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Contribution to the fauna of Encyrtidae (Hymenoptera: Chalcidoidea) of the Andaman and Nicobar Islands, with description of four new species

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ABSTRACT: Four new species of Encyrtidae (Hymenoptera) are described and twenty-three species are recorded, of which seven species are newly recorded from the Andaman Islands (India). The new species described are: *Ageniaspis montanus* Hayat, sp. nov., *Coccidencyrtus jazirah* Hayat, sp. nov., *Ooencyrtus zenon* Hayat, sp. nov. and *Paraphaenodiscus nesiotes* Hayat, sp. nov. The following five genera are recorded for the first time from the Andaman and Nicobar Islands: *Ageniaspis* Dahlbom, *Amicencyrtus* Hayat, *Helegonatopus* Perkins, *Indaphycus* Hayat and *Paraphaenodiscus* Girault.

KEYWORDS: Hymenoptera, Encyrtidae, new records, new species, Andaman Islands, India.

INTRODUCTION

The fauna of Encyrtidae (Hymenoptera: Chalcidoidea) from the Andaman and Nicobar Islands (India) until recently was poorly known. In recent years, Manickavasagam and Rameshkumar (2013) and Hayat and Veenakumari (2013, 2014a, b) added several genera and species. This paper is a continuation of our contributions to the encyrtid fauna of the Andaman and Nicobar Islands. We record 23 species, of which seven species are newly recorded from Andaman Islands, and describe four new species. Further, five genera are also newly recorded from these islands. The total number of known species now stands at 82 in 46 genera (see list of species of Encyrtidae from the Andaman and Nicobar Islands given in this paper).

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METHODS

Hayat (2006) is followed for terminology, except for the use of the terms 'mesosoma' for the thorax plus propodeum and 'metasoma' for the petiole plus gaster. Only body lengths are given in millimetres; other measurements are relative, taken from the divisions of a linear scale of a micrometer placed in the eye piece of a stereozoom binocular microscope for card mounted specimens at 10× zoom 8 magnification (1 division = 0.001234 mm), and placed in the eye piece of a compound microscope at either 100× magnification (1 division = 0.00988 mm) or at 400× magnification (1 division = 0.0025 mm) as noted in the text.

Citations to the species are not given as these are available in Hayat (2006) and later publications. Under "Records of species", citations to the first record of or description of a species based on material from the Andaman and Nicobar Islands, is not given as this is provided in the "List of Encyrtidae from Andaman and Nicobar Islands". The genera and species newly recorded from the Andaman and Nicobar Islands are, however, indicated in square brackets following the name of the species.

The following abbreviations are used:

ANI = Andaman and Nicobar Islands. This abbreviation is used on the data labels of the specimens.

F1, F2, etc. = Funicle segments 1, 2, etc.

(MT) = Malaise Trap. (This and two other abbreviations placed in brackets are used under 'Material examined' section to indicate the method of collection of the specimens.)

OCL = Minimum distance between a posterior ocellus and the occipital margin.

OOL = Minimum distance between a posterior ocellus and the corresponding eye margin.

POL = Minimum distance between the posterior ocelli.

(SN) = Sweep Net.

TI, TII, etc. = Tergites 1, 2, etc. of gaster.

(YPT) = Yellow Pan Trap.

The following acronyms are used for the depositories:

NBAIR = National Bureau of Agricultural Insect Resources, Bengaluru, India.

ZDAMU = Insect Collections, Department of Zoology, Aligarh Muslim University, Aligarh, India.

RESULTS AND DISCUSSION

Description of new species

1. *Ageniaspis montanus* Hayat, sp. nov. (Figs 1–7)

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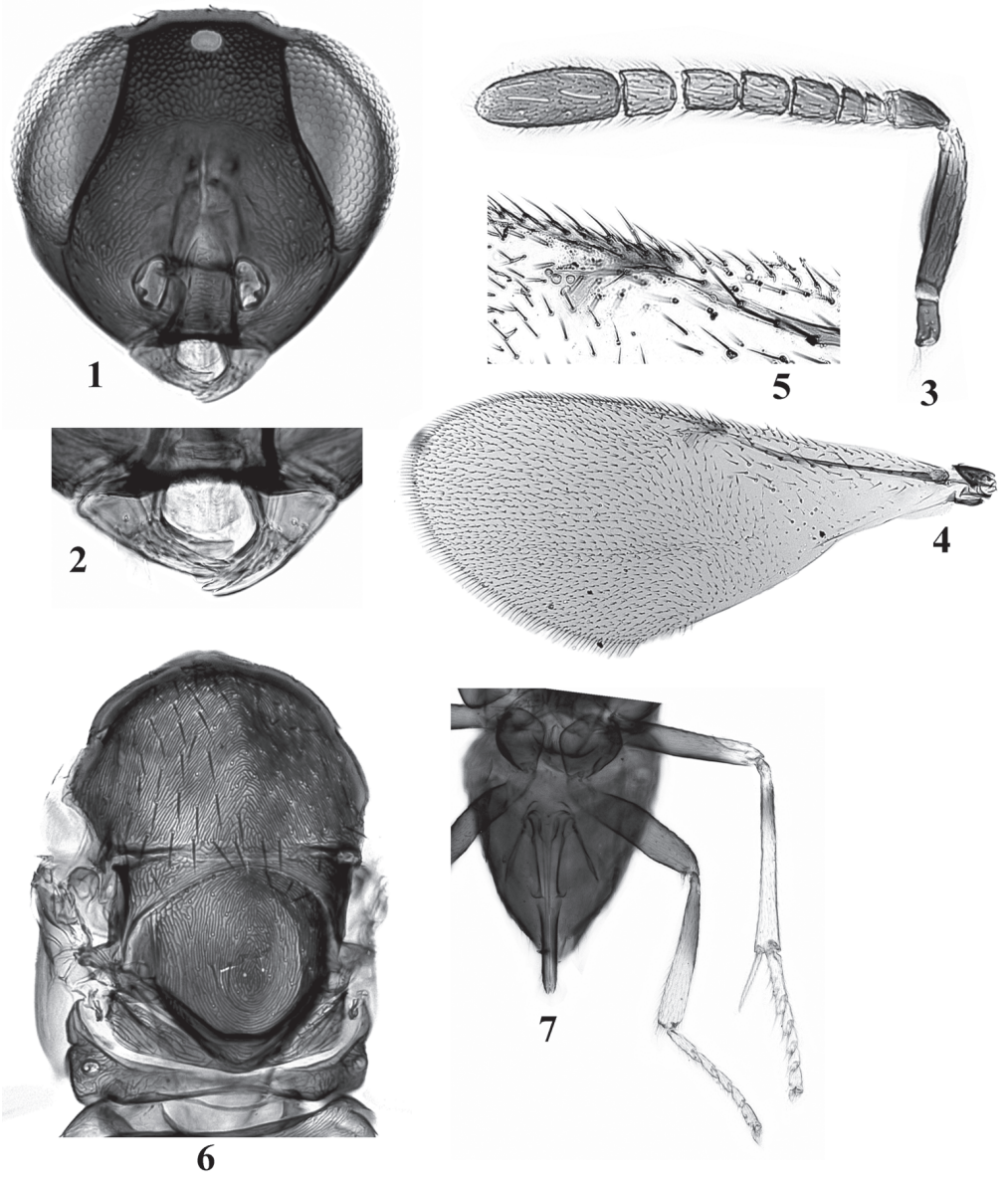
Female

Holotype. Length, 0.86 mm. Head dark brown with bluish shine. Antenna with radicle dark brown; scape dark brown with apex white; pedicel dark brown with apex white; funicle segments, in outer aspect, infuscate brown, with lower two-thirds of F1 and lower third of F2, white; in inner aspect, F1 and F2 same as in outer aspect, but F4–F6 largely white except brown margins; clava brown. Mesosoma dark brown; mesothoracic dorsum matt. Wings hyaline. Fore leg with coxa dark brown; trochanter white; femur dark brown with base and apex white; tibia brown with base and apical half white. Mid leg with coxa dark brown; trochanter white; femur dark brown with base and apex white; tibia white with a dark brown sub-basal band. Hind leg with coxa dark brown; trochanter white; femur dark brown; tibia in about basal three-fifths dark brown and apical two-fifths white. Metasoma dark brown; ovipositor sheaths dark brown.

