

Three new species of *Amblyaspis* Förster (Hymenoptera: Platygasteridae) from India along with a Key to Indian species

*Anjana Gangadharan M. and Rajmohana Keloth

Zoological Survey of India, Western Ghat Regional Centre (Recognized Research Centre of University of Calicut), Eranhipalam PO, Calicut-673006, Kerala, India

(email: *anjugk9@gmail.com)

Abstract

The genus *Amblyaspis* Förster, 1856 (Hymenoptera: Platygasteridae) is represented by eight species in India. Three species of *Amblyaspis*: *Amblyaspis hirsuta*, *Amblyaspis emarginata* and *Amblyaspis narendrani* are hereby described as new to science. An identification key to the species of *Amblyaspis* in India is also included.

Keywords: Hymenoptera, Platygasteridae, *Amblyaspis*, new species, India, key.

Received: 29 July 2015; Revised: 20 September 2015; Online & Published: 5 November 2015.

Introduction

Amblyaspis Förster, 1856 (Hymenoptera: Platygasteridae) comes under the subfamily Platygasterinae and are reported as the parasitoids on *Contarinia pisi* Winnertz on *Pisum sativum* L., *Rhopalomyia californica* Felt. etc. (Vlug, 1995). The genus is represented by 81 species all over the world, 18 species from the Oriental region (Cora and Johnson, 2015) and eight species in India (Mukerjee, 1978; Veenakumari *et al.*, 2013; Veenakumari, *et al.*, 2015). This genus is characterized by almost fused A9-A10 and by the dense hairs on the scutellum. Three species of *Amblyaspis* are hereby described as new to science. A key to Indian species of *Amblyaspis* is also included.

Materials and Methods

Standard morphological terminologies and abbreviations are after Masner and Huggert (1989). Description and imaging were carried out employing Leica M205A and Leica DFC-500 digital camera. All the specimens studied are deposited at Zoological Survey of India, Calicut.

Abbreviations

OOL= oculo ocellar line; LOL= lateral ocellar line; OD= ocellar diameter; POL= posterior ocellar line; A1-A10= antennal segments 1-

10; IOS= interorbital space; T1-T6= metasomal tergites 1-6.

Amblyaspis Förster, 1856

Type species: *Platygaster tritici* Walker, 1856

Diagnosis

Head transverse, Antenna 10 segmented in both sexes; A9-A10 in female almost fused, separated only by a fine suture; scutellum flattened in dorsal view, somewhat pointed, hardly transverse, not separated from mesoscutum by a groove; scutellum with dense hairs; tarsi 5 segmented; metasoma six segmented; forewing with submarginal vein, not knobbed apically.

Key to Indian species of *Amblyaspis* Förster, 1856

1. Notauli present.....2
- Notauli absent.....3
2. Scape 7 X as long as wide; clava 1.13 X A3-A6 combined.....
.....*A. kurinji* Veenakumari and Buhl
- Scape 4.4 X as long as wide; clava subequal to preceding segments combined.....
.....*A. dalhousianus* Mukerjee
3. Fore wings emarginate medially (fig. 15).....
.....*A. emarginata* sp. n.
- Fore wings rounded medially (fig. 7).....4

4. Mesoscutum smooth.....
.....*A. charvaka* Veenakumari and Buhl
- Mesoscutum finely reticulate (fig. 21)..... 5
5. Occiput with six prominent longitudinal striae laterally.....
.....*A. ashmeadi* Veenakumari and Buhl
- Occiput with faint striae or without striae...6
6. OOL equal to LOL.....*A. narendranii* sp. n.
- OOL not equal to LOL.....7
7. OOL less than 1.5 X LOL.....8
- OOL greater than 1.5 X LOL.....9
8. A10 elongate, 1.7 X as long as wide; metapleura with dense white setae.....
.....*A. hirsuta* sp. n.
- A10 not elongate, 1.08 X as long as wide; metapleura with sparse, posteriorly oriented yellow setae.....
.....*A. khasiana* Veenakumari and Buhl
9. Occiput reticulate with sparse longitudinal striae in lower half; scape less than 5 X longer than wide.....10
- Occiput reticulate without any longitudinal striae; scape more than 5.5 X longer than wide.....
.....*A. panhalensis* Veenakumari and Buhl
10. Head 1.7 X higher than long; A10 1.76 X as long as wide
.....*A. fabrei* Veenakumari and Buhl
- Head 1.48 X higher than long; A10 1.43 X as long as wide.....
.....*A. tipusultani* Veenakumari and Buhl

