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DESCRIPTION OF A NEW SPECIES OF ANAGYRINI (HYMENOPTERA: ENCYRTIDAE), WITH SOME RECORDS FROM INDIA

Ramsha Ashraf[1], Shahid Bin Zeya[1]* and Kavya Yadav G A[2]

[1]Department of Zoology, Aligarh Muslim University, Aligarh 202002, Uttar Pradesh, India
[2]Department of Agricultural Entomology, College of Agriculture, Keladi Shivapa Nayaka University of Agricultural And Horticultural Sciences, Shivamogga 577204, Karnataka, India
*Email: drsbz1966@gmail.com (corresponding author): ORCID ID 0000-0003-1594-0372

ABSTRACT

One new species of Anagyrini (Encyrtidae: Tetracneminae) *Gyranusoidea vasantharaji* Zeya, Ashraf and Yadav, sp. nov., is described from the specimens reared from the insect host *Planococcus lilacinus* (Hemiptera: Sternorrhyncha) infesting *Ficus carica* plantations in the Indian State of Karnataka. An identification key to *Gyranusoidea* Compere is also given. Five species viz., are newly recorded from the Indian states noted in parentheses: *Anagyrus diversicornis* (Howard) (Karnataka), *Caenohomalopoda tahai* Fatima and Zeya (Uttar Pradesh), *Cheiloneurus nankingensis* Li and Xu (Uttarakhand, Uttar Pradesh, Karnataka), *Sakencyrtus mirus* Hayat (Uttarakhand) and *S. albiclavus* Hayat (Uttarakhand)

Key words: Hymenoptera, encyrtidae, new species, records, key to species, India, new records, *Gyranusoidea vasantharaji* sp. nov., *Planococcus lilacinus*, *Ficus carica*, Karnataka, Uttar Pradesh, Uttarakhand

The species belonging to the family Encyrtidae are entomophagous in nature which help in keeping the pests under check of agricultural and horticultural crops. In this regard Japoshvilli and Noyes (2006) reported that a large number of encyrtid parasitoids have been or are being used worldwide as biocontrol agents for suppression of pests in field conditions. A detailed taxonomic work on Oriental Anagyrini was provided by Noyes and Hayat (1994) in which they reported that almost all the species belonging to this tribe are endoparasitoids of mealybugs (Homoptera: Pseudococcidae) which regulate the mealybug populations in field conditions. The paper deals with six species, including one newly described species of the tribe Anagyrini, *Gyranusoidea vasantharaji* Zeya, Ashraf and Yadav, sp. nov., reared from the mealybug *Planococcus lilacinus* infesting *Ficus carica* plantations in Shivamogga, Karnataka. It is, therefore, considered as a natural enemy which regulates the infestation of *Planococcus lilacinus* in their natural habitat. Hence they may be utilized in future in controlling the mealybug population in field conditions. In this regard one species of the genus *Gyranusoidea* viz., *G. tebygi* Noyes, 1988 was successfully utilized as biocontrol agent to control the *Rastrococcus invadens* in West and Central Africa on mango, avocado and other crops in Africa (Agricola et al., 1989; Neuenschwander, 1989).

It is to note that the genus *Gyranusoidea* Compere is poorly known taxonomically from India as it contains only 5 species (Noyes and Hayat, 1994; Hayat, 2006) out of 37 species described so far from the world (Hayat, 2006). After a gap of almost 30 years a new species, *Gyranusoidea vasantharaji* sp. nov. is being added to this genus. And, five other encyrtid species are recorded for the first time from the Indian States of Uttar Pradesh, Uttarakhand and Karnataka, of which *Anagyrus diversicornis* is redescribed in detail for better understanding at species level.