Head. Occipital margin sharp; head, in frontal view (Fig. 1), 1.17× as broad as high; frontovertex width 0.38× head width; mouth fossa width nearly as wide as frontovertex width; eye height 2× malar space; frontovertex with raised, polygonal reticulate sculpture and with minute setigerous punctures; face on sides of scrobes with cells obliquely oriented, and elongate; malar space with lineolate reticulate sculpture; setae on head brown; eye setose, setae hyaline, and each seta at least about as long as a facet diameter. Mandible (Fig. 2) slightly curved and narrowed towards apex, with two pointed teeth and an apically truncate third tooth. Antenna (Fig. 3) with scape 3.8× as long as broad (measured in the second antenna, not illustrated; in Fig. 3, the scape is slightly tilted laterally, hence appears slightly more than 4× as long as broad), as long as frontovertex width, slightly more than 3× as long as pedicel, and distinctly longer (1.18×) than clava; pedicel 1.47× as long as broad, and longer than F1 and F2 combined; F1 transverse, shorter and narrower than F2; F2 transverse; F3 1.75× as long as and slightly broader than, F2; F3–F6 each slightly longer than broad; clava solid (= unsegmented), 2.57× as long as broad, and slightly shorter than F4–F6 combined; sensilla absent on F1 and F2. *Relative measurements* (slide, at 100×): head frontal width, 34; head frontal height, 29; frontovertex width, 13; mouth fossa width, 12; eye height, 20; malar space, 10; antennal scape length, 13. (slide, at 400×), antennal segments, length (width)–scape, 53.5 (14); pedicel, 17 (11.5); F1, 7 (9); F2, 8 (11); F3, 14 (12); F4, 15 (12); F5, 16 (12.5); F6, 16 (14); clava, 45 (17.5).

Mesosoma (Fig. 6). Mesoscutum and scutellum with lineolate reticulate sculpture; setae all dark brown. Fore wing (Fig. 4) 2.28× as long as broad; costal cell with a line of setae in distal two-fifths on dorsal surface, ventral surface with a line of setae in about distal third, which



FIGURES 1–7. ***Ageniaspis montanus*** **Hayat, sp. nov., holotype, female: 1, head frontal view; 2, mandibles; 3, antenna; 4, fore wing; 5, distal venation of fore wing; 6, mesosoma; 7, metasoma with mid and hind legs.**

become two lines in proximal two-thirds; basal triangle largely bare; filum spinosum represented by a single spine; relative lengths of marginal, postmarginal and stigmal veins, 13:29:14 (Fig. 5). Hind wing 3.46× as long as broad. Mid tibia 3× as long as mid basitarsus; mid tibial spur as long as mid basitarsus (Fig. 7). *Relative measurements* (slide, at 100×): mesosoma length, 40; mid tibia length, 30; mid basitarsus length, 10; mid tibial spur length, 10.

Metasoma (Fig. 7). Ovipositor exserted to 0.12× gaster length. *Relative measurements* (slide, at 100×): metasoma length, 38; ovipositor length, 28; third valvula length, 15. [Ovipositor very slightly longer than mid tibia; third valvula 1.5× as long as both mid tibial spur and mid basitarsus.]

Male: Unknown.

Material examined: Holotype, female (on slide under 4 coverslips, slide No. EH.1720), labelled "INDIA: ANI: South Andaman, Mt. Harriet, 1.ii.2013 (SN), Coll. K. Veenakumari" (NBAIR; registration No. ICAR/NBAIR/EN.35).

Distribution: India: Andaman and Nicobar Islands.

Etymology: Latin, *montanus* = belonging to a mountain.

Comments: This new species, *Ageniaspis montanus* Hayat, sp. nov., is similar to *A. fuscicollis* (Dalman) (see Mercet, 1921: 336, fig. 144; Trjapitzin, 1989: 355, fig. 365), but differs mainly in the dimensions of antennal segments, and in having the ovipositor exserted to 0.12× gaster length. In the new species, scape 3.8× as long as broad and F3–F6 each longer than broad. In *fuscicollis:* scape about 3× as long as broad, and F3–F6 each quadrate to broader than long.

The genus *Ageniaspis* Dahlbom is newly recorded from the Andaman and Nicobar Islands.

2. *Coccidencyrtus jazirah* Hayat, sp. nov. (Figs 8–13)

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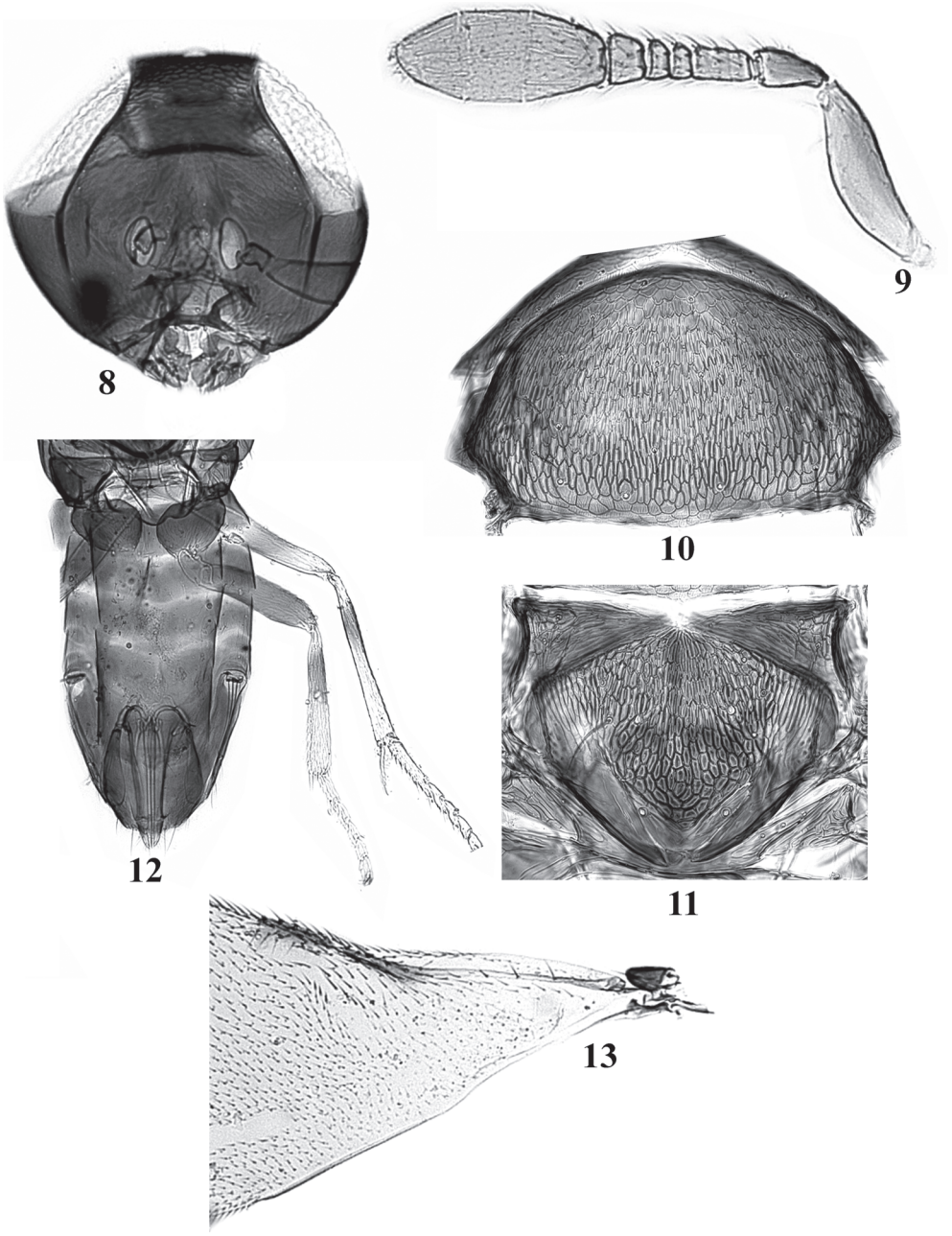
The metallic shine of this species was not noted prior to mounting the specimen on slide.

