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ON THE IDENTITY OF *CHRYSIS COMOTTII* GRIBODO,
C. FEANA MOCSÁRY, *C. FUKAII* ROHWER, AND *C. LEPCHA*
CAMERON, WITH DESCRIPTION OF *C. POGGII* N. SP.
(HYMENOPTERA, CHRYSIDIDAE)

ESTRATTO dagli ANNALI del MUSEO CIVICO di STORIA NATURALE "G. DORIA"
Vol. 116 - 20 OTTOBRE 2023

GENOVA 2023

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INTRODUCTION

A large, outstanding and undescribed Oriental cuckoo wasp, usually identified as *Chrysis comottii* Gribodo, 1884 (repl. name for *C. insularis* Smith, 1859), is found in most European collections, sometimes even in large numbers. During the revision of the Indian Chrysididae (ROSA *et al.* 2021), I noticed that at the Museo Civico di Storia Naturale of Genoa a series of specimens identified by Giovanni Gribodo as *Chrysis comottii* are clearly different from all the other specimens identified as *C. comottii* by the majority of taxonomists, including MOCSÁRY, ZIMMERMANN, LINSENMAIER and KIMSEY & BOHART.

Nevertheless, Gribodo's specimens perfectly match the original description of *Chrysis insularis* provided by SMITH (1859). One of these specimens, collected by Odoardo Beccari at Celebes [currently Sulawesi] in April 1874, bears the handwritten label by Gribodo "*Chrysis insularis* Smith confrontato col tipo" [= *Chrysis insularis* compared with the type] (ROSA *et al.* 2021). In fact, Gribodo received some of Smith's Chrysididae for study and described at least five new species, whose types are preserved at the Natural History Museum in London and at the Museo Civico di Storia Naturale in Genoa (GRIBODO 1879, ROSA 2009). GRIBODO (1884) redescribed *Chrysis insularis* Smith, 1859 and replaced this name, preoccupied by *C. insularis* Guérin-Méneville, 1842, with *Chrysis comottii*, after Captain Giovanni Battista Comotto, who collected this species during a stay in Myanmar.

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Gribodo's Chrysididae collection was acquired by Fabio Invrea and integrated into his collection, which is still separated from the general collection of the Museum in Genoa (ROSA 2009). In Invrea's collection, specimens of *Chrysis comottii* are correctly labelled in the box with other *Hexachrysis*, whereas 17 specimens of the outstanding and undescribed species are separated in a row with a blank identification label. The first specimen bears a handwritten label by Gribodo "*Chrysis foveolata inedita Java D.[Dedit] Ritsema*" and a subsequent label "*Chrysis Comottii* Grib. Det. Gribodo" with Invrea's handwriting, as for the other specimens in the row. *Chrysis foveolata* was never described by Gribodo (ROSA 2009; PENATI & MARIOTTI 2015). At the Royal Museum of Natural Sciences in Brussels there are seven specimens of this outstanding species identified as *Chrysis comottii* by Mocsáry and Zimmermann and one identified by Gribodo as "*Chrysis insularis* Smit. var."

Thanks to the valuable help of James Hogan, curator at Hope Entomological collections in Oxford (UK), I examined the type of *Chrysis insularis* Smith (fig. 1) and I confirm Gribodo's interpretation of the species was correct and the taxon usually identified as *C. comottii* Auctorum belongs to an undescribed species, which is here described with the name *Chrysis poggii* Rosa, n. sp.

In the collections housed at the Museo Civico di Storia Naturale of Genoa the holotype of *Chrysis feana* Mocsáry, 1893 stat. resurr. is also deposited. KIMSEY & BOHART (1991), after type examination, synonymised *Chrysis feana* Mocsáry, 1893, *C. assamensis* Mocsáry, 1913, *C. lepcha* Cameron, 1902 and *C. fukaii* Rohwer, 1911 with *C. parallela* Brullé, 1846. During the revision process of the hexadentate Oriental *Chrysis* I examined Brullé, Cameron, Mocsáry and Rohwer's types, and they clearly represent different distinct species. *Chrysis feana* is closely related to *C. comottii* and may be its undescribed and unknown male; *C. fukaii* Rohwer, 1911 stat. resurr., is related to *C. poggii* n. sp., whereas *C. lepcha* is here synonymised with *C. principalis* Smith, 1874.

The goal of this publication is to provide a contribution to the knowledge of the most speciose species group of *Chrysis* in the Oriental region, which is still poorly studied and in need of revision.

MATERIALS AND METHODS

Specimens were examined and described using a Carton Togonal ZSP stereomicroscope.

Photographs of *Chrysis feana* and *C. parallela* types were taken with a Nikon D80 camera attached to a Carton Togonal microscope, photographs of *C. insularis* type with a Canon EOS 70D camera attached to a LEICA MZ-125 stereomicroscope and photographs of *C. poggii* n. sp. and *C. lepcha* type with a Camera Olympus E-M1 Mark II with the Olympus Zuiko 60mm objective and stacked with the software Helicon Focus (ver. 7.6). Further image processing was completed with Adobe Photoshop CS6 software program.

Morphological terminology follows KIMSEY & BOHART (1991). The abbreviations are as follows: MOD = anterior ocellus diameter; F1, F2, F3, etc. = first, second, third, etc. antennal flagellomeres; MS = malar space, the shortest distance between the base of the mandible and the ventral margin of the eye; OOL = distance between posterior ocellus and inner eye margin; P = Pedicel; POL = the shortest distance between posterior ocelli.

The material examined is deposited in the following institutes: MNHN - Muséum National d'Histoire Naturelle, Paris (France), MSNG - Museo Civico di Storia Naturale "G. Doria", Genova (Italy), NHMW - Naturhistorische Museum, Wien (Austria), NMLU - Natur-Museum Luzern (Switzerland), OUMNH - Oxford University Museum of Natural History (England), RBINS - Royal Belgian Institute of Natural Sciences, Bruxelles (Belgium), RMNH - Naturalis Biodiversity Center, Leiden (The Netherlands), USNM - U.S. National Museum, Washington D.C. (USA), and in the following private collections: GLAC - Gian Luca Agnoli private collection, Bologna (Italy), PRC - Paolo Rosa private collection, Bernareggio (Italy).

TAXONOMIC PART

Chrysis comottii Gribodo, 1884 (figs 1A-1F)

Chrysis insularis Smith, 1859: 26, nec Guérin-Ménéville, 1842. Holotype ♀; Indonesia: Celebes [= Sulawesi] (OUMNH).

Chrysis comottii Gribodo, 1884: 367, replacement name for *Chrysis insularis* Smith, 1859, nec Guérin-Ménéville, 1842.

Chrysis (Hexachrysis) comottii: MOCSÁRY 1889: 560.

