

FAUNA OF INDIA
AND
THE ADJACENT COUNTRIES

Eulophinae (Hymenoptera : Eulophidae)

T. C. Narendran



ZOOLOGICAL SURVEY OF INDIA

This Fauna volume deals with the subfamily Eulophinae of the family Eulophidae (Chalcidoidea : Hymenoptera). The members of this subfamily are mostly parasitoids of immature stages of other insects while some are phytophagous. They are economically very important since many species keep the population of several insect pests under check, preventing them from reaching economic injury level. They are minute wasps which usually range in length from 1-4 mm. This volume contains 39 genera and 251 species. Among these two genera and 72 species are new to science. It is hoped that this volume will not only help in the identification of various genera and species of Eulophinae occurring in the Indian subcontinent, their distribution, host relationships and affinities with other related species but also serve as a tool for undertaking biological control work against insect pests involving these insects.

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Eulophinae (Hymenoptera : Eulophidae)

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FOREWORD

The superfamily Chalcidoidea is one of the economically most important groups of Parasitic Hymenoptera. Their biology is highly diverse. Most species of chalcidoids are parasitoids of insects, (rarely, of arachnids) including pests of agricultural importance and many species are used successfully in biological control programmes all over the world. A few chalcidoids are phytophagous. In spite of these biological peculiarities and intricacies, their taxonomy is not adequately developed in the Oriental Region where rich fauna await discovery.

The family Eulophidae is one of the largest chalcidoid families with about 300 genera and over 4300 species so far described from the world. It consists of 4 subfamilies viz. Tetrastichinae, Eulophinae, Euderinae and Entedoninae. The present volume deals with the subfamily Eulophinae consisting of 39 valid genera and 251 species from India and adjacent countries including 2 new genera and 72 new species. Illustrated keys, extensive bibliography and a host- parasite index are added as assets to the volume. For many years to come, this fauna of India volume will serve as a reference book for the Indian and foreign workers on Parasitic Hymenoptera and applied entomologists because of its standard and authenticity.

July, 2010
Kolkata

Dr. Ramakrishna
Director
Zoological Survey of India

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INTRODUCTION

Sound taxonomy is the foundation of all meaningful research in natural history, evolution, biological diversity and pest management. The decision 11/8 of the second meeting of the conference of the parties to CBD identified lack of taxonomists as the significant impediment. At no time there has been a greater need for taxonomists than now where the crisis facing biodiversity is escalating and when Centinelan extinctions take place so fast. The number of taxonomists and the resources at their disposal are alarmingly inadequate especially in the developing countries for the tremendous task before them. In the present scenario, with the few taxonomists now available, it is not possible to study the taxonomy of all groups of organisms. Hence it is necessary to choose groups of comparatively greatest importance. The family Eulophidae is one such group of greatest importance since they form not only an important component in the ecosystem for sustaining biological diversity but also help to keep the population of many insects pests under economic injury level.

Many lacunae exist in our knowledge on the taxonomy of Eulophidae of Indian subcontinent. The published information are scattered and fragmentary and the accumulation of gray literature on the Eulophid fauna have increased during the last two or three decades. Hence it was a herculean task before me to find out the real identity of the taxa involved. After completing my revision of the Tetrastichinae in a preliminary frame work of revision, I was trying to to finalyse my revision of the subfamily Eulophinae of the Indian subcontinent which I was studying for more than a decade. During the past two years I studied a huge number of Eulophidae including eulophinae collected from various different parts of India and this has enabled me to understand the distribution of many species.

As in the case of Tetrastichinae the subfamily Eulophinae is also biologically and morphologically very diverse through they attack a lesser variety of hosts than the Tetrastichinae. Some species are phytophagous or inquilenes or gall formers. Some species are used as biological control agents against some insect pests in the world. Examination of type specimens of already known taxa was a dificult problem taxonomists confront in India. In this work I was fortunate to visit the Natural History Museum, London for studying many of the types and other materials of Eulophidae and this enabled me to solve many problems of taxonomy of Indian

Eulophidae. However I could not get cooperation from some corners and as a result in some extreme cases I have to keep some taxa under 'incertae sedis' since the available information was too meager for recognition of the taxa. I have followed Bouček (1988) in including Anselmellini under the subfamily Eulophinae until a final settlement is arrived regarding its correct placement in future. I hope this work will provide a basis for future accomplishments by those who follow to study this interesting and marvelous microscopic "jewels"

PURPOSE AND SCOPE

The purpose of this monograph on the Eulophinae of Indian subcontinent, in the light of recent discovery of several new taxa and new records of several known taxa from the region together with recent changes in the classification of the subfamily Eulophinae (Gauthier *et al.*, 2000, Bouček, 1988), is to update our knowledge on the taxa of Eulophinae existing in the subcontinent in consistent with that used in other regions of the world. The Indian subcontinent includes countries south of the Himalaya i.e., Pakistan, India, Nepal, Bangladesh, Sri Lanka and Burma (Bouček & Narendran, 1981, Narendran 1994). It is my intention to place all the species of Eulophinae of Indian subcontinent in their proper genera, give necessary descriptions for several new taxa and to give a workable key to species and genera.

The genera and species are arranged in alphabetic order. All known species are provided with diagnosis and in some cases where the available description is inadequate, a redescription is provided if specimens of that species are available for my studies. This monograph has been prepared virtually single-handedly by me with several difficulties. I could not verify some doubtful cases, since all my efforts to procure the types were in vain and for the same reason I was forced to keep these under 'incertae sedis'

This work should be considered as a starting point for the study of Eulophinae of Indian subcontinent. This is indeed a very difficult group since most of the genera look very much alike due to homoplasy. It is very difficult to construct keys that will fit all the variation seen within this group, yet still may remain usable by many workers. It is hoped that this monograph will be of value not only to taxonomists but also to workers in other fields of entomology as well.

HISTORICAL RESUM

The study of the eulophid subfamily Eulophinae may be said to have begun well before 248 years ago when the genus *Eulophus* was erected by Geoffroy in 1762

with the type species *Ichneumon ramicornis* Fabricius. Since then the same genus was described under different junior synonyms such as *Comedo* by Shrank (1802) and *Cratotechus* by Thompson (1878). Westwood (1828) first proposed the subfamily 'Eulophina' based on the oldest generic name in Chalcidoidea, *Eulophus* Geoffroy (1762). Since then innumerable workers contributed to the study of Eulophinae. Those workers who stood prominent in the 19th century are Shrank (1802), Westwood (1828-1839), Nees (1834), Ashmead (1894, 1896), Foerster (1841-1861), Motschulsky (1863), Ratzeberg (1848), Dahlbom (1857), Howard (1897), Dalla Torre (1898), Rondani (1877), Thompson (1978) and Walker (1838-1872).

In the first half of 20th century the major contributors to the knowledge of taxonomy of Eulophinae were Cameron (1905, 1913), Crawford (1910, 1911), Schulz (1906), Schmiedeknecht (1909), Howard (1910), Girault (1913-1929), Masi (1907, 1917), Waterston (1915), Brèthes (1918), Rohwer (1921), Gahan (1922, 1932), Gahan & Fagan (1923), Mani (1935), Li (1936); Ishii (1937), Ferrière (1933-1941), Ghesquière (1946), Gadd (1945), Erdös (1954, 1961) and Chaterjee (1945). In the second half of the last century and in the present 21st century the main contributors to the study of Eulophinae taxonomy are Graham (1959-1988), Bou ek (1959-1988), Bou ek & Askew (1968), Mani (1989), Verma & Hayat (1986), Kurian (1954), Subba Rao & Hayat (1985, 1986), Hayat et. al (2005), Hanson (1991), Ujiye & Adachi (1995) Narendran & Narendran *et. al.* (2002-2009), Yefrimova (2007), Zhu and Huang (2001, 2002) LaSalle (2005), Schauff & Gates (2005) and Gumosky (2003).

BIOLOGY AND ECONOMIC IMPORTANCE

Members of the subfamily Eulophinae develop mostly as ectoparasites of various insects burrowing or mining plant tissues. Some species are phytophagous. Many species of the genus *Elasmus* are parasitoids or hyperparasitoids of lepidopteran larvae or pupae living in cases or cocoons. Some species of the genus *Trichospilus* are widely used in biological control of Coconut leaf caterpillars in South Asia. For instance the species *Trichospilus pupivorus* Ferrière is found to be very effective in keeping the population of the black headed caterpillar pest of coconut viz. *Opisina arenosella* Walker (Lepidoptera: Oecophoridae) in Kerala state of Southern India. They have been mass bred and released by the state government agencies with great success in some parts of the state. Larvae of *Anselmella* are phytophagous and develop as seed-eaters of various species of *Syzygium*. Some species of

Stenomesus are primary ectoparasites of small caterpillars of various families of Lepidoptera such as Gelichiidae, Lyonetiidae, Glyphipterygidae, Tortricidae, Pyralidae, and Noctuidae including some leaf mining species. One species is stated to be reared from eggs of *Scirpophaga innotata* (Walker), the white rice borer in Indonesia (Bou ek, 1988). *Aroplectrus contheylae* Narendran is parasitic on the Coconut pest *Contheyla rotunda* in Kerala (Narendran *et al.*, 2002). *Elachertus piperis* Narendran is believed to be parasitic on *Liothrips karnyi* which makes marginal leaf galls on Pepper leaf. (Narendran & Bindu, 2009).

DISTRIBUTION

The most widely distributed genera of Eulophinae are *Euplectrus*, *Elachertus* and *Elasmus* followed by *Cirrospilus*, *Pnigalio*, *Hemiptarsenus*, and others. Detailed distribution of Indian genera are plotted in the maps given in this work.

CLASSIFICATION

Ever since Westwood (1828) erected the subfamily Eulophinae, several workers treated it differently including and excluding different tribes and genera or other subfamilies for a long time. In the second half of the last century, Nikol'skaya (1952) treated the present subfamily as the family Eulophidae and gave family status to Tetrastichidae, Elachetertidae, Entodonidae and Elasmidae. Riek (1970) downgraded Elasmidae as Elasminae of the family Eulophidae. Burks (1979) considered Eulophidae consisting of the subfamilies Eulophinae, Elachertinae, Euplectrinae and Elasminae. Yoshimoto (1984) also treated Elasmidae as Elasminae of Eulophidae. Bou ek (1988) divided the family Eulophidae into the following 4 subfamilies viz. Eulophinae (including Anselmellini and Keryini), Euderinae, Tetrastichinae, and Entedoninae. Although this division has wider acceptance by many workers, there were disagreements also (LaSalle & Schauff, 1995; Schauff *et al.*, 1997, Gibson *et al.*, 1999). According to the most recent classification by Gauthier *et al.* (2000) the family Eulophidae consists of the following subfamilies viz. Eulophinae (consisting of the tribes: Eulophini, Elasmini and Cirrospilini), Tetrastichinae, Entedoninae and Euderinae. According to these authors the tribe Eulophini consists of most genera from Bou ek's (1988) Eulophinae. Gauthier *et al.* excluded the tribes Anselmellini, Ophelimini and Platetetracampini and Kerrini and kept them unplaced. I have included Anselmellini here in this work tentatively, following Bou ek (1988) since this tribe is represented in India.

PHYLOGENY OF EULOPHINAE

For a long time the subfamily Eulophinae was considered as the most primitive among the subfamilies of Eulophidae (Graham, 1987, Bou ek, 1988, La Salle & Schauff, 1995; Schauff *et al.*, 1997). However according to the studies of Gauthier *et al.*, (2000) the subfamily Eulophinae is a derived one, rather than of primitive lineage consisting of three tribes referred here as Eulophini (including Elachertini and Euplectrini), Elasmini and Cirrospilini. The subfamily Eulophinae consists of two major clades Eulophini (including *Elasmus*) and Cirrospilini and with a sister group relationship to Tetrastichinae. Though Elasmini is included under Eulophinae, its relationship to the tribe Eulophini is not clearly understood. It is also not sure whether Elasmini is a sister group of Eulophini or a derived member from within Eulophini. Since the genus *Trichospilus* does not possess synapomorphies used to define Eulophini or Cirrospilini, its placement among these tribes is still problematic. Similarly the systematic status of Anselmellini is also problematic since the molecular data of Gauthier *et al.* (2000) does not provide sufficient evidence as to their correct placement. Hence in this work I have followed Bou ek (1988) in including Anselmellini in the subfamily Eulophinae pending further evidence as to their correct placement after further studies.

MATERIALS AND METHODS

The materials for studying the subfamily Eulophinae were obtained mainly by collecting specimens from field using sweep net as illustrated and explained by Narendran (2001). The preparation and curation of specimens were done as per the recommendation of Noyes (1982). Besides field collections, several specimens were reared in the laboratory from plant galls and leaf mines collected from various localities in India. Several specimens were obtained from in and outside India on loan for my studies and returned. Several Institutes and researchers sent innumerable specimens from different parts of India for identification and this has also helped me in my studies. The word 'Plesiotype' used in this monograph is meant for a specimen upon which a redescription of the species is based (Mayr, Linsely & Usinger, 1953).

All new names proposed here in this work must be treated as derived from an arbitrary combination of letters or nouns in apposition, except otherwise specified. Types of the new species taxa, unless mentioned otherwise, are deposited in the Department of Zoology, University of Calicut, Calicut (DZUC), but will eventually be transferred to either the Western Ghat Research Station, Zoological Survey of India, Kozhikode (ZSIK) or the National Zoological Collections, Zoological Survey of India, Kolkata (NZSI).

TERMS AND MEASUREMENTS

The terminologies used are illustrated in the figures 1-6. Radicle is not counted while considering the antennal formula. The general abbreviations for the terms are as follows :

CL1-Cl ₃	= Claval segments 1 to 3
CC	= Costal cell
F1-F4	= Funicular segments 1 to 4
gen. nov.	= New genus
LTS	= Longer hind libial spur
MS	= Malar sulcus
MV	= Marginal vein
ML	= Median line, groove or sulcus
MLM	= Mid lobe of Mesoscutum
OD	= Major diameter of hind ocellus
OOL	= Ocellocular line
PMV	= Postmarginal vein
POL	= Postocellar line
SMV	= Submarginal vein
STV	= Stigmal vein
WIOS	= Width of Inter-oculalar space
T ₁ - T ₇	= Gastral tergites 1-7
sp. nov.	= Species nova or new species
comb. nov.	= New combinations
nom. nov.	= New name
syn. nov.	= New synonym

ACRONYMS FOR MUSEUMS AND DEPOSITORIES

AMS	= Australian Museum, Sydney, NSW, Australia
BMNH	= The Natural History Museum, London SW7 5BD, England
BPBM	= Bernice Pauahi Bishop Museum, Honolulu, Hawaii
CNC	= Canadian National Collection, Agriculture Canada, Biosystematic Research Institute, Ottawa, Ontario, Canada
CPCRI	= Central Plantation Crops Research Institute, Kayamkulam, India

- CSIRO = Commonwealth Scientific and Industrial Research organization, Division of Entomology, Australia (Canberra City, ACT)
- DZUC = Department of Zoology, University of Calicut, Kerala.
- EIHU = Entomological Laboratory, Hokkaido University, Japan
- FM = Florence Museum, Italy
- FRI = Forest Entomology Division, Forest Research Institute, Dehra Dun, India
- HNHM = Hungarian Natural History Museum, Budapest, Hungary
- IEA = Istituto di Entomologia agraria, Portici, Italy
- INPC (=NPC) = Indian Agricultural Research Institute, National Pusa Collections, New Delhi,
- IZAS = Institute of Zoology, Academy of Sciences, Beijing, China
- JXAU = Jinagxi Agricultural University, Nanchang, China
- LUZN = Zoological Museum, Lund University, Sweden
- MHNG = Muséum d'Histoire Naturelle, Geneva, Switzerland
- MNNH = Museum National d' Histoire Naturelle, Paris France
- NHMV = Naturhistorisches Museum, Vienna, Austria
- NIAES = National Institute of Agro-environmental Sciences, Ibaraki, Japan
- NMI = National Museum of Ireland, Dublin, Ireland
- NWCF = Northwestern College of Forestry, Yangling , Shaanxi, China
- NZSI = National Zoological Collections, Zoological Survey of India, Kolkata, India
- PUA = Pantnagar University of Agriculture, Pantnagar, India.
- QM = Queensland Museum, South Brisbane, QLD, Australia
- SEA = School of Entomology, St. Johns College, Agra, India
- TM = Természettudományi Muzeum, Budapest, Hungary
- TWM = Taiwan Museum, Taiwan
- UCDC = Bohart Museum, University of California, USA
- UMO = University Museum, Oxford, England
- USNM = United States National Museum of Natural History, Washington, D. C., USA
- ZDAMU = Insect Collections, Department of Zoology, Aligarh Muslim University, Aligarh, India.

ZIL	= Zoological Institute, Academy of Sciences, Leningrad
ZMMS	= Moscow State University Museum, Moscow, Russia
ZSIK	= Western Ghat Regional Centre, Zoological Survey of India, Kozhikode (= Calicut), Kerala, India

ABBREVIATIONS

DST	= Department of Science and Technology, Government of India, New Delhi
GBPU	= G. B. Pant University, Partnagar, India.
ICZN	= International Commission on Zoological Nomenclature
MoEF	= Ministry of Environment and Forests, Government of India, New Delhi
TNAU	= Tamil Nadu Agricultural University, Coimbatore, India
TBGRI	= Tropical Botanical Garden and Research Institute, Karimancode, Pacha-Palode, Thrunavanthapuram, Kerala, India
QLD	= Queensland, Australia

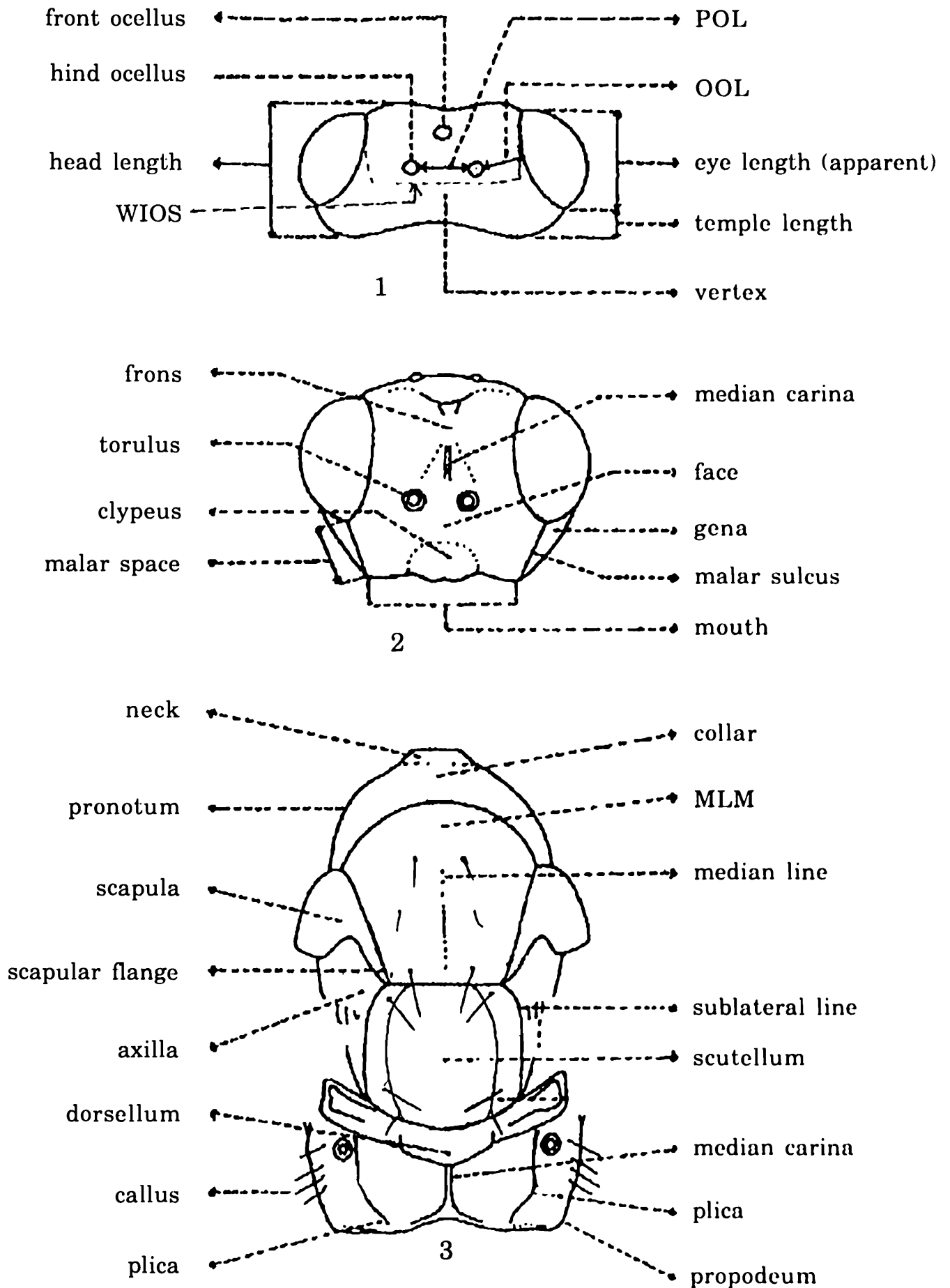
DIAGNOSTIC CHARACTERS OF EULOPHINAE

Length : Varies from less than 1 mm to 3 mm (rarely exceeding 3 mm). Colour black or yellow or brown, with or without metallic green or blue or bronze refringence or wholly or partly metallic green or blue. Often yellow with black or brown or metallic markings or vice versa.

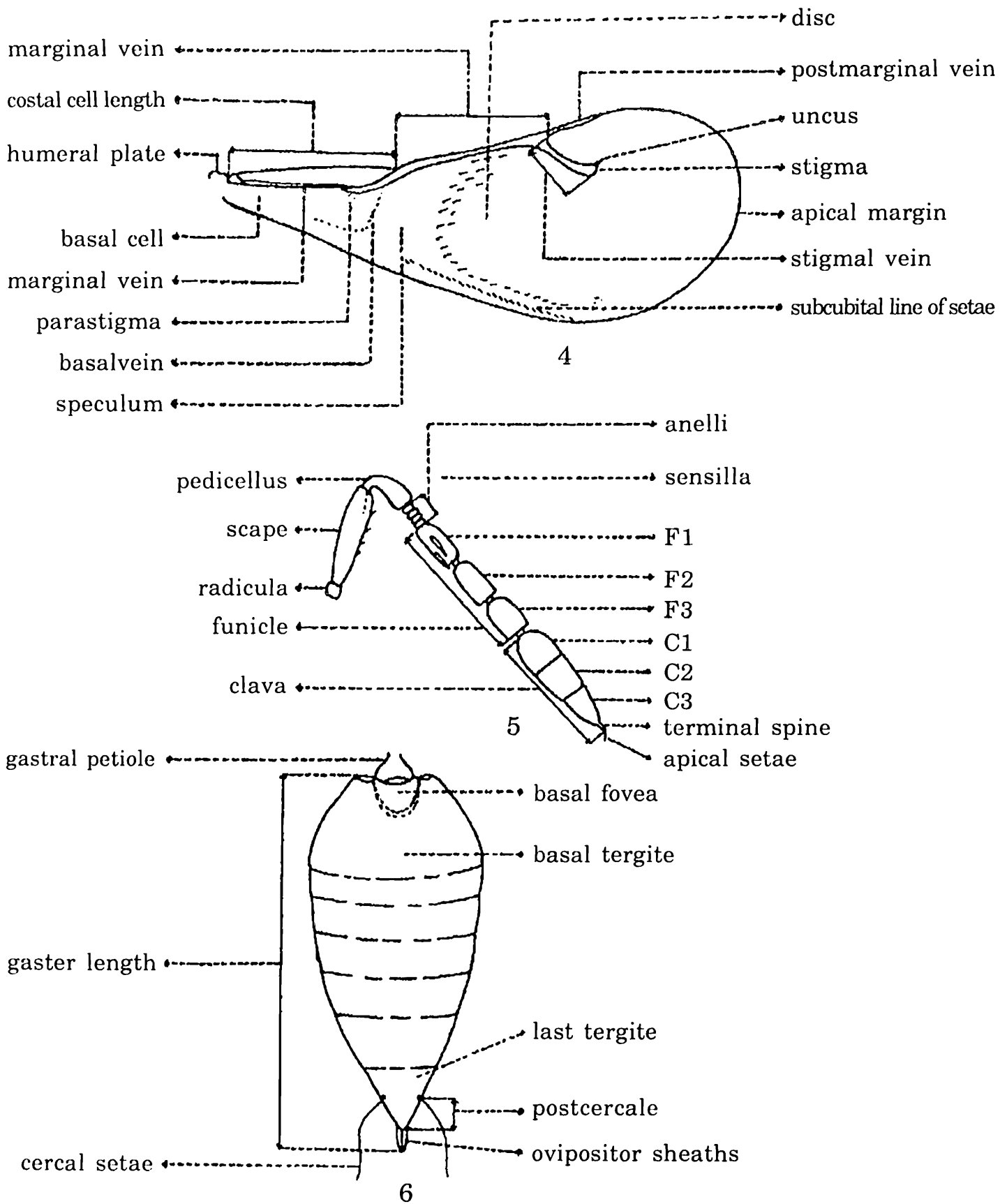
Head : (Fig. 1 & 2) : Often tends to collapse when dead; sides of scrobe ecarinate; MS may or may not be present; antennae inserted at or below or above level of lower eye margin; scape may or may not exceed level of vertex; clava 2 or 3 segmented with or without an apical speculum (Fig. 5); funicular segments with or without long sensillae or plumose; funicular segments often petiolate; occipital carina may or may not be present. In *Perthiola* and *Anselmella* flagellum 9 segmented.

Mesosoma (Fig.3) : Pronotum with or without a cross ridge or carina; MLM with 1 to 3 pairs of setae or with scattered setae; ML may or may not be present on mesoscutum; notauli complete or incomplete may or may not reach scutoscuteellar groove; axillae usually may not meet each other anteriorly; scutellum with or without sublateral grooves, always inside the paired setae. Forewing (Fig. 4) with SMV at distal end smoothly curving into parastigma; PMV mostly longer than, rarely only as long as the STV

Metasoma (Fig.6) : Petiolate or sessile or subsessile T7 and T8 not separated.



Figs. 1-3. Terminology of Eulophinae : 1. Head dorsal view; 2. Head anterior view; 3. Mesosoma.



Figs. 4-6. Terminology of Eulophinae : 4. Forewing; 5. Antenna; 6. Gaster.

Key to genera of Eulophinae of Indian Subcontinent

1. Hind coxa greatly enlarged (Figs. 135, 136) disc-like, hind tibia usually with dark setae arranged in a characteristic fashion (Fig. 135); forewing (Fig. 140) narrow and wedge shaped; antenna with 3 funicular segments ***Elasmus*** Westwood.
- Hind coxa much smaller than above, hind tibia and forewing different from above alternate 2
2. Mesoscutum usually broad anteriorly (Fig. 34), scapulae indistinct; notauli absent; pronotum with a pair of usually lengthy hairs reaching beyond of mesoscutum; mesoscutum smooth and polished with a few scattered minute pits (Fig. 34); [axillae advanced anteriorly], scutellum with a pair of weak submedian lines ending in the distal setal pits; [antennal formula 11443] ***Boucekiola*** Narendran
- Characters not as above, almost completely different 3
3. Notauli incomplete, in posterior part not present or hardly distinct though sometimes traceable under certain illumination in some angles of vision, being indicated mostly by slightly deeper reticulation; antenna of males in some genera branched 4
- Notauli complete, clearly visible, reaching scutoscutellar suture or turning to anterior margin of axillae or reaching junction between axillae and scutellum 18
4. Petiole half or more than half length of gaster, about 5x as long as wide (Fig. 1 of Khan 1993); scutellum with 3 pairs of setae; axillae narrowly contiguous in the middle; posterior margin of pronotum deeply concave; antennal formula 11042; scape exceeding level of vertex ***Mohaniella*** Khan
- Petiole shorter than above; other characters partly or completely different 5
5. Scutellum (Fig. 275) longer than mesoscutum with 5 weak setae in an irregular longitudinal row on either side (Fig. 275); propodeum with a pair of median longitudinal carinae enclosing microsculptured area; petiole a little longer than propodeum, microsculptured, gena strongly converging (Fig.273); anterior margin of vertex projecting a little beyond level of anterior margin of eyes in dorsal view (Fig. 274); antennal formula 11333 ***Hayatiola*** Narendran

- Characters not as above, mostly different from above alternatives 6
- 6. Scutellum with distinct sublateral grooves 7
- Scutellum with sublateral grooves absent 10
- 7. Antenna with 2 funicular segments; gaster subsessile; petiole smooth, small and transverse **Diglyphus** Walker
- Antenna with 3 or 4 funicular segments; other characters variable 8
- 8. Propodeum with 2 widely separated submedian carinae, each carina diverging posteriorly (Fig. 20); antennal formula 11142; funicular segments broad with deep concavity on inner side (Fig. 19); mid femur with a distinct seta on distal ventral side; scutellum (20) with a broad smooth median part containing a longitudinal median fovea; lateral parts of scutellum reticulate **Anumanniola** Narendran
- Propodeum with a single median carina; other characters different from above 9
- 9. Antennal funicle 4 segmented; median carina of propodeum (Fig. 313) forked at base; sublateral grooves of scutellum well marked and not effaced posteriorly, with adjoining pits stronger **Necremnoides** Girault
- Antennal funicle 3 segmented median carina of propodeum not forked at base; sublateral grooves of scutellum not well marked as above usually effaced posteriorly **Dicladocerus** Westwood
- 10. Mandibles reduced; not meeting medially; basitarsus of at least midleg distinctly shorter than second tarsal segment; female funicle 3 segmented; body relatively broader **Eulophus** Geoffroy
- Mandibles not as above; other characters partly or completely different 11
- 11. Vertex (Fig. 163) posteriorly raised into a sharp arcuate crest; mesoscutum and scutellum with a very delicate reticulation and dense white pilosity **Eulophomorpha** Girault
- Vertex without raised sharp arcuate crest; other characters variable 12
- 12. Propodeum with transverse costula, median carina and plica (Fig. 362) present; plicae often angulate; MLM with numerous hairs at least in anterior half **Pnigalio** Schrank
- Propodeum without costula; scutellum and MLM often different 13

13. Propodeum (Fig. 323) with large median area delimited on sides; mesad of postspiracular groove with plicae step like; with strong median carina; surface of propodeum reticulate (or smooth as in some extralimital species) MLM with scattered setae ***Notanisomorphella*** Girault
- Propodeum with median area transversely convex or sloping from median line; plicae absent or with abrupt edge; MLM usually with reduced pilosity 14
14. Female funicle (Fig. 318) always 3 segmented, clava 3 segmented; scape about 2x as long as POL; funicle segments sometimes very long; F3 always oblong; scutellum subquadrate or longer than broad; hind tibia with 2 spurs; propodeum with median carina; body usually larger ***Necremnus*** Thompson
- Female funicle mostly 4 segmented; other characters not as in above combination or partly or completely different 15
15. Forewing (Fig. 287) atleast 2.6x as long as wide; CC 10- 15x as long as wide; scape very distinctly exceeding level of vertex; legs long and body slender ***Hemiptarsenus*** Westwood
- Forewing less than 2.6x as long as wide; CC less than 10x as long as wide; scape usually not very distinctly exceeding level of vertex; legs not as long as above; body not very slender 16
16. Antenna (Fig. 159) in both sexes simple, short, F2 to F4 transverse; scutellum (Fig. 160) often broader than long; axillae wide apart, narrow and strongly advanced; mesonotum and face often with yellow pattern ***Eulophinusia*** Girault
- Antenna longer than in alternate; male often with 3 branches; scutellum not transverse; mesonotum usually not with yellow pattern 17
17. Clypeus with anterior margin distinctly bilobed and depressed ***Dimmockia*** Ashmead
- Clypeus with anterior margin straight and not depressed ***Sympiesis*** Foerster
- 18(3) Flagellum distinctly 9 segmented, clavate; radicula atleast 2x as long as wide; antenna inserted always above centre of face; MV thickened and short 19

- Flagellum mostly with fewer than 9 distinct segments or atleast the first after pedicel indistinct, reduced to form a thin anellus; radicula always short; antenna mostly inserted below centre of face; MV different, if thickened then not short 20
- 19. PMV distinctly longer than MV; scrobe shallow, undivided; proximal 4 segments of flagellum subequal, short (Fig. 331.)..... ***Perthiola*** Bou ek
- PMV shorter than MV; scrobe deep and divided by median crest; F1 distinctly longer than F2 (Fig. 333)..... ***Anselmella*** Girault
- 20. Hind tibia with atleast one spur distinctly longer than basitarsus (Fig.204.) 21
- Hind tibia with spurs normal, not longer than basitarsus 26
- 21. Propodeum with single median carina posterior to basal cup 22
- Propodeum with 2 submedian carinae; median carina absent 25
- 22. Scutellum without sublateral grooves; pronotum with a cross carina.
..... ***Euplectrus*** Westwood
- Scutellum with sublateral grooves; pronotum variable 23
- 23. Hind tibia with a single, apical spur which is slightly longer than hind basitarsus***Metaplectrus*** Ferrière
- Hind tibia with 2 distinctly elongate apical spurs 24
- 24. Submedian area of propodeum (Figs. 27,29,32) divided into more than 4 areolae, as long as half length of metasoma ***Aroplectrus*** Lin
- Propodeum with undivided submedian area; T1 variable
..... ***Platyplectrus*** Ferrière
- 25(21). Scutellum without sublateral grooves; head relatively broad (Fig.9 of Wijesekara & Schauff,1997), usually more than 1.6x wider than high; petiole distinct, plate like in dorsal view (Fig. 12 of Wijesekara & Schauff, 1997)
..... ***Eurycephaloplectrus*** Wigesekara & Schauff
- Scutellum (Fig.193) with distinct sublateral grooves; head less than than 1.5x wider than high; petiole transverse, not visible dorsally
..... ***Euplectromorpha*** Girault
- 26(20). Propodeum medially with 2 strong carinae connected before middle in an “H” shape or “X” shape (Fig 387) [scutellum with sublateral grooves]
..... 27
- Propodeum atmost with a single median carina which may be forked anteriorly 28

- 27 Pronotum with distinct transverse carina; female funicle 5 segmented (Fig.398) mesosoma very coarsely and irregularly rugose; head without temples; with broad concave occiput; petiole longer than hind coxa; gaster short but T1 large (Fig. 398..) ***Stenopetius*** Bou ek
- Pronotum(Fig. 385) without transverse carina; female funicle 4 segmented; mesosoma sculptured or partly smooth, shiny; temples developed; petiole shorter than hind coxa; gaster elongate; T1 short.....
..... ***Stenomesius*** Westwood
28. Pronotum(Fig. 193) long and broad, anteriorly with sharp transverse carina; axillae almost touching medially; propodeum with diverging plicae situated anteriorly well mesad of spiracle; T1 large and convex.....
..... ***Euplectrophelinus*** Girault
- Pronotum and other characters not as above, partly or completely different
..... 29
29. Scutellum(Figs. 10 & 14) shiny with elongate median pit, sublateral grooves posteriorly united in the middle; funicle 4 segmented
..... ***Alophomorphella*** Girault
- Scutellum without median pit; if however a median pit like depression present then other characters different 30
30. Funicle 3- 4 segmented 31
- Funicle 2 segmented 39
31. Pronotum (Fig. 302) large semiglobose; MLM with only 2 pairs of setae; sculpture on mesosoma fine and more or less regular
..... ***Hyssopus*** Girault
- Pronotum smaller or if nearly semiglobose then either with rather coarse sculpture or mesoscutum with more pubescence 32
32. MLM and scutellum with conspicuous reticulation, notauli in posterior half very shallow, indicated only by deeper meshes of sculpture (Extra limital)
..... ***Diaulomorpha*** Ashmead
- MLM and scutellum with different sculpture; notauli, if shallow mostly indicated by fine carina on inner side of groove 33
33. MLM with atleast 6 setae (3 pairs), sometimes with numerous scattered setae; if with 3 pairs, then middle pair weakest; sculptured shallowly reticulate; gaster sessile or petiolate 34
- MLM with only 2 or 3 pairs of setae but no additional hairs; if with 3 pairs then middle pair similar to other pairs and sculptured very strong..... 36

34. MLM with a distinct median groove; pronotum much longer than alternate (Fig. 401.); propodeum with convex shiny
 **Sureshanella** Narendran gen. nov.
- MLM with median groove absent; pronotum not very long as above; propodeum not as above 35
35. Median carina of propodeum (Fig. 117) with a deep fovea adjacent to it on either side; sublateral grooves of propodeum absent; scutellum with a median depression of fovea; pronotum bell shaped with a median pit anteriorly (Fig. 116)..... **Propodeochertus** Narendran gen. nov.
- Median carina (Fig. 106) normal with adjacent fovea absent; scutellum with median fovea usually absent..... **Elachertus** Spinola
36. Mesosoma metallic green; antennal formula 11132; sublateral grooves of scutellum meet medially at posterior margin; clava longer than combined length of F2 and F3; F1 shorter than pedicel **Ginsiella** Erdős
- Characters not as in above combination or partly or completely different from above 37
37. STV with stigma distinctly elongate (Fig. 432.) and uncus separated from apex **Aulogymnus** Foerster
- STV normal, not as above 38
38. MLM with 2 pairs of setae; gaster (Figs. 50, 52) petiolate; petiole subrectangular; scutellum not as strongly reticulate as in alternate; T1 almost reaching or exceeding middle of gaster in female
 **Deutereulophus** Schulz
- MLM with 3 pairs of setae; gaster sessile; scutellum with strong reticulations, often deep; T1 not reaching middle of gaster
 **Diglyphomorphomyia** Girault
- 39(30) Forewing (Fig. 412) with 2 or 3 dark spots or tufts of dark thick hairs; scutellum completely striate longitudinally or striate with median smooth area(Figs.404, 407) in between striated sides; frontovertex unusually convex posteriorly rising to sharp cross-ridge; antenna inserted at mouth margin; body unusually yellowish brown without distinct pattern
 **Trichospilus** Ferrière
- Forewing not as above, without tuft of hairs, scutellum without longitudinal striations; frontovertex not as above, without occipital ridge; antennae inserted usually above level or at level of ventral margin of eyes; body

- often with yellow pattern or if mesosoma completely dark then it is usually with metallic refringence and propodeum reticulate 40
40. Notauli curving to meet anterior portion of axillae; vertex extending distinctly above upper margin of eyes, body never metallic; forewing often with dark patches
 (extralimital to Indian Subcontinent) **Zagrammosoma** Ashmead
- Notauli straight extending to anterior margin of scutellum or to the junction between axillae and scutellum (if notauli curving to meet axillae as in *C. ambiguous* then body metallic green and vertex not extending above upper margin of eyes); vertex not extending above upper margin of eyes; body and wing colour variable 41
41. Forewing with stigma distinctly elongated (Fig. 413) with uncus separated from apex; scutellum relatively convex, without submedian grooves or grooves faintly indicated by change of sculpture ..**Aulogymnus** Foerster
- Forewing with stigma rounded, with uncus at apex; scutellum relatively flat with submedian grooves present though sometimes difficult to see due to colour pattern (Fig. 46) **Cirrospilus** Westwood

Genus ***Alophomorphella*** Girault

1913. *Alophomorphella* Girault [167] : 282. Type species *Alophomorphella illustris* Girault; by original designation.

Diagnosis : Female : Funicle 4 segmented; MS present; pronotum without a cross carina; MLM with 3 pairs of setae; notauli deep throughout, parallel in posterior half; scutoscutellar suture almost straight; axillae well apart, smooth and behind the unusually deep anterior part of axillar suture fused with the smooth sides of scutellum (outside of sublateral grooves); scutellum with a deep longitudinal fovea (or pit); propodeum smooth and shiny with a median carina and fovea like depression mesad of each spiracle; CC barely longer than MV; gaster sessile, in female lanceolate; T1 with posterior margin straight.

Host : One species was reared in Marciba Queensland, from Pyralids (Lepidoptera) *Lamprosema abstitalis* (Walker) on *Glycine javanica* and *Iledylepta dimenalis* (Guenee) (Bou ek), 1988).

Distribution : India, Australia, Indonesia, China and New Guinea.

Remarks : *Alophomorphella* resembles *Elachertus* in having median carina of propodeum 'Y' shaped and scutellum with sublateral grooves. However *Elachertus*

differs from *Alophomorphella* in having scutellum without a median pit and notauli not as deep as that of *Alophomorphella*.

Key to species of *Alophomorphella* Girault of Indian subcontinent

(Based on females)

1. Head and mesosoma metallic green; head width 1.24x its height in anterior view; MS 0.23x eye height; F2 shorter than F1 (Fig. 9); MV 2x as long as PMV (Fig. 11).....*A. bharathica* Narendran sp. nov.
- Head and mesosoma with strong metallic violet refringence; head width 1.5x its height in anterior view; MS 0.77x eye height; F2 as long as F1 (Fig. 13); MV 1.46x as long as PMV(Fig. 16)..... *A. viola* Narendran sp. nov.

1. *Alophomorphella bharathica* Narendran sp. nov.

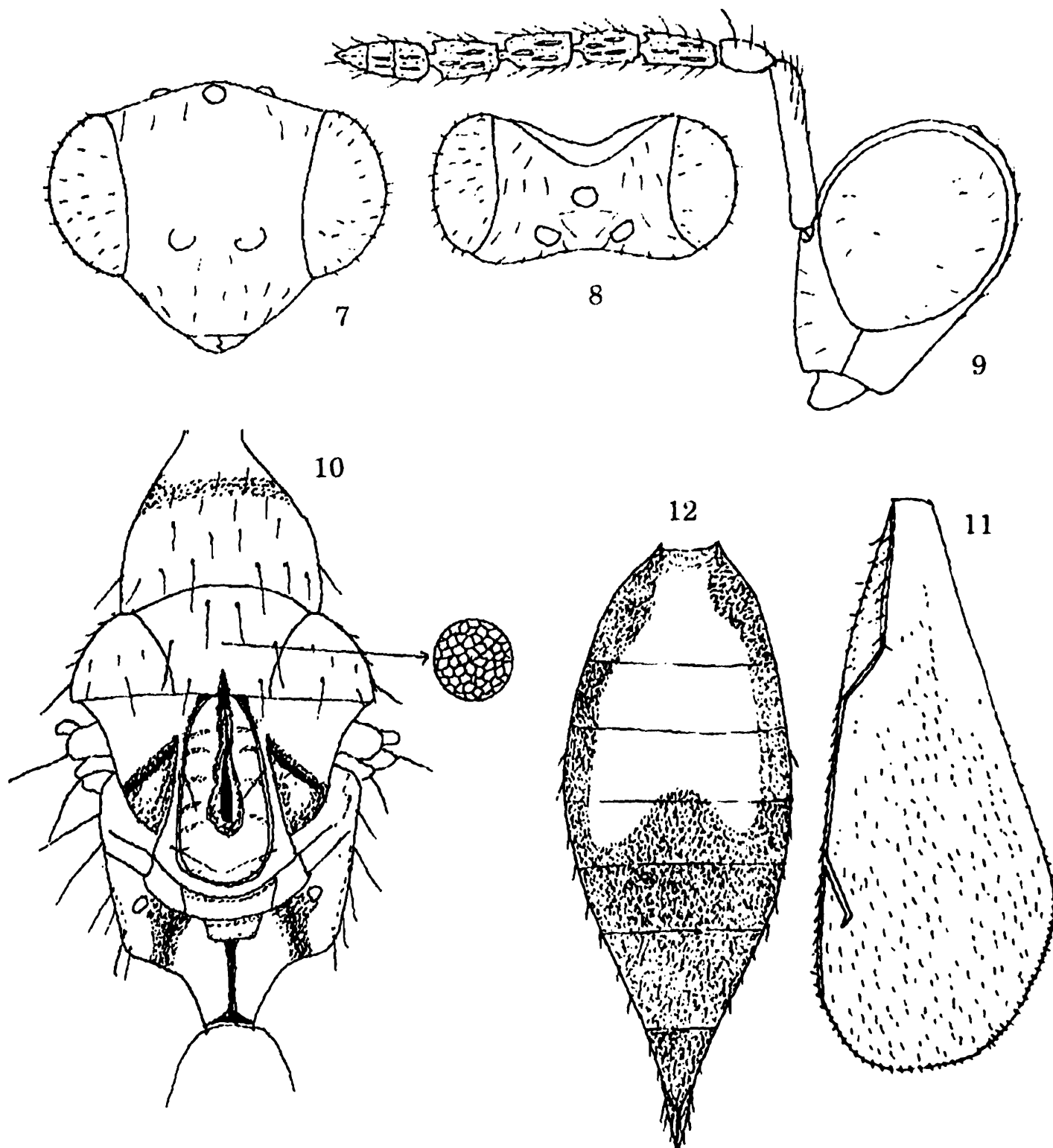
(Figs. 7-12)

Female : (Holotype) Length 2.63 mm. Head metallic green; eye dark red with margin around pale; ocelli pale reflecting yellow; scape pale yellow (without any infuscation); pedicel brownish yellow; flagellum dark brown; mandibles, maxillae pale brownish yellow; mesosoma metallic green; tegula pale yellow; legs whitish pale yellow including all coxae except pretarsi dark; metasoma dark brown with a large pale yellow patch on anterior part and T1 with metallic green refringence on sides; ovipositor sheath black.

Head width 1.24x its height in anterior view, in dorsal view 2.2x its length; POL 1.22x OOL; AOL shorter than OOL; LOL shorter than AOL; WIOS 1.55x OOL; posterior margin of occiput ecarinate; MS 0.23x height of eye in profile; eyes pubescent, eye length in profile 0.83x eye height; frons and vertex reticulate; area below antennal toruli with scattered pubescence, vertex and occiput more densely pubescent; antennae inserted a little above of ventral margin of eyes; scape exceeding a little over level of vertex; relative L: W of antennal segments: scape = 36 : 6; pedicel = 12 : 7; F1 = 16 : 7; F2 = 14 : 7; F3 = 16 : 7; F4 = 15 : 8; clava = 21 : 8.

Mesosoma slightly narrower than head in dorsal view (13 : 14); pronotum with scattered setae, distinctly reticulate; MLM with 3 pairs of setae, distinctly reticulate with a weak median longitudinal fovea (0.23x length of MLM) at posterior margin; scapula distinctly reticulate and pubescent; axilla smooth and shiny; scutellum 1.74x as long as MLM, smooth with faint reticulation; median fovea reaching scutoscutellar suture; dorsellum smooth and shiny; propodeum smooth and shiny with median carina which connects a transverse projecting flap at anterior end,

with a broad groove on either side laterally; spiracle separated from metanotum by a distance slightly shorter than its diameter; callus with 7 setae on either side; hind coxa weakly reticulate on dorsal side; first tarsal segment of hind leg equal to second tarsal segment; lateral panel of pronotum distinctly reticulate except



Figs. 7-12. *Alophomorphella barathica* sp. nov. Female : 7. Head anterior view; 8. Head dorsal view; 9. Head & antenna profile; 10. Mesosoma dorsal view; 11. Forewing; 12. Metasoma dorsal view.

smooth and pale lower rim; prepectus smooth and shiny with a fovea containing pits in it on anterior marginal area; mesepimeron and mesepisternum smooth and shiny; forewing length 2.4x its width; speculum closed behind by a cubital line of setae; SMV with 6-7 dorsal setae; relative L : W of CC = 41 : 7; relative L of SMV = 30; MV = 36; PMV = 18; STV = 15.

Metasoma 1.44x as long as mesosoma; 2.6x as long as wide; posterior margin of T1 straight; hypopygium not reaching middle of gaster.

Male : Similar to female except in having shorter gaster, a little longer petiole and funicular segments slightly longer.

Host : Since several specimens from cardamom plantations are collected, this species may be associated with cardamom pests or plants.

Variation : In some specimens reticulation on mesosoma is a little more pronounced than in Holotype.

Material examined : Holotype, Female, INDIA, Kerala, Malappuram District, Calicut University Campus, (11° 7' N 75° 5' E); 15-iii-1987, T.C.Narendran; Paratypes: 2 Females of same data of Holotype. 1 Female, Kerala, Malappuram District, Nilambur (11° 16' N 76° 13' E), 30-i-2003, T.C.Narendran & party; 1 Female, Kerala, Calicut District, Nanminda, (11° 26' N 75° 50' E), 30-viii-2003, T.C.Narendran & party; 1 Male, Kerala, Wayanad District, Pookode Lake area (11° 32' N 76° 01' E), 8-ii-2003, T.C.Narendran & party; 5 Females & 1 Male, Kerala, Idukki District, Vandiperiyar (9° 35' N 77° 5' E), Cardamom Plantations, 8-i-2004, T.C.Narendran & Party.

Other material examined : 1 Female, INDIA, Orissa, Khorda (37' 30" E and 19° 40' to 20° 25' N) Kadurai, 03-xii-2009, F R. Khan (ZDAMU).

Depository : Holotype deposited in the Department of Zoology, University of Calicut, Kerala State pending transfer to ZSIK or NZSI.

Remarks : This new species comes near *Alophomorphella illustris* Girault in general appearance but differs from it in having: (1) speculum closed behind by cubital line of setae (in *A. illustris* speculum open behind as per Zhu and Huang, 2001); (2) forewing 2.4x as long as wide (in *A. illustris* forewing 2.6- 2.8x as long as wide); (3) MV 2x as long as PMV (in *A. illustris* MV 1.25- 1.3x as long as PMV); (4) mesosoma distinctly reticulate (as per Girault's original description mesosoma of *A.illustris* is transversely wrinkled somewhat as in *Megastigmus*) and (5) no purplish tinge on abdomen (in *A. illustris* abdomen with purplish black area as per Girault, 1913).

Ubaidillah and Kojima (2006) redescribed the species *Alophomorphella illustris* based on Indonesian material, but it differs from *illustris* in having speculum closed behind (see Ubaidillah and Kojima, 2006: 40, Fig. 3); hairy scape pale yellow at apex light brown and MV 1.5x as long as PMV. The species described by Ubaidillah and Kojima (2006) is probably different from *A. illustris* but may represent an undescribed species.

This new species does not agree with any of the species described by Ubaidillah and Kojima (2006).

2. *Alophomorphella viola* Narendran sp. nov.
(Figs. 13-17)

Female : (Holotype) Length 2.57 mm. Head and mesosoma with strong metallic violet colour; eyes dark red with margin around pale; ocelli pale reflecting yellow; mouth parts yellow; scape pale white; pedicel pale brownish yellow; flagellum dark brown; tegula pale; legs including coxae pale whitish yellow with pretarsi dark; metasoma dark brown with pale yellow patch on anterior half dorsally and ventrally except side margins (Fig-17); T1 with metallic violet tinge on sides; wings hyaline with veins pale yellowish hyaline.

Head width in anterior view 1.5x its height, 2.1x its length in dorsal view; occipital and postoccipital carina absent; POL 1.4x OOL; AOL slightly shorter than OOL; LOL shorter than AOL; WIOS 3x POL; MS 0.77x eye height in profile; eyes pubescent; eye length in profile 0.76x eye height; frons and vertex reticulate; area below antennal toruli with scattered pubescence; occiput more densely pubescent; antenna inserted a little above level of ventral margin of eyes; scape slightly exceeding level of vertex; relative L : W of antennal segments : scape = 49 : 5; pedicel = 13 : 7; F1 = 21 : 8; F2 = 21 : 9; F3 = 23 : 9; F4 = 17 : 7; clava = 30 : 10.

Mesosoma slightly narrower than head in dorsal view (14 : 15); pronotum with scattered setae, raised reticulate; MLM with 3 pairs of setae, with raised reticulation, with a weak median longitudinal fovea (0.33x length of MLM) at posterior margin; scapula coarsely reticulate and pubescent; axilla smooth and shiny; scutellum 1.2x as long as MLM; finely reticulate; median fovea reaching scutoscutellar setae; dorsellum smooth and shiny; propodeum with median carina connects a transverse projecting flap at anterior end, with a broad fovea or groove on either side laterally; spiracle separated from metanotum by a distance shorter than diameter of spiracle; callus with 8 setae on either side; hind coxa faintly reticulate on dorsobasal part; first tarsal segment of hind leg slightly shorter than second segment; lateral panel of pronotum reticulate except on smooth anterior admarginal area; prepectus smooth and shiny with a large foveola

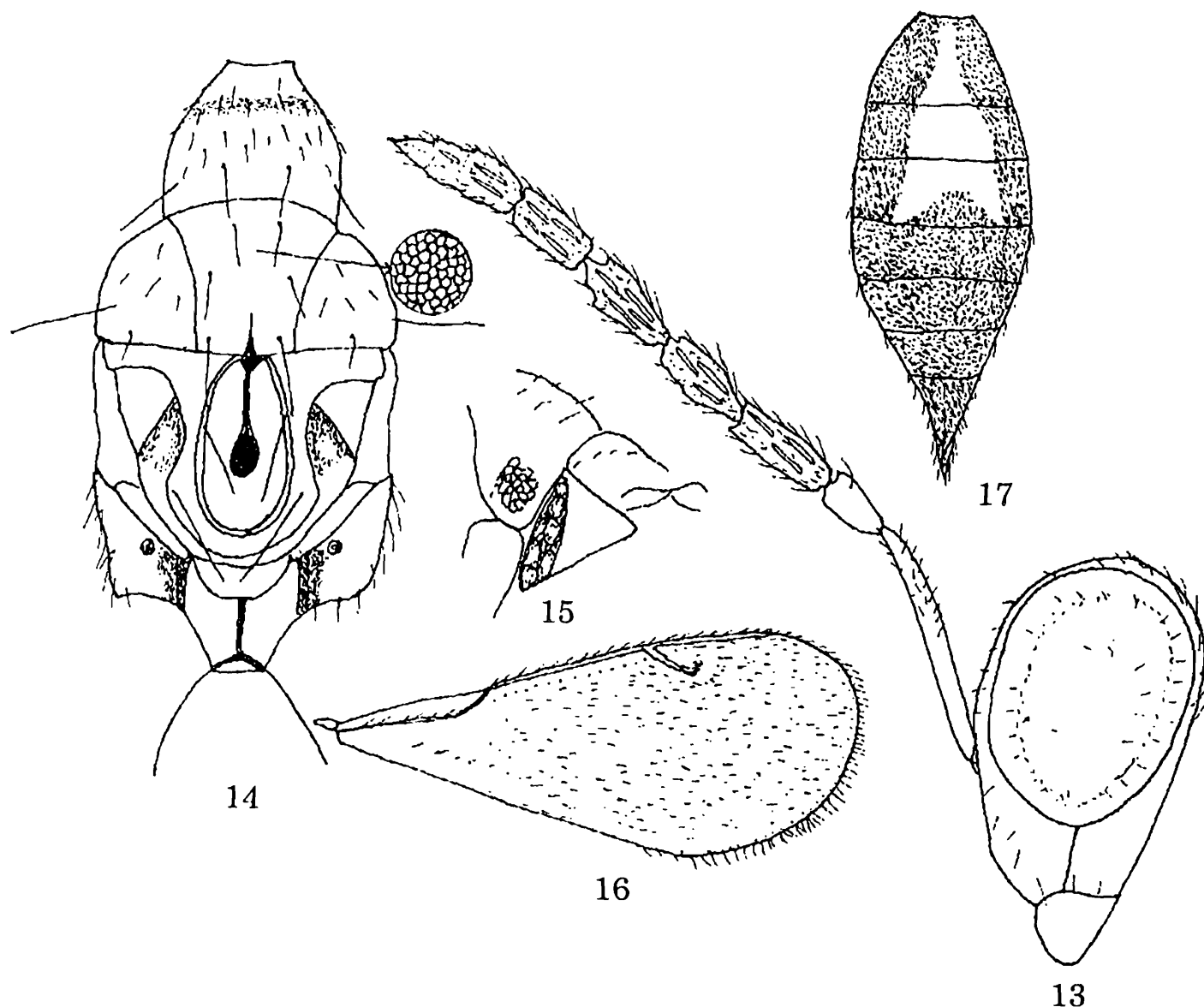
containing pits, foveola triangular shaped with narrower point of angle almost reaching anterior dorsal margin; mesepimeron and mesepisternum smooth and shiny except for a faint reticulation on lower episternum; forewing length 2.44x its width; speculum closed behind by a cubital line of setae; SMV with 7 dorsal setae; relative L : W of CC = 31 : 4; relative length of SMV = 25; MV = 35; PMV = 24; STV = 11.

Metasoma 1.24x as long as mesosoma, 2.63x as long as wide; posterior margin of T1 straight; hypopygium not reaching middle of gaster.

Male : Unknown.

Host : Unknown.

Material examined : Holotype, Female, INDIA, Kerala, Vandiperiyar (9° 35' N 77° 5' E), Manjumala, 8-i-2004, T. C. Narendran & party.



Figs. 13-17. *Alophomorphella viola* sp.nov. Female : 13. Head and antenna profile; 14. Mesosoma dorsal view; 15. Prepectus; 16. Forewing; 17. Gaster dorsal view.

Depository : Deposited in the Department of Zoology, University of Calicut, Kerala State pending transfer to ZSIK or NZSI.

Remarks : This species comes near *Alophomorphella boneia* Ubaidillah in the key to Indonesian species by Ubaidillah and Kojima (2006), but differs from that species in having : (1) body mostly with deep violet refringence (in *A. boneia* body metallic blue- green); (2) scape completely pale white (in *A. boneia* scape yellow with apical part dark brown); (3) pedicel pale brownish yellow (in *A. boneia* pedicel dark brown); (4) metasoma mostly dark brown with pale yellow patch on anterior half medially (in *A. boneia* metasoma mostly yellowish brown); (5) pedicel 0.62x length of F1 (in *A. boneia* Ubaidillah pedicel 0.7x length of F1); (6) malar space 0.77x eye height (in *A. boneia* malar space 0.25x eye height); (7) MS not ending in a fovea below eye (in *A. boneia* MS ending in a small fovea below eye) and (8) MV 1.45x as long as PMV (in *A. boneia* MV 1.66x as long as PMV).

Genus *Anselmella* Girault

1926. *Anselmella* Girault, [398] : 3 Type species *Anselmella miltoni* Girault, by monotypy.

1958. *Eugeniana* Narayanan, Subba Rao & Patel, 200-202 Type species *Eugeniana herrichi* Narayanan, Subba Rao & Patel, by monotypy. Synonymy by Bou ek (1988).

Diagnosis : (Based on Bou ek, 1988). Body nonmetallic, pitch brown, wings hyaline. Head stout (Fig: 1039, Bou ek, 1988), non collapsing, frons strongly convex; genae, temples and occiput rounded. MS not distinct; clypeus delimited at most only on sides, with usually distinct tentorial pits, its anterior margin straight; labrum broadly bilobed, usually exposed; scrobe deep, and with channels and for most part completely separated from each other, far apart, scrobe reaching front ocellus, margins carinate. Antennae inserted well above middle of frons, toruli well separated by a distance more than about 2x or more diameter of a torulus, antennal formula 119 with undifferentiated flagellum which is clavate (more strongly in female).

Mesosoma strongly convex, without prominent setae or pubescence. Pronotum rounded, short, posterior margin emarginated in middle; mesoscutum with very deep, straight and complete, widely separated notauli posteriorly. Scutellum convex, rounded apically, not projecting over, metanotum without frenum, without grooves and with numerous very short pubescence. Propodeum short, sloping, almost smooth with a weak median carina (faintly indicated); spiracles in middle of lateral length of propodeum, separated from meanotal margin by deep oblique pit. Prepectus triangular without sculpture, horizontally about as long as tegula. Legs strong; fore tibia with 2 spines at apex externally. Forewing extending

beyond apex of metasoma, parastigma rather smoothly joining SMV (Fig1038 of Bou ek, 1988). MV one forth as long as or shorter than one forth of SMV; STV longer than MV; PMV shortest (represented by a very short stub); wing pilosity strongly reduced, in proximal half, virtually absent.

Metasoma : Gaster sessile, oval, not compressed from sides; ovipositor sheath not exerted.

Host : Larvae, phytophagous and develop in seeds of *Syzygium* (= *Eugenia*).

Distribution : From India to Phippines, Fiji Islands and Australia (Bou ek, 1988).

Anselmella kerrichi (Narayanan, Subba Rao & Patel)

(Fig : 333)

1958. *Eugeniana kerrichi* Narayanan, Subba Rao & Patel, 202. Female, India, Poona. (INPC).

1988. *Anselmella kerrichi* (Narayanan, Subba Rao & Patel): Bou ek, 603.

Diagnosis : Female : Length 2.00 mm. Head dark brown; clypeus light reddish brown, eyes grey, mesosoma (except metanotum and propodeum) dark brown. Metanotum and propodeum light reddish brown; legs yellowish red with coxae slightly dark shaded; wings hyaline, veins brown; metasoma dark brown and shining.

Head rugosopunctate, sculpture more distinct than on mesosoma; OOL 2x LOL; antennae strongly clavate; relative L : W of antennal segments : scape, 35 : 8; pedicel = 20 : 9; F1 = 10 : 5; F2 = 5 : 5; F3 = 3 : 7; F4 = 6 : 10; F5 = 7 : 13; F6 = 6 : 13; F7 = 5 : 13; F8 = 7 : 12; F9 = 8 : 7 (Fig : 333).

Mesosoma reticulately punctate in the middle, finely regularly striate anteriorly and on sides; mesonotum, axillae and scutellum shiny, reticulately striate; propodeum shiny smooth, pleurae rather smooth, shiny; forewing bare on disc; relative length of veins : SMV = 7; MV = 1; STV = 1; PMV represented by a short stub.

Metasoma longer than mesosoma, shiny.

Male : Length 1.50 mm. Antennal segments slender (Fig: 301. A. Mani 1989); forewing densely pilose on apical 0.50; marginal fringe present throughout; relative lengths of forewing veins: SMV = 5; MV = 1; STV = 1.

Host : Unknown.

Distribution : India.

Remarks : This is the only species of *Anselmella* known from the Oriental Region. According to Bou ek there are atleast six species of *Anselmella* known from the world.

Genus *Anumanniola* Narendran

2003. *Anumanniola* Narendran, in Narendran & Sinu., 1031. Type species *Anumanniola lasallei* Narendran, by monotypy.

Diagnosis : Head collapsing; POL slightly shorter than OOL; occipital carina indistinct; eyes not pilose; antennal formula 11142; toruli located near middle of frons ; flagellar segments flat and thin with deep, smooth concavity on one side; pronotum somewhat bell-shaped; mesoscutum with two pairs of strong setae; scutellum with two pairs of strong setae, middle part smooth and with a shallow groove in middle (Fig: 20), sides reticulate, propodeum with a pair of posteriorly diverging carinae; mid femur with a characteristic seta at subapical part; forewing with apex infumate; PMV distinctly longer than STV; costal cell much shorter than MV; caudal end of metasoma tilted upwards.

Distribution : India and Sri Lanka (New record for Sri Lanka).

Remarks : In the key to genera of Australasian Eulophidae by Bouček (1988) this genus comes close to the genus *Naumanniola* Bouček in having somewhat similar type of pronotum, antennal insertion; and clava two segmented. However *Naumanniola* differs from this genus in having: mid femur without a characteristic subapical seta, propodeum with a median carina, MV not much longer than costal cell as in *Anumanniola*, antenna with trichoid sensillae, and flagellar segments without deep concavities.

Anumanniola lasallei Narendran

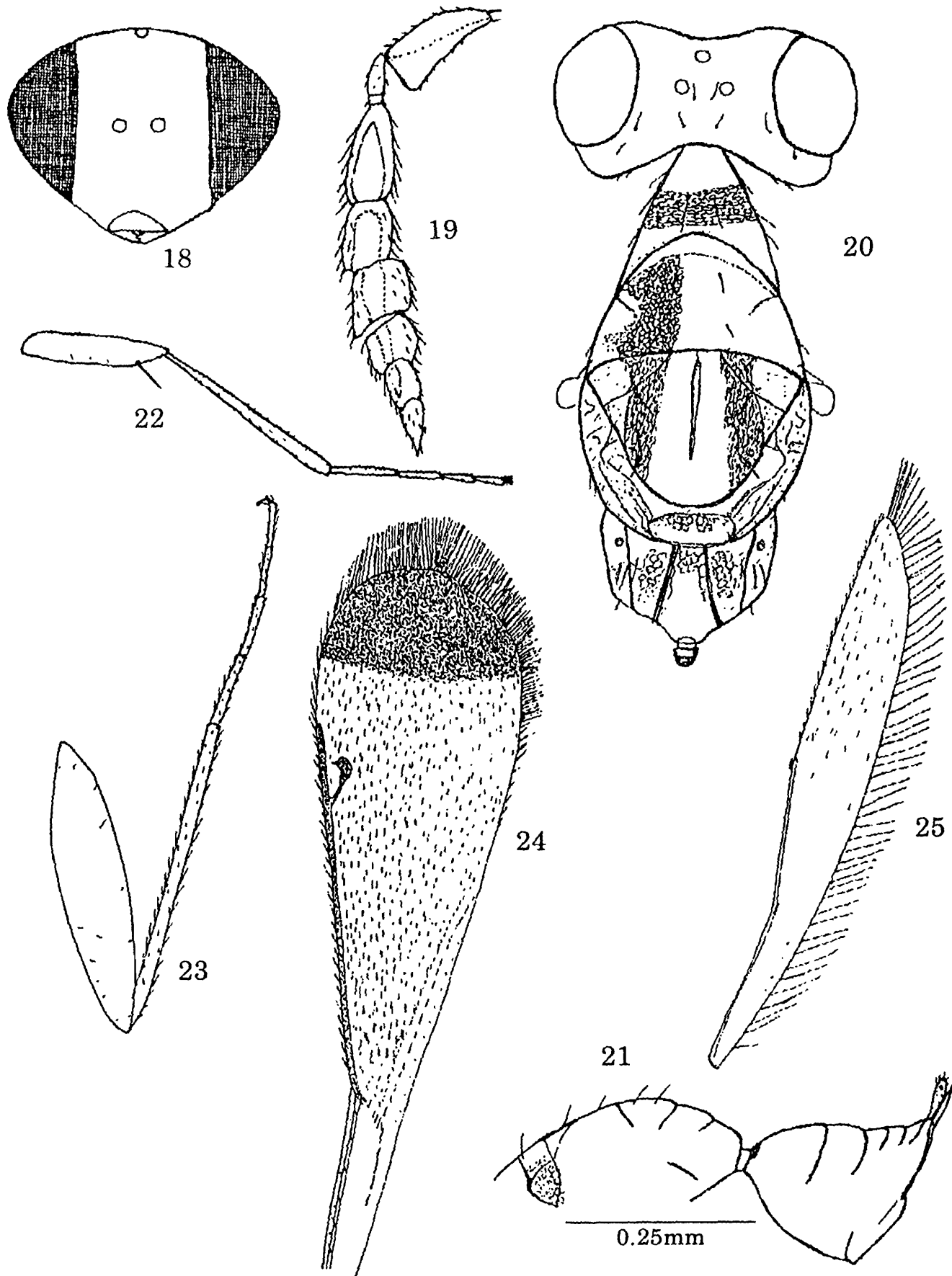
(Figs. 18-25)

2003. *Anumanniola lasallei* Narendran, in Narendran & Sinu., 103. Female : India, Sringeri (ZSIK).

Redescription : *Female* : Length 0.69-0.70 mm.

Colour : antenna brown with apical segment of clava pale white; head blackish-brown with metallic green refringence; eye and ocelli reflecting pale yellow; clypeus, mandibles and anterior lower part of gena pale brown ; sides of vertex with violet tinge ; pronotum metallic green with violet tinge ; mesoscutum bright metallic green ; median smooth part of scutellum and axillae concolorous with mesoscutum ; sides of mesosoma pale brown ; propodeum metallic green but darker than mesoscutum; legs pale yellow ; metasoma with petiole , dark brown, anterior part of petiole yellow, posterior part black; T1 pale brown with metallic green reflections; remaining tergites dark brown; wings hyaline with apex of forewing infumate; pubescence dark brown on vertex, pale brown on mesosoma.

Head width in dorsal view about 3x its median length; width in anterior view 1.36x its median length; frons smooth; vertex faintly reticulate(can be seen only



Figs. 18-25. *Anumaniola lasallei* Narendran. Female : 18. Head anterior view; 19. Antenna; 20. Head and mesosoma dorsalview; 21. Mesosoma and metasoma side view; 22. Middle leg; 23. Hind leg; 24. Forewing; 25. Hind wing.

under certain lights); POL slightly shorter than OOL (8:9); vertex with a pair of setae inside POL area posteriorly and behind this with three pairs of setae; eyes without hairs ; MS distinct (careful examination under proper illumination is necessary to see this character); relative measurements of L : W of antennal segments : scape = 15 : 8; pedicel = 11 : 5; anellus = 1 : 3; F1 = 25 : 13; F2 = 16 : 14; F3 = 17 : 16; F4 = 12 : 13; Clava = 23 : 9.

Mesosoma : Pronotum transversely reticulate, its median length 0.75x length of mesoscutum; mesoscutum distinctly reticulate with notouli faintly visible (under certain illumination) on anterior side; anterior marginal area smooth and shiny; mesoscutum with two pairs of setae on outer side margin; scutellum median length a little less than 1.5x its width; 1.32x median length of mesoscutum; median part with longitudinal narrow fovea starting from base and exceeding beyond middle but not reaching posterior part; submedian areas smooth and shiny, sublateral part longitudinally reticulate; scutellum with two pairs of strong setae; dorsellum bulging with deep pits on basal sides, remaining part of dorsellum smooth and shining. Prepectus large, subtriangular, reticulate. Propodeum with two submedian carina diverging posteriorly, basal part of area between submedian carinae and sides of propodeum reticulate, remaining regions of propodeum smooth and shiny; nucha absent. Middle femur with a characteristic seta at subapical part; hind femur 4.4 x as long as its width. Forewing length 3.22x its median width; distal part infumate; relative lengths of forewing veins : SMV = 50; MV = 78; PMV = 20; STV = 11; SMV with 6 dorsal setae; CC with a line of ventral setae; longest marginal fringe 0.024x width of forewing; hind wing (Fig. 24) 7.1x as long as its width.

Metasoma shorter than mesosoma; petiole divided into two parts, broader than long, its posterior part ending in a pit on base of T1. Ovipositor sheath tilted upwards, as long as midmetatarsus, a little shorter than hind metatarsus.

Male : Unknown.

Host : Unknown.

Distribution : India : Karnataka; Orissa (new record for Orissa) Sri Lanka : Kandy.

Material Examined : Holotype : female. India, Karnataka, Sringeri (13°25'N 75°15'E) (ZSIK). 1 Female. Sri Lanka: Central Kandy District, University of Peradaniya, Hantana mt. (7° 15' N 80° 37' E) 10.14.vii.1999, M & J. Wauber (UCDC). 2 Females, Orissa, 26.xi.2007 F R. Khan (INPS).

Genus *Aroplectrus* Lin

1963. *Aroplectrus* Lin, 112. Type species *Aroplectrus dimerus* Lin, by original designation.

Diagnosis : Head in front view wider than high; scrobe weakly developed; frontal line stronger on anterior part (lower side) than on posterior part (upper part). Eyes pubescent. Antenna long, with anelli varied in number of segments and in length; funicle four segmented; clava shorter than F1; pronotum rounded off anteriorly, not with sharp margins; coarsely granulate or striate-punctate or reticulate. Mesoscutum with distinct notauli; scutellum coarsely sculptured with irregular rugae and fine granules, anteriorly with two large deep oval concavities, disc slightly convex, posterior margin of scutellum raised. Propodeum divided into more than four areolae by several short carinae; median carina may not present; prepectus coarsely rugose. Mesopleural furrow deep, strongly curved. Hind tibia with two distinctly elongate apical spurs; hind basitarsus much longer than second tarsal segment. Wings normal. Metasoma with T1 as long as half length of metasoma.

Host : Lepidoptera : Cochliidae and Limacodidae.

Distribution : India, Indonesia, Thailand, Peoples Republic of China, Philippines, and Taiwan.

Key to Oriental species of *Aroplectrus* Lin

(Modified from Narendran *et al.* (2002).)

1. Propodeum without a median carina, with more than 4 areolae including a hexagonal median areola; MV a little longer than SMV; body entirely yellow except lines on face and transverse carina of pronotum; anterior part of the pronotum and transverse band before end of metasoma sometimes brownish. Celebes, Malayan Peninsula *A. areolatus* (Ferrière)
- Propodeum with median carina; other characters partially or completely different from above 2
2. Hind tibial spur reaching apex of second tarsal segment 3
- Hind tibial spur not at all reaching apex of second tarsal segment 4
3. Hind basitarsus almost 1.5x as long as second segment; F1 over 2x as long as pedicel; general body colour with yellow predominant; , MLM, sides of axillae and of metanotum, most of propodeum and pleurae reddish honey colour; legs yellow with hind coxae slightly tinged with red. Philippines *A. flavescens* (Crawford)
- Hind basitarsus a little more than 2x as long as second hind tarsal segment; F1 not over 2x as long as pedicel; general body colour with black predominant;

mesoscutum with a median reddish brown patch near posterior margin with two reddish brown patch on each scapula; scutellum with side margin and posterior marginal area pale brown; propodeal lamina pale brown; leg with all coxae black with apices paler; all femora brownish black with apical one-third part paler; all tibia pale brownish yellow with medium part of hind tibia darken. India *A. contheylae* Narendran

4. Head much narrower than mesosoma; submedian propodeal areola divided completely into two sectors by a continuous oblique carina; anellus well defined (2 in female)..... 5
 - Head much broader than mesosoma, submedian propodeal areola partially divided by interrupted carina; anellus only partially definable in female *A. haplomerus* Lin
5. General body colour black; scape not longer than eye; distance between occipital margin and anterior margin of head in dorsal view 3x shortest distance between occipital margin and occipital foramen; clava longer than F4(Fig.31),Thailand *A. noyesi* Narendran sp. nov.
 - General body colour yellow; scape distinctly longer than eye; distance between occipital margin and anterior margin of head in dorsal view 1.12x shortest distance between occipital margin and occipital foramen; clava(Fig.38) as long as F4 or at the most subequal in length. Taiwan, India *A. dimerus* Lin

1. *Aroplectrus contheylae* Narendran

(Figs. 26-27)

2002. *Aroplectrus contheylae* Narendran, in Narendran *et al.*, 31-34. Holotype Female, India, Kerala, Kayamkulam, (ZSIK).

Redescription : Length 3.84 mm, black with following parts as follows : head pale yellow with median part of frons brownish black; postocciput black; scape pale yellow; pedicel pale brown, flagellum brownish black; pronotum with posterior margin and two faint patches reddish brown; mesoscutum with a median reddish brown patch near posterior margin, with two reddish brown patches on each scapula; tegula pale yellowish brown ; scutellum with side margin and posterior marginal area pale brown; propodeal lamina pale brown; legs having all coxae black with apices paler; all femora brownish black with apical one-third part paler; all trochanters pale brownish yellow; all tibiae pale brownish yellow with median part of hind tibiae slightly darker; tibial spurs and tarsi pale yellow; pretarsi black; metasoma black; wings hyaline, veins and pilosity brown; stouter setae on body brown; other pubescence pale yellowish white.

Head (Figs. 26) 1.10x width of mesosoma; width in anterior view 1.25x its height; width in dorsal view about 4x its median length; vertex and frons smooth with faint reticulations, the former with a few black setae and latter with sparse cilia; malar space smooth, MS 0.36x length of eye in profile, complete; occiput and postgena faintly reticulate; the former with sparse cilia; eye length about 1.5x its width in profile; POL about 1.7x OOL; epistomal sulcus distinct, straight, margin of clypeus straight; antenna (Fig. 28) densely ciliate on funicle and club; scape a little shorter than eye, 6x as long as width; pedicel a little shorter than 2.8x its width; anelli two; first anellus thin, hardly visible, bare, second anellus ciliate; F1 3x as long as its width, longer than any of the funicular segments and clava, with 3 rows of sensillae, F2 slightly longer than F3; F4 longer than F3; clava length subequal to length of F2, distinctly 3-segmented.

Mesosoma : Pronotum width about 1.5x as long as its length, coarsely and irregularly striate-punctate, densely pubescent with 4 strong setae at posterior margin; reddish brown area adjacent to posterior margin of pronotum densely microsculptured; lateral area of pronotum with a very long seta near centre; mesoscutum distinctly reticulate on anterior part, posterior part irregularly striate and granulate; mesoscutum with a median weak carina (Fig. 26), with 4 long setae and 2 shorter strong setae on posterior marginal area, anterior area with 2 strong setae, remaining part of dorsum densely pubescent; scutellum a little wider than its length (47 : 43), granulate with strong longitudinal irregular carinae, basal part with 2 strong areolae; scutellum without pubescence except for 4 strong setae; mesonotum with a strong median carina and a pair of weak sublateral carinae; anterior median lamina (Fig. 26) strongly projecting, weakly sculptured, median carina distinct; propodeum (Fig. 27) gradually descending caudad, weakly and sparsely granulate, mostly smooth, submedian areola weakly convex; forewing thoroughly microtrichiate; relative length of veins : SMV = 40; MV = 25.2; PMV = 15.75; STV = 7; hind coxa smooth; femur in profile 4.7x as long as its maximum width; longest spur of hind tibia slightly exceeding combined length of hind metatarsus and second hind tarsus.

Metasoma sessile, longer and narrower than mesosoma; oblong-ovate in dorsal view; apical tergites with a few hairs on each side; ovipositor sheath not exceeding beyond metasomal apex (hardly reaching apex).

Male : 2.39 mm. Similar to female except in having head width with smaller profile depth in female; antenna more slender, anellus only 1 segmented; clava broader than F1; metasomal apex truncate.

Host : Caterpillar of *Contheyla rotunda* Hampson (Lepidoptera : Cochliidiidae).

Material examined : Holotype and Paratype.

Type locality : India, Kerala.

Remarks : This species resembles *A. dimerus* Lin in having similar type of antenna, head much narrower than mesosoma, submedian propodeal areola divided completely into two sectors by a continuous oblique carina and in several other features. However this species can be separated from *A. dimerus* and from other species by the key to species of *Aroplectrus* given above.

2. *Aroplectrus dimerus* Lin

(Figs. 28-30)

1963. *Aroplectrus dimerus* Lin., 118. Holotype Female, Taiwan, Taipei (TWM).

Redescription : (partly based on Lin., 1963 and partly based on one paratype present in (BMNH).

Female : Length 2.40-2.80 mm. Body reddish, with yellow and some times black markings. Head yellow; postorbital carina red to black; antenna with reddish scape, darker on funicle (excluding lower surface of F1 and F2) as well as clava. Pronotum (excluding anteriolateral corners), mesonotum, axilla (posterior part), scutellum (lateral margin) and metanotum (lateral areola) all yellow. Wings hyaline, veins brownish. Metasoma either unicolor, or T4 and T5 each with dark bands; ovipositor sheath black.

Head narrower than mesosoma (23 : 28) in anterior view 1.4-1.5x as wide as its height, in dorsal view 2.61x as broad as its length; vertex and frons finely reticulate; malar space smooth, MS 0.53x as long as length of eye, 0.48x height of eye in side view; complete. Eye height: length (in side view) = 21 : 19; OOL: POL : LOL = 7 : 9 : 5; anterior margin of clypeus weakly convex. Antenna with scape much longer than eye (25:19); pedicel more than 2x as long as broad (13 : 6); anellus two segmented; F1 4.4x as long as broad and distinctly longer than any of the funicular segments and clava.

Mesosoma in profile very strongly curved along dorsal margin. Pronotum 2.0x as wide as long, anteriorly rounded off; posteriorly emarginated; posterior marginal area densely punctate, with 4 setae; lateral area each with a relatively long seta near centre. Mesonotum 2.6x as broad as long, finely striate on anterior part, with four setae slightly behind middle of mesoscutum, 4 near posterior margin of scapula and another two near each tegula. Scutellum length : width (11 : 13) finely granulate and with longitudinal carinae. Propodeum finely granulate, median carina weak, submedian areola divided by a complete oblique carina.

Forewing 2.43x as long as wide, densely pilose, relative lengths of veins : SMV : MV : PMV : STV = 16 : 20 : 17 : 6.2. longest spur of hind tibia not reaching apex of second tarsal segment.

Metasoma shorter and narrower than mesosoma, ovate in dorsal view, oblong.

Male similar to female with different proportion of antennal segments (for details see Lin 1963).

Host : *Parsara bicolor*, *Pentocrates* sp. (Lepidoptera : Limacodidae) (From Noyes, 2003).

Distribution : Taiwan; India (Lin, 1963; Singh *et al.*, 1988); Peoples Republic of China, and Philippines.

Materials examined : 1 Female paratype (BMNH).

Remarks : This species comes near *A. noyesi* Narendran, sp. nov. but differs in many features as mentioned under 'Remarks' under *A. noyesi*.

3. *Aroplectrus noyesi* Narendran sp. nov.

(Figs. 31-33)

Female : (Holotype) Length 2.43 mm. Head yellow; eyes and ocelli red; antenna brown except pale yellow scape and pedicel; occiput black; cervix and area adjacent to it black; pronotum yellowish pink with dark patches anteriorly; posterior broader of pronotum pale yellow, rest of mesosoma black with slight pinkish colour on dorsal marginal area of scapula and median part of metanotum slightly; legs brownish black with apices of coxae, apices and bases of all femora and tibia and all tarsi and spurs pale yellow; metasoma black with pale brown cross band on distant half and subapically. Wings hyaline with brownish tinge, veins pale brown; pilosity of wings brown.

Head narrower than mesosoma (23 : 28) , in anterior view 1.33x its height, in dorsal view 2.56x its length; vertex and frons finely reticulate; malar space smooth, 0.35x length of eye, about 0.3x height of eye in side view; MS complete. Eye height : length = 42 : 34; OOL : POL : LOL = 2 : 4 : 2; anterior margin of clypeus weakly convex. Antenna (Fig. 31) scape much longer than eye (40 : 34); pedicel a little more than 2x as long as broad, anellus 2 segmented; F1 2.66x as long as broad, subequal in length to F2 or F3 or clava; F4 slightly shorter than F3 clava subequal in length to F3.

Mesosoma in profile moderately curved along dorsal margin; pronotum 2.7x as wide as long, anteriorly rounded off, posteriorly emarginated; pronotum distinctly pitted, posterior marginal area with four setae; lateral area each with a relatively very long seta near centre. Mesonotum 2.8x as broad as long (28 : 10); with

longitudinal carina and large pits, with 4 setae, lateral area with one long seta on each side near tegula. Scutellum length: width 12:10, with large pits and 4 setae. Propodeum finely granulate, median carina moderately strong, submedian areola divided by a complete oblique carina on either side. Forewing 2.66x as long as wide; densely pilose; relative length of veins : SMV : MV : PMV : STV = 20 : 17 : 11 : 6 hind coxa about 2x as long as wide, about 0.7x length of hind femur; longest spur of hind tibia not reaching apex of second hind tarsal segment.

Metasoma : Gaster shorter and narrower than mesosoma; ovate in dorsal view, oblong.

Male : Unknown.

Host : Larva of *Darna sordida* Snellen (Lepidoptera: Limacodidae) on oil palm.

Distribution : Thailand.

Holotype : Female. Thailand: Chumponon (0°29' N and 99°11' E), 10.ix.1992, collector unknown. (BMNH). Paratypes: 2 females, of same data of holotype (BMNH).

Remarks : This new species comes near *A. dimerus* Lin in having somewhat similar propodeum but differ from it in having : (1) black species (*A. dimerus* yellow species); (2) MS 0.35x length of eye (in *A. dimerus* MS 0.53x length of eye); F1 2.6x as long as broad (F1 more than 4x as long as broad in *A. dimerus*); PMV slightly shorter than 2x length of STV (in *A. dimerus* PMV 2.25x length of STV) and in several other features.

Etymology : Named after Dr. John S. Noyes (BMNH) for his cooperation in my work and for his significant contributions to Chalcidology.

Genus *Aulogymnus* Foerster

(Fig. 432)

1851. *Aulogymnus* Foerster, 24. Type species *Aulogymnus acerii* Foerster, by monotypy.

1856. *Olynx* Foerster, 72. Type species *Ichneumon gallarum* Linnaeus; by original designation.

1858. *Cyniphoctonus* Reinhard, 22. Type species *Ichneumon gallarum*; by original designation. (Bou ek & Askew 1968 synonymized)

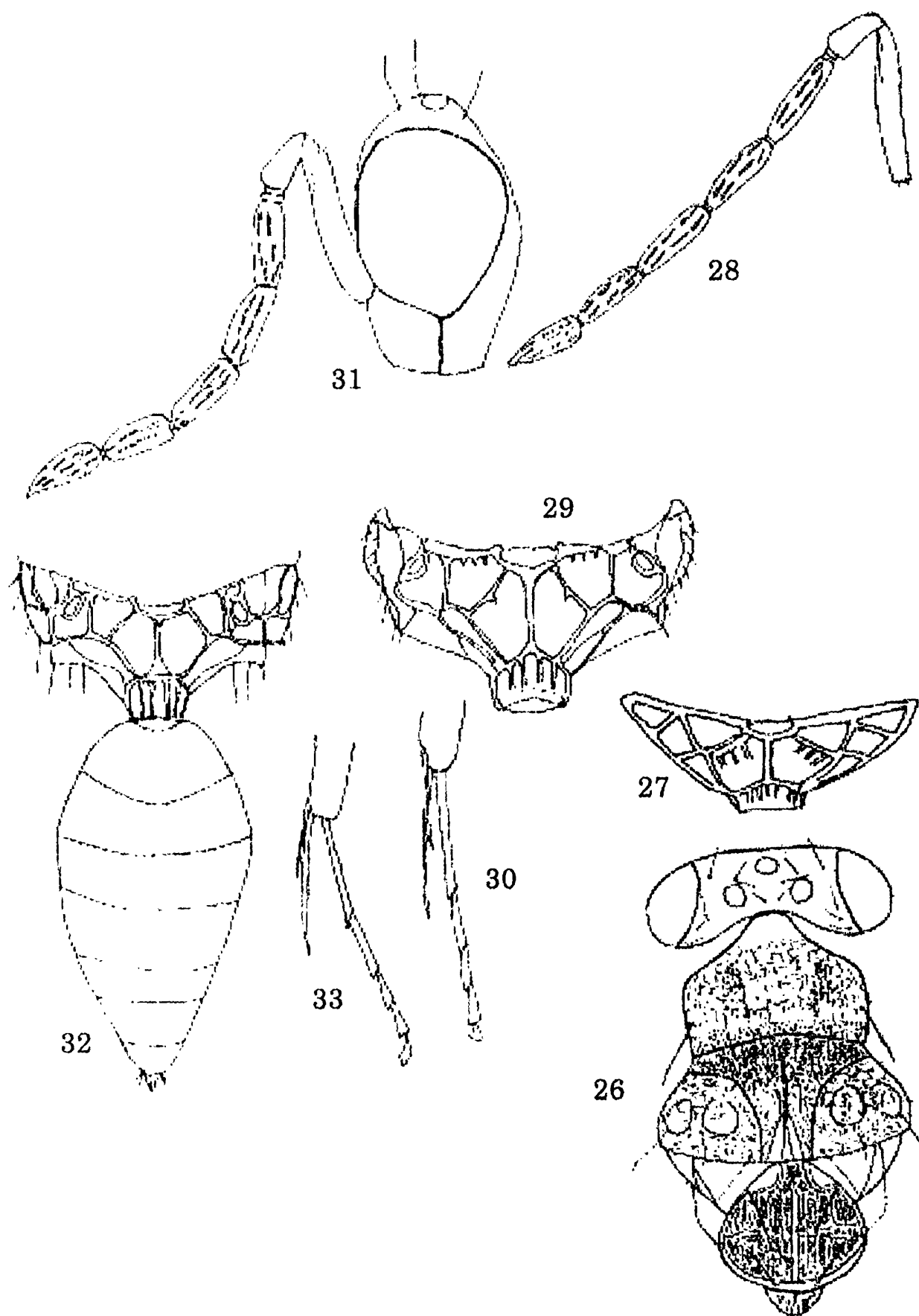
1858. *Olinx* Reinhard, 22. Emendation.

1904. *Ophelenoideus* Ashmead, 163. Type species *Ophelenoideus japonicus* Ashmead; by original designation (Kamijo, 1976 synonymized).

1904. *Scotolinx* Ashmead, 354. Type species *Scotolinx gallicola* Ashmead (Bou ek, 1988 synonymized).

1913. *Pseudiglyphella* Girault, [167] : 255. Type species *Pseudiglyphella caelestis* Girault; by original designation. Description supplemented by Girault, 1915 (230).

1916. *Mirolinx* Girault, [289] : 131. Type species *Mirolinx flavitibiae* Girault; by original designation (Schauff and La Salle, 1993 synonymized).



Figs. 26-27. *Aproplectus conthelae* Narendran. Female : 26. Head & Mesosoma dorsal view; 27. propodeum. **Figs. 28-30.** *A. demerus* Linn. Female : 28. Antenna; 29. Propodeum; 30. Apex of hind tibia & tarsi. **Figs. 31-33.** *A. noyesi* sp.nov. Female : 31. Head & antenna profile; 32. Propodeum & gaster; 33. Apex of hind tibia & tarsi.

1916. *Pseudolynx* Girault, [266] : 152. Type species *Pseudolynx io* Girault (Schauff and La Salle, 1993 synonymized).

1916. *Scotolinx* Girault, [274] : 218- 219. Type species *Scotolinx gallicola* Girault; by original designation. Based on the same material as *Scotolinx gallicola* Ashmead (Bouček, 1988 synonymized).

Diagnosis : Antenna with 2-3 funicular segments in females, 3-4 segmented funicle in male; pronotum rounded anteriorly; notauli almost straight posteriorly; scutellum with sublateral grooves faint or absent; axillae slightly advanced; forewing with stigma distinctly elongate with uncus separated from apex (Fig. 432).

Host : Mostly parasitic in plant galls caused by cynipids (Hymenoptera). Bouček & Askew (1968) recorded other hosts such as Curculionidae and Gracillariidae.

Distribution : Mostly Palaearctic region. The report from India by Arifa & Khan (1992) and Khan *et al.* (2005) is doubtful.

Remarks : Arifa & Khan (1992) and Khan *et al.* (2005) reported two species of *Aulogymnus* (?) under same species name viz *Olynx indicus* Arifa & Khan (1992) and *Aulogymnus indicus* Khan, Agnihotri and Sushil (2005). I have tried to get the types of these two species but all my efforts were in vain. The authors never responded to my requests. Prof. Ramamurthy informed me (per. com. 2009) that the types of these two species are not present in the NPC where one of the species is stated to be deposited. The depository of *O. indicus* may be G.B.Pant University or lost? Since the identity of these two species could not be ascertained from the poor descriptions I am treating both the species as *incertae sedis*.

I have not come across this genus so far from India.

Genus and species *Incertae Sedis* under *Aulogymnus*.

1. *Aulogymnus indicus* (Arifa & Khan)

1992. *Olynx indicus* Arifa & Khan 428. Holotype male, India, Mussoorie (PUA?)

2009. *Aulogymnus indicus* (Arifa & Khan) (Universal Chalcidoidea data base).

Host : Lepidopterous leaf miner on wild plant (Arifa & Khan, 1992).

Distribution : India : Uttarakhand.

Remarks : From the figures given by the authors it seems that this species is not likely to be an *Aulogymnus*, but may belong to some other genus or even to subfamily Tetrastichinae. The PMV and SMV in the Fig. 33 shows characteristics of Tetrastichinae as also the axillae. However to be sure one needs to study the relevant type. I place this taxon under '*incertae sedis*' : since it is not possible to determine the identity of the taxon from the original description and figures.

2. *Aulogymnus indicus* Khan, Agnihotri & Sushil

2005. *Aulogymnus indicus* Khan, Agnihotri & Sushil, 47. Holotype [female] India, Nainital (NPC ?).

Host : Unknown.

Distribution : India : Uttarakhand.

Remarks : The poor description and figures do not help in ascertaining the real identity of this species. The absence of notauli (Khan *et al.*, 2005 : Fig. 3), scutellum with 2 setae, and nature of antenna show that this species probably does not belong to *Aulogymnus*. Since I could not examine the type, I am not sure of its real identity. For the same reason the homonymy involved here could not be ascertained. I place this species under '*incertae sedis*'

Genus *Boucekiola* Narendran

2005. *Boucekiola* Narendran, 199. Type species *Boucekiola malabarica* Narendran, by original designation.

Diagnosis : Head hardly stout; vertex raised relative to dorsal margin of eye; eye pilose; occiput in dorsal view moderately, triangularly concave, without carina; scrobes forming inverted V-shape, moderately deep depression not reaching anterior ocellus, the scrobal margins ecarinate; frons and vertex distinctly reticulate; gena short and narrow; malar sulcus deep and complete; mouth broad; mandibles tridentate. Antennae inserted at level of lower ocular line, short, with formula 11443. Mesosoma: Pronotum without distinct cross carina, with a paramedial pair of unusually long, posteriorly directed setae and several scattered shorter setae; mesoscutum polished, shiny, but with a few scattered pits. Notauli absent; axillae strongly advanced anteriorly, smooth and polished; scutellum with a pair of weak submedian lines, each ending posteriorly in a setal pit, and with 2 pairs of setae slightly beyond middle of scutellum; propodeum with distinct raised median carina and closely attached groove on either side; plicae distinct and complete, submedian areas large, smooth and shiny. Legs slender, hind coxa bare; spurs short. Forewing with basal cell delimited apically by basal setal line and posteriorly by cubital setal line, the cubital setal line starting from base of forewing and closing speculum posteriorly; speculum extending anteriorly behind MV to STV; SMV with 4 dorsal setae; PMV longer than STV; CC very narrow; disc ventrally with a line of setae behind MV

Gaster petiolate, with petiole narrower basally and with broader apical area having tooth on either side; gaster subequal in length to mesosoma; T1 longest, with a shallow basal fovea.

Host : Unknown.

Distribution : India : Kerala.

Remarks : The genus *Boucekiola* Narendran does not fit in any genus included in the key to genera of Indian Eulophidae by Hayat (in Subba Rao & Hayat, 1985) or the description of any genus described so far in the world. It keys to *Necremnoides* Girault (1913)[167] in Bou ek's key (1988), but differs from it and all other genera of Eulophidae by the following combination of characters: vertex raised; eyes pilose; antennal formula 11443; pronotum with a pair of unusually long setae; mesoscutum shiny, smooth with a few scattered pits; axillae strongly advanced; scutoscutellar sulcus slightly convex anteriorly; scutellum with a pair of submedian weak carinae, the distance between the carinae much greater than distance between carina and lateral margin; scutellum with 2 pairs of setae; propodeum with a raised median carina and closely attached groove on either side of carina; forewing with cubital line of setae continuous to base of wing; PMV longer than STV; gaster petiolate, the petiole with a tooth on either side.

***Boucekiola malabarica* Narendran**

(Figs. 34-37)

2005. *Boucekiola malabarica* Narendran, 199-202. Holotype Female, India [Calicut Dist. Nanminda] (ZSIK).

Redescription : *Female* : Body length 1.08–1.1 mm. Black except for following: antenna with scape pale yellowish brown, pedicel brown, and flagellum dark brown; eye yellowish grey; ocelli pale reflecting yellow; legs including coxae yellow; wings hyaline, pilosity and veins pale yellowish brown.

Head width in anterior view about 1.19x head height from dorsal margin to mouth margin; clypeus not demarcated clearly, lower margin entire; POL subequal to OOL. Relative length: width of scape = 26:8; pedicel = 16 : 8; F1 = 9 : 9; F2 = 14 : 11; F3 = 12 : 12; F4 = 12 : 12; clava = 28 : 12 (Fig. 36).

Mesosoma : mesonotum with scutoscutellar sulcus slightly convex anteriorly; mesoscutal lateral lobe with a black, deep fovea lateral to axilla; scutellum shorter than mesoscutum and with apex posteriorly arched. Metanotum with two deep transverse black foveae laterally. Propodeum with spiracle round and separated from posterior margin of metanotum. Forewing 2.26x as long as its maximum width; relative length of costal cell and veins: costal cell = 49, MV = 57, PMV = 25, STV = 14.

Metasoma : petiole rugoso-reticulate. Gaster (excluding petiole) about 1.46x as long as maximum width; tergites as in Fig. 34.

Male : Length : 1.08 mm. Similar to female except for pale yellow patch on basal half of gaster dorsally. Antenna (Fig. 37) with flagellum narrower and scape broader than for female.

Host : Unknown.

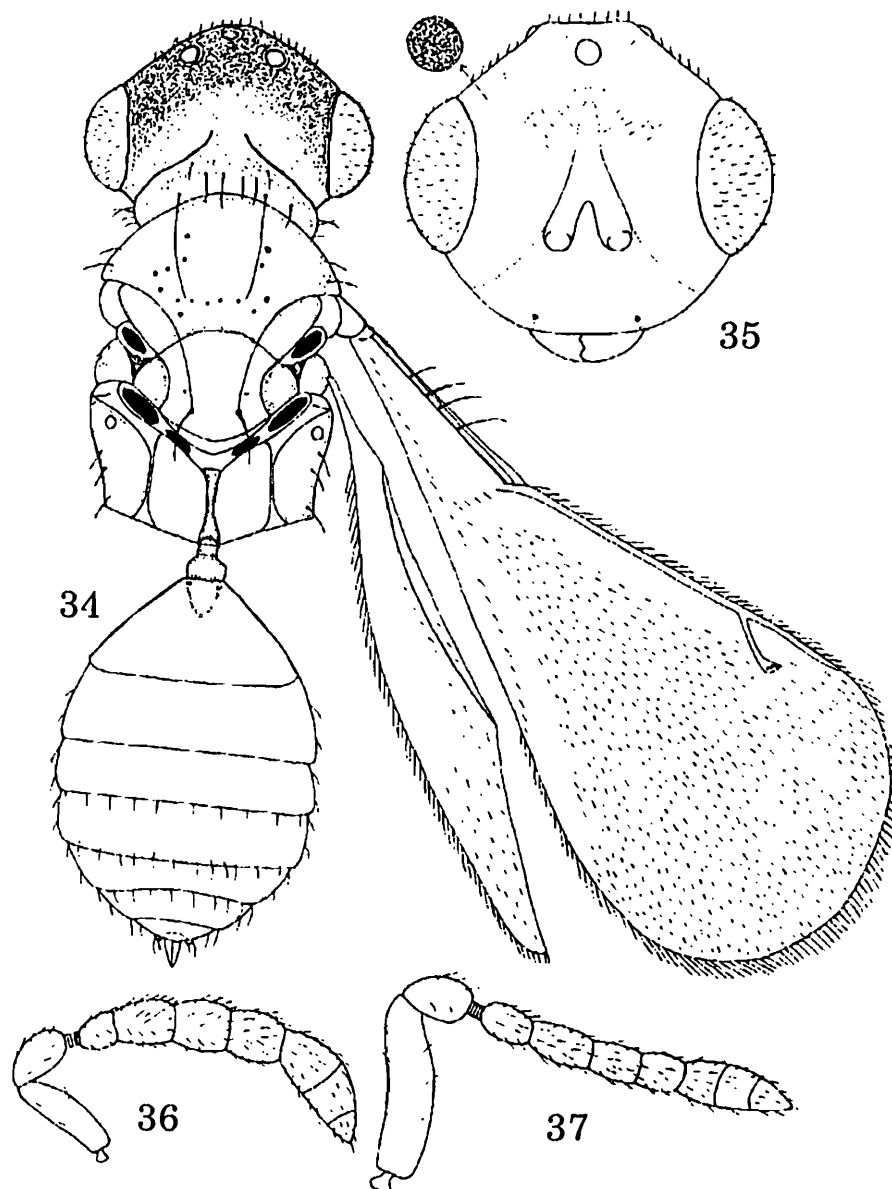
Distribution : India (Kerala).

Material examined : Holotype and Paratypes (ZSIK, transferred from DZUC on 20.3.2006).

Genus *Cirrospilus* Westwood

1832. *Cirrospilus* Westwood, 128. Type species *Gyrolasella elegantissimus* Westwood, by monotypy.

1907. *Atoposoma* Masi, 276. Type species: *Atoposoma variegatum* Masi : by monotypy (Bou ek, 1959 : 172, synonymized).



Figs. 34-37. *Boucekiola malabarica* Narendran : Female : 34. Body dorsal view; 35. Head anterior view; 36. Female antenna. 37. Male antenna.

1910. *Atoposomoidea* Howard, 9. Type species: *Atoposomoidea ogimae* Howard : by monotypy (Peck, 1951: 458, synonymized).
- 1911a. *Winnemana* Crawford, 620 Type species: *Winnemana argei* Crawford : by original designation (Graham, 1975 : 281, synonymized).
1913. *Gyrolasella* Girault, [167] : 166: Type species : *Cirrospilomella fasciatus* Girault : by original designation (Bou ek, 1988 : 612, synonymized).
1913. *Achrysocharelloidea* Girault, [167] : 178 : Type species: *Gyrolasella pax* Girault : by monotypy (Bou ek, 1988 : 612, synonymized).
1913. *Cirrospilomella* Girault, [167] : 265 : Type species: *Cirrospuomella fasciatus* Girault : by monotypy (Bou ek, 1988 : 612, synonymized).
1913. *Pseudiglyphomyia* Girault, [167] : 267: Type species: *Pseudiglyphomyia biguttatus* Girault: by original designation (Girault, 1916 : [274], synonymized).
1913. *Gyrolasella* Girault, [171] : 105: Type species: *Gyrolasella consobrinus* Girault: by original designation (Bou ek, 1988 : 611, synonymized).
1915. *Cyrospilopsis* Girault, [213] : 263. Preoccupied by Brèthes, 1913. (Bou ek, 1988 synonymized).
1916. *Parzagrammosoma* Girault, [274] : 205 : Type species: *Zagrammosoma pulchra* Girault : by original designation (Bou ek, 1988 : 612, synonymized).
1923. *Giraultia* Gahan & Fagan, 66 Replacement name for *Cirrospilopsis* Girault, 1915 [nec. Brèthes , 1913] (Bou ek 1988 : 612, synonymized).
1929. *Austrolynx* Girault, [431] : 325: Type species: *Austrolynx clavitibia* Girault : by monotypy (Bou ek, 1988 : 612, synonymized).
1936. *Ootetrastichoides* Li, 221 Type species: *Ootetrastichoides hibachi* Li: by monotypy (Dominichini, 1964 : 15, synonymized with *Winnemana* and Graham 1975 : 281 synonymized with *Cirrospilus*).
1953. *Plesiospilus* Ferrière, 398 Type species: *Eulophus unistriatus* Foerster: by original designation (Delucchi, 1958 : 253, synonymized).

Diagnosis : Funicle 2 segmented in both male and female; notauli usually complete meeting either anterior margin of axilla or scutellum or near junction of anterior margin of scutellum and axilla; scutellum usually with submedian longitudinal grooves, (occasionally these grooves indistinct or absent); PMV usually shorter to or equal to length of STV, rarely longer than STV (upto 1.5x STV).

Host : Parasitic or hyperparasitic on leaf minors or other sheltered larvae or pupae. Some species are parasitic on eggs.

Distribution : World wide.

Key to species of *Cirrospilus* Westwood

1. Notauli meets axilla at a distance well separated from posterior margin of mesoscutum (Fig. 43); mesosoma metallic green with posterior half of axillae white or pale yellow; MLM with 2 pairs of setae.....
..... *C. brevicorpus* Shafee & Rizvi

- Notauli straight or nearly so, complete reaching junction of axilla and scutoscutellar suture usually not as above 2
- 2. Head and body mostly black with a transverse yellow band adjoining scutellar groove; scapula mostly whitish yellow except at anterior inner margin; anterior margin of axilla narrowly white *C. denitus* Narendran sp. nov.
- Head and body usually more yellow or brown if black then colour pattern different from above 3
- 3. Body black, head with white markings antenna black except the white basoventrally on scape; mesosoma with metallic green refringence; fore and mid legs white; hind leg white except for the black basal 0.75x of femur; gaster white basally with 2 white spots on sides of T1, scape swollen, males only *C. ornatus* (Mukerjee)
- Body with different colour pattern 4
- 4. Pronotum, mesoscutum, scutellum and propodeum with a median black or brown line (in some cases line is indistinct or absent on pronotum and propodeum) 5
- Median line completely absent 6
- 5. Forewing with a row of ventral setae behind MV; cubital line of setae nearly straight; speculum present; mesosoma with slight metallic green refringence on the dark longitudinal median line in some specimens
..... *C. variegatus* (Masi)
- Forewing with row of ventral setae behind MV absent; cubital line of setae distinctly curved anteriorly at base joining base of parastigma; speculum absent; mesosoma never with metallic refringence
..... *C. acadus* Narendran sp. nov.
- 6. Mesosoma yellow with a large black patch on posterior part of pronotum and anterior part of mesoscutum; scutellum, dorsellum, metanotum and propodeum completely black; gaster with black bands *C. pictus* (Nees)
- Colour pattern different from above 7
- 7 Propodeum without median carina; mesosoma almost yellow with distinct markings; mesoscutum, scutellum and propodeum with raised reticulation; [Gaster yellow with 4 black bands] *C. ingenuus* Gahan
- Propodeum with median carina; mesoscutum with weak reticulation or smooth; gaster colour pattern variable 8
- 8. Propodeum dark brown medially (Fig.39); sides yellow; scutellum with a dark brown spot anteromedially or medially *C. abalus* Narendran sp. nov.

- Propodeum (Fig.49) yellow with 2 dark transverse stripes anteriorly; and one transverse stripe posteriorly; scutellum with dark spot absent
*C. pondicheri* Narendran sp. nov.

1. *Cirropilus abalus* Narendran sp. nov.

(Figs.38-39)

Female : (Holotype) Length 1.25 mm. General body colour yellow with black and dark markings; head yellow; eyes grayish yellow, with black patch; ocelli pale reflecting yellow; antenna, scape pale yellow; pedicel pale brownish yellow; remaining antennal segments brown; mesosoma yellow with dark brown or black spots at anterior margin of pronotum; posterior corners of pronotum, anterior corners of scapula, a spot on axilla anteriorly, a larger spot on scutellum anteriorly and black brown on median part of propodeum; parts of mesepimeron light brown; legs yellow except light brown on extreme base of hind coxa; metasoma yellow with 3 black bands and a spot on either side of T1; ovipositor sheath black, wings hyaline and veins pale brown.

Head a little wider than its height in anterior view; width in dorsal view 2.14x its length; POL 2.5x OOL; WIOS 2.2x POL; AOL subequal to OOL; MS 0.3x height of eye in profile; eye length in profile 0.5x eye height; eye with extremely minute very sparse pubescence (careful observation is necessary under proper illumination to see the pubescence on eyes); frons and vertex reticulate (but not sharply reticulate); antenna inserted a little above level of ventral margin of eyes; scape not reaching level of vertex; relative L: W of antennal segments: scape = 25 : 7; pedicel = 15: 8; F1 = 15 : 9; F2 = 14 : 9; clava = 36 : 10.

Mesosoma : Pronotum and mesoscutum distinctly reticulate; MLM with 3 pairs of setae; posterior pair stronger than others; each scapula with 2 stronger setae near outer margin, 2 or 3 smaller weaker setae inside; axillae a little advanced anteriorly; notauli joining the junction between axilla and scutellum; scutellum weakly reticulate, sublateral grooves distinct; dorsellum shorter than propodeum, faintly reticulate; median carina present; plicae absent; spiracle separated from metanotum by a distance shorter than its diameter; hind coxa faintly reticulate; hind tibial spur about half as long as hind metatarsus; forewing 2.1x as long as broad, speculum absent, cubital line of setae obliquely reaching base of wing; marginal fringe shorter than STV; relative length of CC = 13; SMV = 9; MV = 18; PMV = 6; STV = 4.

Metasoma longer than mesosoma (17 : 13), as long as head plus mesosoma; 1.65x as long as broad.

Variation : In the paratype gaster with 4 black bands present.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala).

Material examined : Holotype, Female, INDIA, Kerala, Palghat District, Koottanad (10° 49' N 76° 11' E), 16-xi-2003, T.C.Narendran & party. Paratype: 1 Female, Kerala, Calicut District, Nanminda (11° 26' N 75° 50' E), 11-viii-2003, T.C.Narendran & party.

Depository : The Holotype is deposited in the department of Zoology, University of Calicut pending transfer to Zoological Survey of India, Calicut.

Remarks : This new species is characterized by a reticulate propodeum with median area dark brown and sides yellow; scutellum with a dark spot in middle. In the key to species by Zhu *et al.* (2002), this species superficially resembles *Cirrospilus jiangxiensis* Sheng & Wang but differs in having propodeum with plicae absent (present in *jiangxiensis*); MLM without strong reticulations (with strong reticulation in *jiangxiensis*) and in gaster colour pattern.

2. *Cirrospilus acadius* Narendran sp. nov.

(Figs. 40-41)

Female : (Holotype) Length 0.77 mm. General body colour yellow with dark brown patches and bands; antenna dark brown except pale yellow scape and ventral part of pedicel; pronotum yellow with an oblique black stripe on either side at submarginal area, with a median black spot; a median dark brown line running from anterior margin of mesoscutum to posterior margin of propodeum present; a dark brown spot at anterior projecting part of axilla present; legs pale yellow with weak dark patch on hind coxa and femur; gaster yellow with 5-6 weak brown cross bands and a weak median longitudinal line (strong bands and strong median line present in paratypes); ovipositor sheath black; wings hyaline with parastigmal part, bases of STV and PMV, apex of STV darker with slight infuscation adjoining apex of STV

Head collapsing; relative L : W of antennal segments: scape = 20 : 9; pedicel = 13 : 11; F1 = 8 : 8; F2 = 7 : 10; clava = 18 : 11.

Mesosoma : Pronotum and mesoscutum weakly reticulate; notauli meeting subscutellar groove; MLM with 3 pairs of setae, median pairs weaker; axillae advanced anteriorly; scutellum weakly reticulate; dorsellum overhanging anterior part of propodeum; propodeum with median carina; plicae absent; spiracle separated from metanotum by a distance shorter than diameter of spiracle; hind coxa weakly reticulate; hind tibial spur almost as long as hind metatarsus; forewing 2.5x as

long as wide; speculum setose; cubital line slightly bent towards anterior part basally; relative length of CC = 9; SMV = 7; MV = 8; PMV = 2; STV = 3.

Metasoma longer than mesosoma; shorter than combined length of head plus mesosoma, 1.7x as long as broad.

Male : Similar to female but gaster with cross bands divided medially by a longitudinal black line.

Host : Unknown.

Material examined : Holotype: Female, INDIA, Kerala, Calicut University Campus (11° 7'N 75° 5'E), 10-vi-2003, T.C.Narendran & party. Paratypes : 1 Female, INDIA, Kerala, Kannur, Kavinissery (11° 55' N 75° 22' E), 16-ii-2003, T.C.Narendran & party; 1 Female, Kerala, Palghat District, Mukali (10° 58' N 76° 30' E), 30-xii-1988, M., Hayat; 3 Females, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 16-xii-1979, Dec. 1980, June 1983, M. Hayat; 1 Male, INDIA, Bihar, Ramgarh, 1-iii-1994, S.B.Zea & S.I.KAzmi.(2 female paratypes in ZDAMU).

Depository : Deposited in the Department of Zoology, University of Calicut pending transfer to Zoological Survey of India, Calicut.

Remarks : This new species comes near *Cirrospilus vittatus* Walker in the key to species by Zhu *et al.* (2002). However it differs from *C. vittatus* in having : (1) Parastigma and base of STV infuscated with infuscation near apex of STV (in *C. vittatus* no such marking on the wing); (2) MLM with weak reticulation (in *C. vittatus* MLM with raised reticulation); (3) dorsellum longer than propodeum and (4) gaster 1.7x as long as broad (in *C. vittatus* gaster 2.25 as long as gaster).

3. *Cirrospilus brevicorpus* Shafee & Rizvi

(Figs. 42-43)

1988a. *Cirrospilus brevicorpus* Shafee & Rizvi, 37. Holotype Female, India, Aligarh (ZDAMU) (Hayat examined).

1996. *Cirrospilus ambiguus* Hansson & LaSalle Holotype Female, Tanzania (BMNH, examined) Syn. nov.

2005. *Cirrospilus zeae* Khan, Agnihotri & Sushil, 15, India, U.T, Pantnagar (PUA?). Syn. nov.

Diagnosis : *Female* : Length 0.7 mm-1.1 mm. Frons pale yellow or yellowish brown with infuscate or dark metallic patches or stripes; vertex pale yellow with parts around ocelli partly to completely infuscate; temple and occiput infuscate or metallic greenish blue, except pale yellow part close to mouth opening; malar space pale yellow with infuscate or metallic green transverse strip between eye and mouth opening; scape pale with apical part infuscate; mesosoma predominantly metallic green or greenish blue to golden-green; lower part of lateral panel of

pronotum, posterior half of axilla, upper part of mesepisternum pale yellow; coxae metallic greenish blue; fore and middle femora and fore and middle tibiae pale; hind femur pale yellow with a broad brown band medially; fore hind tibia pale yellow with a dark brown band subabsally; forewing hyaline with part around STV infuscate; metasoma dark with transverse or circular hyaline patches; notauli curved meeting axilla at a distance well separated from posterior margin of scutellum; axillae well advanced and protruding anteriorly; MLM with 2 pairs of setae; antenna with 2 anelli.

Male : Similar to female except gaster dark with a large pale anteromedian patch and spots on sides.

Host : *Lirriomyza trifolii* (Burgess), *Calycomyza lantanae* (Agromyzidae), Mealy bug on *Mangifera indica* (Hausson & La Salle, 1996; Shafee & Rizvi (1988).

Distribution : India [Delhi, Uttar Pradesh, Madhya Pradesh, Tamil Nadu and Kerala (New Record for Kerala)], Taiwan, Tanzania.

Variation : The metallic green colour on occiput & temple often becomes weak or absent in some specimens and instead infuscation remains; the transverse strip between eye and mouth often varies from infuscate stripe to metallic green stripe. The hind femora in some specimens (*brevicorpus*) the dark part is reduced; similarly the hind tibia also the dark part is restricted to subbasal part and in specimens from Kerala, the hind tibia is yellow with one dark patch subabsally and one dark patch subapically

Other material examined : 2 Female, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 23-vi-1984, M. Hayat; 1 Male, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), March 1983, M. Hayat; 1 Female, INDIA, Kerala, Kollam District, Ochira (9° 7' N 76° 30' E), 21-ii-1989, T. C. Narendran & party; 1 Female, INDIA, Kerala, Calicut District, Kalipoyika, 22-iv-2004, T.C.Narendran & party; 1 Female, INDIA, Kerala, Alappuzha District, Kayamkulam (9° 10' N 76° 30' E), 19-iv-2004, T. C. Narendran & party.

Remarks : I have examined specimens of *Cirrospilus brevicorpus* Shafee & Rizvi, determined by Prof. M. Hayat of Aligarh Muslim University who had examined the type of *C. brevicorpus*. I have no doubt that *C. ambiguus* is a junior synonym of *Cirrospilus brevicorpus*. Hayat & Aftab, in Hayat *et al.* (2005) also pointed out this possible synonymy of these two species. The description and figures of *Cirrospilus zea* do not agree each other in some points. However from the figures and description it is clear beyond doubt that *C. zea* is a junior synonym of *Cirrospilus brevicorpus*.

4. *Cirrospilus denitus* Narendran sp. nov.

(Figs. 44-45)

Female : (Holotype) Length 1.54 mm. General body colour black with following parts otherwise: a transverse stripe below toruli, lower marginal area of gena and mouth pale yellow; eyes grayish yellow with dark brown patch; ocelli pale reflecting yellow; scape with a yellow stripe ventrally; distal part of pedicel yellow; MLM with a yellow transverse band at posterior margin; scapula whitish yellow except at anterior inner margins; anterior lateral margin of axilla narrowly whitish yellow; femora and tibiae yellow with brown markings on ventral side of hind femur and hind tibia; wings hyaline with veins pale yellowish brown.

Head width 1.1x its height in anterior view; width in dorsal view 2.11x its length; frons and vertex weakly reticulate; MS 0.5x height of eye in profile; eye length 0.82x eye height in profile; eyes bare; POL 5x OOL; AOL longer than OOL (2: 1); WIOS 1.4x POL; antenna inserted a little below level of ventral margin of eyes; scape almost reaching level of vertex; relative L : W of antennal segments: scape = 41 : 7; pedicel = 15 : 11; F1 = 15 : 11; F2 = 14 : 12; clava = 38 : 14.

Mesosma : Pronotum weakly reticulate, sparsely pubescent; mesoscutum weakly reticulate, with 2 pairs of setae (posterior pair stronger); notauli joining anterior margin of axillae near the junction of axillae and scutellum, axillae advanced anteriorly; scutellum mostly smooth and shiny with deep sublateral grooves, dorsellum smooth and shiny with faint reticulations, as long as median length of propodeum; propodeum weakly reticulate with a median carina and several weak rugae on submedian area; spiracle separated from metanotum by a distance subequal to its diameter; callus with 4-6 setae on either side; hind tibial spur exceeding a little beyond middle of hind metatarsus; forewing 2.41x as long as wide; speculum relatively small, cubital line of setae slightly moving anteriorly meeting basal line of setae; relative length of CC = 16; SMV = 13; MV = 14; PMV = 8; STV = 5.

Metasoma sessile, longer than mesosoma (19 : 14), slightly longer than combined length of head plus mesosoma, 2x as long as wide.

Male : Unknown.

Host : Unknown.

Material examined : Holotype, Female, INDIA, Ladakh, Hemis National Park (N 33° 54' 51.8" E 17° 42' 46"), 3568 mtr., 5-vii-2008, P.M. Sureshan. Paratype: 1 Female, Ladakh, Shey (34° 08' 24" N and 77° 32' 59" E), 11-viii-2008, S. I. Kazmi.

Depository : Holotype deposited at NZSI.

Remarks : This species comes near *Cirrospilus nigrifemur* Zhu, La Salle and Huang in the key to Chinese species of *Cirrospilus* by Zhu *et al.* (2002) but differs from *C. nigrifemur* in having : (1) mesosoma with a transverse yellow band adjoining posterior margin of MLM (in *C. nigrifemur* mesosoma completely black); (2) most part of scapula whitish yellow (black in *C. nigrifemur*); (3) POL 5x OOL (in *C. nigrifemur* POL 1.7x OOL); (4) PMV 1.6x as long as STV (in *C. nigrifemur* PMV equal to STV); (5) gaster 2x as long as broad (in *C. nigrifemur* gaster 1.3x as long as broad) and (6) pedicel as long as F1 (in *C. nigrifemur* pedicel distinctly larger than F1 (11 : 7)).

In the key to species by Tryapitzin and Kostyukov (1987) this new species comes near *Cirrospilus singa* Walker but differs from it in having: (1) mesosoma and metasoma with metallic refringence absent (in *C. singa* mesosoma and metasoma with metallic refringence present); (2) sculpture on MLM weakly reticulate and recessed striae absent (in *C. singa* MLM with recessed striae present) and (3) scutellum mostly smooth and shiny (in *C. singa* scutellum consists of recessed striae).

This new species does not come near any Oriental species of *Cirrospilus*.

5. *Cirrospilus ingenuus* Gahan

1932. *Cirrospilus ingenuus* Gahan 753. Holotype Female, Indonesia, Java (USNM).

1966. *Scotolinx quadristriata* Subba Rao & Ramani 412, India, New Delhi (INPC); (Ujige & Adachi, 1995 synonymised).

Diagnosis : Body generally yellow to brownish yellow; head pale yellow proximally and darker distally; antennae brownish yellow; mesosoma yellow or yellowish orange without dark or metallic markings dorsally; metasoma yellow with 3-5 brown or dark brown transverse bands (5th band often complete); legs pale yellow; wings hyaline, almost as high as its width in anterior view; antennae inserted at or just below level of ventral margin of eyes; scape not reaching above level of vertex; pedicel subequal in length to F1; F1 longer than F2; MLM with 3 pairs of setae, along with a few short ones; notauli straight or almost so reaching scutoscuteular groove, with rugose sculpturing stronger than that of scutellum; plicae and median carina absent; dorsellum shorter than propodeum medially; forewing hyaline, 2.4x as long as broad; speculum absent; PMV nearly equal to STV; cubital line of setae almost straight; metasoma slightly shorter than mesosoma (in Figure of page 42 of Subba Rao and Ramani, 1965, mesosoma was shown shorter than metasoma).

Male : Similar to female.

Host : *Phyllocnistis citrella* Staintoni, *Phyllonorycter* sp. (Gracillariidae), *Leucoptera coffeella* (Guerin-Meneville), *Ageniaspis citricola* Logvinovskaya (Encyrtidae) and Agromyzidae sp. (From Noyes. 2003).

Distribution : Cosmopolitan (In India: Delhi, Maharashtra, Punjab and Rajasthan).

The above account is based on available literature (Subba Rao & Ramani, 1966, Zhu *et al.* 2002).

Remarks : *Cirrospilus ingenuus* comes near *Cirrospilus jiangxiensis* Sheng in the key to species by Zhu *et al.* but differs from it in having: (1) propodeum completely yellow (in *C. jiangxiensis* propodeum almost completely black; gaster with 3-5 dark bands (in *C. jiangxiensis* gaster narrowly yellow at base, on sides, near and at apex with a large black patch medially).

6. *Cirrospilus ornatus* (Mukerjee)

1975 *Euplectrus (Pachyscapha) ornatus* Mukerjee, in Saraswat and Mukerjee 60. Male, India, Madhya Pradesh, Dholpur, (USNM) (Gates examined).

1994. *Cirrospilus ornatus* (Mukerjee) : Wigesekhara and Schauff, 34.

Diagnosis : Body black, head with white markings; antenna black except white basoventrally on scape; mesosoma with metallic green refringence; fore and mid legs white; hind legs white except for the black basal 0.75 of femur; abdomen black with white basally and two spots on sides of T1; antennae inserted a little above level of ventral margin of eyes, with two anelli; notauli straight reaching scutoscuteellar groove; mesonotum, scutellum and propodeum finely reticulate; forewing 2.1x as long as wide; small speculum present; cubital line of setae turning anteriorwards basally but not reaching basal line of setae (Fig. 304 Mani, 1989); relative length of CC = 18; SMV = 14; MV = 17; PMV = 5; STV = 5.

Metasoma 1.64-1.73x as long as broad, 0.35x length of body.

Female : Unknown.

Material examined : None.

The above description is based on available literature (Mani, 1989).

Remarks : This species is probably the male of *Cirrospilus brevicarpus* Shafee and Rizvi (1988a). On my request Dr. Michael Gates (USNM) examined the holotype and paratypes and informed me as follows (2010 per.comm.): "The holotype is laterally flattened and smashed beneath the cover slip, thus the median propodeum is not easily viewed. The specimen appears to have been partially cleared, but the axilla is unicolorous brown with hints of metallic green. Two of the three paratypes are mounted laterally on slides and none of them

have the bicolored axilla. The third paratype is mounted dorsoventrally and has the brown axilla and lacks a median carina on the propodeum.”

7. *Cirrospilus pictus* (Nees)

(Figs. 46-47)

1834. *Eulophus pictus* Nees 165. Lectotype Female, Germany (UMO); designated by Graham (1988).

1838. *Cirrospilus thasus* Walker 309. Europe (BMNH); Bou ek and Askew (1968 : 34) synonymized.

1841. *Cirrospilus arcuatus* Foerster 41. Germany (UMO); Bou ek and Askew (1968) synonymized.

1846. *Eulophus flavorvarius* Nees: Walker 72. Misidentification.

1848. *Entedon arcuatus* (Foerster): Rastzeberg, 163.

1872. *Cirrospilus bifasciatus* Walker 103. France (BMNH); Bou ek and Askew (1968) synonymized.

Cirrospilus pictus (Nees). Thompson (1878), Bou ek and Askew (1968), & Kamijo (1987).

1910. *Atoposomoidea ogimae* Howard 9-11. Japan (USNM); Kamijo (1987 : 47) synonymized.

1992. *Cirrospilus nigriscutellaris* Sheng & Wang 37. Peoples' Rep. China: Jiangxi (JXAU); Zhu *et al.* (2002 : 38) synonymized.

1994. *Cirrospilus huangyaensis* Sheng 1-4. Peoples' Rep. China: Jiangxi (JXAU); Zhu *et. al* (2002 : 38) synonymized.

Diagnosis : Female : General body colour yellow with black markings as follows : head with ocellar area black; eyes black; ocelli black; antenna black with ventral half yellow; pronotum yellow with black marking on anterior and posterior median margin, connected by a black branch on one side (Fig. 46); mesoscutum with a large black patch on anterior half; scutellum, dorsellum and propodeum completely black; axillae yellow with outer marginal area and posterior apical area black; mesosternum (except upper yellow part), mesepemeron, ventral part of mesosoma black; legs immaculate yellow with three- fourth of hind coxa from base black; fore tarsi pale brown; all pretarsi and fourth tarsal segments pale brown; metasoma yellow with black band and median longitudinal black area on dorsolateral part; ventral part completely black; ovipositor sheath black; scape exceeding level of vertex; wings hyaline with speculum large extending to anterior side below MV; cubital vein not quite reaching posterior side of speculum (speculum open behind), with a row of 13- 15 ventral setae posterior to MV; PMV shorter than STV; MV 4x as long as PMV; MLM with 3 pairs of setae; propodeum with median carina present; metasoma as long as mesosoma.

Male : Similar to female with reduced black colours on gaster and a dark spot on midtibia medially.

Host : Parasitoid of various Lepidopteran families and hyperparasitoid of Braconidae and Ichneumonide (Details in Host-parasite list).

Distribution : Nearctic, Palaearctic and Oriental region. This is the new record for India.

Material examined : 3 Females, INDIA, Ladakh, Shey (34° 08' 24" N and 77° 32' 59" E), 11-viii-2008, S. I. Kazmi.

Remarks : The specimens collected from India does not show any metallic refringence on the black colour of the body. This is probably a variation of the species.

8. *Cirrospilus pondicheri* Narendran sp. nov.

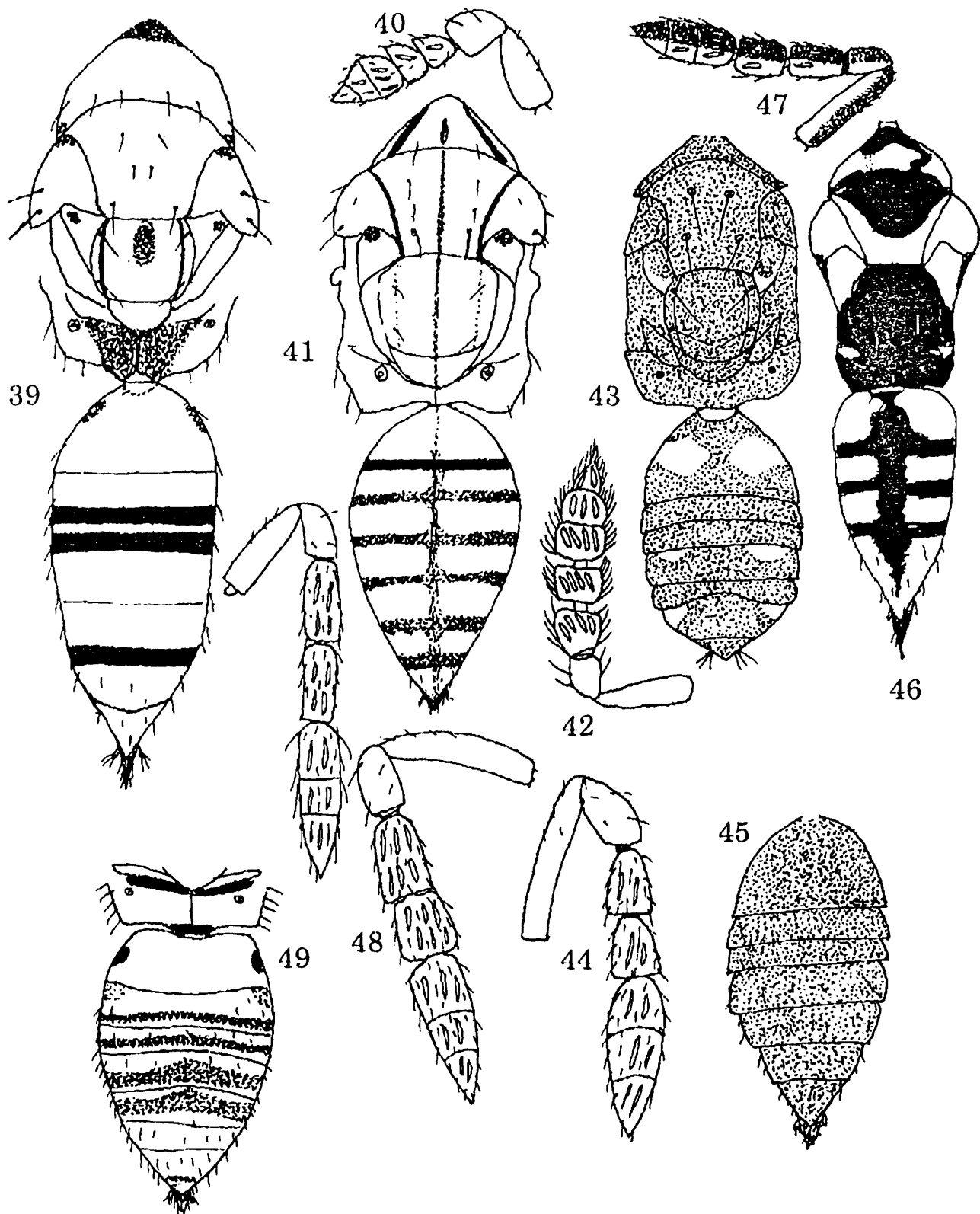
(Figs.48-49)

Female : (Holotype) Length 1.44 mm. General body colour yellow; head yellow with area near occipital foramen black; eyes with a dark shade; ocelli dark brown or reddish brown; pedicel and flagellum yellowish brown; scape yellow; mesosoma yellow with pronotal spiracle, groove separating pronotum and mesonotum, notauli, scutoscutellar groove, dark brown; a cross stripe or patch on either side of anterior margin of MLM dark brown; propodeum with a dark spot or stripe on either side of anterior margin and one dark stripe medially at posterior margin; gaster with a dark spot on either side of T1 and a weaker spot on either side of T2 and with following 4-5 cross bands; legs including coxae completely yellow; wings hyaline with veins pale brown.

Head in anterior view a little wider than its height (17: 16); width in dorsal view 2.3x its length; POL 2x OOL; AOL subequal to OOL; WIOS 3x POL; MS 0.57x height of eye in profile; eyes bare; eye length 0.86x height of eye in profile; frons and scrobe faintly granulate; antenna inserted a little above level of ventral margin of eyes; scape almost reaching level of vertex; relative L: W of antennal segments: scape = 37 : 8; pedicel = 16 : 10; F1 = 20 : 12; F2 = 15 : 14; Clava = 37 : 13.

Mesosoma with weak reticulate MLM with 3- 4 pairs of setae, posterior most pair stronger than others; each scapula with one strong spur at posterior margin; notauli straight and reaching junction of axilla and scutellum; axillae advanced anteriorly, dorsellum mostly smooth; scutellum with distinct sublateral grooves, shorter than propodeum; propodeum distinctly reticulate, with a median carina; plicae absent; spiracle separated from metanotum by a distance shorter than diameter of spiracle; each callus with 6-9 setae; forewing 2.25x as long as broad; speculum relatively small, cubital line of setae a little tilted towards basal veins and joins basal vein; relative length of CC = 6; SMV = 13; MV = 14; PMV = 4; STV = 4.

Metasoma almost as long as mesosoma; 1.6x as long as broad.



Figs. 38-39. *Cirrospilus abalus* sp. nov. Female : 38, Antenna; 39. Mesosoma & metasoma dorsal view. **Figs. 40-41.** *C. acadius* sp. nov. Female : 40. Antenna; 41. Mesosoma & metasoma dorsal view. **Figs. 42-43.** *C. ambiguous* Hansson & LaSalle : Female : 42. Antenna, 43. Mesosoma and metasoma dorsal view. **Figs. 44-45.** *C. denitus* sp. nov. Female : 44. Antenna; 45. Gaster dorsal view. **Figs. 46-47.** *C. pictus* (Nees) Female : 46. Antenna; 47. Mesosoma & metasoma dorsal view. **Figs. 48-49.** *C. pondicheri* sp. nov. Female : 48. Antenna; 49. Propodeum & metasoma dorsal view.

Male : Similar to female but gaster with only a single transverse dark band submedially.

Host : Unknown.

Distribution : India (Pondicherry, Kerala).

Etymology : The name of the species is an arbitrary combination of letters but will pronounce as the name of the locality Pondicherry.

Material examined : Holotype, Female, INDIA, Pondicherry, (11° 56' N 79° 53 E), 17-18-ii-1993, S.I. Kazmi. (ZDAMU) Paratypes : 7 Females of same data of holotype. 1 Paratype Female, India, Kerala, Neyyadam (8° 37' N 77° 7' E), 24-11-1989, T. C. Narendran & Party (DZCU).

Depository : Holotype deposited at ZDAMU.

Remarks : This new species comes near *Cirrospilus perticus* Zhu, La Salle & Huang (2002) in the key to species by Zhu *et al.* but differs from *C. perticus* in having : (1) propodeal plicae absent (plicae present in *C. perticus*); (2) pronotum and propodeum with a pair of black markings (in *C. perticus* no such black marking on propodeum and pronotum); (3) scape not exceeding level of vertex (in *C. perticus* scape exceeding level of vertex) and (4) pedicel completely yellow (in *C. perticus* pedicel yellowish brown basally).

9. *Cirrospilus variegatus* (Masi)

1907. *Atoposoma variegatum* Masi 276. Italy, Portici (IEA).

1983. *Zagrammosoma variegatum* (Masi) : DeSantis, 20.

1988. *Cirrospilus variegatus* (Masi) : Bou ek, 616.

Diagnosis : General body colour yellowish brown with a median longitudinal dark line (with metallic green refringence) from anterior margin of pronotum to posterior margin of scutellum or extending to dorsellum; pronotum with an oblique longitudinal black stripe on either side; forewing with dark markings at stigma and parastigma; pedicel shorter than F1; cubital vein relatively straight; PMV shorter than STV; notauli complete to scutoscuteellar groove; scutellum with sublateral grooves present; gaster with black and hyaline or white patches or spots; forewing with distinct speculum and with a row of setae behind MV on ventral side; gaster a little longer than mesosoma, 1.7x as long as wide.

Male : Similar to female except for shorter gaster.

Host : Ectoparasitoids.

Material examined : 1 Female, INDIA, Kerala, Kottiyoor (10° 7' N 78° 49'E), 17-ii-2003, T. C. Narendran & party.

Distribution : India (Tamil Nadu & Kerala), Europe, China.

Remarks : This species comes very near *C. acadius* Narendran sp. nov. in having general colour pattern of body. However *C. variegatus* differs from *C. acadius* in having: (1) forewing with a distinct speculum (speculum absent in *acadius*); (2) forewing with a row of ventral aetae behind MV (in *C. acadius* no such row of ventral setae behind MV present); (3) cubital line of setae nearly straight (in *C. acadius* cubital line of setae lifted anteriorwards basally); (4) mesosoma with some metallic green refringence on black longitudinal band (no metallic refringence in *C. acadius*).

Species *incertae sedis* (under *Cirrospilus*)

1. *Cirrospilus coccivorus* Motschulshy

1863 *Cirrospilus coccivorus* Motschulshy, 68. Female? Sri Lanka, Columbo (ZMMS).

I could not examine the type of this species inspite of my efforts to procure it on loan from Zoology Museum of Moscow State University, Moscow. All my requests remained unanswered. The original description by Motschulsky is of no use for the recognition of this species

Distribution : Sri Lanka.

Host : *Lecanium coffeae*.

2. *Cirrospilus kanpurensis* Shafee & Rizvi

1988a. *Cirrospilus kanpurensis* Shafee & Rizvi, 36. Female, India, Kanpur (ZDAMU).

Hayat & Aftab, in Hayat *et al.* (2005) state that there is no specimen labeled as this species in Shafee's collection at ZDAMU. According to Hayat *et al.* there is however a slide with 'O' written with a green glass pencil and it contains one antenna and one forewing which according to Hayat *et al.* agree with the description.

Since the description is extremely poor and not sufficient to recognize this species, I am placing it under *insertae sedis* category.

Distribution : India : Uttar Pradesh.

Genus *Deutereulophus* Schulz

1904a. *Eulophopteryx* Ashmead, 341, 342, 374. Type species *Eulophopteryx chopadae* Ashmead (original designation) preoccupied by *Eulophopteryx* Moschler, 1878 : 684.

1906. *Deutereulophus* Schulz, 146. Replacement name for *Eulophopteryx* Ashmead, 1904 (not *Eulophopteryx* Moschler, 1878).

1913. *Entedonomorpha* Girault, [167] : 261. Type species *Entedonomorpha tennysoni* Girault (Original designation) LaSalle & Schauff (1992) synonymized.

Diagnosis : Female antenna with funicle 3 or 4 segmented; clava 3 or 4 segmented; male antenna with funicle 4 or 5 segmented, not pedungulate; pronotum with sides rounded or parallel sided; mesoscutum with dense reticulations or

shiny with 2 pairs of setae; scutellum with sublateral grooves meeting or separate in middle posteriorly; sublateral grooves with or without punctures; propodeum without plicae but with sublateral grooves, median part high, convex; paraspircular carina present; metasoma with distinct short petiole.

Host : Unknown.

Distribution : India (Bou ek, 1988); South China (Bou ek, 1988, Zhu & Huang, 2002); Taiwan (Zhu & Huang, 2002); America (Ashmead, 1904a; Schauff, 2000) and Micronesia.

