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RESEARCH ARTICLE

New species and new records of cuckoo wasps (Hymenoptera: Chrysididae) from India and Sri Lanka

Новые виды и новые находки ос-блестянок (Hymenoptera: Chrysididae) из Индии и Шри-Ланки

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Abstract. A contribution to the knowledge of Indian and Sri Lankan Chrysididae is given. The following six species are described: *Chrysis decorosa* **sp. nov.** from Rajasthan (*Ch. maindroni* group); *Ch. glauca* **sp. nov.** from Karnataka (*Ch. succincta* group); *Ch. zdenula* **sp. nov.** from Tamil Nadu (*Ch. succincta* group); *Ch. kartikeya* **sp. nov.** from Tamil Nadu (*Ch. decemdentata* group); *Ch. unidentata* **sp. nov.** from Tamil Nadu (*Ch. unidentata* group); *Hedychridium zeylanicum* **sp. nov.** from Sri Lanka (*H. roseum* group). The *Chrysis unidentata* group is established here; the *Ch. maindroni*, *Ch. pulchella* and *Hedychridium roseum* groups are recorded for the first time for the Oriental Region. The genus *Isegama* Krombein, 1983 and eight species are recorded for the first time from India: subfamily Amiseginae: *Isegama aridula* (Krombein, 1980); subfamily Chrysidinae, tribe Elampini: *Hedychridium mysticum* Semenov-Tian-Shanskij, 1912, *Hedychrum striatum* Mocsáry, 1911, *Holophris marginella* (Mocsáry, 1890), *Omalus aeneus* (Fabricius, 1787); tribe Chrysidini: *Chrysis goetheana* Semenov-Tian-Shanskij, 1967, *Praestochrysis spinula* Bohart, 1988, and *Primeuchroeus malayensis* (Linsenmaier, 1982). *Chrysis goetheana* is transferred to the *Ch. pulchella* group. New distributional data for other six Indian species are provided.

Резюме. Осуществлен вклад в познание индийских и шри-ланкийских ос семейства Chrysididae. Описаны шесть видов: *Chrysis decorosa* **sp. nov.** из Раджастана (группа вида *Ch. maindroni*); *Ch. glauca* **sp. nov.** из Карнаки (группа вида *Ch. succincta*); *Ch. zdenula* **sp. nov.** из Тамил Наду (группа вида *Ch. succincta*); *Ch. kartikeya* **sp. nov.** из Тамил Наду (группа вида *Ch. decemdentata*); *Ch. unidentata* **sp. nov.** из Тамил Наду (группа вида *Ch. unidentata*); *Hedychridium zeylanicum* **sp. nov.** из Шри-Ланки (группа вида *H. roseum*). Выделена группа вида *Chrysis unidentata*; группы видов *Ch. maindroni*, *Ch. pulchella* и *Hedychridium roseum* впервые отмечаются в фауне Ориентальной области. Род *Isegama* Krombein, 1983 и восемь видов впервые обнаружены в Индии: из подсемейства Amiseginae – *Isegama aridula* (Krombein, 1980), из подсемейства Chrysidinae, в трибе Elampini – *Hedychridium mysticum* Semenov-Tian-Shanskij, 1912, *Hedychrum striatum* Mocsáry, 1911, *Holophris marginella* (Mocsáry, 1890), *Omalus aeneus* (Fabricius, 1787), и в трибе Chrysidini – *Chrysis goetheana* Semenov-Tian-Shanskij, 1967, *Praestochrysis spinula* Bohart, 1988 и *Primeuchroeus malayensis* (Linsenmaier, 1982). *Chrysis goetheana* перенесен в группу вида *Ch. pulchella*. Приведены новые сведения о распространении других шести индийских видов.

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Key words: Oriental Region, distribution, Amiseginae, Chrysidini, Elampini, new species

Ключевые слова: Ориентальная область, распространение, Amiseginae, Chrysidini, Elampini, новые виды

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Introduction

Rosa et al. (2021a) have recently compiled an updated checklist of the Indian cuckoo wasps and listed 105 species for the country. The authors analysed the distribution of species in the Indian states and noted that (i) the Indian fauna is still largely unknown and (ii) the faunal richness is expected to be much higher than currently recognised. Interestingly, based on currently known data, it has been estimated that 47% of Indian cuckoo wasps are endemic, and for this reason it has been suggested that more efforts should be directed to this family to evaluate its species diversity, ecology and real distribution in the country. An additional species was later added to the Indian fauna, *Chrysis arkadyi* Rosa, Baiocchi, Halada et Proshchalykin, 2021, described from Uttarakhand in India and Khyber Pakhtunkhwa in Pakistan (Rosa et al., 2021b).

The present contribution is based on material collected by the second author during an entomological survey in the Indian States of Karnataka, Kerala and Tamil Nadu in 2005, and on occasional specimens collected by other Czech entomologists during entomological surveys in the States of Arunachal Pradesh, Karnataka, Rajasthan, Tamil Nadu and Uttarakhand. In this small collection of 65 specimens, we identified 21 Indian species, five of which turned out to be undescribed, and eight ones new for India. Finally, we describe a new outstanding Sri Lankan species from the genus *Hedychridium* Abeille de Perrin, 1878 and the *H. roseum* group which is recorded for the first time from the Oriental Region. The Sri Lankan fauna is even less known than the Indian one, excluding the subfamilies Amiseginae and Loboscelidiinae, which were studied by Krombein (1980, 1983). Only about forty species are currently known from Sri Lanka (Bingham, 1903; Kimsey & Bohart, 1991; Strumia, 1999; Rosa et al., 2021a).

The purpose of this contribution is to broaden the current knowledge of the Indian and Sri Lankan fauna of Chrysididae by providing new records and new distribution data.

Material and methods

The specimens examined are deposited in the private collections of the authors: Paolo Rosa (PRC) and Marek Halada (MHC). The holotypes of the new species are deposited in the collection of the Museum of Natural History, Milan, Italy (MSNM). Other types are deposited in the following institutes and museums: Bohart Museum of Entomology, University of California at Davis, USA (BME); Hungarian Natural History Museum, Budapest, Hungary (HNHM); Museum of Natural History "G. Doria", Genoa, Italy (MSNG); National Museum of Natural History, Paris, France (MNHM); Natural History Museum, London, UK (NHMUK); Natural History Museum, Vienna, Austria (NHMW); Naturalis, Leiden, The Netherlands (Naturalis); United States National Museum of Natural History, Washington DC, USA (USNM); Zoological Institute, Saint-Petersburg, Russia (ZIN); Zoological Museum, University of Copenhagen, Denmark (ZMUC).

New distribution records presented in this paper are marked with an asterisk (*).

Abbreviations used in the descriptions are as follows: F1, F2, F3, etc. – respectively, flagellomeres 1, 2, 3, etc.; l/w – ratio of length to width; MOD – median ocellus diameter (measured in the frontal view); MS – malar space, the shortest distance between the base of mandible and the lowest margin of compound eye; OOL – oculo-ocellar line, the shortest distance between the posterior ocellus and the compound eye; P – pedicel; PD – puncture diameter; POL – posterior ocellar line, the shortest distance between the posterior ocelli.

Images were taken with a Nikon D700 digital camera connected to a Togal SCZ stereomicroscope. Images were stacked with Combine ZP software.

Taxonomic part

Order **Hymenoptera**

Family **Chrysididae**

Subfamily **Amiseginae**

Genus ***Isegama*** Krombein, 1983

Isegama aridula (Krombein, 1980)

Cladobethylus aridulus Krombein, 1980: 255.

Holotype (not examined). Female, **Sri Lanka**, *Eastern Prov.*, Amparai Disr., Ekgal Aru Saner (USNM).

Material examined. **India**, *Karnataka*, Sullia, Madikeri, 150 m, 12°31.8′N 75°29.0′E, 8.V.2005, M. Halada leg., 1 female (PRC).

Distribution. *India (Karnataka); Sri Lanka (Krombein, 1980, 1983; Kimsey & Bohart, 1991).

Remarks. The genus *Isegama* is recorded from India for the first time. As already discussed by Rosa et al. (2021b), the occurrence of Amiseginae in India is underestimated, and only one species, *Indothrix longicornis* Krombein, 1957, was previously recorded. Contrarywise, Amiseginae are better known from Sri Lanka, where ten genera and twenty species were already recorded (Krombein, 1980, 1983). This gap is probably due to the limited and incomplete field collection of material.

Kimsey & Bohart (1991) recorded the genera *Cladobethylus* Kieffer, 1922 and *Baeosega* Krombein, 1983 from "southern India" based on Krombein's (1980, 1983) publications. These two genera were not listed by Rosa et al. (2021a) because any identification of species or locality was not mentioned in the previous works. The genus *Cladobethylus* was recorded by Krombein (1980) for southern India (without any further information), and in Kimsey & Bohart (1991), *Isegama aridula* (Krombein, 1980) was mentioned in both the genera *Cladobethylus* and *Isegama*, leaving uncertainty as to which of the two genera was actually recorded from India. According to T. Mita (Japan, pers. comm.), who examined the holotype in Washington, *Cladobethylus aridulus* Krombein is actually a member of *Isegama*, which corresponds to the combination proposed by Krombein (1983). An unidentified *Baeosega* species was recorded from Madras by Krombein (1980, as *Serendibula* sp.; 1983). We now include this genus in the updated Indian faunal list, although it is clear that a revision of Indian Amiseginae is needed, based on materials deposited in Indian museums and universities and to be collected in new field surveys.

Subfamily **Chrysidinae**

Tribe **Elampini**

Genus ***Hedychridium*** Abeille de Perrin, 1878

Hedychridium mysticum
Semenov-Tian-Shanskij, 1912
(Fig. 1A–F)

Hedychridium mysticum Semenov-Tian-Shanskij, 1912: 177.

Type material examined. Holotype, male, **Iran**, Bambur (ZIN).

Additional material. **India**, *Tamil Nadu*, Pykara, Nilgiri Hills, 2250 m, 11°26.9′N 76°36.9′E, 26.IV.2005, M. Halada leg., 1 female (MHC).

Distribution. *India (Tamil Nadu); Iran (Semenov-Tian-Shanskij, 1912; Rosa et al., 2017a).

Hedychridium sikkimium Strumia, 1999

Hedychridium sikkimium Strumia, 1999: 69.

Holotype (not examined). Female, **India**, *Sikkim*, Chumtang, 5,120 ft, 18–29.VI.1959, F. Schmidt leg. (Naturalis).

Material examined. **India**, *Karnataka*, Bangalore University campus, 13°08′N 77°37′E, 1–15.III.2005, Olejniček leg., 1 female (MHC).

Distribution. India (Sikkim, *Karnataka).

Hedychridium wroughtoni du Buysson, 1896

Hedychridium wroughtoni du Buysson, 1896: 466.

Type material examined. Lectotype [designated by Kimsey 1986: 106], female, **India**, central states (likely *Maharashtra*, *Pune*) (MNHM).

Additional material. **India**, *Tamil Nadu*, Pykara, Nilgiri Hills, 2250 m, 11°26.9′N 76°36.9′E, 26.IV.2005, M. Halada leg., 1 male, 9 females (MHC).

Distribution. India (Gujarat, Tamil Nadu, Uttar Pradesh) (Rosa et al., 2021a); Nepal (Bingham, 1908), Myanmar, Sri Lanka (Strumia, 1999).

***Hedychridium zeylanicum* sp. nov.**
(Fig. 2A–G)

Holotype. Male, **Sri Lanka**, 2 km SW of Kirinda, 6°12.07′N 81°19.47′E, 24–31.I.2019, yellow pan trap, J. Halada leg. (MSNM).