Amblyaspis hirsuta Anjana and Rajmohana, sp. n. (Figs. 1-8)

[urn:lsid:zoobank.org:act:F6D13AA2-56EE-4437-BA79-5D95C182474E](https://zoobank.org/urn:lsid:zoobank.org:act:F6D13AA2-56EE-4437-BA79-5D95C182474E)

Diagnosis: Length 1.13 mm; occiput strongly reticulate; hyperoccipital carina present; A3 equal to A4; notauli absent; scape 5.8 X as long as wide; mesoscutum finely reticulate.

Description

Female: Length 1.13 mm (holotype) (fig. 1); A1-A2 and legs yellowish brown; A3-A9 dark brown; tegula dark brown; microtrichia dark brown; last segment of tarsi slightly darkened.

Head from above 2.18 X as wide as long

(fig. 2); 1.09 X as wide as mesosoma; head in front view 1.17 X as wide as high (fig. 4); occiput strongly reticulate and without any striae; frons finely reticulate; lower frons above toruli with several transverse striae; IOS 2.29 X eye height; eyes bare; OOL 2.8 X OD; OOL 1.89 X LOL; POL 2.4 X LOL; eye height (in dorsal) 3.2 X temples; hyperoccipital carina present, extending between orbits; scape 5.8 X as long as wide; A3 equal to A4; scape 1.36 X as long as A7-A10 combined; ratio of length and width of antennal segments A1-A10 being 0.29: 0.05; 0.07: 0.03; 0.05: 0.03; 0.05: 0.03; 0.04: 0.03; 0.04: 0.04; 0.06: 0.05; 0.05: 0.06; 0.05: 0.06; 0.06: 0.04 (fig. 3).

Mesosoma 1.39 X as long as wide (fig. 5); pronotum non angular, clearly visible from above; lateral sides of pronotum sparsely setose with fine reticulations; epomial carina present; mesoscutum 1.07 X as long as wide, finely reticulate with sparse setae; notauli absent (fig. 5); posterior margin of mesoscutum with median lobe, projecting above mesoscutellum; scutellum 1.07 X as long as wide; fully covered with white setae, mesopleuron smooth; metapleuron fully covered with white setae (fig. 6). Forewing 2.56 X as long as wide (fig. 7), with fine and dense microtrichia; marginal cilia on posterior margin of forewing 0.12 X width of wing.

Metasoma 1.96 X as long as wide (fig. 8); T1 with dense white setae laterally; T2 with white setae at basal region, rest smooth; T3-T6 with punctures at the apex; T5-T6 with a transverse row of white setae; length and width of T1-T6 being: 0.09: 0.10; 0.36: 0.29; 0.03: 0.24; 0.03: 0.19; 0.03: 0.11; 0.03: 0.06.

Specimen examined

Holotype: Female, India, Kerala, Anjuruli, Idukki (9.74⁰N, 77.06⁰E), 09.iv.2013, Coll. Rajmohana, on card, Reg. No. ZSI/WGRS/IR.INV.4636, paratype: female, India: Kerala, Anjuruli, Idukki (9.74⁰N, 77.06⁰E), 09.iv.2013, Coll. Rajmohana, on card, Reg. No. ZSI/WGRS/IR.INV.4637.

Etymology

This species is named '*hirsuta*' as the metapleuron of the species is fully pilose.

Three new species of *Amblyaspis* Förster (Hymenoptera: Platygasteridae) from India

Comments

Amblyaspis hirsuta sp. n. runs to *A. vietnamensis* in Buhl's key to Oriental species of *Amblyaspis* (2009), but differs in the following characters. OOL 1.89 X LOL in *Amblyaspis hirsuta* sp. n. whereas only 1.25 X in *A. vietnamensis*. Mesoscutum is with sparsely arranged short hairs in *A. hirsuta* sp. n. whereas, two broad stripes of short hairs along imaginary notauli is present in *A. vietnamensis*. Metapleuron is fully pilose in *A. hirsuta* sp. n. whereas sparsely pilose in *A. vietnamensis*.

