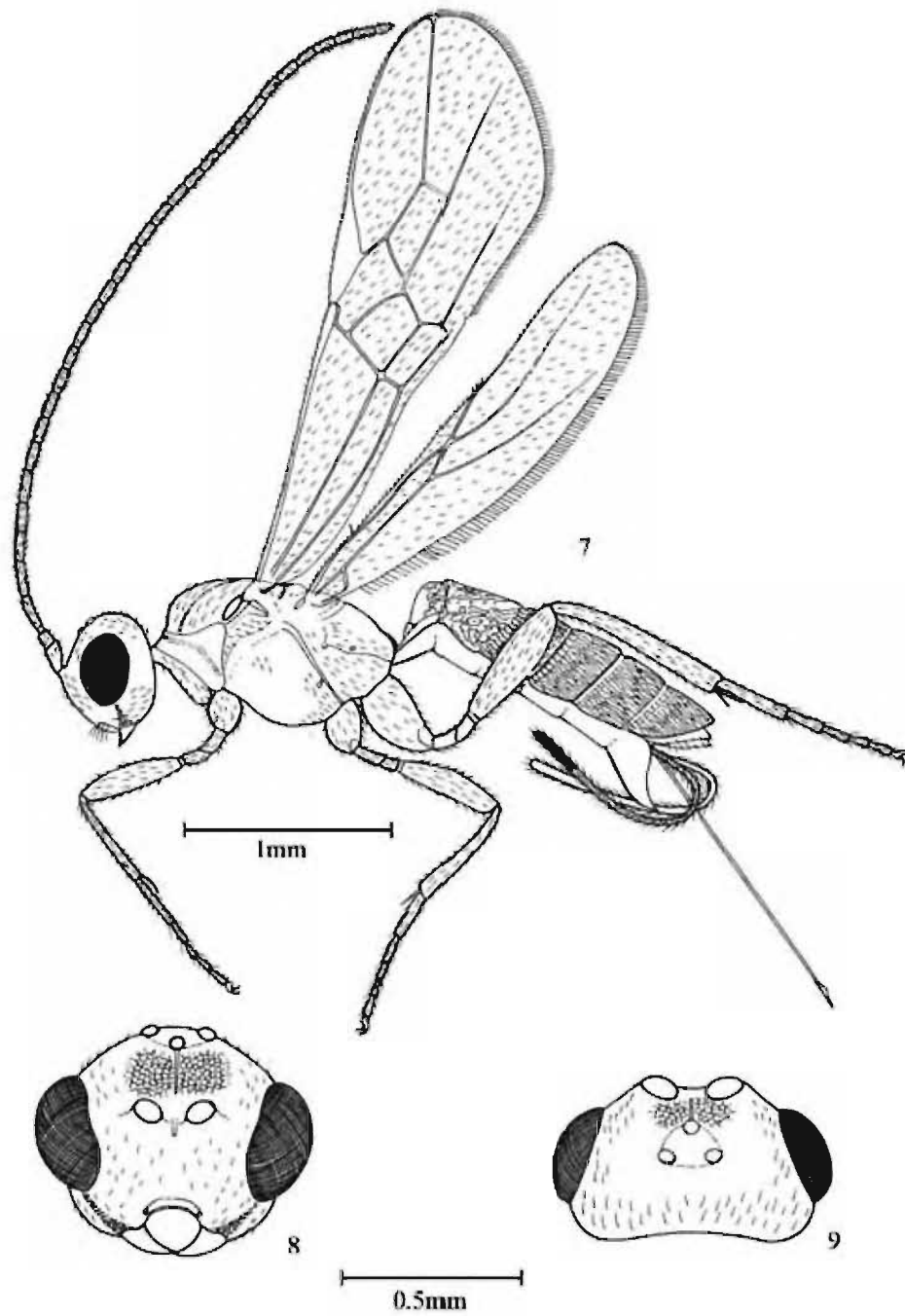
***Bracon dachaon* sp. nov.**

(Figs. 7-9)

*Holotype*: Female: Length of body 3.44 mm, of antenna 3.93 mm, of fore wing 2.95 mm and of ovipositor 1.58 mm.

*Head*: Width 1.23 and 1.95x its median length in anterior (Fig.8) and dorsal (Fig.9) views respectively; antenna with 32 segments; length of third antennal segment 1.07x fourth segment: length of third, fourth and penultimate antennal segments 4.0, 3.75 and 3.33x their width, respectively; apical antennal segment acuminate; frons flat, faintly reticulate, with a shallow median groove; OOL: OD: POL = 12: 3.5: 6; stemmaticum slightly raised above level of vertex, surrounded by narrow shallow groove; vertex, temple, and gena smooth, shiny and hairy; eyes glabrous, slightly emarginate; length of eye in dorsal view 2.50x temple; face flat, smooth, shiny and hairy with a faint median ridge dorsally; width of face 2.26x its height; clypeus smooth, shiny, without transverse carina; intertentorial distance 0.91x tentorioocular distance; width of hypoclypeal depression 0.34x maximum width of face; occipital flange narrow; malar space faintly granulose as long as basal width of mandible.

*Mesosoma* (Fig. 7) : Length of mesosoma 1.73x its height; pronotum smooth, shiny and hairy dorsally, sides glabrous; mid lobe of mesoscutum glabrous medio anteriorly, hairy posteriorly, lateral lobes hairy; notauli distinct and smooth; scutellar sulcus wide, with 9 carinae; scutellum smooth, shiny and hairy; metanotum with anterior median carina; propleuron, smooth, shiny and hairy; mesopleuron hairy anteriorly and posteroventrally, glabrous dorsomedially; metapleuron smooth, shiny and covered with long hairs; metapleural flange medium sized; propodeum smooth, shiny, hairy, with a median posterior carina; propodeal spiracle round, small and medially situated; fore wing (Fig.7) vein 1-SR 0.36x 1-M and continuous with it; ratio of length of fore wing veins: r:3-SR:SR1 = 6:14.5: 35; vein 3-SR 2.42x r; 1-SR+M slightly sinuate; SRI straight, cu-a vertical and interstitial; 2-SR straight; 2-SR:3-SR: r-m = 9.5:14.5: 6; m-cu converging to 1-M posteriorly and 0.68x shorter



Figs. 7-9. : *Bracon dachaon* sp. nov. - Female: 7. Body profile; 8. Head anterior view; 9. Head dorsal view.

than 1-M; hind wing (Fig.7) vein SC+R1 straight and 1.59x 1r-m; hind coxa smooth, shiny and hairy; tarsal claws with basal lobe protruding; length of femur, tibia and basitarsus of hind leg 3.63, 8.89 and 5.33x their width, respectively; length of hind tibial outer and inner spurs 0.31 and 0.44x hind basitarsus; hind tarsus with both dorsal and ventral rows of setae.

*Metasoma* (Fig. 7) : Length of first tergite 0.89x its apical width, surface rugose with raised median area posteriorly, sides of median area crenulate, rugose posteriorly; glymma narrow, shallow and crenulate; dorsolateral carina of first tergite complete; second tergite strongly rugosereticulate with median triangular area extending to its tip, surrounded by crenulate grooves on either side; suture between second and third tergites crenulate; remaining tergites aciculatorugose with crenulate anterior transverse groove; ovipositor with dorsal nodus and five ventral teeth; length of ovipositor sheath 0.46x fore wing and covered with long hairs; hypopygium slightly extending beyond apex of metasoma.

*Colour*: Honey yellow except for following: eyes grey; ocelli shining yellow; antenna (except basal half of scape honey yellow), stemmaticum, median triangular area of second tergite and ovipositor sheath (except tip black) brown.

*Male*: Unknown.

*Host*: Unknown.

*Etymology*: The species name is an arbitrary combination of letters.

*Material examined*: Holotype: ♀, INDIA: Kerala, Malappuram Dt., Calicut University Campus (11°7'N 75°5'E), Divakaran, 9.viii.2001. Paratypes: 8♀s, Kerala, Malappuram Dt., Calicut University Campus (11°7'N 75°5'E), Sabirabi, 3.viii.1999; 28.ii.2000; Sudheer, 16.vii.2001; 9.viii.2001.; Simi, 16-19.ix.2002.

*Discussion*: This new species comes close to *B. punjabensis* in having mesosoma smooth and shiny completely, however differs from *B. punjabensis* in having: 1) face smooth, shiny and hairy with a faint median ridge dorsally (face closely and distinctly but not strongly punctured in *B. punjabensis*); 2) first tergite rugose with rugose raised median area apically (first tergite stoutly, irregularly, longitudinally striolated apicomediaally in *B. punjabensis*); 3) Second tergite rugosereticulate with median triangular area extending to its tip, surrounded by crenulate grooves on either side (Second tergite coarsely, irregularly, rugosely punctured, basomedially, irregularly longitudinally striolated, lateral depressions striated at bottom, apicomediaally irregularly striated in *B. punjabensis*); and 4) remaining tergites aciculatorugose with crenulate anterior transverse groove (remaining tergites closely punctured, fourth and fifth with oblique depressions laterally and transverse furrow at apex in *B. punjabensis*).

This species also comes close to *B. nexperon* sp. nov. in having frons faintly reticulate; vertex smooth and shiny; pronotum smooth and shiny laterally and scutellum smooth, shiny and hairy. However it differs from *B. nexperon* sp. nov. in having 1) hind coxa smooth (hind coxa punctate in *B. nexperon* sp. nov.); 2) first tergite rugose with raised median area posteriorly, sides crenulate and rugose posteriorly (first tergite smooth with laterally

crenulate raised median area posteriorly in *B. nexperon* sp. nov.); 3) Second tergite strongly rugosereticulate with median triangular area extending to its tip surrounded by crenulate grooves on either side (second tergite faintly rugosereticulate with anterolateral and posterior smooth area in *B. nexperon* sp. nov.); 4) Fourth to sixth tergites rugulose (fourth to sixth tergites weakly rugose in *B. nexperon* sp. nov.).

***Bracon daphnephilae* Szepligeti**

*Bracon daphnephilae* Szepligeti, 1905. *Annales de la Societe Scientifique de Bruxelles.*, 29: 185

*Diagnosis:* Female: Length: 3 mm. Head transverse; antennae 24 segmented, a little larger in female than in male; mesosoma smooth, apical half of mesonotum slightly rough; notauli absent; metanotum not carinate; stigma oval; radial cell reaching apex of wing; fore wing vein m-cu reaching to first cubital cell; vein cu-a interstitial; legs slender; metasoma rough and elliptical; first tergite obtuse and triangular, as long as broad at its posterior end with a cross furrow parallel with side margin; second tergite transverse, longer than third, with a feable carina in middle; second suture slightly and minutely carinate; hypopygium does not reaching apex of abdomen; ovipositor shorter than abdomen.

*Colour:* Red except legs and abdomen yellow; antenna, metnotum, first tergite, a small spot on basal half of second tergite, a transverse band of remaining segments, apex of hind tibiae and tarsi black; transverse bands of abdomen meet in an oval spot in male.

*Male:* Similar to female.

*Host:* Unknown.

*Distribution:* India (Bengal).

*Discussion:* This species comes close to *B. cecidobius* in having mesonotum rough in posterior half. However it differs from *B. cecidobius* in having 1) Second tergite transeverse (Second tergite as long as broad in *B. cecidobius*) and 2) Hypopygium reaching does not tip of metasoma (hypopygium reaching tip of metasoma in *B. cecidobius*)

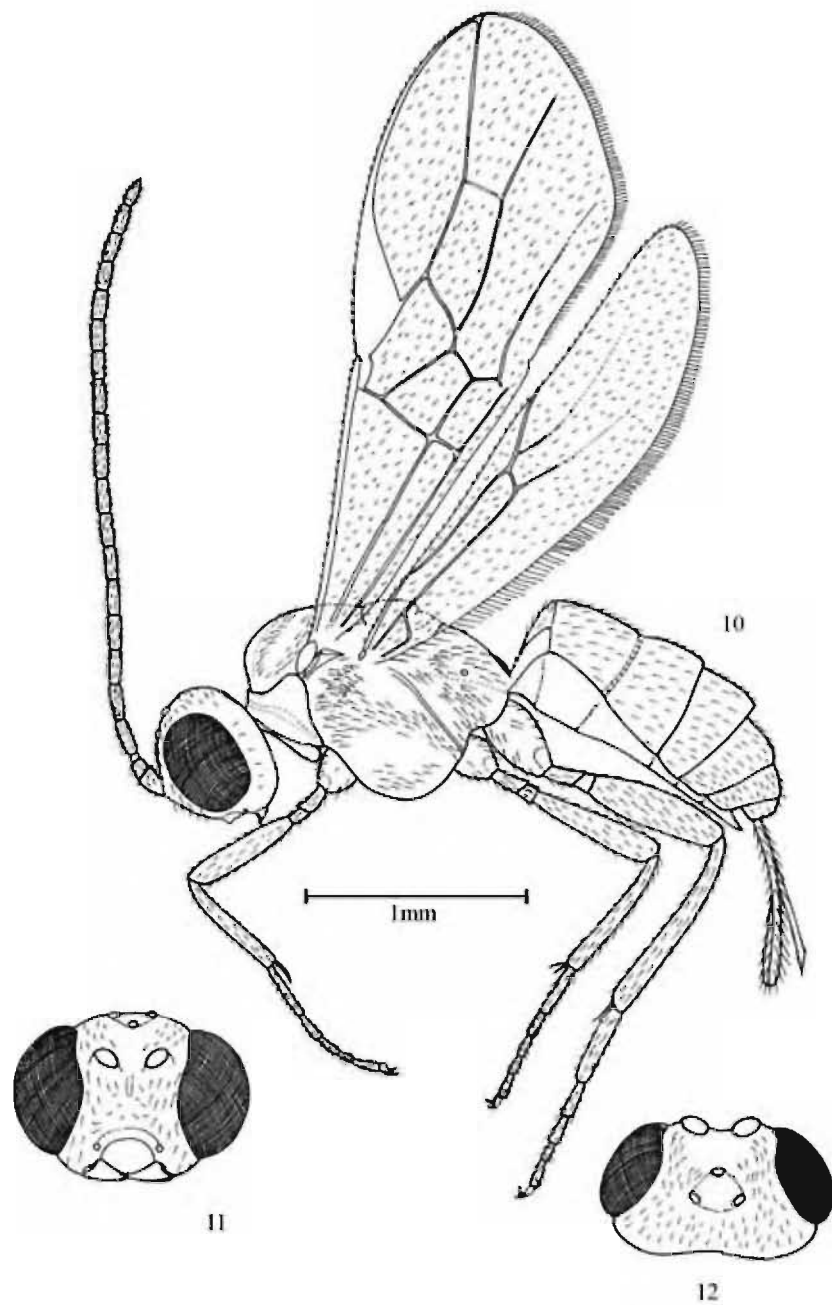
*Remarks:* The above diagnosis is based on the original description by Szepligeti (1905)

***Bracon daris* sp. nov.**

(Figs. 10 -12)

*Holotype:* Female: Length of body 3.42 mm, of antenna 2.86 mm, of fore wing 2.92 mm and of ovipositor 0.73 mm.

*Head:* Width 1.44 and 1.96x its median length in anterior (Fig.11) and dorsal (Fig. 12) views respectively; antenna 22 segmented; length of third segment 1.20x fourth; length of third, fourth and penultimate antennal segments 3.60, 3.0 and 2.60x their width respectively; apical segment acuminate; frons, stemmaticum, vertex, temple, gena, face and malar space shagreen; frons without median groove, moderately hairy; OOL: OD: POL = 5:3:7; stemmaticum sparsely hairy, surrounded by shallow groove; vertex moderately hairy laterally; eyes slightly emarginate; length of eye in dorsal view 6.83x temple; temple and gena sparsely hairy; face moderately hairy, with median raised area; width of face 1.84x its height; intertentorial distance 2.40x tentorioocular distance; width of hypoclypeal depression 0.55x maximum width of face; occipital flange narrow; malar space 0.17x basal width of mandible.