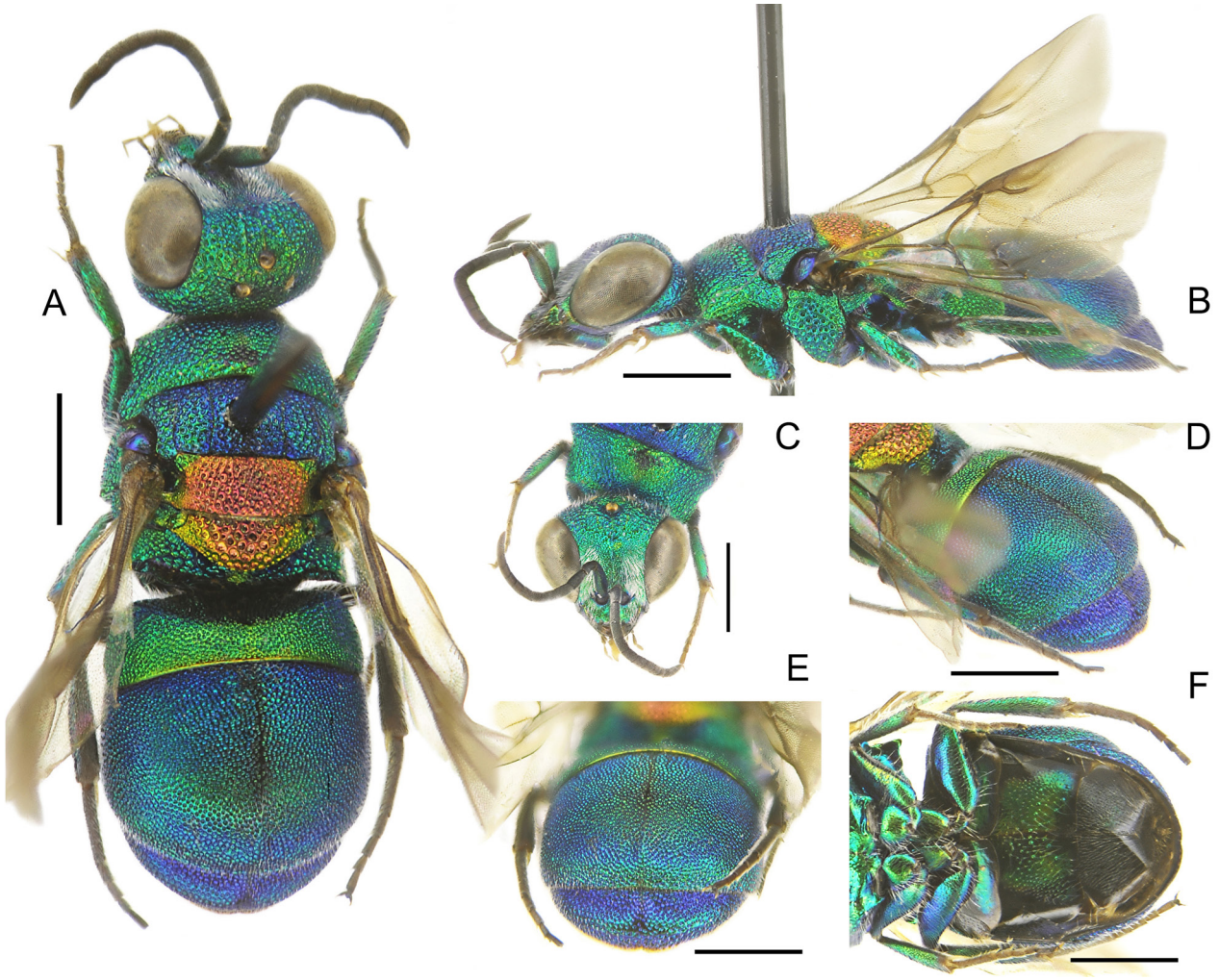


Fig. 1. *Hedychridium mysticum* Semenov-Tian-Shanskij, 1912, female from Tamil Nadu; **A**, habitus, dorsal view; **B**, habitus, lateral view; **C**, head, frontal view; **D**, metasoma, posterolateral view; **E**, metasoma, posterior view; **F**, metasoma, ventral view. Scale bars: 1.0 mm.

Paratype. 1 male, same locality and data as for holotype (MHC).

Diagnosis. *Hedychridium zeylanicum* **sp. nov.** can be recognised by pedicel extremely elongate (slightly longer or as long as F1) and light brown, contrasting with metallic blue scape and dark brown flagellomeres; body deeply and densely punctate overall, in particular metasoma densely minutely punctate; posterior propodeal angles digitate, blunt and outward directed; inner surface of hind tibia with deep, elongate pit, as long as two-fifth of tibia length; legs distal to coxae largely non-metallic yellow, with weak opalescent reflection on femora; head and mesosoma dark blue and terga I–III with metallic blue to violet colour laterally, non-metallic yellow medially.

Description. *Male* (holotype). Body length 4.1 mm.

Head. Scapal basin polished medially, with relatively large, dense punctures at sides, covered by silvery, adpressed pubescence (Fig. 2D); anterior margin of clypeus straight, non-metallic brown; malar spaces short (0.3 MOD); frons with relatively small (0.3 MOD), round and dense punctures, almost without interspaces; ocellar area and temples with smaller punctures; posterior ocelli about 2.2 MOD distant from eye margin; mandible tridentate, yellowish medially, with falciform apex (Fig. 2D). Relative length

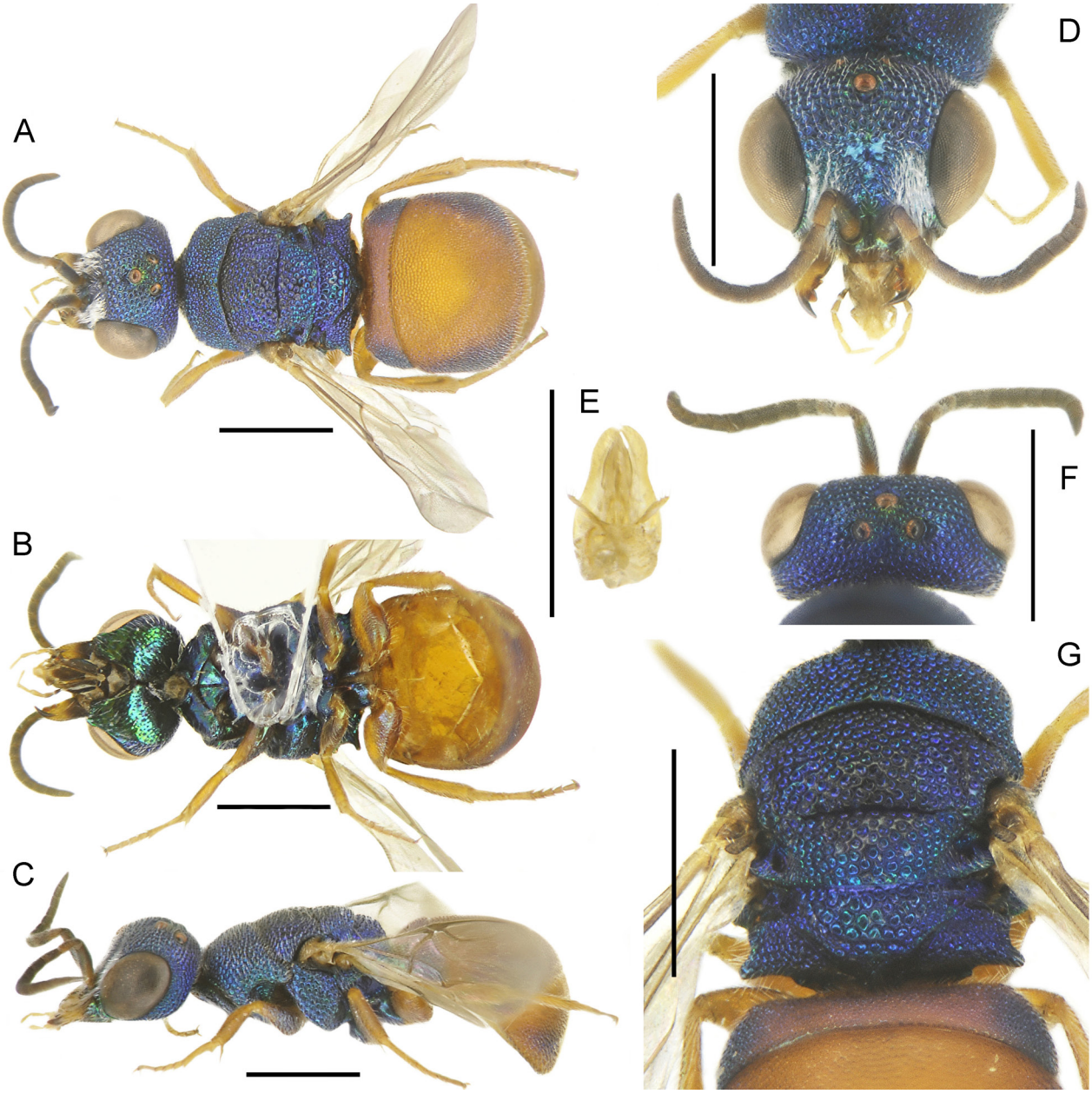


Fig. 2. *Hedychridium zeylanicum* **sp. nov.**, male, holotype. **A**, habitus, dorsal view; **B**, habitus, ventral view; **C**, habitus, lateral view; **D**, head, frontal view; **E**, genital capsule; **F**, head, dorsal view; **G**, mesosoma, dorsal view. Scale bars: 1.0 mm.

of P:F1:F2:F3 = 1.0:1.0:0.8:0.7; OOL = 2.1 MOD; POL = 1.4 MOD; MS = 0.3 MOD; subantennal space = 0.8 MOD.

Mesosoma. Pronotum 1.5 times as long as mesoscutellum; punctation dense, with small, even punctures and even interspaces (Figs. 2A, G); mesoscutum with dense punctation, with punctures of larger diameter at base; notauli like lines between punctures, hardly visible; parapsidal lines like impunctate lines, more visible than notauli; mesoscutellum with dense punctures similar to those at base of mesoscutum, with polished interspaces medially; metascutellum with a row of elongate, large punctures along meso-metascutellar suture, with large, irregular punctures on remaining part of scutellum; mesopleuron densely punctate, without clearly defined sulci; posterior propodeal projections

digitate, blunt at apex and directed outward (Fig. 2G); fore femur carinate ventrally; inner surface of hind tibia with deep, elongate pit, as long as two-fifth of tibia length; hind tarsomere II slightly thicker and shorter than tarsomere III (Fig. 2A).

Metasoma. Metasoma with peculiar punctation, with small, dense punctures, without interspaces (Fig. 2A); sternum II with scattered punctures bearing long setae; genital capsule unusually pale (as in *Colpopyga* Semenov-Tian-Shanskij, 1954) and differently shaped compared to Palaearctic members of the same species group, with gonocoxae curved at apex (Fig. 2E).

Colouration. Head and mesosoma metallic deep blue; legs distal to coxae largely non-metallic yellow, with weak opalescent reflections on femora only (Fig. 2B); terga I–III metallic blue to violet at sides, non-metallic yellow medially; pedicel light brown, contrasting with blue metallic scape and dark brown flagellomeres; tegula brown; fore wing slightly hyaline.

Female. Unknown.

Comparative remarks. *Hedychridium zeylanicum* **sp. nov.** belongs to the *H. roseum* group. It is the first record of this species group from the Oriental Region. This species can be easily separated from all the other known Indian and Sri Lankan species (see keys and descriptions in Strumia, 1994, 1999) by the diagnostic features of the species group: head and mesosoma uniformly metallic blue, metasoma flesh coloured; hind leg with tarsomere II thicker and slightly shorter than tarsomere III; punctation on mesosoma dorsally deep and dense; tibiae largely non-metallic; profemora ventrally carinate; punctation on metasoma distinctly smaller and dense; vestiture short and whitish. The new species can be distinguished from all Palaearctic species of the *H. roseum* group by dense punctuation of the body, mandibles falcate distally, antennae with an elongate pedicel, blunt and digitate posterior propodeal angles, and the unusually pale and differently shaped genital capsule.

Etymology. The adjective *zeylanicum*, which is sometimes used in the nomenclature, is a Latinised derivative of "Zeylan", the Dutch spelling of "Ceylon", an old name for Sri Lanka.

Distribution. Sri Lanka.

Genus ***Hedychrum*** Latreille, 1802

Hedychrum striatum Mocsáry, 1911

Hedychrum striatum Mocsáry, 1911: 457.

Type material examined. Holotype, female, **Malaysia**, "*Malacca*", *Perak* (HNHM).

Additional material. **India**, *Arunachal Pradesh*, vicinity of Durang, 1800 ± 100m, 27°21′N 92°13′E, 8–22.V.2006, P. Pacholátko leg., 1 female (MHC).

Distribution. *India (Arunachal Pradesh); Malaysia (Kimsey & Bohart 1991).

Genus ***Holophris*** Mocsáry, 1890

Holophris marginella (Mocsáry, 1890)

Ellampus (*Holophris*) *marginellus* Mocsáry, 1890: 51.

Holotype (not examined). Female, **Indonesia**, **Sumatra** [lost].

Material examined. **India**, *Uttarakhand*, 20 km NE of Rishikesh, Ganga River valley, vicinity of Kaudiyala, ca. 500 m, 25–27.VII.2003, Z. Kejval & M. Trýzna leg., 1 female (MHC).

Distribution. *India (Uttarakhand); China (Yunnan, Hainan), Indonesia (Sumatra) (Mocsáry, 1890), Malaysia, Philippines, Vietnam (Mocsáry, 1913; Baltazar, 1966; Kimsey & Bohart, 1991), Thailand (Rosa et al., 2016b).

Remarks. *Holophris marginella* is a variable species (Rosa et al., 2016b), and some cryptic species can be hidden under this name (see Nguyen & Wiśniowski, 2021).