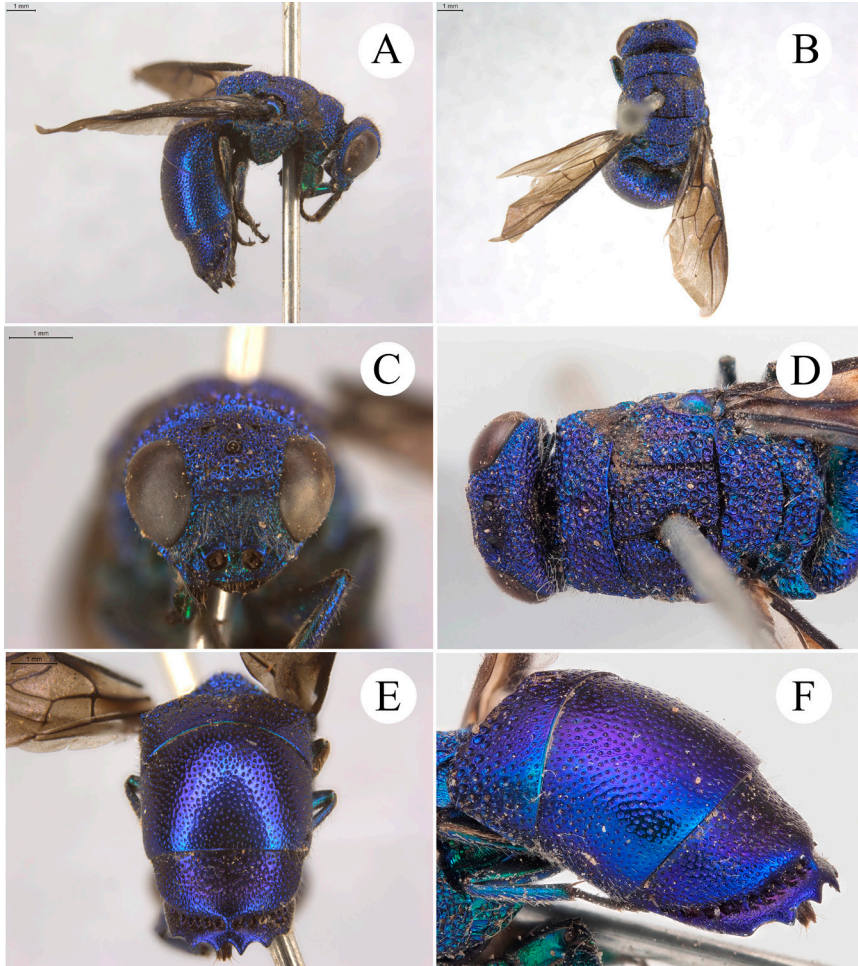


Fig. 1 - *Chrysis insularis* Smith, 1854 (= *Chrysis comottii* Gribodo, 1884), holotype, female. Habitus, lateral view (A); habitus, dorsal view (B); Head frontal view (C); Mesosoma, dorsal view (D); Metasoma, dorsal view (E); Metasoma, dorso-lateral view (F).

M a t e r i a l e x a m i n e d . Indonesia: Aru: 3 ♀♀, Rosenberg Ins. Aru, ex Coll. Gribodo Is. Aru (MSNG). Bali: 2 ♀♀, Coll. Gribodo Bali, ex Coll. Gribodo I. Bali, *C. Comottii* Grib. Determ. F. Invrea (MSNG). Java: 1 ♀, Coll. Gribodo Giava, ex Coll. Gribodo Giava, *C. Comottii* Grib. Determ. F. Invrea (MSNG); 1 ♀, ex Coll. Gribodo Indie orient., Coll. Guérin, *Chrysis Comottii* Grb. Det. Gribodo (MSNG). Sulawesi: 1 ♀, Mak [= Makassar], *Chrysis insularis* Smith, type (HECO); 1 ♀, Celebes Kandari aprile 1874 O. Beccari, ex Coll. Gribodo Celebes Kandari IV.[18]74 O. Beccari, *C. insularis* Smith confrontato col tipo, *Chrysis comottii* Grib. Det. Gribodo (MSNG); 6 ♀♀, ex Coll. Gribodo, Celebes Macassar, Coll. Gribodo Macassar, *C. Comottii* Grb Determ. F. Invrea (MSNG).

D i s t r i b u t i o n . India (Tamil Nadu; Puducherry; West Bengal), Indonesia: Aru, Bali, Java, Sulawesi (KIMSEY & BOHART 1991; ROSA *et al.* 2021) (fig. 8).

R e m a r k s . GRIBODO (1884) replaced the preoccupied name *Chrysis insularis* Smith, 1859 (nec *C. insularis* Guérin-Ménéville, 1842) with *Chrysis comottii*. In all examined European collections this name was incorrectly applied to *Chrysis poggii* n. sp. specimens, probably because the latter is a large, blue and hexadentate species, apparently very common, collected in the same type locality of *C. insularis* Smith. These two species can immediately be separated by the different mesoscutal punctation, dense in *C. comottii* (fig. 1B, see also fig. 28A in ROSA *et al.* 2021) and sparse in *C. poggii* (fig. 6C).

KIMSEY & BOHART (1991) synonymised *Chrysis assamensis* Mocsáry, 1913 with *C. parallela* Brullé, 1846. ROSA *et al.* (2021) synonymised *C. assamensis* with *C. rani* Mocsáry, 1913 for the dense punctation on mesoscutum, however, it also shares some similarities with *C. comottii*. Considering that the type of *C. assamensis* is an aberrant specimen, its real placement may remain unclear and, considering the complicated taxonomic history of the species included in this group, more Indian specimens are needed to investigate the relationships between these species.

***Chrysis feana* Mocsáry, 1893 stat. resurr. (figs 2A-2F)**

Chrysis (*Hexachrysis*) *feana* Mocsáry, 1893: 235. Holotype ♂: Birmania Indiae orientalis, British Burma: Schwegoo [= Schwegu, Myanmar], leg. Leonardo Fea (MSNG); BISCHOFF 1913: 65 (catalog).

Chrysis feana: KIMSEY & BOHART 1991: 447, synonymised with *Chrysis parallela* Brullé, 1846.

M a t e r i a l e x a m i n e d . Myanmar: Birmania, Schwego Myo, Fea X 1885; *Chr. feana* ♂ Mocs.; *C. Feana*, Mocs., ex. tip.; TYPUS; Museo Civico di Genova; Holotype *Chrysis feana* ♂ Mocsary [red label handwritten by Bohart].

D i s t r i b u t i o n . Myanmar (fig. 8).