**Figs. 10-12 :** *Bracon daris* sp. nov.-female: 10. Body Profile; 11. Head anterior view; 12. Head Dorsal view.

*Mesosoma* (Fig. 10) : Length of mesosoma 1.19x its height; mesosoma and hind coxa shagreen; mid lobe of mesoscutum hairy posteriorly, lateral lobes medially not hairy; notauli weakly indicated; scutellar sulcus narrow with carinae; scutellum hairy; metanotum with complete median carina; pleural sulcus narrow, smooth; mesopleuron hairy except dorsally and medially glabrous; metapleural flange narrow; propodeum with complete mid longitudinal carina and small transverse carinae on either side of it; fore wing vein 1-SR 0.31x 1-M and continuous with it; ratio of length of fore wing veins: r:3-SR:SR1 = 8:22:35; 3-SR 2.75x r; 1-SR+M straight; cu-a vertical, slightly antifurcal; 2-SR slightly sinuate; 2-SR : 3-SR : r-m = 14:22:9; m-cu 0.62x 1-M (Fig.10); hind wing vein SC+R1 2.67x 1r-m; tarsal claws with pointed basal lobe; length of femur, tibia and basitarsus of hind leg 3.53, 8.8 and 5.83x their width respectively; length of hind tibial outer and inner spurs 0.34 and 0.26x hind basitarsus.

*Metasoma* (Fig. 10) : Length of first tergite as long as its apical width; apical width of first tergite 1.50x its basal width; first tergite shagreen, with crenulate sided raised median area posteriorly; second tergite shagreen, with parallel sided median area basally extending its middle and sides of median area rugose; width of second tergite 2.80x its width; suture between second and third tergites wide and crenulate; third and fourth tergites reticulaterugose medially, shagreen laterally; remaining tergites shagreen; hypopygium not extending beyond tip of metasoma; ovipositor sheath 0.26x fore wing; ovipositor with dorsal nodus and three ventral teeth.

*Colour*: Body reddish yellow with black markings on metasomal tergites (except pale yellow face midially); head, basal eight segments of antenna, mesosoma (except black medial part of propodeum), legs (except brown claws), large lateral portion of second and fifth tergites, lateral part of third and fourth tergite, sixth tergites and ovipositor reddish yellow; eyes black, surrounded by grey area; stigma and veins yellow; ovipositor sheath, small medial part of first, second and fifth tergites brown; large medial area of third and fourth tergites black.

*Male*: Unknown.

*Host*: Unknown.

*Distribution*: India (Kerala).

*Etymology*: The species name is an arbitrary combination of letters.

*Material examined*: Holotype: ♀ &, INDIA: Kerala, Malappuram Dt., Calicut University Campus (11°7'N 75°5'E), Sheeba, M., 17.xi.2005. Paratypes: 2 ♀s, data same as holotype.

*Discussion*: This new species comes close to *B. lefroyi* in having mesoscutum and propodeum shagreen. However, it differs from *B. lefroyi* in having 1) propodeum with complete midlongitudinal carina and small transverse carinae on either side of it (propodeum without median carina except at extreme apex, areolate in *B. lefroyi*); 2) apical width of first tergite 1.50x its basal width (apical width of first tergite 2.0x its basal width in *B. lefroyi*); 3) width of second tergite 2.80x its length (width of second tergite 4.0x its length in *B. lefroyi*) and 4) third tergite a trifle shorter than second (third tergite a little longer than second in *B. lefroyi*).

This new species also comes close to *B. agathon* sp. nov. in having frons, mesoscutum, hind coxa and fourth tergite shagreen. However it differs from *B. agathon* sp. nov. in having 1) frons without median groove (frons with median shallow groove in *B. agathon* sp. nov.); 2) face with a median raised area (face without a raised area medially in *B. agathon* sp. nov.); 3) pronotum shagreen (pronotum smooth and shiny, punctate laterally in *B. agathon* sp. nov.); 4) mesoscutum hairy posteriorly (mesoscutum hairy along notauli in *B. agathon* sp. nov.); 5) scutellar sulcus narrow (scutellar sulcus wide in *B. agathon* sp. nov.); 6) metanotum with complete median carina (metanotum with anterior median carina in *B. agathon* sp. nov.); 7) propodeum with long median carina (propodeum with a median posterior carina in *B. agathon* sp. nov.); 8) fore wing vein cu-a slightly postfurcal (fore wing vein cu-a slightly antefurcal in *B. agathon* sp. nov.) 9) second tergite shagreen (second tergite rugose-reticulate in *B. agathon* sp. nov.).

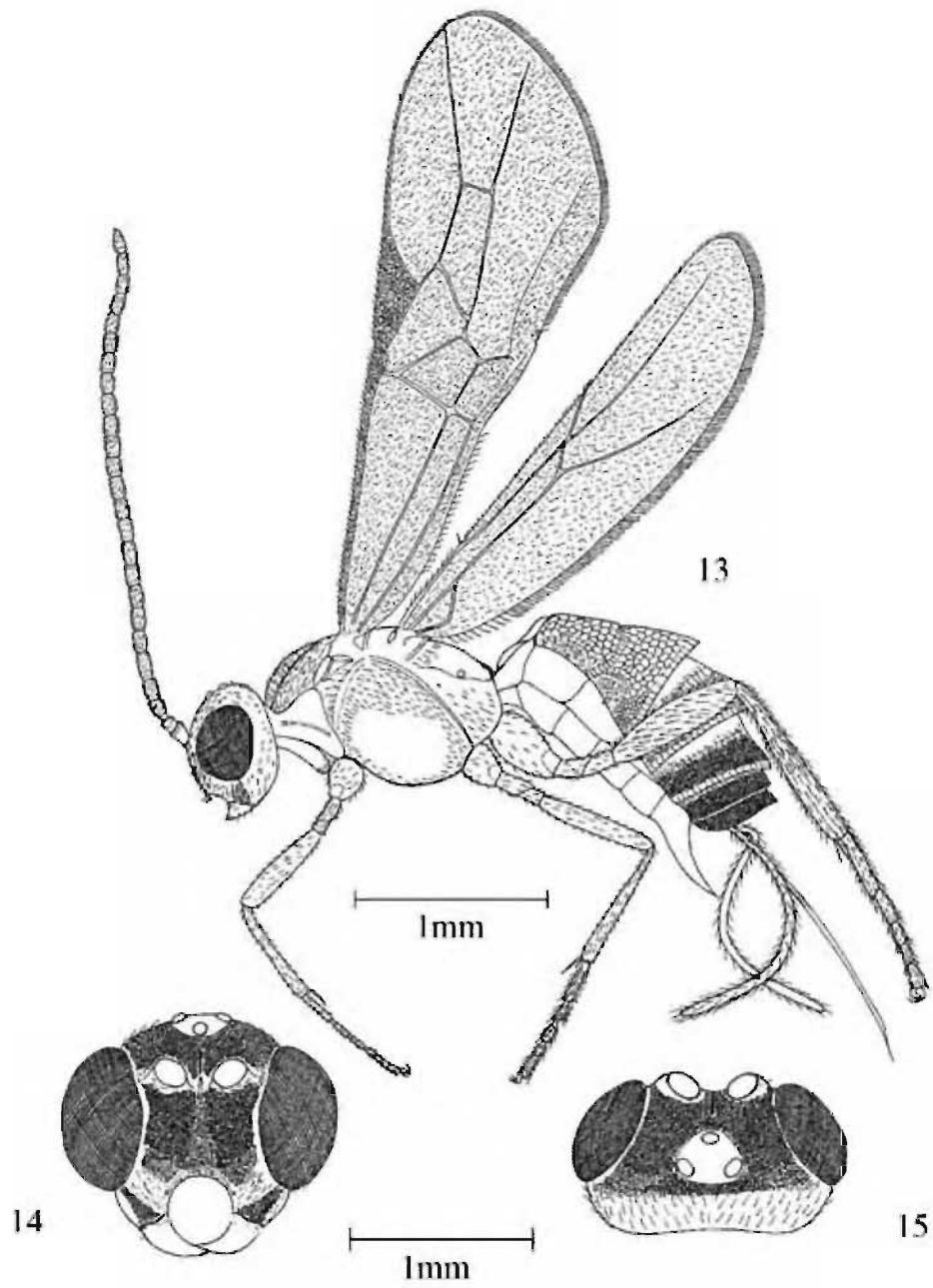
***Bracon decor* sp. nov.**

(Figs. 13-15)

*Holotype*: Female: Length of body 3.6 mm, of antenna 2.79 mm, of fore wing 3.29 mm and of ovipositor 1.48 mm.

*Head*: Width 1.15x and 1.97x its median length in anterior (Fig. 14) and dorsal (Fig. 15) views respectively; antenna 25 segmented; length of third segment 11.50x fourth; length of third, fourth and penultimate segments 2.17, 1.67 and 2.50x their width, respectively; apical segment acuminate; frons and face shagreen; frons flat, with median longitudinal carina extending from between antennal toruli to middle of frons, hairy laterally; OOL: OD: POL = 7:4.5: 6.5; stemmaticum slightly raised above vertex and surrounded by a shallow groove; vertex rugose, anteriorly smooth, shiny posteriorly and hairy; eyes glabrous, slightly emarginate; length of eye in dorsal view 2.50x temple; temple smooth, shiny and hairy; face hairy with a small median smooth longitudinal ridge dorsally, extends between toruli; width of face 1.65x its height; clypeus faintly punctate, not separated from face by carina, its apical margin upcurved, thin and with a row of long hairs; intertentorial distance 1.65x tentorioocular distance; width of hypoclypeal depression 0.56x minimum width of face; occipital flange narrow; malar space granulose, 0.92x basal width of mandible.

*Mesosoma* (Fig. 13): Length of mesosoma 1.51x its height; pronotum smooth and shiny; mesoscutum smooth, shiny hairy; notauli weakly impressed; posteriorly, smooth; scutellar sulcus wide with 8 carinae; scutellum smooth, shiny and hairy; metanotum with anterior median carina; propleuron smooth, shiny and hairy; mesopleuron hairy anterodorsally and ventrally, glabrous medioposteriorly; pleural sulcus narrow, smooth; metapleuron smooth, shiny and hairy; metapleural flange lamelliform, and obtuse, medium sized; propodeum smooth, shiny with a few hairs anteriorly and posterior median longitudinal carina extending upto its middle; propodeal spiracle round, small and medially placed; fore wing vein 1-SR 0.25x 1-M continuous with it; ratio of length of fore wing veins: r: 3-SR: SR1 = 6: 19: 35; vein 3-SR 3.17x r; veins 1-SR + M and SR1 straight; cu-a vertical, interstitial; 2-SR sinuate; 2-SR: 3-SR: r-m 14:19:7; m-cu converging to 1-M posteriorly and 0.48x 1-M; hind wing vein SC+R1 straight, 1.67x longer than 1r-m; hind coxa smooth, shiny and hairy; tarsal claws with basal lobe produced into a distinct tooth; length of femur, tibia and



Figs. 13- 15 : *Bracon decor* sp. nov.- female: 13. Body Profile ;  
14. Head anterior view; 15. Head Dorsal view.

basitarsus of hind leg 3.88, 8.4 and 5.0x their width respectively; length of hind tibial outer and inner spurs 0.27 and 0.33x hind basitarsus.

*Metasoma* (Fig. 13): Length of first tergite 0.83x its apical width, surface reticulate with a median triangular area posteriorly, sides of median area crenulate; and posterior side rugose; glymma shallow, wide and crenulate; dorsolateral carina of first tergite complete; second tergite rugosereticulate with median triangular carina and lateral grooves (Fig.13); suture between tergites crenulate; third and fourth tergites rugosereticulate; remaining tergites shagreen (Fig.13); ovipositor with dorsal nodus; length of ovipositor sheath 0.43x fore wing and covered with long hairs; hypopygium extending beyond tip of metasoma and 0.33 apically acute; ovipositor 0.7x length of metasoma.

*Colour*: Black. Palpi pale yellow; mandibles (except brown tip), fore leg, mid trochanter, mid femur, base and apex of mid femur, extreme apex of hind femur, extreme base of hind tibia yellow; claws, mid femur medially, mid tarsus, three fourth of hind tibia and hind tarsus; stigma and veins (except pale brown 1-SR+M, 2-SR+M and m-cu) brown; wings infumate.

*Male*: Unknown.

*Host*: Unknown.

*Distribution*: India (Kerala).

*Etymology*: The species name is an arbitrary combination of letters.

*Material examined*: Holotype: ♀ &, INDIA: Kerala, Palakkad Dt., Kalkkandi (11°1'N 76°28'E), Sumodan, 13.xii.1987. Paratypes: 3♀s, data same as that of holotype.

*Discussion*: This new species come close to *B. greeni* in having smooth and shiny mesosoma and ovipositor 0.70x length of metasoma but differs in having 1) fore wing vein 3-SR 3.17x r (fore wing vein 3-SR 3.0x r in *B. greeni*) and 2) antenna 0.78x length of body (antenna nearly as long as body in *B. greeni*).

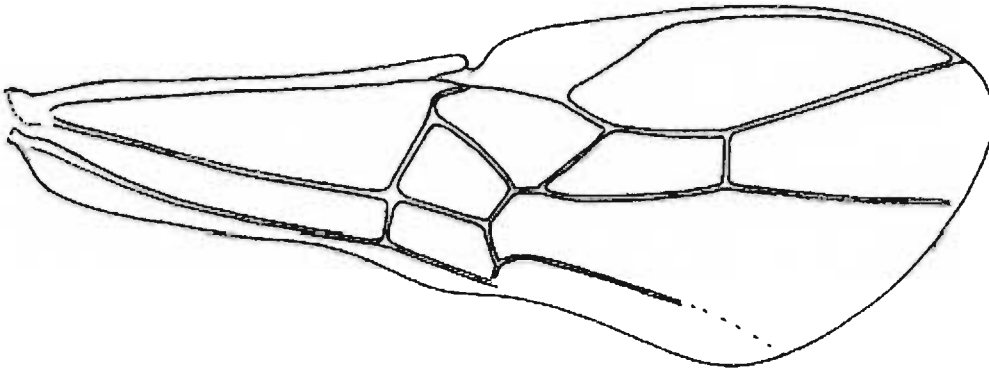
### ***Bracon fletcheri* Silvestri**

(Fig. 16)

*Bracon fletcheri* Silvestri, 1916. *Bollettino del Laboratorio di Zoologia Generale e Agraria, Portici.*, **11**: 160-162.

*Diagnosis*: Female: Length 5mm. Head transverse, little more broader than mesosoma; antenna 28 segmented, 3.2mm long; scape 2/3 more longer than pedicel; third segment more than 2x pedicel; face approximately 1/6 wider than high; clypeus arched; eyes hairy; width of mesosoma 1.09mm; notauli extends to posterior part of mesoscutum, hairy with ten fovea; metanotum carinate anteriorly, smooth, posteriorly convex; fore wing (Fig.16) 3.5mm, width of fore wing 1.30 mm; propodeum large with transverse carinae posteriorly; stigma small and round; mesopleura smooth; metasoma subovale; tergites 2-4 deeply and irregularly foveate; ovipositor thin, nearly straight and 2.8mm long.

*Colour*: Body yellow.



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Figs. 16. : *Bracon fletcheri* Silvestri

*Male*: Differs from female for notauli and black scutellum, hind legs. Antenna 31 segmented, nearly completely smooth. Sixth tegite nearly completely smooth.

*Host*: Unknown.

*Distribution*: India (Pusa).

*Discussion*: This species comes close to *B. ingrates* in having.

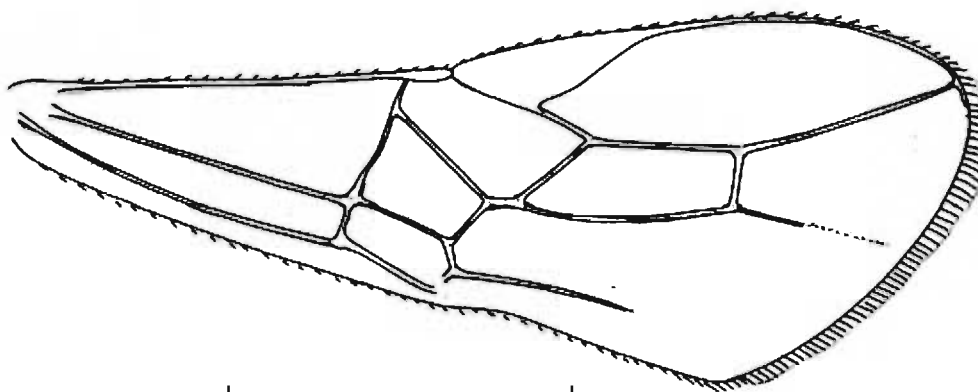
*Remarks*: The above diagnosis is based on the original description by Silvestri (1916).