Female

Holotype. Length, mesosoma plus metasoma, 0.69 mm. Body completely dark brown. Antenna with scape yellow with upper third brown; pedicel dark brown, apex white; funicle yellowish brown; clava pale brown. Wings hyaline; fore wing with parastigma, marginal and postmarginal veins, dark brown. Fore leg with coxa, femur except white apex, and tibia except white apical half or so, dark brown. Mid leg with coxa, femur except white apical fourth, dark brown; tibia with a dark brown band except white base and apical half. Hind leg with coxa and femur dark brown; tibia with a dark brown band, except white base and apical half.



FIGURES 8–13. ***Coccidencyrtus jazirah*** **Hayat, sp. nov., holotype, female: 8, head frontal view; 9, antenna; 10, mesoscutum; 11, axillae and scutellum; 12, propodeum and metasoma with mid and hind legs; 13, fore wing, basal half.**

Head (Fig. 8), in frontal view, 1.27× as broad as high; frontovertex width 0.34× head width; antennal torulus with upper margin in line with lower margin of eye; distance between torulus to mouth margin at least slightly more than torulus height; mouth fossa 1.12× frontovertex width; eye height slightly more (1.18×) than malar space; frontovertex with raised, polygonal reticulate sculpture; face up to toruli with fine, transversely elongate reticulations, from upper level of toruli to mouth margin with slightly obliquely oriented, fine, longitudinally elongate reticulations; setae sparse and hyaline; eye setose, setae hyaline, and each seta shorter than a facet diameter. Mandible (Fig. 8) with one pointed tooth and a broad dorsal truncation. Antenna (Fig. 9) with scape 3.28× as long as broad; pedicel 1.7× as long as broad, and slightly longer than F1–3 combined; F1–3 fused, with sutures faintly indicated; F1–5 transverse, and F5 two-thirds the length of F6; F6 1.44× as broad as long; clava slightly shorter than pedicel and funicle combined. *Relative measurements* (slide, at 100×): head frontal width, 28; head frontal height, 22; frontovertex width, 9.75; mouth fossa width, 11; torulus height, 4; inter-torular distance, 5; torulus mouth margin distance, 5; eye height, 13; malar space, 11. (slide, at 400×) antennal segments length (width)–scape, 46 (14); pedicel, 17 (10); F1–3, 14 (8); F4, 5.5 (9); F5, 6 (10); F6, 9 (13); pedicel plus funicle, 55; clava, 52.5.

Mesosoma. Pronotum with irregular, transversely elongate, reticulate sculpture; mesoscutum with raised, small, longitudinally elongate reticulations, the cells slightly larger posteriorly, but appearing finely lineolate reticulate at lower magnifications (Fig. 10); scutellum in a triangular area with deep polygonal, longitudinally elongate reticulations, the cells in posterior third larger, and aciculate, laterally in about anterior half with lineolate reticulate sculpture, but sides and apex smooth (Fig. 11); setae brown; pronotal collar with a line of setae, with one seta at each posterolateral corner long; mesoscutum with 24 setae; each axilla with 2 setae; scutellum with 3 + 3 setae; scutellar sensilla located in about anterior third of scutellum. Fore wing 2.42× as long as broad; costal cell with a line of setae on distal half of dorsal surface, and ventral surface with two lines of setae in proximal half which become one line is distal half; venation as in Fig. 13; linea calva closed posteriorly and interrupted by setae; proximal to linea calva setae hyaline, except brown setae in about anterior third (Fig. 13). Hind wing 4.38× as long as broad; marginal fringe 0.4× wing width. *Relative measurements* (slide, at 100×): mid tibia length, 23; mid basitarsus length, 8; mid tibial spur length, 6.5.

Metasoma (Fig. 12) 1.43× as long as mesosoma (43:30); second valvifer 4.21× as long as third valvula. *Relative measurements* (slide, at 100×): TVII length (width), 22 (19); ovipositor length, 18.25; third valvula length, 3.5. [Ovipositor 0.79× mid tibia length; third valvula 0.43× mid basitarsus length.]

Male: Unknown.

Material examined: Holotype, female (on slide under 4 coverslips, slide No. EH.1715), labelled "INDIA: ANI: Little Andaman, Hut Bay, 28.i.2013 (SN), Coll. K. Veenakumari". (NBAIR; registration No. ICAR/NBAIR/EN.36).

Distribution: India: Andaman and Nicobar Islands.

Etymology: Arabic, *jazirah* = island, and may be taken as a noun in apposition.

Comments: The genus *Coccidencyrtus* Ashmead contains 33 currently valid world species (Noyes, 2014). Of these, seven (possibly eight) species are characterized by the complete or incomplete fusion of the basal three funicle segments (F1–F3). These species are: *C. albiflagellum* (Girault), *C. albitarsus* (Girault), *C. auricornis* (Girault), *C. australis* (Girault), *C. clavatus* (Hayat, Alam and Agarwal), *C. secundus* (Girault), *C. shafeei* (Hayat, Alam and Agarwal), and *C. wallacei* (Girault). Of these species, two species (*C. clavatus* and *C. shafeei*) are from India, and the remaining species are all from Australia.

The new species, *C. jazirah* Hayat, sp. nov., runs to *C. australis* in the key to species given by Noyes and Ren (1987) because of similar colour of the legs, but based on the original description given by Girault (1915: 132) and the key characters given by Noyes and Ren (1987), the new species differs from *C. australis* by the following characters: antennal pedicel less than half the length of funicle; F1–F3 combined 1.75× as long as broad; clava shorter than pedicel and funicle combined. In *C. australis:* pedicel over half the length of funicle; F1–F3 combined a little longer than wide; clava a little longer than pedicel and funicle combined. Details of sculpture of the mesoscutum and scutellum, and relative lengths of the ovipositor, third valvula and mid tibia are not known for Girault's species.