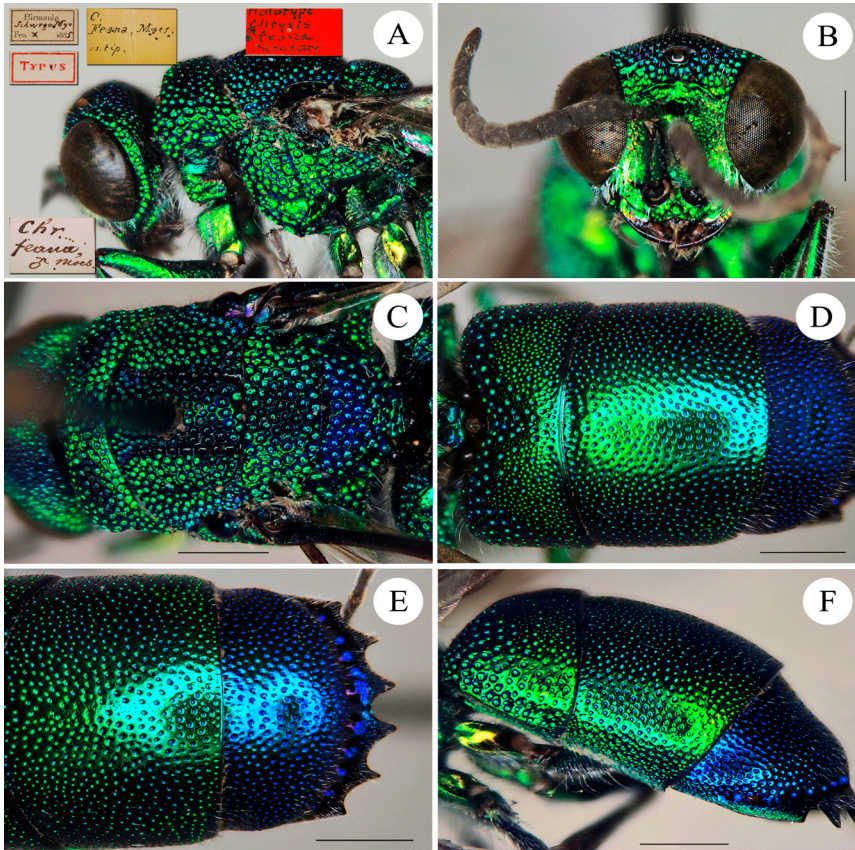


Fig. 2 - *Chrysis feana* Mocsáry, 1893, holotype, male. Head and mesosoma, lateral view (A); head, frontal view (B); mesosoma, dorsal view (C); metasoma, dorsal view (D); second and third metasomal tergum, dorsal view (E); metasoma, lateral view (F). Scale bars 1 mm.

R e m a r k s . MOCSÁRY (1893) described *Chrysis feana* based on a single male which was considered similar to *Chrysis comottii*, yet it has a distinctly different ratio between the first and second flagellomere, with F1 about half long as F2: “*Chrysidii Comottii Grib. (insularis Sm. nec Guér.) similis et affinis; sed antennarum articulo tertio valde brevi, quarto duplo brevior, non vero tertio secundo dimidio longiore, quarto subaequali, iam satis distincta*”.

Chrysis feana was synonymised with *C. parallela* Brullé, 1846 by KIMSEY & BOHART (1991), nevertheless it can be clearly separated by the dense punctation of mesoscutum, its size, and its colouration (fig. 2). I here revalidate the species from the previous synonymy proposed by KIMSEY & BOHART (1991), however *C. feana* could be the undescribed male of *Chrysis comottii*. I wait for the examination of males of *Chrysis comottii* before formalising this synonymy.

***Chrysis fukaii* Rohwer, 1911 stat. resurr.** (figs 3A-3C)

Chrysis fukaii Rohwer, 1911: 478. Holotype ♀: Taiwan: Horisha (Washington) (pictures of the type examined).

Chrysis fukaii: KIMSEY & BOHART 1991: 447. Incorrect subsequent spelling. Synonymised with *Chrysis parallela* Brullé, 1846.

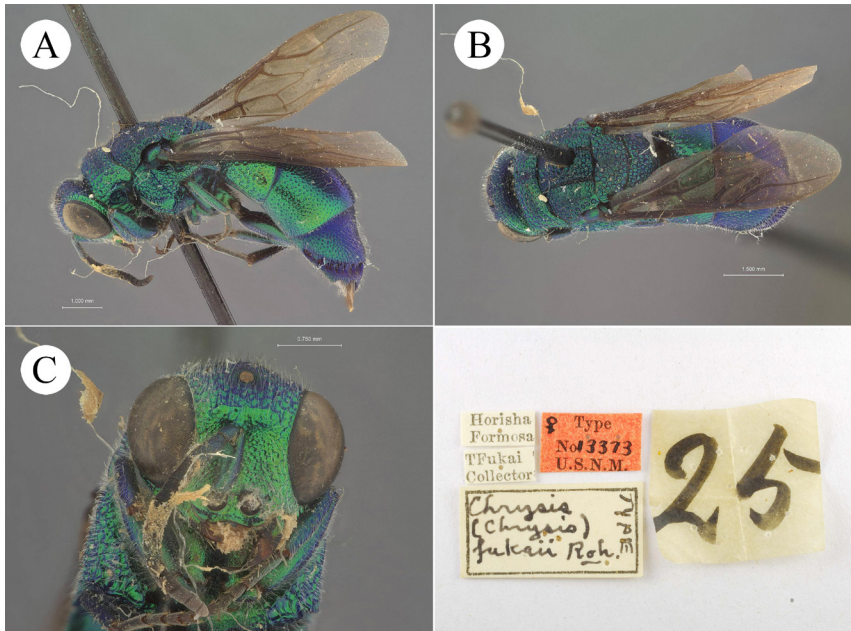


Fig. 3 - *Chrysis fukaii* Rohwer, 1911, holotype, female. Habitus, lateral view (A); Habitus, dorsal view (B); Head, frontal view (C).

M a t e r i a l e x a m i n e d . Taiwan: Horisha Formosa, TFukai Collector, 25, ♀ Type No 13373 U.S.N.M., *Chrysis* (*Chrysis*) *fukaii* Roh. TYPE (USNM).

D i s t r i b u t i o n . Taiwan (fig. 8).

R e m a r k s . KIMSEY & BOHART (1991) synonymised *Chrysis fukaii* with *C. parallela* Brullé, 1846. These two taxa share the sparse mesoscutal punctation, however *Chrysis fukaii* is distinctly smaller, 9 mm (fig. 3A) vs. 12 mm in *C. parallela* (fig. 7A); the sculpture of the head and terga is different, with larger, round punctures on the scapal basin (fig. 3C) vs. smaller and transversally aligned punctures with margins aligned to form a sort of wrinkle sculpture in *C. parallela* (fig. 7B); the first tergum has relatively large punctures only on the anterior margin (fig. 3B) vs. larger punctures all over the first tergum, in particular along the posterior margin in *C. parallela* (fig. 7F); punctation of the second and third tergum dorsally denser (fig. 3A) vs. sparse with large polished intervals in *C. parallela* (fig. 7F).

Chrysis fukaii is more closely related to *C. poggii* n. sp. from which it is separated by the different colouration of head and mesosoma, without the characteristic green olive colour (fig. 3B); the mesosoma is blue with green colour laterally and basally on the pronotum, on the posterior half of the mesoscutum and on the scutellum, where the median area is darker; the punctation on the lateral areas of the mesoscutum is denser; the post pit row area on the third tergum is more elongate (fig. 3A) than in *C. poggii* (figs 3D, 3E) and the teeth on the apical margin are longer.

Based on the differences observed between the type specimens, I resurrect *C. fukaii* from the previous synonymy with *C. parallela* and consider it as a valid species in the *smaragdula* species group. This species is so far known only from the island of Taiwan.

Chrysis lepcha Cameron, 1911 (figs 4A-4F)

Chrysis (*Tetrachrysis*) *lepcha* Cameron, 1902: 206. Holotype ♀: India: Khasia Hills (OUMNH).

Chrysis lepcha: KIMSEY & BOHART 1991: 447. Synonymised with *Chrysis parallela* Brullé, 1846.

Chrysis lepcha n. syn. of *Chrysis principalis* Smith, 1874: present paper.