***Bracon gelechidiphagus* (Ramakrishna Ayyar)**

(Fig. 36)

*Microbracon gelechidiphagus* Ramakrishna Ayyar, 1928. *Mem. Dept. Agric. Indian Ent. Ser.* 10. 147.

*Bracon gelechidiphagus* (Ramakrishna Ayyar). Synonymized by Yu *et al.*, 2005.



1mm

Figs. 36 : *Bracon gelechidiphagus* (Ramakrishna Ayyar)

*Plesiotype*: Female: Length of body 3 mm; antenna 2.75 mm, fore wing 2.81 mm and ovipositor 0.8 mm.

*Head*: Width 1.17x and 2x its median length in anterior and dorsal view respectively; antenna 23 segmented; length of third segment as long as fourth; third, fourth and penultimate segments 2.5, 2.5 and 2x their width respectively; apical segment acuminate; frons, vertex, surface of stemmaticum, face and malar space shagreen; OOL:OD:POL = 3:1:3; stemmaticum slightly raised above vertex; eyes glabrous; width of face 2x its height; intertentorial distance 0.67x tentorioocular distance; width of hypoclypeal depression 0.17x maximum width of face; malar space as long as basal width of mandible.

*Mesosoma*: Shagreen. Length 1.18x its height; mesoscutum hairy along notauli; notauli distinct, smooth; scutellar sulcus with 9 carinae; metanotum smooth with anterior median carina; mesopleuron hairy mediolongitudinally, ventromedially and posteriorly; pleural sulcus narrow, smooth; metapleuron hairy; propodeum with a median posterior carina; fore wing (Fig. 36): vein 1-SR 0.33x 1-M; ratio of length of fore wing veins: r: 3-SR; SR1 = 7:18:28; 1-SR+M, SR1 and 2-SR straight; cu-a vertical. Interstitial; 2-SR: 3-SR: r-m = 11:18:7; m-cu converging to 1-M posteriorly, 0.58x 1-M; hind coxa shagreen; tarsal claws with basal lobe produced into tooth; length of femur, tibia and basitarsus of hind leg 4, 8.5, and 4x their width respectively; length of hind tibial outer and inner spurs 0.25 and 0.45x basitarsus.

*Metasoma*: Oval, shagreen; first tergite 2.33x its apical width; ovipositor with dorsal nodus and two ventral serrations; hypopygium not extending beyond tip of metasoma.

*Colour*: Yellow except eyes black with outer rim grey; ocelli shining yellow; antenna, stemmaticum, claws and ovipositor sheath brown; ovipositor shining orange; third and fourth tergites with two brownish patches mediodorsally.

*Male*: Unknown.

*Host*: *Pectinophora gossypiella* Saud., *Phthorimaea blapsigona* (Meyr).

*Distribution*: India (Kerala, Punjab, Himachal Pradesh).

*Material examined*: ♀s, Kerala, Malappuram Dt., Manjeri (11°7'N 76°7'E), Sheeba, M., 4.x.2003; 1Female, Kerala, Kozhikode Dt., Kakkodi (11°20' N 75°51'E), Girish Kumar, P., 21.xi.2004.

*Discussion*: *B. gelechidiphagus* Ramakrishna Ayyar comes close to *B. greeni* Ashmead. It differs from *B. greeni* in having third and fourth tergites with faint dark marks mediodorsally (Extreme apex of second tergite and dorsal blotches on third and fourth segments black in *B. greeni*).

#### *Bracon greeni* Ashmead

*Bracon greeni* Ashmead 1896. *Proc. U.S. natn. Mus.*, **18**: 645.

*Microbracon greeni* Ashmead, 1896. 1896a. *Ind. Jour. Ent.*, **7** (122): 37-40.

*Bracon tachardiae* Cameron, 1899. Synonymized by Yu *et al.*, 2005.

**Diagnosis: Female:** Length 2.5-3.0mm. Brownish yellow. Head and thorax smooth; antenna 24 segmented; wings hyaline; stigma and veins brown; fore wing vein 3-SR about 3.0x r; vein m-cu joins first submarginal cell a little beyond its apical third; metasoma broadly oval and shagreen; second to fourth metasomal tergites subequal, remaining a little shorter.

**Colour:** Brownish yellow. Disc of metasoma, extreme apex of second tergite and large dorsal blotches on third and fourth tergites black; wings hyaline, stigma and veins brown.

**Male:** Length 2-2.5 mm. Similar to female except antenna 25 segmented, longer than body.

**Host:** *Adisura atkinsoni* Moore, *Alcides affaber* L., *Earias fabia* Stoll., *Heliothis obsoleta* L., *Rabila frontalis* Wlk.

**Distribution:** India (Kerala, Uttar Pradesh).

**Discussion:** *B. greeni* comes close to *B. punjabensis* Cameron in having head and mesosoma smooth and shiny. However, it differs from 1) wings hyaline (wings uniformly dark-furcous in *B. punjabensis*); 2) metasoma shagreen (first tergite stoutly, irregularly, longitudinally striolated apico-medially, second tergite coarsely, irregularly rugosely punctured, basomedially irregularly longitudinally striolated, lateral depressions striated at bottom, apicomediaally irregularly striated, remaining tergites closely punctured, fourth and fifth with oblique depressions laterally and transverse furrow at apex in *B. punjabensis*).

**Remarks:** The above diagnosis is based on the original description by Ramakrishna Ayyar (1928).

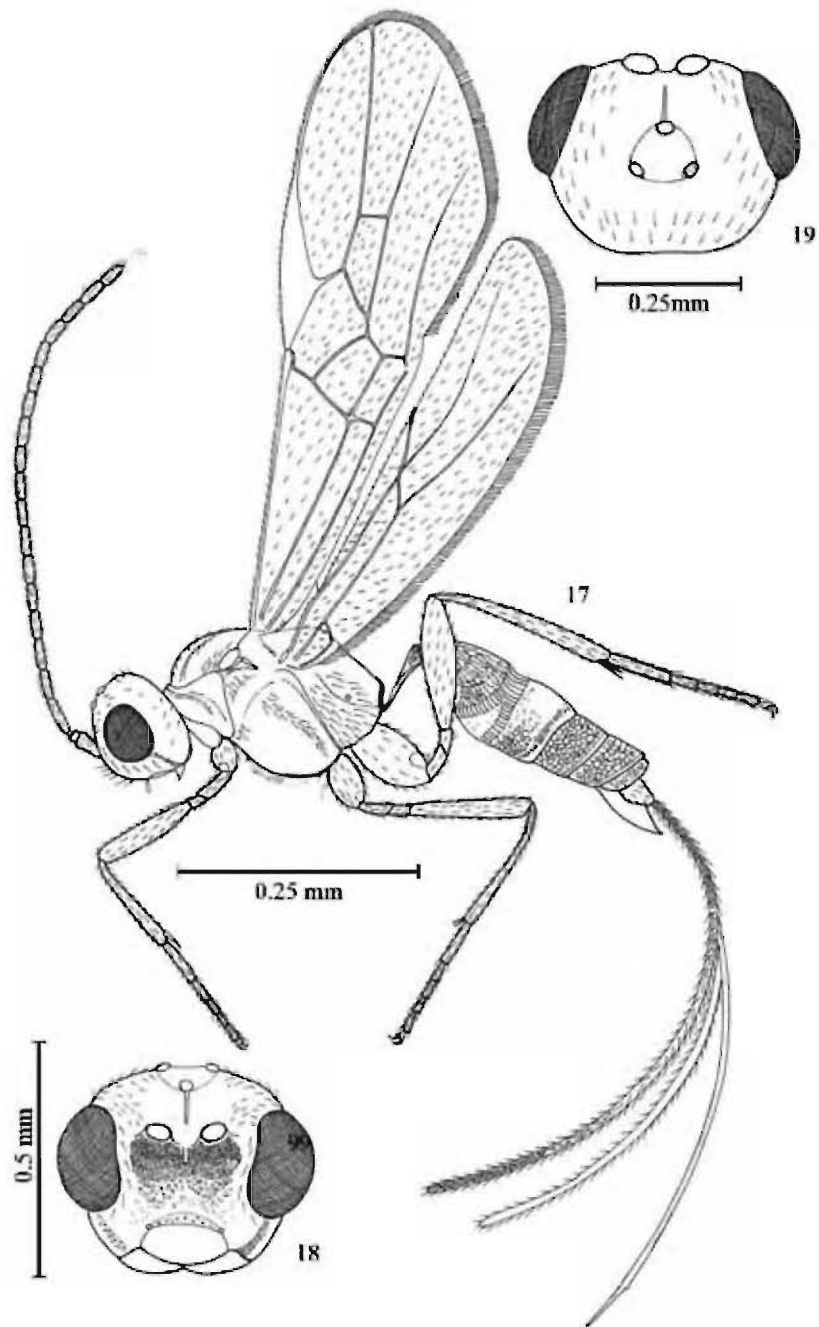
***Bracon heteron* sp. nov.**

(Figs. 17-19)

**Holotype: Female:** Length of body 2.80 mm, of antenna 2.43 mm, of fore wing 2.56 mm and of ovipositor 2.40 mm.

**Head:** Width 1.27 and 1.49x its median length in anterior (Fig.18) and dorsal (Fig.19) views respectively; antenna 20 segmented; length of third segment 1.38x fourth; length of third, fourth and penultimate segments 4.50, 3.26 and 3.0x their width, respectively; apical segment acuminate; frons flat, smooth, shiny, sparsely hairy laterally with median longitudinal groove (Fig. 18); OOL: OD: POL = 10:4:9; stemmaticum slightly raised above level of vertex, surrounded by narrow shallow groove; vertex smooth, shiny with widely separated hairs (Fig.19); eyes glabrous, slightly emarginate; length of eye in dorsal view 1.75x temple; temple smooth, shiny, and sparsely hairy; face flat, mostly smooth and shiny, faintly granulose, with a median ridge dorsally, sparsely hairy and with a single row of long hairs near inner margin of eye; width of face 2.0x its height; clypeus without dorsal carina, its apical margin upcurved, intertentorial distance 1.88x tentorioocular distance; width of hypoclypeal depression 0.63x maximum width of face; occipital flange narrow; malar space granulate, 1.27x basal width of mandible.

**Mesosoma** (Fig. 17): Length of mesosoma 1.44x its height; pronotum smooth, shiny; mid lobe of mesoscutum glabrous anteriorly, hairy posteriorly and lateral lobes glabrous;



Figs. 17-19 : *Bracon heteron* sp. nov. - Female: 17. Body profile; 18 Head anterior view; 19. Head dorsal view.

notauli distinct and smooth; scutellar sulcus wide with 5 carinae; scutellum smooth, shiny and hairy; metanotum with anterior median carina; propleuron smooth, shiny; mesopleuron hairy dorsally and ventrally, glabrous medially; pleural sulcus narrow and smooth; metapleuron smooth, shiny and covered with long hairs; propodeum smooth, shiny with posterior median carina not extending to its middle and few hairs laterally; propodeal spiracle round, small, medially situated; fore wing (Fig.17) vein 1-SR 0.46x 1-M and continuous with it; ratio of length fore wing veins: r :3-SR : SR1 = 7:12:43; 3-SR 1.71x r; fore wing veins 1-SR + M and SR1 straight; cu-a vertical and interstitial; 2-SR slightly sinuate; 2-SR : 3-SR : r-m = 12:12.5 : 6.5; m-cu converging to 1-M posteriorly and 0.50x it ((Fig.17) ; hind wing vein SC + R1 straight and 1.57x 1r-m; hind coxa smooth, shiny and hairy; tarsal claws with basal lobe produced into tooth; length of femur, tibia and basitarsus of hind leg 4.13, 10.50 and 5.0x their width, respectively; length of hind tibial outer and inner spurs 0.40 and 0.47x hind basitarsus; hind tarsus with dorsal and ventral row of setae.

*Metasoma* (Fig. 17): Length of first tergite 0.75x its apical width, surface rugulose with smooth, shiny raised median area posteriorly, sides of median area crenulate; glymma shallow, smooth; dorsolateral carina of first tergite complete; second tergite aciculatorugose with crenulate sided median triangular carina; suture between second and third tergites crenulate; third tergite mostly smooth, laterally faintly reticulate, with curved crenulate grooves anterolaterally and transverse crenulate groove subposteriorly; remaining tergites faintly reticulate; ovipositor with dorsal nodus and three ventral teeth; length of ovipositor sheath 0.87x forewing and covered with long hairs; hypopygium extending beyond apex of metasoma and apically acute.

*Colour*: Yellow. Eyes black; antenna (except scape and pedicel yellow), wing veins, stigma (except pale yellow base), ovipositor sheath, claws, tip of mandible, first tergite, suture between first and second tergites, third, fourth and fifth tergites medioposteriorly brown; ocelli shining yellow; stemmaticum mostly yellow, brown near ocelli.

*Male*: Unknown.

*Host*: Emerged from *Ficus racemosa* L. leaf galls.

*Etymology*: Species name is taken from the Greek adjectives meaning different.

*Material examined*: Holotype: ♀, INDIA: Kerala, Malappuram, Nilambur, Chokkad, C.K. Colony (11°16'N 76°14'E), Sheeba, M., 22.iv.2006. Paratypes: 2♀s of data same as that of holotype.

*Distribution*: India (Kerala).

*Discussion*: This new species comes close to *B. punjabensis* in having mesosoma smooth and shiny. However it differs from *B. punjabensis* in having (1) face flat, mostly smooth and shiny, faintly granulose (face closely and distinctly but not strongly punctured in *B. punjabensis*); 2) second tergite aciculatorugose, with crenulate sided median triangular carina (second tergite coarsely, irregularly, rugosely punctate, basomedially irregularly, longitudinally striolated, lateral depressions striated at bottom, apicomediaally irregularly striated in *B. punjabensis*); 3) third tergite mostly smooth, laterally faintly reticulate, with curved crenulate grooves anterolaterally and with transverse crenulate groove

subposteriorly (third tergite closely punctured in *B. punjabensis*); 4) fourth and fifth tergites faintly reticulate (fourth and fifth tergites closely punctured with oblique depressions laterally and striated transverse groove apically in *B. punjabensis*) and 5) sixth tergite faintly reticulate (sixth tergite closely punctured in *B. punjabensis*).

***Bracon incarnatus* (Ramakrishna Ayyar)**

*Microbracon incarnatus* Ramakrishna Ayyar, 1928. *Mem. Dept. Agric. Indian Ent. Ser.* 10. 48.

*Bracon incarnatus* (Ramakrishna Ayyar), 1928. Synonymized by Yu *et al.*, 2005.

**Diagnosis:** Female: Length 2.75 mm. Vertex broad and smooth; lobes of inescutum punctate; notauli shallow and hairy; base of scutellum finely crenulate; body covered with sparse, white hairs, especially on mesosoma; second cubital cell of wings longer than first; vein 3-SR a little less than SR1; vein m-cu meets first cubital very close to its junction with second; metasoma ovoid, slightly convex, and finely shagreen above; second suture not distinct; ovipositor as long as metasoma.

**Colour:** Head ochraceous; mesosoma and metasoma bright reddish brown, latter often of a paler hue; wings flavohyaline, clearer towards posterior region, stigma and veins pale brown.

**Male:** Length 2.5 mm. Similar in all respects to female.

**Host:** *Dactylethra candida* Stainton.

**Distribution:** India (Tamilnadu).

**Discussion:** This species comes close to *B. pongamiaensis* in having metasoma not shagreen however it differs from *B. pongamiaensis* in having metasoma ovoid and shagreen.