Genus ***Omalus*** Panzer, 1801

Omalus aeneus (Fabricius, 1787)

Chrysis aenea Fabricius, 1787: 284.

Type material examined. Holotype, female, **Germany**, Halle (ZMUC).

Additional material. **India**, *Uttarakhand*, 30 km N of Bageshwar, vicinity of Khati Vill., 2100–2300 m, 27–30.VI.2003, Kejval & Trýzna leg., 1 female (PRC).

Distribution. *India (Uttarakhand); China (Inner Mongolia, Taiwan), Japan. Widespread in the Holarctic and Oriental Regions (Kimsey & Bohart, 1991; Rosa et al., 2014).

Remarks. The specimen examined shows some unusual features, in particular shallow punctation and a deep apical notch medially on the tergum III.

Tribe **Chrysidini**

Genus ***Chrysis*** Linnaeus, 1761

***Chrysis decorosa* sp. nov.**
(Figs 3A–F, 12A)

Holotype. Female, **India**, *Rajasthan*, NW of Dungarpur, 23°52′N 73°41′E, ca. 250 m, along river, 1–2. VII.2006, Z. Kejval leg. (MSNM).

Diagnosis. *Chrysis decorosa* **sp. nov.** can be recognised by elongated malar spaces (3.0 MOD); transverse frontal carina faint, with prominent brow; scapal basin polished, with two longitudinal stripes of aligned small punctures; short OOL (1.0 MOD); mesoscutum elongate, twice as long as mesoscutellum; mid- and posterior tarsi yellowish to whitish basally and darker distally.

Description. *Female* (holotype). Body length 8.0 mm.

Head. Scapal basin largely polished, with two longitudinal rows of small dots (Fig. 3C); transverse frontal carina faint, but with prominent brow; anterior margin of clypeus slightly incurved, with thickened brown border (1.0 MOD); malar spaces elongate and thickened, seen in lateral view; genal carina weak; frons with large, round punctures, ocellar area and temples with smaller punctures; malar spaces with relatively large and dense punctures; posterior ocelli close to eyes, at a distance of 1.0 MOD to eye margin; mandible with an inner tooth, unusually light brown to yellowish. Relative length of P:F1:F2:F3 = 1.0:1.2:0.8:0.8; OOL = 1.0 MOD; POL = 2.7 MOD; MS = 3.0 MOD; subantennal space = 1.3 MOD.

Mesosoma. Pronotum elongate, longitudinally longer than mesoscutellum (Fig. 3A); anteromedian pronotal line deep, broad and reaching two-thirds of pronotum length; pronotal anterior angles produced, and pronotum sinuous laterally, without pronotal sublateral carina; punctation sparse, with large (1.0–2.0 PD), corrugated interspaces and relatively small and shallow punctures; mesoscutum distinctly elongate, twice as long as mesoscutellum (Fig. 3A); median area basally with large, contiguous punctures; lateral areas of mesoscutum with sparse and relatively small punctures, with tiny dots on interspaces; interspaces with transversal wrinkles close to notauli; notauli like subsquare pits decreasing from base to anterior margin of mesoscutum; mesoscutellum with relatively small, sparse punctures, with interspaces polished medially and longitudinally wrinkled laterally; meso-metascutellar suture deep and wider than mesoscutellar punctures, widened anteromedially; metascutellum with relatively small and round punctures; mesopleuron with distinct episternal sulcus formed by large foveae; scrobal sulcus complete, but hardly visible in lateral view (Fig. 3B) because located on ventral margin of pleuron, well visible in lateroventral view; mesepisternum with double punctures, and mesepimeron with small punctures only; posterior propodeal projections slightly divergent, with basal margin concave (Fig. 3A); radial sector of fore wing almost complete, distant from wing margin by value of 1.0 MOD.

Metasoma. Metasomal terga with larger punctures medially, decreasing in diameter at sides (Fig. 3E); punctures on terga widely spaced (1.0–2.0 PD) and interspaces densely micropunctate medially; pits of pit row on tergum III deep, large, reduced in number (Fig. 3E); apex of tergum III with four large and triangular teeth (Fig. 3E); interval between median teeth deeper and wider than interval between median and lateral ones; black spots on sternum II medium-sized, elongate, oblong, partially connected to lateroterga, largely separated medially (Fig. 3F).

Colouration. Head and mesosoma metallic green, with golden-red reflections on clypeus, anterior margin of pronotum and lateral areas of mesoscutum; blue on ocellar area and median area of mesoscutum; metasomal tergum I golden to red, with a median blue spot; terga II and III red laterally and posteriorly, with a large blue area anteromedially; scape green; pedicel and flagellum brown; tegula brown, with slight green metallic reflection; legs green, with yellowish mid- and hind tarsi, darker distally; fore wing slightly hyaline.

Male. Unknown.

Comparative remarks. *Chrysis decorosa* **sp. nov.** belongs to the *Ch. maindroni* group according to the diagnosis given by Kimsey & Bohart (1991). This group was considered so far endemic to the Afrotropical fauna (Madl & Rosa, 2012). The new species can be easily separated from *Ch. decorata* Mocsáry, 1889 by the polished scapal basin with two rows of small dots (*vs.* fully punctate)

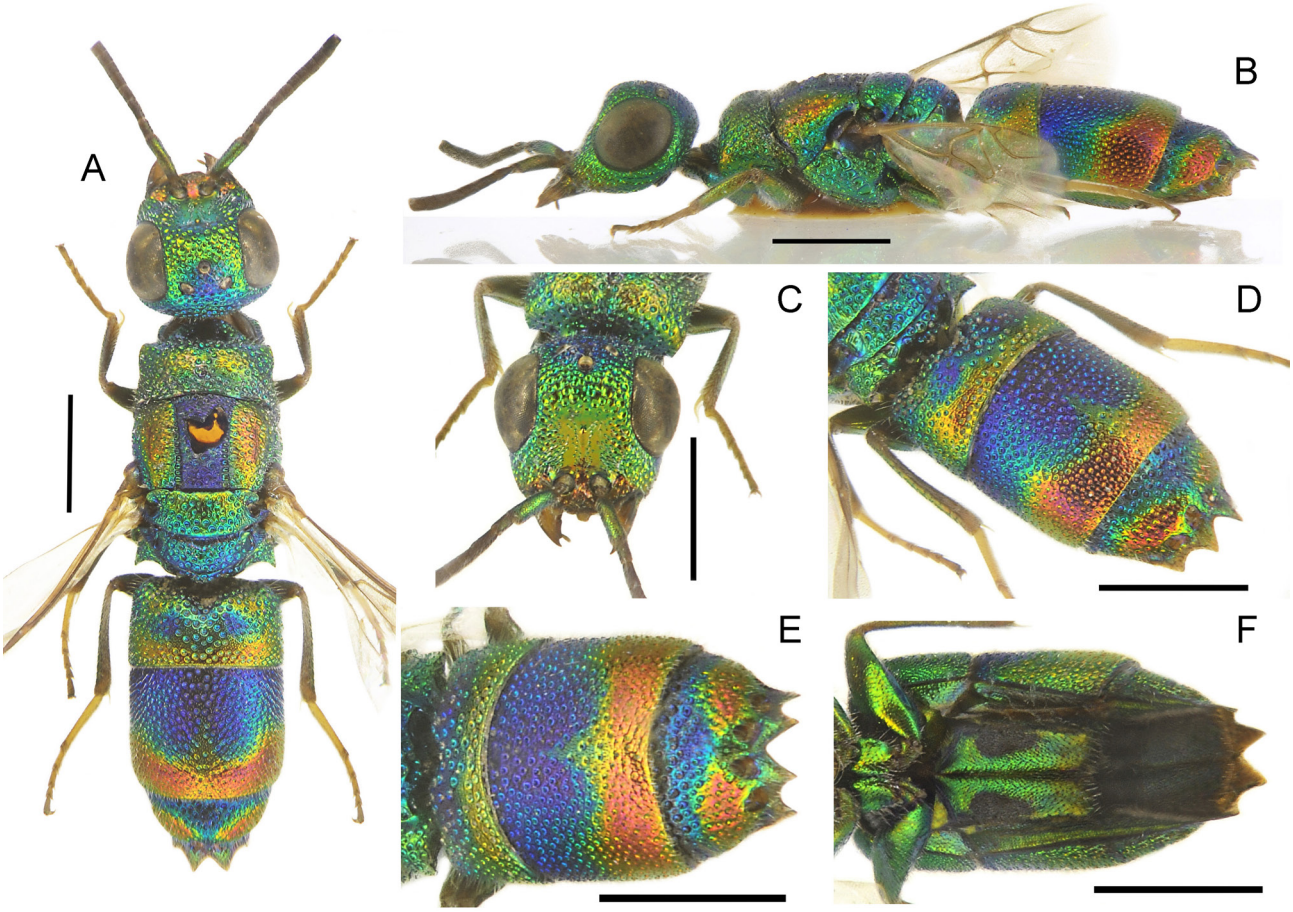


Fig. 3. *Chrysis decorosa* **sp. nov.**, female, holotype. **A**, habitus, dorsal view; **B**, habitus, lateral view; **C**, head, frontal view; **D**, metasoma, dorsal view; **E**, metasoma, dorsoposterior view; **F**, metasoma, ventral view. Scale bars: 1.0 mm.

and by F1 dark brown (*vs.* blue metallic). However, the strong similarity between these two species casts some doubts on the real type locality of *Ch. decorata*. This species was originally labelled as "Africa ?" (see images of the type in Rosa et al., 2020) and was later considered doubtfully as a Palaearctic species by Kimsey & Bohart (1991) without any explanation, and as an Afrotropical species by Madl & Rosa (2012), because members of the *Ch. maindroni* group were known for the Afrotropical fauna only. *Ch. decorata* may have accidentally been introduced in Africa by commerce, but originated from South Asia.

Etymology. The specific epithet *decorosa* is the Latin adjective meaning "elegant, beautiful, graceful"; it refers to the fair colour of this species and to its closeness to a member of the same species group, *Chrysis decorata*.

Distribution. India (Rajasthan).

Chrysis glauca sp. nov.

(Figs 4A–G, 12D)

Holotype. Male, **India**, *Karnataka*, 40 km SW of Shimoga, 600 m, 13°36.74′N 75°07.98E, 10.V.2005, M. Halada leg. (MSNM).

Paratypes. 2 males, same data and locality as for holotype (MHC, PRC).

Diagnosis. *Chrysis glauca* **sp. nov.** can be recognised by bluish-green colour; F2 shorter than pedicel, F1 and F3; basal margin of tergum I with two distinct anteromedian humps before anterior declivity; genital capsule with truncate apex of gonocoxa; face almost flat, without distinct prominent brow; meso-metascutellar suture formed by longitudinally elongate foveae; apical margin of tergum III with four short aligned teeth.

Description. *Male* (holotype). Body length 5.7 mm.

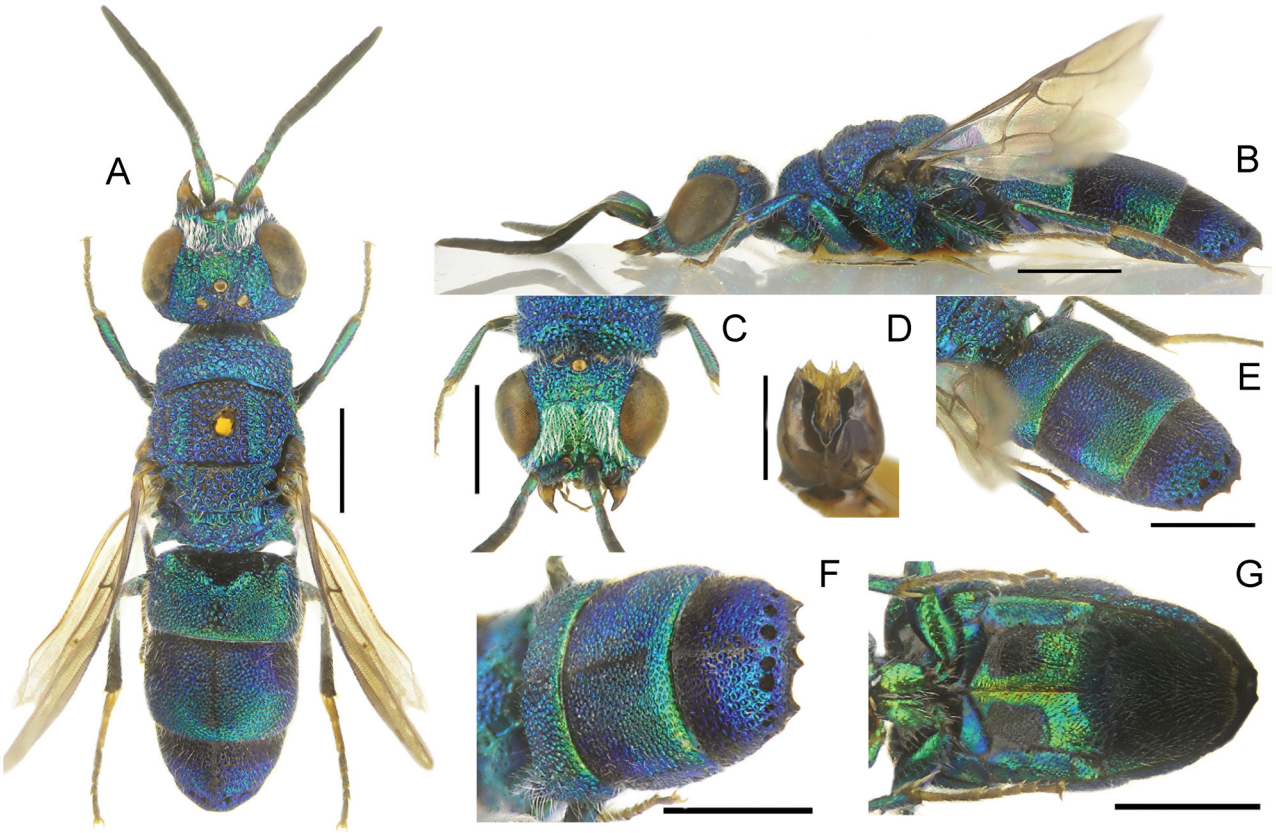


Fig. 4. *Chrysis glauca* **sp. nov.**, male, holotype. **A**, habitus, dorsal view; **B**, habitus, lateral view; **C**, head, frontal view. **D**, genital capsule; **E**, metasoma, dorsal view; **F**, metasoma, posterior view; **G**, metasoma, ventral view. Scale bars: 1.0 mm (A–C, E–G) and 0.5 mm (D).