MATERIALS AND METHODS

The specimens were collected either by a sweep-net, or reared from mealybugs. The body colour was noted from card-mounted specimens prior to mounting the specimens on slides in Canada balsam following the methods given by Noyes (1982). Unless noted, otherwise specimens were mounted on cards. Card mounted specimens and some body parts are taken at 60× through Stereozoom binocular microscope (Nikon SMZ 1000). Only body lengths are given in millimetres, other measurements are relative, taken from the divisions of linear scale micrometer placed in the eye piece of a compound microscope (Nikon Eclipse E200) at 100× magnification (one division equals 0.01 mm) for slide-mounted parts. Photographs of body parts were taken with a digital camera (Nikon DS-Fi 1c) attached to a compound microscope (Nikon Eclipse Ci).

The following abbreviations are used: AOL= Minimum distance between a posterior ocellus and anterior ocellus; F1, F2, etc. = Funicle segments 1, 2, etc; OCL= Minimum distance between a posterior ocellus and occipital margin; OOL = Minimum distance between a posterior ocellus and the corresponding eye margin; POL = Minimum distance between the posterior ocelli; TI, TII, etc. = Tergites 1, 2, etc. of gaster; The following acronyms are used for the depositories: BMNH = The Natural History Museum, London, UK; NAU = Nanjing Agricultural University, Nanjing, China; NPC = National Pusa Collections, Division of Entomology, Indian Agricultural Research Institutes, New Delhi, India; ZDAMU = Insect Collections, Department of Zoology, Aligarh Muslim University, Aligarh, India.

RESULTS AND DISCUSSION

1. *Anagyrus diversicornis* (Howard) (Fig. 1, 2)

Copidosoma diversicornis Howard, in Riley, Ashmead and Howard, 1894: 92, female.

Lectotype female [designated by Noyes, 1979: 147]: West Indies, St. Vincent (BMNH)

Litomastix diversicornis (Howard): Ashmead, 1900: 364

Apoanagyrus diversicornis (Howard): Noyes, 1979: 147-148, redescription.

Anagyrus diversicornis (Howard): Noyes, 2000: 34, 71. Manickavasagum et al., 2001: 494, Indian record. Hayat, 2006: 239, catalogue.

Redescription

Female: Length, 1.2 mm. Head dark brown to black; antennal radicle black; scape pale white basally and apically, medially brown; pedicle largely dark brown, apically pale white to pale brown; F1, F3–F6 and first claval segment dark brown to black; F2 and last two segments of clava dark brown to black; F3 pale brown basally, becoming dark brown to black distally. Mesosoma dark brown to black. Wings hyaline; fore wing with brown venations, setae black on the disc except the hyaline setae proximal to linea calva and two-three line of setae below submarginal vein. Legs with coxae, trochanters dark brown; fore femur pale white with brownish at base; mid femur in basal third brown, rest pale white; hind femur brown in basal half, rest pale brown; tibiae of all legs pale white; fore and hind tarsal segments pale brown; mid tarsus white with dark brown pegs ventrally. Metasoma dark brown to black.

Head (Fig. 1A). Head, in frontal view, 1.12× as broad as high; frontovertex width at level of anterior ocellus 0.4× head width; POL 3.5× as long as OOL; eye height 3.75× as long as malar space; head with polygonal reticulate sculpture as follows: frontovertex with raised polygonal reticulate sculpture, especially above the foramen magnum, otherwise with polygonal to lineolate reticulation; antennal scrobe, with area between toruli with polygonal reticulate sculpture; torulus separated from mouth margin by its own height, malar space with longitudinal lineolate reticulate sculpture. Mandible with two sharp teeth; Antenna (Fig. 1B) with scape subslender, 6× as long as broad; pedicel slender, slightly dilated apically, 3× as long as broad, 0.8× of F1; all funicular segments distinctly longer than broad; F1the longest; F4 and F5 subequal, slightly shorter than F3 but slightly longer than F6; antennal sensilla in apical half in the following funicle segments: F3 with one longitudinal sensilla, F4 –6 with two longitudinal sensilla; clava 2.71× as long as broad, subequal to F4–F6 combined.; each segment of clava with longitudinal sensilla. *Relative measurements* (from card, at 60×): head dorsal width, 35; head dorsal height, 34; head dorsal frontovertex width10; (from slide, at 100×): head frontal width, 45; head frontal height, 41; frontovertex width at anterior ocellus, 18; eye height, 30; malar space, 8; scape length (width), 24 (4); pedicel length (width), 9(3); clava length (width) 19 (7).