Key to Oriental species of *Deutereulophus* Schulz

(Based on females)

1. Sublateral grooves of scutellum united on middle of posterior margin of scutellum; T1 0.24x length of gaster (10:42); head and mesosoma metallic blue *D. marginatus* Zhu & Huang
- Sublateral grooves of scutellum not united each other; T1 longer than above; colour variable 2
2. T1 not exceeding middle of gaster (Fig. 50), ovate; antennal formula 11434; PMV 1.25x as long as STV; legs pale yellow with fore coxa darker; gaster brown with basal half of ventral side black; sides of gaster on dorsal side black with metallic green refringence *D. malabarensis* Narendran
- T1 exceeding middle of gaster; antennal formula different; other characters variable 3
3. Forewing with MV shorter than or as long as CC 4
- Forewing with MV distinctly longer than CC; SMV with 9 dorsal setae; PMV 1.44x as long as STV; legs yellow with hind coxa dark brown dorsally; body metallic green *D. interruptus* Zhu & Huang
4. Gaster black with weak green refringence; MV as long as CC; occipital carina present; F2 1.5x as long as F3; propodeum distinctly reticulate (Fig. 52) *D. tunctatus* Narendran
- Gaster lemon yellow; MV shorter than CC; occipital carina absent; F2 equal or subequal to F3; propodeum smooth *D. tennysoni* (Girault)

1. *Deutereulophus interruptus* Zhu & Huang

2002. *Deutereulophus interruptus* Zhu & Huang, 353-358, Female, C. Taiwan, Nantou Xian (IZCAS)

Diagnosis : *Female* : Length 2.15 mm. Body metallic green; antenna brown except yellow scape; legs yellow with hind coxa dark brown dorsally (Zhu & Huang, 2002). Other characters as in the key given above.

Host : Unknown.

Distribution : Taiwan.

Remarks : The above information of the species is based on the paper of Zhu & Huang (2002).

2. *Deutereulophus malabarensis* Narendran

(Figs. 50, 51)

2007. *Deutereulophus malabarensis* Narendran, in Narendran *et al.*, 62. Holotype Female, India, Kerala, Malappuram, Calicut University Campus (NZSI).

Redescription : *Female* : Length 1.5 mm. mostly black with metallic green refringence except following parts: eye and ocelli dark brown; antenna dark brown except pale scape; legs pale yellow with fore coxae slightly brownish (in paratype black in one specimen); tegula pale yellow; gaster brown with basal half of ventral side black on sides with metallic green refringence; wings hyaline with veins pale brownish yellow.

Head width 1.2x its length in anterior view; width in dorsal view 4.5x its dorsal length; vertex mostly smooth and shiny; frons moderately reticulate; toruli located at level of lower eye margin; eyes with extremely short and sparse pilosity (unlike long and dense pilosity of *D. punctatus*); mandibles 5 dentate; occipital carina present but weak; POL 1.8x OOL; OD shorter than OOL; Antennal formula 11434. Relative length: width of antennal segments: scape = 36 : 6; pedicel = 11 : 5; F1 = 17 : 7; F2 = 16 : 7; F3 = 15 : 8; clava (including apical specula) = 29 : 8.

Mesosoma : Pronotum with raised reticulations, without a cross carina, with relatively long setae among which 2 stronger and longer than others; midlobe of mesoscutum distinctly reticulate, with one anterior and one posterior pair of setae; each scapula with 4 setae, similarly reticulate as that of midlobe of mesoscutum; axillae weakly advanced, smooth and shiny without setae; scutellum reticulate, reticulations a little smaller than that of mesoscutum, with 2 pairs of strong setae (one pair on anterior half and the other pair on posterior half); sublateral groove with pits, curved inwards at posterior end but not united each other in the middle, with a large pit on anterior end of each groove; dorsellum smooth and shiny with a narrow cross groove between it and propodeum containing several longitudinal carinae or ridges; propodeum extremely smooth and shiny without even traces of reticulations between plicae and median carina; median carina and plical carinae present; propodeal spiracle relatively small, separated from anterior margin by a distance about 2x its own diameter, curved paraspiracular carinae

present; forewing 2.3x as long as wide; relative length of CC and veins : CC = 25; SMV = 16; MV = 21; PMV = 10; STV = 8; fringe 0.38x length of STV; SMV with 5 dorsal setae.

Metasoma : Shorter than mesosoma, T1 not quite reaching middle of gaster; relative length: width of petiole and gaster: petiole = 10 : 12; gaster = 65 : 50.

Male : Unknown.

Host : Unknown.

Distribution : India: Kerala (Malappuram District, Calicut District, Trivandrum District).

Material examined : Holotype and Paratypes (NZSI).

Remarks : This species differs from *D. tennysoni* (Girault) and *D. interruptus* Zhu & Huang in having: 1) Toruli located at level of lower margin of eye (in *D. tennysoni* and *D. interruptus* toruli located well above ventral margin of eye); 2) Anelli 4 segmented (in *D. tennysoni* and *D. interruptus* anelli 2 segmented).

3. *Deutereulophus marginatus* Zhu & Huang

2002. *Deutereulophus marginatus* Zhu & Huang, 353-358. Holotype, Female, South China, Fujian, Wuyi Mountains (IZCAS).

Diagnosis : Female : Length 1.54 mm. Body metallic blue; antennae yellow; mandibles yellow; legs yellow; metasoma yellow. For other characters see key given above (Zhu & Huang, 2002).

Male : Similar to female except the elongate funicle.

Host : Unknown.

Distribution : S. China: Fujian.

Remarks : The above account on the species is based on Zhu and Huang (2002).

4. *Deutereulophus tennysoni* (Girault)

1913. *Etedonomorpha tennysoni* (Girault), Holotype, Female, Australia, Queensland (QMB).

1913. *Deutereulophus tennysoni* (Girault), [167] : 262..

Diagnosis : Female : Length 1.00 mm. Shining black; gaster lemon yellow on inside dorsally and on ventral side; funicle joints subequal. The species is very near *D. interruptus* Zhu and Huang and *D. tunctatus* Narendran sp. nov. from which it can be separated by the key given above.

Host : Unknown.

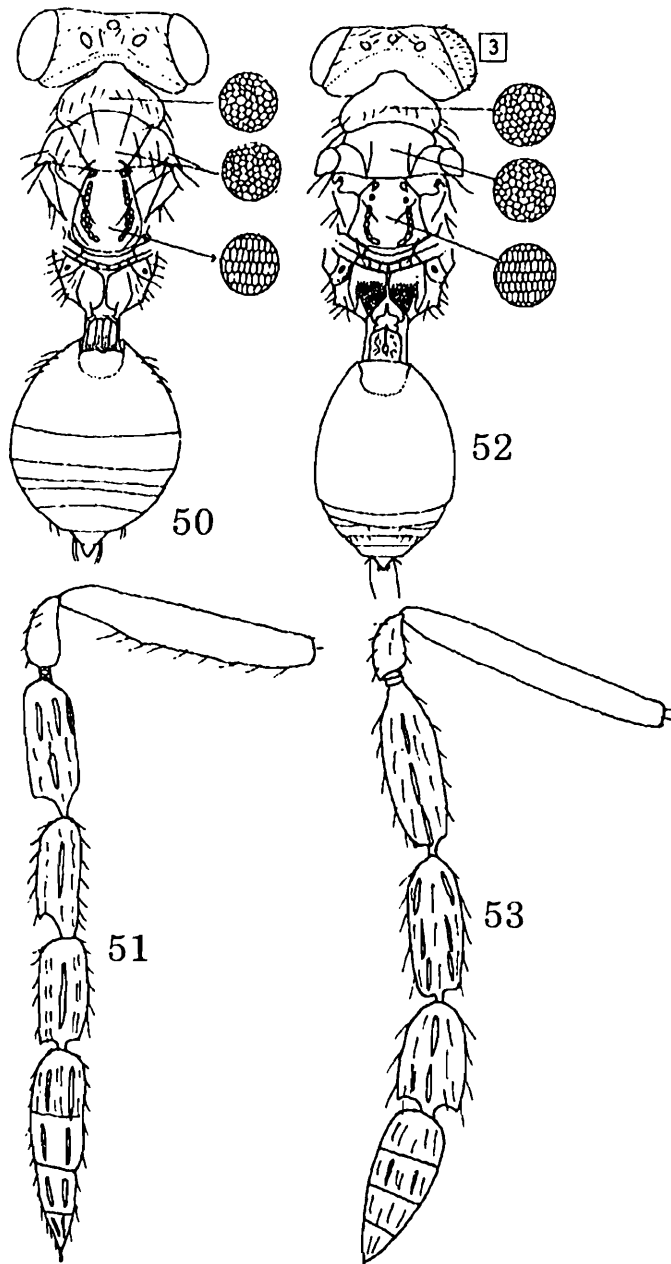
Distribution : Australia : Queensland ; S. China : Hainan.

5. *Deutereulophus tunctatus* Narendran

(Figs. 52, 53)

2007. *Deutereulophus tunctatus* Narendran, in Narendran *et al.*, 63. Holotype Female, India, Kerala, Calicut, Kadalundi (DZUC, examined).

Redescription : Female : Length 1.7 mm. Black with slight metallic green refringence with following parts otherwise: eye grayish yellow; ocelli pale reflecting yellow; antenna black except yellowish brown scape; legs including coxae yellow with pretarsi slightly brown; tegula pale brownish yellow; wings hyaline with veins brown.



Figs. 50-51. *Deutereulophus malabarensis* Narendran Female : 50. Body in dorsal view; 51. Antenna. **Figs. 52-53.** *D. tunctatus* Narendran Female : Body in dorsal view; 52. Body in dorsal view; 53. Antenna.

Head width in anterior view 1.31x its length; width in dorsal view 4.2x as wide as long; vertex moderately reticulate; frons mostly shiny with faint reticulations; toruli located a little below lower eye margin; epistomal sulcus distinct; eyes strongly setose; mandibles at least 3 dentate; occipital carina present but weak; eye height in profile 2.25x length of malar space; malar sulcus weak; POL 2.6x OOL; OD shorter than OOL; Antennal formula 11234. Relative length: width of antennal segments: scape = 42 : 5; pedicel = 10 : 5; F1 = 22 : 7; F2 = 21 : 8; F3 = 14 : 9; clava including apical specula = 23 : 9.

Mesosoma : Pronotum with raised reticulations, without distinct transverse carina anteriorly, with a pair of strong setae near posterior margin; midlobe of mesoscutum with large raised reticulations, with a pair of strong setae (Fig. 32) on anterior half; posterior pair (worn out?); scapula with similar reticulations as that of midlobe of mesoscutum; with 4 strong setae on each scapula; axillae very weakly advanced,

smooth and shiny without setae; scutellum weakly reticulate, reticulations not raised, with 2 pairs of strong setae (one pair on anterior half and the second pair on posterior half); sublateral grooves on scutellum with pits; slightly curved inward at posterior end and not united each other; two larger pits present at anterior end of each sublateral groove; dorsellum smooth with a broad cross groove between it and propodeum, containing several longitudinal short carinae; propodeum distinctly reticulate; median carina and plical carinae well represented; propodeal spiracle rather small separated from anterior margin by its own diameter; curved paraspiracular carinae present; forewing hyaline, 2.33x as long as broad; relative measurements of forewing: CC and veins = 27; SMV = 25; MV = 27; PMV = 10; STV = 8; marginal fringe about 0.4x length of STV; speculum relatively small, closed behind by cubital line of setae; SMV with 5 dorsal setae.

Metasoma subovate; shorter than mesosoma; a trifle narrower than maximum width of mesosoma (10 : 9), with T1 more than half length of gaster, relative length: width of petiole and gaster = petiole = 13 : 12; gaster = 62 : 42.

Male : Unknown.

Host : Unknown.

Distribution : India: Kerala (Malappuram District).

Remarks : This species comes in the *tennysoni* -group as defined by Bouček (1988). It differs from *D. tennysoni* (Girault) in having: 1) Gaster black with weak green refringence (gaster lemon yellow in *D. tennysoni* 2) MV as long as CC (in *D. tennysoni* MV shorter than CC); 3) Forewing 2.33x as long as wide (in *D. tennysoni* forewing 2.5x as long as wide); 3) Occipital carina present (absent in *D. tennysoni*) 4) F2 1.5x as long as F3 (in *D. tennysoni* F2 equal or subequal to F3).

It differs from *D. interruptus* Zhu and Huang (2002) in having : 1) Body black with slight metallic green refringence (in *D. interruptus* body is metallic green); 2) MV as long as CC (in *D. interruptus* MV longer than CC (65 : 56)); 3) PMV 1.25x as long as STV (in *D. interruptus* PMV 1.44x as long as STV); 4) SMV with 5 dorsal setae (in *D. interruptus* SMV with 9 dorsal setae); 5) Toruli situated below lower margin of eye (in *D. interruptus* toruli situated above lower margin of eye).

It also differs from *D. marginatus* Zhu and Huang in having : 1) Sublateral grooves of scutellum not meeting posteriorly (in *D. marginatus* sublateral grooves united posteriorly); 2) Funicular segments unequal in length (in *D. marginatus* funicular segments equal in length); 3) T1 exceeding half of gaster (in *D. marginatus* T1 not reaching middle of gaster).

Genus *Di cladocerus* Westwood

1832. *Di cladocerus* Westwood 128. Type species *Di cladocerus westwoodii* Westwood by monotypy.

Diagnosis : Antenna with funicle 3 segmented; scape almost or reaching anterior ocellus; mesonotum densely sculptured, notauli absent or incomplete; scutellum in female with a pair of sublateral grooves (often effaced posteriorly); male funicle with two branches; propodeum with median carina and plicae distinct; forewing with a line of setae on underside behind MV as in *Sympiesis* Foerster; metasoma elongately ovate.

Host : Parasitic on Lepidoptera and Diptera (Agromyzidae).

Distribution : America, Europe, Asia including India.

Remarks : Khan (1995) recorded this genus from India and described 4 species as new. The types of all the four species are stated to have been deposited in ZSI Kolkata (NZSI) but on my enquiry Dr. P. Girish Kumar of ZSI Kolkata informed me that these are not deposited in NZSI. They are probably lost or with the author. In any case the types are not available to scientific community for studies. The descriptions and figures do not permit me to know the real identities of the genera to which these species belong. I have no other option left than to consider these species as of doubtful generic placement and of doubtful validity. All the four species names are, therefore, considered *incertae sedis*. These species are listed, but neither are diagnosed nor is a key provided.

1. *Di cladocerus antennalis* Khan

1995. *Di cladocerus antennalis* Khan, 88. Holotype Female, India, Uttarakhand, Dehradun (lost?).

Host : *Calycomyza humeralis* sp. (V Roser) (Diptera: Agromyzidae) on *Blumea membranacea* D.C (Compositae) (Khan, 1995).

Distribution : India : Uttarakhand (Dehradun).

2. *Di cladocerus indicus* Khan

1995. *Di cladocerus indicus* Khan, 90- 91. Holotype Female, India, Uttarkhand, Ramnagar (lost?).

Host : *Tropicomyia vigneae* (Seguy) (Diptera: Agromyzidae) on *Dolichos lablab* Linn. (Leguminosae) (Khan, 1995).

Distribution : India: Uttarakhand? (Ramnagar).

3. *Di cladocerus liriomyzae* Khan

1995. *Di cladocerus liriomyzae* Khan, 93, Holotype, Female, India, Uttarkhand. Kathgodam (lost?).

Host : *Liriomyza compositella* (Malloch) Spencer (Diptera: Agromyzidae) on *Xanthium strumarium* Linn (Compositae) (Khan, 1995).

4. *Dicladocerus viggianii* Khan

1995. *Dicladocerus viggianii* Khan 86-87. Holotype, Female, India, Uttarkhand, Bhimtal (lost?)

Host : *Agromyza* sp. (Diptera : Agromyzidae) on *Trifolium alexandrium* Linn. (Leguminosae) (Khan, 1995).

Genus *Diglyphomorphomyia* Girault

1913. *Diglyphomorphomyia* Girault, [167] : 281 Type species *Diglyphomorphomyia nigriscutellum* Girault, by original designation.

2005. *Neolachertus* Narendran, 130. Type species *Elachertus (Neolachertus) nexius* Narendran. As subgenus of *Elachertus*. Synonymized with *Diglyphomorphomyia* by Narendran *et al.* (33).

Diagnosis : Funicle 4 or 5 segmented; propodeum with distinct plicae; scutellum with atleast with same deep punctures or pits; MLM usually with 2pairs and rarely 3 pairs of long bristles, rarely with additional hairs; notouli distinct and complete; gaster sessile; wings rarely dwarfed.

Host : One species from Uganda was reared from a stem borer (persumably a lepidopteran) on *Physalis* (Bouček 1988).

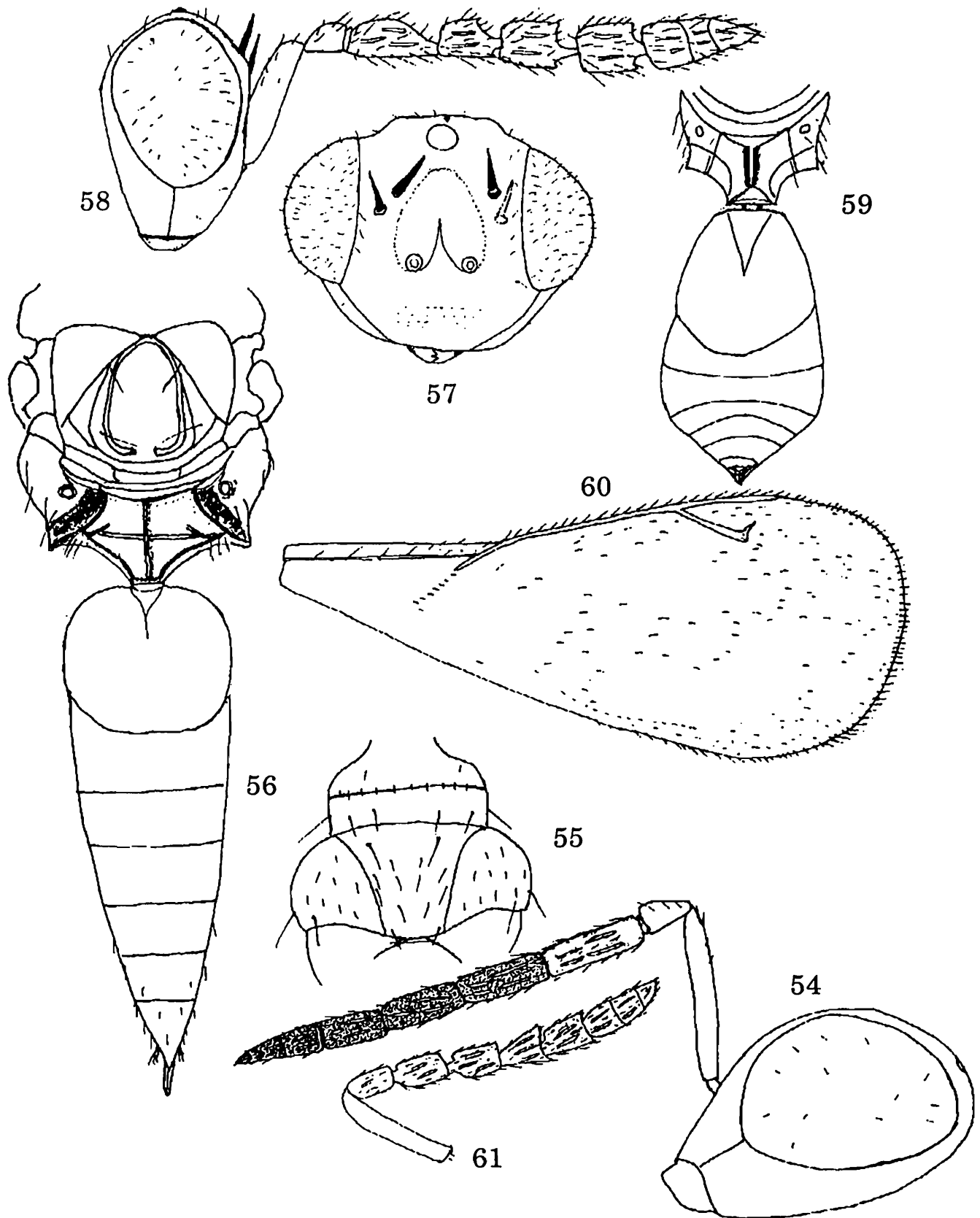
Distribution : Oriental, African.

Remarks : The genus *Diglyphomorphomyia* appears almost closely related to *Elachertus* with which it shares many characters except the propodeal plicae and strong pits on scutellum. However in a few species of *Elachertus* the plica is found developed. The strong pits of scutellum are also not very stable characters. *Diglyphomorphomyia* may represent nothing more than a specialized group of *Elachertus* but I am maintaining it as a distinct genus pending further study.

Key to oriental species of *Diglyphomorphomyia* Girault

(Mainly based on females)

1. Frons with 1 or 2 pairs of unusual stout setae (Figs. 57, 58); metasoma 1.6x as long as broad *D. scolofronta* Narendran sp. nov.
- Frons with such unusual stout setae absent; metanotum variable 2
2. Lower face striate; clava as long as combined length of F3 and F4; antenna brown except for Yellow scape; MV 1.7x PMV; hind femur and hind tibia brown *D. metanotalia* Zhu & Huang
- Lower face not striate; other characters variable 3
3. Body predominantly black or dark brown 4
- Body predominantly yellowish brown or brown or rufus 7



Figs. 54-56. *Elachertus aenigmatis* Narendran sp. nov. Female : 54. Head & antenna profile; 55. Pronotum and anterior part of mesonotum dorsal view; 56. Posterior half of mesonotum and metanotum dorsal view. **Figs. 57-62.** *Diglyphomorphyoyia scolofronta* sp. nov. Female : 57. Head anterior view; 58. Head & antenna side view; 59. Propodeum & metanotum dorsal view; 60. Forewing; 61. *D. sringeriensis* Narendran femae antenna.

- 4. Antenna pale yellow without any darker segments; head and mesosoma black; POL 2.17x OOL; F3 longer than F2; F4 shorter than F3; MV 1.7x as long as PMV (China)..... *D. nigra* Zhu & Huang
- Antenna atleast with some segments darker; other characters partly or completely different from above alternate 5
- 5. Antenna black with three-fourths from base of F1, pedicel and scape pale yellow; MV 3x PMV *D. nigraella* (Narendran) nom. nov.
- Antennal colour patern different, clava and some other segments pale 6
- 6. Forewing (Fig.68) with a relatively long infuscation in the middle of wing disc; metasoma 2.44x as long as its width; body black with liver brown tinge; antenna pale yellow with F2, F3 and F4 darker; each mandible with 7 or 8 teeth *D. palodica* Narendran sp. nov.
- Forewing with infuscation absent; metasoma (Fig.74) 2.23x as long as its width; body black without liver brown tinge; antenna(Fig.72) pale yellow with F3 and F4 dark brown; pedicel brown; each mandible bidentate
..... *D. sholayarica* Narendran sp. nov.
- 7. Antenna (Fig.61) completely pale yellow without any darker segments; F3 shorter than F2; F4 longer than F3; MV 1.94x as long as PMV
..... *D. sringeriensis* Narendran
- Antenna not completely yellow or unicoloured, atleast some segments darker; other characters partly or completely different 8
- 8. Antenna black or brownish black with scape and pedicel brownish yellow or pale brownish Yellow or pale yellow; forewing with a patch of infuscation on disc 9
- Antennal colour pattern different from above; forewing mostly without infuscation (in *D. rufescens* with weak infuscation) 10
- 9. Propodeum with median carina bifurcated at base; MV (Fig.64)2.64x as long as PMV; F1 1.9x as Long as F2 *D. kairali* Narendran
- Propodeum with median carina not bifurcated at base; MV 2.43x as long as PMV; 1.4x as long as F2 *D. ebifurcata* Narendran sp. nov.
- 10. Body rufotestaceous; apical half of F4 and (Fig.71) pale yellow; distance between antennal toruli to anterior ocellus a little more than 2x distance between toruli and lower margin of mouth; POL a liittle over 3x OOL; maximum diameter of eye in profile 4.5x MS; MV shorter than 3x PMV
..... *D. rufescens* (Motschulsky)
- Characters partly or completely different from above 11

11. PMV rudimentary; clava pale yellow; F4 as long as pedicel(Fig. 65); head and mesosoma pale brownish yellow; metasoma pale brownish yellow with dark patches on sides and on middle of posterior half.....
 *D. nexius* (Narendran)
- PMV not rudimentary, longer, clava brownish black or brown; other characters not as above 12
12. Funicle with all segments of same width; F4 as long as broad; F2-F4 brown (China) *D. aeguus* Zhu & Huang
- Funicular segments gradually increasing in width and decreasing in length towards apex; F1, 1.1x as long as broad; F3-F4 brown (China)
 *D. platys* Zhu & Huang

1. *Diglyphomorphomyia ebifurcata* Narendran sp. nov.

(Fig. 62)

Female : (Holotype) Length 2.44 mm. Head and mesosoma pale brownish yellow; eyes gray; ocelli brown antenna brownish black with scape and pedicel brownish yellow; metasoma pale brownish yellow with sides and median part on posterior half and ovipositor sheath darker; wings hyaline with infuscation a little distance below STV; pubescence pale yellow with stronger setae on mesosoma whitish.

Head width in anterior view 1.2x its height; width in dorsal view 2.1x its length; occiput, sharply margined, carinate distance between toruli to anterior ocellus 2x distance between toruli to mouth margin, vertex and scrobe reticulate (not strongly reticulate), POL 2x OOL; LOL equal to OOL; AOL longer than OOL (4 : 3); WIOS 2.83x POL; MS 0.21x height of eye in profile; eye height 1.3x eye length in profile; scrobe not reaching anterior ocellus. Antenna inserted at level of ventral margin of eyes, relative L:W of antennal segments : scape = 26 : 4; pedicel = 10 : 5; F1 = 14 : 6; F2 = 10 : 6; F3 = 11 : 9; F4 = 9 : 9; clava = 14 : 9.

Mesosoma : Pronotum with cross carina absent; distinctly reticulate; mesoscutum with notauli almost straight; MLM punctate with 3 pairs of setae; axillae hardly advanced anteriorly, finely reticulate; scutellum as long as mesoscutum, with distinct close pits, interstices narrower than half diameter of pit, ecarinate, smooth, with 2 pairs of setae; sublateral grooves pitted and joins each other at posterior margin. Propodeum with median carina not bifurcated basally, with a projecting lamina above at base; plicae and costulae distinct; submedian areas smooth and shiny; spiracle separated from metanotum by a distance equal to diameter of spiracle. Forewing 2.5x as long as wide; speculum absent; relative length of CC = 16; SMV = 14; MV = 17; PMV = 7; STV = 4.

Metasoma a little shorter than mesosoma (16 : 17); 1.9x as long as broad.

Male : Unknown.

Host : Unknown

Distribution : India (Arunachal Pradesh).

Material examined : Holotype Female, INDIA, Arunachal Pradesh, Nadampha (N 27° 31' 16.1 E 96° 29' 52.9), 435 mtrs. 11.xi.2009. P. M. Sureshan. Paratype : 1 Female of same collection data of holotype.

Depository : NZSI (Both holotype & paratype).

Remarks : This new species comes very near *D.kairali* Narendran & Kumar in general appearance but differs from it in having: (1) propodeum with median carina not bifurcated at base (in *D.kairali* propodeal median carina bifurcated at base); (2) F1 1.4x as long as F2 (in *D.kairali* F1 as long as F2.).

1. ***Diglyphomorphomyia kairali*** Narendran & Kumar
(Figs. 63-64)

2005b. *Diglyphomorphomyia kairali* Narendran & Kumar, in Narendran *et al.*, 151. Holotype, Female, India, Kerala, Kannur District, Kottiyoor Forest (ZSIK).

Redescription : *Female* : Length : 2.25 mm. pale brownish yellow; eyes brownish black with margin paler, ocelli black; antenna brownish black with scape and pedicel pale brownish yellow; median part of metanotum, median propodeal carina, brownish black; gaster with black patches on sides and middle of second, third and fourth tergites. Wings hyaline with infuscation a little distance below STV. Pubescence pale brown with stronger setae on mesosoma darker.

Head width in anterior view (70 : 53) 1.32x its length; width in dorsal view (68 : 20) 3.4x its median dorsal length. Vertex rugosoreticulate; eyes pilose; occipital carina present; distance between toruli to anterior ocellus 3.8x distance between toruli to mouth margin; scrobe margin ecarinate. POL 1.85x OOL; maximum diameter of eye in profile 2.2x malar space; malar groove distinct. Relative length: width of antennal segments; scape = 30 : 5; pedicel = 11 : 6; F1 = 19 : 7; F2 = 10 : 9; F3 = 9 : 9; clava = 18 : 8.

Mesosoma : Pronotum without transverse carina; notauli a little curved, convergent towards posterior side, ending at outer angles of axilla; midlobe of mesoscutum not protruding markedly posteriorly, with 3 pairs of strong, setae, distinctly punctuate, interstices narrow and smooth, ecarinate; axilla with anterior margin in line with scutellar suture, finely reticulate; scutellum 1.24x as long as mesoscutum, with distinct close pits, interstices narrow and smooth, ecarinate without additional setae except two pairs of strong setae; sublateral grooves of

scutellum pitted and joins each other posteriorly. Propodeum with a median carina which becomes divided and forked at the proximal half (anterior half) and with a raised lamina at the base; plicae and costulae distinct; propodeal neck distinct; space between plicae and median carina mostly smooth, faintly reticulate; each lateral margin of propodeum with 4-5 setae. Forewing hyaline with brown infuscation a little distance below stigmal vein (Fig. 64); length of forewing 3.15x its maximum width; speculum sparsely setose, closed behind with cubital line of setae. Relative length of SMV = 45; MV = 49; PMV = 19; STV = 15. Cubital vein straight at base.

Metasoma as long as mesosoma or subequal to mesosoma; ovate. T1 largest, a little shorter than half length of gaster; one cercal seta slightly longer than other setae.

Male : Similar to female except the following: gaster distinctly shorter than mesosoma, black with T1 yellow.

Host : Unknown.

Distribution : India: Kerala

Material examined : Holotype and paratype (ZSIK).

Remarks : This species comes near *D.rufescens* (Motschulsky, 1863) but differs from it in having 'Y' shaped fork at basal part of propodeum; MV longer than 3x PMV and in other characters mentioned in the key above.

2. *Diglyphomorphomyia nexius* (Narendran)

(Fig. 65)

2004. *Elachertus* (*Neoelachertus*) *nexius* Narendran 130. Holotype, Female, India, Thiruvanthapuram, Mannamkonam (ZSIK)

2005b. *Diglyphomorphomyia nexius* (Narendran): Narendran et al., 29-34. New combination by Narendran et al.

Rediscription : *Female* : (Holotype) Length 1.83 mm. Pale brownish yellow; area below front ocellus, sides of gaster, middle of front tergite, sixth tergite, epipygium and ovipositor sheath darker; eyes grey; ocelli reflecting yellow; tips of mandibles brown; antennae pale yellow with first three funicular segments brown; legs yellow with claws brown. Wings hyaline with slight brownish tinge, veins and pilosity brown.

Head not collapsing, width in anterior view 1.206x its length; width in dorsal view 3.84x its median length; frontovertex and margin of eyes with distinct stout setae, setae shorter on ventral margin of eyes; scrobe shallow, margins ecarinate; clypeus distinctly demarcated, transverse, with two 2 hairs on its distal side;

maximum diameter of eye in profile a little over 4.6x malar space; eyes with very short sparse pubescence; POL 3x OOL; occiput carinate posteriorly, abruptly declined to ventral side. Antennae inserted a little above level of ventral margin of eyes; antennal formula 11143; scape not reaching front ocellus, about 4.6x its maximum width, 2x length of pedicel; first funicular segment a little longer than second; third funicular segment slightly shorter than second but a little longer than fourth; clava a little more than 1.6x length of preceding segment; width of funicular segments subequal.

Mesosoma distinctly reticulate-punctate on pronotum, mesoscutum and scutellum; pronotum somewhat bell shaped with 3 pairs of setae near its posterior border; notauli distinct and complete; mesoscutum with 3 pairs of setae; axillae not produced anteriorly, mostly smooth; scutellum without submedian grooves, but with distinct sublateral grooves with two pairs of setae outside groove; sublateral grooves not quite distinctly connected to each other through posterior margin of scutellum; dorsellum with a row of pits; propodeum with distinct plicae and median carina; legs with sparse bristles. Forewing length 2.5x its width, pilose, marginal fringe shorter than half length of stigmal vein; submarginal vein with 7 dorsal setae; costal cell slightly longer than marginal vein; postmarginal hardly distinct, rudimentary, stigmal vein linear, about 0.29x length of marginal vein. Hind wing 4.12x as long as its width.

Metasoma : subsessile, smooth and shiny, a little longer than mesosoma; first tergite largest, with a small pit and a short median groove; posterior margin of first and second tergite convex.

Male : Unknown.

Host : Unknown.

Distribution : India : Kerala.

Material examined : Holotype (ZSIK).

Remarks : This is the unique species differing from all oriental species in having PMV rudimentary and F4 as long as pedicel.

3. *Diglyphomorphomyia nigraella* Narendran, **nom.nov.**

(Fig. 66)

2005b. *Diglyphomorphomyia nigra* Narendran, in Narendran *et al.*, 29 India, Kerala, Malappuram District, Calicut University Campus (ZSIK). Preoccupied by *Diglyphomorphomyia nigra* Zhu & Huang 2003 : 447.

Redescription : *Male* : Length : 1.4 mm; Forewing length: 1.09 mm; black; eye yellowish grey; ocelli pale reflecting yellow; scape pale brownish yellow; pedicel brown; flagellum dark brown; legs pale yellow; setae pale yellow.

Head width 1.39x its length in anterior view; width in dorsal view 2.4x its median dorsal length; vertex transversely reticulate; eyes pilose; occipital carina present; distance between toruli and anterior ocellus 2.8x distance between toruli and mouth margin; scrobe ecarinate; POL 2x OOL; maximum diameter of eye in profile a little over 2.6x length of malar space; malar groove distinct. Relative length: width of antennal segments: scape = 24 : 5; pedicel = 10 : 8; F1 = 17 : 10; F2 = 14 : 1 I; F3 = 16 : 9; F4 = 14 : 10; clava = 32 : 10.

Mesosoma : Pronotum without transverse carina; notouli curved, convergent towards posterior side; midlobe of mesoscutum not protruding markedly backwards, with 3 pairs of strong setae, distinctly reticulate; punctuate; interstices narrow and somewhat carinate irregularly; axilla with anterior margin in line with scutoscutellar suture, finely reticulate; scutellum a little longer than mesoscutum (37 : 31), with longitudinally arranged longitudinal pits; interstices narrow, somewhat carinate longitudinally, with 2 pairs of setae; sublateral grooves of scutellum pitted and each other posteriorly. Propodeum with a median carina bifurcating posteriorly, anteriorly meeting a perpendicular lamina, containing two dorsal pits; plicae distinct with a transverse carina joining outer margin; another transverse carina present anterior to spiracle; propodeal neck distinct but relatively shorter than that of *sringeriensis*; space between plicae and median carina smooth and shiny, margin of propodeum with 4-5 setae. Forewing hyaline, its length 2.64x its maximum width, densely pilose; speculum present, closed posteriorly by cubital line of setae. Relative length of forewing veins: SMV = 45; MV = 45; PMV = 15; STV = 10; cubital vein straight at base.

Gaster a little shorter than mesosoma (6 : 8), ovate, T1 0.4x length of gaster.

Female : Length 1.52 mm. Similar to male except in the following characters: Antenna as in (Fig. 66), gaster longer than mesosoma, basal yellow colour less pronounced than that of female; ovipositor sheath 0.8x length of gaster; ovipositor not exerted.

Host : Unknown.

Distribution : India : Kerala (Malappuram and Trichur districts).

Remarks : This new species differs from the other Indian species in having: 1) scutellum with longitudinally arranged pits; 2) speculum present; 3) Head, mesosoma and metasoma black (except T1 with yellow colour partly). It resembles the Australian species *D. nigriscutellum* Girault (1913 [167]) in having scutellum black but *D. nigriscutellum* differs from *nigraella* in having 1) head and mesoscutum blood red (head and mesoscutum black in *D. nigraella*); 2) gaster

yellowish brown with black patches (gaster black with yellow colour in T1 in male, slightly in female); 3) F4 as long as pedicel (F4 shorter than pedicel in *D. nigraella*) and 4) scutellum with scattered pin punctures on the disc (in *D. nigraella* scutellum with close longitudinally arranged pits).

4. *Diglyphomorphomyia palodica* Narendran sp. nov.

(Fig. 67-70)

Female : (Holotype) Length 2.54 mm. Head, mesosoma and metasoma black with liver brown tinge; ocelli pale reflecting brown; eye grayish yellow; scape and clava whitish yellow; pedicel pale brownish yellow; F1 pale brown with an orange tinge. F2, F3 and F4 black; fore coxa and femur liver brown, fore tibia and tarsus pale yellow; all tarsi black; mid and hind legs pale yellow with base of mid coxa pale brown; wings hyaline with slight infuscation below MV and STV (Fig. 68).

Head in anterior view 1.28x as wide as its width; width in dorsal view 2.2x its length, wider than mesosoma; POL 3.25x OOL; LOL 1.5x OOL; distance (AOL) between front ocellus and hind ocellus equal to LOL; occiput sharply margined WIOS 2.46x POL; scrobe shallow, finely reticulate, not quite reaching front ocellus, margins ecarinate; clypeus demarcated, lower margin straight; mandible 7-8 teeth. MS 0.29x eye height in profile; eye pilose, eye height in profile 1.28x its length. Antenna inserted a little above level of lower margin of eyes; scape hardly reaching level of vertex; relative L: W of segments: scape = 34 : 6; pedicel = 12 : 4 F1 = 17 : 5; F2 = 16 : 7; F3 = 13 : 10; F4 = 11 : 9, clava = 20 : 10.

Mesosoma : Pronotum rounded, without a dorsal cross carina, length (including collar) 0.53x its width, coarsely punctate-reticulate, moderately pubescent, besides 4 longer setae on posterior margin and one laterally on either side. Mesoscutum a little longer than pronotum (10 : 8); MLM (exclusively scapulae) 1.3x as wide as its length, distinctly pitted, with 3 pairs of long setae near posterior margin and another on outer margin, with smaller hairs on remaining part. Scutellum distinctly and closely pitted; with 2 pairs of long setae, lateral grooves pitted united each other posteriorly. Propodeum with median carina forked anteriorly below projecting lamina, submedian areas smooth and shiny; with well developed nucha like projection posteriorly. Forewing 2.67x as long as broad, relative lengths of veins SMV = 41, MV = 31, PMV = 15, STV = 11; CC = 52.

Metasoma : Gaster sessile, length 2.44x its width; longer than mesosoma (28 : 23) T1 largest T2 to T5 subequal in length; T6 broader than long; ovipositor sheath invisible from above.

Male : Unknown.

Host : Unknown.

Material examined : Holotype: Female, INDIA, Kerala, Thiruvananthapuram Dt. Palode (N 8° 42' 47" E 77° 1' 35"), 11. xii.2004. T. C. Narendran & Party; Paratype : 1 Female, INDIA, Arunachal Pradesh, Namdapha, (N 27° 31' 16.1" E 96° 29' 52.9"), 435 mts., 10.xi.2009.

Depository : Holotype deposited at ZSIK.

Etymology : Named after the locality of Holotype : Palode.

Remarks : This new species resembles the Australian *D. albiclava* Girault (Girault 1915:230) in general appearance but *D. albiclava* differs from this new species in having: body mainly orange yellow; gaster honey yellow; legs concolorous with gaster; scutellum with interstices of pits much broader than diameter of a pit. In the new species colour of body is different; interstices of pits carinate.

5. *Diglyphomorphomyia rufescens* (Motschulsky)

(Fig. 71)

1863. *Cheiloneurus rufescens* Motschulsky, 53. Holotype, Male (?), Sri Lanka, mont Patannas (ZMMS).

1896. *Comys rufescens* (Motschulsky) : Howard, in Howard & Ashmead, 640.

1988. *Diglyphomorphomyia rufescens* (Motschulsky) : Bou ek, 649.

Redescription : *Female* : Length: 2.21 mm. Rufotestaceous; scape, apical half of F4 and clava pale yellow; eyes dark reddish-brown with margins paler; setae brownish black; gaster pale brownish yellow with sides and middle part black; last tergite and ovipositor sheath black; legs pale yellow.

Head width 1.2x its length in anterior view; 4x its median length in dorsal view; vertex reticulate; occiput distinctly granulo-reticulate; occipital carina present; eyes pilose; maximum diameter of eye in profile 4.5x malar space; distance between toruli to anterior ocellus 2.17x distance between toruli and lower mouth margin; scrobe ecarinate. POL 3.2x OOL; malar groove distinct; maximum diameter of eye in profile 4.5x malar space. Relative length : width of antennal segments: scape 33 : 6; pedicel 12 : 15; F1 = 17 : 5; F2 = 11 : 7; F3 = 12 : 8; F4 = 10 : 8; clava 19 : 11.

Mesosoma : Pronotum without transverse carina; notauli a little curved and convergent towards posterior side, ending at inner angles of axilla; mid lobe of mesoscutum not protruding markedly backwards, with three pairs of strong setae, distinctly punctate, interstices narrow and smooth, ecarinate; axilla with anterior margin in line with scuto-scutellar suture, distinctly reticulate; scutellum longer than mesoscutum (45 : 35) with distinct pits and a median pit like depression,

interstices smooth, narrow and ecarinate with two pairs of setae; sublateral grooves deeply pitted and join each other posteriorly. Propodeum with median carina and plicae, a transverse carina running from posterior part of each plica to outer margin of propodeum; spiracle with a transverse carina anteriorly; propodeum with 6-7 setae on lateral margin. Forewing hyaline with brown infuscation posterior to STV; speculum absent; cubital line of setae straight from base; forewing length about 3x its maximum width. Relative lengths of veins : SMV = 42; MV = 42; PMV = 15; STV = 12.

Gaster as long as mesosoma, ovate; T1 0.31x length of gaster; basal fovea narrowing to median groove reaching posterior margin; one cercal seta on either side more than 2x length of the remaining seta; ovipositor sheath exerted.

Male : Unknown.

Host : Unknown.

Material examined : 1 Female, India: North Kerala, Thamarasseri (75°52'E11°25'N), 18.ix.2003, Coll. Sabu K.Thomas (DZUC).

Distribution : India: Kerala; Sri Lanka.

Discussion : This species can be separated from all other Indian species using the key given in this monograph. The Australian species *D. specimenipennis* Girault (1913 [167]) resembles *D. rufescens* in having somewhat similar colour of gaster. However, it differs from *D. rufescens* in having : (1) F3 shorter than F2 (not so in *D. rufescens*); (2) mesoscutum and scutellum reticulo-punctate (in *D. rufescens* mesoscutum and scutellum deeply and closely punctuate without any reticulation); (3) general body colour yellow with apex of scutellum faded lemon yellow (general body colour rufotestaceous including apex of scutellum in *D. rufescens*); and (4) F1 and F2 yellowish white (F1 and F2 black in *D. rufescens*).

6. *Diglyphomorphomyia scolofronta* Narendran sp. nov.

(Figs. 57-62)

Female : (Holotype) Length 1.9 mm. Generally black with following parts as follows: scape and pedicel light brown; eye gray; ocelli pale reflecting yellow; pubescence of antenna and eye silvery, mesosoma black, tegula pale brownish yellow; legs pale whitish yellow with a dark patch on apical part of hind femur, pretarsi dark brown; metasoma black with slightly pale brown on T1, and on apical part of hypopygium; wings hyaline with veins pale brown.

Head width in anterior view 1.2x its height, width in dorsal view 2.25x its length, a little wider than mesosoma (13 : 11.5); POL 1.7x OOL; LOL equal to

OOL; AOL a little shorter than OOL (2.5 : 3); occiput sharply margined; WIOS 3.3x POL; frons with a pair of unusual setae on either side; scrobe moderately deep, not reaching front ocellus, cross reticulate, margins ecarinate; clypeus not demarcated, lower margin straight, mandibles with 3 teeth; MS 0.3x eye height in profile, 1.3x its length, eye pilose; antenna inserted a little above level of lower margin of eyes; relative L : W of segments : scape = 33 : 7; pedicellus = 11 : 7 : F1 = 22 : 9; F2 = 16 : 9; F3 = 19 : 10; F4 = 11 : 12; clava = 28 : 11.

Mesosoma : Pronotum somewhat bell shaped 0.86x as long as its width, with a weak cross carina on sides only (medially vague), coarsely punctate reticulate, moderately pubescent, besides 4 larger setae near posterior margin and one seta laterally on either side; mesoscutum subequal in length to pronotum, MLM a little wider than long (8 : 6), distinctly and closely pitted on posterior half, strongly reticulate anteriorly, with 3 pairs of strong brownish yellow setae; MLM not protruding posteriorly, scapula strongly reticulate, pubescent with one stronger seta; scutellum with a pit on its anterior margin, with distinct close pits, interstices of pits weakly aciculate mostly smooth, not carinate, with 2 pairs of strong setae, lateral grooves united posteriorly; propodeum with median carina not forked anteriorly; carina lying in a groove; submedian areas smooth and shiny, with well developed plicae and costulae, with well developed nucha like projection; propodeal spiracle separated from metanotum by distance shorter than its diameter; forewing 2.4x as long as broad; relative length of CC = 53; SMV = 46; MV = 47; PMV = 23; STV = 17.

Metasoma with a short petiole; gaster 1.7x as long as broad, shorter than mesosoma (11 : 13); T1 longest, almost reaching middle of gaster; T2 & T3 subequal in length; ovipositor sheath slightly visible.

Host : Unknown.

Material examined : Holotype, Female, INDIA, Kerala, Wayanad District, Pookode Lake (11° 32' N 76° 01' E), 8-xi-2003, T.C.Narendran & party; Paratype: 1 Female, Kerala, Wayanad District, Muthanga (11° 44' N 76° 29' E) (Sulthan bathery), 10-x-2000, T. C. Narendran & party.

Depository : Holotype deposited at ZSIK.

Remarks : This species can be separated from all other species of *Diglyphomorphomyia* of India in having unusual large pair of black setae on either side of frons and in having a small petiole and propodeum with median carina in a groove.

7. *Diglyphomorphomyia sholayarica* Narendran sp. nov.

(Figs. 72-74)

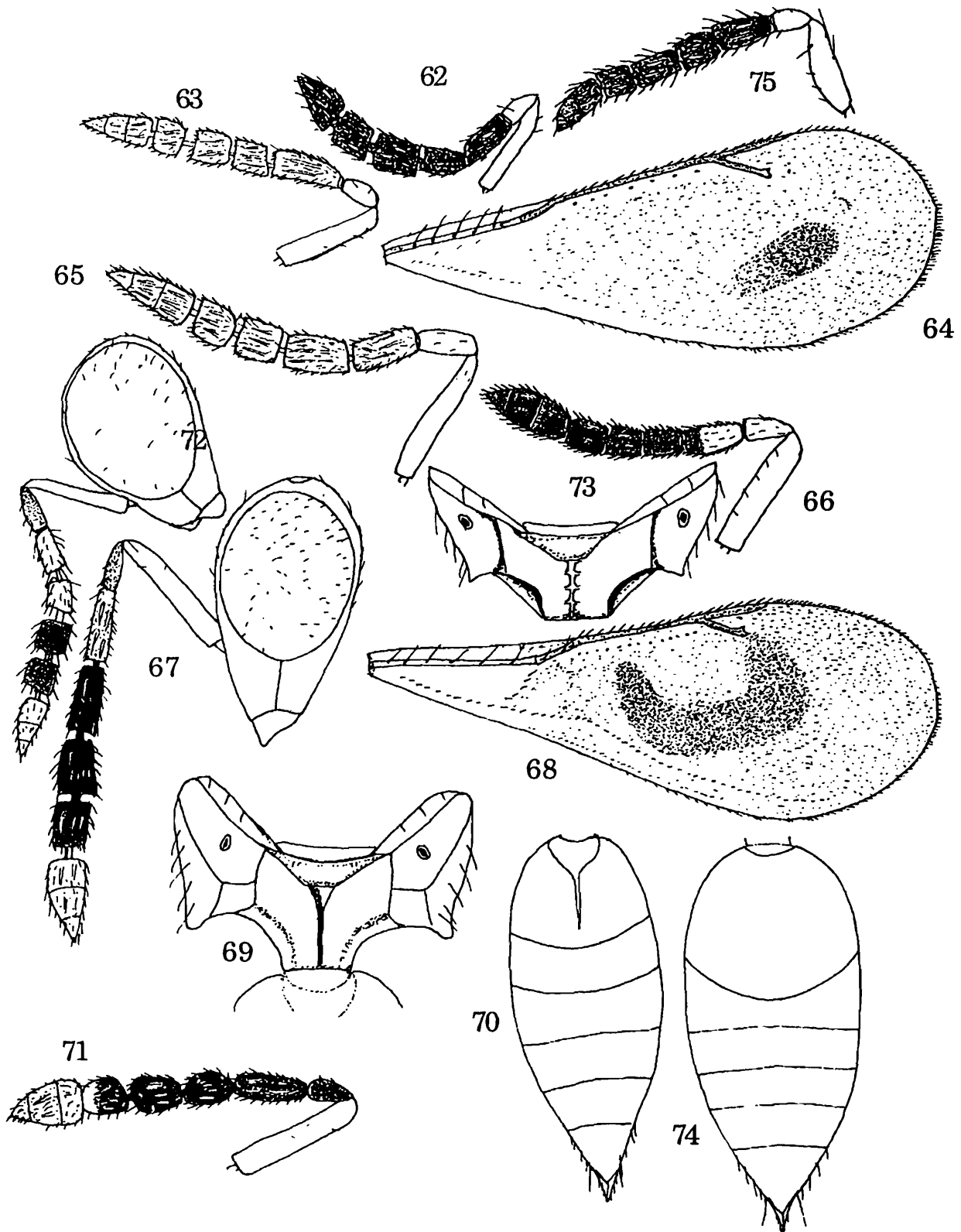
Female : (Holotype) Length 2.25 mm. General body colour black with following parts as follows : ocelli reflecting dark brown; eye pale grayish yellow with slight orange tinge on anterior part; scape, F1, F2 and clava pale yellow; pedicel brown; F3 and F4 dark brown. Wings hyaline without infuscation, veins brown. Forecoxa and forefemur brown, foretibia and tarsus pale yellow, mid coxa and mid femur light brown, remaining segments of mid leg pale yellow; hind leg pale yellow with distal half of femur mostly brown. Metasoma black with distal part of T1 slightly pale brownish.

Head in anterior view 1.23x as wide as its height; width in dorsal view, 2.1x its length, as wide as mesosoma; POL 3.5x OOL; LOL 2x OOL; AOL equal to LOL; occiput sharply margined; WIOS 2.6x POL; scrobe moderately deep, not reaching front ocellus, reticulate, margins ecarinate; clypeus weakly demarcated, lower margin straight; mandible bidentate. MS 0.18x eye height in profile; eye pilose; eye height in profile 1.25x its length; Antenna inserted a little above level of lower margin of eyes; relative L : W of segments: scape = 26 : 3 pedicel = 11 : 4; F1 = 10 : 5 F2 = 8 : 6; F3 = 8 : 8; clava = 14 : 6, scape not all reaching front ocellus.

Mesosoma : Pronotum rounded without a cross carina, length 0.5x its width, coarsely punctate-reticulate, moderately pubescent besides 4 longer setae at posterior margin and one seta on each side laterally. Mesoscutum longer than pronotum (12 : 9); MLM as long as its width, distinctly pitted, with 3 pairs of long setae, not protruding posteriorly each scapula with a long seta at posterior margin and another on outer margin, with smaller hairs on remaining part. Scutellum distinctly and closely pitted with 2 pairs of long setae, lateral grooves pitted and united each other posteriorly; propodeum with median carina not forked anteriorly but with small bud like projections on sides; submedian areas mostly smooth and shiny with faint reticulations; with well developed nucha like projection posteriorly. Forewing 2.13x as long as broad; relative lengths of veins : C = 17; SMV = 15; MV = 18; PMV = 10; STV = 7; disc densely pilose; speculum absent.

Metasoma : Gaster sessile; 2.23x as long as broad; as long as mesosoma; T1 longest; T2 to T5 subequal in length medially, T6 longer than any of the other tergites from T2 to T5, about 1.7x as broad as long; ovipositor sheath visible from above.

Male : Length 1.5 mm. Antennae darker than that of female, segments with short apical projection.



Figs. 62. *Diglyphomorphomyia ebifurcata* Narendran sp.nov. Female antenna; **Figs. 63-64.** *D. kairali* Narendran Female : 63. Antenna; 64. Forewing. **Fig. 65.** *D. nexius* Narendran Female antenna. **Fig. 66.** *D. nigrella* (Narendran) Female antenna. **Figs. 67-70.** *D. palodica* sp.nov. Female : 67. Head & antenna profile; 68. Forewing; 69. Propodeum; 70. Gaster. **Fig. 71.** *D. rufescens* (Motschulsky) Female antenna. **Figs. 72-74.** *D. sholayarica* sp.nov. 72. Head and antenna profile; 73. Propodeum; 74. Gaster. **Fig. 75.** *Elachertus zellus* sp.nov. Female antenna.

Host : Unknown.

Material examined : Holotype : Female : INDIA, Kerala, Thrissur District, Sholayar (10° 31' N 76° 13' E), Ambalappara (76°25.011' E), 17.02.06 Sabu. K. T. Paratype: 1 Male, Kerala, Wayanad District, Pookad lake side (11°33'53"N 76°1'28"E), 22.v.2005. S. Santhosh.

Depository : Holotype deposited at ZSIK.

Etymology : Named after the locality of Holotype viz. Sholayar.

Remarks : This new species comes near *E. nigraella* (Narendran) in general appearance but *E. nigraella* differs from this new species in having: 1) F2, F3, F4 and clava black. 2) speculum present. 3) scutellum with longitudinally arranged pits and 4) Median carina bifurcating posteriorly.

8. *Diglyphomorphomyia sringeriensis* Narendran

(Fig. 61)

2005. *Diglyphomorphomyia sringeriensis* Narendran, in Narendran *et al.*, 31. Holotype, Female, (ZSIK) (examined).

Redescription : *Female* : Length: 1.9 mm. Forewing length 1.31 mm. Head and mesosoma brown; eyes yellowish brown; ocelli reflecting pale yellow; antenna pale yellow; setae pale brownish yellow (reflecting golden yellow at certain angle); legs and gaster yellow.

Head 1.23x as wide as its length (69 : 56) in anterior view; width in dorsal view 3.57x its median length; vertex finely reticulate; eyes pilose; occipital carina present; distance between toruli to anterior ocellus 3x distance between toruli to mouth margin; scrobe ecarinate; POL 2.8x OOL; maximum diameter of eye in profile 2.75x malar space; malar groove distinct; Relative L : W of antennal segments: scape = 39 : 6; pedicel = 14 : 7; F1 = 16 : 9; F2 = 15 : 9; F3 = 14 : 10; F4 = 14 : 10; clava = 24 : 10.

Mesosoma : Pronotum without transverse carina; notauli a little curved, convergent towards posterior side, ending at outer angle of axilla; mid lobe of mesoscutum not protruding markedly posteriorly, with three pairs of strong setae, distinctly punctate, interstices narrow and smooth, ecarinate; axilla with anterior margin in line with scutellar suture, finely reticulate; scutellum a little longer than mesoscutum (16 : 13) with distinct close pits, interstices narrow and smooth, ecarinate without additional setae except two pairs of strong setae; sublateral grooves of scutellum pitted and joins each other posteriorly; propodeum with a median carina which meets anterior margin with a raised conspicuous perpendicular lamina containing two pits; plicae distinct with a transverse carina

joining outer margin; another transverse carina distinct anterior to spiracle; propodeal neck distinct, space between plicae and median carina mostly smooth, faintly reticulate; each lateral margin of propodeum with 7-8 setae; forewing hyaline, 2.44x as long as its maximum width, densely pilose, speculum absent, SMV with 6-7 dorsal setae; relative length of SMV = 33; MV = 35; PMV = 18; STV = 12; cubital vein straight at base.

Gaster a little longer than mesosoma (11 : 9), ovate; T1 a little less than half length of gaster (17 : 21); one circle seta longer than remaining ones on either side; exerted part of ovipositor 0.38x as long as gaster.

Male : Unknown.

Host : Unknown.

Material examined : 1 Female, INDIA, Karnataka, Sringeri (75° 15' E 13° 29' N), 5-v-2003, Coll. P.A. Sinu (ZSIK).

Distribution : India : Karnataka (Sringeri).

Remarks : This species resembles *Diglyphomorphomyia rufescens* (Motschulsky) and *D. nexius* (Narendran) in having somewhat similar sculpture of mesoscutum. *D. rufescens* differs from *D. sringeriensis* in having: (1) F1 length 1.45x length of F2 (in *D. sringeriensis*) F1 subequal in length to F2; (2) F4 subequal to F3 (in *D. sringeriensis* F4 subequal in length to F3); (3) postocciput distinctly reticulate (not so in *D. sringeriensis*); (4) forewing with infumation near middle (without infumation in *D. sringeriensis*); (5) T1 with a median shallow groove extending from basal fovea to near distal margin (in *D. sringeriensis* the groove does not reach near middle from basal fovea); (6) mesosomal setae blackish- brown in all lightnings (in *D. sringeriensis* mesosomal setae look golden brown in certain angle of light); (7) gaster with blackish patches and yellowish- brown (in *D. sringeriensis* gaster completely yellow) and (8) propodeum distinctly reticulate (in *D. sringeriensis* propodeum smooth and shiny).

Genus *Diglyphus* Walker

1844. *Diglyphus* Walker, 409. Type species *Cirrospilus chabrias* Walker, designated by monotypy.

1904a. *Diaulis* Ashmead, 356. Type species *Diaulus begini* Ashmead, by monotypy. Preoccupied by Mueller (Peck (1963) synonymized).

1906. *Dialinus* Schulz, Replacement name for *Diaulus* Ashmead, not Mueller (Peck (1963) synonymized).

1951. *Cycloscapus* Erdös and Novicky, in Erdös, 2: 200. Type species *Cycloscapus puzzelensis* Erdös and Novicky, by original designation. (Bou ek, 1959 synonymized).

Diagnosis : Body narrow, dark coloured, with a metallic refringence; sculpture very delicate; pubescence not conspicuous; funicle 2 segmented in both female

and male; notauli incomplete or very shallow and curve posteriorly outwards to advanced axillae; MLM with 2 pairs of setae; axillae advanced; scutellum with 2 subparallel grooves placed submedially as in Tetrastichinae; propodeum with plicae absent; gaster sessile and elongated; SMV with more than 3 setae.

Host : Parasites of Dipterous leaf miners (mainly Agromyzidae). Other hosts include Curculionidae, Ephydriidae, Gracillaridae, Lyonetiidae, Nepticulidae, Tephritidae and Tortricidae (Zhu *et al.*, 2000).

Distribution : India, South Asia, Australia, Pacific, South America and other countries of Holarctic region.

Key to the Indian species of *Diglyphus* Walker

(Based on females)

1. Forewing infuscated with two hyaline spots (one adjoining anterior margin and another adjoining posterior margin. (Fig. 19, 22 of Khan 1985, Khan *et al.* 2005. Plate iv. Figs. 6, 9) 2
 - Forewing hyaline without infuscation as above 3
2. PMV shorter than STV; F1 and F2 quadrate, subequal in length, clava entirely white; scape not swollen (Female)..... *D. mandibularis* Khan
 - PMV longer than STV; F1 and F2 longer than wide; clava brown with apex white; scape swollen (Male) *D. funicularis* Khan
3. Antenna with 3 anelli, width of space between sublateral grooves of scutellum 0.75x its length; scutellum with 3 pairs of setae; hind tibia yellowish with dark brown bands on basal & apical half; F1 2x as long as wide; clava 3.15x as long as F2 *D. frontolatus* Arifa & Khan
 - Antenna with 1 or 2 anelli; width of space between sublateral grooves different from above; other characters variable 4
4. Antenna with 2 anelli 5
 - Antenna with 1 anellus 7
5. Hind tibia completely yellow; speculum large; general body colour metallic green (dark metallic green in female) *D. pachyneurus* Graham
 - Hind tibia with black marking 6
6. Hind tibia black with base and apex pale white *D. horticola* Khan
 - Hind tibia yellow with dark brown bands on basal and apical halves *D. indicus* Arifa & Khan
7. Hind tibia yellow with 2 black bands (one subbasally and one subapically) [MV 1.3- 1.6x as long as PMV; metasoma shorter than mesosoma] *D. guptai* (Subba Rao)

- Hind tibia dark brown or black with base and apex yellow 8
- 8. Forewing narrow with cubital line of hairs curved basally towards anterior margin of wing; speculum absent [In Lectotype female scape brown with basal part slight pale and metasoma longer than mesosoma]
.....*D. isaea* (Walker)
- Forewing broader with cubital line of hairs almost straight; speculum present but small [scape uniformly dark coloured or uniformly brown] 9
- 9. Scutellum with purple or bronze refringence in contrast to dark metallic blue-black mesoscutum; segments of antennal funicle atleast 1.5x longer than wide; sublateral grooves of scutellum more widely separate than in alternate
.....*D. minoeus* (Walker)
- Body including scutellum brightly metallic green; segments of antennal funicle (atleast F2) not longer or barely longer than wide; sublateral grooves of scutellum more nearer than in alternate [scape with metallic refringence]
.....*D. chabrias* (Walker)

1. *Diglyphus chabrias* (Walker)

1838. *Cirrospilus chabrias* Walker, 451. Lectotype, Female, United Kingdom, near London (Lectotype selected by Graham 1959: 178) (BMNH, examined).

1844. *Diglyphus chabrias* (Walker): Walker, 409.

Diagnosis : Female : (Lectotype) 1.75 mm. Head and mesosoma bright metallic green, metasoma dark metallic green, antenna brown; hind coxa, femur (except apical yellow part) black; hind tibia black with base and apex yellow; hind metatarsus and following segment yellow; remaining hind segments yellowish brown; ocelli reflecting brown; eyes brown; head width in dorsal view 2x its length; pronotum 2x its median length, its posterior margin concave; mesoscutum longer than pronotum, as wide as head width; scutellum shorter than mesoscutum; forewing 2.1x as long as broad; relative length of CC = 11; SMV = 9; MV = 10; PMV = 5.1; STV = 5. Metasoma a little shorter than mesosoma, 1.75x its width.

Host : Unknown.

Distribution : Palaearctic and Pakistan.

Material examined : Lectotype, Female, BMNH, No. Hym 5. 2589.

Remarks : This species comes near *Diglyphus minoeus* in general appearance but differs from that species in having: (1) body including scutellum bright metallic green (in *D. minoeus* body dark metallic-blue black and scutellum with purple bronze refringence); (2) F2 not longer or barely longer than wide (in *D. minoeus*

antennal funicle segments atleast 1.5x as long as wide) and (3) sublateral grooves of scutellum more nearer to each other than that of *D. minoews*.

2. *Diglyphus frontolatus* Arifa & Khan

1992. *Diglyphus frontolatus* Arifa & Khan, 429. Holotype Female, India, Uttar Pradesh (Lakhimpur Kheri) (lost ?).

Diagnosis : (Based on Arifa & Khan, 1991). Female : 1.4 mm. Head and mesosoma dark brown with very faint iridescent reflections, clypeal part yellowish brown; antenna uniformly brown; metasoma dark brown with white complete bands on dorsum; fore coxa, tochanter and femur dark brown except apical one-fourth; coxa, trochanters and femora of mid and hind legs same as that of fore leg; mid and hind tibiae yellowish with dark brown bands on apical and basal half; head width 1.31x its height (excluding mandibles) in anterior view; POL less than 1.5x OOL; antennae inserted a little above level of lower margin of eyes; antenna with 3 anelli; mesosoma with notauli complete; scutellum with 3 pairs of setae; metasoma longer than mesosoma.

Male : Unknown.

Host : ex *Liriomyza taraiia* Gong (Diptera: Agromyzidae) on *Vicia sativa* Linn (LegUMinosae)" Arifa & Khan 1991.

Distribution : India: Uttar Pradesh (Lakhimpur Kheri).

Remarks : There are some discrepancies in the description and figures. In the original description the authors state that the scrobe smooth and polished but in the figure 11, frons and scrobe are shown completely reticulate. In the key to species the authors state that frontovertex smooth without punctures but in the figure frons completely reticulate.

Prof. M. Hayat of Aligarh Muslim University informed me that the type of this species is not so far deposited in ZDAMU as stated by the authors. A request for the type from the authors remained unanswered. Hence the name of this species is treated here as 'unavailable'.

3. *Diglyphus funicularis* Khan

1985. *Diglyphus funicularis* Khan, 152. Holotype Female, India, Uttarakhand (Nainital : Jeolikot) (lost ?).

Diagnosis : (Based on Khan, 1985). Female : Length 1.5 mm. Dark metallic with bluish green reflections; antenna uniformly brown except apex of clava white; scape swollen distinctly less than 3x longer than width; forewing infuscated with 2 round hyaline spots (one spot attached to anterior margin and the other attached to posterior margin.); coxae dark brown, femora and tibiae brown with greenish reflections; tarsal segments white; notauli weak but complete.

Male : Unknown.

Host : ex. *Melangromyza obtusa* on *Flemingia* sp. (Khan 1985).

Distribution : India: Uttarakhand (Nainital: Jeolikot, 4000ft.).

Remarks : In the infuscated wing with 2 hyaline spots, this species resembles *D. mandibularis* Khan but differs from it in having swollen scape and in funicular segments longer than wide. In *D. mandibularis* scape not swollen and funicular segments are quadrate. On my request Dr. P.Girish Kumar of NZSI Kolkatta searched NZSI and informed me that the Holotype which is stated to be deposited in NZSI is not present there. It is probably lost, hence the name is unavailable.

4. *Diglyphus guptai* (Subba Rao)

(Figs. 76-77)

1957. *Solenotus guptai* Subba Rao 50, India, New Delhi Holotype Female (NPC).

1988. *Diglyphus guptai* (Subba Rao) : Bou ek, 617.

Diagnosis : (Based on a specimen determined by Bou ek in 1976 as *Diglyphus guptai* and present in BMNH and on original description). Female : Length 1.6 mm. Metallic blue and green with red iridescence on some parts; coxae concolourous with mesosoma; femora brownish black with apices pale; all tibiae yellow with 2 black or dark brown bands (one subabsally and other subapically); eyes brick red; head width in dorsal view 2x its length; vertex narrowed slightly punctate; eyes bare; POL slightly longer than OOL; antennae inserted just above lower level of lower margin of eyes; antennal formula 11123; relative L : W of antennal segments : scape = 49 : 9; pedicel = 25 : 13; F1 = 25 : 13; F2 = 23 : 16; clava = 69 : 21.

Mesosoma : Notauli deep and incomplete; scutellum convex with 2 pairs of setae; MLM reticulate; scutellum weakly reticulate; propodeum smooth and shiny; median carina and plicae absent; callus pilose; spiracle separated from metanotum by a distance subequal to its diameter; forewing length 2.3x-2.6x its width; MV 1.3x-1.6x as long as PMV

Metasoma : Shorter than mesosoma, with a very short petiole.

Male : Unknown.

Host : External parasite on *Phytomyza atricornis* (Meigen) (Subba Rao, 1957), ex. *Phytomyza horticola*.

Distribution : India (New Delhi, Punjab & Himachel Pradesh [New Record for Himachal Pradesh]).

Material examined : 6 Females, INDIA, Punjab, Ludhiana (30° 55' N, 75° 54' E), 5-iii-1975, G.S.Sandhu. (BMNH) (Bou ek 1975 determined); 1 Female, INDIA,

Uttarakhand, Dehra Dun (30° 20' N, 78° 04' E), 19-viii-1978, Shujaudin; 1 Female, INDIA, Uttar Pradesh (26° 30' N 83° 47' E), Aligarh? , 5-6-x-1984, M.Hayat.; 2 Females, INDIA, Himachal Pradesh, Solan (30°55'N, 77°7'E), Rabon, 18-iii-2009, S.BAnis & T. Rehmat; 1 Female, INDIA, Kashmir (34° 25' N, 77° 00' E), Tangmarg, August 2009, N.Razak. (2 females in ZDAMU).

Remarks : I could examine 6 specimens of this species determined by Bouček as *Diglyphus guptai* (Subba Rao) during my visit to BMNH in 2008. This species comes near *D. isaeae* (Walker) in having a single anellus but differs from it in having : (1) hind tibia with 2 dark bands alternating with yellow (in *D. isaeae* (Walker) hind tibia dark brown or black with base and apex yellow); (2) metasoma shorter than mesosoma (in *D. isaeae* (Walker) metasoma longer than mesosoma) and (3) MV 1.83x as long as PMV (in *D. isaeae* (Walker) MV 1.3x as long as PMV).

5. *Diglyphus horticola* Khan

(Fig. 78)

1985. *Diglyphus horticola* Khan, 150-151. Holotype Female, India, Uttarakhand, Pantnagar, (NPC, examined).

Diagnosis : Female : Length 1.4 mm. Head and mesosoma dark brown or black with golden and slight metallic green reflections; scape dark brown with apex slightly paler (see Fig. 5 of Khan, 1985); pedicel a little less darker than scape; anelli dark brown; funicle and clava dark brown; all coxae and trochanters dark brown; femora dark brown with apex whitish; fore and midtibiae yellow with dark brown bands; hind tibiae black with a subbasal and apical white band (see figure 11 of Khan, 1985); metasoma dark brownish; head width 1.36x its height (excluding mandibles) in anterior view; pedicel shorter than F1; F2 shorter than F1; clava shorter than funicle and pedicel combined, 3x longer than wide.

Mesosoma with 2 pairs of setae on MLM, setae directed to sides (Fig. 6 of Khan, 1985) and not directed posteriorly (unusual?); scutellum with 3 pairs of setae; propodeal spiracle separated from metanotum by a distance more than diameter of spiracle; forewing hyaline, MV 1.6x as long as PMV; speculum slightly indicated in fig. 8 (Khan, 1985) partly closed behind.

Metasoma longer than mesosoma.

Male : Unknown.

Host : Pea leaf minor *Chromatomyia horticola* (Gour.) (Diptera: Agromyziae) on *Pisum sativum* L. (Khan, 1985).

Distribution : India: Uttarakhand (Pantnagar).

Material examined : Holotype.

Remarks : Though in the original paper the author stated that the material is being deposited in Zoological Survey of India, the author deposited it in NPC. Prof. Ramamurthy sent the Holotype slide containing head, antenna, leg and wings; antennal funicle and clava is darker brown and not white; scutellum has only 2 setal pits on either side. This species differs from all other species in the different colour pattern of antenna, with 2 anelli, with golden reflections on head and mesosoma and setae of MLM directed to sides.

6. *Diglyphus indicus* Arifa and Khan

1992. *Diglyphus indicus* Arifa and Khan, 429. Holotype, Female, India, Uttarakhand (Pantnagar) (lost?).

Diagnosis : *Female* : Length 1.55-1.57 mm. Body iridescent bluish green; antenna uniformly dark brown; fore legs dark brown except apex of femur; first tarsal segment and basal half of second tarsal segment yellowish; mid and hind legs with coxae, trochanters dark brown, femora dark brown with base and apex pale; tibiae yellow with dark brown bands on basal and apical halves; wings hyaline; head width 1.33x its height (excluding mandibles); antenna with 2 anelli; pedicel shorter than F1; F2 shorter than F1; clava 3.33x as long as wide.

Mesosoma with notauli complete; scutellum with 3 pairs of setae (in specimens collected by M.Hayat scutellum with only 2 pairs of setae); grooves of scutellum 1.54x as long as broad; forewing hyaline, MV 2.44x as long as PMV

Metasoma longer than mesosoma.

Male : Unknown.

Host : ex. *Pseudonapomyza asiatica* Spencer (Diptera: Agromyzidae) on *Oryza sativa* Linn.

Distribution : India : Uttarakhand (Pantnagar).

Material examined : 6 Females, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 18-iii-1984 (2); 5-x-1984 (4); 31-iii-1985, M.Hayat.

Remarks : This species resembles *D. guptai* (Subba Rao) in having antenna uniformly dark brown but differs from it in having: (1) antenna with 2 anelli (one anelli in *D. guptai*) and scutellum with 3 pairs of setae (in *D. guptai* scutellum with 2 pairs of setae); (2) pedicel shorter than F1 (in *D. guptai* pedicel as long as F1).

Prof. Hayat informed me that the type of this species is not deposited in ZDAMU. A loan request for the type to the authors remained unanswered. Since the whereabouts of the type is not known, the name of the species is probably unavailable. The specimens examined by me all have 2 pairs of setae on scutellum.

7. *Diglyphus isaea* (Walker)

(Figs. 79-80)

1838. *Cirrospilus isaea* Walker, 385-386. Lectotype Female (selected by Askew 1963) (BMNH. No. 5.2591) (examined).
1959. *Diglyphus isaea* (Walker) Graham 178; transferred to *Diglyphus*.
1851. *Entedon gracilis* Goureau, 159. France (Graham, 1963 : 179, synonymized).
1861. *Diglyphus bisannulatus* Förster 38 (Bou ek and Askew, 1968, synonymized).
1968. *Diglyphus ornatus* Foerster 1861:38. Switzerland (MHNG) (Bou ek and Askew, 70, synonymized).
1968. *Diglyphus clavicornis* Walker, 1872:126. United Kingdom, London (BMNH) (Bou ek and Askew, 70, synonymized).
1974. *Elachistus phytomyzae* Rondani, 1877:171. Lectotype Female, Italy, (FM) (Bou ek, 262, synonymized).
1878. *Solenotus viridis* Thomson, 237. Lectotype Female, Sweden (LUZN) (Ferrière, 1952 synonymized).
1898. *Cirrospilus medidus* DallaTorre, 83. Lectotype Female, United Kingdom (BMNH) Lapsus.

Redescription : Female : (Lectotype) Length 1.68 mm. Dark metallic green; eyes reddish brown; ocelli pale yellow; antenna dark brown with basal part of scape slightly pale; tegula brown; legs black with apices of femora bases and apices of tibiae, metatarsi of middle and hind legs pale yellow; all tarsi of fore leg, second to fourth tarsi of middle and hind leg dark brown; wings hyaline; veins pale yellowish brown.

Head weakly reticulate, width 3x its length in dorsal view; 11123; relative L : W of segments : scape = 12 : 2; pedicel = 4 : 2; F1 = 4 : 2; F2 = 3 : 3; clava = 8 : 3; scape cylindrical.

Mesosoma : Posterior margin of pronotum slightly arched; shorter than mesoscutum; MLM with 2 pairs of setae directed posteriorly; axillae a little advanced anteriorly; scutellum with submedian grooves and 2 pairs of setae, subequal in length to MLM; propodeum smooth; median carina and plicae absent; forewing 2.7x as long as wide; speculum absent; relative length of CC = 23; SMV = 20; MV = 27; PMV = 11; STV = 6.

Metasoma : Longer than mesosoma.

Host : Ectoparasitoids of leaf miners in Agromyzidae and Gracillaridae including *Chromatomyia horticola* (Gour.) on *Pisum sativum* Linn. In India. (Kumar, 1985).

Distribution : Neotropical, Oriental, India and Palaearctic.

Material examined : Lectotype. Other material examined : 1 Female, INDIA, Ladakh (32° 00' N, 80° 00' E), 5-vii-2008, P. M. Sureshan; 2 Females, INDIA, Dehra Dun (30° 20' N, 78° 04' E), 8-iv-1978, M. Verma; 3 Female, INDIA,

Aligarh (27° 53' N 78° 04' E), 18-iii-1984, 5 & 6-x-1984, M.Hayat; 1 Female, INDIA, Arunachal Pradesh, East Goong, Pasighat (95° 22' E 28° 4' N), 31-i-2009, I. Khan & H. Sharma; 2 Females, INDIA, Karnataka, Bangalore (12° 58' N, 77° 38' E), 8-iii-1993, S.B.Zea; 2 Female, INDIA, Himachal Pradesh, Solan (30°55'N, 77°7'E), Rabon, 18-iii-2009, S. B. Anis & T. Rehmat; 8 Females, INDIA, Ladakh, Nyoma (33° 10' N, 78° 40' E), 8-viii-2008, S. I. Kazmi; 1 Female, Ladakh(32° 00' N, 80° 00' E), Sheng, 11-viii-2008, S. I. Kazmi; 1 Female, Ladakh, Nimmu (32° 47' N 78° 57.5' E), 12-vii-2008, S. I. Kazmi; 1 Female, INDIA, Uttar Pradesh, Dehra Dun (30° 20' N, 78° 04' E), Shujauddin, 19-viii-1978.(3 females in ZDAMU)

Remarks : This species comes very near *D. guptai* (Subba Rao) in having similar colour of antenna with one anellus. However *D. isaea* differs from *D. guptai* in having : 1) hind tibia black or dark brown with base and apex pale (in *D. guptai* hind tibia yellow with 2 black bands); 2) metasoma longer than mesosoma (in *D. guptai* metasoma shorter than mesosoma) and 3) MV 1.83x as long as PMV (in *D. guptai* MV 1.3- 1.6x as long as PMV).

8. *Diglyphus mandibularis* Khan

1985. *Diglyphus mandibularis* Khan, 151, Holotype Female, India (lost?).

Diagnosis : (Based on original description of Khan, 1985). Female; Length 1.52 mm. Head and metasoma dark metallic with bluish green reflections; mesosoma dark brown with bluish green reflection on dorsum; antenna brown except clava white; coxae dark brown; femora and tibiae brown with greenish reflections; tarsal segments white; forewing (fig. 19 of Khan, 1985) infuscated with 5 contrasting hyaline areas; head width 1.42x its height (excluding mandibles) in anterior view; relative L : W of antennal segments: scape = 4.5 : 1.5; F1 = 3 : 3; F2 = 3 : 3; clava = 6 : 2.5.

Mesosoma : MLM with 2 pairs of setae directed towards lateral part; scutellum with 2 pairs of setae, slightly wider than long; propodeum weakly reticulate, without median carina and plicae; forewing 2.33x as long as its width; STV longer than PMV; MV 2x as long as PMV

Metasoma : as long as mesosoma.

Male : Not known.

Host : ex. *Melangromyza obtusa* on *Flemingia* sp. (Khan, 1985).

Distribution : India: Uttarakhand (Nainital).

Material examined : None.

Remarks : The author of this species stated (Khan, 1985) that the type "is being deposited in NZSI, Kolkata. On my request Dr. P. Girish Kumar (NZSI,

Kolkata) checked the type collection & list and the type is not found deposited at NZSI Kolkata. My request to the author for the loan of the type remained unanswered. Hence it is not known where the type is located. It is probably lost. Since the type depository is unknown the name of the species is probably unavailable as in the case of all other *Diglyphus* species described by Khan (1985) and Arifa & Khan (1992).

9. *Diglyphus minoeus* (Walker)

1838. *Cirrospilus minoeus* Walker, 385. Lectotype Female (Lectotype selected by Graham, 1959) (BMNH) (examined).
1838. *Cirrospilus abron* Walker, 385. Lectotype Female, United Kingdom, (BMNH) (examined). Bou ek & Askew, 1968: 70, synonymized.
1839. *Cirrospilus myron* Walker, 294. Lectotype Female, United Kingdom (BMNH) Bou ek & Askew 1968: 70, synonymized.
1839. *Cirrospilus deldon* Walker 294. Lectotype Female, United Kingdom (BMNH) Bou ek & Askew 1968: 70, synonymized.
1839. *Cirrospilus myron* Walker, 179 Lectotype Female, United Kingdom (BMNH) (examined). Bou ek & Askew, 1968 synonymized.
1959. *Diglyphus minoeus* (Walker) Graham, 178 transferrd.
1839. *Cirrospilus smilis* Walker, 317. Lectotype Female United Kingdom (BMNH). Transferred to *Tetrastichus* by Walker, 1848 : 150; transferred to *Asecodes* by Morley, 1910: 57; synonymized by Bou ek & Askew, 1968 : 70.

Diagnosis : Scutellum purple or bronze refringence in contrast to dark metallic blue-black mesoscutum; antenna pale brown with pedicel dark with base and apex of scape a little paler in *D. abron*; legs with all coxae, trochanter, basal two-thirds of femora, tibiae (except pale base and apex) and third to fourth tarsal segments dark (often with metallic shine); other parts of legs pale yellow or yellow; relative L : W of antennal segments of lectotype female of *Diglyphus abron* (Walker): scape = 11 : 12; pedicel = 2 : 1.1; F1 = 3 : 1.75; F2 = 2.5 : 1.5; antenna 2.13x as long as width of mesosoma; clava pointed; occiput distinctly reticulate; relative length of pronotum = 3; mesoscutum = 7; scutellum = 7; propodeum = 5.1; space between sublateral grooves on scutellum about 2x as long as wide; mesoscutum reticulate, scutellum weakly reticulate; forewing 2.3x as long as wide; relative length of forewing in lectotype of *D. abron* CC = 11; MV = 10; PMV = 5 and STV = 4.

Metasoma with extremely short petiole, distinctly longer than mesosoma.

Distribution : Cosmopolitan (including Pakistan).

Remarks : This species comes near the Palaearctic species *Diglyphus crassinervis* Erdős in the key to Chinese species by Zhu et. al (2002) but can be separated by

the presence of purplish shine on the scutellum in contrast to dark metallic blue-black mesoscutum where as in *D. crassinervis* scutellum is concolourous with mesoscutum without violet shine. Besides speculum is large in *D. crassinervis* where as speculum is very small or hardly present in *D. minoeus*.

10. *Diglyphus pachyneurus* Graham

1963. *Diglyphus pachyneurus* Graham, 176. Holotype Male, U.K. (HDOU).

Diagnosis : Female : General body colour dark metallic green; antenna except scape dark brown; scape basal half pale yellow, distal half dark brown; eyes dark brown; all coxae dark metallic green (concolourous with mesosoma); trochanter dark brown with base and apex pale yellow; femora two- third dark metallic green with one-third apical part pale yellow; all tibiae pale yellow; first three segments of tarsi in all legs pale yellow; fourth tarsal segment and all pretarsi dark brown and black respectively; tegula brown; wings hyaline with veins thick and dark brown; head collapsing antenna at level of ventral margin of eyes; scape exceeding a little over level of vertex; pronotum mesoscutum and scutellum distinctly and strongly reticulate; notauli incomplete; propodeum reticulate; median carina and plicae absent; forewing 2.41x as long as broad speculum large, with some scattered setae inside, closed behind; relative length of CC = 14; SMV = 8; MV = 26; PMV = 6; STV = 6; cubital line of setae tilted upwards towards base, touching basal line of setae; metasoma longer than mesosoma.

Male : Similar to female but metallic green colour, less pronounced, femora more area black than that of female.

Host : Parasitic on *Agromyza salicifolia* (Diptera: Agromyzidae) (Zhu et. al. 2000).

Distribution : Palaearctic region including China and new record from India.

Material examined : 5 Males, INDIA, Ladakh, Shey (76° 79' N 30° 36' E), 11-viii-2008, S. I. Kazmi; 1 Female, Ladakh, Nomenu (32° 00' N, 80° 00' E), 12-viii-2008, S. I. Kazmi. (NZSI).

Remarks : This species is reported for the first time from India. This species comes near another palaearctic species *Diglyphus pulchripes* (Crawford, 1912) in general appearance but differs from it in having fore and mid tibiae pale yellow (in *D. pulchripes* fore and mid tibiae with basal dark markings). The general body colour of males are with bright metallic green refringence where as in the single female specimen it is more darker with light metallic green refringence and the dark areas of femora is more extended to apical part in females.

Genus *Dimmockia* Ashmead

1904a. *Dimmockia* Ashmead, 357. Type species *Eulophus incongruus* Ashmead, by monotypy.

1904a. *Encopa* Graham, 182 (Bouček & Askew, 1968 synonymized with *Dimmockia*).

Diagnosis : Anterior margin of clypeus bilobed, incised medially, female funicle 4 segmented (male antenna with funicle 1- 3 branched); scutellum without submedian or lateral sulci; propodeum with median carina and plicae present; antennae inserted below middle of face.

Host : Parasitic on Chrysomelidae (Coleoptera), Anthomyiidae (Diptera), Coleophoridae (Lepidoptera), Lymantriidae (Lepidoptera), Pyralidae (Lepidoptera) and Braconidae (Hymenoptera) (Noyes 2003).

Distribution : India; Sri Lanka; Indonesia; Palaearctic; Canada and USA (Noyes, 2003).

Remarks : This genus is closely related to *Sympiesis* Foerster from which it differs in having the clypeus produced and medially incised. Hussain & Khan (1986) reported an indetermined species from Karnataka, India with reference to Kerrich (1969). I have not collected any specimens of this genus so far.

Dimmockia javanica Ferrière

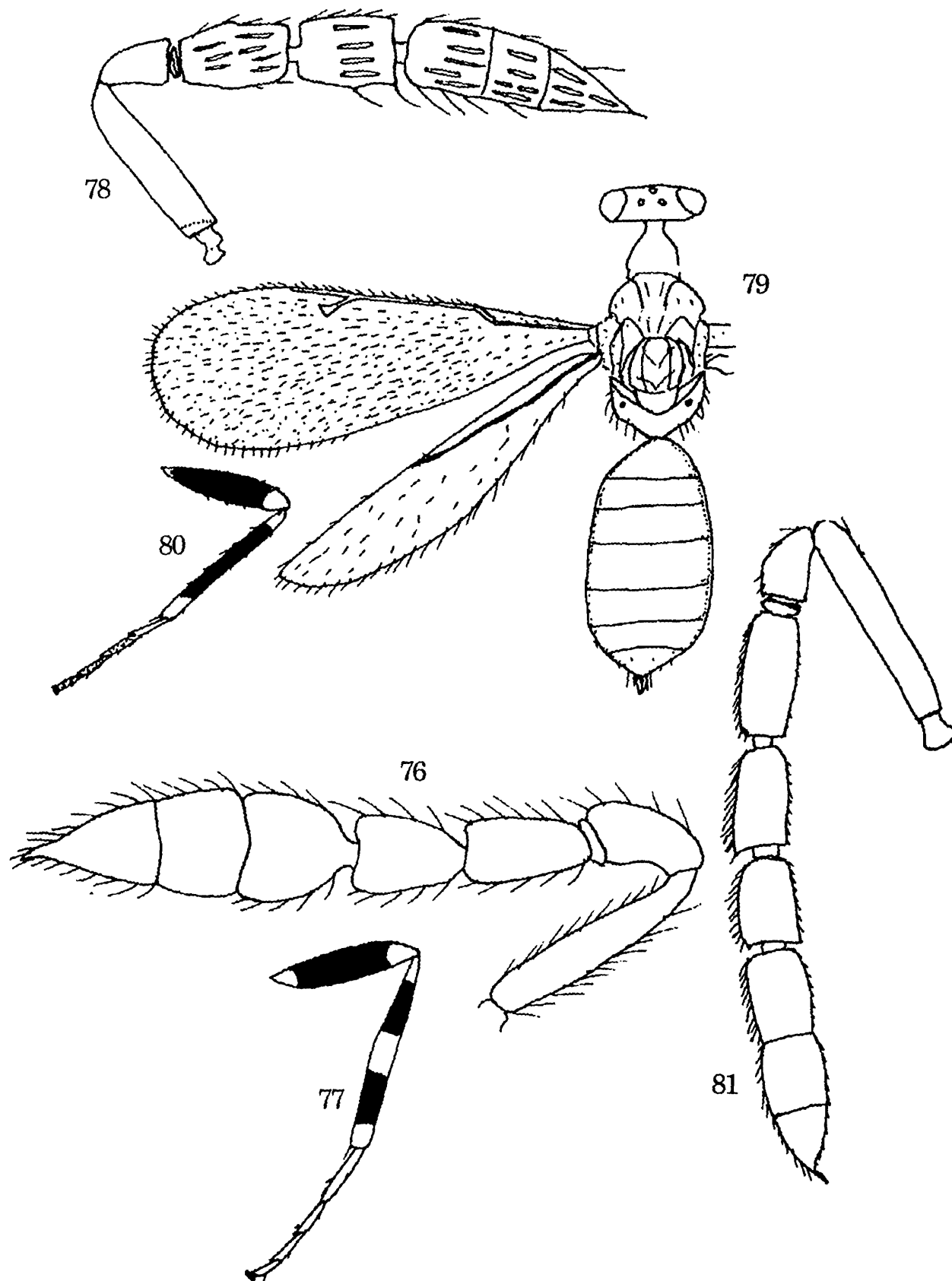
(Fig. 81)

1933. *Dimmockia javanica* Ferrière, 92. Holotype Female, Java (BMNH)

Diagnosis : (Based on Ferrière, 1933). Female: Length 1.2-1.7 mm. Body black or dark bluish green, more shining green on sides of the vertex, the end of the pronotum, the propodeum and base of gaster; rest of gaster aeneous; antenna dark brown, pedicel "clearer"; scape and under part of pedicel and F1 yellowish; legs with coxae concolourous with body, trochanters "clear", femora dark brown, yellowish at apex, the knees, tibiae and tarsi yellow; wings hyaline and veins pale.

Head : OOL equal to AOL; frons finely punctate, dull, the face more shining; cheeks (malar space) as long as half the width of an eye; each mandible with 4 teeth; antennae inserted on the level of the base of eyes; scape scarcely reaching anterior ocellus; relative L : W of antennal segments: scape = 45 : 7; pedicel = 15 : 9; F1 = 25 : 11; F2 = 21 : 11; F3 = 17 : 12; F4 = 17 : 12; clava (2 segmented) = 23 : 12 with a spicule at apex.

Mesosoma coarsely reticulated, scutellum more finely than mesoscutum; mesonotum with 6 long setae in two series and others short on sides; scutellum with 2 pairs of white setae, two at base on sides and two near posterior end; propodeum smooth and shining, slightly striated on sides, with a median carina,



Figs. 76-77. *Diglyphus guptai* (Subba Rao) Female. 76. Antenna Hind leg (Partly). **Fig. 78.** *D. horticola* Khan Female antenna. **Figs. 79-80.** *D. isaea* (Walker) : Female : 79. Body dorsal view; 80. Hind leg (Partly). **Fig. 81.** *D. javanica* Ferriere Female antenna.

lateral carinae only indicated at base, with lateral rounded furrows on sides above hind coxae; legs with tarsal segments subequal in length; wings with relative length of SMV shorter than MV

Metasoma : Petiolate, petiole very short, not easily seen, 2x wider than its length; metasoma shorter than mesosoma, 1.35x as long as its width.

Male : Similar to female except having smaller size (1.1- 1.3 mm), antennae with 3 short ramelli on the first three funicular segments.

Host : *Promecotheca* (Chrysomellidae) on Coconut palm.

Distribution : Indonesia, Singapore, Java, Bali, Borneo and Sri Lanka. (Fernando 1972, Noyes 2003.)

Remarks : Fernando (1972) reported this species from Sri Lanka. This species differs from the other known species from Oriental region of China viz. *Dimmockia secunda* Crawford (1910) in having propodeum smooth and shiny (in *D. secunda* Crawford propodeum reticulate as in scutellum); 2) metasoma shorter than mesosoma (in *D. secunda* metasoma longer than mesosoma) and 3) coxae concolourous with body (in *D. secunda* coxae yellow).

Genus *Elachertus* Spinola

1811. *Elachertus* spinola, 151. Type species *Diplolepis lateralis* spinola, by designation of Gahan & Fagan, 1923 : 50. Revised by Schauff 1985, Reviewed by Bou ek, 1988 : 639.
1834. *Elachertus* Nees, 135. Emendation for *Elachertus*.
1856. *Elachistus* Foerster, 73. Unjustified emendation for *Elachertus*.
1897. *Ardalus* Howard, 161. Type species *Ardalus aciculatus* Howard. Revised by Gahan 1922 : 20. Validated by Ashmead 1904 : 352, Dalla Torre 1898 : 73, Schmiedeknecht 1909 : 405, synonymized by Bou ek 1988 : 639.
1904. *Cirrospiloideus* Ashmead, 354, Type species *Miotropis platynotae* (Howard, 1885, designated). Validated by Schmiedeknecht 1909. Synonymized by Schauff and LaSalle 1993 : 493
1913. *Sympiesomorphelleus* Girault, [158] : 75. Type species *Sympiesomorphelleus suttneri* Girault. Synonymized by Bou ek, 1988 : 639.
1913. *Pseudelachertus* Girault, [167] : 260. Type species *Pseudelachertus nigrithorax* Girault. Lapsus: *Pseudelachertus* Risbec, 1957, synonymized by Bou ek 1988 : 639.
1913. *Parentedon* Girault [167] : 260. Type species *Parentedon australis* Girault. Synonymized by Bou ek 1988 : 639
1913. *Diglyphomorphella* Girault [167] : 280. Type species *Diglyphomorphella delira*, Girault 1913 [167], synonymized by Bou ek 1988 : 639
1915. *Euplectromorphella* Girault [230] : 280. Type species *Euplectromorphella cicatricosa* Girault, synonymized by Bou ek 1988 : 639
1915. *Ardaloides* Girault, [230] : 288. Type species *Ardaloides simithorax* Girault, 1915. Synonymized by Bou ek 1988 : 639.

1915. *Proardalus* Girault and Dodd, in Girault, [230] : 288. Type species *Proardalus nigricaput* Girault and Dodd.. Synonymized by Bou ek, 1988 : 639
1917. *Epardalus* Girault [317] : 5. Type species *Elachistus cidariae* Ashmead,. Synonymized by Peck 1951 : 455
1961. *Peteenus* Erdős, 471. Type species *Peteenus pulcher* Erdős. Synonymized by Bou ek 1965a : 9.
1998. *Guptaiella* Khan & Sushil, 1-4. Type species *Guptaiella indica* Khan & Sushil, by monotypy.
Syn. Nov.

Diagnosis : Funicle 4 or 5 segmented; occiput carinate; pronotum not very elongate anteriorly; with or with out cross carina; mesoscutum with notauli complete to anterior margin of axilla or scutellum; MLM with atleast 3 pairs of setae or scattered setae all over; scutellum with a sublateral groove on either side which may or may not unite each other posteriorly at middle, with usually 2 pairs of strong setae, occasionally with additional pairs; propodeum delimited on sides by broad grooves; scutellum with distinctly or faintly reticulate or smooth (never with distinct pits); propodeum with a median carina either forked anteriorly or straight, with or without rami on sides; plica and costula absent; hind tibia with spur never exceeding two-third length of metatarsus; metasoma sessile or petiolate.

Host : Probably all species are primary parasitoids of several lepidopterans larvae or pupae of several different families. (Zhu and Huang, 2001). Hemiptera (Coreidae), Anthomyidae and Tephritidae (Diptera) and Braconidae (Hymenoptera). Homoptera (Coccidae) also from hosts of this genus (Zhu & Huang 2001 and Noyes, 2003). *Elachertus piperis* Narendran emerged from the marginal leaf galls of *Liotrips karnyi* (Bagnall) (Thysanoptera) (Narendran and Bindu 2009).

Distribution : All continents (Bou ek, 1988).

Remarks : Through the kindness of Prof. Ramamurthy I could examine the Holotype slide of the type species of *Guptaiella* containing head, antenna, mesosoma, legs and wings (all separated and treated) and find that *Guptaiella* is a junior synonym of *Elachertus* Spinola.

See remarks under *Diglyphomorphomyia* in this monograph for comparison with *Diglyphomorphomyia*.

Key to Indian species of *Elachertus* Spinola

(Based on females).

1. Gaster distinctly petiolate 2
- Gaster sessile (or with indistinct petiole) 9
2. Lateral grooves of scutellum united on posterior margin 3

- Lateral grooves of scutellum not united (Note : in doubtful cases the key should lead to identification both ways) 4
- 3. Scutellum with 3 pairs of setae; eyes bare; MV a little longer than 2x PMV; legs (including coxae) pale brownish yellow; POL 1.4x OOL; clava a little longer than 2x F4(Fig. 126)..... *E. sinui* Narendran.
- Scutellum with 2 pairs of setae; eyes pilose; MV not longer than 2x PMV; all coxae dark lever brown; remaining segments of leg pale yellow with slight brownish tinge; POL 2.25x OOL; clava almost 2x as long as F4(Fig. 82)*E. adimalicus* Narendran, sp. nov.
- 4. Scutellum with 4 pairs of setae; MLM with 6pairs of setae (4 setae in longitudinal row on either side) (Fig. 1 B, Chisti & Shafee 1988); MV 1.5x PMV *E. breviclavus* Chisti & Shafee.
- Scutellum with 2 or 3 pairs of setae; other characters different 5
- 5. Scutellum with 3 pairs of setae 3
- Scutellum with 2 pairs of setae 6
- 6. Occiput not distinctly margined; MLM with 2 pairs of stronger setae and several smaller scattered setae on anterior half; MV more than 2x as long as PMV; legs including coxae yellow scutellum smooth..... *E. kainophanestus* Narendran.
- Occiput marginal, other characters partly or completely different 7
- 7. T1 covering half to two-thirds of short gaster; antennae dull brown with scape lemon yellow; clava half length of funicle; gaster dull brown; axilla without setae *E. nigrithorax* (Girault)
- T1 shorter than above, other characters partly or completely different..... 8
- 8. Pedicel shorter than F1; median carina of propodeum (Fig. 106) without rami; lateral grooves of scutellum almost touching except for a slightly upturned interrupted in middle; axilla without setae *E. nedumbassericus* Narendran sp. nov.
- Pedicel as long as F1; median carina of propodeum with rami (Fig. 106); lateral grooves of scutellum well separated (Fig: 104) and without interruption of a tubercle; each axilla with 2 minute setae *E. malabaricus* Narendran sp. nov.
- 9. Funicle (Fig. 110) 5 segmented; scrobe with an oblique black stripe on either side; head yellow; mesosoma pale brownish yellow; legs pale yellow; found in pepper galls *Liothrips karnyii*..... *E. piperis* Narendran

- Funicle 4 segmented; scrobe without oblique black stripes; other characters may or may not differ from above alternate 10
- 10. Lateral grooves of scutellum united at middle on posterior margin 11
- Lateral grooves of scutellum not united at middle on posterior margin 13
- 11. MV distinctly shorter than 1.6x length of PMV; metasoma distinctly more than 2x as long as wide; head black with slight metallic refringence; metasoma with slight metallic green refringence on tergites behind T1 *E. jurus* Narendran sp.nov
- MV more than 1.6x as long as PMV; metasoma distinctly shorter than 1.6x as long as broad; head black without metallic refringence; metasoma without any trace of metallic green refringence 12
- 12. Scutellum smooth and shiny; MLM distinctly produced posteriorly from level of anterior margin of axillae *E. kashmiricus* Narendran sp.nov.
- Scutellum reticulate; MLM not produced posteriorly from level of anterior margin of axillae *E. radhakrishnai* Narendran sp. nov.
- 13. Median carina of propodeum with rami well developed (often one or two rami reaching posteriolateral corners) (Figs.91,104) 14
- Median carina of propodeum without rami 17
- 14. Scutellum with additional 3 or 4 pairs of weaker setae besides 2 pairs of strong setae; propodeal carina without fork below projecting lamina; rami well developed; clypeus bilobed at lower margin; head and mesosoma black with slight metallic bluish green refringence *E.asokai* Narendran sp.nov
- Scutellum with only two pairs of setae, without any additional setae; other characters variable 15
- 15. Scutellum mostly smooth and shiny with faint aciculae; lateral grooves relatively shallow; forewing with speculum present (closed behind); MV about 2x as long as STV (head and mesosoma black with metallic bluish refringence; metasoma brown with posterior half darker; propodeal rami not reaching posteriolateral corners of propodeum) *E. dericus* Narendran sp.nov
- Scutellum distinctly reticulate; lateral grooves deep; other characters variable 16
- 16. Pronotum without cross carina; head and mesosoma completely metallic green; metasoma longer than mesosoma MV shorter than 2x length of PMV *E. sobrinus* (Girault & Dodd)

- Pronotum with a cross carina; head and mesosoma black with slight tinge of metallic green; metasoma subequal in length to mesosoma; MV longer 2x PMV *E. propodiatius* Narendran sp.nov.
- 17. Notauli curved outwards posteriorly; distinctly angled with anterior margin of axilla; head yellow with dark patches on POL area or area between POL and AOL..... 18
- Notauli not curved as above; head black 19
- 18. Scutellum with median fovea like depression; mesosoma and metasoma predominantly black; F2 shorter than F1 (Fig. 75) *E. zellus* Narendran sp nov.
- Scutellum with median fovea like depression absent; mesosoma and metasoma not predominantly black, mostly yellowish brown or brownish yellow; F2 longer than F1 (Fig. 120) *E. pulcher* (Erdös)
- 19. Scutellum smooth and shiny, pronotum with cross crina (which is weaker at middle in some cases) 20
- Scutellum reticulate; pronotum with cross carina absent 22
- 20. Propodeum with strong costula intersecting median carina at middle (Fig. 56) *E. aenigmatis* Narendran sp.nov.
- Propodeum without costula 21
- 21. Eyes pilose; head and mesosoma with slight metallic green refringence; pedicel shorter than F1 *E. lanotus* Narendran sp. nov.
- Eyes bare; head and mesosoma with metallic green refringence absent but with purplish refringence; pedicel as long as F1 *E. indicus* (Khan & Sushil)
- 22. Metasoma pale brownish yellow with posterior half darker, without metallic refringence; areas on either side of median carina of propodeum not strongly convex; occiput strongly margined and carinate *E. asycritus* Narendran sp. nov.
- Metasoma black with or without metallic refringence, areas on either side of propodeum may be strongly convex; occiput not strongly margined or carinate 23
- 23. Metasoma black with metallic blue refringence; eyes bare; MLM with 3 pairs of setae; notauli divergent posteriorly slightly *E. nuperus* Narendran sp. nov.
- Metasoma black with no metallic refringence; eyes pubescent; MLM with several short scattered setae; notauli straight *E. zandanicus* Narendran sp. nov.

1. *Elachertus adimalicus* Narendran sp. nov.

(Fig. 82-83)

Female : (Holotype) Length 1.33 mm. Head black with metallic blue refringence on frons and gena; eyes brown ocelli pale reflecting yellow; mandibles pale brown; scape pale yellow; remaining segments of antenna light brown. Mesosoma black; tegula pale brown; all coxae dark liver brown, remaining segments of legs pale yellow with slight brownish tinge; metasoma black with T1 pale brown; wings hyaline with veins pale brown.

Head width in anterior view 1.23x as broad as its height, width in dorsal view a little more than 2x its length; POL 2.25x OOL; LOL 0.75x OOL; AOL a little longer than LOL, equal to OOL; occiput with cross carina present on median part just behind posterior ocelli, not complete to posteriolateral corners of eye; WIOS 2.6x POL; scrobe and frons smooth and shiny with faint aciculations, side margins of scrobe ecarinate, anterior (upper) margin sharply edged, separated from front ocellus by a distance shorter than half diameter of front ocellus; clypeus not delimited, lower margin slightly convex ; each mandibles with 2 larger and 4-6 smaller teeth; MS 0.35x eye height in profile; eye pilose (careful observation under illumination is necessary to observe the short pilosity)' eye height in profile 1.12x its length. Antenna inserted slightly above level of lower margin of eyes; relative L : W of antennal segments: scape = 33 : 7; pedicel = 12 : 7; F1 = 10 : 11; F2 = 10 : 13; F3 = 10 : 14; F4 = 10 : 15; clava = 18 : 14.

Mesosoma : Pronotum without cross carina, 0.6x as long as wide; weakly reticulate, with moderately dense setae, with 3 pairs of stronger setae on posterior part; mesoscutum shorter than pronotum (5 : 7); MLM wider than long (9 : 5).

Host : Unknown.

Material Examined : Holotype Female. India, Kerala, Idukki Dt. Adimali (9° 58' N 76° 56' E), 3.xii.1988, T. C. Narendran & Party.

Type depository : Holotype deposited in ZSIK.

Remarks : This new species comes near *E.sinui* Narendran in general features but differs from *E. sinui* in having : (1) Scutellum with 2 pairs of setae (In *E. Sinui* scutellum with 3 pairs of setae); (2) eyes pilose (in *E.sinui* eyes bare); (3) MV not longer than 2x PMV (in *E.sinui* MV a little longer than 2x PMV); (4) all coxae dark liver brown (in *E.sinui* legs including coxae pale brownish yellow and remaining segments pale yellow), (5) POL 2.25x OOL (in *E.sinui* POL 1.4x OOL) and 6) clava almost 2x as long as F4 (in *E.sinui* clava a little longer than 2x F4).

2. *Elachertus aenigmatis* Narendran sp. nov.

(Figs. 54-56)

Female : (Holotype) Length 2.2 mm. Head black with metallic green refringence, eyes gray; ocelli pale reflecting yellow; antennal scape, pedicel, anellus and F1 pale yellow; remaining antennal segments black; mesosoma pale brownish yellow; metasoma with T1 pale yellow, remaining tergites black; sternites T1 to T3 pale brownish yellow remaining part black; legs pale yellow with pretarsi slightly brown; wings hyaline with veins pale brown.

Head width 1.18x its height in anterior view, width in dorsal view 1.7x its length; POL 1.5x OOL; AOL equal to OOL; WIOS 3.7x POL' occiput sharply margined and carinate medially; scrobe moderately deep, smooth and shiny in middle; margins ecarinate, not reaching anterior ocellus, separated from anterior ocellus by a distance subequal to diameter of anterior ocellus; mandible with 3 teeth visible; MS present, 0.25x height of eye in profile; eyes pilose; eye length in profile 0.78x its height; antenna inserted at level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments : scape = 41 : 5; pedicel = 12 : 7; F1 = 24 : 7; F2 = 22 : 7; F3 = 20 : 7; F4 = 15 : 7; clava = 22 : 7.

Mesosoma : Pronotum narrowed towards anterior side, gradually sloping, with a distinct cross carina, 0.87x as long as its width, coarsely reticulate, with 12- 15 small setae adjacent to cross carina or touching cross carina, 3 pairs larger setae near posterior margin, one large seta on either side; MLM a little longer than pronotum, wider than long, cross-striate reticulate, with 6 pairs of setae (among 6 pairs one posterior pair stouter and longer than others); scapula similarly striate-reticulate, with several setae (one pair longer on either side); scutellum a little shorter than mesoscutum, weakly reticulate, with 2 deep sublateral grooves turning towards middle posteriorly but not uniting each other; propodeum with a median carina but without a transverse lamina at its anterior end, median carina not forked at anterior end; a well developed transverse costula extending median carina present; plicae arcuately turn outwards; propodeal spiracle separated from metanotum by a distance shorter than diameter; hind coxa with a longitudinal shallow groove; forewing 2.47x as long as broad; speculum absent; relative length of CC = 17; SMV = 14; MV = 17; PMV = 7; STV = 5.

Metasoma sessile, 1.53x as long as mesosoma, 3x as long as broad; T1 large and subglobose, gaster ovate posteriorly.

Male : Unknown.

Host : Unknown.

Etymology : The species name *aenigmatis* is derived from the latin word 'aenigma' meaning obscure, denoting its obscure affinity.

Material examined : Holotype, Female, INDIA, Kerala, Palghat District, Chindaki (10° 39' N 76° 40' E), 13-xii-1987, coll. T. C. Narendran & party.

Type depository : Holotype deposited in ZSIK.

Remarks : This new species differs from all Indian species in having a costula intersecting median carina. This belongs to the Bou ek's *Australlis* group (Bou ek, 1988) but mesosoma and metasoma are without metallic refringence.

3. *Elachertus asokai* Narendran sp. Nov.

(Figs. 84-85)

Female : (Holotype) Length 2.1 mm. Head black with slight bluish green refringence; eye brown; ocelli pale reflecting yellow; antennal scape whitish yellow; pedicel pale brownish yellow; flagellum brown; mandibles pale yellowish brown. Mesosoma black with slight bluish green metallic refringence, tegula pale yellow; legs whitish yellow with three fourth of coxa of fore & hind legs from base and on one third from base of mid coxa pale brown. Metasoma dark brown with T1 and hypopygium pale reddish brown with yellowish tinge. Wings hyaline with veins pale brownish.

Head width in anterior view 1.4x its height ; width in dorsal view 2.2x its length; POL 1.8x OOL; LOL 0.8x OOL; AOL equal to LOL; occiput sharply margined, carinate, WIOS 2.7x POL; scrobe shallow, weakly reticulate, margins ecarinate, separated from front ocellus by a distance shorter than diameter of front ocellus, anterior margin (upper margin) not carinate, frons distinctly reticulate; mandible bidentate, clypeus bilobed at lower margin; MS 0.17x eye height in profile; 1.4x its length; eye pilose. Antenna inserted at level of ventral margin of eyes; relative L : W of antennal segments: scape = 45 : 8; pedicel = 17 : 8; F1 = 18 : 9; F2 = 14 : 9; F3 = 11 : 11; F4 = 11 : 12; clava = 22 : 12.

Mesosoma : Pronotum without cross carina, 0.13x as long as wide, coarsely reticulate, densely pubescent with 3 pairs of stronger setae. Mesoscutum as long as pronotum; MLM wider than long(10:7), not protruding backwards from level of anterior margin of axillae, coarsely reticulate, with setae scattered all over disc; axilla strongly reticulate but bare; scapula dorsally pubescent with 2 stronger setae; scutellum longer than mesoscutum (8 : 7), with raised reticulation; with additional 3 pairs of weaker setae in addition to 2 pairs of stronger setae; lateral groves curved posteriorly towards medium part but not meeting each other medially. Propodeum mostly smooth on submedian areas , median carina with rami, rami

not reaching postero-lateral corners; median carina without a fork below projecting lamina, sublateral grooves deep and broad near spiracle this broader semicircular area with coarse reticulation and well developed rami; spiracle separated from metanotum by its own diameter; forewing 2.1x as long as wide, relative length of CC = 23; SMV = 21; MV = 21; PMV = 10; STV = 7 speculum present, closed behind by the cubital line of setae.

Metasoma : slightly longer than mesosoma, as long as wide; gaster sessile; petiole indistinct; T1 largest; its distal margin convex at middle; remaining tergites except T1, subequal in median length; ovipositor sheath visible from dorsal side.

Male : Similar to female except antennal segments of typical male type.

Host : Unknown.

Etymology : Species name is after the wise king of ancient India viz. Asoka.

Variation : Length varies 1.9-2.2 mm. In one paratype gaster more darkish on T1.

Material examined : Holotype. Female INDIA, Kerala, Kottayam district, Kumaragam (9° 30' N 76° 31' E), 17.iv.2004, T. C. Narendran and party. Paratype : 1 Female of same data of Holotype. 1 Male and Female, Kerala, Calicut University Campus (11° 7'N 75° 5'E), 10 & 16.x.1986, T. C. Narendran 1 Female, Kerala, Aleppy district, Kayamkulam (9° 10' N 76° 30' E), 19.iv.2004, T. C. Narendran & party.

Type depository : Holotype deposited in ZSIK.

Remarks : This new species comes to *Elachertus ramosus* Zhu & Huang in the key to species by Zhu & Huang (2001). However *E. ramosus* differs from *E. asokai* in having (1) axillae with indistinct setae (in *E. asokai* axillae without setae); (2) T1 dark green with pale sub basal patch (in *E. asokai* T1 never with green colour); (3) clava as long as F1 (in *E. asokai* clava distinctly longer than F1); (4) POL 1.33x OOL (in *E. asokai* POL 1.8x OOL); (5) speculum open behind (in *E. asokai* speculum closed behind by cubital line of setae); (6) MV 1.3x as long as PMV (in *E. asokai* MV 2.1x as long as PMV; (7) petiole distinct (petiole indistinct in *E. asokai*); and gaster 1.94x as long as wide(in *E. asokai* gaster 1.7x as long as wide).

4. *Elachertus asycritus* Narendran sp. nov.

(Fig. 86-88)

Female : (Holotype) Length 1.68 mm. head black with slight metallic refringence; eyes and ocelli pale reflecting yellow; mandibles testaceous; antenna with scape, pedicel and F1 pale yellow; remaining segments dark brown; mesosoma black;

legs including coxae bright yellow; metasoma pale brownish yellow with posterior half darker. Wings hyaline with veins pale brown, disc without any infuscation.

Head in anterior view 1.3x as wide as its height; width in dorsal view 1.8x as wide as its length; POL 2.3x OOL; LOL as long as OOL; AOL as long as LOL; occiput distinctly carinate and sharply margined posteriorly. WIOS 2.7x POL; scrobe moderately deep, margins ecarinate on sides, carinate near front ocellus, not reaching front ocellus; smooth inside; clypeus not clearly delimited, lower margin slightly emarginated medially; mandibles bidentate; MS 0.25x eye height in profile; eye pilose; 1.4x its length. Antenna inserted a little above level of lower margin of eye; relative L:W of antennal segments : scape = 19 : 4; pedicel = 7 : 3; F1 = 8 : 5; F2 = 7 : 6; F3 = 6 : 7; F4 = 7 : 7; Clava = 12 : 6.

Mesosoma : Pronotum without cross carina, median length 0.60x its width, with moderately raised reticulation, with moderately sparse pubescence with 2 or 3 pairs of stronger setae. Mesoscutum as long as pronotum (including collum), MLM distinctly wider than long (9 : 6), not protruding backwards from the level of anterior margin of axillae, with moderately raised reticulation, with 3 pairs of setae of subequal length; notauli straight and not curved, scapulae with moderate pubescence with 2 or 3 longer setae; axillae bare. Scutellum longer than MLM (9 : 6), with distinct reticulation, with 2 pairs of setae (without additional setae) with a small longitudinal groove medially, arising from scutoscutellar groove; lateral groove distinctly curved inward almost reaching middle of posterior margin but not joining each other medially. Propodeum with a median carina with a relatively small fork at its anterior end, lamina projecting very little, (careful observation necessary to observe this); sublateral groove deep, submedian areas smooth and shining. Forewing 2.3x as long as wide; speculum present, relatively small, closed behind by cubital line of setae; relative length of CC = 19; SMV = 14; MV = 16; PMV = 10; STV = 7.

Metasoma sessile, longer than mesosoma (20 : 15); about 2x as long as broad; T1 longest followed by T7; T2 to T3 subequal in length. Ovipositor sheath visible.

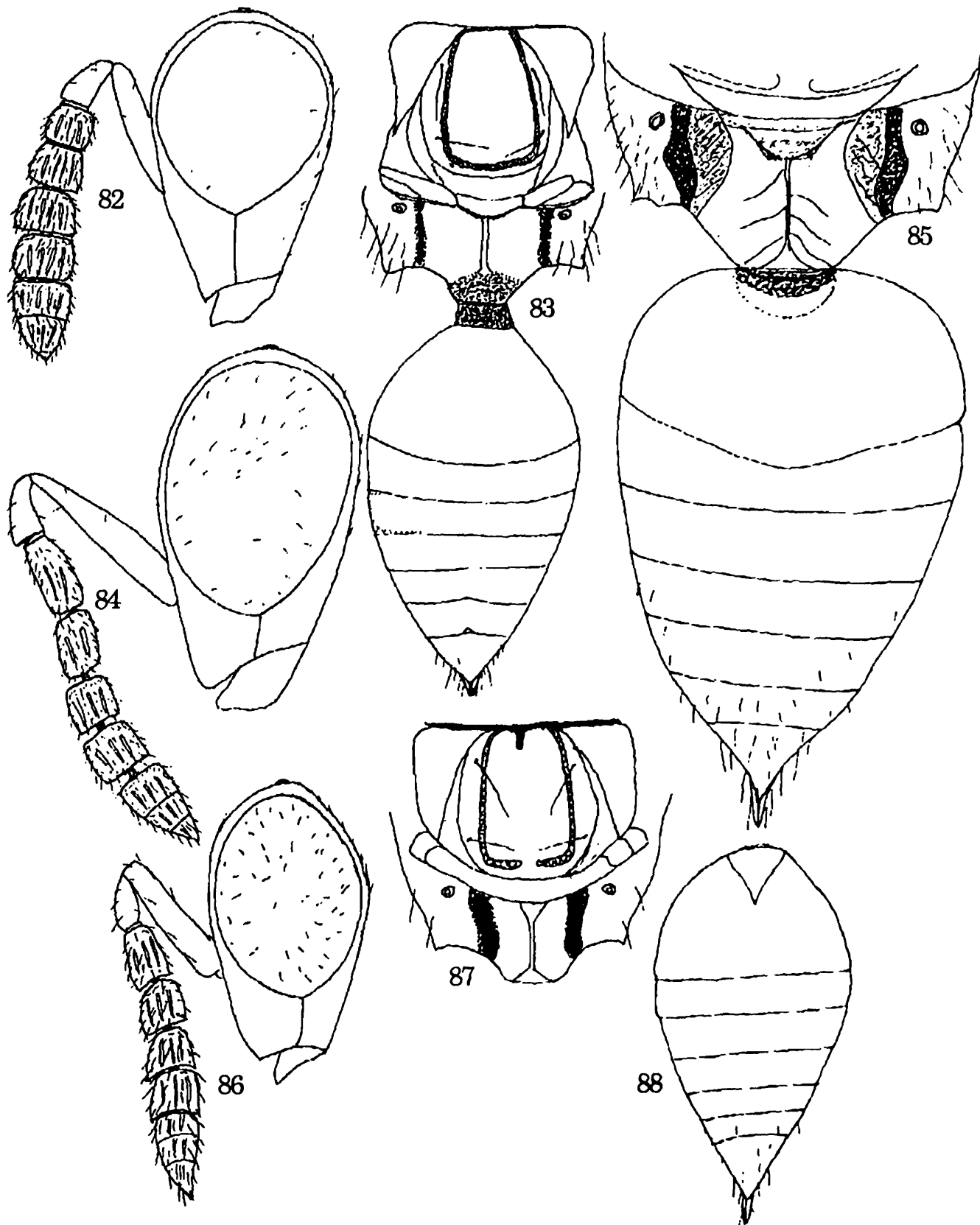
Male : Unknown.

Host : Unknown.

Etymology : The species name is taken from the Greek word 'asynkritos' meaning 'unlike' indicating its status as a new species.

Material examined : Holotype : Female. INDIA : Kerala, Kannur District, Kottiyoor forests (10° 7' N 78° 49'E), 17.ii.2003. T. C. Narendran & party.

Type depository : Holotype deposited in ZSIK.



Figs. 82-83. *Elachertus adimalicus* sp.nov. Female : 82. Head and antenna profile; 83. Posterior part of mesosoma & metasoma dorsal view. **Figs. 84-85.** *E. ashokai* sp.nov. Female : 84. Head & antenna profile; 85. Propodeum & metasoma dorsal view. **Figs. 86-88.** *E. asycritus* sp.nov. Female : 86. Head & antenna profile; 87. Scutellum & Propodeum; 88. Gaster.

Remarks : This new species comes near *Elachertus auripes* (Girault) (Girault, 1913) and *Elachertus nigrithorax* (Girault) (Girault, 1913) in general features but differs from both in having: (1) F1 longer than wide; (2) F1 longer than F2; (3) scape, pedicel and F1 pale yellow with remaining segments dark brown; (4) all legs bright yellow; (5) mesosoma without metallic refringence; (6) pedicel distinctly shorter than F1.

5. *Elachertus breviclavus* Chishti & Shafee

(Fig. 89)

2002. *Elachertus breviclavus* Chishti & Shafee, 19. Holotype Female, India, Aligarh (ZDAMU) (examined).

Diagnosis : Female : Length 1.5 mm. Head and mesosoma dark with metallic green refringence; antenna yellowish brown; legs yellow; metasoma brownish.

Head wider than long in front view; relative l: w of antennal segments: scape = 25 : 5; pedicel = 9 : 5; F1 = 7 : 6; F2 = 6 : 6; F3 = 6 : 6; F4 = 7 : 6; clava = 15 : 7. Mesosoma: Pronotum without cross carina MLM not protruding backwards from the level of anterior margin of axilla; MLM with 6 pairs of setae (Fig. 1 B of Chishti & Shafee 1988); axilla with a longitudinal suture; scutellum a little longer than MLM; smooth, with 4 pairs of setae; lateral grooves not united posteriorly at middle. Propodeum with a median carina; forewing a little more than 2x as long as wide; speculum closed behind cubital line of setae; relative length of CC = 22; SMV = 17; MV = 18; PMV = 12; STV = 7.

Metasoma : Petiolate; petiole a little broader than long (9 : 8); metasoma longer than mesosoma; ovipositor sheath hidden.

Male : Unknown.

Host : Unknown.

Distribution : India (Aligarh).

Remarks : Through the kindness of Prof. M. Hayat I could examine the two slides containing the Holotype. I could not make out the nature of sculpture on vertex, mesosoma and propodeum since these parts on slide are not at all clear. I also could not detect the "longitudinal suture" of the axilla from the slide. This species differs from all other Indian species in having (1) axilla with a long oblique groove; (2) scutellum with four pairs of setae; (3) pedicel longer than F1; (4) MLM with 6 pairs of setae in a characteristic pattern (Fig. 1B of Chishti and Shafee 2002).

6. *Elachertus dericus* Narendran sp. nov.

(Fig. 90-91)

Female : (Holotype) Length 1.8 mm. Head black with metallic brownish green refringence; eye brown; ocelli pale reflecting yellow; scape pale yellow, pedicel to F4 pale brownish yellow; clava dark brownish yellow; mandibles pale brown. Mesosoma black with metallic refringence; legs pale yellow with pale brown at bases of fore & hind coxa. Metasoma brown with posterior half darker.

Head width 1.15x its height; width in dorsal view 2x its length; POL 1.25x OOL; LOL 0.75x OOL; AOL equal to LOL; occiput margined and carinate posteriorly (except on area near eyes); WIOS 3.8x POL. Scrobe margin ecarinate, separated from front ocellus by less than diameter of front ocellus; scrobe and frons reticulate; clypeus not clearly delimited; its anterior (lower) margin convex; mandibles tridentate. MS 0.24x eye height in profile; eye pilose; eye height in profile 1.20x its length. Antenna inserted at level of ventral margin of eyes; relative L : W of antennal segments : scape = 50 : 9; pedicel = 16 : 7; F1 = 13 : 8; F2 = 11 : 9; F3 = 11 : 11; F4 = 8 : 12; clava = 21 : 13.

Mesosoma : Pronotum with cross carina; 0.64x as long as wide; coarsely reticulate, moderately pubescent with 3-4 pairs of stronger setae; mesoscutum as long as pronotum; MLM wider than long (11 : 7), slightly bent towards posterior side at middle margin; with scattered setae, coarsely reticulate; scapula coarsely reticulate, sparsely pubescent with 2 stronger setae; axilla weakly reticulate; scutellum a little longer than MLM, faintly reticulate, mostly smooth and shiny, lateral grooves relatively shallow, curved posteriorly towards middle scutellum with 2 pairs of setae, without additional setae; axilla smooth and shiny without any seta. Propodeum with a median carina, without fork below projecting lamina, median carina with 4 or 5 pairs of rami, rami not reaching posteriolateral corners of propodeum; smooth and shiny on both sides of median carina and rami, spiracle separated from metanotum by more than diameter of spiracle. Forewing 2.4x as long as broad; speculum present and closed behind by cubital line of setae; relative L : W of CC = 30; SMV = 23; MV = 21; PMV11; STV = 8.

Metasoma not petiolate, sessile, as long as mesosoma about 2 x as long as broad; T1 largest but not reaching half length of gaster; T2 to T6 subequal to median length. Ovipositor sheath visible from above.

Male : Length 1.36 mm similar to female except in having metasoma shorter than mesosoma.

Host : Unknown.

Variation : Female : Length 1.31-1.9 mm the colour of F3 and F4 slightly darker than in Holotype; in some paratype coxae completely yellow without brownish tinge at base of fore or hind coxae.

Etymology : Species name is an arbitrary combination of letters.

Material examined : Holotype: Female, INDIA, Kerala, Wayanad District, Kalpetta Thonikadavu (11° 36' N 76° 6' E), 7.11.2003, T. C. Narendran & party. Paratype: 1 Male of same data of Holotype; 3 Females, Kerala, Kannur district, Kottiyoor (10° 7' N 78° 49'E), 19.ii.2003 (2 Females), 17.IV 2004 (1 Female); 1 Female, Kerala, Calicut University campus (11° 7'N 75° 5'E), 15.IV.1989, T. C Narendran.

Type depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala state pending transfer to ZSIK or to NZSI.

Remarks : This new species comes to *Elachertus ater* Zhu and Huang in the key to Chinese species by Zhu and Huang (2001). However *E.ater* differs from this new species in having : (1) T1 covering more than half to two-third length of gaster; (2) body with out metallic refringence; (3) metasoma with petiole; (4) Funicular segments differ and (5) propodeum without rami. *Elachertus lanotus* Narendran sp. nov. differs from this new species in having (1) propodeum without rami (2) pronotum with cross carina; (3) CC equal to MV; (4) metasoma distinctly longer than mesosoma; and (5) different proportions of length and width of antennal segments.

Elachertus kainophanestus Narendran sp. nov. differs from this new species in having : (1) gaster with distinct petiole; (2) occiput not marginal and with out carina (3) median carina of propodeum without rami and (4) in different proportion of antennal segments.

7. *Elachertus indicus* (Khan & Sushil) comb. nov.

1998. *Guptaiella indica* Khan & Sushil, 1-4. Holotype Female, India (NPC) (examined).

Diagnosis : Female : Length : 1.77 mm. Body dark brown (in slides dark colour is less and it looks pale brown, probably due to the preparation of the slide), with purplish refringence. Relative L; W of antennal segments: scape= 35 : 4; pedicel = 11 : 8; F1 = 10 : 8; F2 = 10 : 9; F3 = 10 : 9; F4 = 9 : 10; clava = 24 : 11.

Mesosoma smooth; nataulices straight joining scutoscutellar groove, with 3 pairs of setae on MLM; sublateral grooves not joining each other at middle; dorsellum relatively larger; forewing 2.24x as long as wide; speculum closed behind by curved cubital line of setae; relative length of CC = 10; SMV = 8; MV = 11; PMV = 5; STV = 3.

Metasoma longer than mesosoma.

Male : Unknown.

Host : Leaf miner *Chromatomyia horticola* (Goureau) (Diptera: Agromyzidae) (Khan & Sushil, 1998).

Material examined : Holotype slide containing parts of body head, antenna, forewing, legs and mesosoma. Metasoma missing (NPC).

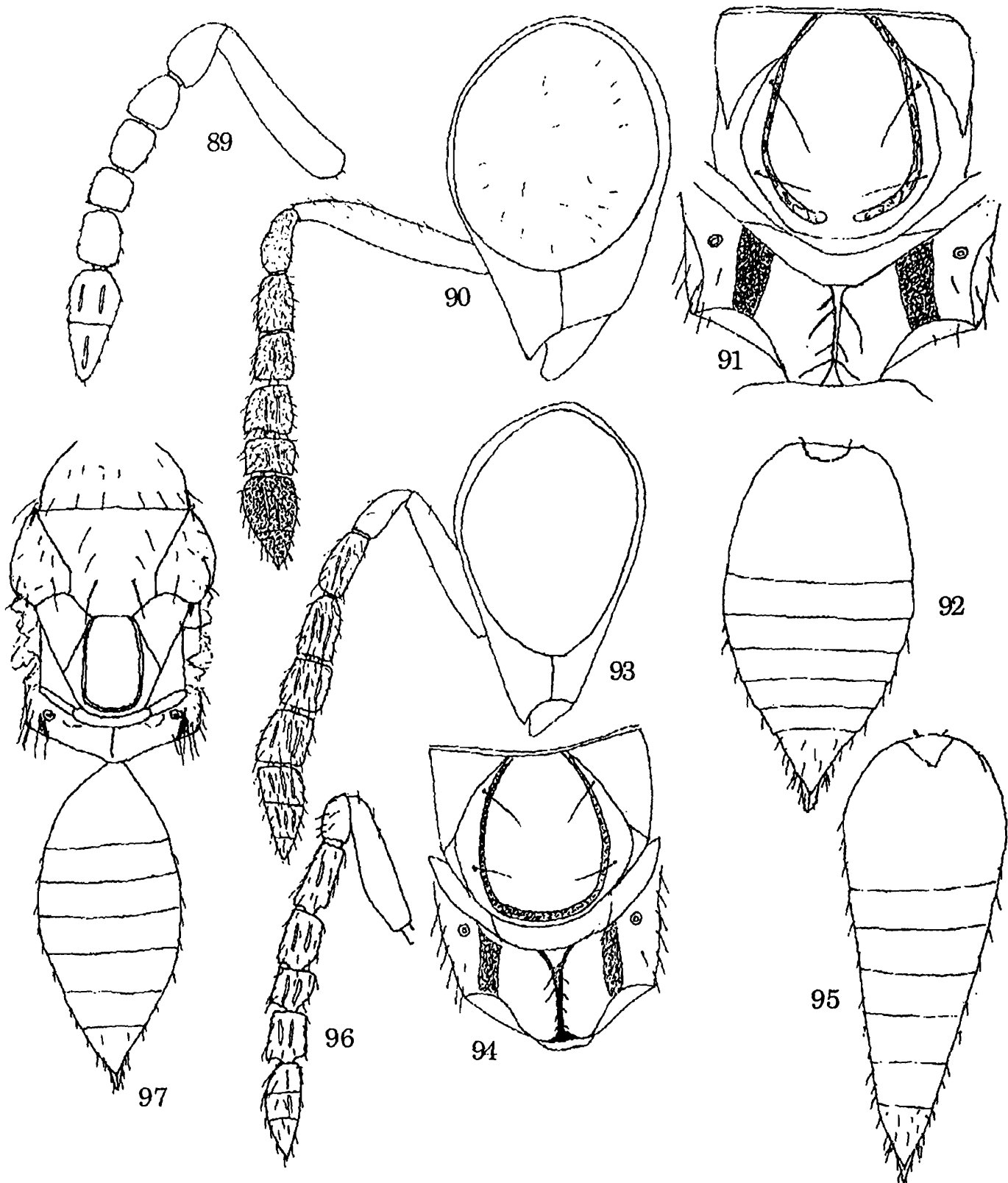
8. *Elachertus jurus* Narendran sp. nov.

(Figs. 93-95)

Female : (Holotype) Length 1.5 mm. Head black with slightly metallic green refringence; eye pale grayish yellow with reddish brown mark; ocelli dark brown with apical half pale brownish yellow; scape and pedicel pale yellow; remaining segments of antenna pale brown with clava slightly darker. Mesosoma black; tegula pale brown; metasoma pale yellowish brown with slight darker tinge mixed with slight metallic green refringence on tergites behind T1. Legs pale yellow with slight brownish tinge on basal half of coxae; wings hyaline with veins pale brown.

Head width in anterior view 1.3x height, in dorsal view 2.2x its length; POL 3x OOL; LOL equal to OOL; AOL 1.5x LOL; occiput margined, carinate, reaching posteriolateral corners of eye; WIOS 2.3 x POL; scrobe and frons reticulate, scrobe margin ecarinate, scrobe separated from front ocellus by diameter of front ocellus; clypeus not delimited from frons, its lower margin not bilobed or emarginated; mandible with 5 or 6 minute teeth; MS 0.17x eye height in profile, eye pilose; eye height 1.4x its length. Antenna inserted slightly above level of ventral margin of eyes, relative L : W of antennal segments: scape = 37 : 8; pedicel = 16 : 6; F1 = 15 : 7; F2 = 14 : 8; F3 = 11 : 10; F4 = 12 : 11; clava = 22 : 11.

Mesosoma : Pronotum without cross carina, with raised reticulation, moderately dense pubescence with three longer setae. Mesoscutum subequal in length to pronotum, with raised reticulation, with scattered setae; notauli almost straight; scapula with raised and course reticulation, axilla weakly reticulate without setae; scutellum longer than mesoscutum with raised reticulation (not pitted); lateral grooves united each other posteriorly; propodeum with median carina forked at proximal end; and with short rami, no lamina projecting over propodeum. Surface of propodeum smooth and shiny; propodeal spiracle separated from metanotum by a distance shorter than its diameter. Forewing 2.25x as long as broad; speculum absent, relative length of CC = 22; SMV = 19; MV = 14; PMV = 10; STV = 6.



Figs. 89-92. *Elachertus breviclavus* Chisti & Shaffee Female : 90. Head and antenna profile; 91. Scutellum & Propodeum; 92. Gaster. **Figs. 93-95.** *E. jurus* sp.nov. Female : 93. Head & antenna profile; 94. scutellum & propodeum; 95. Gaster. **Figs. 96-97.** *E. kashmiricus* sp.nov. Female : 96. Antenna; 97. Mesosoma & metasoma dorsal view.

Metasoma sessile, longer than mesosoma (30:25); 2.7x as long as broad; T1 longest; T2toT6 subequal in length; T7 conical posteriorly; ovipositor sheath visible from dorsal side.

Male : Unknown.

Host : Unknown.

Etymology : Species name is an arbitrary combination of letters.

Material required : Holotype female, INDIA: Kerala Calicut University campus (11° 7'N 75° 5'E), 22.IX.1985. T.C. Narendran.

Type depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala state pending transfer to ZSIK or to NZSI.

Remarks : This new species comes to couplet no.12 of key to species by Zhu and Huang (2001) but does not proceed further since the gaster is not petiolate. *Elachertus lateralis* (Spinola) comes near this species in having legs yellow but differs from it in having: (1) a distinct petiole; (2) gaster almost 1.2x longer than wide.

9. *Elachertus kainophanestus* Narendran sp. nov.

(Figs. 99-100)

Female : (Holotype) Length 1.44 mm. Head black with slight metallic bluish refringence; eyes brown; ocelli pale reflecting yellow; antennal scape pale yellow, remaining segment pale yellowish brown. Mesosoma black without metallic refringence; tegula pale brownish yellow; legs including coxae yellow; wings hyaline without any infuscation, veins pale brown; metasoma T1 and ventral side three-fourth from base pale yellowish brown, remaining part becoming darker towards caudal end.

Head : Width in anterior view 1.32x as wide as its height; width in dorsal view 2.1x its length; POL 1.75x OOL; LOL shorter than OOL; AOL as long as LOL; occiput not sharply margined, not carinate; WIOS about 2.6x POL; scrobe and frons smooth and shiny, scrobe ecarinate on side, distinctly margined anteriorly, almost reaching front ocellus; mandible with 5 small teeth; MS 0.21x eye height in profile; 1.5x its length. Antenna inserted a little above level of ventral margin of eye; eye bare; relative L : W of antennal segments scape = 37 : 5; pedicel = 11 : 7; F1 = 10 : 9; F2 = 8 : 9; F3 = 10 : 9; clava = 22 : 9.

Mesosoma : Pronotum without cross carina; 0.7x as long as width; with weak or faint reticulation, 17-19 pairs of setae, two pairs of stronger; mesoscutum shorter than pronotum (6 : 7); MLM wider than long (13 : 6); not protruding backwards, from level of anterior margin of axillae, with faint reticulation, with

two pairs of larger setae and on anterior half with additional smaller setae; (middle and posterior pairs) scapula with sparse pubescence and 2 stronger setae; axilla bare; scutellum longer than mesoscutum (9 : 6), smooth and shiny with 2 pairs of setae, lateral grooves curved posteriorly towards middle touching the other medially but not interrupted medially by small knob like structure. Propodeum with a median carina, without a fork anteriorly but with a projecting lamina above its anterior end; without rami; sublateral groove deep submedian area smooth and shiny. Forewing 2.23x as long as wide, without any infuscation; speculum present, closed behind by cubital line of setae. Relative lengths of CC = 16; SMV = 13; MV = 14; PM = 6; STV = 4.

Metasoma subequal to mesosoma, 2.3x as long as wide, petiolate, petiole with 6 or 7 weak longitudinal carinae on dorsal surface; T1 largest, about half length of gaster; T2 to T6 subequal in length; ovipositor sheath visible from dorsal side.

Male : Length 1.17 similar to female but petiole slightly longer.

Variation : Length of female varies from 1.26-1.45 mm; length of male varies from 1.17-1.9 mm. Clava & F4 darker in some males; in paratypes metallic bluish refringence on head is hardly distinct.

Host : Unknown.

Etymology : the species name is taken from the Greek word "Kainophanes" meaning "new" indicating the new species status.

Material examined : *Holotype* : 1Female INDIA, Kerala, Wayanad District, Pookod lake area (11° 32' N 76° 01' E), 8.ii.2003. T. C. Narendran & party; 2 Females & 1Male, Kerala, Kottiyoor forest (10° 7' N 78 ° 49'E), 17.ii.2003, T. C. Narendran & party; 1 Female and 1Male, Kerala, Manjeri, 4.x.2003, T. C. Narendran & party; 1 Female, Kerala, Calicut University Campus (11° 7'N 75° 5'E), 13.IV.1989, T. C. Narendran.

Type depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala state pending transfer to ZSIK or to NZSI.

Remarks : This new species comes near *Elachertus ater* Zhu and Huang in having: gastral petiole with distinct longitudinal carinae and in general appearance. However *E.ater* differs from this new species in having : (1) occiput sharply margined (2) toruli placed on lower margin of eye; (3) MS 0.38x height of eye; (4) F3 and F4 equal in length and longer than F1 or F2; (5) body including gaster black.

10. *Elachertus kashmiricus* Narendran sp. nov.
(Figs.96-97)

Female : (Holotype) Length 2.22 mm. Head black without metallic refringence; eyes black with margin gray; ocelli pale reflecting brown; mandibles pale yellowish brown; flagellum dark brown; scape pale yellow with apical part darker; mesosoma black with tegula pale yellow; legs including coxae pale yellow; metasoma pale brown with side margins of tergites and ovipositor sheath darker ; wings hyaline with veins pale brown.

Head width 1.3x its height in anterior view; width in dorsal view 2.28x its length; POL 1.75x OOL; LOL shorter than OOL; AOL subequal to LOL, shorter than OOL; occiput margined but at posterolateral corners of eyes; WIOS 2.86x OOL; scrobe and frons weakly reticulate, margins ecarinate; scrobe almost reaching front ocellus; clypeus not bilobed at lower margin, entire; MS 0.21x eye height in profile; eye pilose; eye height in profile 1.3x its length; antenna inserted slightly above level of lower margin of eyes; relative L: W of antennal segments: scape = 34 : 9; pedicel = 11 : 7; F1 = 17 : 8; F2 = 13 : 9; F3 = 9 : 9; F4 = 12 : 9; clava = 23 : 9.

Mesosoma : Pronotum without cross carina, coarsely reticulate moderately pubescent with 3 pairs of strong setae near posterior margin; MLM wider than long, distinctly produced posteriorly from level of anterior margin of axillae, with 3 pairs of setae; MLM with cross reticulations; reticulation not raised; scapula reticulate with scattered pubescence; notauli meeting axillae; axillae weakly or faintly aciculate; scutellum shorter than MLM, smooth and shiny; lateral grooves united medially at posterior margin; propodeum with a median carina, without a distinct projecting lamina at base; rami absent; submedian areas smooth and shiny; spiracle separated from metanotum by a distance shorter than its diameter; forewing 2.32x as long as wide; speculum relatively small, closed behind posteriorly by cubital line of setae; relative L of CC = 17; SMV = 13; MV = 18; PMV = 11; STV = 7.