**Remarks:** The above diagnosis is based on the original description by Ramakrishna Ayyar (1928).

***Bracon ingratus* Cameron**

*Bracon ingratus* Cameron, 1897. *Memoirs and Proceedings of the Manchester Literary and Philosophical Society.* 41(4): 35.

**Diagnosis:** Female: Length 10mm. Head shining; tip of mandibles black; a broad furrow leads down from ocelli; mesosoma shining, impunctate; curved furrow on mesopleura wide; median segment with a gradual slope, very smooth and shining; metapleura with a broad oblique furrow; tibiae thickly covered with pale hair; first tergite smooth, apex in centre with a few stout longitudinal keels, lateral furrows wide; remaining tergites strongly rugosely punctured; second tergite with a stout keel in centre reaching near to apex, sides with a broad slightly curved depression, stoutly keeled on innerside; remaining tergites with a stout transverse keel at base, which become wider at sides, and are crenulated. Legs luteous; wings bright yellow to near stigma, which is luteous, black at base and apex; first cubital cell with a large somewhat triangular hyaline spot, fore wing vein cu-a with a small spot below.

**Male:** Unknown.

*Host:* Unknown.

*Distribution:* India (Uttar Pradesh).

*Remarks:* The above diagnosis is based on the original description by Cameron 1897

*Bracon keralense* sp. nov.

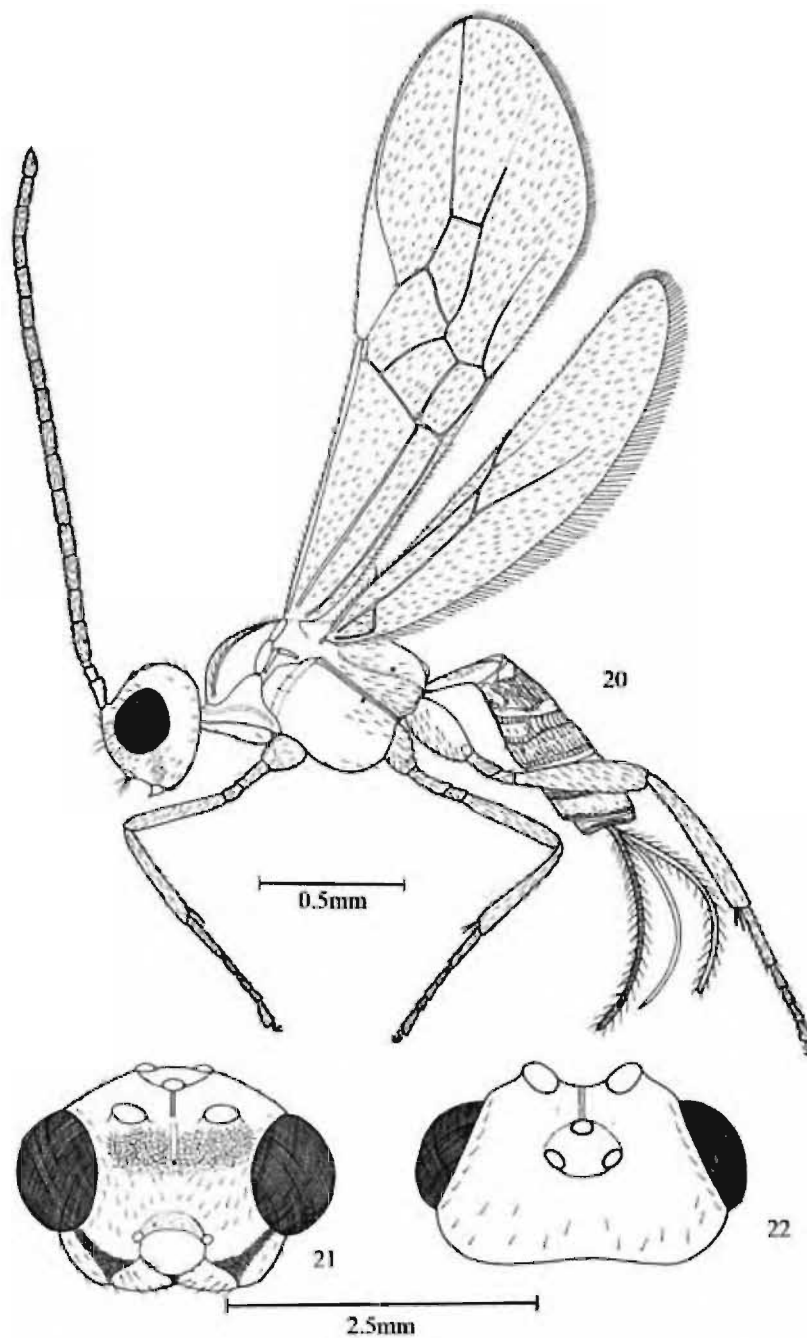
(Figs. 20-22)

*Holotype:* Female: Length of body 2.05 mm, of antenna 1.99 mm of fore wing 2.21 mm and of ovipositor 0.77 mm.

*Head:* Width 1.47 and 1.92x its median length in anterior (Fig. 21) and dorsal (Fig. 22) views respectively; antenna 18 segmented; length of third segment 1.43x fourth; third, fourth and penultimate segments 3.33, 2.33, and 3.25x their width, respectively; apical segment acuminate; frons smooth, shiny, with shallow median groove and with single row of hairs along eye margin (Fig.22); OOL:OD: POL = 12.5:8; stemmaticum slightly raised above surface of vertex, surface smooth and surrounded by shallow groove; vertex smooth, shiny and sparsely hairy; eyes glabrous, not emarginate; length of eye in dorsal view 2.30x temple; temple smooth, shiny and sparsely hairy (Fig.22); face (Fig.21) mostly smooth, faintly reticulate dorsally, hairy with a median ridge extending from between antennal toruli to middle of face; width of face 2.11x its height; clypeus faintly granulose without dorsal carina and its apical margin upcurved; intertentorial distance as long as tentorioocular distance; width of hypoclypeal depression 0.37x maximum width of face; occipital flange narrow; malar space faintly granulose, hairy, 1.33x basal width of mandible.

*Mesosoma* (Fig. 20): Length of mesosoma 1.45x its height; pronotum smooth and shiny; mesoscutum smooth, shiny and hairy along notauli anteriorly and lateral sides of mid lobe posteriorly; notauli distinct and smooth; scutellar sulcus wide with six carinae; scutellum smooth, shiny and hairy; metanotum smooth, without median carina; propleuron smooth, shiny, glabrous; mesopleuron smooth, shiny, hairy posteriorly; pleural sulcus narrow, smooth; metapleuron, smooth, shiny and hairy; metapleural flange medium sized; propodeum smooth, shiny, hairy laterally and with median posterior carina; not extending beyond its middle; propodeal spiracle round, small and medially situated; fore wing vein 1-SR 0.35x 1-M; ratio of length of fore wing veins: r: 3-SR: SR1 = 7:12.5:42.5; vein 3-SR 1.79x r; 1-SR + M slightly sinuate; SR1 straight; cu-a vertical, interstitial; 2-SR slightly sinuate; 2-SR: 3-SR: r-m = 13:12.5:7; m-u converging to 1-M posteriorly and 0.48x 1-M; hind wing vein SC+R1 straight and 0.90x 1r-m; hind coxa smooth, shiny and hairy; tarsal claws with basal lobe produced into a distinct tooth; length of femur, tibia and basitarsus of hind leg 4.14, 9.0 and 7.0x their width respectively; hind tibial outer and inner spurs 0.29 and 0.36x hind basitarsus.

*Metasoma:* Length of first tergite 0.53x its apical width, depressed anteriorly, surface reticulate medioposteriorly with a smooth, shiny elevated area surrounded by crenulations, dorsolateral carinae complete; second tergite mediobasally with smooth and parallel sided area, remaining part largely aciculatorugose, anteriorly, laterally and posteriorly smooth



**Figs. 20-22 :** *Bracon keralense* sp. nov. - Female: 20. Body profile; 21. Head anterior view; 22. Head dorsal view.

and with anterolateral grooves (Fig.20); suture between second and third tergites deep, crenulate; third tergite faintly aciculatorugose with crenulate groove posteriorly (Fig.20); remaining tergites smooth, shiny with crenulate groove posteriorly; length of ovipositor sheath 0.37x forewing; ovipositor with dorsal nodus and three ventral teeth; hypopygium short, not extending beyond tip of metasoma.

*Colour:* Pale yellow except pedicel and other antennal segments, claws of all legs, tip of mandible, suture between second and third tergites and ovipositor sheath brown; eyes dark brown; ocelli shining yellow with outer reddish brown line; veins light brown.

*Male:* Similar to female except: length 1.41mm; forewing 1.84mm; OOL:OD:POL = 12:8:4; width of face 1.50x its height; r: 3-SR: SR1 = 6:10.5:34.5; length of femur, tibia and basitarsus of hind leg 4.50, 6.0 and 7.0x their width.

*Host:* Emerged from leaf galls of *Cinnamomum malabattrum* (Burm).

*Distribution:* India (Kerala).

*Etymology:* The species name is after the state from where the specimen is collected.

*Material examined:* Holotype: ♀, INDIA: Kerala, Malappuram Dt., Manjeri, Marathani (11°7'N 76°7'E), Sheeba, M., 9.xi.2004. Paratypes: 61♀s and 25♂s, data same as holotype except date, 9-18.xi.2004.

*Discussion:* The new species comes close to *B. heteron* sp. nov. in having propodeum with posterior median carina not extending to middle of propodeum; frons and vertex smooth, shiny with median longitudinal groove and mesoscutum smooth and shiny. However it differs from *B. heteron* sp. nov. in having: 1. metanotum with anterior median carina (metanotum without median carina in *B. heteron*.); 2. hypopygium extending beyond tip of metasoma (hypopygium not extending beyond tip of metasoma in *B. heteron*.); 3. fore wing vein 1-SR+M straight (fore wing vein 1-SR+M slightly sinuate in *B. heteron*.); 4. first tergite reticulate with smooth, shiny raised median area (first tergite rugulose with smooth, shiny raised median area in *B. heteron*.); 5. second tergite with smooth and parallel sided area mediobasally, remaining part largely aciculatorugose, smooth anteriorly, laterally and posteriorly and with anterolateral grooves (second tergite aciculatorugose with crenulate sided median triangular carina in *B. heteron*.); 6. third tergite faintly aciculatorugose with crenulate groove posteriorly (third tergite mostly smooth, laterally faintly reticulate, with curved crenulate grooves anterolaterally and transverse crenulate groove sub posteriorly in *B. heteron*) and 7. remaining tergites smooth, shiny with crenulate groove posteriorly (remaining tergites faintly reticulate in *B. heteron*).

This new species also comes close to *B. punjabensis* Cameron in having head and mesosoma smooth and shiny and frons with midlongitudinal groove. However it differs from *B. punjabensis* in having 1. face mostly smooth faintly reticulate dorsally (face closely and distinctly, but not strongly, punctate in *B. punjabensis*); 2. first tergite reticulate, medioposteriorly with a smooth, shiny elevated area surrounded by crenulations (first tergite stoutly, irregularly, longitudinally striolated apicomediaally in *B. punjabensis*);

3. second tergite mediobasally with smooth and parallel sided area, largely aciculatorugose, anteriorly, laterally and posteriorly smooth, shiny, with anterolateral grooves (second tergite coarsely, irregularly, rugosely punctured, basomedially irregularly, longitudinally striolated, lateral depressions striated at bottom, apicomediaally irregularly striated in *B. punjabensis*); 4. third tergite faintly aciculatorugose, with crenulated groove posteriorly (third segment closely punctured in *B. punjabensis*); 5. fourth and fifth tergites smooth, shiny with crenulate groove posteriorly (fourth and fifth tergites closely punctured with oblique depressions laterally and striated transverse groove apically in *B. punjabensis*) and 6. sixth tergite smooth, shiny with crenulate groove posteriorly (sixth tergite punctured without crenulate groove in *B. punjabensis*).

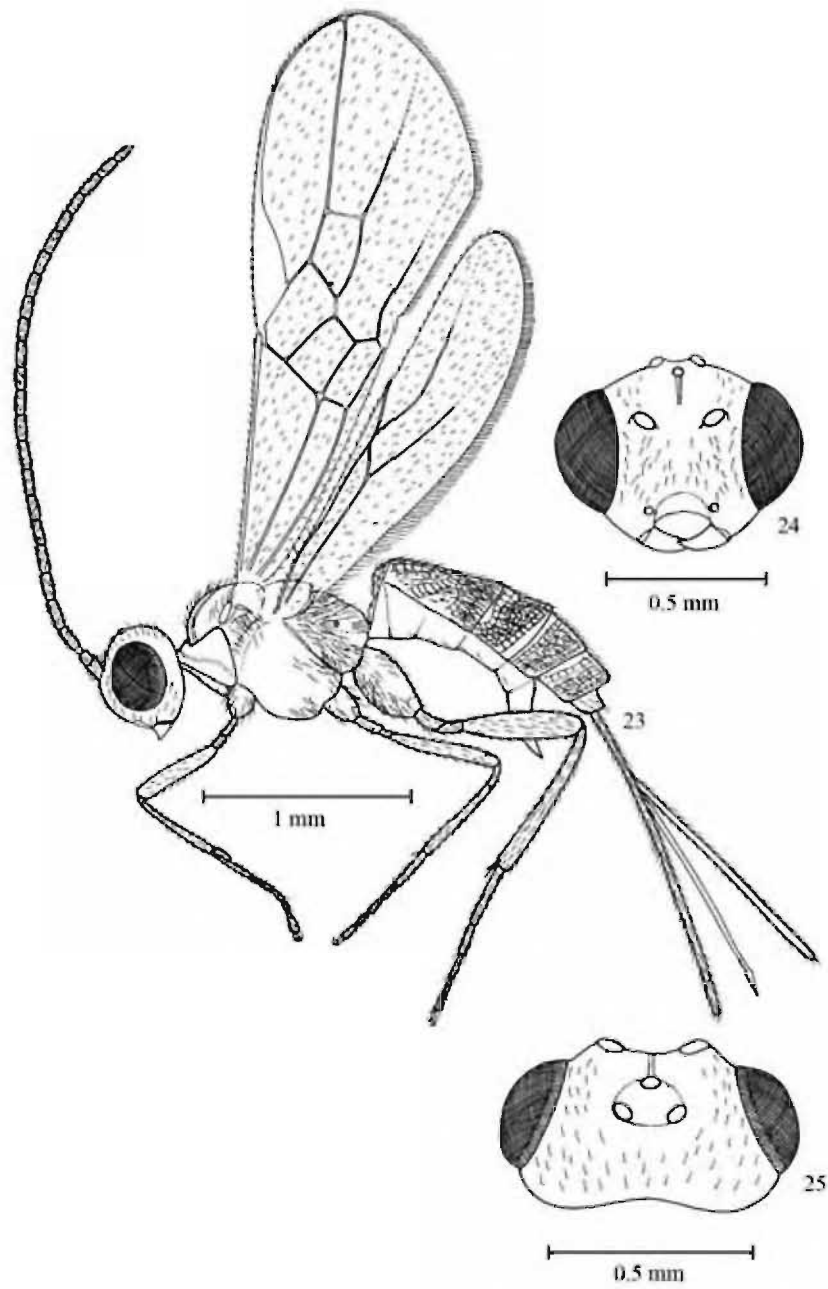
*Bracon koridor* sp. nov.

(Figs. 23-25)

*Holotype*: Female: Length of body 2.90 mm, of antenna 2.49 mm, of fore wing 2.87 mm and of ovipositor 1.63 mm.