Head. Face almost flat, without distinct prominent brow (Fig. 4C); transverse frontal carina weak, scarcely visible, with two weak lateral branches extending to anterior ocellus; scapal basin fully and densely micropunctate, covered with adpressed silvery pubescence; anterior margin of clypeus slightly incurved, with thin, brown border; malar spaces convergent; head dorsally with large, round and contiguous punctures, without polished interspaces, with smaller punctures on ocellar area, genal carina completely distinct, from temple to mandible; mandible unidentate, distinctly light brown medially; F2 shorter than pedicel, F1 and F3. Relative length of P:F1:F2:F3 = 1.0:1.1:0.7:0.9; OOL = 2.0 MOD; POL = 2.2 MOD; MS = 1.0 MOD; subantennal space = 0.6 MOD.

Mesosoma. Anteromedian pronotal line broad, reaching half of pronotum length; pronotum without sublateral carina; punctation dense, with large, deep, irregular punctures contiguous to confluent, without polished interspaces (Fig. 4A); median area of mesoscutum with large, irregular punctures separated by narrow polished interspaces; lateral areas of mesoscutum with slightly smaller and sparser punctures, micropunctate on interspaces; notauli formed by large subsquare pits decreasing towards anterior margin, being here smaller than adjacent mesoscutal punctures; mesoscutellum with anteromedian polished and micropunctate area, with large punctures medially; meso-metascutellar suture deep, formed by longitudinally elongate foveae; metascutellum with large, irregular and contiguous punctures; mesopleuron with distinct episternal and scrobal sulci formed by large foveae (Fig. 4B); posterior propodeal projections slightly divergent, with basal margin concave; fore wing with complete radial sector and closed radial cell.

Metasoma. Basal margin of tergum I with two distinct anteromedian humps (Fig. 4A, 4F); terga I–III with a median blackish, micropunctate, longitudinal stripe; metasomal punctation double, dense; tergum III with punctures larger than those on tergum II (Fig. 4F); pits of pit row large, deep and rounded; apex of tergum III with four short teeth; interval between median teeth narrower than intervals between median and lateral tooth (Fig. 4F); black spots on sternum II relatively small and subrectangular, connected to lateroterga and largely separated medially (Fig. 4G); genital capsule with apex of gonocoxa obliquely truncate (Fig. 4D).

Colouration. Body colour blue with green effulgence, with black interspaces on: ocellar area, median area of mesoscutum, longitudinal metasomal stripe, tergum II anterobasally and tergum III basally; scape, pedicel and F1 green, rest of flagellum black; tegula slightly metallic; legs blue to green, with tarsi brownish; hind basitarsus light brown; fore wing slightly infuscate.

Female. Unknown.

Comparative remarks. Chrysis glauca **sp. nov.** belongs to the *Ch. succincta* group based on the habitus, the shape of metasomal tergum III and internalised segments (Fig. 12D), which are similar to those of other males examined in this group (Rosa, unpubl. data). This species shows some unusual diagnostic features, such as the face without distinct prominent brow; deep and enlarged meso-metascutellar suture; tergum I with two distinct anteromedian humps; unique genital capsule with shortened and oblique gonocoxa apices. These morphological characters separate *Ch. glauca* from all the other members of this species group.

Etymology. The specific epithet *glauca* is the Ancient Greek adjective γλαυκός (blue-green or blue-gray) and refers to the body colour pattern.

Distribution. India (Karnataka).

Chrysis goetheana Semenov-Tian-Shanskij, 1967 (Figs 5A–F, 12B)

Chrysis (*Holochrysis*) *goetheana* Semenov-Tian-Shanskij, 1967: 148.

Chrysis goethiana: Kimsey & Bohart 1991: 414 [incorrect subsequent spelling; *Ch. elegans* group].

Chrysis goetheana: Rosa et al., 2017b: 78 [*Ch. maculicornis* group].

Type material examined. Holotype, female, **Turkmenistan**, Imam-Baba (ZIN).

Additional material. **India**, *Tamil Nadu*, 20 km SW of Karamadai, 450 m, 11°12.6′N 76°48.9′E, 27.IV.2005, M. Halada leg., 1 female (MHC).

Distribution. *India (Tamil Nadu); Turkmenistan (Semenov-Tian-Shanskij, 1967).

Remarks. Chrysis goetheana is the first member of the *Ch. pulchella* group recorded in the Oriental Region. It is recognised by the combination of the following characters: malar spaces very short (0.6 MOD) (Fig. 5C); clypeus noticeably incurvate; transverse frontal carina almost faint; postgenal area and temples widen, seen in the lateral view; female face unusually finely punctate and covered with dense, adpressed, silvery pubescence, as in the male; apical margin of the tergum III sinuate medially and with a blunt angle laterally (Fig. 5D, E); pits of pit row of the tergum III deep and longitudinally elongate; black spots on the sternum II small, transverse, trapezoidal, separated by green metallic line medially (Fig. 5F); colour pattern blue, with light blue-green stripes posteriorly on the terga I and II; female internalised segments of typical shape for this species group, with round external membrane (Fig. 12B). The main differences of this species from the other members of the *Ch. pulchella* group are the lateral margins of tergum III without a small tooth (or angle) at or beyond the middle, without a slight concavity before the lateral angle, seen in the lateral view (Fig. 5B); black spots on the sternum II unusually small, transverse, trapezoidal and not covering a large part of the segment, unlike most of the other species (Fig. 5 F).

The particular shape of the tergum III and of black spots on the sternum II deceived Kimsey & Bohart (1991) and Rosa et al. (2017b) who failed to place *Ch. goetheana* in the correct species group. Kimsey & Bohart (1991) included this species in the *Ch. elegans* group, whereas Rosa et al. (2017b), in the *Ch. maculicornis* group. The observation given by Rosa et al. (2017b) on the shortened male F1 and F2 was based on a misidentified specimen. After examination of males and females collected at the same locality ("Komarovskiy [37º45′06″N 58º 32′51″E], Zakaspi[yskaya] obl[ast'], 1928, leg. Gussakowskij") in Turkmenistan (deposited at ZIN), we can state

that the male F1 is longer than F2, as in other species of the *Ch. pulchella* group. After dissection and analysis of the internal terga and sterna (Fig. 12B), we here transfer *Ch. goetheana* to the *Ch. pulchella* group, because the shape of these internalised segments is typical of the members in this group (Rosa, 2005).

Chrysis ionophris Mocsáry, 1893

Chrysis (*Tetrachrysis*) *ionophris* Mocsáry, 1893: 226.

Type material examined. Holotype, female, "Burma" **[Myanmar]** (MSNG).

Additional material. **India**, *Karnataka*, 20 km SE of Sagar, 600 m, 14°06.37′N 75°08.93′E, 12.V.2005, M. Halada leg., 1 female (MHC).

Distribution. India (Arunachal Pradesh, *Karnataka, Kerala, Tamil Nadu); China (Taiwan, Hong Kong), Indonesia (Sumatra), Laos, Myanmar, Thailand (Rosa et al., 2021a).

Chrysis kartikeya **sp. nov.**
(Fig. 6A–F)

Holotype. Female, **India**, *Tamil Nadu*, 15 km SE of Kotagiri, 11°22′N 76°56′E, 17–22.V.1997, Dembický & Pacholátko leg. (MSNM).

Diagnosis. Chrysis kartikeya **sp. nov.** is a large-sized species with blue body colouration, distinguished by: distinct sublateral pronotal carina; lamellate metascutellum; anterior margin of tergum I with two distinct median humps and two deep, rounded lateral impressions; tergum I with dense double punctation contrasting with simple, even punctation of tergum II, without dense micropunctures on interspaces; apical margin of tergum III with eight teeth; pits of pit row small, deep and round; black spots on sternum II unusually small, rounded, largely spaced medially and connected to laterotergum II laterally.

Description. Female (holotype). Body length 9.8 mm.

Head. Scapal basin deep, polished along midline, narrow, bearing longitudinal stripe with sparse, fine, transverse wrinkles, and largely polished below transverse frontal carina; laterally with small, aligned punctures and bearing sparse, long, silvery setae; transverse frontal carina weak medially, with two strong, subparallel branches laterally, almost encircling anterior ocellus; area between transverse frontal carina and anterior ocellus with large, irregular foveate punctures; punctures on vertex dense and deep and smaller on ocellar area; clypeus slightly outcurved; mandible simple, unidentate; setae on vertex erect, darkened, relatively long (1.2–1.5 MOD) (Fig. 6C). Relative length of P:F1:F2:F3 = 1.0:2.3:1.7:1.0; OOL = 2.4 MOD; POL = 2.2 MOD; MS = 1.5 MOD.

Mesosoma. Pronotum distinctly short (Fig. 6A, B), as long as three-quarters of scutellar length medially; sublateral carina completely distinct; anteromedian pronotal line shallow, as long as three-quarters of pronotal length; pronotal punctation double, with dense, contiguous punctures; mesoscutum with larger punctures at base and slightly corrugated interspaces among punctures; notauli deep, like a line of small, round and black pits; parapsidal furrow distinctly visible; mesoscutellum with similar punctation; metascutellum with irregular and deeper punctures, not evidently larger than those on mesoscutellum; metascutellum lamellate, with apex directed upward; mesopleuron with dense, large punctures; episternal sulcus formed by subrectangual foveae and distinct scrobal sulcus, with large, polished, bilobed area ventrally.

Metasoma. Anterior margin of tergum I with two distinct humps and two deep round lateral impressions; punctation of tergum I distinctly double, with dense, small punctures on interspaces, contrasting with punctation on terga II and III, with polished interspaces; terga II and III without distinct median carina; tergum III with slight prepit bulge; pit row with small, deep, isolated, round pits; apical margin of tergum III with eight teeth; interval between median teeth deeply incised, with inner margin close to pit row (Fig. 6D, E); black spots on sternum II small, round, fused to lateroterga and widely spaced medially (Fig. 6F).

Colouration. Body dark blue, with greenish reflections on face and ventral surface; mandibles dark brown; scape and pedicel metallic blue, flagellum black; tegula entirely metallic blue; legs bluish, inner side of hind femur and tarsi dark brown.

Male. Unknown.