Metasoma sessile subequal to mesosoma; 2.3x as long as broad; ovipositor sheath visible from above.

Male : Unknown.

Host : Unknown.

Material examined : *Holotype* : Female, INDIA, Kashmir (34° 25' N, 77° 00' E), K. P. Bagh, April 2009, Nakeer Razak.

Etymology : Named after the place of collection.

Depository : Holotype deposited in the Department of Zoology, University of Calicut, pending transfer to ZSIK.

Remarks : This new species comes near *Elachertus radhakrishnai* Narendran sp. nov. in general features but differs from it in having : (1) Scutellum smooth and shiny (in *E. radhakrishnai* scutellum reticulate); (2) MLM distinctly produced posteriorly from level of anterior margin of axillae (in *E. radhakrishnai* MLM not produced anteriorly from level of anterior margin of axillae); (3) Propodeum with projecting lamina at base absent (in *E. radhakrishnai* propodeum with a short lamina at base present) and (4) MV 1.64x as long as PMV (in *E. radhakrishnai* MV 2x as long as PMV).

11. *Elachertus lanotus* Narendran sp. nov.

(Figs. 101-102)

Female : (Holotype) Length 1.7 mm. Head black with slight metallic green tinge; antennal scape and pedicel yellow, remaining segments dark brown; eyes pale reflecting gray; ocelli reddish brown; mandibles pale brownish yellow. Mesosoma black without metallic refringence; tegula and legs pale yellow; wings hyaline with veins pale brown. Metasoma dark brown with base paler.

Head : Width in anterior view 1.1x its height; width in dorsal view 2.1x its length; POL 2x OOL; LOL equal to OOL; AOL equal to LOL; occiput sharply margined; WIOS 3.3x POL, scrobe and frons weakly reticulate, mostly smooth; scrobe margin ecarinate on sides margin near front ocellus sharply margined separated from front ocellus by less than diameter of front ocellus; mandible with 2 distal large teeth followed by 5 or 6 small minute teeth; MS 0.3x eye height in profile; eye height in profile 1.1x its length. Antenna inserted a little above level of ventral margin of eye; relative L : W of antennal segments. Scape = 33 : 8; pedicel = 12 : 9; F1 = 17 : 10; F2 = 178 : 10; F3 = 16 : 10; F4 = 12 : 8; clava = 25 : 10.

Mesosoma : Pronotum with cross carina which becomes weak in the middle; 0.7x as long as wide; with moderate reticulation, with three pairs of strong and several shorter setae. Mesoscutum longer than pronotum (12 : 10); MLM a little wider than long (13 : 12); not protruding backwards from level of anterior margin of axillae, distinctly reticulate; with three pairs of strong setae, middle pair weaker than others; without additional pubescence; scapula moderately pubescent with 2 larger setae on posterior margin; axilla bare; scutellum longer than mesoscutum (14 : 12); smooth and shiny, with 2 pairs of setae, lateral grooves curved posteriorly towards inner middle side but not touching each other medially. Propodeum

smooth and shiny with a median carina; without rami, without a fork at base, with relatively small projecting lamina above median carina at its anterior end; sublateral groove broad and deep. Forewing 2.5x as long as wide; relative length of CC = 17; SMV = 15; MV = 17; PMV = 7; STV = 5 speculum present, closed behind by cubital line of setae.

Metasoma sessile, distinctly longer than mesosoma (22 : 16); 2.4x as long as wide; petiole indistinct; T1 largest, 0.32x length of gaster; rest of tergites except T7 subequal in length; ovipositor sheath visible from dorsal side.

Male : Unknown.

Host : Unknown.

Etymology : Species name is an arbitrary combination of letters.

Materials examined : Holotype: Female INDIA, Kerala, Kannur District, Kottiyoor Forest (10° 7'N 78° 49'E), 17.ii.2003 T.C. Narendran & party.

Type depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala state pending transfer to ZSIK or to NZSI.

Remarks : This new species comes near *E. ater* Zhu and Huang in the key to species by Zhu and Huang (2001) but *E. ater* differs from this new species in having: (1) pedicel longer than F1 (*E. lanotus* pedicel as long as F1); (2) clava a little longer than 2x length of F3 (in *E. lanotus* clava distinctly shorter than 2x length of F3); (3) pronotum without cross carina (in *E. lanotus* pronotum with cross carina although weaker in middle); (4) MLM with 5-8 pairs of setae (in *E. lanotus* MLM with only 3 pairs of setae); (5) gastral petiole distinct (gastrol petiole indistinct in *E. lanotus*); (6) T1 half to 2/3 length of whole gaster (T1 0.32x length of gaster in *E. lanotus*); (7) gaster 1.7x as long as wide (in *E. lanotus* gaster 2.4 as long as wide). (8) Funicle yellow (in *E. lanotus* funicle dark brown).

12. *Elachertus malabaricus* Narendran sp. nov.

(Figs. 103-104)

Female : (Holotype) Length 2 mm. Head black with metallic green refringence; eyes brown; ocelli reflecting brown; mandibles pale brown; antenna scape and pedicel pale yellow; F1 and F2 pale brownish yellow; F3 to apex of clava dark brown; mesosoma black with metallic green refringence; tegula pale brown; legs pale yellow with coxae brown with apices paler. Wings hyaline with veins pale yellowish brown. Metasoma black with pale brown patch on T1 dorsally and ventrally.

Head : Width is anterior view 1.26x its height; width in dorsal view 2.14x its length; POL 2x OOL; LOL equal to OOL; AOL equal to LOL; occiput sharply

margined posteriorly, carinate; WIOS 2.83x POL; scrobe and frons reticulate, scrobe ecarinate on margins, separated from front ocellus by lesser distance than diameter of front ocellus; anterior margin of scrobe weakly carinate; mandible bidentate; MS 0.3x eye height in profile; eye height in profile 1.4x its length. Eye pilose. Antenna inserted a little above level of ventral margin of eye; relative L: W of antennal segments: scape = 37 : 7; pedicel = 17 : 7; F1 = 17 : 8; F2 = 12 : 8; F3 = 14 : 9; F4 = 10 : 10; clava = 23 : 10.

Mesosoma : Pronotum with cross carina, 0.53x as long as wide; coarsely reticulate, moderately pubescent with 3 pairs of stronger setae. Mesoscutum a little longer than pronotum; MLM wider than long (9 : 7); not protruding backwards from level of anterior margin of axillae; coarsely reticulate, with setae scattered all over disc; axillae smooth but with 2 very weak, short setae on posterior margin; scapula with moderately dense pubescence with 2 stronger setae; scutellum longer than mesoscutum (8 : 7) with distinct (but not raised) reticulation with 2 pairs of setae, without additional setae; lateral grooves curved posteriorly at posterior margin but not meeting each other at middle. Propodeum with median carina starts below projecting lamina, without a fork, with rami distinct but not quite reaching posteriolateral corners of propodeum; spiracle separated from metanotum by its own diameter. Forewing 2.4x as long as wide; relative L : W of CC = 16; SMV = 12; MV = 17; PMV = 8; STV = 5; speculum relatively small restricted mainly adjoining parastigma, running towards base of STV through posterior side of MV, closed behind by discal setae and cubital line of setae.

Metasoma : Petiolate, a little longer than mesosoma (16:14), about 2.1x as long as wide in dorsal view; petiole transverse, broader than long, [difficult to observe]; T1 longest, T2 to T6 subequal in median length; ovipositor sheath distinct from above.

Male : Unknown.

Host : Unknown.

Etymology : Named after Malabar area of Kerala state to which the collection locality of Holotype belongs.

Material examined : Holotype, Female, INDIA, Kerala, Calicut university campus (11° 7'N 75° 5'E), 13.vii.2004. T. C. Narendran.

Type depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala state pending transfer to ZSIK or to NZSI.

Remarks : This new species comes near *Elachertus longiramulus* Zhu & Huang (2001) in general appearance but *E. longiramulus* differs from this new species

in having : (1) Body including metasoma completely metallic green (in *E. malabaricus* metasoma not metallic green); (2) axilla without seta (in *E. malabaricus* each axilla with 2 weak setae on its posterior border); (3) propodeum with rami distinct on anterior half of median carina (in *E. malabaricus* distinct through out median carina); (4) MV shorter than 2x PMV (in *E. malabaricus* MV longer than 2x PMV); (5) metasoma 2.5x as long as wide (in *E. malabaricus* metasoma 2.15x as long as wide).

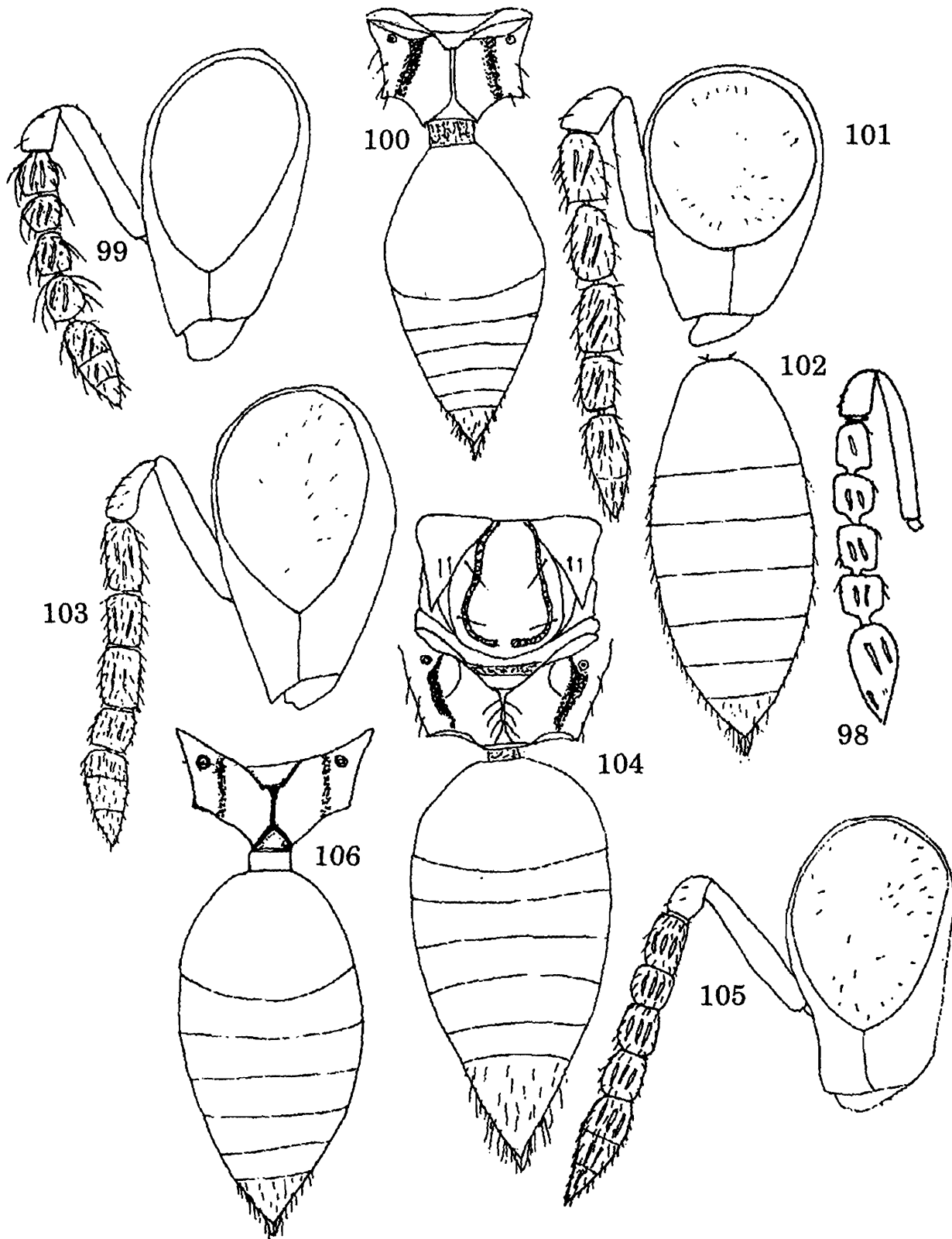
13. *Elachertus nedumbassericus* Narendran sp. nov.

(Figs. 105-106)

Female : (Holotype) Length 1.8 mm. Head black with slight metallic green refringence; eye gray, ocelli pale reflecting yellow; scape and pedicel pale brownish yellow, remaining segments of antenna a little darker; mouth parts pale brownish yellow; mesosoma black with legs pale yellow including coxae; petiole black; gaster black with sternites and lower part of sides and a large patch on T1 and T2 medially pale brownish yellow; wings hyaline with veins pale brown.

Head : Width in anterior view 1.31x its height, head width in dorsal view 2.83x its length; POL 1.5x OOL; LOL 0.75x OOL; AOL equal to LOL; occiput margined, carinate, concave in middle; carinate margin not reaching posteriolateral corners of eye; WIOS 2.83x POL; scrobe and frons weakly reticulate; scrobe margin ecarinate, almost reaching front ocellus; clypeus not delimited from frons, its lower margin straight; mandible with 4 or 5 minute teeth; MS 0.3x eye height in profile; eye pilose; eye height about 1.4x its length; antenna inserted a little above level of ventral margin of eye. Relative L : W of antennal segments: scape = 37 : 7; pedicel = 11 : 7; F1 = 13 : 9; F2 = 9 : 9; F3 = 12 : 9; F4 = 11 : 9; clava = 28 : 10.

Mesosoma : Pronotum without cross carina, reticulate, moderately pubescent; mesosctum 1.6x as long as pronotum (including column), moderately reticulate with scattered setae; notauli almost straight; scapula mostly smooth, weakly aciculate with sparse setae; scutellum 1.4x as long as mesosctum, smooth and shiny, with 2 pairs of setae; lateral grooves not united each other posteriorly, interrupted in the middle by a tubercle like projection; propodeum with median carina forked at posterior end, without rami, projecting lamina present, posterior margin of projecting lamina straight; submedian sides of propodeum smooth and shiny; propodeal spiracle separated from metanotum by a distance shorter than its diameter; forewing 2.6x as long as broad; speculum present, closed behind by cubital line of setae; relative length of CC = 17; SMV = 13; MV = 14; PMV = 10; STV = 7.



Figs. 98. *Elachertus indicus* (Khan & Sushil) Female antenna. **Figs. 99-100.** *E. kainophanestus* sp.nov. Female : 99. Head & antenna; 100. Propodeum & Gaster. **Figs. 101-102.** *E. lanotus* sp.nov. Female † 101. Head & antenna profile; 102. Gaster. **Figs. 103-104.** *E. malabaricus* sp.nov. Female : 103. Head & antenna profile; 104. Scutellum, propodeum & metasoma. **Figs. 105-106.** *E. nedumbassericus* sp.nov. Female : 105. Head & antenna profile; 106. Propodeum & metasoma.

Metasoma petiolate; petiole broader than long (10: 4) metasoma a little longer than mesosoma (12.5 : 11); T1 0.4x length of gaster; T2 to T5 subequal in length; ovipositor sheath slightly visible from dorsal side; gaster 2x as long as broad.

Host : Unknown.

Material examined : 1 Female, INDIA, Kerala, Ernakulam District (9° 58' N, 76° 16' E), Nedumbasseri, T. C. Narendran & party.

Type depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala state pending transfer to ZSIK or to NZSI.

Remarks : This species comes near *Elachertus malabaricus* Narendran sp. nov. in having occiput margined; scutellum with 2 pairs of setae and lateral grooves of scutellum not united each other. However *E. nedumbassericus* differs from *E. malabaricus* in having: (1) median carina of propodeum without rami (with rami in *E. malabaricus*); (2) F2 shorter than F4 (in *E. malabaricus* F2 longer than F4); (3) axilla without short setae (with short setae in *E. malabaricus*) and in other characters.

14. *Elachertus nigrithorax* (Girault)

1913. *Pseudelachertus nigrithorax* Girault, [167] : 260 : Queensland (QM) *Elachertus nigrithorax* (Girault) Bou ek (1988) transferred to *Elachertus*.

Diagnosis : Female : Length 1.5 mm. Shining black, gaster, legs and pedicel to tip of clava dull brown; scape lemon yellow; pedicel and F1 subequal, the 4 funicular segments more or less equal and subquadrate; clava half length of funicle; pronotum and MLM finely reticulated; notauli almost slightly divergent posteriorly, without forming angle; scutellum with sublateral groove not united posteriorly.

Host : *Hyblaea puera* (Cramer) (Lepidoptera: Hyblaeidae) on *Tectona grandis* (Verbenaceae). (Patil & Naik 1998)

Distribution : India, China and Australia.

Material examined : None. The above diagnosis is based on Girault (1913), Bou ek (1988) and Zhu and Huang (2001).

Remarks : Zhu and Huang (2001) believe that the Chinese specimens of *Elachertus auripes* (Girault) are conspecific with determined specimens of *E. nigrithorax*.

15. *Elachertus nuperus* Narendran sp. nov. (Figs. 107-109)

Female : (Holotype) Length 2 mm. Head black with metallic blue refringence; eye brown; ocelli pale yellow; mandible brown; scape pale yellow, remaining

segments dark brown; mesosoma black with slight metallic blue refringence; tegula brown; metasoma black with metallic blue refringence; legs pale brownish yellow with coxae slightly more brownish. Wings hyaline with faint brown infuscation behind STV

Head : Width in anterior view 1.2x its height, width in dorsal view 2x its length; POL 1.2x OOL; LOL 0.6x OOL; AOL as long as LOL; occiput not margined or carinate; WIOS 3.3x OOL; scrobe and frons reticulate; scrobe margin ecarinate; scrobe separated from front ocellus by about the diameter of front ocellus; clypeus not clearly delimited from frons, lower margin entire; each mandible with 4 minute teeth and two slightly larger teeth; MS 0.2x eye height in profile; eye bare; eye height in profile 1.23x its length. Antenna inserted a little above level of lower margin of eyes; relative L : W of antennal segments: scape = 28 : 7; pedicel = 14 : 6; F1 = 15 : 8; F2 = 13 : 7; F3 = 15 : 8; F4 = 12 : 9; clava = 21 : 11.

Mesosoma : Pronotum without cross carina, reticulate, with moderately dense pubescence and three pairs of stronger setae in posterior half. Mesoscutum longer than pronotum, reticulate with 3 pairs of subequal setae, notauli curved, divergent posteriorly, forming an angle with posterior margin of MLM; MLM a little wider than long, produced posteriorly, axillae weakly reticulate-striate, without setae. Scutellum subequal in length to MLM, distinctly reticulate. Without distinct pits, with 2 pairs of setae; lateral grooves relatively shallow, curving posteriorly towards median part but not at all united each other. Propodeum with distinct plicae; median carina with fork at proximal end below weakly projecting lamina, rami absent; area on either side of median carina convex, smooth and shiny, propodeal spiracle separated from metanotum by its own diameter. Forewing 2.44x as long as broad; speculum present, extend as a narrow strip below MV up to STV, closed behind by cubital line of setae; relative length of CC = 21; SMV = 17; MV = 16; PMV = 8; STV = 5.

Metasoma sessile; longer than mesosoma (14 : 11), 1.8x as long as broad; T1 largest; T2 to T5 subequal in median length; T6 slightly longer than T5; T7 narrow posteriorly; ovipositor sheath visible from dorsal side.

Male : Unknown.

Host : Unknown.

Etymology : Species name taken from Latin, 'nuperus' meaning new.

Material examined : Holotype female: INDIA, Kerala, Idukki District Adimali (9° 58' N 76° 56' E), 3.xii. 1988 T. C. Narendrn & Party.

Type depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala state pending transfer to Zoological Survey of India, Calicut (Kozhikode), Kerala state or to NZSI

Remarks : This new species resembles *Diglyphomorphomyia* in having distinct plicae and 3 pairs of mesoscutal setae. However the nature of reticulation of the scutellum clearly is that of *Elachertus*. It comes near *Elachertus varicapitulum* Zhu and Huang in the key to species by Zhu and Huang (2001). However *E. varicapitulum* differs from this new species in having : (1) head yellow or orange yellow with dark patches; (2) eyes pilose; (3) pedicel 0.5x as long as F1; and (4) sublateral grooves of scutellum united posteriorly.

16. *Elachertus piperis* Narendran

(Fig. 110-112, Plate I, Photo 2)

2009. *Elachertus piperis* Narendran, in Narendran & Bindu, 45-48, India, Kerala (DZUC).

Redescription : Female : (Holotype) length 2.5 mm. Head yellow with an oblique black stripe inside on either side of scrobe; eye brick red; flagellum black; pedicel pale brown, scape yellow, mesosoma pale brownish yellow; legs pale yellow; metasoma black with a pale yellow patch on T1; T6 slightly pale; ventral side of metasoma pale. Wings hyaline with veins and pilosity pale brown.

Head : In anterior view 1.17x as wide as its length in dorsal view, 1.14x as wide as mesosoma; POL as long as OOL; LOL shorter than OOL; AOL 0.07x LOL; occiput not carinate and not sharply margined posteriorly; WIOS 4.3x POL; scrobe moderately deep, margins ecarinate, not reaching front ocellus, faintly reticulate, mostly smooth, clypeus clearly demarcated, lower margin straight, mandible bidentate; MS 0.4x eye height in profile, eye pilose; eye height in profile 1.2x its length. Antenna inserted a little above level of lower margin of eye; antennal funicle 5 segmented, clava 2 segmented. Relative L: W of antennal segments: scape = 25 : 7; pedicel = 12 : 5; F1 = 19 : 7.5; F2 = 15 : 8; F3 = 14 : 7; F4 = 12 : 7; F5 = 13:8; clava = 17 : 6.

Mesosoma : Pronotum with a faint cross carina indicated, median length 0.6x its maximum width (0.5x its lateral length), finely reticulate, with sparse pubescence and 4 pairs of stronger setae. Mesoscutum longer than pronotum (34 : 24); MLM as wide as long, protruding backwards from level of anterior margin of axillae, finely reticulate on anterior half and weakly reticulate on posterior half, with 3 pairs of setae of subequal length, notauli curved posteriorly, angled with anterior margin of axilla; axilla bare; scutellum shorter than MLM, with fine reticulation, with two pairs of stout setae, without additional setae, lateral groove parallel, never curved inside and meet each other medially; propodeum with a median

carina, without a fork at base; medium carina without rami and starting anteriorly below a projecting lamina, areas on either side of median carina smooth and shiny. Forewing 2.1x as long as broad, speculum absent, relative length of CC = 28; SMV = 23; MV = 37; PMV = 20; STV = 14.

Metasoma a little longer than mesosoma (111 : 105), 2.43x as long as broad; T1 longest followed by T6. T2, T3, T4 and T5 subequal in median length. Ovipositor sheath visible from dorsal side.

Male : Unknown.

Host : Emerged from leaf galls (Photo 1) of *Liothrips karnyi* (Bagn.) on pepper.

Variation : length varies from 2-2.25; POL as long as to slightly longer than OOL; WIOS 3-4.3 as long as POL; MS 0.32-0.4x eye height in profile; forewing 2.1-2.3x as long as wide.

Etymology : Named after host plant *Piper nigrum*.

Material examined : Holotype and Paratypes.

Remarks : This species does not resemble any of the species of *Elachertus* described from oriental region. It comes to *E. parallelus* Zhu & Huang (2001). However *E. parallelus* differs from *E. piperis* in having: (1) head and mesosoma completely black (head & mesosoma yellow in *E. piperis*); hind femur black with yellow apex (hind femur completely pale yellow in *E. piperis*); (3) clava longer than F1 (clava shorter than F1 in *E. piperis*); (4) POL 2x OOL (POL equal to OOL); (5) pronotum without transverse carina (with faint transverse carina in *E. piperis*); (6) plicae absent (plicae present in *E. piperis*); (8) scrobe without oblique black strips (Scrobe with oblique black stripes in *E. piperis*).

17. *Elachertus propodiatu*s Narendran sp. nov.

(Figs. 113-115)

Female : (Holotype) Length 1.9 mm. Head dark metallic green, eyes dark brown, ocelli pale reflecting yellow; mandible brown; antenna brown with scape pale yellow. Mesosoma dark metallic green, tegula and legs immaculate yellow. Metasoma pale brown with posterior half darker. Wings hyaline with veins pale brown; without infuscation.

Head : In anterior view 1.37x as wide as its height; width in dorsal view 2.5x as wide as its length; POL 1.5x OOL; LOL a little shorter than OOL (3:4); AOL as long as LOL; occiput sharply margined posteriorly; WIOS 3x POL; scrobe shallowly depressed; margins ecarinate, not reaching front ocellus, faintly aciculate inside; clypeus not delimited, lower margin straight; mandibles with six relatively minute teeth. MS 0.19x eye height in profile; 1.21x its length; eye pilose. Antenna

inserted a little above level of lower margin of eye; relative L : W of antennal segments : scape = 30 : 5; pedicel = 10 : 5; F1 = 11 : 7; F3 = 11 : 8; F4 = 9 : 9; clava = 18 : 7.

Mesosoma : Pronotum with cross carina; median length 0.42x its width, with moderately raised reticulation, and sparse pubescence, with 3 pairs of stronger setae. Mesoscutum shorter than pronotum (7 : 10); MLM wider than long (12 : 7); slightly protruding backwards from level of anterior margin of axillae; with distinct reticulations, with 3 pairs of setae of subequal length, notauli almost straight; scapulae moderately dense pubescence, with 2 or 3 stronger setae; axilla bare; scutellum longer than mesoscutum (10 : 7); with strong reticulation; with 2 pairs of setae; lateral grooves curved inwards, almost reaching middle of posterior marginal area but not uniting with each other. Propodeum with median carina, with well developed rami arising from median carina, almost touching posteriolateral corners, median carina with a lamina projecting over it at anterior end; sublateral grooves deep, submedian area smooth and shiny between rami and other parts; spiracle separated from metanotum by more than diameter of spiracle. Fore wing 2.3x as long as wide; speculum small, closed behind by cubital line of setae; relative length of CC = 22; SMV = 16; MV = 18; PMV = 8; STV = 6; forewing disc without infuscation.

Metasoma sessile; subequal in length of mesosoma, 1.9x as long as broad; T1 longest, followed by T6; T2 to T6 subequal in length.

Male : Unknown.

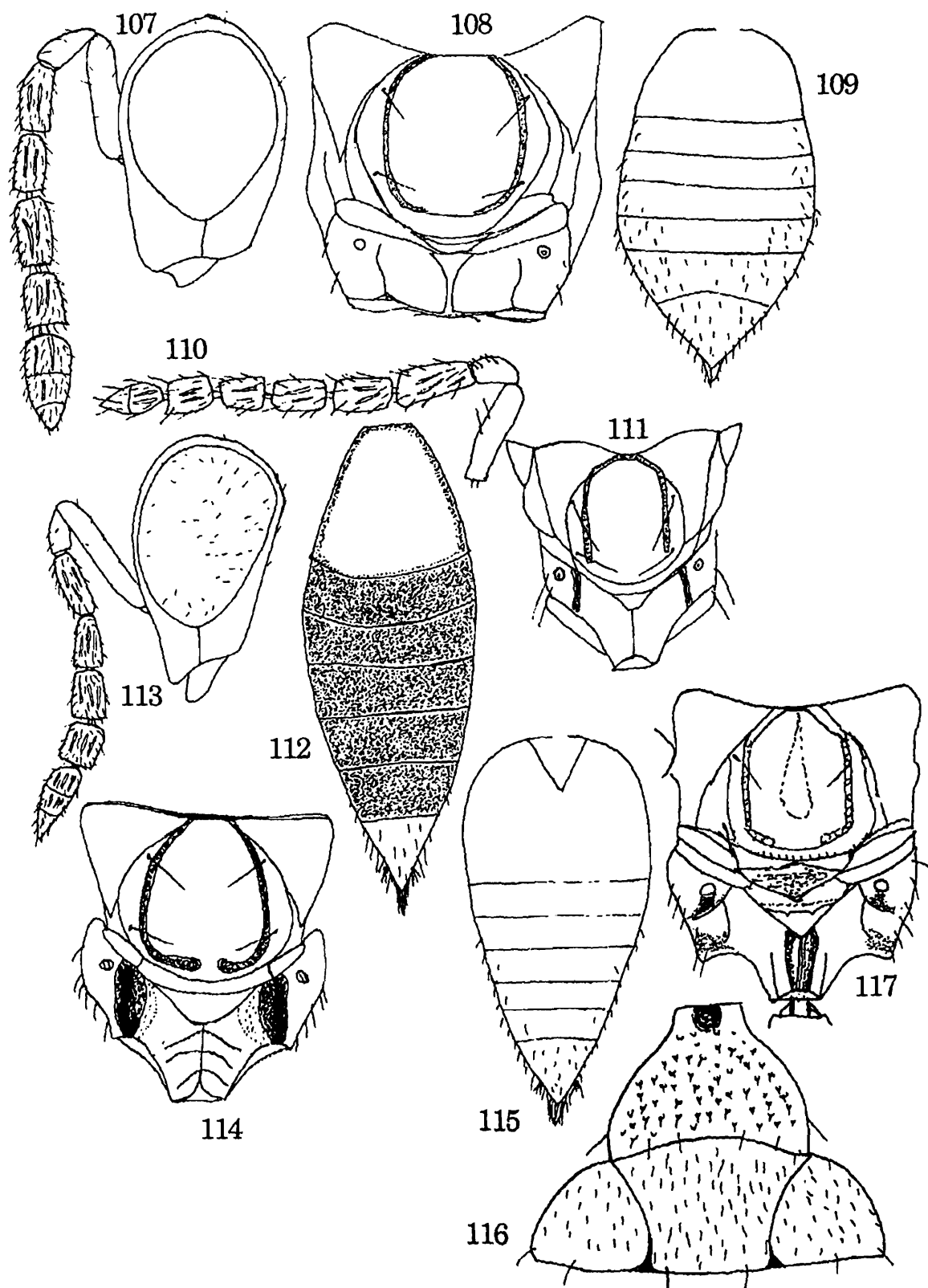
Host : Unknown.

Variation : Length 1.91-2.1 mm; fore coxa and hind coxa black from base to area near apex and antenna more yellowish brown in the specimen from Maharashtra; head width 1.32-1.37x as wide as large in front view; head width in dorsal view 2.3-2.5x as wide as long; POL 1.5-2x OOL.

Etymology : Species name refers to the propodeum with distinct long rami.

Material examined : Holotype female : INDIA, Kerala, Kannur district, Kottiyoor (10° 7' N 78° 49'E), 17.11.2003, T. C. Narendran & Party, Paratypes : 2 Females & 1 Male, Kerala, Palghat district, Siruvani forests (10° 36' N 76° 49'E), 26.ix.1987, T. C. Narendran; 1 Female, Kerala, Calicut University campus (11° 7' N 75° 5'E), 10.x.1986, T.C.Narendran. 1 Female INDIA, Maharashtra (18° 56' N 72° 51' E), Buldana dt. Lonar Crater Wild life sanctuary 17.ii.2003, P.M. Sureshan.

Type depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala state pending transfer to Zoological Survey of India, Calicut (Kozhikode), Kerala state or to NZSI.



Figs. 107-109. *Elachertus nuperus* sp.nov. Female : 107. Head & antenna profile; 108. Scutellum & Propodeum; 109. Gaster. **Figs. 110-112.** *E.piperis* Narendran, Female : 110. Antenna; 111. Scutellum & propodeum; 112. Gaster. **Figs. 113-115.** *E.propodiatatus* sp.nov. Female : 113. Head & antenna profile; 114. Scutellum & propodeum; 115. Gaster. **Figs. 116-117.** *Propodeochertus sureshani* gen.&sp. Nov. Female : 116. Pronotum & mesosutum; 117. Scutellum & propodeum.

Remarks : This new species comes near *Elachertus longiramulus* Zhu & Huang in having propodeum with long rami and antennae brown except scape yellow. However *E. longiramulus* differs from this new species in having : (1) body completely dark metallic green (in *E. propodeatus* gaster pale brown with posterior half darker, without metallic refringence); (2) coxa brown or black with hind one yellow at apex (in *E. propodeatus* all legs including all coxae yellow); (3) POL a little more than 2x OOL (in *E. propodeatus* POL 1.5x OOL); (4) scutellum as long as mesoscutum (in *E. propodeatus* scutellum distinctly longer than mesoscutum); (5) mesoscutum longer than pronotum (in *E. propodeatus* mesoscutum shorter than pronotum); (6) MV 1.71x as long as PMV (in *E. propodeatus* MV 2.25x as long as PMV and (7) Gaster about 2.5x as long as broad (in *E. propodeatus* gaster 1.9x as long as broad).

18. *Elachertus pulcher* (Erdös)

(Figs. 119-122)

1961. *Peteenus pulcher* Erdös : 472. Transferred to *Elachertus* by Bou ek 1965a : 9.

Rediscription : Female : Length 3 mm. Head yellow with dark brown patches in POL and AOL; antenna dark brown with scape yellow : eyes black with reflecting yellow tinge; pronotum brownish yellow with dark patch anteriorly; mesoscutum, scutellum and dorsellum brownish yellow; metanotum dark brown; propodeum dark brownish yellow with median carina and plicae dark; pro, meso and metaplura brownish yellow; legs whitish yellow; gaster pale brownish yellow with T2, T3, T4 and T5 dark brown; ovipositor sheath black. Wings hyaline with veins and pilosity pale brown.

Head : In anterior view 1.35x as wide as its height; in dorsal view 2.13x as wide as long; 1.21x as wide as mesosoma; POL 1.33x OOL; LOL equal to OOL; AOL 0.7x LOL; occiput not carinate and not sharply margined; WIOS 2.5x POL; scrobe moderately deep, margins ecarinate, not reaching anterior ocellus; clypeus clearly demarcated, 2.7x as broad as long, lower margins straight ; each mandible 5 or 6 dentate; MS 0.3x eye height in profile; eye pilose; eye height in profile 1.25x its length. Antenna inserted a little above level of lower margin of eyes; relative L : W of segments: scape = 29 : 10; pedicel = 14 : 7; F1 = 21 : 9; F2 = 24 : 9; F3 = 21 : 8; F4 = 21 : 9; clava = 30 : 9.

Mesosoma : Pronotum without a cross carina; median length 0.41x its maximum width; weakly reticulate with scattered weak setae and with a pair of stronger setae posteriorly. Mesoscutum longer than pronotum (7 : 5); MLM broader than long (10 : 7); protruding backwards, reticulate moderately on anterior half and weakly on posterior half, with scattered weaker setae in addition to one pair of

strong setae on posterior side. Notauli curved outwards posteriorly, distinctly angled with anterior margin of axilla. Axilla bare. Scutellum nearly as long as MLM medially, with faint reticulations; with 2 pairs of setae, without additional setae; laterals grooves slightly curved inwards posteriorly, not united with each other. Propodeum with a median carina without a fork at base, ending anteriorly below a projecting lamina, without rami; submedian areas smooth and shiny spiracle separated from metanotum by shorter distance than diameter of spiracle. Forewing: 2.5x as long as broad; relative L : W, CC = 19; SMV = 14; MV = 20; PMV = 9; STV = 5; speculum small, closed behind by cubital line of setae.

Metasoma sessile, a little longer than mesosoma, 2.44 x as long as broad; T1 longest; T2 to T6 subequal in length; ovipositor sheath visible from above.

Male : See Zhu & Huang (2001).

Host : Unknown.

Distribution : Oriental & Palearctic region. New record for India.

Material examined : 1 Female: INDIA, Kerala, Palghat district, Silent Valley (11° 15' N 76° 30' E), 15.v.1985. T.C. Narendran.

Variation : The specimen collected from Kerala and on which the above redescription is based shows the following variation from the redescription of species by Zhu & Huang (2001). Head not completely yellow but with dark brown patches in POL and AOL. Zhu & Huang mentions that in European specimens examined head is yellow with part of occiput brown, mesosoma yellow with dark metallic (weak) patches. In the Indian specimen I have studied mesosoma is without such patches. In the Indian specimen F1 is 2.25x as long as broad (in the Chinese specimens F1 more than 4x as long as wide). In the Indian specimens F2 is longest where as in the Chinese specimens funicle segments are subequal and more than 2.5x as long as broad.

Remarks : This species comes near *E.pilifer* Zhu & Hmang in having MLM projecting a little beyond anterior margin of axilla and in having scattered setae. However *E.pilifer* differs from this new species in having body mostly black and in different properties of antennal segments & forewing veins in addition to several other differences.

19. *Elachertus radhakrishnai* Narendran sp. nov

(Figs. 123-125)

Female : (Holotype) : Length 1.3 mm. Head black; eye yellowish gray; ocelli pale reflecting yellow; mandibles yellowish brown; scape pale yellow; pedicel pale brownish yellow; funicle and clava pale brown. Mesosoma black; tegula pale.

yellow; legs pale brownish yellow with coxae slightly brownish; metasoma pale brown with median part slightly darker.

Head : Width in anterior view 1.29x its height, width in dorsal view 2.3x its length; POL 1.5x OOL; LOL a little over 0.5x OOL; AOL a little longer than LOL; almost equal to OOL; occiput margined and carinate, carina not reaching posteriolateral corners of eye, WIOS 3x OOL; scrobe and frons weakly reticulate, margins ecarinate, scrobe separated from front ocellus by the diameter of front ocellus; clypeus not delimited, lower margin not bilobed, slightly convex, each mandible with 2 longer teeth (not quite visible in the specimen; MS 0.25x eye height in profile; eye pilose; eye height in profile 1.3x its length. Antenna inserted slightly above level of lower margin of eyes; relative L:W of antennal segments: scape = 26 : 9; pedicel = 12 : 6; F1 = 10 : 7; F2 = 8 : 8; F3 = 8 : 9; F4 = 8 : 10; clava = 18 : 11.

Mesosoma : Pronotum without cross carina, 0.6x as long as wide; coarsely reticulate, moderately pubescent with 3 pairs of stronger setae; mesoscutum longer than pronotum (10 : 85); MLM wider than long (10 : 7), not produced posteriorly from the level of anterior margin of axillae, with scattered setae, MLM with raised reticulation; scapula coarsely reticulate, with sparse pubescence, axilla weakly aciculate; scutellum longer than MLM (9 : 6), with raised reticulation, lateral grooves united medially at posterior margin. Propodeum with a median carina; median carina with a fork anteriorly, projecting lamina relatively very short, rami absent; area on both sides of median carina smooth and shiny; spiracle separated from metanotum by its own diameter. Forewing 2.5x as long as wide; speculum relatively small; closed behind posteriorly by cubital line of setae; relative L : W of CC = 16; SMV = 11; MV = 16; PMV = 8; STV = 5.

Metasoma sessile; as long as mesosoma, 1.60x as long as broad; T1 largest, T2 to T6 subequal in median length; ovipositor sheath visible from above.

Male : Unknown.

Host : Unknown.

Etymology : Named after Mr. C. Radhakrishnan, Additional Director, Zoological survey of India, for his support in my research.

Material examined : Holotype : Female : INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7'N 75° 5'E), 5.iv.1985, T.C.Narendran; Paratypes: 1 Female, Calicut University Campus (11° 7'N 75° 5'E), 9.v.1989, K.Surekha. 1 Female, Kerala, Palghat District. Siruvani Forest (10° 36' N 76° 49'E), 26.ix.1987, T.C.Narendran & party.

Type depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala state pending transfer to Zoological Survey of India, Calicut (Kozhikode), Kerala state or to NZSI.

Remarks : This species resembles *Elachertus ramosus* Zhu & Huang and *Elachertus asokai* Narendran sp. nov. in general appearance. However *E. ramosus* differs from *E. radhakrishnai* in having : (1) axilla with setae; (2) pedicel longer than F1; (3) F3 equal in length to F2; (4) F4 shorter than F3; (5) gaster about 2x as long as broad and distinctly longer than mesosoma and (6) occipital carina complete. *E. asokai* Narendran sp. nov. differs from *E. radhakrishnai* in having : (1) propodeum with distinct rami; (2) F1 almost equal to pedicel; (3) body without metallic refringence; (4) lower margin of clypeus bilobed; and (5) scutellum with 5 pairs of setae.

20. *Elachertus sinui* Narendran

(Fig. 126)

2004. *Elachertus sinui* Narendran : 132. Holotype female, INDIA (DZUC).

Redescription : *Female* : (Holotype) length 1.48 mm; Head and mesosoma black; eyes blackish gray; ocelli dark yellow; antenna and legs (including coxa) pale brownish yellow; gaster pale brown becoming darker towards apex on dorsal and dorsolateral parts. Wings hyaline, veins pale brown; pilosity pale yellow.

Head width in anterior view 1.29x its width; width in dorsal view a little less than 3x its length; LOL subequal to OOL; AOL equal to LOL; occiput carinate on median region, ecarinate on sides; WIOS 3.2x POL. Scrobe and frons polished, margins of scrobe ecarinate, almost reaching front ocellus but not touching it; clypeus clearly delimited, lower margin straight; each mandible with 6 minute teeth. MS 0.4x eye height in profile; eyes bare; eye height in profile 1.5x its length. Antenna inserted a little above level of ventral margin of eyes; relative L : W of antennal segments : scape = 21 : 5; pedicel = 8 : 6; F1 = 7 : 8; F2 = 8 : 7 F3 = 9 : 6; F4 = 8 : 6; clava = 18 : 5; apex of clava pointed.

Mesosoma Pronotum without cross carina; 0.6x as long as wide, reticulate with scattered setae; and with 2 pairs of long setae. Mesoscutum little longer than pronotum (17 : 15). MLM wider than long, not protruding backwards from the level of anterior margin of axillae, with scattered setae, posterior most pair of setae longer than others; scapula moderately reticulate with sparse setae; axilla bare, weakly reticulate; scutellum a little longer than mesoscutum (19 : 17); slightly longer than wide; smooth and shiny, with 3 pairs of setae, middle pair

shorter than others; lateral grooves united posteriorly. Propodeum smooth and shiny with median carina starting below projecting lamina, without fork, rami absent. Forewing 2.5x as long as its width; speculum absent; relative length of veins : CC = 41; SMV = 34; MV = 26; PMV = 11; STV = 9.

Metasoma : The figure 8 of Narendran 2004 is not fully correct as the gaster is in a collapsed condition. Later a non collapsed gaster of a specimen collected and examined reveal that metasoma is as long as mesosoma, 2.2x as long as broad in dorsal view, T1 almost really middle of gaster, T2 to T6 subequal in median length; ovipositor sheath visible.

Male : Unknown.

Host : Unknown.

Distribution : India (Karnataka, Kerala), New record for Kerala.

Material examined : (In addition to the Holotype) 1 Female, Kerala, Wayanad district, Kalpetta, Puthurvayal (11° 37' N 76° 6' E), and 6.ii.2003. T.C Narendran & party; 1 Female, Kerala, Kasaragod (12° 29' N 74° 59' E), 21.i.2003, T. C. Narendran & party; 1 Female, Kerala, Nilambur (11° 16' N 76° 14' E), 21.i.2003, T. C. Narendran & party; 1 Female, Kerala, Kannur, Kavinissery (11° 55' N 75° 22' E), 16.ii.2003, T. C. Narendran & party. 1 Female, Kerala, Calicut, Nanminda (11° 26' N 75° 50' E), 14.xi.2004, T. C. Narendran & Party.

Type depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala state pending transfer to Zoological Survey of India, Calicut (Kozhikode), Kerala state or to NZSI.

Remarks : *E. sinui* comes near *E. isadas* Walker in general appearance but *E. isadas* differs from *E. sinui* in having (1) MLM slightly protruding backwards beyond anterior level of axillae; (in *E. sinui* MLM not protruding backwards); (2) scutellum with 2 pairs of setae (in *E. sinui* scutellum with 3 pairs of setae); (3) body brightly metallic green (in *E. sinui* body not metallic green; and (4) in antennal segments of different proportions. *E. adimalicus* Narendran sp.nov differs from this new species in having: (1) forewing with large speculum; (2) coxae black or dark brown & (3) different antennal segments.

21. *Elachertus sobrinus* (Girault & Dodd)

(Figs. 127-129)

1915. *Parentedon sobrinus* Girault and Dodd in Girault, [230] : 283 Queensland, Gordovale (QM).

1988. *Elachertus sobrinus* (Girault and Dodd) : Bou ek, 642.

Redescription : Female : (Plesiotype) Length 1.63 mm. head dark metallic green; eyes light brown; front ocellus pale reflecting yellow; hind ocelli pale reflecting brown; mandible pale yellowish brown; antennal scape pale yellow; remaining antennal segments dark brown. Mesosoma dark metallic green; tegula pale brown; legs including coxae pale yellow; metasoma reddish brown, with a slightly dark tinge towards the posterior end. Wings hyaline, veins pale brown yellow.

Head : width in anterior view 1.2x its height; width in dorsal view 2.4x its length; POL 1.75x OOL; LOL 0.75x OOL; AOL equal to OOL; occiput sharply margined and carinate, reaching posteriolateral corners of eyes; WIOS a little shorter than 3x POL (7:20); frons and vertex with moderately strong reticulation; scrobe weakly reticulate, margin ecarinate, scrobe separated from front ocellus by a distance shorter than diameter of front ocellus; clypeus not delimited; mandible with MS 0.26x eye height; eye pilose; eye height 1.40x its length in profile. Antenna inserted slightly above level of ventral margin of eyes, relative L : W of antennal segments : scape = 27 : 6; pedicel = 11 : 7; F1 = 14 : 8; F2 = 12 : 9; F3 = 11 : 10; F4 = 10 : 10; clava = 21 : 11.

Mesosoma : Pronotum without cross carina, coarsely reticulate; mesoscutum longer than pronotum (9 : 8), coarsely reticulate, MLM with scattered setae, notauli not curved posteriorly, MLM not produced posteriorly beyond level of front margin of axillae; axilla minutely reticulate, without setae; scutellum longer than MLM (10 : 9); with 2 pairs of setae; scutellum distinctly reticulate; lateral groove curved inward but not united with opposite groove, well separated. Propodeum smooth and shiny on sides, median carina with rami, proximal end of median carina not forked, projecting lamina over basal part of median carina present; spiracle separated from metanotum by a distance shorter than diameter of spiracle. Forewing 2.35x as long as broad; speculum present and closed behind by cubital line of setae; relative length of CC = 17; SMV = 12; MV = 15; PMV = 9; STV = 5.

Metasoma : sessile; a little longer than mesosoma (29 : 27) 2.4x as long as broad; T1 length 0.44x of metasoma; T2 to T6 subequal in length; ovipositor sheath visible from dorsal side; metasoma narrowed towards caudal end (Fig. 129).

Host : unknown.

Material examined : 1 Female, INDIA; Kerala, Palakkad District, Malampuzha (10° 53' N 76° 46' E), 19.I.1988. T.C. Narendran; 1 Female, Kerala, Calicut District, Kakkayam (11° 15' N 75° 50' E), 9.II.1996, T.C. Narendran.

22. *Elachertus zandanicus* Narendran sp. nov.

(Fig. 130)

Female : (Holotype) Length 87 mm. Head mesosoma and metasoma black; antenna brownish black except pale yellow scape; eyes gray, ocelli dark brown; legs yellow with fore and hind coxa black three-fourths from base; hind femur with a brown patch on distal half on outer side; all pretarsi brown; tegulae pale yellow. Wings hyaline with veins brown.

Head : Width in anterior view 1.1x its height; width in dorsal view 2.2x its length; POL 1.75x OOL; AOL shorter than LOL; OOL as long as LOL; WIOS 3.5x POL; occiput not carinate but vertical, edged; scrobe and occiput reticulate; clypeus delimited, its lower margin entire; mandibles with several minute teeth; MS 0.26x eye height in profile; eyes pilose; eye height in profile 1.42x its length. Antenna inserted a little above level of lower margin of eyes; relative L : W of antennal segments: scape = 20 : 5; pedicel = 11 : 5; F1 = 14 : 6; F2 = 17 : 7; F3 = 14 : 7; F4 = 13 : 7; clava = 16 : 7.

Mesosoma : Pronotum without cross carina, median length 0.7x its width; with moderate reticulation, moderately spaced pilosity, with 3 pairs of stronger setae posteriorly; mesoscutum a little wider than pronotum; MLM a little wider than long (9 : 8), with distinct raised reticulation, with several scattered setae, one pair posteriorly stouter; notauli straight and not curved; scapulae reticulate as in MLM, with scattered setae, two setae stouter on each scapula; axillae shiny but weakly aciculate-reticulate, without pubescence; scutellum with raised reticulation; sublateral grooves curved inside posteriorly but well separated from each other and not joining each other posteriorly. Propodeum with a strong median carina, not forked basally, with projecting lamina above basally; sublateral grooves shallow and interrupted at middle by extension of convex smooth submedian areas; plicae absent; paraspircular carina not bifurcated; spiracle separated from metanotum by a distance shorter than diameter of spiracle, each callus with 4-6 setae. Forewing 2.41x as long as broad; speculum absent; relative length of CC = 16; SMV = 14; MV = 31; PMV = 14; STV = 7.

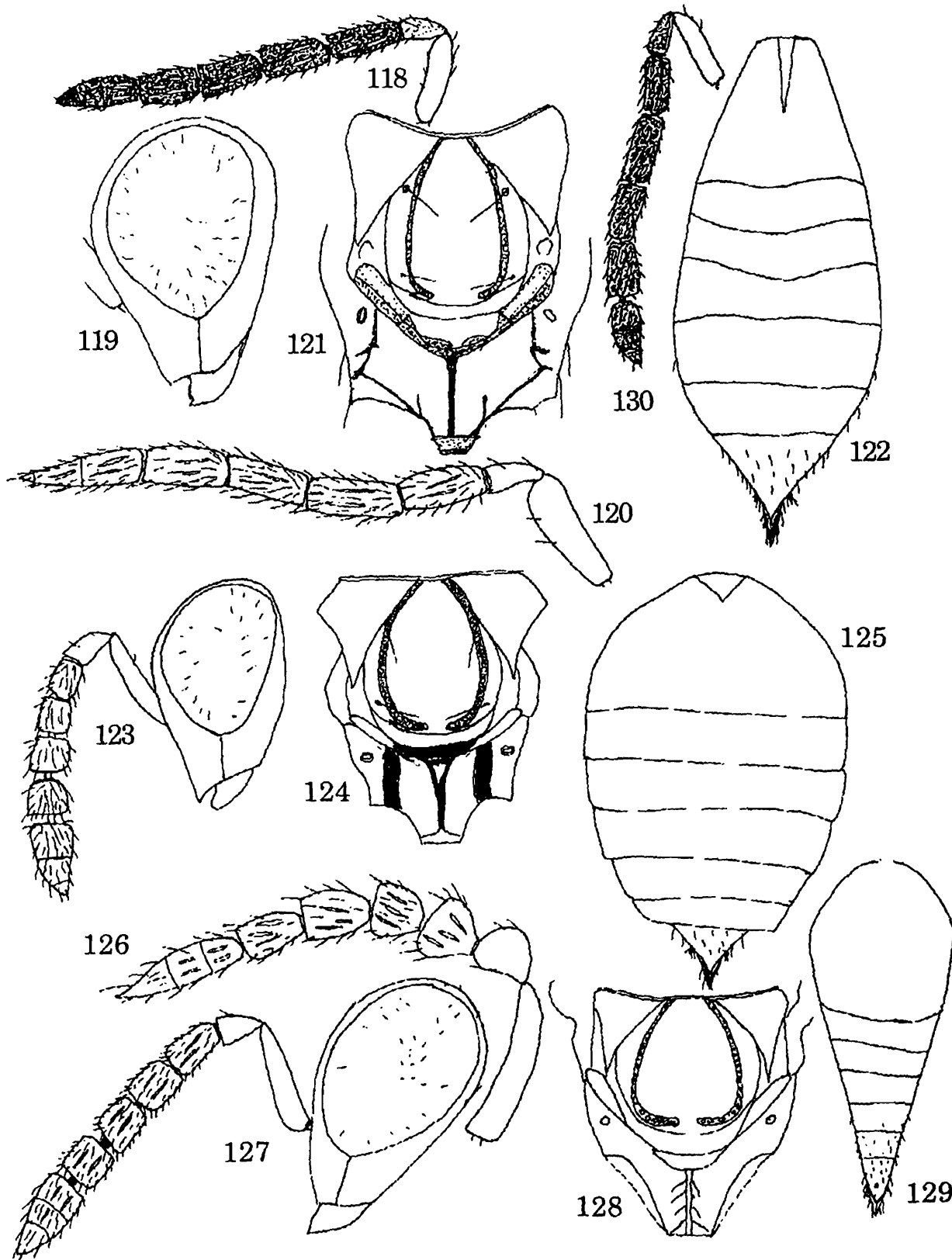
Metasoma sessile, 1.54x as long as mesosoma, about 4x as long as broad.

Male : Unknown.

Host : Unknown

Material Examined : Holotype, Female, INDIA, Arunachal Pradesh, Namdapha, (N 27° 31' 16.1" E 96° 29' 52.9"), 435 mtrs. 11.xi.2009. P. M. Sureshan.

Depository : Holotype deposited at NZSI.



Figs. 118. *Propodeochertus sureshani* sp.nov. female antenna. **Figs. 119-122.** *Elachertus pulcher* (Erdos) Female : 119. Head profile; 120. Antenna; 121. Scutellum & propodeum; 122. Gaster. **Figs. 123-125.** *E.radhakrishnai* sp.nov. Female : 123. Head & antenna profile; 124. Scutellum & propodeum; 125. Gaster. **Figs. 126.** *E. sinui* Narendran Female antenna. **Figs. 127-129.** *E.sobrinus* Gir. & Dodd Female : 127. Head & antenna; 128. Scutellum & Propodeum; 129. Gaster. **Fig. 130.** *E.zandanicus* sp.nov. Female antenna.

Remarks : This new species comes near *Elachertus nuperus* Narendran sp. nov. in general appearance but differs from *E. nuperus* in having: (1) Body without metallic refringence (in *E. nuperus* body with metallic green refringence); (2) eyes densely pubescent (in *E. nuperus* eyes bare); (3) MLM with several short scattered setae with one pair of stouter posterior setae (in *E. nuperus* MLM with 3 pairs of setae only) and (4) notauli straight (in *E. nuperus* notauli divergent posteriorly).

23. *Elachertus zellus* Narendran sp. nov.

(Fig. 75)

Female : (Holotype) length 2.1 mm. Head yellow with POL area dark; mandibles white with teeth pale yellow; eyes grayish yellow with brownish black spot; scape yellow, pedicel yellowish brown; remaining segments of antenna black; mesosoma black with cervix, scapula, sides of MLM weakly yellowish brown; lateral panel of pronotum pale yellowish brown; tegulae pale yellow; all coxae white; remaining segments of all legs pale yellow except slightly darker pretarsi; wings hyaline with veins pale brownish yellow.

Head width in anterior view 1.3x its height; width in dorsal view 2.4x its length; occiput sharply edged; POL 1.43x OOL; LOL slightly shorter than OOL; AOL shorter than LOL; WIOS 3.4x POL; scrobe, frons and vertex weakly reticulate; scrobe not reaching anterior ocellus, separated by a distance subequal to diameter of anterior ocellus; clypeus delimited, its lower margin entire; mandibles with six to seven minute teeth; MS 0.33x height of eye in profile; height of eye 1.2x its length in profile; eyes pubescent; antenna inserted slightly above level of ventral margin of eyes; relative L : W of antennal segments : scape = 23 : 7; pedicel = 9 : 6; F1 = 14 : 7; F2 = 10 : 7; F3 = 11 : 7; F4 = 8 : 7; clava = 15 : 6.

Mesosoma : Pronotum with cross carina absent, with 25-30 scattered setae, 3 pairs posteriorly stouter than others, surface faintly reticulate; MLM with scattered setae, raised reticulate; notauli curved a little towards outer side at the joining anterior margin of axilla; scapula reticulate and pubescent as in MLM; axillae slightly advanced anteriorly, faintly reticulate, mostly smooth; scutellum with a fovea like median longitudinal depression extending to middle from scutoscutellar groove; scutellum with distinct raised reticulations; sublateral grooves shallow, reticulate, not meeting each other posteriorly, well separated each other; dorsellum smooth with a tooth directed posteriorly at middle of posterior margin; propodeum with distinct median carina and sublateral grooves, with a projecting transverse lamina at base dorsally; spiracle separated from metanotum by a distance equal to diameter of spiracle; each callus with 7-8 setae; prepectus large, smooth; mesopleuron smooth; forewing 2.1x as long as wide; speculum absent; relative length of CC = 15; SMV = 10; MV = 21; PMV = 8; STV = 6.

Metasoma slightly longer than mesosoma (15 : 14); T₁ with deep "V" shaped pit at base, pit 0.15x length of T₁; T₁ 0.35x as long as gaster; petiole indistinct.

Male : Unknown.

Host : Unknown

Material examined : Holotype, Female, INDIA, Arunachal Pradesh, Nadampha, (N 27° 31" 16.1 E 96° 29' 52.9), 435 Mtrs. 11.xi.2009, P.M. Sureshan.

Depository : Holotype deposited in NZSI.

Remarks : This species comes near *E.pulcher* in the nature of MLM and notauli but differs from it in having : (1) scutellum with a median fovea like depression (in *E.pulcher* scutellum with such depression absent); (2) mesosoma and metasoma predominantly black (in *E.pulcher* mesosoma and metasoma not predominantly black) and (3) F₂ shorter than F₁ (in *E.pulcher* F₂ longer than F₁).

Genus *Elasmus* Westwood

1833. *Elasmus* Westwood, 343. Type species *Eulophus flabellatus* Fonscolombe, by monotypy.

1834. *Aneure* Nees, 194. Type species *Aneure nuda* Nees, designated by Gahan & Fagan, 1923: 12. Synonymy by Westwood, 1833, 1839.

1877. *Heptocondyla* Rondani, 182. Type species *Heptocondyla unicolor* Rondani, by monotypy. Synonymy by Bouček (1974).

1913. *Cyclopleura* Cameron, 96. Type species *Cyclopleura fumipennis* Cameron (*Elasmus cameroni* Verma & Hayat as replacement name, Verma *et al.*, (2002), designated by Gahan & Fagan, 1923: 41. Synonymy by Waterston, in Mahdihason, 1925.

1967. *Austelasmus* Riek, 148. Type species *Elasmus trifasciiventris* Girault, by original designation. Synonymy by Burks, in Krombein *et al.*, (1979).

Diagnosis : Female : Antennal formula 11233; pronotum triangular; mesoscutum with notauli indicated in about anterior half; axillae relatively small, slightly produced anteriorly and both axillae connected by a bridge; scutellum with 2 pairs of stout bristles; metanotum with a triangular lamella medially jutting over propodeum; propodeum postero-laterally emarginate for reception of enlarged hind coxae; fore wing with MV relatively long and STV short; legs with 4 segmented tarsi; fore tibial spur straight; hind coxa enlarged and flattened, disc-shaped; hind tibia with setae arranged in diamond shaped pattern; gaster elongate with 7 tergites, T₁ longest.

Male : Similar to female except : antennal formula 11243 with F₁ to F₃ with a dorsal ramus on each.

Host : Mainly primary parasitoids of larvae & pupae of various Lepidoptera with a few species forming hyperparasitoids through Braconidae and Ichneumonidae.

Remarks : Since the taxonomy of *Elasmus* species is mainly based on females as in most chalcidoids, the present study is based on females.

Narendran *et al.* (2008) and Verma *et al.*, (2002) have given an account of review of Indian literature on *Elasmus* Westwood. They include papers of Walker (1846), Cameron (1913), Rohwer (1921), Ferrière (1928), 1929 a, b), Mani & Saraswat (1972), Husain & Kudeshia (1984 a, b), Verma & Hayat (1985, 1986) and Mani (1989). Other main references are cited under each species in this paper. All the material examined for the 2008 paper (Narendran *et al.*, 2008) are re-examined in this work for conformation. Hence the same data has been given under each species.

Key to the Indian species of *Elasmus* Westwood (Based on Females)

(Modified from Verma *et al.*, 2002, Narendran *et al.* 2008)

1. Hind tibia with bristles (setae) arranged in 3 wavy lines (Fig. 136) which do not touch one another, mid tibia with 3 lines of bristles 2
 - Hind tibia with bristles arranged in diamond shaped lozenges (Fig. 135); mid tibia with 2 lines of bristles 6
2. Mesoscutum black with 2 broad yellow oblique bands on either side (Fig. 142); gaster brownish yellow with basal half of T₁, basal and apical parts of T₆ and a large median patch from T₁ to middle of T₅ black; forewing length distinctly shorter than 4x its width *E. dubiatus* Narendran
 - Mesoscutum completely black with metallic refringence; other characters not as above 3
3. Gaster completely black or black with yellowish spots at base of T₄ 4
 - Gaster reddish with basal half of T₁ blackish and other tergites not as above 5
4. Gaster black without yellow spots; mid and hind coxae completely black with metallic reflection; F₁ a little less than 2x as long as broad; forewing a little less than 4x as long as broad *E. caligneus* Narendran
 - Gaster black with yellowish spots at base of T₄; mid and hind coxae dark metallic in basal halves; F₁ about 3x as long as broad *E. hutsoni* Ferrière
5. Gaster reddish, with basal half of T₁ black and T₃-T₇ brownish; scape slightly more than 2x as long as broad; F₂ and F₃ subequal in length, each slightly longer than broad *E. nigrinus* Verma & Hayat
 - Gaster orange yellow with basal half of T₁ black and from apical half of T₅ to apex of gaster brownish; scape 3x as long as broad; F₁ about 1.33x as long

- as pedicel and about 2.25x as long as broad; F_2 and F_3 each slightly less than 2x as long as broad *E. grimmi* Girault
6. Forewing with a long wedge shaped bare strip extending from base and with an isolated subcubital line of setae (Fig. 140) 7
- Forewing with only a short irregular bare area at base, and without an isolated subcubital line of setae (Fig. 137) 50
7. Mesosomal dorsum dark brown to black; occasionally mesoscutum with a whitish or yellowish spot on each side near tegulae and or scutellum with a longitudinal yellowish band on each side or with transverse yellowish band at apex 8
- Mesosomal dorsum not completely dark or black 30
8. Hind coxa completely dark brown to black, at most with extreme apex yellowish (Mid coxa largely dark brown to black) 9
- Hind coxa yellow atleast in apical third 22
9. F_1 slightly shorter than pedicel and at most slightly longer than broad; F_2 and F_3 broader than long [Body blackish; gaster completely black or with apices of T_1 , T_2 occasionally also T_3 and basal 4 sternites honey yellow] ...
..... *E. brevicornis* Gahan
- F_1 , F_3 usually elongate, F_1 at most subequal in length to pedicel; F_3 at most quadrate, usually longer than broad; if pedicel longer than F_1 then F_2 and F_3 at least quadrate, usually clearly longer than broad 10
10. Gaster entirely dark brown to black, at most venter yellowish 11
- Gaster not entirely dark, at least with distal half of T_1 yellow to reddish yellow 20
11. Mesoscutum with a yellowish spot (Fig. 153) on each side near tegulae [F_1 - F_3 each at least 2x as long as broad] 12
- Mesoscutum without much spots 13
12. Pedicel 1.5x as long as broad; fore femur brownish in basal half and yellowish in apical half *E. anticles* Walker
- Pedicel over 2x as long as broad; fore femur completely yellow
..... *E. nephantidis* Rohwer
13. Scutellum with a yellow longitudinal band on each side (Fig. 156)
..... *E. noyesi* Verma & Hayat
- Scutellum completely black 14

14. Hind tibia (also mid tibia) yellow to pale yellow 15
 – Hind tibia (also mid tibia) brownish, at most with both ends pale 19
15. Pedicel longer than F_1 which is slightly shorter than F_2
 *E. indicoides* Mani & Saraswat
 – Pedicel shorter than, or at most as long as F_1 16
16. Forewing with an infuscated streak running obliquely inwards from below STV; F_1 nearly as long as scape and nearly 2x as long as pedicel
 *E. anamalaianus* Mani & Saraswat
 – Forewing hyaline or subhyaline, without such a streak; F_1 clearly shorter than scape and at most 1.3x as long as pedicel 17
17. F_1 at least about 2x as long as broad; forewing about 4x as long as broad (Gaster completely black) *E. hyblaeae* Ferrière
 – F_1 about 1.5x as long as broad; forewing less than 4x as long as broad ...
 18
18. F_1 - F_3 subequal in length, each about 1.5x as long as broad; clava shorter than preceding two funicle segments combined
 *E. krishnagiriensis* Mani & Saraswat
 – Funicle segments shorter, F_3 slightly longer than broad; clava longer than preceding two funicle segments combined
 *E. mahabalii* Mani & Saraswat
- 19(14). Pedicel as long as F_1 ; F_1 about 1.5x as long as broad and F_3 very slightly longer than broad; forewing broad, only slightly more than 3x as long as broad *E. rajasthanicus* Verma & Hayat
 – Pedicel shorter than F_1 ; F_1 - F_3 relatively longer, F_3 1.5x as long as broad; forewing atleast 3.5x as long as broad *E. johnstoni* Ferrière
20. Forewing with infumation on distal part (Fig. 132); mesoscutum black with yellow spot on either side near tegula; gaster black with distal part of T_1 and sides reddish yellow *E. alaris* Narendran
 – Forewing without such infumation; other characters not as above 21
21. Pedicel shorter than F_1 ; F_1 - F_3 each slightly more than 2.5x as long as broad; gaster with apical half of T_1 and basal half or so of T_2 yellowish
 *E. indicus* Rohwer
 – Pedicel as long as F_1 ; F_1 - F_3 each about 2x or slightly less, as long as broad; gaster with only apical half of T_1 more or less yellowish to reddish yellow
 *E. homonae* Ferrière

- 22.(8). Mesoscutum with a yellow spot on each side near tegulae 23
- Mesoscutum completely black without such yellow spots 24
23. Antennal clava (Fig152) as long as combined length of F_1 to F_3 ; pedicel longer than F_1 ; fore and hind coxae yellow .*E. neopunctulatus* Narendran
- Antennal clava as long as combined length of F_1 to F_2 only; pedicel shorter than F_1 ; basal half of fore coxa and base of mid coxa brown
..... *E. punctulatus* Verma & Hayat
24. Gaster dark above, at most with transverse dusky to yellow stripes 25
- Gaster reddish, orange or honey yellow, at most with dark spots or bands, but apical two tergites more or less completely dark 28
25. Forewing with dark brownish infuscation in apical half
..... *E. cameroni* Verma & Hayat
- Forewing hyaline or subhyaline 26
26. Pedicel short, about 0.5x of F_1 which is 3x as long as broad; gaster with dusky yellowish transverse stripes on posterior margins of T_1 to T_3
..... *E. claripennis* (Cameron)
- Pedicel only slightly shorter than F_1 , which is at most 2.5x as long as broad; gaster colour different 27
- 27 Hind femur yellow with black margins; mid coxa and femur largely yellow; gaster with narrow, dusky yellow stripes at apices of T_1 - T_4
..... *E. viridiscutellatus* Verma & Hayat
- Mid and hind coxae in basal half, and mid and hind femora in apical half dark brown to black; gaster with bases of T_2 - T_4 with yellowish bands
..... *E. kollimalaianus* Mani & Saraswat
- 28.(24). Head with face below mid level of eyes, a small spot on each side (Fig. 61 of Verma *et al.*, 2002) of occiput behind eyes, a spot on each side of pronotal collar, and a longitudinal band on each side of scutellum (Fig. 63 of Verma *et al.*, 2002) yellowish white *E. alami* Verma & Hayat
- Either head entirely blackish, or if yellowish below mid-level of eyes then pronotum and scutellum dark 29
29. Pedicel about 2x as long as broad and only slightly shorter than F_1 ; F_1 about 2.5x as long as broad; gaster with T_1 about 3x as long as T_2 ; head entirely blackish..... *E. zehntneri* Ferrière
- Pedicel about 1.5x as long as broad and distinctly shorter than F_1 ; F_1 about 2x as long as broad; gaster with T_1 slightly longer than T_2 ; head brownish

- yellow below lower level of eyes, otherwise blackish
 *E. munnarus* Mani & Saraswat
30. Either mesoscutum (save axillae) or scutellum not entirely yellow 31
- Mesoscutum (save axillae) and scutellum entirely yellow 41
31. Mesoscutum nearly black, with an orange-yellow transverse band or stripe in posterior third (Fig. 70 of Verma *et al.*, 2002) 32
- Mesoscutum without such a transverse band or stripe in posterior third, more or less yellow or yellow with brownish spots or transverse black band posteriorly 33.
32. Scutellum completely black *E. pulchellus* Verma & Hayat
- Scutellum black with lateral and posterior margins yellow
 *E. syleptae* Ferrière
33. Mesoscutum yellowish brown with a blackish transverse band posteriorly [F_1 - F_3 each about 3x as long as broad, and each about 1.5x as long as pedicel; gaster yellowish brown with base of T_1 and apical fourth blackish]
 *E. khandalus* Mani & Saraswat
- Mesoscutum not as above 34
34. Mesoscutum black with yellow patches anteriorly and posteriorly on either side (Fig. 140); forewing with dark brownish infuscation on apical half (Fig. 140); scutellum black with a yellow longitudinal stripe on either side
 *E. nuperus* Narendran
- Mesoscutum and forewing not as above 35
35. With broad black longitudinal median band (Fig. 134) from anterior margin of pronotum to reaching posterior margin of mesoscutum and 2 lateral yellow bands on either side [scutellum black; propodeum black with an oblique yellow band on sublateral part (Fig. 134); gaster pale brownish yellow with dark patches extending from middle of T_1 to anterior margin of T_6 medially; T_6 with a black median patch; median and distal part of T_7 and ovipositor sheath black] *E. bathyskius* Narendran
- Pronotum and mesonotum colour not as above 36
36. Scutellum entirely blackish 37
- Scutellum blackish with sides and apex yellow 38
37. Mesoscutum pale brownish yellow with a paler oblique and curved streak (Fig. 26) on either side; mesepimeron and metapleuron black; antennal toruli

- situated a little above level of ventral margin of eye; clava a little shorter than 4x its width *E. scutellofurvus* Narendran
- Mesoscutum yellow with large, dark brownish spot on either side (Fig. 29); antennal toruli situated at level of ventral margin of eye; clava 6x as long as its width *E. longicornis* Verma & Hayat
38. Antenna slender, elongate; scape about equal in length to F_1 ; pedicel about half of F_1 ; F_1 - F_3 each at least 3x as long as broad (Fig. 75 of Verma *et al.*, 2002); gaster orange-yellow with basal half of T_1 and largely T_4 dark; T_2 - T_5 mainly orange, but occasionally with brownish spots or bands
..... *E. longiventris* Verma & Hayat
- Antenna shorter; scape distinctly (not less than 1.5x) longer than F_1 ; pedicel a little shorter than F_1 ; F_1 - F_3 each at most 2.5x as long as broad; gaster orange-yellow or yellow, occasionally with 2 dark brownish spots on sides at base of T_1 , and spots or patches on other tergites sometimes present..... 39
39. Scape as long as following two segments combined; F_1 slightly shorter than F_2 ; gaster with a median large brown spot on T_2 and T_3 and spots on sides of T_3 and T_4 (Fig. 80 of Verma *et al.*, 2002) *E. albopictus* Crawford
- Scape shorter than following two segments combined; F_1 longer than F_2 ; gaster without lateral spots on T_3 and T_4 , but often with a brownish area on T_4 to T_6 or on T_6 alone 40.
40. Mesopleuron black; forewing 4.5x as long as broad; mesonotum with a dark spot on either side on scapular region (Fig. 139); F_3 0.93x length of F_1 ; gaster with an elongated brown spot on either side of T_1
..... *E. zatonus* Narendran & Sheeba
- Mesopleuron yellow; forewing 3.3 to 3.41x as long as broad; mesonotum without a dark spot on either side; F_3 shorter than 0.75x length of F_1 ; gaster without such spots on T_1 *E. binocellatus* Mani & Sarswat
- 41.(30).Mid coxa more or less black or brown in basal half or part (Fig. 84 of Verma *et al.*, 2002) *E. punensis* Mani & Saraswat
- Mid coxa wholly or almost wholly yellow 42
42. F_1 slightly longer than pedicel [spots on sides of T_1 - T_5 and whole of T_6 and T_7 blackish] *E. lutens* Crawford
- F_1 at least about 1.5x as long as pedicel 43
43. Mesoscutum with a large black patch on either side (Fig. 151); gaster with a large black mark on either of T_1 and T_3 *E. sigillatus* Narendran

- Mesoscutum without such large patch or spot on either side; gaster not as above; if spots present on base of T_1 , then much smaller than in the alternative couplet; T_2 without spots on sides 44
- 44. Gaster with T_1 yellow or at most with a brownish spot on each side near base 45
- Gaster with T_1 with a black transverse band in basal half or so (Fig. 132) 46
- 45. T_6 black with posterior marginal area yellow; T_7 black; mesoscutum and scutellum yellow without pale brown suffusions; gaster distinctly longer than head plus mesosoma *E. neoflavocarpus* Narendran & Hema
- T_6 and T_7 yellow without black colour; mesoscutum and scutellum yellow with pale brown suffusions; gaster slightly shorter than head plus mesosoma *E. flavocarpus* Husain & Kurdeshia
- 46. Gaster, except for the blackish band in basal half of T_1 , orange yellow to honey yellow *E. queenslandicus* Girault
- Gaster, apart from basal half of T_1 with some terga with blackish spots or bands 47
- 47. F_1 shorter than F_2 or as long as F_2 48
- F_1 distinctly longer than F_2 49
- 48. Gaster with T_1 completely and T_2 at basal marginal area black; T_4 and T_5 with a median transverse black strip at posterior margin on each; T_6 mostly and posterior margin of T_7 black; hind wing shorter than 4.5x as long as broad *E. dexotus* Narendran
- Gaster with T_1 with a blackish band with bright greenish refringence at basal half; T_5 to T_7 and tip entirely dark brown to almost blackish; hind wing longer than 5x its width *E. cavicolous* Verma & Hayat
- 49. Clava as long as combined length of preceding two segments; mesoscutum with a faint brownish central area extending from base up to middle; malar space 0.5x eye length *E. flavescence* Verma & Hayat
- Clava distinctly shorter than length of preceding two segments combined; mesoscutum without such brownish central area as above; malar space 0.3x eye length *E. neoflavescens* Narendran
- 50.(6). Head and mesosoma largely yellow, with dark brown to blackish parts [forewing hyaline; gaster honey yellow with T_6 and T_7 blackish (Fig. 100 of Verma *et al.*, 2002); clava 2.43x as long as broad, a little shorter than

preceding 2 segments combined; F_1 distinctly longer than F_2 ; pedicel as long as half length of scape]*E. fulvicornis* Verma & Hayat

- Head and mesosoma almost completely blackish; legs with coxae and femora dark brown to nearly black; scutellum with a transverse yellowish white band at apex; gaster largely honey yellow, with lateral spots on T_1 to T_4 and T_7 completely dark; forewing hyaline*E. ceylonicus* Ferrière

1. *Elasmus alami* Verma & Hayat

2002. *Elasmus alami* Verma & Hayat, in Verma *et al.*, 271-272, Female, India, Uttar Pradesh (BMNH).

Diagnosis : Female : Head partly, mesosoma mostly black with bluish refringence; following parts yellowish to cream white: face below mid level of eyes, a small spot on each side with a yellowish longitudinal band; gaster honey yellow except a transverse band at base of T_1 , indistinct spots on sides of T_4 (about basal two-third of T_6 , T_7 completely blackish. Legs yellowish except dark brown to almost blackish spots on dorsal and ventral margin of hind coxa, dorsal margin of middle and hind femora narrowly. Gaster slightly longer than head and mesosoma combined.

Host : *Philodonta modesta* Weise.

Distribution : India : Kerala, Bihar, Uttar Pradesh.

Material examined : 1 Female, INDIA, Kerala, Kannur Dt., Aralam (11° 58' N 75° 40' E), 25.ii.1988, coll. by T. C. Narendran & Party.

Remarks : This species comes near *E. zehntneri* Ferrière in the key to species of Narendran *et. al* (2008) but *E. zehntneri* Ferrière differs from *E. Alami* in having : (1) Head entirely blackish; (2) pedicel about 2x as long as broad and only slightly shorter than F_1 ; (3) F_1 about 2.5x as long as broad; and 4) gaster with T_1 about as long as T_2 .

2. *Elasmus alaris* Narendran

(Figs. 131 & 132)

2008. *Elasmus alaris* Narendran, in Narendran *et al.*, 8. Female, India (NZSI).

Redescription : Female : (Holotype) Length 3.64 mm. Black with slight metallic blue reflections and following parts as follows: eye and ocelli pale reflecting yellow; radicle and scape pale yellow, pedicel pale yellowish brown; flagellum brown; tegula yellow, a spot on mesoscutum near tegula yellow on ether side; median basal part of metanotum yellow, posteriorly extended part of metanotum hyaline; front leg yellow with basal part black; mid and hind leg: coxae concolorous with mesosoma except extreme yellow apices; femora concolorous with mesosoma except

yellow bases and apices; tibiae and tarsi yellow. Gaster black with distal part of T_1 and sides reddish yellow. Wings hyaline with distal part of forewing infumate (Fig. 132).

Head with shallow, setigerous pits, width in dorsal view 3x its median length; POL 2.7x OOL; eye 1.5x as long as its width; malar space 0.32x length of eye; distance between antennal toruli and clypeal margin 2x diameter of a torulus, separated from eye by a distance a little less than its diameter, toruli situated at level of ventral margin of eye; scrobal impression very shallow, not clearly in the shape of inverted 'Y' Antenna as in figure 131.

Mesosoma : Pronotum width in dorsal view 3x as long as broad, about 0.4x as long as mesoscutum; mesoscutum 1.24x as broad as long; posterior row of setae on mesoscutum long, reaching middle of scutellum; scutellum width subequal to its length; propodeum smooth and shiny. Forewing 4.1x as long as broad, with 9 erect backwardly directed ventral setae below MV; hind wing 4.75x as long as broad.

Metasoma : Distinctly longer than head and mesosoma combined (32 : 26), 5.1x as long as broad; exerted part of ovipositor sheath about 0.07x length of gaster in dorsal view.

Male : Unknown.

Host : Unknown.

Distribution : Kerala.

Material examined : Holotype Female, INDIA, Kerala, Palghat Dt., Thoonakkadavu (77°35' E 10° 12' N), 5.v.1989, coll. Narendran, T. C. & Party (NZSI) (MoEF Rg.No.864).

Remarks : This species comes near *Elasmus indicus* Rohwer in the key to species by Verma *et al.*, (2002), but differs from *E. indicus* in having : (1) Mesoscutum with a yellowish spot on each side near tegulae (in *E. indicus* no such yellowish spot present on each side near tegulae); (2) Radicle and scape pale yellow (in *E. indicus* radicle and scape dusky); (3) Forewing with infumation on distal part (in *E. indicus* no such infumation on wings); (4) Head width in dorsal view 3x its median length (in *E. indicus* a little more than 2x as broad as long); (5) POL 2.7x OOL (in *E. indicus* POL 3.5x OOL); (6) Eye 1.5x as long as its width (in *E. indicus* eye twice as long as broad); (7) Malar space 0.32x length of eye (in *E. indicus* malar space 0.42x length of eye); (8) Antennal toruli situated at level of ventral margin of eye (in *E. indicus* antennal toruli situated a little above ventral margin of eye); (9) F_1 1.54x as long as pedicel (in *E. indicus* F_1 1.33x as long as pedicel).

3. *Elasmus albopictus* Crawford

1910. *Elasmus albopictus* Crawford, 132, Female, Philippines, Manila (USNM).

Diagnosis : Female : Yellowish brown with following parts black: occiput with a median spot extending on frontovertex surrounding ocelli and extending a little in front of front ocellus; a spot on each side of posterior margin behind eyes meeting with a central long spot by transverse brown patches; in another female spots on vertex as shown in figure 77 of Verma *et al.*, (2002); mesosoma yellowish to orange yellow with a slight brownish infuscation in middle; pronotum with a small median anterior brownish spot, axillae and tegulae brownish; scutellum with a large central blackish spot with sides and apex yellow; metanotum with transverse brownish stripe; propodeum dark except on sides near spiracles yellowish; mesopleuron with a dark brownish spot; gaster concolorous with mesosoma except spots on sides of T₁; median spot covering T₂ and basal half of T₃, a larger spot on each side of T₃ and a small spot on each side of T₄, brownish; legs yellowish brown, with black on basal third of hind coxa; dorsal margin of fore and middle femora narrowly and hind femur dorsal margin broadly.

Host : *Tryporyza incertulus* Walker on paddy; *Eucosma critica* Meyrick, *Cnaphalocrosis medinalis* Guenee.

Distribution : India: Uttar Pradesh, West Bengal; Philippines.

Material examined : None. The above account is based on the redescription given by Verma *et al.*, (2002)

Remarks : This species comes near *E.zatonus* Narendran & Sheeba in the key to species by Narendran *et. al.* (2008) but differs from it in having: (1) Scape as long as following two segments combined; (2) F1 slightly shorter than F2; (3) gaster with a median large brown spot on T2 and T3; and (3) spots on T3 and T4.

4. *Elasmus anamalaianus* Mani & Saraswat

1972. *Elasmus anamalaianus* Mani & Saraswat, 461-462, Female, India, Annamalai Hills (USNM).

Diagnosis : Female : Length 3.0 mm. Black with metallic green refringence; fore coxae black at base, rest of fore leg pale brown; middle and hind coxae and femora black, rest of legs pale brown; gaster black with yellowish brown on ventral part; wings hyaline with a large oblique dark brown infumate band behind STV.

Host : Unknown.

Distribution : India : Tamil Nadu.

Material examined : None. The above account is based on the original redescription provided by Mani (1989).

Remarks : This species comes near *E.krishnagiriensis* Mani & Saraswat in the key but differs from *E.krishnagiriensis* in having : (1) Forewing with an infuscated streak running obliquely inwards from below STV; (2) F1 nearly as long as scape and (3) F1 nearly 2x as long as pedicel.

5. *Elasmus anticles* Walker

1846. *Elasmus anticles* Walker, 181, Female, India, Bombay (BMNH)

1920. *Elasmus albomaculatus* Gahan, 347, Female, Philippines, Manila, Luzon (USNM).
Synonymy by Kerrich, 1970.

1984. *Elasmus ricinus* Husain & Kudeshia, 363-365, Female, India, Aligarh (lost?); Narendran *et.al.* (2008) synonymized.

Diagnosis : Female : Length 1.3-2.13 mm. Black with green refringence on head, mesosomal dorsum and on sides of basal T₁ (in some specimens body dark brown); tegula dark brown; mesoscutum with a yellow or pale yellow or whitish yellow spot on each side near tegula; scutellum black with slight metallic refringence; metanotum yellow at base of posterior hyaline extended part; legs black or dark brown with trochanters, apical half of fore femur, apices and middle of hind femur and tibiae of all legs pale yellow. Gaster slightly longer than head and mesosoma combined.

Host : *Apanteles malevolus* Rolston through *Hyblaea puera* Cramer, *Bracon* sp. and *Chelonus* sp. through *Epicephala pulcherrima* (L.) in Philippines. Narendran *et.al.*(2008) reported for the first time the emergence of this species from *Inglisia bivalvata* Green (Coccidae) on Sandalwood in Karnataka, collected by O. K. Remadevi.

Distribution : India (Kerala (New record), Karnataka, Tamil Nadu, Uttaranchal, Uttar Pradesh, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra); Bangladesh; Philippines.

Material examined : 10 Females, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 25.ii.1988, 19.v.1988, 16.x.1988, 2.v.1989, 4.x.2001, 19.ix.2002; 1 Female, Kerala, Malappuram Dt., Nilambur (11° 16' N 76° 14' E), 4.v.1985; 1 Female, Kerala, Calicut Dt., Nanminda (11° 26' N 75° 50' E), 8.iv.2001; 1 Female, Kerala, Calicut Dt., Chaliyam (11° 9' N 75° 49' E), 23.iv.1989; 1 Female, Kerala, Calicut Dt., Madappally (11° 36' N 75° 35' E), 20.xi.2001; 1 Female, Kerala, Alappuzha Dt., (9° 30' N 76° 23' E), 27.ii.1989; 6 Females, Kerala, Alappuzha Dt., Kayamkulam (9° 10' N 76° 30' E), 25.vi.1988, 21.i.2003, 8.i.2004; 2 Females, Kerala, Kottayam Dt., Kumarakom (9° 36' N 76° 26' E), 29.xi.1988;

1 Female, Kerala, Kollam Dt., Kolathupuzha ($8^{\circ} 54' N 77^{\circ} 4' E$), 9.xii.2004; 1 Female, Kerala, Trivandrum ($8^{\circ} 40' N 77^{\circ} 7' E$), 8.xii.2004; 1 Female, Kerala, Kasaragod Dt., Karanthakkadu ($12^{\circ} 31' N 74^{\circ} 58' E$), 21.i.2003; 1 Female, Kerala, Palghat Dt., Malampuzha ($10^{\circ} 53' N 76^{\circ} 46' E$), 5.i.1986. All the above mentioned specimens collected by T.C.Narendran & Party; 1 Female, Karnataka, Bangalore ($12^{\circ} 58' N 77^{\circ} 35' E$), 10.vi.1996, from *Inglisia bivalvata* by O. K. Remadevi.

Remarks : The description of the species *E. ricinus* clearly shows beyond doubt that it is *E. anticles* Walker. Verma *et al.*, (2002) also pointed out this as a possible synonymy.

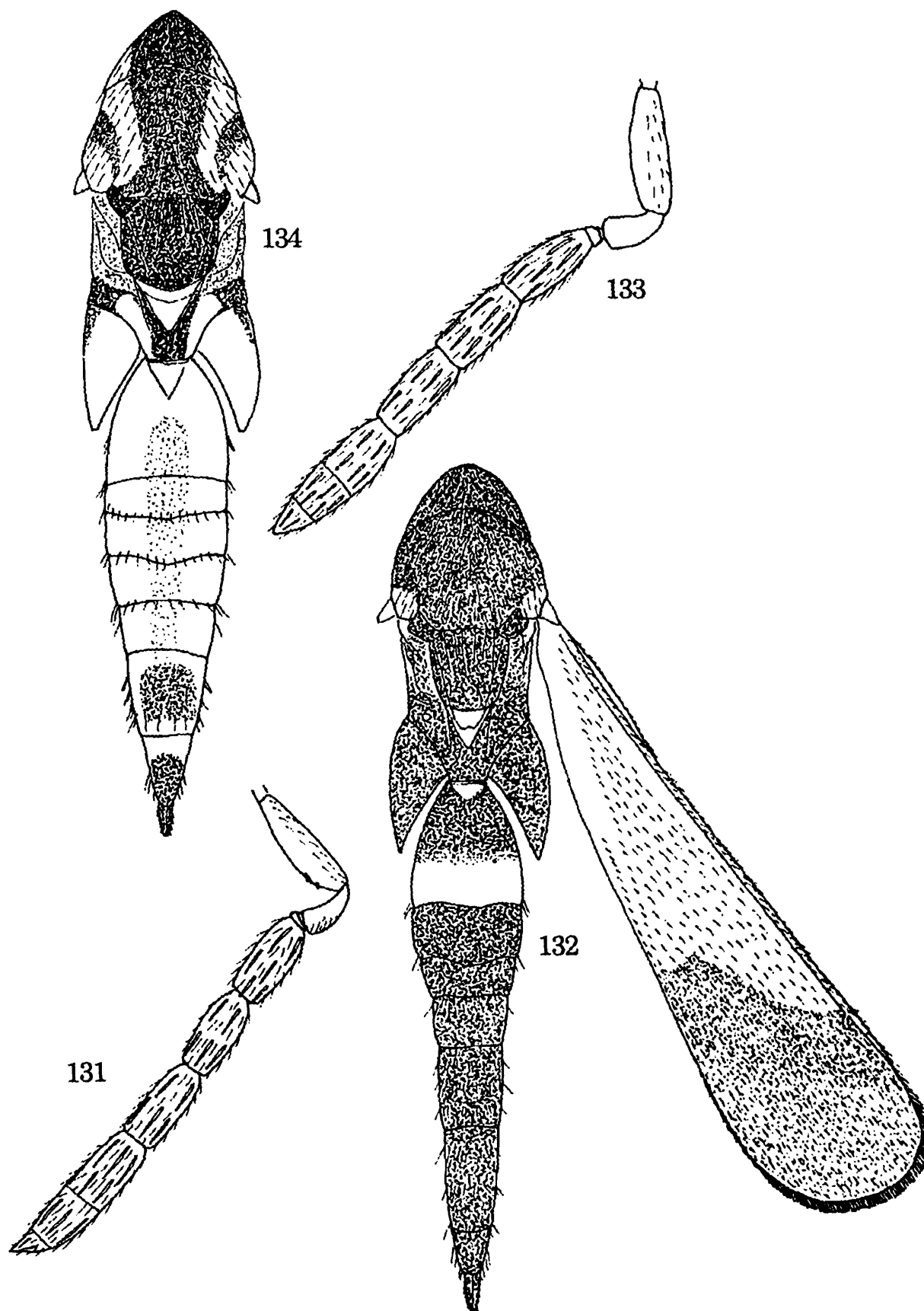
6. *Elasmus bathyskius* Narendran (Figs. 133 & 134)

2008. *Elasmus bathyskius* Narendran, 8, Female, India (NZSI).

Description : *Female* : (Holotype) Length 2.4 mm. Head black with metallic blue reflection; antennal radicle brown; scape pale yellow; flagellum brown; pronotum black with sides yellow; mesoscutum black with sides yellow or brownish yellow (Fig. 134); scapula with a blackish oblique patch; tegula dark brown; scutellum completely black; metanotum black except yellow median part and extended hyaline part; propodeum black with a yellowish stripe on either side; prepectus and mesepisternum pale brownish yellow; upper side of epimeron dark; metapleuron pale brownish yellow; legs pale brownish yellow with basal margin slightly darker; gaster pale brownish yellow with dark patches extending from base to tip (Fig. 134). Legs yellow with basodorsal margin of hind coxa slightly darker; wings hyaline with a slight brownish infumation throughout.

Head : Width in dorsal view 2x as wide as its median length, with fine setigerous regular punctures on frontovertex; eyes dark; inter-scröbal area and malar space with scattered sparse setae; head in anterior view a little wider than long (16 : 13); POL 2x OOL; eye 1.55x as long as broad; malar space 0.4x eye length (6 : 17); distance between antennal toruli and clypeal margin 2x diameter of a torulus, separated from eye margin by about 2x diameter of a torulus; lower margin of toruli in line with lower eye margin; scröbal impression inverted 'V' shaped, not carinate; antenna as in figure 133.

Mesosoma : Pronotum width 2x length in dorsal view, about half length of mesoscutum (13 : 27); mesoscutum 1.3x as broad as long; posterior row of setae on mesoscutum reaching middle or exceeding middle of scutellum; scutellum length subequal to its width; propodeum smooth and shiny. Forewing 4.18x as long as broad, with 11 or 12 erect backwardly directed ventral setae below MV; hind wing 5.25x as long as broad; marginal fringe of hind wing 0.1x length of wing.



Figs. 131-132. *Elasmus alaris* Narendran Female : 131. Antenna; 132. Mesoma & metasoma dorsal **Figs. 133-134.** Figs. *E. bathyskius* Narendran Female : 133. Antenna; 134. Mesosoma & Metasoma.

Metasoma distinctly longer than combined length of head and mesosoma (17 : 12), 4.2x as long as its width; hypopygium exceeding middle of gaster; exerted part of ovipositor sheath 0.06x length of gaster in dorsal view.

Male : Similar to female except the following characters: antenna branched; gaster shorter.

Host : Unknown.

Variation : The black colour on the dorsum of gaster is reduced in one paratype.

Distribution : Kerala.

Material examined : Holotype Female, INDIA, Kerala, Kottayam Dt., Kumarakam, RARS (9° 36' N 76° 26' E), 29.xi.1988, coll. Narendran, T. C. & Party (NZSI) (MoEF Rg.No.1302).

Paratypes : 1Female, of same data of holotype except date 28.xi.1988; 2 Females of same data of holotype; 1 Female, Kerala, Calicut Dt., Nanminda (11° 26' N 75° 50' E), 16.xi.2003, coll. Narendran, T.C. & Party; 1 Male, Kerala, Palghat Dt., Koottanad (10° 49' N 76° 11' E), 11.viii.2003, coll. Narendran, T.C. & Party.

Remarks : This species comes near *Elasmus pulchellus* Verma & Hayat in the key to species by Verma *et al.*, (2002). However, it differs from *E. pulchellus* in having : (1) Head completely black with metallic blue reflection (in *E. pulchellus* head orange yellow except a central blackish area; (2) mesoscutum black with sides yellow, without any metallic reflections (in *E. pulchellus* mesoscutum entirely blackish with greenish reflection and with a transverse reddish brown band on posterior third); (3) Gaster pale brownish yellow with black irregular patches extending from base to tip (in *E. pulchellus* colour pattern of gaster different); (4) Antennal toruli at level of ventral margin of eyes (in *E. pulchellus* antennal torulus slightly above lower margin of eyes); (5) Scutellum length subequal to its width (in *E. pulchellus* scutellum 1.25x its width); (6) Clava subequal to combined length of preceding two segments (in *E. pulchellus* clava shorter than combined length of preceding two segments), and (7) Pronotum black with sides yellow (in *E. pulchellus* pronotum completely black).

7. *Elasmus binocellatus* Mani & Saraswat

1972. *Elasmus binocellatus* Mani & Saraswat, 462-463, Female, India, Nilgiri Hills (USNM).

Diagnosis : Female : Length 2.1-3.0 mm. Yellowish brown or brownish yellow; vertex, front ocellar area, a patch above and on sides of occipital foramen, a large median area on scutellum, small circular spots at roots of hind wings, small oval spots behind and outside of propodeal spiracle, 2 oval spots laterally at base of T₁,

hind coxa narrowly and faintly above in the middle third, narrowly on hind femur above brownish black or black; legs pale yellowish brown.

Host : Unknown. One specimen collected from Rice ecosystem.

Distribution : India: Kerala, Tamil Nadu, Uttar Pradesh, Rajasthan, Delhi (Verma *et al.*, 2002, Noyes, 2003).

Material examined : 1 Female, Kerala, Malappuram dt., Vallikkunnu (11° 8' N 75° 50' E), 30.vii.1987; 5 Females, Kerala, Malappuram Dt., Nilambur (11° 16' N 76° 14' E), 22.iv.1989, 30.i.2003, 2.xi.2003; 2 Females, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 10.iv.1989, 2.v.1989; 1 Female, Kerala, Alappuzha Dt., Onattukara (9° 10' N 76° 30' E), 19.iv.2004; 1 Female, Kerala, Palghat Dt., Kuriarkutty (10°46' N 76°42'E), 6.v.1989; 1 Female, Kerala, Kannur Dt., Peravoor (11°53' N 75°44'E), 25.ii.1988; 1 Female, Kerala, Malappuram Dt., Manjeri (11° 7' N 76° 7' E), 11.viii.1987; 1 Female, Kerala, Pathanamthitta Dt., Vattamon (8° 53' N 76° 54' E), 28.xi.1988; 1 Female, Kerala, Palghat Dt., Malampuzha (10° 53' N 76° 46' E), 1.i.1986. All specimens collected by T. C. Narendran & Party.

Remarks : This species comes near *E.zatonus* Narendran & Sheeba in having: scape shorter than following two segments combined; F1 longer than F2 and gaster without lateral spots. However *E. binocellatus* differs from *E.zatonus* in having : (1) Meso pleuron yellow; (2) forewing 3.3 to 3.41x as long as broad; (3) mesonotum without a dark spot on either side; (4) F3 shorter than 0.75x length of F1; and (5) gaster without an elongated spot on either side of T1.

8. *Elasmus brevicornis* Gahan

1922. *Elasmus brevicornis* Gahan, 50, Female, Indonesia, Java, Buitenzorg (USNM).

Diagnosis : Female : Length 1.25-1.98 mm. dark brown to black, with bluish refringence on head, pronotum and mesoscutum; posterior extension of metanotum yellow at base, posterior part hyaline; gaster black with apical part of T₁ and T₂ honey yellow (rarely T₃ also honey yellow); legs with coxae dark brown or black with apex of fore coxa pale yellow; fore femur with brown infuscation at base; middle and hind femora dark brown or black with pale yellow at bases and apices; middle and hind femora dark brown or black with bases and apices pale yellow; all trochanters, tibiae and tarsal segments pale yellow. Gaster slightly shorter than head and mesosoma combined.

Host : *Bilobata subsecivella* Zeller, *Cnaphalocrosis medinalis* Guenee, *Diaphania indica* Saunders, *Hapalia machaeralis* Walker on *Tectona grandis* L. *Lamprosema indicata* Fabricius, *Lygropia quaternalis* Zeller defoliating *Helicteres*

isora L., *Marasmia suspicalis* Walker, *Nausinoe geometralis* Guenee *Apanteles machaeralis* Wilkinson, *Erionota thrax* L. in Java, *Psara stultalis* Walker and *Sylepta derogata* Fabricius in Malaysia (Verma *et al.*, 2002, Noyes, 2003).

Distribution : India : Kerala, Tamil Nadu, Andhra Pradesh, Goa, Maharashtra, Delhi, Madhya Pradesh, Orissa, Punjab, Rajasthan, Uttaranchal, Uttar Pradesh, West Bengal, Chattisgarh.

Material examined : 3 Female, INDIA, Chattisgarh, Dhanora, 2Kms SE Durg Stadium, (21° 08' 24" N 81° 20' 32" E), 300m, Paddy field, 24.iv - 9.v.2007, coll. Hema & Santhosh. The following specimens are collected by T.C. Narendran & Party: 1 Female, Kerala, Kannur Dt., Kottiyoor (10° 7' N 78° 49' E), 17.ii.2003; 1 Female, Kerala, Kannur Dt., Kavinissery (11° 55' N 75° 22' E), 16.ii.2003; 5 Females, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 24.v.1986, 7.iv.1989, 25.iv.1996, 25.iv.1996; 2 Females, Kerala, Thrissur (10° 28' N 76° 18' E), 24.v.1986; 7 Females, Kerala, Alappuzha Dt., Kayamkulam (9° 10' N 76° 30' E), 20-21.ii.1989, 21.i.2003; 1 Female, Kerala, Calicut Dt., Chaliyam (11° 9' N 75° 49' E), 14.iii.2003; 2 Females, Kerala, Calicut Dt., Nanminda (11° 26' N 75° 50' E) 14.ii.2004; 1 Female, Kerala, Calicut Dt., Anakkampoyil (11° 18' N 76° 3' E), 17.x.1995; 3 Females, Kerala, Malappuram Dt., Nilambur (Chungathara, Karimpuzha) (11° 16' N 76° 14' E), 23.iv.1989; 1 Female, Kerala, Kannur Dt., Aralam farm (11° 58' N 75° 40' E); 2 Females, Kerala, Kannur Dt., Payyannur (12° 6' N 75° 12' E), 27.ii.1989. All specimens collected by T.C. Narendran & Party.

Remarks : This species comes near *E. anticles* Walker in having metallic refringence on head and dorsum of mesosoma but differs from *E. anticles* in having: (1) F1 slightly shorter than pedicel and almost slightly longer than broad and (2) F2 and F3 broader than long.

9. *Elasmus caligneus* Narendran

(Fig. 149)

2008. *Elasmus caligneus* Narendran, 10, Female, India (NZSI).

Redescription : *Female* : (Holotype) Length 1.72 mm. Black with metallic green refringence and with following parts as follows: eyes and ocelli pale reflecting yellow, radicle pale yellow, scape pale yellow with dorsal side brown, remaining segments pale brown; tegula brown; middle part of metanotum yellow with hyaline extension; foreleg: coxa and femur black with apices pale yellow, tibia and tarsi pale yellow; mid and hindleg: coxa and femur concolorous with mesosoma, tibia pale brownish yellow; tarsi a little more darkish; gaster black with T₁ with metallic green; wings hyaline.

Head : Frontoververtex with setigerous pits; head width 3x its length in dorsal view, width in anterior view a little more than its length (26 : 22); POL 1.75x OOL (7 : 4); eye 1.5x as long as broad; malar space 0.2x length of eye; antennal toruli situated a little above level of ventral margin of eyes; toruli separated from lower clypeal margin by a distance of its diameter, separated from eye margin by a distance of about 2x diameter of torulus; scrobal impression somewhat deep and inverted 'V' shaped, rounded above and slightly on sides. Antenna as in figure 149.

Mesosoma : Pronotum 2.75x as broad as long in dorsal view, shorter than half length of mesoscutum (8 : 22); mesoscutum width subequal to its length; scutellum a little wider than long (10 : 9); forewing 3.6x as long as broad (32 : 9) with 5 prominent backwardly directed setae below the middle of MV on ventral side; hind wing 4.5x as long as broad (27 : 6); marginal fringe of hind wing 0.17x breadth of hind wing.

Metasoma longer than head and mesosoma combined (16 : 14), 3.75x as long as its width; ovipositor sheath length 0.12x length of gaster in dorsal view.

Male : Unknown.

Host : Unknown.

Distribution : India : Kerala.

Material examined : Holotype Female, INDIA, Kerala, Malappuram Dt., Chandakunnu (11° 15' N 76° 12' E), 24.iv.1989, coll. Narendran, T.C. & Party (NZSI) (MoEF Rg.No.675).

Paratype : 1 Female, Kerala, Palghat Dt., Anappadi (76°30' E 11° 15' N) 6.v.1989, coll. T.C. Narendran & Party.

Remarks : This species comes to couplet No. 2 of the key by Verma *et al.*, (2002), but does not fit to any of the species. It differs from *E. hutsoni* Ferrière in having : 1) Gaster black without yellowish spots (in *E. hutsoni* gaster dark with yellowish spots on T₄); 2) Mid and hind coxae completely black with metallic reflection (in *E. hutsoni* mid and hind coxae dark metallic in basal half only); 3) F₁ 1.8x as long as broad (in *E. hutsoni* F₁ about 3x as long as broad); 4) Forewing 3.6x as long as broad (in *E. hutsoni* forewing 5.5x as long as broad).

This species differs from *E. nigrinus* Verma & Hayat in having : 1) Gaster black with T₁ metallic green (in *E. nigrinus* gaster reddish with basal half of T₁ blackish and T₃-T₇ brownish); 2) F₁ 1.6x as long as pedicel (in *E. nigrinus* F₁ subequal to pedicel in length); 3) Gaster longer than head plus mesosoma ((in *E. nigrinus* gaster shorter than head plus mesosoma).

This species differs from *E. grimmi* Girault in having: (1) Gaster black with T_1 metallic green (in *E. grimmi* gaster orange yellow with basal half of T_1 blackish and apical half of T_5 to apex of gaster brownish); (2) F_1 1.8x as long as broad (in *E. grimmi* F_1 2.25x as long as broad); (3) F_1 1.6x as long as pedicel (in *E. grimmi* F_1 1.33x as long as pedicel); (4) Forewing 3.6x as long as broad (in *E. grimmi* forewing 4.66x as long as broad); (5) Malar space 0.2x length of eye (in *E. grimmi* malar space 0.42x length of eye).

10. *Elasmus claripennis* (Cameron)

1913. *Cyclopleura claripennis* Cameron, 92, Female, India, Dehra Dun (BMNH).

1923. *Elasmus colemani* Mahdihassan, 69, Female, India, Bangalore (?) Synonymy by Ferrière, 1928 : 171.

1928. *Elasmus claripennis* (Cameron): Ferrière, 171-172.

Diagnosis : Female : Length 2.5-2.75 mm. Black with bluish green refringence on head and mesosoma; tegulae pale yellow; a brownish spot on mesoscutum at base near tegulae; propodeum dark brown; gaster dark brown to black with brownish yellow cross stripes across posterior margins of T_1 to T_3 . Legs yellow except basal half or so of hind coxa, dorsal margin of hind femur, hind tibia and basal half of metatarsus pale brown. Gaster longer than head and mesosoma combined.

Host : *Cnaphalocrosis medinalis* Guenee, *Eublemma amabilis* Moore parasitic on *Kerria lacca* Kerr., *Eublemma amabilis* Moore, *Holocera pulveria* Meyr. on lac; bred from lac *Pelopidas mathias* Fabricius (Verma *et al.*, 2002).

Distribution : India: Andhra Pradesh, Jharkhand, Karnataka, Orissa, Uttaranchal.

Material examined : 2 Females, INDIA, Orissa, Ranchi, Namkom (23° 21' N 85° 23' E), 5.ii.1999, coll. K.K. Kumar.

Remarks : According to Verma *et al.* (2002) this species is related to *E. pavo* Girault and as already noted by Riek (1967), *E. claripennis* differs mainly in the presence of yellowish bands at apices of T_1 to T_3 .

11. *Elasmus cameroni* Verma & Hayat

1913. *Cyclopleura fumipennis* Cameron, 97, Female, Borneo, Kuchy (BMNH). Preoccupied in *Elasmus* by *fumipennis* Thompson, 1878.

1929. *Elasmus fumipennis* (Cameron): Ferrière, 416.

1986. *Elasmus cameroni* Verma & Hayat, 174. Replacement name for *fumipennis* Cameron not Thompson by Verma *et al.*, 2002.

Diagnosis : Female : Length 3.1-3.5 mm. Black with greenish refringence; gaster black on dorsal side, reddish brown below in basal fourth or so; apices of

T1-T3 with reddish brown transverse stripes. Legs with middle coxae black, fore and hind coxa black at bases only, yellow on the interior half; all trochanters yellow; anterior femur yellow with a black stripe above; middle femur quite black; hind femur with a large yellow spot at base; tibiae and tarsi yellow; wings hyaline at base, strongly infumate, almost black on terminal half. Gaster longer than head plus mesosoma.

Host : Parasitic on Lac and Sal of some unknown relationship (Verma *et al.*, 2002).

Distribution : India : Karnataka, Borneo.

Material examined : None. The above account is based on the published information (Cameron, 1913; Ferrière, 1929 and Verma *et al.*, 2002).

Remarks : Verma *et al.* (2002) states that this is not an Indian species and the reports by Mani (1938), Pruthi and Mani (1940), Varshney (1976) and Verma and Hayat(1986) from India needs checking.

12. *Elasmus cavicolous* Verma & Hayat

2002. *Elasmus cavicolous* Verma & Hayat, in Verma *et al.*, 285-286, Female, India, Maharashtra (BMNH).

Diagnosis : Female : Length 2.0 mm. Yellowish with following parts as follows : a black spot on head below, between eyes; axillae and tegulae dark brown; gaster honey yellow with T₆ and T₇ black; legs mostly yellowish, with dorsal margin of hind femur narrowly brown. Gaster subequal in length to head and mesosoma.

Host : Unknown.

Distribution : India : Uttar Pradesh.

Material examined : None. The above account is based on the original description of Verma *et al.*, (2002).

Remarks : Verma *et al.* (2002) states that this species comes close to *Equingilliensis* Girault and *E.picturatus* Girault and differs not only in colour of gaster but also in having F1 subequal to or shorter than F2 and pedicel distinctly longer than half of F1.

13. *Elasmus ceylonicus* Ferrière

Elasmus ceylonicus Ferrière, 1929b : 418, Female, Sri Lanka, Pelmadulla (BMNH).

Diagnosis : Female : Length 1.12-2.1 mm. Black with light bluish or greenish refringence on frontovertex and mesosomal dorsum; scutellum dull violet with yellowish white transverse band; posterior extension of metanotum hyaline except

at base yellowish white; gaster honey yellow on dorsal side, reddish below with dark brown to black spots at base of T_1 meeting with a median spot; spots on sides of T_2 to T_4 , slightly reaching over T_5 ; T_6 and T_7 completely black. Legs mostly pale yellow with black coxae and femora except yellowish apices and base of hind femur yellow. Gaster longer than head and mesosoma combined.

Host : *Psyche albipes* Moore, Tea bag worm in Sri Lanka.

Distribution : India : Kerala, Karnataka, & Tamil Nadu; Sri Lanka.

Material examined : 3 Females, INDIA, Kerala Malappuram Dt., Nilambur ($11^{\circ} 16' N 76^{\circ} 14' E$), 22.iv.1989, coll. T.C. Narendran & Party; 1 Female, Kerala Kollam Dt., Ochira ($9^{\circ} 7' N 76^{\circ} 30' E$), 21.ii.1989, coll. T.C. Narendran & Party.

Remarks : This species resembles *E.fulvicornis* Verma and Hayat in having Forewing with only a short irregular bare area at base and without an isolated subcubital line of setae. However this species differs from *E.fulvicornis* in having : (1) Head and mesosoma almost completely blackish; (2) legs with coxae and femora dark brown to nearly black; (3) scutellum with transverse yellowish white band at apex; and (4) gaster largely honey yellow with lateral spots on T_1 to T_4 and T_7 completely dark.

14. *Elasmus dextotus* Narendran

(Figs. 143 & 144)

2008. *Elasmus dextotus* Narendran 6, Female, India (NZSI).

Redescription : *Female* : (Holotype) Length 2.47 mm. Body yellow to honey yellow with following parts brown to black; a large area above occipital foramen continued on to frontovertex surrounding ocelli and extending in front of anterior ocellus; pronotum yellow with a large blackish patch on median dorsal side; mesoscutum, tegula and prepectus completely yellow; axillae black; scutellum yellow; metanotum black on sides, yellow in the middle; propodeum dark metallic bluish green; mesopleuron and metapleuron black; gaster yellow with T_1 completely and T_2 basally at marginal area black, T_4 and T_5 with a black transverse strip on the posterior margin on each tergite, T_6 mostly and posterior margin of T_7 black; anterior part of T_7 dark brown; ovipositor sheath black. Antennal radicle and scape yellow; pedicel and flagellum dark brown; legs yellow, except a dark brown spot on posterior dorsal side of hind coxa; dorsal margin of hind femur narrowly black. Wings hyaline, with a slight infumation in middle region (below and posterior to STV).

Head with fine setigerous regular punctures on frontovertex; eyes black; interscrobial area and malar space with scattered sparse setae; head dorsum 2x as

broad as long; head width in anterior view 1.2x as broad as median length; POL 1.5x OOL; eye 2x as long as broad; malar space 0.25x eye length (3 : 12); distance between antennal toruli and clypeal margin 2x diameter of a torulus, separated from eye margin by a trifle more than diameter of a torulus; antenna as in figure 143.

Mesosoma : Pronotum in dorsal view 1.8x as long as broad, about half as long as mesoscutum; mesoscutum 1.15x as broad as long; posterior row of setae on mesoscutum long, reaching middle of scutellum; scutellum slightly broader than long (15 : 14); propodeum smooth and shiny. Forewing 3.93x as long as broad, with 13 erect backwardly directed ventral setae below MV; hind wing 4.33x as long as broad.

Metasoma slightly longer than head and mesosoma combined, 3.8x as long as broad; hypopygium exceeding middle of gaster; exserted part of ovipositor sheath about 0.08x length of gaster in dorsal view.

Male : Unknown.

Host : Unknown.

Distribution : Kerala.

Material examined : Holotype Female, INDIA, Kerala, Wayanad Dt., Kalpetta, Thonikkadavu (11° 34' N 76° 8' E), 07.ii.2003, coll. Narendran, T.C. & Party (NZSI) (MoEF Rg.No.212). Paratypes : 1Female, Kerala, Pathanamthitta Dt., Chethonkara (9° 20' N 76° 48' E), 25.xi.1988, coll. Narendran, T.C.; 1Female, Kerala, Wayanad Dt., Kalpetta, Thonikkadavu (11° 34' N 76° 8' E), 5.v.1989, coll. Narendran, T.C.; 2 Females, Kerala, Kannur Dt., Kottiyoor (10° 7' N 78° 49' E), 19.ii.2003, coll. Narendran & Party, T.C.; 6 Females, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 10.iv.1989, viii. 1987, coll. Narendran, T.C. & Party; 1Female, Kerala, Idukki Dt., Cheruthoni (9° 51' N 76° 58' E), 10.i.2004, coll. Narendran, T.C. & Party; 1Female, Kerala, Kasaragod Dt., Cherkala (12° 27' N 75° 1' E), 25.xi.1988, coll. Narendran, T.C. & Party.

Remarks : This species comes near *Ealsmus flavescens* Verma & Hayat in general appearance, but differs from it in having: (1) F_1 shorter than F_2 (in *E. flavescens* F_1 longer than F_2); (2) Forewing with an infumation near and below STV (in *E. flavescens* forewing without such infumation); (3) Mesoscutum completely yellow (in *E. flavescens* mesoscutum with a faint brownish central area extending from base up to middle and a blackish spot on sides below notauli); (4) Gaster with T_1 completely black (in *E. flavescens* only basal half of T_1 blackish); (5) POL 1.5x OOL (in *E. flavescens* POL 2x OOL); (6) Hind wing 4.33x

as long as broad (in *E. flavescens* hind wing 5.5x as long as broad); (7) Clava distinctly shorter than combined length of preceding two segments (33 : 40) (in *E. flavescens* clava as long as combined length of preceding two segments) and (8) Head width 2x as broad as long in dorsal view (in *E. flavescens* head more than 2x as broad as long).

15. *Elasmus dubiatus* Narendran

(Figs. 141 & 142)

2008 *Elasmus dubiatus* Narendran 6, Female, India (NZSI).

Redescription : Female : (Holotype) Length 1.92 mm. Head black, with area below toruli, gena and area below occipital foramen narrowly yellow; eyes and ocelli pale grey; antenna with radicle and scape yellow and remaining segments dark brown; pronotum black with extreme posterior corner yellow; mesoscutum black with two oblique yellow patches (Fig.9); scutellum completely black; metanotum black with median part yellow, extended part of metanotum hyaline; propodeum black; lateral panel of pronotum yellow with black spot; prepectus and mesopleuron yellow; legs yellow with a black patch on baso-dorsal margin of hind coxa and black line on dorsal margin of hind femur; gaster brownish yellow except basal half of T_1 , basal and apical part of T_6 and a large median patch from T_1 to middle of T_5 (Fig.9) black; wings hyaline.

Head : Frontovertex with distinct setigerous pits; width in dorsal view 2.43x as broad as long; head a little wider than long (16 : 15) in anterior view; POL 1.5x OOL; eye 1.5x as long as wide; malar space 0.33x length of eye; antennal toruli situated slightly above level at lower margin of eye, separated from lower margin of eye by a distance equal to 2x diameter of a torulus, separated from eye margin by a distance equal to its diameter; antenna as in figure 141.

Mesosoma : Pronotum 2x as broad as its length, 0.62x as long as mesoscutum; mesoscutum 1.65x as broad as long (16 : 26); scutellum a little wider than long (21 : 19); posterior pair of scutellar bristles not exceeding middle of propodeum; forewing 3.4x as long as broad (51 : 15); hind wing 6x as long as broad (48 : 8); marginal fringe 0.25x width of disc; hind tibia with bristles arranged in three wavy lines.

Metasoma : A trifle longer than combined length of head and mesosoma (38 : 36), 2.91x as long as its width; ovipositor sheath 0.11x length of gaster in dorsal view.

Male : Unknown.

Host : Unknown.

Distribution : Kerala

Material examined : Holotype Female, INDIA, Kerala, Calicut University Campus (11° 7' N 75° 5' E), 24.x.1988, coll. Narendran, T.C. & Party (NZSI) (MoEF Rg.No.761).

Remarks : This species comes near *E. grimmi* Girault in general appearance, but differs from it in having : (1) Mesoscutum black with 2 oblique yellow patches (in *E. grimmi* mesoscutum completely black with metallic green refringence); (2) Legs yellow with a black patch on basodorsal margin of hind coxa and black line on dorsal margin of hind femur (in *E. grimmi* middle and hind coxae and femora blackish with greenish shine); (3) Scape 3.64x as long as broad (in *E. grimmi* scape 3x as long as broad); (4) Malar space 0.33x length of eye (in *E. grimmi* malar space 0.42x length of eye); (5) Forewing 3.4x as long as broad (in *E. grimmi* forewing 4.66x as long as broad); (6) Posterior pair of scutellar bristles not exceeding middle of propodeum (in *E. grimmi* posterior pair of scutellar bristles reaching base of gaster).

This species differs from *E. nigrinus* Verma & Hayat in having : (1) Mesoscutum black with 2 oblique yellow patches (in *E. nigrinus* mesoscutum blackish with bluish green shine); (2) Gaster longer than head and mesosoma combined (in *E. nigrinus* gaster distinctly shorter than head and mesosoma combined); (3) Legs yellow with a black patch on basodorsal margin of hind coxa and black line on dorsal margin of hind femur (in *E. nigrinus* middle and hind coxae and femur dark brown), and (4) Scutellum a little wider than long (in *E. nigrinus* scutellum a little longer than wide).

This species comes near *E. hutsoni* Ferrière, but differs from it in having : (1) mesoscutum black with 2 oblique yellow patches (in *E. hutsoni* mesoscutum completely black with bluish green shine); (2) Pronotum 2x as broad as its length (in *E. hutsoni* pronotum 2.66x as broad as long); (3) F_2 and F_3 2x as long as their width (in *E. hutsoni* F_2 and F_3 about 3x as long as their width).

16. *Elasmus flavescence* Verma & Hayat

2002. *Elasmus flavescence* Verma & Hayat, in Verma *et al.*, 284-285, Female, India, Karnataka (BMNH).

Diagnosis : *Female* : Length 2.0-2.20 mm. Yellow to honey yellow, following parts brown to black; a large area above occipital foramen continued on to frontovertex surrounding ocelli and extending in front of anterior ocellus; head behind up to middle with a large area between eyes except on sides on dorsal part. Pronotum mostly brown with sides and apex yellow; mesoscutum with a

faint brown middle area, extending from base up to centre and a black spot on sides below notauli; axillae dark brown or brown; metanotum dark brown or black; propodeum with metallic blue refringence; gaster yellow with following parts as follows: basal half of T_1 black with metallic bluish refringence, large dark brown median patch or spot on T_3 to T_5 ; T_6 black except basal part. Legs yellow with a dark brown or black spot at base of hind coxa. Gaster slightly longer than head plus mesosoma.

Host : Unknown.

Distribution : India: Kerala, Karnataka.

Material examined : 2 Females, INDIA, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 13.iv.1995, 25.vi.1988; 1 Female, Kerala, Kottayam Dt., Athirampuzha (9° 41' N 76° 31' E), 28.xi.1988. All specimens collected by T.C. Narendran & Party.

Remarks : Verma *et al.* (2002) states that this species appears related to *E. quingilliensis* Girault and *E. picturatus* Girault in general body colour and more or less similarly elongate antennae but may be distinguished by the strongly exerted ovipositor.

17. *Elasmus flavocorpus* Husain & Kudeshia

1984a. *Elasmus flavocorpus* Husain & Kudeshia, 28, Female, India, Aligarh (lost?).

Diagnosis : *Female* : Length 1.75-3.0 mm. Yellow, with following parts dark brown or black; occiput above foramen, a large spot continued on to frontovertex between ocelli, a band behind eyes almost in the middle, pronotum with a patch in the middle basally, axillae, a central spot on mesonotum and a spot in middle and on either side behind spiracle or surrounding spiracle on propodeum. Tegula pale brown; mesoscutum and scutellum with pale brown suffusions; gaster completely yellow with T_1 occasionally with a small pale brown spot on either side; legs including coxae yellow with a dark spot with light bluish refringence at base of hind coxa. Gaster slightly shorter than head and mesosoma combined (in some specimens, as long as head plus mesosoma).

Host : Cocoons of *Apanteles* species on *Ricinus communis* L. (Husain & Kudeshia, 1984).

Distribution : India : Kerala, Delhi, Uttar Pradesh.

Material examined : 2 Females, INDIA, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 22.iii.1985, 4-21.v.1988, 8.iv.1989, 17.v.2003; 1 Female, Kerala, Trivandrum (8° 40' N 77° 7' E), 26.ii.1989; 1 Female, Kerala, Malappuram Dt., Nilambur, Chungathara Nilambur (11° 16' N

76° 14' E), 23.iv.1989; 1 Female, Kerala, Calicut Dt., Nanminda (11° 26' N 75° 50' E), 14.ii.2004. All specimens collected by T.C. Narendran & Party.

Remarks : This species comes near *E.neoflavicarpus* Narendran in general appearance but differs from it in having T₆ and T₇ yellow without black colour, mesoscutum and scutellum yellow with pale brown suffusions and gaster slightly shorter than head plus mesosoma.

18. *Elasmus fulvicornis* Verma & Hayat

(Fig. 137)

2002. *Elasmus fulvicornis* Verma & Hayat, in: Verma *et al.*, 286, Female, India, Aligarh (BMNH).

Diagnosis : Female : Length 2.00 mm. Body mostly yellowish with following parts dark brown or blackish : a blackish spot on head below, between eyes; axillae and tegulae dark brownish; gaster honey yellow, T₆ and T₇ blackish. Antenna mostly yellowish; scape somewhat dusky. Legs yellowish; dorsal margin of hind femur narrowly, tarsal segments 3-4 of fore legs, 2-4 of middle and hind legs brownish; setae dark brown to almost blackish.

Host : Unknown.

Distribution : India : Uttar Pradesh.

Material examined : None. The above account is based on Verma *et al.*,

Remarks : see remarks under *E.ceylonicus* Ferrière in this monograph.

19. *Elasmus grimmi* Girault

1920. *Elasmus grimmi* Girault, 186: Female, Australia (QMB).

1967. *Austelasmus grimmi* (Girault) : Riek, 148. synonymized.

Diagnosis : Female : Length 1.75-2.1 mm. Black with metallic green refringence on head and mesosomal dorsum, more stronger on propodeum; tegulae violet; posterior extension of metanotum with basal part yellow and distal part hyaline; gaster orange yellow or brownish yellow with basal half of T₁ black with green refringence; a cross brown stripe at apex of T₅; T₆ and T₇ pale brown; foreleg pale yellow with base brown or dark brown at base of coxa; middle and hind coxae and femora blackish with greenish refringence; all tibiae and tarsi yellow or pale yellow. Gaster subequal in length to head and mesosoma combined.

Host : Unknown.

Distribution : India : Tamil Nadu , Karnataka; Australia.

Material examined : 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 11.v.1988, coll. T.C. Narendran; 1 Female, Kerala,

Calicut Dt., Kakkayam (11° 15' N 75° 50' E), 9.ii.1996, coll. T.C. Narendran; 1 Female, Kerala, Calicut Dt., Chaliyam (11° 9' N 75° 49' E), 14.iii.2003, coll. T.C. Narendran & Party; 2 Females, Kerala, Palghat Dt., Mukkali (Near silent Valley) (10° 58' N 76° 30' E), 10.xii.1987, coll. T.C. Narendran & Party; 1 Female, Kerala, Palghat Dt., Malampuzha (10° 53' N 76° 46' E), 1.i.1986, coll. T.C. Narendran & Party; 1 Female, Kerala, Trivandrum Dt., Neyyar Dam (8° 37' N 77° 7' E), 24.ii.1989, coll. T.C. Narendran & Party; 1 Female, Kerala, Thrissur Dt., Vellanikkara (10° 28' N 76° 18' E), 5.vii.2003, coll. T.C. Narendran & Party; 1 Female, Kerala, Thrissur Dt., Arattupuzha (10° 29' N 76° 17' E) 23.iv.2000, coll. T.C. Narendran & Party; 1 Female, Kerala, Kannur (11° 51' N 75° 22' E), 17.ii.2003, coll. T.C. Narendran & Party; 1 Female, Karnataka, Ganagally, Bilgiri Rangaswamy temple Wild Life sanctuary (12° 38' N 76° 37' E), 27.vi.2002, coll. P. A. Sinu.

Remarks : Verma *et al.* (2002) state that this species is related to *E.trifasciiventris* Girault from which it differs in the colour of fore legs as noted by Riek (1967).

20. *Elasmus homonae* Ferrière

1929b. *Elasmus homonae* Ferrière, 415-416, Female (Lectotype) Sri Lanka (BMNH).

Diagnosis : *Female* : Length 2.05-2.2 mm. Black with some bluish green refringence on head and mesosoma; tegulae violet; posterior extension of metanotum yellow at base and hyaline on distal part; gaster dark brown to almost black with a transverse red band at apical half of T₁, ventre reddish brown, apex black; forelegs yellow with bases of coxa and femur black; mid coxa and femur dark brown or black with apices pale yellow; hind coxa black or dark brown; tibiae and tarsi of all legs pale yellow. Gaster as long as head and mesosoma combined.

Host : *Cydia leucostoma* Meyrick, *C. tricentra* Meyrick, *Homona coffearia* Nietn., on Tea in Sri Lanka.

Distribution : India: Kerala , Tamil Nadu, Uttar Pradesh; Sri Lanka.

Material examined : 1 Female, INDIA, Kerala, Malappuram Dt., Nilambur (11° 16' N 76° 14' E), 22.iv.1989, coll. T.C. Narendran & Party; 1 Female, Kerala, Kollam Dt., Ochira (9° 7' N 76° 30' E), 21.ii.1989, coll. T.C. Narendran & Party.

Remarks : This species comes near *E.indicus* Rohwer in the key to species in this work but differs from it in having : (1) pedicel as long as F₁; (2) F₁-F₃ each slightly more than 2x or slightly less, as long as broad; and (3) gaster with only apical half of T₁ more or less yellowish to reddish yellow.

21. *Elasmus hyblaeae* Ferrière

1929b. *Elasmus hyblaeae* Ferrière, 414. Female, India, Arvallica, Nilambur (Kerala) (BMNH).

1984b. *Elasmus nigricus* Husain & Kudeshia, 365, Female, India, Aligarh (lost?); Narendran *et.al* (2008) synonymized.

Diagnosis : Female : Length 1.5-2.57 mm. Dark brown to black with bluish or greenish refringence on frontovertex, mesoscutum, propodeum and base of gaster; posterior extension of metanotum hyaline with base yellow; legs with dark brown or black coxae and femora except distal half or tip of fore femur, all tibiae and all tarsi pale yellow; hind coxae above with bluish refringence. Gaster a little longer than head and mesosoma combined.

Host : *Hyblaea puera* Cramer, *Noorda moringae* Tams.

Distribution : India: Kerala, Tamil Nadu Madhya Pradesh, West Bengal & Meghalaya.

Material examined : 7 Females, INDIA, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 10.xii.1983, 1.viii.1987, 11.v.1988, 22.iv.1990, 20.iv.2001, 9.x.2002, coll. T.C. Narendran & Party; 3 Females, Kerala, Thrissur (10° 28' N 76° 18' E), 10.3.iv-v.1998; coll. T.C. Narendran & Party; 2 Females, Kerala, Idukki Dt., Thekkady (9° 36' N 77° 12' E), 1.v.1986; coll. T.C. Narendran & Party; 1 Female, Kerala, Kottayam Dt., Athirampuzha (9° 41' N 76° 31' E), 28.xi.1988, coll. T.C. Narendran & Party; 2 Females, Kerala, Kottayam Dt., Kumarakom (9° 36' N 76° 26' E), 28.xi.1988, 20.xi.1988; coll. T.C. Narendran & Party; 2 Females, Kerala, Malappuram Dt., Edakkara (11° 16' N 76° 15' E), 24.iv.1989; coll. T.C. Narendran & Party; 1 Female, Kerala, Wayanad Dt., Kalpetta, Thonikadavu (11° 36' N 76° 6' E); 1 Female, Kerala, Kasaragod Dt., Karanthakkad (12° 31' N 74° 58' E), 21.i.2003; 1 Female, Kerala, Kannur Dt., Payyannur (12° 6' N 75° 12' E), 27.ii.1989; 2 Females, Kerala, Alappuzha Dt., Kayamkulam (9° 10' N 76° 30' E), 20-21.ii.1989, 1 Female, Kerala, Calicut Dt., Cheruvannur (11° 13' N 75° 48' E), 29.i.2002, 3 Females, Kerala, Calicut Dt., Madappally (11° 36' N 75° 35' E), 11.xii.1987, 20.xi.2001. All specimens above collected by T.C. Narendran & Party. 1 Female, INDIA, "Machang" (Shillong) "Assam", v.1969 (CIBC).

Remarks : From the original description of *E. ricinus* as pointed out by Verma *et al.*, (2002), this species is indistinguishable from *E. hyblaeae* Ferrière.

22. *Elasmus hutsoni* Ferrière

1929b. *Elasmus hutsoni* Ferrière, 412, Female, Sri Lanka, Pelmadulla (BMNH).

Diagnosis : Female : Length 3-3.2 mm. Black with bluish green refringence on head and mesosoma; propodeum shining bluish green; middle of metanotum yellow;

gaster black with yellowish spots at base of T_4 ; mid and hind coxae dark metallic at basal halves.

Host : 'Bagworm' (*Psyche albipes* Moore, Tea Bagworm in Sri Lanka).

Distribution : India : Karnataka, Kerala, Sri Lanka.

Material examined : 1 Female, INDIA, Kerala Palghat Dt., Mukkali (near Silent Valley) (10° 58' N 76° 30' E), 10.xii.1987, coll. T.C. Narendran & Party; 2 Females, Kerala Thrissur (10° 28' N 76° 18' E) 2004, coll. George Matthew; 1 Female, Kerala Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 23.i.2003, coll. T.C. Narendran & Party.

Remarks : See remarks under *E. caligneus* Narendran

23. *Elasmus indicoides* Mani & Saraswat

1972. *Elasmus indicoides* Mani & Saraswat, 469. Female, India, Annamalai Hills (USNM).

1984b. *Elasmus nigricorpus* Husain & Kudeshia, 27-28, Female, India, Aligarh (lost?)
Narendran *et al.*, (2008) synonymized.

Diagnosis : *Female* : Length 1.75-2.0 mm. Black with metallic blue refringence on head and pronotum; coxae black with apical part narrowly or widely pale yellow; basal part of fore femur, middle and hind femur black, rest of legs pale brown; scape reddish brown; flagellum black; wings hyaline with brown infuscation behind STV

Host : *Apanteles* sp. on *Ricinus communis* L. (Husain & Kudeshia, 1984).

Distribution : India : Kerala , Tamil Nadu.

Material examined : 1 Female, Kerala, Alappuzha Dt., Kayamkulam (9° 10' N 76° 30' E), 20.iv.2004, coll. T.C. Narendran & Party.

Remarks : The original description of *E. nigricorpus* clearly indicates that it is *E. indicoides* Mani & Saraswat. Verma *et al.*, (2002) also pointed out this as a possible synonymy.

24. *Elasmus indicus* Rohwer

(Fig. 158)

1921. *Elasmus indicus* Rohwer, 123-124, Female, Male, India, Coimbatore (USNM).

Diagnosis : *Female* : Length 2.42 mm. Head and mesosoma black; posterior extension of metanotum hyaline; gaster brown; apical half of T_1 , basal half or more of T_2 slightly extending on sides reddish yellow; legs dark brown except fore leg beyond basal half of coxa, basal third or so of fore femur, distal fourth or so of middle femur, tibiae, tarsi and tibial spurs of all legs yellow.

Host : *Anomalococcus* sp., *A. indicus* Ram.; coccids on *Acacia* sp.; *Diaphania (Margaronia) indica* (Saund.); *Lamprosema indicata* (Fab.); *Eublemma* sp., predaceous on *A. indicus* Ram.; probably parasitic on larvae of *Eublemma* sp.; *Sylepta derogate* Fab.

Distribution : India : Karnataka, Maharashtra, Tamil Nadu, Uttaranchal.

Material examined : 3 Females, INDIA, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 17-22.x.1988; 5 Females, Kerala, Alappuzha Dt., CPCRI, Kayamkulam (9° 10' N 76° 30' E), 20.ii.1989; 2 Females, Kerala, Alapuzha Dt., Kayamkulam (9° 10' N 76° 30' E), 21.ii.1989; 3 Females, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 14.iv.1988; 1 Female, Kerala, Calicut Dt., Feroke (11° 11' N 75° 50' E), 5.xii.1985; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 15.iii.1985; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), xi.1985; 2 Females, Kerala, Idukki Dt., Kanjikuzhi (9° 32' N 76° 20' E), 27.ii.1989; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 30.vii.1988; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 25.ii.1988; 1 Female, Kerala, Palghat Dt., Anappadi (76°30' E 11° 15' N), 06.v.1989; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), vii.1986; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 06.x.1968; 3 Females, Kerala, Palakkad Dt., Malampuzha (10° 53' N 76° 46' E), 11.xii.1987; 1 Female, Kerala, Palakkad Dt., Chindaki (10° 39' N 76° 40' E), 13.xii.1987; 1 Female, Kerala, Palakkad Dt., Silent Valley (11° 15' N 76° 30' E), 09.xii.1987; 1 Female, Kerala, Kasaragod Dt., Cherkala (12° 27' N 75° 1' E), 16.xii.1988; 3 Females, Kerala, Kannur Dt., Aralam Farm (11° 58' N 75° 40' E), 25.ii.1988; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), iii.1986; 1 Female, Kerala, Idukki Dt., Thekkadi (9° 36' N 77° 12' E), 07.v.1986; 1 Female, Kerala, Trivandrum Dt., Palode (8° 42' N 77° 2' E), 10.xii.2004; 1 Female, Kerala, Kottayam Dt., Kumarakam (9° 36' N 76° 26' E), 18.iv.2004; 1 Female, Kerala, Calicut Dt., Nanminda (11° 26' N 75° 50' E), 11.vii.2004; 1 Female, Kerala, Ernakulam Dt., Nedumbassery (10° 01' N 76° 18' E), 12.i.2004; 1 Female, Kerala, Calicut Dt., Nadapalam (11° 25' N 75° 77' E), 08.v.2003; 1 Female, Kerala, Kannur Dt., Kottiyoor Forest (10° 7' N 78° 49' E), 17.ii.2003; 1 Female, Kerala, Palghat Dt., Pattambi (10° 49' N 76° 12' E), 12.viii.2003; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 09.x.2002. All specimens collected by T.C. Narendran & Party; 1 Female, INDIA, Tamil Nadu, Girugambakkam Dt. Kanchipuram (12° 50' N 79° 42' E), 02.v.2003, coll. J. Diravium.

Remarks : See remarks under *E.homonae* in this work.

25. *Elasmus johnstoni* Ferrière

1929a. *Elasmus johnstoni* Ferrière, 258, Female, Sudan, Wad Madani (BMNH) also India (Karnal).

1972. *Elasmus valparaicus* Mani & Saraswat, 481, Female, India (USNM) ; Narendran *et al.* (2008) synonymized.

Diagnosis : Female : Length 2-2.3 mm. Dark brown with bluish green refringence on propodeum and base of T₁; tegula brown; legs concolorous with body except trochanters, bases and apices of all femora, base and extreme apex of hind tibia and tibial spurs pale yellow. Gaster longer than head and mesosoma combined.

Host : *Earias insulana* (Boisd.), *E. cupreoviridis* Walker, *E. fabia* Stoll, *Hapalia machaeralis* Walker, *Hyblaea puera* Cramer, *Nephopteryx rhodobasalis* Hampson, *Pectinophora gossypiella* Saunders (= *Platyedra*), *Sylepta derogate* Fabricius, *Apanteles impartunus* Wilkinson, *A. machaeralis* Wilkinson, *A. malevolus* Rolston, (*Earias insulana* Boisd. larvae in bolls of *Abutilon* sp. in Sudan; *P. gossypiella* Saunders in Pakistan). (Verma *et al.*, 2002).

Distribution : India : Madhya Pradesh, Maharashtra, Haryana, Jharkhand, Rajasthan, Tamil Nadu, Uttaranchal, Uttar Pradesh and Chattisgarh; Sudan; Pakistan.

Material examined : 1 Female, INDIA, Chattisgarh, Chanora 8 Kms SE Durg Stadium (21° 08'24" N 81° 20'32" E) 300 m SN Paddy, 22.iv.2007, coll. Hema & Suresh; 1 Female, Chattisgarh, Belhari, 4 Kms NW Durg Stadium (21° 12'30" N 81° 15'15" E), 24.iv.2007, coll. Hema & Santhosh.

Remarks : The original description of *E. valparaianus* by Mani & Saraswat clearly shows it is a junior synonym of *E. johnstoni*. Verma *et al.*, (2002) also indicated this as a possible synonymy.

26. *Elasmus khandalus* Mani & Saraswat

1972. *Elasmus khandalus* Mani & Saraswat, 471-472, Female, India, Khandala (USNM).

Diagnosis : Female : Length 2.5 mm. Yellowish brown; legs including coxae light brown; mesoscutum with a transverse black and posteriorly; hind coxa narrowly above, basodorsal part of T₁, and last one-fourths of gaster black.

Host : Unknown.

Distribution : India : Maharashtra, Kerala.

Material examined : None. The above account is taken from Mani & Sharma (1972) (Courtesy to Mani & Sharma, 1972).

Remarks : Verma *et al.*, (2002) stated that this species comes to *E. ashmeadi* in the key to species by Ferrière (1929b) and to the description of Crawford (1914). However, in *E. ashmeadi* the mesoscutum has a longitudinal narrow strip widening caudad whereas in *E. khandalus* mesoscutum is with transverse strip. Hence, it unlikely that both species are conspecific.

27. *Elasmus kollimalaianus* Mani & Saraswat

1972. *Elasmus kollimalaianus* Mani & Saraswat, 473-474, Female, India, Kollimalai Hills (USNM).

Diagnosis : Female : Length 2.5-3.0 mm. Black with metallic blue or green refringence; fore leg including coxa pale yellow; other legs pale yellow except basal half of middle femur very dark brown to black; gaster blackish brown with base of T₂ to T₄ yellowish brown.

Host : Unknown.

Distribution : India : Kerala, Tamil Nadu.

Material examined : 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 21.x.1988, coll. T.C. Narendran.

Remarks : This species comes near *E. viridiscutellatus* Verma & Hayat in the key to species by Verma *et al.* (2002) but differs from *viridiscutellatus* in having : 1) mid and hind coxae in basal half, 2) mid and hind femora in apical half dark brown to black and 3) gaster with bases of T₂-T₄ with yellowish bands.

28. *Elasmus krishnagiriensis* Mani & Saraswat

1972. *Elasmus krishnagiriensis* Mani & Saraswat, 474-475, Female, India, Bombay, Krishnagiri (USNM).

Diagnosis : Female : Length 2.1-2.5 mm. Black with metallic green refringence; head metallic green; fore leg pale yellow except black basal part of fore coxa, obscure basal part of femur; middle coxa black with apex pale yellow; middle femur black or dark brown with apex pale yellow; hind femur black with base and apex pale yellow; gaster mostly black with ventral part mostly yellowish brown; fore wing with an obscure and faint infuscation behind STV

Host : Unknown.

Distribution : India : Kerala, Maharashtra.