A. hirsuta sp. n. is very similar to *A. khasiana* Veenakumari & Buhl, described from India but differs in the following. A10 in 1.7 X longer than wide in *A. hirsuta* sp. n. and 1.08 X in *A. khasiana*. Scape is 5.8 X longer than wide in *A. hirsuta* sp. n. whereas 5.3 X in *A. khasiana*. *A. khasiana* also has metasoma more than twice as long as wide, A8-A9 less transverse, and POL only 2.1 X LOL. Also body appendages distinctly brighter coloured in *A. hirsuta* sp. n. than in *A. khasiana*.

A. hirsuta sp. n. is compared with all known species of *Amblyaspis* from India. OOL is less than 1.5 X LOL in all the known species from India. In *A. dalhousianus* Mukerjee, OOL 1.45 X OD. In *A. charvakae*, *A. fabrei*, *A. panhalensis*, *A. tipusultani* mesoscutum is with setae arranged in an imaginary notaular line which is absent in *Amblyaspis hirsuta* sp. n. *A. kurinjii* is with deep notauli. Scape is 5.8 X as long as wide in *Amblyaspis hirsuta* sp. n. whereas, only 3.9 X as long as wide in *A. ashmeadi*.

***Amblyaspis emarginata* Anjana and Rajmohana, sp. n. (Figs. 9-16).**

[urn:lsid:zoobank.org:act:7403E0CB-2052-40A6-B89A-AC08043CA110](https://doi.org/10.21203/rs.3.rs-2052404/v1)

Diagnosis: Length 0.93 mm; head 1.86 X wider than long; scape 5.2 X as long as wide; wings emarginate medially; metapleuron setose only at the posterior corners.

Description:

Female: Length 0.93 mm (holotype) (fig. 9);

scape yellowish brown; A2-A10 brown; legs including coxae yellow; tegula light brown; microtrichia dark brown; last segment of tarsi slightly darkened.

Head from above 1.86 X as wide as long (fig. 10); 1.18 X as wide as mesosoma; occiput finely reticulate with granulations and without any striae; head in front view 1.14 X as wide as high; frons reticulate (fig. 11); lower frons above toruli with several transverse striae; IOS 2.25 X eye height; eyes bare; OOL 3.45 X OD; OOL 1.4 X LOL; POL 1.96 X LOL; eye height (in dorsal) 3.5 X temples; hyperoccipital carina present extending between orbits; antennae covered with white setae (fig. 12); scape 5.2 X as long as wide, 1.24 X as long as claval segments combined; ratio of length and width of antennal segments A1-A10 being: 0.26: 0.05; 0.07: 0.04; 0.05: 0.04; 0.03: 0.03; 0.04: 0.03; 0.04: 0.04; 0.05: 0.05; 0.05: 0.06; 0.04: 0.05; 0.07: 0.04.

Mesosoma 1.45 X as long as wide (fig. 13); mesoscutum 1.09 X as long as wide, finely reticulate with sparse setae; notauli absent; pronotum non angular, clearly visible from above; lateral sides of pronotum with fine reticulations; mesopleuron smooth; metapleuron with sparse setae at the anterior margin and thick setae at posterior margin (fig. 14). Forewings emarginate medially; 2.18 X longer than wide, with fine and dense microtrichia; marginal fringe 0.15 X forewing width (fig. 15).

Metasoma 1.5 X as long as wide (fig. 16); T1 with white setae laterally; white setae on the base of T2, rest smooth; T3-T6 with a transverse row of setae; length and width of T1-T6 being: 0.05: 0.13; 0.26: 0.27; 0.03: 0.23; 0.02: 0.19; 0.02: 0.12; 0.03: 0.07.

Specimen examined

Holotype: Female, India, Kerala, Anjuruli, Idukki (9.74⁰N, 77.06⁰E), 09.iv.2013, Coll. Rajmohana, on card, Reg. No. ZSI/WGRS/IR.INV.4638.