3. *Ooencyrtus zenon* Hayat, sp. nov. (Figs 14–19)

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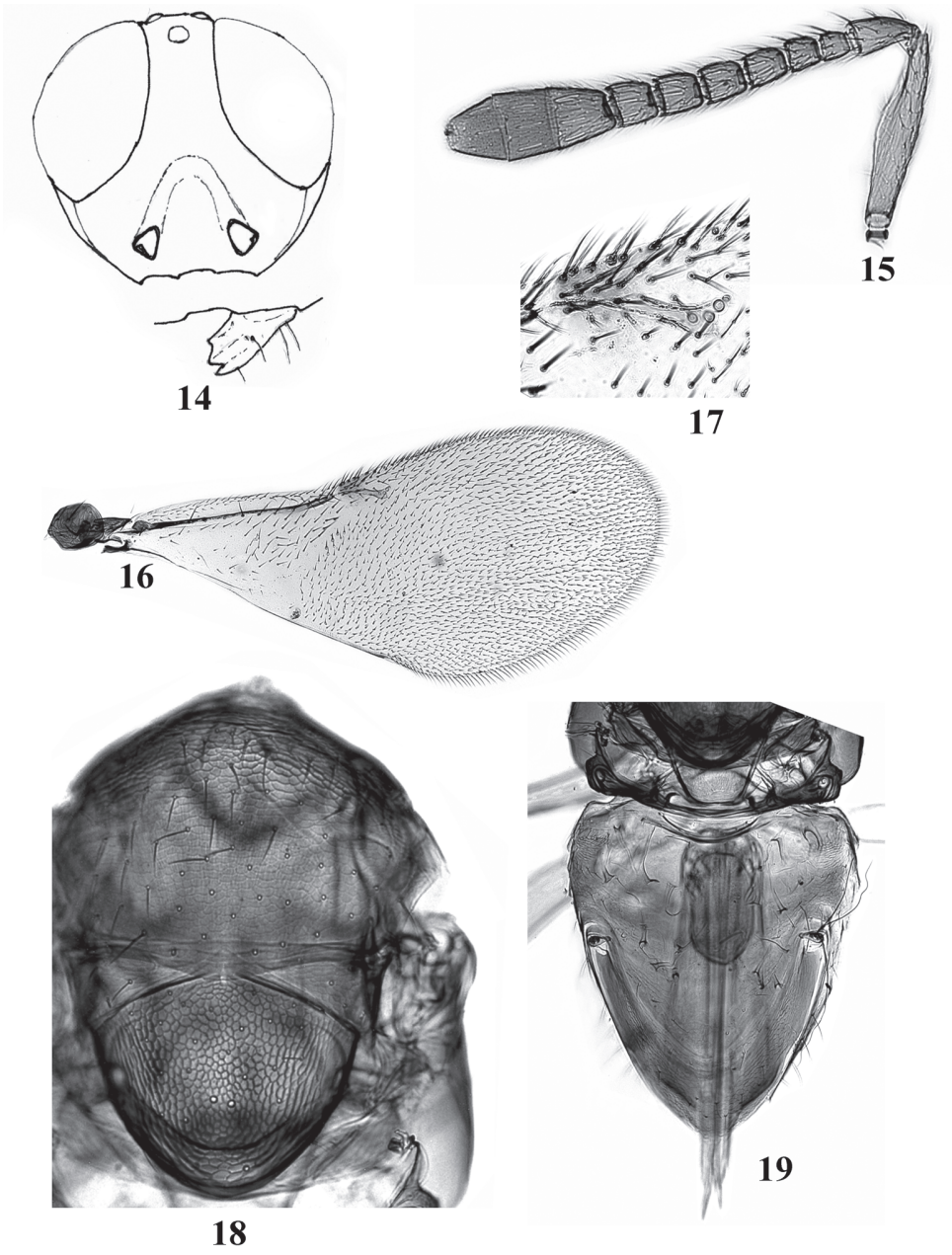
Female

Holotype. Length, 1.0 mm. Head dark brown, with dull violet shine. Antenna with scape pale brownish yellow; pedicel in about basal half brown, apical half pale yellow; funicle segments (F1, F2) brown becoming yellowish brown on F3–F6; clava brown. Mesosoma, including tegula, dark brown; mesoscutum shiny; scutellum with purple shine, sides and posterior part smooth and dull bluish green. Wings hyaline; fore wing below parastigma and submarginal vein with yellowish tinge. Legs, including coxae, pale yellow. Gaster brown; TI, except brown sides, white; exserted part of ovipositor sheaths pale brownish yellow.

Head dorsum 1.73× as broad as long; ocellar triangle with apical angle slightly acute; POL less than OCL (2.5:4); head, in frontal view (Fig. 14), 1.16× as broad as high; frontovertex width 0.22× head width or head width 4.42× as broad as frontovertex width; mouth fossa 1.57× frontovertex width; scrobes shallow, inverted U-shaped with rounded margins; eye large, 2× as long as malar space; frontovertex appears smooth with sparse, long, brown setae; malar space with fine, lineolate sculpture; eye with fine, hyaline setae, each seta longer than a facet diameter. Mandible (Fig. 14) apically slightly narrow, with 2 pointed teeth and a small, slightly



FIGURES 14–18. ***Ooencyrtus zenon*** **Hayat, sp. nov., holotype, female: 14, head frontal view, with mandible enlarged; 15, antenna; 16, fore wing; 17, distal venation of fore wing; 18, thoracic dorsum; 19, metasoma.**

receding truncation. Antenna (Fig. 15) with scape 4.6× as long as broad, and 1.78× as long as frontovertex width; pedicel nearly as long as F1 and F2 combined; funicle segments quadrate (F2, F5, F6) to slightly longer than broad (F1, F3, F4). *Relative measurements* (slide, at 100×): head frontal width, 42; head frontal height, 36; frontovertex width, 9.5; mouth fossa width, 15; eye height, 26; malar space, 13; antennal scape length, 17; pedicel length, 6; funicle length, 22; clava length, 15.

Mesosoma (Fig. 18). Pronotum with raised reticulate sculpture, the cells small and transversely elongate; mesoscutum with polygonal reticulate sculpture, deeper in anterior third and fine in posterior two-thirds; scutellum with raised, polygonal reticulate sculpture, cells small, and deeper than on mesoscutum, lateral fourth with elongate reticulate sculpture, and in apical fourth cells transversely drawn-out; setae brown. Fore wing (Fig. 16) 2.28× as long as broad; postmarginal vein about as long as marginal vein, and 0.7× stigmal vein (Fig. 17); linea calva open posteriorly; basal triangle nearly bare. Hind wing 4.34× as long as broad. Mid tibia 2.79× as long as mid basitarsus, the latter 1.33× as long as mid tibial spur. *Relative measurements* (slide, at 100×): mesosoma length, 48; fore wing length (width), 93.5 (41); hind wing length (width), 63 (14.5); mid tibia length, 33.5; mid basitarsus length, 12; mid tibial spur length, 9.

Metasoma (Fig. 19). *Relative measurements* (slide, at 100×): gaster length, 50; TVII, measured between cercal plates, length (width), 30.5 (30); ovipositor length, 54; third valvula length, 13; exserted part of ovipositor sheaths, 6 [Ovipositor 1.61× as long as mid tibia; third valvula subequal in length to mid basitarsus, and 1.44× as long as mid tibial spur.]

Male: Unknown.

Material examined: Holotype, female (on slide under 4 coverslips, slide No. EH.1733), labelled "INDIA: ANI: South Andaman, Garacharma, 26.i.2013 (YPT), Coll. K. Veenakumari" (NBAIR; registration No. ICAR/NBAIR/EN.37).

Distribution: India: Andaman and Nicobar Islands.

Etymology: The species name is an arbitrary combination of letters, and may be taken as a noun in apposition.