Material examined : 2 Females, Kerala, Kannur Dt., (11° 51' N 75° 22' E), 17.ii.2003; 1 Female, Kerala, Malappuram Dt., Manjeri (11° 7' N 76° 7' E), 9.xi.2003. All specimens collected by T.C. Narendran & Party.

Remarks : This species comes near *E. mahabalii* Mani & Sraswat in the key to species by Verma *et al.* (2002) but differs from it in having : 1) F₁-F₃ subequal

in length, each about 1.5x as long as broad; and 2) clava shorter than preceding two funicle segments combined.

29. *Elasmus longicornis* Verma & Hayat

(Fig. 157)

2002. *Elasmus longicornis* Verma & Hayat, in Verma *et al.*, 276-277, Female, India, Kerala (BMNH).

Diagnosis : Female : Length 2.0 mm. Head mostly black with face below toruli yellowish brown, slight bluish tint on black part of head; mesosoma yellow except as follows: pronotum with a dark brownish to almost blackish spot in middle anteriorly; mesoscutum with dark brownish large spot, one on each side; scutellum entirely black with metallic refringence; axillae black; propodeum and metapleuron black with metallic refringence; gaster dark brown to almost black dorsally, except a transverse broad band in middle of T₁, slightly on sides of T₂ and T₄ and basal three-fourths ventrally, yellowish to honey yellow. Legs mostly yellowish except a small brownish spot on dorsal margin of hind coxa. Gaster shorter than head plus mesosoma.

Host : Unknown.

Distribution : India : Kerala.

Material examined : None. The above account is based on the original description by Verma *et al.*, (2002).

Remarks : Verma *et al.* (2002) stated that this species runs to *E. cygnus* Girault in the key to Australian species by Riek (1967) but *E. cygnus* differs in having : (1) scutellum yellow with lateral part black; (2) tegulae dark; (3) scape slightly longer than F1 and (4) F1-F3 each twice as long as broad.

30. *Elasmus longiventris* Verma & Hayat

2002. *Elasmus longiventris* Verma & Hayat, in Verma *et al.*, 277-278, Female, India, Kerala (BMNH).

Diagnosis : Female : Length 2.0-2.75 mm. Head with a large central spot with greenish refringence above occipital foramen continued on to frontovertex surrounding ocelli and extending almost up to middle of face, a spot behind each eye which meets the central spot, leaving only the sides above; pronotum mostly black with blue green refringence, yellowish on sides and collar; mesoscutum with 2 faint small brownish spots on side near notauli and an indistinct median brownish spot (in some specimens the spots near notauli indistinct); episternum yellow, epimeron mostly black, sometimes with yellowish above; axillae and tegulae black;

scutellum black with sides and apical margin yellow; metanotum black or dark brown; propodeum metallic green; gaster orange yellow with basal half of T₁ and most of T₆ mainly bluish green; T₂ to T₅ orange yellow with sometimes brownish spots on sides of T₂ and spots at base of T₄. Legs yellow except a blackish spot with greenish refringence on dorsal margin of hind coxa. Gaster distinctly longer than head plus mesosoma.

Host : Unknown.

Distribution : India : Kerala, Uttar Pradesh.

Material examined : 1 Female, INDIA, Kerala, Idukki Dt., Moolamattom (10°18' N 76° 38' E), 30.xi.1988; 1 Female, Kerala, Kasaragod (12° 30' N 75° 00' E), 16.xii.1988; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 14.xi.2001. All specimens collected by T.C. Narendran.

Remarks : Verma *et al.* (2002) stated that this species comes near *E.doddi* Girault, *E.cygnus* Girault, *E.stellatus* Girault and *E.lamborni* Ferrière but can be distinguished from all these species in the colour of gaster, elongate funicle segments, scape equal to F1, and elongate and strongly produced gaster which is longer than head and mesosoma combined. In all the above mentioned 4 species gaster is short and not strongly produced at apex.

31. *Elasmus lutens* Crawford

1915. *Elasmus lutens* Crawford, 461-462, Female, Philippines, Manila (USNM).

Diagnosis : Female : Length about 2.25 mm. Yellow; ocellar triangle, a large triangular spot on rear of head extending from top of eyes almost to their bases and connected along carinate edge of occiput with ocellar spot, axillae, a small spot on side of propodeum, a large spot covering the upper part of hind coxa, spots on sides of gastral segments at apices all brown; last two segments of gaster almost completely brown, rest of the dorsal surface of gaster light brown, mesopleuron centrally dark brown.

Host : Unknown.

Distribution : India : Madhya Pradesh; Philippines.

Material examined : None. The above account is based on the redescription of Crawford (1914) and from Verma *et al.*, (2002).

Remarks : This species comes near *E.sigillatus* Narendran, and *E.neoflavocarpus* Narendran but differs from them in having F1 far less than 1.5x length of pedicel. Besides *E.sigillatus* differs in having large black marks on either side of mesoscutum; propodeum completely black with slight metallic green

refringence. Besides F1 length, *E.neoflavocorpus* differs in having gaster without spots on hind coxa and on sides of T2-T5.

32. *Elasmus mahabalii* Mani & Saraswat

1972. *Elasmus mahabalii* Mani & Saraswat, 477, Female, India, Mahabalipuram (USNM).

Diagnosis : Female : Length 1.75-2 mm. Black with metallic blue refringence; basal half of fore coxa, basal half of fore femur, whole of middle and hind coxae and femora black, rest of legs pale brown; gaster dorsally and apically brownish black to black; posterior borders of tergites and venter brown.

Host : Unknown.

Distribution : India : Kerala, Karnataka, Maharashtra and Tamil Nadu.

Material examined : 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 18.x.1988 coll. T.C. Narendran & Party.

Remarks : Verma *et al.* (2002) stated that this species comes near *E. funereus* Riek(1967) but differs in having pale scape and tibiae and shorter funicle segments.

33. *Elasmus munnarus* Mani & Saraswat

1972. *Elasmus munnarus* Mani & Saraswat, 478-479, Female, India, Kerala, Munnar (USNM).

Diagnosis : Female : Length 2.0-3.0 mm. Brownish yellow below lower level of eyes, otherwise black; mesosoma black with metallic refringence; legs pale yellow with a narrow obscure dark brown patch at base and above on hind coxa and a similar and smaller area on middle coxa; gaster yellowish brown except basal three-fourths of T₁ black; paired lateral obscure dark brown oval patches on T₂-T₅; T₆ completely and tip of gaster black.

Host : Unknown.

Distribution : India : Kerala, Tamil Nadu.

Material examined : 2 Females, Kerala, Kasaragod Dt., Nileswaram (12° 20' N 75° 6' E) 26.ii.1988; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E) 31.xii.1985; 1 Female, Kerala, Calicut Dt., Chaliyam (11° 9' N 75° 49' E), 14.iii.2003; 1 Female, Kerala, Alappuzha Dt., Kayamkulam (9° 10' N 76° 30' E), 21.ii.1989. All specimens collected by T.C. Narendran & Party.

Remarks : This species comes near *E.zehntneri* Ferrière in the key to species by Narendran *et al.* (2008) but differs from it in having : (1) pedicel about 1.5x as long as broad; (2) pedicel distinctly shorter than F1; (3) F1 about 2x as long as broad; (4) gaster with T1 slightly longer than T2; and (4) head brownish yellow below lower level of eyes.

34. *Elasmus neoflavocarpus* Narendran & Hema
(Figs. 147 & 148)

2008. *Ealsmus neoflavocarpus* Narendran & Hema, 9 Female, India (NZSI).

Female : Length 2.41 mm. Body yellow with following parts brownish black : occiput above foramen, a large spot continued on to frontovertex, surrounding ocelli and extending in front of anterior ocellus; a large spot behind each eye meeting with a brownish black central spot, a large convex spot on basodorsal part of pronotum (Fig. 148); axillae black; tegulae dark brown; a transverse spot on each side of metanotum; propodeum dark brown in middle which narrowly extends to enclose spiracle (Fig.148). Gaster pale brownish yellow with a brown spot on basal part on each side of T_1 ; T_6 and T_7 with large black patch on each; ovipositor sheath black. Antennal radicle and scape yellow, flagellum dark brown; forewing hyaline. Legs yellow with a faint brownish dorsal margin on posterior half; dorsal margin of middle femur narrowly, most of dorsal margin of hind femur blackish brown; tarsal segments of all legs pale yellowish brown.

Head : Frontovertex with setigerous pits; head width 3x its length in dorsal view, width in anterior view subequal to its length; POL 3x OOL; eye length 1.5x its width; malar space about one-third eye length (3 : 9); head in front view appears not quite rounded; scrobal impression somewhat deep and inverted 'V' shaped, rounded above, and slightly on sides; antennal toruli situated at level of lower margin of eyes, toruli separated from lower margin of clypeus by a distance longer than diameter of a torulus (3 : 4.5), separated from eye margin a little more than its diameter (3 : 4). Antenna as in figure 147.

Mesosoma : Pronotum 2.5x as broad as long, slightly shorter than half as broad as long, slightly shorter than half length of mesoscutum; mesoscutum 1.29x as broad as long (36 : 28); scutellum slightly broader than long (20 : 18), forewing 3.5x as long as broad (52 : 15), with 9 prominent backwardly directed setae below the middle of MV on ventral side; hind wing length 5.25x its width (42 : 8); marginal fringe of hind wing with 0.25x breadth of wing.

Metasoma : Distinctly longer than head and mesosoma combined (34 : 25), 4.44x as long as broad; ovipositor sheath in dorsal view 0.13x length of gaster.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala, Chattisgarh).

Material examined : Holotype Female, INDIA, Kerala, Alappuzha Dt., Kayamkulam, CPCRI (9° 10' N 76° 30' E), 24.ix.1991, coll. Narendran, T.C. &

Party (NZSI) (MoEF Rg.No.1146). Paratypes : 2 Females, Kerala, Alappuzha Dt., Kayamkulam, (9° 10' N 76° 30' E), 2.ii.1989, coll. Narendran, T.C.; 1 Female, Kerala, Kannur Dt., Aralam farm (11° 58' N 75° 40' E), 25.ii.1988, coll. Narendran, T.C.; 1 Female, Kerala, Thiruvananthapuram Dt., Palode (8° 42' N 77° 2' E), 11.xii.2004, coll. Narendran, T.C. & Party; 1 Female, Kerala, Kasaragod Dt., Karanthakkad (12° 31' N 74° 58' E), 11.xii.2004, coll. Narendran, T.C. & Party; 1 Female, Kerala, Malappuram Dt., Calicut University campus (11° 7' N 75° 5' E), 19.ii.2002, coll. Narendran, T.C. & Party; 1 Female, Chattisgarh (22° 33' N to 21° 14' N 82° 6' to 81° 38' E), Belhani 4Kms NV of Durg 24.iv.2007, coll. Hema & Santhosh.

Remarks : This species comes to *Elasmus flavocarpus* Husain & Kudeshia in the key to species by Verma *et al.*, (2002), but differs from *E. flavocarpus* in having the following characters : (1) Mesoscutum and scutellum without pale brown suffusions (with pale brown suffusions on mesoscutum and scutellum in *E. flavocarpus*); (2) T₆ and T₇ with black colour (in *E. flavocarpus* T₆ and T₇ yellow); (3) Antennal scape 1.65x as long as F₁ (in *E. flavocarpus* scape subequal to length of F₁); (4) POL 3x OOL (in *E. flavocarpus* POL 1.4x OOL); (5) Forewing 3.5x as long as broad (in *E. flavocarpus* forewing 4x as long as broad); (6) Hind wing 5.25x as long as broad (in *E. flavocarpus* hind wing about 6x as long as broad); (7) Gaster distinctly longer than head plus mesosoma (in *E. flavocarpus* gaster slightly shorter than head and mesosoma combined).

35. *Elasmus neoflavescens* Narendran

(Figs. 145 & 146)

2008. *Elasmus neoflavescens* Narendran, 7, Female, India (NZSI).

Redescription : *Female* : (Holotype) Length 1.53 mm. Body yellow with following parts brown to black with mostly metallic blue green reflections: occiput and vertex black with yellow spot at sides on vertex adjoining eye margin on either side, black colour extending to front side beyond front ocellus down to upper scrobal depression; pronotum yellow with a large blackish patch on median dorsal side; mesoscutum yellow with two large transverse blackish patch, each on sides mostly below notauli (Fig. 146); axillae black with a connecting transverse blackish band across anterior margin of scutellum; scutellum yellow; metanotum yellow with its posterior extension hyaline, and a black spot on either side on each end; propodeum black with metallic blue reflection; mesopleuron and metapleuron black; gaster yellow; T₁ three-fourth from base black with metallic blue reflection, from submargin of T₂ up to distal margin of T₆ dark brown (without metallic blue reflection); T₇ yellow with tip black; ovipositor sheath black. Antennal radicle and

scape yellow; pedicel pale brown, remaining segments brownish black; legs yellow except a dark patch on posterior dorsal side of hind coxa; dorsal margin of hind femur narrowly black. Wings hyaline.

Head with fine setigerous regular punctures on frontovertex; eyes blackish brown; inter-scröbal area and malar space with scattered sparse setae; head partly collapsed from behind; POL 1.25x OOL; eye 1.43x as long as broad; malar space 0.3x eye length (3 : 10); distance between antennal toruli and clypeal margin 2x diameter of a torulus, separated from eye margin a little more than diameter of a torulus; antenna as in figure 145.

Mesosoma : Pronotum in dorsal view 2.5x as long as broad, about 0.4x as long as mesoscutum; mesoscutum 1.5x as broad as long; posterior row of setae on mesoscutum long, reaching middle of scutellum; scutellum 1.23x as broad as long (15: 13); propodeum smooth and shiny. Forewing 4.7x as long as broad, with 9 erect backwardly directed ventral setae below MV; hind wing 5.5x as long as broad.

Metasoma slightly longer than head and mesosoma combined (30 : 27), 3.4x as long as broad; hypopygium exceeding middle of gaster; exerted part of ovipositor sheath about 0.06x length of gaster in dorsal view.

Male : Unknown.

Host : Unknown.

Variation : In some paratypes the blackish brown patches on sides of mesoscutum is reduced to spots.

Distribution : Kerala.

Material examined : Holotype Female, INDIA, Kerala, Thiruvananthapuram Dt., Mannamkonam (8° 25' N 77° 1' E), 16.iv.2003, coll. Narendran, T.C. & Party (NZSI) (MoEF Rg. No. 967). Paratypes: 1Female, Kerala, Kannur Dt., Aralam (11° 58' N 75° 40' E), 10.x.1998, coll. Narendran, T.C.; 1Female, Kerala, Kannur Dt., Kottiyoor (10° 7' N 78° 49' E), 17.ii.2003, coll. Narendran, T.C. & Party; 1 Female, Kerala, Malappuram Dt., Nilambur, Ganapathikallu (11° 16' N 76° 13' E), 30.i.2003, coll. Narendran, T.C. & Party; 1 Female, Kerala, Calicut Dt., Nanminda (11° 26' N 75° 50' E), 11.vii.2004, coll. Narendran, T.C. & Party; 1Female, Kerala, Kasaragod Dt., Cherkala (12° 27' N 75° 1' E), 16.xii.1988, coll. Narendran, T.C. & Party; 1Female, Kerala, Palghat Dt., Mukkali (10° 58' N 76° 30' E), 10.xi.1987, coll. Narendran, T.C. & Party.

Remarks : This species differs from *Elasmus flavescens* Verma & Hayat in having : (1) Clava distinctly shorter than length of preceding two segments

combined (24 : 31) (in *E. flavescens* clava as long as combined length of preceding two segments); (2) Mesoscutum without a faint brownish central area extending from base up to middle (in *E. flavescens* mesoscutum with a faint brownish central area extending from base up to middle); (3) POL 1.25x OOL (in *E. flavescens* POL 2x OOL); (4) Malar space 0.3x eye length (in *E. flavescens* malar space 0.5x eye length); (5) Pronotum in dorsal view 2.5x as broad as long (in *E. flavescens* pronotum 2x as broad as long); (6) Mesoscutum 1.5x as broad as long (in *E. flavescens* mesoscutum 1.33x as broad as long); (7) Forewing with 9 erect backwardly directed ventral setae below MV (in *E. flavescens* forewing with 11 erect backwardly directed ventral setae below MV).

36. *Elasmus neopunctulatus* Narendran
(Figs. 152 & 153)

2008. *Elasmus neopunctulatus* Narendran, 11, Female, India (NZSI).

Redescription : Female : (Holotype) Length 1.47 mm. Head black with metallic green reflection; eyes black with margin pale grey; ocelli brown; mandible brown; antenna with radicula, scape and pedicel yellow, remaining segments yellowish brown; pronotum and mesonotum black with a yellowish spot on each side of tegulae; tegulae brown; posterior extension of metanotum hyaline, at apex pale brown; propodeum black with metallic green refringence; gaster yellowish brown with basal half of T_1 black with metallic refringence; T_2 and basal half of T_6 partly dusky, tip of T_7 and ovipositor sheath brownish black; legs yellow with a black patch on dorso-basal margin of hind coxa; wings hyaline.

Head with scattered setigerous pits on frontovertex; about 2x as wide as long in dorsal view; head width subequal to its length in anterior view; POL 1.5x OOL; eye length 1.33x its width; malar space 0.5x length of eye; antennal toruli situated slightly above level at lower margin of eye, separated from lower margin of eye by a distance 1.5x diameter of a torulus, separated from eye margin by a distance equal to its diameter; antenna as in figure 152.

Mesosoma : Pronotum 2.77x as wide as its length, about half as long as length of mesoscutum (13 : 24); mesoscutum 1.46x as broad as long (41 : 28); scutellum a little wider than long (21 : 19); forewing 3.36x as long as broad (47 : 14); hind wing 6.3x as long as broad (38 : 6); marginal fringe 0.25x width of disc; hind tibia with bristles arranged in diamond shaped lozenges.

Metasoma distinctly longer than head plus mesosoma (30 : 25), 2.73x as long as its width; ovipositor sheath 0.13x length of gaster in dorsal view.

Male : Unknown.

Host : Unknown.

Distribution : India : Kerala.

Material examined : Holotype Female, INDIA, Kerala, Palghat Dt., Malampuzha (10° 53' N 76° 46' E), 11.xii.1987, coll. Narendran, T.C. & Party (DZUC) (MoEF Rg.No.638).

Remarks : This species comes to *E. punctulatus* Verma & Hayat in the key to species by Verma *et al.*, (2002). However, it differs from *E. punctulatus* in the following characters (1) Antennal clava as long as combined length of F₁ to F₃ (in *E. punctulatus* clava as long as combined length of F₁ and F₂ only); (2) Pedicel longer than F₁ (in *E. punctulatus* pedicel shorter than F₁); (3) Clava shorter than scape (25 : 26) (in *E. punctulatus* clava longer than scape (30 : 26)); (4) Fore and mid coxa yellow (in *E. punctulatus* basal half of fore coxa and base of mid coxa brown).

Besides the above differences, the colour pattern of the gaster also differs.

37. *Elasmus nephantidis* Rohwer

1921. *Elasmus nephantidis* Rohwer, 123, Female, India (Coimbatore) (USNM).

Diagnosis : Female : Length 2.5-3.0 mm. Black with metallic bluish or greenish refringence, on head, dorsum of mesosoma and on base of T₁; apical 0.33 of T₁ faintly brownish; mesoscutum with yellow spot on each side near tegulae; foreleg pale yellow with base of coxa black or dark brown; mid and hind coxae and femora black with apices of coxae, bases and apices of femora paler.

Host : *Opisina arenosella* Walker on Coconut palm.

Distribution : India : Kerala, Tamil Nadu.

Material examined : 3 Females, Kerala, Alappuzha Dt., Kayamkulam (9° 10' N 76° 30' E), from *Opisina arenosella*, 24.ii.1990, coll. T.C. Narendran & Party; 1 Female, Kerala, Alappuzha Dt., Kayamkulam (CPCRI) (9° 10' N 76° 30' E), 24.ix.1991, coll. T.C. Narendran & Party; 1 Female, Kerala, Calicut Dt., Madappally (11° 36' N 75° 35' E), 20.xi.2001, col. T.C. Narendran & Party.

Remarks : This species comes near *E. anticles* Walker in the key to species (Narendran *et al.* 2008) but differs from it in having pedicel over 2x as long as broad and forefemur completely yellow.

38. *Elasmus nigrinus* Verma & Hayat

(Fig. 135)

2002. *Elasmus nigrinus* Verma & Hayat, in Verma *et al.*, 252-253, Female, India, Tamil Nadu (BMNH).

Diagnosis : Female : Length 1.12 mm. Head and mesosoma black with bluish green refringence; base of posterior extension of metanotum yellow; gaster mostly reddish except a blackish transverse band with bluish refringence at basal half of T1; T3-T6 brownish; legs yellow with middle and hind coxae and femora dark brown, dorsal margin narrowly at base of fore femur brownish; gaster distinctly shorter than head and mesosoma combined.

Host : Unknown.

Distribution : India : Kerala, Tamil Nadu.

Material examined : None. The above account is based on the original description of Verma *et al.*, 2002 (Courtesy to Verma *et al.*, 2002).

Remarks : This species comes close to *E. trifasciatus* Girault in general appearance but differs from it in having: (1) T1 and T3-T7 brownish; (2) fore femur completely pale; (3) pedicel almost as long as F1 and (4) funicle segment less than 2x as long as broad (Verma *et al.*, 2002, Riek, 1967).

39. *Elasmus noyesi* Verma & Hayat

(Fig. 156)

2002. *Elasmus noyesi* Verma & Hayat, in Verma *et al.*, 258-259, Female, India, Karnataka (BMNH).

Diagnosis : Female : Length 2.0-2.5 mm. Black with bluish green refringence; tegulae violet; occiput on sides with small yellowish spots near posterior margin of eyes; scutellum dull violet on sides with yellowish longitudinal narrow bands extending from base up to the origin of posterior scutellar setae; gaster black on dorsal surface, reddish or reddish brown below in basal fourths or so, apex black; antennal scape pale brown with dark brownish infumation on dorsal margin; coxae of all legs dark brown or black except apical yellowish half of fore coxa; apex of hind coxa pale yellow; fore femur yellow with an obscure brownish at base on dorsal margin; middle and hind femur dark brown, at base and apex yellow; all trochanters, tibiae and tarsi yellowish.

Host : Unknown.

Distribution : India : Kerala, Karnataka.

Material examined : 3 Females, INDIA, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 21.x.1988, 28.iv.2001; 1 Female, Kerala, Kottayam Dt., Athirampuzha (9° 41' N 76° 31' E), 28.xi.1988; 1 Female, Kerala, Kannur Dt., Payyannur (12° 6' N 75° 12' E), 27.ii.1989; 1 Female, Kerala, Malappuram Dt., Nilambur, Karimpuzha (11° 16' N 76° 13' E), 23.iv.1989; 1 Female, Kerala, Palghat Dt., Malampuzha (10° 53' N 76° 46' E). All specimens

collected by T.C. Narendran & Party. Alappuzha Dt., Kayamkulam (9° 10' N 76° 30' E), 21.ii.1989; 1 Female, Kerala, Malappuram Dt., Nilambur, Chandakkunnu (11° 16' N 76° 13' E), 24.iv.1989; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 2.v.1989. All specimens collected by T.C. Narendran & Party.

Remarks : The combination of colour of hind leg and that of scutellum makes this species distinguishable from all other species of *Elasmus* (Verma *et al.* 2002).

40. *Elasmus nuperus* Narendran

(Fig. 140)

2008. *Elasmus nuperus* Narendran, 5, Female, India (NZSI).

Redescription : *Female* : (Holotype) Length 3.6 mm. Head black with metallic reflections and with area below middle of frons including malar space bright yellow; a yellow spot on either side of vertex adjoining eyes; antenna dark brown except yellow scape and radicula; pronotum black with yellow patches on either side; mesoscutum black with yellow marks anteriorly and posteriorly on either side; scutellum black with yellow stripe on either side; metanotum black with a yellow basal part of distended hyaline part; propodeum black with metallic green reflection; prepectus anterior half black and posterior half yellow; meso and metapleura black; legs whitish yellow with a narrow black patch on dorso-median part of basal margin of hind coxa; dorsal margin of hind femur black; tarsi mostly brown; gaster orange yellow with basal half of T₁ black with metallic green reflection, distal half with a black spot on either side; T₆ black with base and apex yellow; T₇ and ovipositor sheath black. Wings hyaline with part of distal region infumate.

Head : Minutely reticulate with scattered setigerous pits on upper part of frons and vertex; width in dorsal view 1.7x its length; width in anterior view a little longer than wide (19:18); POL 2x OOL; eye length 1.4x its width; malar space 0.4x length of eye; antennal toruli situated a little above lower eye margin, distance between a torulus and clypeal margin 2x diameter of torulus, torulus separated from eye margin by a distance equal to 2x diameter of torulus; antenna as in figure 140.

Mesosoma : Pronotum width 2.2x its length, about 0.4x length of mesoscutum; mesoscutum a little longer than its width (31 : 29); posterior row of setae on mesoscutum long reaching middle of scutellum; scutellum width subequal to its length; propodeum smooth and shiny. Forewing 4.7x as long as broad, with 16 erect backwardly directed setae below MV; hind wing 6x as long as broad.

Metasoma distinctly longer than head and mesosoma combined (38 : 28); 5.5x as long as its width; hypopygium exceeding middle of gaster; exerted part of ovipositor sheath about 0.05x length of gaster in dorsal view.

Male : Unknown.

Host : Unknown.

Distribution : India : Kerala.

Material examined : Holotype Female, INDIA, Kerala, Calicut Dt., Nanminda (11° 26' N 75° 50' E), 14.ii.2004, coll. Narendran, T.C. & Party (NZSI) (MoEF Rg.No.2649). Paratypes : 1 Female of the same data as holotype; 2 Females, Kerala, Kasaragod, Nileswaram (12° 20' N 75° 6' E), 26.ii.1988, coll. Narendran, T.C. & Party; 1 Female, Kerala, Kottayam, Kumarakam, Regional Agricultural Research Station (RARS) (9° 36' N 76° 26' E), 29.xi.1988; 7 Females, 2 Females, Kerala, Malapuram, Calicut University Campus (11° 7' N 75° 5' E), 25-26.ii.1988, 1.x.1989, coll. Narendran, T.C.

Remarks : It comes near to couplet number 26 of the key by Verma *et al.*, (2002), but does not fit to any other couplets. It differs from *E. pulchellus* Verma & Hayat in 1) Completely different colour pattern; 2) Forewing 4.7x as long as wide (in *E. pulchellus* forewing 3.5x as long as broad); 3) Gaster about 1.4x as long as combined length of head and mesosoma (in *E. pulchellus* 1.02x as long as combined length of head and mesosoma); 4) Scape distinctly shorter than F_1 (in *E. pulchellus* scape distinctly longer than F_1 (22 : 13)); 5) Clava 1.33x combined length of preceding two segments (in *E. pulchellus* 1.13x combined length of preceding two segments).

41. *Elasmus pulchellus* Verma & Hayat

2002. *Elasmus pulchellus* Verma & Hayat, in Verma *et al.*, 274-275 (BMNH).

Diagnosis : Female : Length 2.2-2.9 mm. Head orange yellow, except a central blackish area with light metallic green refringence surrounding ocelli and extending to frontovertex in front of anterior ocellus; eyes silvery white with some brownish tinge; mesosoma black with slight metallic green refringence, except on the reddish brown cross band on posterior third; posterior extension of metanotum hyaline, except yellow at base; gaster orange yellow except basal half of T_1 , transverse band on T_5 and all of T_6 and T_7 black or dark brown. Legs pale yellow with faint brown patch or spot on dorsal margin of hind coxa. Dorsal margin of middle and hind femora somewhat broadly and a spot on ventral margin of hind femur near apical third brown or pale brown. Gaster slightly longer than head and mesosoma together.

Host : Unknown.

Distribution : India : Kerala, Karnataka & Uttar Pradesh.

Material examined : 2 Females, INDIA, Kerala, Kannur Dt., Nedumpoyil (11° 51' N 75° 53' E), 24.ii.1988; 2 Females, Kerala, Alappuzha Dt., Kayamkulam (9° 10' N 76° 30' E), 20.ii.1989, 20.iv.2004; 1 Female, Kerala, Palghat Dt., Malampuzha (10° 53' N 76° 46' E), 11.xii.1987. All specimens collected by T.C. Narendran & Party.

Remarks : According to Verma *et al.* (2002) this species comes close to *E. africanus* Ferrière and agrees with that species in the presence of yellowish transverse band in distal third of mesoscutum. However *E. pulchellus* differs from *E. africanus* in antennal dimensions, colour of head, gaster and colour of hind coxae.

42. *Elasmus punctulatus* Verma & Hayat

2002. *Elasmus punctulatus* Verma & Hayat, in Verma *et al.*, 267-268, Female, India, Tamil Nadu (BMNH).

Diagnosis : Female : Length 1.75-2.0 mm. Black with bluish refringence; tegulae brownish with base yellowish; mesoscutum with 2 yellow spots, one on each side near tegulae; posterior extension of metanotum hyaline with base dark brown; gaster dark brown or black dorsally, with bluish refringence on sides of T₁, yellowish brown laterally and ventrally; brownish stripes at apex of T₁, T₃ and T₅, faintly on T₂; legs pale yellow with pale brown or brown as follows: basal half or so of fore coxa, basal two-thirds of hind coxa and base of mid coxa, dorsal and ventral margins at base of fore femur, tip of middle and basal half of hind femur. Gaster slightly longer than head plus mesosoma.

Host : Unknown.

Distribution : India : Kerala, Karnataka, Maharashtra, Tamil Nadu.

Material examined : 1 Female, Kerala, Kottayam (9° 36' N 76° 34' E), 25.ii.1989; 1 Female, Kerala, Calicut Dt., Peruvannamuzhi (11° 36' N 75° 56' E), 9.ii.1998; 1 Female, Kerala, Thrissur Dt., Vazhani (10° 38' N 76° 19' E), 3.vii.2003. All specimens collected by T.C. Narendran & Party.

Remarks : This species comes near *E. aquila* Girault in the key by Riek (1967) but differs from it in having strongly produced gaster with the last two terga about one-third the total length of gaster and brownish tegulae (Verma *et al.* 2002).

43. *Elasmus punensis* Mani & Saraswat

1972. *Elasmus punensis* Mani & Saraswat, 479, Female, India, Pune (USNM).

Diagnosis : Female : Length 1.5-2.5 mm. Yellowish brown or pale brownish yellow; middle coxa dark brown or black on basal half; head with ocellar triangle, axillae, propodeum, a spot on base of T₁ on either side, an obscure narrow patch above near base of hind coxa; ovipositor sheath brownish black.

Host : Unknown.

Distribution : India : Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Uttar Pradesh.

Material examined : 1 Female, INDIA, Andra Pradesh (16° 15' N 80° 28' E), 25.viii.1985; 22 Females, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 26.ii.1985, 10.iv.1987, 2.xii.1987, 16.x.1988, 19.v.1988, 29.i.1988, 16.x.1988, 5-19.x.1989, 25.vi.2989, 10.iv.1989, 28.ix.1989, 22.iv.1990, 11.ix.2002, 17.v.2003; 12 Females, Kerala, Kottayam Dt., Kumarakam (9° 36' N 76° 26' E), 28-29.xi.1989; 5 Females, Kerala, Kottayam Dt., Athirampuzha (9° 41' N 76° 31' E), 28.xi.1989; 2 Females, Kerala, Thrissur Dt., Vazhani (10° 38' N 76° 19' E), 3.viii.2003; 2 Females, Kerala, Palghat Dt., Koottanad (10° 49' N 76° 11' E), 11.viii.2003; 1 Female, Kerala, Palghat Dt., Pattambi (10° 49' N 76° 12' E), 13.viii.2003; 1 Female, Kerala, Calicut Dt., Engapuzha (11° 3' N 76° 0' E), 7.iv.2003; 1 Female, Kerala, Idukki Dt., Kanjikuzhi (9° 32' N 76° 20' E), 27.ii.1989; 1 Female, Kerala, Malappuram Dt., Manjeri (11° 7' N 76° 7' E), 4.x.2003; 1 Female, Kerala, Kasaragod (12° 30' N 75° 00' E), 23.i.2003; 1 Female, Kerala, Malappuram Dt., Nilambur (11° 16' N 76° 14' E), 11.viii.1987; 1 Female, Kerala, Malappuram Dt., Edakkara (11° 16' N 76° 15' E), 24.iv.1989; 4 Females, Kerala, Calicut Dt., Chaliyam (11° 9' N 75° 49' E), 23.iv.1989, 14.iii.2003; 2 Females, Kerala, Trivandrum Dt., Neyyar Dam (8° 37' N 77° 7' E), 24.ii.1989; 1 Female, Kerala, Trivandrum (8° 40' N 77° 7' E), 8.xii.2004; 2 Females, Kerala, Calicut Dt., Nanminda (11° 26' N 75° 50' E), 14.ii.2004; 1 Females, Kerala, Kollam (8° 54' N 77° 4' E), 9.xii.2004. All specimens collected by T.C. Narendran & Party.

Remarks : In some specimens basal half of tegula black and propodeum pale brownish yellow with spiracular area dark brown with metallic refringence. Verma *et al.* (2002) state that this species come near *E.phthorimaeae* Ferrière.

44. *Elasmus queenslandicus* Girault

1913. *Elasmus queenslandicus* Girault, [158] 82, Female, Australia, Queensland, Kuranda (QMB) (For synonyms refer Rick, 1967).

Diagnosis : Female : Length 1.45-2.7 mm. Orange or honey yellow or pale yellow with following parts blackish brown; a spot or patch above occipital foramen

continued on to frontovertex surrounding ocelli and extending in front of front ocellus, a large spot behind each eye meeting with a dark brown central patch or spot, a large convex spot on basal half of pronotum with slight greenish refringence; axillae black; tegulae dark violet; a spot on sides of metanotum; mesoscutum with a faint infuscation in middle and on sides; propodeum dark brown in middle and light brown infuscated area surrounding spiracle; T_1 with a blackish band at basal part; in some specimens T_4 with a dark brown spot in middle. Legs yellow with dorsal margin of hind coxa in distal half, dorsal margin of middle femur narrowly, most of dorsal margin of hind femur and all tarsal segments brown or pale brown. Gaster as long as head and mesosoma combined.

Host : Unknown.

Distribution : India : Kerala, Karnataka, Tamil Nadu, Orissa, Uttar Pradesh, Uttarakhand, West Bengal, Jharkhand, Delhi, Chattisgarh ; Australia.

Material examined : 10 Females, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 18-25.vi.1988, 11.viii.1989, 12.x.1989, 18.ix.2002; 3 Females, Kerala, Kasaragod (12° 30' N 75° 00' E), 16.xii.1988, 21-23.i.2003; 1 Female, Kerala, Alappuzha Dt., Kayamkulam (9° 10' N 76° 30' E), 23.iv.1989; 1 Females, Kerala, Kottayam Dt., Kumarakam (RARS) (9° 36' N 76° 26' E), 29.xi.1988; 1 Female, Kerala, Kottayam Dt., Athirampuzha (9° 41' N 76° 31' E), 28.xi.1988; 1 Female, Kerala, Trivandrum Dt., Neyyar Dam (8° 37' N 77° 7' E), 24.ii.1989; 1 Female, Kerala, Calicut Dt., Pokkunnu (11° 12' N 75° 49' E), 13.iv.2003; 4 Females, Kerala, Calicut Dt., Nanminda (11° 26' N 75° 50' E), 13.iv.2003, 16.xi.2003, 14.ii.2004, 11.vii.2004; 1 Female & 2 Females, Kerala, Kannur Dt., NedUMPoyil (11° 51' N 75° 53' E), 24.ii.1988; 1 Female, Kerala, Malappuram Dt., Vallikkunnu (11° 8' N 75° 50' E), 24.ii.1988; 1 Female, Kerala, Palghat Dt., Malampuzha (10° 53' N 76° 46' E), 11.xii.1987; 1 Female, Kerala, Pathanamthitta Dt., Chethonkara (9° 20' N 76° 48' E), 11.xii.1987; 1 Female, Kerala, Alappuzha Dt., Sherthallai (9° 41' N 76° 20' E), 27.ii.1990; 1 Female, Kerala, Malappuram Dt., Edakkara (11° 16' N 76° 15' E). All specimens collected by T.C. Narendran & Party. 1 Female, INDIA, Chattisgarh, Dhanora, 8 Kms SE Durg, (21° 08' 24" N 81° 20' 32" E), 300m, 24.iv.2007, coll. Hema & Santhosh.

Remarks : This species comes near *E. flavescence* Verma & Hayat but differs from it in having gaster ,except for the blackish band in basal half of T_1 , orange yellow to honey yellow (in *E. flavescence* gaster with T_1 largely blackish).

45. *Elasmus rajasthanicus* Verma & Hayat

(Fig. 136)

2002. *Elasmus rajasthanicus* Verma & Hayat, in Verma *et al.*, 262-263, Female, India, Rajasthan (NZSI).

Diagnosis : Female : Length 1.75-2.1 mm. Black or dark brown with bluish green refringence on frontovertex and mesosomal dorsum, scutellum, propodeum and base of T₁. Legs concolorous with body with tibiae pale brownish yellow and tarsal segments of forelegs yellowish. Gaster slightly longer than head and mesosoma combined.

Host : Unknown.

Distribution : India : Kerala, Rajasthan.

Material examined : 4 Females, INDIA, Kerala, Calicut Dt., Madappally (11° 36' N 75° 35' E), 20.xi.2001; 1 Female, Kerala, Malappuram Dt., Manjeri (11° 7' N 76° 7' E), 27.ii.1988; 3 Females, Kerala, Kannur Dt., Payyannur (12° 6' N 75° 12' E), 27.ii.1989; 1 Female, Kerala, Alappuzha Dt., Kayamkulam (9° 10' N 76° 30' E), 21.ii.1989; 1 Female, Kerala, Malappuram Dt., Nilambur, Chandakkunnu (11° 16' N 76° 13' E), 24.iv.1989; 1 Female, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 2.v.1989. All specimens collected by T.C. Narendran & Party.

Remarks : This species comes near *E. masii* Ferrière but differs from it in having middle and hind tibiae pale; fore coxae completely brownish, and shorter antennae with F₁-F₃ only slightly longer than broad (Verma *et al.* 2002).

46. *Elasmus scutellofervus* Narendran

(Figs. 154 & 155)

2008. *Elasmus scutellofervus* Narendran, 11, Female, India (NZSI).

Redescription : Female : (Holotype) Length 1.9 mm. Occiput and postocciput black which extends to frons medially up to and including upper part of scrobal depression; sides of vertex, sides of frons, area below toruli and gena yellow; eyes pale reflecting yellow with a blackish mark antero-ventrally; ocelli pale reflecting brownish yellow; pronotum yellow with a large black mark on medially; mesoscutum pale brownish yellow with a paler oblique and curved streak on either side and as in figure 155; scutellum and axillae entirely black; metanotum and propodeum black with metallic green refringence with median extended part of metanotum pale yellow at base and hyaline at apex; epimeron and metapleuron black, rest of pleural regions yellow; coxa yellow with a dark brown patch on postero-dorsal margin; other segments of all legs yellow except distal three segments of tarsi pale brownish yellow, gaster black with distal marginal area of T₁, T₂ and T₃ completely and basal half of T₄ pale brownish yellow; radicle and scape pale brownish yellow, remaining segments dark brown; wings hyaline.

Head : Frontoververtex with small scattered pits; head width in dorsal view 3x its length; width in anterior view 1.25x its length; POL 2x OOL; eye 1.57x as long as its width; malar space 0.4x length of eye; antennal toruli situated a little above level of lower eye margin, separated from lower clypeal margin by a distance a little more than its diameter, separated from eye margin by distance equal to its diameter; antenna as in figure 154.

Mesosoma : Pronotum 2.7x as broad as its length, 0.38x as long as mesoscutum; mesoscutum 1.26x as broad as long (34 : 27); scutellum a little wider than long (19 : 18); forewing 4.46x as long as broad (53 : 13); hind wing 5.2x as long as broad (52 : 10); marginal fringe 0.3x width of disc.

Metasoma length subequal to combined length of head and mesosoma, 3.32x as long as its width (73 : 22); ovipositor sheath 0.1x length of gaster in dorsal view.

Male : Unknown.

Host : Unknown.

Distribution : India : Kerala.

Material examined : Holotype Female, INDIA, Kerala, Wayanad Dt., Thariyodu (11° 40' N 75° 57' E), 22.ii.1988, coll. Narendran, T.C. & Party (NZSI) (MoEF Rg.No.2785). Paratype : 1 Female, INDIA, Kerala, Calicut Dt., Thiruvannur (11° 16' N 75° 47' E), 28.xi.1994, coll. Narendran, T.C. & Party.

Remarks : This species comes near *E. longicornis* Verma & Hayat in general appearance, but differs from it in having : (1) Mesoscutum pale brownish yellow with a paler oblique and curved streak on either side (in *E. longicornis* mesoscutum yellow with dark brownish large spot on either side); (2) Mesepimeron and metapleuron black (in *E. longicornis* mesepimeron and metapleuron yellow); (3) Antennal toruli situated a little above level of lower eye margin (in *E. longicornis* antennal toruli situated at level of lower margin of eye); (4) Pronotum 2.7x as broad as its length (in *E. longicornis* pronotum 2x as broad as long); (5) Pronotum 0.38x as long as mesoscutum (in *E. longicornis* pronotum 0.5x as long as mesoscutum); (6) Forewing 4.46x as long as broad (in *E. longicornis* forewing 3.5x as long as broad); (7) T₅ distinctly more than half length of T₆ (in *E. longicornis* T₅ about half length of T₆).

47. *Elasmus sigillatus* Narendran
(Figs. 150 & 151)

2008. *Elasmus sigillatus* Narendran, 10, Female, India (NZSI).

Redescription : Female : (Holotype) Length 3 mm. Head black with metallic green refringence. Toruli and part below yellow; ventral half of malar space yellow; upper half black; distal half of mandible pale brown; pedicel brown; remaining antennal segments dark brown. Pronotum yellow with black median patch on anterior half; mesoscutum with a faint brownish central area extending from base up to middle and a large black patch covering almost complete scapular part on side beside notauli on either side; axillae black; metanotum dark brown to almost black; propodeum black with slight metallic green refringence; posterior extension of metanotum yellow with black marking as follows: T_1 with a large longitudinal black patch on either side; T_3 with a dark brown spot on either side; T_7 and remaining part posteriorly black (Fig. 151); mesepimeron and metapleuron black; legs yellow except basal half of hind coxa and a patch on the dorso-lateral part on distal half of hind femur black. Wings hyaline.

Head : Frontovortex with fine setigerous regular pits; width in dorsal view about 3x its length; in anterior view head a little wider than long (15 : 14); POL a little more than 2x OOL; eye 1.39x as long as broad, 0.26x length of eye; scrobal impression not very deep, rounded above and on sides; antennal toruli removed from lower clypeal margin by a distance as long as diameter of torulus, separated from eye by diameter of torulus, toruli situated a little above level of lower margin of eye. Antenna as in figure 21.

Mesosoma : Pronotum 2.8x as broad as long and half as long as mesoscutum; mesoscutum 1.64x as broad as long; scutellum slightly broader than long (20 : 19); forewing 4.5x as long as broad (45 : 10); hind wing 4.5x (36 : 8) as long as broad; its marginal fringe 0.19x breadth of hind wing (1.5 : 8).

Metasoma distinctly longer than head plus mesosoma (32 : 27), 3.55x as long as broad in dorsal view; ovipositor sheath about 0.06x length of gaster in dorsal view.

Male : Unknown.

Host : Unknown.

Variation : In one paratype the black patch on the mesoscutum almost faded and in another it is absent.

Distribution : India : Kerala.

Material examined : Holotype Female, INDIA, Kerala, Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 2.iii.1987, coll. Narendran, T.C. & Party (NZSI) (MoEF Rg.No.705). Paratype: 1 Female, of same data of holotype, except date 1.iv.1989; 3 Females, INDIA, Kerala, Malappuram Dt., Calicut University

Campus (11° 7' N 75° 5' E), 10.vi.2003, 25.vi.1988, 1.viii.1987, coll. Narendran, T.C. & Party.

Remarks : This species comes to couplet No. 34 in the key by Verma *et al.*, (2002), but differs from it in having: (1) Mesoscutum with one black patch on either side (in *E. flavocarpus* no such black mark on either side); (2) Gaster with a large black mark on either side of T₁ and T₃, from T₇ to tip of ovipositor sheath black (in *E. flavocarpus* gaster completely yellow with a faint brown spot on either side of T₁); (3) Basal half of hind coxa black (in *E. flavocarpus* hind coxa with a dark spot with some bluish shine at base); (4) Gaster distinctly longer than head plus mesosoma (in *E. flavocarpus* gaster slightly shorter than head and mesosoma combined); (5) Clava distinctly shorter than preceding two segments combined (in *E. flavocarpus* clava distinctly longer than or as long as preceding two segments combined).

This species also comes near *E. longicornis* in having similar black patches on the mesoscutum, but differs from it in having : (1) Scutellum completely yellow (in *E. longicornis* scutellum completely black); (2) Gaster yellow with black marks on dorsal side (in *E. longicornis* gaster dark brown to almost blackish dorsally except a transverse band in the middle of T₁); (3) Gaster distinctly longer than head plus mesosoma (in *E. longicornis* gaster shorter than head plus mesosoma).

48. *Elasmus syleptae* Ferrière

1929. *Elasmus syleptae* Ferrière, 420, Female, Africa, Nyasiland, Namiwara (BMNH).

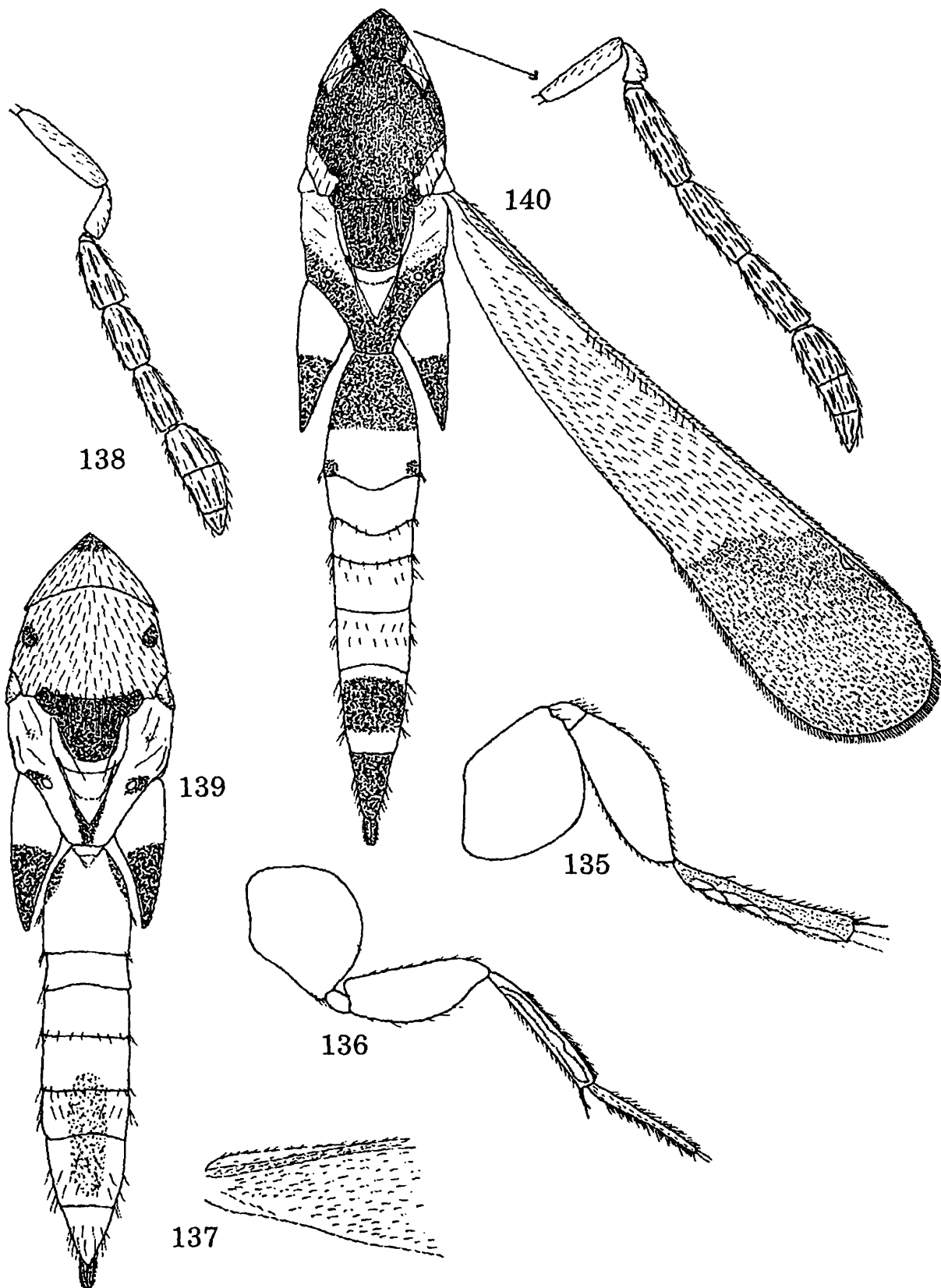
Diagnosis : Female : Length 2-2.3 mm. Black with metallic refringence; vertex with 2 large yellow spots near eyes; frons below anterior ocellus and gena yellow; mesosoma with a transverse band or stripe along hind margin of mesonotum (scapula and mesoscutum) yellow; scutellum black, with lateral and posterior margins yellow. Gaster black on dorsal side with broad red stripes on T₃, T₅ and posterior margin of T₆. Legs entirely pale yellow with upper part of hind coxae and lines above and below of middle and hind femora black.

Host : *Sylepta derogata* F (Africa).

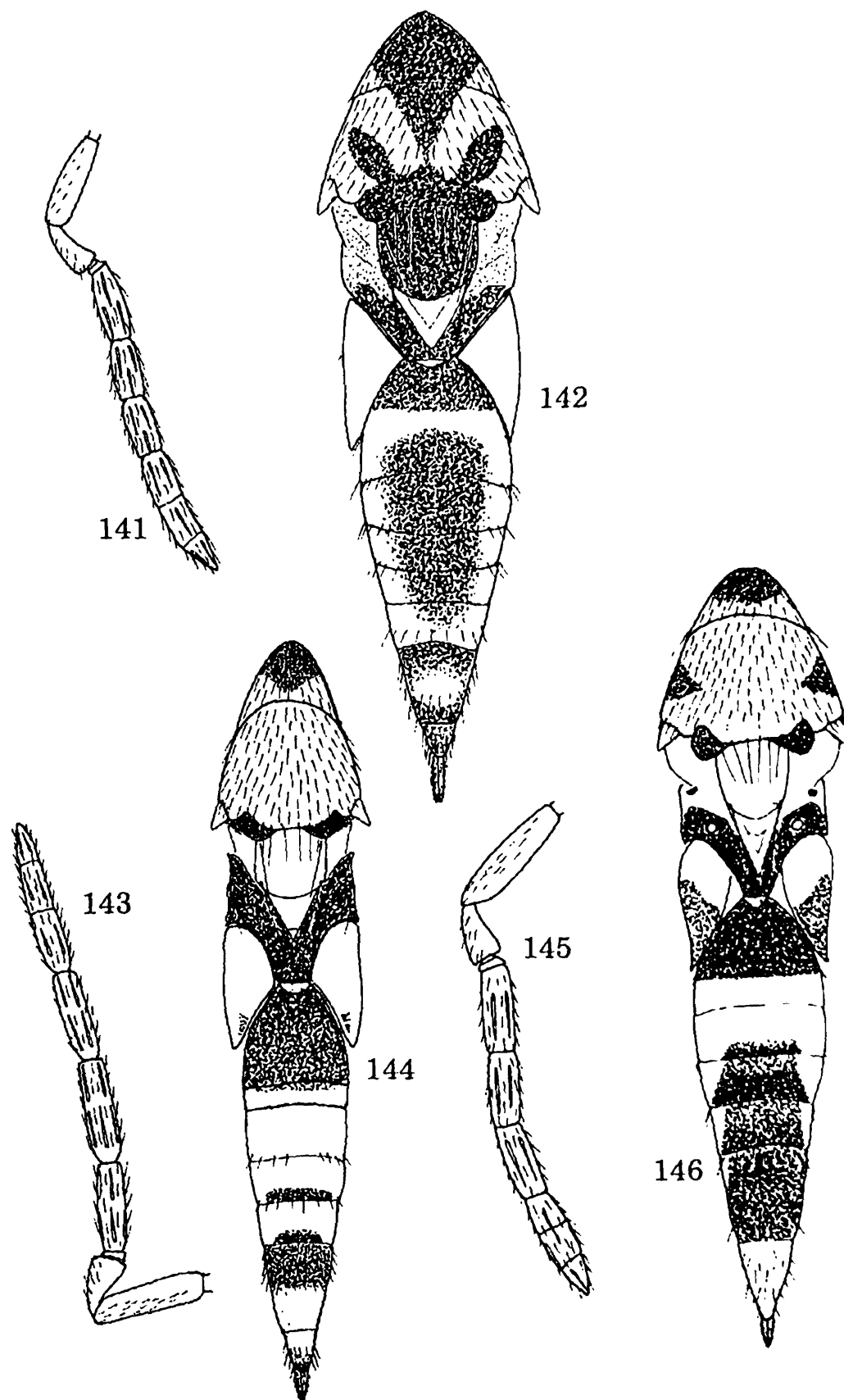
Distribution : Africa (Ferrière,1929); India (Narendran *et.al.*2008).

Material examined : 2 Females, INDIA, Kerala Malappuram Dt., Calicut University Campus (11° 7' N 75° 5' E), 3&25.ii.1988, coll. T.C. Narendran & Party (DZUC).

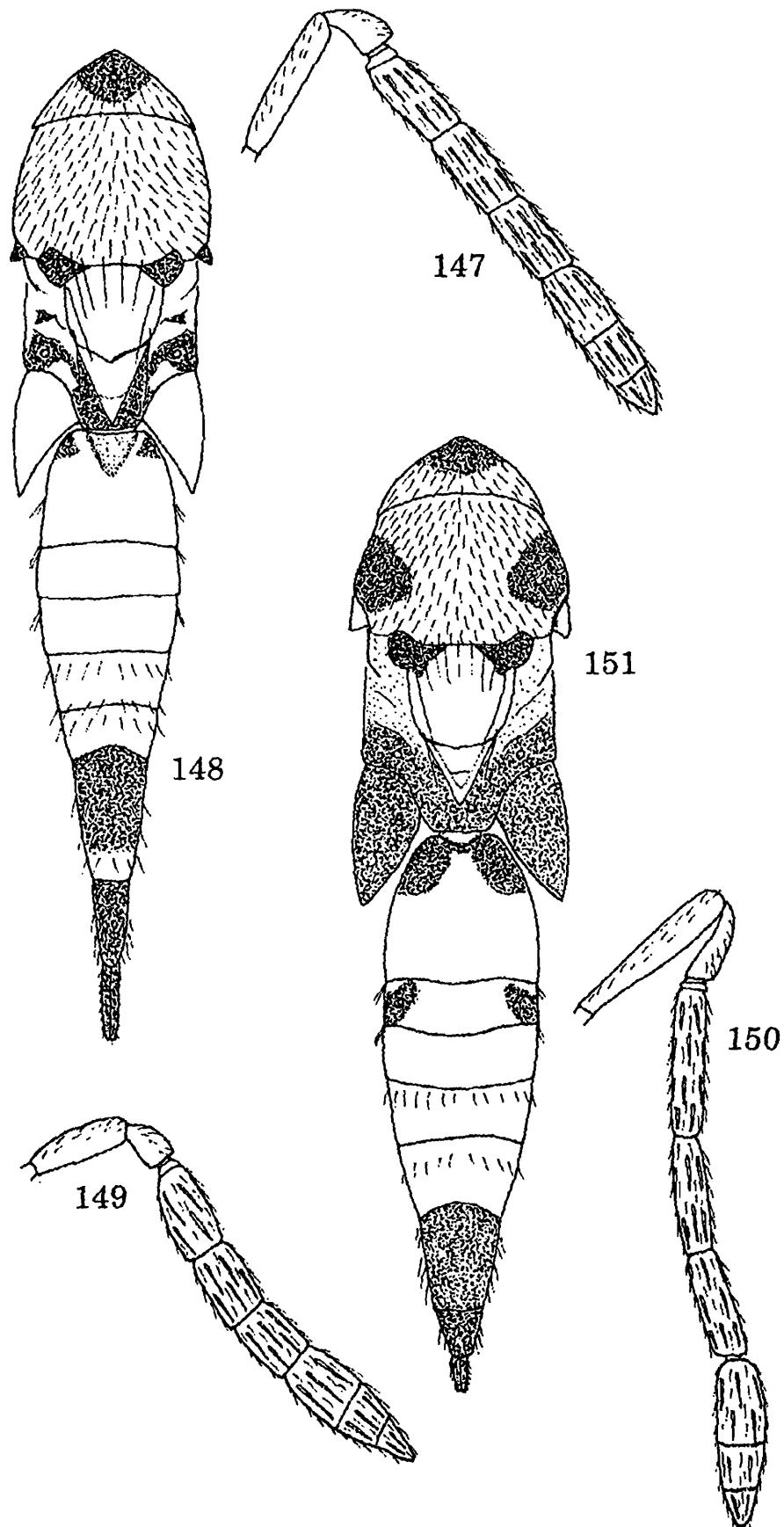
Remarks : This comes near *E. pulchellus* Verma & Hayat in the key by Narendran *et al.* (2008) but differs from it in having scutellum black with lateral and posterior margins yellow(in *E. pulchellus* scutellum is completely black).



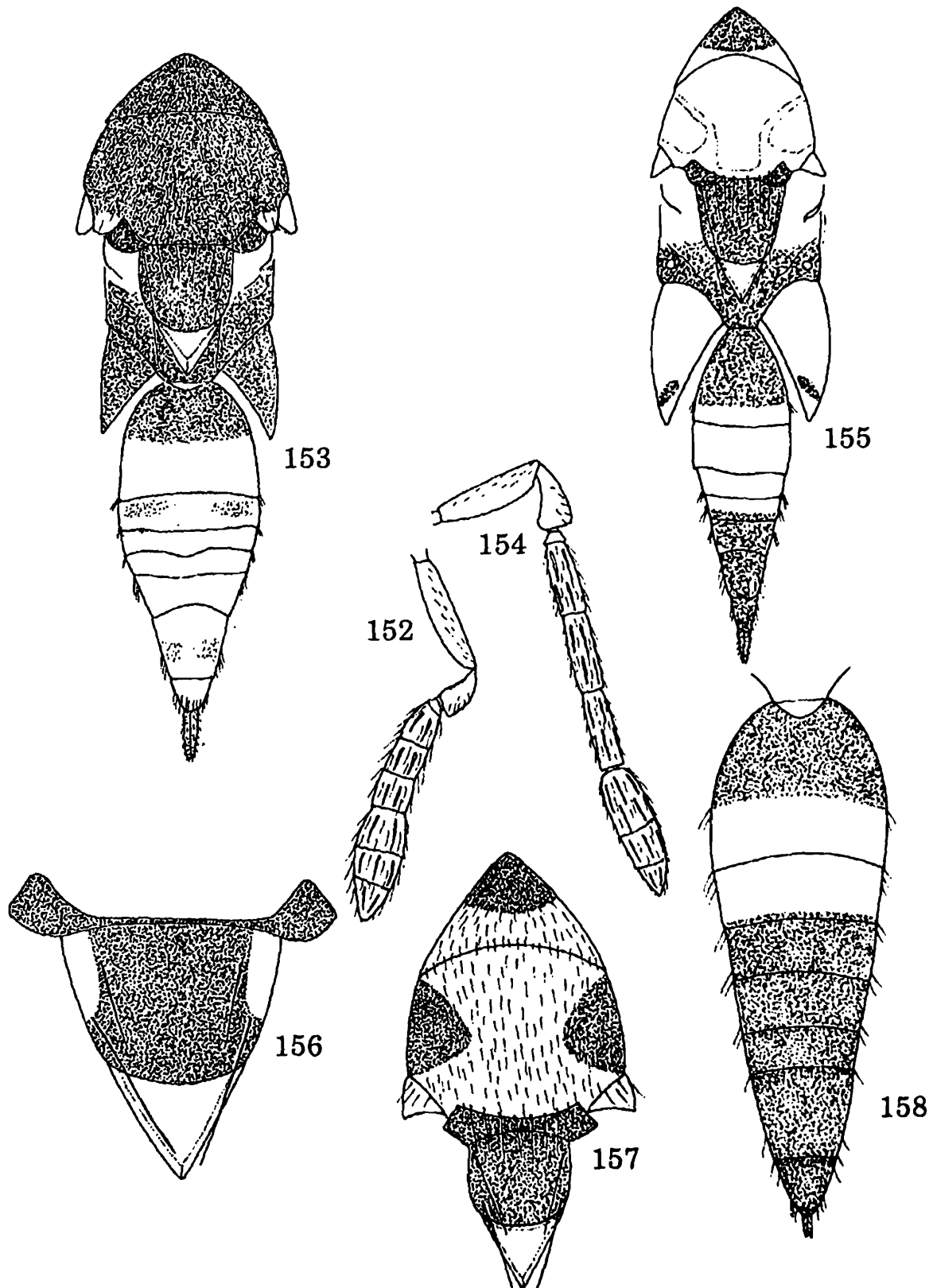
Figs. 135. *Elasmus nigratus* Verma & Hayat hind leg. **Fig. 136.** *Elasmus rajathanicus* Verma & Hayat female hind leg; **Fig. 137.** *Elasmus fulvicornis* Verma & Hayat Basal part of forewing. **Figs. 138-139.** *E. zatonus* Narendran Female : 138. Antenna; 139. Mesosoma & metasoma. **Figs. 140.** *E. nuperus* Narendran Female; antenna, mesosoma, metasoma & forewing.



Figs. 141-142. *Elasmus dubiatus* Narendran Female : 141. Antenna; 142. Mesosoma & metasoma *E. dextotus* Narendran Female : 143. Antenna; 144. Mesosoma & metasoma; *E. neoflavescens* Narendran Female : 145. Antenna; 146. Mesosoma & metasoma dorsal view.



Figs. 147-148. *Elasmus neoflavicornis* Narendran Female. 147. Antenna; 148. Mesosoma & metasoma **Fig. 149.** *E. caligneus* Narendran female antenna. **Figs. 150-151.** *E. sigillatus* Narendran Antenna; 151. mesosoma & metasoma dorsal view.



Figs. 152-153. *Elasmus neopunctulatus* Narendran Female 152. Antenna; 153. Mesosoma & metasoma dorsal view. **Figs. 154-155.** *E. scutellofurvus* Narendran Female : 154. Antenna; 155. Mesosoma & metasoma dorsal view. **Fig. 156.** *E. noyesi* Verma *et. al.* Female : female scutellum; **Fig. 157.** *E. longicornis* Verma *et. al.* Female Pronotum & metanotum. **Fig. 158 :** *E. indicus* Rohwer Female Metasoma.

49. *Elasmus zatonus* Narendran & Sheeba
(Figs. 138 & 139)

2008. *Elasmus zatonus* Narendran & Sheeba in Narendran *et al.*, Female, India (NZSI).

Diagnosis : Female : Holotype : Length 2.32 mm. General colour yellow with the following exceptions: eye pale reflecting yellow, a black patch starting from occipital foramen reaching vertex and extending anteriorly enclosing front ocellus, a thick black patch extend from occipital foramen to eye margin on either side, all remaining part of vertex yellow; antennal radicle and scape yellow, remaining segments of antenna dark brown; mandible dark brown at distal half; pronotum with a small dark patch at apex; mesoscutum with a black spot on either side; axillae black; scutellum black except lateral and apical part yellow; metanotum yellow with a black spot on either side; propodeum with a black colour medially and areas near surrounding spiracle; gaster yellow with an elongated black patch at base on either side, with a median depressed black spot; mesopleuron black; legs yellow with a black patch on posterior basodorsal part of hind coxa. Wings hyaline.

Head with scattered fine setigerous pits; width in dorsal view 2.3x as wide as its length; head a little broader than its length in anterior view (16 : 14); POL 3x OOL; eye 1.5x as long as its width; malar space 0.5x length of eye; distance between antennal toruli and clypeal margin 2.5x diameter of a torulus; separated from eye by a distance 3x its diameter; toruli situated a little above ventral margin of eye; scrobal impression in the form of inverted 'Y' Antenna as in figure 138.

Mesosoma : Pronotum 2.33x as long as broad, about 0.5x as long as mesoscutum; mesoscutum 1.32x as broad as long; posterior row of setae on mesoscutum long reaching middle of scutellum; scutellum width subequal to its length; propodeum smooth and shiny; forewing 4.5x as long as broad, with 10 erect backwardly directed ventral setae below MV; hind wing 4.4x as long as broad.

Metasoma subequal to length of head and mesosoma combined, 11x as long as broad; exerted part of ovipositor sheath 0.05x length of gaster in dorsal view.

Male : Unknown.

Host : Collected from coconut plantations of Central Plantation Crops Research Institute (CPCRI).

Distribution : Kerala.

Material examined : Holotype Female, INDIA, Kerala, Kasaragod, CPCRI (12° 31' N 74° 60' E), 21.i.2003, coll. Narendran, T.C. (NZSI) (MoEF Rg. No.27).

Paratypes : 2 Females, Kerala, Kasaragod, Manjeswaram (12° 42' N 74° 53' E) 27.ii.1988, coll. Narendran, T.C.; 1 Female, Kerala, Malappuram, Calicut University Campus (11° 7' N 75° 5' E) 16.x.1988, coll. Narendran, T.C.; 1 Female, 21.x.1988; 1 Female, 22.x.1988.

Remarks : This species comes very near *E. binocellatus* Mani & Saraswat in general appearance, but differs from it in having : (1) Forewing 4.5x as long as broad (in *E. binocellatus* forewing 3.3 to 3.41x as long as broad); (2) Mesopleuron black (in *E. binocellatus* mesopleuron yellow); (3) mesonotum with a dark brown spot on either side on scapular region (in *E. binocellatus* no such spot on scapular region); (4) Clava about 3x as long as broad (in *E. binocellatus* clava shorter than 2.5x its width); (5) F_3 length 0.93x length of F_1 (in *E. binocellatus* F_3 shorter than 0.75x length of F_1); (6) Gaster with one elongated spot on either side at base of T_1 and one median spot at base with black patches on T_4 to T_7 (in *E. binocellatus* no such pattern of colour).

50. *Elasmus zehntneri* Ferrière

1900. *Elasmus* sp. Zehntner, (by Ferrière, 1929b).

1929b. *Elasmus zehntneri* Ferrière, 417. Female Indonesia, West Java (BMNH).

1972. *Elasmus mahabaleswarensis* Mani & Saraswat, 475-476, Female, India (USNM); Narendran *et.al.*(2008) synonymized.

Diagnosis : Female : Length 2-2.4 mm. Head and mesosoma black with bluish green refringence on frontovertex, pronotum and mesoscutum; less refringence on scutellum; gaster orange or honey yellow with faint brownish spots at apex of T_1 , on bases of T_2 to T_5 , slightly extending on lateral parts with triangular brownish spots; T_6 to apex completely dark brown or black; legs yellow with basal third of hind coxa black with metallic refringence; basal third of middle femur brown; tibiae and tarsal segments of all legs pale yellow. Gaster longer than head and mesosoma combined.

Host : *Bissetia steniella* Hampson, *Chilo infuscatellus* Snellen, *Pectinophora gossypiella* Saunders, *Scirpophaga* sp., *S. auriflua* Zeller, *Tryporyza monostigma* Zeller, *T. nivella* Snellen, *T. rhodoproctalis* Hampson (*Scirpophaga intacta* Snellen in Java) (Noyes, 2003).

Distribution : India : Kerala, Andhra Pradesh, Bihar, Delhi, Punjab, West Bengal, Karnataka & Tamil Nadu (Noyes, 2003) (Verma *et al.*, 2002).

Material examined : 1 Female, INDIA, Kerala, Calicut Dt., Kakkayam (11° 15' N 75° 50' E), 9.ii.1996, coll. T.C. Narendran & Party; 1 Female, Kerala, Pathanamthitta Dt., Chethonkara (9° 20' N 76° 48' E), 25.xi.1988, coll. T.C.

Narendran & Party; 1 Female, Kerala, Kollam Dt., Vattamon (8° 53' N 76° 54' E), 26.xi.1988, coll. T.C. Narendran & Party; 1 Female, Kerala, Trivandrum, Neyyar Dam (8° 37' N 77° 7' E), 24.ii.1989, coll. T.C. Narendran & Party; 1 Female, Kerala, Kasaragod Dt., Chowki (12° 31' N 74° 59' E), 23.i.2003, coll. T.C. Narendran & Party; 2 Females, Kerala, Calicut Dt., Nanminda (11° 26' N 75° 50' E), 14.ii.2004, coll. T.C. Narendran & Party.

Remarks : From the original description the synonym of *E. mahabaleswarensis* is clearly beyond doubt. Verma *et al.*, (2002) also indicated this synonymy. See remarks under *E.munnarus*.

Genus *Eulophinusia* Girault

1913. *Eulophinusia* Girault, [162] : 457. Type species *Eulophinusia cydippe* Girault, by original designation.

1913. *Alophomopsis* Girault, [167] 281-282. Type species *Alophomopsis spenceri* Girault, by original designation (Bou ek, 1988 synonymized).

1913. *Grotiusella* Girault, [167] 282- 283. Type species *Grotiusella fasciatifrons* Girault, by original designation (Bou ek, 1988 synonymized)

1913. *Elachertonecremnus* Girault, [167] 293. Type species *Elachertonecremnus circumjectus* Girault, by monotypy (Bou ek, 1988 synonymized.)

1922. *Babinda* Girault, [361] : 100. Type species *Babinda murrariensis* Girault, by monotypy (Bou ek, 1988 synonymized).

1997. *Arunus* Singh & Khan, 9-11. Type species *Arunus indicus* Jaikishan Singh & Khan, original designation. syn. nov.

2008. *Pradeshia* Kocak *et al.*, 7. Replacement name for *Arunus* thought to be preoccupied by *Aruna* Sengupta, 1997. syn. nov.

Diagnosis : Body somewhat flat; dark (often metallic) with yellow pattern, antenna in both sexes simple, short, funicular segments 2-4 transverse; scape not reaching level of vertex, almost reaching or not reaching front ocellus; antenna inserted at or a little above level of ventral margin of eyes; mandibles quadridentate; notauli weakly represented anteriorly with scattered minute setae on MLM; axillae well separated and well advanced anteriorly; scutellum usually broader than long with 2 pairs of setae; sublateral or submedian grooves absent; propodeum bare with narrow median carina; wings hyaline with a row of ventral setae behind MV; marginal fringe hardly distinct; metasoma broad.

Host : Parasitic on microlepidopteran moths.

Distribution : Australia; India (New record for India).

Remarks : This genus is very close to *Sympiesis* Foerster from which it differs in having : (1) antennae short and funicular segments 2-4 transverse. (in *Sympiesis*

antennae longer than that of *Eulophinusia*); (2) scutellum often broader than long (in *Sympiesis* scutellum not transverse) and (3) mesosoma with yellow pattern (not so in *Sympiesis*).

The genus *Arunus* cannot be separated from *Eulophinusia* on clear cut generic features. It is therefore considered a junior subjective synonym of *Eulophinusia*. The unnecessary replacement name, *Pradeshia*, proposed for *Arunus*, thought to be a homonym of *Aruna* Sengupta, is also considered a synonym of *Eulophinusia*. Hayat (Per. comm. 2010) informs me that "I understand that for genus group names, a one letter difference is enough to prevent homonymy"

Key to species of *Eulophinusia* Girault of India

1. Mesosoma black with metallic green refringence; pedicel 1.5x as long as wide; eyes pilose; metasoma longer than mesosoma
..... *E. keralensis* Narendran sp. nov.
- Mesosoma yellowish brown without metallic refringence; pedicel almost as long as wide; eyes bare; metasoma slightly shorter than mesosoma
..... *E. indicus* (Singh & Khan)

1. *Eulophinusia indica* (Singh & Khan), comb. nov.

1997. *Arunus indicus* Singh & Khan. 9-11. Holotype Female, India, Uttarakand, Pantnagar University Campus (NZSI?).

2008. *Pradeshia indicus* (Singh & Khan) : Kocak, *et al.*, 7.

Diagnosis : (Based on Singh & Khan, 1997). Female: Length 1.27 mm. Body yellowish brown; head with infuscations in the middle of frons, antennae dark brown except scape white with infuscations; forewing hyaline with small fuscous band on STV; legs uniformly yellowish except coxae, hind femur and tibia infuscated; head width in anterior view 1.5x or a little more than 1.5x its height; relative L : W of antennal segments: scape = 15 : 5; pedicel = 6 : 5; F1 = 6 : 7; F2 = 5 : 10; F3 = 6 : 11; F4 = 6 : 11; clava = 12 : 10 (Fig. 5 of Jaikishan Singh & Khan, 1997); mesoscutum with incomplete notauli; forewing 2x or a little over 2x as long as wide; relative length of CC = 18; SMV = 16; MV = 22 : PMV = 9; STV = 6 (Fig. 8 of Singh & Khan, 1997); propodeum with a median carina and plicae present; metasoma slightly shorter than mesosoma.

Host : Emerged from leaf galls of *Trioza fletcheri* on *Trewia nudiflora* Linn. (Singh & Khan, 1997).

Distribution : India (Uttarakand).

Material examined : None.

Remarks : Although there are discrepancies between the description and the figures given by Singh & Khan, the above diagnosis is based on the figures and original description as I could not get the types for study in spite of my requests to the authors. The measurements of antennal segments and wing veins are directly taken from the original figures of Singh & Khan, (1997).

2. *Eulophinusia keralensis* Narendran sp. nov.

(Figs. 159-162)

Female : (Holotype) Length 1.77 mm. Head black with area below toruli and gena pale yellow; antennal scape black with base and apex pale yellow; pedicel black with apex pale yellow, remaining segments of antenna dark brown; eyes pale brownish; ocelli dark brown; mesosoma black with metallic green refringence, with yellow marking on pronotum, mesoscutum (Fig.160); tegula pale white; legs pale whitish yellow with hind coxa black with metallic green refringence; hind femur pale yellow with a dark brown patch; pretarsi pale brown; metasoma black with yellow spots on sides and two large spots on T1; T7 completely pale yellow; wings hyaline and veins pale brown.

Head width a little over its height, 2.06x broader than its length in dorsal view; POL 5x OOL; AOL longer than OOL; LOL shorter than OOL; WIOS 1.5x POL; antennae inserted at level of ventral margin of eyes; scape not reaching level of vertex, almost reaching anterior ocellus; relative L : W of antennal segments : scape = 36 : 8; pedicel = 18 : 10; F1 = 15 : 12; F2 = 10 : 12; F3 = 9 : 12; F4 = 8 : 13; clava = 22 : 13.

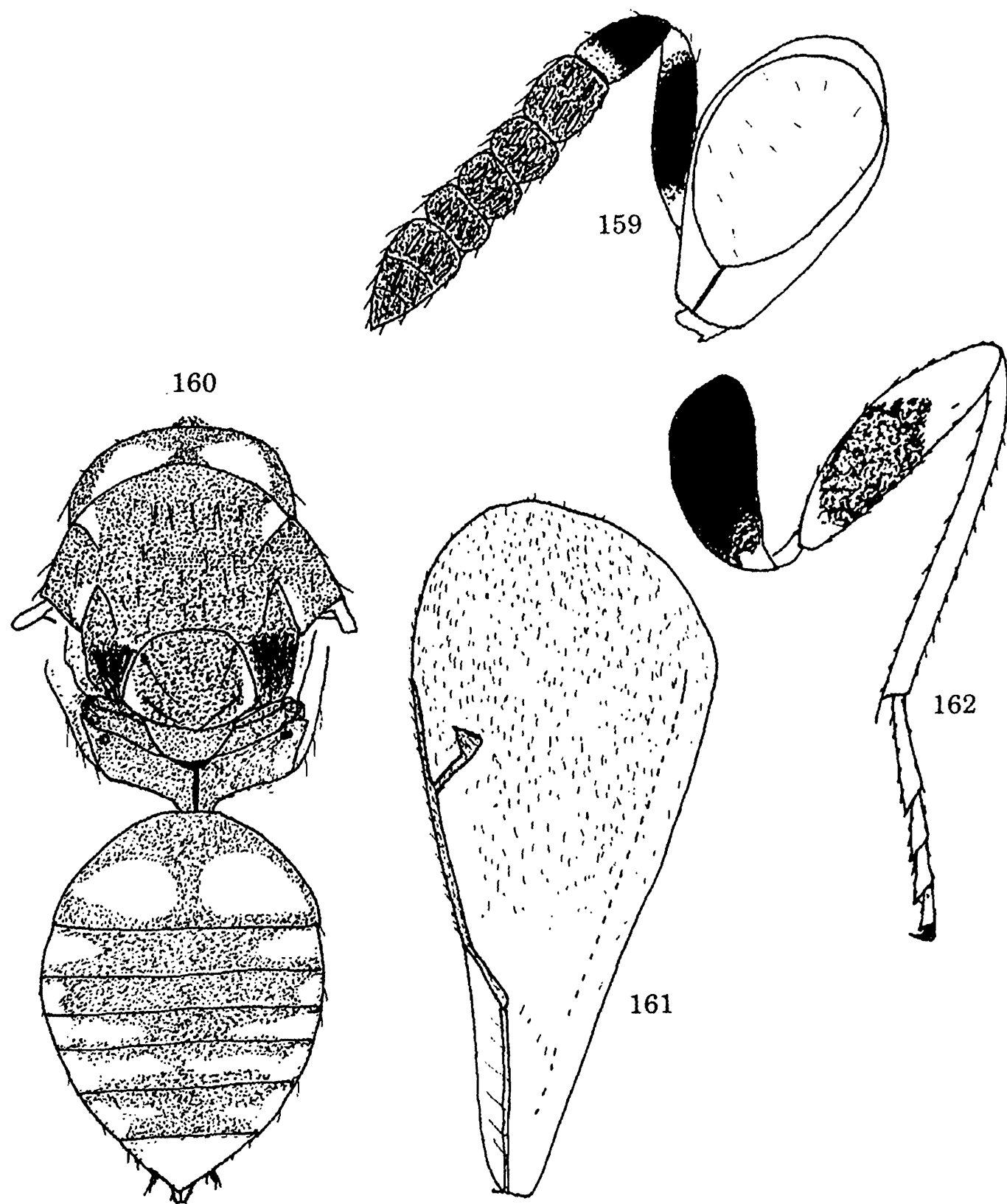
Mesosoma : Pronotum finely reticulate sparsely pubescent; mesoscutum with several scattered minute short setae; notauli distinct anteriorly; axillae well advanced and well separated from each other; mesoscutum densely reticulate; scutellum densely reticulate, 1.4x as broad as long; dorsellum reticulate; propodeum relatively short, reticulate, with a short median carina; hind femur 3.7x as long as wide; spiracle almost touching metanotum; forewing 2.6x as long as wide; speculum closed behind by cubital line of setae; relative length of CC = 44; SMV = 35; MV = 32; PMV = 20; STV = 12.

Metasoma : A little longer than mesosoma, 1.33x as long as wide; ovipositor sheath a little exserted.

Male : Unknown.

Host : Unknown.

Material examined : Holotype : Female, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 3-iii-1989, T.C. Narendran &



Figs. 159-162. *Eulophinusia keralensis* Narendran Female : 159. Head & antenna profile; 160. Mesosoma & metasoma dorsal view; 161. Forewing; 162. Hind leg.

party. Paratype : 1 Female, Kerala, Edakkara (11° 21' N 76° 18' E), 24-iv-1989, T.C. Narendran & party.

Depository : Holotype deposited at the Department of Zoology, University of Calicut, Kerala state, India pending transfer to ZSIK or NZSI.

Remarks : This new species resembles the Australian *Eulophinusia cydippe* Girault in general appearance but differs from it in having : (1) Pedicel a little longer than F1 (in *E. cydippe* pedicel shorter than F1); 2) gaster 1.33x as long as broad (in *E. cydippe* gaster 1.71x as long as wide); and the yellow patches reduced in mesosoma in *E. keralensis*.

Genus *Eulophomorpha* Dodd

1915. *Eulophomorpha* Dodd, in Girault, [230] : 293. Type species *Eulophomorpha flavicornis* Dodd, by original designation.

Diagnosis : Occiput strongly excavated and dorsally margined by a sharp crest running immediately behind hind ocelli and eyes; vertex with stout setae; eyes densely pubescent; malar space extremely small about 0.2x eye height in profile; antennal formula 11233; mesoscutum and scutellum with very delicate reticulation and dense white pubescence; axilla advanced forward; notauli absent or indistinct; propodeum smooth and distinctly convex between the postspiracular grooves which delimit a broad and flat supracoxal flange, with a distinct median carina ending at a raised nuchal strip; MV very long; PMV and STV very short, subequal; gaster sessile, conspicuously convex, lanceolate, pointed posteriorly, with slightly produced and very narrow ovipositor sheath; cerci distinctly elongate.

Host : Unknown.

Distribution : India, South China, Australia and Nigeria.

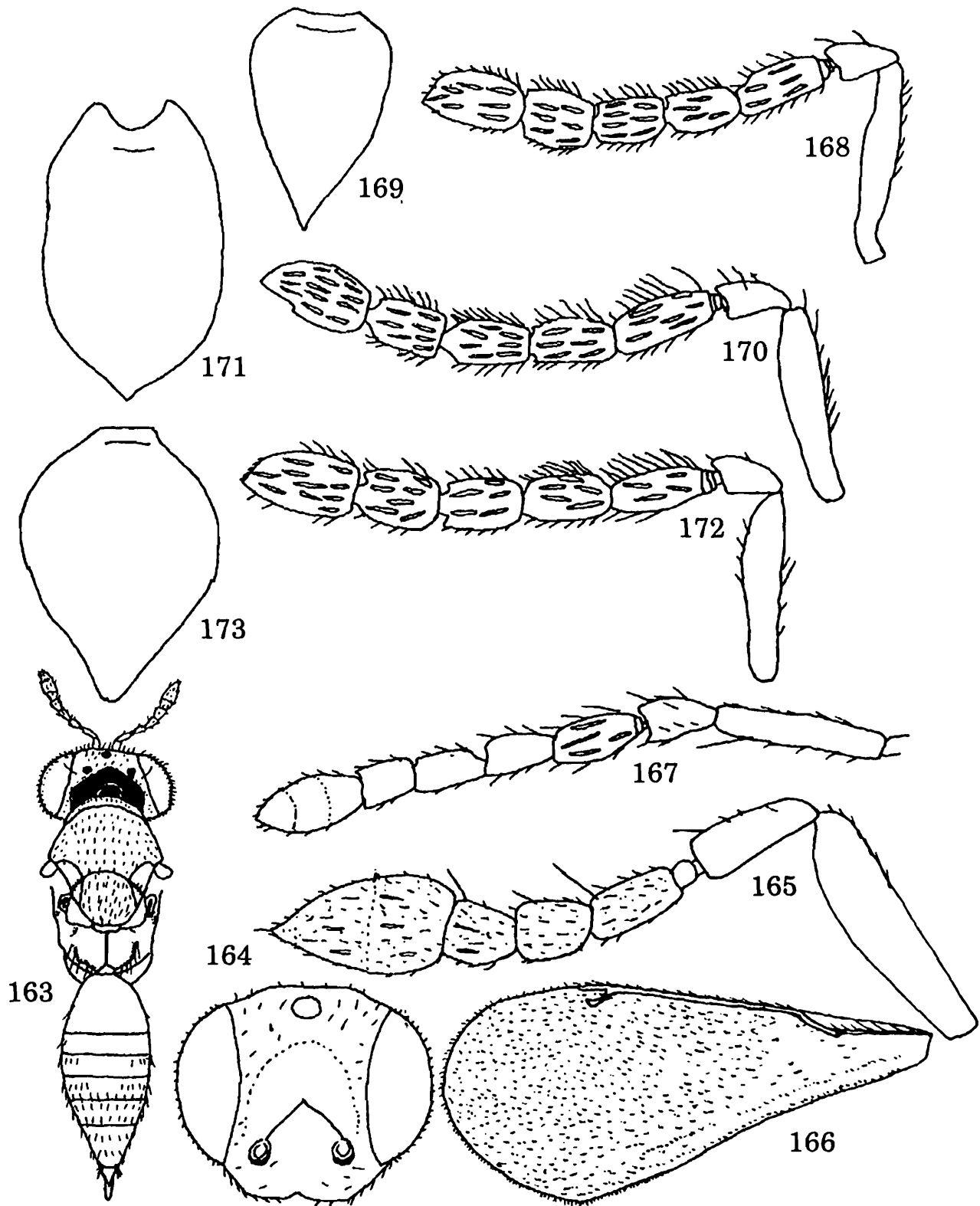
Remarks : This is a very distinctive genus with a strongly excavated occiput, densely pubescent head, mesoscutum and scutellum, convex propodeum, relatively very long MV and conspicuously convex gaster with unusually narrow ovipositor sheath.

Eulophomorpha flavicornis Dodd

(Figs. 163-166)

1915. *Eulophomorpha flavicornis* Dodd, in Girault [230]. Holotype Female, Australia, Queensland, (QM).

Redescription : *Female* : Length 1.54-1.85 mm. Head and mesosoma black with metallic green refringence; eyes dull gray, ocelli black; antenna pale yellow; legs pale yellow; gaster black or dark brown; ovipositor sheath pale brown; wings hyaline with veins pale brown.



Figs. 163-166. *Eulophomorpha flavicornis* Dodd Female : 163. Body dorsal view; 164. Head anterior view; 165. Antenna; 166. Forewing. **Figs. 167.** *Eurycephaloplectrus natadae* (Kurian) Female antenna. **Figs. 168-169.** *Metaplectrus solitarius* Gadd Female (Adapted from Wijesekara & Schauff, 1994). 168. Antenna; 169. Gaster dorsal outline; **Figs. 170-171.** *M. teregaster* Wij. & Schauff. 170. Antenna; 171. Gaster dorsal view. **Figs. 172-173.** *M. thoseae* Ferriere 172. Antenna; 173. Gaster dorsal view outline.

Head width in anterior view 1.11x its height, width in dorsal view 2.1x its length; occiput strongly excavated; POL 4x OOL; AOL distinctly longer than densely pubescent; MS 0.19x eye height in side view; eye length 0.65x eye height in profile; antenna inserted at level of ventral margin of eyes; scape not reaching anterior ocellus; relative L : W of antennal segments: scape = 59 : 14; pedicel = 28 : 11; F1 = 21 : 10; F2 = 17 : 13; F3 = 16 : 14; clava = 42 : 21.

Mesosoma : Pronotum without transverse carina; pronotum, mesoscutum and scutellum with delicate reticulations and dense white or dirty white pubescence; scutellum with lateral grooves absent; dorsellum smooth, without any tooth like structures; propodeum smooth, convex, with a median carina; spiracle separated from metanotum by a distance more than diameter of spiracle; plicae absent; hind tibia with inner spur as long as first hind tarsal segment; forewing 2.3x as long as broad; speculum relatively very small, closed behind by cubital line of setae; relative length of CC = 29; SMV = 20; MV = 43; PMV = 6; STV = 6.

Metasoma : Sessile, longer than mesosoma; pubescent; T1 not reaching middle of gaster; hypopygium not quite reaching half of gaster.

Male : Unknown.

Host : Reared from the eggs of an unidentified mantid (Kamijo, 1996).

Distribution : India : Tamil Nadu, Karnataka (New Record for Karnataka); South China; Australia and probably Nigeria also (Bou ek, 1988).

Material examined : 1 Female, INDIA, Karnataka, Sringeri (13° 25' N 75° 15' E), 10-xii-2001, P.A.Sinu; 1 Female, Karnataka, Makutta (75°22' to 76°11'), 28-vi-2005.

Remarks : One Indian specimen examined shows minor variation : the metallic green is very faint and the general colour of head, mesosoma and metasoma is dirty white.

Genus : *Eulophus* Geoffroy

1762. *Eulophus* Geoffroy, 312. Type species *Ichneumon ramicornis* Fabricius, by monotypy.

1802. *Camedo* Schrank, 308. Type species *Ichneumon larvarum* Linnaeus, by monotypy (Peck, 1951 synonymized with *Eulophus*).

1878. *Cratotechus* Thompson, (5) 208, 219. Type *Ichneumon larvarum* Linnaeus; designated by Ashmead 1904 (Bou ek & Askew, 1968 synonymized with *Eulophus*).

Diagnosis : Female : Funicle 3 segmented; first tarsal segment of at least mid legs shorter than the second, dorsally about as long as, or shorter than, spur of mid tibia; axillulae lacking or short, not connected with lateral furrow; gaster

rounded or subrounded; last tergite several times as broad as long; mandibles stunted, not meeting by their tips; notauli incomplete or indistinct.

Host : Mostly gregarious. Parasitoids of Lepidoptera, Coleoptera, Diptera and Hymenoptera.

Distribution : Palaearctic, Nearctic and Neotropical. The record of a species of the genus from India by Veer (1979) is probably based on incorrect identification. (see www.universalchalcidoidea data base). Motschulsky (1863) reported *Eulophus* from Sri Lanka.

Remarks : Though many earlier authors reported this genus from Indian subcontinent, all of them are based upon misidentifications. This is perhaps the first record of the genus from India.

Key to species of *Eulophus* Geoffroy of India and adjacent countries

1. Fore and mid coxae and all femora yellow; body black with strong metallic green refringence *E. razaki* Narendran sp. nov.
- Fore coxa black; colour patterns of other legs variable 2.
2. Gaster with yellow patch on median part on basal half; hind coxa completely black with or without metallic green refringence; mid coxae yellow; hind femora yellow with dark brown infuscation on apical half 3
- Gaster without yellow patch dorsally; other characters variable 4
3. Metasoma with a small yellow petiole (0.15x length of gaster)
..... *E. velosus* Narendran sp. nov.
- Metasoma without petiole or, petiole indistinct..... *E. abdominalis* Nees
4. Metasoma subovate; head and mesosoma not punctate and reticulate; metanotum with a subcupreous refringence; Sri Lanka.....
..... *E. tardescens* Motschulsky
- Metasoma subcircular, head and mesosoma strongly reticulate; metanotum with subcupreous refringence absent; India.....
..... *E. chennaicus* Narendran sp. nov.

1. *Eulophus abdominalis* Nees

1834. *Eulophus abdominalis* Nees, 159, Europe (Westwood collection, UMO?).

1839. *Eulophus anatole* Walker, 126. (Graham, 1959 : 183, selected Lectotype and synonymized) BMNH(examined).

1878. *Cratotechus longicornis* Thompson, 221. Lectotype Female, United Kingdom (BMNH) (Bou ek, 1959 : 164, synonymized).

Diagnosis : **Lectotype** Female of *Eulophus anatole* : Length : 2.68 mm. Head and mesosoma dark metallic green; gaster brown with pale yellow patch medially on dorsal part; legs pale yellow except hind coxa dark metallic green and hind femur partly brown; wings hyaline without infuscation.

Head 2.8x as long as wide in dorsal view; POL 1.7x OOL, WIOS 2.8x POL; face with cross ridge below toruli; area below toruli reticulate; scape not reaching level of vertex; relative L : W of antennal segments : scape = 6 : 1; pedicel = 2 : 1; F1 = 4 : 1; F2 = 3 : 1; F3 = 3 : 1; clava = 6 : 2.

Mesosoma : Pronotum reticulate; mesoscutum with notauli weakly represented anteriorly, strongly reticulate anteriorly ; scutellum gibbus; propodeum with strong median carinae, strongly reticulate; plicae curved and distinct; spiracle rim exposed, separated from metanotum by a distance shorter than its diameter; first tarsal segment of all legs shorter than respective second tarsal segment; forewing 2.33x as long as wide; speculum open behind; relative length of CC = 23; SMV= 16; MV = 21; PMV = 11; STV = 6.

Metasoma shorter than mesosoma, 1.41x as long as broad.

Additional characters noted in Indian specimens: each callus with 6 setae; metastomal sternites pale whitish yellow.

Host : Larval parasitoid of Lepidoptera (Geometridae, Lasiocampidae, Lymantriidae, Notodontidae, Noctuidae, and Tortricidae) (Zhu & Huang 2002).

Distribution : India : Arunachal Pradesh (New record for India), Palaerctic region, China, Taiwan.

Variation : In one specimen collected from Arunachal Pradesh metallic green refringence is almost absent, fore and hind coxae completely black without any trace of metallic refringence (in the lectotype of *anatole* forecoxa could not be observed due to original mounting position).

Material examined : Lectotype of *E.anatole* Walker. 2 Females, INDIA, Arunachal Pradesh, Namdapha T. R. (N 27° 31' 16.1 "E 96° 29' 52.9"), Hornbill, 4.xi.2009, P.M. Sureshan.

Remarks : This species resembles *E.velosus* Narendran sp. nov. in having gaster with a pale yellow patch on dorsal side, but differs from it in having yellow petiole absent; and gaster shorter than 1.5x its width.

2. *Eulophus chennaicus* Narendran sp. nov.

(Figs. 174-177)

Female : (Holotype) Length 2 mm. Black with very slight metallic green refringence under bright illumination; scape pale brownish yellow; eyes dull grayish

yellow with black patches; ocelli pale reflecting brown; all coxae black; femora brownish black with bases and apices pale; tibia pale brownish yellow; tarsi pale yellow; pretarsi dark brown; wings hyaline; veins pale brown.

Head width in anterior view 1.27x its height; width in dorsal view 3x its length; frons distinctly reticulate; vertex very narrow, ridge like; POL 2x OOL; AOL shorter than OOL; LOL shorter than AOL; WIOS 3.4x POL; face with a cross ridge below toruli; area below toruli cross reticulate-striate; MS present; malar space 0.31x height of eye in profile; eyes bare; eye length in profile 0.69x eye height; antenna inserted well below level of ventral margin of eyes; scape reaching level of vertex; relative L:W of antennal segments : scape = 45 : 7; pedicel = 12 : 5; F1 = 15 : 7; F2 = 12 : 7; F3 = 13 : 9; clava = 24 : 12.

Mesosoma slightly narrower than head (17 : 18) and slightly narrower than gaster (17 : 18); notauli indistinct; MLM with pit like reticulation, very short 5-6 scattered minute pubescence (hardly visible); scutellum with 2 pairs of setae, reticulation as in MLM; dorsellum reticulate; propodeum strongly reticulate with raised median carina; broken plicae indicated; spiracle round separated from metanotum by a distance shorter than diameter of spiracle; lateral panel of pronotum and prepectus strongly reticulate; mesepimeron strongly reticulate; mesepisternum with a pit; hind coxa reticulate; forewing 2.3x as long as wide; pilosity absent below SMV and below region posterior to proximal part of MV, so that speculum is not clearly marked (Fig. 176); relative L : W of CC = 40 : 4; relative length of SMV = 25; MV = 31; PMV = 14; STV = 10.

Metasoma shorter than mesosoma (17 : 24), length subequal to its width; T1 large, its posterior margin convex in the middle.

Male : Unknown.

Host : Ex. Lepidoptera larva on ferns.

Material examined : Holotype, Female, INDIA, Tamil Nadu, Chennai (13° 04' N, 80° 17' E), 5-xi-2008, T.C. Narendran & party.

Depository : Holotype deposited at the Department of Zoology, University of Calicut, Kerala state, India pending transfer to ZSIK or NZSI.

Remarks : This new species comes near *Eulophus abdominalis* Nees in the key to species by Zhu and Huang (2002) and in the key to species by Bouček (1959) but differs from it. I could examine the lectotype (selected by Graham 1958) of *Eulophus anatole* Walker which is a junior synonym of *Eulophus abdominalis* (synonymized by Graham, 1959) during my visit to BMNH and find out the differences between the two species.

Eulophus chennaicus Narendran sp. nov. differs from *E. abdominalis* in having: (1) notauli indistinct (in *E. abdominalis* notauli distinct atleast anteriorly); (2) WIOS 3.4x POL (in *E. abdominalis* Nees WIOS 2.6x OOL); (3) gaster completely black without any pale yellow patch on dorsal side (in *E. abdominalis* gaster brown with pale yellow patch at base); (4) gaster width subequal to its length (in *E. abdominalis* gaster a little longer than wide).

This new species differs from the Sri Lankan species *Eulophus tardescens* Motschulsky in having : (1) metasoma not subovate (in *E. tardescens* metasoma subovate); (2) head and mesosoma well reticulate (head and mesosoma not punctate- reticulate in *E. tardescens*) and (3) mesonotum not with subcupreous colour (in *E. tardescens* mesonotum with subcupreous refringence).

3. *Eulophus razaki* Narendran sp. nov.

(Fig. 321-322)

Female : (Holotype) Length 2.23 mm. Black with metallic green refringence; scape pale yellow; pedicel pale yellowish brown; remaining antennal segments dark brown; eyes gray; ocelli pale reflecting yellowish white; legs yellow except basal half of hind coxae dark metallic green and brown pretarsi; wings hyaline and veins pale yellowish brown.

Head : Width 1.28x its height; width in dorsal view 2.73x its length; frons distinctly reticulate; vertex very narrow, ridge like, POL 3.7x OOL; AOL longer than OOL; LOL subequal to AOL; WIOS 1.91x POL; face with a cross ridge below toruli; area below cross ridge cross reticulate- striate; MS present, malar space 0.24x height of eye in pofile; eyes bare, eye length in profile 0.67x eye height; antenna inserted at level of ventral margin of eyes; scape not reaching level of vertex; relative L: W of antennal segments: scape = 36 : 7; pedicel = 14 : 6; F1 = 14 : 7; F2 = 10 : 7; F3 = 11 : 9; clava = 20 : 9.

Mesosoma slightly wider than head (20 : 18); and a little narrower than metasoma; notauli indistinct; MLM with pit like reticulation with 3 weak setae on either side each; scutellum with 2 pairs of setae, reticulation as in MLM; propodeum strongly reticulate, with raised median carina; plicae present on posterior half; spiracle rounded separated from metanotum by a distance shorter than diameter of spiracle; lateral panel of pronotum and prepectus strongly reticulate; mesepemeron strongly reticulate; mesepisternum with a pit; hindcoxa reticulate; forewing 2.15x as long as wide; pilosity absent below SMV and below proximal

part of MV so that speculum not clearly marked; relative L : W of CC = 16 : 2; relative length of SMV = 14; MV = 15; PMV = 7; STV = 4.

Metasoma shorter than mesosoma; length subequal to its width; T1 largest, its posterior margin not convex.

Material examined : Holotype, Female, INDIA, Kashmir (33° 44' N 74° 54' E), Gulbahar, May 2008, Nakeer Razak. Paratypes : 4 Females of same collection data of Holotype.

Depository : Deposited in Department of Zoology, University of Calicut, pending transfer to Zoological Survey of India, Kozhikode (ZSIK).

Remarks : This resembles *E. chennaicus* Narendran sp. nov. in several characters but differs from it in having: (1) forecoxa yellow (in *E. chennaicus* forecoxa black with apex pale); (2) fore femur mostly yellow (in *E. chennaicus* fore femur black with apex yellow); (3) hind coxa completely black without metallic refringence (in *E. chennaicus* hind coxa yellow with basal part metallic green); (4) hind femur immaculate yellow (in *E. chennaicus* hind femur dark brown with base and apex yellow); (5) POL 3.7x OOL (in *E. chennaicus* POL 2.25x OOL); (6) PMV 1.75x as long as STV (in *E. chennaicus* PMV 1.5x STV) (7) body with distinct metallic green refringence (in *E. chennaicus* head and mesosoma black with slight tinge of metallic green) and (8) scutellum slightly bulging upwards in side view (in *E. chennaicus* scutellum distinctly more bulging in side view).

4. *Eulophus tardescens* Motschulsky

1863. *Eulophus tardescens* Motschulsky, 36 : 65. Sri Lanka, mont Patannas? (ZMMS).

Diagnosis : (Based on Motschulsky 1863). Female: 1.50 mm. Body black with slightly metallic green refringence; base and apices of femora, antennal scape, pale; tibiae and tarsi subwhite; median part of femora infusate; metasoma gray with green refringence head and mesosoma not punctate; mesoscutum large, subovate, apex acuminate.

Male : see Motchulsky 1863.

Host : Unknown.

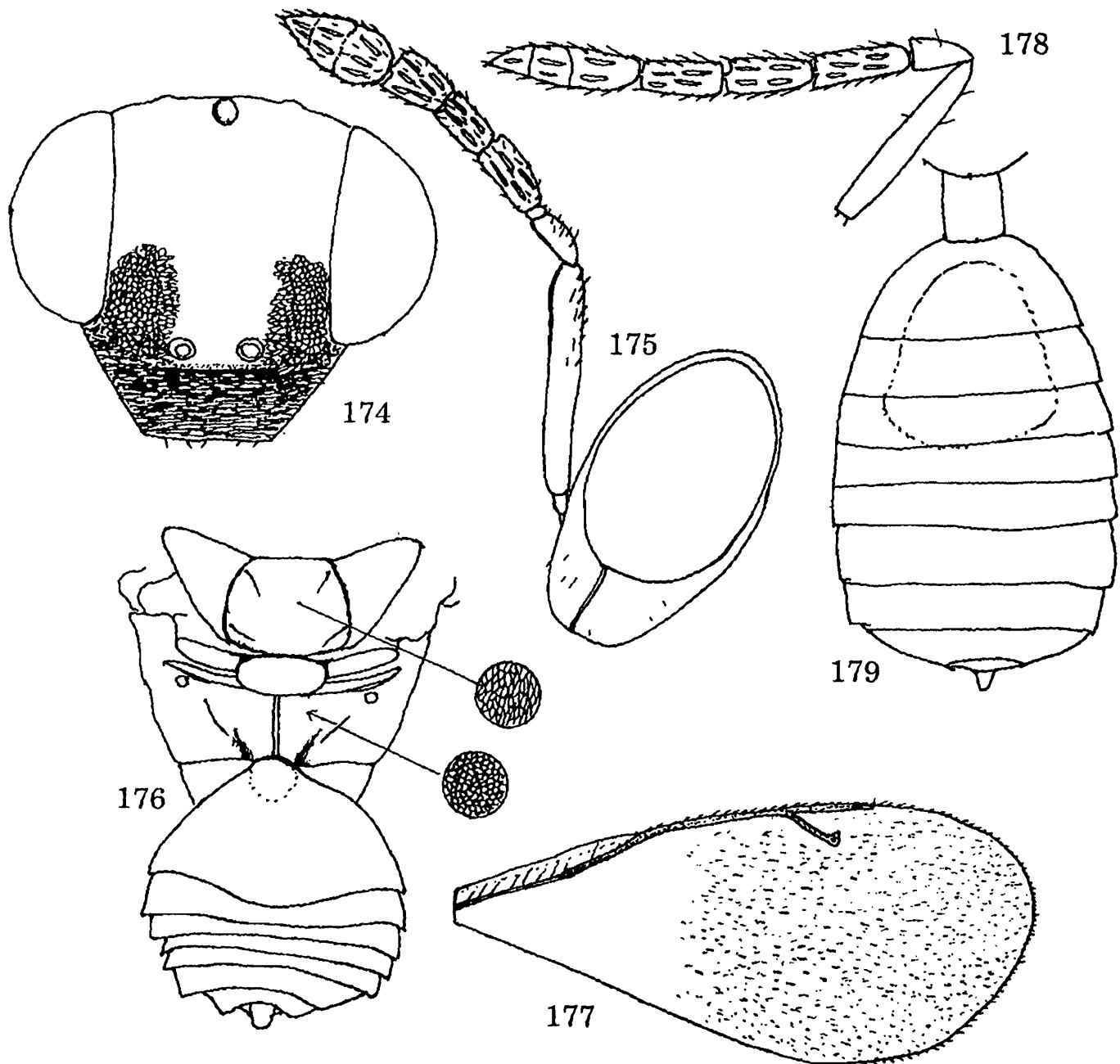
Type locality : Sri Lanka : Mt. Nuwara ELLIYA.

Remarks : I could not examine the type in spite of my repeated requests to Dr. Antropov, curator of ZMMS (with recommendation of Dr. Zerova of Ukraine). My requests remained unanswered.

5. *Eulophus velosus* Narendran sp. nov.

(Figs. 178-179)

Female : (Holotype) Length 2.31 mm. Head and mesosoma black without metallic refringence; metasoma with petiole pale yellow; gaster black with pale yellow patch basally on dorsal side; antennae with funicle and clava black; pedicel pale brown ; scape pale yellow; all coxae concolorous with mesosoma; fore femur black with base and apex pale ; mid and hind femora pale yellow with a dark



Figs. 174-177. *Eulophus chennaiicus* sp. nov. 174. Head anterior view; 175. Head & antenna; 176. Scutellum, propodeum and metasoma dorsal view; 177. Forewing. **Figs. 178-179.** *E. velosus* sp. nov. 178. Antenna; 179. Metasoma dorsal view.

brown band medially; all tibiae and tarsi pale yellow; metasomal sternites pale yellow on basal half ; wings hyaline with veins pale brown.

Head : Width in anterior view equal to its height ; POL 3.5x OOL; AOL longer than POL; MS present ; eyes bare ; antenna inserted at level of frontal margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments : scape = 39 : 6; pedicel = 12 : 6; F1 = 19 : 6; F2 = 17 : 6; F3 = 16 : 6.5; clava = 32 : 8.

Mesosoma : Gibbous; notauli indistinct ; MLM with pit like reticulation; scutellum gibbous, reticulation as in MLM ; axillae advanced anteriorly ; dorsellum and propodeum strongly reticulate; median carina and plicae complete and strong on propodeum; spiracle separated from metanotum by a distance shorter than half diameter of spiracle; prepectus reticulate; mesopleuron strongly reticulate Forewing 2x as long as wide; speculum large; open behind;

Length of CC 15; SMV = 10; MV = 22; PMV = 10; STV = 4.

Metasoma subequal to mesosoma in length; gaster 1.6x as long as its width; petiole a little longer than wide.

Male : Unknown.

Host : Unknown.

Distribution : India (Arunachal Pradesh).

Material examined : Holotype Female : INDIA (Arunachal Pradesh), Nadampha, Near Haldibari, (N 27° 32' 17" E 96° 26' 34.5"), 634 mtrs. 06.xi.2009, P. M. Sureshan. *Paratypes* : 2 Females, Sikkim, 1.vi.2008, F.R. Khan (NPC).

Holotype depository : Deposited in NZSI.

Remarks : This new species comes near *Eulophus abdominalis* in having pale yellow patch on dorsal side of gaster but differs from it in having (1) body with metallic refringence absent (in *E. abdominalis* body with metallic refringence usually present; (2) metasoma with yellow petiole (in *E. abdominalis* petiole absent or indistinct); (3) gaster 1.6x as long as wide (in *E. abdominalis* gaster less than 1.45x as long as wide).

Genus : *Euplectromorpha* Girault

1913. *Euplectromorpha* Girault, 276(167). Type species : *Euplectromorpha unifasciata* Girault; original designation.

1915. *Euplectromorpha* Girault, 278. Erroneously published as 'new genus' Repetition of original description of *Euplectromorpha* Girault (page 278)

1940. *Neoplectrus* Ferrière, 134. Type species *Neoplectrus bicarinatus* Ferrière, designated by Lin, 1963. Synonymy by Bou ek, 1988: 634.

Diagnosis : Propodeum with two submedian carinae connected anteriorly by raised basal cup forming an H- shaped structure with a median areola; occipital and postoccipital carinae absent; scutellum with lateral longitudinal grooves; hind tibia with one or 2 apical spurs of which one distinctly longer than first hind tarsal segment.

Host : Ectoparasitic on Lepidopteran larvae.

Distribution : World wide.

Key to species of *Euplectromorpha* Girault of Indian Subcontinent

(Mostly based on females) (Modified from Wigsekara & Schauff 1994)

1. Hind tibia with a single apical spur longer than first hind tarsal segment; body yellow or orange with scutellum and posterior band of gaster black *E. jamburaliyaensis* Wigsekara & Schauff
- Hind tibia with two apical spurs; scutellum yellow 2
2. Clava truncate or subtruncate at apex, not pointed at apex (Fig. 188); eyes densely stose *E. maculatus* (Ferrière)
- Clava pointed at apex (Fig. 186.); eyes sparsely setose 3
3. Single short thick seta within ocellar triangle posterior to anterior ocellus; transverse lamina separating frons and vertex *E. laminum* Wigsekara & Schauff
- No seta behind the anterior ocellus; transverse lamina between vertex and frons absent *E. formosus* Wigsekara & Schauff

1. *Euplectromorpha formosus* Wijesekara & Schauff

1994. *Euplectromorpha formosus* Wijesekara & Schauff, 19. Holotype Female, Sri Lanka Jamburaliya (USNM).

Diagnosis : (Based on Wijesekara & Schauff). *Female* : Length 1.5-2 mm. Colour predominantly orange-yellow except the following parts: a transverse patch on the neck, scrobe, funicle, clava, pronotal carina and ovipositor sheath black; head, collar of pronotum, posterior half of mesoscutum, scutellum laterally, dorsellum and legs except hind coxa yellow; eyes sparsely ciliated, MS distinct; POL 1.8x OOL (Fig. 43 of Wijesekara & Schauff, 1994); OOL shorter than AOL; LOL shorter than OOL (Fig. 43 of Wijesekara & Schauff, 1994); scape reaching level of anterior ocellus; relative L : W of antennal segments: scape = 28 : 5; pedicel = 10 : 6 : F1 = 12 : 6; F2 = 11 : 6; F3 = 11 : 7; F4 = 10 : 9; clava = 22 : 8; propodeum with distinct transverse carina; LTS 0.75x length of first two hind tarsal segments together; forewing with MV 2x as long as PMV, 6x as long as STV

Male : Similar to female except antenna slightly different.

Host : Unknown.

Distribution : Sri Lanka : Jamburaliya.

Remarks : There is some discrepancy in the original description by Wijesekara & Schauff. POL is given as 6: 5 (i.e., POL is 1.2x OOL) where as in the figure 43 of the dorsal view of head POL is shown as 1.8x length of OOL. According to Wijesekara & Schauff this species could be confused with *E. laminum* but can be differentiated by the absence of a lamina between the vertex and frons and absence of a single seta posterior to anterior ocellus.

2. *Euplectromorpha jamburaliyaensis* Wijesekara & Schauff

(Figs. 181–184)

1994. *Euplectromorpha jamburaliyaensis* Wijesekara & Schauff, 20. Holotype Female, Sri Lanka, Jamburaliya (USNM).

Redescription : *Female* : Length 1.4 mm. Head yellow, ocelli dark reddish brown; eyes yellowish gray; scape pale yellow with apex a little brownish; pedicel and flagellum pale brown; anelli brown; mesosoma pale yellowish brown except the area between lateral grooves of scutellum black; legs completely pale yellow; metasoma pale yellow with T4 and T5 black; T6 dark brownish; wings hyaline, veins pale brownish yellow; pubescence pale yellow.

Head width in anterior view 1.33x its height; width in dorsal view 2.8x its length; vertex not margined; POL 1.3x OOL; AOL shorter than OOL; LOL subequal to AOL; WIOS 3.8x POL; transverse lamina between frons and vertex absent; MS present; malar space 0.36x eye height in profile; eyes sparsely pilose; antenna inserted at level of ventral margin of eyes; scape reaching level of anterior ocellus; F1 1.25x length of pedicel; two anelli present; relative L : W of antennal segments = 37 : 9; pedicel = 16 : 7; F1 = 20 : 8; F2 = 15 : 8; F3 = 16 : 9; F4 = 14 : 10; clava = 25 : 10.

Mesosoma : Pronotum with a cross carina anteriorly, covered with small white setae; surface with weak reticulation; mesoscutum sculpture similar to pronotum; scutellum weakly reticulate; dorsellum smooth with tooth like structure absent; propodeum smooth, submedian carinae distinct; plicae present; propodeal spiracle separated from metanotum by a distance shorter than the diameter of the spiracle; hind tibia with a single spur, longer than first tarsal segment; forewing 2.4x as long as broad; speculum setose; relative length of CC = 10; SMV = 8; MV = 15; PMV = 6; STV = 4.

Metasoma : Petiole indistinct; gaster shorter than mesosoma.

Male : Similar to female except smaller length, 0.8 mm-0.9 mm (Wijesekara & Schauff, 1994). Antenna as in figure 22 of Wijesekara & Schauff (1994).

Host : Unknown.

Distribution : India : Kerala (New record for India); Sri Lanka.

Variation : The Indian species show the following differences from the Sri Lankan ones : (1) head width in dorsal view 2.8x as broad as long (in Sri Lankan specimens width 2.4x as long as broad); (2) F1 1.25x as long as pedicle (in Sri Lankan specimens 1.1x as long as pedicel); (3) clava 2.5x as long as broad (in Sri Lankan specimens clava 2.6x as long as broad); (4) clava 1.8x as long as preceding segment (in Sri Lankan specimen clava 1.7x as long as preceding segment); (5) petiole indistinct (in Sri Lankan specimen petiole distinct as far as gathered from the description of Wijesekara & Schauff, 1994; (6) forewing 2.4x as long as broad (in Sri Lankan specimen forewing 2.8x as long as broad.

Besides these, one specimen from India shows scutellum with black colour restricted to posterior half only, the anterior half being pale brown.

Material examined : 3 Females, INDIA: Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 2-xii-1988, (2 Nos.), 17-iii-1989, T.C. Narendran & party.

Remarks : This species is unique in having a single hind tibial spur and the scutellum is usually black.

3. *Euplectromorpha laminum* Wijesekara & Schauff

(Figs. 185-187)

1994. *Euplectromorpha laminum* Wijesekara & Schauff, 20. Holotype Female, Sri Lanka, Mahailukpallama (USNM).

Redescription : *Female* : Length 1.5-2.0 mm. Head, yellow with scrobe black; eyes grayish yellow with dark brown patch; ocelli dark brown; setae on head brown; scape yellow; pedicel pale brownish yellow; anelli and remaining segments black; mesosoma orange yellow; metasoma pale brownish yellow with a black band before the posterior end of metasoma; legs yellow; wings hyaline with veins brown.

Head width in anterior view 1.5x its height; width in dorsal view 2.4x its length; vertex slightly margined posteriorly but not carinate; POL 1.25x OOL; AOL shorter than OOL; LOL shorter than AOL; WIOS 3.4x POL; vertex separated from frons by a short transverse lamina; single black setae present behind anterior

ocellus; MS present; malar space 0.43x height of eye; eyes densely pilose; eye height 1.25x eye length in profile; antennae inserted at level of ventral margin of eyes ; scape reaching level of anterior ocellus; F1 longer than F2-F4; F1 1.3x as long as pedicel; two anelli present; relative L: W of antennal segments : scape = 40 : 5; pedicel = 15 : 9; F1 = 19 : 9; F2 = 17 : 9; F3 = 17 : 9; F4 = 14 : 10; clava = 27 : 8.

Mesosoma : Pronotum not collar like, covered with small white setae and 3 pairs of stout setae (near posterior margin and sides); transverse carina weak but distinct; surface faintly reticulate; MLM sculpture similar to that of pronotum, with 8-9 pairs of setae (two pairs stout); each scapula with 3 stout setae and 12-15 small white setae; scutellum weakly reticulate, as long as broad with 3 pairs of setae (middle pair weaker than the other pairs); dorsellum and propodeum smooth; sub median carina of propodeum distinct, plicae indistinct or weakly represented; propodeal spiracle separated from metanotum by a distance shorter than diameter of spiracle; LTS shorter than first two hind tarsal segments together; forewing 2.7x as long as broad ; speculum width shorter than length of STV, but its length 3x its length of STV, closed behind by cubital line of setae; relative length of CC = 14; SMV = 12; MV = 27; PMV = 19; STV = 6.

Metasoma : Petiole indistinct; T1 a little more than half length of mesosoma; metasoma shorter than mesosoma.

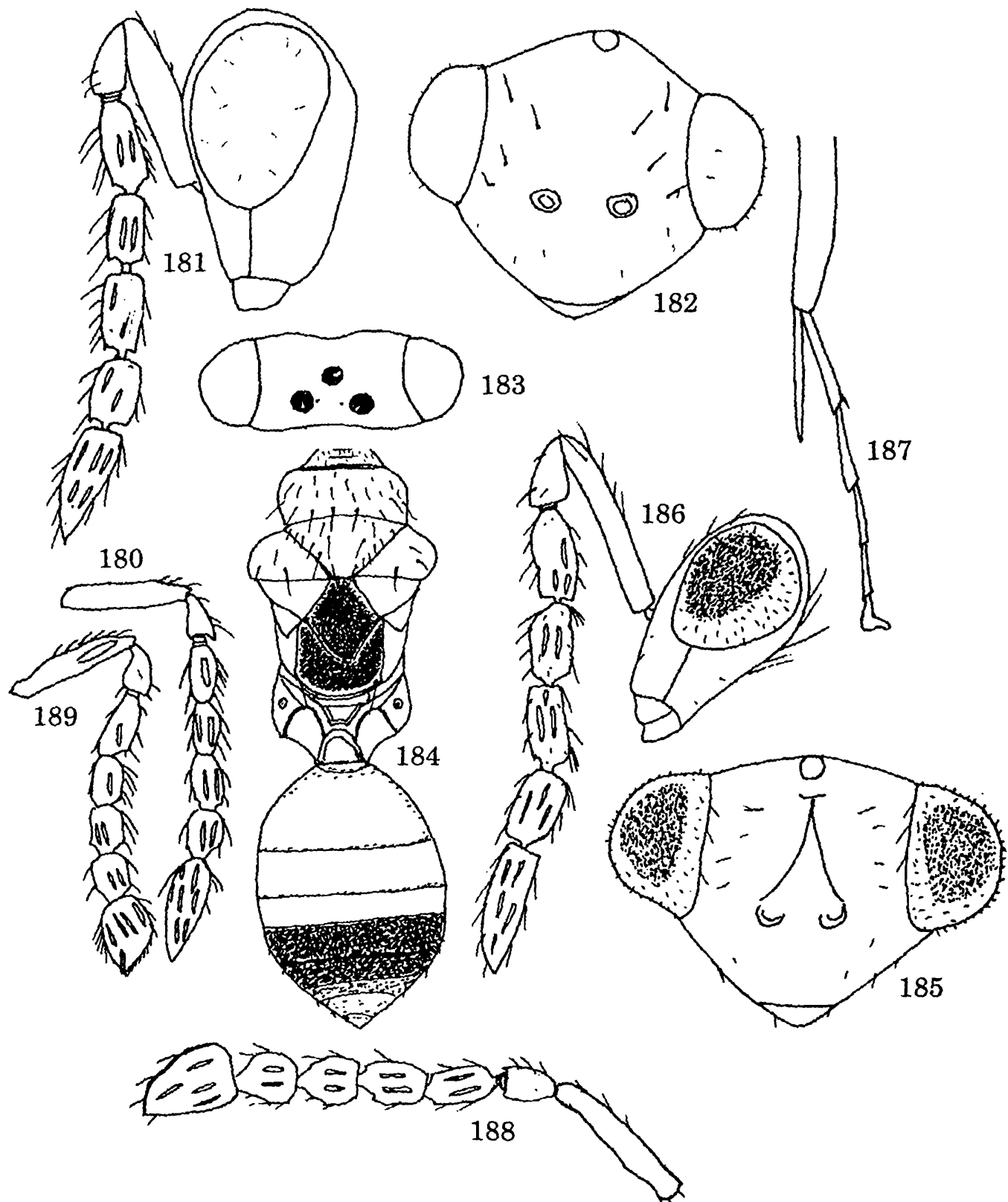
Male : Unknown.

Host : Unknown.

Distribution : India : Kerala (New record for India); Sri Lanka.

Material examined : 1 Female, INDIA, Kerala, Malappuram District, Nilambur (11° 16' N 76° 13' E), 30-1-2003; 1 Female, Kerala, Thiruvananthapuram District, Mannamkonam (8° 25' N 77° 1'), 16-iv-2003; 1 Female, Kerala, Alleppy District, Onattukara (9° 10' N 76° 30' E), 19-iv-2004; 2 Females, Kerala, Kottayam District, Kumarakom (9° 42' N 76° 26'), 17-iv-2004; 3 Females, Kerala, Kannur, District, Kottiyoor (11° 52' N 75° 51' E), 19-ii-2003; 2 Females, Kerala, Calicut University Campus (11° 7' N 75° 53' E), 23-iv-1989 (All specimens collected by T.C.Narendran & party); 1 Female, Kerala, Waynad District, Adivaram (11° 29' N 76° 00'), 11-iv-2000, K. Rajmohana.

Remarks : The Indian specimens show some minor variations from the Sri Lankan specimens in having : (1) Width of head 1.5x its height (1.4x in Sri Lankan specimens); (2) head width in dorsal view 2.4x its length (2.5x in Sri Lankan specimens); (3) petiole indistinct (petiole short and transverse in Sri Lankan specimens) and (4) MV 1.42x PMV (in Sri Lankan specimens MV 1.7x PMV).



Figs. 180. *Euplectromorpha formosus* Wij. & Schauff Female antenna (Adapted from Wij. & Schauff, 1994). **Figs. 181-184.** *E. jamburaliyaensis* Wij. Schauff Female : 181. Head & antenna profile; 182. Head anterior view; 183. Head dorsal view; 184. Mesosoma & metasoma dorsal view. **Figs. 185-187.** *E. laminum* Wij. & Schauff Female : 185. Head anterior view; 186. Head & antenna profile; 187. Tip of hind tibia and tarsus. **Figs. 188-189.** *E. maculatus* (Ferriere) 188. Female Antenna; 189. Male antenna.

According to Wijesekara & Schauff, (1994) this species is very similar to *E. formosus* but can be differentiated by the transverse lamina, separating vertex from frons and by the presence of a single stout seta behind anterior ocellus.

4. *Euplectromorpha maculatus* (Ferrière)

(Figs. 188–189)

1940. *Neoplectrus maculatus* Ferrière, 136. Lectotype Female (selected by Z. Bouček, 1974), Sri Lanka (BMNH) examined, Type No. Hym. 1214.

1994. *Euplectromorpha maculatus* (Ferrière) : Wijesekara & Schauff, 22-23.

Redescription : Female : (Lectotype) Length 1.7 mm.; colour yellow except the following parts: thin brown band across tergum of metasoma near apex; funicle, clava and pedicel brownish; antennal scrobe black; a black spot near each ocellus.

Head width in anterior view 1.2x its height; width in dorsal view 3.3x its length; POL 2x OOL; AOL subequal to OOL; LOL shorter than AOL; WIOS 3.75x POL; vertex separated from frons by a short transverse lamina; MS present; malar space 0.43x eye height in profile; eyes densely pubescent; eye height 1.2x eye length in profile; antennae inserted at level of ventral margin of eyes; scape reaching the level of anterior ocellus; F1 longer than pedicel; relative L: W of antennal segments : scape = 33 : 6; pedicel = 11 : 8; F1 = 15 : 7; F2 = 14 : 8; F3 = 13 : 10; F4 = 12 : 10; clava = 21 : 14; clava truncated at apex.

Mesosoma : Pronotum with a transverse carina, with three pairs of stout setae near posterior margin and sides; mesoscutum with 3 pairs of a little stronger setae; each scapula with 3 stout setae and a few weaker setae; scutellum slightly longer than broad; propodeum with sub median carinae distinct; LTS shorter than first two hind tarsal segments together; forewing 2.31x as long as wide; relative length of CC = 8; SMV = 6; MV = 14; PMV = 6; STV = 3.

Metasoma : Petiole indistinct, metasoma shorter than mesosoma (18 : 24); T1 reaching middle of gaster.

Male : (Based on Wijesekara & Schauff). Smaller in size, antenna (Fig.189.) with single anellus and clava a little more strongly truncate; middle tibia with black colour at distal end.

Host : *Artona catoxantha* (Hampson) (Lepidoptera : Zygaenidae); *Darana nararia* (Moore) (Lepidoptera: Limacodidae).

Distribution : Sri Lanka, Indonesia, Java.

Material examined : Lectotype BMNH (No. Hym. 1214), the lectotype lacks one hind leg (except coxae and trochanter), Sri Lanka (Panara, June 1929, Coll : J.V.D.Vecht).

Remarks : This species can be separated from other species of Indian subcontinent by its truncate antennal clava.

Genus *Euplectrophelinus* Girault

1913. *Euplectrophelinus* Girault, [167]: 283. Type species *Euplectrophelinus saintpierrei* Girault, by original designation.

1952. *Seletrichella* Risbec, 204- 205. Type species *Seletrichella meridionalis* Risbec, by monotypy. (Bouček (1988: 637) synonymized).

Diagnosis : Female : Pronotum relatively long and broad with sharp transverse carina anteriorly; scutellum with lateral longitudinal grooves; axillae almost meeting medially; propodeum with diverging plicae and 'T' shaped median carina; hind tibia with normal tibial spurs; gaster relatively small, convex with T1 large and subglobose, its hindmargin medially produced.

Host : No host record available. Bouček (1988) states that the species of this genus may be parasites of some caterpillars.

Distribution : India, China, Australia, Southern Africa and Madagascar (Bouček 1988).

Remarks : This genus resembles *Platyplectrus* in having bristly mesosoma but differs from *Platyplectrus* in having normal tibial spurs where as in *Platyplectrus* one tibial spur always much longer than first hind tarsal segment.

Key to the Indian species of *Euplectrophelinus* Girault

(Females)

1. Scape not reaching level of vertex; head and mesosoma black; hind coxa black on basal half *E. sureshani* Narendran sp. nov.
- Scape exceeding level of vertex; head and mesosoma mostly yellow or yellowish brown; hind coxa completely yellow 2.
2. Pronotal collum and propodeum pale yellowish brown, concolorous with mesoscutum; clava 2.5x as long as wide; MV 2.4x as long as PMV; mesoscutum and scutellum strongly reticulate; propodeum with raised reticulation; eyes very sparsely pilose *E. calicuticus* Narendran sp. nov.
- Pronotal collum and propodeum black, not concolorous with mesoscutum; clava 1.7x as long as broad; MV 1.8x as long as PMV; mesoscutum and scutellum weakly reticulate; propodeum striate reticulate; eyes moderately or densely pilose *E. saintpierrei* Girault

1. *Euplectrophelinus calicuticus* Narendran sp. nov.

(Figs. 190-195)

Diagnosis : Female : (Holotype) Length 1.81 mm. Head dull yellow; scape, anelli and pedicel dull yellow, remaining segments black; eyes reddish brown with margin pale; ocelli reflecting brown; mesosoma pale yellowish brown; metasoma black with basal half pale brownish yellow; legs including coxae pale yellow; wings hyaline with veins pale yellowish brown.

Head width in anterior view 1.23x its height; width in dorsal view 2.24x its length; occipital carina absent; post occipital carina present; POL 1.5x OOL; AOL a little shorter than OOL (9: 10); LOL shorter than AOL; WIOS 3.1x POL; eyes almost bare with 2-4 minute setae; MS present; malar space 0.47x eye height in profile; eye length a little shorter than eye height in profile; antenna inserted a little below level of ventral margin of eyes; scape exceeding level of vertex; relative L : W of antennal segments : scape = 48 : 7; pedicel = 16 : 8; F1 = 13 : 8; F2 = 8 : 9; F3 = 8 : 10; F4 = 8 : 10; clava = 25 : 10.

Mesosoma : Pronotum with strong transverse carina anteriorly, with 60-65 short setae and 3 pairs of stout setae; surface distinctly reticulate; MLM with 24-26 setae with 2 setae stouter; each scapula with 3 stouter setae and 17-20 shorter delicate setae; surface distinctly cross reticulate; axillae almost touching each other medially, striate; scutellum separated from MLM and anterior inner part of axilla by deep furrow joining shallower lateral groove on sides, lateral groove of scutellum foveolate, groove not curving posteriorly to meet medially; surface of scutellum with raised cross reticulation; dorsellum with two teeth like protuberances directed posteriorly; propodeum reticulate; median carina raised into a transverse flap anteriorly so that the carina looks like a "T" shaped structure in posterior view; plicae diverging, spiracle separated from metanotum by a distance almost equal to diameter of spiracle; callus with 9-10 setae on each side; forewing length 2.6x its width; speculum small, closed behind by setae; relative length of CC = 32; SMV = 26; MV = 29; PMV = 12; STV = 8.

Metasoma : Petiole transverse; metasoma 0.82x length of mesosoma; T1 larger exceeding middle of gaster, medially produced posteriorly; ovipositor sheath slightly produced posteriorly.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala).

Holotype : Female, INDIA, Kerala, Calicut District, Chaliyam (11° 9' N 75° 49' E), 14-iii-2003, T.C. Narendran.

Depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala, India pending transfer to ZSIK or NZSI.

Remarks : This specie differs from *E. saintpierrei* Girault in having : (1) Pronotal collum pale yellowish brown (in *E. saintpierrei* pronotal collum black); (2) propodeum pale yellowish brown (in *E. saintpierrei* propodeum black or dark brown); (3) clava 2.5x as long as wide (in *E. saintpierrei* clava 1.7x as long as wide); (4) MV 2.4x as long as PMV (*E. saintpierrei* Girault MV 1.8x PMV); (5) mesoscutum and scutellum strongly reticulate (*E. saintpierrei* Girault mesoscutum and scutellum weakly reticulate); (6) mesosoma with fewer setae than that of *E. saintpierrei*; (7) propodeum strongly reticulate with raised reticulation (in *E. saintpierrei* propodeum striate reticulate), and (8) eyes very sparsely pilose (in *E. saintpierrei* eyes densely pilose).

2. *Euplectrophelinus saintpierrei* Girault

(Figs. 196-199)

1913. *Euplectrophelinus saintpierrei* Girault, [167]: 283. Holotype Female, Queensland, Australia (Q.M).

Redescription : *Female* : Length 2 mm. Head, scape and pedicel yellow; remaining antennal segments black; eyes brownish red; ocelli black; pronotum behind black cross carina yellow with posterior margin pale brown; pronotal collum black; MLM pale brownish yellow, scapula pale brownish yellow with area near distal side yellow; pleural part on sides pale brownish yellow with prepectus yellow; scutellum pale brownish yellow; dorsellum pale brownish yellow; propodeum black; metasoma black with basal part lighter yellow; legs including coxae yellow; wings hyaline with veins pale brownish yellow.

Head width in anterior view 1.1x its height, width in dorsal view 2x its length; occipital carina absent, postoccipital carina present; POL 2x OOL; AOL almost equal to OOL; WIOS 2.7x POL; eyes moderately pubescent (neither densely nor sparsely); MS present; malar space 0.35x height of eye in profile; eye length 0.8x eye height in profile; antenna inserted a little lower to level of ventral margin of eyes; scape slightly exceeding level of vertex; relative L : W of antennal segments : scape = 45 : 5; pedicel = 14 : 13; F1 = 12 : 8; F2 = 8 : 10; F3 = 9 : 12; F4 = 7 : 12; clava = 20 : 12.

Mesosoma : Pronotum with strong transverse carina anteriorly, with more than 65 short setae with 3 pairs of stouter setae; surface not strongly reticulate as in *E. calicuticus* Narendran sp. nov. but distinctly reticulate; MLM with 36-40 short setae and 2 stouter setae; each scapula with more than 20 short setae

and 3 stouter setae; surface sculpture as in pronotum; axillae almost touching each other medially, striate; scutellum separated from MLM and inner side of axilla by a deep furrow; lateral groove of scutellum shallow, weakly foveolate; surface of scutellum distinctly reticulate (not strongly reticulate as in *E. calicuticus* Narendran sp. nov.); dorsellum with two teeth like protuberances directed posteriorly; propodeum striate- reticulate median carina raised into a transverse flap anteriorly so that the carina look like a 'T' shaped structure when viewed from posterior side; plicae diverging, spiracle separated from metanotum by a distance almost equal to diameter of spiracle; callus with 12-13 setae on each side; forewing length 2.5x its breadth; speculum small, closed behind by setae; relative length of forewing veins: CC = 32; SMV = 27; MV = 30; PMV = 17; STV = 8.

Metasoma : Petiole transverse; metasoma 0.74x length of mesosoma, T1 larger exceeding half of metasoma but not as long as that of *E. calicuticus* Narendran sp. nov.; ovipositor sheath short, slightly protruding posteriorly.

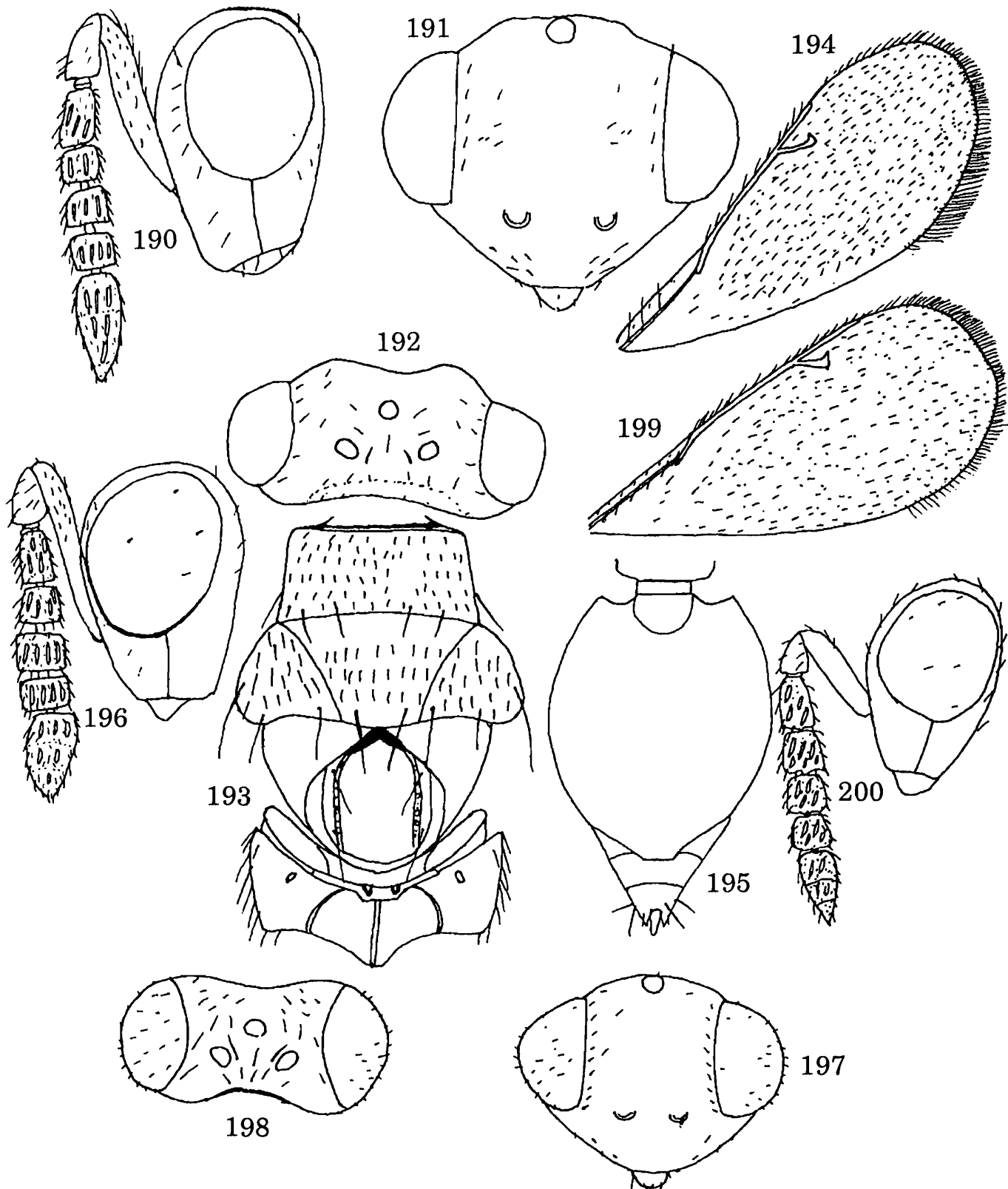
Male : Unknown.

Host : Unknown.

Distribution : India (Karnataka, Andhra Pradesh and new record for Kerala), Australia.

Material examined : 1 Female, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 5-iv-1987, T.C.Narendran; 1 Female, INDIA, Karnataka, Bangalore (12° 58' N 77° 35' E), v- 1980, K.D.Ghorpade (BMNH); 1 Female, INDIA, Andhra Pradesh, Hyderabad, Pattancheru (17° 31' N 78° 16' E), vii-ix-1980, M.Trap, Baernays & Woodhead (BMNH).

Remarks : This Australian species is recorded from India by Bouček (1988). It resembles *E. calicuticus* superficially but differs from it in having: (1) pronotal collum black (pale yellowish brown in *E. calicuticus* Narendran sp. nov.); (2) propodeum black (pale yellowish brown in *E. calicuticus* Narendran sp. nov.); (3) clava 1.7x as long as broad (in *E. calicuticus* Narendran sp. nov. clava 2.5x as long as broad); (4) MV 1.8x as long as PMV (in *E. calicuticus* Narendran sp. nov. MV 2.4x PMV); (5) mesoscutum and scutellum not strongly reticulate as that of *E. calicuticus* Narendran sp. nov.; (6) mesosoma with more setae on notum than that of *E. calicuticus* Narendran sp. nov.; (7) propodeum striate reticulate (in *E. calicuticus* Narendran sp. nov. propodeum not striate but strongly reticulate) and OOL almost equal to AOL (in *E. calicuticus* Narendran sp. nov. AOL shorter than OOL) and in several other features.



Figs. 190-195. *Euplectrophelinus calicuticus* sp.nov. Female : 190. Head & antenna profile; 191. Head anterior view; 192. Head dorsal view; 193. Mesosoma dorsal view; 194. Forewing; 195. Metasoma dorsalview. **Figs. 196-199.** *E.saintpierrei* Girault Female : 196. Head & antenna; 197. Head in anterior view; 198. Head dorsal view; 199. Forewing; **Fig. 200.** *E.sureshani* sp. nov. : Head and antenna profile.

3. *Euplectrophelinus sureshani* Narendran sp. nov.

(Fig. 200)

Female : (Holotype) Length 1.63 mm. Head and mesosoma black ; scape pale yellow; pedicel pale brown; funicle and clava dark brown eyes dark red with margins slightly pale; ocelli blackish brown; legs yellow except basal half of hind coxa black ; metasoma black with basodorsal part of T1, gasteral sternites and sides of gaster partly pale brownish yellow; wings hyaline with veins pale brown.