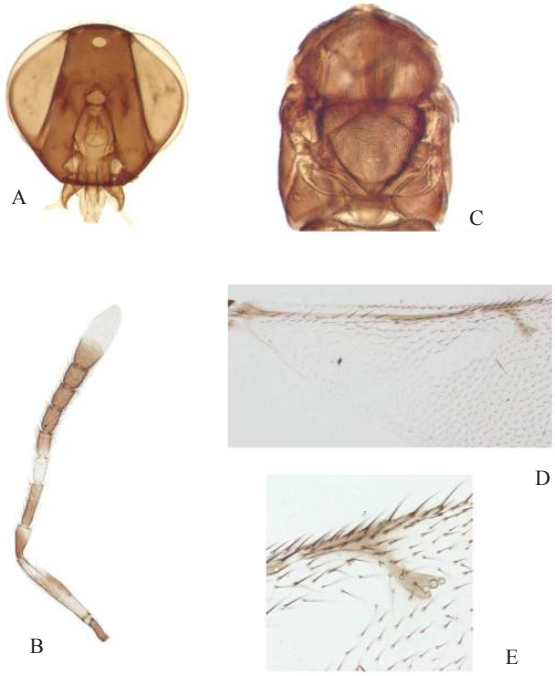

Fig. 1. A-E: *Anagyrus diversicornis* (Howard). Female: A- head; B- antenna; C- mesosoma; D- fore wing; E- fore wing distal venation

Mesosoma (Fig. 1C). Pronotum narrow, with rugose reticulate sculpture; mesoscutum subequal to scutellum, setose with thick setae; each axilla with more than 9 setae; mesoscutum (Fig. 2A) with polygonal reticulate sculpture becoming fine posteriorly; tegulae longitudinally reticulated; axilla with polygonal reticulate sculpture and scutellum with obliquely to longitudinally elongate reticulate sculpture (Fig. 2B); propodeum largely smooth, callus with elongate reticulate sculpture; sides of propodeum proximal and anterior to spiracle with about 20 setae. Fore wing (Fig. 1D) 3.5× as long as broad; marginal vein slightly longer than postmarginal vein (6:5), 0.85× stigmal vein (6:7), 0.13× submarginal and parastigmal veins combined (6: 45); linea calva is interrupted by 4 –5 line of setae; marginal fringe 0.1× maximum wing width rest venation and setation as in figures, 1D,1E. Hind wing 3.7× as long as broad with marginal fringe 0.15× maximum wing width. *Relative measurements* (slide): mesosoma length, 50; mesoscutum length (width), 22: 42; scutellum length (width), 20:23; fore wing length (width), 104 (40); marginal fringe length, 4; hind wing length (width), 74 (20); marginal fringe length, 3; mid tibia length, 52; mid basitarsus length; 12, mid tibial spur length, 15. Metasoma (Fig. 2C). Gaster slightly longer than mesosoma; ovipositor slightly exserted beyond apex of gaster; TI and TII with polygonal sculpture arranged horizontally; TVII with polygonal lineolate reticulate sculpture laterally, medially smooth; TIII–TVI appears to be smooth as sculpture not distinct. *Relative measurements* (slide): TVII length, 34; TVII width between cercal plates, 23; ovipositor length, 34 [Ovipositor 0.65× mid tibia length].