Comparative remarks. Chrysis kartikeya **sp. nov.** belongs to the *Ch. decemdentata* group sensu Linsenmaier (1959). The latter (op. cit) included this group in the subgenus *Octochrysis* Mocsáry, 1914. Kimsey & Bohart (1991)

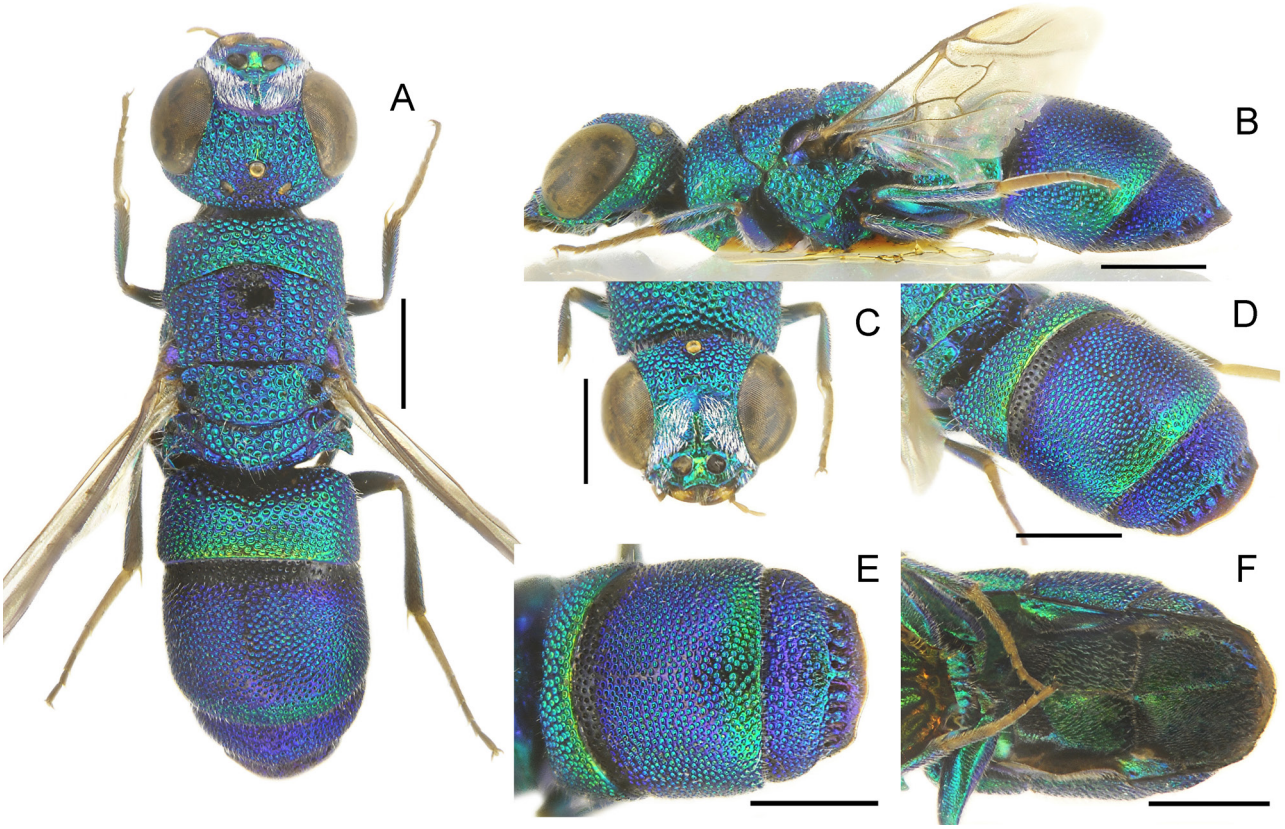


Fig. 5. *Chrysis goetheana* Semenov-Tian-Shanskij, 1967, female from Tamil Nadu. **A**, habitus, dorsal view; **B**, habitus, dorsal view; **C**, head, frontal view; **D**, metasoma, dorsal view; **E**, metasoma, dorsoposterior view; **F**, metasoma, ventral view. Scale bars: 1.0 mm.

synonymised *Octochrysis* with *Chrysis* Linnaeus, 1761 and transferred two members of this group (*Ch. decemdentata* and *Ch. lamellata* Mocsáry, 1914) to the *Ch. smaragdula* group. Nevertheless, the members of this group can be easily separated from all other members of the *Ch. smaragdula* group by the unique structure of the first tergum; completely different shape of black spots on the sternum II [compare Figs 6F and 7F with figures of members of the *Ch. smaragdula* group (e.g. *Ch. baldocki* Rosa, 2021) in Rosa et al. (2021a)]; and different internalised segments (Rosa, unpubl. data). *Chrysis kartikeya* **sp. nov.** is separated from *Ch. lamellata* by eight teeth on the apical margin of tergum III (*vs.* only six) and from *Ch. decemdentata*, by the combination of the following characters: the temples about one-third wider than in *Ch. decemdentata* (clearly visible in the lateral view, compare Figs 6B and 7B); distinctly double punctation of the tergum I, with dense small punctures on interspaces between larger punctures, in contrast with punctation on the terga II and III, with polished interspaces (Fig. 6A, D) (*vs.* punctation on tergum I polished on interspaces or with sparse tiny dots, Fig. 7D, E); mesepisternum larger, with four longitudinal lines of dense punctures (Fig. 6B) (*vs.* mesepisternum shorter and narrow, with three lines of irregular punctures, Fig. 7B); mesepimeron expanded transversally (*vs.* narrower); metapleuron expanded (*vs.* short and narrow); apical teeth on the tergum III with a deeply incised median interval (Fig. 6E) (*vs.* interval as deep as lateral ones, Fig. 7E); black spots on the sternum II round and larger (Fig. 6F) (*vs.* ogival and smaller, Fig. 7F); and the blue body colour (*vs.* green).

Etymology. From Sanskrit कार्त्तिकेय [kārttikeya], the Hindu god of war, brother of Ganesha

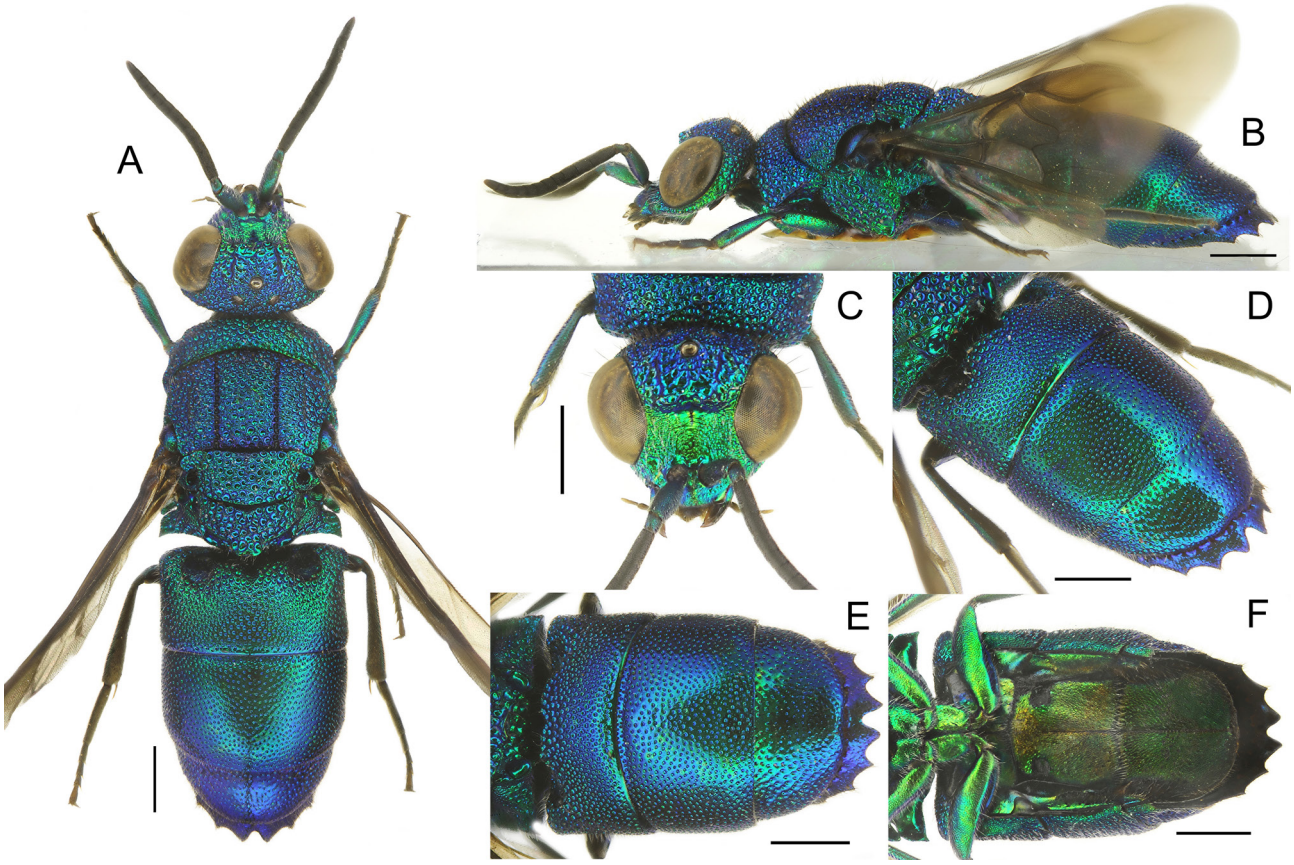


Fig. 6. *Chrysis kartikeya* **sp. nov.**, female, holotype. **A**, habitus, dorsal view; **B**, habitus, lateral view; **C**, head, frontal view; **D**, metasoma, dorsolateral view; **E**, metasoma, dorsal view; **F**, metasoma, ventral view. Scale bars: 1.0 mm.

and an important deity popular in the Tamil communities, in particular in Tamil Nadu, the type locality of this species.

Distribution. India (Tamil Nadu).

Remarks. *Chrysis insperata* Mocsáry, 1914 (a junior primary homonym of *Chrysis insperata* Chevrier, 1870; = *Ch. decemdentata* Linsenmaier, 1959) (Fig. 7) is the type species of the subgenus *Octochrysis* Mocsáry, 1914, by monotypy. It is characterised by eight teeth on the apical margin of tergum III; however, strangely enough, Linsenmaier (1959) replaced this name by *Chrysis decemdentata* and included the latter together with *Ch. lamellata* Mocsáry, 1914 in the new *Ch. decemdentata* species group.

Kimsey & Bohart (1991) defined *Chrysis lamellata* Mocsáry, 1914 as a species with the pronotal sublateral carina and with eight teeth on the apical margin of tergum III. The sublateral carina is present in all species of this group, whereas *Ch. lamellata* (type examined) has only six teeth on the apical margin of tergum III, and for this reason it was described as a member of the subgenus *Hexachrysis* by Mocsáry (1914). The number of apical teeth at the tergum III is not diagnostic for the subgenus *Octochrysis*, while the shape of head, mesopleuron, tergum III, black spots on the sternum II (Figs 6F, 7F) and the shape of internalised segments are considered diagnostic features (Linsenmaier, 1959; Rosa, unpubl. data).

Chrysis oculata Fabricius, 1775

Chrysis oculata Fabricius, 1775: 357.

Type material examined. Holotype, female, **India**, Malabar (ZMUC).

Additional material. **India**: *Tamil Nadu*, 60 km SW of Madurai, 200 m, 09°21.6′N 77°26.6′E, 6.V.2005, M. Halada leg., 1 male (PRC); *Tamil Nadu*, 11 km SE of Kotagiri, ca. 1100 m, 11°24′N 76°56′E, V.2003, Pacholátko leg., 1 female (MHC).