Head width in anterior view 1.2x its height; width in dorsal view 2x its length; occiput not margined; POL 2.5x OOL; AOL subequal to OOL; WIOS 3.2x POL; eyes densely pubescent; MS 0.42x eye height in profile ; eye length 0.85x eye height in profile; antenna inserted slightly lower to level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments : scape = 25 : 6; pedicel = 10 : 7; F1 = 12 : 8; F2 = 10 : 10; F3 = 9 : 10; F4 = 8 : 9; clava = 19 : 9.

Mesosoma : Pronotum with strong anterior cross carina ; with several short setae, with 3 pairs of stouter setae on posterior submarginal area and at sides; surface reticulate; MLM with several setae on anterior half, posterior half with 2 stout setae; each scapula with 30-37 setae on either side; surface sculpture as in pronotum; axillae almost touching each other anteriorly; weakly cross striate; scutellum separated from axillae by deep furrow; sublateral grooves moderately deep, not foveolate, not meeting each other posteriorly, restricted to side only; scutellum cross striate-reticulate, dorsellum smooth, its posterior margin entire, tooth like protuberance absent; propodeum faintly aciculate-reticulate, mostly smooth; median carina raised into a transverse flap anteriorly so that carina look like a "T" shape structure when viewed from posterior side; plicae diverging ; spiracle separated from metanotum by a distance shorter than diameter of spiracle; callus with 6-7 setae on each side; forewing length 2.4x its width; speculum small, closed behind by cubital line of setae, speculum extending narrowly below MV towards base of STV; relative length of CC = 30; SMV = 24; MV = 33; PMV = 18; STV = 9.

Metasoma : Petiole transverse; slightly visible from dorsal side, metasoma 0.77x length of mesosoma, 1.43x as long as broad; T1 exceeding middle of gaster, medially produced and pointed posteriorly; ovipositor sheath slightly visible in dorsal view.

Male : Unknown.

Host : Unknown.

Distribution : India (Arunachal Pradesh).

Material examined : Holotype, Female, INDIA, Arunachal Pradesh, Nadampha, Tiger Reserve, Baranala, (N 27° 32' 18.8", E 96° 26' 27.5"), 7.xi. 2009, P. M. Sureshan.

Type Depository : Holotype deposited in NZSI.

Remarks : This new species comes near *E. saintpierrei* in general appearance but differs from it in having : (1) head completely black (in *E. saintpierrei* head yellow); (2) pronotum black (in *E. saintpierrei* pronotum behind cross carina yellow with posterior margin pale brown); (3) MLM black (in *E. saintpierrei* MLM pale brownish yellow); (4) scape not reaching level of vertex (in *E. saintpierrei* scape exceeding level of vertex); (5) pedicel shorter than F1 (in *E. saintpierrei* pedicel not shorter than F1); (6) dorsellum without teeth like protuberances (in *E. saintpierrei* dorsellum with 2 teeth like protuberances directed posteriorly). This new species differs from *E. calicuticus* in having: (1) Head black (dull yellow in *E. calicuticus*); (2) Mesosoma black (in *E. calicuticus* mesosoma pale yellowish brown); (3) hind coxa yellow with basal half black (in *E. calicuticus* hind coxa completely yellow); and 4) scape not reaching level of vertex (in *E. calicuticus* scape exceeding level of vertex).

Genus *Euplectrus* Westwood

1832. *Euplectrus* Westwood, 128. Type species *Euplectrus maculiventris* Westwood, by monotypy.

1857. *Diplectron* Dahlbom. 292. Type species *Pteromalus bicolor* Swederus, designated by Gahan and Fagan, 1923. Synonymized by Dalla Torre 1898.

1897. *Pachyscapa* Howard, 159. Type species *Pachyscapa insularis* Howard (Monotypy). Synonymized by Ferrière 1941.

1904. *Rekabia* Cameron, 65. Type species: *Rekabia testaceipes* Cameron (Monotypy). Synonymized by Kerrich 1974.

1918. *Heteroscapus* Brèthes, 9. Type species *Heteroscapus ronnai* Brèthes, 1918 (monotypy). Synonymized by De Santis 1980.

1946. *Heteroscapiscus* Ghesquiere, 370. Replacement name for *Heteroscapus* Brèthes 1918.

Diagnosis : Head and mesosoma mostly black with or without patches of yellow or brown patch below antennal toruli and gena; legs mostly yellow or brownish yellow; coxa occasionally dark; metasoma black with yellowish patches or yellow with black or brown patches. Head in dorsal view with stout paired setae, occasionally with one or 2 pairs of minute setae medially or submedially on vertex; pronotum relatively short with a fine transverse carina dorsally, area behind transverse carina with strong setae along posterior margin; MLM with 3 pairs of strong setae; scutellum without longitudinal furrows; propodeum with a distinct median carina, basal cup not raised. Hind tibia with a pair of stout unequal setae at apex, longer seta exceeding well over hind metatarsus. Metasomal

petiole as long as or longer than or broader than long; sculptured dorsally; males are generally similar to females, but smaller in size and the scape of the antennae is distinctly broader in the middle.

Host : Species of this genus are known to parasitize Hemiptera, Lepidoptera and Hymenoptera.

Distribution : Occurs in all zoogeographical regions. Bou ek (1988) estimated the number of species to be about 100. Most species are probably in the tropical countries (Wijesekara & Schauff 1944).

Key to species of *Euplectrus* Westwood of Indian Subcontinent

(Based mainly on Females)

1. Vertex with 2 or 4 minute setae (rarely with one minute seta as in *E. nyctemerae*) between hind ocelli 2
 - Vertex without minute setae between hind ocelli 22
2. Vertex with 4 minute setae 3
 - Vertex with 2 minute setae 11
3. MLM with a complete or incomplete median longitudinal carina 4
 - MLM with longitudinal carina absent 7
4. Median carina of MLM reaching (or reaching near) posterior margin of pronotum 5
 - Median carina of MLM short or incomplete limited to posterior or posteromedian side of MLM 6
5. OOL shorter than AOL; head black with area below antennal toruli and malar space yellow [occiput strongly margined; scutellum strongly striate; petiole as long as broad; hind coxa yellow] *E. leucostomus* Rohwer
 - OOL longer than AOL; head black with area below toruli light brown which does not extend to malar space [LTS as long as first two hind tarsal segments together; hind coxa deep honey yellow] *E. mathuri* Bhatnagar
6. MV 2x PMV; petiole 2x as long as wide; vertex margined behind; funicular segments subequal in length *E. peechansis* Wijesekara & Schauff
 - MV 3x PMV; petiole 1.6x or less than 1.6x as long as its width; vertex not margined behind; funicular segments unequal in length *E. nuperus* Narendran sp. nov.
7. Hind coxa black or dark brown, OOL as long as AOL 8
 - Hind coxa yellow; OOL either shorter than AOL or longer than AOL, never equal to AOL 9

8. MV 3x PMV, 5x STV; hind femur yellow, without a dark patch above; head black with a red spot below toruli; occiput not margined
 *E. umbrocoxatus* Narendran sp. nov.
- MV 2.5x PMV, 4x STV; hind femur yellow with a dark patch above; head completely black without any other colour below toruli, occiput margined
 *E. manii* Narendran sp. nov.
9. OOL longer than AOL; petiole 1.5x or a little more as long as broad; LTS shorter than first two hind tarsal segments together
 *E. ceylonensis* Howard
- OOL either shorter than AOL or equidistant; petiole as long as broad or broader than long 10
10. OOL shorter than AOL; petiole as long as broad
 *E. litoralis* Wijesekara & Schauff
- OOL equal to AOL; petiole broader than long *E. parvulus* Ferrière
11. MLM with a complete or incomplete median longitudinal carina 12
- MLM with median carina absent 18
12. Median longitudinal carina of MLM almost reaching posterior margin of pronotum; head black with clypeal margin yellow; legs including coxae yellow; OOL longer than AOL; scape reaching front ocellus; pedicel shorter than F1; MLM cross striate, LTS as long as first two hind tarsal segments together
 *E. indicus* Ferrière
- Median longitudinal carina of MLM short, limited to posterior part of MLM; other characters variable or completely or partly different 13
13. Head black with area below toruli yellow extending to malar space 14
- Head black with yellow area or pale brown area below toruli not extending to malar space 16
14. Yellow colour of malar space clearly touching ventral margin of eye 15
- Yellow colour of malar space not reaching ventral margin of eye but separated from lower eye margin by a black band [POL 2x OOL; scape not reaching level of front ocellus; pedicel equal to F1 in length; MV 2.4x PMV]
 *E. zandanus* Narendran sp. nov.
15. Pedicel as long as F1; MV shorter than 2x PMV; LTS as long as first two hind tarsal segments together [legs including coxae yellow]
 *E. euplexiae* Rohwer

- Pedicel shorter than F1; MV 2.83x as long as PMV; LTS shorter than first two hind tarsal segments together [legs yellow]
..... *E. latifrons* Shafec *et. al.*
- 16. Petiole as long as broad; LTS as long as broad; LTS as long as combined length of first two hind tarsal segments together; head completely black without any pale colour below toruli; hind coxa orange yellow
..... *E. atrofacies* Wijesekara & Schauff
- Petiole longer than wide; LTS shorter than first two hind tarsal segments together; head black or brownish black with a light reddish tinge below toruli; hind coxae pale yellow or whitish yellow 17
- 17 MLM with 2 short subparallel median carinae posteriorly; OOL equal to AOL; POL 2x OOL; MV 1.4x as long as PMV; legs including coxae whitish yellow; pedicel a little shorter than F1 *E. nyctemerae* Crawford
- MLM with only one short median carina posteriorly; OOL longer than AOL; POL 1.4x OOL; MV 1.8x as long as PMV; legs including coxae pale yellow; pedicel as long as F1 *E. yaloticus* Narendran sp. nov.
- 18. Hind coxa honey brown or darker with apex paler, scape not reaching front ocellus; occipital carina absent; OOL a little longer than AOL; petiole longer than broad; pedicel shorter than F1
..... *E. mellocoxus* Wijesekara & Schauff
- Hind coxa yellow or pale yellow or pale brown; other characters not agreeable or partly or completely different from above 19
- 19. OOL as long as AOL or shorter than AOL 20
OOI distinctly longer than AOL 21
- 20. OOL as long as AOL; POL 2x OOL; pedicel distinctly longer than F1; MV 2.4x as long as PMV; clava 1.9x as long as F4 *E. maternus* Bhatnagar
- OOL shorter than AOL; POL 3x OOL; pedicel longer than F1; MV 2.5x as long as PMV; clava 2.6x as long as F4 *E. asotus* Narendran sp. nov.
- 21 Head black without metallic refringence, with a light coloured area near clypeus; clava 1.6x as long as F4; pedicel as long as F1
..... *E. nihilis* Wijesekara & Shauff
- Head dark brown with metallic refringence, without any light coloured area below toruli; clava 2.1x as long as F1; pedicel longer than F1
..... *E. longiscapus* Khan *et al.*
- 22. OOL as long as or shorter than AOL 23
- OOL distinctly longer than AOL 25

23. OOL shorter than AOL; pedicel longer than F1; antenna with single anellus; clava two segmented, 1.8x as long as wide; POL 2.6x OOL; head black with a slight metallic refringence, with a paler region below antennal toruli; petiole as long as broad; MV 2.43x as long as PMV, 5.7x as long as STV
 *E. prashanti* Khan *et. al*
- OOL as long as AOL, other characters may or may not agree to the above, or not in above combinations 24
24. MLM with median carina absent; pedicel shorter than F1; MV 1.8x-2x as long as PMV, about 4x as long as STV; petiole almost 3x as long as wide
 *E. petiolatus* Ferrière
- MLM with a short median carina posteriorly; pedicel as long as F1; MV 1.4x as long as PMV, about 3x as long as STV; petiole as long as wide
 *E. geethae* Wijesekara & Schauff
25. Head black or dark brown with a yellow patch below toruli and this yellow extending to malar space and to its posterior margin 26
- Head completely black or dark brown without any paler or brown patch below toruli, if with a paler or brownish or yellowish patch present below toruli then this paler colour never reaches malar space 29
26. MLM with median carina completely absent; MV a little shorter than 2x length of PMV; LTS shorter than first two hind tarsal segments together 27
- MLM with a short median carina posteriorly, other characters may or may not agree as above 28
27. Yellow colour below antennal toruli extending to malar space and touching lower margin of eye; MS present [petiole length subequal to its width or slightly broader than long] *E. coimbatorensis* Ferrière
- Yellow colour below antennal toruli extend to malar space but separated from lower, margin of eye by a black band; MS absent [petiole subquadrate]
 *E. xanthocephalus* Girault
28. Yellow colour of malar space not reaching ventral margin of eye; dorsal surface of petiole microsculptured and granulate PMV 1.9x STV
 *E. manjericus* Narendran *sp. nov.*
- Yellow colour of malar space reaching ventral margin of eye; dorsal surface of petiole shagreened; MV 1.7x STV
 *E. xanthovultus* Wijesekara & Schauff

29. Pedicel as long as F1 or shorter than F1 30
 – Pedicel distinctly longer than F1 35
30. Pedicel as long as or almost as long as F1 31
 – Pedicel distinctly shorter than F1 (F1 1.4- 1.5x as long as pedicel) 33
31. Scrobe with a conspicuous inter scrobal carina separating scrobes; vertex smooth; axillae contiguous; MV about 2x as long as PMV, 3x as long as STV; head black with a small reddish brown patch below antennal toruli
 *E. utetheisae* Mani & Kurian
 – Scrobe without a conspicuous interscrobal carina as above; other characters partly or completely different 32
32. Head completely black, without yellow or paler part below toruli; MV 2.3x PMV, 4x STV, antenna inserted below level of ventral margin of eye
 *E. zamoorini* Narendran sp. nov.
 – Head brownish black with area below toruli yellow which extends slightly to mid-ventral margin of gena (Fig. 254); MV about 1.6x PMV, a little shorter than 3x STV; antenna inserted at level of ventral margin of eyes
 *E. stom* Narendran sp. nov.
33. Petiole as long as broad, occiput margined with a thin carina; MV 2.2x as long as PMV, 3.7x as long as STV; hind coxa honey brown (other leg segments yellow); LTS longer than first two hind tarsal segments together
 *E. colliosilvus* Wijesekara & Schauff
 – Petiole distinctly longer than broad; occiput not margined; other characters partly or completely agree 34
34. Hind coxa black with apex reddish brown; MV 2.2x as long as PMV; petiole 1.44x as long as its width; MS absent or indistinct
 *E. himalayaensis* Mani
 – Hind coxa yellow; MV 2.41x as long as PMV; petiole 2x as long as its width; MS present (Extra limital) *E. manilae* Ashmead
35. Antennae with 3 anelli; F1 as long as F2; clava about 2x as long as wide, a little over 2x as long as F4; F4 slightly wider than long; gaster 2.5x as long as wide; head dark brown with metallic bluish refringence
 *E. viggiani* Khan *et. al*
 – Antenna with 2 anelli; F1 shorter than F2; other characters may or may not agree as above or not in above combination 35

35. Head lustrous dark brown; legs including hind coxae yellow; MV about 3x as long as PMV, 3.6x as long as STV *E. bristlis* Khan et. al
 – Head black, legs slightly reddish brown with hind coxa slightly darkened at base; MV 1.7x as long as PMV, 3x as long as STV
 *E. spodopterae* Bhatnagar

1. *Euplectrus asotus* Narendran sp. nov.

(Figs. 201-205)

Female : (Holotype) Length 2.11 mm. Head black with slight reddish brown tinge below antennal toruli; eye grayish yellow with reddish brown patch; ocelli pale reflecting yellow; antenna with scape pale yellowish white; pedicel pale yellow; F1, F2, and F3 pale brownish yellow; F4 and clava darker; mesosoma black; metasoma dark brown with large pale brown patch on T1, sides and sternites pale yellow; legs pale yellow with pretarsi dark; stout setae of head dark brown; stout setae of mesosoma pale yellowish white; wings hyaline with veins pale brownish yellow; stout setae of veins dark brown.

Head width 1.2x its height in anterior view; width in dorsal view 2.3x its length; POL 3x OOL; OOL shorter than AOL (3 : 4); LOL slightly longer than OOL; WIOS 2.2x POL; occiput not margined, slightly concave posteriorly; vertex with two minute setae between hind ocelli (posterior level of hind ocelli); MS absent, distance between lower eye margin to lower margin of gena 0.3x eye height in profile; eye height 1.3x its length in profile; scrobe shallow weakly reticulate, not reaching front ocellus; lower margin of clypeus entire; frons and vertex smooth and shiny. Antenna inserted at level of ventral margin of eye. Relative L: W of antennal segment: scape = 45 : 7; pedicel = 12 : 8; F1 = 10 : 9; F2 = 10 : 8; F3 = 11 : 9; F4 = 8 : 8; clava = 21 : 9.

Mesosoma : Pronotum reticulate punctate anterior to cross carina and weakly cariate posteriorly, with 3 pairs of stout setae and several minute setae; MLM finely imbricate near anterior margin and raised reticulate on remaining part, with 3 pairs of stout setae; median carina absent; scapula imbricate, with a stout seta near posterior part; scutellum almost as long as wide, faintly reticulate; axillae faintly cariate; dorsellum and propodeum smooth; medium carina of propodeum with a projecting lamina above at its anterior end; plica present, spiracle touching metanotum; LTS not exceeding second hind tarsal segment; forewing length 2.3x as long as broad, costal cell margin with 3 setae at the distal end, SMV with 4 setae, parastigma with 2 setae; speculum present, extending to STV below MV as a narrow strip, closed sparsely by cubital line of setae; wing

disc moderately pilose, marginal fringe slightly shorter than half length of STV; relative L : W of CC = 15, SMV = 12, MV = 20; PMV = 8; STV = 5.

Metasoma including petiole a little shorter than mesosoma (8 : 9); petiole slightly longer than broad, reticulate-striate; T1 (first post petiolar segment) not reaching half of gaster (0.4x length of gaster); gaster as long as broad.

Male : Similar to female except for longer pilosity of antenna.

Host : Unknown.

Distribution : India : Kerala.

Variation : The colour of antennal funicle is completely dark in one specimen; gaster with more yellowish colour in another.

Material Examined : Holotype : Female : INDIA, Kerala, Malappuram District, Nilambur Forest (11° 16' N 76° 13' E), T.C. Narendran, 30-i-2003 (11° 16' N 76° 13' E) (ZSIK). Paratypes: 1 Female same data of holotype; 1 Female, Kerala, Trivandrum District, Mannamkonam (8° 25' N 77° 1'), 6-iv-2003 T.C. Narendran & party; 1 Female, Kerala, Palghat District, Siruvani (10° 58' N 76° 42' E), 26-ix-1987, Malampuzha (10° 53' N 76° 46' E), 10-i-1986, T.C.Narendran; 1 Male, Kerala, Malappuram District, Nilambur (11° 16' N 76° 13' E), 1-ii-1989, T.C. Narendran; 1 Female, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 12-ii-1987, T.C. Narendran.

Depository : Holotype deposited at ZSIK.

Remarks : This new species comes near *E. parvulus* Ferrière in general features but differs from *parvulus* in having (1) OOL shorter than AOL (in *E. parvulus* Ferrière OOL as long as AOL); (2) petiole a little longer than broad (in *E. parvulus* Ferrière petiole slightly broader than long) and (3) pedicel longer than F1 (in *E. parvulus* Ferrière pedicel shorter than F1).

In the key to Chinese species of *Euplectrus* by Zhu and Huang (2003) this new species comes near *E. koebelei* Crawford but differs from it in having: (1) F1 shorter than pedicel (in *E. koebelei* funicle a little longer than pedicel) and (2) F4 not broader than F1 (in *E. koebelei* F4 less than 1.5x as broad as F1) and (3) MS absent (in *E. koebelei* MS present) and (4) MLM without any carina (in *E. koebelei* MLM with a short carina posteriorly).

In the key to Sri Lankan species by Wijesekara & Shauff (1994) this new species comes under *E. nibilis* Wijesekara & Shauff but differs from it in having : (1) pedicel longer than F1 (in *E. nibilis* pedicel equal in length to F1); (2) T1 not reaching middle of gaster (in *E. nibilis* T1 (T2 of Wijesekara & Shauff) covering entire length of metasoma and (3) LTS not shorter than combined length of first

two hind tarsal segments (in *E. nibilis* LTS shorter than combined length of first two hind tarsal segments).

In the key to species by Ferrière (1940) this new species comes near the African *E. nigroclypeatus* Ferrière but differs from it in having : (1) AOL longer than OOL (in *E. nigroclypeatus* AOL shorter than OOL) and (2) pronotum with a strong cross carina (in *E. nigroclypeatus* pronotum with out cross carina).

2. *Euplectrus atrofacies* Wijesekara & Schauff

(Fig. 206)

1994. *Euplectrus atrofacies* Wijesekara & Schauff, 5. Holotype Female, Sri Lanka (USNM).

Diagnosis : Head completely black without yellow or brown or reddish colour below antennal toruli; vertex with two minute setae; occiput not margined; OOL longer than AOL; scape not reaching level of front ocellus; pedicel as long as F1; mesoscutum with a short median carina posteriorly; scutellum cariateous anteriorly and smooth posteriorly; LTS as long as first two tarsal segments together; hind coxa and femur orange yellow; petiole as long as broad; mesoscutellum black; metasoma except sides, base, a cross stripe on dorsum near tip orange yellow; forewing with MV 1.75x - 2x PMV

Male : Unknown.

Host : Unknown.

Distribution : Sri Lanka; India (Kerala).

Material examined : 1 Female, INDIA, Kerala, Palghat District, Agali (11° 9' N 76° 40' E), 12-xii-1987, T.C. Narendran & party.

Remarks : According to Wijesekara & Schauff (1994) this species is similar to *E. nibilis* but differs from *nibilis* in having : (1) petiole as long as broad (in *E. nibilis* petiole longer than broad); (2) scutellum cariateous to smooth (in *E. nibilis* scutellum cariateous); LTS as long as first two hind tarsal segments (in *E. nibilis* LTS shorter than first two tarsal segments).

3. *Euplectrus bristlis* Khan, Agnihotri & Sushil

(Fig. 207)

2005. *Euplectrus bristlis* Khan, Agnihotri & Sushil 60. Holotype, India, Nainital, Pantnagar (NPC) examined.

Diagnosis : *Female* : Head lustrous dark brown; antennae light brown; mesosoma dark brown with purplish reflection, legs yellow; gaster dark brown; vertex without minute setae; OOL longer than AOL; antennal pedicel longer than F1; all remaining funicular segments longer than F1; relative L : W of scape = 39 : 8; pedicel = 16 : 8; F1 = 14 : 10; F2 = 16 : 10; F3 = 17 : 8; F4 = 16 : 10;

clava = 25 : 10 ; mesoscutum without median carina; scutellum smooth; LTS not reaching middle of second hind tarsal segment; MV 2.7x PMV

Male : Unknown.

Host : Unknown.

Distribution : India : Uttarakhand (Nainital).

Material examined : Holotype, slide No.1001 (NPC).

Remarks : Professor Ramamurthy (IARI) sent me a slide of Holotype of this species and it shows broken head and antenna, mesosoma and wings. Khan *et al.* (2005) stated that there are two anelli in this species, but the figure given by them shows a single anellus.

4. *Euplectrus ceylonensis* Howard

(Figs. 208, 209)

1896. *Euplectrus ceylonensis* Howard , in Howard & Ashmead, 641 Holotype Female, Ceylon (= Sri Lanka) (USNM).

1911. *Euplectrus insulanus* Crawford, 281. Indonesia (USNM) (Ferrière 1941 synonymized).

Diagnosis : *Female* : Head completely black without any paler colour below toruli; antenna yellow, gradually darkening towards clava; mesosoma black; legs excluding coxa yellow; petiole black; rest of antenna mostly yellowish brown with base, sides, apical part blackish brown; vertex with four minute setae; occiput margined; OOL longer than AOL; pedicel shorter than F1 (Fig. 208); mesoscutellum without median carina; scutellum smooth; LTS shorter than first and second hind tarsal segment together; MV a little shorter 2x (or almost 2x) as long as PMV; propodeum with distinct plicae, spiracle touching metanotum; petiole 1.5 to about 2x as long as wide, striate.

Male : Similar to female, antennal scape slightly swollen.

Host : Parasitic on some species of Lymantriidae (Lepidoptera) including *Euproctis fraterna* Moore. Zhu & Huang (2003) recorded *Dendrolimus* (Lasiocampidae) as hosts of this species from China. Noyes (2003) gave detailed lists of hosts.

Variation : The colour of antennae is variable from yellow to pale yellow from scape to apex of clava in some specimens. Gaster is more darkish in some specimens. In two specimens slight brownish tinge below toruli.

Material examined : 1 Female, INDIA, Kerala, Thrissur District, Kerala Forest Research Institute, Peechi (10° 31' N 76° 13' E), 10-xii-1989, K. Mohandas from Larva of *Euproctis fraterna* Moore on Cassurina; 2 Females, Kerala, Trivandrum District, Palode (8° 42' N 77° 02' E), 8-xii-2004, T.C.Narendran & party; 1 Female,

Kerala, Wayanad District, Pookode (11° 32' N 76° 01' E), 8-ii-2003, T.C. Narendran & party; 1 Female, Kerala, Idukki District, Kanjikuzhi, (9° 32' N 76° 20' E), 29-2-1989, Cheruthoni (9° 51' N 76° 58' E), 10-i-2004 T.C. Narendran & party; 2 Females, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 21-x-1986 & 2-xii-2003, T.C. Narendran; 1 Female, Kerala, Palghat District, Chindaki (10° 39' N 76° 40' E), 13-xii-1987, T.C. Narendran & party.

Remarks : This species comes near *E. peechansis* Wijesekara & Schauff in the key to species of Sri Lanka by Wijesekara & Schauff (1994) but differs from it in having: 1) head completely black (in *E. peechansis* head with a yellow patch below antennal toruli); 2) OOL longer than AOL (in *E. peechansis* OOL equal to AOL); 3) posterior margin of vertex straight (in *E. peechansis* posterior margin of vertex concave); 4) MLM without a short median carina posteriorly (in *E. peechansis* MLM with a short carina posteriorly).

5. *Euplectrus coimbatorensis* Ferrière

(Figs. 210-211)

1940. *Euplectrus coimbatorensis* Ferrière, 33. Lectotype (Selected by Z. Bouček 1974) Female, India (BMNH Type No. 1241) (examined).

Diagnosis : Head black with lower part below antennal toruli yellow extending to gena and lower eye margin; antenna orange yellow, brownish towards tip, scape pale yellow; legs including coxa yellow; petiole black; gaster yellow on dorsum with black line at sides, at base, tip slightly more orange; head width in dorsal view 2.7x its length; vertex without pairs of minute setae; occiput not margined, almost straight; OOL longer than AOL; POL 2.25x OOL; WIOS 2.4x POL; MS distinct, 0.4x eye height in profile; eye height in profile 1.4x eye length; antenna: pedicel shorter than F1, F2 to F4 shorter than F1; clava a little shorter than 2x F4.

Mesosoma weakly cross reticulate, median carina absent; scutellum finely reticulate; propodeum with median carinae and plicae present; spiracle not quite touching metanotum; LTS not reaching tip of second hind tarsal segment; MV about 2x PMV, 3x as long as STV

Metasoma shorter than mesosoma; petiole as long as wide, finely shagreened, gaster as long as wide; T1 not at all reaching middle of gaster.

Male : Unknown.

Host : Unknown.

Distribution : India : Tamil Nadu; Uttar Pradesh (new record).

Material examined : Lectotype Female (BMNH).

Other Material examined : 1 Female, INDIA, Uttar Pradesh, (6° 30' N 83° 47' E) Qayamgang, Baryala 07-ix-2007, F R. Khan, (ZDAMU).

Remarks : This species comes near *E. xanthocephalus* Girault in general appearance but differs from it in having: (1) yellow colour below toruli which extends to gena reaches ventral margin of eye and posterior genal margin broadly (in *E. xanthocephalus* Girault yellow colour of gena does not reach ventral margin of eye.); (2) malar sulcus present (malar sulcus absent in *E. xanthocephalus* Girault); (3) MLM without median carina (in *E. xanthocephalus* Girault MLM with a short median carina posteriorly)

Euplectrus coimbatorensis Ferrière also resembles *E.xanthovultus* in several features but differs from it in having : (1) MLM without median carina (in *E.xanthovultus* MLM with a short median carina posteriorly; (2) pedicel shorter than F1 (in *E.xanthovultus* pedicel as long as F1); (3) malar sulcus present (malar sulcus absent in *E.xanthovultus*).

6. *Euplectrus colliosilvus* Wijesekara & Schauff

(Fig. 212)

1994. *Euplectrus colliosilvus* Wijesekara & Schauff 7. Holotype Female Sri Lanka (USNM).

Diagnosis : (Based on Wijesekara & Schauff 1994).

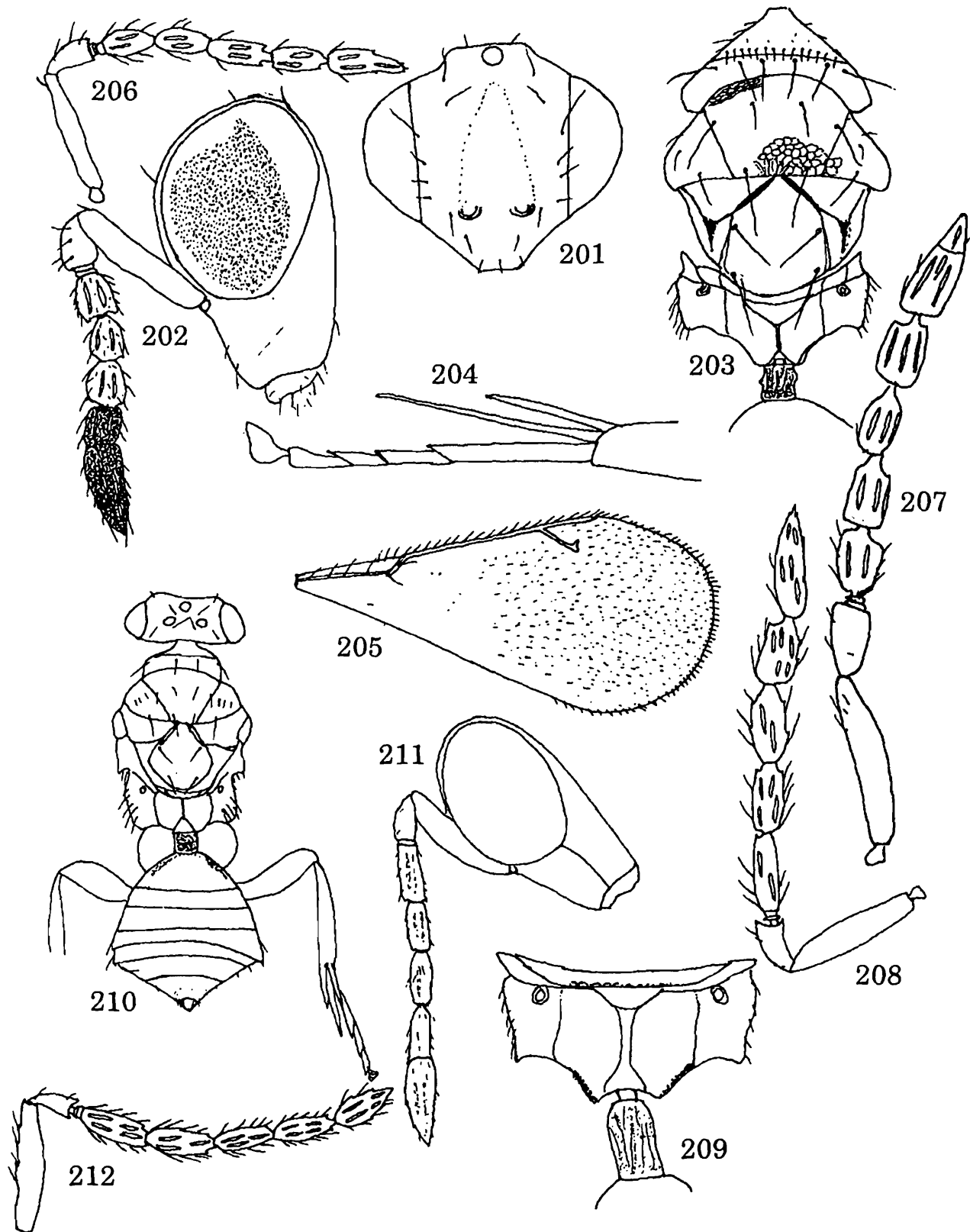
Female : Black with following parts as follows; legs except the hind coxa, triangular area on the dorsum of the metasoma anteriorly, yellow; hind coxa honey brown; antennae yellowish brown; small setae between hind ocelli absent; OOL longer than AOL; POL 1.5x OOL; vertex weakly margined with thin carina posteriorly; scape reaching level of font ocellus; F1 1.8x as long as pedicel; MLM without median carina; scutellum alutaceous; LTS longer than first two tarsal segment together; MV 2.2x as long as PMV; petiole as long as broad and granulate dorsally; T1 (first gastral tergite T2 of Wijesekara & Schauff) 0.66x the length of metasoma.

Male : Characters similar to female except antennae.

Host : Unknown.

Distribution : Sri Lanka.

Remarks : According to Wijesekara & Schauff (1994) this species may be confused with *E. mellocoxus* Wijesekara & Schauff but can be differentiated by lack of minute setae between lateral ocelli and the granulated petiole which is as long as broad. (*E. mellocoxus* has two minute setae between lateral ocelli; petiole longer than broad and striate).



Figs. 201-205. *Euplectrus asotus* sp.nov. Female : 201. Head anterior view; 202. Head & antenna profile; 203. Mesosoma & petiole dorsal view; 204. Tip of hind tibia, tarsal segments and spurs; 205. forewing. **Fig. 206.** *E.atrafacies* Wij. & Schauff : Female antenna. **Figs. 208-209.** *E. ceylonensis* Howard : Female : 208. Antenna; 209. Propodeum & petiole. **Figs. 210-211 :** *E.coimbatorensis* Ferriere Female : 210. Body in dorsal view; 211. Head & antenna in profile. **Fig. 212.** *Euplectrus colliosilvus* Wij.Schauff Female antenna.

7. *Euplectrus euplexiae* Rohwer
(Figs. 213-215)

1921. *Euplectrus euplexiae* Rohwer 135. Holotype Male, INDIA, Tamil Nadu (USNM).

Rediscription : Female : Length 2-2.5 mm. Head black with area below antennal toruli and malar space yellow; scape pale white, pedicel and F1 pale yellow; remaining segments of antenna pale yellowish brown; legs including coxae pale yellow; mesosoma black, tegula pale yellow; petiole black, gaster yellow with base, sides and a broad cross band just before posterior end dark brown or black.

Head width 1.2-1.25x its height in anterior view; width in dorsal view 2-2.3x its length; POL 1.8-2.1x or a little over 2x OOL; OOL longer than AOL; LOL shorter than AOL; WIOS 2.5-2.6x as long as POL; occiput not margined; vertex with 2 minute setae between hind ocelli; MS absent; malar space 0.75x eye height in profile, eye height 1.1x its length in profile; antenna inserted distinctly below level of ventral margin of eyes; scape not reaching level of front ocellus; relative L : W of antennal segments: scape = 43 : 9; pedicel = 17 : 7; F1 = 17 : 8; F2 = 17 : 7; F3 = 19 : 8; F4 = 17 : 7; clava = 25 : 9.

Mesosoma : MLM imbricate anteriorly, with distinct raised reticulation on remaining part, with 3 pairs of setae; scapula imbricate with 2 stout setae and 4 or 5 smaller setae; MLM with a short incomplete median carina posteriorly; scutellum faintly aciculate; propodeal plicae present; propodeal spiracle touching metanotum; LTS equal to first to hind tarsal segments together; forewing length 2.5-2.7x as long as wide; speculum closed behind by setae; relative length of CC = 14; SMV = 11; MV = 16; PMV = 9; STV = 5.

Metasoma a little shorter than or as long as mesosoma; petiole 1.2x as long as broad; T1 reaching middle of gaster or slightly exceeding it.

Male : Length 1.5mm, similar to female except head; colour lighter than female.

Host : *Prospalta* (= *Euplexia*) *conducta* (Walker), *Selepa docilis* Butler, *Euplexia capensis* (Guen) (Lepidoptera : Noctuidae). Unidentified leaf webber of vanilla plant.

Variation : In some specimens F2 is pale yellow; in a few specimens malar space is slightly separated from ventral margin of eyes by a dark band or patch. In a few cases antenna completely pale yellow.

Distribution : Wide spread through out India and Sri Lanka.

Material examined : 1 Paratype : Female, South India, Coimbatore, on *Euplexia conducta* 8-vii-1914 USNM No.20980 (Present in BMNH); 4 Females, INDIA, Tamil Nadu, Coimbatore (11° 0' N 76° 58' E), 11-i-2005, T.C. Narendran & party,

ex unidentified larvae of leaf webber on vanilla plant; 1 Female, INDIA, Kerala, Kannur District, Kottiyoor (11° 52' N 75° 51' E), 19-ii-2003, T.C. Narendran & party; 5 Females, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 1-x-1987, T.C. Narendran; 2 Females, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 3 & 5-x-1989, K.Surekha; 2 Females, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 5-ii-1989, T.C. Narendran; 3 Females, Kerala, Malappuram District, Nilambur (11° 16' N 76° 13' E), 11-viii-1987, T.C. Narendran & party; 1 Female, Kerala, Wayand District, Thonikadavu (11° 34' N 76° 8' E), Kalpetta, 7-ii-2003, T.C. Narendran & party; 1 Female, Kerala, Waynad District, Manathavady (11° 48' N 76° 00' E), 22-ii-1988, T.C. Narendran & party; 4 Females, Kerala Palghat District, Kolkandi (10° 46' N, 76° 42' E), 13-xii-1987, T.C. Narendran & party; 7 Females, Palghat District, Malampuzha (10° 53' N 76° 46' E), 13-vi-1986, 11-xii-1987, 19-i-1988, T.C. Narendran & party; 1 Female, Palghat District, Anakatti (11° 06' N 76° 44' E), 12-xii-1987, T.C. Narendran & party; 1 Female, Palghat District, Agali (11° 9' N 76° 40' E), 12-xii-1987, T.C. Narendran & party; 5 Females, Kerala, Kollam District, Kulathupuzha & Shastamkottai (9° 02' N 76° 37'), T.C. Narendran & party; 1 Female, Kerala, Idukki District, Adimali (9° 58' N 76° 56' E), 3-xii-1988, T.C. Narendran & party; 1 Female, Idukki District, Vandiperiyar (9° 35' N 77° 5' E), 8-i-2004, T.C. Narendran & party; 1 Female, Alappuzha District, Kayamkulam (9° 09' N 76° 30' E), 21-ii-1989, T.C. Narendran & party; 1 Female, Thiruvananthapuram District, Palode (8° 42' N 77° 02' E), 10-xii-2004, T.C. Narendran & party; 1 Female, INDIA, Uttar Pradesh, Sadabad, Bedai (27° 26' N 78° 02' E), 4-ix-2006, M.Hayat & F R. Khan; 1 Female, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 14-25-vii-1993, S. I. Kazmi; 1 Female Uttar Pradesh, Firozabad (27° 09' N 78° 23' E), 04-ix-2007, F R. Khan. (2 females in ZDAMU).

Remarks : This species comes near *E. latifrons* Shafee & Fatma in general appearance but differs from *E. latifrons* Shafee & Fatma in having: (1) pedicel as long as F1 (in *E. latifrons* pedicel shorter than F1); (2) MV a little shorter than 2x PMV (in *E. latifrons* MV 2.83x as long as PMV) and (3) LTS equal to first two hind tarsal segments together (in *E. latifrons* LTS shorter than first 2 hind tarsal segments together).

8. *Euplectrus geethae* Wijesekara & Schauff

(Figs. 216-217)

1944. *Euplectrus geethae* Wijesekara & Schauff 9. Holotype Female, Sri Lanka (USNM).

Diagnosis : *Female* : Length 0.9-1.7 mm. Head black with a small pale yellow patch below antennal toruli which may slightly extend to lower part of gena in some specimens (in some specimens the yellow colour is very faint and smaller);

mesosoma and petiole black; scape, pedicel, funicle yellow or pale yellow; clava brownish; metasoma except sides and near petiole yellow; legs yellow with hind coxa orange yellow or brownish yellow. Head without minute setae between hind ocelli; occiput not margined; OOL as long as AOL; POL 2-2.2x OOL; WIOS 2.3-2.6x POL; MS absent; length between eye and lower margin of gena 0.6-0.7x height of eye; scape reaching level of front ocellus (in some Indian specimens scape not quite reaching level of front ocellus); pedicel as long as F1; funicular segments subequal in length; MLM with a short median carina posteriorly; scutellum smooth (weakly reticulate in some Indian specimens); propodeal spiracle almost touching metanotum; LTS shorter than first two hind tarsal segments; MV 1.4x as long as PMV(in some Indian specimens MV about 2x as long as PMV); petiole as long as broad, granulated dorsally, T1 almost half of gaster.

Male : Unknown

Host : One Indian specimen was recorded as endoparasitic on the larva of *Euproctis fraterna* Moore (Lymantriidae) (New Record).

Distribution : Sri Lanka, India (Kerala, Uttar Pradesh). New record for India.

Material examined : 1 Female, INDIA, Kerala, Thrissur District, Kerala Forest Research Institute, Peechi (10° 31' N 76° 13' E), from larva of *Euproctis fraterna*, 20-vii-1985, K. Mohandas; 1 Female, Kerala, Wayanad district, Pookode (11° 32' N 76° 01' E), 8-ii-2003, T.C. Narendran & party; 2 Females, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 6-ii-1987, 21-x-1988, T.C. Narendran; 2 Females, Kerala, Plaghat District, Chindaki (10° 39' N 76° 40' E), 13-xii-1987, T.C. Narendran; 7 Females, India, Uttar Pradesh, Gonda, Raja Pura (28° 20' N 78° 22' E) (2) (8-x-2006), Firozabad, Nagla Prabhu, (27° 09' N 78° 23' E) (1), (04-ix-2007), Qayamgang, Baryala, (4) (7-ix-2007). (7 females in ZDAMU).

Remarks : This species comes near *E. petiolatus* in having head black with yellow colour below toruli but differs from it in having: (1) petiole as long as broad (in *E. petiolatus* petiole almost 3x as long as broad); (2) MLM with a short median carina posteriorly (in *E. petiolatus* MLM with out a median carina); (3) pedicel as long as F1 (in *E. petiolatus* pedicel shorter than F1); (4) scape reaching level of front ocellus (in *E. petiolatus* scape not reaching level of front ocellus).

9. *Euplectrus himalayaensis* Mani

1935. *Euplectrus himalayaensis* Mani 257. Holotype Female, India (NZSI) (Girish examined).

1941. *Euplectrus himalayaensis* Mani; Ferrière 47.

Diagnosis : *Female* : Length : 2.5 mm. Head completely black without paler colour below toruli; antenna dark brown; scape brown; clava a little darker than

other segments; legs mostly brown (fore coxa and apex of hind coxa reddish brown) with hind coxa black except apex; gaster black basally. Head without minute setae between hind ocelli; OOL longer than AOL (6 : 4); antenna inserted below level of lower margin of eyes; pedicel shorter than F1 (7 : 9.5); F2 to F4 subequal; MLM without median carina; scutellum with net like reticulation; LTS shorter than first to hind tarsal segments together; MV 2.2x as long as PMV; petiole 1.44x as long as its width; gaster longer than wide.

Male : Unknown.

Host : Unknown.

Distribution : India : West Bengal (E. Himalaya, Darjeeling).

Remarks : On my request Dr. P. Girish Kumar of Zoological Survey of India, Kolkata examined the holotype of this species present in NZSI and sent me short notes on the type. The above diagnosis is based on these notes.

E. himalayaensis Mani comes near *E. manilae* Ashmead in general appearance but differs from it in having: (1) hind coxa black with apex reddish brown (in *E. manilae* hind coxa yellow); (2) MV 2.2x as long as PMV (in *E. manilae* MV 2.41x as long as PMV); (3) MS absent (MS present in *E. manilae*).

10. *Euplectrus indicus* Ferrière

(Figs. 218-219)

1940. *Euplectrus indicus* Ferrière 33. Lectotype Female (Lectotype Selected by Bouček, 1974). (BMNH No. Hym 5. 1239) (examined).

Redescription : *Female* : Length : 2.5 mm. Head black with clypeal part and mandibles pale brownish yellow; yellowish colour not at all extending to gena; antenna yellow with clava brownish (in many specimens antennal scape, pedicel and often F1 pale yellow and remaining segments darker); legs including coxa yellow; gaster black with a yellowish patch on T1.

Head width 1.4-1.5x its height in anterior view; head width in dorsal view 2.7x its length; POL 1.4x as long as OOL; OOL a little longer than AOL; LOL a little shorter than OOL; WIOS 2.7x OOL; MS absent; distance between lower eye margin and lower margin of gena 0.4x eye height in profile; scape almost reaching level of front ocellus; pedicel distinctly shorter than F1; MLM with median carina nearly complete; scutellum longitudinally and clearly reticulate; propodeal spiracle not touching metanotum clearly; LTS as long as first two hind tarsal segments; MV 2.5x as long as PMV; speculum indistinct; petiole subquadrate faintly regular; gaster length subequal to its width; T1 0.3x length of gaster.

Male : Similar; scape whitish, broadened at middle; funicle segments narrower; gaster triangular, petiole a little longer than broad.

Host : Ex. Geometrid larvae of Mustard plant, ex cocoon leaf of *Tectona grandis*, one from *Apanteles obliqua* var. *niger* Wilk (Braconidae) (Ferrière 1940).

Distribution : India (Dehradun, Tamil Nadu, Kerala, Himachal Pradesh).

Variation : The cross striation of mesosoma is cross reticulate in some specimens and longitudinal reticulation is weak in some specimens.

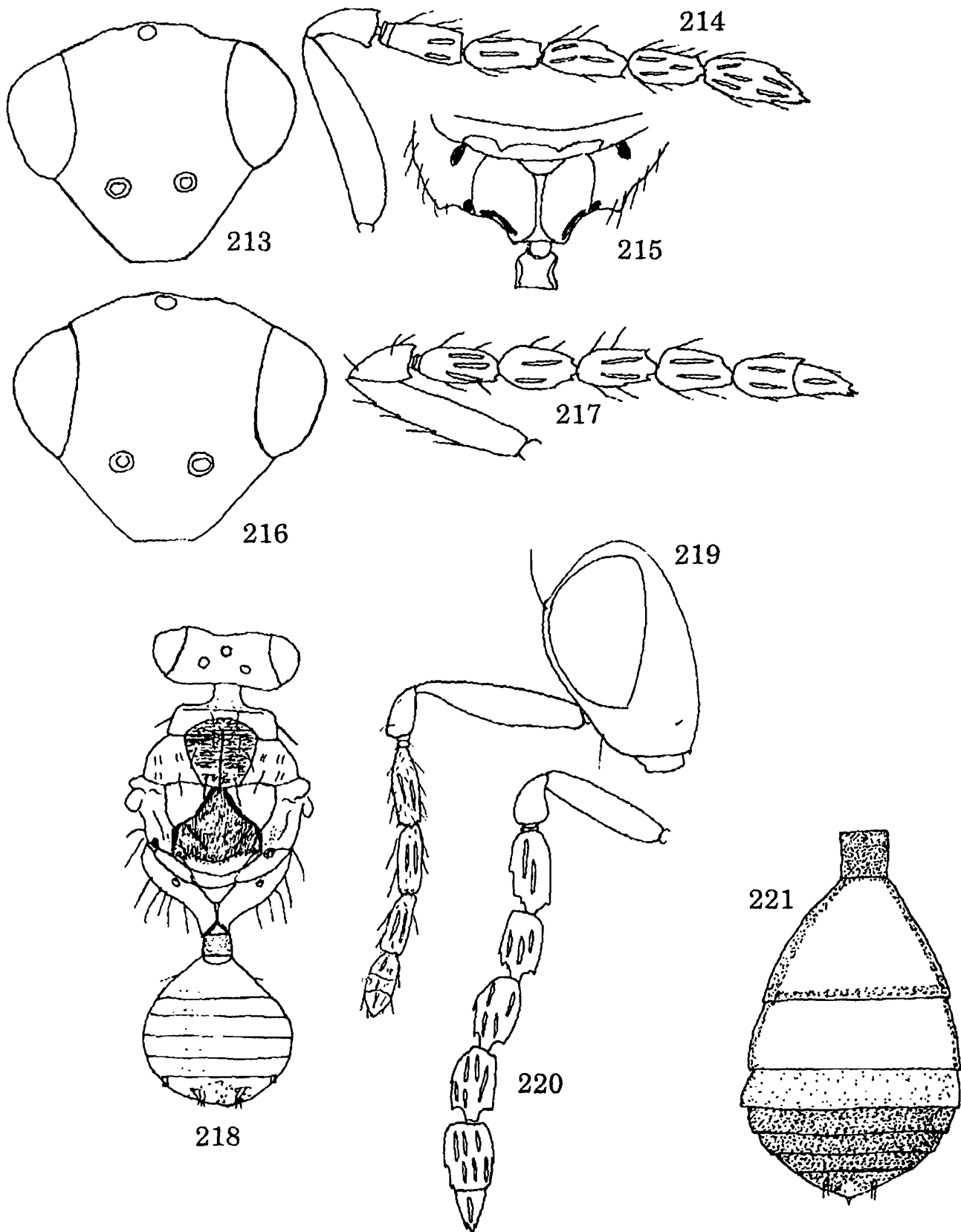
Material examined : Lectotype, Female (BMNH); 1 Female, INDIA, Kerala, Kottayam District, Thekkadi (9° 36' N 77° 12' E), 5-v-1986, T.C. Narendran; 1 Female, Kerala, Palghat District, Chindaki (10° 39' N 76° 40' E), 13-xii-1987, T.C. Narendran; 1 Female, Kerala, Thrissur, District, Peechi (10° 31' N 76° 13' E), 26-vi-1989, T.C. Narendran; 1 Female, INDIA, Himachal Pradesh, Hamirpur (31° 41' N 76° 31' E), Anu Kalan, 1-vii-2006, S. M. A. Badruddin & F. R. Khan; 1 Female, INDIA, Meghalaya, Ri Bhoi, Khalauv (25° 54' N 91° 53' E), 26-x-2008, F. R. Khan; 1 Female, INDIA, West Bengal, Darjeeling (27° 02' N 88° 15' E), 15-v-2008, F. R. Khan. (3 females in ZDAMU)

Remarks : This species comes near *E. leucostomus* Rohwer in having similar structure of mesosoma but differs from it in having : (1) yellow colour of clypeus not extending to gena and touching ventral margin of eye (in *E. leucostomus* yellow colour below antennal toruli touches ventral margin of eye and fully occupies gena); (2) vertex with only one pair of minute setae between hind ocelli (in *E. leucostomus* vertex with 4 pairs of minute setae between hind ocelli); (3) median longitudinal carina of MLM not touching posterior margin of pronotum (in *E. leucostomus* median carina of MLM touches posterior margin of pronotum); and (4) scutellum not very strongly reticulate longitudinally (in *E. leucostomus* scutellum very strongly reticulate longitudinally).

11. *Euplectrus latifrons* Shafee, Fatma, Khan and Shujauudin
(Figs. 220-221)

1984. *Euplectrus latifrons* Shafee, Fatma, Khan & Shujauudin, 618. Holotype Female, India, Andaman Islands (ZDAMU) (examined).

Diagnosis : Head dark brown, area below antennal toruli pale brown extending to gena, touching ventral margin of eye and posterior margin of gena (could not see any metallic bluish reflection as noted in the original description); vertex with 2 minute setae between hind ocelli; occiput not margined or carinate; OOL longer than AOL; malar space as long as eye width (Shafee *et.al.*, 1994); antennal pedicel distinctly shorter than F1; MLM with a short median carina at posterior



Figs. 213-215. *Euplectrus euplexiae* Rohwer Female : 213. Head anterior view; 214. Antenna; 215. Propodeum & petiole. **Figs. 216-217 :** *E. geethae* Wij. & Schauff Female : 216. Head anterior view; 217. Antenna. **Figs. 218-219.** *E. indicus* Ferriere Female : 218. Body dorsal view; 219. Head & antenna profile. **Figs. 220-221.** *E. latifrons* Shafee & Fatma : 220. Antenna, 221. Metasoma dorsal view.

margin; scutellum weakly rugulose; LTS shorter than first two hind tarsal segments combined; petiole as long as wide, granulate on dorsal side; MV 2.83x as long as PMV; speculum closed behind by setae; petiole subequal in length and width (in the original description petiole slightly longer than wide); T1 0.42x length of gaster.

Male : Unknown.

Host : Unknown.

Distribution : India : Andaman and Nicobar Islands.

Material examined : Holotype Female (ZDAMU).

Remarks : This species comes near *Euplectrus euplexiae* Rohwer in general appearance but differs from it in having: (1) pedicel shorter than F1 (in *E. euplexiae* pedicel as long as F1); (2) petiole as long as wide (distinctly longer than wide in *E. euplexiae*); (3) MV 2.83x as long as PMV (in *E. euplexiae* a little less than 2x as long as PMV); (4) LTS shorter than first 2 hind tarsal segments together (in *E. euplexiae* LTS as long as first 2 hind tarsal segments together).

12. *Euplectrus leucostomus* Rohwer

(Figs. 222-225)

1921. *Euplectrus leucostomus* Rohwer, 134. Holotype Female, India, Coimbatore (USNM Type No. 20989).

Redescription : (Based on identified specimen). Length 2.9 mm. Black with following parts as follows : area below antennal toruli, gena completely, legs including caxae, yellow; gaster yellow with sides, margin, basal margin and a cross band a little before posterior end dark brown.

Head width 1.4x its height; width in dorsal view, 2.85x its length, POL 3.5x OOL; OOL shorter than AOL (2 : 3); LOL a little longer than AOL; WIOS 2.6x POL; MS absent; malar distance (from base of eye to lower margin of gena) 0.35x eye height in profile; eye height 1.7x its length; lower margin of clypeus slightly arcuate; frons and vertex granulate or faintly microsculptured; antenna inserted a little above level of ventral margin of eye; pedicel distinctly shorter than F1. (Fig.223).

Mesosoma : (Fig. 224). MLM with median carina complete, cross striate, reticulate; scutellum strongly and longitudinally striate; MV 1.54x as long as PMV; speculum present reaching STV as a strip below MV, closed behind by setae; propodeum with a spiracle touching metanotum, surface smooth; metasoma as long as mesosoma; petiole as long as broad, microsculptured and raised reticulate; T1 exceeding a little middle of gaster.

Male : For characters of male the paper of Wijesekara and Schauff (1994) may be referred.

Host : *Achaea janatha* (Linnaeus) (Lepidoptera : Noctuidae), *Trabala vishnu* Lefebvre (Lepidoptera : Lasiocampidae), *Polydesma scriptilis* Guenee ((Lepidoptera : Noctuidae).

Distribution : India : Tamil Nadu (Coimbatore); Sri Lanka (Wijesekara & Schauff, 1994).

Material examined : 1 Female, INDIA, Tamil Nadu, Coimbatore (11° 00' N 76° 58' E), 9-xii-1993, Raja Rishie.

Remarks : This species comes near *E. indicus* Ferrière in having a long median carina on MLM. However it differs from *E. indicus* Ferrière in having: (1) OOL shorter than AOL (in *E. indicus* Ferrière OOL longer than AOL); 2 yellow area extends to gena and upto ventral margin of eye (in *E. indicus* Ferrière yellow area restricted to clypeal part).

13. *Euplectrus litoralis* Wijesekara & Schauff

(Fig. 226)

1944. *Euplectrus litoralis* Wijesekara & Schauff, 10. Holotype Female, Sri Lanka (USNM).

Diagnosis : (Based on Wijesekara & Schauff, 1994).

Female : Length : 1.3mm. Head except clypeus, mesosoma, petiole and sides of metasoma black; clypeus and stripe across the metasoma near tip and antenna except scape brownish; scape, legs and metasoma except areas described above, yellow; head with 4 minute setae on vertex between hind ocelli; occiput not margined; OOL shorter than AOL; POL 2.3x OOL; LOL equal to OOL; WIOS 3.1x POL; MS absent; pedicel a little shorter than F1; median carina of MLM absent; scutellum weakly reticulate; LTS as long as first two hind tarsal segments together; MV 2x as long as PMV; metasoma with petiole as long as broad; T1 (T2 of Wijesekara & Schauff) 0.33 length of metasoma.

Male : Unknown.

Host : Unknown.

Distribution : Sri Lanka.

Remarks : This species comes near *E. ceylonensis* in having vertex with 4 minute setae but differs from it in having : (1) OOL shorter than AOL (in *E. ceylonensis* OOL longer than AOL); (2) petiole as long as broad (petiole longer than broad in *E. ceylonensis*); (3) LTS as long as first two hind tarsal segments together (in *E. ceylonensis* LTS shorter than first two hind tarsal segment together).

14. *Euplectrus longiscapus* Khan, Agnihotri & Sushil
(Fig. 227)

2005. *Euplectrus longiscapus* Khan, Agnihotri & Sushil, 66. Holotype Female, India, Nainital (NPC) (Examined).

Diagnosis : Head dark brown with metallic reflection; antennal scape white, pedicel, anelli, F1 & F2 yellow, remaining segments infuscated; mesosoma dark with metallic reflections; legs yellow; gaster dark brown except a white broad patch on middle of dorsum. From the figure 1 of Plate viii of Khan *et al.* (2005) vertex with 2 minute setae between hind ocelli; OOL longer than AOL; POL 1.6x OOL; WIOS (Fig. 1 of plate viii of Khan *et al.* 2005) 3.3x POL; pedicel longer than F1; relative L:W of antennal segments : scape = 36 : 6; pedicel = 16 : 7; F1 = 13 : 7; F2 = 14 : 7; F3 = 14 : 7; F4 = 14 : 7; clava = 22 : 7; MLM without median carina; LTS shorter than first two hind tarsal segments together; MV a little shorter than 3x PMV; petiole distinctly longer than wide.

Male : Unknown.

Host : *Lamprosema indicata* (Fabricus) (Lepidoptera: Pyraustidae) on *Phaseolus aureus* (Green gram).

Distribution : India : Uttarakhand.

Remarks : This species comes near *E. nibilis* Wijesekara & Schauff in having OOL longer than AOL, mesoscutum without carina and vertex with 2 minute setae. However *E. longiscapus* differs from *E. nibilis* in having : (1) head dark brown with metallic refringence (in *E. nibilis* head black without metallic refringence and with a light coloured area near clypeus); (2) clava a little over 2x as long as F4 (in *E. nibilis* clava 1.6x as long as F4); (4) pedicel longer than F1 (in *E. nibilis* pedicel as long as F1).

15. *Euplectrus manii* Narendran sp. nov.
(Figs. 231-234)

Female : (Holotype) Length 2.1 mm. Head completely black; eye dull gray; ocelli pale yellowish brown; antennal funicle and clava pale brown; scape, pedicel and anelli pale yellow; fore and mid coxae dark brown; remaining segments of fore and mid legs pale yellow; hind coxa black; hind femur pale yellowish brown with a darker patch medially (Fig.234); gaster with a yellow patch on T1.

Head width 1.35x its height in front view; width in dorsal view 2.8x its length; POL 2x OOL; OOL as long as AOL; LOL equal to OOL; WIOS 2.9x POL; occiput margined, slightly concave posteriorly, vertex with 4 minute setae between hind ocelli; MS absent; malar space between ventral margin of eye and lower margin

of gena 0.5x height of eye in profile; eyeheight 1.4x its length in profile; scrobe shallow, not reaching front ocellus; lower margin of clypeus entire; frons and vertex almost smooth with faint aciculations; antenna inserted a little above level of ventral margin of eyes; relative L : W of antennal segments: scape = 28 : 6; pedicel = 11 : 6; F1 = 11 : 6; F2 = 10 : 6; F3 = 9 : 6; F4 = 9 : 6; clava = 21 : 7.

Mesosoma : Pronotum cross reticulate and sparsely punctuate anterior to cross carina, weakly cross reticulate posteriorly, with 3 pairs of stout setae and several minute setae; MLM finely imbricate all over, with 3 pairs of strong setae; median carina absent; scapula imbricate with 2 stout setae, one pair on posterior side and other on lateral margin; scutellum smooth and shiny (with faint aciculations) as long as wide; axilla smooth and shiny with weak aciculations on area near outer and anterior margins; dorsellum and propodeum smooth; plicae present; propodeal spiracle not touching metanotum, separated by a distance less than diameter of spiracle; LTS shorter than first two hind tarsal segments together; forewing length 2.4x its width; relative length of ES = 15; SMV = 10; MV = 21; PMV = 8; STV = 5.1.

Metasoma a little shorter than mesosoma, petiole subquadrate, gaster length subequal to its width (Fig. 233); T1 exceeding half of gaster.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala).

Etymology : The species is named after late Professor M.S. Mani, the well known Indian Entomologist.

Material examined : Holotype. Female : INDIA, Kerala, Kollam District, Shenduruny (08° 55' N 77° 15' E), 10-i-2004, T.C. Narendran & party (ZSIK).

Depository : Holotype deposited at ZSIK.

Remarks : In the key to Sri Lankan species of *Euplectrus* of Wijesekara & Schauff (1994) this new species comes to couplet No. 4 but does not fit to it since OOL is equal to AOL.

In the key to Chinese species by Zhu and Huang (2003), this new species comes to *E. ceylonensis* Howard but differs from it in having: OOL equal to AOL (in *E. ceylonensis* OOL longer than AOL); (2) pedicel as long as F1 (in *E. ceylonensis* pedicel shorter than F1); (3) MV 2.6x length of PMV (in *E. ceylonensis* MV a little shorter than 2x as long as PMV); (4) petiole as long as wide (in *E. ceylonensis* petiole 1.5x-2x as long as wide) and (5) propodeal spiracle not touching metanotum (in *E. ceylonensis* propodeal spiracle touching metanotum).

In the key to species by Ferrière (1940), this new species comes near the African *E. fuscipes* Ferrière but differs from it in having : (1) OOL equal to AOL (in *E. fuscipes* OOL longer than AOL); (2) petiole as long as broad (in *E. fuscipes* petiole broader than long); (3) MV 1.4x SMV (in *E. fuscipes* MV as long as SMV); (4) hind tibia yellow without brown colour in the middle (in *E. fuscipes* hind tibia with more or less brown in middle).

16. *Euplectrus manilae* Ashmead

(Figs. 235-236)

1904. *Euplectrus manilae* Ashmead 16 Female, Philippines (USNM).

Redescription : *Female* : Length 2.25 mm. Head completely black, antenna yellow with slight brownish tinge towards apical end; legs including coxae yellow; petiole black; gaster pinkish brown with a very large yellow patch on dorsal side.

Head width in anterior view 1.29x its height; width in dorsal view 2.6x its length; POL equal to OOL; OOL longer than AOL; LOL longer than AOL but shorter than OOL; WIOS 4.8x POL; occiput not margined; vertex without any minute setae between hind ocelli; MS present; malar space 0.5x as long as eye height in profile; eye height 1.4x its length in profile; lower margin of clypeus entire; antenna inserted at level of ventral margin of eyes; relative L : W of antennal segments : scape = 22 : 6; pedicel = 8 : 6; F1 = 11 : 5; F2 = 10 : 6; F3 = 10 : 6; F4 = 10 : 7; clava = 16 : 6.

Mesosoma Pronotum with a distinct cross carina; MLM without median carina; scutellum not strongly reticulate or striate; propodeum with plicae present; spiracle not touching metanotum, separated from metanotum by a distance shorter than half diameter of spiracle : LTS as long as first two hind tarsal segments together; forewing 2.5x as long as broad; speculum closed behind by setae; relative length of EC = 10; SMV = 8; MV = 17; PMV = 7; STV = 4.

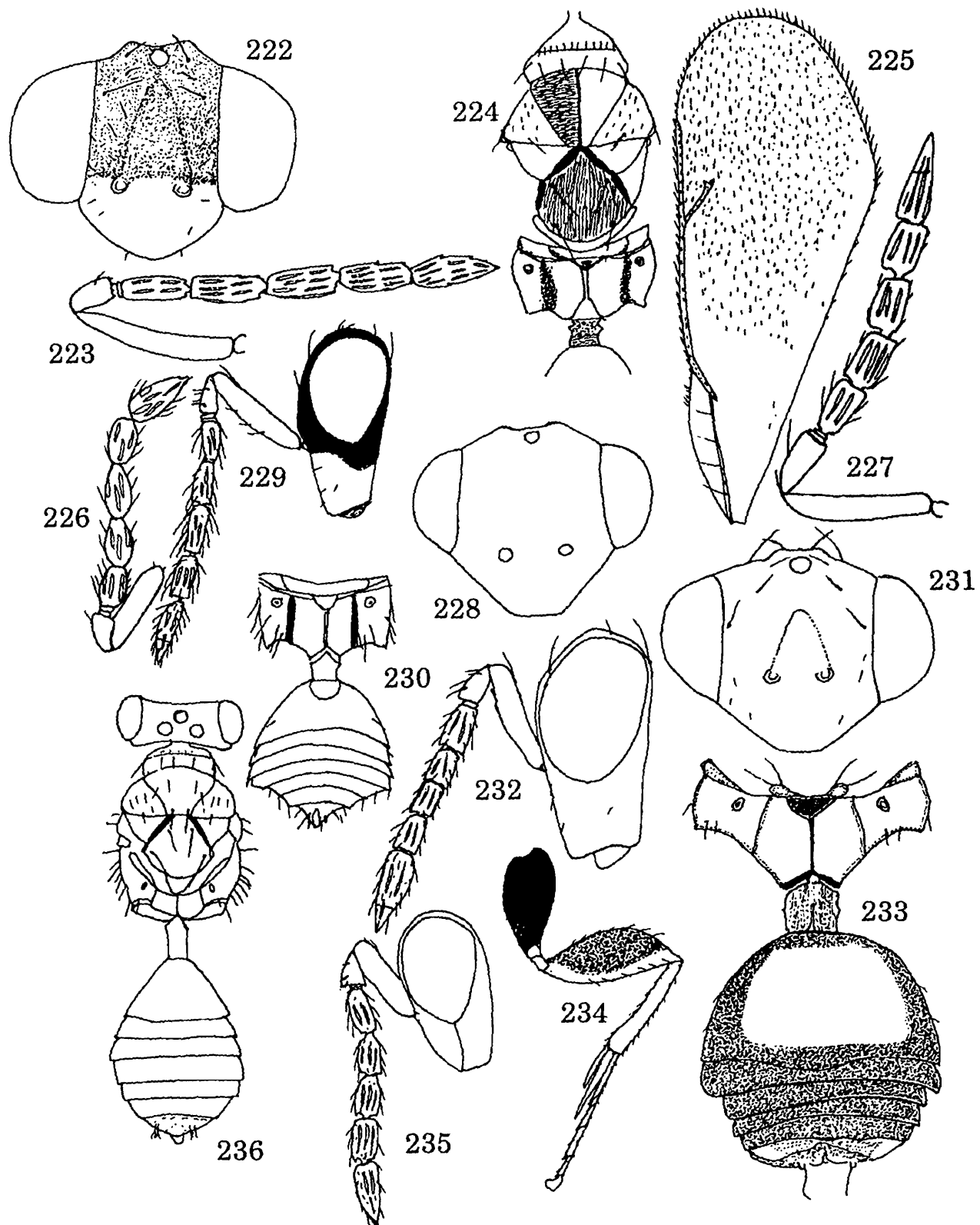
Metasoma longer than mesosoma; petiole longer than broad (10 : 5); T1 about 0.3x length of gaster.

Male : Unknown.

Host : Parasitic on *Papilio alphenor* Cramer (Lepidoptera: Papilionidae) (According to Zhu & Huang 2003, parasitoids of Noctuids and Papilionids).

Distribution : Philippines, Japan, Malaysia, Papua new Guinea, Thailand, China.

Material examined : 1 Female specimen determined by Bouček at BMNH (Box No. 5.732). PHILIPPINES, Luzon, Coll. Baker.



Figs. 222-225. *Euplectrus leucostomus* Rohwer Female : 222. Head anterior view; 223. Antenna; 224. Mesosoma & petiole dorsal view. 225. Forewing. **Fig. 226.** *E.litoralis* Wij. & Schauff Female : antenna; 227. *E.longiscapus* Khan et.al. Female antenna; **Figs. 228-230.** *E.manjericus* sp.nov. 228. Head anterior view; 229. Head and antenna profile; 230. Propodeum & metasoma. **Figs. 231-234.** *E.manii* sp.nov. Female : 231. Head anterior view; 232. Head & antenna profile; 233. Propodeum & metasoma; 234. Hind leg. **Figs. 235-236.** *E.manilae* Ashmead Female : 235. Head & antenna profile; 236. Body dorsal view.

Remarks : This species is not so far reported from India but included in this work since it is quite likely that it may be found in India later as it has a very wide distribution in Asia. Among species of Indian subcontinent it comes near *E. himalayaensis* Mani in having petiole longer than broad, occiput not margined and pedicel shorter than F1. However *E. manilae* Ashmead differs from *E. himalayaensis* Mani in having: 1) MS present (absent in *E. himalayaensis* Mani); 2) hind coxa yellow (hind coxa black in *E. himalayaensis* Mani).

17. *Euplectrus manjericus* Narendran sp. nov.

(Figs. 228-230)

Female : (Holotype) Length 1.53 mm. Head black except area below toruli yellow which extends to gena but not united with ventral margin of eye; eye dark red with marginal area dull gray; ocellus dark brownish red; antenna scape and pedicel pale yellow; flagellum gradually becoming darker towards apex; legs including coxa yellow; pretarsi dark; mesosoma black; metasoma dark brown on dorsal side with T1 slightly paler; ventral side of gaster pale yellow; wings hyaline and veins pale yellowish; pubescence pale whitish yellow on head and body.

Head width in anterior view 1.31x its height; width in dorsal view 2.4x its length; POL 2x OOL; OOL longer than AOL; LOL as long as AOL; WIOS 2.8x POL; occiput not margined; vertex without any minute setae between hind ocelli; MS absent; malar space between ventral margin of eye and lower margin of gena 0.62x eye height in profile; eye height in profile 1.37x its length; lower margin of clypeus entire; antenna inserted at level of ventral margin of eye; relative L : W of antennal segment: scape = 27 : 6; pedicel = 9 : 5; F1 = 9 : 5; F2 = 10 : 5; F3 = 11 : 5; F4 = 11 : 5; clava = 17 : 5.

Mesosoma : Pronotum cross-reticulate and sparsely punctuate anterior to cross carina, weakly cross reticulate posteriorly, with three pairs of short stout setae and several minute setae; MLM finely imbricate, anteriorly and distinctly reticulate on remaining part, with 3 pairs of stout setae, with a short median carina posteriorly; scapula imbricate with one stout seta posteriorly and another on lateral part, other setae of scapula weak and delicate; scutellum with distinct longitudinal striate reticulation (longitudinal striations not as strong as that of *E. leucostomus*); axilla imbricate; prpoduem smooth, spiracle separated from metanotum by a distance equal to half diameter of spiracle; plical carina weak or faint, but plical fovea moderately deep; LTS shorter than first two hind tarsal segments together; forewing length 2.4x as long as wide; speculum present, closed behind by setae; relative measurement of length of EC = 15; SMV = 12; MV = 23; PMV = 13; STV = 7.

Metasoma shorter than mesosoma; petiole as long as broad or a trifle longer than broad; dorsal surface microsculptured and granulate; T1 0.42x length of gaster; gaster length subequal to its width.

Male : Unknown.

Host : Unknown.

Distribution : India : Kerala, Himachal Pradesh, West Bengal, Meghalaya, Assam, Uttar Pradesh, Punjab.

Etymology : Named after the locality of collection of Holotype.

Material examined : Holotype Female : INDIA, Kerala, Malappuram District, Manjeri (11° 07' N 76° 07' E), Coll. No. MoEF 1277, 20-vii-2003, T.C.Narendran & party (ZSIK). Paratypes: 8 Females, Malappuram District (11° 1' 48? N, 76° 3' 0? E), Devathial , 16-xii-2003, T.C. Narendran & party; 8 Females, Malappuram District, Thenjipalam (11° 07' N 75° 53' E), 3-xii-2003, T.C. Narendran & party; 4 Females, Kerala, Wayanad District, Kalpetta, Thonikadavu (11°36' N 76° 6' E), 7-ii-2003, T.C. Narendran & party; 2 Females, Kerala, Malappuram, Calicut University Campus (11° 7' N 75° 53' E), 27-03-1989 Surekha K & 18-i-2002, Sudheer & Divakaran; 1 Female, Kerala, Wayanad District, Thariyodu (11° 40' N 75° 57' E), 22-ii-1988, T.C. Narendran & party; 1 Female, Kerala, Idukki District, Cheruthoni (9° 51' N 76° 58' E), 10-i-2004, T.C. Narendran & party; 2 Females, Kerala, Idukki District, Vandiperiyar (9° 35' N 77° 5' E), 8-i-2004, T.C. Narendran & party; 1 Female, Kerala, Thiruvananthapuram District, Palode (8° 42' N 77° 02' E), 11-xii-2004, T.C. Narendran & party; 1 Female, Kerala, Palghat District, Malampuzha (10°53' N 76° 46' E), January 1986, T. C. Narndran & party; 1 Female, Kerala, Kasargod District, 22-ii-1988, T.C. Narendran & party.

Other Material Examined : 1 Female, INDIA, Himachal Pradesh, Chandiyal (31° 30' N, 77° 00' E), 26-vi-2006, S. M. A. Badrudhin & F R. Khan; 1 Female, India, Uttar Pradesh (6° 30' N 83° 47' E), Qayamgang, Baryala, 07-iv-2007, F. R. Khan; 1 Female, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 11-iv-1991 & 11-v-1991, S.B. Zeya; 1 Female, West Bengal, Cooch Behar (26° 22' N, 89° 29' E), 25-v-2008, F. R. Khan; 1 Female, INDIA, West Bengal (22° 34' 10.92? N 88° 22' 10.92? E), New Jaipalpur, 30-v-2008, F R. Khan; 1 Female, INDIA, Meghalaya (25° 34', N 91° 53'), Ri Bhoi, 21-x-2008, F.R.Khan; 1 Female, INDIA, Assam, Guwahati (26° 11' N, 91° 44' E), 28-x-2008, F R. Khan. (6 females in ZDAMU).

Depository : Holotype deposited at ZSIK.

Remarks : This species comes near *E. xanthovultus* Wijesekara & Schauff in having: mesoscutum with a short median carina posteriorly; head black with a

yellow patch below toruli; OOL longer than AOL; vertex without minute setae. However *E. majericus* differs from *E. xanthovultus* in having: (1) yellow colour of malar space separated from ventral margin of eye by a black or dark brown band; (2) dorsal surface of petiole microsculptured and granulate (in *E. xanthovultus* dorsal surface of petiole shagreened); (3) PMV 1.9x as long as STV (in *E. xanthovultus* PMV 1.7x as long as STV); (4) metasoma 0.7x as long as mesosoma (in *E. xanthovultus* metasoma 0.9x as long as mesosoma).

In the key to Chinese species of *Euplectrus* Zhu and Huang (2003) this new species comes to *E. paribus* Zhu & Huang but differs from it in having : (1) POL 2x OOL (in *E. paribus* POL 1.3x OOL); (2) pedicel as long as F1 (in *E. paribus* longer than F1 (in *E. paribus* pedicel longer than F1)); (3) MV 1.8x PMV (in *E. paribus* 1.6x PMV).

In the key to species of *Euplectrus* by Ferrière (1940) this new species comes to *E.laphygmae* Ferrière but differs from it in having : (1) MLM with a short median carina posteriorly (without median carina in *E.laphygmae*; (2) length of malar space 0.62x height of eye (in *E.laphygmae* length of malar space as long as height of eye); (3) metasoma shorter than mesosoma (in *E.laphygmae* metasoma as long as mesosoma); (4) petiole microsculptured and granulate (in *E.laphygmae* petiole almost smooth).

Variation : The length of female varies from 1.5-2mm. In fresh specimens gaster comes more yellowish and dark colour is faint. In some specimens gaster is longer than mesosoma.

18. *Euplectrus maternus* Bhatnagar
(Figs. 237-238)

1952. *Euplectrus maternus* Bhatnagar, (1951) : 133. Holotype Female, India, Kanpur (USNM).

Diagnosis : (Based on Bhatnagar 1952).

Female : Length 2.85 mm. Head black, below antennal toruli light brown; antenna light brown except for the yellowish white- scape; mesosoma black; legs including coxae honey brown except for the hind coxae slightly of a "deeper tone"; apices of terminal tarsal segments dark brown; gaster mostly white except for a discontinuous centrally interrupted pale brown band apically; laterally and at the extreme base brown; petiole dark brown.

Head width in anterior view 1.4x its height; width in dorsal view 2.5x its length; POL 2x OOL; OOL as long as AOL; vertex with two minute setae between hind ocelli; vertex shallowly and closely punctate; occiput not concave, occipital margin straight; malar space 0.33x eye height; lower clypeal margin entire;

antennae inserted slightly above level of ventral margin of eye; relative L : W of antennal segments: scape = 28 : 8; pedicel = 12 : 6; F1 = 16 : 7; F2 = 15 : 7; F3 = 12 : 7; F4 = 11 : 7; clava = 21 : 8.

Mesosoma : Pronotum hardly visible from dorsal side; MLM strongly rugosely punctate; anteriorly, punctae not very well defined and ventrally coalescent; scapulae shagreened; notauli complete; scutellum and axilla smooth and shiny but on higher magnification minutely and shallowly punctate; axillae large and contiguous; longest spur of hind tibia shorter than first two hind tarsal segments together; forewing length 2.23x its length; speculum closed behind by cubital line of setae; relative length of CC = 25; SMV = 20; MV = 40; PMV = 17; STV = 10.

Metasoma : Petiole 0.25x as long as hind coxa.

Male : Length 1.2mm. Very similar to Female.

Host : *Othreis materna* Linnaeus, *Othreis fullonica* Clerk (Noctuidae).

Distribution : India (Kanpur).

Remarks : From the Fig. 46 of Bhatnagar, I understand there are two minute setae between hind ocelli. I did not try to examine the type of this species, since Wijesekara & Schauff (1994) stated that there are only two slides containing parts of the type and these are not adequate to confirm the identity.

19. *Euplectrus mathuri* Bhatnagar

(Figs. 239-240)

1952. *Euplectrus mathuri* Bhatnagar 171. Holotype Female, India, Uttarakhand, Dehradun (USNM).

Diagnosis : (Based on Bhatnagar, 1952).

Female : Length 2.85 mm. Head black with light brown below antennal toruli, antenna light brown with scape yellowish white; mesosoma black with tegula light reddish brown; legs including the coxae honey brown except for the hind coxae which is slightly of a deeper tone; pretarsi dark brown; gaster apically black, towards base with a light brown patch in the middle, ventrally mostly brown with some darkening towards margin.

Head : Width in anterior view 1.3x its height (excluding parts beyond lower margin of clypeus), in dorsal view 2.5x its length; vertex with 4 minute setae between hind ocelli; POL 2x OOL; OOL as long as AOL; LOL a little shorter than AOL; occiput slightly concave; antenna inserted at level of ventral margin of eye; relative L:W of antennal segments: scape 34 : 6; pedicel = 14 : 7; F1 = 21 : 8; F2 = 17 : 8; F3 = 18 : 8; F4 = 16 : 7; clava = 23 : 8.

Mesosoma : Pronotum matt (Mani 1989), declivous in front with 3 pairs of stout setae; MLM strongly rugosely punctate anteriorly; punctae not well defined and virtually coalescent with complete median carina; scapula shagreened; scutellum finely longitudinally striate; LTS as long as first 2 hind tarsal segments together; PMV 1.63x as long as STV

Metasoma : As long as broad.

Male : Length 2.3 mm; resembles female except for the legs being of lighter shade and the abdomen being slightly longer than broad (Mani 1989).

Host : Larva of an unknown Agaristid defoliating *Dioscorea belophylla*.

Remarks : Wijesekara & Schauff (1994) stated that their *Euplectrus* sp.c is probably *E. mathuri*. However I find the following discrepancies between the original descriptions of *E. mathuri* and *Euplectrus* sp.c of Wijesekara & Schauff.

In *E. mathuri* it is stated in the original description that ocellular space half the interocellar and equal to front ocellar space (i.e. OOL is 0.5 of OOL and equal to AOL). In the description of Sp.c, OOL is 0.6x POL and closer to front ocellus than to eye margin. In the figure 41 of *E. mathuri* of Bhatnagar (1952) the longest hind tibial spur (LTS) is shown to be equal to first two hind tarsal segments combined where as in *Euplectrus* sp.c the LTS is equal to first 3 hind tarsal segments together. These differences indicate that either the original description of *E. mathuri* by Bhatnagar is wrong or the *Euplectrus* sp.c of Wijesekara is different.

20. *Euplectrus mellocoxus* Wijesekara & Schauff

(Fig. 249)

1994. *Euplectrus mellocoxus* Wijesekara & Schauff, 11. Holotype Female, Sri Lanka (USNM).

Redescription : *Female* : Length 1.4-1.8 mm. Head completely black; scape and pedicel of antenna legs except hind coxa, sternum of metasoma, a large patch on basal half of dorsum of gaster; yellow funicle and clava yellowish brown; mesosoma, third coxa and remaining part of metasoma black.

Head : Width 1.1-1.3x height; width in dorsal view 2.75-2.78x its length; POL 1.2-1.5x as long as OOL; OOL longer than AOL; LOL shorter than AOL; WIOS 3-3.2x POL; occiput not margined; vertex with 2 small setae between hind ocelli; MS absent, malar space 0.7- 0.75x eye height in profile; eye height 1.1x its length; lower margin of eye entire; antenna inserted at level of ventral margin of eye; relative L : W of antennal segments : scape = 24 : 7; pedicel = 9 : 6; F1 = 12 : 6; F2 = 11 : 6; F3 = 11 : 6; F4 = 11 : 6; clava = 19 : 6.

Mesosoma : MLM imbricate anteriorly and moderately reticulate or coriaceous on remaining part; scapula coriaceous; MLM without median carina and with 3 pairs of stout setae; no scattered setae; scutellum weakly striate- reticulate or rugulose; propodeal spiracle almost touching metanotum; LTS as long as first two hind tarsal segments together; forewing 2.1- 2.3x as long as wide; MV 2.2x as long as PMV; STV 0.5x PMV

Metasoma shorter than mesosoma, 1.3-1.4x as long as broad; petiole 1.2-1.4x as long as wide; rugose dorsally; T1 (T2 of Wijesekara & Schauff) 0.66x as long as gaster.

Male : Similar to female except smaller (1.1-1.2mm.) antennal scape broader medially.

Host : Unknown.

Distribution : Sri Lanka, India (New Record).

Material examined : 2 Females, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 15-xii-1986, T.C. Narendran; 1 Female, Kerala, Idukki District, Vandiperiyar, Manjumala (9°35' N 77°5' E), Cardamom Plantation, 8-i-2004, T.C. Narendran & party; 1 Female, Kerala, Kasargod District, Chowki (12°31' N 74°59' E), 22-i-2003, T.C. Narendran & party; 1 Female, Kerala, Thrissur District, Peechi (10° 31' N 76° 13' E), Kerala Forest Research Institute, 16-viii-1991, K. Mohandas, ex. Plant *Selepa celtis*.

Remarks : This species resembles *E. colliosilvus* Wijesekara & Schauff in having similar colour but differs from it in having vertex with 2 minute setae (in *E. colliosilvus* minute setae absent); and petiole longer than broad (in *E. colliosilvus* petiole as long as broad).

21. *Euplectrus nibilis* Wijesekara & Schauff

(Fig. 241)

1994. *Euplectrus nibilis* Wijesekara & Schauff Holotype Female, Sri Lanka (USNM).

Diagnosis : (Based on Wijesekara & Schauff).

Female : Length 1.6-1.8 mm. Head, mesosoma, petiole and base, sides and a transverse band across dorsum of metasoma black; area near clypeus brownish; scape, pedicel, F1, metasoma (except black areas mentioned above) reddish brown, legs except hind coxa and mouth parts yellow; F2- F4 and clava brownish; hind coxa orange; head with 2 minute setae between hind ocelli present; occiput not margined; POL 1.6x OOL; OOL longer than AOL; MS absent; malar space 0.6x eye height; scape not reaching level of anterior ocellus; pedicel longer than F1; MLM without median carina; scutellum rugulose becoming smooth posteriorly;

LTS shorter than first two hind tarsal segments combined; MV 2x PMV; petiole longer than broad, granulated dorsally; T1 (T2 of Wijesekara & Schauff) covering almost entire length of metasoma.

Male : Unknown.

Host : Unknown.

Distribution : Sri Lanka.

Remarks : According to Wijesekara & Schauff (1994), this species can be confused with *E. atrafacies* Wijesekara & Schauff but can be separated from *E. atrafacies* Wijesekara & Schauff in having: (1) petiole longer than broad (in *E. atrafacies* petiole subquadrate); (2) LTS not as long as two hind tarsal segments together (in *E. atrafacies* LTS as long as first two hind tarsal segments together) and scutellum rugulose (in *E. atrafacies* scutellum coriaceous to smooth).

22. *Euplectrus nuperus* Narendran

(Figs. 242-243)

2003. *Euplectrus nuperus* Narendran in Hayat & Narendran 325. Holotype female, India (NZSI).

Redescription : *Female* : Length 1.27-1.29mm. Head except a patch below antennal toruli, mesosoma and petiole, black; antenna yellow, gradually darkening towards clava; area below antennal toruli, legs, ventral side and a large area on middle of dorsum of metasoma yellow; base, sides and subapical part of metasoma dark brown.

Head width 1.3-1.4x its height; 2.3x- 2.5x its maximum dorsal length; POL about 2x OOL; OOL equal to AOL; LOL equal to AOL; WIOS 3.1x as long as POL; occiput not margined; vertex with 4 minute setae between hind ocelli; MS absent; malar space 0.4x eye height in profile; antenna inserted a little below level of ventral margin of eye; scape not reaching front ocellus; relative L : W of antennal segments : scape = 43 : 7; pedicel = 15 : 9; F1 = 15 : 8; F2 = 15 : 10; F3 = 17 : 10; F4 = 14 : 11; clava = 29 : 12.

Mesosoma coriaceous with incomplete median carina posteriorly, with 3 pairs of stout setae on MLM; scutellum faintly rugulose; LTS shorter than first two hind tarsal segments together; forewing 2.2x as long as broad; MV 3x PMV; PMV 1.5x STV

Metasoma : Petiole 1.6x as long as broad; gaster a little longer than wide; T1 0.4x as long as gaster.

Male : Unknown.

Host : Holotype from Lepidopteran caterpillar on Sandal Wood.

Distribution : India (Karnataka, Kerala, new record for Kerala).

Variation : The antenna inserted at level of ventral margin of eyes in some specimens; petiole 1.4 or 1.5x as long as wide.

Material examined : Besides Holotype the following specimens : 1 Female, INDIA, Kerala, Malappuram District, Devathial near Calicut University Campus (11° 7' N 75° 53' E), 16-xii-2003; 1 Female, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 8-ix-2001, T.C. Narendran & party; 1 Female, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 3-v-1989, K. Surekha; 2 Females, Kerala, Malappuram District, Nilambur (11° 16' N 76° 13' E), 25-x-1988, K. Mohandas; 1 Female, Malapuram District, Olippram near Calicut University Campus (11° 7' N 75° 53' E) , 16-x-1988; 1 Female, Kerala, Wayanad District, Pookode Lake side (11° 32' N 76° 01' E), 8-ii-2003, T.C. Narendran & party; 1 Female, Kerala, Palghat District, Vadakkanchery (10° 35' N 76° 29' E), 17-1-1986, T.C. Narendran & party; 1 Female, Kerala, Kottayam District, Thekkady (09° 31' N 77° 11' E), 5-v-1986, T.C. Narendran & party.

Remarks : This species comes near *E. peechansis* Wijesekara & Scauff in the key to Sri Lankan species by Wijesekara & Scauff (1994) but differs from it in having: (1) MV 3x as long as PMV (in *E. peechansis* MV 2x as long as PMV); (2) petiole 1.6x or less as long as wide (in *E. peechansis* petiole 2x as long as wide); (3) funicular segments not subequal in length (in *E. peechansis* Wijesekara & Scauff funicular segments subequal in length) and T1 0.4 x as long as gaster (in *E. peechansis* T1 0.33x as long as gaster).

23. *Euplectrus nyctemerae* Crawford.

(Figs. 244-246)

1912. *Euplectrus nyctemerae* Crawford, 9. Type Female: India (USNM) examined.

Diagnosis : Female : (Holotype) Length 1.9 mm. Head brownish black with slightly reddish brown below antennal toruli; eye gray, ocelli reflecting brown with border reflecting yellow; antenna with scape, pedicel whitish yellow, remaining antennal segments slightly brownish; legs including coxae whitish yellow; mesosoma black, tegula pale yellow; petiole black; gaster pale brownish yellow with base, sides and posterior part brownish black, sternites pale brownish yellow; wings hyaline, veins pale whitish yellow.

Head width in anterior view 1.33x its height in dorsal view; vertex with one minute seta between ocelli (aberrant?); width in dorsal view 2.6x its length; POL 2x OOL; OOL equal to AOL; LOL shorter than AOL; WIOS 2.6x POL; MS

absent; malar space 0.5x height of eye in profile; eye height in profile 1.43x its length; antenna inserted a little below level of ventral margin of eye; scape not reaching level of front ocellus; relative L : W of antennal segments: scape = 32 : 6; pedicel = 11 : 5; F1 = 13 : 6; F2 = 11 : 6; F3 = 13 : 6; F4 = 10 : 6.5; clava = 21 : 6.

Mesosoma : Pronotum with a raised cross carina, with 3 pairs of stout setae and several minute setae; MLM imbricate anteriorly and with raised reticulation on remaining part with 2 subparallel incomplete median carinae posteriorly; scapula mostly smooth, weakly imbricate anteriorly; MLM with 3 pairs of stout setae; scutellum mostly smooth, faintly aciculate; axilla smooth, without setae; propodeum with weak incomplete plicae; spiracle separated from metanotum by a distance shorter than diameter of spiracle; LTS shorter than first two hind tarsal segments together; forewing 2x as long as wide; speculum closed behind by cubital line of setae; relative length of CC = 10; SMV = 7; MV = 13; PMV = 9; STV = 6.

Metasoma as long as mesosoma; petiole about 1.5x as long as wide, distinctly (raised) reticulate; T1 not reaching middle of gaster.

Male : Unknown

Host : Larva of *Nyctemera lacticinia* Swinhoe (Arctidae), *Pelopidas ias* (Fabr.) (Hesperiidae)

Distribution : India (Karnataka).

Material examined : Type only.

Remarks : This species comes very near *E. yaloticus* Narendran sp. nov. in general appearance but differs from it in having: (1) MLM with 2 short median carina posteriorly (in *E. yaloticus* Narendran sp. nov. MLM with one short median carina); (2) OOL as long as AOL (in *E. yaloticus* Narendran sp. nov. OOL longer than AOL); (3) POL 2x OOL (in *E. yaloticus* Narendran sp. nov. POL 1.4x OOL); MV 1.44x as long as PMV (in *E. yaloticus* Narendran sp. nov. MV 1.8x as long as PMV); (4) pedicel shorter than F1 (pedicel as long as F1 in *E. yaloticus*).

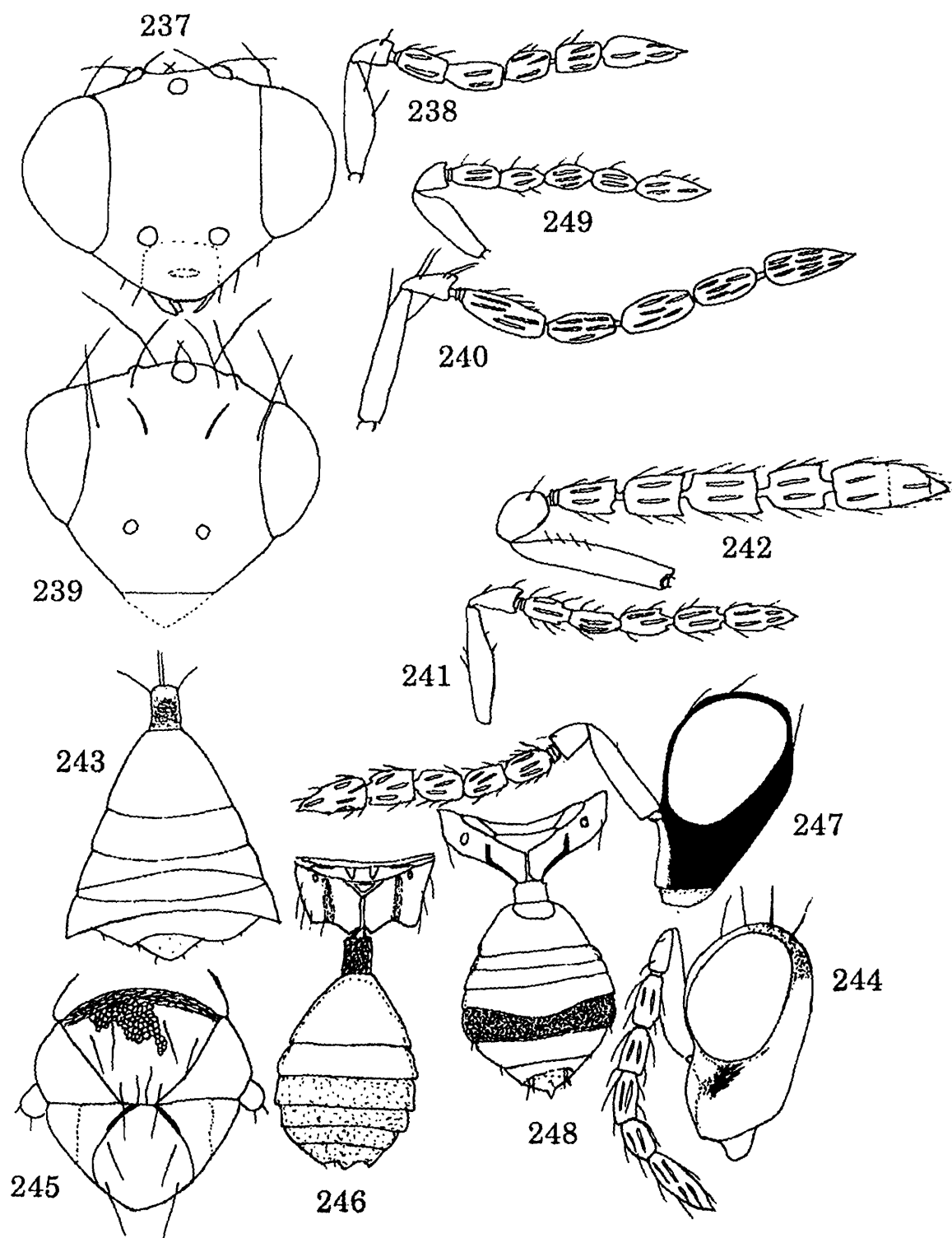
24. *Euplectrus parvulus* Ferrière

(Figs. 247-248)

1941. *Euplectrus parvulus* Ferrière, 33. Lectotype Female (BMNH) (examined) (Lectotype selected by Z. Bouček 1974).

1941. *Euplectrus plecopterae* Mani, 31. Synonymized by Chatterjee 1945.

Redescription : *Female* : (Lectotype) Length 1.8 mm. Head black, area below antennal toruli yellow; antenna yellow; legs entirely whitish yellow; mesosoma black, tegula yellow; petiole brown; gaster yellow with a dark brown band.



Figs. 237-238. *Euplectrus maternus* Bhatnagar (Adapted from Bhatnagar, 1952) Female : 237. Head Anterior view; 238. Antenna. **Figs. 239-240.** *E. mathuri* Bhatnagar (Adapted from Bhatnagar, 1952) : Female : 239. Head anterior view; 240. Antenna. 241. *E. nibilis* Wij. & Schauff Female antenna. **Figs. 242-243.** *E. nuperus* sp.nov. Female. 242. Antenna; 243. Petiole & metasoma dorsal view. **Figs. 244-246.** *E. nyctemerae* Crawford Female : 244. Head & antenna profile; 245. Part of mesosoma dorsal view; 246. Propodeum & metasoma dorsal view. **Figs. 247-248.** *E. parvulus* Ferriere Female : 247. Head & antenna profile; 248. Propodeum & mesosoma dorsal view; 249. *E. mellocoxus* Wij. & Schauff. Female : antenna.

Head width in dorsal view 2.6x its length; POL 2.7x OOL; OOL equal to AOL; LOL subequal to AOL; WIOS 2.4x POL; vertex with 4 minute setae between hind ocelli; occiput not margined; MS absent; malar space 0.5x eye height; eye height in profile 1.44x its length in profile; scape not reaching front ocellus; pedicel a little shorter than F1; relative L : W of antennal segments: scape = 27 : 6; pedicel = 9 : 7; F1 = 12 : 7; F2 = 11 : 7; F3 = 12 : 7; F4 = 12 : 8; clava = 17 : 8.

Mesosoma : Pronotum with cross carina and 3 pairs of stout setae; MLM finely rugose punctate; reticulation relatively larger; median carina absent; scapula rugose punctate; scutellum finely coriaceous; propodeum with plicae absent but plical fovea present; propodeal spiracle not touching metanotum; LTS as long as first two hind tarsal segments together; forewing 2.3x as long as wide; ratio of veins CC = 12; MV = 12.5; PMV = 6; STV = 5; speculum closed behind by setae, extending to STV behind MV as a narrow strip.

Metasoma : Petiole broader than long; granulate dorsally, T1 0.24x as long as gaster.

Male : Similar to female; antennal joints more elongate; scape slightly broadened in the middle.

Host : Ex. Larvae of *Plecoptera reflexa* Guenee on *Dalbergia sissoo* and Pyralid defoliating *Stephegne diversifolia* (Ferrière 1941).

Distribution : India : Punjab, Uttarakhand, Uttar Pradesh; Myanmar.

Material examined : Lectotype Female, BMNH No. 5. 1240.

Remarks : This species comes near *E. litoralis* Wijesekara & Schauff in general features but differs from *E. litoralis* in having: (1) OOL equal to AOL (in *E. litoralis* OOL shorter than AOL); (2) petiole broader than long (in *E. litoralis* petiole as long as broad and (3) T1 0.24x as long as gaster (in *E. litoralis* T1 0.33x as long as gaster).

25. *Euplectrus peechansis* Wijesekara & Schauff

1994. *Euplectrus peechansis* Wijesekara & Schauff 13. Holotype Female, Sri Lanka (USNM).

Diagnosis : (Based on Wijesekara & Schauff, 1994). *Female* : Length 1.8 mm. Head with a pale yellow or pale brownish yellow area below antennal toruli; mesosoma and petiole black; antenna yellow, gradually darkening towards clava; legs yellow; gaster with sternum and a large area on middle of dorsum yellow, sides, base and apical part black.

Head with 4 minute setae between hind ocelli; vertex margined behind; POL 2x OOL; OOL equal to OOL; LOL shorter than AOL; MS absent; malar space 0.5x eye height.

Mesosoma with an incomplete median carina postero- medially; LTS shorter than first two hind tarsal segments together; forewing 2.3x as long as broad; MV 2x PMV, 4x STV

Metasoma : Petiole 2x as long as broad, granulate to striate; T1 (T2 of Wijesekara & Schauff) 0.33 length of metasoma.

Male : Unknown.

Host : Unknown.

Distribution : Sri Lanka.

Remarks : This species comes near *E. nuperus* Narendran in general appearance but differs from it in having: (1) MV 2x as long as PMV (in *E. nuperus* Narendran MV 3x PMV); (2) petiole 2x as long as broad (in *E. nuperus* Narendran petiole 1.6 or less than that, as long as broad); (3) funicular segments subequal in length (in *E. nuperus* Narendran funicular segments not subequal in length) and T1 0.33x as long as gaster (in *E. nuperus* Narendran T1 0.4x as long as gaster).

26. *Euplectrus prashanti* Khan, Agnihotri & Sushil

(Fig. 251)

2005. *Euplectrus prashanti* Khan, Agnihotri & Sushil, 62. Holotype Female, India Uttar Pradesh, Rampur (NPC) (examined).

Diagnosis : Female : Length about 2.12 mm. Head black with metallic reflections with clypeal region white; antennal scape white with infuscations; mesosoma dark with metallic green reflections; legs uniformly honey yellow; gaster dark except a broad yellow patch on middle of dorsum.

Head width 1.4x its height in front view; 2.3x its length in dorsal view; vertex without minute setae between hind ocelli; POL 2.6x OOL (as per Figure 2, Plate vi of Khan *et. al* 2005); OOL shorter than AOL; LOL a little shorter than OOL; WIOS 2.44x POL; occiput not margined, straight; MS absent; antennae inserted at level of lower margin of eye; scape not reaching level of front ocellus; relative L : W of antennal segments: scape = 43 : 7; pedicel = 15 : 9; F1 = 10 : 8; F2 = 10 : 8; F3 = 11 : 9; F4 = 13 : 10; clava = 22 : 10.

Mesosoma : MLM weakly reticulate anteriorly and strongly reticulate posteriorly, with 3 pairs of setae; median carina absent; propodeum with plicae present; spiracle separated from metanotum by more than half as long as diameter of spiracle; LTS equal to length of first two hind tarsal segments together; forewing 2.34x as long as wide; speculum closed behind by cubital line of setae; relative length of CC = 40; SMV = 29; MV = 31; PMV = 15; STV = 10.

Metasoma : Petiole as long as broad.

Male : Unknown.

Host : Unknown.

Distribution : India : Uttar Pradesh, Rampur

Material examined : Holotype.

Remarks : This species as far as I could gather from the figures of the original paper by Khan *et. al* (2005) shows the following features which are not found represented in other resembling species: antenna with one anellus; clava 2.2x as long as wide; scape 6.1x as long as wide with 7 stout aetae on ventral margin.

27. *Euplectrus petiolatus* Ferrière

(Fig. 250)

1941. *Euplectrus petiolatus* Ferrière 34. Lectotype Female, India, Dehra Dun, F.R.I. Compound (present designation) (BMNH, No. 5.1242) (examined).

Female : (Lectotype) Length : 2.32 mm. Black; clypeus and a round spot on gaster yellow; antenna brown with scape and pedicel yellow; legs yellow.

Head width 1.5x its height in front view; 2.62x its length in dorsal view; POL 2x OOL; OOL equal to AOL; LOL subequal to AOL; WIOS 2.75x POL; MS present; malar space 2.1x height of eye in profile; height of eye 1.53x eye length; antenna inserted at level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments: scape = 21 : 3; pedicel = 8 : 5; F1 = 12 : 5; F2 = 11 : 5; F3 = 11 : 5; F4 = 12 : 5 clava = 16 : 6.

Mesosoma : Pronotum with a cross carina; MLM finely reticulate, without a median carina; scutellum smooth; LTS a little shorter than first two hind tarsal segments together; forewing 2.8x as long as wide; speculum closed behind by cubital line of setae; relative measurements of CC = 20; SMV-15; MV = 21; PMV = 12; STV = 6.

Metasoma Petiole almost 3x as long as broad (T1 exceeding half of gaster).

Male : Similar to female except broader scape with sensillar area.

Host : Larvae of Lymantriidae

Variation : Zhu & Huang (2003) states that the petiole in Indian specimens they examined varies from 2.4 to 3x as long as broad.

Material examined : Female in BMNH (No. Hym. 5. 1242) was selected by me as Lectotype during my visit to BMNH in June 2008. The Lectotype locality is India (Dehra Dun- F.R.I Compound).

Remarks : This species comes near *E. parvulus* Ferrière in general colour but differs from it in having : 1) vertex without minute setae between hind ocelli, and petiole longer than broad (in *E. parvulus* petiole broader than long).

28. *Euplectrus spodopterae* Bhatnagar
(Fig. 252)

1951. *Euplectrus spodopterae* Bhatnagar, 169. Holotype Female, India (Kerala) (USNM).

Diagnosis : (Based on Bhatnagar 1951).

Female : Length 1.80 mm. Black; area below antennal toruli dark reddish brown; antenna with scape, pedicel and anellus reddish brown; F1 brown and remaining segments dark brown; tegula reddish brown; legs light reddish brown except the hind coxae which is slightly darker at base; metasoma with petiole, sides and apex black remaining part reddish brown.

Head : 1.32x as wide as its height in dorsal view; width 3x its length in dorsal view; OOL equal to POL; OOL 2x AOL; WIOS a little over 3x POL; antenna inserted a little below level of ventral margin of eye; vertex without minute setae between hind ocelli; scape not reaching front ocellus; relative L : W of antennal segments: scape = 51 : 10; pedicel = 22 : 10; F1 = 16 : 10; F2 = 20; F3 = 20 : 10; F4 = 20 : 10; clava = 33 : 11.

Mesosoma : Pronotum with 5 stout setae on posterior margin; MLM shallowly and closely punctate; median carina absent; scutellum finely and shallowly punctate; LTS a little shorter than first two hind tarsal segments together; forewing 2.9x its width; relative lengths of CC = 24; SMV = 20; MV = 30; PMV = 17.5; STV = 10.

Metasoma : Petiole 1.83x as long as wide, granulate; T1 0.8x as long as gaster.

Male : Unknown.

Host : Parasitic on *Spodoptera mauritia* Boisduval (Lepidoptera : Noctuidae).

Distribution : India : Kerala (Thiruvananthapuram, Pallam).

Remarks : Wijesekara & Schauff (1994) states that this species is probably the species B described by them (but not named) but could not confirm. I find some differences between the descriptions of the two species. *Euplectrus spodopterae* Bhatnagar differ from species B in having: (1) F1 shorter than pedicel (in sp. B of Wijesekara & Schauff F1 is equal to pedicel in length); (2) POL as long as OOL (in sp. B of Wijesekara & Schauff POL is distinctly longer than OOL); (3) scape not reaching level of front ocellus (in sp. B of Wijesekara & Schauff scape reaching level of front ocellus); (4) F3 not longer than any other funicular segments (in sp. B of Wijesekara & Schauff F3 longer than any other funicular segments); MV 1.7x as long as PMV (in sp. B of Wijesekara & Schauff MV 2.25x as long as PMV) and in several other characters.

29. *Euplectrus stom* Narendran sp. nov.

(Figs. 253-255)

Female : (Holotype) Length 1.6 mm. Head brownish black with area below antennal toruli yellow which slightly extend to mid ventral margin of gena; eye gray with pale reddish patch in middle, front ocellus reflecting pale yellow; hind ocelli reflecting pale brownish yellow; antenna: scape pale white, pedicel pale yellow; F1 slightly brownish yellow; F2 to tip of clava pale brown. Mesosoma Black with tegula pale yellow; legs whitish pale yellow; mesosoma pale brownish yellow with petiole, base, sides and a cross band before posterior end black; wings hyaline with veins pale whitish yellow.

Head : Width 1.31x as broad as its height in anterior view, in dorsal view 2.1x as broad as its length; POL 1.5x OOL; OOL longer than AOL; LOL subequal to AOL; WIOS 2.83x POL; occipital margin not carinate, weakly concave medially; vertex without minute setae between hind ocelli; MS absent; malar space 0.5x height of eye in profile; eye height 1.3x eye length; antenna inserted at level of ventral margin of eyes; scape not reaching level of front ocellus; relative L: W of antennal segments: scape = 30 : 6; pedicel = 9 : 5; F1 14 : 5; F2 = 13 : 5; F3 = 11 : 4; F4 = 13 : 5; clava = 19.5 : 6.

Mesosoma : Pronotum with distinct cross carina and 3 pairs of stout setae and several minute setae; MLM imbricate near anterior margin, distinctly raised reticulate on remaining part; median carina absent, with 3 pairs of stout setae; scapula imbricate, with 2 pairs of stout setae and a few shorter setae; ; propodeal plicae present; LTS a little shorter than first two hind tarsal segments together; forewing 2.5x as long as broad; speculum small, closed behind by cubital line of setae; relative lengths of CC = 17; SMV = 13; MV = 17; PMV = 11; STV = 6.

Metasoma a little shorter than mesosoma; petiole 1.5x as long as broad; microsculptured; T1 hardly reaching middle of gaster.

Male : Unknown.

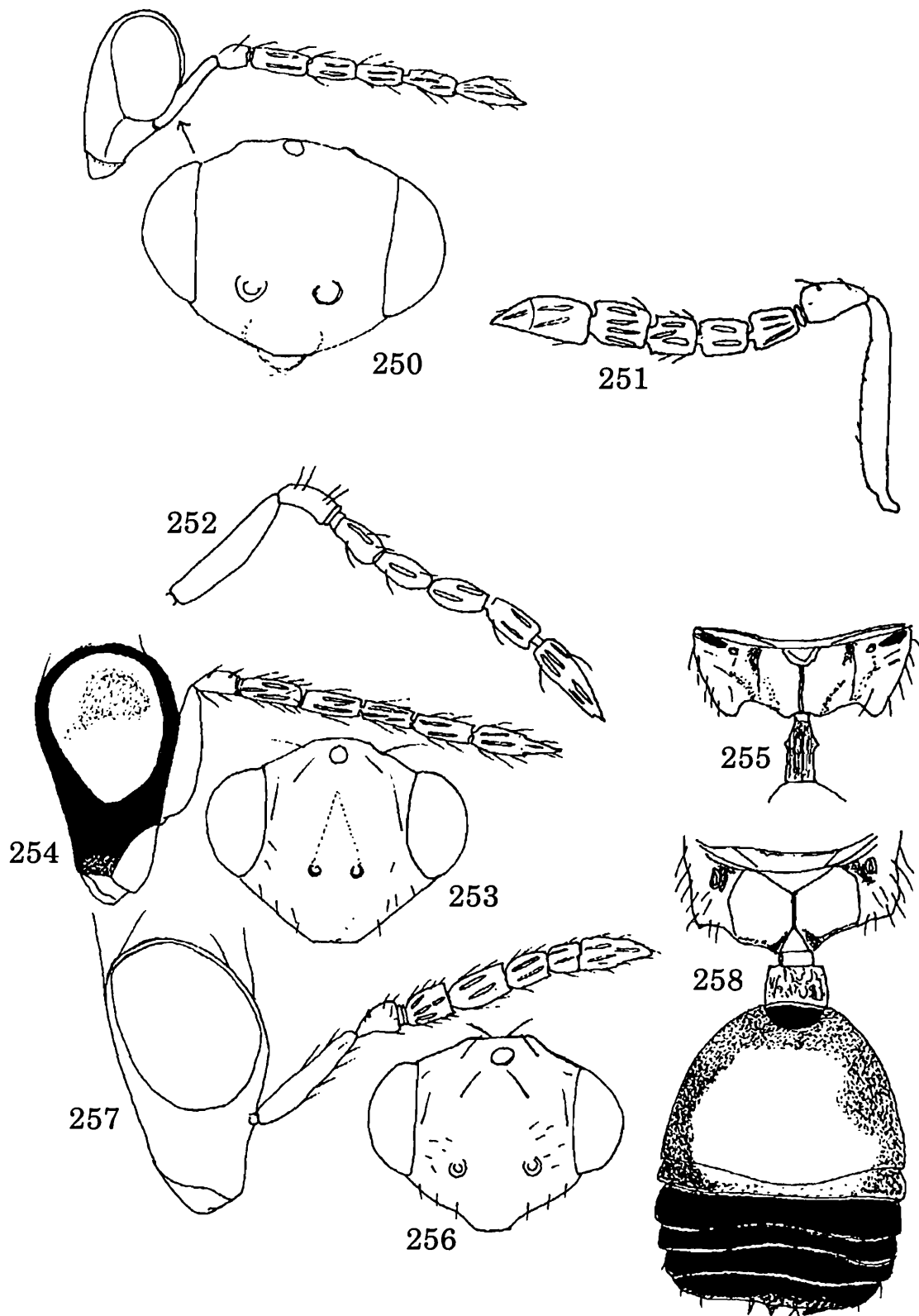
Host : Unknown.

Variation : Length of female varies 1.6- 1.9mm.

Distribution : India (Kerala, Uttar Pradesh).

Depository : Holotype deposited at Western Ghat Regional Centre, Zoological Survey of India, Kozhikode(= Calicut), Kerala, India.

Material examined : Holotype, Female, INDIA, Kerala, Wayanad District, Pookode Lake (11° 32' N 76° 01' E), 8-ii-2003, T.C. Narendran & party. Paratypes: 3 Females of same location data of Holotype; 1 Female, Kerala, Kannur District,



Figs. 250. *Euplectrus petiolatus* Ferriere Female : Head anterior view & head and antenna profile; **Fig. 251.** *E. prashanti* Khnan et.al. Female antenna. **252.** *E. spodopterae* Bhatnagar (adapted from Bhatnagar, 1952) female antenna. **Figs. 253-255.** *E. stom* sp.nov. Female : 253. Head anterior view; 254. Head & antenna profile; 255. Propodeum & petiole. **Figs. 256-258.** *E. umbrocoxatus* sp.nov. Female : 256. Head anterior view; Head and antenna profile; 258. propodeum & metasoma dorsal view.

Kottiyoor (11° 52' N 75° 51' E), 17-ii-2003, T.C. Narendran & party; 1 Female, Kannur District, Aralam (11° 58' N 75° 44' E), 16-xii-1995, T.C. Narendran & party; 1 Female. Kerala, Malappuram District, Nilambur (11° 16' N 76° 13' E), 30-i-2003, T.C. Narendran & party; 1 Female, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 17-x-2002, T.C. Narendran & party; 1 Female, Kerala, Palghat District, Chindaki (10° 39' N 76° 40' E), 13-xii-1987, T.C. Narendran & party; 1 Female, Kerala, Thrissur District, Peechi (10° 31' N 76° 13' E), 5-ii-1989, T.C. Narendran & party; 1 Female, Calicut District, Thiruvannur (11° 13' N 75° 48' E), 28xi-1994; 1 Female, Kerala, Idukki District, Kanjikuzhi (9° 32' N 76° 20' E), 27-ii-1989, T.C. Narendran & party; 1 Female, Quilon District, Neendakara (8°56' N 76°32' E), 22-ii-1989, T.C. Narendran & party; 1 Female, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 24-viii-1979, M. Verma; 1 Female, Uttar Pradesh, Gonda, Porter ganj (27° 07' N 81° 57' E), 7-x-2006, F R. Khan. (1 female in ZDAMU)

Remarks : This new species comes to *E. laeviscutellum* Zhu and Huang in the key to Chinese species by Zhu and Huang (2003). However *E. stom* differs from *E. laeviscutellum* in having: (1) POL 1.5x OOL (in *E. laeviscutellum* POL 1.8x OOL); (2) pedicel distinctly shorter than F1 (in *E. laeviscutellum* pedicel is equal to F1); and (3) propodeum with distinct plicae (in *E. laeviscutellum* propodeal plicae absent).

30. *Euplectrus umbrocoxatus* Narendran sp. nov

(Figs. 256-258)

Female : (Holotype) Length 2 mm. Head black with slight brownish tinge below antennal toruli on clypeal region; eye dark reddish brown; ocelli dark brown; antennal scape pale white, pedicel pale yellow, funicle and clava dark brown; mesosoma black, tegula pale yellow; legs pale yellow except dark brown hind coxa (apex of hind coxa pale yellow); pretarsi brown; mesosoma black with a pale yellow patch on T1 and T2 and sternites pale yellow; wings hyaline with veins pale brown.

Head width in anterior view 1.6x its height; width in dorsal view 2.4x its length; POL 1.75x OOL; WIOS 3.14x POL; occiput not margined, vertex with 4 minute setae between hind ocelli; MS absent; malar space 0.45x eye height in profile; eye height 1.23x its length in profile; antenna inserted at level of ventral margin of eyes; scape not reaching level of front ocellus; relative L: W of antennal segments: scape = 29 : 6; pedicel = 10 : 7; F1 = 10 : 7; F2 = 14 : 7; F3 = 10 : 7; F4 = 8 : 6; clava = 16 : 7.

Mesosoma : Pronotum with distinct cross carina; 3 pairs of stout setae and several minute setae, cross reticulate- striate; MLM imbricate near anterior margin, distinctly reticulate on remaining part; median carina absent; scapula imbricate with 3 stout setae and one weaker seta; scutellum weakly reticulate or rugulose; propodeal plicae present; LTS shorter than first 2 hind tarsal segments together; forewing 2.33x as long as its width; speculum closed behind by cubital line of setae; relative length of CC = 17; SMV = 12; MV = 23; PMV = 9; STV = 4.

Metasoma : A little shorter than mesosoma, 1.5x as long as broad; petiole a little broader than long, coarsely reticulate- striate; T1 exceeding middle of gaster.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala & Tamil Nadu, Karnataka).

Variation : Female Length 2-2.33 mm; eye gray in some specimens; pale brownish tinge below antennal toruli indistinct in some specimens; F1 pale yellow in some paratypes.

Material examined : Holotype, Female, INDIA, Kerala, Malappuram District, Devathial (near Calicut University Campus (11° 7' N 75° 53' E), 16-xii-2003, T.C. Narendran & party, (ZSIK). Paratypes: 1 Female, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 20-x-1986, T.C. Narendran & party; 1 Female, Kerala, Idukki District, Kanjikuzhi (9° 32' N 76° 20' E), 27-ii-1989, T.C. Narendran & party; 1 Female, INDIA, Tamil Nadu, Siruvani (11° 02' N 76° 38' E), 26-ix-1987, T.C. Narendran & party; 7 Females, Tamil Nadu, Mangarai (12° 09' N 77° 54' E), 7-ix-1995, Madhavan pillai; 1 Female, INDIA, Karnataka, Sringeri (13° 25' N 75° 15' E), 17-v-2003, P. A. Sinu.

Depository : Holotype deposited at ZSIK.

Remarks : In the key to Sri Lankan species by Wijesekara & Schauff this new species comes near *E. peechansis* Wijesekara & Schauff but differs from it in having: 1) MLM without any trace of median carina (in *E. peechansis* MLM with an incomplete median carina postero- medially); 2) pedicel as long as F1 (in *E. peechansis* pedicel shorter than F1); 3) hind coxa dark brown or black (in *E. peechansis* hind coxa yellow).

In the key to Chinese species of *Euplectrus* by Zhu and Huang this new species comes to *E. brevicarinatus* Zhu and Huang, but differs from it in having: (1) MLM without median carina (in *E. brevicarinatus* MLM with short median carina posteriorly); (2) MLM with 3 pairs of setae (in *E. brevicarinatus* MLM with 4 pairs of setae); (3) propodeal plicae present (propodeal plicae absent in *E. brevicarinatus*); and (4) MV 2.6x PMV (in *E. brevicarinatus* MV 1.8x PMV).

In the key to species of *Euplectrus* by Ferrière (1941), this new species comes to *E. fuscipes* Ferrière, but differs from it in having: 1) femora yellow (in *E. fuscipes* femora brownish with tip paler, OOL equal to AOL (in *E. fuscipes* OOL longer than AOL); 3) funicular segments unequal in length (in *E. fuscipes* funicular segments subequal in length); and 4) MV about 6x as long as STV (in *E. fuscipes* MV 3x as long as STV).

1. *Euplectrus utetheisae* Mani & Kurian

(Figs. 259-260)

1953. *Euplectrus utetheisae* Mani & Kurian 17, 20, Holotype Female, India, Bangalore (lost?).

Diagnosis : (Based on Mani & Kurian, 1953). *Female* : Length 1.8mm. Head black except for a dark reddish brown patch below toruli; antenna brown, except for the yellow scape; mesosoma black; legs yellowish brown; metasoma black with a yellowish brown medially on the posterior half and at apical part.

Head : Width about 2x its length in dorsal view; occiput excavate; POL slightly longer than OOL; OOL longer than AOL; vertex smooth and shiny; scrobe separated by a conspicuous carina; scape reaching front ocellus; relative L : W of antennal segments: scape = 31 : 6; pedicel = 13 : 6; F1 = 13 : 5; F2 = 13 : 5; F3 = 17 : 6; F4 = 17 : 6; clava 28 : 6.

Mesosoma : Pronotum abruptly declivous in front, finely cross striate, with an obscure cross carina bearing 3 pairs of stout setae; MLM rugulose without a median carina (?); axillae contiguous in the middle; LTS shorter than first 2 hind tarsal segments together; forewing 2.5x as long as broad; speculum hardly distinct (Fig 60 of Mani & Kurian 1953); relative lengths : CC = 15; SMV = 14; MV = 19; PMV = 10; STV = 6.

Metasoma : Petiole 1.22x as long as its width; T1 exceeding middle of gaster.

Male : Length 1.4mm. For other features the original paper by Mani & Kurian (1953) may be referred.

Host : *Utetheisa pulchella* Linnaeus (Lepidoptera: Arctiidae)

Distribution : India (Bangalore).

Remarks : The type could not be located. Husain & Khan (1986) stated that the type is in SEA (School of Entomology, St. Johns College, Agra). As far as I understand that no type of Chalcidoidea described by Mani are present in SEA. Prof. V.K.Gupta (*pers. communi.* 2008) informed me that many of the types were transferred from SEA to FRI, long time ago and probably all these types are lost or untraceable. Wijesekara & Schauff (1994) states that one of the species described (but not named) by them as sp. A is possibly *E. utetheisae* Mani & Kurian but differs from it in having : (1) vertex sculptured (smooth in *E. utetheisae*); (2) no

conspicuous carina separating scrobes (a conspicuous carina separate the scrobes in *E. utetheisae*) and; (3) axillae not contiguous in the middle (in *E. utetheisae* axillae contiguous in the middle).

32. *Euplectrus viggiani* Khan, Agnihotri & Sushil

2005. *Euplectrus viggiani* Khan, Agnihotri & Sushil 64. Holotype Female, India (Uttar Pradesh, Pilibhit) (GBPU ?).

Diagnosis : (Based on Khan *et al.*, 2005).

Female : Length 1.81 mm. Head dark brown with metallic blue refringence; antenna yellow with slight infuscation except whitish scape; mesosoma dark brown with metallic blue refringence; metasoma dark brown with metallic blue refringence; legs yellow except hind coxae slightly infuscate.

Head width in anterior view 1.4x its height; POL 1.71x OOL; OOL longer than AOL, (Fig. 1, of Plate vii of Khan *et al.*, 2005); MS absent; antenna inserted slightly above level of ventral margin of eyes; scape not reaching level of front ocellus; relative L : W of antennal segments: scape = 51 : 10; pedicel = 17 : 8; F1 = 13 : 8; F2 = 13 : 8.5; F3 = 12 : 10; F4 = 12 : 12; clava = 28 : 15, with 3 anelli.

Mesosoma : Pronotum with 3 pairs of stout setae; mesoscutum with 3 pairs of stout setae on MLM; scutellum smooth with 3 pairs of setae; LTS shorter than first two hind tarsal segments together; forewing with speculum partially open behind; relative lengths of CC = 41; SMV = 28; MV = 31; PMV = 15; STV = 9.

Metasoma : Petiole 1.5x as long as wide; T1 exceeding middle of gaster;

Male : Unknown.

Host : *Merasmia trapezalis* (Guen) (Lepidoptera : Pyraustidae).

Distribution : India : (Uttar Pradesh, Pilibhit)

Remarks : This species differs from all other Indian species of *Euplectrus* in having three anelli; body dark brown with metallic blue refringence MV 2.1x as long as PMV; and clava about 2x as long as wide.

33. *Euplectrus xanthocephalus* Girault.

(Figs. 261- 262)

1913. *Euplectrus xanthocephalus* Girault. [159], 273- 274. Female, Australia, Queensland (QM).

Redescription : *Female* : 2.11 mm. Black; clypeus and adjacent areas including malar space (except near lower eye margin) yellow; antenna brown with scape and pedicel pale yellow or pale brownish yellow; legs yellow with coxa with slight brownish tinge; gaster pale brownish yellow with sides and posterior part dark brown; wings hyaline with veins pale yellow.

Head : Width 2.43x as long as its length; POL 1.3x OOL; OOL longer than AOL; LOL a little shorter than AOL; vertex with minute setae absent, occiput not marginate; antenna inserted a little lower to level of ventral margin of eyes; scape not reaching level of front ocellus; relative L : W of antennal segments: scape = 35 : 10; pedicel = 11 : 5; F1 = 12 : 5; F2 = 11 : 5; F3 = 13 : 6; F4 = 11 : 5; clava = 18 : 6.

Mesosoma : Pronotum with sharp cross carina, with 3 pairs of strong setae and several shorter setae; MLM reticulate without any median carina; LTS shorter than first two hind tarsal segments together; propodeal plicae present; spiracle not clearly touching metanotum; forewing 2.3x as long as broad, speculum weakly closed behind by setae; relative length of CC = 14; SMV = 10; MV = 17; PMV = 8; STV = 6.

Metasoma : Shorter than mesosoma; petiole subquadrate, microsculptured or granulate; T1 not reaching middle of gaster.

Male : Unknown.

Host : Parasitoids of Noctuidae.

Distribution : India (widely distributed), China, Indonesia, Malaysia, Papua New Guinea and Australia.

Material examined : 3 Females, INDIA, x-1981, Anand (No.5.CIE 13695), ex larva of *Spodoptera litura* in ground nut (BMNH); 5 Females, INDIA, Kerala, Malappuram District, Nilambur (11° 16' N 76° 13' E), 11-v-2009, Dileep Kumar; 20 Females, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 1-iv-1987, 10-vi-1988, 21-x-1988, 3-iv-1989, 24-iv-1989, T.C. Narendran & party; 1 Female, Kerala, Malappuram District, Thenjipalam (11° 07' N 75° 53' E), 28-xii-2003, T.C. Narendran & party; 1 Female, Malappuram District, Karimpuzha (11° 18' N 76° 15' E), (Near Nilambur), 28-iv-1989, T.C. Narendran & party; 1 Female, Malappuram District, Edakkara (11° 21' N 76° 18' E), 23-xii-1999, T.C. Narendran & party; 6 Females, Kerala, Calicut District, Nanminda (11° 25' N 75° 49' E), 7-xii-2003, 4-iv-2004, T.C. Narendran & party; 4 Females, Kerala, Kasaragod, Chowki (12°31' N 74°59' E), 22-i-2003, T.C. Narendran & party; 3 Females, Kerala, Kasaragod, Karanthakad, 22-i-2003, T.C. Narendran & party; 4 Females, Kasaragod (12° 29' N 74° 59' E), 27ii-1988, T.C. Narendran & party; 1 Female, Kerala, Palghat District, Malampuzha (10°53' N 76°46' E), 11-xii-1987, T.C. Narendran & party; 2 Females, Kerala, Ernakulam District, Kalady (10° 10' N 76° 26' E), 12-i-2004, T.C. Narendran & party; 1 Female, Kasaragod District, Neeleswaram (12° 15' N 75° 07' E), 26-ii-1987, T.C.

Narendran & party; 1 Female, Kazaragod District; Manjeswaram (12° 42' N 74° 54' E), 27-ii-1988, T.C. Narendran & party; 1 Female, Kerala, Thrissur District, Peechi (10° 31' N 76° 13' E), 29-x-1985, T.C. Narendran & party; 1 Female, Palghat District, Silent Valley (11° 15' N 76° 30' E), 9-xii-1987, T.C. Narendran & party; 2 Females, Malappuram District, Manjeri (11° 07' N 76° 07' E), 4-x-2003, T.C. Narendran & party; 1 Female, Palghat District, Chindaki (10° 39' N 76° 40' E), 13-xii-1987, T.C. Narendran & party; 3 Females, Kerala, Waynad District, Thonikadavu (Kalpetta) (11° 34' N 76° 8' E), 8-ii-2003; 1 Female, Waynad District, Pookode Lake area (11° 32' N 76° 01' E), 8-ii-2003; T.C. Narendran & party; 6 Females, Kollam District, Kottium, 23-ii-1989, T.C. Narendran & party; 5 Females, Kerala, Idukki District, Kanjikuzhi, (9° 32' N 76° 20' E), 27-ii-1989, T.C. Narendran & party; 4 Females, Kerala, Alappuzha District, Kayamkulam (9° 09' N 76° 30' E), 20-iv-2004, T.C. Narendran & party; 3 Females, Thiruvananthapuram, Palode (N 8° 42' 47" E 77° 1' 35"), 10-xii-2004, T.C. Narendran & party; 3 Females, Kerala, Kannur District, Azheekode (11° 53' N 75° 24' E), 16-ii-2003, T.C. Narendran & party; 1 Female, Ernakulam District, Nedumbasseri (10° 08' N 76° 22' E), 12-i-2004, T.C. Narendran & party; 1 Female, Kerala, Thiruvananthapuram District, Attengal (8°41' N 76°50' E), T.C. Narendran & party; 1 Female, Thiruvananthapuram, Neyyar Dam (8°37' N 77°7' E), 24-ii-1989, T.C. Narendran & party; 1 Female, INDIA, Chattisgarh, Belhari (21° 18' N 81° 51' E), 24-iv-2007, Hema & Santosh; 3 Females, INDIA, Tamil Nadu, Mamallapuram (12° 37' N 80° 10' E), 16-ii-1993, S. B. Zeya & S. I. Kazmi; 1 Female, INDIA, West Bengal, Calcutta Botanical Gardens (22° 34' N 88° 21' E), 17-ii-1994, S. B. Zeya & S. I. Kazmi; 2 Females, INDIA, Tamil Nadu, Ooty, Doddabetta (11° 24' N 76° 41' E), 6-iii-1993, S. B. Zeya & S. I. Kazmi; 1 Female, Tamil Nadu, Kodaikanal, 21-xi-1993, S. B. Zeya & S. I. Kazmi; 1 Female, Tamil Nadu, Mahabhalipuram, 6-ii-1993, S. B. Zeya & S. I. Kazmi; 6 Females, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 20-x-1979, 10-xii-1979, ix- 1980, M. Hayat; 2 Females, Aligarh (27° 53' N 78° 04' E), 16-iii-1978, 21-iii-1976, M. Verma; 1 Female, INDIA, West Bengal, New Jalpaiguri (26° 30' N 88° 43' E), 30-v-2008, F R. Khan.(some females in ZDAMU).

Remarks : The above redescription is based mainly on specimens determined by Z. Bouček (1981), present in BMNH and studied by me during my visit to BMNH in 2008.

This species comes very near *Euplectrus manjericus* Narendran sp. nov. in the general colour of head and body but differs from it in having : 1) MLM without

a median carina (in *Euplectrus manjericus* Narendran sp. nov. MLM with a short median carina posteriorly; 2) POL 1.3x OOL (in *Euplectrus manjericus* Narendran sp. nov. POL 2x OOL); 3) antenna inserted below level of lower margin of eyes (in *Euplectrus manjericus* Narendran sp. nov. antenna inserted at level of lower margin of eyes) and 4) MV hardly 3x as long as STV (in *Euplectrus manjericus* Narendran sp. nov. MV a little more than 3x STV).

34. *Euplectrus xanthovultus* Wijesekara & Schauff.

1994. *Euplectrus xanthovultus* Wijesekara & Schauff 14. Holotype Female, Sri Lanka (USNM).

Diagnosis : Female : Length 1.4-2 mm. Head black with area below antennal toruli, gena yellow; yellow colour of gena touching ventral margin of eye; antennal flagellum pale brown; pedicel and scape pale yellow; mesosoma black; legs yellow with hind coxa slightly dark yellow; petiole black; gaster yellow except base, sides and a subapical band black or dark brown.

Head : Vertex without minute setae, not margined behind; POL 1.6x OOL; OOL longer than AOL; LOL shorter than AOL; WIOS 2.71x POL; MS absent, malar space 0.73x eye height in profile; eye height 1.22x eye length in profile; antenna inserted at level of ventral margin of eyes; scape reaching level of anterior ocellus; pedicel as long as F1.

Mesosoma : MLM imbricate near anterior margin, reticulate on remaining part, with an incomplete median carina posteriorly; LTS a little shorter than first two hind tarsal segments together; forewing with speculum closed behind by a cubital line of setae; MV 1.8x PMV

Metasoma subequal to length of mesosoma or slightly longer; petiole as long as broad; T1 reaching middle of gaster.

Male : Unknown.

Host : Unknown.

Distribution : Sri Lanka, India (Kerala, Tamil Nadu, West Bengal, Uttar Pradesh. New record for India).

Material examined : 2 Females, INDIA, West Bengal, Cooch Behar, Mohish Baton (26° 19' N 89° 27' E), 26-iv-2008, F. R. Khan; 1 Female, Uttar Pradesh, Mathura, Barari (25° 44' N 81° 29' E), 29-viii-2007, F. R. Khan; 1 Female, Uttar Pradesh, Bahraich (27° 34' N 81° 35' E), Tikona Mod, 1-x-2006, F. R. Khan; 1 Female, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 24-xi-1995, M. Hayat; 2 Females, Kerala, Kollam District, Kulathupuzha (08° 54' N 77° 03' E), 9-xii-2004, T.C. Narendran & party; 3 Females, Kollam District, Sasthamkotta (09° 02' N 76°

38' E), 12-xii-2004, T.C. Narendran; 1 Female, Kerala, Waynad District, Mantody, 22-ii-1988, T.C. Narendran & party; 1 Female, Kerala, Calicut District, Nanminda (11° 25' N 75° 49' E), 10-x-2003, T.C. Narendran & party; 4 Females, Kerala, Palghat District, Malampuzha (10°53' N 76°46' E), 11-xii-1987, T.C. Narendran & party; 3 Females, Kannur District, Kottiyoor (11° 52' N 75° 51' E), 19-ii-2003, T.C. Narendran & party; 1 Female, Waynad District (11°47' & 15°58' E 75°47' & 70°27'E), Noolpuzha, 20-iii-2003; 3 Females, Kerala, Malappuram District, Calicut University (11° 7' N 75° 53' E), 3-xii-1991; 1 Female, Kerala, Kasaragod, Karanthakad, 21-i-2003.(4 females in ZDAMU)

Variation : Length varies from 1.4-2 mm; POL varies from 1.6-1.7x OOL; malar space 0.7-0.8 eye height.

Remarks : This species comes near *Euplectrus manjericus* Narendran sp. nov. in general features but differs from it in having: (1) yellow colour of gena touches ventral margin of eye (in *Euplectrus manjericus* Narendran sp. nov. yellow colour not touches ventral margin of eyes); (2) dorsal surface of petiole shagreened (in *Euplectrus manjericus* Narendran sp. nov. dorsal surface of petiole microsculptured and granulate); (3) PMV 1.7x STV (in *Euplectrus manjericus* Narendran sp. nov. PMV 1.9x STV) and (4) metasoma 0.9x as long as mesosoma (*Euplectrus manjericus* Narendran sp. nov. 0.7x as long as mesosoma).

35. *Euplectrus yaloticus* Narendran sp. nov.

(Figs. 264-265)

Female : (Holotype) Length 2.3 mm. Head black with slight reddish tinge on clypeal region; eye pale yellowish gray, ocelli pale reflecting yellow; scape pale white; pedicel pale yellow; funicle and clava pale brown; mesosoma black; tegula pale brown; legs including coxae pale yellow; petiole black, gaster pale brownish yellow with black at base, at sides and on posterior one- third parts; wings hyaline with veins pale yellow.

Head width in anterior view 1.2x its height; width in dorsal view 2.4x its length; POL 1.4x OOL; OOL longer than AOL; LOL slightly shorter than AOL; WIOS 3.3x POL; vertex with 2 minute setae between hind ocelli; MS absent, malar space 0.63x eye height in profile; occiput not marginate; eye height 1.4x eye length in profile; antenna inserted distinctly below level of lower eye margin; scape almost reaching level of front ocellus; relative L: W of antennal segments: scape = 44 : 9; pedicel = 16 : 8; F1 = 16 : 8 : F2 = 18 : 8; F3 = 19 : 8; F4 = 15 : 8; clava = 17 : 8.

Mesosoma : Pronotum with a cross carina and 3 pairs of stout setae and several minute setae, cross reticulate with scattered pits; MLM imbricate near anterior margin, distinctly reticulate on remaining part; a short median carina present posteriorly, with 3 pairs of stout setae; scapula faintly imbricate, with 2 stout setae and 3-4 minute setae; scutellum smooth and shiny, with 2 pairs of stout setae; scapula smooth and shiny, LTS shorter than first two hind tarsal segments together; forewing 2.4x as long as wide; speculum closed behind by cubital line of setae; relative length of CC = 24; SMV = 20; MV = 34; PMV = 19; STV = 9.

Metasoma subequal in length to mesosoma, petiole 1.63x as long as wide, raised reticulo-punctate; T1 not reaching middle of gaster.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala, Maharashtra, West Bengal).

Variation : Length varies from 1.9-2.3mm. In some species antennal funicle F2 also pale yellow; colour above antennal toruli varying from black to dark brown, in some case yellow colour of malar space slightly separated from eye by brown or black patch.

Material examined : Holotype : Female, INDIA, Calicut District, Nanminda (11° 25' N 75° 49' E), 14-ii-2004, T.C. Narendran & party, (ZSIK). Paratypes: 1 Female, Kerala, Kazaragod, Central Plantation Crop Research Institute (CPCRI) (12° 33' N 74° 58' E), 21-i-2003, T.C. Narendran & party; 1 Female, Kerala, Kannur District, Kottiyoor (11° 52' N 75° 51' E), 19-ii-2003, T.C. Narendran & party; 1 Female, Calicut District, Moodadi (11°28' N 75°38' E), 31-x-1988, T.C. Narendran & party; 1 Female, Kerala, Malappuram District, (12° ' N 75° ' E) Mathapuzha, 10-viii-1988, K. Surekha; 1 Female, Kerala, Waynad District, Muthanga (11°44'N 76°29'E), 7-v-2000, T.C. Narendran & party; 1 Female, Malappuram, Edakkara (11° 21' N 76° 18' E), 24-iv-1989, T.C. Narendran & party; 1 Female, Kerala, Thrissur District, Peechi (10° 31' N 76° 13' E), 26-vi-1989, Rehmathulla; 1 Female, Kerala, Palghat District, Malampuzha (10°53' N 76°46' E), 11-xii-1987, T.C. Narendran & party; 1 Female, Kerala, Idukki District, Vandiperiyar (9° 35' N 77° 5' E), 8-i-2004, T.C. Narendran & party; 1 Female, Palghat District, Kalkandi (11°1' N 76°28' E), 13-xii-1987, T.C. Narendran & party; 3 Females, Palghat District, Agali (11° 9' N 76° 40' E), 12-xii-1987, T.C. Narendran & party; 1 Female, INDIA, Maharashtra (18° 56' N 72° 51' E), Buldana District, Lonar Crater Wild Life Sanctuary, North East of Lonar Lake (19° 58' N 76° 30' E), 21-xi-2003, P. M. Sureshan.