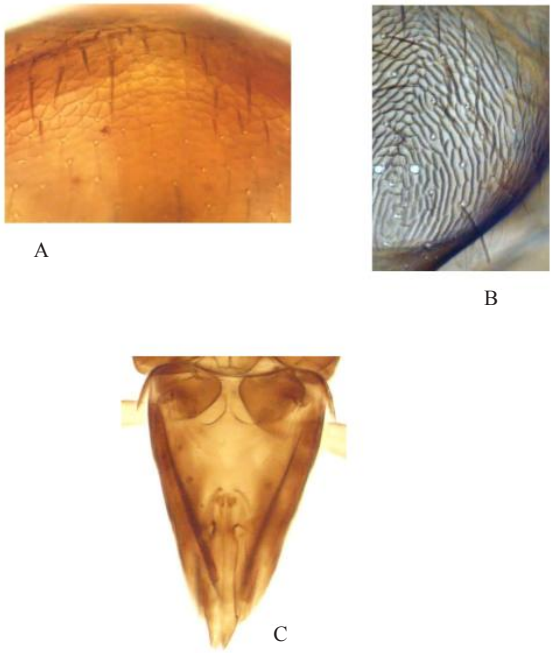

Fig 2. A-C: *Anagyrus diversicornis* (Howard). Female: A- sculpture showing on mesoscutum; B- sculpture showing on scutellum; C- metasoma

Material examined. INDIA: KARNATAKA: Shivamogga, 1 female (on slide under four coverslips), 5.x. 2020, Ex. *Pseudococcus jackbeardsleyi* on *Clerodendrun paniculatum*, Coll. Kavya Yadav G.A. (ZDAMU)

Hosts: *Pseudococcus jackbeardsleyi* (new record), Indet. coccids on *Annona squamosa*, and pseudococcid on *Solanum nigram* (Manickavasagum et al, 2001). (*Phenococcus madrirensis* (Green), *Phenococcus herreni* Willams & Cox, *Phenococcus manihoti* (Noyes, 2000))

Distribution. India: Karnataka (new record), Tamil Nadu. (Neotropical, USA, Florida, Bangladesh; introduced into Malawi, but failed to established (Noyes, 2000)

Comments. The collected specimen agrees fairly well with the diagnosis and illustrations provided by Noyes (2000) and Manickavasagum et al. (2001). However, it differs from the diagnosis of the species given by Noyes (2000) as follows: body length, 1.2 mm; frontovertex 0.4× head width; scape, 6× as long as broad; F3 pale brown basally, becoming dark brown to black distally; forewing with marginal vein slightly longer than post marginal vein and slightly shorter than stigmal vein. In the diagnosis: body length, 0.87 –1.55 mm; frontovertex width 0.33× head width; scape, a little over 5× as long as broad; F3 completely dark brown; fore wing with marginal, postmarginal and stigmal veins subequal. We consider these slight differences to fall within the range of variation for the species.

2. *Caenohomalopoda tahai* Fatima & Zeya

Caenohomalopoda tahai Fatima & Zeya, 2017: 1– 5, female, Holotype female, India, Uttarakhand, Pantnagar (ZDAMU).

Caenohomalopoda tahai Fatima and Zeya: Ayyamperumal and Manickavasagam, 2019: 127, Karnataka record. Fatima and Zeya, 2022: 260, redescription.

Material examined**.** INDIA: UTTAR PRADESH: Aligarh, 1, females (on card), 18.ix.2022 (SN), Coll. Ramsha Ashraf.

Distribution. India: Karnataka, Uttarakhand, Uttar Pradesh (new record)

3. *Cheiloneurus nankingensis* Li & Xu

Cheiloneurus nankingensis Li & Xu, in Lin et al., 2020: 25, female, male. Holotype female, Nanjing city, Jiangsu Province, China (NAU).

Cheiloneurus nankingensis Li & Xu: Zeya et al., 2022: 6, record India, Kerala.

Material examined. INDIA: KARNATAKA: Shivamogga,1 female (on slide under four coverslips), 12.v.2021,Ex. *Phenacoccus solenopsis* on Hibiscus, Coll. Kavya Yadav G.A.; Uttar Pradesh: Aligarh, 1 females (on slide, under four coverslips),14. ii. 2021 (SN), Coll. Ramsha Ashraf; 1 female (on card), 21.xi.2021(SN), Coll. Ramsha Ashraf; 3 females (on cards), 25. v.2022(SN), Coll. Ramsha Ashraf;1 female (on card) 25. viii.2022 (SN), Coll. Ramsha Ashraf and Ishfaq Ahmed; 1 female (on card), 23. viii.2023 (SN), Coll. Ramsha Ashraf; UTTARAKHAND: Nainital, Jeolikote, 3 females (one female on card and other two on slides (under four coverslips), 16.vi.2022 (SN), Coll. Ramsha Ashraf.