*Head*: Width 1.17 and 1.89x its median length in anterior (Fig. 24) and dorsal (Fig. 25) views respectively; antenna 24 segmented; third segment as long as fourth: length of third, fourth and penultimate segments 3.50, 3.50 and 2.50 x their width, respectively; apical segment acuminate; frons flat, smooth, shiny, hairy laterally and with a median longitudinal groove (Fig.25); OOL:OD: POL = 10:4:8; stemmaticum slightly raised above level of vertex, surrounded by a narrow shallow groove; ocelli in equilateral triangle; vertex smooth, shiny and sparsely hairy; eyes glabrous, not emarginate; length of eye in dorsal view 2.38x temple; temple smooth, shiny; gena sparsely hairy; face flat, smooth, shiny, hairy and with a row of hairs along inner eye margin (Fig.24); width of face 1.88 x its height; clypeus smooth and shiny; intertentorial distance 2.0 x tentorioocular distance; width of hypoclypeal depression 0.37 x maximum width of face; occipital flange narrow; malar space shagreen, 0.80x basal width of mandible.

*Mesosoma* (Fig. 23): Length of mesosoma 1.41 x its height; pronotum smooth, shiny and with a row of hairs dorsally, smooth and shiny laterally; mesoscutum smooth, shiny and sparsely hairy posteriorly, midlobe of mesoscutum anteriorly with two longitudinal grooves; notauli distinct, smooth; scutellar sulcus wide with 8 carinae; scutellum smooth, shiny and sparsely hairy; metanotum without median carina; propleuron smooth, shiny and sparsely hairy; mesopleuron glabrous except posteriorly; pleural sulcus narrow and smooth; metapleuron smooth, shiny and sparsely hairy; propodeum smooth, shiny, with transverse row of hairs anteriorly, sparse long hairs laterally and with a posterior median longitudinal carina extending beyond middle of propodeum; propodeal spiracle round, small and medially situated; fore wing vein 1-SR 0.55 x 1-M and continuous with it; ratio of length of fore wing veins: r:3-SR : SR1 = 7:12:44; 3-SR 1.71 x r; 1-SR+M and SR1 straight; cu-a vertical and interstitial; 2-SR slightly sinuate; 2-SR:3-SR: r-m = 10.5:11.5:8; vein m-cu converging to 1-M posteriorly and 0.74 x 1-M (Fig.23); hind wing vein SC+R1 straight and 1.38 x 1r-m; hind coxa smooth, shiny and hairy; length of femur, tibia and basitarsus of hind leg 4.42, 10.13 and 7.25 x their width, respectively; length of hind tibial spurs 0.28 and 0.21 x hind basitarsus; hind tarsus with dorsal and ventral rows of setae.



Figs. 23- 25 *Bracon Koridor* sp. nov.- Female: 23. Body profile; 24. Head anterior view; 25. Head dorsal view.

*Metasoma* (Fig. 23): Length of first tergite 0.90 x its apical width and with a raised median area posteriorly, surface of median area smooth anteriorly, rugose posteriorly, sides crenulate; glymma shallow, narrow and smooth; dorsolateral carina of first tergite complete; second tergite aciculate rugoseretate, with median triangular carina extending posteriorly, and anterolateral grooves; suture between second and third tergites crenulate (Fig. 23); third tergite aciculate rugose; fourth tergite rugoseretate; remaining tergites rugose; third to sixth tergites with crenulate anterior transverse groove; ovipositor with dorsal nodus and four ventral teeth; length of ovipositor sheath 0.56 x forewing and covered with long hairs; hypopygium extending beyond tip of metasoma.

*Colour*: Brown. Head and pronotum yellow; eyes black surrounded by outer greyish layer; ocelli shining yellow; tegula, legs except claws, lateral side of second tergite, median area of fifth tergite and sixth tergite pale yellow; ovipositor shining orange.

*Male*: Unknown.

*Host*: Unknown.

*Biology*: Unknown.

*Etymology*: The species name is an arbitrary combination of letters.

*Material examined*: Holotype: ♀, INDIA: Kerala, Kannur Dt., Kottiyoor, Panniyarmala (10°8'N 78°49'E), T.C. Narendran and Party, 22.viii.2006. Paratypes: 13♀s, data same as holotype except locality of one specimen, Kerala, Kannur Dt., Pambarpan (10°9'N 78°49'E); 2♀s, Kerala, Malappuram Dt., Manjeri (11°7'N 76°7'E), Sheeba, M., 17.viii.2003; Kerala, Malappuram Dt, Nilambur, Kurumbalangode, (11°16'N 76°14'E), Sheeba, M., 12.vii.2004.

*Discussion*: This new species comes close to *B. punjabensis* Cameron in having mesosoma completely and vertex smooth and shiny. However it differs from *B. punjabensis* in having 1) face flat, smooth, shiny, hairy and with a row of hairs along inner eye margin (face closely and distinctly, but not strongly punctured and with long sparse hairs in *B. punjabensis*); 2) posterior raised median area of first tergite smooth anteriorly, rugose posteriorly (posterior median area of first tergite stoutly, irregularly longitudinally striolated in *B. punjabensis*); 3) second tergite aciculate rugoseretate with median triangular carina extending posteriorly, laterally with oval area surrounded by crenulations (second tergite coarsely, irregularly, rugosely punctured, irregularly longitudinally striolated mediobasally, lateral depressions striated at bottom and irregularly striated apicomediaally in *B. punjabensis*); 4) third tergite aciculate rugose (third tergite closely punctured in *B. punjabensis*); 5) fourth and fifth tergites reticulate rugose with crenulate anterior transverse groove (fourth and fifth tergites closely punctured with oblique depressions laterally and transverse groove apically in *B. punjabensis*).

This species also comes close to *B. keralense* sp. nov. in having frons, vertex and mesoscutum smooth and shiny and forewing vein cu-a interstitial. However it differs from *B. keralense* in having 1) median longitudinal carina of propodeum extending beyond its middle. (median longitudinal carina of propodeum not extending beyond its middle in *B. keralense*); 2) second tergite aciculate rugoseretate with median triangular carina extending posteriorly, laterally with oval area surrounded by crenulations (second tergite

mediobasally with smooth and parallel sided area mediobasally, remaining part largely aciculatorugose, anteriorly, laterally, and posteriorly smooth and with anterolateral grooves in *B. keralense*.); 3) fourth to sixth tergites smooth, shiny with crenulate groove posteriorly (fourth to sixth tergites reticulaterugose with crenulate groove anteriorly in *B. keralense*); 4) hypopygium not extending beyond tip of metasoma (hypopygium extending beyond tip of metasoma in *B. keralense*).

***Bracon lefroyi* (Dudgeon & Gough)**

*Rhogas lefroyi* Dudgeon & Gough, 1914. *Agric. Jour. of Egypt.*, 3: 109.

*Microbracon lefroyi* (Dudgeon & Gough, 1914); n. comb. by Brues, 1920. *Rept. 3<sup>rd</sup> Ent. Meet., Pusa*; 1026.

*Bracon lefroyi* (Dudgeon & Gough, 1914); n. comb. by Khan & Verma 1946. *Indian J. Ent.*, 7: 41.

**Diagnosis:** Female: Length 2.0-3.0 mm. Antenna 25 to 27 segmented; mesonotum shagreen; scutellum shining; propodeum distinctly shagreen, but often more nearly smooth basomedially with a median carina at extreme apex; mesopleura finely shagreen with a narrow polished strip along its posterior margin; metasoma oval or nearly circular; first tergite 2.0x its width at apex, posterior corners separated by deep grooves, and with a median triangular field; width of second tergite 4.0x its length, with an obsolete median carina; third tergite a trifle longer than second; remaining tergites shorter; metasoma except corners of first segment finely roughened, without distinct punctures or reticulations, except on second and third segments medially; ovipositor two-third length of metasoma.

**Colour:** Body honey yellow to black and piceous. Legs paler. Face dorsally, base of antenna, stemmaticum, propodeum, irregular marks on pleura, third to five tergites except narrow lateral border and ovipositor sheaths with black markings.

**Male:** Length 2mm. Similar to female except antenna 24-25 segmented; head and thorax darker.

**Host:** *Adisura atkinsoni* Moore, *Alcides affaber* Linnaeus, *Alcides leopardus* Oliver, *Anarsia melanoplecta* Meyrick, *Carpomyia vesuviana* Costa, *Crocidolomia binotatis* Zeller, *Earias fabia* (Stoll), *Earias insulana* Boisd., *Eublemma amabilis* Moor, *Eublemma quadrilineata* Moor, *Gnorimoschema blapsigona* M., *Heliothis obsoleta* Linnaeus, *Pectinophora gossypiella* Saud., *Rabila frontalis* Wlk.

**Distribution:** India (Kerala, Punjab)

**Material examined:** 3♀s, INDIA: Kerala, Malappuram Dt., Calicut University Campus (11°7'N 75°5'E), Sumodan, 5-11.vi.1987; 1♀, Kerala, Malappuram Dt., Parappanangadi (11°3'N 75°52'E), Sumodan, 28.viii.1987; 1♀, Kerala, Kannur Dt., Payannur (12°6'N 75°12'E), 26.ii.1988; 1♀, Kerala, Malappuram, Manjeri (11°7'N 76°7'E), Sheeba, M., 17.viii.2003.

**Discussion:** This species comes close to *B. albolineatus* Cameron in having metasoma oval shaped. However it differs from *B. albolineatus* Cameron in having 1) Metasoma brownish yellow, extreme apex of second and large dorsal blotches on third and fourth tergites black (Metasoma black, pleural regions of first two tergites yellowish white, apex

of third to seventh tergites narrowly yellowish white which is interrupted medially in third and fourth tergites in *B. albolineatus*); 2) Metasoma shagreen (Metasoma smooth in *B. albolineatus*); 3) Length 2.5-3 mm (Length 4.5.5 mm in *B. albolineatus*).

***Bracon melleus* Ramakrishna Ayyar 1928**

*Microbracon melleus* Ramakrishna Ayyar, 1928. *Mem. Dept. Agric. Indian Ent. Ser.* 10. 48-49.

*Bracon melleus* (Ramakrishna Ayyar), 1928. Synonimized by Yu *et al.*, 2005.

*Diagnosis:* Female: Length 2-2.5 mm. Body short, flat and ovoid; head transverse, as broad as or slightly broader than mesosoma; antennae short, stout and hairy with 15-18 segments; notauli not distinct, lobes sparsely punctured; base of scutellum crenulate; second cubital cell smaller than first and very much narrowed anteriorly; vein r almost as long as 3-SR; SR1 more than 3x 3-SR; m-cu joins first cubital cell at some distance from its apex; 3-M rather faint; metasoma broad and ovoid, tergites broader than long; first tergite with carina towards posterior border; remaining tergites smooth and shiny; median dorsal line along metasoma slightly convex and appears as though it were longitudinal carina; second tergite large; second suture not prominent; ovipositor short, about half length of metasoma; whole body covered with thin white short hairs; ovipositor 0.75mm. Body of a uniform honey colour.

*Colour:* Head yellow; antennae and ocellar area pale to dark brown; mesosternum shining dark brown; metanotum with dark brown markings; metasoma uniformly flavotestaceous and shining; legs flavous with tarsal tips dark; wings with basal half flavous and distal half hyaline; ovipositor dark.

*Male:* 2mm. Slightly smaller and narrower. Antennae slender and long with 20-21 segments; back of head and on mesonotum near tegulae with dark marks.

*Host:* *Crocidolomia binotalis* Zeller.

*Distribution:* India (Tamilnadu).

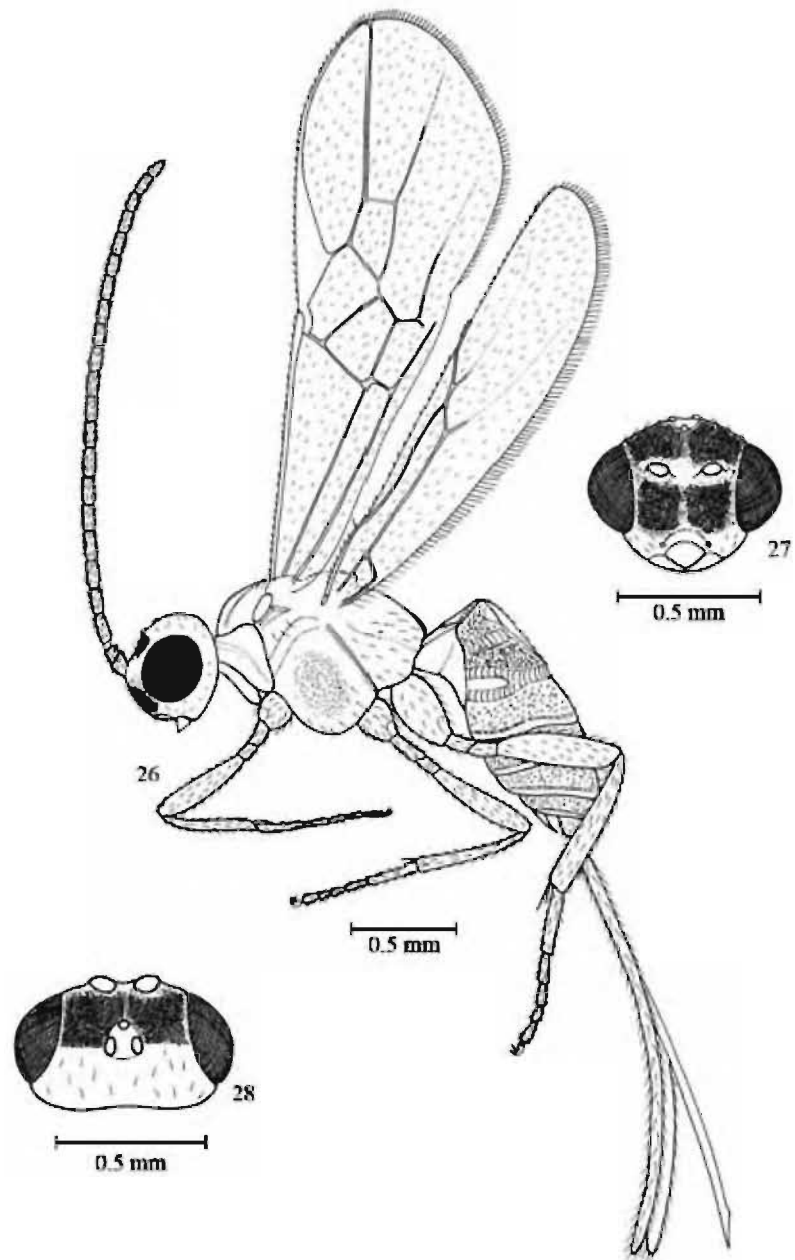
*Discussion:* This species comes close to *B. stom* sp. nov in having metasoma not shagreen however it differs from *B.stom* in having 1) First tergite with carina towards posterior border (First tergite rugosoreticulate with anterior smooth median posterior area in *B. stom* sp. nov.); 2) Remaining tergites smooth and shiny (Second tergite aciculate rugosoreticulate; third tergite aciculorugose; fourth to sixth tergites with anterior smooth area and transverse groove basally; fourth and fifth tergites aciculorugose apically; sixth tergite shagreen apically in *B. stom* sp. nov.); 3) Notauli not distinct (Notauli distinct in *B. stom* sp. nov.) and 4) Antenna 15-18 segmented (Antenna 28 segmented in *B. stom* sp. nov.)

*Remarks:* The above diagnosis is based on the original description by Ramakrishna Ayyar (1928).

***Bracon molycaon* sp. nov.**

(Figs. 26-28)

*Holotype:* Female: Length of body 2.95 mm, of antenna 2.54 mm, of fore wing 2.76 mm and of ovipositor 2.12 mm.



Figs. 26- 28 : *Bracon molycaon* sp. nov. - Female: 26. Body profile; 27. Head anterior view; 28. Head dorsal view.

*Head:* Width 1.28 and 1.76x its median length in anterior (Fig.27) and dorsal (Fig.28) views respectively; antenna 22 segmented; length of third segment 1.42x fourth; length of third, fourth and penultimate segments 3.40, 2.40 and 2.20x their width respectively; apical segment acuminate; frons and face shagreen; frons, with median longitudinal groove, sparsely hairy laterally (Fig.28); OOL: OD: POL = 9:2:3; stemmaticum surrounded by a shallow groove; vertex shagreen anteriorly, smooth shiny and moderately hairy posteriorly, hairs adpressed mostly not reaching above upper level of posterior ocellus (Fig.28); eyes glabrous, not emarginate; length of eye in dorsal view 5.29x temple; temple smooth, shiny and hairy; face hairy, without raised median dorsal area (Fig.27); width of face 2.0x its height; intertentorial distance 1.14x tentorioocular distance; width of hypoclypeal depression 0.36x maximum width of face; occipital flange narrow; malar space smooth and shiny, 1.50x basal width of mandible.