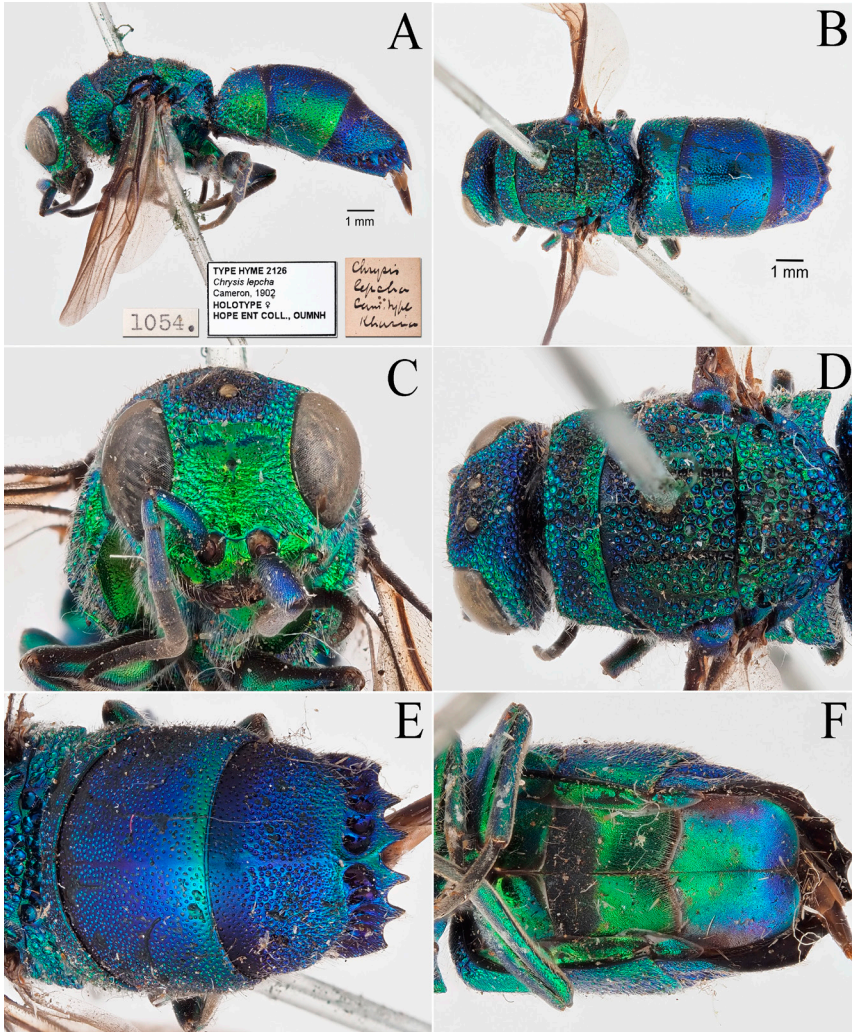


Fig. 4 - *Chrysis lepcha* Cameron, 1902, holotype, female. Habitus, lateral view (A); Habitus, dorsal view (B); Head, frontal view (C); Mesosoma, dorsal view (D); Metasoma, posterior view (E); Metasoma, ventral view (F).

M a t e r i a l e x a m i n e d . India: *Chrysis lepcha* Cam. Type Khasia, 1054, Type HYME 2126 *Chrysis lepcha* Cameron, 1902 HOLOTYPE ♀ HOPE ENT COLL., OUMNH.

D i s t r i b u t i o n . India [Himalayas; Meghalaya; Maharashtra; Bengal (locality not specified)]. China, Myanmar, and Malayan subregion; Korea (ROSA *et al.* 2021).

R e m a r k s . CAMERON (1902) described *Chrysis lepcha* from India, without any comparison with other species, simply reporting “This is considerably larger than any of the other species of this section”. The “section” Cameron refers to is the subgenus *Tetrachrysis* Lichtenstein, 1876, in which he described *C. lepcha*. This erroneous attribution possibly confused other authors, who did not mention this species in following publications. KIMSEY & BOHART (1991) synonymised *Chrysis lepcha* with *C. parallela* Brullé, 1846, after type examination. However, the type is clearly different for the stout and apically right angled posterior propodeal projections, the fine and dense punctation of metasoma, and the large pits of the pit row. All of these characters, including the large size, are typical of *Chrysis principalis* Smith, 1874 (compare plate 53 in ROSA *et al.* 2021). The only difference with the Indian specimen illustrated in ROSA *et al.* (2021) is the shape of the black spots on the second sternum, which are equally large but posteriorly straight and not curved. The black spots of the type of *Chrysis principalis* from China are somehow in the middle, being gently curved. As the shape of the black spots on the second sternum is an important diagnostic character for the identification of the species in this species-group, I wait for the examination of more Indian material before considering *C. lepcha* as a valid species, and temporarily consider it as an aberration of the common and widespread *C. principalis*.

Chrysis p o g g i i n. sp. (figs 5A-B, 6A-F)

zoobank.org:act:517755CB-921D-4B25-AD5A-717E532E68F5

Holotype ♀, Indonesia: Java, M.C. Piepers Java occ., ex Coll. Gribodo Giava (MSNG).

Paratypes (141 specs.): Indonesia:

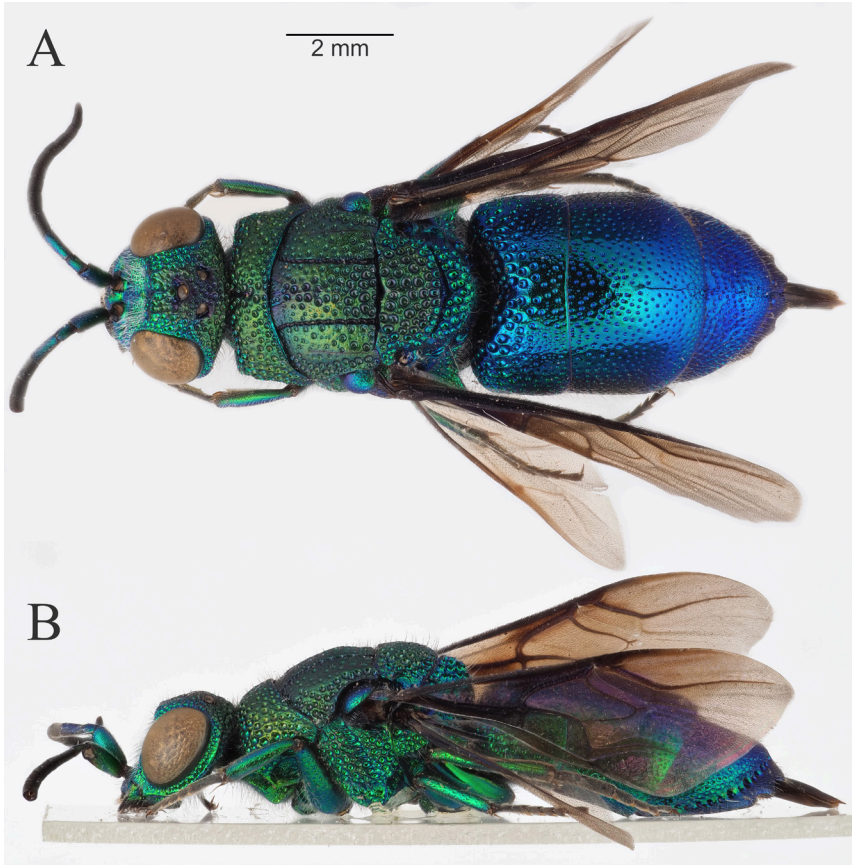


Fig. 5 - *Chrysis poggii* n. sp., paratype from Sumatra (PRC), female. Habitus, dorsal view (A); Habitus, lateral view (B).