Hosts: ex. *Phenacoccus* spp. on *Sesamum indicum*, *Euphorbia* sp.; *Phenacoccus solenopsis* on *Talinum fruticosum* and on *Hibiscus* sp.

Distribution. India: Karnataka (new record), Kerela, Uttar Pradesh (new record), Uttarakhand (new record). (China)**.**

4. *Gyranusoidea vasantharaji* Zeya, Ashraf and Yadav sp.nov. (Fig. 3, 4)

A. Key to Indian species of *Gyranusoidea*, female (modified from Noyes & Hayat, 1994)

1. Fore wing with a complete line or less complete line of setae on ventral surface of costal cell……..2
- Fore wing with at least two or more or less complete lines of setae on ventral surface of costal cell……5
2. Scape with infuscation restricted to a narrow line along its ventral margin (Noyes & Hayat, 1994: Fig.439)……1. *G. cercoplastis* (Agarwal)
- Scape with infuscate areas more extensive, reaching or nearly reaching its dorsal margin……3
3. Fore wing with marginal vein distinctly longer than stigmal vein; scape dark brown with a whitish subapical band; scape slightly more than 2× as long as broad (Noyes and Hayat, 1994: Fig.446); mid coxa dusky..... 2. *G. indica* Shafee, Alam & Agarwal
- Fore wing with marginal vein shorter or slightly longer than stigmal vein; scape pale white to yellowish with dark brown patch on its ventral margin; scape at least 2.7× as long as broad; mid coxa pale white to pale yellow.....4
4. Fore wing with marginal vein not longer than stigmal vein; scape medially with dark brown to black patch begins slightly above to its base; antenna with proximal four funicle segments distinctly shorter than the distal segments; clava slightly more than 4× as long as broad (Noyes and Hayat, 1994: Fig.454).....……..3. *G. flava* Shafee, Alam & Agarwal
- Fore wing with marginal vein slightly longer than stigma vein; scape medially with dark brown to black patch relatively slightly distal to its base; antenna with funicle segments subequal in length; clava slightly more than 3× as long as broad (Fig. 3C) .....4. *G.vasantharaji* sp. nov. Zeya, Ashraf and Yadav

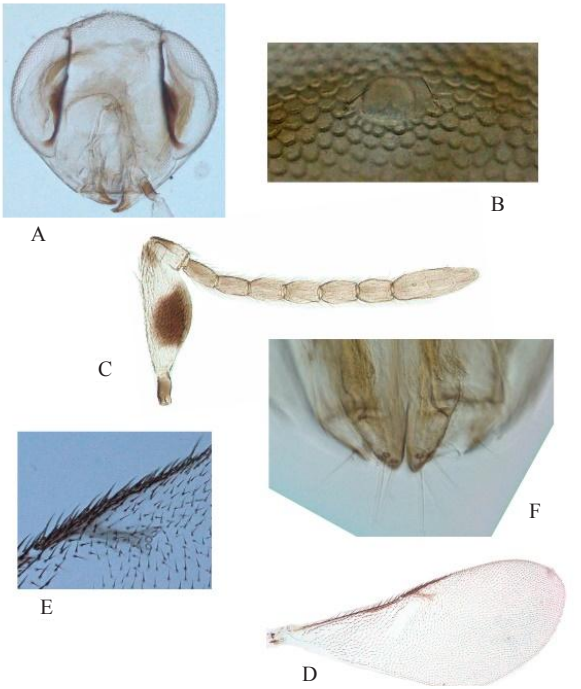

Fig. 3. A-F: *Gyranusoidea vasantharaji* sp. nov. Holotype, female: A-head; B-sculpture showing on frontovertex; C- antenna; D- fore wing; E-fore wing distal venation; F-third valvula of ovipositor.