*Mesosoma* (Fig.26): Length of mesosoma 1.28x its height; pronotum smooth and shiny; mesoscutum smooth and shiny, hairy posteriorly; notauli distinct scutellar sulcus wide with carinae; scutellum smooth, shiny and hairy; metanotum with anterior median carina; propleuron smooth, shiny and hairy; mesopleuron faintly rugose medially and sparsely hairy; metapleuron smooth, shiny, sparsely hairy; pleural sulcus narrow, smooth; propodeum smooth, shiny, sparsely hairy laterally, posteriorly with a short median carina; forewing vein 1-SR 0.29 x 1-M and continuous with it; ratio of length of fore wing veins: r:3-SR : SR1 = 5.5 : 11: 42; vein 3-SR 2.0x r; 1-SR+M and 2-SR straight; cu-a vertical and postfurcal; 2-SR:3-SR:r-m = 11:11:7; m-cu 0.5 x 1-M (Fig.26); hind wing vein SC+R1 1.33x 1-rm; hind coxa smooth and shiny; length of femur, tibia and basitarsus of hind leg 3.93, 6.73 and 5.33x their width respectively; length of hind tibial outer and inner spurs 0.31 and 0.47 x hind basitarsus.

*Metasoma* (Fig.26): Length of first tergite 0.83 x its apical width; first tergite smooth and shiny, with raised median area, sides of median area crenulate and surface faintly rugose; second tergite rugose, submedially foveate and with a median triangular area extending to posterior end of tergite; suture between second and third tergites wide, crenulate; remaining tergites rugose with crenulate posterior transverse groove; hypopygium not extending beyond tip of metasoma; ovipositor sheath 0.75x forewing.

*Colour:* Yellow. Eyes black; antenna, claws, ovipositor sheath brown; ocelli and mandible shining red; stigma and veins pale yellow; suture between second and third tergites medially black.

*Male:* Unknown.

*Host:* Unknown.

*Biology:* Unknown.

*Etymology:* The species name is an arbitrary combination of letters.

*Material examined:* Holotype: ♀, INDIA: Kerala, Malappuram Dt., Calicut University Campus (11°7'N 75°5'E) Sheeba, M., 6.i.2004. Paratypes: 4♀s, data same as holotype except date of one, 19.iv.2006; 6♀s, Kerala, Malappuram Dt., Calicut University Campus (11°7' N 75°5'E), Sumodan, 3.iv.1987; 13.iv.1987; 8.v.1987; 17.v.1988.

*Discussion:* This new species comes close to *Bracon daphnephilae* Szepilgeti in having at least partly sculptured mesosoma. However it differs from *B. daphnephilae* in having 1) notauli distinct (notauli absent in *B. daphnephilae*); 2) metanotum with median carina (metanotum without median carina *B. daphnephilae*); and 3) fore wing vein cu-a postfurcal (fore wing vein cu-a interstitial in *B. daphnephilae*).

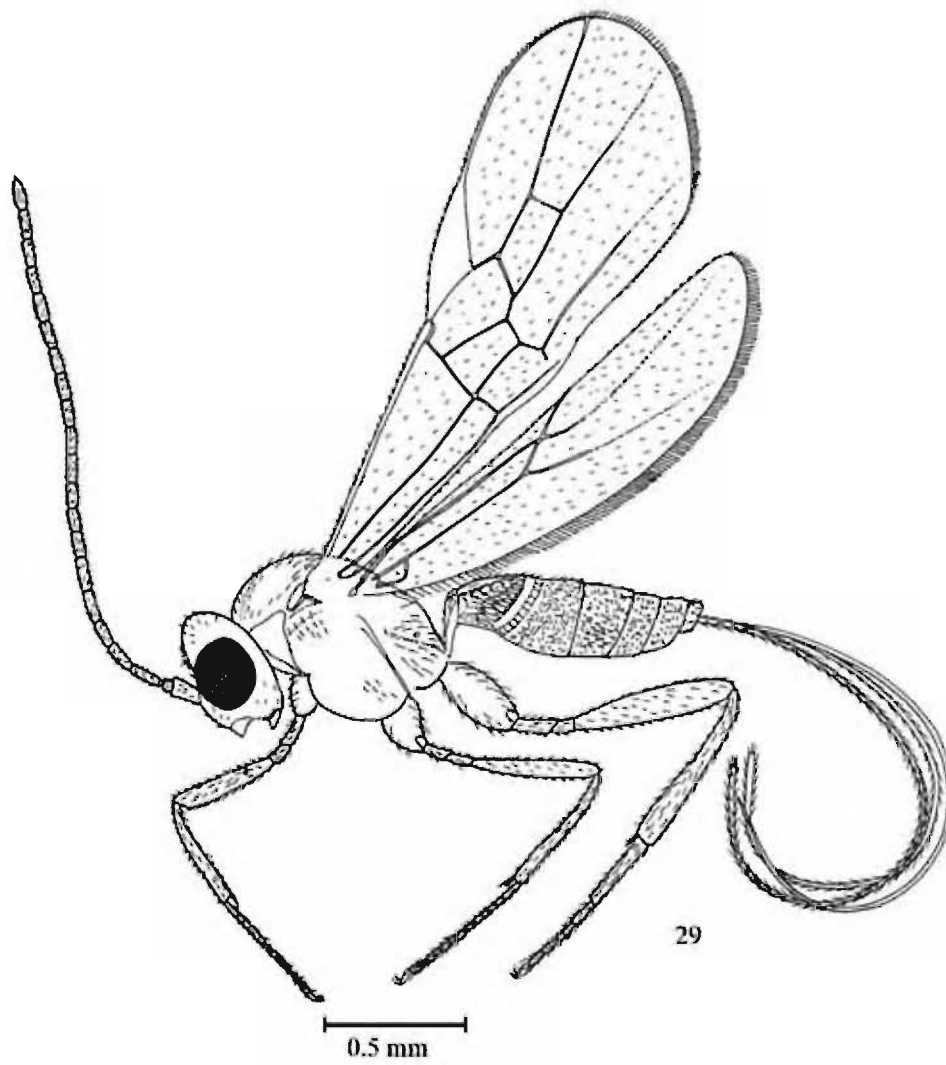
***Bracon nexperon* sp. nov.**  
(Fig. 29)

*Holotype:* Female: Length of body 2.40 mm, of antenna 2.14 mm, of fore wing 2.28 mm and of ovipositor 2.24 mm.

*Head:* Width 1.15 and 1.60x its median length in anterior and dorsal views respectively; antenna 21 segmented; length of third segment 1.20x fourth segment; length of third, fourth and penultimate segments 3.0, 2.67 and 2.0x their width respectively; apical segment acuminate; frons faintly reticulate, collapsed; OOL:OD:POL = 9: 4.5: 8; stemmaticum surrounded by a shallow groove; vertex smooth, shiny and sparsely hairy; eyes glabrous, not distinctly emarginate; length of eye in dorsal view 3.13x temple; temple smooth, shiny and narrow; face and malar space shagreen; face slightly convex, sparsely hairy, with a median dorsal ridge; width of face 2.90x its height; clypeus smooth, shiny, without dorsal carina, its apical margin upcurved, thin, with a row of long hairs; intertentorial distance 1.70x tentorioocular distance; width of hypoclypeal depression 0.32x maximum width of face; occipital flange narrow; malar space 0.31x basal width of mandible.

*Mesosoma:* Length of mesosoma 1.26x its height; sides of pronotum smooth and shiny; mesoscutal lobes hairy except medially glabrous; notauli distinct; scutellar sulcus narrow, with 7 carinae; scutellum smooth, shiny and hairy; metanotum without median carina; propleuron smooth, shiny; mesopleuron smooth, shiny, hairy anterodorsally and posteromedially; pleural sulcus narrow, smooth; metapleuron convex, smooth, shiny and hairy; metapleural flange lamelliform and obtuse, medium sized; propodeum smooth, shiny, with a few hairs anteriorly and median posterior longitudinal carina; propodeal spiracle round, small and medially situated; fore wing vein 1-SR continuous with 1-M; ratio of length of fore wing veins (Fig.29): r: 3-SR: SR1 = 6:15:43; vein 3-SR 2.50x r; veins 1-SR+M, 2-SR and SR1 straight; cu-a vertical and interstitial; 2-SR: 3-SR : r-m = 10: 15: 8; m-cu converging to 1-M posteriorly and 0.55x 1M; hind wing vein SC+R1 straight and 1.53x 1r-m; hind coxa punctate; length of femur, tibia and basitarsus of hind leg 4.90, 6.80, and 6.0x their width respectively; length of hind tibial spurs 0.22 and 0.17x hind basitarsus.

*Metasoma* (Fig. 29): Length of first tergite as long as its apical width, surface smooth with laterally crenulate raised median area posteriorly, glymma shallow, wide and crenulate; dorsolateral carinae of first tergite complete; second tergite aciculate rugosereticulate, with small anterior and posterior smooth areas and a triangular carina running to tip of tergite surrounded by crenulate grooves; suture between second and third tergites crenulate; remaining tergites rugose, with shallow crenulate posterior grooves; ovipositor with dorsal nodus and four ventral teeth; length of ovipositor sheath 1.06x fore wing and covered with long hairs; hypopygium not extending beyond tip of metasoma.



Figs. 29 : *Brucon nexperon* sp. nov. - Female : Body profile.

*Colour:* Pale yellow except following: eyes black; antenna (except scape and pedicel yellow), ovipositor sheath, posterior tip of mandible, claws and dorsolateral carina of first tergite brown; wing veins and distal half of stigma pale brown; ocelli and ovipositor shining yellow; head, scape and pedicel yellow.

*Male:* Similar to female except length 1.83 mm.

*Host:* Emerged from *Syzygium cumini* (L.) leaf galls.

*Biology:* Unknown.

*Etymology:* The species name is an arbitrary combination of letters.

*Material examined:* Holotype: ♀, INDIA: Kerala, Thiruvananthapuram Dt., Near Art Gallery (8°29N 76°59E), Sheeba, M., 20♀s.i.2006. Paratypes: 1♂, data same as that of holotype; 2♀s & 1♂, Kerala, Thiruvananthapuram Dt., Near Art Gallery (8°29N 76°59E), Santhosh, 9.xi.2007.

*Discussion:* This new species comes close to *Bracon punjabensis* Cameron in having mesosoma and head smooth and shiny. However it differs from *B. punjabensis* in having 1. face shagreen (face closely and distinctly but not strongly punctured in *B. punjabensis*); 2. second tergite aciculate rugoseretate with anterior and posterior smooth areas and a triangular carina running to tip of tergite surrounded by crenulate groove (second tergite coarsely, irregularly, rugosely punctured, irregularly longitudinally striolated mediobasally, lateral depressions striated at bottom and irregularly striated apicomedia in *B. punjabensis*); 3. all other tergites weakly rugose with shallow crenulate posterior groove (remaining tergites closely punctured, fourth and fifth with oblique depressions laterally and transverse groove at apices).

This species also comes close to *B. dachaon* sp. nov. in having frons faintly reticulate, vertex and temples smooth and shiny. However it differs from *B. dachaon* in having: 1. face shagreen (face smooth and shiny *B. dachaon*); 2. mesoscutal lobes hairy except medially glabrous (mesoscutum hairy except mid lobe medioanteriorly glabrous in *B. dachaon*); 3. hypopygium not extending beyond tip of metasoma (hypopygium slightly extending beyond tip of metasoma in *B. dachaon*) and 4. ovipositor 1.06 x forewing (ovipositor 0.46 x forewing in *B. dachaon*).

#### *Bracon pongamiaensis* Shenefelt

*Microbracon pictus* Ramakrishna Ayyar, 1928. *Mem. Dept. Agric. Indian Ent. Ser.* 10. 50.

*Bracon pongamiaensis* Shenefelt 1978 *Hymenopterorum Catalogus (nova editio)*. Pars, 15: 1425-1872.

**Diagnosis: Female:** Length 4.50mm. Body elongated; head quadrate, very closely and finely punctured; a shallow narrow groove around ocellar area on a slightly higher level; mesosoma smooth and shiny, sparsely punctured; notauli clear and hairy but not very deep, central lobe gibbous; propodeum smooth with a mediodorsal dark posteriorly forked carina; metasoma elongated, tergites coarsely punctured and punctures almost form irregular longitudinal striae especially on first four segments; median longitudinal narrow area convex and appears like a longitudinal carina; body covered with sparse, short, white

hairs especially on mesosoma and metasoma; wings well developed; second cubital cell larger than first; vein m-cu joins first cubital cell some appreciable distance from its apex; vein 3-SR a little more than 3x vein r. ovipositor as long as metasoma and hairy; ovipositor 2.75mm.

*Colour:* Head dark brown to black; mesosoma pale to reddish brown; metasoma dorsally light brown with dark markings on tergites, ventrally pale white; tergites 2-5 with a pair of dark broad maculae one on each sides of middorsal line, mid-dorsal longitudinal line and sides of segments pale white; legs pale brown mottled with dark markings; ovipositor and antenna dark brown.

*Male:* Length 4-4.25 mm Similar to female in most aspects. Body of a dark tinge; paired dark markings on metasoma not always clearly defined as in female.

*Host:* *Crocidolomia binotalis* Zeller.

*Distribution:* India (Tamilnadu).

*Discussion:* This species comes close to *B. incarnatus* in having metasoma not shagreen however it differs from *B. incarnates* in having metasoma coarsely punctured and punctures form irregular longitudinal striae especially on first tergites.

*Remarks:* The above diagnosis is based on the original description by Ramakrishna Ayyar (1928).

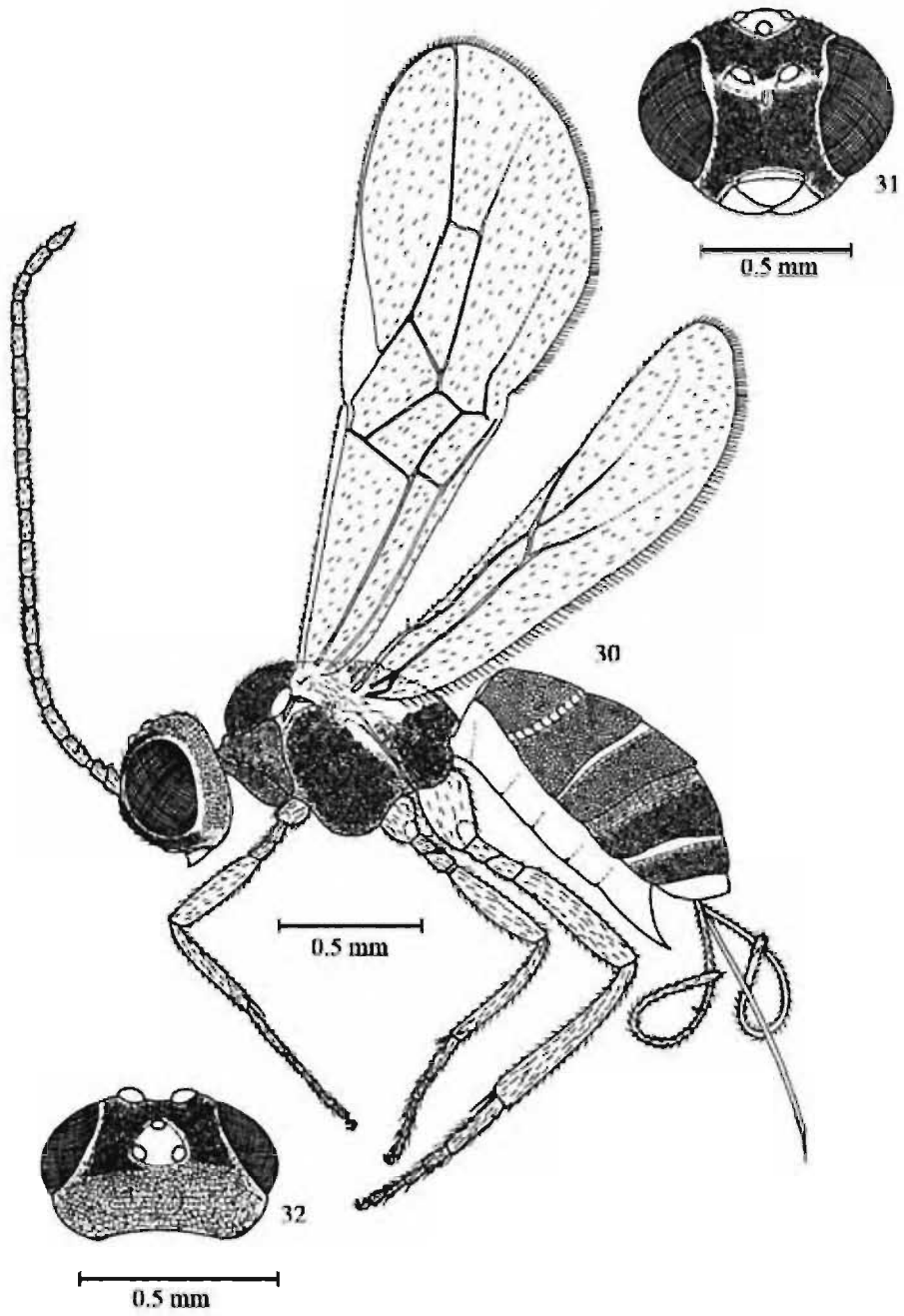
***Bracon procnis* sp. nov.**

(Fig. 30-32)

*Holotype:* Female: Length of body 2.49 mm, of antenna 2.20 mm, of fore wing 2.30 mm and of ovipositor 1.0 mm.