Ambon: 1 ♀, Amboine, ex. Coll. Gribodo I. Seram Amboina (MSNG).

Bali: 1 ♀, Bali, Denpasar, iv.1940, leg. W. Spies, (RMNH).

Bawean: 1 ♀, Bawean Is., leg. H. Fruhstorfer (NMLU).

Flores: 1 ♀, Flores Is., Laboean Badjb [?], vi.1937, leg. J.K. de Jong (NMLU); 2 ♀♀, Lesser Sundas, Flores, Ruteng area, Kuwus Mt., 300–800m, x–xii.2006, leg. local collector (GLAC).

Kangean: 1 ♀, Kangean Is., Petapan, iii.1936, [leg.] Walsh (NHMW); 1 ♀, Island of Kangean, Petapan (NHMW).

Java: 1 ♀, 96, ex Coll. Gribodo Giava, *Chrysis foveolata* inedita D.[dedit] Ritsema, *Chrysis Comottii* Grib. Det. Gribodo (MSNG); 1 ♀, Java, ex Coll. Gribodo Giava (MSNG); 1 ♀, Coll. Gribodo Giava D. [Dedit] Mocsary, ex Coll. Gribodo Giava, *Chrysis Comottii* Grib. Det. Gribodo (MSNG); 1 ♀, Coll. Guérin, ex Coll. Gribodo Indie Orient., *Chrysis Comottii* Grib. Det. Gribodo (MSNG); 1 ♀, K.J.v.H. [likely Kollektion Johan Coenrad van Haselt (Doesburg 1797 - Buitenzorg in Java 1823)] Java, ex Coll. Gribodo Giava (MSNG); 1 ♀, Hekmeyer Ardjoeno, ex Coll. Gribodo Giava (MSNG); 1 ♀, v. Lansberg Java, ex Coll. Gribodo Giava (MSNG); 2 ♀♀, Muller Java, ex Coll. Gribodo Giava (MSNG); 1 ♀, de Gaven Batavia, ex Coll. Gribodo Giava (MSNG); 1 ♀, dr. Ploem Java, ex Coll. Gribodo Giava (MSNG); 3 ♀♀, Java, 305-40, *Chrysis comottii* Grib. Det. Mocsary (HMNH); 4 ♀♀, Java, [leg.] Fruhstorfer (NHMW); 1 ♀, Indes Néerlandaises, Suyckerbuyk, 2132, M.R.Belg., *Ch. comottii* Grib. = *insularis* Sm (nec Guer.), Determ. 1889 du Buysson, *Chrysis comottii* Grib. S. Zimmermann det., 19 (RBINS); 1 ♀, 2132, Coll. Du Buyss., *Chrysis*, *Chrysis insularis* Smit var. Patrie Iles de la Sonde? <handwritten by Gribodo>, *Chry. Comottii* Grib. = *syn. Ch. insularis Smith* (nec Guérin), Determ. 1889 du Buysson (RBINS, specimen badly damaged missing two legs, part of propodeum and metasoma); 1 ♀, 2132, M.R.Belg., Determ. 1889 du Buysson (RBINS); 2 ♀♀, Java, *Chrysis Comottii* Grib. (RBINS, specimen badly conserved and partially eaten by dermestids, without eyes and metasoma ventrally); 1 ♀, Java (RBINS, specimen badly conserved and partially eaten by dermestids, missing head and metasoma ventrally); 1 ♀, Java 1870, R. du Buysson (RBINS, specimen partially damaged, missing left antenna and left foreleg); 1 ♀, Museum Paris Java Plason Ratoe (J.B. Lebru) R. Oberthur 1898, *Chrysis comottii* Grib. Det. Mocsary (HMNH); 2 ♀♀, Dr. Bolsius, Sindanglaja [=Sindanglaya], Java (RMNH); 1 ♀, Java occ. 500m. G. Pantiar, 11-14.xii.1931 M.A. Lieftinck (RMNH); 1 ♀, Tapos [unreadable], West Java, 1932, leg. [unreadable] (RMNH); 1 ♀, leg. H. Lucht, G. Raseng, Java, "Bajoekidoel", 450-700m, 7.iii.1933, Museum Leiden, ex collective J.P. van Lith (RMNH); 1 ♀, leg. H. Lucht, G. Raseng, Java, "Bajoekidoel", 450-700m, 28.i.1933, Museum Leiden, ex collective J.P. van Lith (RMNH); 1 ♀, West Java, Malang, v.1910, P. Buitenygh [?] (NMLU); 1 ♀, West Java, Halimoon, 1936, leg.

M.E. Walsh (NMLU); 1 ♀, West Java, Mt. Salak, Tjiapoës, 400m, 21.v.1939, [leg.] T.A. Ineu (NMLU); 1 ♀, W Java, G. Raoeng, "Bajoekidoel", 450-700m, x.1931, leg. H. Lucht (NMLU); 1 ♀, W Java, Noesa Kambangau, iii.1911, E. Jacobson (NMLU); 1 ♀, W Java Palaboeanratoe, Aisolok, 2.v.1932 leg. Lieftinck (NMLU); 1 ♀, West Java, Bajak, S. Bantam (NHMW); 1 ♀, West Java, Salatri (NHMW); 1 ♀, leg. Dr. Ed. Jacobson, Preanger, Java, 780m, Bandoeng, v.1936 (RMNH); 1 ♀, West Java, Bandoeng [= Bandung], 700m, 20.x.1940, leg. J. Olthof (NMLU); 1 ♀, Java, Bandoeng [= Bandung], 700m, v.1935, leg. Dr. E. Jacobson (NMLU); 1 ♀, W Java, Bandoeng [= Bandung], Malang, iii.1938, leg. M.E. Walsh (NMLU); 1 ♀, W Java, Bandoeng [= Bandung], Sampang, iii.1938, leg. M.E. Walsh (NMLU); 1 ♀, W Java, Bandoeng [= Bandung], Kimerang Tengah, leg. M.E. Walsh (NMLU); 1 ♀, West Java, Buitenzorg [= Bogor], 1925, leg. F.C. Van Heurn (RMNH); 1 ♀, idem (NMLU); 1 ♀, L.G.E. Kalahoven, Buitenzorg [= Bogor], 27.vi.1924 (RMNH); 1 ♀, Buitenzorg [= Bogor], 10.xii.1928, leg. C.M. Franssen (RMNH); 1 ♀, Buitenzorg [= Bogor], 21.xi.1932 J.v.d.Vecht (RMNH); 1 ♀, W Java, Buitenzorg [= Bogor], 2.vii.1935, leg. Dupont (NMLU); 1 ♀, W Java, Buitenzorg [= Bogor], Dramaga, 30.iv.1936, leg. J.van der Vecht (NMLU); 1 ♀, West Java, Mt. Salak, Buitenzorg (NHMW); 1 ♀, West Java, Bogor, 24.vi.1955, leg. Hamann (NHMW); 1 ♀, West Java, Bogor, 23.viii.1955, leg. Hamann (NHMW); 2 ♀♀, Museum Leiden, M.E. Walsh, Djampang, Tengala, Java 1934 (RMNH); 2 ♀♀, W. Java, 6-800m, Djampang Tengah, G. Tjisoeroe, iii.1933, M.E. Walsh misit (RMNH); 1 ♀, idem (NMLU); 2 ♀♀, idem, iii.1935 (RMNH); 1 ♀, idem, ix.1935 (NMLU); 1 ♀, West Java, Radjamandara, Mts. Djampang, 1200m (NHMW); 1 ♀, idem, 2000m (NHMW); 1 ♀, West Java, Bibidjilan, Mts. Djampang (NHMW); 1 ♀, West Java, Wetan, Mts. Djampang, [leg.] Walsh; 1 ♀ L.G.E. Kalshoven, Java, 800m, Mount Gede, x.1932 (RMNH); 1 ♀, L.G.E. Kalshoven, Java, Kediri, forest, 17.v.1925 (RMNH); 1 ♀, West Java, Mt. Gede, 800m, x.1932, leg. L.G.E. Kalshoven (NMLU); 1 ♀, idem, xii.1932 (NMLU); 1 ♀, West Java, Mt. Gede Tapos, 800m, 14-18.i.1933, leg. J.van der Vecht (NMLU); 1 ♀, idem, 6-12.ii.1933 (NMLU); 3 ♀♀, West Java Soekaboemie [= Sukabumi], leg. E. Cordier 6.V.1908, Coll. C. de Béarn Croisière du "Nirvana" (NMLU); 9 ♀♀, Coll. I.R.Sc.N.B., Indonesie - Java