5. Flagellum with F1–3 dark brown, F4 basally brown, rest of F4, F5, F6 and clava white to yellow; scape distinctly broader medially than at either ends, 2.2– 2.5× as long as broad……
……5.*G. cinga* Noyes & Hayat
- Flagellar segments gradually becoming lighter apically, clava more or less testaceous, not yellow or white; scape relatively narrow, at least 2.5× as long as broad….6.*G. tebygi* Noyes

B. Description

Female: Holotype. Length, 1.17 mm. Head pale yellow, with red patch on vertex, besides posterior ocelli. Antennal radicle black; scape pale white with dark brown patch in middle, not touching dorsal margin, apically dark brown; pedicel nearly basal half brown, rest pale white; flagellum brown. Mesosoma largely pale yellow; mesoscutum with brown infuscation; metanotum pale brown; propodeum pale yellow; gaster pale brown. Wings subhyaline; venations pale brown. Legs including coxae pale white to pale yellow.

Head. Head (Fig. 3A), in frontal view, 1.19× as broad as high; frontovertex width, at the level of anterior ocellus, 0.42× head width, eye height 1.42× malar space; head with hexagonally reticulate sculpture; reticulation raised on vertex (Fig. 3B) and malar space; eye appears bare, but at higher magnification (at 400×) short pale setae can be seen. Mandible with two teeth. Antenna (Fig. 3C) with scape flattened, 2.77× as long as broad; pedicel triangular, 1.75× as long as broad, and slightly longer than median length of F1; F1 and F2 subequal and narrower than rest of the funicle segments; F2–F6 subequal in length; clava slightly more than 3× as long as broad, and slightly longer than preceding two funicle segments combined. *Relative measurements* (from card, at 60×): head dorsal width: height, 39:25; frontovertex width, dorsal, 16; (from slide, at 100×): head frontal width, 49; head frontal height, 41; frontovertex width at anterior ocellus, 21; POL,10; OOL,3; OCL,6; AOL,7; eye height, 30; malar space, 9; scape length (width), 25 (9); pedicel length (width), 7(4); clava length (width) 16 (5).

Mesosoma distinctly longer than metasoma; pronotum with rugose reticulate sculpture; mesoscutum and axilla with fine raised reticulate sculpture; anterior margin of mesoscutum with dark setations, rest with densely setose; scutellum with polygonal reticulation, polygonal cells, slightly elongate posteriorly, with sparely setose and two pairs of long setae posteriorly including a pair of submedial setae extending to petiole; each axilla with more than 14 setae Fore wing (Figs. 3D) 2.42× as long as broad; marginal vein short, 0.53× postmarginal vein (7:13), 1.16× as long as stigmal vein (7:6), 0.15× submarginal and parastigmal veins combined (7: 44); marginal fringe 0.04× maximum wing width; linea calva is closed by several row of setae; rest venation and setation as in Fig. 3D, 3E. Hind wing 3.68× as long as broad with marginal fringe 0.26× maximum wing width. Mid tibia 3.10× as long as mid basitarsus; mid tibial spur slightly shorter than mid basitarsus. *Relative measurements* (slide): fore wing length (width), 109 (45); hind wing length (width), 70(19); mid tibia length, 59; mid basitarsus length; 19, mid tibial spur length, 17. Metasoma. Ovipositor as in figure (3F). TI and TII with polygonal reticulate sculpture; rest of the gaster with polygonal reticulate sculpture, cells arranged longitudinally, and TVII laterally with raised reticulation. *Relative measurements* (slide): TVII length, 34; ovipositor length, 29 (Ovipositor 0.49× mid tibia length).

Male*:* Paratype. Length 0.86 mm. Head pale white. Antennal radicle dark brown; scape pale yellow with dark brown dorsally; pedicel and flagellum pale brown. Mesosoma yellowish brown; metanotum medially white, sides pale with dorsal and ventral margin dark brown; propodeum brown. Gaster including petiole brown to dark brown. Wings subhyaline, venations pale brown. Legs, including coxae, pale yellow except hind coxa basally pale brown.