*Head:* Width 1.22 and 1.82 x its median length in anterior (Fig. 31) and dorsal (Fig. 32) views respectively; antenna 20 segmented; length of third segment 1.20 x fourth segment; length of third, fourth and penultimate segments 3.0, 2.50 and 2.80x their width respectively; apical segment acuminate; frons flat, shagreen without median groove (Fig. 32); OOL:OD:POL = 7:4:5; stemmaticum slightly raised above vertex, granulose, surrounded by a shallow groove; vertex anteriorly, face and malar space shagreen; vertex faintly reticulate posteriorly, sparsely hairy; eyes glabrous, emarginate (Fig. 32); length of eye in dorsal view 2.50x temple; temple faintly reticulate and sparsely hairy; face flat, sparsely hairy, with median raised area dorsally (Fig. 31); width of face 1.37 x its height; intertentorial distance 3.0x tentorioocular distance; width of hypclypeal depression 0.54 x maximum width of face; occipital flange narrow; malar space 0.40 x basal width of mandible.

*Mesosoma:* Length of mesosoma 1.37 x its height; pronotum faintly reticulate laterally; mesoscutum, mesopleuron, metapleuron and propodeum and hind coxa shagreen; mesoscutum hairy along notauli and posteriorly; notauli distinct, smooth; scutellar sulcus narrow, with 8 carinae; scutellum smooth and hairy; metanotum smooth, with anterior median carina; propleuron faintly reticulate and hairy; mesopleuron hairy mediolongitudinally; pleural sulcus narrow, smooth; metapleuron moderately hairy;



Figs. 30-32 : *Brucon procnis* sp. nov. - Female : 30. Body profile; 31 Head anterior view; 32. Head dorsal view.

propodeum sparsely hairy, with a posterior median carina; propodeal spiracle oval, small and medially situated; fore wing vein 1-SR 0.31 x 1-M and continuous with it; ratio of length of fore wing veins: r:3-SR:SR1 = 10:23:38; vein 3-SR 2.30 x r; veins 1-SR+M, SR1 and 2-SR straight; cu-a slightly postfurcal and vertical; 2-SR: 3-SR: r-m = 13: 23: 7; m-cu converging to 1-M posteriorly and 0.54 x 1-M; hind wing vein SC+R1 straight, 2.33 x length of 1-M (Fig.35); length of femur, tibia, and basitarsus of hind leg 4.77, 7.0 and 5.17 x their width respectively; length of hind tibial outer and inner spurs 0.37 and 0.45 x hind basitarsus.

*Metasoma*: Length of first tergite as long as its apical width, surface granulate, with a raised median area posteriorly, surface of median area faintly granulate, glymma shallow, narrow and smooth; dorsolateral carina of first tergite complete; second to fourth tergites minutely reticulate (Fig.30); suture between second and third tergites wide and crenulate; fifth tergite apically and sixth tergite shagreen; fifth tergite faintly reticulate basally; fourth to sixth tergites with faint crenulate anterior transverse groove; last tergite smooth and shiny; ovipositor with dorsal nodus and with two ventral teeth; length of ovipositor sheath 0.47x forewing and covered with long hairs; hypopygium extending beyond tip of metasoma and apically acute.

*Colour*: Yellow. Eye black, with outer margin pale yellow; ocelli shining yellow; antenna, stemmaticum, tip of mandible, third and fourth tergites medially and ovipositor sheath brown; stigma and veins pale brown; ovipositor orange.

*Male*: Unknown.

*Host*: Unknown.

*Biology*: Unknown.

*Etymology*: The species name is an arbitrary combination of letters.

*Material examined*: Holotype: ♀, INDIA: Kerala, Alappuzha Dt., Memana (9°54'N 76°19'E), Sumodan, 26.ii.1989. Paratypes: 11♀s, Kerala, Malappuram Dt., Calicut University Campus (11°7'N 75°5'E), Sumodan, 8.ii.1989; Kerala, Wayanad Dt., Puzhamudi (11°47'E 75°47'N), Sumodan, 23.ii.1988; Kerala, Kannur Dt., Payyannur (12°6'N 75°12'E), Sumodan, 26.ii.1988; Kerala, Wayanad Dt., Mananthavady (11°27'N 75°47'E), Sumodan, 29.ii.1988; Kerala, Thiruvananthapuram Dist., Neyyar (8°37'N 77°7'E), 29.ii.1989; Kerala, Palakkad Dt., Agali (11° 9' N 76° 59' E), Sumodan, 12.xii.1989; Kerala, Kannur Dt. Kannavam forest (11°50'N 75°40'E), Sumodan, 31.x.1988; Kerala, Palakkad Dt., Walayar (10°51'N 76°51'E), Sumodan, 8.i.1989.

*Discussion*: This new species comes close to *B. lefroyi* (Dudgeon & Gough) in having mesoscutum and propodeum shagreen. However it differs from *B. lefroyi* in having 1) propodeum with a posterior median carina (propodeum without median carina except at extreme apex, areolate in *B. lefroyi*); 2) apical width of first tergite 1.50 x its basal width (apical width of first tergite 2.0 x its basal width in *B. lefroyi*); 3) width of second segment 3.33x its length (width of second tergite 4.0x its length in *B. lefroyi*); 4) third tergite as long as second (third tergite a little longer than second in *B. lefroyi*).

This new species also comes close to *B. molycaon* sp. nov. in having frons shagreen, notauli distinct, scutellum smooth, metanotum with anterior median carina and propodeum with a posterior median carina. However it differs from *B. molycaon* in having 1. frons without median groove (frons with median longitudinal groove in *B. molycaon*); 2. vertex and temple faintly reticulate (vertex and temple smooth and shiny in *B. molycaon*); 3. mesoscutum shagreen (mesoscutum smooth and shiny in *B. molycaon*); 4. scutellar sulcus narrow (scutellar sulcus wide in *B. molycaon*); 5. propleuron shagreen (propleuron smooth shiny and hairy in *B. molycaon*); 6. mesopleuron shagreen (mesopleuron faintly rugose medially and sparsely hairy in *B. molycaon*); 7. propodeum shagreen (propodeum smooth and shiny in *B. molycaon*); 8) hind coxa shagreen (hind coxa smooth and shiny in *B. molycaon*); 9) second to fourth tergites minutely reticulate; fifth and sixth tergites rugose, fourth to sixth tergites with faint, crenulate anterior transverse groove (second tergite shagreen with median triangular area extending to posterior end of tergite, remaining tergites rugose in *B. molycaon*).

***Bracon punjabensis* Cameron**

*Bracon punjabensis* Cameron, 1902. *J. Bombay nat. Hist. Soc.*, **14**: 432.

*Diagnosis*: Female: Long: 9-10 mm. Head smooth and shining; face and oral region closely and distinctly, but not strongly, punctured and sparsely covered with pale, long hair; mesosoma smooth and shiny, above sparsely covered with short pale hairs; mesopleurae with an oblique furrow, basally smooth and extends near to the middle; furrow on the metapleura wide and deep at base and becomes gradually narrowed; 2-SR surrounded by hyaline bands; stigma rufous to slightly beyond the middle; apical central lobe of petiole stoutly, irregularly, longitudinally striolated; second tergite coarsely, irregularly, rugosely punctured, basal part medially irregularly, longitudinally striolated, lateral depression on it striated at bottom; securiform articulation deep, widened at sides and stoutly, longitudinally striated; apex of tergite irregularly striated medially; other segments closely punctured; fourth and fifth tergites with oblique depressions on sides and striated transverse furrows at apices; ovipositor 7mm.

*Colour*: Antennae black; the scape covered with black hairs; the flagellum with a pale down; wings uniformly dark- fuscous, except for a large oblique cloud in the first cubital celle, the cloud being prolonged obliquely in to the discoidal cellule where it extends into the middle; legs coloured like the body, the front tibiae behind and the four hinder tibiae and tarsi fuscous- black.

*Male*: Unknown.

*Host*: Unknown.

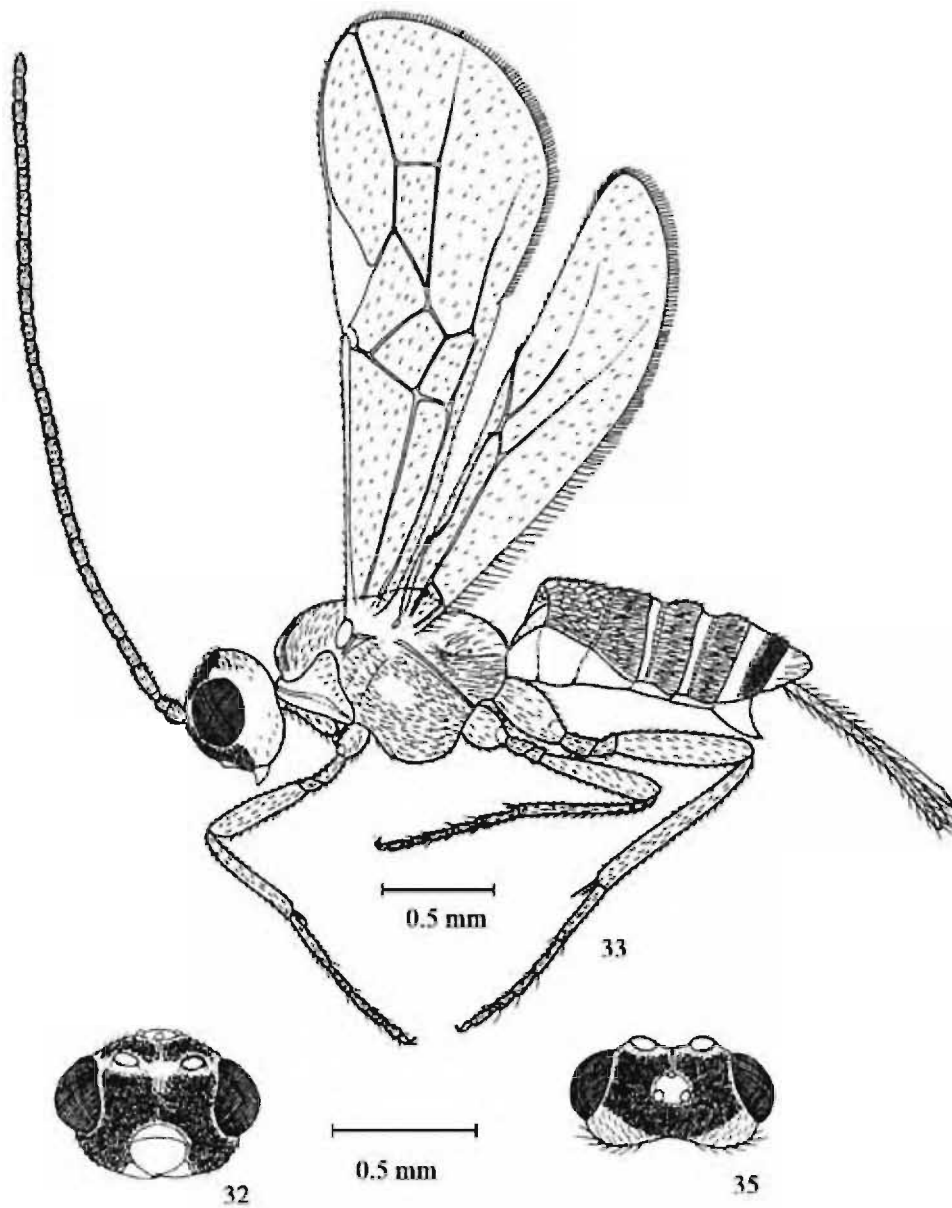
*Distribution*: India (Gujarat, Himachal Pradesh, Punjab)

*Remarks*: The above diagnosis is based on the original description by Cameron (1902).

***Bracon stom* sp. nov.**

(Fig. 33-35)

*Holotype*: Female: Length of body 3.04 mm, of antenna 3.21 mm, of fore wing 2.69 mm and of ovipositor 0.94 mm.



**Figs. 33-35 ; *Bracon stom* sp. nov. - Female : 33.Body profile; 34 Head anterior view; 35. Head dorsal view.**

*Head:* Width 1.33 and 2.20 x its median length in anterior (Fig. 34) and dorsal (Fig. 35) views respectively; antenna 28 segmented; length of third segment 1.31 x fourth; length of third, fourth and penultimate segments 3.40, 2.60 and 2.50 x their width respectively; apical segment acuminate; frons, vertex anteriorly and behind ocelli, face and malar space shagreen; frons hairy laterally and with median longitudinal groove (Fig. 35); OOL:OD:POL = 8.5:3:3.5; stemmaticum surrounded by a shallow groove; eyes glabrous, slightly emarginate; vertex covered with dense short hairs, smooth and shiny laterally; length of eye in dorsal view 3.10 x temple; temple smooth, shiny and hairy; face hairy with median dorsal ridge (Fig. 34); width of face 2.17 x its height; intertentorial distance 1.64 x tentorioocular distance; width of hypoclypeal depression 0.46x maximum width of face; occipital flange narrow; malar space 1.83 x basal width of mandible.

*Mesosoma:* Length of mesosoma 1.32 x its height; pronotum smooth, shiny and hairy; mesoscutum except anteriorly a small area of mid lobe glabrous; scutellum densely hairy and sparsely punctate; notauli distinct, smooth; scutellar sulcus wide with 11 carinae; metanotum with anterior median carina; propleuron smooth, shiny and hairy; mesopleuron smooth and shiny except medially a small glabrous area (Fig. 33); propodeum smooth, shiny, sparsely hairy medially, densely hairy anterolaterally and with a median longitudinal carina and transverse carinae on either side of it; fore wing vein 1-SR 0.24 x 1-M and continuous with it; ratio of length of fore wing veins: r: 3-SR:SR1 = 9:14.5:30; vein 3-SR 1.61x r; 1-SR+M and SR straight; cu-a vertical, antifurcal; 2-SR: 3-SR: r-m = 14:14.5:9; m-cu 0.60x 1-M; hind wing vein SC+R1 1.80x 1r-m (Fig. 33); hind coxa smooth, shiny and hairy; tarsal claws with pointed basal lobe; length of femur, tibia and basitarsus of hind leg 4.29, 10.86 and 2.0 x their width respectively; length of hind tibial outer and inner spurs 0.43 and 0.27 x hind basitarsus.