Etymology

This species is named 'emarginata' as the forewing of the species is medially emarginate.

Comments

This species runs to *A. cariniceps* Buhl, 1997 in Buhl's key to Oriental species of *Amblyaspis* (2009). Even though, *A. cariniceps* also has OOL slightly shorter than LOL and me-

tableuron evenly covered by pilosity, *A. emarginata* sp. n. differs from *A. cariniceps* in having medially emarginate wing. This character makes this species unique from all other known species of *Amblyaspis*.



Plate 1. *A. hirsuta* sp. n. (1) Female (2) Head dorsal (3) Frons (4) Antenna (5) Mesosoma (6) Pleura (7) Metasoma (8) Wings.

Three new species of *Amblyaspis* Förster (Hymenoptera: Platygasteridae) from India

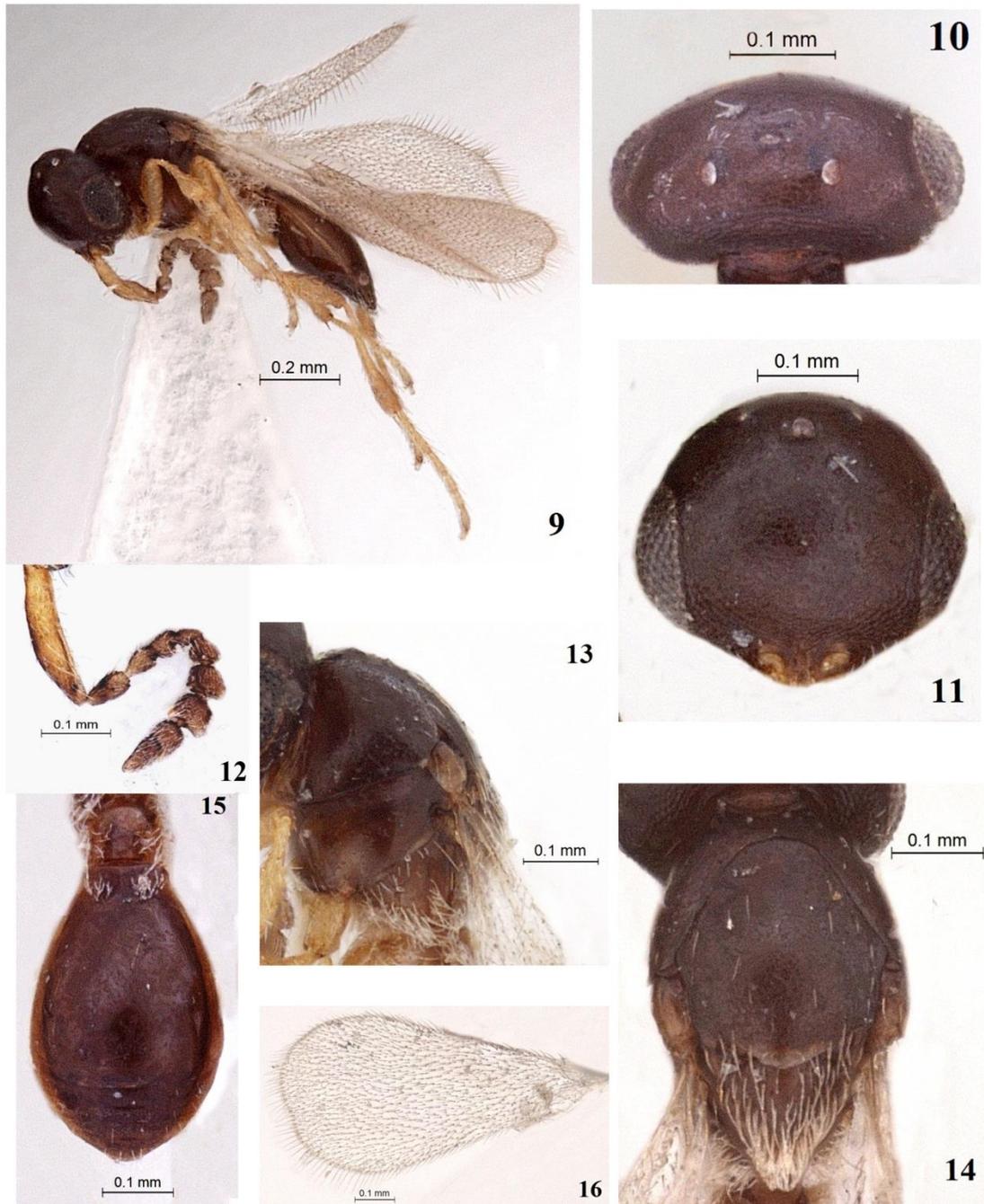


Plate 2. *A. emarginata* sp. n. (9) Female (10) Head dorsal (11) Frons (12) Antenna (13) Pleura (14) Mesosoma (15) Metasoma (16) Wings.