Head. Head (Fig. 4A), in frontal view, 1.35× as broad as high; frontovertex width 0.52× head width at the level of anterior ocellus, eye height 1.83× malar space; head with hexagonally reticulate sculpture as in female; reticulation raised on vertex; malar space longitudinal striations, inner margin hexagonally reticulated; eye appears bare. Mandible with two teeth. Antenna (Fig. 4B) with scape, 2.14× as long as broad; pedicel as long as broad, but apically widened; funicle segments all distinctly longer than broad with long setae; F1 broad, slightly more than 2× as long as broad; clava long, 6.6× as long as broad, subequal to F5 and F6 combined *Relative measurements*: head frontal width, 42; head frontal height, 31; frontovertex width at anterior ocellus, 22; eye height, 22; malar space, 12; scape length (width), 15 (7); pedicel length (width), 4.5(4); clava length (width) 20(3). Mesosoma distinctly longer than metasoma; setation and reticulation same as female. Each axilla with more than 11 setae. Fore wing (Fig. 4C) 2.2× as long as broad; marginal fringe 0.06× maximum wing width; linea calva is closed by

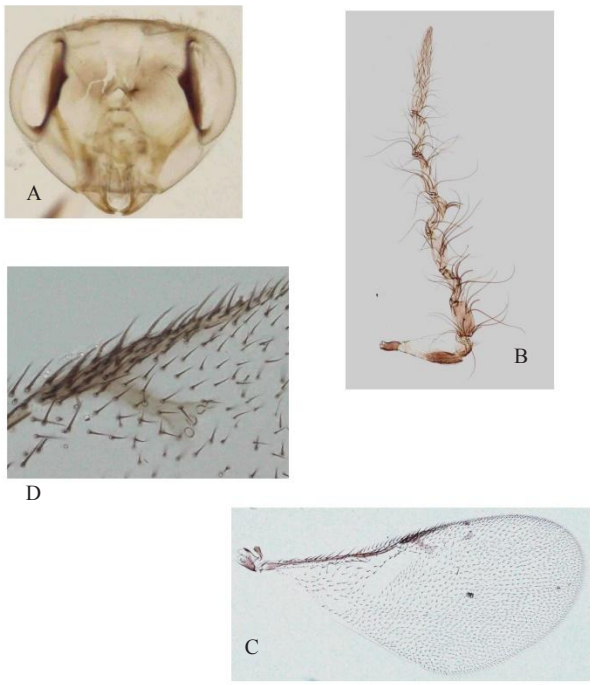

Fig. 4. A-D: *Gyranusoidea vasantharaji* sp. nov. Paratype, male: A- Head; B- antenna; C- fore wing; D- fore wing distal venation

4 lines of setae; rest venation and setation as in Fig. 4D. Hind wing 2.71× as long as broad with marginal fringe 0.28× maximum wing width. Mid tibia 3.42× as long as mid basitarsus; mid tibial spur subequal to mid basitarsus. *Relative measurements* (slide): fore wing length (width), 88 (40); hind wing length (width), 38 (14); mid tibia length, 48; mid basitarsus length; 14, mid tibial spur length, 14.

Metasoma. Petiole 3.6× as broad as long. gaster with reticulation same as for female. *Relative measurements* (slide): TVII length, 108; distance between the cercal plates , 88 (phallobase 23; aedeagus, 2.5).

Material examined: Holotype, female (on slide under 4 coverslips), labelled "INDIA: KARNATAKA: Shivamogga, 17.iii. 2021, Ex. *Planococcus lilacinus* on Fig, Coll. Kavya Yadav G.A." (ZDAMU).

Paratype, male (on slide under 4 cover slips), data as for holotype.

Distribution: India: Karnataka

Etymology: The species is named after Dr. B. Vasantharaj David, Chennai for his excellent contribution to the taxonomy of Indian Aleyrodidae.