*Metasoma* (Fig. 33): Length of first tergite 0.83 x its apical width; first tergite rugoseretulate, with anteriorly smooth median posterior area; second tergite aciculate rugoseretulate; suture between second and third tergites narrow, crenulate; third tergite aciculatorugose; fourth to sixth tergites with an anterior smooth area and transverse groove basally, aciculatorugose apically; sixth tergite shagreen; ovipositor with dorsal nodus and two ventral teeth; ovipositor sheath 0.35x fore wing; hypopygium not extending beyond tip of metasoma.

*Colour:* Reddish yellow with black markings on metasoma. Head, mesosoma (except black propodeum), legs (except brown claws), lateral sides of second to fifth tergites and sixth tergite completely reddish yellow; tip of mandible red; eyes, first and second tergite medially black.

*Male:* Unknown.

*Host:* Unknown.

*Biology:* Unknown.

*Etymology:* The species name is an arbitrary combination of letters.

*Material examined:* Holotype: ♀, INDIA: Kerala, Malappuram Dt., Manjeri (11°7'N 76°7'E) Sheeba, M., 10.iv.2005. Paratypes: 1Female. Data same as that of holotype; 20♀s,

Kerala, Malappuram Dt., Manjeri (11°7'N 76°7'E) Sheeba, M., 5.ii.2006; 4♀s, Kerala, Wayand Dt., Kalpetta, Pookode (12°37'N 80°14'E), T.C. Narendran & Party, 7-8.ii.2003; 2 Females, Kerala, Idukki Dt., Cheruthoni (9°51'N 76°58'E), T.C. Narendran & Party, 10.i.2004; 4♀s, Kerala, Kozhikode Dt., Nanminda (11°26'N 75°50'E), Girish Kumar, P. 10.i.2004; 1♀, Kerala, Kollam Dt., Neendakara (8°56'N 76°32'E), Sumodan, 22.ii.1989; 1♀, Kerala, Thiruvananthapuram Dt., Attingal (8°41'N 76°50'E), Sumodan, 23.ii.1989; 1♀, Kerala, Palakkad Dt., Walayar (10°51'N 76°51'E), Sumodan, 27.ii.1989; 8 Females, Kerala, Wayanad Dt., Mananthavady (11°27'N 75°47'E), Sumodan, 29.ii.1988; 1♂, Kerala, Malappuram Dt., Karimpuzha (10°46'N 76°22'E), Sumodan, 23.iv.1989.

*Discussion:* This species comes close to *B. pongamiaensis* Ramakrishna Ayyar in having fore wing vein 3-SR longer than r and notauli distinct. However it differs from *B. pongamiaensis* in having 1. fore wing vein 3-SR x vein (fore wing vein 3-SR a little more than 3 x r in *B. pongamiaensis*); 2. first and second tergites rugose-reticulate (first and second tergite punctate, and punctures almost form irregular longitudinal striae in *B. pongamiaensis*); 3. third to fifth tergites aciculatorugose, fourth to sixth tergites with an anterior smooth area and transverse groove basally (third and fourth punctate; punctures form irregular longitudinal striae, fifth without such longitudinal striae) in *B. pongamiaensis*; 4. sixth tergite shagreen (sixth tergite coarsely punctate in *B. pongamiaensis*) and 5. frons shagreen (frons very closely and finely punctured).

This species also comes close to *B. melleus* in having not shagreen however it differs from *B. melleus* in having 1. First tergite rugosoreticulate with anterior smooth median posterior area (First tergite with carina towards posterior border in *B. melleus*); 2. Second tergite aciculate rugosoreticulate; third tergite aciculatorugose; fourth to sixth tergites with anterior smooth area and transverse groove basally; fourth and fifth tergites aciculatorugose apically; sixth tergite shagreen apically (Remaining tergites smooth and shiny); 3. Notauli distinct (Notauli not distinct) and 4. Antenna 28 segmented (Antenna 15-18 segmented)

***Bracon trypaeniphaga* (Ramakrishna Ayyar)**

*Bathyaulax trypaniphaga* Ramakrishna Ayyar, 1928. *Mem. Dept. Agric. Indian Ent. Ser.* 10. 147.

*Bracon trypaniphaga* (Ramakrishna Ayyar). Synonymized by Dicky Sick Ki Yu, 2012.

*Diagnosis:* Female: Length 4 mm. Head transverse; vertex broad with a few isolated punctures; notauli long, distinct and hairy, lobes smooth and shiny; scutellum smooth and shiny, apical region hairy; median segment smooth and shiny; along median line a gentle groove in which runs a fine sharp black longitudinal carina; scutellar sulcus crenulate; metasoma elongated, cylindrical, convex above; mesosoma covered with short pale white hairs; second cubital cell longer than first; SR1 and 1-R1 reaches wing apex; 2-SR slanting and makes second cubital cell narrower anteriorly; vein r shorter than 3-SR, as long as r-m; m-cu joins 2-SR+M some appreciable distance from its apex; first metasomal tergite with grooves laterally, central raised, triangular area coarsely reticulate at apical margin; dorsal region of second, third and fourth tergites strongly rugosely punctured and surface rough and reticulate; second metasomal tergite with a

very small smooth area basally; a median carina like projection runs along dorsomedian line of all segments; second and third tergites dorsolaterally with a small, transverse shallow groove, not very distinct; ovipositor longer than metasoma. Fulvotestaceous. Head and mesosoma testaceous, metasoma fulvous with dark patches on dorsum of second to fourth tergites; ocelli and antenna dark brown; scape, pedicel and third segments of antenna red; palpi and legs pale yellow except tip of tarsi dark; median segment with median dorsal area narrowly dark; wings hyaline and irredescent; costa fuscous; stigma pale brown; ovipositor dark; apical margin of first metasomal tergite, middorsal area of second and third tergites and basal triangular area on fourth tergite dark; remaining parts of metasoma pale fulvous.

*Male:* Unknown.

*Host:* Trypetid maggots.

*Distribution:* Oriental region (India).

*Discussion:* This species comes close to *B. carpomyiae* (Ramakrishna Ayyar) in notauli distinct, lobes smooth and shiny and scutellar sulcus crenulate. However it differs from *B. carpomyiae* in having 1. Metasomal tergites second, third and fourth strongly rugosely punctured and surface rough and reticulate (Metasomal tergites coarsely reticulate punctuate in *B. carpomyiae*) and 2. Apical margin of first metasomal tergite, middorsal area of second and third tergites and basal triangular area on fourth tergite dark; remaining parts of metasoma pale fulvous (First to fifth metasomal tergites black dorsally; black colour being interrupted along median dorsal line of third to fifth by a pale white ridge, dark area on fifth segment confined to its basal half only; remaining parts pale whitish yellow in *B. carpomyiae* )

*Remarks:* The above diagnosis is based on the original description by Ramakrishna Ayyar (1928).

## SUMMARY

Twelve new species of *Bracon* Fabricius viz. *B. agathon* sp. nov., *B. charien* sp. nov., *B. dachaon* sp. nov., *B. daris* sp. nov., *B. decor* sp. nov., *B. heteron* sp. nov., *B. keralense* sp. nov., *B. koridor* sp. nov., *B. molycaon* sp. nov., *B. nexperon* sp. nov., *B. procnis* sp. nov. and *B. stom* sp. nov. are described and compared with its closest relatives. A key to Indian species of *Bracon* is also given.

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## REFERENCES

- ACHTERBERG, C, van, 1993, Illustrated key to the subfamilies of the Braconidae (Hymenoptera: Ichneumonoidea). *Zool. Verh. Leiden.*, **283**: 1-189.
- ACHTERBERG, C, van and A, Polaszek, 1996, The parasites of cereal stem borers (Lepidoptera: Cossidae, Crambidae, Noctuidae, Pyralidae) in Africa, belonging to the family Braconidae (Hymenoptera: Ichneumonoidea). *Zoo. Verh.*, **304**: 1-123.
- AGASSIZ, L. J. R., 1846, Nomenclator Zoologicus Index Universalis,.....II. *Nomia Systematica Generum Hymenopterorum: i-viii*, 1-36. Recognoverunt.
- ASHMEAD, W. H., 1889, Descriptions of new Braconidae in the collection of the U.S. National Museum. *Proc. U. S. Natl. Mus.*, **11**: 611-672.
- ASHMEAD, W. H., 1890, On the Hymenoptera of Colorado: Descriptions of new species, Notes and a list of the species found in the state. *Bull. Colo. Boil. Ass.*, **1**: 1-47.
- ASHMEAD, W. H., 1895, In: Johnson, W. G. A new parasite of the Mediterranean flour moth *Ephestia kunhuiela*. *Ent. News.*, **6**: 324-325.
- ASHMEAD, W. H., 1900, Classification of the Ichneumon flies, or the superfamily Ichneumonoidea. *Proc. U. S. Natn. Mus.*, **23**: 1-220.
- BINGHAM, C. T., 1901, Description of two new species of Bracon from Bengal. *An. Mag. Nat. Hist.*, **8**: 555-557.
- BRETHES, J., 1909, Hymenoptera Paraguayensis. *Ann. Mus. Nac. Hist. Nat. B. Aires.*, **19**: 226-256.
- BRUES, C. T., 1920, On the bollworm parasite described as *Rogas lefroyi* by Dudgeon and Gough. *Proc. Ent. Meet. Pusa*, **3**: 1026-1028.
- BRULLE, A, 1846, Hymenopteres. In: Lapeletier de St. Fargeau, A. L. M. 1846. *Histoire naturelle des insects*, **4**: 1-689.
- CAMERON, P. 1897. Hymenoptera Orientalia, or contribution to a knowledge of the Hymenoptera of the Oriental Zoological Region. Part V. Memoirs and Proceedings of the Manchester Literary and Philosophical Society **41**: 1-144.
- CAMERON, P. 1902. Descriptions of new genera and species of Hymenoptera collected by Major C.S. Nurse at Deesa, Simla and Ferozepore. Part II. *J. Bombay Nat. Hist. Soc.*, **14**: 419-449.
- CAMERON, P., 1906a, On the Tenthredinidae and parasitic Hymenoptera collected in Baluchistan by C. G. Nurse. *J. Bombay Nat. Hist. Soc.*, **17**: 101-107.
- CAMERON, P., 1906b, On some Braconidae from Himalaya. *Entomologist*, **39**: 204-206.
- CRESSON, E.T., 1872, Description of North American Hymenoptera. *Can. Ent.* **4**: 81-84 & 226-231.
- DICKY Sick Ki Yu, 2012. Home of Ichneumonoidea, <http://www.taxapad.com/local.php?taxonidLC=90214946> (Accessed on 09.11.2012)

- DUDGEON, G. C. and L. H. Gough, 1914 (1912), Description of two braconid parasitic on *Earias*. *Agric. J. Egypt.*, **3**: 108-110.
- FABRICIUS, J. C., 1798, Supplementum Entomologiae systematicae. Proft et Storon, Hafniae. 572 pp.
- FABRICIUS, J. C., 1804, Systema Piezatorum. 1-439. Brunsviga.
- FAHRINGER, J., 1927, Braconiden - Studien (Hym). *Entomologische Mitteilungen*, **16**: 256-266.
- KHAN, M. H. and P. M. Verma, 1946, Studies on *Earias* species (The spotted bollworms of cotton) in the Punjab. Part 3-The biology of the common parasite of *E. fabia* Stoll., *E. insulana* Boisd. And *E. cuproeviridis* Wlk. *Indian J. Ent.*, **7** (2): 41-62.
- KIEFFER, J.J. 1905. Etude sur de nouveaux insectes et Phytoptides gallicoles du Bengale. *Annales de la Societe Scientifique de Bruxelles.*, **29**: 143-200.
- NARENDRAN T. C. 2001, *Parasitic Hymenoptera and Biological Control*. Palani Paramount Publication, Palani. 201pp.
- NASON, W. A, 1905, Parasitic hymenoptera of Algonquin, Illinois II. *Ent. News.*, **16**: 293-298.
- NEES von Esenbeck, C. G. 1812, Ichneumonides adsciti in genera et families divisi a Dre. *Mag. Ges. Naturf. Fr. Berlin*, **5**: 3-37.
- NEES von Esenbeck, C. G. 1834, Hymenopterorum Ichneumonibus affinum Monographiae. Genera Europaea et species Illustratae. Scripsit Christ. Goofr. Nees ab Esenbeck. Stuttgartia, Tubinga, sumptibus, J. G. Cotta, 2 vols.
- NIEZABITOWSKI, E. L., 1910, Materyaly do fauny Brakonidow Polski I. *Spraw. Kom. Fizyogr. Krajow.*, **44**: 47-106.
- PAPP, J., 1999, *Bracon (Glabrobracon) Dilatus* sp. nom Iran and Iraq with taxonomical remarks on several related species (Hymenoptera: Braconidae: Braconinae). *Folia Entomologica Hungarica/Rovartani Koezlemenyek*, **50**: 269-282.
- PAPP, J., 2000, *Bracon poleris*, redescription of a little known species (Hymenoptera: Braconidae). *Entomologica Fennica*, **11** (2): 125-128.
- PROVANCHER, A. L., 1880, Faune Canadienne Les Insects Hymenopteres. *Nat. Can.*, **12**: 130-207.
- RAMAKRISHNA Ayyar, T. V. 1928, A contribution to our knowledge of South Indian Braconidae. Part I -Vipioninae. *Memoirs of the Department of Agriculture in India (Entomological series)*, **10**: 29-60.
- SATHE, T. V., Inamdar, S.A. and Dawale, R.K, 2003. *Indian Pest Parasitoids*. Daya Publishing House, Delhi. 145pp
- SCHULZ, 1911, Swei hundert atte Hymenopteren. *Zool. Annl.*, **4**: 1-220
- SHENEFELT, R. D., 1978, *Hymenopterorum Catalogus, Part 15 Braconidae 10*. Dr. W. Junk, 448 pp.

- SHESTAKOV, A, 1932, Zur Kenntnis der asiatischen Braconiden. *Zool. Anz.*, **99**: 255-263.
- SMITH, F., 1860. *J. Linn. Soc. London*, **4**: 141.
- STEPHANI-Perez, T de, 1909, Alti zooecidi dell'Eritrea. *Marcellia*, **8**: 7-18.
- SZEPLIGETI, G. V., 1896, Adatok a Magyar fauna Braconidainak ismeretehez. *Termeszetr. Fuz.*, **19**: 165-186.
- SZEPLIGETI, G. V., 1901, A palaearktibus Braconidák meghatározó táblázatai. *Term-Tud. Közl.*, **33**: 174-184.
- SZEPLIGETI, G. V., 1906, Braconiden aus der g des ungarischen National Museums, I. *Ann. Hist. Nat. Mus. Natl. Hung.*, **4**: 547-618.
- TELENGA, N. A., 1936, Hymenoptera 5 (2). Fam. Braconidae 1. *Fauna Rossii* (n. S.), **4**: i-xvi +1-403.
- TOBIAS, V.I. 1957. [New subgenera and species of the genera Bracon F. and Habrobracon Ashm. (Hymenoptera, Braconidae) from the steppes and arid regions of USSR.] (in Russian) *Entomologicheskoye Obozreniye*. **37**(2): 476-500.
- TOBIAS, V. I., 1959, K Sistematike i sinonimike rodov *Bracon* F. i *Habrobracon* Ashm. (Hymenoptera: Braconidae) [On the taxonommy and synonyms of the Genera *Bracon* F. and *Habrobracon* Ashm. (Hymenoptera: Braconidae). *Ent. Obozr.*, **38** (4): 885-897.
- TOBIAS, V. I., 1961, New subgenera and species of the genera *Bracon* F. (Hymenoptera: Braconidae). *Ent. Obozr.*, **40**: 659-688.
- VIERECK, H. L., 1914, Type species of the genera of Ichneumon flies. *Bull. U. S. Natn. Mus.*, **83**: 1-186.
- WESMAEL, C, 1838, Monographie des Braconides de Belgique, 4. *Nouv. Mem. Acad. Sci. R. Bruxelles*, **11**: 1-116.
- WESTWOOD, W.H., 1882, Description of new or imperfectly known Ichneumones adsciti. *Tijdschr. Ent.*, **25**: 17-48.