Soekaboemi [= Sukabumi, West Java], Ex Coll. LE MOULT (RBINS); 1 ♀, Indonesia, East Java prov., Katapang, 11.VII.2015, 8°08'S 114°23'E, leg. I. Zappi (GLAC).

Lombok: 2 ♀♀, Lombok Sapit 2000' April 1896 H. Fruhstorfer, *Chrysis comottii* Grib. Det. Mocsary (HMNH); 1 ♀, Lombok Sapit 2000' Mai-Juni 1896 H. Fruhstorfer, *Chrysis comottii* Grib. Det. Mocsary (HMNH).

Pulau Panaitan: 1 ♀, Pulau Panaitan (Prinsen Eil.) Sept. 1951 (RMNH).

Sumatra: 1 ♀, S Sumatra, 450/650m, Lampangs, 22.vii-5.viii, Mt. Tanggamoos, M.E. Walsh 1935 (RMNH); 2 ♀♀, Sumatra, Lampongs, Mt. Tanggamoos, 450-650m, 22.vii-5.viii.1935, leg. M.E. Walsh (NMLU); 1 ♀, Sumatra (NHMW); 3 ♀♀, Sumatra W, Herau Valley env., 500-800m, 20 km N of Payakumbuh, v.2006, leg. S. Jákl (GLAC); 1 ♀, dr. Ploem Sumatra, ex Coll. Gribodo Sumatra (MSNG); 1 ♀, Sumatra, Medan 21.iii.1967 leg. Dr. E. Diehl (NMLU); 1 ♀, idem, 24.v.1967 (NMLU); 1 ♀, idem, 21.vi.1967 (NMLU); 2 ♀♀, idem, 29.vi.1967 (NMLU); 1 ♀, idem, 17.iv.1968 (NMLU); 1 ♀, 20.vi.1969 (NMLU); 1 ♀, idem, 2.viii.1969 (NMLU); 1 ♀, idem, 15.viii.1969 (NMLU); 1 ♀, idem, 1-20.iii.1970 (PRC); 3 ♀♀, idem, 1-20.iii.1970 (NMLU); 1 ♀, idem, 10.iii.1971 (NMLU); 1 ♀, idem, 23.iii.1971 (NMLU); 2 ♀♀, idem, 28.iii.1971 (NMLU); 2 ♀♀, idem, 7.iv.1971 (NMLU); 1 ♀, idem, 14.iv.1971 (NMLU); 1 ♀, idem, 20.iv.1971 (NMLU); 1 ♀, idem, 13.ii.1973 (NMLU); 1 ♀, Sumatra, Medan, Stabet vi.1971 leg. Dr. E. Diehl (NMLU); 1 ♀, idem, 13.vi.1971 (NMLU); 1 ♀, Sumatra, Medan, Trapat, 1100m 18.vii.1971, leg. Dr. E. Diehl (NMLU); 1 ♀, Sumatra, Medan, Dolok Merangir, 9.iii.1967, leg. Dr. E. Diehl (NMLU); 2 ♀♀, idem, 25.v.1967 (NMLU); 1 ♀, idem, 29.v.1967 (NMLU); 2 ♀♀, idem, 30.v.1967 (NMLU); 1 ♀, idem, 31.xii.1969 (NMLU); 1 ♀, idem, 2.ii.1970 (NMLU); 1 ♀, idem, 3.viii.1971 (NMLU); 1 ♀, idem, 11.ii.1972 (NMLU); 1 ♀, Siantar, Berastagi, 7.v.1971 leg. Otto-Surbeck (NMLU).

Sumbawa: 1 ♀ coll. Gribodo Sumbawa Tambora, ex Coll. Gribodo Is. Sumbawa Tambora, *Chrysis Comottii* Grib. Det. Gribodo (MSNG); 1 ♀, v. Lansberge Sumbawa, ex Coll. Gribodo Sumbawa (MSNG).