Comments: The genus *Ooencyrtus* Ashmead presently contains 300 world species (Noyes, 2014). This new species is different from all the described species (Noyes, 1985, Neotropical species; Prinsloo, 1987, species from sub-Saharan Africa; Trjapitzin, 1989, Palaearctic species; Huang and Noyes, 1994, Indo-Pacific species; Hayat, 2006, Indian species; Noyes, 2010, Costa Rican species), and does not run to any species in the available keys to *Ooencyrtus* species.

4. *Paraphaenodiscus nesiotes* Hayat, sp. nov. (Figs 20–26)

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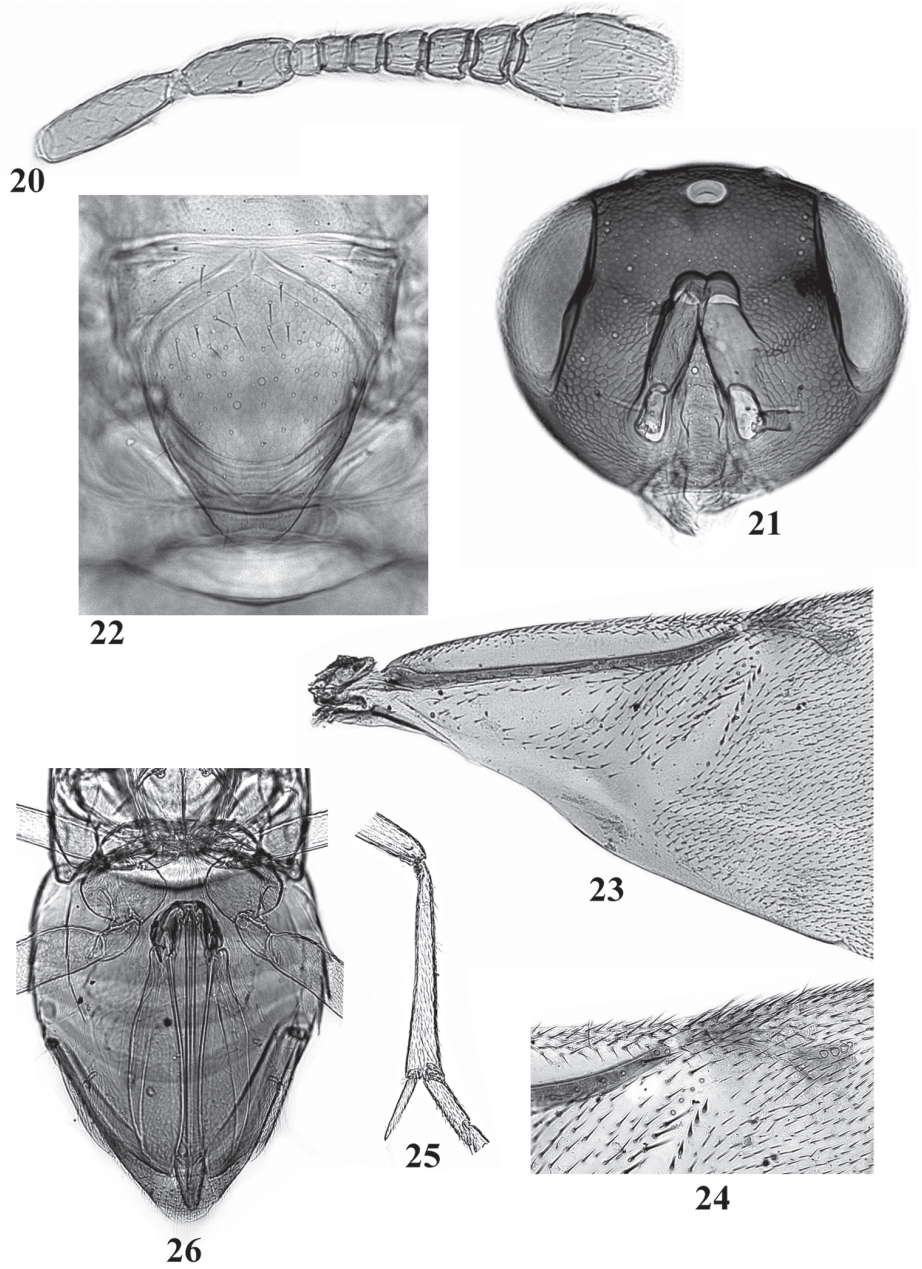


FIGURES 20–26. ***Paraphaenodiscus nesiotes*** **Hayat, sp. nov., holotype, female: 20, antenna; 21, head frontal view; 22, part of mesosoma showing scutellar flange; 23, basal part of fore wing; 24, distal venation of fore wing; 25, mid tibia, basitarsus and spur, at same magnification as Fig. 26; 26, apex of scutellum, propodeum and metasoma.**

Female

Holotype. Length, 1.1 mm. Head dark brown; frontovertex largely with bronzy violet shine. Antenna with scape yellow; pedicel yellow with upper margin brown; flagellum brownish yellow. Mesosoma with visible part of pronotum, mesoscutum, axilla, and scutellum pale brown; tegulae yellow; metanotum and propodeum brown; prepectus and pleurites pale brownish yellow. [On slide, mesosoma appears yellow.] Fore wing, including costal cell, infuscate, the infuscation fading towards apex of disc. Legs, including coxae, pale brownish yellow; mid and hind tibiae, mid tibial spur and all tarsi pale yellow. Gaster brown.

Head, in dorsal view, with occipital margin sharp, and concave between eyes, 2.56× as broad as long; frontovertex broad, 0.54× head width; ocellar triangle with apical angle obtuse; posterior ocellus slightly nearer to occipital margin than to eye margin, POL:OOL:OCL, 8.5:2:1.5; head, in frontal view, 1.2× as broad as high (Fig. 21); scrobes elongate, with upper and lateral margins sharply ridged; interantennal prominence sharply margined (= ridged) and pointed above; antennal torulus with upper margin slightly above lower margin of eye; torulus separated from mouth margin by a distance slightly less than torulus height; eye height 1.6× malar space; frontovertex, face and malar space with regular, polygonal raised reticulate sculpture, the cells very small, and with some scattered minute setigerous punctures; head sparsely setose, setae short and hyaline; eye bare. Antenna (Fig. 20) with scape short, 3.14× as long as broad, 0.5× frontovertex width (11:21.5), and subequal in length to clava; pedicel longer than F1–F3 combined; funicle segments all broader than long, gradually increasing in length and width; clava (collapsed) with apex broadly rounded, slightly shorter than F3–F6 combined. *Relative measurements* (card): head dorsal width, 32; head dorsal length, 12.5; frontovertex width, 17.5. (slide, at 100×): head frontal width, 40; head frontal height, 33; frontovertex width, 21.5; eye height, 20; malar space, 12.5; antennal scape length, 11; pedicel length, 7.5; funicle length, 14; clava length, 11.5.

Mesosoma. Mesoscutum 0.61× scutellum length (including apical flange); scutellar flange distinct, overlapping propodeum medially (Fig. 22); mesoscutum with fine, regular polygonal reticulate sculpture, the cells very small; scutellum with a similar sculpture, the cells slightly larger, but deeper than on mesoscutum, and apically fading; setae pale brown. Fore wing 2.26× as long as broad; marginal vein about 2× as long as broad, shorter than stigmal vein (21:25); postmarginal vein 0.4× marginal vein and 0.36× stigmal vein (Fig. 24); linea calva open; basal triangle with a large bare area, otherwise as in Fig. 23. Mid tibia (Fig. 25) 2.75× as long as mid basitarsus; mid tibial spur slightly shorter than mid basitarsus. *Relative measurements* (card): mesosoma length, 38; pronotum, visible part, length (width), 4 (28); mesoscutum length (width), 13.5 (31); scutellum length, (width), 22 (20). (slide, at 100×): mid tibia length, 33; mid basitarsus length, 12; mid tibial spur length, 10.