Depository : Holotype deposited at ZSIK.

Remarks : This new species comes near *E. atrafacies* Wijesekara & Schauff in general appearance but differs from it in having: 1) petiole longer than wide (in *E. atrafacies* petiole as long as wide; 2) LTS shorter than first two hind tarsal segments together (in *E. atrafacies* LTS as long as first two hind tarsal segments together) and 3) MV 1.5x as long as PMV (in *E. atrafacies* MV absent 1.8x as long as PMV) and in many other features.

36. *Euplectrus zamoorini* Narendran sp. nov.

(Figs. 266-268)

Female : (Holotype) Length 2.1 mm. Head completely black; eye gray with dark brown patch; scape and pedicel pale yellow; F1 pale brown; F2 to clava brown; mesosoma black; tegula pale yellow; legs including coxae yellow; petiole black; gaster dark brown with a paler longitudinal patch on T1 to T4 (Fig. 268); wings hyaline, veins paler.

Head : Width 1.3x its height in anterior view; width in dorsal view 2.7x its length; vertex with no minute setae between hind ocelli; occiput not margined; POL equal to OOL; OOL longer than AOL; LOL shorter than AOL; WIOS 4x POL; MS absent; malar space 0.78x eye height in profile, equal to eye length in profile; antenna inserted a little below level of ventral margin of eyes; scape reaching level of lower margin of front ocellus; relative L : W of antennal segments : scape = 34 : 7; pedicel = 12 : 5; F1 = 12 : 7; F2 = 15 : 8; F3 = 15 : 7; F4 = 15 : 7; clava = 27 : 8.

Mesosoma : Pronotum with cross carina and 3 pairs of stout setae and several minute setae; MLM imbricate near anterior margin; distinctly raised reticulate on remaining part, with a short median carina posteriorly; scapula imbricate, with 2 pairs of stout setae and few weaker setae; scutellum weakly striate-reticulate; propodeal plicae weakly represented with an adjoining longitudinal fovea; spiracle not touching metanotum separated by a distance less than diameter of spiracle; LTS shorter than first two hind tarsal segments together; forewing 2.43x as long as broad; relative length of CC = 14; SMV = 10; MV = 17; PMV = 8; STV = 5.

Metasoma as long as mesosoma; petiole 1.5x as long as wide, distinctly raised reticulate; T1 exceeding middle of gaster.

Male : Unknown.

Host : Unknown.

Distribution : India : Kerala.

Etymology : The species name is after the wise king of Zamoorin of Malabar Mânnavikraman Raja, the Saamoothiri of Kozhikode who is famous for being the

ruler who received the Portuguese trader and navigator Vasco da Gama on May 18, 1498.

Variation : Female Length 1.7- 2.1 mm. Propodeal plicae and short median carina more pronounced in some paratypes.

Material examined : Holotype Female, INDIA, Kerala, Alappuzha District, Vayalar (9° 41' N 76° 19' E), 27-ii-1989, T.C. Narendran & party, (ZSIK). Paratypes: 1 Female, Kerala, Idukki District, Adimali (9° 58' N 76° 56' E), 3-xii-1988; 1 Female, Kerala, Idukki District, Cheruthoni (9° 51' N 76° 58' E), 10-i-2004, T.C. Narendran & party; 2 Females, Kerala Idukki District, Kanjikuzhi (9° 32' N 76° 20' E), 27-ii-1989, T.C. Narendran & party; 1 Female, Kerala, Palghat District, Agali (11° 9' N 76° 40' E), 12-xii-1987, T.C. Narendran & party; 1 Female, Palghat District, Chindaki (10° 39' N 76° 40' E), 13-xii-1987, T.C. Narendran & party; 1 Female, Kerala, Calicut District, Nanminda (11° 25' N 75° 49' E), 2-xi-2003, T.C. Narendran & party; 1 Female, Kerala, Calicut, District, Kakkayam (11°15' N 75°50' E), 9-ii-1996, T.C. Narendran & party; 3 Females, Kerala, Pathanamthitta District, Thavalappara (76° 35' N 77° 6' E), 26-ii-1988, T.C. Narendran & party; 1 Female, Kerala, Malappuram District, Edakkara (11° 21' N 76° 18' E), 23-xii-1999.

Depository : Holotype deposited at ZSIK.

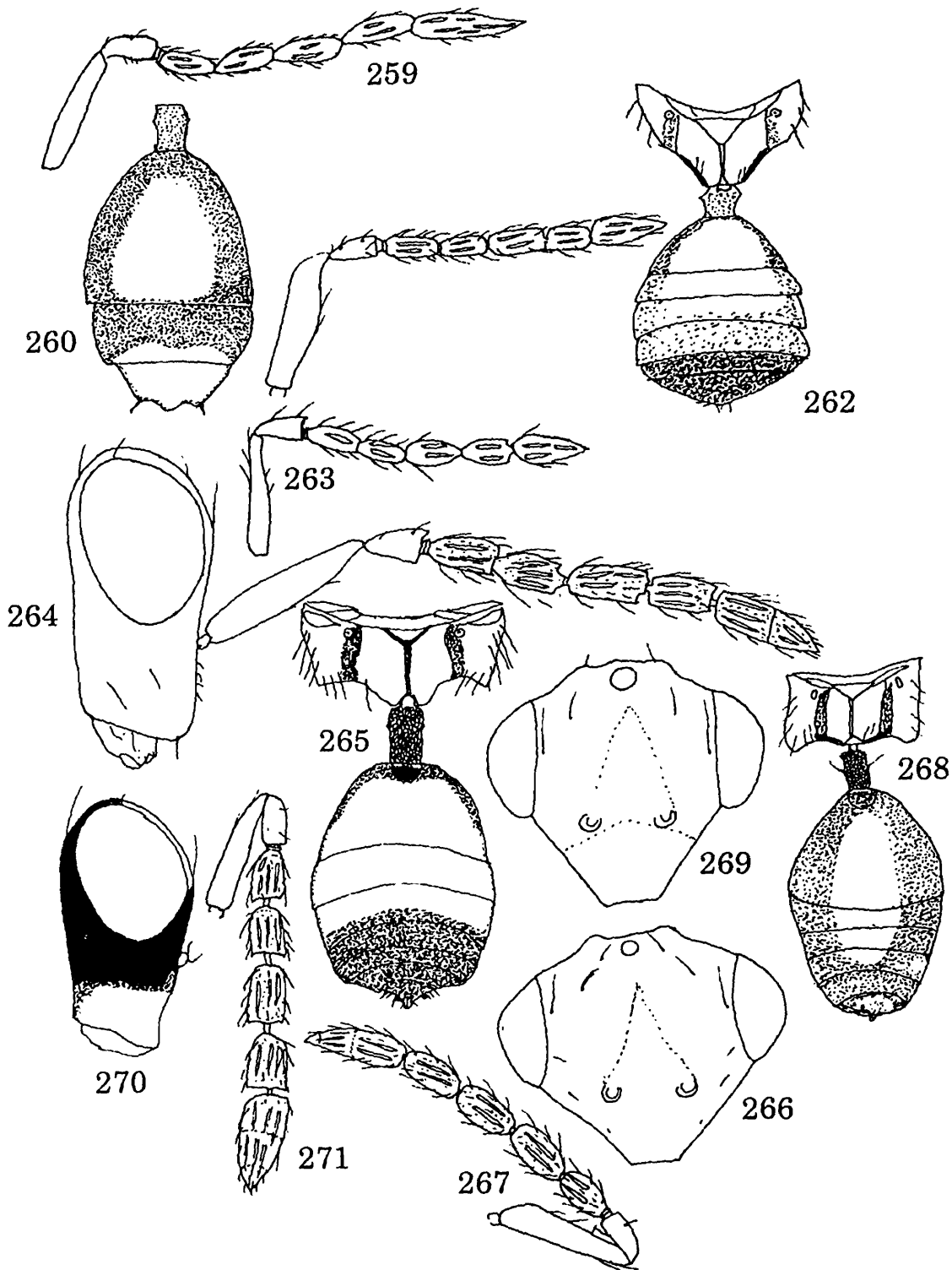
Remarks : This new species comes to *E. nigroclypeatus* Ferrière in the key to species by Ferrière (1941) but differs from that species in having: (1) pronotum with distinct cross carina (in *E. nigroclypeatus* pronotum without carina); (2) PMV distinctly longer than 1.5x STV (in *E. nigroclypeatus* PMV only about 1.5x STV); (3) metasoma as long as mesosoma (in *E. nigroclypeatus* metasoma much shorter than mesosoma) and petiole distinctly raised reticulate (in *E. nigroclypeatus* petiole shagreened).

This new species comes to *E. nibilis* Wijesekara & Schauff in the key to Sri Lankan species of Wijesekara & Schauff (1994) but differs from that species in having : (1) head without any lightly coloured area near clypeus (in *E. nibilis* head with a lightly coloured area near clypeus); (2) malar space 0.78x eyeheight (in *E. nibilis* malar space 0.6x eye height); (3) scape reaching level of front ocellus (in *E. nibilis* scape not reaching level of front ocellus); (4) pedicel as long as F1 (in *E. nibilis* pedicel longer than F1) and (5) vertex without minute setae (in *E. nibilis* vertex with a pair of minute setae between hind ocelli).

37. *Euplectrus zandanus* Narendran sp. nov.

(Figs. 269-271)

Female : (Holotype) Length 2 mm. Head black with area below toruli yellow which extends to gena but separated from eye margin by a black band; scape pedicel and F1 pale yellow, remaining segments of antenna pale brown; mesosoma



Figs. 259-260. *Euplectrus utethesiae* Mani & Kurian Female : 259. Antenna; 260. Petiole & metasoma. **Figs. 261-262.** *E. xanthocephalus* Girault Female : 261. Antenna; 262. Propodeum & mesosoma dorsal view. **Fig. 263.** *E. xanthovultus* Wij. & Schauff Female antenna (Adapted from Wijesekara & Schauff 194). **Figs. 264-265.** *E. yaloticus* sp.nov. Female : 264. Head & antenna profile; 265. Propodeum & metasoma dorsal view. **Figs. 266-268.** *E. zamoorini* sp.nov. Female : 266. Head anterior view. 267. Antenna; 268. Propodeum & metasoma dorsal view. **Figs. 269-271.** *E. zandanus* sp.nov. 269. Head anterior view; 270. Head profile; 271. Antenna.

black, tegula pale yellow; legs pale yellow; petiole black; gaster pale yellowish brown with a paler patch on basal part and hypopygium pale yellowish; wings hyaline, veins pale yellow; wing disc with a pale yellow tinge all over.

Head : Width in anterior view 1.2x its height in dorsal view, 2.4x its length; vertex with 2 minute setae between hind ocelli; occiput weakly and vaguely margined; POL 2x OOL; OOL equal to AOL; LOL shorter than AOL; WIOS 2.6x POL; MS absent; malar space 0.7x eye height in profile; eye height 1.36x length of eye; antenna inserted a little below level of ventral margin of eyes; scape not reaching level of front ocellus; relative L : W of antennal segments: scape = 30 : 6; pedicel = 12 : 6; F1 = 12 : 7; F2 = 11 : 9; F3 = 13 : 9; F4 = 13 : 10; clava = 24 : 11.

Mesosoma : Pronotum with 3 pairs of stout setae and several minute setae, cross carinate; MLM imbricate anteriorly, distinctly raised reticulate on remaining part with a very short median carina posteriorly; scutellum faintly reticulate; propodeal plicae absent; spiracle not touching metanotum; LTS shorter than first two hind tarsal segments together; forewing 1.41x as long as broad, speculum absent; relative length of CC = 18; SMV = 14; MV = 24; PMV = 10; STV = 8.

Metasoma shorter than mesosoma; petiole as long as wide, distinctly reticulate; T1 reaching middle of gaster.

Male : similar to female, except head, completely yellow, scape slightly wider.

Host : Unknown.

Variation : Length of female 1.3-2 mm. In one paratype antennal segments more pale from F2 to clava.

Distribution : India : Kerala, Uttar Pradesh.

Material examined : Holotype Female, Kerala, Thrissur District (10° 31' N 76° 13' E), 5-ii-1999, T.C. Narendran & party, (ZSIK). Paratypes: 1 Female, Kerala, Malappuram District, Calicut University Campus, 25-iv-1989, T.C. Narendran; 1 Female, 2 Males, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), iv-v-1991, S. B. Zeya.

Depository : Holotype deposited Western Ghat Regional Centre, Zoological Survey of India, Kozhikode, Kerala state, India

Remarks : This new species comes near *E. euplexiae* Rohwer in general appearance but differs from it in having : (1) yellow areas of gena not touching ventral margin of eyes (in *E. euplexiae* yellow colour of gena not touching ventral margin of eye); (2) petiole as long as wide (in *E. euplexiae* petiole 1.2x

longer than wide); (3) MV more than 2x as long as PMV (in *E. euplexiae* MV shorter than 2x PMV) and (4) OOL as long as AOL (in *E. euplexiae* OOL longer than AOL).

This new species differs from *E. latifrons* Shafee *et al.* in having : 1) yellow colour of gena not touching ventral margin of eye (in *E. latifrons* yellow colour of gena touches ventral margin of eye); 2) MV 2.4x as long as PMV (in *E. latifrons* MV 2.83x as long as PMV); 3) pedicel as long as F1 (in *E. latifrons* pedicel shorter than F1).

Species incertae sedis under *Euplectrus*

38. *Euplectrus gopimohani* Mani

1941. *Euplectrus gopimohani* Mani 33. Female. Bangladesh, Dacca, Tejgeon (INPC?).

Husain & Khan (1986) recorded the depository of the type of this species as IARI (Division of Entomology Indian Agricultural Research Institute, New Delhi). On my enquiry Prof. V V Ramamurthy informed me (per. com. 2009) that the type could not be traced in IARI. Prof. Hayat (per. com. 2009) informed me that the type is not available at FRI, Dehra Dun also. Prof. V K. Gupta (per. com. 2009) informed me that many of the types of parasitic Hymenoptera described by Mani and deposited at School of Entomology, St. John's College, Agra were later transferred to FRI by some one. These are probably lost for unknown reason and probably are not available in FRI.

The original description of Mani does not give any character which can be used for separating this species from any other species of *Euplectrus* of Oriental region.

39. *Euplectrus narariae* (Kurian)

1954. *Secodes narariae* Chandy Kurian 123. Female, India (lost?).

1986:. *Omphale narariae* (Chandy Kurian): Husain & Khan, page: 227

2005. *Euplectrus narariae* (Chandy Kurian): Hayat & Aftab, in Hayat *et al.*, 3.

The type depository of this species is unknown, and it is probably lost. The characters of the original description are of no use in distinguishing the species from other Oriental species. As pointed out by Hayat *et al.* (2005) Husain and Khan (1986) transferred the species from *Secodes* to *Omphale* mainly because *narariae* was described in a genus which is a junior synonym of *Omphale*. Hayat & Aftab (in Hayat *et al.*, 2005) transferred this species to *Euplectrus* on the basis of original description and especially the long hind tibial spurs illustrated by Chandy Kurian (1954). I confirm this transfer.

Genus *Eurycephaloplectrus* Wijesekara & Schauff

1997. *Eurycephaloplectrus* Wijesekara & Schauff, 106. Type species *Eurycephaloplectrus colombianus* Wijesekara & Schauff, by monotypy.

Diagnosis : (Based on Wijesekara & Schauff).

Female : Head distinctly broader than high; occiput concave; scutellum without lateral grooves; propodeum with two submedian carinae, median carina lacking; petiole distinct, broader than long.

Host : Parasitic on limacodid larvae (Lepidoptera: Limacodiidae).

Distribution : USA, India.

Remarks : According to Wijesekara & Schauff (1997) this genus can be distinguished from *Euplectromorpha* Girault by the absence of lateral grooves on scutellum. It differs from *Euplectrus* Westwood in having the propodeum with two submedian carinae and absence of a median carina.

1. *Eurycephaloplectrus natadae* (Kurian)

(Fig. 167)

1954. *Euderus natadae* Kurian, 126; Holotype Female, India, Andhra Pradesh, East Godavary Dt., Tatipaka. (lost?). *Eurycephaloplectrus natadae* (Kurian): Hayat & Aftab, in Hayat *et al.*, 2005: 3.

Diagnosis : (Based on original description of Kurian, 1954)

Female : Length 1.5 mm. Colour reddish brown; eye dark reddish brown; ocelli dark reddish brown; mandibles yellowish brown; antenna brown except for lighter scape and pedicel; mesosoma brown; legs brown with knees white; metasoma reddish brown, darker than mesosoma, more so at sides.

Head : Length in dorsal view one-third its breadth: POL one and one-fourth OOL; AOL shorter than OOL; length of eye 1.5x that of gena; antenna inserted at level of ventral margin of eyes; eyes pubescent; relative L : W of antennal segments: scape = 43 : 7; pedicel = 17 : 9; F1 = 19 : 10; F2 = 16 : 8; F3 = 16 : 8; F4 = 12 : 8; clava = 24 : 12.

Mesosoma : Pronotum transversely carinate anteriorly; faintly, irregularly, coriaceous, with 3 pairs of brown setae placed posteriorly; MLM rugulose coriaceous, with 6 setae, 4 medium sized brown anteriorly placed and 2 black setae posteriorly disposed; each scapula with 2 stout setae; scutellum coriaceous, with 2 pairs of stout setae; dorsellum smooth and shiny; propodeum with two longitudinal carinae meeting the transverse basal carina, enclosing a small rectangular area; hind tibia with 2 apical spurs; LTS shorter than first two hind tarsal segments together; forewing 2.3x its breadth; speculum closed behind by setae; relative length (Fig. 17 of Kurian, 1954) of CC = 14; SMV = 11; MV = 17; PMV = 6; STV = 4.

Metasoma 0.75x length of mesosoma; dorsoventrally somewhat flattened; broadly oval, apically somewhat conical; petiole broader than long, quadrate; T1 and T2 cover nearly 0.7 of gaster.

Male : Unknown.

Host : Parasitic on *Darna nararia* (Moore) (Lepidoptera : Limacodidae).

Remarks : The only species to compare with is the North American type species of the genus *E. colombianus* Wijesekara & Schauff from which it differs in having: (1) funicular segments gradually becoming shorter towards clava (in *E. colombianus* Wijesekara & Schauff funicular segments 2-4 sub equal in length); (2) MLM brown (in *E. colombianus* Wijesekara & Schauff MLM black); (3) hind coxae and hind femur brown (in *E. colombianus* Wijesekara & Schauff hind coxa and hind femur light brown) and (4) propodeal carinae not diverging as in the case of *E. colombianus* Wijesekara & Schauff.

It is not quite possible to compare the two species since the original description does not reveal many of the relevant features for comparison.

Genus *Ginsiella* Erdős

This genus was recorded from India by Arifa & Khan (1992) with description of a species, *G. indica* Arifa & Khan, from India, (Utarakhand, Nainital, Rudrapur). From the figures and description of this species, it is clear that it is not *Ginsiella*. The nature of scutellar setae, submedian grooves, forewing, and other characters show it belongs to Tetrastichinae. However, it is not possible for me to ascertain the correct identity of the genus or species unless I see the type which I could not get inspite of my efforts. The only remaining option is to consider the record of *Ginsiella* from India as doubtful, and the species, *G. indica*, is of doubtful placement and of doubtful validity (*insertae sedis*).

From my enquiries I could understand that the types are not present at the National Collection of Zoological Survey of India, Kolkata.

Genus *Hayatiola* Narendran

2006. *Hayatiola* Narendran, 2467-2470, Type species *Hayatiola macrocephala* Narendran, by monotypy.

Diagnosis : (Based on Narendran, 2006).

Female : Head large with postoccipt concave, accommodating pronotum; antennal formula 11333; gena strongly converging; mesosctum shorter than scutellum; scapula with 5- 6 setae; scutellum with 5`admarginal setae on either side; axillae hardly advanced; propodeum with a double median carinae enclosing a microsculptured median area; plicae distinct; petiole flat and microsculptured.

Host : Unknown.

Distribution : India

Remarks : This genus comes near *Petiolacus* Bou ek (Bou ek, 1988) in having a long petiole; slender body, excavated occiput, clypeus poorly delimited, mouth small, genae strongly converging, scape exceeding vertex, mesoscutum with vague notauli; axillae hardly advanced, elongate scutellum and propodeum subhorizontal. However, it differs from *Petiolacus* in having: (1) Pedicel not small, 0.75x as long as F1 (In *Petiolacus* pedicel very short, shorter than half length of F1); (2) Scrobe distinct (indistinct in *Petiolacus*); (3) Funicle 3 segmented and clava 3 segmented (in *Petiolacus* funicle 4 segmented and clava 2 segmented); (4) Pronotum hidden by head (in *Petiolacus* pronotum longer than mesoscutum and well visible); (5) Propodeum with a double median carinae enclosing a microsculptured median area (in *Petiolacus* propodeum with a single median carina); (6) Plicae distinct (plicae absent in *Petiolacus*); (7) Submedian area of propodeum reticulate (smooth in *Petiolacus*); (8) Hind coxa without raised transverse rugae (with raised transverse rugae on dorsal side in *Petiolacus*); (9) Forewing not bifaciate (forewing bifaciate in *Petiolacus*); (10) Forewing 2.4x as long as wide (in *Petiolacus* forewing 2.8x as long as wide); (11) CC shorter than MV (in *Petiolacus* CC longer than MV); (12) petiole flat on dorsal side with microsculptures (in *Petiolacus* petiole humped and with a median raised ridge, not microsculptured), and (13) Scutellum with 5 weak setae in an irregular longitudinal row on either margin (in *Petiolacus* scutellum entirely different somewhat like elachertini).

***Hayatiola macrocephala* Narendran**

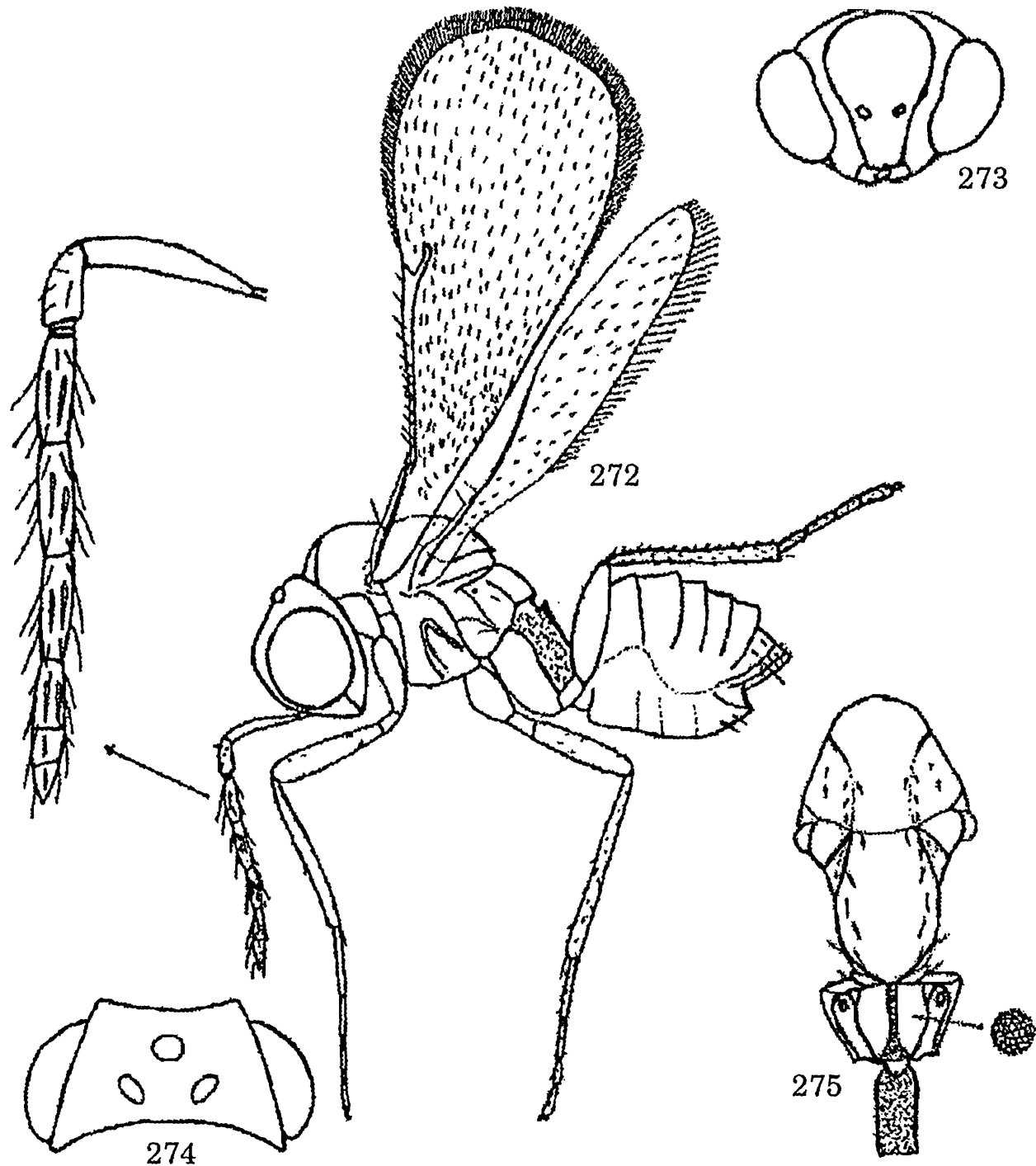
(Figs. 272-275)

2006. *Hayatiola macrocephala* Narendran, 2467-2470. Holotype Female, India, Aligarh, (NZSI).

Redescription : *Female* : Length 1.17 mm. General body colour brown; eye grayish yellow; ocelli pale yellow; antenna pale brownish yellow except black clava; legs including coxae yellow except pale brownish yellow fourth tarsal segment and pretarsi; wings hyaline with veins and pilosity pale brown.

Head not collapsing in dried specimens; relatively large; width in anterior view 1.46x its length; width in dorsal view 1.19x its maximum length, vertex flat, reticulate with sparse, short pilosity; lower clypeal margin weakly but distinctly emarginate; mandibles bidentate; scrobe deep, margin raised; POL equal to OOL; OOL 1.57x OD; eyes bare, converging towards ventral part; eye height in side view a little longer than its width (18:16), 3.6x length of malar space; MS complete, straight without a basal fovea below eye; occiput concave so that posterior part

of head completely cover pronotum; antennal toruli inserted well above lower ocular line, a little below middle; antennal formula 11333; scape broader towards apical part; slightly exceeding level of vertex, distinctly longer than clava; relative L:W of antennal segments : Scape = 35 : 5 (maximum width); pedicel = 15 : 8; F1 = 20 : 7; F2 = 20 : 7; F3 = 19 : 6.5; Clava = 26 : 6.5; clava without an apical specula.



Figs. 272-275. *Hayatiola macrocephala* Narendran Female : 272. Body profile; 273. Head anterior view; 274. Head dorsal view; 275. Part of mesosoma & metasoma and petiole dorsal view.

Mesosoma : Pronotum hidden by posterior excavation of head; mesoscutum distinctly reticulate, notauli weak, but traceable up to scuto-scutellar groove, with 1 pair of setae; each scapula with 5 setae; all setae relatively small, weak; scutellum longer than mesoscutum (40 : 36), a little over 1.3x as long as its width, with 4 admarginal weak setae; submedian and sublateral grooves absent; axillae slightly advanced anteriorly; dorsellum indistinct; propodeum relatively large as long as half of scutellum, with a double median carinae with a median reticulate groove; submedian area reticulate; propodeal spiracle exposed, separated from metanotum by about half its diameter; plical carinae present. Forewing (excluding fringe) 2.4x as long as wide; relative measurements of forewing, CC and veins as follows : CC = 22; MV = 31; PMV = 2; STV = 6, marginal fringe = 4; speculum mostly setose with a relatively small asetose area, closed behind by setae; all coxae smooth and shiny.

Metasoma : Petiole as long as hind coxa, a trifle longer than propodeum, with a narrow neck anteriorly; side margins carinate, both dorsal and lateral parts distinctly microsculptured; gaster shorter than mesosoma (39 : 45); one cercal seta on either side slightly longer than others; not conspicuous; hypopygium well exceeding middle level of gaster.

Male : Unknown.

Host : Unknown.

Distribution : India : Uttar Pradesh.

Material examined : Holotype.

Depository : The Holotype of *Hayatiola macrocephala* has been transferred from DZUC to the NZSI with effect from 19.01.2007.

Genus *Hemiptarsenus* Westwood

1833. *Hemiptarsenus* Westwood, 122-123. Type species *Hemiptarsenus fulvicollis* Westwood, designated by Westwood, 1839.

1904. *Notanisomorpha* Ashmead, 356. Type species *Notanisomorpha collaris* Ashmead, by original designation (synonymized by Schauff and La Salle, 1993 : 494).

1913. *Eriglyptoideus* Girault, [167] : 154. Type species *Eriglyptoideus varicornis* Girault, by original designation (synonymized by Bou ek, 1988: 626).

1916. *Hemiptarsenoideus* Girault, [274] : 220. Type species *Hemiptarsenoideus semialbiclava* Girault, designated by Gahan and Fagan, 1923. (synonymized by Girault 1924[376]).

1917. *Neodimmockia* Dodd, 361-362. Type species *Neodimmockia agromyzae* Dodd, by monotypy. (synonymized by Girault, 1924[376]).

Diagnosis : Scape exceeding level of vertex; funicle 4 segmented in female and with 3 branches in male; notauli incomplete; axillae usually not angulately

advanced; scutellum without sublateral grooves; propodeum with median carina and plicae indistinct or absent in majority of species; forewing and costal cell long and narrow; forewing atleast 2.6x as long as wide and costal cell 10- 15x as long as wide.

Host : Mainly larval or nymphal parasitoids of Diptera (Agromyziidae, Chloropidae), Homoptera (Coccidae), Lepidoptera, Coleoptera and Hymenoptera (Tenthredinidae).

Distribution : Oriental, Palaearctic, Australian, Afrotropical, Nearctic and Pacific regions.

Remarks : This genus comes very close to genus *Sympiesis* Foerster in very many characters and it is quite likely will be merged with that genus when better known in future studies. For the present, it can be separated from *Sympiesis* mainly in having : (1) toruli well above level of lower margin of eye and hence apex of scape extending above level of vertex of (in *Sympiesis* toruli inserted at or lower level of ventral margin of eye and hence apex of scape not extending above level of vertex; (2) forewing atleast 2.6x as long as wide (in *Sympiesis* forewing shorter than 2.6x as long as wide) and (3) Costal cell 10- 15x as long as wide (in *Sympiesis* costal cell less than 10x as long as wide).

Key to species of *Hemiptarsenus* Westwood of Indian Subcontinent
(Based on Female)

1. Forewing with a brown infuscation adjoining STV; antennal toruli situated at level of ventral margin of eyes; midfemur with a seta on ventral side subapically; scape not exceeding level of vertex.....
..... *H. olaticus* Narendran sp. nov.
- Forewing without infuscation adjoining STV; other characters not as above
..... 2
2. Petiole 2.6-2.7x as long as broad; propodeum reticulate, with plicae indicated; funicle and clava uniformly black; pedicel brown; scape pale; axillae weakly aciculate- reticulate; PMV 2.5x STV; posterior margin of T1 convex.....
..... *H. banati* Narendran sp. nov.
- Petiole distinctly shorter than above, broader than its length; other characters partly or completely different 3
- 3 Propodeum not strongly reticulate, mostly smooth and shiny; clava partly yellow or partly dark coloured 4
- Propodeum strongly or moderately reticulate; clava uniformly pale coloured or uniformly dark coloured 5

4. Forewing with 2 longitudinal 'Y' shaped brownish bands; MS absent; clava unsegmented *H. indicus* Khan
 – Forewing without brownish bands as above; clava segmented
 *H. varicornis* (Girault)
5. Funicle black, clava pale yellow; gaster black (with T1 metallic green refringence); posterior margin of T1 straight; metasoma shorter than mesosoma *H. aditus* Narendran sp. nov.
 – Funicle and clava uniformly brown or dark brown with median carina and plicae present; other characters may or may not as above 6
6. Pronotum orange yellow with admarginal area near posterior margin metallic green; propodeum without median carina and plicae; gaster yellow with black patches *H. orizae* Narendran sp. nov.
 – Characters not as above 7
7. Antenna inserted a little above middle of frons; petiole black; hind femur and tibia completely yellow *H. effarkhani* Narendran sp. nov.
 – Antenna inserted a little below middle of frons; petiole pale yellow; hind femur and tibia with apices dark brown *H. nuperus* Narendran sp. nov.

1. *Hemiptarsenus aditus* Narendran sp. nov.

(Figs. 276-279)

Female : (Holotype) Length 1.73 mm. Head and mesosoma dark metallic green; gaster black with T1 dark metallic green; eyes black with marginal border pale gray; ocelli reflecting brown; antennal funicle and pedicel black; clava and scape pale yellow; legs and tegulae pale yellow; wings hyaline with veins pale brownish yellow.

Head : Width 1.21x its height in anterior view; width in dorsal view 3.25x its length; occiput concave medially, occipital carina absent; POL 1.5x OOL; AOL shorter than OOL (3 : 4); LOL shorter than AOL; WIOS 3.3x POL; MS distinct; malar space 0.33x eye height; eyes bare; eye length in profile 0.67x eye height in profile; antenna inserted a little above level of ventral margin of eyes; scape exceeding level of vertex; relative L : W of antennal segments : scape = 41 : 6; pedicel = 12 : 7; F1 = 21 : 9; F2 = 17 : 10; F3 = 17 : 11; F4 = 15 : 10; clava = 23 : 9.

Mesosoma : Pronotum a little shorter than mesoscutum (8 : 9), cross reticulate on anterior half; posterior half of pronotum with raised reticulations nearly like pits, with 3 pairs of setae; mesoscutum with raised pit like reticulations, and with

3 pairs of setae; axillae not advanced anteriorly, raised reticulate; scutellum as long as mesoscutum, strongly raised reticulate, with 2 pairs of setae; dorsellum mostly smooth and shiny; propodeum raised reticulate, median carina absent, plicae indistinct; spiracle separated from metanotum by a distance longer than its diameter; hind coxa weakly striate dorsally; forewing 2.7x as long as broad; CC = 14x as long as broad; relative length of CC = 28; SMV = 24; MV = 42; PMV = 17; STV = 10.

Metasoma : Petiole broader than long, reticulate carinate; metasoma shorter than mesosoma (21 : 27); posterior margin of T1 straight.

Male : Similar to female except antenna with 3 branches, gaster shorter.

Host : Unknown.

Distribution : India (Kerala, Karnataka).

Variation : Length of female varies slightly 1.5-1.73mm.

Material examined : Holotype, Female, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 10-vi-2003, T.C. Narendran *et. al.* Paratypes: 2 Females, Calicut University Campus (11° 7' N 75° 53' E), 11-viii-1988, T.C. Narendran; 1 Male, INDIA, Karnataka, Sringeri (13° 25' N 75° 15' E), 22-v-2003. P. A. Sinu.

Depository : Holotype deposited in Department of Zoology, University of Calicut, India pending transfer to ZSIK or NZSI.

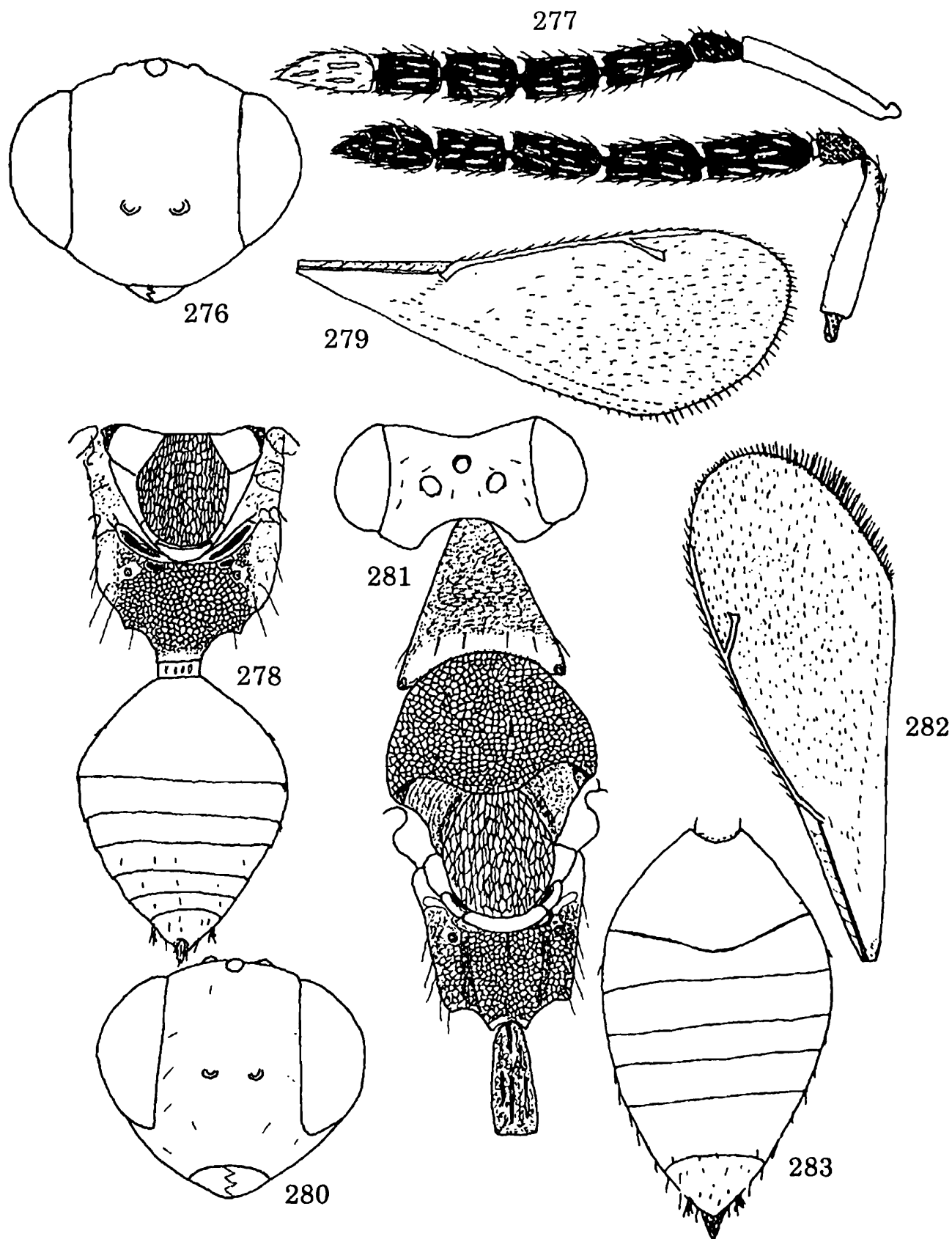
Remarks : This new species comes near *H. varicornis* (Girault) in the general features but differs from in having: 1) propodeum strongly reticulate (propodeum mostly smooth in *H. varicornis* and 2) clava completely pale yellow (in *H. varicornis* clava only partly pale and partly dark).

2. *Hemiptarsenus banati* Narendran sp. nov.

(Figs. 280-283)

Female : (Holotype) Length 2.6 mm. Head and mesosoma black with metallic green refringence; funicle and clava black; pedicel brown; scape pale yellow; eyes gray; tegula and legs pale yellow; petiole black with metallic green refringence; gaster brownish black; wings hyaline with veins pale brown.

Head : Width in anterior view 1.14x its height, width in dorsal view 2.1x its length; occiput concave medially, occipital carina absent; POL 1.6x OOL; AOL shorter than OOL; LOL subequal to AOL; WIOS 3.1x POL; MS present; malar space 0.4x eye height in profile; eye length 0.88x eye height in profile; eyes bare; antenna inserted well above level of ventral margin of eyes; scape reaching well



Figs. 276-279. *Hemiptarsenus aditus* sp. nov. Female : 276. Head anterior view; 277. Antenna; 278. Scutellum, propodeum & metasoma; 279. Forewing. **Figs. 280-283.** *H. banati* sp. nov. Female; 280. Head dorsal view; 281. Head, mesosoma & petiole dorsal view; Forewing; 283. Gaster.

above level of vertex; relative L : W of antennal segments: scape = 39 : 8; pedicel = 12 : 7; F1 = 25 : 10; F2 = 23 : 10; F3 = 20 : 10; F4 = 16 : 10; clava = 24 : 10.

Mesosoma : Pronotum longer than mesonotum, weakly reticulate, shiny, posterior admarginal area smooth; spiracle on both corners distinct; mesoscutum raised reticulate; axillae a little advanced anteriorly, weakly cross aciculate; scutellum with raised reticulations; dorsellum smooth and shiny; propodeum distinctly raised reticulate with deep spiracular groove; hind coxa reticulate on dorsal side; forewing 2.7x as long as wide; CC = 41; SMV = 35; MV = 41; PMV = 26; STV = 10.

Metasoma a little longer than mesosoma; petiole 2.7x as long as broad, coarsely reticulate-striate; posterior margin of T1 convex.

Male : Similar to female except antenna with 3 funicular branches and relatively shorter gaster; coxae darker in male; mid and hind femora darker medially.

Host : Unknown.

Distribution : India (Kerala)

Variation : Length varies from 2.3-2.6mm in female; gaster more brownish in one paratype.

Material examined : Holotype, Female, INDIA, Kerala, Munnar, Madupetty (9° 58' 76° 17' E), 11-2004, T.C.Narendran; Paratypes: 4 Females, 1 Male of some data of Holotype.

Depository : Holotype deposited in Department of Zoology, University of Calicut, India pending transfer to ZSIK or NZSI.

Remarks : This is a unique species with a longer petiole and at first it lead to *Petiolacus* Bou ek in the key of Bou ek (1988) but that genus belongs to Elachertini with sublateral grooves on scutellum whereas in this new speices of *Hemiptarsenus* Westwood sublateral grooves of scutellum absent. Besides this, there are other differences also to separate these two.

3. *Hemiptarsenus effarkhani* Narendran sp. nov.

(Figs. 284-287)

Female : (Holotype) Length 2.3 mm. Head dark metallic green; eye gray with dark brown marking; ocelli dark brown; antennal flagellum dark brown; pedicel pale brown; scape pale yellow; mesosoma bright metallic green except scutellum a little darker with metallic green refringence; petiole black; gaster black with slight brownish cross band on T1 and with slight metallic green refringence on remaining part; legs pale yellow except brown fourth tarsal segments and pretarsi, wings hyaline with slight yellowish tinge; veins pale yellowish brown.

Head width 1.1x its height in anterior view; head width in dorsal view 2.4x its length; occiput a little concave medially, not margined posteriorly; POL 1.7x OOL; AOL shorter than OOL; LOL shorter than AOL; WIOS 2.6x OOL; MS present; malar space 0.24x eye height in profile; eye length in profile 0.79x eye height; antenna inserted slightly above middle of frons; scape well exceeding level of vertex; relative L;W of antennal segments: scape = 30 : 7; pedicel = 9 : 5; F1 = 16 : 7; F2 = 17 : 8; F3 = 18 : 8; F4 = 15 : 10; clava = 23 : 9.

Mesosoma : Pronotum a little shorter than mesoscutum (8: 10); transversely and finely reticulate; posterior admarginal area smooth and shiny; posterior margin arched; mesoscutum with distinct pit like reticulation, MLM with 3 pairs of setae in paratype (in Holotype setae on MLM missing); axillae weakly reticulate with an oblique fovea on anterolateral corner; scutellum raised reticulate; dorsellum smooth and shiny; propodeum raised reticulate, a median carina and lateral plicae-like carina present; spiracle separated from metanotum by a distance longer than diameter of spiracle; hind coxa faintly reticulate on dorsal side; legs relatively long; forewing 3.3x as long as wide; CC 22x as long as wide; relative length of CC and veins CC = 53; SMV = 40; MV = 46; PMV = 19; STV = 9.

Metasoma as long as mesosoma; posterior margin of T1 straight; petiole 1.5x as broad as its length, with broken rugae or carinae on dorsal side, not slender.

Male : Unknown.

Host : Unknown.

Distribution : India (Assam, Meghalaya).

Material examined : Holotype, Female, INDIA, Assam, Kamrup (26°53' N 90° 39'E), Boodapahar, 30-x-2008, F. R. Khan, (NPC). Paratype : 1 Female, INDIA, Meghalaya, Jowai, Thaldskin, 22-x-2008, F. R. Khan, (ZDAMU).

Depository : Holotype deposited at NPC.

Remarks : This new species resembles *H. nuperus* Narendran sp. nov. in general appearance but differs from it in having characters mentioned under remarks under *H. nuperus* Narendran sp. nov.

Etymology : Species name is a combination of letters but will be pronounced as F. R. Khan who collected the specimens.

4. *Hemiptarsenus indicus* Khan

1985. *Hemiptarsenus indicus* Khan 153. Holotype Female, India, Uttarakhand, Pantnagar (GBPU?).

Diagnosis : (Based on Khan, 1985).

Female : Length 1.61 mm. Dark brown with golden reflections; gaster brownish with yellowish reflections; antenna dark brown except apical one-third of clava

yellowish and scape yellowish with a dark band on dorsal surface of apical half; forelegs uniformly yellowish except apical half of coxa and tarsal segments 2-4 brownish; mid leg uniformly yellowish except coxa and tarsal segments 2-4 brownish; hind leg uniformly yellowish except coxa on major portion, basal half of femora and tarsal segments 2-4 dark brownish; malar space as long as transverse diameter of eye; relative L : W of antennal segments: scape = 12 : 2; F1 = 7 : 2; F2 = 7 : 2; F3 = 7 : 2; F4 = 6 : 2; clava = 7 : 3 [Fig.27 of Khan 1985]; surface of propodeum smooth; forewing slightly less than 4x longer than wide, with 2 longitudinal 'Y' shaped brownish bands.

Male : Unknown.

Host : *Chromatomyia horticola* (Diptera: Agromyzidae) on *Pisium sativum*.

Distribution : India Uttarakhand

Remarks : This species comes very near *Hemiptarsenus varicornis* (Girault) in the general features especially antennal colour but differs from all other Indian species in having forewing with two 'Y' shaped brown bands; MS absent (Khan, 1985 & Khan *et. al* 2005) and clava unsegmented.

5. *Hemiptarsenus nuperus* Narendran sp. nov.
(Figs. 288-291)

Female : (Holotype) Length 2.05 mm. Head dark metallic green; eye gray; ocelli pale reflecting yellow; antennal flagellum dark brown; pedicel pale yellowish brown; scape pale yellow with dark brown dorsoapically; mesosoma bright metallic green with scutellum slightly darker; petiole pale yellow; gaster basal one third pale brownish yellow with dark brown metallic reflecting cross band; MLM with slight metallic green refringence; legs pale yellow except for dark brown colour on apical part of hind femur and on apices of hind and mid tibiae; fourth tarsal segments of all legs and pretarsi dark brown; wings hyaline without a yellowish tinge; veins pale hyaline yellowish brown.

Head width in anterior view 1.1x its height; head width in dorsal view 1.9x its length; occiput not margined; POL 2x OOL; AOL slightly shorter than OOL; LOL shorter than AOL; WIOS 2.3x POL; MS present; malar space 0.4x eye height; antenna inserted a little below middle of frons but a little above level of ventral margin of eyes; scape well exceeding level of vertex; relative L : W of antennal segments: scape = 35 : 6; pedicel = 12 : 7; F1 = 21 : 8; F2 = 21 : 9; F3 = 19 : 10; F4 = 17 : 10; clava = 24 : 9.

Mesosoma : Pronotum subequal in length of mesoscutum; transversely and finely reticulate, posterior admarginal area smooth and shiny; posterior margin

arched; mesoscutum with pit like reticulation; MLM with 3 pairs of setae; axillae weakly reticulate, with an oblique fovea on anterolateral corner; scutellum raised reticulate; dorsellum smooth and shiny; propodeum raised reticulate, with a median carina and lateral plicae; plicae bifurcated anteriorly; spiracle separated from metanotum by a distance longer than diameter of spiracle; hind coxa faintly reticulate on dorsal side; legs relatively long; forewing 3.1x as long as wide; CC 20x as long as wide; relative length of CC = 23; SMV = 20; MV = 33; PMV = 13; STV = 7.

Metasoma shorter than mesosoma; posterior margin of T1 straight; petiole as long as broad with irregular short carinulae, on dorsal side, somewhat slender.

Male : Unknown.

Host : Unknown.

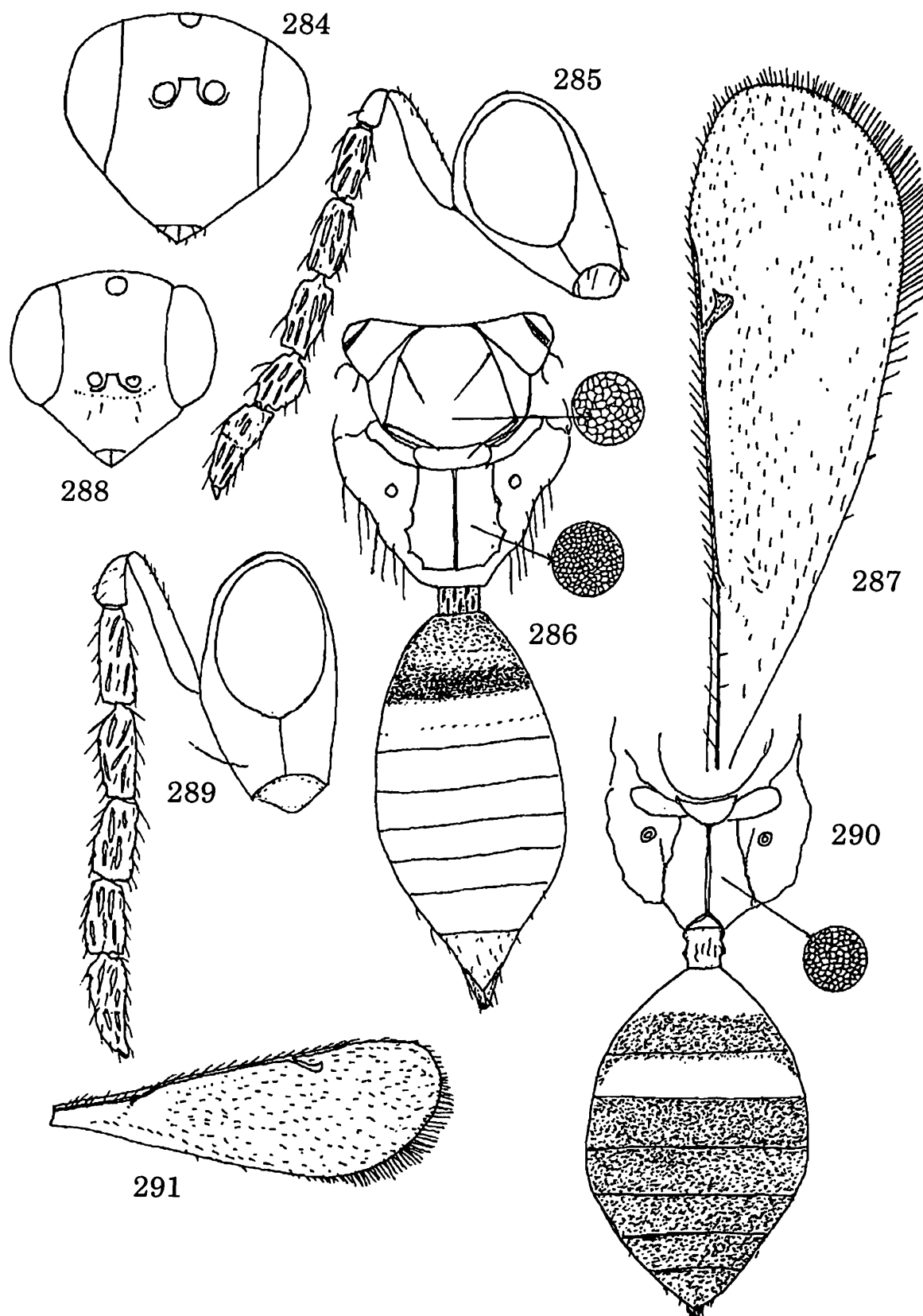
Distribution : India (Himachal Pradesh, Sikkim).

Material examined : Holotype, Female, INDIA, Himachal Pradesh, Shimla (31° 06' N, 77° 13' E), Kufri, 20-vi-2006, S. M. A. Badrudhin & F. R. Khan, (NPC). Paratype: 1 Female of same data of Holotype; 1 Female INDIA, Sikkim, Gangtok (27° 20' N 88° 40' E), 04-v-2008, F.R.Khan, (ZDAMU).

Depository : Holotype deposited at NPC.

Remarks : This new species resembles *H. effarkhani* Narendran sp. nov. in general appearance but differs from it in having; (1) F2 and F3 of equal length and longest funicular segments (in *H. effarkhani* Narendran sp. nov. F3 longest funicular segment); (2) antenna inserted a little below centre of frons (in *H. effarkhani* Narendran sp. nov. antenna inserted a little above centre of frons); (3) apices of hind femur, hind tibia and mid tibia apex dark brown (in *H. effarkhani* Narendran sp. nov. apices of hind femur, hind tibia and mid tibia yellow concolorous with remaining parts of legs); (4) petiole pale yellow more or less slender (in *H. effarkhani* Narendran sp. nov. petiole black not slender) and (5) gaster 1.56x as long as broad and shorter than mesosoma (in *H. effarkhani* Narendran sp. nov. gaster 2.1x as long as broad and as long as mesosoma).

The two species of *H. effarkhani* and *H. nuperus* resemble the genus *Notanisomorphella* Girault in having: step like plicae and median carina. However they differ from *Notanisomorphella* Girault in having: (1) CC more than 10x as long as broad (in *Notanisomorphella* Girault CC less than 10x as long as broad); (2) MLM without scattered setae (in *Notanisomorphella* Girault MLM with scattered setae) and (3) scape reaching well above level of vertex (in *Notanisomorphella* Girault scape not at all reaching well over level of apex of vertex).



Figs. 284-287. *Hemiptasenus effarkhani* sp.nov. Female. 284. Head anterior view; 285. Head and antenna profile; 286. Scutellum, propodeum & metasoma dorsal view; 287. Forewing. **Figs. 288-291.** *H. nuperus* sp.nov. Female : 288. Head anterior view; 289. Head & antenna profile; 290. Propodeum and metasoma dorsal view; 291. Forewing.

6. *Hemiparaenus olaticus* Narendran sp. nov.

(Figs. 292-294)

Female : (Holotype) Length 3.33 mm. Black with slight metallic refringence; eyes gray, ocelli pale white; antennal flagellum and pedicel dark brown, scape pale yellow; coxae concolorous with mesosoma, femora black with apices pale; tibiae and first three tarsal segments pale white, fourth tarsal segments and pretarsi dark brown; wings hyaline with infumation adjoining STV

Head width in anterior view 1.25x its height, width in dorsal view 2.43x its length; occiput concave medially; occipital carina absent; POL 2x OOL; AOL shorter than OOL; WIOS 2.25x OOL; MS present, 0.5x height of eye in profile; eyes bare, eye length 0.75x eye height in profile; antenna inserted at level of ventral margin of eyes; scape hardly reaching level of vertex; relative L : W of antennal segments : Scape = 33 : 8; pedicel = 12 : 7; F1 = 19 : 9; F2 = 17 : 9; F3 = 18 : 9; F4 = 17 : 8; clava = 26 : 9.

Mesosoma : Pronotum shorter than mesoscutum, distinctly reticulate; mesoscutum raised reticulate, axillae well advanced anteriorly, distinctly reticulate; scutellum with raised reticulation; dorsellum distinctly reticulate; propodeum reticulate except smooth medio-apical part; spiracle touching metanotum; plicae absent; callus with 10-12 setae on each side; hind coxa reticulate; middle femur with a seta on ventral side subapically; forewing 2.28x as long as wide; CC 10 x as long as wide; relative length of CC = 30; SMV = 20; MV = 24 : PMV = 21; STV = 12.

Metasoma distinctly longer than mesosoma (26 : 14), 3.8x as long as broad in dorsal view.

Male : Unknown.

Host : Unknown.

Material examined : Holotype : Female, INDIA, Ladakh, Hunder, N 34° 34' 48.8" E 77° 28' 45.4" 31980 mtr, 04-vii-2008, P. M. Sureshan.

Depository : Holotype deposited in NZSI.

Remarks : This unique species differs from all other Indian species in having: 1) forewing with infuscation adjoining STV; 2) metasoma 3.8x as long as wide; 3) scape not exceeding level of vertex and propodeal spiracle touching metanotum and 4) middle femur with one black seta at subapical part on ventral side.

7. *Hemiptarsenus orizae* Narendran sp. nov.

(Figs. 295-297)

Female : (Holotype) Length 2.47 mm. Head dark metallic green with bronze refringence; eye gray; ocelli pale brownish yellow; antenna brown with pedicel

and scape pale yellowish brown; pronotum orange yellow with a transverse area adjacent to posterior border medially metallic green; mesoscutum, scapula, axilla, scutellum and meso and metapleuron slightly dark with metallic green and bronze refringence; petiole pale brown; gaster with yellow and black patches; legs completely pale yellow except fourth tarsal segment and pretarsus of forelegs also brown; wings hyaline with veins brown.

Head width 1.24x its height in anterior view; width in dorsal view 2.35x its length; occiput concave medially; occipital carina absent; POL 1.4x OOL; AOL shorter than OOL; LOL slightly shorter than AOL; WIOS 3.3x POL; MS present; malar space 0.21x height of eye in profile; eye length (transverse diameter of eye in profile) 0.71x eye height, eyes bare; antenna inserted well above level of ventral margin of eye; scape exceeding level of vertex; relative L : W of antennal segments: scape = 46 : 10; pedicel = 11 : 9; F1 = 29 : 10; F2 = 29 : 10; F3 = 28 : 11; F4 = 19 : 12; clava = 26 : 11.

Mesosoma : Pronotum length subequal to mesoscutum, transversely striate-reticulate; mesoscutum, scutellum and axilla raised reticulate; dorsellum reticulate; propodeum raised reticulate; spiracular groove distinct; median carina and plicae absent; hind coxa weakly striate; forewing 2.7x as long as wide; CC 12x as long as width; speculum closed behind by cubital line of setae; relative length of CC = 36; SMV = 25; MV = 47; PMV = 21; STV = 7.

Metasoma distinctly longer than mesosoma; T1 with concave posterior margin; petiole transverse.

Male : Length 1.73mm. Similar to female except antennal segments with 3 branches; metasoma shorter than mesosoma.

Host : The Holotype and one Paratype collected from rice ecosystem in Tamil Nadu.

Distribution : India (Tamil Nadu & West Bengal).

Variation : The paratypes from West Bengal are more brightly metallic green without bronze refringence and antenna pale brownish; length of female varies from 2.4-2.5mm.

Etymology : Since the Holotype and one paratype are collected from rice ecosystem the species is named after rice *Oriza*.

Material examined : Holotype : Female, INDIA, Tamil Nadu, Budur, Rice Ecosystem, 17-iv-2003, J. Diravium. Paratypes : 1 Male of same collection data of Holotype; 4 Females, Tamil Nadu, Vellupuram, 19-ii-2003, S. B. Zeya & S. I. Kazmi; 11 Females, West Bengal, Sadanpur (2 Females), Chandaneswar (One) and Pathorghata (8 females), 22.ix.1983. S. S. Islam. (4 females in ZDAMU).

Depository : Holotype deposited at Dept.of Zoology, University of Calicut, Kerala state, India pending transfer to ZSIK or NZSI.

Remarks : This species comes near *H. aditus* Narendran sp. nov. in having dark metallic green refringe. However this new species differs from *H. aditus* in having: (1) funicle and clava uniformly brown or pale brown (in *H. aditus* Narendran sp. nov. funicle black and clava pale yellow); (2) posterior margin of T1 convex (in *H. aditus* Narendran sp. nov. posterior margin of T1 straight) and (3) metasoma longer than mesosoma (in *H. aditus* Narendran sp. nov. metasoma shorter than mesosoma).

8. *Hemiptarsenus varicornis* (Girault)

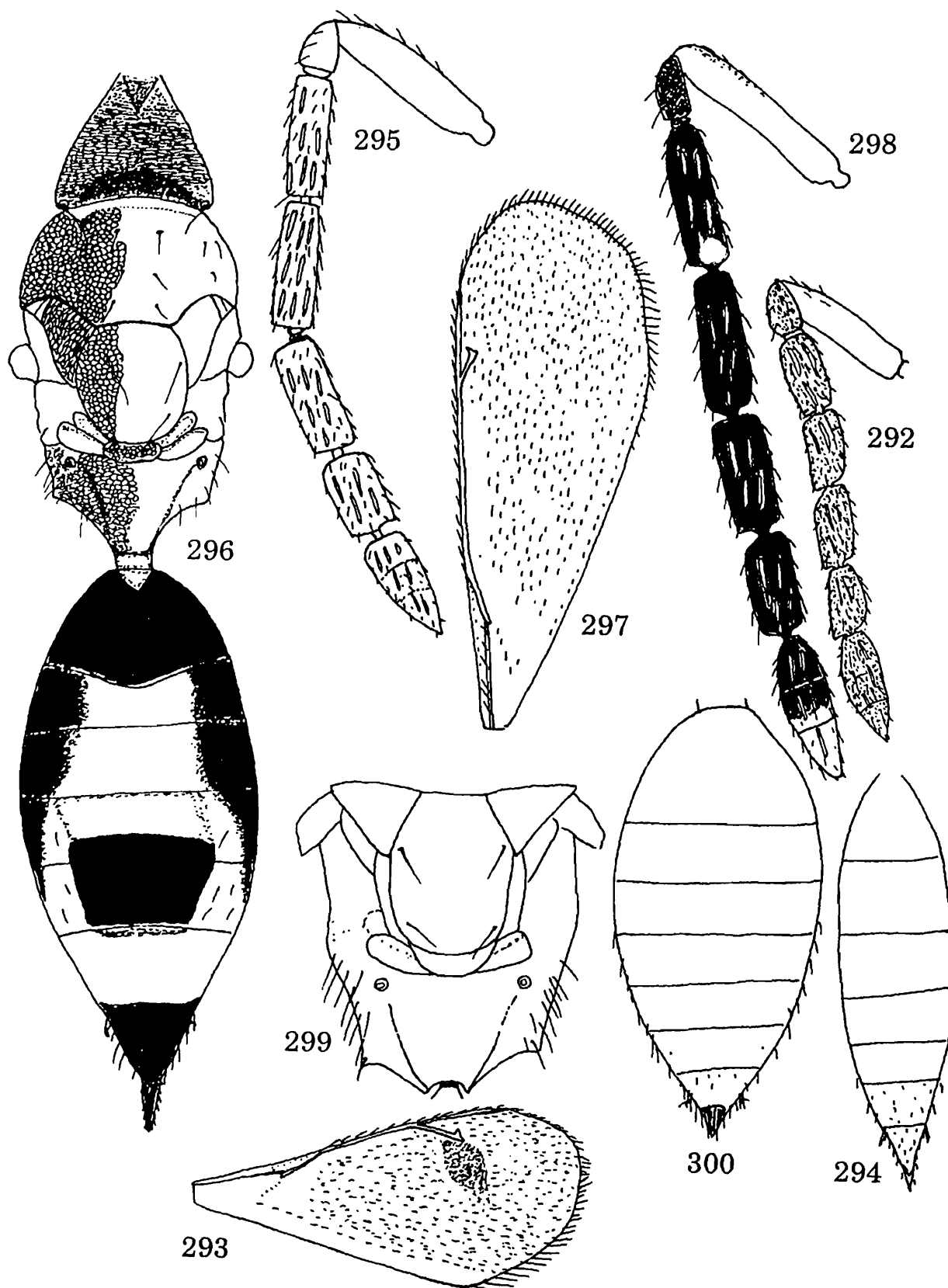
(Figs. 298-300)

1913. *Eriglyptoideus varicornis* Girault, [167] : 154. South Australia, Murray Bridge (QM).
 1916. *Hemiptarsenoideus semialbiclava* Girault, [274] : 220-221, West Australia, Perth (USNM).
 Bou ek (1988 : 627) synonymised with *Hemiptarsenus varicornis* (Girault).
 1917. *Hemiptarsenus antennalis* Masi, 208. Seychelles (QM) Bou ek (1988 : 627) synonymized.
 1957. *Hemiptarsenus ophiomyzae* Risbec, 247-251. Senegal (MNNH) Bou ek (1988 : 627) synonymized.
 1965. *Hemiptarsenus semialbiclavus* Yoshimoto & Ishii, 114. unjustified emendation (Bou ek, 1988 : 627).
 1988. *Hemiptarsenus varicornis* (Girault) : Bou ek (627) transferred to *Hemiptarsenus*.
 1917. *Neodimmockia agromyzae* Dodd, 247-251. Bou ek (1988 : 627) synonymized.

Redescription : *Female* : Length 1.61-1.7 mm. Head black with metallic green refringence; antenna black with distal half of clava pale yellow or pale white and scape pale yellow with dorsal apical part dark; mesosoma dark metallic green; petiole yellow; gaster dark metallic green with pale brown patch on sides basally; legs pale yellow with coxae and last three tarsal segments and pretarsi black or dark brown; wings hyaline with veins pale brown.

Head collapsing in dry specimens; width 1.2x its height in anterior view; width in dorsal view 2.22x its length; occiput concave medially; occipital carina absent; POL 2x OOL; AOL subequal to OOL; LOL shorter than AOL; WIOS 2.4x POL; MS present; malar space 0.33x height of eye in profile; eye length in profile 0.77x its height in profile; eye bare; antenna inserted well above level of ventral margin of eyes; scape exceeding level of vertex; relative L : W of antennal segments: scape = 51 : 9; pedicel = 15 : 8; F1 = 34 : 10; F2 = 33 : 12; F3 = 27 : 12; F4 = 27 : 12; clava = 35 : 12.

Mesosoma : Pronotum cross reticulate; mesoscutum, scutellum raised reticulate; axilla reticulate; dorsellum and propodeum smooth and shiny; hind coxa reticulate



Figs. 292-294. *Hemiptarsenus olaticus* sp.nov. Female : 292. Antenna; 293. Forewing; 294. Gaster. **Figs. 295-297.** *H. orizae* sp.nov. Female : 295. Antenna; 296. Mesosoma & metasoma dorsal view; 297. Forewing. **Figs. 298-300.** *H. varicornis* (Girault) Female : 298. Antenna; 299. Scutellum & propodeum dorsal view; 300. Gaster dorsal view.

dorsally; forewing 2.9-3.2x as long as broad; CC = 11-14x as long as wide; relative length of CC = 28; SMV = 24; MV = 31; PMV = 14; STV = 7.

Metasoma : A little longer than mesosoma; posterior margin of T1 straight.

Male : Similar to Female except for branched antenna and shorter gaster.

Host : Parasitoids of various species of Agromyzidae (*Agromyza*, *Liriomyza*, *Ophiomyia*), Drosophilidae (*Drosophila*).

Distribution : India (widely distributed), Taiwan, China, Afrotropical, Australia/Pacific.

Variation : Female length varies from 1.61-1.7 mm. Colour varies from black to brown with varying degrees of metallic green refringence. In some specimens hind femur yellow with apex dark brown.

Material examined : 1 Female, INDIA, Kerala, Malappuram District, Nilambur (11° 16' N 76° 13' E), 1-viii-1987, T.C. Narendran & party; 2 Females, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 5' E), 4-ii-1989 & 16-vi-2001; 1 Female, Kerala, Malappuram District, Thalappara (11° 7' N 75° 5' E), (Near Calicut University Campus, 11-iv-2001, K. Mohana; 3 Females, Kerala, Kasaragod (12° 29' N 74° 59' E), 22-i-2003, T.C. Narendran & party; 1 Female, Kerala, Kozhikode (11° 15' N 75° 46' E), 2-ii-2004, T.C. Narendran & party; 1 Female, Kerala, Wayanad, Kalpetta, Puthurvayal (11° 37' N 76° 6' E), 6-ii-2003, T.C. Narendran & party; 1 Female, Kerala, Onattukara (9° 10' N 76° 30' E), 19-iv-2004, T.C. Narendran & party; 1 Female, Kerala, Trivandrum District, Vellayani (8° 42' N 77° 9' E), 1-vii-2002, Raji; 1 Male, Kerala, Munnar, Madupetty (9° 58' 76° 17' E), 11-i-2004, T.C. Narendran & party; 1 Female, INDIA, Tamil Nadu, Coimbatore (11° 0' N 76° 58' E), 1-ix-1987, T.C. Narendran & party; 3 Females, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 10-xii-1979, M. Hayat; 1 Male, Aligarh (27° 53' N 78° 04' E), ix- 1992, M. Hayat; 2 Females, INDIA, West Bengal, Sunderbans (30° 24' N 77° 40' E), 1-iv-2008, P. Girish Kumar (NZI); 2 Females, INDIA, West Bengal (22° 34' 10.92? N 88° 22' 10.92? E), Gudish Basti, 07-vi-2008, F. R. Khan; 3 Females, INDIA, West Bengal (22° 34' 10.92? N 88° 22' 10.92? E), New Jaipaiguri, 30-v-2008, F. R. Khan; 1 Female, INDIA, Uttar Pradesh, Qayamganj, Baryala, 07-ix-2007, F. R. Khan; 2 Females, INDIA, West Bengal, Cooch Bihar (26° 22' N, 89° 29' E), 25-v-2008, F. R. Khan; 2 Females, INDIA, Punjab, Pathankot (32° 17' N, 75° 42' E), 11-vii-2006, S. M. A. Badrudhin & F. R. Khan; 2 Females, INDIA, Himachal Pradesh, Mandi, Chandiyal (30° 43' N, 76° 47' E), 26-vi-2006, S. M. A. Badrudhin & F. R. Khan; 1 Female, INDIA, Sikkim, Gangtok (27° 20' N 88° 40' E), 4-v-2008, F. R. Khan. (13 females in ZDAMU).

Remarks : This species comes very close to *Hemipatarsenus indicus* Khan in having similar type of propodeum, general colour including that of clava. However *Hemipatarsenus varicornis* does not have the 'Y' shaped longitudinal brownish bands on propodeum as in *Hemipatarsenus indicus*

Genus *Hyssopus* Girault

1916. *Hyssopus* Girault, [268], 115. Type species *Hyssopus thymus* Girault, by original designation.

1946. *Hyssopicus* Ghesquiere, 370. Unnecessary replacement name for *Hyssopus* thought to be preoccupied by *Isopus* Montrouzier—see Bou ek, 1988.

1955. *Crataepoides* Masi, in Zinna, 66-68. Type species *Crataepoides russoi* Zinna, by original designation. (Schauff, 1985 synonymized).

Diagnosis : Pronotum large semiglobose in dorsal view; MLM with 2 pairs of setae; funicle 4 segmented; scutellum with sublateral grooves; propodeum with a median carina; callus fully pubescent on margin; gaster sessile.

Host : Primary ectoparasites of Caterpillars of Tortricidae, Pyralidae, Coleophoridae, Gelechiidae.

Distribution : India (New Record), America, West Palaearctic, Australia and New Zealand.

Remarks : This genus comes very near *Elachertus* Spinola in general appearance and Bou ek (1965) once regarded it as a subgenus of *Elachertus*. It differs from *Elachertus* in having: 1) MLM with only 2 pairs of setae (in *Elachertus* MLM with 3 pairs or several setae) and 2) pronotum subglobose (in *Elachertus* pronotum not subglobose).

Key to Indian species of *Hyssopus* Girault

1. Pronotum and scutellum smooth and shiny; head and mesosoma black; metasoma brown *H. licinus* Narendran sp. nov.
- Pronotum and scutellum atleast weakly reticulate; colour variable 2
2. Body mostly brown, without any metallic tinge; gaster 1.33x as long as wide; F3 2x as long as wide; PMV 0.55x length of MV; sublateral groove of scutellum not united posteriorly *H. kamrupicus* Narendran sp. nov.
- Body mostly black with slight metallic tinge on head and mesosoma; gaster 1.7x as long as wide; F3 1.13x as long as wide; PMV 0.40x length of MV; sublateral grooves of scutellum united posteriorly
..... *H. indicus* Narendran sp. nov.

1. *Hyssopus indicus* Narendran sp. nov.

(Figs. 301-304)

Female : (Holotype) Length 1.63 mm. Head black with metallic green refringence; eyes gray; ocelli reflecting dark brown; flagellum dark brown; pedicel brown with apex pale; scape pale; mandibles brown; mesosoma black with slight metallic green tinge; tegulae pale yellowish brown; legs pale yellow; metasoma black with T1 basally slightly pale, anterior part of black portion of gaster with slight metallic green refringence; ovipositor pale yellowish brown; wings hyaline with veins pale brown.

Head width 1.1x its height in anterior view; width in dorsal view 2.27x its length; occiput not margined, concave medially; frons and vertex weakly reticulate; POL 2.2x OOL; AOL slightly shorter than OOL; LOL shorter than AOL; WIOS 2.36x POL; MS present; malar space 0.44x height of eye in profile; eye pilose; eye length in profile 0.73x eye height; antenna inserted slightly below level of ventral margin of eyes; scape not reaching anterior ocellus; scrobe relatively deep but margins ecarinate; relative L : W of antennal segments: scape = 35 : 8; pedicel = 16 : 8; F1 = 9 : 8; F2 = 8 : 9; F3 = 9 : 8; F4 = 9 : 8; clava = 29 : 9.

Mesosoma narrower than head width in dorsal view; notauli complete; pronotum semiglobose, finely reticulate; mesoscutum shorter than pronotum, finely reticulate; MLM with 2pairs of setae; scutellum finely and regularly reticulate; sublateral grooves meeting each other posteriorly; scutellum with 2pairs of setae; dorsellum faintly rugulose, not very shiny; propodeum smooth, median carina present; plical carina faint; spiracle separated from metanotum by a distance shorter than its diameter; callus with 11-14 setae on either side; hind coxa weakly rugose; forewing 2.23x as long as broad; speculum not distinct; CC 8x as long as its width; relative length of CC = 32; SMV = 22; MV = 37; PMV = 15; STV = 12.

Metasoma : Petiole slightly visible, transverse; metasoma shorter than mesosoma; posterior margin of T1 convex; gaster 1.7 x as long as its width.

Male : Similar to female but funicular segments longer and gaster relatively shorter.

Host : Unknown.

Distribution : India (West Bengal).

Material examined : Holotype : Female, INDIA, West Bengal, Siliguri (26° 42' N, 88° 25' E), Bagdogra, 28-v-2008, F R. Khan, (NPC). Paratype: 1 Male, INDIA, Kerala, Malappuram District, Thenjipalam (11° 07' N 75° 53' E), 15-v-2004, T.C. Narendran & party.

Depository : Holotype deposited at NPC.

Remarks : This new species comes near the type species in general appearance but differs from it in having (1) legs completely yellow (in *H. thymus* only trochanters, lips of tibiae broadly and the tarsi yellow); (2) F3 not wider than long (in *H. thymus* F3 wider than long); (3) clava not wider than funicle (in *H. thymus* clava wider than funicle) and 4) F4 not wider than long (in *H. thymus* F4 wider than long).

2. *Hyssopus kamrupicus* Narendran sp. nov.

(Figs. 305-309)

Female : (Holotype) Length 1.14 mm. Head brownish black with slight metallic green refringence; eyes gray; ocelli pale reflecting brown; scape pale yellow; pedicel pale brown; flagellum yellowish brown; mesosoma brownish black with anterior part of pronotum slightly paler and propodeum pale brown; mesosoma without metallic refringence; tegula pale brown; wings hyaline with veins pale brown.

Head : Width in anterior view 1.3x its height; width in dorsal view 2.23x its length; occiput not margined posteriorly, concave medially; POL 1.5x OOL; AOL a little shorter than OOL; LOL shorter than AOL; WIOS 3.2x POL; head faintly reticulate; MS present; malar space 0.36x eye height in profile; eyes sparsely pubescent; antenna inserted at level of ventral margin of eyes; scape not reaching level of front ocellus; relative L: W of antennal segments: scape = 33 : 6; pedicel = 14 : 7; F1 = 11 : 8; F2 = 13 : 8; F3 = 14 : 7; F4 = 12 : 9; clava = 23 : 8.

Mesosoma narrower than head in dorsal view; notauli complete; pronotum semiglobose; faintly reticulate; mesoscutum shorter than pronotum, faintly reticulate, with 2 pairs of setae; scutellum weakly and longitudinally reticulate; sublateral grooves shallow, meeting each other posteriorly; propodeum weakly rugulose; propodeum smooth and shiny with a median carina present, plical carina weakly represented; spiracle separated from metanotum by a distance shorter than its diameter; callus with 9-11 setae on either side; hind coxa faintly reticulate on dorsal side; forewing 2.43x as long as wide; CC 7.6x as long as wide; relative length of CC = 38; SMV = 29; MV = 31; PMV = 17; STV = 10; speculum present, closed behind by cubital line of setae.

Metasoma : Petiole hardly distinct; subequal in length to mesosoma; 1.33x as long as wide; posterior margin of T1 straight.

Male : Unknown

Host : Unknown.

Etymology : Named after the locality of Holotype.

Material examined : Holotype : Female, INDIA, Assam, Kamrup (26° 53' N and 90° 39'E), Bodapahar, 30-x-2008, F.R.Khan, (NPC). Paratype : 1 Female same data of Holotype, (ZDAMU).

Depository : Holotype deposited at NPC.

Remarks : This species comes near *H. indicus* Narendran sp. nov. in general appearance but can be separated by the characters given in the key.

3. *Hyssopus licinus* Narendran sp. nov.

(Figs. 310-311)

Female : (Holotype) Length 1.75 mm. Head and mesosoma black; metasoma brown; eyes gray; ocelli pale reflecting yellow; antenna dark brown with base of scape pale; coxae brown; femora light brown with apex paler; tibia pale yellow; first 3 tarsal segments pale yellow; fourth tarsal segment pale brown; wings hyaline with veins pale brownish yellow.

Head width 1.14x its height in anterior view, width 2.2x its length in dorsal view; occiput not margined, slightly concave medially; frons and vertex faintly aciculate; POL 2.3x OOL; AOL a little shorter than OOL; WIOS 2.26x POL; MS present, 0.43x height of eye in profile; eye length in profile 0.71x eye height; eyes very sparsely pubescent; scape not reaching anterior ocellus; scrobe relatively deep but margin ecarinate; relative L : W of antennal segments: scape = 27 : 6; pedicel = 11 : 6; F1 = 8 : 7; F2 = 9 : 7; F3 = 9 : 8; F4 = 9 : 8; clava = 24 : 9.

Mesosoma width equal to head width; pronotum semiglobose, smooth and shiny; mesoscutum shorter than pronotum, finely reticulate; notauli complete; MLM with 2 pairs of setae; scutellum smooth and polished; sublateral grooves turning mesad posteriorly but not meeting each other; dorsellum smooth and shiny; propodeum smooth. Median carina present; spiracle separated from metanotum by a distance slightly more than diameter of spiracle; callus 10-12 setae on either side; hind coxa weakly rugose on dorsal side; forewing 2.24x as long as wide, speculum present, closed behind by cubital line of setae; CC 6.3x as long as wide; relative length of CC = 19; SMV = 14; MV = 15; PMV = 9; STV = 7.

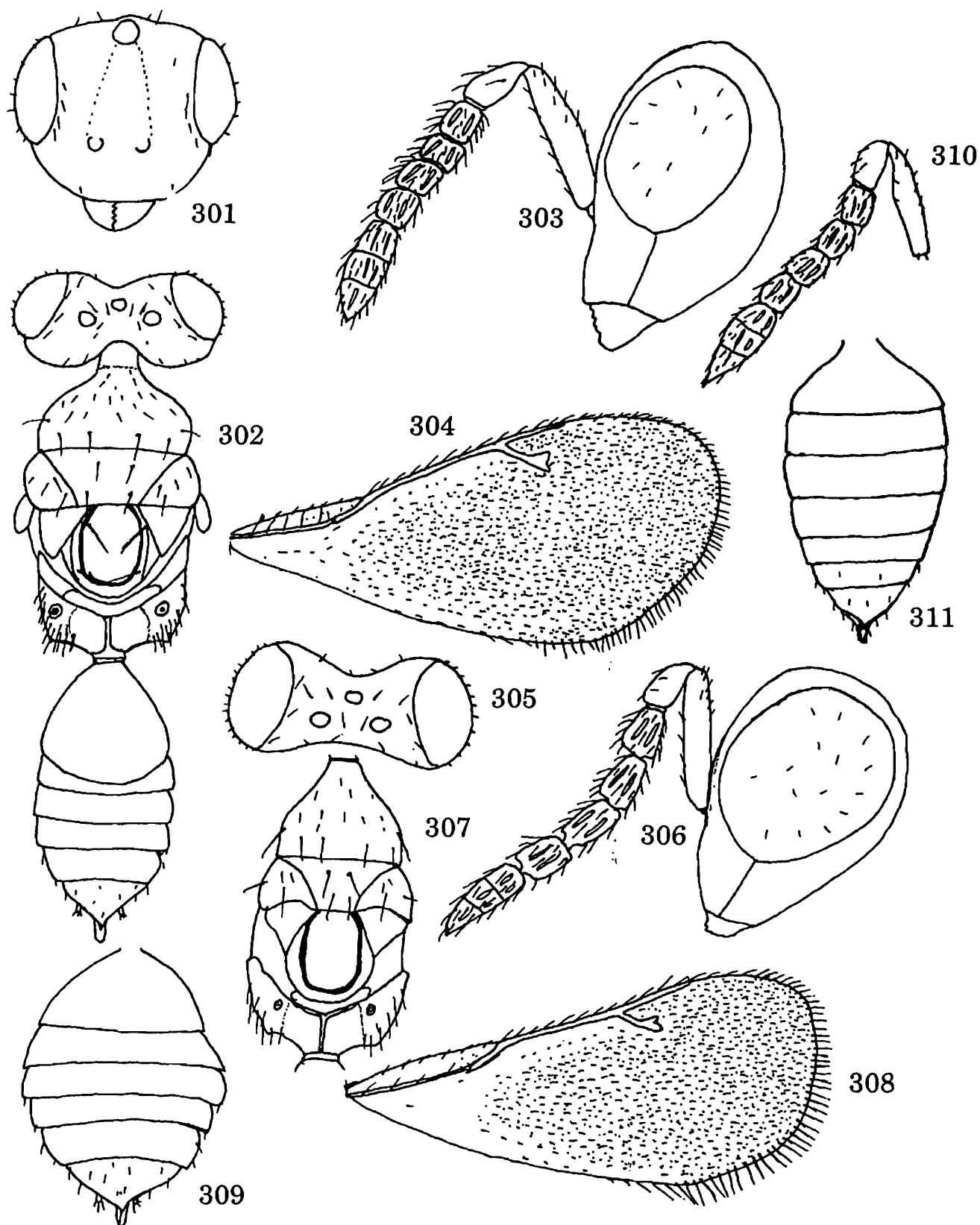
Metasoma : Petiole hardly visible metasoma as long as mesosoma; 1.84x as long as broad; posterior margin of T1 straight.

Male : Unknown.

Host : Unknown.

Material examined : Holotype, Female, Ladakh, Forest Rest House (N 34° 10' 04.8" E 77° 35' 32.4"), 3540 mtrs., 04-vii-2008, P. M. Sureshan.

Depository : Holotype deposited in NZSI.



Figs. 301-304. *Hyssopus indicus* sp.nov. Female : 301. Head anterior view; 302. Body dorsal view; 303. Head & antenna profile; 304. Forewing.
Figs. 305-309. *H. kamrupicus* sp.nov. Female : 305. Head dorsal view; 306. Head & antenna profile; 307. Mesosoma dorsal view; 308. Forewing; 309. Gaster.
Figs. 310-311. *H. licinus* sp.nov. Female : 310. Antenna; 311. Gaster.

Remarks : This new species differs from all other Indian species of *Hyssopus* in having: smooth and polished scutellum and pronotum, sublateral grooves of scutellum not united medially and in different proportion of antennal segments and forewing veins.

Genus *Metaplectrus* Ferrière

Metaplectrus Ferrière, 1941 : 18, 19 Type species *Metaplectrus thoseae* Ferrière, by monotypy.

Diagnosis : Hind tibia with a single spur, length of spur longer than first hind tarsal segment; propodeum with a distinct median carina and lateral plicae; scutellum with sublateral grooves; petiole short, transverse.

Host : Gregarious parasites of Lepidoptera.

Distribution : Sri Lanka, Taiwan and Australia.

Key to Oriental species of *Metaplectrus* Ferrière

(Based on Females)

1. Antennal scrobes black 2
- Antennal scrobe orange or yellow 3
2. Scutellum with a black line near base; area below tegula with a black spot; F1 1.4x length of pedicel; clava 1.6x as long as broad; petiole transverse; metasoma 0.9x as long as mesosoma; eyes sparsely pubescent; WIOS 2.7x POL *M. solitarius* Gadd
- Scutellum and area under tegula not as above; F1 1.6x as long as pedicel; clava 2.1x as long as broad; petiole subquadrate; metasoma 0.7x as long as mesosoma; eyes densely pubescent; WIOS 3.4x POL; (extra limital-Taiwan) *M. politus* Linnaeus
3. Vertex with two black patches lateral to ocelli; metasoma shorter than mesosoma and sharply pointed posteriorly *M. thoseae* Ferrière
- Black patches lateral to ocelli absent; metasoma as long as mesosoma and obtusely pointed posteriorly *M. teresgaster* Wijesekara & Schauff

1. *Metaplectrus solitarius* Gadd

(Fig. 168-169)

1945. *Metaplectrus solitarius* Gadd, 333. Lectotype Female, Ceylon [=Sri Lanka], Passara (USNM).

Diagnosis : (Based on Wijesekara & Schauff, 1994).

Female : Colour orange-yellow except following areas which are black: antennal scrobes, two spots lateral to ocelli, large patch on occiput, collar region of pronotum

including the carina, line near the base of scutellum, spots under tegulae, band across the base of the propodeum; sides of the metasoma and the posterior dorsal surface of metasoma except the tip; head with 1.5x its height; head width in dorsal view 2.8x its length; MS present; POL 1.8x OOL; AOL shorter than OOL; LOL shorter than AOL; WIOS 2.7x POL; eyes sparsely setose; antennal toruli situated at or a little above level of ventral margin of eyes; relative L : W of antennal segments: scape = 32 : 5; pedicel = 10 : 6; F1 = 14 : 6; F2 = 12 : 7; F3 = 11 : 8; F4 = 10 : 9; clava = 16 : 10; scutellum reticulate in the middle and coriaceous at sides; axillae coriaceous; propodeum smooth; petiole short, transverse; metasoma 0.9x as long as mesosoma; T2 covering 0.5x the length of mesosoma.

Male : Similar to female except for a shorter metasoma.

Host : Solitary parasite of *Thosea cervina* Walker, *Narosa conspersa* Walker (Lepidoptera: Limacodidae).

Distribution : Sri Lanka.

Remarks : This species comes near the Taiwanese species *M. politus* (Linnaeus) in the colour of the scrobe, but differs from it in having : (1) Scutellum with a black line near base (in *M. politus* no such black line on scutellum); (2) a black spot under tegula (no black spot under tegula in *M. politus*); (3) petiole transverse (in *M. politus* petiole subquadrate); (4) WIOS 2.7x POL (in *M. politus* WIOS 3.4x POL).

2. *Metaplectrus teresgaster* Wijesekara & Schauff

(Figs. 170-171)

1994. *Metaplectrus teresgaster* Wijesekara & Schauff, 24. Holotype Female, Sri Lanka, Hunnasgiriya (USNM).

Diagnosis : (Based on Wijesekara & Schauff, 1994).

Female : Length 1.8mm. Colour orange-yellow except patch on the occiput and posterior margin of T3 and T4 black (one specimen with black spots at the sides of dorsellum and near propodeal spiracles); head width 1.4x height in anterior view; head width in dorsal view 2.8x as wide as long; POL 1.5x OOL; AOL shorter than OOL; LOL as long as AOL; WIOS 3.2x POL; MS distinct; eyes sparsely pubescent; antennal toruli situated at level of ventral margin of eyes; scape not reaching level of anterior ocellus; relative L : W of antennal segments : scape = 29 : 6; pedicel = 11 : 5; F1 = 15 : 7; F2 = 12 : 7; F3 = 12 : 7; F4 = 11 : 7; clava = 15 : 9.

Mesosoma : Pronotum distinctly carinated in front; MLM with scattered setae anteriorly; scutellum reticulate in the middle and coriaceous at sides, with distinct lateral grooves; propodeum with distinct median carina and lateral plicae; hind

tibial spur slightly longer than first hind tarsal segment; forewing 2.1x as long as broad; MV1.5x as long as PMV, 2.5x as long as STV

Metasoma : Petiole transverse; metasoma as long as mesosoma, obtusely pointed at apex.

Male : Unknown.

Host : Unknown.

Distribution : Sri Lanka.

Remarks : This species can be distinguished from *M. thoseae* Ferrière in having : (1) vertex with two black patches lateral to ocelli absent (in *M. thoseae* vertex with two black patches lateral to ocelli present); (2) metasoma as long as mesosoma (in *M. thoseae* metasoma shorter than mesosoma) and (3) metasoma obtusely pointed posteriorly (in *M. thoseae* metasoma sharply pointed posteriorly).

3. *Metaplectrus thoseae* Ferrière

(Figs. 172-173)

1941. *Metaplectrus thoseae* Ferrière, 19. Lectotype selected by Wijesekara; Schauff, Female, Sri Lanka, Passara (BMNH) (examined).

Redescription : Female : Length 2.2 mm (Lectotype). Body yellow except the following areas black; two small patches lateral to ocelli, small area on occiput, pronotal carinae absent, spot under tegulae and a band before tip of metasoma; antennal scrobes yellow; scape and pedicel yellow, remaining segments brown.

Head : Width in anterior view 1.4x its height, width in dorsal view 2.75x its length; POL 1.6x OOL; AOL shorter than OOL; LOL shorter than AOL; WIOS 3x POL; MS present; eyes pubescent; antennae inserted at level of ventral margin of eyes; scape not quite reaching anterior ocellus; F1 longer than pedicel; two anelli present; relative L : W of antennal segments: scape = 27 : 5; pedicel = 10 : 5; F1 = 13 : 7; F2 = 13 : 6; F3 = 12 : 8; F4 = 12 : 8; clava = 17 : 9.

Mesosoma : Pronotum strongly and transversely carinated in front, finely rugulose; MLM slightly rugulose; scutellum reticulate medially with thin lateral grooves; propodeum smooth with distinct median carina (not developed into a cup like structure anteriorly), plicae indicated on posterior half of propodeum; apical tibial spur of hind tibia a little longer than first hind tarsal segments; forewing veins SMV equal to MV; STV one-third of MV' PMV 1.5x STV

Metasoma : Shorter than mesosoma, sharply pointed posteriorly; 1.4x as long as broad; T1 exceeding a little beyond middle of gaster.

Male : Similar to female except in having shorter length, black colour on occiput and pronotal carina absent.

Hosts : *Thosea cervina* Walker, *Darna nararia* (Moore) (Lepidoptera: Limacodidae).

Distribution : Sri Lanka, Indonesia (Ferriere, 1941).

Material examined : Lectotype. Female, BMNH (No. Hym 5. 1215), Ceylon, Passara (6° 56' N 81° 09', V- 1929 (J. C. Hutson).

Remarks : This species resembles *M. solitarius* Gadd in general appearance but differs from it in having: 1) antennal scrobe orange (in *M. solitarius* antennal scrobe black) and 2) metasoma 1.3-1.4x as long as broad (in *M. solitarius* metasoma 1.7x as long as broad).

Genus *Mohaniella* Khan

1995. *Mohaniella* Khan, 3-7. Type species *Mohaniella indica* Khan, by original designation.

Diagnosis : (Based on Khan 1993). Antenna inserted well above level of lower margin of eyes; funicle 4 segmented, clava 2 segmented; pronotum with distinct cross carina at anterior margin; mesoscutum with incomplete notauli; MLM without any smooth reticulations; scutellum flat with sublateral grooves (Fig. 1 of Khan 1993); axilla not advanced anteriorly, almost meeting each other anteriorly; propodeum with median carina and plicae; PMV longer than STV; petiole 2.7x as long as propodeum, about half as long as gaster; gaster sublobose (Fig. 1 of Khan 1993), almost as wide as long.

Host : Lepidopteran leaf miners.

Distribution : India.

Remarks : This genus comes near *Petiolacus* Bou ek in the key to genera by Bou ek (1988) but differs from *Petiolacus* in having : (1) petiole without median crest (petiole with median crest in *Petiolacus*); (2) mesosoma smooth with reticulations (in *Petiolacus* mesosoma with reticulations); (3) axillae almost touching each other at anterior median part (in *Petiolacus* axillae well separated); (4) forewing without any band (in *Petiolacus* forewing bifasciate).

Mohaniella indica Khan

1995. *Mohaniella indica* Khan, 3-7. Holotype Female, India, Mussoorie (GBPU? Or NZSI?).

Diagnosis : (Based on Khan 1993).

Female : 2.5 mm. General body colour yellow ("yellow" of Khan 1993); head a little wider than its height in anterior view; eyes sparsely setose; antennae inserted well above level of lower margin of eyes; MS distinct, mandible tridentate; antennal formula 11042; relative L : W of antennal segments (as from Fig.1 of Khan 1993); scape = 13 : 3; pedicel = 4 : 2; F1 = 10 : 3; F2 = 9 : 4; F3 = 9 : 4;

F4 = 8 : 4; clava = 10 : 3; pronotum with anterior and posterior margin deeply arched; MLM with 2 pairs of setae and each scapula with a single strong seta; scutellum with 3 pairs of setae; each axilla with a seta; forewing 2.7x as long as broad; speculum narrow and closed behind; relative length of CC = 37; SMV = 35; MV = 31; PMV = 17; STV = 9; propodeum and metasoma as described under genus characters.

Male : Unknown.

Host : Lepidopteran leaf minors.

Distribution : India : Uttarakhand.

Material examined : None.

Remarks : A request for loan of the type remained unanswered. Dr. Girish Kumar on my request searched the National collection of Zoological Survey of India, Kolkata and informed me that the types are not so far deposited there as stated in the paper.

Genus *Necremnoides* Girault

1913. *Necremnoides* Girault, [167] : 288. Type species *Necremnoides tricarinatus* Girault, by original designation.

Diagnosis : Antennal funicle 4 segmented both in female and male; scutellum with distinct lateral longitudinal grooves; notauli weakly represented posteriorly often indistinct; propodeum with distinct plicae; petiole short or inconspicuous or indistinct.

Host : Unknown.

Distribution : India, Australia.

Remarks : This species is very close to the genus *Elachertus* Spinola but differs from *Elachertus* in having notauli distinct throughout, scutellum with distinct sublateral or lateral grooves and with distinct propodeal plicae. In *Elachertus* scutellum with lateral grooves absent, notauli distinct throughout, propodeal plicae mostly absent.

1. *Necremnoides harithodaris* Narendran

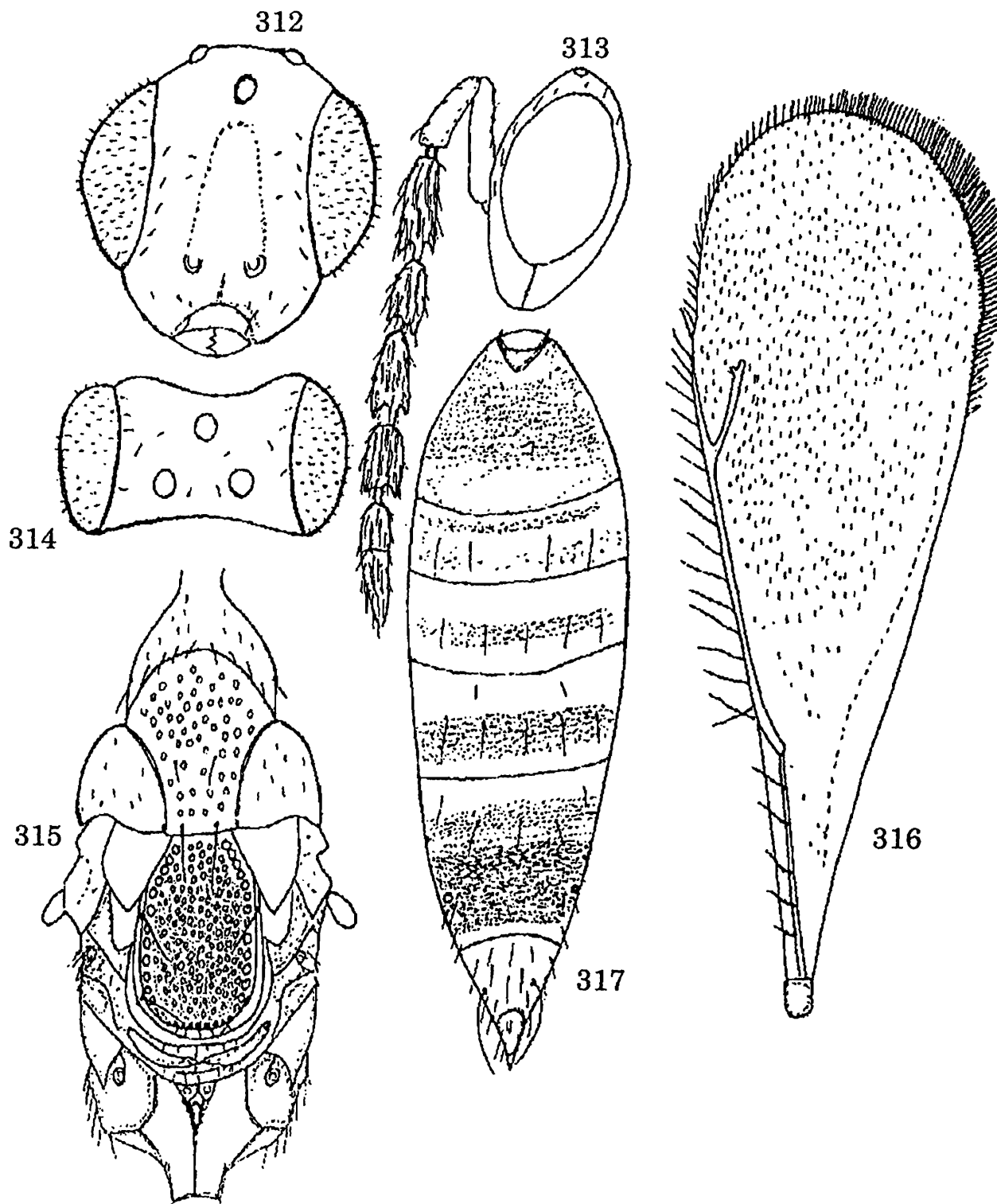
(Figs. 312-317)

2005. *Necremnoides harithodaris* Narendran, in Narendran *et al.*, 149. Holotype Female, India, Kozhikode, Nanminda (DZUC pending transfer to ZSIK) (examined).

Redescription :

Female : Length 1.45 mm. Head dark brown with lower face pale yellowish brown; ocelli yellowish; eye dark brown with pale yellow margin; antenna brown

with scape and F1 pale brownish yellow; mesosoma yellowish brown; legs pale yellow; gaster dark metallic green; wings hyaline, veins pale brown with stalk of STV paler; pubescence on head and body yellowish white with stronger setae of mesosoma darker.



Figs. 312-317. *Necrimnoides harithodaris* sp. nov. Female : 312. Head anterior view; 313. Head & antenna profile; 314. Head dorsal view; 315. Mesosoma dorsal view; 316. Forewing; 317. Gaster.

Head width in anterior view 1.27x its height in dorsal view; width in dorsal view (68: 23) a little more than 2.95x its median length; vertex transversely reticulate; occipital carina present; POL 1.5x OOL; AOL equal to OOL; LOL shorter than AOL; WIOS 3x POL; MS distinct; malar space 0.3x eye height in profile; eyes pubescent; eye length in profile 0.79x eye height in profile; antenna inserted at level of ventral margin eyes; scape not reaching level of vertex; relative L : W of antennal segments: scape = 23 : 5; pedicel = 16 : 6; F1 = 19 : 10; F2 = 11 : 8; F3 = 16 : 8; F4 = 12 : 9; calava = 23 : 7.

Mesosma : Pronotum without transverse carina; reticulate; MLM distinctly punctate; interstices weakly reticulate; scapula reticulate punctate; MLM with 2 pairs of setae; scutellum a little longer or subequal to MLM, with distinct close pits, with 2 pairs of strong setae; lateral longitudinal grooves shallow joining posteriorly; dorsellum smooth, with a single median tooth projecting posteriorly; a translucent lobe present posterior to this tooth; propodeum with the median carina forked at base; spiracle distinctly separated from metanotum by a distance subequal to diameter of spiracle; costula arising from plica join side margin; callus with 5- 6 setae; forewing length 2.42x its width; speculum present and closed posteriorly by cubital line of setae; relative length CC = 44; SMV = 41; MV = 60; PMV = 15; STV = 17.

Metasoma distinctly longer than mesosoma; ovate, T1 with a basal fovea, with long pubescence from T2 to apex of gaster, weakly granulate reticulate; one cercal seta longer than remaining one on either side.

Male : Similar to female except for the shorter gaster, funicular segments subequal in length except F4 which is shorter than others and gaster black with T1 yellow.

Host : Unknown.

Remarks : This is the only species of the genus recorded so far from Indian Subcontinent. It differs from the Australian species *Necremnoides tricarinatus* Girault in having : (1) pedicel longer than F2 and F4 (in *N. tricarinatus* pedicel shorter than any of the funicular segment); (2) F2 to F4 not gradually shortening and F3 longer than F2 (in *N. tricarinatus* F2 to F4 gradually shortening); (3) MV 1.46x SMV (in *N. tricarinatus* MV about equal to SMV or a little longer) and (4) body not olive green (in *N. tricarinatus* body olive green).

Necremnoides harithodaris Narendran differs from *Necremnoides fulvipropodeum* Girault in having : (1) pedicel distinctly longer than F4 (in *N. fulvipropodeum* pedicel not quite as long as F4); (2) gaster with petiole indistinct or absent (in *N. fulvipropodeum* Girault gaster with a short petiole visible) and

(3) mesosoma completely yellowish brown (in *N. fulvipropodeum* mesosoma predominantly dark metallic green except propodeum; postscutellum and petiole chestnut brown).

Genus *Necremnus* Thomson

1878. *Necremnus* Thomson, 208, 234. Type species *Eulophus leucarthros* Nees, designated by Ashmead, 1904a: 358.

Diagnosis : (Based on Bou ek, 1959, and Nikol'skaya, 1963).

Female : Antennae inserted below middle of face; funicle and clava 3 segmented; scape about 2x as long as POL; funicle segments sometimes very long, F3 always oblong; male funicle with long and slender branches; scutellum subquadrate or longer than broad, without sublateral longitudinal grooves; PMV at most 1.7x as long as STV, often shorter; anterior margin of clypeus entire; notauli indicated in front only or indistinct; hind tibia with 2 spurs; propodeum with median carina present.

Host : Lepidoptera & Coleoptera.

Distribution : India, Europe.

1. *Necremnus leucarthros* (Nees)

(Figs. 318-320)

1834. *Eulophus leucarthros* Nees, 172. Female Germany, Bonn? (University of Bonn museum?)

1846. *Eulophus anaxippus* Walker, 182. Lectotype Female, United Kingdom, near Dover (BMNH) Bou ek & Askew (1968 : 65) synonymized.

1841. *Eulophus cornucopiae* Foerster, 44. Bou ek (1959) synonymized.

1861. *Eulophus teratocerus* Foerster, 37. Switzerland (MHNG?) Bou ek & Askew (1968 : 65) synonymized.

2007. *Necremnus arthros* (*lapsus calami* for *Necremnus leucarthros* (Nees) by Yefremova (Noyes, 2003).

Diagnosis : Female : Length 1.9- 2.1mm; body dark green; forewing without dark spots or infuscations; F1 of female at most 1.8x as long as pedicel; first hind tarsal segment pale; mid and hind tibiae fuscous except knees; PMV about 1.5x as long as STV; propodeum or nearly, plicae lacking or indicated as weak lines posteriorly. Gaster 2.1x as long as wide.

Male : Antennal funicle with branches stouter, covered by stiff adpressed hairs.

Hosts : *Hypera postica* (Gyllenhae) (Coleoptera : Curculionidae) (Subba Rao *et al.*, 1967).

Distribution : India : Delhi, Himachal Pradesh. Palaearctic.

Material examined : 2 Females, INDIA, Himachal Pradesh, Solan, Kanoh and Rabon (30°55'N, 77°7'E), 20-iii-2009 & 18-iii-2008, S. B Anis & T. Rehmat, (ZDAMU).

Remarks : This is the only species of the genus *Necremnus* from Indian subcontinent. This species is the best known and most widely distributed species of the genus. It comes near *Necremnus tidius* (Walker) in having forewing immaculate; antennae in female shorter, F1 atmost 1.8x as long as pedicel and mid and hind tibiae fuscous except knees. However *N. leucarthros* differs from *N. tidius* in having : (1) body dark green (in *N. tidius* body bronze or greenish bronze); (2) branches of male antenna stouter (in *N. tidius* branches of male antenna thin) and (3) hairs of branches of male antenna stiff adpressed bristles (in *N. tidius* hairs of branches of male antenna long).

Genus *Notanisomorphella* Girault

1913. *Notanisomorphella* Girault, [167] : 287. Type species *Notanisomorphella australiensis* Girault by original designation.

1917 *Craeteulophus* Masi, 206. Type species *Craeteulophus niger* Masi, by monotypy. (Bou ek 1988 : 627 synonymised).

1952. *Raurua* Risbic, 188. Type species *Raurua australis* Risbec, by monotypy (Bou ek, 1988 : 627 synonymised).

Diagnosis : Female : Vertex narrow; mesosoma strongly punctate; mesoscutm pilose even in median part; propodeum with large median area (reticulate or smooth) delimited on sides, mesad of post spiracular groove and posteriorly, by distinct step- like or carinate edge (plica) and with strong median carina.

Male : Antenna with 3 branches.

Host : Parasites of Microlepidoptera, Leaf mining hespine beetles and in spider eggs (hyper parasitic?) (Bou ek, 1988).

Distribution : India (New Record); warmer parts of Asia, Europe, Africa and Australia.

Remarks : This genus is closely related to *Sympiesis*, but constitutes a rather distinct group (Bou ek, 1988); However, *Notanisomorphella* Girault differs from *Sympiesis* Foerster in having an irregularly step-like plicae.

Key to Indo-Australian species of *Notanisomorphella* Girault

(Based on females)

1. Propodeum not strongly punctured-reticulate, smooth and shiny (or weakly scaly); coxae blue or blackish blue or black; body dark steel blue with propodeum and base of gaster dorsad green 2

- Propodeum strongly punctured-reticulate; other characters may or may not as above 3
- 2. Femora dark brown with base and apex pale yellow
.....*N. manjerica* Narendran sp. nov.
- Femora completely yellow *N. proserpinensis* (Girault)
- 3. Metasoma pale brownish yellow with margin dark; hind coxa pale yellow or pale brownish yellow *N. flaviventris* (Girault)
- Metasoma black or dark metallic green or blue; coxae mostly concolorous with mesosoma or atleast basally darker 4
- 4. Coxae and femora concolorous with mesosoma (mostly dark metallic green or blackish green); F1 nearly as long as scape *N. femoratus* Girault
- Coxae and femora not concolorous with mesosoma; F1 much shorter than scape 5
- 5. Propodeum with a tooth like protuberance (apex of tooth broad) on either side posteriorly; F1 0.53x length of scape; hind coxa with basal half dark brown with metallic refringence, remaining part white
.....*N. walarica* Narendran sp. nov.
- Propodeum without a tooth like protuberance as above; F1 0.43x length of scape; hind coxa completely pale yellow
..... *N. cheriani* Narendran sp. nov.

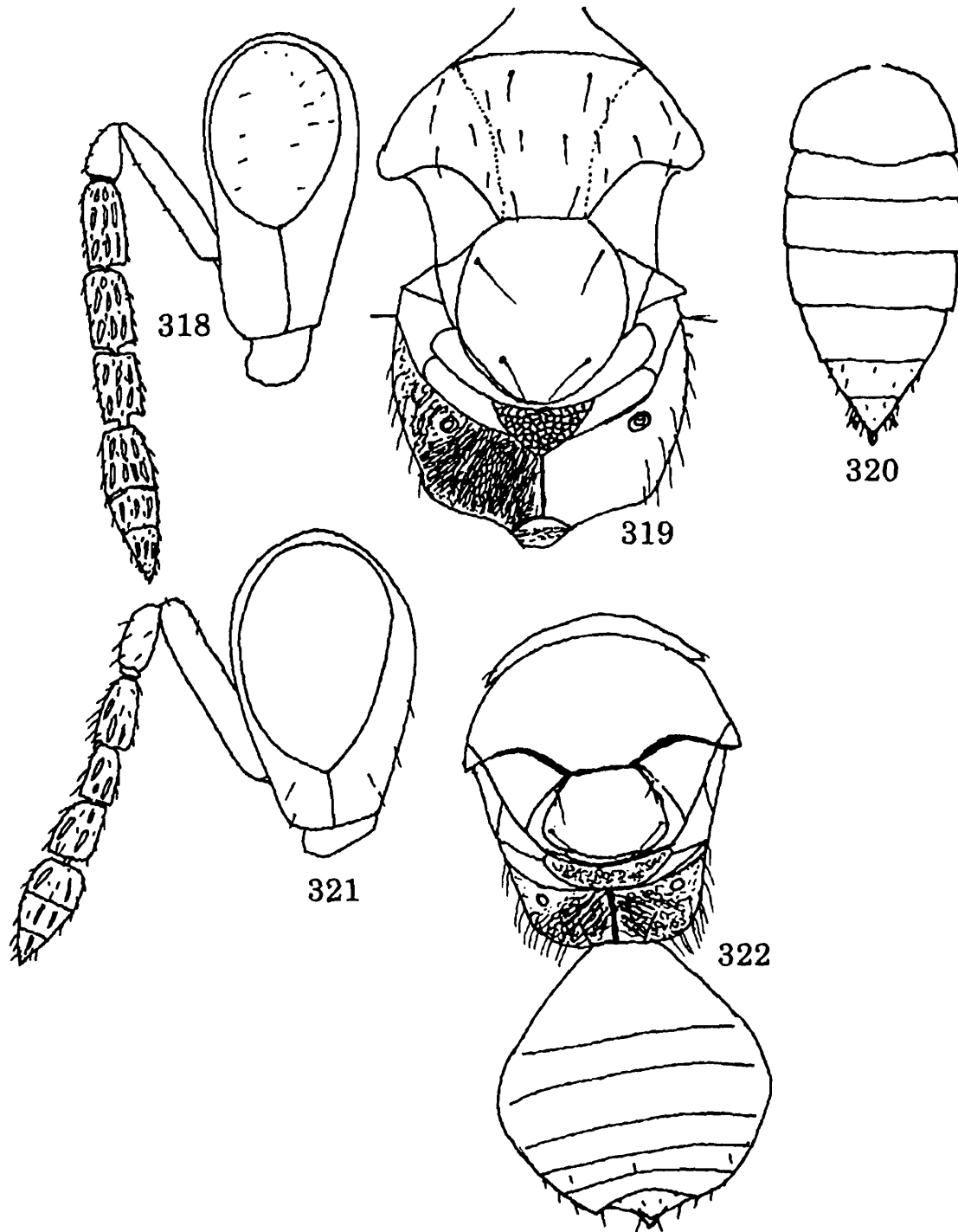
1. *Notanisomorphella cheriani* Narendran sp. nov.

(Fig. 322)

Female : (Holotype) Length 2.53 mm. Head and mesosoma metallic green; metasoma dark metallic green dorsally, dull brown ventrally; eyes gray with black patches; antennal scape pale yellow with slightly brownish apically; pedicel brown; funicle and clava blackish brown; tegula and legs (including coxae) pale brownish yellow; wings hyaline with veins pale brown.

Head distinctly reticulate, with scattered pits on vertex; width in anterior view 1.31x its height; width in dorsal view 2x its length; occiput medially a little concave; occipital carina absent; POL 2x OOL; AOL shorter than OOL; LOL equal to AOL; WIOS 2.83x POL; MS distinct; malar space 0.27x eye height in profile; eyes mostly bare with 4 or 5 very minute scattered setae; eye length in profile 0.8x eye height; antenna inserted a little above level of ventral margin of eyes; scape not reaching anterior ocellus; relative L : W of antennal segments: scape = 30 : 7; pedicel = 11 : 7; F1 = 13 : 7; F2 = 10 : 8; F3 = 10 : 9; F4 = 10 : 9; clava = 21 : 9.

Mesosoma distinctly raised reticulate with 3 pairs of setae; notauli indistinct; axilla well advanced anteriorly, well separated from each other; scutellum broader than long (11 : 9), 0.82x length of MLM; dorsellum distinctly reticulate, propodeum strongly punctate- reticulate; with distinct median carina and irregular plicae; spiracle separated from metanotum by a distance subequal to diameter of spiracle; hind coxa weakly reticulate dorsally; hind tibial spurs hardly reaching half of



Figs. 318-320. *Necremnus leucarthros* (Nees) Female : 318. Head & antenna profile; 319. mesosoma dorsal view; 320. Gaster dorsal view. **Figs. 321-322.** *Eulophus razaki* sp.nov. Female : 321. Head & antenna profile; 322. Mesosoma & gaster.

first hind tarsal segment; forewing 2.3x as long as wide; speculum relatively small, closed behind by cubital line of setae; relative length of CC = 56 : SMV = 40; MV = 64; PMV = 28; STV = 12; CC 5.3-6x as long as wide.

Metasoma longer than mesosoma (22 : 17), about 2.5x as long as its width, ovate; posterior margin of T1 not very convex medially.

Male : Unknown.

Host : Unknown.

Distribution : India (Meghalaya).

Material examined : Holotype Female, INDIA, Thingdowl, (Mizoram), 6-iii-1977, P. T. Cherian.

Depository : Holotype deposited in ZSIK.

Etymology : The species name is in honour of Dr. P.T. Charian who collected the specimen and for his significant contributions to the taxonomy of the dipteran family Chloropidae.

Remarks : This species comes near *Notanisomorphella walayarica* Narendran sp. nov. in having metallic green refringence and propodeum punctate-reticulate but differs from *N. walayarica* Narendran sp. nov. in having : (1) propodeum without tooth like protuberance posteriorly (in *N. walayarica* Narendran sp. nov. propodeum with broad tooth like protuberance posteriorly); (2) plicae irregular and running not on outer lateral parts of spiracle and in several other features.

2. *Notanisomorphella flaviventris* (Girault)

(Figs. 323-324)

1913. *Notanisomorphella flaviventris* Girault, [167] : 287. Holotype Female, Australia (QM).

1988. *Hemiptarsenus aligarhensis* Shafee & Rizvi, 15. Female, India, Uttar Pradesh, Aligarh (ZDAMU) Hayat & Aftab, in Hayat *et al.*, (2005) synonymised.

Redescription : *Female* : Length : 1.97-2.1 mm. Head black with slight metallic green refringence; eyes gray (variable in some specimens having dark patches); ocelli reflecting brown or reflecting pale yellow; scape and pedicel pale yellow, remaining segments of antenna brown (or pale brown in some specimens); mesosoma black often with slight metallic green refringence; tegula pale yellow; metasoma pale brownish yellow with side margin darker; ovipositor sheath black; legs pale yellow; metasoma pale brownish yellow with side margin darker; ovipositor sheath black; legs pale yellow (in some specimens coxae pale brownish yellow); wings hyaline, veins pale brownish.

Head highly sclerotised, not collapsing, distinctly reticulate; width in anterior view 1.4x its height; width in dorsal view 2.6x its length; occiput vertical; occipital

carina absent; POL 1.6x or 1.7x OOL; AOL shorter than OOL; LOL shorter than AOL; WIOS 2.8x POL; MS distinct; malar space 0.26x eye height in profile; eyes bare; eye length in profile 0.59x its height; antenna inserted a little above level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments: scape = 40 : 8; pedicel = 12 : 7; F1 = 20 : 9; F2 = 17 : 8; F3 = 18 : 9; F4 = 16 : 9; clava = 19 : 10.

Mesoscutum with raised polygonally reticulated forming nearly like punctures; pronotum with 3 rows of bristles; mesoscutum without notauli, with scattered bristles; axilla a little advanced anteriorly, well separated from each other; scutellum longer than mesoscutum, as long as wide, with 2 pairs of setae; dorsellum reticulate; propodeum with a distinct median carina; submedian areas similarly sculptured as in scutellum; plical carina running to proximal margin of spiracle; spiracle separated from metanotum by a distance subequal to diameter of spiracle; propodeum without a tooth like structure posteriorly on either side; hind coxa with reticulation on dorsal side; hind tibial spur shorter than half length of first hind tarsal segment; forewing length 2.1-2.3x as long as wide; speculum closed behind by cubital line of setae; relative length of CC = 18; SMV = 13; MV = 17; PMV = 5; STV = 3, CC = 6.5-7x as long as wide.

Metasoma sessile equal to mesosoma, 1.22x as long as wide in dorsal view (in some specimens gaster a little more longer than width and slightly longer than mesosoma); posterior margin of T1 almost straight.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala, Tamil Nadu, Karnataka, Uttar Pradesh, Delhi) Australia, South East Asia.

Material examined : 1 Female, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 8-iv-1989, T.C. Narendran; 1 Female, Kerala, Malappuram District, Karimpuzha (11° 18' N 76° 15' E) (Near Nilambur), 22-iv-1989; 1 Female, Kerala, Calicut District, Cheruvannur (11° 12' N 75° 49' E), 21-ix-2002, T.C. Narendran; 1 Female, Kerala, Alleppey District (9° 30' N 76° 20' E), Ayiram Tengu, 21-ii-1989, T.C. Narendran & party; 2 Females, Kerala, Kasaragod, CPCRI (12° 33' N 74° 58' E), 21-i-2003, T.C. Narendran & party; 2 Females, Alappuzha District, Kayamkulam (9° 09' N 76° 30' E), 19-1v-2004, T.C. Narendran & party; 2 Females, Kerala, Kottayam District, Kumarakom (9° 42' N 76° 26'), 17-iv-2004, T.C. Narendran & party; 1 Female, Karnataka (13° 20' 60" N 74° 46' 60" E), Acmkotte, 25-v-2003, P. A. Sinu; 2 Females, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), viii-1983, S. S. Islam; 3 Females, INDIA,

Himachal Pradesh (31°30' N, 77° 00' E), Una, Behdala, 6.ii.2006 & 22-vi-2006, SMA Badrudin & F R. Khan; 1 Female, Uttar Pradesh, Farrukkabad (7°30' 0? N 79° 30' 0? E), Chandpur, 13-x-2006, F R. Khan; 1 Female, Uttar Pradesh, Mainpuri (27° 14' N, 79° 03' E), 06-ix-2007, F R. Khan. (5 females in ZDAMU)

Remarks : This species differs from *Notanisomorphella walayarica* Narendran sp. nov. in having: propodeum without tooth like protuberance at posterior side (in *N. walayarica* Narendran sp. nov. propodeum with a tooth like protuberance on either side posteriorly); (2) gaster pale brownish yellow (in *N. walayarica* Narendran sp. gaster black with metallic bluish green refringence); (3) eyes bare (eyes densely pilose in *N. walayarica* Narendran sp. nov.); (4) propodeal plical carina not running to outer side of spiracle (in *N. walayarica* Narendran sp. nov. plicae running to outer side of spiracle) and in many other characters). It differs from *N.manjerica* Narendran sp. nov. in having propodeum strongly punctured reticulate (in *N.manjerica* propodeum smooth and shiny)

3. *Notanisomorphella manjerica* Narendran sp. nov.

(Fig. 325)

Female : (Holotype) Length 1.9 mm. Black with metallic bluish green refringence on propodeum and T1; scape and pedicel pale yellow, remaining antennal segments dark brown; tegula pale brownish; all coxae concolorous with mesosoma, with apex a little pale; femora dark brown with bases and apices pale; all tibiae and tarsi pale yellowish white; pretarsi brown; wings hyaline with veins pale brown.

Head collapsing a little; width in anterior view 1.2x its height; POL 2.83x OOL; AOL a little shorter than OOL; LOL equal to AOL; WIOS 2.8x POL; MS distinct; malar space 0.44x eye height in profile; eyes mostly bare with 4 or 5 very minute scattered setae; antenna inserted at level of ventral margin of eyes; scape not reaching anterior ocellus; relative L : W of antennal segments: scape = 36 : 7; pedicel = 11 : 7; F1= 18 : 8; F2 = 16 : 9; F3 = 15 : 9; F4 = 14 : 9; clava = 21 : 9.

Mesosoma polygonally reticulated forming areas near like punctures; with 14 pairs of setae; scutellum a little longer than mesoscutum a little shorter than wide (8: 9); axilla advanced anteriorwards; dorsellum and propodeum smooth and shiny with very faint reticulations; median carina and plicae present; spiracle separated from metanotum by a distance less than its diameter; hind coxa weakly reticulate; hind tibial spur subequal in length to half of first hind tarsal segment; forewing 2.26x as long as its width; speculum relatively large closed behind by cubital line of setae; relative length of CC = 56; SMV = 40; MV = 64; PMV = 24; STV = 8; CC 6.5-7x as long as wide.

Metasoma a little longer than mesosoma (18 : 15), 1.64x as long as its width in dorsal view; T1 slightly convex at its posterior margin.

Male : Unknown.

Host : Unknown.

Distribution : INDIA (Kerala).

Material examined : Holotype. Female : INDIA, Kerala, Malappuram District, Manjeri (11° 07' N 76° 07' E), 4-x-2003, T.C.Narendran & party.

Depository : Holotype deposited in Department of Zoology, University of Calicut, Kerala, India, pending transfer to ZSIK or NZSI.

Etymology : Named after the locality of the Holotype.

Remarks : This new species comes very close to the Australian *Notanisomorphella proserpinensis* Girault in general appearance and the only difference I could gather from the literature is that the femora and tibiae are dark brown (with apices pale) in the new species whereas they are white in *N. proserpinensis* and F1 distinctly shorter than clava (in *N. F1* as long as clava).

4. *Notanisomorphella walayarica* Narendran sp. nov.

(Figs. 326-329)

Female : (Holotype) Length 2.14 mm. Head and mesosoma black with slight metallic blue tinge; metasoma black with metallic bluish green refringence on T1; eyes grayish yellow; ocelli brown with margin slightly pale; scape pale yellow; pedicel pale brownish yellow; remaining antennal segments a little darker; legs pale white with basal part of hind coxa dark brown and pretarsi brown; wings hyaline with veins brown.

Head distinctly reticulate and punctate; width in anterior view 1.23x its height; width in dorsal view 2.7x its length; occiput a little concave; subvertical, occipital carina absent; POL 1.77x OOL; AOL subequal to OOL; LOL subequal to OOL; WIOS 3.3x POL; MS distinct; malar space 0.4x eye height in profile; eyes densely pilose; eye length in profile 0.64x eye height; antenna inserted at level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments : scape = 34 : 55; pedicel = 10 : 7; F1 = 18 : 9; F2 = 15 : 10; F3 = 15 : 11; F4 = 12 : 10; clava = 17 : 10.

Mesosoma : Pronotum, mesoscutum, scutellum and propodeum with raised reticulations nearly like punctures, with scattered sparse bristles on mesoscutum; notauli absent; axillae well separated each other, a little advanced anteriorly; scutellum as long as MLM; dorsellum weakly reticulate; propodeum with a distinct

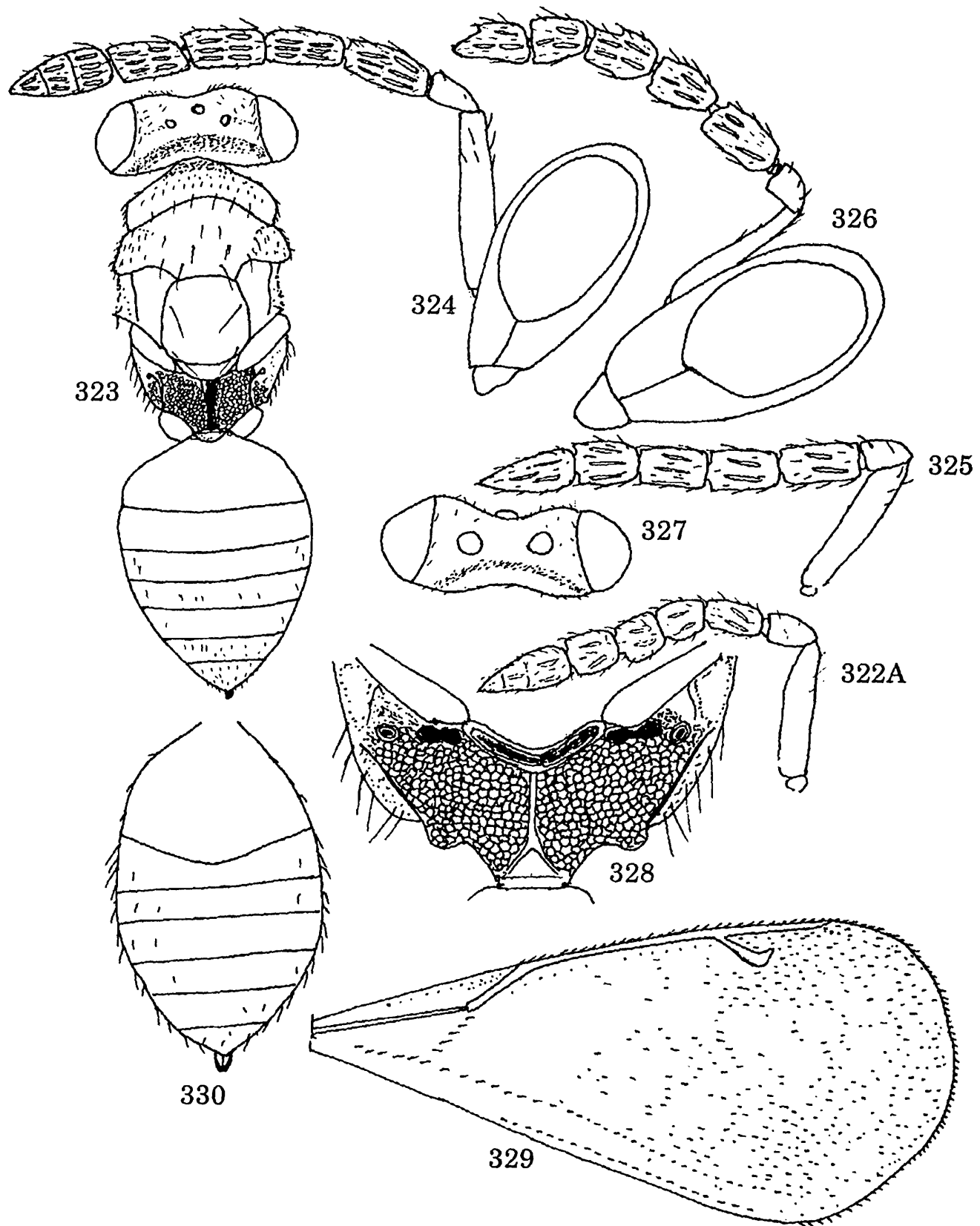


Fig. 322A. *Notasiomorphella cheriani* sp.nov. Female antenna; **Figs. 323-324.** *N. flaviventris* (Girault) Female. 323. Body dorsal view; 324. Head and antenna profile. **Fig. 325.** *N. manjerica* sp.nov. Female antenna; **Figs. 326-329.** *N. wayalarica* sp.nov. Female : 326. Head & antenna profile; 327. Head dorsal view; 328. Propodeum; 329. Forewing; 330. Gaster.

median carina; plical carinae obliquely running to outer side of spiracle; propodeum strongly reticulo-punctate, with a tooth like protuberance posteriorly (Fig.328), apex of protuberance broad; spiracle separated from metanotum by a distance subequal to its diameter; hind coxa distinctly cross striate and reticulate dorsally; hind tibial spurs hardly reaching half length of first hind tarsal segment; forewing 2.2x as long as wide, speculum closed behind by cubital line of setae; relative length of CC = 49; SMV = 36; MV = 47; PMV = 24; STV = 11; CC = 8.2 as long as wide.

Metasoma subsessile; a little shorter than mesosoma (13 : 11); 1.72x as long as wide; posterior margin of T1 convex.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala).

Material examined : Holotype, Female, INDIA, Kerala, Walayar Forest (10° 51' N 76° 09' E), 4-iii-1993, S.B. Zeya and S. I. Kazmi.

Depository : Holotype deposited in ZDAMU.

Remarks : This new species resembles the Australian *Notanisomorphella femoratus* Girault in the general colour of head and mesosoma but differs from *N. femoratus* in having : (1) coxa and femora not concolourous with mesosoma (in *N. femoratus* coxa and femora concolourous with mesosoma); (2) F1 0.53x length of scape (in *N. femoratus* F1 nearly as long as scape); and (3) propodeum with tooth like protuberance posteriorly (in *N. femoratus* no such tooth like protuberance posteriorly on propodeum).

This species may represent an undescribed genus since the plicae of propodeum are outside spiracle and oblique. I am keeping this species provisionally under *Notanisomorphella*, pending collection of further material.

Genus *Perthiola* Bou ek

1988. *Perthiola* Bou ek, 602. Type species: *Perthiola mazaneci* Bou ek, original designation.

2003 *Manipurella* Narendran, in Narendran *et al.*, 23. Type species *Manipurella moringae* Narendran, by original designation. (Reina & LaSalle 2005 synonymised).

Diagnosis : Antenna with nine segmented flagellum; first flagellar segment shorter than second; radicula more than half length of scape, at least 2x as long as wide; MV thickened and distinctly shorter than PMV; notauli deep and complete to scutoscutellar groove; scutellum with longitudinal grooves absent, with 2-5 pairs of short stae; gaster sessile or subsessile.

Host : Galls of *Morinda angustifolia* (Rubiacea) and galls of? *Baeckea* sp. (Myrtacea) (Narendran et. al 2003 & Reina & La Salle, 2005)

Distribution : India and Western Australia.

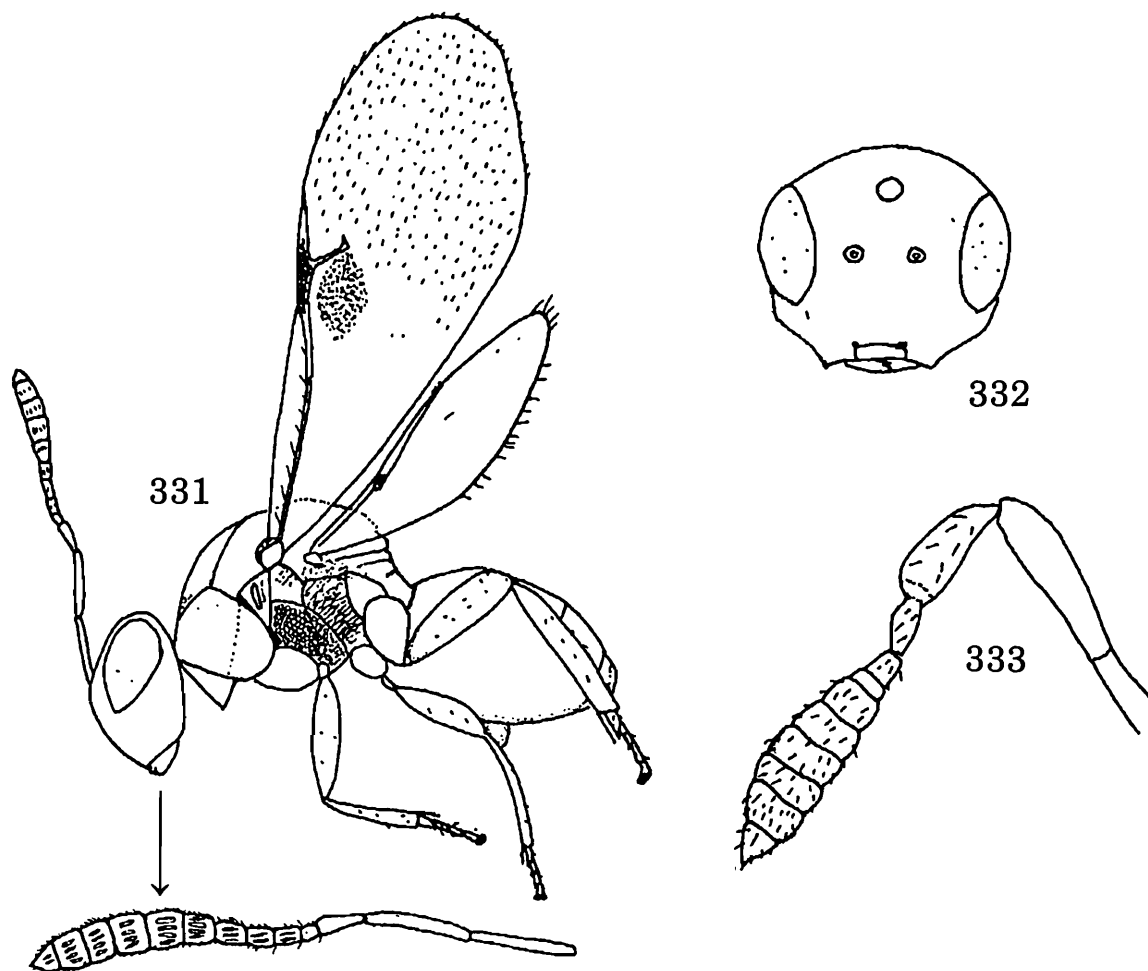
***Perthiola moringae* (Narendran)**

(Figs. 331-332)

2003. *Manipurella moringae* Narendran, in Narendran et al., 24. Holotype Female, India, Manipur, Trilbung. (ZSIK) (examined).

2005. *Perthiola moringae* (Narendran): Reina & LaSalle, 222.

Redescription : *Female* : Length 2-4 mm. Black with metallic green refringence (in paratype metallic green colour brighter than Holotype); antenna blackish brown with radicula paler; all coxae brownish black; all femora blackish brown with base and apex paler; trochanter and tibia pale brown; tarsi pale brown, metanotum black; forewing with MV dark brown, with brown patch adjacent to it; SMV and MV paler.



Figs. 331-332. *Perthiola moringae* Narendran Female : 331. Body profile & antenna; 332. Head anterior view; **Fig. 333.** *Anselmella kerrichi* (Narayanan, Subba Rao & Patel) Female antenna.

Head reticulate with sparse short pubescence, mostly bare; width in anterior view a little over 1.2x its height; width in dorsal view 3x its median length; POL a little over 1.6x OOL; maximum diameter of eye in profile 1.6x length of malar space; malar space reticulate; MS absent; tentorial pits distinct and placed ventral to lower level of eye; antenna inserted middle of face; radicula as long as scape; pedicel 3x as long as first flagellar segment; second flagellar segment a little about 1.7x first flagellar segment; fourth flagellar segment a little longer than third but as long as fifth or sixth; seventh shorter than sixth; eighth segment as long as sixth; ninth flagellar segment as long as seventh.

Mesosoma : Pronotum hardly visible in dorsal view; MLM distinctly and transversely reticulate with faint median line posteriorly indicated which extends to scutellum a little distance basally; mesoscutum without distinct pair of setae; mostly asetose; scutellum width subequal to its length; dorsellum very short; propodeum without distinct median carina or plicae; spiracle placed midway between anterior and posterior margin of propodeum; foretibial spur slightly longer than first tarsal segment; forewing a little shorter than 2.3x its width, with spectral veins radiating from STV absent; costal cell relatively long 0.42x length of forewing; PMV longer than STV; SMV with 9 dorsal setae; costal cell asetose.

Metasoma sessile; a little shorter than mesosoma; T1 longest; its posterior margin sinuate in the middle, hypopygium ending at middle length of gaster.

Male : Unknown.

Host : Laef galls of *Morinda angustifolia* (Rubiaceae).

Distribution : India : Manipur (Trilbung, 800mtrs.).

Material examined : Holotype and Paratype (ZSIK).

Remarks : In the key to species of *Perthiola* by Reina & LaSalle (2005) this species comes near the Australian *Perthiola bouceki* Reina & LaSalle, but differs from it in having; (1) forewing without spectral veins radiating from STV (in *P. bouceki* forewing with one spectral vein radiating from STV); (2) scape as long as radicula (in *P. bouceki* scape longer than radicula) and foretibial spur slightly longer than first tarsal segment (in *P. bouceki* fore tibial spur shorter than first tarsal segment).

Genus *Platyplectrus* Ferrière

1941. *Platyplectrus* Ferrière, 20. Type species *Platyplectrus natadae* Ferrière, by original designation.

1945. *Autoplectrus* Gadd, 336. Synonymy by Bouček 1988. Type species *Autoplectrus tabrobanes* Gadd; original designation.

1941. *Euplectromorpha* of Ferrière, (not Girault, 1913: [167]) [Misidentification according to Bou ek, 1988: 634]

Diagnosis : Propodeum not areolate, with one strong median carina, raised anteriorly to form a cup or tongue or semirectangular projection; scutellum with lateral longitudinal grooves or furrow on either sides; often meeting each other on posterior margin medially; hind tibia with two tibial spurs of one is longer than first hind tarsal segment.

Host : Gregarious or solitary ectoparasites of Lepidoptera.

Distribution : All zoogeographical regions, except the Neotropical region.