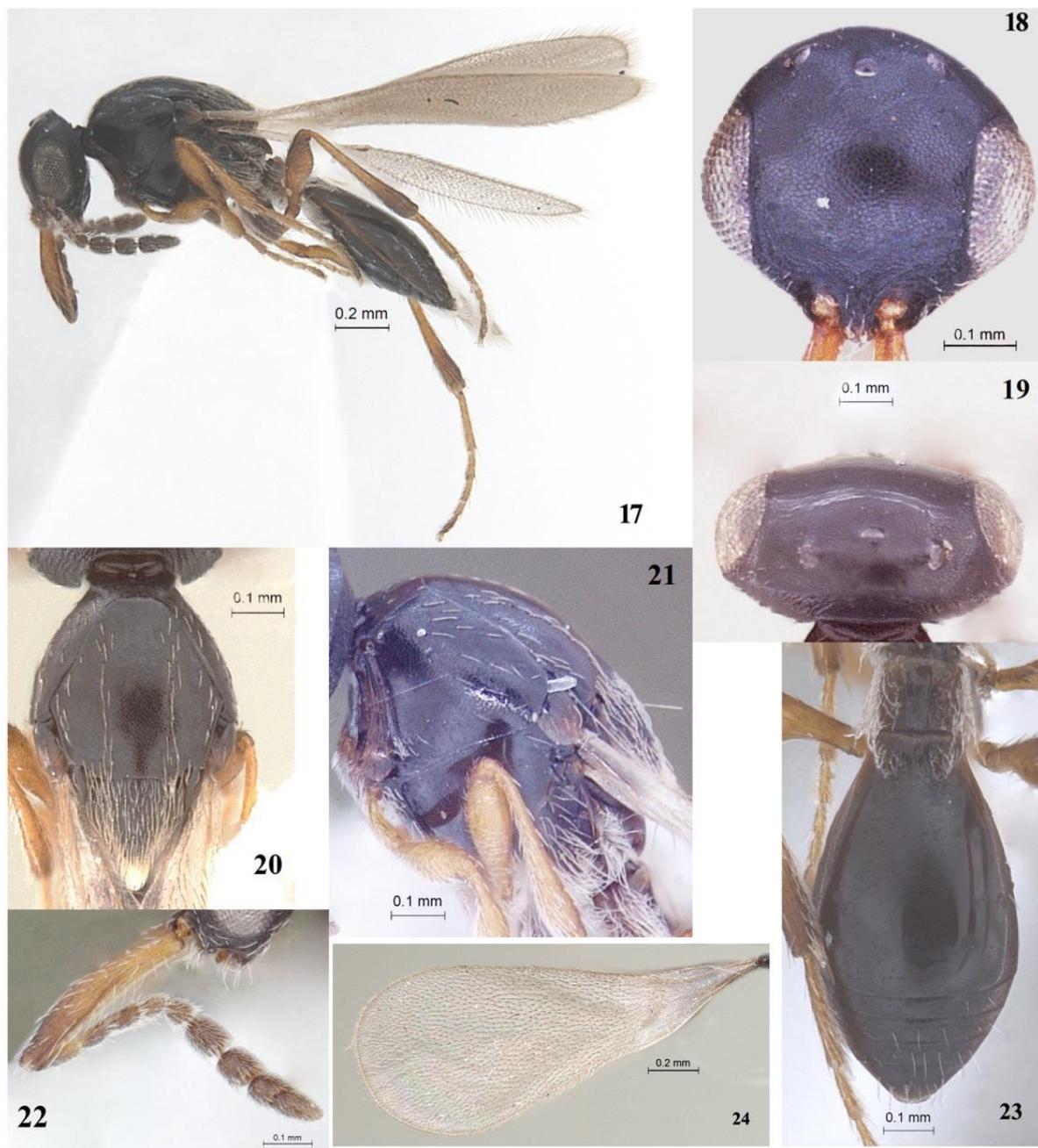


Plate 3. *A. narendrani* sp. n. (17) Female (18) Frons (19) Head dorsal (20) Mesosoma (21) Pleura (22) Antenna (23) Metasoma (24) Wings.

Amblyaspis narendrani Anjana and Rajmohana, sp. n. (Figs. 17-24).

[urn:lsid:zoobank.org:act:B397FF6C-2391-4E05-B2B8-E088A4E59A64](https://zoobank.org/urn:lsid:zoobank.org:act:B397FF6C-2391-4E05-B2B8-E088A4E59A64)

Diagnosis: Length 1.72 mm; head 2 X as wide as long; scape 5.3 X as long as wide; occiput with longitudinal striae on the lateral ends; marginal fringe almost absent.

Three new species of *Amblyaspis* Förster (Hymenoptera: Platygasteridae) from India

Description:

Female: Length 1.72 mm (holotype) (fig. 17); scape yellowish brown at the base and more darker towards the apex; A2-A10 brown; legs yellow; tegula black; microtrichia dark brown; last segment of tarsi slightly darkened.

Head from above 2 X as wide as long (fig. 18); occiput reticulate with longitudinal striae on the lateral ends; head in front view 1.04 X as wide as high (fig. 20); frons finely reticulate; lower frons above toruli with several transverse striae; IOS 1.36 X eye height; eyes bare; OOL 2.3 X OD; OOL equal to LOL; POL 2.4 X LOL; eye height (in dorsal) 2.3 X temples; hyperoccipital carina present extending between orbits; antennae fully covered with white setae; scape 5.3 X as long as wide; scape 1.25 X as long as claval segments combined; ratio of length and width of antennal segments A1-A10 being: 0.41: 0.08; 0.1: 0.03; 0.08: 0.04; 0.06: 0.04; 0.06: 0.04; 0.06: 0.05; 0.09: 0.08; 0.08: 0.08; 0.06: 0.07; 0.10: 0.06 (fig. 19).