Metasoma (Fig. 26) slightly longer than mesosoma (41:38); ovipositor extending from TI of gaster, and not exserted at apex; ovipositor with second valvifer 4.87× as long as third valvula; setae on tergites as follows: TI–TIV, a short line each on each side; TV, a single line, but in

posterior third with several setae; TVI, a single line; TVII, numerous setae. *Relative measurements* (slide, at 100×): TVII length (width), measured between cercal plates, 28.5 (35); ovipositor length; 47; third valvula length, 8. [Ovipositor 1.42× as long as mid tibia; third valvula shorter than mid tibial spur.]

Male: Unknown.

Material examined: Holotype, female (on slide under 4 coverslips, slide No. EH.1714), labelled "INDIA: ANI: Little Andaman, Hut Bay, 28.i.2013 (SN), Coll. K. Veenakumari". (NBAIR; registration No. ICAR/NBAIR.EN.38)

Distribution: India: Andaman and Nicobar Islands

Etymology: Greek, *nesiotes* = islander, inhabitant of an island.

Comments: This new species is quite different from all the described species of the genus *Paraphaenodiscus* Girault (Girault, 1915; Prinsloo, 1976; Prinsloo and Mynhardt, 1982; Myartseva, 1980; Singh and Agarwal, 1993; Hayat, 2006; Hayat et al., 2008; Noyes, 2014) in having the following combination of characters: head dark brown in contrast to the yellow to brownish yellow mesosoma; antennal funicle and clava brownish yellow; head with frontovertex broad, 0.54× head width; scrobes deep, elongate and sharply ridged; interantennal prominence sharply ridged, triangularly pointed above. The last three characters are unique for this new species, and not found in any other described species. These characters suggest that the new species may eventually prove to belong to a separate (new) genus, but is here placed in *Paraphaenodiscus* as it agrees in all the other characters with this genus.

The genus *Paraphaenodiscus* is newly recorded from Andaman and Nicobar Islands.

Records of species

1. *Achalcerinys lindus* (Mercet)

Material examined: INDIA: ANI: South Andaman, Garacharma, 9 females, 26.i.2013 (YPT), Coll. K. Veenakumari. (2 females in ZDAMU; 7 females in NBAIR)

2. *Adelencyrtus moderatus* (Howard)

Material examined: INDIA: ANI: South Andaman, Garacharma, 5 females, 26.i.2013 (YPT), Coll. K. Veenakumari; South Andaman, Sippighat, 1 female, 20.i.2013 (SN), Coll. K. Veenakumari. (NBAIR)

3. *Adelencyrtus orissanus* Hayat

Material examined: INDIA: ANI: Garacharma, 1 female, 20.i.2013 (YPT), Coll. K. Veenakumari.

(ZDAMU)

4. ***Amicencyrtus obscurus*** **Hayat [New record of the genus and species from ANI]**

Material examined: INDIA: ANI: South Andaman, Sippighat, 1 female, 20.i.2013 (SN), Coll. K. Veenakumari (NBAIR).

5. ***Anikera andamana*** **Hayat, in Hayat and Veenakumari**

Material examined: INDIA: ANI: Middle Andaman, Chitrakoot, 1 female, 24.i.2013 (SN), Coll. K. Veenakumari; South Andaman, Garacharma, 1 female, 30.i.2013 (SN), Coll. K. Veenakumari; South Andaman, Mt. Harriet, 1 female, 1.ii.2013 (SN), Coll. K. Veenakumari (1 female in ZDAMU; 2 females in NBAIR).

6. ***Arrhenophagoidea andamanica*** **Hayat, in Hayat and Veenakumari**

Material examined: INDIA: ANI: Garacharma, 1 female (on slide No. EH.1713), 30.i.2013 (SN), Coll. K. Veenakumari (NBAIR).

7. ***Cheiloneurus flaccus*** **(Walker)**

Material examined: INDIA: ANI: Middle Andaman, Rangat Bay, 1 female, 23.i.2013 (SN), Coll. K. Veenakumari; Little Andaman, Hut Bay, Waterfalls, 1 female (right fore wing lost; scutellar brush of setae detached), 28.i.2013 (SN), Coll. K. Veenakumari (1 female in ZDAMU; 1 female in NBAIR).

8. ***Cheiloneurus longipennis*** **Fatma and Shafee [New record from ANI]**

Material examined: INDIA: ANI: Middle Andaman, Rangat Bay, 1 female (scutellar brush of setae detached), 23.i.2013 (SN), Coll. K. Veenakumari (ZDAMU).

9. ***Encyrtus aurantii*** **(Geoffroy)**

Material examined: INDIA: ANI: Little Andaman, Harminder Bay, 1 female, 30.i.2013 (SN), Coll. K. Veenakumari (NBAIR).

10. ***Helegonatopus pulchricornis*** **Hayat and Verma [New record of the genus and species from ANI]**

Material examined: INDIA: ANI: Little Andaman, Hut Bay, Waterfalls, 3 males, 28.i.2013 (SN), Coll. K. Veenakumari; Middle Andaman, Rangat Bay, 3 females, 6 males, 23.i.2013 (SN), Coll. K. Veenakumari (NBAIR).

11. ***Indaphycus planus*** **Hayat (Figs 27, 28) [New record of the genus and species from ANI]**

Material examined: INDIA: ANI: Little Andaman, Hut Bay, 1 male (on slide, No. EH.1719), 28.i.2013 (SN), Coll. K. Veenakumari. (ZDAMU).

Comments: This species is known from females from Karnataka (Hayat et al., 2013), Tamil Nadu (Manickavasagam and Rameshkumar, 2011) and Uttar Pradesh (see Hayat, 2006). The male of this species is recorded for the first time, and illustrated (Figs 27, 28). It is very similar to the females, except for the genitalia.

12. *Leptomastix dactylopii* Howard [New record from ANI]

Material examined: INDIA: ANI: Little Andaman, Forest Nursary, 1 female, 30.i.2013, Coll. K. Veenakumari; South Andaman, Garacharma, 1 female (right antenna beyond F5, and left antenna beyond F4, missing), 26.i.2013 (YPT), Coll. K. Veenakumari (NBAIR).

13. *Mahencyrtus ranchiensis* (Fatima and Shafee)

Material examined: INDIA: ANI: South Andaman, Garacharma, 5 females, 26.i.2013 (YPT), Coll. K. Veenakumari (NBAIR).