Key to species of *Platyplectrus* Ferrière of Indian Subcontinent

1. Occiput rounded (without occipital carina) 2
- Occiput margined (with occipital carina) 9
2. Pronotum with distinct transverse carina 3
- Pronotum with transverse carina absent 6
3. Head including antennae yellow; scrobe black; mesosoma black with lateral panel of pronotum and tegula brownish yellow; legs yellow; median carina of propodeum developed into an inverted subtriangular spine like process anteriorly; F1 as long as pedicel; LTS a little longer than first two hind tarsal segments together *P. ericatus* Narendran sp. nov.
- Head black with or without metallic refringence; median propodeal carina developed into a cup like structure and not as a spine like structure 4
4. Petiole a little longer than wide; head black with green or bluish green refringence; eyes densely pilose; hind femur yellow with slightly brown patch on dorsoapical part *P. viridiceps* (Ferrière)
- Petiole broader than long; head black but without any metallic refringence; eyes sparsely pubescent; hind femur black or dark brown with base and apex pale or hind femur reddish brown 5
5. MV 1.5x as long as PMV; F1 2x as long as pedicel; AOL a little longer than OOL; LTS as long as first two hind tarsal segments together; antenna inserted a little above level of ventral margin of eyes (general colour of body black) *P. kuriani* Wijesekara
- MV 2.1x as long as PMV, F1 shorter than 2x length of pedicel; AOL equal to OOL; LTS shorter than first two hind tarsal segments together; antenna inserted a little below level of ventral margin of eye (general colour of body as in alternate balck) *P. obscurata* (Ferrière)

6. Head and mesosoma completely black; hind coxa black; hind femur brown with base and apex pale; hind tibia pale brownish yellow; fore and mid legs pale brownish with coxae brown; F1 as long as pedicel; MLM with median longitudinal carina absent; MV 1.8x as long as PMV
 *P. daricus* Narendran sp. nov.
- Body mostly yellow; legs including coxae yellow; F1 distinctly longer than pedicel; other characters partly or completely different 7
7. Median longitudinal carina of MLM absent; funicle and clava black; propodeum black*P. baricus* Narendran sp. nov.
- Median longitudinal carina of MLM present; funicle and clava yellow or whitish yellow; propodeum yellow 8
8. Antenna with 2 anelli; POL subequal to OOL
 *P. flavus* Wijesekara & Schauff
- Antenna with anelli absent; POL much longer than AOL, (F1 with dense white setae in male)*P. tabrobanes* (Gadd)
9. Pronotum with longitudinal, parallel short carinae attaching to transverse carinae, scutellum with large strong reticulations, lateral grooves not quite distinctly demarcated; F3 shorter than F4; head, mesosoma and hind coxa black.....*P. bussyi* (Crawford)
- Pronotum with such longitudinal parallel short carinae absent; other characters partly or completely different 10
10. Pronotum with transverse carina present 11
- Pronotum with transverse carina absent 14
11. Occipital carina developed into a translucent lamina along posterior margin 12
- Occipital carina not developed into a translucent lamina 13
12. Clava strongly truncated at apex (Fig.356). 1.2x as long as broad; dorsellum with two distinct teeth like projections towards posterior side; POL 1.5x OOL; F1 1.4x as long as pedicel*P. oricus* Narendran sp. nov.
- Clava truncated but not as sharply as above (Fig.348), 1.6x as long as broad; dorsellum not as above; POL 1.3x OOL; F1 2.3x as long as pedicel
 *P. melinus* Wijesekara & Schauff
13. Propodeal carina developed into a peculiar tongue shaped, translucent, protuberance anteriorly; both occipital and post occipital carinae present; scutellum smooth, eyes densely setose; eye height 2x as long as malar space
 *P. natadae* Ferrière

- Propodeal carina developed into a cup like protuberance, not tongue shaped; post occipital carina absent; scutellum reticulate medially; eyes sparsely setose; eye height shorter than 2x malar space.....
..... *P. gannoruwaensis* Wijesekara & Schauff
- 14. Occipital carina developed into a translucent protuberance (lamina) along posterior margin; clava sharply truncated, 1.1x as long as broad (Fig.357)
..... *P. truncatus* Wijesekara & Schauff
- Occipital carina not developed into a translucent lamina along posterior margin; clava not as above 15
- 15. Head completely dark metallic green; eyes densely setose; lateral grooves of scutellum not meeting each other medially at posterior margin; hind femur yellowish brown with base and apex pale; WIOS 3.4x POL.....
..... *P. yarensis* Narendran & Jilcy.
- Head not as above either completely black without metallic refringence or if with metallic refringence then area below toruli and malar space pale yellow; lateral grooves of scutellum meeting medially at posterior margin; hind femur uniformly coloured; WIOS different from above..... 16
- 16. Head black with metallic green refringence except yellow area below toruli and malar space; POL 2x OOL; legs including coxae yellow; mesosoma completely yellow; lateral grooves of scutellum narrow, not foveolate
..... *P. nilamburicus* Narendran sp. nov.
- Head completely black without metallic refringence; POL 1.4x OOL; hind coxa dark brown; mesosoma black; lateral grooves of scutellum wide, deep and irregularly foveolate.....*P. coracinus* Wijesekara & Schauff

1. *Platyplectrus baricus* Narendran sp. nov.

(Figs. 334-335)

Female : (Holotype) Length 2.54 mm. Body yellow except the following parts; ocelli located in a triangular dark brown area; an inverted 'V' shaped median part of scrobe, F4 to lip of clava, scutellum (except sides) and propodeum black; pedicel and dorsal lip of scape pale brown; eyes grayish yellow; ocelli brown; metasoma with petiole pale yellow; T1 brown with middle part yellow; T2 pale brown; remaining tergites black; sternites yellow; a black spot on anterior part of pronotum black; sides of metanotum dark brown.

Head width in anterior view 1.45x its height; width in dorsal view 2.2x its length; POL 1.7x OOL; LOL a little shorter than AOL; OOL a little longer than AOL (3 : 2.5); WIOS 2.8x POL; vertex separated from frons by a short transverse

carina; occipital carina absent; postoccipital carina present; vertex and occiput smooth; MS and epistomal suture present; malar space from lower eye margin to lower margin of gena 0.45x height of eye in profile; eye height 1.6x its length in profile; antennal toruli situated at level of ventral margin of eyes; eyes bare; scape reaching level of anterior ocellus, one anellus present, F1 1.7x as long as pedicel, 2.5x as long as broad; clava as long as F1 or a slightly longer; relative L : W of antennal segments scape = 42 : 8; pedicel 12 : 6; F1 = 20 : 8; F2 = 16 : 11; F3 = 17 : 11; F4 = 17 : 11; clava = 21 : 11.

Mesosoma : Pronotum shorter than mesonotum, almost rounded in front, transverse carina absent, surface cross reticulate-striate, fully scattered setae, 2 pairs of setae near posterior margin stouter, one stouter setae on either side; posterior margin of pronotum slightly sinuate; MLM coriaceous, with scattered setae, one pair of setae near posterior margin stouter; median longitudinal carina absent; scutellum as long as broad, a little longer than MLM, with distinct raised reticulations, lateral longitudinal groove with large pits, grooves meeting each other posteriorly; dorsellum smooth; propodeum smooth, median carina developed into an anterior protuberance at anterior end of propodeum. LTS shorter than first two hind tarsal segments together; forewing 2.53x as long as broad; speculum absent, fully setose; CC with two rows of ventral setae and one row anterior marginal setae; relative length of CC = 15; SMV = 12; MV = 18; PMV = 6; STV = 3.

Metasoma : Very short, transverse; metasoma distinctly shorter than mesosoma.

Male : Unknown

Host : Unknown

Distribution : India (Kerala).

Material examined : Holotype Female, INDIA, Kerala, Wayanad District (10° 21' N 77° 25' E), Tirunelli Village, Appappara , 31-x-1988, T.C. Narendran & party.

Depository : Holotype deposited in the Department of Zoology, University of Calicut, Kerala state, pending transfer to ZSIK or NZSI.

Remarks : In the key to species of *Platyplectrus* of Sri Lanka by Wijesekara & Schauff (1994), this new species comes to *P. flavus* Wijesekara & Schauff but differs from it in having : (1) MLM without a median longitudinal carina (in *P. flavus* MLM with a median longitudinal carina); (2) median lobe of scutellum black (in *P. flavus* median lobe of scutellum yellow; (3) scape reaching level of front ocellus (in *P. flavus* scape not reaching level of front ocellus; (4) F1 1.7x as

long as pedicel (in *P. flavus* F1 2.3x as long as pedicel); (5) POL 1.7x OOL (in *P. flavus* POL 1.1x OOL) and (6) metasoma distinctly shorter than mesosoma (in *P. flavus* metasoma as long as mesosoma).

This new species does not fit to the key to species by Ferrière (1941) and by Zhu and Huang (2004).

2. *Platyplectrus bussyi* (Crawford)

(Fig. 336)

1911. *Euplectrus bussyi* Crawford, 279. Holotype Female, Indonesia, Sumatra (USNM).

1941. *Euplectromorpha bussyi* (Crawford) Ferrière 25.

2004. *Platyplectrus bussyi* (Crawford) Zhu & Huang 2194.

Diagnosis : (Based on Crawford, 1911, Ferrière 1941, Mani, 1989 and Zhu & Huang 2004).

Female : Length : About 2.25 mm. Head completely black; scape white, remaining segments of antenna light brown (in some specimens of South East Asia funicle completely yellow, Zhu & Huang 2004); mesosoma black; legs yellow with hind coxa black, hind femur largely black or dark on dorsal margin; metasoma black with whitish patch dorsally on basal or middle part; sternites whitish; postoccipital carina absent, occipital carina present; F1 longer than pedicel; F2 1.9x as long as wide, shorter than F1; F3 1.3x as long as wide; shorter than F2; F3 a little shorter and wider than F2; F4 as long as wide, longer than F3; clava 1.9x as long as wide, subequal or a little longer than F1; pronotum with distinct transverse carina anteriorly, with longitudinal parallel short carinae attaching to transverse carinae (Zhu & Huang 2004); MLM without median longitudinal carina, with raised reticulation; scutellum reticulate without lateral longitudinal grooves (Fig. 51 Zhu & Huang 2004); reticulations on scutellum large and strong; propodeum with median carina without rami ; LTS a little longer than first two hind tarsal segments together (Fig. 52, Zhu & Huang 2004); petiole about 1.5x as long as wide.

Male : Length about 1.75mm; similar to female except for the stronger sculpture on frons.

Host : Lepidopterous leaf miner of *Pongamia glabra* (Husain & Khan, 1986).

Distribution : India : Delhi, Tamil Nadu; Indonesia, Vietnam, China, Australia.

Remarks : This species is unique in having the cross carina of pronotum with several short longitudinal, parallel carinae & lateral groove not distinctly demarcated from the strongly pitted median part.

3. *Platyplectrus coracinus* Wijesekara & Schauff
(Fig. 339)

1994. *Platyplectrus coracinus* Wijesekara & Schauff, 27. Holotype female, Sri Lanka (USNM).

Diagnosis : (Based on Wijesekara & Schauff, 1994).

Female : Length 1.6-1.8 mm. Colour black except following: scape, pedicel and legs except hind coxa yellow; hind coxa and basal half of the metasoma dark brown; eyes sparsely setose; malar space 0.5x eye height; MS distinct; POL 1.4x OOL; occipital carina well developed, post occipital carina absent; vertex separated from frons by a short transverse lamina; toruli situated at level of ventral margin of eyes; F1 1.8x as long as pedicel; clava shorter than F1; pronotum without a transverse carina; median carina of mesoscutum absent; scutellum rugose in the middle, lateral grooves wide and deep, irregularly foveate (Fig. 102 of Wijesekara & Schauff, 1994), converging posteriorly to meet in the middle; propodeum with well developed median and lateral carinae; LTS as long as first two hind tarsal segments together; forewing 2.8x as long as broad; relative length of SMV = 25; MV = 37; PMV = 23; STV = 10; petiole transverse; metasoma shorter than mesosoma.

Male : Similar to female, length 1.4-1.6 mm; basal half of metasoma black.

Host : Unknown.

Distribution : Sri Lanka.

Remarks : This species comes very near to *P. nilamburicus* Narendran sp. nov. but differs from it in having: (1) head without metallic refringence (in *P. nilamburicus* Narendran sp. nov. head with a metallic refringence); (2) hind coxa dark brown (in *P. nilamburicus* Narendran sp. nov. hind coxa yellow) and (3) lateral grooves of scutellum wide deep foveolated (in *P. nilamburicus* Narendran sp. nov. lateral grooves narrow, not foveolated).

5. *Platyplectrus daricus* Narendran sp. nov.
(Figs. 340-341)

Female : (Holotype) Length 2.1 mm. Colour black except the following: scape, whitish yellow; pedicel and F1 and F2 pale brownish yellow; F3, F4 and clava pale yellowish brown; eyes reddish brown; fore and mid legs pale brownish yellow with coxae brown; hind coxa black, hind femur brown with base and apex pale; hind tibia pale brownish yellow; tarsi pale yellow; all pretarsi dark brown; tegula pale brownish yellow; gaster dark brown with base and sides darker; wings hyaline with veins pale yellow.

Head : Width in anterior view 1.39x its height, width in dorsal view 3x its length; POL 2x OOL; AOL a little shorter than OOL (3.5 : 4); LOL almost equal to OOL; WIOS 3x POL; vertex without any transverse ridge or carina separating frons; occipital carina absent; postoccipital carina present; vertex smooth and shiny; occiput finely aciculate; MS absent; epistomal sulcus absent; malar space in profile 0.45x eye height, eye bare; eye height in profile a little longer than eye length in profile (11 : 10); antenna inserted at level of ventral margin of eyes, scape not reaching anterior ocellus; 2 anelli present; F1 as long as pedicel, 1.5x as long as broad; clava longer than F1, longer than F4; relative L : W of antennal segments : scape = 42 : 8; pedicel 15 : 8; F1 = 15 : 10; F2 = 13 : 11; F3 = 15 : 12; F4 = 13 : 13; clava = 23 : 13.

Mesosoma : Pronotum with distinct, sharp raised cross carian, postcarinal part of pronotum shiny with faint reticulations, area anterior to cross carina distinctly reticulate; pronotum 0.6x length of mesonotum, with 2 pairs of stout setae on cross carina and one each at either side of pronotum; posterior border of pronotum not emarginated, straight; MLM with raised close reticulation, median carina absent, with 8 scattered setae on either side; scapula with two stout setae and a few smaller setae; scutellum as long as wide; scutellum smooth and shiny; lateral longitudinal groove narrow, slightly curved inwards posteriorly, widely separated from each other posteriorly, groove without pits or sculpture; dorsellum smooth and shiny with 6 or 8 small tooth like structure in its posterior margin; propodeum smooth, median carina developed into an anterior arcuate black lobe at anterior end; plicae absent; spiracle touching metanotum, posterior margin of propodeum, beyond posterior end of median carina reticulate; LTS as long as first two hind tarsal segments together; forewing 2.6x as long as broad; speculum relatively small with one or two dorsal setae, closed behind by cubital line of setae; relative length of CC = 15; SMV = 14; MV = 16; PMV = 9; STV = 4.

Metasoma : Petiole 1.43x as long as wide; dorsal side of petiole reticulate; metasoma a little shorter than mesosoma; gaster length subequal to its width.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala).

Material examined : Holotype Female, INDIA, Kerala, Malappuram Dt. (11° 1' 48? N, 76° 3' 0? E), Devathial, Near Calicut University Campus, 16-xii-2003, T.C. Narendran & party.

Depository : Holotype deposited in the Department of Zoology, University of Calicut, Kerala state, pending transfer to ZSIK or NZSI.

Remarks : This new species comes to *P. laeviscuta* Zhu & Huang in the key to Chinese species of *Platyplectrus* by Zhu & Huang (2004) but differs from it in having : (1) petiole 1.43x as long as broad (in *P. laeviscuta* petiole 2-3.5x as long as broad; (2) MS absent (in *P. laeviscuta* MS present); (3) pedicel as long as F1 (in *P. laeviscuta* F1 a little longer than pedicel; (4) malar space 0.45x as long as eye height in profile (in *P. laeviscuta* malar space 0.75x as long as eye height in profile; (6) clava 1.8x as long as F4; (in *P. laeviscuta* clava 2.3x as long as F4).

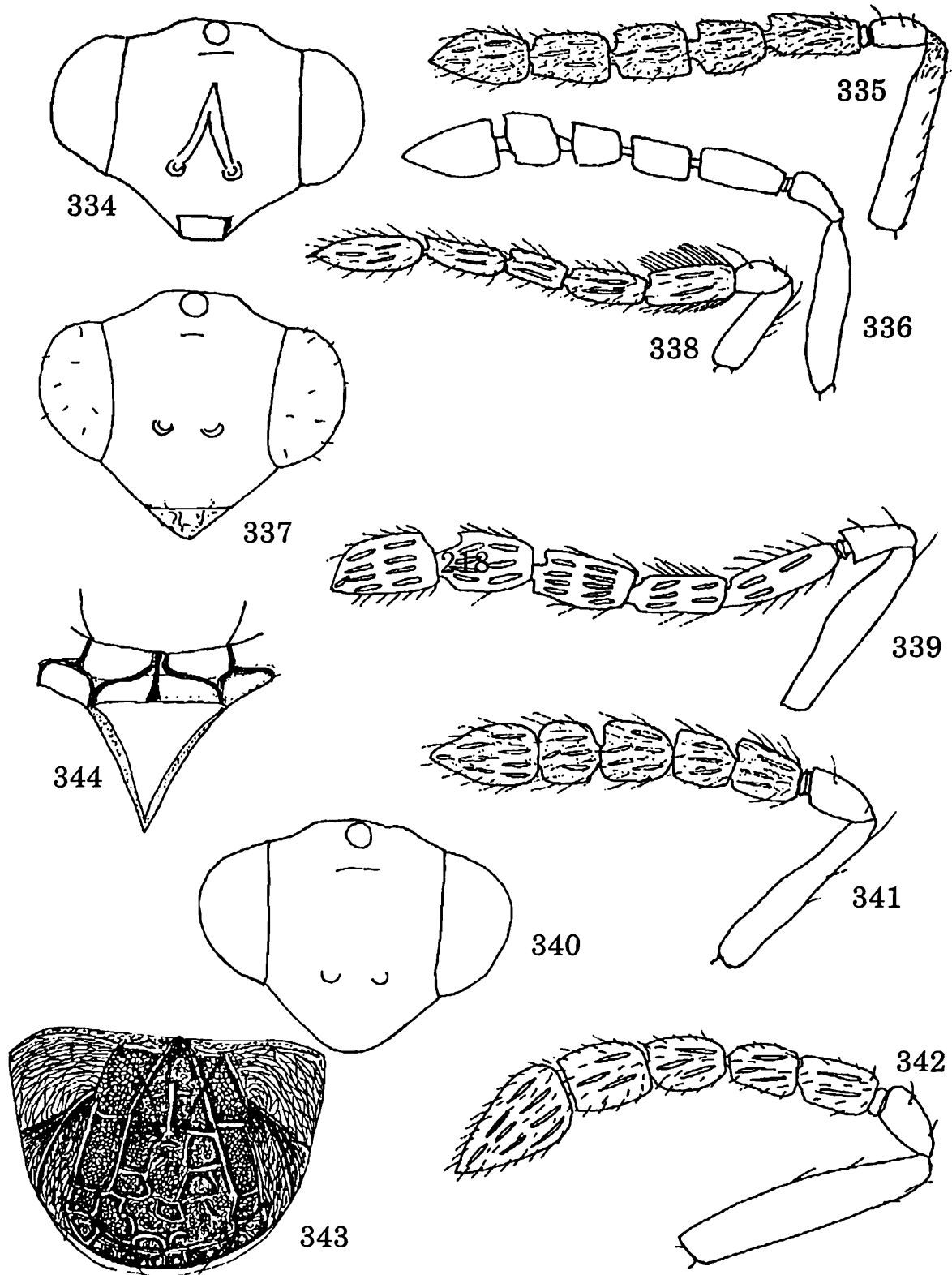
6. *Platyplectrus ericatus* Narendran sp. nov.

(Figs. 342-344)

Female : (Holotype) Length 2.1mm. Head including antenna yellow, except the following: scrobe black; ocelli black; mesosoma black except lateral panel of pronotum and tegula pale brownish yellow; legs and metasoma yellow with light dark patches on side margin and dorsal distal half of metasoma ; wings hyaline with veins pale yellow.

Head width 1.11x its height in anterior view width in dorsal view 2.9x its length; POL 1.6x OOL; AOL shorter than OOL; LOL shorter than AOL; WIOS 3x POL; vertex separated from frons by a short median transverse ridge (or lamina) above scrobe; occipital carina absent, postoccipital carina present; vertex smooth and shiny, occiput faintly aciculate and with scattered pubescence; MS present; epistomal suture present; malar space 0.36x eye height in profile; eye height 1.4x eye length in profile; antenna inserted distinctly well below level of ventral margin of eyes; scape not reaching level of anterior ocellus, antenna with one anellus; F1 as long as pedicel, a little less than 2x as long as broad; clava about 2x as long as F1; relative L : W of segments: scape = 52 : 9; pedicel = 15 : 8; F1 = 16 : 10; F2 = 15 : 10; F3 = 17 : 11; F4 = 18 : 14; clava = 31 : 16.

Mesosoma : Pronotum with transverse carina absent, anteriorly rounded, distinctly and finely reticulate, with dense pubescence and 6 setae, posterior margin weakly concave; pronotum a little shorter than mesoscutum; MLM coarsely reticulate, thickly pubescent, with 2 stout setae near posterior margin; scapula coarsely reticulate and punctate, thickly pubescent, 2 setae stout on each scapula; median longitudinal carina of MLM absent; scutellum a little broader than long, coarsely sculptured with irregular rugae or carinae, with raised granular sculpture, lateral groove large, irregularly foveolated, wide, converging posteriorly to meet in the middle; axillae cross striate; dorsellum foveolated; propodeum distinctly reticulate and with a few pits near median carinae; an oblique carina (plica) present on either side; median carina developed into a median subspine like projection at anterior end; spiracle separated from metanotum by a distance shorter



Figs. 334-335. *Platyplectrus baricus* sp.nov. Female : 334. Head anterior view; 335. Antenna; 336. *P. bussyi* (Crawford) female antenna. **Figs. 337-338.** *P. tabrobanes* (Gadd) Female : 337. Head anterior view; 338. Antenna. **Fig. 339.** *P. coracinus* Wij. & Schauff Female antenna; **Figs. 340-341.** *P. daricus* sp.nov. Female : 340. Head anterior view; 341. Antenna. **Figs. 342-344.** *P. ericatus* sp.nov. Female : 342. Antenna; 343. Scutellum, 344. spine like lamina on base of median propodeal carina.

than its diameter; LTS a little longer than first two hind tarsal segments together (13 : 12); forewing 2.21x as long as wide; speculum relatively small, closed behind by setae; relative length of CC = 22; SMV = 20; MV = 20; PMV = 8; STV = 35.

Metasoma : Petiole slightly visible from dorsal side, transverse; metasoma shorter than mesosoma (9 : 13).

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala).

Material examined : Holotype Female, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 53' E), 5-iv-1989, T.C. Narendran & party.

Depository : Holotype deposited in the Department of Zoology, University of Calicut, Kerala state, pending transfer to ZSIK or NZSI.

Remarks : This is a unique species with the following combination of distinct features which separate it from all other species of Indian subcontinent. (1) antennal clava about 2x as long as wide; (2) funicular segments gradually becoming longer and wider; (3) scutellum with large lateral groove and median area with large irregular pits and rugae with raised granular structure; (4) median carina of propodeum developed into a triangular spine like structure at anterior end; (5) propodeum reticulate; (6) LTS longer than first two hind tarsal segments together, and (7) head yellow.

7. *Platyplectrus flavus* Wijesekara & Scahauff
(Fig. 345)

1994. *Platyplectrus flavus* Wijesekara & Scahauff, 28. Holotype Female, Sri Lanka (USNM).

Redescription : *Female* : Length 2.3-2.5 mm. Colour yellow except three fourth of clava from tip to base pale brown (in some specimens funicle and clava brownish); ovipositor sheath black.

Head width 1.33-4x its height, width in dorsal view 2.33- 2.8x its length; POL subequal to OOL; AOL shorter than OOL; LOL equal to AOL; vertex without any transverse ridge or carina separating frons; occipital carina absent; postoccipital carina present; vertex smooth and shiny; postocciput weakly reticulate; epistomal sulcus indistinct; MS absent; malar space 0.7x eye height; eye height 1.2x eye length in profile; eyes sparsely pubescent; scape not reaching anterior ocellus; 2 anelli present; F1 2.3x as long as pedicel; 2.1x as long as broad; relative L : W of antennal segments: scape = 29 : 7; pedicel 9 : 7; F1 = 21 : 9; F2 = 18 : 10; F3 = 20 : 10; F4 = 19 : 10; clava = 22 : 11.

Mesosoma : Pronotum a little shorter than mesonotum; rounded in front, transverse carina absent; surface coriaceous and covered with short setae; MLM distinctly reticulate but not raised, 10-13 pairs of setae (some smaller); median longitudinal carina present; scutellum a little wider than long or subequal in length to width, finely reticulate; lateral longitudinal groove finely reticulate, joining each other at middle on posterior margin; dorsellum and propodeum smooth; median carina developed into a translucent protuberance at anterior end of propodeum; plicae absent; spiracle 2.3x as long as wide, separated from metanotum by a distance shorter than half diameter of spiracle; LTS a little longer than first two hind tarsal segments together; forewing 2.4x as long as broad; speculum setose; relative length of CC = 29; SMV = 22; MV = 32; PMV = 16; STV = 8.

Metasoma : Very short, transverse, a little shorter than mesosoma (or a little longer than mesosoma in some specimens).

Male : Unknown.

Material examined : 2 Females, INDIA, Maharashtra (18° 56' N 72° 51' E), Buldana Dt. Lonar Crater Wild Life Sanctuary, South of Forest Rest House, 16-ii-2003, P. M. Sureshan; 3 Females, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 13-1-1980, M. Hayat; 1 Female, Aligarh (27° 53' N 78° 04' E), 27-xii-1984, M. Hayat; 1 Female, Aligarh, 30-xi-1979, M. Hayat.(1 female in ZDAMU)

Host : Unknown.

Distribution : India (New Record) : Maharashtra and Uttar Pradesh.

Remarks : The specimens from India show slight variation from the original description of the species by Wijesekara & Schauff (1994) which is based upon the Sri Lankan specimens. The antennal segments are a little stouter than in the Sri Lankan specimens, LTS a little longer than first two hind tarsal segments in the Indian specimens studied (in Sri Lankan specimens LTS as long as first two hind tarsal segments together) and MV 2x as long as PMV (in Sri Lankan specimens MV 1.7x as long as PMV)

8. *Platyplectrus gannoruwaensis* Wijesekara & Schauff

(Fig. 346)

1994. *Platyplectrus gannoruwaensis* Wijesekara & Schauff, 29. Holotype Female, Sri Lanka (USNM).

Diagnosis : (Based on Wijesekara & Schauff, 1994).

Female : Length 2.1-2.3 mm. Colour predominantly yellowish- brown except the following: Margin around eyes, scape, pedicel, F1, collar of pronotum, posteriorly

on side lobes of mesoscutum, posterior region and sides of scutellum, legs except large patch on hind tibia and femur, yellow; last three funicle segments of antennae, scrobe, transverse area on occiput, anterior of pronotum, base of scutellum, meso and metapleuron, propodeum and posterior half of metasoma black.

Head : Occipital carina well developed; vertex separated from frons by a transverse lamina; eye sparsely setose; malar space 0.6x eye height, MS and epistomal sulcus present; POL 1.8x OOL.

Mesosoma : Pronotum rounded in front with weak transverse carina; median longitudinal carina of MLM absent; scutellum longer than wide, reticulate medially, sides smooth, lateral longitudinal furrows deep, irregularly foveolate, meeting each other in the middle of posterior margin of scutellum; median carina of propodeum not developed into a basal translucent cup like structure anteriorly; LTS shorter than first two hind tarsal segments together; MV 2.4x as long as PMV, 4.5x as long as STV

Metasoma : Petiole transverse, metasoma shorter than mesosoma.

Male : Unknown.

Host : Unknown.

Distribution : Sri Lanka.

Remarks : According to Wijesekara & Schauff (1994) this species is very similar to *P. melinus* except in having : (1) antennal scrobe black (in *P. melinus* Wijesekara & Schauff scrobe orange); (2) sides of scutellum smooth (in *P. melinus* sides of scutellum coriaceous); (3) dorsellum with 3 tooth like structures directed posteriorly (in *P. melinus* dorsellum without such structure) and (4) propodeum finely reticulate (in *P. melinus* propodeum smooth).

9. *Platyplectrus kuriani* Wijesekara

(Fig. 347)

1954. *Euplectromorpha natadae* Kurian, 122. Male: Andhra Pradesh, East Godavari district, Tatipaka (lost?). (Junior Secondary homonym of *Platyplectrus natadae* Ferrière, 1941).

1994. *Platyplectrus kuriani* Wijesekara, 34, replacement name.

Diagnosis : (Based on Kurian, 1954, and Mani, 1989).

Male : Length 1.89 mm. Body black with very faint metallic luster on gaster; antenna brown except reddish brown scape; legs reddish brown with coxae black or dark brown.

Head : Width in anterior view 1.2x its length; width in dorsal view 3x its length; POL 2xOOL; AOL a little longer than OOL; malar space slightly less than

0.5x eye height; antenna inserted just above level of ventral margin of eye; F1 2x length of pedicel; clava slightly longer than F1. Relative L : W of antennal segments : scape = 39 : 7; pedicel = 8 : 6; F1 = 16 : 8; F2 = 14 : 8; F3 = 14 : 8; F4 = 12 : 8; clava = 18 : 7.

Mesosoma : Mesonotum nearly 2x as long as pronotum; scutellum as long as MLM, densely and rugosely punctate, almost flat; lateral longitudinal grooves crenulated meeting each other medially on posterior margin; propodeum faintly sculptured (nearly smooth and shiny); LTS as long as first two hind tarsal segments together; forewing nearly 2.25x as long as broad; speculum setose; relative length of CC = 23; SMV = 17; MV = 18; PMV = 12 ; STV = 4.

Metasoma shorter than mesosoma; petiole broader than long or subquadrate.

Female : Unknown.

Host : *Darna nararia* Moore (= *Natada nararia*) Lepidoptera : *Limacodidae*).

Distribution : India : Andhra Pradesh.

Remarks : There is a specimen (not in good condition) in my collection, collected from Calicut University Campus on July 1986 and this comes near to *P. kuriani* Wijesekara when compared with original description of *kuriani*. However I am not sure of its identity since I could not compare this specimen with the types of *P. kuriani* Wijesekara which is probably lost. In this specimen occipital carina absent; post occipital carina weak; scape not reaching front ocellus; pronotum with sharp raised carina separating collum from collar; MLM with a weak median longitudinal carina.

10. *Platyplectrus melinus* Wijesekara & Schauff

(Fig. 348)

1994. *Platyplectrus melinus* Wijesekara & Schauff, : 30. Holotype Female, Sri Lanka, Batalagoda (USNM).

Diagnosis : (Based on Wijesekara & Schauff, 1994).

Female : Length 1.8-2.2 mm. Colour predominantly honey brown except following parts: margin around compound eyes, scape, pedicel, funicle except last one or two segments, posterior half of pronotum, large dorsal patch near base of metasoma and legs except small patch on hind tibia, yellow; hind coxa yellow; antennal scrobe orange; clava F4 small patch on the occiput, base of the scutellum, propodeum, base of the metasoma and posterior half of metasoma black.

Head : Width 1.3x its height in anterior view, width in dorsal view 2.3x its length; vertex separated from frons by a short transverse lamina; occipital carina developed as a translucent protuberance directed posteriorly; POL 1.33x OOL;

AOL subequal or equal to OOL; LOL 0.25x AOL; MS and epistomal suture present; scape not reaching anterior ocellus; F1 1.9-2.3x length of pedicel; clava as long as F1; relative L : W of antennal segments: scape = 29 : 5; pedicel = 9 : 5; F1 = 17 : 5; F2 = 13 : 6; F3 = 14 : 8; F4 = 12 : 8; clava = 17 : 10.

Mesosoma : Pronotum with a weak transverse carina; MLM with coriaceous sculpture, median longitudinal carina absent; scutellum longer than wide, lateral longitudinal grooves distinct continuous around frenum; propodeum smooth; LTS shorter than first two hind tarsal segments together; forewing 2.5x as long as broad; MV 2.5x as long as PMV, 3.9x as long as STV

Metasoma : Petiole transverse, 0.6x length of mesosoma.

Male : Unknown.

Host : Unknown.

Distribution : Sri Lanka : Batalagoda.

Remarks : This species comes near *P.oricus* Narendran sp. nov. in general appearance but differs from it in having : (1) clava not strongly truncated, 1.6x as long as broad (in *P.oricus* Narendran sp. nov. clava strongly truncated at apex, 1.2x as long as broad); (2) MV 2.5x as long as PMV (in *P.oricus* Narendran sp. nov. MV 2x as long as PMV) and (3) F1 2.3x as long as pedicel (in *P.oricus* Narendran sp. nov. F1 1.4x as long as pedicel).

11. *Platyplectrus natadae* Ferrière

(Fig. 349)

1941. *Platyplectrus natadae* Ferrière, 21. Holotype Female, Sri Lanka (BMNH) examined.

Redescription :

Female : (Holotype) Length 3 mm. Colour yellow with the following parts black : scrobe, spot on occiput, anterior part beyond pronotal carina, and near area adjacent to posterior margin, spots on scapula and axilla, median strips or spots on scutellum, propodeum, one spot on either side of metanotum, T1 with a distinct spot on either side, and posterior half of gaster.

Head width in anterior view 1.4x its height; width in dorsal view 3.2x its length; POL 1.5x OOL; AOL shorter than OOL; LOL shorter than AOL; WIOS 3.1x POL; vertex separated from frons by a short lamina; postoccipital and occipital carinae present; MS present; malar space 0.35x eye height in profile; eyes densely setose; eye height 1.72x eye length in profile; antenna inserted at level of ventral margin of eyes; scape not reaching front ocellus; F1 distinctly longer than pedicel; clava as long as F1; relative L : W of antennal segments: scape = 39 : 6; pedicel = 12 : 8; F1 = 21 : 10; F2 = 17 : 12; F3 = 17 : 13; F4 = 15 : 13; Clava = 21 : 13.

Mesosoma : Pronotum with a carina separating collar from ocellus; pronotum and MLM coriaceous punctate, MLM with median carina absent; axillae, scutellum and dorsellum and propodeum smooth; raised propodeal median carina developed into translucent tongue-like protuberance anteriorly; plicae present; propodeal spiracle almost touching metanotum; LTS as long as or a little longer than first two hind tarsal segments together; forewing 2.4x as long as broad, speculum absent, setose; relative length of CC = 26; SMV = 21; MV = 25; PMV = 11; STV = 6.

Metasoma : Petiole absent or indistinct; metasoma shorter than mesosoma.

Male : (Based on Ferrière, 1941). Smaller in size than female; other characters similar to female; gaster truncate or shortly rounded towards tip.

Host : *Darna nararia* (Moore) (Lepidoptera: Limacodidae).

Distribution : Sri Lanka.

Material examined : Holotype present at BMNH.

Remarks : This species is unique in having : (1) Propodeum with the median carina developed into a tongue-like protuberance; (2) yellow colour with characteristic black spots and patches; (3) LTS as long as or a little longer than first two hind tarsal segments together; (4) MS present and (5) eyes densely setose.

12. *Platyplectrus nilamburicus* Narendran sp. nov.

(Figs. 350-351)

Female : (Holotype) Length 2.1 mm. Head black with metallic green refringence except yellow area below level of antennal toruli, this yellow area extending to malar space, but not reaching ventral margin of eyes; eyes grayish yellow with brick red patch in the middle; scape pale yellow; pedicel and F1 pale brownish yellow, remaining segments gradually becoming darker; mesosoma pale yellowish brown; metasoma pale brownish yellow with posterior part darker; ovipositor sheath black; legs pale brownish yellow; wings hyaline with veins pale yellow.

Head width in anterior view 1.4x its height, width in dorsal view 2.75x its length; POL 2x OOL; AOL equal to OOL; LOL shorter than OOL; WIOS 2.7x POL; episternal suture and MS present; malar space 0.81x eye height in profile; eye dorsally pilose (careful observation is needed to note this); eye height 1.04x eye length in profile; vertex not distinctly separated from frons by a short transverse lamina; occiput sharply margined forming weak carina, post occipital carina present; vertex finely reticulate; antenna inserted a little below level of ventral margin of eyes; scape not reaching level of anterior ocellus; two anelli present; F1 1.8x

length of pedicel; clava as long as F1; relative L : W of antennal segments: scape = 26 : 4; pedicel = 10 : 5; F1 = 18 : 5; F2 = 15 : 6; F3 = 16 : 6; F4 = 14 : 6; clava = 18 : 7.

Mesosoma : Pronotum without transverse carina, transversely and weakly reticulate; mesosoma densely pilose, sculpture as in pronotum; median longitudinal carina absent; scutellum as long as broad, weakly reticulate, lateral grooves meeting posteriorly in the middle; axillae weakly reticulate, dorsellum smooth, without any protuberance; median propodeal carina developed into a cup like protuberance at anterior end; propodeum smooth; plicae short incomplete, spiracle separated from metanotum by its own diameter; LTS shorter than first two hind tarsal segment combined; forewing 2.75x as long as broad, speculum closed behind by cubital line of setae; relative length of CC = 16; SMV = 13; MV = 16; PMV = 7; STV = 4.

Metasoma as long as mesosoma, petiole short broader than long.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala).

Material Examined : Holotype Female, INDIA, Kerala, Malappuram District, Nilambur (11° 16' N 76° 13' E), 23-iv-1989, T.C. Narendran & party.

Depository : Holotype deposited in the Department of Zoology, University of Calicut, Kerala, India pending transfer to ZSIK or NZSI.

Remarks : This species comes to the African species *Platyplectrus ausensis* Ferrière in the key by Ferrière (1941) but differs from it in having : (1) area below level of toruli and gena yellow, other region black with metallic green refringence (in *P. ausensis* head entirely black (without metallic refringence) and only margins of broadly yellow; (2) mesonotum without black spot (in *P. ausensis* mesonotum with a black spot); (3) LTS reaching only middle length of second hind tarsal segment (in *P. ausensis* LTS as long as first two hind tarsal segments together) and (4) metasoma as long as mesosoma (in *P. ausensis* metasoma much shorter than mesosoma).

13. *Platyplectrus obscurata* (Ferrriere), **comb. nov.**

(Figs. 352-354)

1941. *Euplectomorpha obscurata* Ferrriere, 28, Female & Male, Africa, Nyasaland, Namiwawa & Uganda (BMNH).

Redescription : Length 2.5 mm. Colour black except the following parts yellow; scape, pedicel, tegula, fore and mid legs (except brown basal part of coxae) tip of

hind coxa, base and apex of hind femur, dorsal three fourth of gaster, sternites of gaster pale brownish yellow with a black dot in middle; posterior margin of pronotum yellowish brown; wings hyaline with veins pale whitish gray.

Head : Width in anterior view 1.31x its height, width in dorsal view 2.9x its length; POL 1.75x OOL; AOL equal to OOL; LOL shorter than AOL; WIOS 2.9x POL; MS and epistomal suture distinct; malar space 0.7x eye height in profile; eyes sparsely pubescent; eye height 1.12x eye length in profile; vertex separated from frons by a distinct laminated edge above scrobe; occipital carina absent, occiput not sharply margined; postoccipital carina present; vertex faintly reticulate, occiput cross reticulate; antenna inserted a little below level of lower margin of eyes; scape not reaching level of anterior ocellus; F1 1.7x as long as pedicel; clava longer than F1; two anelli present; relative L : W of antennal segments: scape = 32 : 7; pedicel = 10 : 7; F1 = 17 : 9; F2 = 15 : 9; F3 = 15 : 10; F4 = 11 : 10; clava = 20 : 10.

Mesosoma Pronotum with transverse carina absent, rounded anteriorly, with distinct round cross reticulations; MLM distinctly reticulate on anterior half, with irregular carinae and pits on posterior half; median longitudinal carina absent; scutellum 1.2x as long as its width; with deep large pits, interstices of pits irregularly carinate, inside of pits reticulate; lateral longitudinal groove broad irregularly crenulated, joining at middle at posterior margin; scutellum with 3 pairs of large deeper pits posteriorly (Fig. 354); axilla finely reticulate; dorsellum reticulate punctate with two projecting tubercle like structures towards anterior margin of propodeum; propodeum distinctly granulate- reticulate with a few pits near median carina, median carina developed into acup like projection anteriorly; plicae absent; spiracle elongated, 2x as long as wide, separated from metanotum by a distance shorter than length of spiracle; LTS a little shorter than first two hind tarsal segments together (11 : 12); forewing 2.3x as long as broad, speculum relatively small, closed behind by cubital line of setae; relative length of CC = 19; SMV = 14; MV = 17; PMV = 8; STV = 4.

Metasoma longer than mesosoma (13 : 12); petiole transverse.

Male : Length (of specimens studied) 1.41mm. Similar to female except the borders of large pits between lateral grooves of scutellum weak. Propodeum smooth, gaster relatively shorter than that of female.

Host : *Archips occidentalis* (Walsingham) (Lepidoptera: Tortricidae) (Noyes 2003). 1 Male from thrip gall on Pepper leaf from Kerala.

Distribution : India (New record for India) : Kerala, Maharashtra; Malawi, South Africa, Uganda.

Material examined : 2 Females, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7'N 75° 5'E), 21-x-1986 & March 1987, T.C. Narendran & party; 1 Female; INDIA, Maharashtra (18° 56' N 72° 51' E), Buldana District, Lonar Crater Wild Life Sanctuary, North of Forest Rest House, 17-ii-2003, P. M. Sureshan; 1 Male, Kerala, 27-xi-2008, Nasreem, ex. thrip gall on Pepper.

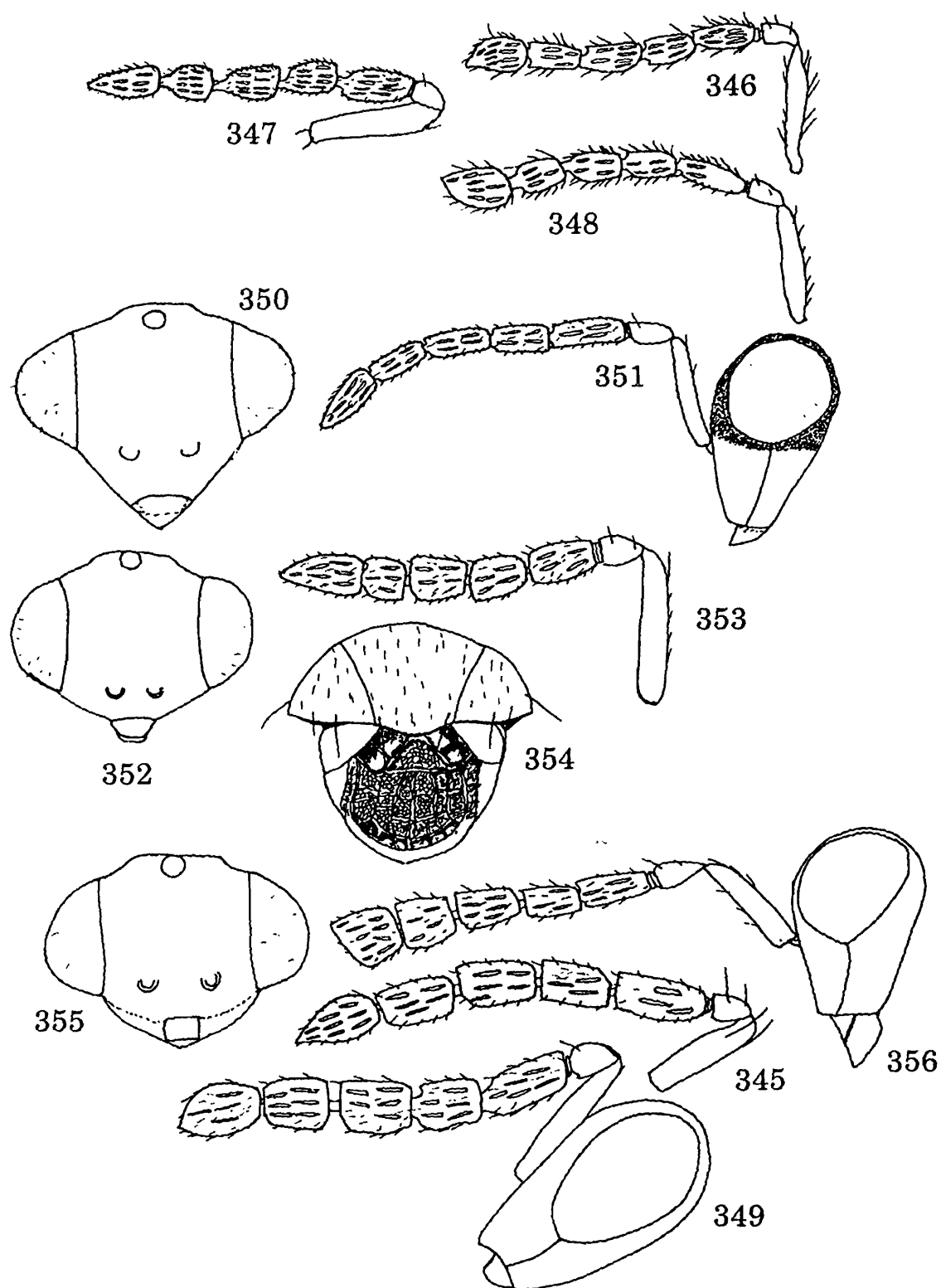
Variation : The Indian specimens differ from the original description of Ferrière (1941) in having : (1) Pronotum black with a pale yellowish brown posterior margin (in the original description no such yellowish brown colour at posterior margin of pronotum is mentioned); (2) vertex and face faintly reticulate (smooth according to original description); (3) axillae finely reticulate (in original description axillae almost smooth); (4) gaster yellow with posterior part black (in original description gaster yellow with a yellowish ring near base) and (5) metasoma longer than mesosoma (in original description metasoma shorter than mesosoma). I consider these differences as minor and of not any specific value and are only variation of *Platyplectrus obscurata* Ferrière.

14. *Platyplectrus oricus* Narendran sp. nov.

(Figs. 355-356)

Female : (Holotype) Length 2.6 mm. Head pale yellowish brown except the following parts black: Vertex and occiput (except part near eye margin) and scrobe; eyes grayish yellow; scape, pedicel, F1, F2 and basal half of F3 yellow, remaining segments black; pronotum pale yellowish brown with a median black spot on anterior and posterior part; mesoscutum and scapulae pale yellowish brown with a median black longitudinal stripe on MLM; scutellum pale yellowish brown with median area between lateral grooves black; mesopleuron pale yellowish brown with ventral half black; metapleuron black with pale brownish area in the middle; propodeum black; metasoma pale yellowish brown with posterior part of T1 and T2 completely pale yellow; T3 partly pale brownish yellow, remaining tergites black; base and sides of T1 and T2 dark brown; sternites pale yellow; legs including all coxae pale yellow, except for a dark brown patch at distal part of hind femur; wings hyaline with veins pale brown.

Head : Width in anterior view 1.4x its height; width in dorsal view 2.1x its length; POL 1.5x OOL; AOL shorter than OOL; LOL shorter than AOL; WIOS 3.3x POL; MS and epistomal suture present, malar space 0.61x eye height; eyes sparsely setose; eye height 1.12x its length in profile; vertex separated from frons by a short transverse lamina above scrobe; occipital carina developed into a translucent protuberance; postoccipital carina weak but distinct; vertex faintly reticulate, occiput distinctly and clearly reticulate; antenna inserted at level of



Figs. 345. *Platyplectrus flavus* Wij. & Schauff : Female antenna; **Fig. 346.** *P. gannoruwaensis* Wij. & Schauff. Female antenna. **Fig. 347.** *P. kuriani* Wij. & Schauff Female antenna (Adapted from Kurian, 1954). **Fig. 348.** *P. melinus* Wij. & Schauff, Female antenna. **Fig. 349.** *P. natadae* Ferriere female Head & antenna. **Figs. 350-351.** *P. nilamburicus* Female : 350. Head anterior view; 351. Antenna. **Figs. 352-354.** *P. obscurata* (Ferriere) Female : 352. Head anterior view; 353. Antenna; 354. Mesoscutum & scutellum. **Figs. 355-356.** *P. oricus* sp. nov. Female : 355. Head anterior view; 356. Antenna.

ventral margin of eyes; scape not reaching level of anterior ocellus; F1 1.5x as long as pedicel; clava shorter than F1; two anelli present; relative L : W of antennal segments : scape = 28 : 6; pedicel = 12 : 6; F1 = 17 : 7; F2 = 14 : 7.5; F3 = 15 : 9; F4 = 13 : 11; clava = 15 : 13; clava truncate at apex.

Mesosoma : Pronotum with distinct raised cross carina just behind collum, posterior margin of pronotum entire, not concave, pronotum as long as mesonotum, cross reticulate and striate, MLM reticulate, median longitudinal carina absent, fully pubescent, each scapula with deep pits on its posterior margin; scutellum a little longer than broad (9 : 8), lateral groove broad foveolate united posteriorly at middle; area between lateral groove reticulate; outer lobes beyond lateral grooves reticulate; axilla with 2-4 minute setae, reticulate; dorsellum with 2 small projections towards posterior part; propodeum smooth, plicae present; spiracle separated from metanotum by less than diameter of spiracle; median carina developed into a translucent cup like projection anteriorly; LTS a little shorter than first two hind tarsal segments together; forewing 2.5x as long as broad, speculum setose relative length of CC = 10; SMV = 7; MV = 14; PMV = 7; STV = 4.

Metasoma : Petiole transverse, narrow; metasoma a little shorter than mesosoma.

Male : Similar to female except clava not truncate, gaster shorter and black colour on mesosoma more spread on dorsum.

Host : Unknown.

Material examined : Holotype, Female, INDIA, Orissa (22° 34' N 87° 29' E), Khorda, Kadurnai, 03-xii-2007, F. R. Khan (NPC). Paratypes: INDIA, Karnataka (15° 00' N 75° 00' E), Vogga, 18-xii-1988, T.C. Narendran & party; 1Female, Karnataka (15° 00' N 75° 00' E), Hosmola, 17-xii-1988, T.C. Narendran & party; 1 Female, Karnataka (15° 00' N 75° 00' E), Vittal, 16-xii-1988, T.C. Narendran & party; 1 Male, INDIA, Kerala, Malappuram District (90° 15' E 26° 40' N), Tenjipalam, 15-x-2000, T.C. Narendran; 1 Female, Kerala, Calicut University Campus (11° 7'N 75° 5'E), 10-xii-1988, T.C. Narendran.

Depository : Holotype deposited at NPC.

Variation : In some paratypes the following variations are found: WIOS 2.9x POL; malar space 0.5x as long as eye height; in some paratypes the median black area of pronotum, mesonotum and scutellum absent or slightly represented; forewing 2.6x as long as wide; MV a little over 2x as long as PMV; metasoma as long as mesosoma.

Remarks : This species comes very close to *P. melinus* Wijesekara & Schauf in general appearance but differs in having : (1) clava strongly truncated, 1.2x as long as broad (in *P. melinus* clava not strongly truncated, 1.7x as long as broad);

(2) POL 1.5x OOL (in *P. melinus* POL 1.3x OOL); (3) dorsellum with two distinct teeth like projection (in *P. melinus* Wijesekara & Schauf dorsellum without such 2 teeth like structures) and (4) F1 1.4x as long as pedicel (in *P. melinus* (F1 2.3x as long as pedicel).

This species comes very near to *P. truncatus* Wijesekara & Schauf in general appearance but differs from it in having : (1) pronotum with a transverse carina (in *P. truncatus* pronotum without transverse carina); (2) hind coxa yellow (in *P. truncatus* hind coxa black), and (3) MV 2x as long as PMV (in *P. truncatus* Wijesekara & Schauf MV 1.6x PMV).

This new species comes near *P. natadae* Ferrière, but differs from *P. natadae* in having : (1) propodeal median carina not developed into a tongue like structure as in *P. natadae* Ferrière but forms only a cup like projection; (2) median propodeal carina not translucent along margin (in *P. natadae* propodeal median carina translucent along margin); (3) eyes sparsely setose (in *P. natadae* eyes densely setose); (4) malar space 0.5- 0.6x height of eye (in *P. natadae* malar space 0.35x height of eye); (5) dorsellum with 2 teeth like projections (in *P. natadae* dorsellum without such projections) and (6) occipital carina developed into a translucent lobe (in *P. natadae* occipital carina not developed into a translucent lobe).

15. *Platyplectrus taprobanes* (Gadd)

1945. *Autoplectrus taprobanes*, Gadd, 336. Holotype Female, Sri Lanka (lost). *Platyplectrus taprobanes* (Gadd) : Wijesekara & Schauff, 1994 : 31.

Redescription : *Male* : Length 1.6 mm. Colour whitish yellow; eyes grayish yellow; wings hyaline, veins yellow.

Head : Width in anterior view 1.22x its height, width in dorsal view 2.7x its length; POL 2.5x OOL; AOL equal to OOL; LOL equal to AOL; WIOS 2.53x POL; ocelli located in a rounded slightly raised area; MS indistinct; epistomal suture slightly distinct; malar space 0.4x height of eye; eyes sparsely pubescent; eye height a little longer than eye length in profile; vertex not separated from frons by a distinct lamina above scrobe; occipital carina absent, occiput margin not sharp; (postoccipital carina could not be observed since head is very close to pronotum in the specimen at hand); vertex faintly granulate; antenna inserted a little above level of ventral margin of eye; scape reaching anterior ocellus; anellus absent; F1 2x length of pedicel; F1 with dense white setae on both sides; clava longer than F1; relative L : W of antennal segments : scape = 23 : 6; pedicel = 10 : 7; F1 = 20 : 8; F2 = 17 : 7; F3 = 13 : 6; F4 = 17 : 6; clava = 25 : 7.

Mesosoma : Pronotum with weak cross carina anteriorly; pronotum weakly reticulate, posterior margin entire, not concave; MLM with 12 setae scattered all

over, weak median carina present; scutellum faintly reticulate, as long as broad, lateral groove united posteriorly; dorsellum smooth without protuberances; propodeum smooth; plicae weak; spiracle separated from metanotum by a distance shorter than diameter of spiracle; median carina developed into a translucent cup like projection; LTS almost as long as first two hind tarsal segments together; forewing 2.5x as long as broad, speculum setose; relative length of CC = 14; SMV = 10; MV = 16; PMV = 7; STV = 4.

Metasoma : Petiole transverse, very short, metasoma shorter than mesosoma.

Female : (Based on Wijesekara & Schauff, 1994). Length 2.5-3mm. Body orange yellow, with small black spots below tegula and at posterior end of metasoma; vertex smooth without distinct margin; eyes sparsely pubescent; anelli absent, clava as long as F4.

Host : *Thosea cervina* Moore, *Spatulifimbria castaneiceps* Hampson (Lepidoptera: Limacodidae) (Wijesekara & Schauff, 1994).

Distribution : India (New Record), Sri Lanka.

Material examined : 1 Male, INDIA, Kerala, Calicut University Campus (11° 7'N 75° 5'E), 20-iv-1989, T.C. Narendran.

Remarks : The Indian specimen agrees with the account given by Wijesekara & Schauff, (1994) in almost all characters except that it is whitish yellow instead of orange yellow of Sri Lankan specimen.

16. *Platyplectrus truncatus* Wijesekara & Schauff (Figs. 357-358)

1994. *Platyplectrus truncatus* Wijesekara & Schauff, 32. Female, Sri Lanka, Sita Eliya (USNM).

Diagnosis : (Based on Wijesekara & Schauff 1994).

Female : Length 2.9 mm. Predominantly black, the following areas yellow: margin around eyes, gena, sides and dorsal part of pronotum, posterior margin of scapulae, sides of scutellum, metasomal sternum, area on dorsum of metasoma, legs except hind coxa and apex of hind femur; scrobe, clypeus, scape, pedicel and posterior end of scutellum yellowish brown.

Head : With POL 1.6x OOL; AOL slightly shorter than OOL (4 : 4.5); LOL shorter than AOL; WIOS 2.7x POL; MS and epistomal suture present; malar space 0.7x eye height; eyes sparsely setose; frons separated from vertex by a short transverse lamina; occipital carina developed into translucent protuberance; postorbital carina absent; vertex coriaceous; antenna inserted at level of ventral margin of eyes; scape not reaching front ocellus; F1 1.5x as long as pedicel (Fig. 15. Wijesekara & Schauff, 1994) (in description F1 1.8 x as long as pedicel); clava

as long as F1; two anelli present; relative L : W of antennal segments : scape = 30: 6; pedicel = 11 : 5; F1 = 16 : 5; F2 = 12 : 6; F3 = 12 : 7; F4 = 12 : 9; clava = 16 : 14; clava truncate at apex.

Mesosoma : Pronotum without carina, as long as mesonotum, coriaceous, MLM without median carina, coriaceous, scutellum imbricate medially, lateral grooves deep and irregularly foveolate, converging posteriorly to meet medially; propodeum smooth, median carina and plicae well developed; LTS shorter than first two hind tarsal segments together; forewing 2.4x as long as broad; MV 1.6x PMV and 4.4x STV

Metasoma : Petiole transverse, metasoma as long as mesosoma.

Male : Unknown.

Host : Unknown.

Distribution : Sri Lanka.

Remarks : This species comes very near to *P. oricus* Narendran sp. nov. in general appearance but differs from it in having : (1) pronotum without cross carina (in *P. oricus* Narendran sp. nov. pronotum with distinct cross carina); (2) hind coxa black (in *P. oricus* Narendran sp. hind coxa yellow) and (3) MV 1.6x PMV (in *P. oricus* Narendran sp. nov. MV 2x PMV).

17. *Platyplectrus viridiceps* (Ferrière)

(Figs. 359-360)

1940. *Euplectromorpha viridiceps* Ferrière, 136. Holotype female, Indonesia, Java (BMNH) examined.

1994. *Platyplectrus viridiceps* (Ferrière) : Wijesekara & Schauff, 33.

Redescription : *Female* : (Holotype) Length 2.39 mm. Head bluish green metallic refringence; mesosoma, metasoma and hind coxa black except a small patch on metanotum which is yellowish; scape yellow, pedicel light brown, remaining antennal segments brown; legs yellow except black hind coxa and hind femur slightly brown dorsally.

Head : Width in anterior view 1.5x its height, width in dorsal view 2.33x its length; POL 2x OOL; AOL equal to OOL; LOL shorter than AOL; WIOS 2.5x POL; MS indistinct, malar space 0.33x eye height in profile; eye densely pilose; eye height 1.12x its length in profile vertex separated from frons by a short lamina; occipital and post occipital carinae absent; antenna inserted a little above level of ventral margin of eye; scape not reaching level of anterior ocellus; F1 1.3x as long as pedicel; clava longer than F1; two anelli present; relative L : W of

antennal segments: scape = 35 : 7; pedicel = 13 : 9; F1 = 17 : 7; F2 = 15 : 10; F3 = 15 : 10; F4 = 14 : 10; clava = 26 : 10.

Mesosoma : Pronotum without cross carina, rugulose, a little shorter than mesoscutum; mesoscutum with median longitudinal carina absent, coriaceous punctate, densely pubescent; axillae and scutellum smooth or very finely shagreened; lateral groove united at middle on posterior margin; propodeum smooth, developed into a cupshaped translucent protuberance anteriorly; spiracle separated from metanotum by a distance shorter than diameter of it; LTS shorter than first two hind tarsal segments combined; forewing 2.4x as long as broad; relative length of CC = 12; SMV = 7; MV = 17; PMV = 12; STV = 5.

Metasoma : Shorter than mesosoma, petiole a little longer than wide (3: 2) in dorsal view.

Male : Similar to female except scape is broadened on apical half.

Host : *Artona catoxantha* (Hampson) (Lepidoptera : Zygaenidae).

Distribution : India (Himachal Pradesh, Uttar Pradesh), Sri Lanka, Malaysia, Indonesia, China, Taiwan, Vietnam.

Material examined : Holotype only.

Remarks : This species resembles *P. nilamburicus* Narendran sp. nov. in having head with metallic refringence. Hence it differs from *P. nilamburicus* Narendran sp. nov. in having : (1) mesosoma black (in *P. nilamburicus* Narendran sp. nov. mesosoma pale yellowish brown); (2) hind coxa black (in *P. nilamburicus* Narendran sp. nov. hind coxa pale brownish yellow); (3) postoccipital and occipital carinae absent (in *P. nilamburicus* Narendran sp. nov. occiput sharply margined forming a weak carina and occipital carina present); and (4) petiole longer than broad (in *P. nilamburicus* Narendran sp. nov. petiole broader than long) and in many other characters.

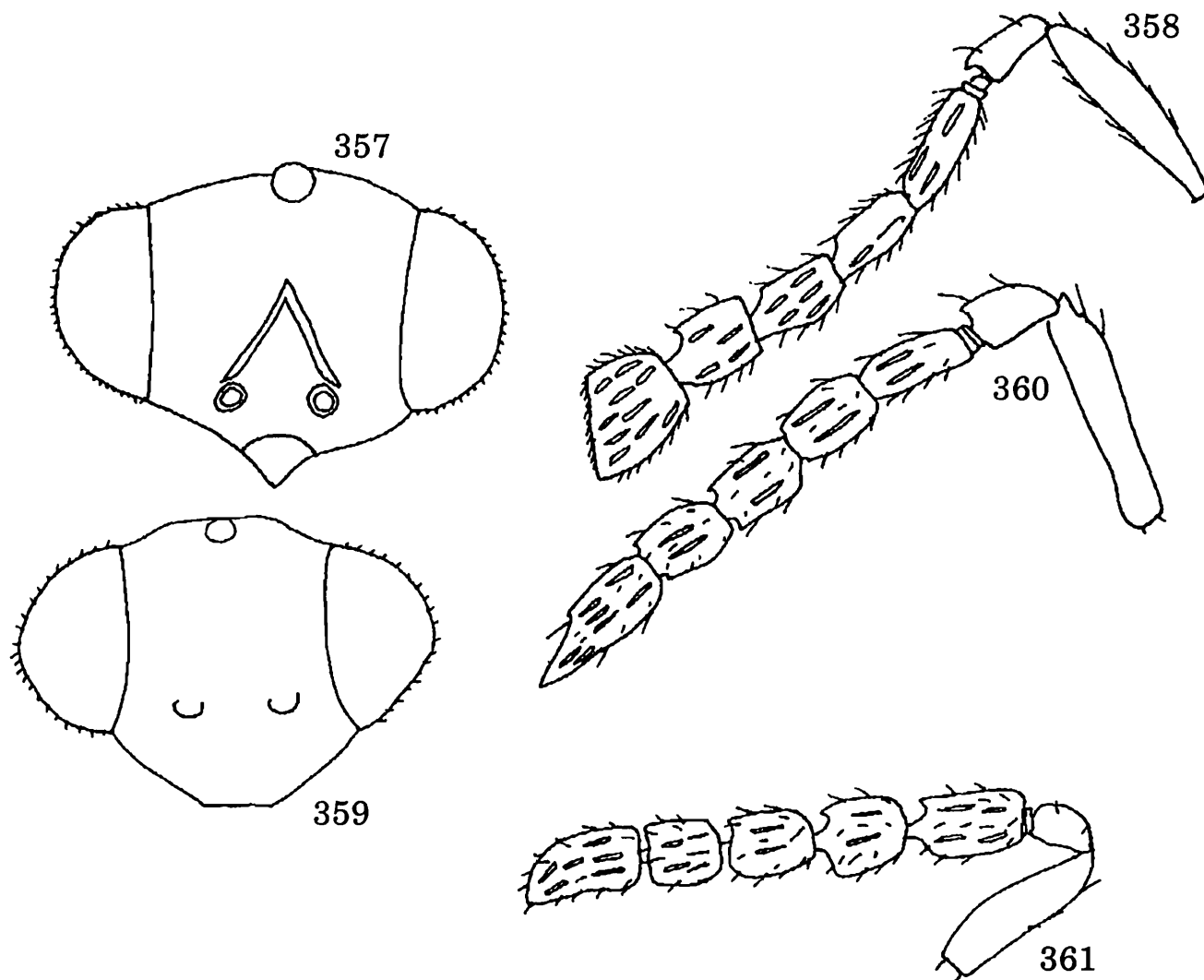
19. *Platyplectrus yarensis* Narendran & Jilcy (Fig. 361)

2006. *Platyplectrus yarensis* Narendran & Jilcy, in Narendran *et al.*, 2469, Holotype female, India, Idukki, Vandiperiyar (ZSIK).

Redescription : *Female* : Length 2.18 mm. Black except following areas: eyes brick red with margins pale; ocelli pale reflecting yellow; antennal scape pale yellow; pedicel and anelli pale brownish yellow; F1 basal half pale brownish yellow, remaining funicle and clava dark brown; legs yellow with hind coxa black; hind femur yellowish brown (apex pale); tegula yellowish brown, with a subtriangular yellowish brown spot; gaster black with basodorsal part (T1 to T3)

pale brownish yellow; base of gaster brownish yellow on sides also; head black with metallic blue refringence; mesosoma and metasoma black without metallic refringence; wings hyaline, veins and pilosity pale brown.

Head : Width in anterior view 1.44x its height; width in dorsal view 2.25x its median length; POL a little over OOL (5 : 4); AOL shorter than OOL; LOL subequal to AOL; WIOS 3.4x POL; occipital carina present, post occipital carina absent; MS distinct; epistomal sulcus faint; malar space 0.4x eye height in profile; eye densely pilose; eye height 1.35x eye length in profile; antenna inserted at level of ventral margin of eyes; scape not reaching level of front ocellus; F1 distinctly longer than pedicel; clava a little longer than F1; 2 anelli present; relative L : W of antennal segments : scape = 30 : 8; pedicel = 11 : 6; F1 = 16 : 9; F2 = 13 : 10; F3 = 14 : 9; F4 = 12 : 11; clava = 20 : 10.



Figs. 357-358. *P. truncatus* Wij. & Schauff Female (Adapted from Wijesekara & Schauff, 1994), 357. Head anterior view; 358. Antenna. **Figs. 359-360** : *P. viridiceps* (Ferriere) Female : 359. Head anterior view; 360. Antenna. 361. *P. yrensis* Narendran & Jilcy Female antenna.

Mesosoma : Pronotum with a cross carina, rounded in front; pronotum and mesonotum coriaceous punctate with scattered thick white setae; median longitudinal carina of MLM absent; axillae mostly smooth and shiny; scutellum uniformly reticulate; lateral grooves deep but not regularly foveolate, not converging posteriorly to meet in the middle; sides lateral to lateral groove smooth; dorsellum weakly reticulate with 2 small (smaller than diameter of propodeal spiracle) tooth like structure projecting posteriorly; median carina of propodeum developed into an inverted triangle shaped translucent projection anteriorly; spiracle almost touching metanotum; LTS shorter than first two hind tarsal segments together; forewing 2.2x as long as wide; speculum small closed behind by a line of setae; relative length of CC = 15; SMV = 11; MV = 18; PMV = 11; STV = 6.

Metasoma : shorter than mesosoma; petiole short, transverse.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala).

Material examined : Holotype (ZSIK).

Remarks : This species comes near the African *Platyplectrus nitidiceps* (Ferrière) (from *Euplectromorpha* Ferrière 1941, **comb. nov.**) in the key to species of *Euplectromorpha* given by Ferrière (1941) but differs from it in having: (1) gaster black with basodorsal part (T1 to T3) pale brownish yellow (in *P. nitidiceps* gaster broadly brownish above); (2) pedicel and basal half of F1 pale brownish yellow (in *P. nitidiceps* pedicel blackish above and all funicular segments brown); (3) pedicel almost 2x as long as broad (in *P. nitidiceps* (Ferrière) pedicel only slightly longer than broad); (4) F1 shorter than 2x its width (in *P. nitidiceps* pedicel more than 2x its width); (5) F3 longer than F2 (in *P. nitidiceps* (Ferrière) funicle segments gradually becoming shorter); (6) scutellum distinctly reticulate, not at all smooth (in *P. nitidiceps* scutellum finely shagreened, almost smooth) and (7) length of body 2.18 mm (in *P. nitidiceps* length of body 1.6-1.8mm).

Genus *Pnigalio* Schrank

1802. *Pnigalio* Schrank, 315. Type species *Ichneumon pectinicornus* Linnaeus, by monotypy.

1868. *Tineophaga* Rondani, 22. Type species *Tineophaga tischeriae* Rondani, by original designation, monotypy. (Synonymized by Bou ek, 1988).

1913. *Notanisomorphomyia* Girault, [167] : 289. Type species *Notanisomorphomyia albicoxa* Girault, by original designation (synonymized by Peck (in Muesebeck *et al.*, 1951).

Diagnosis : Propodeum with transverse costula intersecting median carina and touching plica on either side; antenna with 4 segmented funicle (in a few

extralimital species antenna with 3 segmented funicle, Bou ek, 1988); in male funicular segments 1-3 branches; notauli indistinct posteriorly; scape exceeding level of vertex; antenna inserted always well above level of ventral margin of eyes; occiput not margined; petiole transverse; scutellum without longitudinal grooves; axillae advanced anteriorly.

Hosts : Parasites of leaf mining larvae of mostly Lepidoptera, occasionally attacking Coleoptera, Diptera and gall forming Symphyta.

Distribution : All continents (Bou ek, 1988).

Key to the Indian species of *Pnigalio* Schrank

1. Propodeum with costulae arising from anterior end of median carina and diverging outwards in a curved manner (Fig.376); MLM with more than 20 scattered setae; body dark metallic green; legs including coxae yellow except 3rd & 4th tarsal segments of fore and mid leg brownish yellow; hind leg with 2nd to 4th brownish yellow; callus densely pubescent
..... *P. camicalis* Narendran sp. nov.
- Propodeum with costulae not arising from anterior end of median carina; other characters partly or completely different or variable 2
2. Anterior half of propodeal plicae distinctly sinuate and curved to inner side; gaster dark metallic green with pale brown patch medially; MLM with 4 pairs of setae; legs pale yellow except forecoxa brown
..... *P. subconicus* (Motschulsky)
- Anterior half of propodeal plicae not sinuate as above, at the most slightly oblique, mostly straight, other characters partly or completely variable
..... 3
3. Dorsellum divided medially by a longitudinal row of pits; submedian areas of propodeum distinctly reticulate; MLM with 24 pairs of setae; metasoma pale yellow with T2 to posterior margin of T7 slightly dark brown; all legs including coxae yellow *P. bengali* Narendran sp. nov.
- Dorsellum not divided as above; other characters variable or partly or completely different 4
4. Forewing with speculum absent, fully setose; hind tibia pale brown with distal half dark brown; F1 to F3 equal in length; MLM with about 20 scattered setae; general body colour (including metasoma black without any metallic refringence) *P. ameti* Narendran sp. nov.
- Forewing with speculum present; other characters variable; mostly different from above 5

5. MLM with 4 pairs of setae; metasoma distinctly less than 2x as long as wide; metasoma black with a weak pale brown patch at middle of T1; MLM with 4 pairs of setae; legs including coxae pale yellow; all funicular segments equal in length..... *P. anoti* Narendran sp. nov.
- MLM with more than 9 pairs of setae; metasoma longer than 2x its width; all funicular segments unequal in length; colour of metasoma variable from above 6
6. F1 to F3 equal in length; eyes bare; clava 1.17x as long as F4; petiole 1.7x as wide as long; gaster mostly pale brownish yellow; legs completely yellow, without dark patches *P. zandani* Narendran sp. nov.
- F1 to F3 not equal in length; F2 shorter than F1 and F3 longer than F2; eyes sparsely pubescent; clava 1.56x as long as F4; petiole 2.1x as wide as long; gaster black with metallic green refringence; legs yellow with dark patches on coxa and fourth tarsal segment
..... *P. cadoti* Narendran sp. nov.

1. *Pnigalio ameti* Narendran sp. nov.

(Figs. 362-363)

Female : (Holotype) Length 1.92 mm. General body colour black without metallic green refringence; antenna dark brown with ventral part of scape a little pale; eyes gray with dark patches or spots; ocelli pale reflecting yellow; fore coxa black with apex pale; all trochanters pale; basal half of fore femur black, distal half pale brown; fore tibia pale brown; fore tarsi brown; mid coxa dark brown; mid femur dark brown on dorsal part and pale brown on ventral part, mid tibia dark brown at apical half, pale brown on proximal half; first 3 tarsal segment of mid leg pale brown, fourth tarsal segment dark brown; hind coxa pale brown with distal half dark brown; hind femur pale brown with dorsal part darker; hind tibia pale brown with distal half dark brown; first and second tarsal segment of hind leg pale brown, third and fourth tarsal segments dark brown; all pretarsi black; wings hyaline with veins and pilosity brown; metasoma black.

Head width 1.2x its height in anterior view; width in dorsal view 2x its length; POL 1.6x OOL; AOL shorter than OOL; WIOS 2.6x POL; occiput medially concave, ridged but not carinate or sharply margined; MS distinct, 0.3x height of eye in profile; eyes pilose; eye length in profile 0.73x eye height; antenna inserted nearly middle of frons, scape far exceeding level of vertex; relative L : W of antennal segments : scape = 12 : 2; pedicel = 5 : 3; F1 = 10 : 4; F2 = 10 : 4; F3 = 10 : 4; F4 = 8 : 5; clava = 12 : 5.

Mesosoma : Pronotum longer than mesoscutum (11 : 10), its posterior margin a little concave medially with 3 pairs of larger setae near posterior margin; surface weakly reticulate; mesoscutum as broad as head, distinctly reticulate except smooth area near anterior margin, medially with scattered pubescence (about 20 setae) among which two setae on posterior half relatively longer; axillae advanced a little anteriorly, mostly smooth with weak aciculations; scutellum distinctly reticulate, margins of reticulations slightly raised; scutellum shorter than MLM (6 : 7); 1.2x as long as its width, with 2 pairs of setae; dorsellum smooth, 0.33x length of scutellum; propodeum smooth and shiny with median carina, plicae and transverse costula; anterior half of each plica straight and slightly oblique, not curved, callus densely pilose with long setae; spiracle touching metanotum; forewing 2.6x as long as broad; speculum absent; CC about 12x as long as wide; relative length of CC = 30; SMV = 25; MV = 37; PMV = 23; STV = 12.

Metasoma a little longer than mesosoma (20 : 18), 2.7x as long as broad; T1 posterior margin not concave.

Male : Unknown.

Host : Unknown

Material examined : Holotype, Female, INDIA, Sikkim, Gangtok (27° 20' N 88° 40' E), Hanumantok, 15-x-2008, Coll. F.R.Khan, (NPC). Paratype: 1 Female same as that of Holotype (ZDAMU).

Depository : Holotype deposited at NPC.

Remarks : This species comes near *Pnigalio longulus* Zetterstedt in having median propodeal carina intersected by costula before its mid point and middle and hind tibiae with black or dark spots or patches. However this new species differ from *P. longulus* in having : (1) F4 1.6x as long as its width (in *P. longulus* Zetterstedt F4 almost saquared); (2) crests of propodeum not well developed (in *P. longulus* Zetterstedt crests of propodeum well developed); (3) vertex black (in *P. longulus* Zetterstedt vertex cupreous); (4) scape dark brown dorsally and pale in ventral part without green colour (in *P. longulus* Zetterstedt scape and pedicel metallic green) and (5) legs without metallic green colour (in *P. longulus* Zetterstedt legs with coxae and femora with metallic green colour on some parts).

2. *Pnigalio anoti* Narendran sp. nov.

(Figs. 364-366)

Female : (Holotype) Length 1.48 mm. General body colour black with metallic green refringence; antenna dark brown with scape pale yellow; eyes grayish yellow, ocelli pale reflecting yellow; legs including all coxae pale yellow; pretarsi

brown; metasoma black with a weak pale yellow patch at middle of T1; forewing hyaline with veins pale brown.

Head : Width in anterior view 1.33x its height; width in dorsal view 2.4x its length; POL 1.6x OOL; AOL shorter than OOL; LOL subequal to AOL; WIOS 3x POL; occiput not margined, medially concave; MS distinct, 0.24x height of eye in profile; eyes pubescent, eye length in profile 0.64x eye height; antenna inserted a little above level of ventral margin of eyes, scape exceeding above level of vertex; relative L : W of antennal segments: scape = 25 : 6; pedicel = 9 : 6; F1 = 13 : 6; F2 = 14 : 6; F3 = 14 : 6; F4 = 14 : 6; clava = 21 : 7.

Mesosoma : Pronotum a little shorter than mesoscutum (7 : 8), its posterior margin a little concave medially, with 3 pairs of setae near posterior margin, surface raised reticulate except admarginal area on posterior side; mesoscutum as broad as head in dorsal view, surface with distinct hexagonal reticulations, with 4 pairs of setae on MLM; axillae advanced anteriorly, faintly reticulate; scutellum distinctly reticulate shorter than mesoscutum, its length subequal to its width, with 2 pairs of setae; dorsellum 0.3x as long as scutellum, smooth; propodeum smooth and shiny, with median carina, plicae and transverse costulae; anterior half of each plicae almost straight, callus with 6-8 setae on either side; spiracle separated from metanotum by a distance less than diameter of spiracle; forewing 2.7x as long as broad, speculum present, closed behind by cubital line of setae; CC about 9x as long as wide; relative length of CC = 36; SMV = 26; MV = 36; PMV = 27; STV = 12.

Metasoma as long as mesosoma; 1.8x as long as wide.

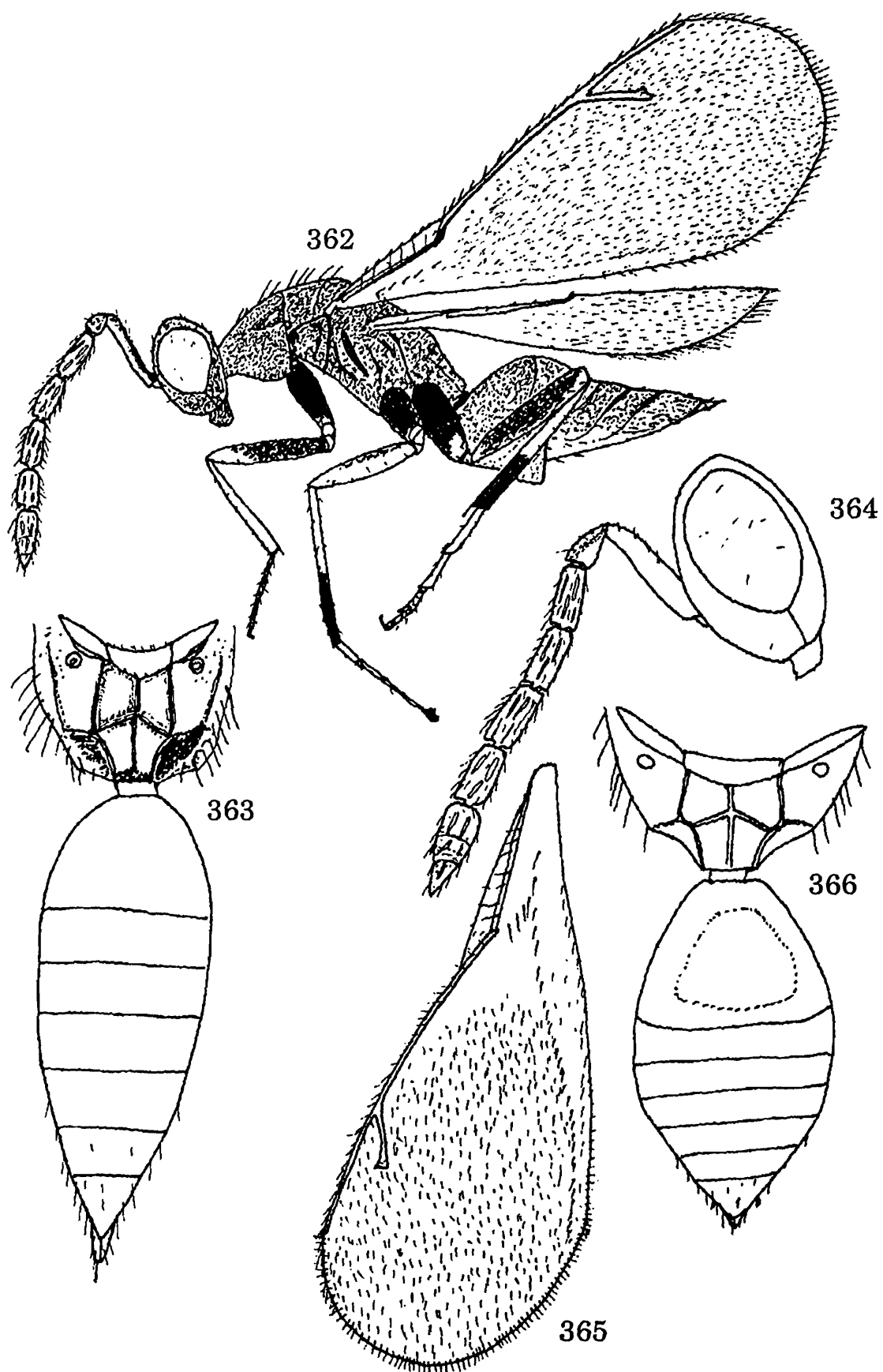
Male : Unknown.

Host : Unknown.

Material examined : Holotype, Female, INDIA, Kerala, Calicut University Campus, 5-xii-xi-1989, T.C. Narendran; Paratypes : 3 Females of same collection data, 1 Female, Kerala, Wayanad, Kalpeta, Thonikadavu (11° 36' N 76° 6' E), 7-ii-2003, T.C. Narendran & party; 2 Females, Kerala, Kollam District, Kulathupuzha (8°54' N 77° 4' E), 9-xii-2004, T.C. Narendran & party.

Depository : Holotype deposited in the Department of Zoology, University of Calicut, pending transfer to ZSIK or NZSI.

Remarks : This new species comes near *Pnigalio longulus* Zetterstedt in the key to species by Tryapitzin (1987) but differs from it in having : (1) F4 2.2x as long as wide (in *Pnigalio longulus* F4 almost squared); (2) legs including coxae pale yellow (in *P. longulus* middle & hind tibiae with dark spots); (3) scape pale yellow (in *P. longulus* scape metallic green); (4) vertex without cupreous colour



Figs. 362-363. *Pnigalio ameti* sp.nov. Female : 362. Body profile; 363. Propodeum & Metasoma.
Figs. 364-366. *P. anoti* sp.nov. Female : 364. Head & antenna profile; 365. Forewing; 366. Propodeum & metasoma dorsal view.

(in *P. longulus* vertex with cupreous colour) and (5) gaster with pale yellow patch medially (in *P. longulus* gaster with metallic green colour at base).

This new species differs from *P. ameti* sp. nov. in having : MLM with 4 pairs of setae (in *P. ameti* sp. nov. MLM with scattered pubescence and with one larger pair of setae); (2) forewing with speculum present (in *P. ameti* sp. nov. forewing without speculum); (3) propodeal spiracle separated from metanotum (in *P. ameti* sp. nov. propodeal spiracle touching metanotum); (4) metasoma as long as mesosoma (in *P. ameti* sp. nov. metasoma larger than mesosoma); (5) metasoma 1.76 as long as wide (in *P. ameti* sp. nov. metasoma 2.7x as long as wide) (6) gaster black with pale brown patch at T1 medially (in *P. ameti* sp. nov. gaster completely black) and (7) legs completely pale yellow (except brown pretarsi) (in *P. ameti* sp. nov. legs with black patches).

3. *Pnigalio bengali* Narendran sp. nov.

(Figs. 367-370)

Female : (Holotype) Length 2.4 mm. Head dark brown with metallic green refringence; eyes pale grayish yellow; ocelli pale reflecting yellow; antenna pale yellowish brown with scape slightly more paler; mesosoma dark metallic green; tegula pale yellow; legs yellow; metasoma pale yellow with T2; posterior margin of T7 slightly darker brown; wings hyaline with slight yellowish tinge, veins light brown.

Head : Width in anterior view 1.18x its height, 2.2x its length in dorsal view; posterior margin of occiput a little concave medially, not carinate; POL 1.33x OOL; AOL shorter than OOL but subequal to LOL; WIOS 3x POL; MS distinct, 0.28x height of eye in profile; eyes moderately pubescent with very minute setae visible only in high magnification; eye length in profile 0.69x eye height; antenna inserted well above level of ventral margin of eyes but distinctly below middle of frons; scape exceeding level of vertex; relative L : W of antennal segments : scape = 33 : 6; pedicel = 13 : 9; F1 = 25 : 8; F2 = 25 : 9; F3 = 23 : 8; F4 = 19 : 9; clava = 23 : 8.

Mesosoma : Pronotum a little shorter than mesoscutum (9 : 13), its posterior margin slightly concave medially, with 3 pairs of setae, surface raised reticulate; mesoscutum a little narrower than head in dorsal view (22 : 27), surface with raised reticulations, with 24 pairs of setae on MLM of which 2 setae of posterior side longer; axillae advanced anteriorly, faintly aciculate; scutellum with raised reticulations, a little shorter than mesoscutum, a little shorter than wide (11 : 13), with 2 pairs of setae; dorsellum 0.16x as long as scutellum, completely divided medially by a longitudinal row of 4 deep pits (Fig.368); submedian regions of

dorsellum smooth; propodeum distinctly reticulate (but reticulation not very strong); median carina, plicae and costulae present; anterior half of each plicae straight, posterior half oblique; costulae arising well before mid point of anterior carina, callus with 9-10 setae; spiracle separated from metanotum by a distance shorter than diameter of spiracle; forewing 2.27x as long as broad; speculum present, closed behind by cubital line of setae; CC 7.5x as long as its width; relative length of CC = 30; SMV = 24; MV = 36; PMV = 25; STV = 8.

Mestasoma a little longer than mesosoma (41 : 38), 2.33x as long as broad; posterior margin of T1 straight.

Male : Unknown.

Host : Unknown.

Material examined : Holotype, Female, INDIA, West Bengal (22° 34' 10.92? N 88° 22' 10.92? E), Chandemeswar, 1-x-1983, S. S. Islam. (NZSI).

Depository : Holotype deposited at NZSI.

Remarks : This new species differs from all other Indian species in having the following combination of characters : (1) dorsellum divided medially by a row of pits; (2) posterior half of each plica oblique; (3) MLM with 24 pairs of setae; (4) PMV 3x as long as STV; (5) metasoma pale yellow with T2 to posterior margin of T7 slightly dark brown and (6) all legs including coxae yellow.

4. *Pnigalio cadoti* Narendran sp. nov.

(Figs. 371-374)

Female : (Holotype) Length 2.47 mm. General body colour black with a little metallic green refringence on head and mesosoma and a little more strongly on metasoma; scape black on distal half and yellow on basal half; remaining antennal segments dark brown; eyes pale gray, ocelli pale reflecting yellow; fore coxa dark brown with apex pale; all trochanters pale, all four tarsal segments and all pretarsi dark brown; basal half of fore femur with a dark brown patch on dorsal side, remaining part of fore femur and other segments of fore leg pale yellow except dark brown fourth tarsal segment and pretarsi; mid leg pale yellow except a dark brown spot on coxa dorsally; hind leg pale yellow with a dark brown spot on hind coxa dorsally and anteriorly; forewing hyaline with veins and pilosity brown.

Head width 1.1x its height in anterior view, 2.33x its length in dorsal view; POL 2x OOL; AOL a little shorter than OOL; WIOS 3x as long as POL; occiput medially concave, posterior margin ridged medially but not carinate; MS distinct,

0.21x height of eye, eye length in profile 0.7x eye height; eyes sparsely pilose, pilosity hardly distinct in high magnification; antenna inserted nearly middle of frons; scape far exceeding level of vertex; relative L : W of antennal segments : scape = 38 : 7; pedicel 11 : 6; F1 = 25 : 7; F2 = 20 : 7; F3 = 23 : 7; F4 = 16 : 7; clava = 25 : 7.

Mesosoma : Pronotum as long as mesoscutum, its posterior margin a little concave in middle, with 3 pairs of long setae near posterior marginal area, surface weakly reticulate; mesoscutum a little narrower than head width distinctly reticulate, with 18 setae on MLM with two setae on posterior part slightly longer; axillae advanced anteriorly with weak aciculations, mostly smooth, scutellum with raised reticulations, slightly shorter than mesoscutum; 1.13x as long as wide, with 2 pairs of setae; dorsellum smooth, 0.22x length of scutellum; propodeum smooth and shiny with median carina intersected by costulae before the middle; anterior half of plicae slightly oblique, not curved, callus 12-14 setae on either side; spiracle touching metanotum; forewing 2.43x as long as wide; speculum present, closed behind by cubital line, interrupted at middle partly by other setae as in figure 373; CC 8.7x as long as wide; relative length of CC = 26; SMV = 20; MV = 36; PMV = 25; STV = 9.

Metasoma : As long as mesosoma, distinctly petiolate; petiole 2.1x as wide as long; metasoma 2.9x as long as wide in dorsal view; posterior margin of T1 straight.

Male : Antenna with branches on F1 to F3; gaster yellow basally, otherwise similar to female.

Host : Unknown.

Material examined : Holotype : Female, INDIA, Sikkim, Gangtok (27° 20' N 88° 40' E), Ranipal, 04-v-2008, F R. Khan, (NPC). Paratypes : 1 Female, INDIA, Assam, Kamrup (26°53' N 90° 39'E), Boodapahar, 30-x-2008, F R. Khan; 1 Male, INDIA, Meghalaya, Shillong (25° 34', N91° 53'), 24-x-2008, F.R.Khan (ZDAMU).

Depository : Holotype deposited at NPC.

Remarks : This new species is extremely close to *P.ameti* Narendran sp. nov. in very many features but differs from it in having : (1) speculum present (speculum absent in *P. ameti* Narendran sp. nov.); (2) MV 1.44x as long as PMV (in *P. ameti* sp. nov. MV 1.61x as long as PMV); (3) PMV 2.8x as long as STV (in *P. ameti* Narendran sp. nov. PMV 1.9x as long as STV); (4) petiole length 0.46x its width (in *P. ameti* sp. nov. petiole length 0.25x its width); (5) gaster black with metallic green refringence (in *P. ameti* Narendran sp. nov. gaster

black without metallic green refringence); (6) F2 shorter than F1 (in *P. ameti* Narendran sp. nov. F2 as long as F1) and (7) basal cell with 3 setae behind and just before cubital line).

5. *Pnigalio camicalis* Narendran sp. nov.

(Figs. 375-376)

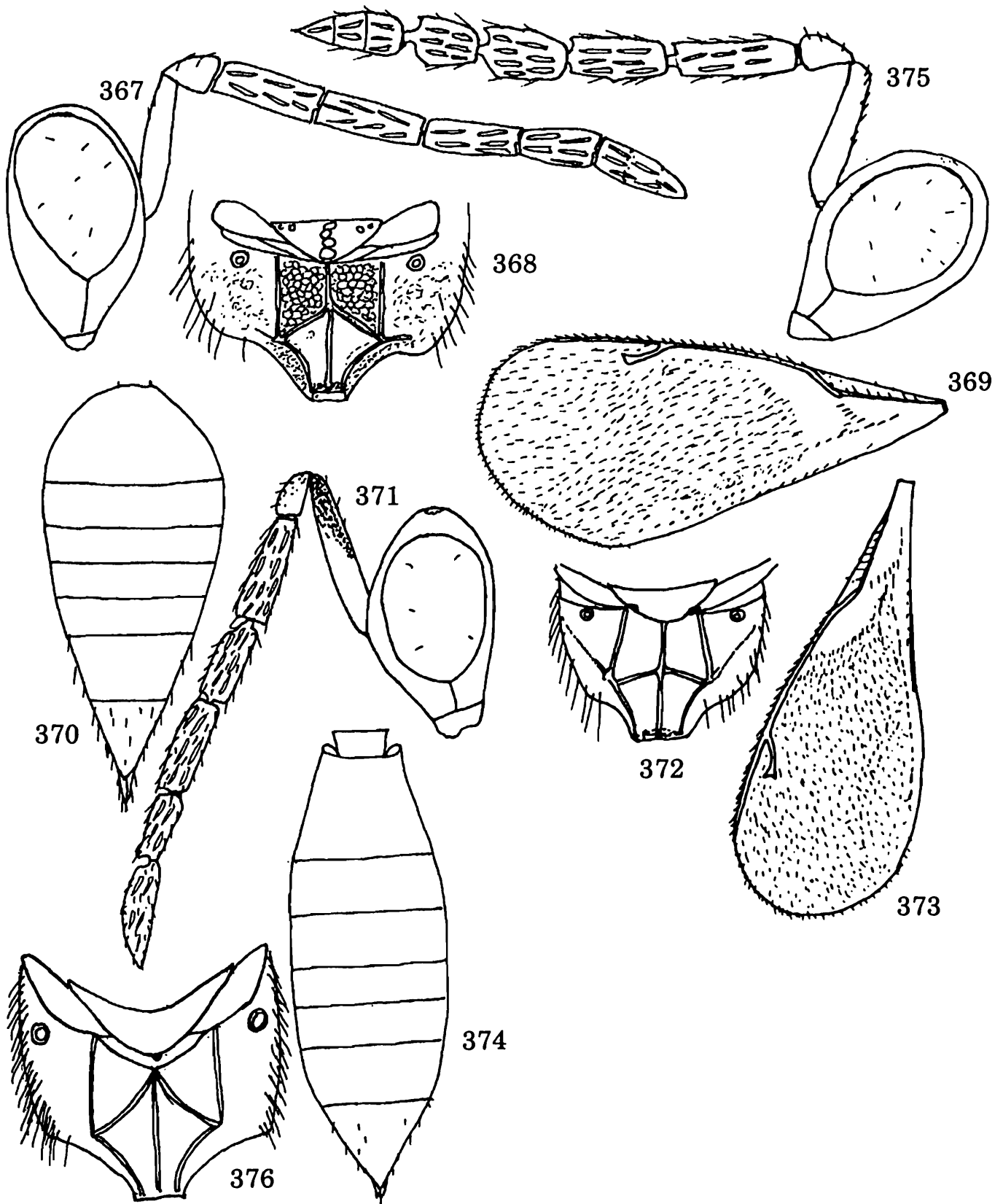
Female : (Holotype) Length 2.8 mm. Body dark metallic green; eyes gray; ocelli pale white; antenna black with scape pale yellow except on dark dorsal side; coxae, trochanters, femora and tibiae pale yellow; fore tarsi light brown; first and second tarsal segments of mid leg pale yellow, third and fourth mid tarsal segments light brown; first tarsal segment of hind leg pale yellow, remaining tarsal segments of hind leg light brown; all pretarsi dark brown; wings hyaline with veins light brown.

Head : Width in anterior view 1.2x its height; width in dorsal view 2.1x its length; occiput concave a little in middle, not marginate; POL 1.75x OOL; AOL shorter than OOL; LOL subequal to AOL; WIOS 2.9x POL; MS distinct, 0.24x eye height in profile; eye length in profile 0.71x eye height; eyes pilose; antenna inserted well above level of ventral margin of eyes; scape reaching above level of vertex of head; relative L : W of antennal segments: scape = 35 : 6; pedicel = 12 : 8; F1 = 30 : 8; F2 = 22 : 10; F3 = 20 : 11; F4 = 15 : 11; clava = 16 : 9.

Mesosoma : Pronotum shorter than mesoscutum, its posterior margin concave at middle, coarsely reticulate and pubescent, with 2 pairs of strong setae near posterior margin and one strong seta on either side laterally; mesoscutum width a little less than head width (16 : 18); with relatively large reticulations, with more than 20 setae scattered all over; axillae advanced anteriorly, faintly reticulate; scutellum with hexagonal distinct reticulations, 0.6x as long as mesoscutum; dorsellum faintly reticulate on proximal half, mostly smooth and shiny on distal half, 0.25x as long as scutellum; propodeum faintly reticulate, mostly smooth and shiny, costulae start from anterior end of median carina, not quite intersecting median carina; anterior arm of plicae straight; spiracle separated from metanotum by a distance shorter than diameter of spiracle; callus densely pubescent; forewing 2.3x as long as its width; speculum present, closed behind by cubital line of setae which extends to subbasal area of wing; CC 9.3x as long as its width; relative length of CC = 11; SMV = 9; MV = 13; PMV = 4; STV = 2.5.

Metasoma : A little longer than mesosoma (19 : 15); 1.5x as long as broad; posterior margin of T1 slightly convex, (not quite straight).

Male : Unknown.



Figs. 367-370. *Pnigalio bengali* sp. nov. Female : 367. Head & antenna profile; 368. Propodeum dorsal view; 369. Forewing; 370. Gaster. **Figs. 371-374 :** *P. cadoti* sp. nov. Female : 371. Head & antenna profile; 372. Propodeum; 373. Forewing; 374. Petiole & gaster. **Figs. 375-376 :** *P. camicalis* sp. nov. Female : 375. Head & antenna profile; 376. Propodeum.

Host : Unknown.

Etymology : Arbitrary combination of letters.

Material examined : Holotype: Female, INDIA, Ladakh Hunder, N 34 34 48.8, E 77 28 45.4, 31980 mtr., 04-vii-08, P. M. Sureshan, (NZSI).

Depository : Holotype deposited at NZSI.

Remarks : This new species differs from all other species of *Pnigalio* of Indian subcontinent in having : (1) characteristic costulae, starting from anterior end of median carina, (2) MLM with dense pubescence and (3) callus densely pubescent.

6. *Pnigalio subconicus* (Motschulsky)

(Figs. 377-379)

1863. *Ceraninus subconicus* Motschulsky, 66. Sri Lanka, Des Montagnes de Nura-Ellia (ZMMS).

1965. *Pnigalio subconicus* (Motschulsky): Bou ek, 553.

Female : (Plesiotype) Length 2.4 mm. Head and mesosoma black with slight metallic green refringence; eyes pale gray; ocelli pale reflecting yellow; scape pale yellow on basal half, apical half dark brown; remaining segments of antenna dark brown; mandibles brown; legs pale yellow except brown fore coxa; gaster dark metallic green with pale brown patch on median and basal part on dorsal side and on ventral side; wings hyaline with veins brown.

Head : Width in anterior view 1.2x its height; about 2x its length in dorsal view; occiput slightly concave posteriorly; POL 2x OOL; AOL equal to OOL; WIOS 3x POL; MS distinct, 0.29x eye height in profile; eye length 0.36x eye height in profile; antenna inserted well above level of ventral margin of eyes; eyes sparsely pubescent (very minute setae visible only on high magnification); scape exceeding well over level of vertex; relative L : W of antennal segments : scape = 28 : 5; pedicel = 11: 6; F1 = 22 : 8; F2 = 22 : 8; F3 = 21 : 8; F4 = 18 : 8; clava = 24: 8.

Mesosoma : Pronotum as long as mesoscutum (14 : 12), its posterior margin a little concave medially, with 3 pairs of setae near posterior margin, surface raised reticulate except smooth admarginal area of posterior side; mesoscutum as broad in dorsal view, surface with distinct hexagonal reticulations, with 4 pairs of setae on MLM, axillae advanced a little anteriorly, weakly reticulate; scutellum with raised reticulations; shorter than mesoscutum, as long as its width, with 2 pairs of setae; dorsellum 0.17x length of scutellum, smooth and shiny; propodeum smooth with median plicae and costulae; median carina intersected by costulae before mid point of median carina; anterior half of plica curved towards inner side, not straight (Fig. 379.); spiracle separated from metanotum by a distance shorter than half diameter of spiracle; forewing 2.7x as long as broad; speculum

present, closed behind by cubital line of setae, basal cell with 6 dorsal setae posteriorly just anterior to cubital line of setae; CC 10x as long as wide, relative length of CC = 30; SMV = 25; MV = 43; PMV = 26; STV = 9.

Metasoma as long as mesosoma, 1.46x as long as broad; posterior margin of T1 straight.

Male : Antenna with F1 to F3 with side branches.

Host : Unknown.

Distribution : India (Kerala, New Record of India); Sri Lanka.

Variation : Length varies from 1.5-2.4 mm. Metasoma 1.46-1.8x as long as broad; pale brown patch on gaster less pronounced in some specimens. In some specimens sinuation of plicae a little weaker.

Material examined : 1 Female, 2 Males (Plesiotype Female), INDIA, Kerala, Trivandrum District, Munar, 3-xii-1988, T.C. Narendran & party; 1 Female, Kerala, Calicut District, Thiruvannur (11° 16' N 75° 47' E), 28-xi-1994, T.C. Narendran & party; 1 Female, Kerala, Kannur District, Aralam Forests (11° 58' N 75° 40' E), 16-xii-1995, 2 Females, Kerala, Wayanad District, Pookode (11° 32' N 76° 01' E), 5-viii-2001 and 2 Females, 8-ii-2003, T.C. Narendran & party; 1 Female, Kerala, Calicut District, Adimali (9° 58' N 76° 56' E), 11-i-2004, T.C. Narendran & party; 5 Females, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 5' E); 2 Females, Kerala, Idukki District, Madupetty (9° 58' 76° 17' E), 11-i-2004, T.C. Narendran & party; 1 Female, Kerala, Idukki District, Vandiperiyar (9° 35' N 77° 5' E), 8-i-2004, T.C. Narendran; 2 Females, Kerala, Thiruvananthapuram District, Palode, (N 8° 42' 47" E 77° 1' 35") 8-xii-2004, T.C. Narendran & party; 2 Females, Kerala, Idukki District, Cheruthoni (9° 51' N 76° 58' E), 10-i-2004, T.C. Narendran & party.

Remarks : This species differs from all other Indian species in having anterior half of plicae distinctly curved aside; fore coxa alone brown and other legs pale yellow; MLM with 4 pairs of setae, and gaster dark metallic green with pale brown patch medially and basally.

7. *Pnigalio zandani* Narendran sp. nov.

(Figs. 380-383)

Female : (Holotype) Length 1.92 mm. Head and mesosoma black with a little metallic green refringence; eyes gray, ocelli pale reflecting yellow; scape pale yellow with a slight dark colour on apical part, other segments of antenna dark brown; mandibles dark brown; tegula pale yellow; legs including coxae pale yellow;

gaster pale brownish yellow with T4, T5 and median part of T7 dark brown; ovipositor sheath dark brown; wings hyaline with veins pale brownish yellow.

Head width in anterior view 1.2x its height, 2.1x as wide as its length in dorsal view; occiput a little concave in middle posteriorly, not margined or carinate; POL 2x OOL; AOL shorter than OOL; WIOS 2.7x POL; MS distinct, 0.26x eye height in profile, eye length 0.8x eye height in profile; eyes bare; antenna inserted well above level of ventral margin of eyes, but slightly below middle of frons; scape exceeding well above level of vertex; relative L : W of antennal segments: scape = 29 : 5; pedicel = 9 : 6; F1 = 20 : 6 : F2 = 20 : 6 : F3 = 20 : 6; F4 = 18 : 7; clava = 21 : 7.

Mesosoma : Pronotum as long as mesoscutum, its posterior margin a little concave in middle, with 10 pairs of long setae, cross reticulate striate; mesoscutum as wide as head in dorsal view; distinctly reticulate, with 18 pairs of setae on MLM (of which two at posterior part relatively longer than others); axillae advanced anteriorly almost smooth and shiny, scutellum with hexagonal raised reticulations, a little shorter than mesoscutum, 1.1x as long as wide, with 2 pairs of setae; dorsellum smooth and shiny, 0.2x length of scutellum; propodeum smooth and shiny with median carina intersected before middle; anterior half of plicae a little oblique, callus with 12-14 setae on either side; forewing 2.51x as long as broad; speculum present closed behind by cubital line of setae which extent to the subbasal area of wing; CC 7.5x as long as wide; relative length of CC = 30; SMV = 21; MV = 40 : PMV = 30; STV = 12.

Metasoma a little longer than mesosoma (22 : 20); 2.1x as long as wide; petiole distinct, 1.7x as wide as its length; posterior margin of T1 straight.

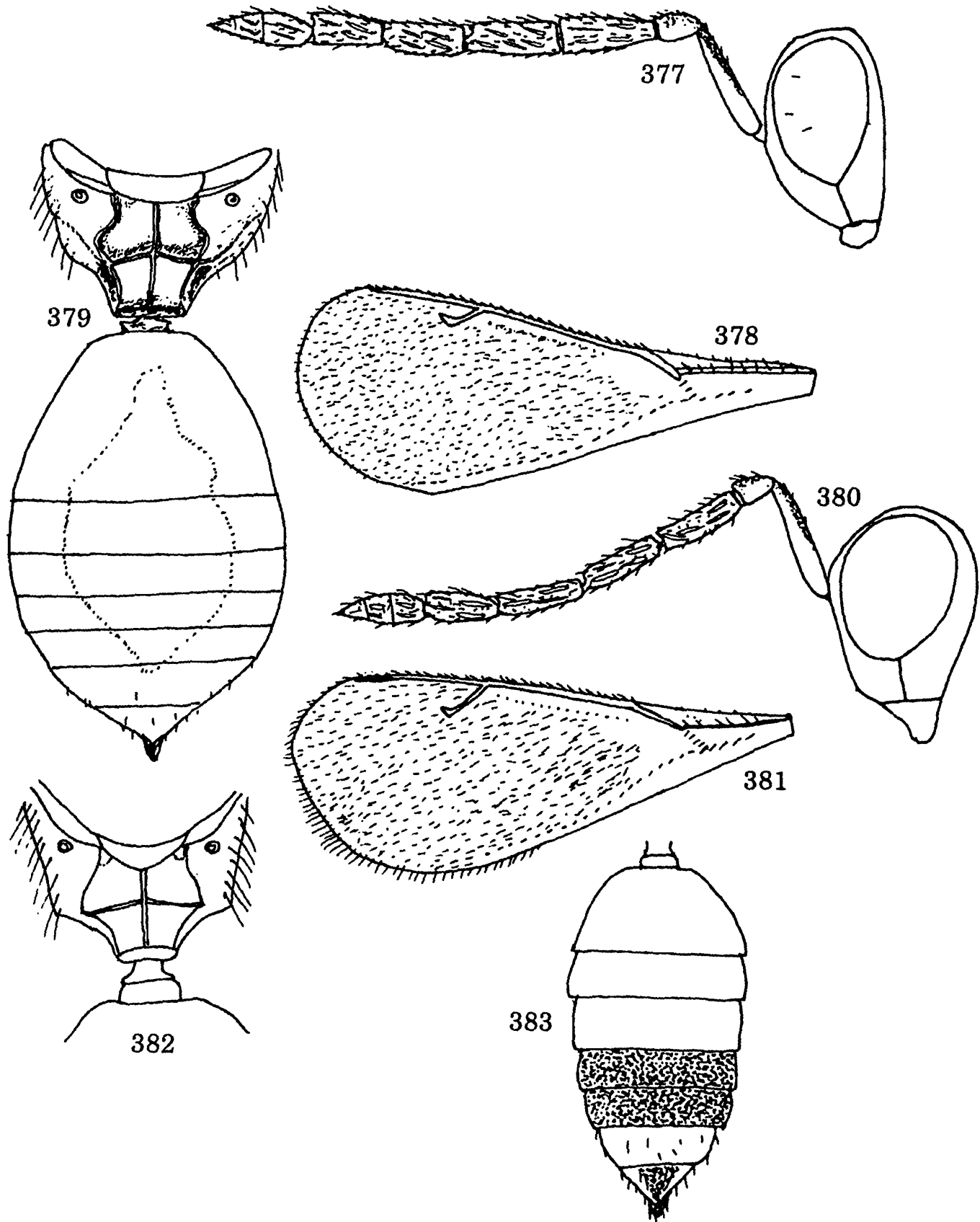
Male : Unknown.

Host : Unknown.

Material examined : Holotype, Female, INDIA, Himachal Pradesh, Hamirpur (76° 18' to 76° 44' E and 31° 25' to 31° 52'N), Anu Kalan, 1-vii-2006, S. M. A. Badruddin and F. R. Khan (NPC).

Depository : Holotype deposited at NPC.

Remarks : This species comes near *P.cadoti* Narendran sp.nov. in general appearance but differs from it in having : (1) F1 to F3 equal in length (in *P.cadoti* Narendran sp.nov. F2 shorter than F1 and F3 longer than F2); (2) eyes bare (in sp. *P.cadoti* Narendran sp. nov. eyes sparsely pubescent); (3) clava 1.17x as long as F4 (in *P. cadoti* Narendran sp. nov. clava 1.56x as long as F4); (4) petiole 1.7x as wide as long (in *P. cadoti* Narendran sp. nov. petiole 2.1x as long as wide); (5) metasoma 2.1x as wide as long (in *P. cadoti* Narendran sp. nov.



Figs. 377-379. *Pnigalio subconicus* (Mots.) Female : 377. Head & antenna profile; 378. Forewing; 379. Propodeum & gaster. **Figs. 380-383.** *P. zandani* sp. nov. Female : 380. Head & antenna profile; 381. Forewing : 382. Propodeum & petiole; 383. Gaster dorsal view.

metasoma 2.9x as long as wide); (6) gaster mostly pale brownish yellow (in *P. cadoti* Narendran sp. nov. gaster black with metallic green refringence) and (7) legs completely yellow without dark patches (in *P. cadoti* Narendran sp. nov. legs yellow with dark brown patches on coxae and fourth tarsal segment brown).

This species does not come near any other described Oriental species.

Genus *Propodeochertus* Narendran gen. nov.

Type species *Propodeochertus sureshani* Narendran sp.nov.

Diagnosis : Female : Head a little hypognathous; vertex flat; eyes densely pilose; antenna inserted distinctly above level of ventral margin of eyes; scape exceeding a little above level of vertex; clypeus delimited from frons; its lower margin entire; antenna with 4 segmented funicle and 3 segmented clava. Pronotum somewhat bell shaped with a median pit anteriorly and with dense setae, each seta arising from raised wart like papilla; MLM densely pubescent and coarse, raised reticulation; notauli almost straight with a pit like depression at its posterior end; axillae slightly advanced anteriorly, separated from each other by a distance shorter than its width; scutellum with a broad fovea like depression anteriomedially; with sublateral grooves. Propodeum with a strong median carina with a deep fovea adjoining it on either side as in the genus *Entedon*; plicae present on posterior half; paraspircular carina present and bifurcated in posterior half; lateral or sublateral grooves of *Elachertus* absent; forewing as in *Elachertus*; mid and hind legs with metatarsus shorter than following segment; metasoma with a short petiole; petiole a little over 2x as broad as long.

Distribution : India.

Host : Unknown.

Remarks : This new genus comes near *Elachertus* in general appearance but differs from it in having : (1) Head a little hypognathous (in *Elachertus* head not hypognathous); (2) vertex flat (in *Elachertus* vertex not flat); (3) pronotum with raised wart like papillae all over (in *Elachertus* no such raised papillae present); (4) pronotum somewhat bell shaped with a median pit anteriorly (in *Elachertus* pronotum not so and without a median pit anteriorly); (5) Propodeum with median carina provided with deep fovea adjoining it on either side as in *Entedon* (in *Elachertus* no such fovea adjoining median carina); (6) lateral or sublateral grooves of propodeum absent (in *Elachertus* sublateral grooves present); and (7) Scutellum with a median fovea like depression present (in *Elachertus* no such median depression on scutellum present).

The genus *Zealchertus* Bou ek resembles this new genus in having wart-like papillae on pronotum but differs from it in all other generic features.

***Propodeochertus sureshani* Narendran sp. nov.**

(Figs. 116-118)

Female : (Holotype) Length 2.6 mm. Head yellow with dark brown patches on vertex; scape pale yellow; pedicel pale brown; funicle and clava black ; eyes grayish yellow; posterior ocelli reflecting red with dark anterior part ; anterior ocellus dark brown; pronotum black with lateral ledges pale brown; mesoscutum black; scapula black with yellowish brown patch; scutellum pale brownish yellow with anterior part a little darker; axillae a little darkish brown; dorsellum, median part of metanotum and propodeum black; prepectus, mesopleuron, metaleuron pale brownish yellow; legs including coxae whitish yellow; gaster mostly black with some parts slightly brownish. Wings hyaline with veins pale brown.

Head : Width in anterior view 1.4x its height, width in dorsal view 2x its length; POL equal to OOL; AOL shorter than OOL; WIOS 4.33x POL; scrobe and frons smooth and faintly reticulate; frons distinctly separated from anterior ocellus by a distance equal to diameter of anterior ocellus; clypeus delimited from frons, its lower margin entire; each mandible with 5-6 minute teeth; MS 0.2x height of eye in profile; occiput margined but ecarinate; eye length in profile 0.8x eye height; eye pilose. Antenna inserted distinctly above level of ventral margin of eyes; scape exceeding a little above level of vertex; relative L : W of antennal segments : scape = 23 : 6; pedicel = 12 : 5; F1 = 19 : 7; F2 = 17 : 8; F3 = 18 : 8; F4 = 15 : 8; clava = 21 : 7.

Mesosoma : Pronotum without cross carina; with dense setae, each seta arising from raised wart-like papilla ; with two pairs of stouter setae on posterior marginal area and one stout seta on either side of pronotum; mesonotum subequal in length to pronotum, with coarse and raised reticulation, with scattered setae; notauli almost straight; scutellum shorter than MLM, weakly reticulate, sublateral groove turning mesad posteriorly but not meeting each other, well separated; dorsellum reticulate; propodeum with a strong median carina weakly forked at base below a weakly projecting lamina; median carina in a deep groove as in the genus *Entedon* Dalman; plicae present only at posterior half; paraspiracular carina present and bifurcated posteriorly; submedian areas convex and smooth; lateral areas reticulate; callus with 6-7 setae; spiracle separated from metanotum by a distance shorter than diameter of spiracle; prepectus large and triangular, major part smooth; mespimeron and mesepisternum smooth; mid and hind metatarsi shorter than following segment of each leg respectively; forewing 2.33x as long

as its width; speculum absent; relative length of CC = 16; SMV = 12; MV = 18; PMV = 8; STV = 6.

Metasoma : Petiole a little over 2x as broad as long, 0.08x length of gaster; metasoma almost equal to mesosoma; hyopygium a little exceeding middle of gaster.

Male : Unknown.

Host : unknown.

Material examined : Holotype Female : India, Arunachal Pradesh, Daphabum N 27° 30' 46.8", E 96° 31' 17.4", 534 mtrs. 09.xi.2009, P. M. Sureshan, (NZSI).

Depository : Holotype deposited in NZSI.

Genus *Stenomesius* Westwood

1833 *Stenomesius* Westwood, 343. Type species *Stenomesius pulchellus* Westwood, designated by Westwood, 1839.

1913 *Euryscotolinx* Girault, [167] : 266. Type species *Euryscotolinx guttativertex* Girault, by original designation. [synonymy by Bou ek, 1977 : 401]

1917 *Stenelachistus Masi*, 201. Type species *Stenelachistus impressus Masi*, designated by Gahan & Fagan, 1923 : 136 [synonymy by Bou ek, 1977 : 401].

1951 *Nioro* Risbec, 25. Type species *Nioro elegantula* Risbec, by monotypy. [synonymy by Bou ek, 1977:401]

Diagnosis : Propodeum medially with two strong carinae connected before middle in form of 'H' or 'X'; scutellum with lateral longitudinal groove; hind tibial spurs normal; pronotum without transverse carina; female funicle 4 segmented; mesosoma finely sculptured or partly smooth or shiny; propodeum smooth or finely reticulate or coarsely carinate reticulate; petiole shorter than hind coxa, gaster usually elongate.

Host : Ectoparasites (probably always primary) of small caterpillars of Lepidoptera including leaf mining species. Recorded host families include Gelechiidae, Lyonetiidae, Glyphipterygidae, Tortricidae, Pyralidae, Noctuidae (Bou ek, 1988). Bou ek (1988) stated that one specimen from Indonesia is labeled as having been reared from eggs of *Scirpophaga innotata* (Walker), the rice borer and this record needs confirmation.

Distribution : India, Pakistan, Senegal, Seychelles Is, South Mariana Is, Caroline Is, China, Japan, Korea, New Guinea and New Zealand.

Remarks : This genus resembles the genera *Stenopetius* Bou ek and *Euplectromorpha* Girault in having similar type of propodeum with 'H' shaped carinae. However it differs from *Stenopetius* Bou ek in having : (1) pronotum without transverse carina (in *Stenopetius* Bou ek pronotum with distinct transverse

carina; (2) female funicle 4 segmented (in *Stenopetius* Bou ek female funicle 5 segmented); (3) mesosoma not coarsely and irregularly rugose (in *Stenopetius* Bou ek mesosoma coarsely and irregularly rugose); (4) temples developed (in *Stenopetius* Bou ek head without temples) and (5) petiole shorter than hind coxa (in *Stenopetius* Bou ek petiole longer than hind coxa).

It differs from *Euplectromorpha* in having hind tibia with at least one spur distinctly longer than first hind tarsal segment whereas in *Stenomesus* Bou ek hind tibial spurs normal.

Key to Indian species of *Stenomesus* Westwood

(Based on females)

1. Gaster a little shorter than mesosoma, its width 0.7x its length; mesosoma black with anterior marginal area of collum and lateral edge of pronotum pale brownish yellow; axillae well separated from each other; scutoscuteellar groove narrow; propodeum besides 'H' shaped carinae, surface irregularly carinate and reticulate; head black except area from toruli to distal margin of clypeus, gena and a line around each eye yellow.....
.....*S. aligarhicus* Narendran sp. nov.
- Gaster not shorter than mesosoma, usually longer than mesosoma, if shorter, other characters not as in above combination; other characters partly or completely different or variable..... 2
2. Gaster shorter than mesosoma; antennal toruli located almost middle of distance between front ocellus and lower clypeal margin (Fig. 1 of Khan *et. al*, 1994); POL longer than OOL*S. anati* Khan & Singh
- Gaster longer than or as long as mesosoma, other characters variable..... 3
3. Antennal segments relatively narrow; F1 4.5x as long as wide; propodeum with several irregular carinae besides 'H' shaped carinae (Fig.393); body yellow with black markings*S. calicuticus* Narendran sp. nov.
- Antennal segments not so narrow as above; propodeum usually not carinate, if carinate then not as densely carinate as above; colour variable 4
4. Scape not reaching above anterior ocellus; propodeum with plicae curved sharply at two points medially (Fig.6 Khan *et. al*, 2004).....
.....*S. orientalis* Agnihotri & Khan
- Scape reaching above anterior ocellus; propodeal plicae not as above..... 5

5. All funicular segments equal or subequal in length; clava 3 segmented; MV 2x as long as PMV *S. japonicus* (Ashmead)
- All funicular segments not equal or subequal in length; atleast one segmented shorter or longer than any other segment, clava 2 segmented; MV length variable..... 6
6. Antennal toruli located much above lower level of eyes; OOL longer than 3x LOL; MV 2.7x as long as PMV, 5x as long as STV
.....*S. singularis* (Shafee & Rizvi)
- Antennal toruli located much below middle of distance between front ocellus and lower clypeal margin; OOL much shorter than 3x OOL; MV 2.3x as long as PMV, 4x as long as STV*S. modicellus* Khan

1. *Stenomesus aligarhicus* Narendran sp. nov.

(Figs. 384-389)

Female : (Holotype) Length 2 mm. Head black with area below antennal toruli and area around margin of eyes yellow; eyes gray with marginal area pale yellow; ocelli reflecting pale yellow; antenna brown with pedicel pale brown and scape pale yellow on ventral half and pale brown on dorsal half; mesosoma black with cervix and ledge of pronotum pale brownish yellow; tegula pale brownish yellow; gaster pale yellow with side margins and T4 & T5 pale brown; legs yellow; wings hyaline with veins pale brownish yellow.

Head : Width in anterior view 1.2x its length, width in dorsal view 2.1x its length; postocciput deeply concave; POL 1.5x OOL; AOL a little shorter than OOL (5 : 6); LOL shorter than OOL; WIOS 2.9x POL; eye with very sparse short pubescence (careful observation is necessary to see this); MS present; malar space 0.33x eye height; eye length 0.8x eye height in profile; antenna inserted at level of ventral margin of eye; scape exceeding a little over vertex; relative L : W of antennal segments: scape = 46 : 13; pedicel = 15 : 7; F1 = 20 : 7; F2 = 20 : 7; F3 = 21 : 8; F4 = 19 : 7; clava = 29 : 7.

Mesosoma : Pronotum without transverse carina, posterior half finely reticulate; mesoscutum distinctly reticulate; scutellum distinctly reticulate; lateral longitudinal groove shallow, meeting each other medially on posterior margin; groove with large cell like reticulation; scutoscutellar groove narrow; axillae well separated from each other; propodeum with irregular carinae besides 'H' shaped carina; hind tibial spurs shorter than first hind tarsal segment; forewing 2.5x as long as wide, speculum absent; relative length of CC = 25; SMV = 20; MV = 36; PMV = 18; STV = 8.

Metasoma : Petiole transverse; gaster a little shorter than mesosoma, 1.4x as long as its width.

Male : Unknown.

Host : Unknown.

Distribution : India : Uttar Pradesh.

Material examined : Holotype. Female : INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 20-i-1978, M. Hayat & M. Verma (ZDAMU).

Depository : Holotype deposited in ZDAMU.

Remarks : This is a unique species which differs from all other Indian species in having : (1) gaster shorter than mesosoma; (2) dorsal width 0.7x its length; (3) scutoscuteellar groove relatively narrower than other species; (4) axillae well separated from each other and propodeum coarsely carinate.

2. *Stenomesus anati* Khan & Singh

1994 *Stenomesus anati* Khan & Singh, 11. Female, India, Uttar Pradesh, Jeiolikot (Nainital) (GBPU?).

Diagnosis : This species comes very near *S. japonicus* (Ashmead) in very many characters and it is possible that this species may be a variant form of *S. japonicus* (Ashmead) when the relevant types are studied. From the original description of *S. anati* Khan & Singh the funicular segments show slight differences from that of *S. japonicus* (Ashmead).

Host : Unknown.

Distribution : India (U.P.).

Remarks : On enquiry it was learnt that the type is not deposited in NZSI as stated by Khan & Singh (1994). A request for loan of holotype sent to the authors of the species remained unanswered.

3. *Stenomesus calicuticus* Narendran sp. nov.

(Figs. 390-395)

Female : (Holotype) Length 2.0 mm. Head yellow, eyes brownish black with rim around pale gray; ocelli black; antenna dark brown with scape pale brownish yellow (except the brownish apex of scape); pronotum yellow with a black patch posteriomediaally on pronotum and anteromediaally on MLM; axilla with a black spot on either side, rest of mesoscutum yellow; scutellum yellow; dorsellum black; propodeum pale brown with median and lateral parts black; ventral half of meso and metasternum black; metasoma yellow with a black narrow part from T3 to T6; ovipositor sheath black; legs including coxae yellow; wings hyaline with veins pale brownish hyaline.

Head : Width in anterior view 1.11x its height, width in dorsal view 2.2x its length; postocciput concave (but not as deep as in *Stenomesus aligarhicus* Narendran sp. nov.); POL 1.13x OOL; AOL shorter than OOL; LOL a little shorter than AOL; WIOS 3.8x POL; eyes bare; MS present; malar space 0.33x eye height in profile; eye length in profile 0.8x eye height in profile; antenna inserted almost near middle of frons; scape exceeding level of vertex; relative L : W of antennal segments : scape = 36 : 6; pedicel = 12 : 4; F1 = 18 : 4; F2 = 19 : 4; F3 = 17 : 4; F4 = 18 : 4; clava = 26 : 5.

Mesosoma : Pronotum without transverse carina, finely reticulate; mesoscutum finely and distinctly reticulate; each scapula with an oblique short pit posteriorly; each axilla almost near touching anteriorly; scutoscutellar groove not as narrow as *S. aligarhicus* Narendran sp. nov.; median part between lateral groove of scutellum reticulate; lateral groove foveolate, not meeting medially each other; propodeum besides 'H' shaped carinae several irregular carinae (Fig. 393); hind tibial spurs shorter than first hind tarsal segment; forewing (excluding fringe) 2.9x as long as wide; speculum indistinct; relative length of CC = 27; SMV = 25; MV = 46; PMV = 21; STV = 8.

Metasoma : Petiole short, a little wider than long, gaster longer than mesosoma, 2.24x as long as broad.

Male : Similar to female except in having : (1) scape about 0.6x as broad as long and (2) gaster much shorter than mesosoma.

Host : Unknown.

Distribution : India (Kerala).

Material examined : Holotype. Female, India, Kerala, Calicut District, Nanminda (11° 26' N 75° 50' E), 14-ii-2004, T.C. Narendran & party. Paratypes : 6 Females and 4 Males of some collection data as that of holotype.

Depository : Holotype deposited in the Department of Zoology, University of Calicut, Kerala state pending transfer to ZSIK or NZSI.

Variation : In some female specimens ocellar area is dark and length varies from 1.9-2.1mm.

Remarks : This species comes near *S. aligarhicus* Narendran sp. nov. in somewhat similar propodeum in having several carinae but differ in having different colouration, and narrower antennal segments and metasoma longer than mesosoma.

4. *Stenomesus japonicus* (Ashmead)

(Fig. 396)

1904b *Sympiesomorpha japonica* Ashmead, 163. Lectotype, Female, Japan (USNM).

- 1916 *Sympiesomorphelleus whitmani* Girault, [287] : 300. Kamijo (1976: 484) synonymized.
- 1917 *Stenelachistus impressus* Masi, 201. Lectotype Female, Seychelles (BMNH); Bou ek (1977: 402) synonymized.
- 1921 *Euryscotolinx coimbatorensis* Rohwer, 134. Holotype Female, India (USNM); Bou ek (1977 : 402) synonymized.
- 1937 *Sympiesomorpha chilonis* Ishii, 110. Lectotype Female, Japan (NIAES); Kamijo (1976 : 484) synonymized.
- 1953 *Sympiesomorpha mikan* Ishii, 4. Lectotype Female, Japan, Nagasaki; Kamijo (1976 : 484) synonymized.
- 1966 *Stenomessioideus ashmeadi* Subba Rao & Sharma, 299. India, Andhra Pradesh, Anantapur; Bou ek (1976 : 402) synonymized.
- 1989 *Miotropis ashmeadi* (Subba Rao & Sharma), New combination by Mani (1249) for *Stenomessioideus ashmeadi* Subba Rao & Sharma.
- 1988 *Hemiptarsenus agragensis* Shafee & Rizvi, 13. Holotype Female, India, Uttar Pradesh (ZDAMU) Hayat & Aftab, in Hayat *et al.*, 2005 : 4, synonymized.

Diagnosis : Female : Length 1.2-2.2 mm. Yellow with or without black markings or patches on head, mesosoma and metasoma; antennal toruli located at level (or slightly above) ventral margin of eyes; scape reaching a little above level of vertex; funicle segments subequal in length and width; POL subequal to OOL; lateral grooves of scutellum meeting each other through posterior margin; submedian areas of propodeum mostly smooth between 'H' shaped carina and plicae; gaster longer than mesosoma, ovoidal. Forewing as in figure 396.

Male : Similar to female except for shorter metasoma and size relatively shorter in length.

Host : Parasitic on various Lepidoptera families such as Gelechiidae, Gracillariidae, Lyonetiidae, Noctuidae and Pyralidae (For detailed list Noyes 2003.).

Material examined : 13 Females, INDIA, Kerala, Calicut University Campus (11° 7' N 75° 5' E), 15.iii.1989, T.C. Narendran; 1 Female, Kerala, Kayamkulam (9° 10' N 76° 30' E), 20.ii.1988, T.C. Narendran & Party; 2 Males, 1 Female, Kerala, Kannur District, Kottiyoor (10° 7' N 78° 49' E), 19.iii.2003, T.C. Narendran & Party, 1 Female, Kerala, Palghat District, Malampuzha (10° 53' N 76° 46' E), 11.x.1987, T.C. Narendran & Party; 1 Female, Kerala, Kasaragod (12°30' N 74° 59' E), 23.i.2003, T.C. Narendran & Party; 2 Females, Kerala, Wayanad District, Thonikadavu (11° 36' N 76° 6' E), Kalpetta, 7.ii.2003, T.C. Narendran & Party; 1 Female, Wayanad, Thariyodu (11° 40' N 75° 57' E), 22.ii.1988, T.C. Narendran & Party; 1 Female, INDIA, Tamil Nadu, Annamalai University Campus (12°18' N 79°4' E), 10.x.2000, R.Nagarajan; 3 Females, Tamil Nadu, Coimbatore (11° 0' N 76° 58' E), 8.xi.2005, G. Santharam; 2 Females, INDIA, Orissa, Puri (19° 45'

N 85° 49' E), 20.ii.1944, S.B. Zeya; 1 Female, INDIA, Uttar Pradesh, Balampur (27° 26' N 82° 11' E), 5.x.2000, F.R.Khan. (1 female in ZDAMU)

Remarks : This is a very variable species with the colour varying from body yellow with various black patches to completely yellow. *S. anati* Khan & Singh, *S. modicellus* Khan and *S. orientalis* Agnihotri & Khan may be different variant forms of *S. japonicus* (Ashmead), when known better on their identities.

5. *Stenomesius modicellus* Khan

1992 *Stenomesius modicellus* Khan, 25. Holotype Female, India, Tamil Nadu, padappai (GBPU?)

Diagnosis : From the figures and description of the original paper by Khan, this species differ from *S. japonicus* (Ashmead) mainly in slightly different proportion of antennal segments and in having relatively shorter PMV

Male : Unknown.

Host : Larva of *Aproaerema modicella* Dev. (Lepidoptera : Gelechiidae) on *Arachis hypogaea* L. (Groundnut) (Khan 1992).

Distribution : India (Tamil Nadu, padappai).

6. *Stenomesius orientalis* Agnihotri & Khan

2004 *Stenomesius orientalis* Agnihotri & Khan, 422-424 Holotype Female, India, Uttarakhand, Haldwani (GBPU?).

Diagnosis : (Based on Agnihotri & Khan, 2004)

Body yellow with slight infuscation on sides of gaster and a brown spot beyond middle of gaster; POL longer than OOL; antenna inserted a little above level of ventral margin of eyes; antenna densely setose; scape not reaching above anterior ocellus; plical carinae of propodeum irregular (Fig. 6, Agnihotri and Khan, 2004).

Male : Unknown.

Host : *Acrocercops* sp. (Lepidoptera : Gracillariidae).

Distribution : India : Uttarakhand.

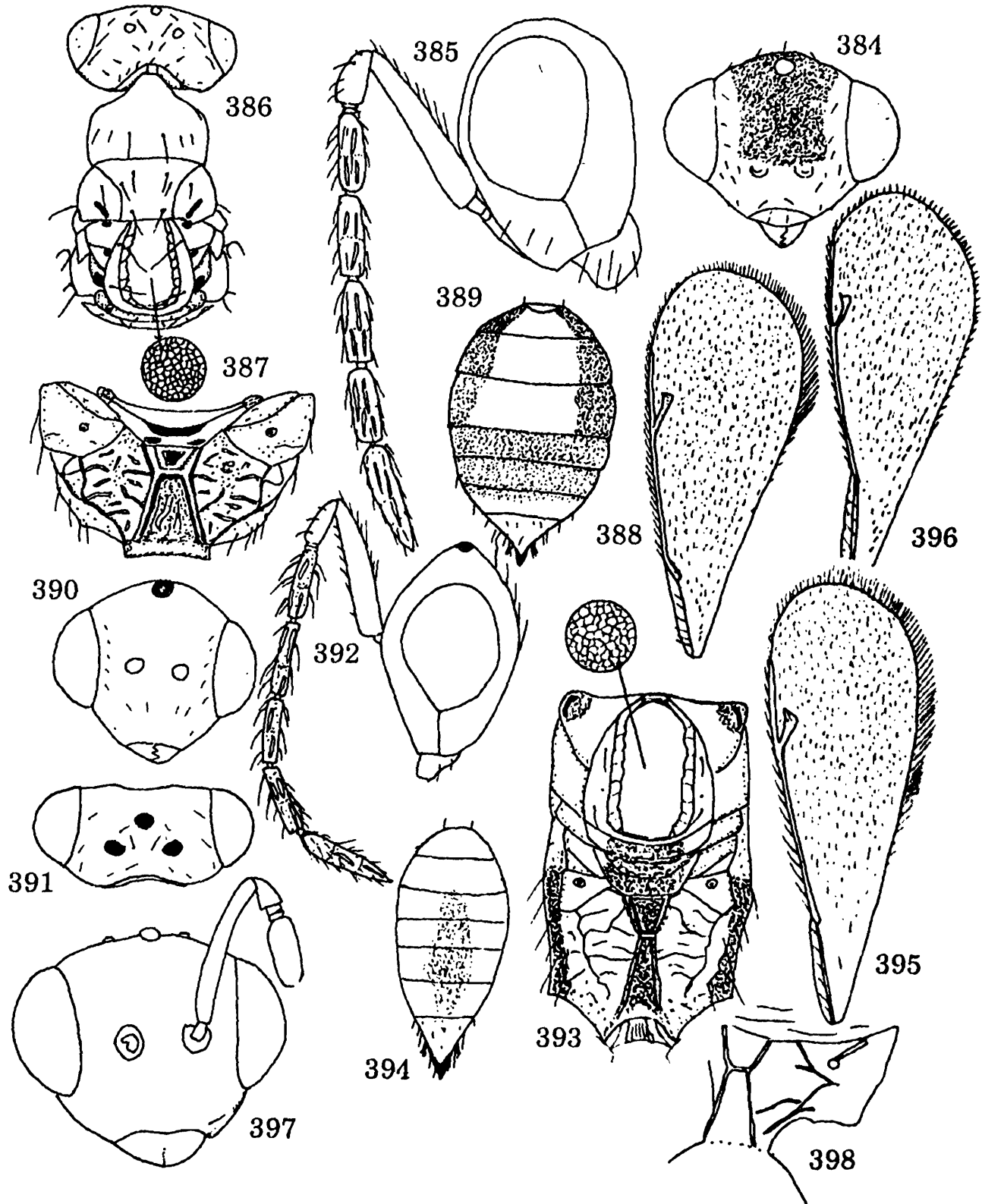
Remarks : The relative shorter scape and irregular plical carinae can be used for separating this species from other Indian species. On enquiry it is known that the species is not present in NZSI as stated in the original paper by the authors.

7. *Stenomesius singularis* (Shafee & Rizvi)

(Figs. 397-398)

1988 *Hemiptarsenus singularis* Shafee & Rizvi, 12. Holotype Female, India, Madhya Pradesh (ZDAMU).

2005 *Stenomesius singularis* (Shafee & Rizvi) : Hayat & Aftab, in Hayat *et al.*, 5.



Figs. 384-389. *Stenomesus aligharicus* sp.nov. Female : 384. Head anterior view; 385. Head & antenna profile; 386. Head & part of mesosoma dorsal view; 387. Propodeum; 388. Forewing; 389. Gaster. **Figs. 390-395.** *S.calicuticus* sp.nov. Female : 390. Head anterior view; 391. Head dorsal view; 392. Head & antenna profile; 393. Scutellum & propodeum; 394. Gaster; 395. Forewing. 396. *S.japonicus* (Ash.) Female forewing; **Figs. 397-398.** *S.singularis* (Shafec & Rizvi) Female : 397. Part of antenna; 398. Part of propodeum.

Diagnosis : It is not possible to ascertain the correct identity of this species from the poor original description. It comes very near *S. modicellus* Khan. On my request Prof. M.Hayat of Aligarh Muslim University examined the holotype and provided the figures of head (front view) and propodeum; the scape far exceeds the level of vertex and the propodeum is somewhat carinate on sides besides 'H' shaped carina.

Male : Unknown.

Host : ex. *Agromyza* sp. (Diptera).

Distribution : India (Madhya Pradesh).

Genus *Stenopetius* Bou ek

1988 *Stenopetius* Bou ek, 637. Type species *Stenopetitus rugosus* Bou ek, 1988: 638, by original designation.

Diagnosis : (Based on Bou ek, 1988; Gumosky, 2003).

Occiput concave dorsolaterally touching eyes, dorsally distinctly carinate not far behind ocelli; genae strongly converging, posteriorly with edge very narrow behind malar grooves; antenna with 5 segmented funicle and 2 segmented clava; pronotum with distinct collar carina, distinctly narrower than mesoscutum; notauli complete, alveolate; axillae not advanced, medially strongly approaching each other; disc of scutellum depressed rugose; propodeum as in *Stenomesius* Westwood but adspiracular groove broad and deep and in middle crossed by a high ruga; petiole narrow and long, distinctly exceeding hind coxae, longer than scutellum; gaster with T1 covering slightly more than half of gaster.

Host : Unknown.

Distribution : India, Australia, Pacific regions.

1. *Stenopetius rugosus* Bou ek

(Fig. 399)

1988 *Stenopetius rugosus* Bou ek, 638. Holotype Female Australia, Queensland, (ANIC).

2003 *Stenopetius rugosus* Bou ek : Gumosky, 30, redescription.

Diagnosis : (Based on Gumosky, 2003). According to Gumosky, (2003) the Indian specimens of this species differ somewhat in colour (paler) and show some morphological peculiarities which were not mentioned in the original description. Hence the following diagnosis is based on the redescription of Gumosky, (2003) as it relates to Indian specimens.

Female : Length 3.2-3.3mm. Head and mesosoma orange brown; supracoxal flange of propodeum, legs, scape and pedicel pale; antennal flagellum brownish; hind femur with brownish spot in distal half; gaster pale brown.

Head : With POL 1.4x OOL; eyes densely pubescent; eye height 1.8x as long as malar space; MS present; antennae inserted in the middle of face; scape with narrow apical 'neck', not reaching anterior ocellus; pedicel about 2x shorter than

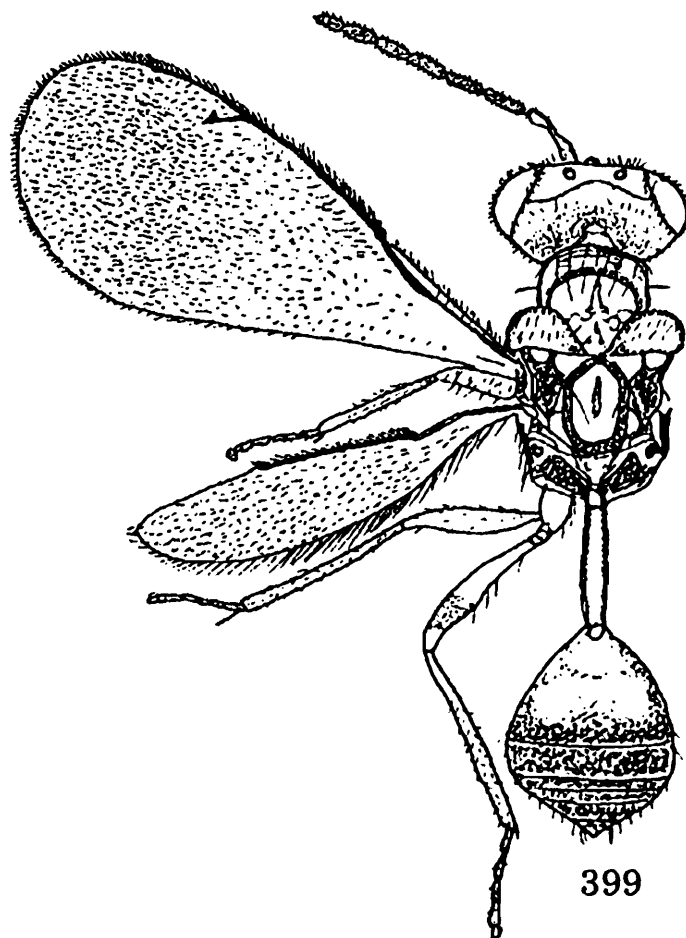


Fig. 399. *Stenopetius rugosus* Bou ek Female body dorsal view.

each of 5 funicular segments; clava as long as the preceding segment, 2.5x as long as broad.