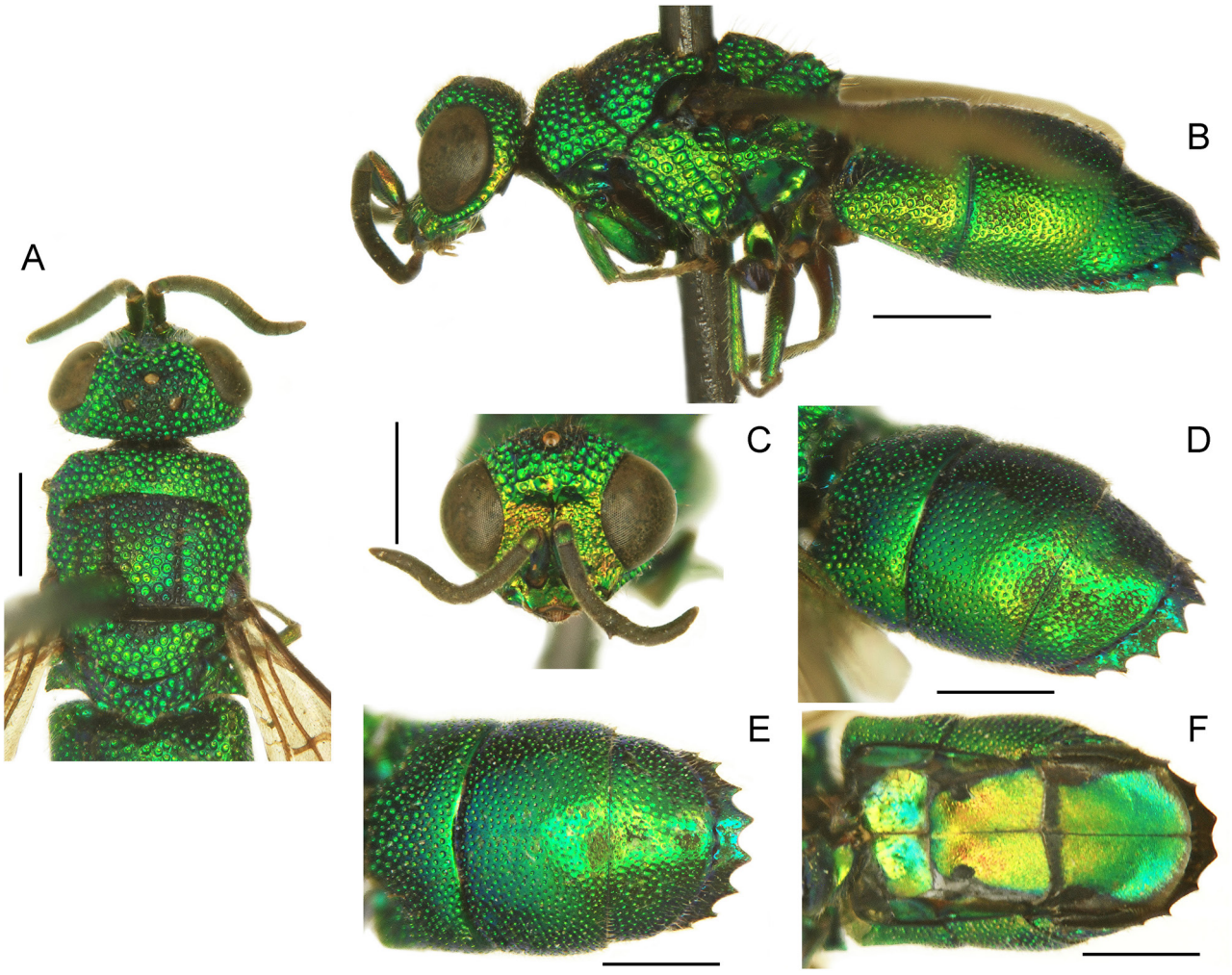


Fig. 7. *Chrysis decemdentata* Linsenmaier, 1959, female from Borneo. **A**, head and mesosoma, dorsal view; **B**, habitus, lateral view; **C**, head, frontal view; **D**, metasoma, dorsolateral view; **E**, metasoma, dorsal view; **F**, metasoma, ventral view. Scale bars: 1.0 mm.

Distribution. India (Bengal [locality not specified], Bihar, Chhattisgarh, Karnataka, Kerala, Maharashtra, Malabar [locality not specified], Puducherry, Sikkim, Tamil Nadu, Uttarakhand, West Bengal); Myanmar, Sri Lanka (Rosa et al., 2021a).

Chrysis schioedtei Dahlbom, 1854

Chrysis schiödtei Dahlbom, 1854: 309.

Type material examined. Holotype, female, **India**, *Tamil Nadu*, Tranquebaria (ZMUC).

Additional material. **India**: *Kerala*, 15 km E of Chalakudy, 50 m, 10°17.9′N 76°24.8′E, 30.IV.2005, M. Halada leg., 1 female (MHC); *Rajasthan*, 15 km N of Udaipur, Eklingji, ca. 700 m, 24°45′N 73°43′E, 7.VII.2006, Z. Kejval leg., 1 female (PRC).

Distribution. India (Assam, Chhattisgarh, Gujarat, Kerala, Maharashtra, Meghalaya, Odisha, *Rajasthan, Sikkim, Tamil Nadu) (Rosa et al., 2021a). Distributed in the Oriental and Australasian Regions (Kimsey & Bohart, 1991).

Chrysis tamerlana Mocsáry, 1912b

Chrysis (*Tetrachrysis*) *Tamerlana* Mocsáry, 1912: 551.

Type material examined. Holotype, male, **India**, *Himachal Pradesh*, Matiana, 8000 ft, Simla Hills (HNHM).

Additional material. **India**, *Uttarakhand*, 30 km NW of Bageshwar, 2400 m, 25–30.VI.2003, Kejval & Trýzna leg., 9 males (MHC, PRC).

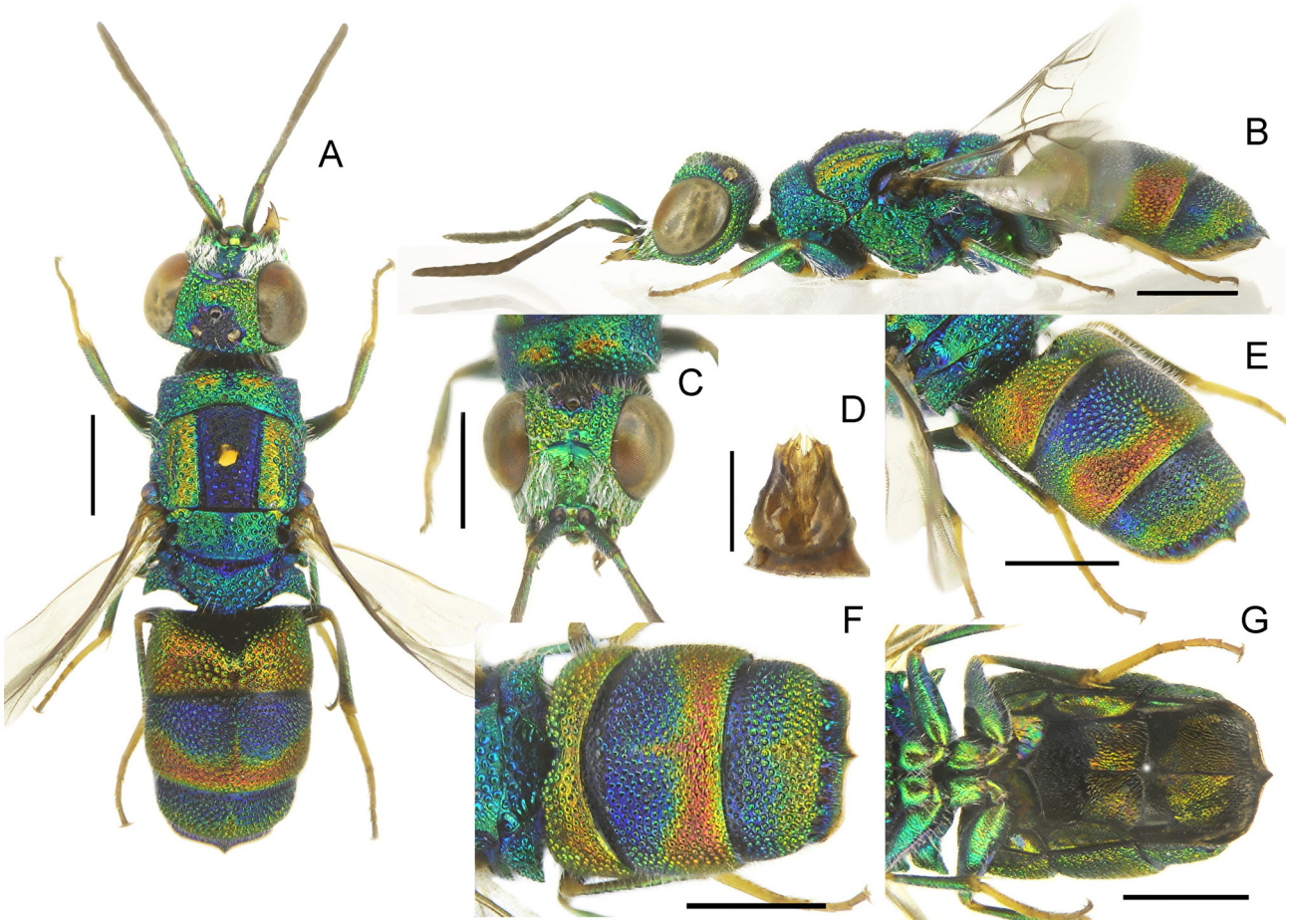


Fig. 8. *Chrysis unidentata* **sp. nov.**, female, holotype. **A**, habitus, dorsal view; **B**, habitus, lateral view; **C**, head, frontal view; **D**, genital capsule; **E**, metasoma, dorsolateral view; **F**, metasoma, dorsoposterior view; **G**, metasoma, ventral view. Scale bars: 1.0 mm (A–C, E–G) and 0.5 mm (D).

Distribution. India (Himachal Pradesh, Jammu and Kashmir, Sikkim, *Uttarakhand, West Bengal) (Rosa et al., 2021a); Nepal (Kimsey & Bohart, 1991).

Chrysis unidentata sp. nov.

(Fig. 8A–G)

Holotype. Male, **India**, *Tamil Nadu*, 60 km SW of Madurai, 200 m, 09°21.6′N 77°26.6′E, 6.V.2005, M. Halada leg. (MSNM).

Paratypes. 2 males, same data and locality as for holotype (MHC, PRC).

Diagnosis. *Chrysis unidentata* **sp. nov.** is a medium-sized species with slender and elongate mesonotum; apical margin of tergum III with a single medial tooth; pits of pit row large, round and deep; sublateral pronotal carina faint; black spots on sternum II unusually large, fused medially and covering anterior half of segment; mesosoma densely micropunctate or corrugated transversally on large interspaces; mandible with subapical tooth; tarsi and joints of femora whitish to yellowish. Body green-blue, pronotum anteriorly and lateral area of mesoscutum with golden reflections, contrasting with deep blue median area of mesoscutum; tergum I golden-red, tergum II with large golden-red stripe posterolaterally, tergum III golden-green before pit row.

Description. *Male*. Body length 6.0 mm.

Head. Scapal basin moderately deep, polished below transverse frontal carina, finely wrinkled medially, with small and aligned punctures between wrinkles laterally, covered by long, silvery and dense setae (Fig. 8C); punctures of vertex

dense and deep, smaller and sparser on ocellar area; transverse frontal carina weak and slightly arcuate; area between transverse frontal carina and anterior ocellus with sparser punctures; clypeus incurvate medially, with brownish margin; mandible with subapical tooth. Setae on vertex erect, white, relatively short (1.0 MOD). Relative length of P:F1:F2:F3 = 1.0:2.0:1.0:0.7; F1 l/w = 4.6; OOL = 1.1 MOD; POL = 1.8 MOD; MS = 1.5 MOD.

Mesosoma. Anteromedian pronotal line shallow, as long as half of pronotal length (Fig. 8A); sublateral pronotal carina faint (Fig. 8B); pronotal punctures even and sparse, interspaces irregularly corrugated transversally; mesoscutum extended longitudinally, about 3.0 times as long as pronotal length (Fig. 8B); punctation similar to that on pronotum, with large (1.0–2.0 PD) and corrugated interspaces; notauli like a line of large, square pits; parapsidal furrows deep; mesoscutellum with sparse punctures (1.0 PD), densely micropunctate; metascutellum with large anteromedian fovea; mesepisternum with large punctures, with micropunctate interspaces; mesepimeron with subbasal alar fovea and small, dense punctures; episternal sulcus with large subrectangular foveae, scrobal sulcus large and deep (Fig. 8B); setae on outer edge of metatibia short, about equal to MOD; fore wing with complete radial sector and closed radial cell.

Metasoma. Metasomal punctuation with even and round punctures, with shallow and tiny punctures on interspaces; terga II and III without distinct median carina (Fig. 8E, F); tergum III without pre-pit bulge; pit row with deep, large and isolated pits; apical margin of tergum III with median spiny tooth, laterally angled (Fig. 8E, F); apical margin bordered by thin, hyaline distal rim; black spots on sternum II large, fused medially and covering anterior half of segment (Fig. 8G); genital capsule as in Fig. 8D.

Colouration. Head metallic green, dark blue to black on ocellar area; mandible mostly yellowish; mesosoma metallic green to blue, with bright golden reflections on pronotum anteriorly and lateral area of mesoscutum, and with golden-green reflections on scutellum; tergum I entirely golden; tergum II golden with large anterior blue spot; tergum III blue with large green band before pit row; scape, pedicel and F1 metallic green, other flagellomeres black; tegula entirely metallic blue; legs greenish, with yellowish joints; tarsi yellowish, brownish distally.

Female. Unknown.