14. *Manmohanencyrtus hayati* Singh

Material examined: INDIA: ANI: South Andaman, Garacharma, 1 female, 22.ii.2012; 3 males, 22.ii.2012 (SN); 4 males, 26.i.2013 (YPT); 1 female, 30.i.2013 (SN), Coll. K. Veenakumari. (1 female, 2 males, in ZDAMU; 1 female, 5 males, in NBAIR)

15. *Meniscocephalus optabilis* Hayat (Figs 29, 30) [New record from ANI]

Material examined: INDIA: ANI: South Andaman, Garacharma, 1 female (with left antenna and left side wings on a slide, No. EH.1669), 26.i.2013 (YPT), Coll. K. Veenakumari. (ZDAMU)

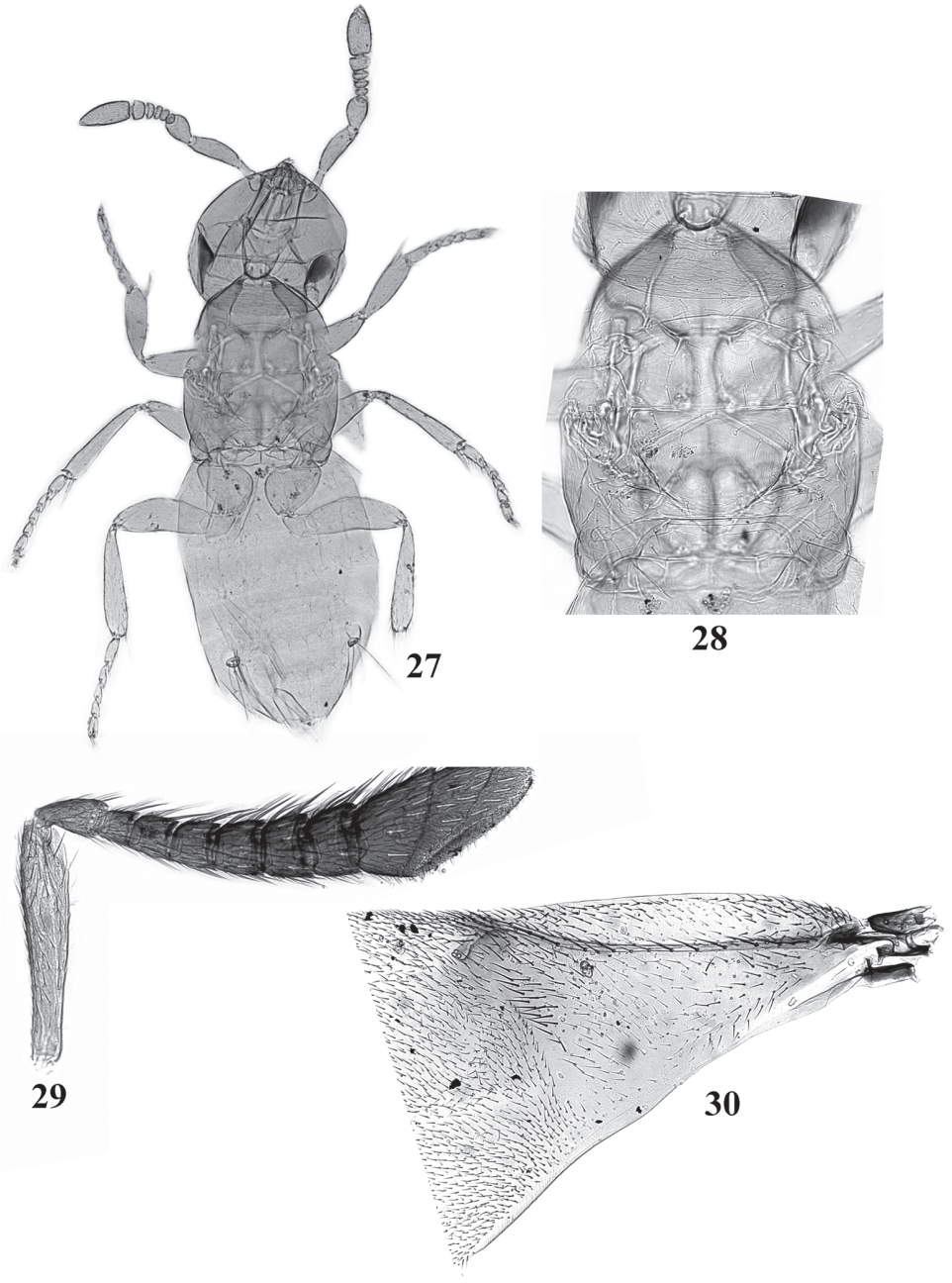
Comments: This species was described by Hayat (2003) from two specimens (holotype and paratype) collected from Kerala. This occurrence of this genus in ANI was earlier reported by Hayat and Veenakumari (2014a).

16. *Neocladia calicutana* (Hayat)

Material examined: INDIA: ANI: South Andaman, Garacharma, 3 females, 30.i.2013 (SN), Coll. K. Veenakumari (1 female, in ZDAMU; 2 females, in NBAIR).

17. *Ooencyrtus guamensis* Fullaway [New record from ANI]

Material examined: INDIA: ANI: Little Andaman, Farm Tikrey, 1 female, 30.i.2013, Coll. K. Veenakumari; South Andaman, Garacharma, 1 female, 22.ii.2012 (SN); 1 female, 26.i.2013 (YPT), Coll. K. Veenakumari (NBAIR).



FIGURES 27–30. (27, 28) ***Indaphycus planus*** **Hayat, male: 27, body, dorsal view; 28, mesosoma. (29, 30)** ***Meniscocephalus optabilis*** **Hayat, female: 29, antenna; 30, part of fore wing.**

18. *Ooencyrtus papilionis* Ashmead

Material examined: INDIA: ANI: South Andaman, Mile Tilak, 1 female (on slide, No. EH.1705), 22.ii.2012, Coll. K. Veenakumari; South Andaman, Mt. Harriet, 1 female (on slide, No. EH.1735), 1.ii.2013 (SN), Coll. K. Veenakumari (NBAIR; 1 female, slide No.EH.1735, in ZDAMU).

19. *Ooencyrtus utetheisae* (Risbec)

Material examined: INDIA: ANI: Little Andaman, Forest Nursary, 4 females, 29.i.2013 (SN); 1 female, 30.i.2013 (MT), Coll. K. Veenakumari; South Andaman, Sippighat, 3 females (one on slide, No. EH.1734), 20.i.2013 (SN), Coll. K. Veenakumari (NBAIR; 1 female, slide No. EH.1734, in ZDAMU).

20. *Paraclausenia herbicola* Hayat

Material examined: INDIA: ANI: South Andaman, Sippighat, 1 female, 20.i.2013 (SN), Coll. K. Veenakumari; South Andaman, Garacharma, 2 females, 26.i.2013 (YPT), Coll. K. Veenakumari (NBAIR).

21. *Tassonia amaura* Hayat

Material examined: INDIA: ANI: South Andaman, Garacharma, 1 female, 26.i.2013 (YPT), Coll. K. Veenakumari (NBAIR).

22. *Tassonia calunica* Hayat

Material examined: INDIA: ANI: South Andaman, Garacharma, 1 female, 26.i.2013 (YPT), Coll. K. Veenakumari (NBAIR).

23. *Trechnites hairah* Hayat, in Hayat and Veenakumari

Material examined: INDIA: ANI: South Andaman, Chitratapu, 1 male, 22.ii.2012 (SN), Coll. K. Veenakumari; South Andaman, Garacharma, 3 females, 30.i.2013 (SN), Coll. K. Veenakumari; South Andaman, Mt. Harriet, 1 female, 1.ii.2013 (SN), Coll. K. Veenakumari; Little Andaman, Harminder Bay, 1 female, 1 male, 30.i.2013 (SN), Coll. K. Veenakumari (1 female, in ZDAMU; remaining specimens in NBAIR).

LIST OF ENCYRTIDAE FROM ANDAMAN AND NICOBAR ISLANDS

The reference to the first record of a species from ANI is given in square brackets. For species described on material from ANI (holotypes/paratypes/additional material included along with type material) only the year is enclosed in square brackets.