Comments: This new species apparently looks resemble to *G. flava* Shafee, Alam & Agarwal, but differs as follows: scape medially with dark brown to black patch begins relatively distal to its base; funicle segments all longer than broad and subequal in length; clava slightly more than 3× as long as broad, longer than preceding two funicle segments; fore wing proximal to linea calva with more setae and densely setose . In *G. flava* (features taken from Noyes & Hayat, 1994): scape medially with dark brown to black patch begins slightly above to its base; funicle segments all longer than broad, proximal 4 funicle segments distinctly shorter than distal segments; clava nearly 4× as long as broad, longer than preceding three funicle segments. fore wing proximal to linea calva with less setae and less densely setose.

5. *Sakencyrtus mirus* Hayat

Sakenencyrtus mirus Hayat, 1981:28. Female. Holotype female, India, Aligarh (BMNH).

Sakenencyrtus mirus Hayat: Noyes & Hayat, 1984: 336, taxonomy. Hayat, 2006: 217, Catalogue, figures. Hayat & Singh, 2000a:7, female, male, record Assam. Hayat & Singh, 2000b:8, female, record Odisha. Hayat & F.R. Khan, 2008, female, record West Bengal. Manickavasagam & Rameshkumar, 2011a:111, female, record Kerala. Manickavasagam and Rameshkumar, 2011b: 406, female, record Kerala. Hayat et al., 2013: 274, female, record Tamil Nadu. Usman and Zeya, 2018: 358, female, redescription.

Material examined. INDIA: UTTARAKHAND: Nainital, Jeolikote, 6 females, (5 females on cards, and 1 female on slide (under four coverslips), 16.vi.2022 (SN), Coll. Ramsha Ashraf & Ishfaq Ahmed.

Distribution: India: Assam, Karnataka, Kerala, Odisha, Uttarakhand (new record), Uttar Pradesh, West Bengal.

6. *Sakencyrtus albiclavus* Hayat

Sakencyrtus albiclavus Hayat, in Hayat et al., 2008: 109 –110, female. Holotype female, India, Aligarh (NPC).

Sakencyrtus albiclavus Hayat: Usman & Zeya, 2018: 360, female, redescription.

Material examined. INDIA: UTTARAKHAND: Nanital, Jeolikote, 1 female, 16.vi.2022 (SN), Coll. Ramsha Ashraf and Ishfaq Ahmed.

Distribution: India: Himachal Pradesh, Uttarakhand (new record).

The present study is based on a small collection

of encyrtid specimens collected from the three Indian States viz., Karnataka, Uttar Pradesh, Uttarakhand. They were collected mainly by a sweep-net except two species of the tribe Anagyrini (Tetracniminae). These are: *Anagyrus diversicornis* reared from the mealybugs *Pseudococcus jackbeardsleyi* (new host) on *Clerodendron* and *Gyranusoidea vasantharaji* sp.nov. from *Planococcus lilacinus* on *Ficus carica*. The former species was recorded previously from various Pseudococcids as noted in the 'hosts' section under the redescription of the species. The distributional records of four encyrtid species namely, *Caenohomalopoda tahai* (Encyrtinae), *Cheiloneurus nankingensis* (Encyrtinae), *Sakenencyrtus mirus and S. albiclavus* (Tetracniminae) belonging to the tribes Habrolepidini, Ectromatini and Tetracnemini, respectively.

Some genera mentioned in this paper are poorly known taxonomically from India. These are: *Gyranusoidea*- 5 species (Hayat, 2006); 6 species including the new species described in this paper); *Caenohomalopoda* Tachikawa- 8 species, Fatima & Zeya (2022); and *Sakenencyrtus* Hayat- 3 species, Usman and Zeya (2018)). This is due to their small size which needs special care for their collection, sorting and mounting and other being lack of thorough taxonomic studies on the family Encyrtidae. It is well known that India has biodiversity richness regions in varied agroclimates and it may yield more encyrtids if collecting trips for the parasitoids and their hosts are planned in future for the taxonomic work.

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AUTHOR CONTRIBUTION STATEMENT

Ramsha Ashraf is the main author is enrolled as Ph D student under the guidance and mentorship of Prof Shahid Bin Zeya (the corresponding author) and G A Kavya Yadav collected the specimens for study.

CONFLICT OF INTEREST

No conflict of interest.

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