Comparative remarks. Chrysis unidentata **sp. nov.** is characterised by a large number of diagnostic characters that do not fit any of the already known species groups. In particular, the combination of the following features is unique: the elongated mesoscutum (Fig. 8A) (shared with members of the *Ch. maindroni* group); triangular shape of the head in the frontal view (Fig. 8C); weak and arcuate transverse frontal carina bordering the scapal basin; pronotum without lateral carina (Fig. 8B); unidentate apical margin of the tergum III (Fig. 8F); large black spots on the sternum II (Fig. 8G). All these characteristics clearly distinguish *Ch. unidentata* from members of other groups of species, and therefore we establish the *Ch. unidentata* species group here to accommodate this unusual species. We tentatively consider this group to be close to the *Ch. maindroni* group

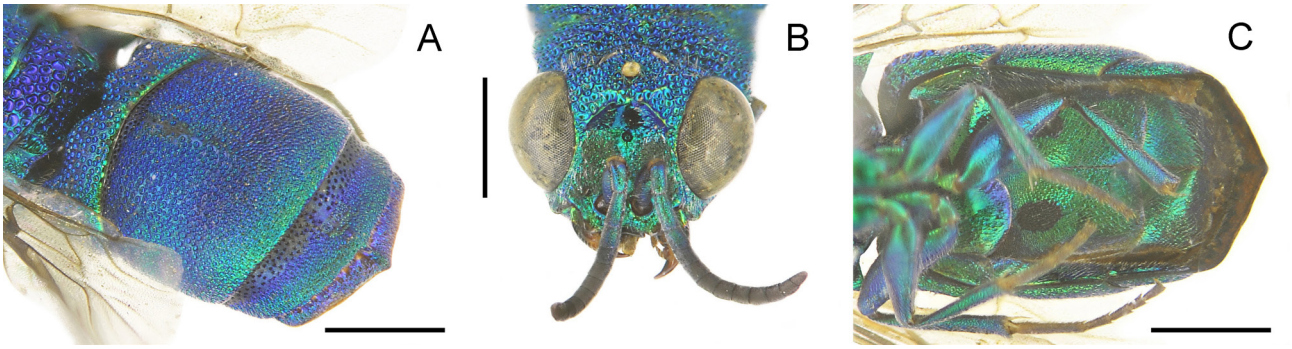


Fig. 9. *Primeuchroeus unidens* (Mocsáry, 1911), female from Australia. **A**, metasoma, dorsoposterior view; **B**, head, frontal view; **C**, metasoma, ventral view. Scale bars: 1.0 mm.

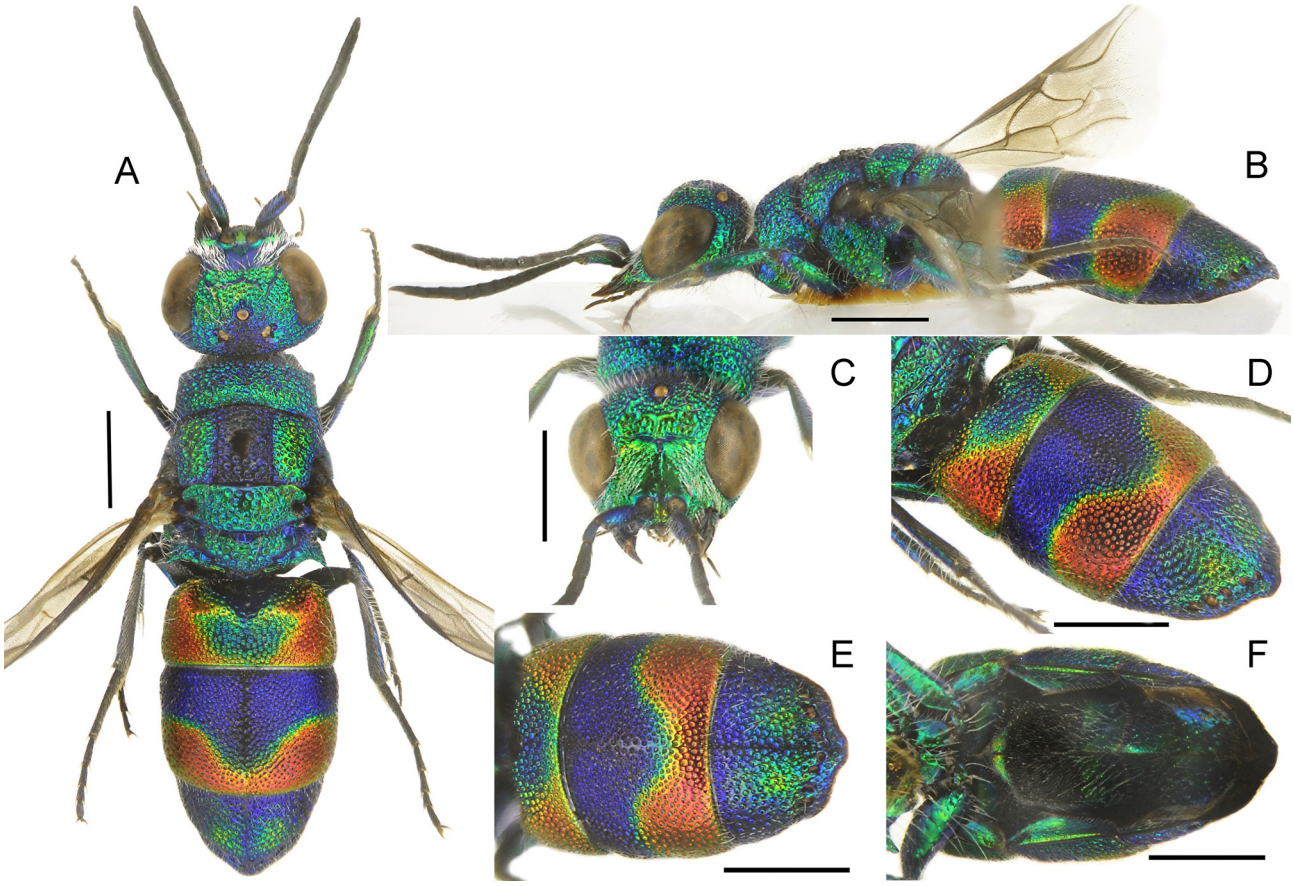


Fig. 10. *Chrysis zdenula* **sp. nov.**, female, holotype. **A**, habitus, dorsal view; **B**, habitus, lateral view; **C**, head, frontal view; **D**, metasoma, dorsolateral view; **E**, metasoma, dorsoposterior view; **F**, metasoma, ventral view. Scale bars: 1.0 mm.

on the basis of the elongate shape of mesoscutum; however, future study, including molecular analyses, may clarify its true generic placement.

Currently, only another Oriental species, *Primeuchroeus unidens* (Mocsáry, 1911), shows a similar apical margin of the mesosoma (Fig. 9). However, despite the striking similarity in the shape of the last tergum (Fig. 9A), *P. unidens* can be distinguished by the mesopleuron without visible episternal and scrobal sulci; very short radial sector of the fore wing; down-curved transverse frontal carina (Fig. 9B); and black spots on the sternum II round and largely separated from each other (Fig. 9C). *Chrysis unidentata* **sp. nov.** cannot be considered a member of the genus *Primeuchroeus* Linsenmaier, 1968 due to the completely visible episternal and scrobal sulci, the complete radial sector of the fore wing, weak transverse frontal carina, and black spots on the sternum II covering half of the segment and fused medially. It cannot be considered neither a member of *Trichrysis* Lichtenstein, 1876 because of the elongate shape of mesoscutum and its unusual punctation, the absence of a sublateral pronotal carina, and the shape of black spots on the sternum II.

Etymology. The specific name derives from the Latin prefix *uni-* (one, uni-) and the Latin adjective *dentatus* (toothed, having teeth) and refers to the single median tooth on the apical margin of tergum III.

Distribution. India (Tamil Nadu).

Chrysis zdenula sp. nov.
(Figs 10A–F, 12C)

Holotype. Female, **India**, *Tamil Nadu*, Pykara, Nilgiri Hills, 11°26.9′N 76°36.9′E, 26.IV.2005, M. Halada leg. (MSNM).

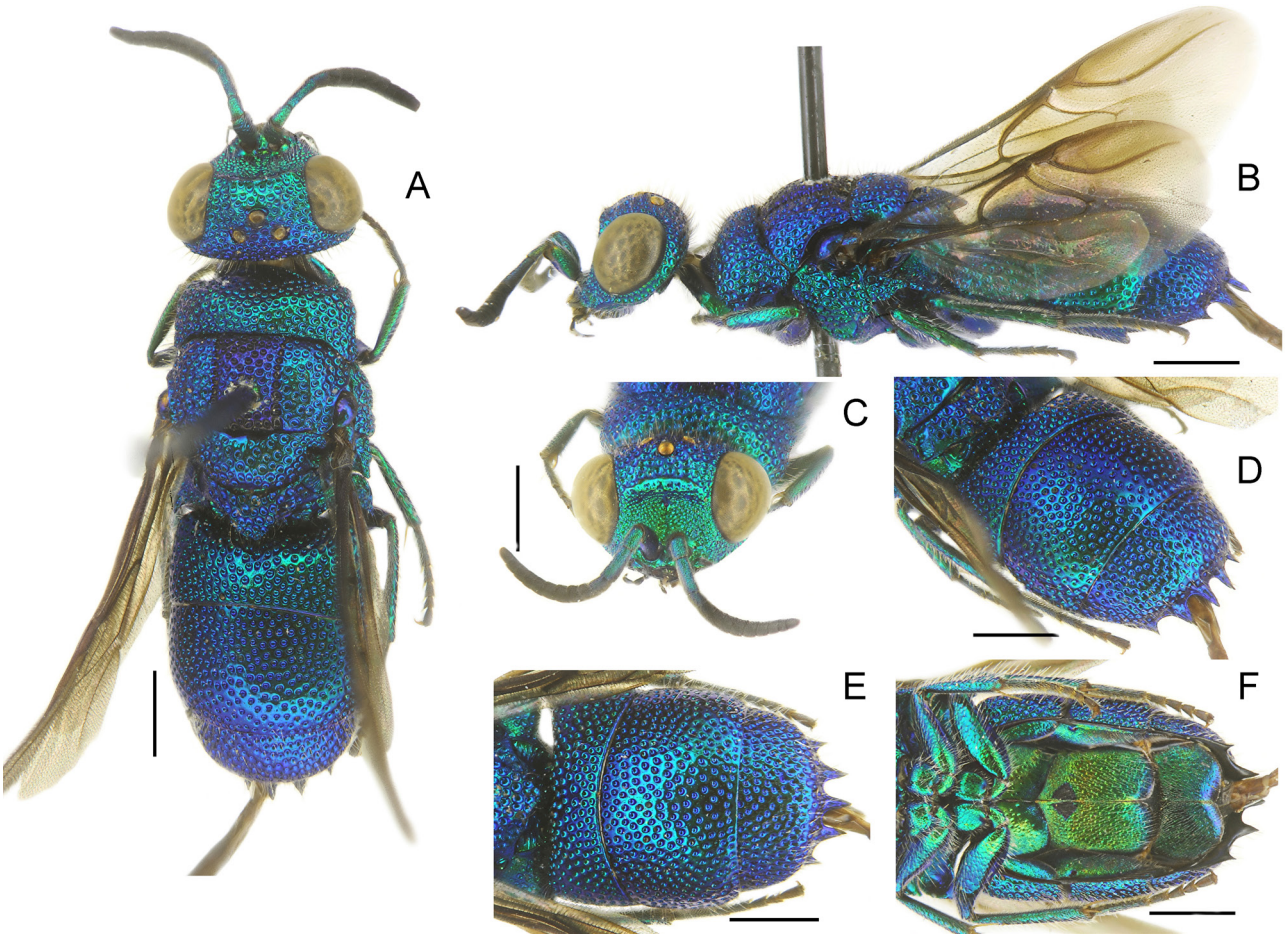


Fig. 11. *Praestochrysis spinula* Bohart, 1987, female from Tamil Nadu. **A**, habitus, dorsal view; **B**, habitus, lateral view; **C**, head, frontal view; **D**, metasoma, dorsolateral view; **E**, metasoma, dorsal view; **F**, metasoma, ventral view. Scale bars: 1.0 mm.