Mesosoma 1.5 X as long as wide (fig. 21); mesoscutum 1.08 X as long as wide, finely reticulate; five setae present towards the lateral end of the mesoscutum; notauli absent, imaginary notaular line present; pronotum non angular, clearly visible from above; lateral sides of pronotum with fine reticulations with scattered white setae; scutellum fully covered with white setae; 1.2 X as long as wide; mesopleuron smooth; metapleuron with sparse setae at the anterior margin and thick setae at posterior margin (fig. 22). Forewings 2.4 X longer than wide, with fine and dense microtrichia (fig. 24).

Metasoma 1.5 X as long as wide (fig. 23); T1 with parallel median carinae with a depression in between; dense lateral setae present on T1; white setae on base of T2, rest smooth; T3-T6 with a transverse row of setae; length and width of T1-T6 being: 0.14: 0.18; 0.53: 0.4; 0.04: 0.35; 0.05: 0.3; 0.05: 0.24; 0.07: 0.13.

Specimen examined

Holotype: Female, India, Kerala, Manalar, Idukki (9.62°N, 77.34°E), 07.iv.2013, Coll. Abhilash Peter, on card, Reg. No. ZSI/WGRS/IR.INV.4639.

Etymology

This species is named 'narendrani' after the eminent taxonomist, late Prof. Dr. T. C. Narendran.

Comments

This species runs to *A. cariniceps* Buhl, 1997 in key to Oriental species of *Amblyaspis* (Buhl, 2009). *A. cariniceps* is much smaller compared to new species. Occiput is without longitudinal striae in *A. cariniceps*. Also, OOL is equal to LOL in new species whereas, LOL 1.2 X OOL in *A. cariniceps*. *A. cariniceps* also has metapleuron evenly covered by pilosity.