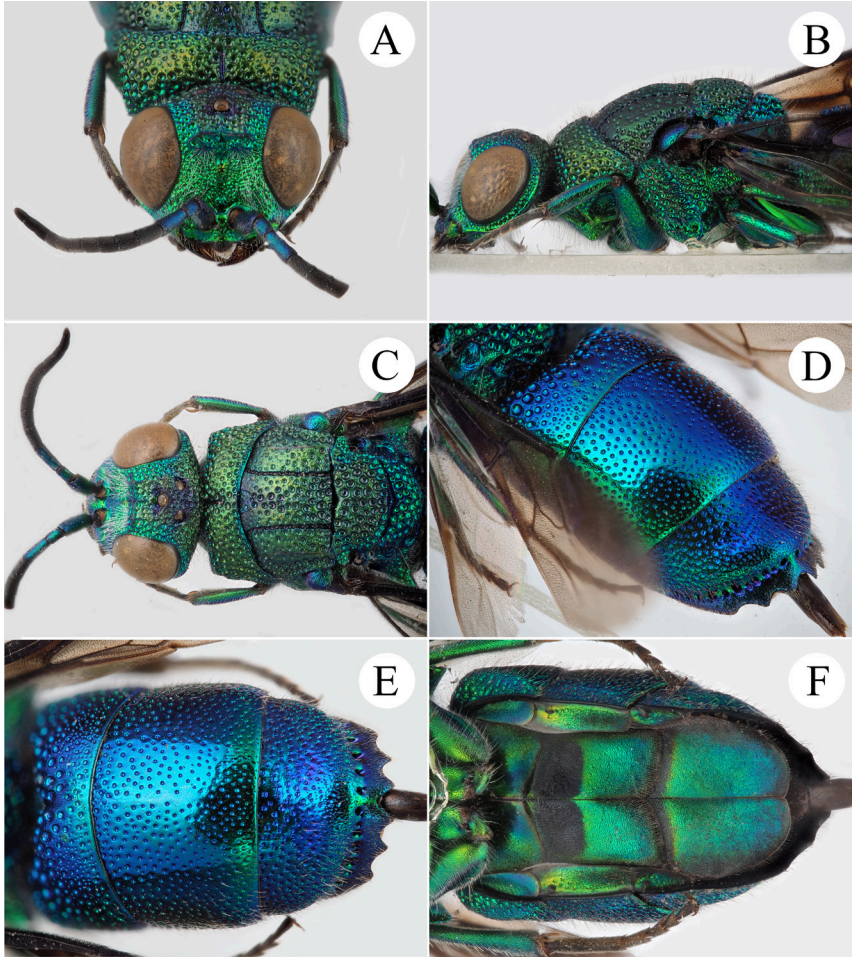


Fig. 6 - *Chrysis poggii* n. sp., paratype from Sumatra (PRC), female. Head, frontal view (A); Head and mesosoma, lateral view (B); Head and mesosoma, dorsal view (C); Metasoma, postero-lateral view (D); Metasoma, dorsal view (E); Metasoma, ventral view (F).

D i a g n o s i s . Body metallic blue with olive green colour on head, pronotum, and mesonotum (fig. 5A). Transverse frontal carina well developed, raised, double (fig. 6A). Sculpture on scutum diagnostic, with large, dense and deep punctures forming a triangle with the vertex placed antero-medially on mesoscutum and the base placed on the mesoscutal-scutellar suture (fig. 6C); lateral areas of scutum with small, sparse and shallow punctures; scutellum antero-medially with large fovea; mesoscutellum with large, foveate-reticulate puncture without interspaces; tergum I with large punctures widely separated, with interspaces densely punctate by small punctures; largest punctures on tergum I anteriorly as wide as punctures on metanotum (fig. 6D), posteriorly as punctures on tergum II; pits of pit row on metasomal tergum III small and round (fig. 6E); metasomal sternum II with large black spots with straight posterior margin (fig. 5F). Fore wing darkened along anterior margin, including radial sector, radial cell and median cell (fig. 6B).

D e s c r i p t i o n . (Female).

Body length 12.0–14.0 mm. Forewing length 7.0–8.0 mm. OOL $2.0 \times \text{MOD}$; POL $1.7 \times \text{MOD}$; MS $1.0 \times \text{MOD}$; relative length of P:F1:F2:F3 = 1.0:2.3:1.7:0.9.

Head. Vertex with large (about $0.5 \times \text{MOD}$) and contiguous punctures, without polished interspaces; without polished areas laterally to posterior ocelli; brow without defined punctures between anterior ocellus and frontal carina, with irregular and undefined sculpture; transverse frontal carina double, strong and raised, medially weak, laterally arcuate (fig. 6A), lateral endings distant about $1 \times \text{MOD}$ to eye margin; scapal basin transversally irregularly punctate to micropunctate, with punctures somehow aligned; subantennal space about $1.0 \times \text{MOD}$; clypeus with small, sparse punctures, apical margin of clypeus slightly incurvate medially; genal carina fully developed to mandibular insertion; genae with small, even punctures.

Mesosoma. Medial pronotal line deep, as long as $\frac{3}{4}$ length of pronotum; pronotum dorsally with large, spaced punctures ($0.5 \times \text{MOD}$); scattered tiny dots on interspaces; laterally with large, dense, deep punctures and narrow, micropunctate interspaces; mesoscutum characteristic in sculpture, with large and dense punctures forming a triangular area with base along mesoscutal-scu-

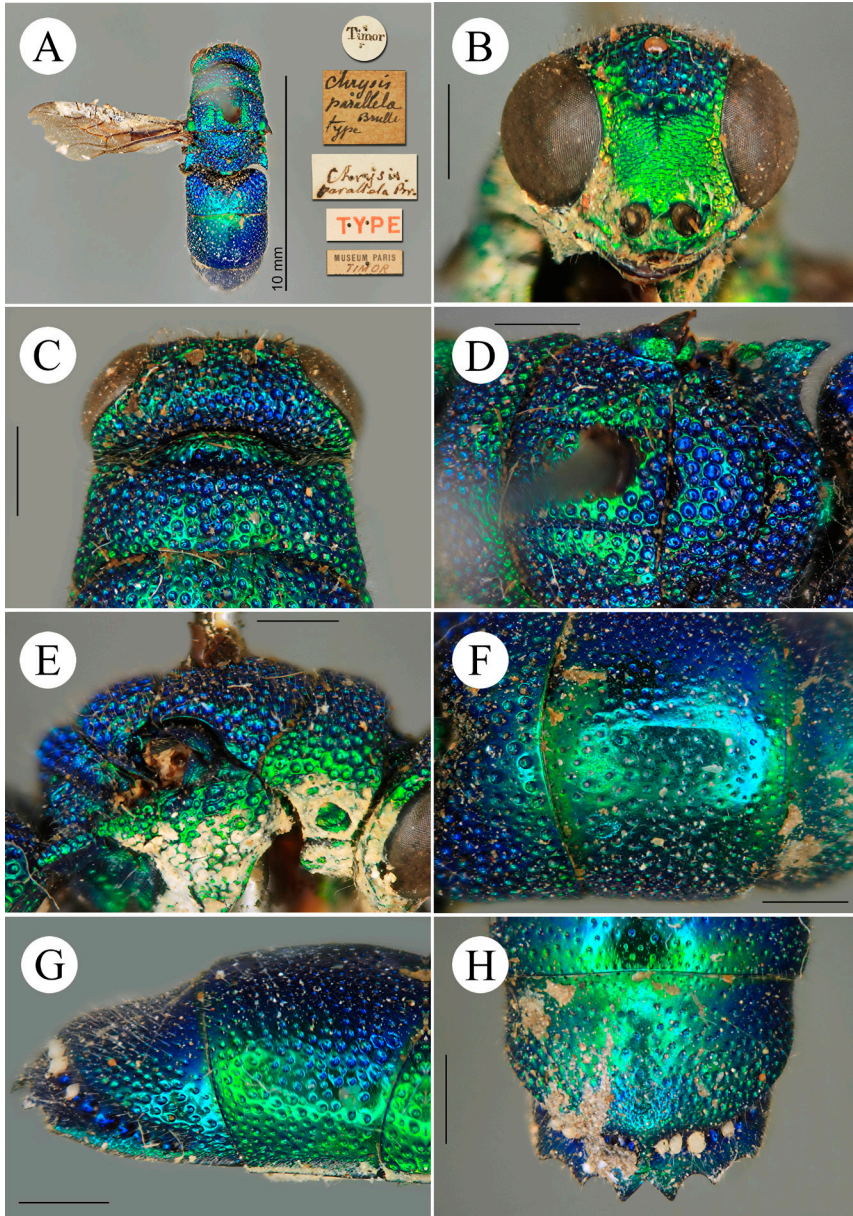


Fig. 7 - *Chrysis parallela* Brullé, holotype, female. Habitus, dorsal view (A); Head, frontal view (B); Head and pronotum, dorsal view (C); Mesosoma, dorsal view (D); Mesosoma, lateral view (E); Metasoma, dorsal view (F); Metasoma, lateral view (G); Third tergum, dorsal view (H).