Mesosoma : MLM with shallow alveoli; scapula densely haired; axillae nearly approaching each other, scutellum with 2 pairs of setae, lateral longitudinal grooves meet each other medially on posterior margin; propodeum smooth to coriaceous, with submedian carinae connecting under high shelf of basal cup; forewing with relative length of CC = 18; SMV = 14; MV = 36; PMV = 18; STV = 8.

Metasoma : Petiole 2x as long as hind coxa.

Male : Unknown.

Host : Unknown.

Distribution : India (Karnataka), Australia, Papua New Guinea, Solomon Is, Fiji (Bou ek, 1988 and Gumosky, 2003).

Variation : The length of female varies from 1.7- 3.3mm. The colour in some specimens (particularly from Australia) varies as follows: Head black, dorsally with distinct violaceous to dark green with dark purpureous gloss; mesosoma and gaster mainly black without metallic tinge; legs, scape and pedicel brownish.

Remarks : The figure 399 is a modified version of the figure given by Gumosky(2003)(Courtesy Gumosky 2003).

Genus ***Sureshanella*** Narendran **gen.nov.**

Type species : *Sureshanella nupera* Narendran sp.nov.

Diagnosis : *Female* : Head weakly aciculate, mostly smooth and shiny, with dense pubescence; vertex not margined or carinate posteriorly; eyes densely pubescent ;scrobe smooth, not quite reaching anterior ocellus; lower margin of clypeus slightly produced and slightly reflexed; tentorial pits conspicuous; mandible toothed; antennae inserted slightly above level of ventral margin of eyes; interantennal space convex; antennal formula 11143; flagellum clavate; pronotum narrower than mesoscutum, bell shaped, hind margin not emarginated, straight; surface reticulate with denser pubescence, with two pairs of stouter setae near posterior margin and with one stout setae on either side margin posteriorly; notauli deep, not linear, straight (not curved posteriorly); MLM densely hairy with two stouter setae at posterior margin; with a deep complete median groove; axillae hardly advanced, straight anterior margin; distinctly longer than distance between them; scutellum elongate, smooth and shiny, convex; dorsellum smooth and shiny; propodeum strongly convex medially, with narrow median carina, anteriorly median carina slightly forked; deep sublateral grooves sinuate, posteriorly delimiting supracoxal flange; plical carinae absent; hind tibia with two short spurs; hind metatarsus slightly shorter than preceding (second tarsal segment) segment; prepectus large, smooth and shiny; forewing as of common *Elachertus* type. Metasoma petiolate; petiole broader than long; metasoma a little longer than mesosoma.

Male : Unknown.

Host : Unknown.

Distribution : India.

Etymology : Named after Dr.P.M.Sureshan who collected this interesting specimen on which the genus is described.

Remarks : This new genus comes under the tribe Eulophini and subtribe Elachertini. It comes near *Zealachertus* Bou ek in the key to species of Australasian Chalcidoidea by Bou ek (1988) but differs from it in having : (1) Head with raised reticulation abzent (in *Zealachertus* head with raised reticulation

present); (2) head not hypognathous (in *Zealachertus* head slightly hypognathous); (3) antennae inserted a little above level of ventral margin of eyes (in *Zealachertus* antennae inserted slightly below level of ventral margin of eyes); (4) Notauli deeply grooved, not linear (in *Zealachertus* notauli linear); (5) notauli straight, not curved (in *Zealachertus* notauli curved posteriorly diverging before apex, deepened in a broad shallow depression); (6) MLM with several scattered setae with two setae stouter at posterior marginal area (MLM with only 3-4 pairs of dark setae in *Zealachertus*); (7) axillae distinctly longer than space between them (in *Zealachertus* axillae scarcely longer than space between them); (8) scutellum elongate, sublateral grooves not at all wide apart (in *Zealchertus* scutellum transverse and sublateral grooves wide apart); (9) dorsellum smooth and shiny (dorsellum reticulate in *Zealachertus*); (10) propodeum with deep sublateral channel on either side (in *Zealachertus* propodeum with no distinct channels at sides); (11) propodeum with plicae or lateral carinae absent (in *Zealachertus* propodeum with lateral carinae on either side mesad of spiracle present); (12) prepectus smooth (in *Zealachertus* prepectus reticulate); (13) PMV shorter than 2x as long as STV (in *Zealchertus* PMV longer than 2x as long as STV); (14) gaster petiolate (in *Zealachertus* gaster sessile); and (15) scutellum smooth and shiny (in *Zealachertus* scutellum reticulate).

This new genus differs from *Elachertus* Spinola in having : (1) pronotum large and bell shaped (in *Elachertus* pronotum not large and bell shaped); (2) MLM with strong and complete median longitudinal groove (in *Elachertus* MLM with median groove absent); (3) clypeal margin slightly produced and slightly reflexed (in *Elachertus* clypeal margin not produced or reflexed); and (4) submedian sides of propodeum bulging or convex (in *Elachertus* propodeum not so).

The Australian genus *Ryhonos* Bou ek resembles this new genus in having : (1) MLM with a median longitudinal groove, (2) large hairy eyes; and (3) propodeum convex with deep sublateral grooves. However the new genus differs from *Ryhonos* in having : (1) pronotum large and bell shaped (in *Ryhonos* pronotum narrow and not bell shaped); (2) pronotum with cross carina absent (in *Ryhonos* pronotum with cross carina present); (3) metasoma with very short petiole (in *Ryhonos* metasoma with petiole longer than broad); (4) Notauli straight not interrupted in middle (in *Ryhonos* notauli interrupted in middle, posteriorly deep); and (5) MLM strongly reticulate (in *Ryhonos* MLM mostly smooth).

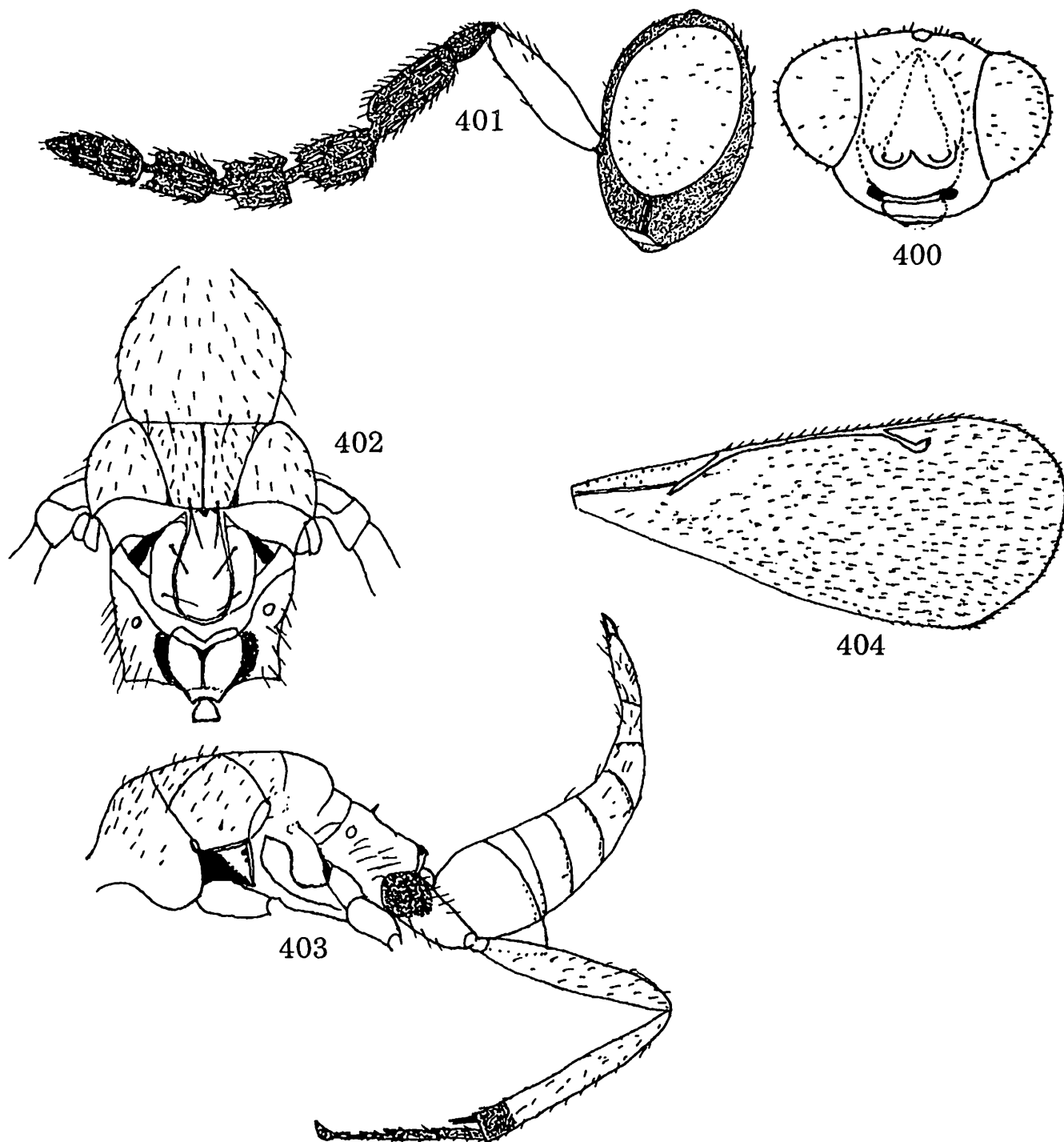
***Sureshanella nupera* Narendran sp. nov.**

(Figs. 400-404)

Female : (Holotype) Length 3.1 mm. Dark metallic green; flagellum and pedicel black; scape yellow with apex black; legs pale yellow with base of hind coxa

concolorus with mesosoma; apex of hind tibia and hind tarsi dark brown; eyes pale whitish grey; ocelli dark brown; ventral side of gaster pale yellow on basal half; pubescence on body white.

Head : Width in anterior view 1.42x its height; head width in dorsal view 2.5x its length; occiput not margined posteriorly; POL 1.5x OOL; AOL shorter than



Figs. 400-404. *Sureshanella nupera* sp.nov. Female : 400. Head anterior view; 401. Head and antenna profile; 402. Mesosoma dorsal view; 403. Mesosoma and metasoma profile; 404. Forewing.

OOL; WIOS 3.3x POL; vertex and eyes well pubescent; scrobe shallow, smooth, not quite reaching anterior ocellus; clypeus well marked with pronounced tentorial pits; lower margin of clypeus slightly produced and slightly reflexed; MS 0.31x eye height in profile; eye length in profile 0.77x its height; antenna inserted a little above ventral margin of eyes; scape hardly reaching anterior ocellus; relative L : W of antennal segments : scape = 35 : 10; pedicel = 11 : 6; F1 = 27 : 9; F2 = 22 : 10; F3 = 18 : 10; F4 = 16 : 10; clava = 23 : 9.1.

Mesosoma : Pronotum large and bell shaped, its length subequal to its width, a little shorter than 2x length of MLM; its posterior margin straight; surface uniformly pubescent with 3 pairs of stout setae near posterior margin; MLM densely pubescent with a pair of stouter setae near posterior margin; MLM completely divided by a median longitudinal groove; MLM and scapulae strongly reticulate; axillae not well advanced, separated from each other by a distance shorter than its length; scutellum with distinct deep sublateral grooves without any sculpture or punctae inside grooves, meeting each other posteriorly; scutellum, axillae, submedian areas of propodeum smooth and shiny; propodeum with a median carina slightly bifurcated at base; spiracle separated from metanotum by a distance shorter than diameter of spiracle; on either side of median carina propodeum unusually convex delimited by sublateral groove on either side; plicae or sublateral carinae absent; callus with moderately dense long white hairs; prepectus large, triangular, smooth and shiny with a deep concavity below; mesopleuron with pleural groove "S" shaped; hind metatarsus subequal to following segment; hind tibia with 2 short apical spurs, apical spurs shorter than hind metatarsus. Forewings 2.4x as long as its width; speculum almost absent; relative length of CC = 34; SMV = 24; MV = 38; PMV = 16; STV = 10.

Metasoma : Slightly wider than long; metasoma longer than mesosoma (17 : 13); hypopygium not reaching middle of gaster.

Male : Unknown.

Host : Unknown.

Distribution : India (Arunachal Pradesh).

Material examined : Holotype Female, INDIA, Arunachal Pradesh, Namdapha, Baranala, N 27° 32' 18.8" N 96° 26' 27.5" E. 808 mtrs. 07. Xii.2009.P.M. Sureshan. (NZSI).

Type Depository : Holotype deposited in NZSI.

Genus *Sympiesis* Foerster

1856 *Sympiesis* Foerster, 74. Type species *Eulophus sericeicornis* Nees, by original designation.

1856 *Teleogmus* Foerster, 72. Type species *Teleogmus orbitalis* Foerster (Bou ek 1988 : 620 synonymized).

- 1878 *Sympiezus* Thompson, 217. Emendation for *Sympiesis* by Thompson 1878.
- 1913 *Asympiesiella* Girault, [158] : 78. Type species *Sympiesis nelsonensis* Girault, by original designation (Bouček, 1988 : 620 synonymized).
- 1913 *Opheliminus* Girault, [162] : 458. Type species *Opheliminus grotii* Girault, by original designation. Also Girault, 1913 [167] : 279 (Bouček, 1988 : 620 synonymized).
- 1913 *Pseudopheliminus* Girault, [167] : 286- 287. Type species *Pseudopheliminus longiventris* Girault, by original designation (Bouček, 1988 : 620 synonymized).
- 1913 *Necremnomyia* Girault, [167] : 292. Type species *Necremnomyia saintpierrei* Girault by original designation (Bouček, 1988 : 620 synonymized).
- 1913 *Sympiesonecremnus* Girault, [167] : 292. Type species *Sympiesonecremnus boasi* Girault by original designation (Bouček, 1988 : 620 synonymized).
- 1915 *Pardialomella* Girault, (230). Type species *Pardialomella consona* Girault, by original designation (Bouček, 1988 : 620 synonymized).
- 1915 *Pronecremnus* Girault & Dodd, in Girault [230] : 298. Type species *Paranesremnus speciosus* Girault & Dodd, by original designation (Bouček, 1988 : 620 synonymized).
- 1915 *Dialomella* Girault, [230] : 290-295. Type species *Dialomella australiensis* Girault, by original designation (Bouček, 1988 : 620 synonymized).
- 1915 *Dialomorphella* Girault, [230] : 294 : 295. Type species *Dialomorphella cyaneipurpurea* Girault, by original designation (Bouček, 1988 : 620 synonymized).
- 1915 *Pardialomyia* Girault, [230] : 294. Type species *Pardialomyia spadiceipes* Girault, by original designation (Bouček, 1988 : 620 synonymized).

Diagnosis : Forewing with CC shorter than 10x its width; scape not reaching above level of vertex; notauli usually distinct throughout; body not usually as slender as that of *Hemiptarsenus*.

Host : Solitary or gregarious ectoparasites of lepidopterous larvae mining leaves of various plants (Bouček, 1988).

Distribution : All region especially Oriental, Palaeartic, Nearctic, Australian, New Zealand & various Pacific Islands (Bouček, 1988).

Remarks : The genus *Sympiesis* Foerster is quite possibly a junior synonym of *Hemiptarsenus* Westwood. More studies are necessary for formally synonymizing these two genera. The slender body and relatively longer appendages of *Hemiptarsenus* Westwood are not very stable characters at generic level, as some species of *Sympiesis* Foerster too have slender body such as *S. bardisis*. The species *S. jeolikotensis* described by Khan *et. al* have CC 12x as long as its width as far as the figure 8 Khan *et. al* and this species may belong to *Hemiptarsenus*.

Since I could not examine the type of *S. jeolikotensis* inspite of my efforts, I am unable to make a new combination in this case.

Key to species of *Sympiesis* Foerster of Indian Subcontinent

(Based on Female)

1. Gaster a little over 5x as long as its width; propodeal spiracle touching metanotum 2
 - Gaster distinctly shorter than 4x as long as wide; propodeal spiracle not touching metanotum (if touching metanotum then PMV relatively short, about 1.7x as long as STV) 3
2. MLM with more than 32-34 scattered setae; all coxae concolorous with mesosoma (dark with violet tinge); all femora brown with bases and apices pale; hind tibia pale yellow on basal half and brown on distal half
..... *S. kottiyooricus* Narendran sp. nov.
 - MLM with 3 pairs of setae; fore and mid coxae pale whitish yellow; basal half of hind coxa metallic green and distal half pale yellow; all femora pale whitish yellow; hind tibia completely pale whitish yellow
..... *S. dolichogaster* Ashmead
3. Propodeum with several irregular carinae (Fig. 410); MLM with 6 pairs of setae; POL 4.5x OOL; notauli complete; metasoma dark brown with a yellow band submedially *S. clausenis* Narendran sp. nov.
 - Propodeum not as above; POL shorter than 4x OOL; other characters variable 4
4. Propodeum without a median carina 5
 - Propodeum with a median carina 6
5. MLM with 6 pairs of setae; gaster black with T2 pale yellow (T1 metallic green); clava 1.25x as long as F4 and 2.8x as long as wide; dorsellum reticulate; CC 7x as long as wide (Head and mesosoma bright metallic green)
..... *S. hyplosis* Narendran sp. nov.
 - MLM with several scattered (more than 12) short setae; gaster black without yellow colour (T1 metallic green); clava 1.5x as long as F4, 2.45x as long as wide; dorsellum smooth and shiny with fine delicate sculpture; CC 4.75x as long as wide (head and mesosoma bright metallic green with whitish yellow cervix and yellow spots on lateral panel of pronotum)
..... *S. abalasis* Narendran sp. nov.
6. Body pale brownish yellow; gaster with black patch at middle
..... *S. elastisis* Narendran sp. nov.

- Body metallic green or dark metallic green or blue or black with metallic violet or green tinge on some parts 7
- 7 CC 12x as long as wide (Fig.8 page 86 of Khan *et. al*, 2005); plicae atleast partly present (see Fig. 6 of page 86 of Khan *et. al*, 2005); frontal fork present *S. jeolikotensis* Khan, Agnihotri & Sushil
- CC shorter than 10x its width; plicae absent; frontal fork absent (except in *S. striatipes*) 8
- 8. MLM with 2 pairs of setae; body black with slight metallic blue or green refringence on frons and mesoscutum [PMV about 1.7x as long as STV], scape more darker than pale *S. striatipes* (Ashmead)
- MLM with more than 2 pairs of setae; body different from above; scape mostly pale 9
- 9. MLM with 4-6 pairs of setae; gaster dark metallic green or blue with yellow patches on basal tergites *S. hyblaeae* Surekha
- MLM with less than 4 pairs of setae; gaster without yellow patches 10
- 10. Coxae pale yellow; eyes pubescent; clava 1.3x as long as F4; MV 2x as long as PMV *S. bardisis* Narendran sp.nov.
- Coxae black or metallic green; eyes bare; clava 1.4-1.7x as long as F4; MV 1.96 – 2.8x as long as PMV 11.
- 11. All femora black or dark metallic green with base and apex alone pale 12.
- All femora pale yellow [coxae metallic green; F2 shorter than F1; axillae weakly aciculate; PMV 1.7x as long as STV; tibiae pale yellow] *S. harithi* Narendran sp. nov.
- 12. Coxae and femora not metallic green; F2 longer than F1; PMV 2.5x as long as STV; tibiae pale white *S. acicus* Narendran sp. nov.
- Coxae and femora with metallic green, F2 shorter than F1; PMV 2.9x as long as STV *S. kazmii* Narendran sp. nov.

1. *Sympiesis abalasis* Narendran sp. nov.

(Fig. 405)

Female : (Holotype) Length 2.64 mm. Head and mesosoma bright metallic green except pale whitish yellow cervix and adjacent part of pronotum and lateral panel of pronotum; gaster black with T1 dark metallic green; eyes pale yellow; ocelli reflecting yellowish brown; flagellum black; pedicel pale brownish yellow

with dorsal side a little darker; scape pale yellow; legs pale whitish yellow with a black patch on anterior side of all coxa; tegula pale brown with base a little darker; wings hyaline with pilosity and veins brown.

Head : Width 1.2x its height in anterior view; width in dorsal view 2.27x its length; occiput a little concave; occipital carina absent; POL 2x OOL; AOL a little longer than OOL (2.5 : 2); LOL shorter than AOL; WIOS 2.5x POL; MS distinct; malar space 0.4x eye height; eyes pubescent, eye length in profile 0.7x eye height in profile; vertex, frons and gena with moderate reticulations; moderately pubescent; antenna inserted a little above level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments = 33 : 7; pedicel = 12 : 8; F1 = 23 : 10; F2 = 21 : 10; F3 = 18 : 9; F4 = 18 : 10; clava = 27 : 11.

Mesosoma a little wider than head (25 : 22), 1.25x as wide as gaster; notauli complete, although fine and turning and reaching axilla; mesoscutum strongly reticulate; MLM with scattered setae, not forming pairs; scutellum with strong reticulate sculpture and with 2 pairs of setae; axilla with reticulate sculpture which not as strong as scutellum, with a small yellow to dull white patch in a depressed longitudinal pit at anterolateral corner; dorsellum smooth and shiny with fine delicate sculpture; propodeum smooth and shiny, without a median carina and without plicae; spiracle round slightly separated from metanotum by a distance shorter than diameter of spiracle; lateral panel of pronotum reticulate; prepectus deeply concave and reticulate; mesepimeron strongly reticulate; mesepisternum smooth and shiny except adjacent reticulate area near lower margin of lower episternum; upper mesepisternum clearly separated from lower mesepisternum by a deep cross sulcus; hind coxa weakly reticulate; forewing 2.5x as long as wide; speculum closed behind by cubital line of setae; basal cell without any setae; relative length of CC = 19; CC width = 4; length of SMV = 12; MV = 16; PMV = 8; STV = 4.

Metasoma : Gaster sessile, subequal to length of mesosoma, 0.8x combined length of head and mesosoma, about 2x as long as its own width; posterior margin of T1 straight.

Male : Unknown.

Host : Unknown.

Material examined : Holotype Female, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7'N 75° 5'E), 12-x-1985, T.C. Narendran. Paratypes : 2 Females same data of Holotype except date of collection 5-ii-1989. 1 Female, Kerala, Wayanad, Pookode Lake (11° 32' N 76° 01' E), 8-ii-2003, T.C.Narendran & party.

Depository : Holotype deposited in Western Ghat Regional Centre, Zoological Survey of India, Kozhikode (=Calicut), Kerala state, India.

Remarks : This species comes near *Sympiesis hyblae* Surekha in general appearance but differs from *S. hyblae* in having : (1) Propodeum with median carina absent (in *S. hyblae* propodeum with median carina present); (2) gaster with yellow patch absent (in *S. hyblae* Surekha gaster with yellow spot at base); (3) MLM with several (more than 12) scattered setae; (in *S. hyblae* MLM with 4-6 pairs of bristles); (4) head 1.2x as wide as its height (in *S. hyblae* head more than 2x as wide as its height); (5) mesosoma a little wider than head (in *S. hyblae* Surekha mesosoma a little narrower than head); (6) mesepisternum mostly smooth and shiny (in *S. hyblae* mesepisternum reticulate) and (7) upper mesepisternum separated from lower episternum by a distinct cross sulcus (in *S. hyblae* no such cross sulcus separating upper and lower mesepisternum).

2. *Sympiesis acicus* Narendran sp. nov.

(Figs. 406-407)

Female : (Holotype) Length 2.73 mm. Body black with light metallic green refringence on frons; propodeum, T1, and T2 with strong metallic green refringence; remaining portions black except the following : margins of eyes grayish white; ocelli dark brown; scape and pedicel pale yellowish white; remaining antennal segments dark brown; all coxae black; trochanters pale; all femora black with bases and apices pale; all tibiae and first 3 tarsal segments of all legs pale white; distal part of fourth tarsal segments of all legs and all pretarsi dark brown; wings hyaline with veins pale brown.

Head : Width in anterior view 1.11x its height, width in dorsal view 2.33x its length; occiput without carina or ridge, vertical frons and vertex moderately reticulate; POL 6x OOL; AOL distinctly longer than OOL; LOL shorter than AOL; WIOS 1.83x POL; MS distinct; malar space 0.51x eye height in profile; eyes bare; eye length in profile 0.64x its height; antenna inserted slightly above level of ventral margin of eyes in anterior view; scape not reaching level of vertex; relative L : W of antennal segments : scape = 30 : 5; pedicel = 11 : 7; F1 = 17 : 9; F2 = 18 : 9; F3 = 16 : 9; F4 = 15 : 9; clava = 25 : 10.

Mesosoma (excluding tegulae) : As wide as head; 1.12x as wide as gaster; notauli complete (careful observation needed under proper illumination and angle) but becoming very faint before joining axillae; MLM with 3 pairs of setae, distinctly reticulate (reticulation not pit like); axillae densely reticulate; scutellum strongly reticulate dorsellum mostly smooth; propodeum faintly reticulate, mostly shiny, with a strong median carina; plicae absent; spiracle separated from metanotum

by a distance shorter than its diameter; lateral panel of pronotum and prepectus reticulate; hind coxa reticulate, striate; forewing 1.93x as long as broad; speculum small, closed behind by cubital line of setae; relative length of CC = 18, width = 2; length of SMV = 11; MV = 21; PMV = 9; STV = 4.

Metasoma : Sessile; longer than mesosoma; as long as or slightly longer than combined length of head plus mesosoma; posterior margin of T1 not convex.

Male : Unknown.

Host : Unknown.

Material examined : Holotype, Female, Kashmir (34° 25' N, 77° 00' E), Dachingam, July 2009, Nakeer Razak. Paratypes : 3 Females of same data of holotype.

Depository : The Holotype is deposited in the Department of Zoology, University of Calicut pending transfer to Zoological Survey of India, Kozhikode, Kerala.

Variation : In some paratypes metallic refringence on propodeum and T1 a little more pronounced.

Remarks : This new species comes near *S. harithi* Narendran sp. nov. in general appearance but differs from it in having : (1) all femora black with bases and apices pale (in *S. harithi* all femora pale yellow); (2) POL 6x OOL (in *S. harithi* POL 2x OOL); (3) malar space 0.51x eye height in profile (in *S. harithi* malar space 0.31x eye height); (4) F2 longer than F1 (in *S. harithi* F2 shorter than F1); (5) axillae densely reticulate (in *S. harithi* axillae weakly reticulate); (6) dorsellum mostly smooth (in *S. harithi* dorsellum coarsely reticulate); (7) PMV 2.25x as long as STV (in *S. harithi* PMV 1.7x as long as STV) and (8) T1 straight at posterior margin (in *S. harithi* T1 convex at posterior margin).

This new species comes near *S. gyrofi* Erdös in the key to species by Bouček (1959) and Zhu and Huang (2003) but differs from it in having : (1) pronotum, mesoscutum, scapula and sides of mesosoma completely black without metallic refringence (in *S. gyrofi* MLM green and dark parts of body metallic green); (2) MLM with 3 pairs of setae (in *S. gyrofi* MLM with more than 3 pairs of setae); (3) setae on lower surface of CC maximum in 2 lines at apex (in *S. gyrofi* setae at lower surface of CC in more than 2 lines atleast at apex) and (4) hind coxa reticulate- striate (in *S. gyrofi* hind coxae smooth [Zhu & Huang 2003]).

3. *Sympiesis bardisis* Narendran sp. nov.

(Fig. 408)

Female : (Holotype) Length 1.9 mm. Head mesosoma and metasoma bright metallic green; legs including coxae pale yellow, except dark pretarsi; eyes dark

gray, ocelli pale reflecting yellow; tegulae pale yellow; scape pale yellow, pedicel pale brown; flagellum blackish brown; wings hyaline with veins and pilosity brown.

Head : Width 1.21x its height in anterior view; width in dorsal view 2.5x its length; occiput slightly concave, without sharp border or carina posteriorly; frons and occiput moderately reticulate; POL 1.25x OOL; AOL a little shorter than OOL (2 : 4); LOL a little longer than AOL (2.5 : 2); WIOS 3.4x POL; MS distinct; malar space 0.34x height of eye in profile; eyes with a few scattered minute pubescence; eye length in profile 0.73x its height in profile; antenna inserted a little above level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments : scape = 39 : 8; pedicel = 10 : 8; F1 = 19 : 9; F2 = 19 : 11; F3 = 21 : 9; F4 = 18 : 11; clava = 23 : 10.

Mesosoma : A little narrower than width of head (17 : 20); 1.1x as wide as gaster; notauli complete, turning to reach axilla; mesoscutum strongly reticulate; MLM with 3 pairs of setae; scutellum with strong reticulate sculpture and with 2 pairs of setae; axilla with reticulate sculpture which not as strong as scutellum, with a small dull yellow patch in a pit at anterolateral corner; dorsellum smooth and with a complete median carina; plicae absent; spiracle round, separated from metanotum by a distance of its own diameter; lateral panel of pronotum reticulate; prepectus reticulate, not concave; mesepimeron strongly reticulate; upper episternum smooth and shiny with faint reticulation; lower episternum reticulate and separated from upper episternum by cross sulcus; hind coxa weakly reticulate; forewing 2.5x as long as wide; speculum closed behind by a cubital line of setae; basal cell bare; relative length of CC = 14; width of CC = 2; SMV = 11; MV = 16; PMV = 8; STV = 3.

Metasoma : Petiole 0.06x length of gaster, wider than long (4 : 1); gaster longer than mesosoma; 0.9x combined length of head plus mesosoma, 2.5x as long as its width; posterior margin of T1 slightly convex.

Male : Unknown.

Host : Unknown.

Material examined : Holotype, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 5' E), 5-iii-1981, T.C. Narendran. Paratype : 1 Female, INDIA, Karnataka, Vittal, Central Plantation Crops and Research Institute (12°56' N 77°32' E), 16-xii-1988, T.C. Narendran; 1 Female, INDIA, Tamil Nadu, Villupuram (11° 57' N, 79° 32' E), 12-ii-1993, S. B. Zeya & Kazmi. (1 female paratype in ZDAMU).

Depository : The Holotype is deposited at Western Ghat Regional Centre, Zoological Survey of India, Kozhikode; Kerala state, India.

Remarks : This new species resembles *Sympiesis hyblaeae* Surekha in general appearance but differs from it in having: (1) gaster without yellow colour on dorsal side (in *S. hyblaeae* Surekha gaster with yellow patch at base dorsally); (2) all coxae completely pale yellow (in *S. hyblaeae* caxae metallic basally and yellow apically); (3) speculum closed behind by cubital line of setae (in *S. hyblaeae* speculum open atleast partly behind); (4) MLM with 3 pairs of setae (in *S. hyblaeae* MLM with 4-6 pairs of setae); (5) head 1.21x as wide as its height (in *S. hyblaeae* head 2.3x-2.8x as wide as height); (6) POL 1.25x OOL (in *S. hyblaeae* POL 2x OOL) and (7) propodeal spiracle separated from metanotum by its own diameter (in *S. hyblaeae* spiracle almost touching metanotum).

Variation : The specimens from Tamil Nadu show some slight variation in having median carina of propodeum slightly weaker.

4. *Sympiesis clausenisi* Narendran sp. nov.

(Figs. 409-411)

Female : (Holotype) Length 3.46 mm. Head and mesosoma bright metallic green except the following parts: eyes and ocelli pale reflecting yellow; antennal flagellum brown, pedicel pale and scape pale yellow; tegulae and legs, except hind coxae, pale whitish yellow; hind coxa metallic green with apex yellow; metasoma dark brown with a yellow band sub medially and with metallic greenish blue refringence on T1 or T6. Wings hyaline with veins and pilosity pale brown.

Head : Width 1.32x its height in anterior view; width in dorsal view 2.44x its length; posterior margin of occiput carinate; postocciput subvertical; frons and occiput strongly reticulate; POL 4.5x OOL; AOL a little longer than OOL (3: 2); LOL as long as AOL; WIOS 2.1x POL; MS distinct; malr space 0.25x height of eye in profile; eyes moderately pubescent; eye length in profile 0.5x eye height; antenna inserted slightly over level of ventral margin of eyes; scape almost reaching level of vertex, never exceeding level of vertex; relative L : W of antennal segments : scape = 13 : 3; pedicel = 3 : 2; F1 = 7 : 3; F2 = 8 : 4; F3 = 8 : 4; F4 = 6 : 4, clava missing.

Mesosoma : Slightly broader than head (15 : 14), 1.25x as wide as gaster; notauli complete, pitted, mesoscutum with strongly pit like reticulation; MLM with 6 pairs of setae; scutellum with strong pit like reticulations and with 2 pairs of setae; axilla with pit like reticulations which not as strong as scutellum, with a small yellow patch in a pit at antero-lateral corner; dorsellum with strong pit like reticulations and irregular carinae; propodeum with several irregular carinae

(Fig. 410) and with a broken median carina, plicae absent; spiracle separated from metanotum by a distance shorter than diameter of pit; lateral panel of pronotum with strong pit like reticulations; prepectus with strong pit like reticulations; mesepimeron strongly reticulate; upper mesepisternum smooth and shiny, lower episternum reticulate and separated from upper episternum by an oblique sulcus; hind coxa with strong pit like reticulation; forewing 2.8x as long as wide; speculum closed behind by setal line (widely spaced setae); relative length of CC = 18; width of CC = 3; SMV length = 15; MV = 19; PMV = 8; STV = 3.

Metasoma : Sessile, longer than mesosoma (24 : 16), 1.14x combined length of head plus mesosoma, 3.1x as long as its width in dorsal view; posterior margin of T1 a little convex.

Male : Unknown.

Host : Unknown.

Material examined : Holotype, Female, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7'N 75° 5'E), 1-1-1982, T.C. Narendran.

Depository : The Holotype is deposited at Western Ghat Regional Centre, Zoological Survey of India, Kozhikode, Kerala State, India.

Remarks : This is a unique species with peculiar structure of propodeum with several irregular carinae; gaster dark brown with a median yellow band, gaster longer than combined length of head mesosoma, with strong pit like close reticulation on mesosoma and with 6 pairs of setae on MLM.

5. *Sympiesis dolichogaster* Ashmead

(Figs. 412-413)

1888 *Sympiesis dolichogaster* Ashmead, viii. Female, USA, Kansas (USNM).

1904 *Asympiesiella mikado* Ashmead, 164. Lectotype Female, Japan, Pattami (USNM) synonymized by Kamijo (1976 : 486).

1913 *Asympiesiella nelsonensis* Girault, [158] 78. & 1913 [167] : 286. Australia, Queensland, Gordo nvale Nelson), 1913 : 78, synonymized by Bou ek (1988 : 621). 1914[181] : 11, Male & Female : Australia, Nelson (QMB) Transferred to *Asympiesilla* Girault.

1914 *Sympiesis nowickii* Szelenyi, 27, Holotype Female, Hungary (HNHM), synonymized by Bou ek (1959).

1915 *Asympiesiella nelsonensis* var. *gracilis* Girault, [230] : 296, Australia, Northern Territory (QMB) synonymized by Bou ek (1988:621).

1916 *Asympiesiella india* Girault, [286] : 341- 342, Female, India-Bihar (USNM), synonymized by Bou ek (1988 : 621.)

Redescription : *Female* : Length 3.1-4.2 mm. Head and mesosoma bright metallic green with following parts as follows: eyes and ocelli dark brown to pale yellow;

antenna brown with scape pale (rarely flagellum pale yellowish brown or pale brown); tegula pale yellow; legs pale whitish yellow with basal half of hind coxa metallic green and brown pretarsi and fourth tarsal segment; metasoma black with metallic greenish blue and violet refringence; hypopygium brown; wings hyaline with veins and pubescence pale brown.

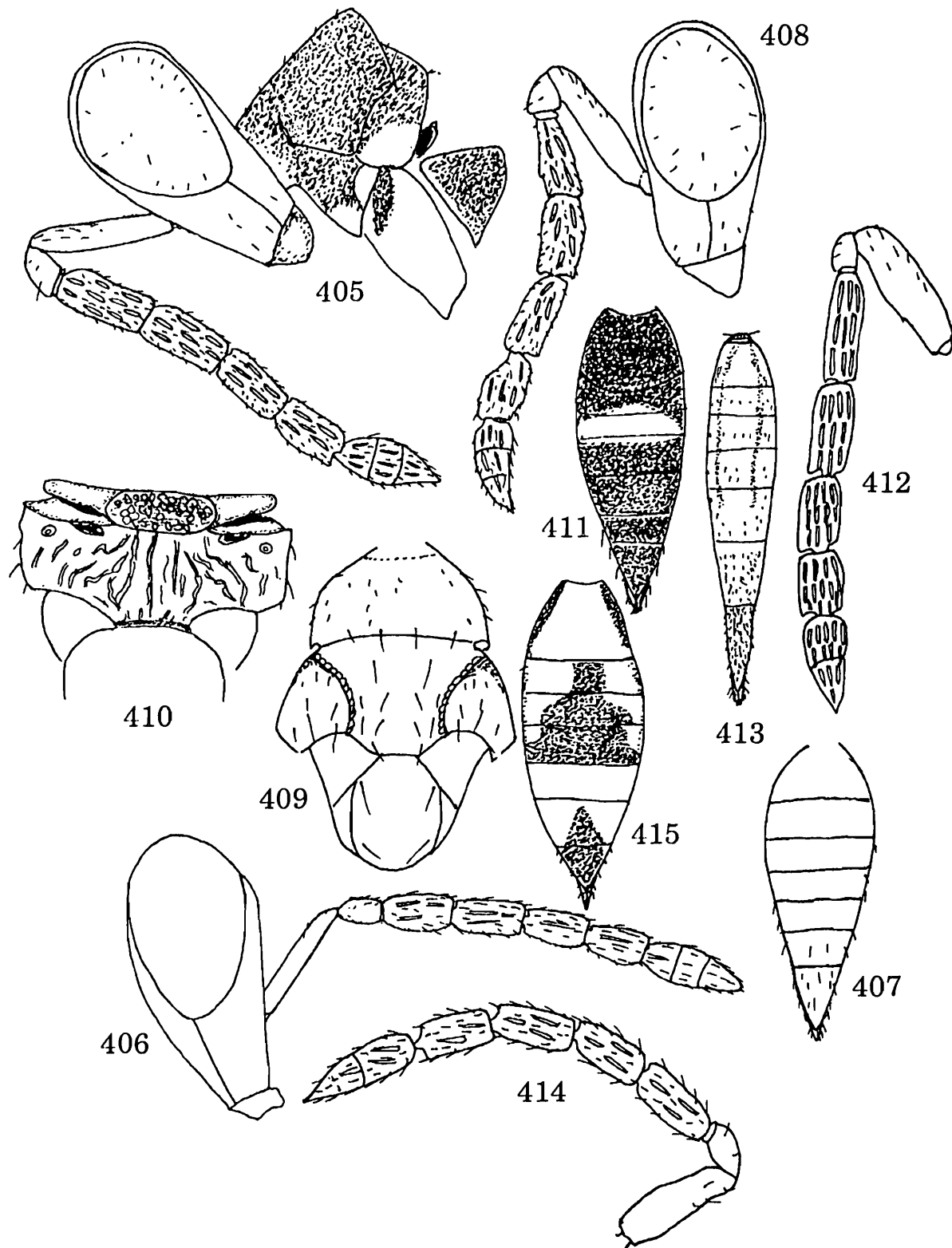
Head : Width equal to its height in anterior view, 2.73x its length in dorsal view; occiput sharp edged at posterior margin, postocciput vertical; frons strongly reticulate, vertex moderately reticulate; POL 3.5x OOL; AOL a little longer than OOL (3 : 2); LOL subequal to AOL; WIOS 2.3x POL; MS distinct; malar space 0.3x eye height in profile; eyes almost bare with 3-6 very short pubescence; eye length in profile 0.8x eye height; antenna inserted at the level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments : scape = 34 : 11; pedicel = 10 : 6; F1 = 26 : 8; F2 = 22 : 10; F3 = 18 : 10; F4 = 15 : 11; clava = 24 : 11.

Mesosoma : A little broader than width of head (16 : 15), 1.6x width of gaster; notauli incomplete, not traceable posteriorly; mesoscutum with strong pit like reticulation; MLM with 3 pairs of setae; scutellum with strong pit like reticulation and with 2 pairs of setae; axilla with pit like reticulation which not as strong as that of scutellum, with a small pale yellow flap at antero-lateral margin; dorsellum reticulate; propodeum weakly reticulate, median carina and plicae absent; spiracle oval, touching metanotum; lateral panel of pronotum reticulate; prepectus reticulate not concave; mesepimeron strongly reticulate; upper episternum smooth and shiny; lower episternum reticulate and separated from upper episternum by oblique sulcus; hind coxa weakly reticulate on yellow part and somewhat strongly reticulate on metallic parts; forewing 2.7x as long as wide; speculum closed behind by a cubital line of setae; basal cell bare; relative length of CC = 20; width of CC = 3; SMV = 13; MV = 17; PMV = 9; STV = 3.

Metasoma : Sessile; gaster longer than combined length of head and mesosoma, 5.2x as long as its width; posterior margin of T1 straight; T7 longer than T6.

Male : Unknown.

Material examined : 2 Females, INDIA, Idukki District, Kulamavu, 1-xii-1988, T.C.Narendran & party; 2 Females, Kerala, Calicut University Campus, 2-vi-1988, Surekha; 2 Females, Kerala, RRS, Kayamkulam, 21-ii-1989, T.C.Narendran & party; 1 Female, Idukki District, Adimaly, 3-xii-1988, T.C.Narendran & party; 1 Female, Kerala, Kannur District, Kottiyum, 23-ii-1989, T.C.Narendran & party; 1 Female, Kerala, Wyanadu District, Pookode Lake, T.C.Narendran & party, 8-



Figs. 405. *Sympiesis abalasis* sp.nov. Female : Head, antenna, pronotum, prepectus, & forecoxa profile. **Figs. 406-407.** *S. acicus* sp.nov. Female : 406. Head & antenna profile; 407. Gaster dorsal view; 408. *S. bardisis* sp.nov. Female : head & antenna profile. **Figs. 409-411 :** *S. clausensis* sp.nov. Female : 409. Pronotum, mesoscutum, setellum; 410. Propodeum; 411. Gaster. **Figs. 412-413.** *S. dolicogaster* Ash. Female : 412. Antenna; 413. Gaster dorsal view; **Figs. 414-415.** *S. elatisis* sp.nov. Female : 414. Antenna; 415. Gaster dorsal view.

ii-2003; 1 Female, Kerala, Thenghakkal, Vandiperiyar, T.C.Narendran & party, 9-i-2004; 1 Female, Jugoslavija : Kosmaj, 13-ix-1979, Ljubo Michailovic.

Host : *Caloptilia soyella* (Deventor) (Lepidoptera: Gracillaridae) and *Stomopteryx neteria* are the recorded hosts from India. *Aproaerema modicella* Deventor (Gracillaridae). Extralimital hosts include Lepidoptera : Gelechidae, Geometridae, Nepticulidae, Pyralidae, Tischeriidae, Tortricidae and Braconidae (for detailed host lists see Noyes, 2003 Data Base.)

Distribution : India (Kerala, Tamil Nadu, Andhra Pradesh, Bihar, Maharashtra and Uttar Pradesh), Palaearctic, Nearctic, Oriental and Australian regions.

Remarks : This species differs from all other Indian species in having relatively a long gaster, longer than combined length of head and mesosoma, 5.2x as long as its width and T7 longer than T6.

6. *Sympiesis elatisis* Narendran sp. nov.

(Figs. 414-415)

Female : (Holotype) Length 1.7 mm. Body pale brownish yellow except following parts as follows; eyes dark brown with marginal area pale gray; ocelli brown and POL dark brown; flagellum dark brown; scape pale yellow; pedicel pale brownish yellow; gaster with a black patch at middle, at sides of T1 and at apex; wings hyaline with veins pale brown.

Head : Width in anterior view 1.13x its height; width in dorsal view 2.3x its length; occiput vertical, occipital carina indistinct; frons and vertex weakly reticulate; POL 2x OOL; AOL shorter than POL, subequal to LOL; WIOS 2x POL; MS distinct; malar space 0.23x eye height in profile; eyes sparsely pubescent; eye length in profile 0.62x eye height, antenna inserted a little above ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments : scape = 30 : 10; pedicel = 11 : 7; F1 = 21 : 9; F2 = 19 : 9; F3 = 20 : 9; F4 = 18 : 9; clava = 31 : 9.

Mesosoma width a little narrower than head; 1.3x as wide as gaster; notauli complete, curved outward meeting axilla on either side; MLM with several scattered minute setae, weakly reticulate; scutellum weakly or faintly reticulate; axillae with faint reticulation; dorsellum faintly reticulate; propodeum smooth and shiny with a median weak carina; plicae absent; spiracle round separated from metanotum by a distance equal to its diameter; lateral panel of pronotum and prepectus faintly reticulate; mesepimeron and mesepisternum faintly reticulate; hind coxa distinctly striate- reticulate on outer side; forewing 2.5x as long as wide; speculum closed behind by cubital line of setae; relative length of CC = 14; width = 2; SMV = 9; MV = 21; PMV = 6; STV = 3.

Metasoma : Sessile, longer than head and mesosoma combined; 2.9x as long as its width; T1 with posterior margin straight; T7 shorter than half of T6.

Holotype : Female : INDIA, Kerala, Malappuram District, Nilambur (11° 16' N 76° 13' E), Manimooly, 29-i-2003, T.C. Narendran & party. Paratypes : 1 Female, Kerala, Thrissur (10° 28' N 76° 18' E), 25-ii-1988, T.C. Narendran; 1 Female, Kerala, Malappuram District, Calicut University Campus (11° 7' N 75° 5' E), 10-xi-1988, T.C. Narendran.

Depository : Holotype deposited at Western Ghat Regional Station, Zoological Survey of India, Kozhikode, Kerala state, India.

Male : Unknown.

Host : Unknown.

Remarks : This is a unique species with body predominantly pale brownish yellow; gaster with black patch at middle and clava 1.3x as long as F4.

7. *Sympiesis harithi* Narendran sp. nov.

(Fig. 416)

Female : (Holotype) Length 2.42 mm. Body metallic green with following parts as follows: eyes dark brown with marginal area pale brownish yellow; ocelli pale reflecting yellow; scape pale yellow; pedicel pale brownish yellow; flagellum brown; legs pale yellow except metallic green coxae; wings hyaline with veins pale yellowish brown; pilosity of wings pale brown.

Head : Width in anterior view 1.11x its height in dorsal view 2.4x its length; occiput without carina or ridge, vertical; frons and vertex moderately reticulate; POL about 2x OOL; AOL slightly shorter than OOL; LOL shorter than AOL; WIOS 2.71x POL; MS distinct; malar space 0.31x eye height in profile; eyes bare; eye length in profile 0.63x its height; antenna inserted a little above level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments: scape = 34 : 5; pedicel = 15 : 9; F1 = 18 : 11; F2 = 15 : 11; F3 = 16 : 11; F4 = 13 : 11; clava = 22 : 11.

Mesosoma : Width a little narrower than head width; 1.2x as wide as gaster, notauli complete but becoming very faint while joining axillae; MLM with 3 pairs of setae, with pit like reticulations; scutellum with strong pit like reticulations; axillae weakly reticulate; dorsellum coarsely reticulate; propodeum moderately reticulate with a strong median carina; plicae absent; spiracle separated from metanotum by a distance shorter than its diameter; lateral panel of pronotum and prepectus reticulate; mesepimeron and mesepisternum moderately reticulate; hind coxa strongly reticulate striate; forewing 2.1x as long as wide; speculum

closed behind by cubital line of setae; relative length of CC = 14; width = 2; length of SMV = 11; MV = 14; PMV = 5; STV = 3.

Metasoma : Sessile; longer than mesosoma but shorter than combined length of head and mesosoma; T1 weakly convex at posterior margin.

Male : Unknown.

Host : Unknown.

Variation : In the specimen from Aligarh gaster is brown and coxae dark brown with slight metallic refringence.

Material examined : Holotype : Female, INDIA, Malappuram District, Calicut University Campus (11° 7'N 75° 5'E), 9-v-1989, T.C.Narendran. Paratype: 1 Female, INDIA, Uttar Pradesh, Aligarh (27° 53' N 78° 04' E), 5 & 6-x-1994, M.Hayat.

Depository : Deposited at Western Ghat Regional centre, Zoological Survey of India, Kozhikode, Kerala, India.

Remarks : Resembles *Sympiesis hyblaeae* Surekha in general appearance but differs from *S. hyblaeae* in having : (1) gaster with yellow colour on dorsum absent (in *S. hyblaeae* basal gastral tergites with distinct yellow patch or spot medially); (2) F1 1.7x as long as wide (in *S. hyblaeae* F1 2x or more than 2x as long as wide); (3) F2 1.4x as long as wide (in *S. hyblaeae* F2 2.3-2.7x as long as wide); (4) F3 1.5x as long as wide (in *S. hyblaeae* F3 2.3-2.4x as long as wide); (5) F4 1.2x as long as wide (in *S. hyblaeae* F4 1.8-2x as long as wide) and (6) clava 2x as long as wide (in *S. hyblaeae* clava 3-3.1x as long as wide).

8. *Sympiesis hyblaeae* Surekha

(Fig. 417)

1996. *Sympiesis hyblaeae* Surekha, in Surekha *et al.*, 73-76. Holotype female, India, Kerala (BMNH) (examined).

Redescription : *Female* : Length 2.0 mm-2.8 mm. Head and mesosoma metallic green to blue; gaster dark metallic green or blue with basal tergites with distinct yellow patch medially; legs pale yellow except coxae which are concolorous with mesosoma except brownish yellow apex; scape and pedicel yellow; flagellum brown; setae on body brown; wings hyaline, veins brown- pale brown.

Head : Width in anterior view 2.3x- 2.8x its height; width in dorsal view 2.3-2.5x its length; POL 2x OOL; AOL shorter than OOL; LOL subequal to AOL; WIOS 2.5x- 2.7x POL; MS distinct but weak; malar space 0.34x- 0.5x as long as its height in profile; eyes bare, its length in profile 0.5x- 0.6x its height; antenna inserted a little above level of ventral margin of eyes; scape not reaching level of

vertex; relative L : W of antennal segments: scape = 40 : 8; pedicel = 11 : 8; F1 = 23 : 10; F2 = 24 : 10; F3 = 23 : 10; F4 = 20 : 11; clava = 35 : 10.

Mesosoma : Narrower than width and 1.08-1.25x as wide as gaster; notauli complete, turning outward posteriorly, reaching axilla; mesoscutum strongly reticulate, MLM with 4-6 pairs of setae; scutellum with strong reticulate sculpture and with 2 pairs of setae; axilla with reticulate sculpture which is not as strong as scutellum, with a small yellow to dull white patch at antero-lateral corner; dorsellum smooth and shiny with fine delicate sculpture; propodeum with median carina; plicae absent; spiracle round, almost touching metanotum; reticulation variable from distinct to very fine or sometimes smooth & shiny; lateral panel of pronotum reticulate; prepectus strongly reticulate; mesepimeron and lower mesepisternum strongly reticulate; upper episternum weakly or faintly; forewing 2.46x as long as wide; speculum partly open behind; relative length of CC = 39; CC width = 6; length of SMV = 23 : MV = 46; PMV = 15; STV = 6.

Metasoma : Gaster sessile, shorter than combined length of head and mesosoma, longer than mesosoma; 2.36 to 2.7x as long as broad; posterior margin of T1 almost straight to slightly convex.

Male : Similar to female except sexual characters.

Host : Solitary endoparasite of *Hyblaea puera* (Cramer) (Lepidoptera : Hyblaeidae).

Variation : Measurements of antenna varies as follows : Scape = 4-5x as long as wide; F1 = 2.3-3x as long as wide; F2 = 2.3-2.7x as long as wide; F3 = 2.3-2.4x as long as wide; F4 = 1.75-2x as long as wide; clava = 3-3.3x as long as wide; length of PMV = 2-2.7x as long as STV

Distribution : India (Kerala).

Material examined : Holotype and Paratypes.

Remarks : This species resembles *Sympiesis abalasis* Narendran sp. nov. in general appearance but differs from it by the characters mentioned under remarks of *S. abalasis* Narendran sp. nov. Another species *S. harithi* Narendran sp. nov. also resembles *S. hyblaea* Surekha and the characters separating the two are given under remarks under *S. harithi* Narendran sp. nov. For other affinities see Surekha *et. al* (1996).

9. *Sympiesis hyplosis* Narendran sp. nov.

(Fig. 418)

Female : (Holotype) Length 2.83 mm. Head and mesosoma bright metallic green with the following parts as follows; eyes dark brown with margin around

pale; ocelli pale reflecting yellowish brown; scape pale yellow; pedicel pale brownish yellow; flagellum dark brown; legs pale yellow with dark brown colour as proximal half of mid coxa, anterior basal half of hind coxa, a spot on outer middle part of fore femur; metasoma black with T1 metallic green; T2 pale yellow; remaining segments black; wings hyaline, veins pale brownish yellow with margins brown.

Head : Width in anterior view 1.1x its height; width in dorsal view 2.7x its length; POL 2x OOL; AOL subequal to OOL; LOL a little shorter than AOL; WIOS 2.75x POL; posterior margin of occiput carinate medially; postocciput vertical; MS distinct; malar space 0.25x height of eye in profile; eyes sparsely pubescent; eye length in profile 0.63x its height; antenna inserted a little above level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments: scape = 34 : 8; pedicel = 10 : 7; F1 = 25 : 9; F2 = 24 : 10; F3 = 22 : 10; F4 = 20 : 11; clava = 25 : 9.

Mesosoma : A little narrower than head (18 : 20), 1.1x as wide as gaster; notauli complete; mesoscutum with pit like close reticulation; MLM with 6 pairs of setae; scutellum with close pit like reticulation and with 2 pairs of setae; axilla strongly reticulate but not as strong as scutellum; dorsellum reticulate; propodeum strongly sculptured with pit like reticulations; median carina and plicae absent; spiracle round, separated from metanotum by a distance shorter than its diameter; lateral panel of pronotum and prepectus strongly reticulate; mesepimeron reticulate; upper mesepisternum smooth and shiny; lower episternum reticulate; hind coxa moderately reticulate on basodorsal part; forewing 2.44x as long as its width; speculum closed behind by cubital line of setae; relative length of CC = 21; width = 3; length of SMV = 15; MV = 24; PMV = 10; STV = 4.

Metasoma : Sessile; a little longer than head and mesosoma combined (25 : 24); 2.2x long as wide; posterior margin of T1 a little convex.

Male : Unknown.

Host : Unknown.

Distribution : India (Kerala & Arunachalpradesh)

Material examined : Holotype, Female, INDIA, Kerala, Wayanad District, Pookode (11° 32' N 76° 01' E), 8-ii-2003, T.C. Narendran & party. Paratype: 1 Female same data of Holotype; 2 Females, INDIA, Arunachal Pradesh, Namdapha, Bulbulia, N 27° 31' 16.1, E 96° 29' 52.9, 435mts., 05-xi-2009 & 11-xi-2009, P. M. Sureshan.

Depository : Holotype deposited at Western Ghat Regional Centre, Zoological Survey of India, Kozhikode, Kerla, India.

Remarks : This new species differs from all other species in having the following combination of characters. (1) MLM with 6 pairs of setae; (2) posterior margin of occiput carinate medially; (3) gaster black with T1 metallic green and T2 pale yellow; (4) propodeum strongly reticulate and median carina and plicae absent; and (5) upper mesepimeron smooth and shiny. Besides proportion, in size of antennal segments also differ.

Variation : The dark colour of anterior part of forecoxa and midcoxa absent in paratype and hind femur with a brown spot medially on outer side in paratype.

10. *Sympiesis jeolikotensis* Khan, Agnihotri & Sushil

2005. *Sympiesis jeolikotensis* Khan, Agnihotri & Sushil, 84. India (NPC?) (not examined).

Diagnosis : Based on the description (see below for additional comments) is recognized by a combination of the following characters: body with dark metallic green reflections; antennae dark brown with scape and pedicel yellow with brown infuscations; legs uniformly pale yellow with fore leg infuscated basally; head width 1.4x its height in anterior view; POL 2.5x OOL in anterior view (Fig. 2, page 86 of Khan *et. al* 2005); AOL shorter than OOL; LOL shorter than AOL; antenna inserted a little above level of ventral margin of eyes; scape not reaching level of median ocellus; relative L : W of antennal segments : scape = 32 : 5; pedicel = 9 : 6; F1 = 20 : 8; F2 = 19 : 11; F3 = 20 : 12; F4 = 16 : 11; clava = 23 : 10.

Mesosoma : Strongly reticulate with 13 small setae on MLM; notauli “turning outwards to top of axillae”; propodeum with median carina; spiracle separated from metanotum by a distance subequal to diameter of spiracle; forewing 2.7x as long as wide (Fig. 8 page 86 of Khan *et. al* 2005); speculum closed behind by cubital line of setae; relative L : W of CC = 36 : 3; length of SMV = 25; MV = 41; PMV = 14; STV = 6.

Metasoma : Longer than mesosoma.

Male : Unknown.

Host : ex. *Acrocercops* sp. (Lepidoptera: Gracillaridae).

Distribution : India : Uttarakhand (Nainital).

Remarks : There is some discrepancy in the original description and figures (Khan *et al.*, 2005). In the original description of this species, it is stated that MS is absent but the MS is shown in their figure 2. Similarly the median propodeal carina is stated to be weak and irregular but in figure 6 it is shown as strong and straight and PMV is stated to be almost 3x as long as STV but in Fig. 8 PMV is 2.33x as long as STV The figure shows CC is 12x as long as wide (A character

of *Hemiptarsenus* Westwood). Besides these, the propodeum shows incomplete plicae in the figure 6. I could not examine the type inspite of my repeated requests for a loan of the type. As pointed out by Grissell (1995) in the case of type of *Ophiopinotus* Husain & Kudesia (Torymidae), the type of this eulophid species "is not available to the scientific community and should [therefore] be considered destroyed"

11. *Sympiesis kazmii* Narendran sp. nov.
(Figs. 419-420)

Female : (Holotype) Length 2.35 mm. General body colour bright metallic green; eye pale yellow; ocelli dark brown; antennal scape black with metallic green refringence, remaining segments brown with ventral part pale yellowish white; mesosoma and metasoma bright metallic green; all coxae concolourous with body; trochanters pale brown; all femora metallic green except apex pale; all tibiae pale; all three tarsal segments from base to apex pale yellow; fourth tarsal segment pale brown; all pretarsi black; wings hyaline with veins brown.

Head : Width in anterior view slightly narrower than or subequal to its height (20: 21); width in dorsal view 2.2x its length; POL 3x OOL; AOL equal to OOL; WIOS 2.33x POL; occiput without sharp margin or carinate; frons and vertex reticulate; MS 0.4x eye height in profile eyes bare; eye length in profile 0.7x its height; antenna inserted at level of ventral margin of eyes; scape not reaching level of vertex; relative L : W of antennal segments : scape = 34 : 6; pedicel = 10 : 7 : F1 = 20 : 10; F2 = 16 : 11; F3 = 18 : 12; F4 = 16 : 13; clava = 24 : 12.

Mesosoma : As wide as head; 1.11x as wide as gaster; notauli incomplete, hardly distinct posteriorly; MLM with 3 weak pairs of setae; with raised reticulation; axillae distinctly reticulate, but reticulation not raised, smaller than that of scutellum or mesoscutum; scutellum with strong raised reticulation; dorsellum faintly reticulate; propodeum very faintly reticulate mostly shiny, with a strong median carina; plicae absent; spiracle touching metanotum; each callus with 7-10 setae; lateral panel of pronotum distinctly reticulate; prepectus with strong raised reticulation; episternum strongly reticulate; upper epimeron smooth; lower epimeron reticulate; hind coxa distinctly reticulate; forewing 2.3x as long as broad; speculum large, open behind partly, extending towards distal part through area behind MV; with a row of 13-14 ventral setae; relative length of CC = 41; SMV = 28; MV = 45; PMV = 23; STV = 7.

Metasoma : Sessile, longer than mesosoma, as long as combined length of head and mesosoma, 2.55x as long as its width.

Male : Unknown.

Host : Unknown.

Distribution : India (Ladakh).

Material examined : Holotype : Female, INDIA, Ladakh (32° 00' N, 80° 00' E), Litksey, 7-viii-2008, S. I. Kazmi; 2 Females, Ladakh, Nimmu (32° 47' N 78° 57.5' E), 12-viii-2008, S. I. Kazmi.

Depository : Holotype deposited at NZSI.

Variation : Length varies from 2.1-2.4 mm. In some specimens hind tibia slightly with a brownish tinge medially and metallic green becomes metallic bluish green or dark metallic bluish green.

Etymology : The new species is named after Dr. S. I. Kazmi, who collected the specimen.

Remarks : This new species comes very close to *Sympiesis acicus* Narendran sp. nov. but differs from it in having : (1) scape black with metallic green refringence (in *S. acicus* scape pale yellow); (2) coxae and femora with strong metallic green or blue refringence (in *S. acicus* coxae and femora without metallic refringence); (3) POL 3x OOL (in *S. acicus* POL 6x OOL); (4) F2 shorter than F1 (in *S. acicus* F2 longer than F1); (5) propodeal spiracle touching metanotum (spiracle separated from metanotum in *S. acicus*) and (6) speculum large open behind (in *S. acicus* speculum small, closed behind by cubital line of setae).

12. *Sympiesis kottiyooricus* Narendran sp. nov.

(Figs. 421-422)

Female : (Holotype) Length 3.1 mm. Body dark metallic violet with following parts otherwise; eyes dark brown; ocelli reflecting pale brown; scape pale yellow; pedicel pale brownish yellow; flagellum black; tegula pale brownish yellow; all coxae concolourous with mesosoma and with apices pale; trochanters pale brownish yellow; femora brown with bases and apices pale; fore and mid tibiae pale yellow; hind tibia pale yellow on basal half and brown on distal half; first second and third tarsal segments of each leg pale whitish yellow; fourth tarsal segment and pretarsi brown; wings hyaline with veins pale brown.

Head : Width in anterior view 1.1x its height; POL 3.5x OOL; AOL subequal to OOL; LOL equal to OOL; WIOS 2.1x OOL; postoccipt vertical; MS indistinct; malar space 0.4x eye height in profile; eyes bare; antenna inserted at level of ventral margin of eyes, scape not reaching level of vertex; relative L: W of antennal segments: scape = 28 : 7; pedicel = 12 : 8; F1 = 29 : 12; F2 = 24 : 12; F3 = 24 : 13; F4 = 21 : 14; clava = 32 : 12.

Mesosoma : Slightly wider than head; 1.9x as wide as gaster; notauli incomplete, not traceable posteriorly; mesoscutum strongly reticulate but reticulation not pit like; MLM with several setae scattered (more than 32-34 setae); scutellum a little convex, reticulation as that of MLM, with 2 pairs of setae; axillae striate reticulate but weaker than scutellum; axillae without yellow flap at anterior lateral corner; dorsellum faintly reticulate, mostly smooth and shiny; propodeum smooth and shiny with a strong median carina; plicae absent; spiracle round, touching metanotum; lateral panel of pronotum, prepectus and mesepimeron strongly reticulate; upper mesepisternum smooth and shiny; lower mesepisternum weakly reticulate; hind coxa reticulate on outer dorsal side; forewing 2.41x as long as wide; speculum partly closed behind by cubital line of setae; relative L : W of CC = 18 : 3; relative length of SMV = 11; MV = 28; PMV = 6; STV = 3.

Metasoma : Longer than head plus mesosoma (19 : 12); 5.14x as long as its width; posterior margin of T1 straight; T7 longer than T6.

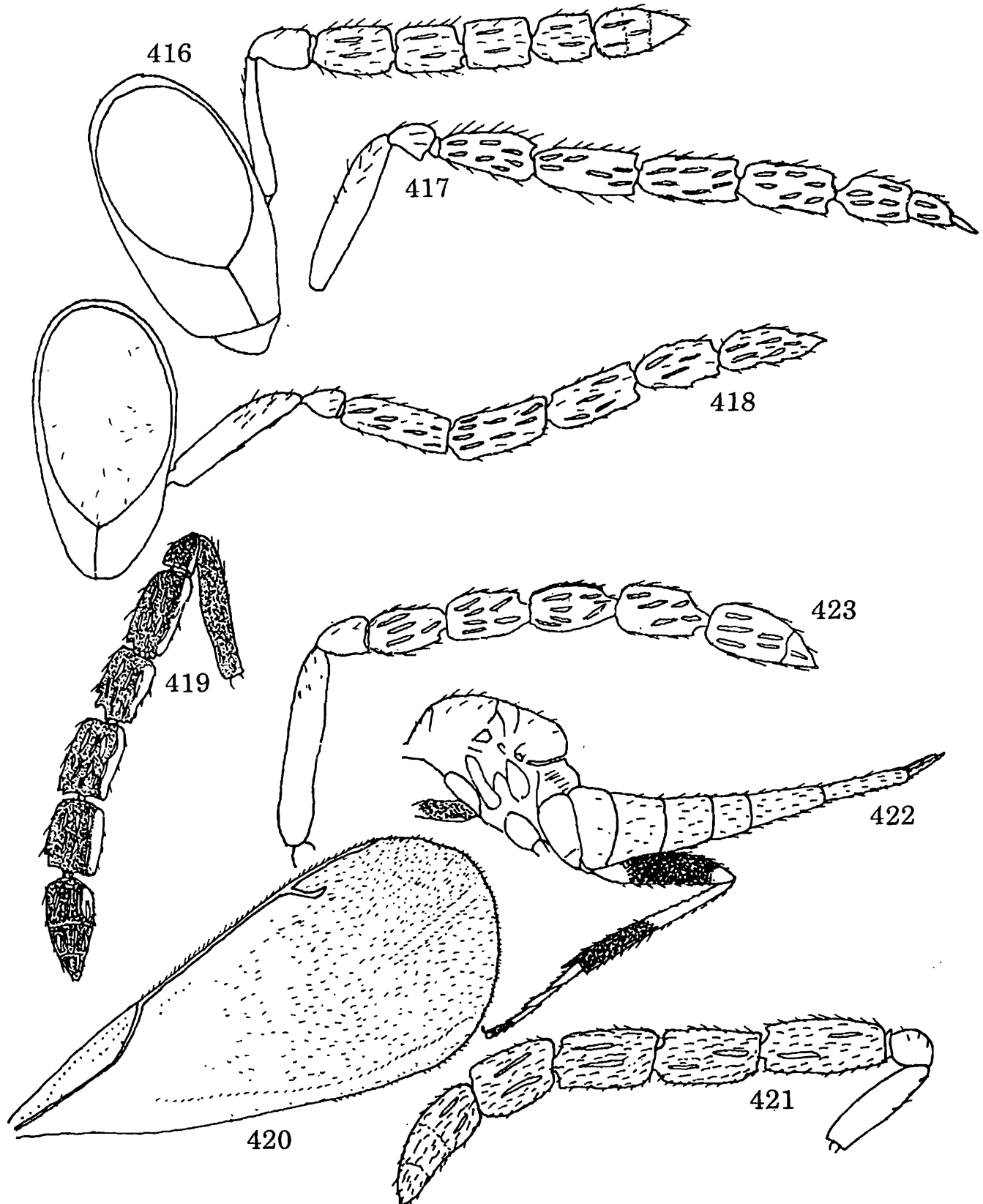
Male : Unknown.

Host : Unknown.

Material examined : INDIA, Kerala, Kannur District, Kottiyoor (10° 7' N 78° 49'E), 17-ii-2003, T.C. Narendran & party.

Depository : Holotype deposited at Western Ghat Regional Centre, Kozhikode, Kerala, India.

Remarks : This species comes extremely close to *Sympiesis dolichogaster* Ashmead in having relatively longer gaster with 5x or more as long as its width; POL 3.5x OOL; notauli not traceable posteriorly; propodeum with median carina and plicae absent and in propodeal spiracle touching metanotum. However it differs from *S. dolichogaster* in having: (1) MLM with more than 32-34 setae scattered (in *S. dolichogaster* MLM with only 3 pairs of setae); (2) PMV 2x as long as STV (in *S. dolichogaster* PMV 3x as long as STV); (3) all coxae concolorous with metasoma except pale apices (in *S. dolichogaster* fore and mid coxae pale whitish yellow and only basal half of hind coxa metallic green); (4) all femora brown with bases and apices pale (in *S. dolichogaster* all femora pale whitish yellow); (5) hind tibia pale yellow on basal half and brown on distal half (in *S. dolichogaster* hind tibia completely pale whitish yellow); (6) sculpture on mesoscutum distinct but not pit like (in *S. dolichogaster* Ashmead sculpture on mesoscutum strong and pit like) and body dark metallic violet (in *S. dolichogaster* body bright metallic green).



Figs. 416. *S. harithi* sp.nov. female antenna; **Fig. 417.** *S. hyblaeae* Surekha female antenna. **Fig. 418.** *S. hyplosis* sp.nov. Female : Head & antenna profile; **Figs. 419-420.** *S. kazmi* sp.nov. Female : 419. Antenna; 420. Forewing. **Figs. 421-422.** *S. kottiyooricus* sp.nov. Female : 421. Antenna; 422. Mesosoma, metasoma & hind leg. **Fig. 423.** *S. striatipes* (Ash.) Female antenna.

13. *Sympiesis striatipes* (Ashmead)

(Fig. 423)

1904. *Eulophus striatipes* Ashmead, b : 165. Holotype Female, Japan (USNM).1915. *Sympiesis purpureous* Waterston, 333. Sri Lanka (BMNH) (examined). Schauff *et al.* (1998) synonymized.1976. *Sympiesis striatipes* (Ashmead) Kamijo, transferred to *sympiesis*.

Redescription : Female : Length 1.4-1.8 mm. Black with slight metallic violet refringence on frons in some specimens and with metallic green tinge on mesoscutum and gaster seen under high illumination; antenna including scape blackish brown; legs pale yellow with coxae concolourous with mesosoma; tegula and pretarsi brown; wings hyaline with veins pale yellowish hyaline.

Head : Width in anterior view a little broader than height (14 : 13), 2.5x as broad as long; POL 2x OOL; AOL subequal to OOL; LOL as long as OOL; WIOS 3.4-4x as long as POL; MS faintly indicated; malar space 0.42-0.43x height of eye in profile; eyes with very few short inconspicuous pubescence; eye length in profile about 0.7x its height; scape not reaching level of anterior ocellus; relative L : W of antennal segments: scape = 41 : 8; pedicel 13 : 9; F1 = 19 : 10; F2 = 20 : 10; F3 = 20 : 10; F4 = 22 : 11; clava = 27 : 12.

Mesosoma : As broad as head; notauli visible anteriorly; mesoscutum strongly reticulate with 2 pairs of setae on MLM; scutellum strongly reticulate, moderately convex, with 2 pairs of setae; axillae weakly reticulate; dorsellum smooth and shiny; propodeum smooth with a strong median carina; plicae absent; spiracle rounded touching metanotum; lateral panel of pronotum and prepectus strongly reticulate; mesepimeron and lower mesepisternum reticulate; upper mesepisternum smooth and shiny; hind coxa weakly striate reticulate on outer dorsal side; forewing 2x as long as broad; speculum closed behind by cubital line of setae; relative L : W of CC = 22 : 3; relative length of SMV = 16; MV = 22; PMV = 5; STV = 3.

Metasoma : A little longer than mesosoma but shorter than head and mesosoma combined; posterior margin of T1 straight.

Male : see kamijo (1976).

Host : *Acrocercops* sp. including *A. syngamma* Mayr (Lepidoptera: Gracillaridae).

Remarks : This species is characteristic with the following characters: frontal fork and scrobal carina present and PMV short.

Material examined : 2 Females, INDIA, Kerala, Malappuram District, Calicut University Campus (11° 7'N 75° 5'E), 1-iv-1989, Mariamma; 1 Female, 1-iv-1989,

T.C. Narendran, 2 Females, 22-x-1990, T.C. Narendran, 6 Female, INDIA, Orissa, Bhubaneswar (21° 15' N 85° 15' E), 15-xi-1994, Dash; 1 Female, Kerala, Alappuzha District, Arattupuzha (9°14' N 76° 25' E), 23-iv-2000, T.C. Narendran & party; 1 Female, Kerala, Wayanad District, Sulthan Bathery (12° 55' 5" N 74° 48' 5" E), 6-v-2000, T.C. Narendran & party; 7 Females, Kerala, Kannur District, Kottiyoor (10° 7' N 78° 49'E), 17-ii-2003, T.C. Narendran and party; 1 Female, Kerala, Pookode Lake (11° 32' N 76° 01' E), 8-ii-2003, T.C. Narendran & party; 1 Female, Kerala, Vandiperiyar (9° 35' N 77° 5' E), 9-i-2004; T.C. Narendran & party; 1 Female, INDIA, Delhi, 2003, Thanuja; 11 Females, INDIA, West Bengal, Sunderbans (30° 24' N 77° 40' E), 26-ii-2008, P. Girish Kumar; 1 Female, INDIA, Meghalaya, Ri Bhoi (25° 54' N 91° 53' E), 21-x-2008, F R. Khan. (1 female in ZDAMU).

Genus *Trichospilus* Ferrière

1930. *Trichospilus* Ferrière, 358. Type species *Trichospilus pupivora* Ferrière, by monotypy.

Diagnosis : *Length* : 0.9 mm-2.0 mm. General body colour predominantly yellowish brown or brown; frontovertex convex, not collapsing, mainly smooth; occipital distinct but not sharp; scrobe not reaching anterior ocellus, bottom smooth, horse- shoe like; head usually with a brown streak running from lower eye margin to mouth present; antenna inserted at or slightly below lower ocular line; funicle 2 segmented, clava 3 segmeneted; anellus indistinct; pronotum with or without cross carina or ridge; MLM with 2 pairs of setae; scutellum without sublateral grooves, with 2 pairs of setae; dorsellum broad- lanulate, propodeum with a nucha, median carina and a groove on either side adjacent to median carina; plicae indicated only; hind tibia with only one spur (short); forewing often with patches of infuscation often with one or two tufts of setae; metasoma sessile, usually more or less rounded, ovipositor is mostly confined to ventral side.

Host : Gregarious parasites of pupae of Lepidoptera. Some species are used for the biological control of pests of coconut or oilpalm.

Distribution : Tropical Africa and Asia and one species established in West Indies and Florida (Bou ek, 1988).

Key to species of *Trichospilus* Ferrière of the world

1. Scutellum with longitudinal striae without any smooth areas on dorsum; [forewing without any tuft of hairs]. Extralimital (Indonesia).....
..... *T striatus* Ubaidillah
- Scutellum with a bare smooth area in middle partly or completely 2

2. Forewing with 2 distinct, thick tufts of erect black hairs, one behind proximal end of parastigmal vein and the other behind proximal end of MV [pronotum with distinct cross carina] 3
 - Forewing without distinct tufts only with infumate spots covered with loose darker hairs [pronotum without cross carina, exception *T hayati* where it is faintly indicated; cross ridge separating smooth strip at posterior margin] 5
3. Forewing with dense (Fig. 3 Bou ek, 1976) pale pubescence between distal tuft and STV; median smooth area of scutellum restricted to posterior half. Extralimital (Africa) *T vorax* Bou ek
 - Forewing extensively bare between distal tuft and STV as well as between the two tufts; smooth area of scutellum reaching its anterior margin 4
4. MLM mostly shiny, with faint or weak sculpture atleast anteriorly, pronotum without cross carina *T pupivorus* Ferrière
 - MLM dull, with fine reticulation, reticulation deep anteriorly; pronotum with cross carina. Extralimital (Africa) *T Ferrièrei* Bou ek
5. MLM smooth and shiny in posterior half, relatively sculptured in anterior half; metasomal terga dark brown except posterior part of T1 and T2 light brown *T politus* Ubaidillah
 - MLM completely reticulate; metasomal colour variable 6
6. Infuscation on forewing extensive, broadly reaching anterior margin (Fig.6 Bou ek, 1976). [Metasomal terga pale yellow medially, infuscated on lateral and apical margin *T boops* Bou ek
 - Infuscation on forewing much reduced, not quite reaching much beyond STV; metasoma either completely pale brownish yellow or yellow with dark brown or black patch posteriorly & medially 7
7. Metasoma brownish yellow without a dark patch posteriorly, 1.5x as long as broad; pronotum with a weak cross ridge separating smooth posterior strip; pedicel 1.23x as long as F1; proximal tuft of setae absent except for 2 weak setae; distal tuft absent, instead with a weak infucate spot covered with loose darker hairs, with a weak infuscation attached to STV and extending towards posterior median part, not at all extending beyond STV towards apical part of wing *T hayati* Narendran sp. nov.
 - Metasomal terga with a black or dark brown patch medially (mainly on posterior half; length a little over its width; pronotum with cross carina absent;

pedicel 2x as long as F1; forewing hyaline with infumation behind STV and a smaller patch near posterior end of MV

.....*T diatraeae* Cherian & Margabandhu

Note : Unplaced in the key: *Trichospilus lutelineatus* (Liao, Pang and Chen.). Ubaidillah (2006) considered this species is conspecific with *T diatraeae* Cherian & Margabandhu.

1. *Trichospilus diatraeae* Cherian & Margabandhu.

(Figs. 424-425)

1942. *Trichospilus diatraeae* Cherian & Margabandhu, 101-102. Female, India (Coimbatore). (Agriculture Research Institute Coimbatore) (TNAU ?).

Redescription : *Female* : Length 1.1-1.2 mm. General body colour pale brownish yellow; head with a brown streak from lower eye margin to mouth present; hind coxa dark brown or black; metasoma pale yellowish brown with black patches on median part or extending to caudal end and with a spot on sides of T1 and T2 on either side; forewing hyaline with infumation behind STV and a smaller patch near posterior end of MV

Head : Width in anterior view as long as its height; width in dorsal view 2x its length; POL 3.5x OOL; AOL longer than OOL; WIOS 2.1x POL; frons and vertex smooth and shiny; eye pilose; MS 0.36x height of eye in profile; eye length 0.82x eye height; L : W of antennal segments : scape = 31 : 8; pedicel = 18 : 8; F1 = 9 : 8; F2 = 8 : 9; clava = 28 : 12.

Mesosoma : Pronotum reticulate, cross carina absent, MLM reticulate, smooth area absent, with 2 pairs of setae; scapula reticulate; axilla smooth; scutellum striate with a smooth area at median-distal part (Fig. 24); propodeum with median carina present, plicae weak; surface smooth; forewing 2.4x as long as as broad; PMV longer than STV

Metasoma : Petiole transverse, gaster subcircular a little over as long as its width.

Host : Pupa of *Chilo venosatus* Walker, *Chilo sacchariphagus* Boger, *Sylepta derogata* (F), *Pyrausta machaeralis* (Walker), *Orthaga exuvineae*, *Scirpophaga incertulas* (Walker) (Bou ek, 1976) (Lepidoptera).

Distribution : India, Sri Lanka, Myanmar, China, Mauritius, Reunion (Bouèek).

Variation : From the original description the specimen described here differ in the following: length 1.1- 1.2 mm (in original description 1.86mm); (2) scape 3.9x as long as broad (in original description scape 5.50x as long as broad); (3) pedicel

2.25x as long as broad (in original description 2.60x as long as wide) and in a few other minor features.

Material examined : Plesiotype: INDIA, Kerala, Calicut, Asokapuram (N 11° 30' and 12° 50' E 75° 45' and 77° 45'), 10-xii-2009, M. Rafeeq A.P.M ex *Orthaga exuvinaea*.

Other material examined : 3 Females of same date of Plesiotype.

2. *Trichospilus hayati* Narendran sp. nov.

(Figs. 426-428)

Female : (Holotype) Length 1.33 mm. General body colour pale brownish yellow; eyes pale reflecting yellow; ocelli brownish red; head with a pale brown streak from lower eye margin to mouth; hind coxa dark brown; forewing with very faint infuscation behind STV

Head : Width as long as its height in anterior view; width in dorsal view 2.32x its length; POL 2.6x OOL; AOL longer than OOL; WIOS 2.1x POL; frons and vertex smooth and shiny; eyes pilose; MS 0.39x eye height in profile; eye length 0.75x eye height in profile; relative L : W of antennal segments : scape = 39 : 8; pedicel 16 : 11; F1 = 13 : 11; F2 = 11 : 13; clava = 41 : 15.

Mesosoma : Pronotum reticulate except a smooth and shiny admarginal stripe posteriorly, with a weak cross ridge (careful observation under proper illumination is necessary for observing this character); MLM completely reticulate, with 2 pairs of setae; scutellum longitudinally striate except for a smooth area on posteriorly; axilla smooth and shiny; propodeum with median carina and weak plicae; nucha distinct; forewing 2.7x as long as broad; speculum large, open behind; proximal tuft of setae absent except for 2 weak setae; distal tuft absent, instead with a weak infuscate spot covered with loose darker hairs, with a weak infuscation attached to STV and extending towards posterior median part, not at all extending beyond STV towards apical part of wing; relative length of CC = 50; SMV = 37; MV = 46; PMV = 18; STV = 12.

Metasoma : Subsessile; 0.93x length of mesosoma, 1.5x as long as broad.

Male : Unknown.

Host : Unknown.

Distribution : India (West Bengal).

Material examined : Holotype, Female, INDIA, West Bengal (22° 34' 10.92" N 88° 22' 10.92" E), Maithun dam area, 14-xi-1994, S. B. Zeya & S. I. Kazmi.

Depository : Deposited in NZSI.

Etymology : Named after Prof. M. Hayat of Aligarh Muslim University for his significant contribution to the study of Chalcidoidea.

Remarks : This new species comes very close to *Trichospilus diatraeae* in somewhat similar type of mesoscutum and similar forewing structure. However this new species differ from *T diatraeae* in having: (1) Gaster without distinct dark patch (in *T diatraeae* gaster with a black or dark brown patch at median or posteriomedian part); (2) Metasoma 1.5x as long as wide (in *T diatraeae* metasoma as long as wide or length subequal to its width); (3) Pedicel 1.23x as long as F1, 1.5x as long as broad (in *T diatraeae* pedicel 2x as long as F1, 2.25x as long as broad).

3. *Trichospilus pupivorus* Ferrière

(Figs. 429-431)

1930. *Trichospilus pupivora* Ferrière, 358-359. Lectotype Female (Bou ek, 1976 designated) INDIA (Cochin) (BMNH) examined.

1988. *Trichospilus pupivorus* Ferrière: Bou ek, 633 amended the spelling of the species.

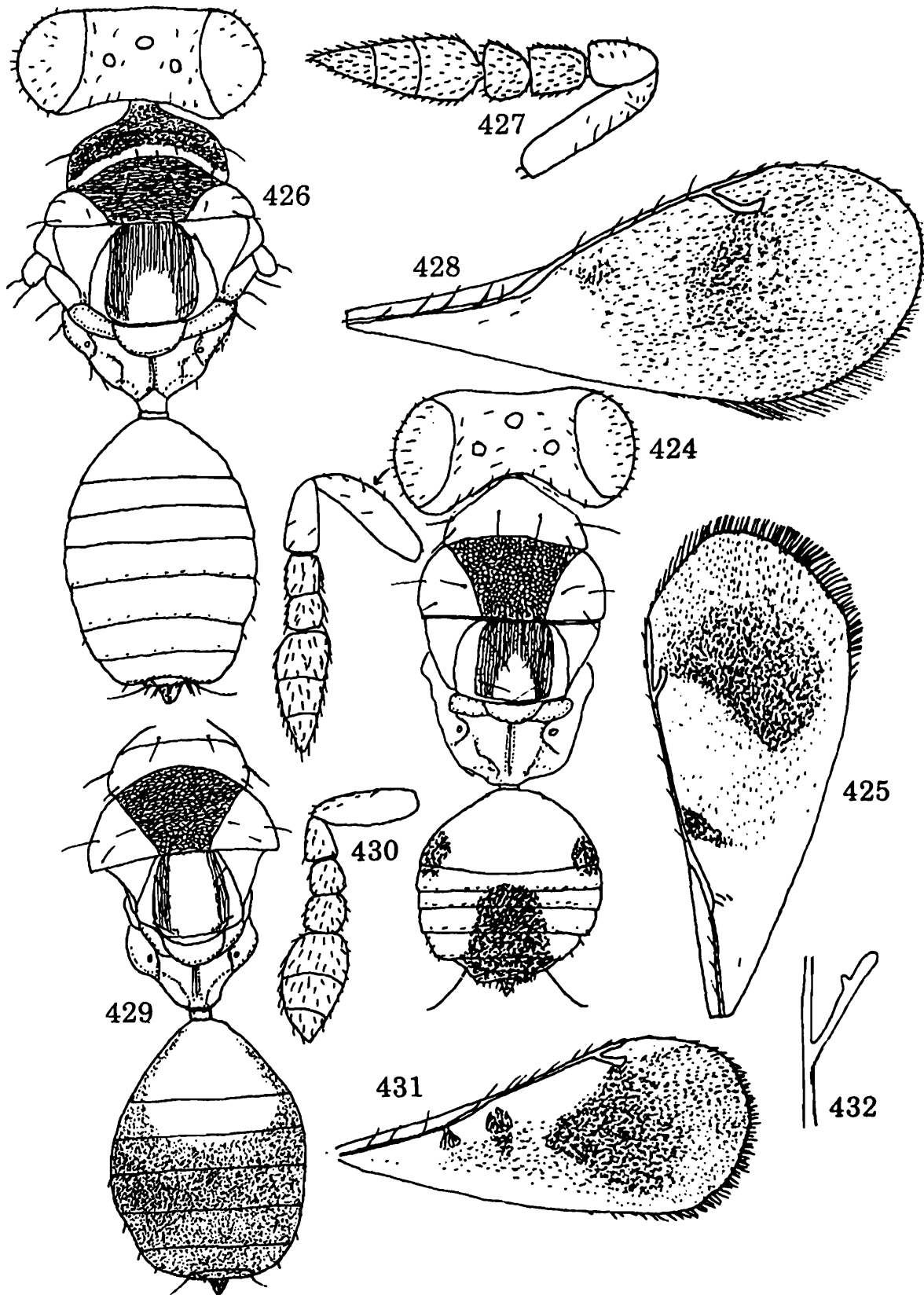
Redescription : *Female* : (Plesiotype) Length 1.11 mm. Head and mesosoma pale brownish yellow; metasoma dark brown with pale yellowish brown area on T1 and T2 medially; head with a brown streak running from lower eye margin to mouth present; wings hyaline with a weak infuscation behind STV, infuscation not extending to distal and posterior margins.

Head : In anterior view a little wider than its height (22 : 20); width in dorsal view 2.13x its length; POL 1.7x OOL; AOL shorter than OOL; WIOS 3x POL; frons and vertex smooth and shiny; eyes pubescent; MS 0.33x eye height in profile; eye length 0.83x eye height in profile; relative L : W of antennal segments : scape = 25 : 8; pedicel = 10 : 8; F1 = 8 : 8; F2 = 9 : 10; clava = 26 : 15.

Mesosoma : Pronotum with cross ridge, reticulate except at smooth admarginal stripe posteriorly; MLM reticulate completely with 2 pairs of setae; axillae smooth; scutellum smooth medially from base to apex, side striate; propodeum with median carina and plicae present; forewing 2.4x as long as broad, with two distinct tufts of stout setae, space between proximal tuft and distal tuft and space between distal tuft and STV bare dorsally; speculum relatively small and closed behind by a distinct line of cubital setae; relative length of CC = 36; SMV = 26; MV = 32; PMV = 7; STV = 6.

Metasoma : Petiole transverse; metasoma shorter than mesosoma; gaster 1.42x as long as wide.

Male : Similar to female except for the differences mentioned by Ferrière (1930).

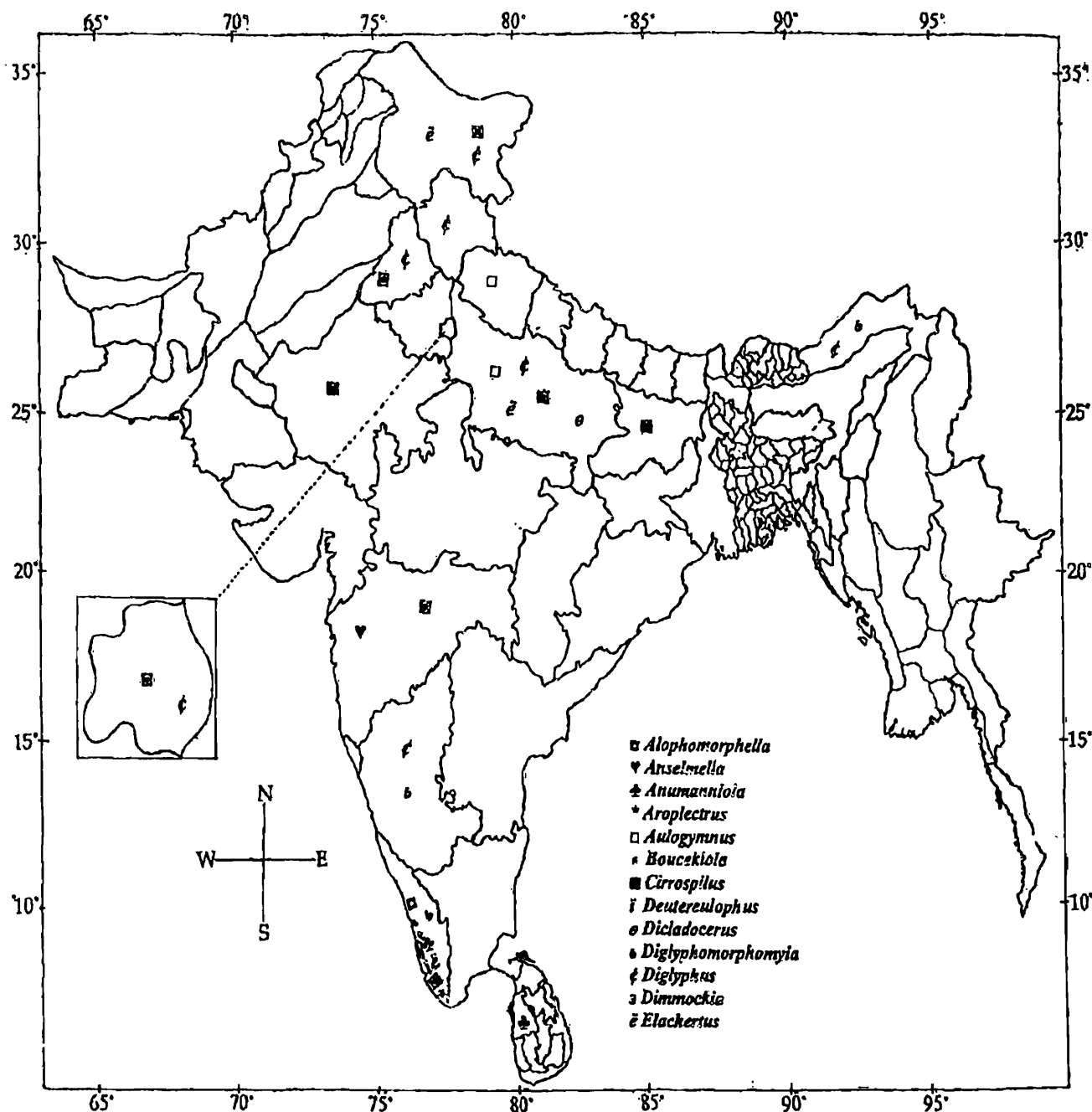


Figs. 424-425. *Trichospilus diatraeae* (Ch. & Marg.) Female : 424. Body dorsal view & antenna; 425. Forewing; **Figs. 426-428.** *T. hayati* sp.nov. Female : 426. Body dorsal view; 427. Antenna; 428. Forewing. **Figs. 429-431.** *T. pupivorus* Ferriere Female : 429. Mesosoma & metasoma dorsal view; 430. Antenna; 431. Forewing. **Fig. 432.** *Aulogymnus* sp. STV.

Host : *Opisina arenosella* Walker (Lepidoptera : Oecophoridae).

Distribution : Barbados, India [Andhra Pradesh, Gujarat, Karnataka, Kerala, Tamil Nadu] Indonesia, Malaysia, Mauritius, Myanmar (Burma), Papua New Guinea, Sri Lanka.

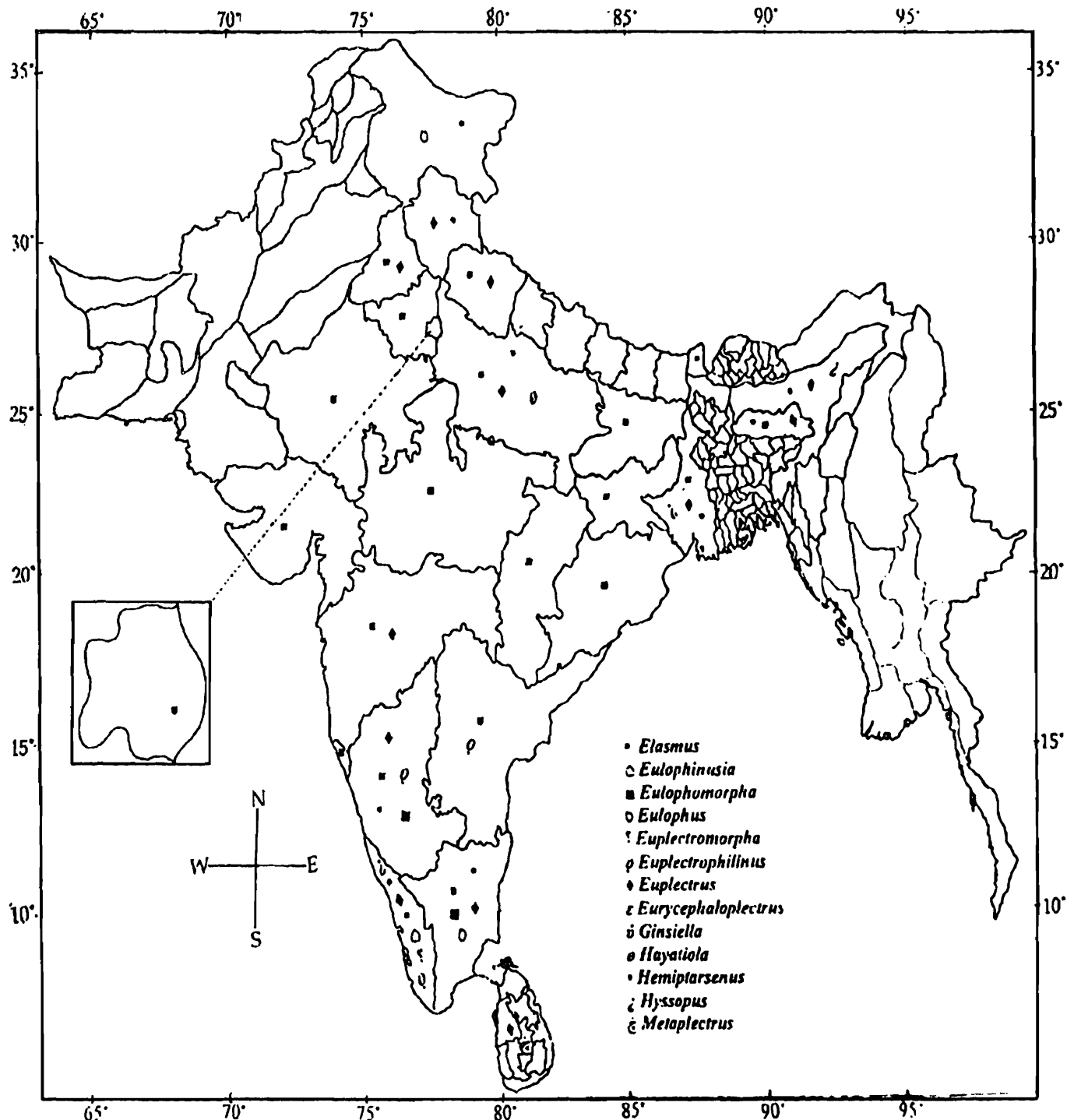
Material examined : Plesiotype: Female, INDIA, Kerala, Kayamkulam (9° 10' N 76° 30' E), Central Plantation Crops Research Institute (= CPCRI), 21-ii-1989, T.C. Narendran & party. Other material examined : 8 Females, INDIA, Kerala,



Figs. 434. Distribution of 13 genera of Eulophinae : *Alopomorphella*, *Anselmella*, *Anumanriola*, *Aroplectrus*, *Aulogymnus*, *Boucekiola*, *Cirrospilus*, *Deutereulophus*, *Di cladocerus*, *Diglyphomorphomyia*, *Diglyphus*, *Dimmockia*, *Elachertus*.

Calicut University Campus (11° 7'N 75° 5'E), 1985, T.C. Narendran; 3 Females, Kerala, Kayamkulam of same data of Plesiotype; 3 Females, Kerala, Calicut University Campus (11° 7'N 75° 5'E), 16-v-2001, T.C. Narendran & party.

Remarks : *T. pupivorus* comes close to the African *T. ferrièrei* Bou ek in the key to species by Bou ek (1976) but differs from it in having : (1) MLM with

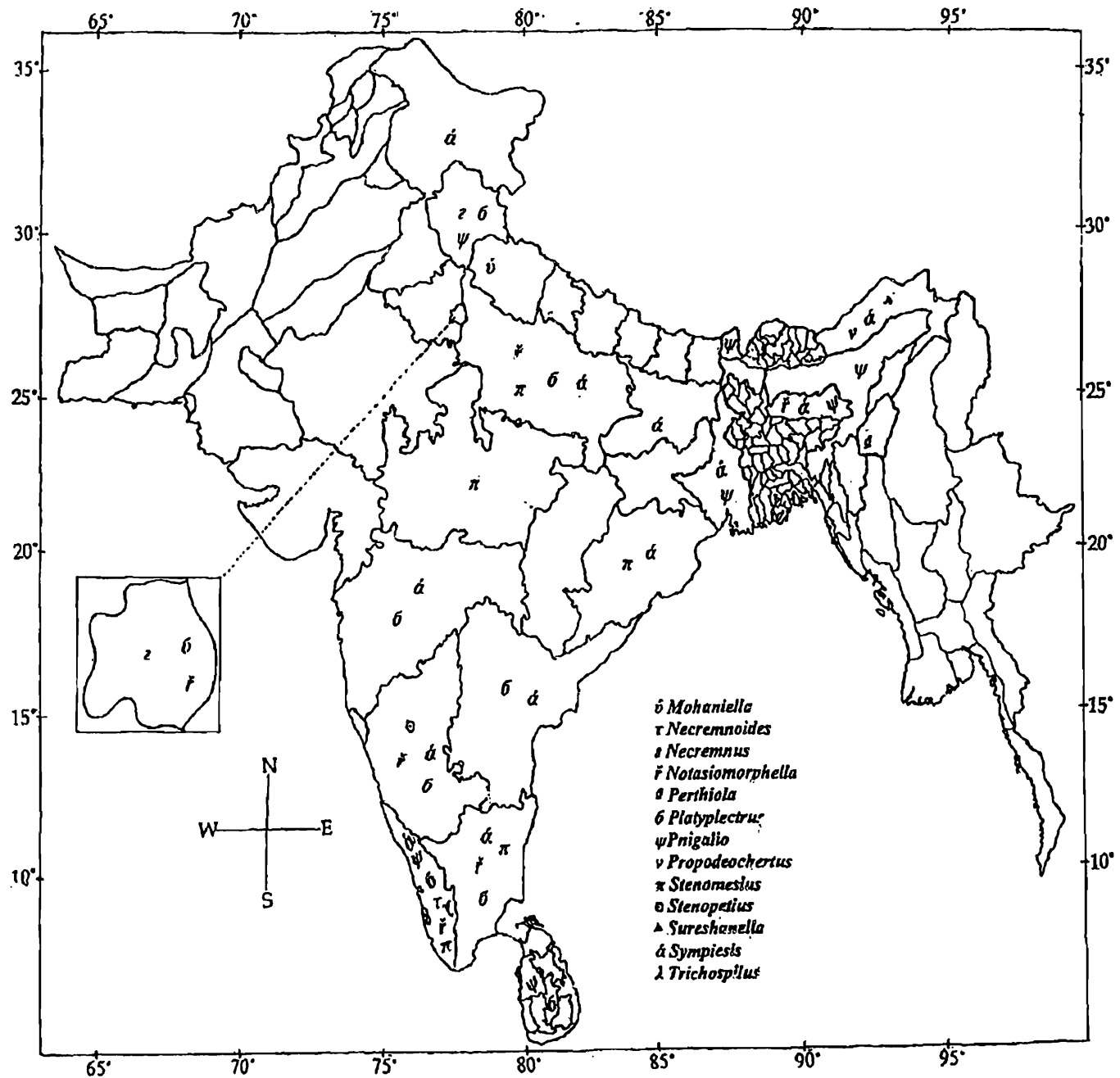


Figs. 435. Distribution of 13 genera of Eulophinae : *Elasmus*, *Eulophinusia*, *Eulophomorpha*, *Eulophus*, *Euplectromorpha*, *Euplectrophillinus*, *Euplectrus*, *Eurycephaloplectrus*, *Ginsiella*, *Hayatiola*, *Hayatiola*, *Hemiptarsenus*, *Hyssopus*, *Metaplectrus*.

weak reticulation (in *T ferrièrei* MLM with deep reticulation); (2) OOL as long as diameter of posterior ocellus (in *T ferrieri* OOL 1.5x as long as diameter of posterior ocellus).

SUMMARY

The genera and species of the Subfamily Eulophinae of the family Eulophidae of Indian Subcontinent are revised in the light of discovery of several new taxa and new record from the region and recent changes and advances in the taxonomy



Figs. 436. Distribution of 13 genera of Eulophinae : *Mohaniella*, *Necremnoides*, *Necremnus*, *Notasiomorphella*, *Perthiola*, *Platyplectrus*, *Prigallo*, *Propodeochertus*, *Stenomesus*, *Stenopetius*, *Sureshanella*, *Sympiesis*, *Trichospilus*.

of this Subfamily in other geographic regions. The Indian subcontinent includes India, Sri Lanka, Nepal, Myanmar, Bhutan, Bangladesh and Pakistan. 39 genera are recognized valid and 251 species are reported from the subcontinent. This includes 72 new species. The new species are described and known species are redescribed or diagnosed. Data on host and distribution are also provided. Key to genera of Indian Subcontinent and key to species of genera are provided. Besides, a few synonyms and new combinations are also proposed in this work. A host parasite index is provided at the end. An index to species is also given. In the beginning of the monograph brief accounts on the historical resume, phylogeny, biology and classification are also provided.

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- Cirphis* sp. (Lepidoptera : Noctuidae)
Euplectrus spodopterae
- Clostera anachoreta* (Denis & Schiffermüller) (Lepidoptera : Notodontidae)
Sympiesis hyblaeae
- Cnaphalocrocis medinalis* (Guenée)
(Lepidoptera : Pyralidae)
Elasmus albopictus
Elasmus brevicornis
Trichospilus pupivorus
- Coleophora binderella* (Kollar)
(Lepidoptera : Coleophoridae)
Cirrospilus pictus
- Coleophora fuscadinella* Zeller
Cirrospilus pictus
- Coleophora ibipennella* Zeller
Cirrospilus pictus
- Coleophora laricella* (Hubner)
Necremnus leucarthros
- Coleophora serratella* (Linnaeus)
Cirrospilus pictus
- Coleophora* sp.
Cirrospilus pictus
- Condica capensis* (Guenée)
(Lepidoptera : Noctuidae)
Euplectrus euplexiae
- Condica conducta* (Walker)
Euplectrus euplexiae
- Conopia* sp. (Lepidoptera : Sesiidae)
Elasmus nephantidis
- Conopomorpha cramerella* Snellen.
(Lepidoptera : Gracillariidae)
Elasmus hyblaeae
- Contarinia* sp. (Diptera : Cecidomyiidae)
Elasmus anticles
- Contheyla rotunda* Hampson
(Lepidoptera : Cochliidae)
Aroplectrus contheylae
- Coptodisca lucifluella* Clemens
(Lepidoptera : Heliozelidae)
Cirrospilus pictus
- Corcyra cephalonica* (Stainton)
(Lepidoptera : Pyralidae)
Trichospilus pupivorus
- Corcyra* sp.
Sympiesis hyblaeae
- Cosmopterix pulchrimella* (Chambers)
(Lepidoptera : Cosmopterigidae)
Cirrospilus pictus
- Crioceris asparagi* (Linnaeus)
(Coleoptera : Chrysomelidae)
Necremnus leucarthros
- Cryptoblabe bistriga* (Haworth)
(Lepidoptera : Pyralidae)
Sympiesis dolichogaster

Cryptophlebia williamsi Bradley
(Lepidoptera : Tortricidae)

Trichospilus pupivorus

Cydia critica (Meyr) (Lepidoptera :
Tortricidae)

Elasmus anticles

Cydia leucostoma Meyr.

Elasmus homonae

Cydia tricentra Meyr.

Elasmus homonae

Cyphosticha caerulea Meyrick
(Lepidoptera : Gracillariidae)

Stenomesus japonicus

D

Dacus oleae (Gmelin) (Diptera :
Tephritidae)

Cirrospilus variegatus

Darna nararia (Moore) (Lepidoptera :
Limacodidae)

Eurycephaloplectrus natadae

Dasineura brassicae (Winnertz)
(Diptera : Cecidomyiidae)

Necromnus leucarthros

Dasychira sp. (Lepidoptera :
Lymantriidae)

Platyplectrus viridiceps

Euplectrus ceylonensis

Dendrolimus spectabilis Butler
(Lepidoptera : Lasiocampidae)

Cirrospilus pictus

Dendrolimus sp.

Euplectrus ceylonensis

Dialectica scalariella (Zeller)
(Lepidoptera : Gracillariidae)

Stenomesus japonicus

Diaphania indica (Saunders)
(Lepidoptera : Pyralidae)

Elasmus brevicornis

Elasmus hyblaeae

Elasmus indicus

Diaphania marinata (Fabricius)

Elasmus brevicornis

Diatraea lineolata (Walker)
(Lepidoptera : Noctuidae)

Trichospilus diatraeae

Diatraea saccharalis (Fabricius)

Trichospilus diatraeae

Diatraea sp.

Elasmus zehntneri

Trichospilus diatraeae

Diatraea venosata (Walker)

Trichospilus diatraeae

Dichocrocis megillalis Walker
(Lepidoptera : Pyralidae)

Elasmus brevicornis

Dismorphia amphiona Linnaeus
(Lepidoptera : Pieridae)

Trichospilus diatraeae

Dismorphia spio

Trichospilus diatraeae

E

Earias biplaga Walker (Lepidoptera :
Noctuidae)

Elasmus johnstoni

- Earias cupreoviridis* Walker
Elasmus johnstoni
- Earias fabia* Stoll
Elasmus johnstoni
- Earias insulana* (Boisduval)
Elasmus johnstoni
- Earias* sp.
Elasmus johnstoni
- Elachista cerusella* Hübner
(Lepidoptera : Elachistidae)
Cirrospilus pictus
- Elasmus* sp. (Hymenoptera :
Eulophidae)
Euplectrus parvulus
- Epicephala chalybacma* Meyrick
(Lepidoptera : Gracillariidae)
Elasmus anticles
- Epicephala pulcherrima* Linn.
Elasmus anticles
- Epimecis detexta* (Walker) (Lepidoptera :
Geometridae)
Trichospilus diatraeae
- Episimus argutanus* (Clemens)
(Lepidoptera : Tortricidae)
Sympiesis dolichogaster
- Ergolis merione* Cramer (Lepidoptera :
Papilionidae)
Trichospilus pupivorus
- Eriocrania semipurpurella* (Stephens)
(Lepidoptera : Eriocraniidae)
Cirrospilus pictus
- Eriocrania sparmannella* (Bosc)
Cirrospilus pictus
- Eriocrania* sp.
Necremnus leucarthros
- Erionota thrax* (Linnaeus). (Lepidoptera :
Hesperiidae)
Elasmus brevicornis
- Eublemma amabilis* Moore
(Lepidoptera : Noctuidae)
Elasmus claripennis
- Eublemma scitula* Ramb.
Elasmus claripennis
- Eublemma* sp.
Elasmus indicus
- Eucosma critica* (Lepidoptera :
Tortricidae)
Elasmus albopictus
- Euleia heraclei* (Linnaeus) (Diptera :
Tephritidae)
Cirrospilus variegatus
- Euplexia capensis* (Guenée)
(Lepidoptera : Noctuidae)
Euplectrus euplexiae
- Euplexia conducta* Walker
Euplectrus euplexiae
- Euproctis flava* Bremer (Lepidoptera :
Lymantriidae)
Euplectrus ceylonensis
- Euproctis fraterna* Moore
Euplectrus geethae Wijesekara &
Schauff
- Euproctis (= Nygmia) scintillans*
Walker
Euplectrus ceylonensis
Platyplectrus viridiceps

F

Fenusa pusilla (Lepeletier)
(Hymenoptera : Tenthredinidae)

Cirrospilus pictus

Fenusa ulmi Sundevall,

Cirrospilus pictus

Fenusa sp.

Cirrospilus pictus

G

Galleria mellonella Linnaeus
(Lepidoptera : Pyralidae)

Trichospilus diatraeae

Geometridae unspecified sp.

Euplectrus indicus

Goniozus sp. (Hymenoptera : Bethylidae)

Elasmus anticles

Gracillaria belfragella Chambers
(Lepidoptera : Gracillariidae)

Sympiesis dolichogaster

Gracillaria cuculipennella Hübner

Sympiesis dolichogaster

Gracillaria fidella Reutti

Sympiesis dolichogaster

Gracillaria negundella Chambers

Sympiesis dolichogaster

Gracillaria perseae Busck

Sympiesis dolichogaster

Gracillaria sassafressella Chambers

Sympiesis dolichogaster

Gracillaria soyella van Deventer

Sympiesis dolichogaster

Gracillaria syringella (Fabricius)

Cirrospilus pictus

Gracillaria theivora Walsingham

Sympiesis dolichogaster

Gracillaria sp.

Cirrospilus pictus

Stenomesus japonicus

Sympiesis dolichogaster

Gregopimpla kuwanae (Viereck)
(Hymenoptera : Ichneumonidae)

Cirrospilus pictus

Cirrospilus variegatus

H

Hapalia machaeralis (Walker)
(Lepidoptera : Pyralidae)

Elasmus brevicornis

Elasmus johnstoni

Trichospilus diatraeae

Hedylepta indicata (Fabricius)
(Lepidoptera : Pyralidae)

Elasmus indicus

Helicoverpa armigera (Hubner)
(Lepidoptera : Noctuidae)

Trichospilus pupivorus

Heliothis armigera (Hübner)
(Lepidoptera : Noctuidae)

Euplectrus euplexiae

Stenomesus japonicus

Sympiesis hyblaeae

Heliothis carinigera (Hubner)

Stenomesus japonicus

Heliothis virescens (Fabricius)

Trichospilus diatraeae

- Heterarthrus aceris* (Kaltenbach) (*Hymenoptera : Tenthredinidae*)
Cirrospilus pictus
- Heterarthrus nemoratus*
Cirrospilus pictus
- Heterarthrus vagans* (Fallén)
Cirrospilus pictus
- Heterarthrus* sp.
Cirrospilus pictus
- Holococera pulverea* Meyr. (*Lepidoptera : Coleophoridae*)
Elasmus anticles
- Holococera pulverea* (Meyrick)
Elasmus claripennis
- Holococera* sp.
Elasmus claripennis
- Holocacista rivillei* (Stainton) (*Lepidoptera : Heliozelidae*)
Cirrospilus variegatus
- Holocacista* sp.
Cirrospilus variegatus
- Homona coffearia* Nietner (*Lepidoptera : Tortricidae*)
Elasmus homonae
- Hoplocampa* sp. (*Hymenoptera : Tenthredinidae*)
Cirrospilus pictus
- Hyblaea puera* Cramer (*Lepidoptera : Hyblaeidae*)
Elasmus brevicornis
- Hydriomena renunciata* (Walker) (*Lepidoptera : Geometridae*)
Sympiesis dolichogaster
- Hypera adspersa* (Fabricius) (*Coleoptera : Curculionidae*)
Necremnus leucarthros
- Hypera arator* (Linnaeus)
Necremnus leucarthros
- Hypera murina* Fabricius
Necremnus leucarthros
- Hypera polygoni* Germar
Necremnus leucarthros
- Hypera postica* (Gyllenhal)
Necremnus leucarthros
- Hypera rumicis* (Linnaeus)
Necremnus leucarthros
- Hypera variabilis* Dejean
Necremnus leucarthros
- Hypera* sp.
Necremnus leucarthros
- Hypsipyla robusta* (Moore) (*Lepidoptera : Pyralidae*)
Trichospilus diatraeae
- Hypurus bertrandi* (Perris) (*Coleoptera : Curculionidae*)
Necremnus leucarthros
- I**
- Inglisia bivalvata* Green. (*Hemiptera : Coccidae*)
Elasmus anticles
- Ivela auripes* (Butler) (*Lepidoptera : Lymantriidae*)
Cirrospilus pictus
- J**
- Japanagromyza salicifolii* (Collin) (*Diptera : Agromyzidae*)
Cirrospilus pictus

K

Kerria lacca (Kerr.) (Homoptera : Kerriidae)

Elasmus claripennis

Kratoysma usticrus (Erdös)
(Hymenoptera : Eulophidae)

Cirrospilus pictus

L

Laccifer lacca (Kerr) (Hemiptera : Coccidae)

Elasmus claripennis

Laprosema annubilata (Swinhoe)
(Lepidoptera : Pyralidae)

Trichospilus pupivorus

Lamprosema annubilobata (Swinhoe)

Trichospilus diatraeae

Trichospilus pupivorus

Lamprosema indicata (Fabricius)

Elasmus indicus

Elasmus brevicornis

Elasmus claripennis

Lamprosema octasema Meyrick

Trichospilus diatraeae

Laspeyresia leucostoma Mayer
(Lepidoptera : Eucosmidae)

Elasmus homonae

Sympiesis dolichogaster

Laspeyresia pomonella (Linnaeus)

Trichospilus diatraeae

Laspeyresia tricentra Meyr.

Elasmus homonae

Lema cyanella (Linnaeus) (Coleoptera : Chrysomelidae)

Necremnus leucarthros

Lema lichenis Weise

Necremnus leucarthros

Lema melanopa Linnaeus

Necremnus leucarthros

Lema sp.

Necremnus leucarthros

Leucoma salicis (Linnaeus)
(Lepidoptera : Lymantriidae)

Cirrospilus pictus

Leucoptera coffeina Washbourn
(Lepidoptera : Lyonetiidae)

Cirrospilus variegatus

Leucoptera coffeella (Guérin-Méneville)

Cirrospilus ingenuus

Leucoptera laburnella

Cirrospilus pictus

Leucoptera malifoliella (O. Costa)

Cirrospilus variegatus

Cirrospilus pictus

Leucoptera meyricki Ghesquiere

Cirrospilus variegatus

Leucoptera scitella Zeller

Cirrospilus variegatus

Leucoptera sinuella (Reutti)

Cirrospilus pictus

Leucoptera sp.

Cirrospilus pictus

Cirrospilus variegatus

Leucospilapteryx omisella (Stainton)
(Lepidoptera : Gracillariidae)

Stenomesus japonicus

Liriomyza bryoniae (Kaltenbach)
(Diptera : Agromyzidae)

Hemiptarsenus varicornis

- Liriomyza congesta* (Becker)
Cirrospilus variegatus
- Liriomyza huidobrensis* (Blanchard)
Hemiptarsenus varicornis
- Liriomyza pusilla* (Meigen)
Hemiptarsenus varicornis
- Liriomyza sativae* Blanchard
Hemiptarsenus varicornis
- Liriomyza* sp.
Hemiptarsenus varicornis
- Liriomyza trifolii* (Burgess)
Hemiptarsenus varicornis
- Lygropia obrinusalis* Walker
(Lepidoptera : Pyralidae)
Elasmus brevicornis
- Lygropia quaternalis* (Zeller)
Elasmus brevicornis
- Lymantria dispar* (Linnaeus)
(Lepidoptera : Lymantriidae)
Cirrospilus pictus
- Lyonetia clerkella* (Linnaeus)
(Lepidoptera : Lyonetiidae)
Cirrospilus pictus
Stenomesus japonicus
- Lyonetia* sp.
Cirrospilus pictus
Cirrospilus variegatus
- M**
- Macroleptra nararia* Moore
(Lepidoptera : Aididae)
Euplectromorpha maculatus
Euplectrus narariae
- Metaplectrus thoseae*
Platyplectrus kuriani
Platyplectrus natadae
Platyplectrus taprobanes
- Malacosoma* sp. (Lepidoptera :
Lasiocampidae)
Cirrospilus pictus
- Manatha albipes* Moore (Lepidoptera :
Psychidae)
Elasmus ceylonicus
- Mantura obtusata* (Gyllenhal, 1813)
(Coleoptera : Chrysomelidae)
Necremnus leucarthros
- Marasmia suspicalis* (Walker)
(Lepidoptera : Pyralidae)
Elasmus brevicornis
- Marasmia trapezalis* (Guenée)
Euplectrus viggiani
- Margaronia pyloalis* Walker
(Lepidoptera : Pyralidae)
Euplectrus euplexiae
- Melanagromyza phaseoli* (Tryon)
(Diptera : Agromyzidae)
Hemiptarsenus varicornis
- Messa hortulana* (Klug) (Hymenoptera :
Tenthredinidae)
Cirrospilus pictus
- Metriochroa inferior* (Silvestri)
(Lepidoptera : Gracillariidae)
Cirrospilus variegatus
- Metriochroa latifoliella* (Millière)
Cirrospilus variegatus
- Metriochroa inferior* (Silvestri)
Cirrospilus variegatus

N

Naranga aenescens Moore (Lepidoptera :
Noctuidae)

Stenomesus japonicus

Naranga sp.

Euplectrus indicus

Narosa conspersa Walker (Lepidoptera :
Limacodidae)

Metaplectrus solitarius

Natada nararia Moore

Euplectromorpha maculatus

Euplectrus narariae

Metaplectrus thoseae

Platyplectrus kuriani

Platyplectrus natadae

Nausinoe geometralis Guenée
(Lepidoptera : Crambidae)

Elasmus brevicornis

Nematus salicis (Klug) (Hymenoptera :
Tenthredinidae)

Cirrospilus pictus

Nematus sp.

Cirrospilus pictus

Nephantis serinopa Meyrick
(Lepidoptera : Oecophoridae)

Elasmus nephantidis

Trichospilus pupivorus

Nephantis sp.

Trichospilus pupivorus

Nephopteryx rhodobasalis Hampson
(Lepidoptera : Pyralidae)

Elasmus johnstoni

Noorda moringae Tams. (Lepidoptera :
Pyralidae)

Elasmus hyblaeae

Nyctemera lactinia Cramer
(Lepidoptera : Arctiidae)

Euplectrus nyctemerae

Nycteola asiatica (Haworth)
(Lepidoptera : Nolidae)

Cirrospilus pictus

O

Oebia sp.

Stenomesus japonicus

Oecophyllembius inferior Silvestri

Cirrospilus variegatus

Oecophyllembius neglectus Silvestri
(Lepidoptera : Pyralidae)

Cirrospilus variegatus

Oecophyllembius sp.

Cirrospilus variegatus

Oeobia verbascalis Schiff. (Lepidoptera :
Pyralidae)

Elasmus brevicornis

Oomyzus sp. (Hymenoptera
Eulophidae)

Stenomesus japonicus

Ophiomyia phaseoli (Tryon) (Diptera :
Agromyzidae)

Hemiptarsenus varicornis

Ophiomyia sp.

Hemiptarsenus varicornis

Opisina arenosella Walker (Lepidoptera
: Oecophoridae)

Elasmus nephantidis

Trichospilus diatraeae

Trichospilus pupivorus

- Oscinella frit* (Linnaeus) (Diptera : Chloropidae) *Papilio polytes* Linnaeus
Necremnus leucarthros *Euplectrus manilae*
Othreis fullonia (Clerk) (Lepidoptera : Noctuidae) *Paraleucoptera sinuella* Reutti
Euplectrus maternus (Lepidoptera : Lyonetiidae)
Othreis homaena Hübner *Cirrospilus pictus*
Euplectrus maternus *Paraphytomyza populi* (Kaltenbach) (Diptera : Agromyzidae)
Othreis materna (Linnaeus) *Cirrospilus pictus*
Euplectrus indicus *Parasa bicolor* (Walker) (Lepidoptera : Limacodidae)
Euplectrus maternus *Aroplectrus dimerus* Lin
Oulema gallaeciana (Heyden) *Parornix anguliferella* (Zeller) (Lepidoptera : Gracillariidae)
Necremnus leucarthros *Cirrospilus pictus*
Oulema lichenis Voet. (Coleoptera : Chrysomelidae) *Pectinophora gossypiella* (Saunders) (Lepidoptera : Gelechiidae)
Necremnus leucarthros *Elasmus zehntneri*
Oulema melanopus (Linnaeus) *Pelopidas mathias* (Fabricius) (Lepidoptera : Hesperiiidae)
Necremnus leucarthros *Euplectrus nyctemerae*
Oulema sp. *Penicillaria jacosatrix* Guenée (Lepidoptera : Noctuidae)
Necremnus leucarthros *Euplectrus leucostomus*
- P**
- Pachyzancla stultalis* Walker *Penthocrates* sp. (Lepidoptera : Limacodidae) (Lepidoptera : Pyralidae)
Elasmus brevicornis *Aroplectrus dimerus* Lin
Palpozenillia diatraeae Townsend *Pericyma cruegeri* (Butler) (Lepidoptera : Noctuidae) (Diptera : Tachinidae)
Trichospilus diatraeae *Euplectrus leucostomus*
Panseptia teleturga Meyrick (Lepidoptera : Xyloryctidae) *Perigea capensis* (Guenée) (Lepidoptera : Noctuidae)
Trichospilus pupivorus *Euplectrus euplexiae*
Papilio alphenor Cramer (Lepidoptera : Papilionidae) *Phanerotoma hendecasisella* Cameron (Hymenoptera : Braconidae)
Euplectrus manilae *Elasmus brevicornis*

Phidodonta modesta Weise. (Coleoptera :
Chrysomelidae)

Elasmus alami

Pholetesor ornigis (Weed)
(Hymenoptera : Braconidae)

Sympiesis dolichogaster

Phyllocnistis citrella Stainton
(Lepidoptera : Phyllocnistidae)

Cirrospilus ingenuus

Cirrospilus pictus

Cirrospilus variegatus

Stenomesius japonicus

Sympiesis striatipes

Phyllocnistis labyrinthella Bjerkander

Cirrospilus pictus

Phyllocnistis saligna (Zeller)

Cirrospilus pictus

Phyllocnistis suffusella Zeller

Cirrospilus pictus

Phyllocnistis unipunctella (Stephens)

Cirrospilus pictus

Phyllocnistis sp.

Cirrospilus pictus

Phyllonorycter (= *Lithocolletis*)
alnifoliella Hübner) (Lepidoptera :
Gracilariidae)

Cirrospilus pictus

Phyllonorycter (= *Lithocolletis*)
blancardella Fabricius

Cirrospilus pictus

Cirrospilus variegatus

Sympiesis dolichogaster

Phyllonorycter (= *Lithocolletis*)
cerasicolella (Herrich-Schäffer)

Cirrospilus pictus

Phyllonorycter (= *Lithocolletis*)
connexella (Zeller)

Cirrospilus pictus

Phyllonorycter (= *Lithocolletis*)
corylifoliella (Hübner)

Cirrospilus pictus

Cirrospilus variegatus

Phyllonorycter cydoniella (Denis and
Schifferrmüller)

Cirrospilus pictus

Phyllonorycter (= *Lithocolletis*)
cytisella (Rebel)

Cirrospilus pictus

Phyllonorycter (= *Lithocolletis*)
cytisifoliae (M. Hering)

Cirrospilus pictus

Phyllonorycter (= *Lithocolletis*)
dubitella (Herrich-Schäffer)

Cirrospilus pictus

Phyllonorycter (= *Lithocolletis*)
emberizaepennella (Bouché)

Sympiesis dolichogaster

Phyllonorycter (= *Lithocolletis*)
fuscedinella (Zeller)

Cirrospilus pictus

Phyllonorycter (= *Lithocolletis*)
holodisci (Braun),

Sympiesis dolichogaster

Phyllonorycter (= *Lithocolletis*)
lyoniae (Kumata)

Stenomesius japonicus

- Phyllonorycter* (= *Lithocolletis*)
maestingella (Müller)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*) *malella*
Gerasimov
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*)
messaniella (Zeller)
Sympiesis dolichogaster
Cirrospilus variegatus
- Phyllonorycter* (= *Lithocolletis*)
oxyacanthae (Frey)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*) *platani*
(Staudinger)
Sympiesis dolichogaster
- Phyllonorycter* (= *Lithocolletis*)
platanoidella (Joannis)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*)
pomifoliella (Zeller)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*)
pomonella (Zeller)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*)
populiella (Chambers)
Cirrospilus pictus
Sympiesis dolichogaster
- Phyllonorycter* (= *Lithocolletis*)
populifoliella (Treitschke)
Cirrospilus pictus
Sympiesis dolichogaster
- Phyllonorycter* (= *Lithocolletis*)
quercifoliella (Zeller)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*) *rajella*
(Linnaeus)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*)
ringoniella (Matsumura)
Stenomesus japonicus
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*) *salictella*
(Zeller)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*)
stettinensis (Nicelli)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*)
strigulatella (Lienig & Zeller)
Cirrospilus pictus
Cirrospilus variegatus
- Phyllonorycter* (= *Lithocolletis*)
tristrigella (Haworth)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*)
pyrifoliella (Gerasimov)
Cirrospilus pictus
Cirrospilus variegatus
- Phyllonorycter* (= *Lithocolletis*)
ulmifoliella (Hübner)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*)
schreberella (Fabricius)
Cirrospilus pictus

- Phyllonorycter* (= *Lithocolletis*)
sorbi (Frey)
Cirrospilus pictus
- Phyllonorycter* (= *Lithocolletis*) sp.
Cirrospilus ingenuus
Cirrospilus pictus
Cirrospilus variegatus
- Phyllonorycter* (= *Lithocolletis*)
spinicolella Zeller
Cirrospilus pictus
- Phytomyza obscurella* Fallen (Diptera :
Agromyzidae)
Necremnus leucarthros
- Phytonomus arator* (Linnaeus)
(Coleoptera : Curculionidae)
Necremnus leucarthros
- Phytonomus nigrirostris* Fabricius
Necremnus leucarthros
- Phytonomus variabilis* (Herbst.)
Necremnus leucarthros
- Phytonomus* sp.
Necremnus leucarthros
- Platyedra gossypiella* Saunders
(Lepidoptera : Gelechiidae)
Elasmus johnstoni
- Plecoptera reflexa* Guenée (Lepidoptera :
Noctuidae)
Euplectrus parvulus
- Plusia orichalcea* (Fabricius)
(Lepidoptera : Noctuidae)
Euplectrus euplexiae
- Plusia peponis* Fabricius
Trichospilus pupivorus
- Plusiinae* unspecified sp.
Euplectrus leucostomus
Euplectrus parvulus
- Pnigalio agraulis* (Walker)
(Hymenoptera : Eulophidae)
Cirrospilus pictus
- Pnigalio* sp.
Cirrospilus pictus
- Polydesma scriptilis* Guenee
(Lepidoptera : Noctuidae)
Euplectrus leucostomus
- Polythlipta macralis* Lederer
(Lepidoptera : Pyralidae)
Stenomesus japonicus
- Porthetria dispar* (Linnaeus)
(Lepidoptera : Lymantriidae)
Cirrospilus pictus
- Prays acomonias* Meyr. (Lepidoptera :
Yponomeutidae)
Elasmus hyblaeae Ferrière
- Proceras* sp.
Trichospilus diatraeae Cherian &
Margabandhu.
- Prodenia litura* Fabricius (Lepidoptera
: Noctuidae)
Trichospilus pupivorus Ferrière
- Profenusa pygmaea* (Klug)
(Hymenoptera : Tenthredinidae)
Cirrospilus pictus
- Prophantis smaragdina* (Butler)
(Lepidoptera : Pyralidae)
Elasmus brevicornis
- Psara stultalis* Walker (Lepidoptera :
Pyralidae)
Elasmus brevicornis

Pseudonapomyza spicata (Diptera :
Agromyzidae)

Hemiptarsenus varicornis

Psyche (= *Manatha*) *albipes* Moore.
(Lepidoptera : Psychidae)

Elasmus ceylonicus

Elasmus hutsoni

Pyrausta machaeralis Walker

Elasmus brevicornis

Elasmus johnstoni

Trichospilus diatraeae

Trichospilus pupivorus

Pyrilla sp. (Homoptera : Lophopidae)

Euplectrus parvulus

Q

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Staphylinidae)

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R

Rhamphus oxyacanthae (Marsham)
(Coleoptera : Curculionidae)

Cirrospilus pictus

Rhogas pallidator Thunbg
(Hymenoptera : Eulophidae)

Cirrospilus pictus

Rhynchaenus alni (Linnaeus)
(Coleoptera : Curculionidae)

Cirrospilus pictus

Rhynchaenus populi Fabricius

Cirrospilus pictus

Rhynchaenus quercus (Linnaeus)

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Rhynchaenus rusci (Herbst)

Cirrospilus pictus

Rhynchaenus testaceus Müll

Cirrospilus pictus

Rhynchaenus ulmi Gyllenhal

Cirrospilus pictus

Rhynchaenus sp.

Cirrospilus pictus

Rivula sp. (Lepidoptera : Noctuidae)

Elasmus brevicornis

S

Saissetia coffeae (Walker).

Cirrospilus coccivorus

Selepa celtis Moore (Lepidoptera :
Nolidae)

Euplectrus euplexiae

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Scirpophaga auriflua Zeller
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Elasmus zehntneri

Scirpophaga excerptalis Walker

Elasmus zehntneri

Scirpophaga incertulas (Walker)

Trichospilus diatraeae

Elasmus albopictus

Scirpophaga intacta Snellen,

Elasmus zehntneri Ferrière

Scirpophaga monostigma Zeller,

Elasmus zehntneri Ferrière

Scirpophaga nivella Fabricius,

Elasmus zehntneri Ferrière

Scirpophaga rhodoproctalis Hampson

Elasmus zehntneri Ferrière

Scirpophaga sp.

Elasmus zehntneri

Scolioneura betulae (Zaddach)
(Hymenoptera : Tenthredinidae)

Cirrospilus pictus

Scolioneura betuleti (Klug)

Cirrospilus pictus

Scopula emissaria (Walker)
(Lepidoptera : Geometridae)

Euplectrus gopimohani

Selepa docilis Butler (Lepidoptera :
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Euplectrus euplexiae

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Trichospilus diatraeae

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Trichospilus diatraeae

Sexava sp. (Orthoptera : Strepsiptera)

Trichospilus diatraeae

Sirocalus posthumus Germar

Necremnus leucarthros

Spatulifimbria castaneiceps Hampson
(Lepidoptera : Limacodidae)

Platyplectrus taprobanes

Speia vuteria (Stoll) (Lepidoptera :
Noctuidae)

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Spodoptera (Laphygma) exigua
(Hübner) (Lepidoptera : Noctuidae)

Euplectrus euplexiae

Euplectrus gopimohani

Spodoptera frugiperda (J. E. Smith)

Trichospilus diatraeae

Trichospilus pupivorus

Spodoptera litura Fabricius

Euplectrus gopimohani

Trichospilus pupivorus

Spodoptera mauritia (Boisduval)

Trichospilus pupivorus

Spodoptera sp.

Euplectrus xanthocephalus

Stenomesus sp. (Hymenoptera :
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Stenomesus japonicus

Stereonychus fraxini (De Geer)
(Coleoptera : Curculionidae)

Cirrospilus pictus

Stigmella (= Nepticula) ariella Herrich-
Schäffer (Family : Nepticulidae)

Cirrospilus variegatus

Stigmella (= Nepticula) aurella
(Fabricius)

Cirrospilus pictus

Stigmella (= Nepticula) confusella
(Wood & Walsingham)

Cirrospilus pictus

Stigmella (= Nepticula) incognitella
(Herrich-Schäffer)

Cirrospilus pictus

- Stigmella* (= *Nepticula*) *juglandifoliella* (Clemens)
Cirrospilus pictus
- Stigmella* (= *Nepticula*) *malella* (Stainton)
Cirrospilus pictus
Cirrospilus variegatus
- Stigmella* (= *Nepticula*) *marginicolella* (Stainton)
Cirrospilus pictus
- Stigmella* (= *Nepticula*) *pyri* (Glitz)
Cirrospilus pictus
- Stigmella* (= *Nepticula*) *trimaculella* (Haworth)
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- Stomatomyia bezziana* Baranov (Diptera : Tachinidae)
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- Stomopteryx nerteria* (Meyrick) (Lepidoptera : Gelechiidae)
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- Stomphastis thraustica* (Meyrick) (Lepidoptera : Gracillariidae)
Elasmus anticlus
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Elasmus anticlus
- Sylepta derogata* (Fabricius) (Lepidoptera : Pyralidae)
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- Tetrastichus israeli* Mani & Kurian (Hymenoptera : Eulophidae)
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- Tetrastichus* sp.
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- Thosea cervina* Moore (Lepidoptera : Limacodidae)
Metaplectrus solitarius
- Thosea recta* Hampson
Platyplectrus natadae
Platyplectrus taprobanes
- Thosea* sp.
Metaplectrus thoseae
- Thysanoplusia orichalcea* (Fabricius)
Euplectrus ceylonensis

Tinea sp. (Lepidoptera : Tineidae)

Elasmus anticles

Tiracola plagiata (Walker)

(Lepidoptera : Noctuidae)

Trichospilus pupivorus

Tirathaba mundella Walker

(Lepidoptera : Pyralidae)

Elasmus cameroni

Tirathaba rufivena (Walker)

Trichospilus pupivorus

Tirathaba sp.

Elasmus claripennis

Elasmus cameroni

Trichospilus pupivorus

Tischeria angusticollella (Duponchel)

(Lepidoptera : Tischeriidae)

Cirrospilus pictus

Tischeria complanella Hübner

Sympiesis dolichogaster

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Tryporyza nivella Fabricius

Elasmus zehntneri

Tryporyza rhodoproctalis (Hampson)

Elasmus zehntneri

Tryporyza sp.

Elasmus zehntneri

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Y

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Z

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*Note : The above Host-parasite list is mainly based on Noyes(UCD;2003) plus research papers on Eulophinae.

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PLATE I

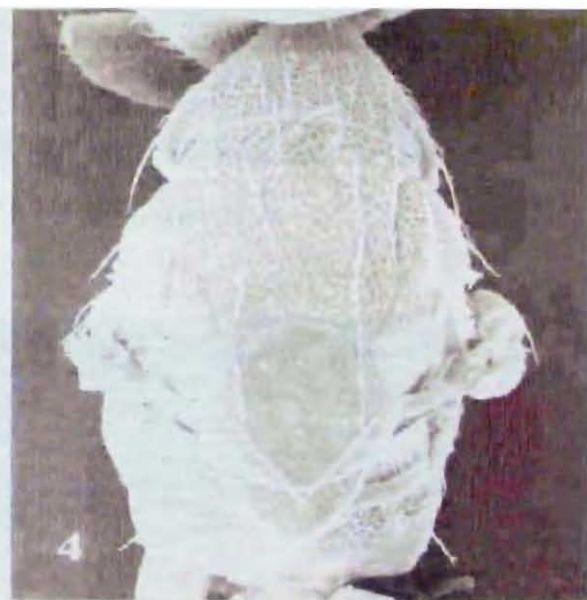
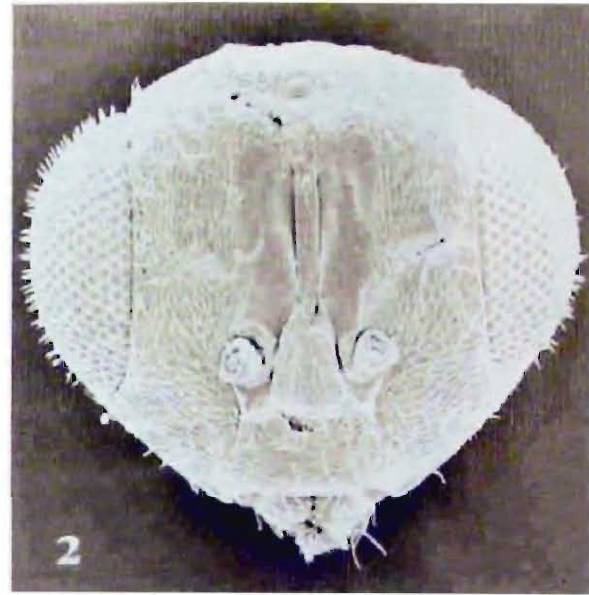


Photo 1. Marginal Gall on Papper leaf.



Photo 2. *Elachertus piperis* Narendran, Female

PLATE II



Figs. 1-5. *Cirrospilus ambiguus* Hansson & LaSalle (= *C. Brevicorpus*, Shafee & Rizvi) Female. 1. Forewing; 2. Head anterior view; 3. Body dorsal view; 4. Mesosoma dorsal view; 5. Antenna (courtesy LaSalle & Fisher, 2010).



Prof. Dr. T. C. Narendran has been engaged in research on the biosystematics of Hymenoptera (particularly Chalcidoidea) for more than four decades. He has worked in the University of Calicut, Kerala as a faculty and retired as Professor and Head of the Department of Zoology. As a visiting scientist he has worked in the Natural History Museum, London and in the United States National Museum of Natural History, Washington, D.C. He is a fellow of the Indian Academy of Sciences. As a recognition towards outstanding contribution to taxonomy, the Ministry of Environment and Forests, Government of India conferred him the prestigious Janaki Ammal National Award For Taxonomy for the year 2004. Prof. Narendran was also a recipient of the 'Best Scientist' award for 2008 by the Sewadashi Science Movement. Professor Narendran has over 350 research papers published in National and International research journals and 10 books (including 7 monographs). Currently Prof. Narendran is President of TCN Trust for Animal Taxonomy.