1. *Achalcerinys lindus* (Mercet) [Hayat and Veenakumari, 2013]
2. *Adelencyrtus bimaculatus* Alam [Hayat and Basha, 2001]
3. *Adelencyrtus coxalis* Hayat et al. [Manickavasagam and Rameshkumar, 2013]
4. *Adelencyrtus moderatus* (Howard) [Hayat and Basha, 2001]
5. *Adelencyrtus orissanus* Hayat [Manickavasagam and Rameshkumar, 2013]
6. *Aenasius advena* Compere [Noyes and Ren, 1995]
7. *Ageniaspis montanus* Hayat, **sp. nov.** [**present paper**]
8. *Amicencyrtus obscurus* Hayat [**present record**]
9. *Anagyrus dactylopii* (Howard) [Hayat and Basha, 2001]
10. *Anagyrus diversicornis* (Howard) [Gupta and Joshi, 2013]
11. *Anagyrus gracilis* (Hayat) [Hayat and Basha, 2001]
12. *Anagyrus kamali* Moursi [Manickavasagam and Rameshkumar, 2013]
13. *Anagyrus levis* Noyes and Hayat [Hayat and Veenakumari, 2014a]
14. *Anagyrus mirzai* Agarwal and Alam [Hayat and Singh, 1999]
15. *Anagyrus ranchiensis* Shamim and Shafee [Hayat and Veenakumari, 2014a]
16. *Anagyrus rugas* Noyes and Hayat [Hayat and Veenakumari, 2014a]
17. *Anagyrus shahidi* Hayat [Manickavasagam and Rameshkumar, 2013]
18. *Anagyrus subflaviceps* (Girault) [Hayat and Singh, 1999]
19. *Anagyrus thailandicus* (Myartseva) [Manickavasagam and Rameshkumar, 2013]
20. *Anagyrus tricolor* (Girault) [Hayat and Veenakumari, 2013]
21. *Anagyrus umairi* Noyes and Hayat [Hayat and Singh, 1999]
22. *Anicetus annulatus* Timberlake [Hayat and Veenakumari, 2013]
23. *Anikera andamana* Hayat, in Hayat and Veenakumari [2013]
24. *Anomalicornia tenuicornis* Mercet [Manickavasagam and Rameshkumar, 2013]
25. *Aphycus sapporoensis* (Compere and Annecke) [Manickavasagam and Rameshkumar, 2013]
26. *Apoleptomastix bicoloricornis* (Girault) [Hayat and Veenakumari, 2013]
27. *Arrhenophagoidea andamanica* Hayat, in Hayat and Veenakumari [2014b]
28. *Blepyrus insularis* (Cameron) [Manickavasagam and Rameshkumar, 2013]
29. *Callipteroma sexguttata* Motschulsky [Manickavasagam and Rameshkumar, 2013]

30. *Callipteroma testacea* Motschulsky [Hayat and Veenakumari, 2013]
31. *Cheiloneuromyia javensis* Girault [Hayat and Singh, 2002]
32. *Cheiloneurus bangalorensis* (Subba Rao) [Hayat and Basha, 2001]
33. *Cheiloneurus flaccus* (Walker) [Hayat and Veenakumari, 2014a]
34. *Cheiloneurus longipennis* Fatma and Shafee [**present record**]
35. *Cheiloneurus parvus* (Hayat) [Hayat and Veenakumari, 2014a]
36. *Cheiloneurus quadricolor* (Girault) [Hayat and Singh, 1999]
37. *Cheiloneurus saissetiae* Noyes and Chua [As *C. insulus* Kaul and Agarwal, 1986; synonymy by Anis and Hayat, 2002]
38. *Coagerus bouceki* Noyes and Hayat [Hayat and Veenakumari, 2014a]
39. *Coccidencyrtus clavatus* (Hayat et al.) [Hayat and Basha, 2001]
40. *Coccidencyrtus jazirah* Hayat, **sp. nov.** [**present paper**]
41. *Coccidencyrtus shafeei* (Hayat et al.) [Manickavasagam and Rameshkumar, 2013]
42. *Coelopencyrtus krishnamurtii* (Mahdihassan) [Hayat and Basha, 2001]
43. *Diversinervus cervantesi* (Girault) [As *Phasmencyrtus indicus* Kaul and Agarwal, 1986; synonym of *D. cervantesi* by Hayat, 1989]
44. *Diversinervus elegans* Silvestri [Hayat and Veenakumari, 2013]
45. *Encyrtus aurantii* (Geoffroy) [Hayat and Singh, 1999]
46. *Epitetracnemus intersectus* (Fonscolombe) [Hayat, 2006]
47. *Exoristobia columbi* (Girault) [Hayat and Veenakumari, 2014a]
48. *Helegonatopus pulchricornis* Hayat and Verma [**present record**]
49. *Indaphycus planus* Hayat [**present record**]
50. *Lakshaphagus fusiscapus* (Agarwal) [Gupta and Joshi, 2013]
51. *Leptomastix dactylopii* Howard [**present record**]
52. *Leptomastix nigrocincta* Risbec [Hayat and Singh, 1999]
53. *Leptomastix tsukumiensis* Tachikawa [Hayat and Veenakumari, 2013]
54. *Leurocerus ovivorus* Crawford [Veenakumari et al., 1997]
55. *Mahencyrtus assamensis* Singh and Agarwal [Hayat and Veenakumari, 2014a]
56. *Mahencyrtus ranchiensis* (Fatima and Shafee) [Manickavasagam and Rameshkumar, 2013]
57. *Manmohanencyrtus hayati* Singh [1995]

58. *Meniscocephalus optabilis* Hayat [**present record**]
59. *Microterys indicus* Subba Rao [Hayat and Veenakumari, 2014a]
60. *Neocladia calicutana* (Hayat) [Hayat and Veenakumari, 2014a]
61. *Neocladia trifasciata* Singh and Agarwal [1993]
62. *Neodusmetia sangwani* (Subba Rao) [Hayat and Basha, 2001]
63. *Ooencyrtus guamensis* Fullaway [**present record**]
64. *Ooencyrtus insulanus* Hayat and Veenakumari [2014a]
65. *Ooencyrtus lucens* Huang and Noyes [1994]
66. *Ooencyrtus papilionis* Ashmead [Manickavasagam and Rameshkumar, 2013]
67. *Ooencyrtus utetheisae* (Risbec) [Manickavasagam and Rameshkumar, 2013]
68. *Ooencyrtus zenon* Hayat, **sp. nov.** [**present paper**]
69. *Paraclausenia herbicola* Hayat [Manickavasagam and Rameshkumar, 2013]
70. *Paraphaenodiscus nesiotes* Hayat, **sp. nov.** [**present paper**]
71. *Paratetracnemoidea insulana* Hayat and Singh [2002]
72. *Prochiloneurus pulchellus* Silvestri [Hayat and Veenakumari, 2013]
73. *Prochiloneurus testaceus* (Agarwal) [Hayat and Singh, 1999]
74. *Protyndarichoides indicus* Singh and Agarwal [Manickavasagam and Rameshkumar, 2013]
75. *Rhopus nigroclavatus* (Ashmead) [Hayat and Veenakumari, 2013]
76. *Saucrencyrtus insulanus* Hayat and Singh [2002]
77. *Syrphophagus hofferi* (Hayat) [Hayat and Veenakumari, 2013]
78. *Tassonia amaura* Hayat [Hayat and Veenakumari, 2013]
79. *Tassonia calunica* Hayat [2003]
80. *Tassonia gloriae* Girault [Hayat and Veenakumari, 2013]
81. *Trechnites hairah* Hayat, in Hayat and Veenakumari [2013]
82. *Zaomma lambinus* (Walker) [Hayat and Basha, 2001]

In addition to the above species, the following genera, without included species, are recorded:

Manickavasagam and Rameshkumar (2013): *Metaphycus* Mercet, *Neastymachus* Girault, *Rhytidothorax* Ashmead.

Hayat and Veenakumari (2014a): *Arrhenophagus* Aurivillius, *Tachinaephagus* Ashmead.

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