A. narendrani sp. n. is compared with all the Indian species of *Amblyaspis*. It differs from *A. kurinjii* Veenakumari and Buhl in not having notauli. New species having OOL equal to LOL differs from all other Indian species.

This species is very similar to Palearctic *A. roboris* (Walker, 1835), cf. Vlug (1985). Even though it runs to *A. roboris* (Buhl and Choi 2006; Buhl 1999), the frontal sculpture of *A. narendrani* sp. n. is a completely different (reticulate meshes) than on *A. roboris* (transversely granulate, uneven without meshes) sufficiently differentiate the two species. Also, LOL is not equal to OOL in *A. roboris*. Also, the longitudinal rows of setae on mesoscutum is more wider and more scattered in *A. roboris* than in *A. narendrani* sp. n.

Acknowledgements

The authors are thankful to the Director, Zoological Survey of India and Officer-in-charge, Western Ghat Regional Centre, Zoological Survey of India, for their support and facilities. We also thank K. Veenakumari for providing facilities at National Bureau of Agricultural Insect Resources for holotype study. The first author is thankful to the Kerala State Council for Science, Technology and Environment for the award of Senior Research Fellowship towards the study. We also thank the reviewers Dr. Peter Neerup Buhl and an anonymous reviewer for critically reviewing the manuscript. Thanks are also due to the Platygasteroidea Planetary Biodiversity Inventory, for literature support.

References

- Buhl, P.N. 1999. A synopsis of the Platygastriidae of Fennoscandia and Denmark (Hymenoptera, Platygastroidea). *Entomofauna, Zeitschrift für Entomologie* 20(3): 17-52.
- Buhl, P.N. and Choi, J.Y. 2006. Taxonomic review of the family Platygastriidae (Hymenoptera: Platygastroidea) from the Korean peninsula. *Journal of Asia-Pacific Entomology* 9: 121-137.
- Buhl, P.N. 2009. New species of Platygastriidae from Vietnam (Hymenoptera: Platygastroidea). *Zoologische Mededelingen* 83: 877-918.
- Cora, J.R. and Johnson N.F. 2015. Hymenoptera online. [Online] Available from <http://hol.osu.edu/index.html?id=13712>. [Accessed 19 June 2015].
- Kieffer, J. J. 1926. Scelionidae. *Das Tierreich*. Vol. 48. Berlin:Walter de Gruyter & Co. 885 pp.
- Masner, L. and Huggert, L. 1989. World review and keys to genera of the subfamily Inostemmatinae with reassignment of the taxa to the Platygastriinae and Sceliotrachelinae (Hymenoptera: Platygastriidae). *Memoirs of the Entomological Society of Canada* 147: 1-214.
- Mukerjee, M.K. 1978. Descriptions of some new species and records of known Platygastriidae (Hymenoptera, Proctotrupoidea) from India. *Memoirs of the School of Entomology, St. John's College* 5: 67-97.
- Veenakumari, K., Buhl, P.N., Prashanth M. and Khan, F.R. 2013. Five new species of *Amblyaspis* Förster (Platygastroidea: Platygastriidae) from India. *Entomologists Monthly Magazine* 149: 223-234.
- Veenakumari, K., Buhl, P.N. and Mohanraj, P. 2015. Six new species of Platygastriidae (Hymenoptera: Platygastroidea) from India. *Entomologists Monthly Magazine* 151: 35-50.
- Vlug, H.J. 1985. The types of Platygastriidae (Hymenoptera, Scelionoidea) described by Haliday and Walker and preserved in the National Museum of Ireland and in the British Museum (Natural History). 2. Keys to species, redescriptions, synonymy. *Tijdschrift voor Entomologie* 127: 179-224.
- Vlug, H.J. 1995. Catalogue of the Platygastriidae (Platygastroidea) of the world (Insecta: Hymenoptera). *Hymenopterorum Catalogus* 19: 1-168.
- Walker, F. 1836. On the species of *Platygaster*. *Entomological Magazine* 3: 217-274.