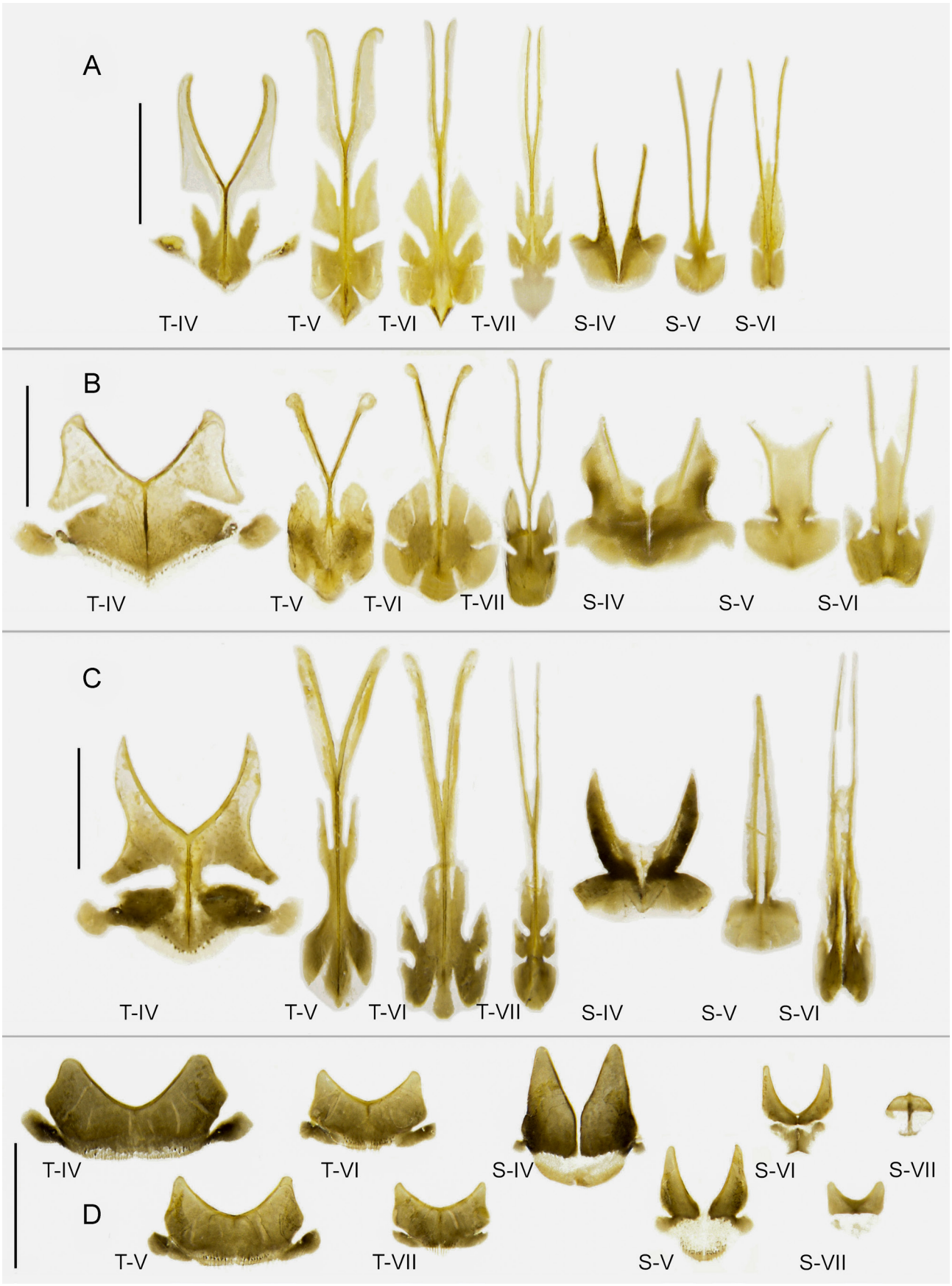
Paratype. 1 female, same data as for holotype (MHC).

Diagnosis. *Chrysis zdenula* **sp. nov.** can be recognised by colour pattern with head and mesosoma metallic green, ocellar area and median area of mesoscutum dark bluish, and metasoma with two large posterolateral red to golden-red stripes on terga I and II; double and raised transverse frontal carina with two distinct transverse branches, one bordering scapal basin and two lateral branches extended backwards to anterior ocellus; apical margin of tergum III edentulous, extended into a blunt tooth apicomedially, or into two almost fused teeth.

Description. *Female* (holotype). Body length 6.6 mm.

Head. Scapal basin polished medially, in particular below transverse frontal carina and triangular area over clypeus, and micropunctate laterally (Fig. 10C); transverse frontal carina double, formed by two transverse branches, one bordering scapal basin and another one on vertex, with two lateral branches extended backwards to anterior ocellus (Fig. 10C); anterior margin of clypeus slightly incurved, with thickened brownish rim; frons with large and coarse punctures between two transverse frontal carinae (Fig. 10C); vertex with double punctures between posterior ocelli and eyes and on temples, with corrugated interspaces; genal carina sharp, distinct from temple to mandible; mandible unidentate. Relative length of P:F1:F2:F3 = 1.0:2.0:1.0:1.0; OOL = 2.2 MOD; POL = 2.7 MOD; MS = 1.3 MOD; subantennal space equal to MOD.

Mesosoma. Pronotum as long as mesoscutellum (Fig. 10B); anteromedian pronotal line weak,


A
T-IV
T-V
T-VI
T-VII
S-IV
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B
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broad and reaching two-thirds of pronotum length; punctation double, coarse along anterior and lateral margins, with narrow polished interspaces; median area of mesoscutum with larger punctures and broader polished interspaces posteriorly; lateral areas of mesoscutum with double punctation and polished interspaces; notauli like a line of small, subrectangular pits, decreasing toward anterior margin of mesoscutum (Fig. 10A); parapsidal furrows visible among punctation; mesoscutellum with larger punctures and with broad, polished interspaces anteromedially; metanotum with large anteromedian fovea on mesoscutal-metascutellar suture, with large polygonal punctures; mesopleuron with wide episternal and scrobal sulci, mesepisternum with double punctures and mesepimeron with small dense punctures (Fig. 10B); posterior propodeal projections shaped like acute angles directed downward, with concave basal margin (Fig. 10A); fore wing with complete radial sector and closed radial cell.

Metasoma. Metasoma evenly punctate (Figs 10D, E); puncture diameter about half to one-third of largest punctures on mesoscutellum; pit row of tergum III deep, with longitudinally elongated large pits (Fig. 10D); apex of tergum III dentate, apicomedially extended into a blunt tooth (Fig. 10E); black spots on sternum II large, basally and medially fused, apically separated by a narrow metallic stripe (Fig. 10F); black spots covering about two-thirds of sternum length.

Colouration. Head and mesosoma metallic green, dark blue on ocellar area and median area of mesoscutum; metasomal tergum I laterally red, with a median green to bluish area; tergum II posterolaterally red to golden-red (in paratype) and with blue anteromedial spot; tergum III blue with median greenish area; scape and pedicel blue; flagellum black (Fig. 10A, B); tegula brown without metallic reflections; legs green to blue, with brown tarsi; fore wing slightly infuscate.

Male. Unknown.

Variability. The paratype shows some variability: the upper and lower transversal frontal carinae connected each other by lateral branches, forming an enclosed area; the median apical tooth of the tergum III slightly bidentate, as in West Palaearctic *Ch. gribodoi* Abeille de Perrin, 1877.

Comparative remarks. *Chrysis zdenula* **sp. nov.** belongs to the *Ch. succincta* group. It is easily separated from all other known species of this group by the shape of frontal carina and the unusual metasomal colouration, combined with edentulous or slightly bidentate apical margin of the tergum III. In India, there is another species, *Ch. jalala* Nurse, 1902, with a similar body colour pattern and the edentulous apical margin of tergum III. Nevertheless, this species belongs to the *Ch. capitalis* group, and the female can be easily distinguished by the fully punctate facial basin, antennae largely yellowish to light brown, and black spots on the sternum II, those being small and separated medially.

Etymology. The specific name *zdenula* is a noun in apposition, derived from the Czech female proper name Zdeňka and the Latin diminutive suffix *-ula*. The description is dedicated to Zdeňka Haladová, the wife of the second author.

Distribution. India (Tamil Nadu).

Genus ***Praestochrysis*** Linsenmaier, 1959

Praestochrysis spinula Bohart, 1987
(Fig. 11A–F)

Praestochrysis spinula Bohart, 1987: 48.

Holotype (not examined). Male, **Sri Lanka** (BME).

Material examined. **India**: *Karnataka*, 40 km SW of Shimoga, 600 m, 13°36.74′N 75°07.98′E, 10.V.2005, M. Halada leg., 1 male (PRC); *Tamil Nadu*, 20 km SW of Karamadai, 450 m, 11°12.6′N 76°44.9′E, 27.IV.2005, M. Halada leg., 1 female (MHC).

Distribution. *India (Karnataka, Tamil Nadu); Sri Lanka (Bohart, 1987), Myanmar (Strumia, 1996).

Remarks. Strumia (1996) described the female.

Fig. 12. Female internalised terga (TIV–TVII) and sterna (SIV–SVI) (**A**–**C**), and male internalised terga (TIV–TVII) and sterna (SIV–SVIII) (**D**). **A**, *Chrysis decorosa* **sp. nov.**, holotype; **B**, *Ch. goetheana* Semenov-Tian-Shanskij, 1967 from Tamil Nadu; **C**, *Ch. zdenula* **sp. nov.**, holotype; **D**, *Chrysis glauca* **sp. nov.**, holotype. Scale bars: 1.0 mm

Genus ***Primeuchroeus*** Linsenmaier, 1968

Primeuchroeus indiacus Bohart, 1988

Primeuchroeus indiacus Bohart, 1988: 26.

Holotype (not examined). Female, **India**, *Uttar Pradesh*, Dehra Dun (USNM).

Material examined. **India**, *Uttarakhand*, vicinity of Nainital, 1900–2100 m, 19–21.VI.2003, Z. Kejval & M. Trýzna leg., 1 female (PRC).

Distribution. India (*Uttarakhand, Uttar Pradesh).

Primeuchroeus malayensis (Linsenmaier, 1982)

Euchroeus (*Primeuchroeus*) *malayensis* Linsenmaier, 1982: 324.

Type material examined. Holotype, female, **Malaysia**, Kedah Peak (NHMUK).

Additional material. **India**: *Maharashtra*, Wai, near river, ca. 700 m, 17°55′N 73°54′E, 5.VI.2006, Z. Kejval leg., 1 female (MHC); *Maharashtra*, ca. 15 km E of Mahabaleshwar, E of Panchgani, near tableland, 17°55′N 73°49′E, ca. 1300 m, 3–6.VI.2006, Z. Kejval leg., 1 female (PRC).

Distribution. *India (Maharashtra); Malaysia ("North Borneo"), Indonesia (Irian Jaya [Papua Province]) (Kimsey & Bohart, 1991).

Genus ***Trichrysis*** Lichtenstein, 1876

Trichrysis triacantha (Mocsáry, 1889)

Chrysis (*Trichrysis*) *triacantha* Mocsáry, 1889: 325.

Type material examined. Syntypes, females, **Indonesia**, **Sumatra** (NHMW).

Additional material. **India**: *Kerala*, E of Kothamangalam, 10°05.1′N 76°39.1′E, 150 m, 1.V.2005, M. Halada leg., 4 females (MHC, PRC); *Kerala*, Thenmala, 8°58.0′N 77°03.5′E, 5.V.2005, M. Halada leg., 1 female (MHC).

Distribution. India (Bihar, *Kerala, West Bengal); China, Indonesia, Myanmar (Rosa et al., 2016a). Widely distributed in the Oriental Region (Kimsey & Bohart, 1991)

Conclusions

The Indian and Sri Lankan fauna of Chrysididae is largely unknown. In this small collection of 65 specimens, most of which occasionally collected during field researches focused on other insects, we have identified 21 Indian species. Five species are new to science, and eight are newly reported for India (Arunachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu, and Uttarakhand States), namely: *Chrysis goetheana* Semenov-Tian-Shanskij, 1967, *Hedychridium mysticum* Semenov-Tian-Shanskij, 1912, *Hedychrum striatum* Mocsáry, 1911, *Holophris marginella* (Mocsáry, 1890), *Isegama aridula* (Krombein, 1980), *Omalus aeneus* (Fabricius, 1787), *Praestochrysis spinula* Bohart, 1988, and *Primeuchroeus malayensis* (Linsenmaier, 1982). New data on distribution in the states of India are provided for: *Chrysis ionophris* Mocsáry, 1893, *Ch. schioedtei* Dahlbom, 1854, *Ch. tamerlana* Mocsáry, 1912, *Hedychridium sikkimium* Strumia, 1999, *Primeuchroeus indiacus* Bohart, 1988, and *Trichrysis triacantha* (Mocsáry, 1889).

Two of the species first recorded for India show an interesting distribution: Turano-Sindian, for *Chrysis goetheana* collected in Central Asia and in southern India (Tamil Nadu), and Irano-Sindian, for *Hedychridium mysticum* previously known only for Iran. The first records of two Palaearctic species groups (*Chrysis pulchella* group and *Hedychridium roseum* group) and one Afrotropical group (*Ch. maindroni* group) in the Oriental Region show the paucity of current knowledge not only about the Indian fauna, but about the Oriental fauna in general, as already noted in Rosa et al. (2016c).

The number of known cuckoo wasp species in the Indian fauna is now increased to 120 species, including 105 species listed in Rosa et al. (2021a), one unidentified species of the genus *Baeosega* (Krombein, 1983), one new species described by Rosa et al. (2021b), eight new records and five new species described in the present paper.

Another new species was collected in Sri Lanka and is reported here because of its biogeographic interest. The Sinhalese fauna is even less known than the Indian one, excluding the subfamilies Amiseginae and Loboscelidiinae. Only about forty species are currently known (Bingham, 1903; Kimsey & Bohart, 1991; Strumia, 1999; Rosa et al., 2021a), half of which belong to the subfamilies Amiseginae and Loboscelidiinae (Krombein, 1980, 1983).

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