tellar suture and vertex on anterior margin (figs 5A, 6C); rest of scutum with weak, small and sparse punctures; notauli deeply impressed, formed by subrectangular, black to dark blue foveae, larger at base; parapsidal signum deep and fully visible; scutellum antero-medially with deep fovea; mesoscutellum with even, large punctures, as wide as those at base of mesoscutum, with a row of smaller punctures along the posterior margin; metanotum antero-medially with deep fovea, with irregular deep, large foveate punctures without interspaces; posterior propodeal projections (= propodeal teeth) subparallel, posteriorly deeply concave; mesopleuron with dense punctation and narrow interspaces; episternal sulcus formed by irregular, elongate foveae; scrobal sulcus wide, with sharp carinae. Tarsomere I of mesoleg as long as II–IV together. Forewing with second radial cell (the marginal cell located apical to the pterostigma) slightly open because radial sector vein (second radial cross & radial sector) does not reach wing margin (fig. 5B).

Metasoma. Punctuation on tergum I double, dorsally with larger punctures broadly separated with small punctures on interspaces; antero-medially with dense and tiny dots on interspaces; punctures on anterior and lateral margins larger, denser and deeper; apical margin of the tergum polished and impunctate; tergum II dorsally with even, scattered punctation, with medium-sized punctures, becoming denser at sides; median longitudinal line not raised, polished, without tiny dots; tergum III with similar, denser punctures, with dense tiny dots on prepit bulge (fig. 6E); pits of pit row small, deep and round (fig. 6E); apical margin with six triangular, short teeth, equally distant each other; lateral tooth as angle. Black spots on sternum II large, medially fused and laterally not connected to lateroterga (fig. 6F).

Colouration. Body metallic light blue with olive green on vertex, pronotum and mesonotum; face, mesosoma laterally and ventral side metallic green. Scape, pedicel and flagellomere I blue, other flagellomeres black. Fore wings fuscous on anterior margin, on radial, second radial, medial and cubital cell, with dark brownish veins. Legs metallic green, tarsi dark brown.

Vestiture. Body with sparse, short ($1 \times \text{MOD}$) and whitish setae.

Male. Unknown.

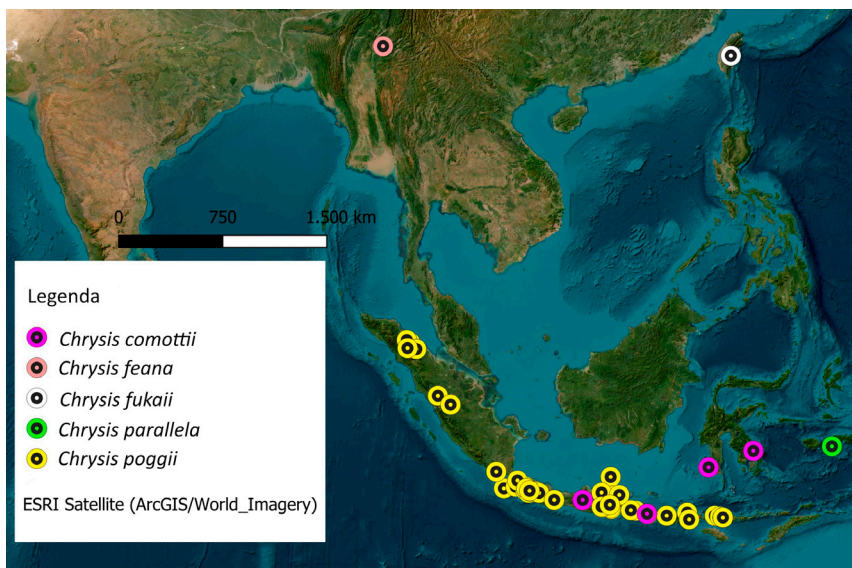


Fig. 8 - Distributional map for examined specimens of *Chrysis comottii* (violet), *C. feana* (pink), *C. fukaii* (white), *C. parallela* (green), and *C. poggii* n. sp. (yellow).

D i s t r i b u t i o n . Indonesia (Ambon, Bali, Bawean, Flores, Kangean, Java, Palau Panaitan, Sumatra, Sumbawa) (fig. 8).

E t y m o l o g y . The specific epithet *poggii* (masculine noun in the genitive form) is dedicated to Dr. Roberto Poggi, former director of the Museo Civico di Storia Naturale in Genova, who amicably supported my entomological studies on Chrysididae and my professional work, acting as one of my mentors.

C o m p a r a t i v e d i a g n o s i s . *Chrysis poggii* n. sp. belongs to the *C. smaragdula* species group and can be easily separated from all the other Australian and Oriental species of this group by the unique light green-olive mesonotal colouration and by sculpture of the mesoscutum, with large and dense punctures forming a triangular area surrounded by sparse, smaller and shallow punctures. It is sympatric with *Chrysis comottii* Gribodo in Sukabumi (West Java), and these two species can be immediately sep-

arated by different mesosomal sculpture, with large, coarse, dense, and contiguous punctures in *C. comottii* (fig. 1B) and the different colouration, dark green with blue or black areas on mesoscutum and pronotum in *C. comottii* (figs 1A, 1B). *Chrysis poggii* n. sp. is also very similar to *C. fukaii*, so far known only for Taiwan, and separated by colouration and shape of the third metasomal tergum, with wider post pit row and longer apical teeth in *C. fukaii* (fig. 3A).

DISCUSSION

The *smaragdula* group is the richest *Chrysis* species group in the Oriental and Australian regions, counting at least 33 valid species and about 23 synonymies that should be re-examined. In fact, many synonymies were proposed without type examination (see KIMSEY & BOHART 1991) and some have proved to be erroneous. This species group needs a major revision and keys for the identification of the species which will be completed when all types will have been examined.

More than twenty species of this group are known for the Oriental region (KIMSEY & BOHART 1991; ROSA *et al.* 2021): *Chrysis apricata* Bohart in Kimsey & Bohart, 1991; *C. arachne* Mocsáry, 1913; *C. arrestans* Nurse, 1903b; *C. baldocki* Rosa in Rosa *et al.*, 2021; *C. baliana* Mocsáry, 1913; *C. bhoutanensis* (du Buysson, 1908); *C. buddhae* Mocsáry, 1913; *C. ceylonica* Mocsáry, 1913; *C. comottii* Gribodo, 1884; *C. durga* Bingham, 1903; *C. feana* Mocsáry, 1893; *C. fukaii* Rohwer, 1911; *C. igniceps* Mocsáry, 1893; *C. laglaizei* du Buysson, 1898b; *C. musa* Semenov-Tian-Shanskij in Semenov-Tian-Shanskij & Nikol'skaya, 1954; *C. parallela* Brullé, 1846; *C. principalis* Smith, 1874; *C. rani* Mocsáry, 1913; *C. schioedtei* Dahlbom, 1854; *C. takasago* Tsuneki, 1963; *C. vicaria* Mocsáry, 1913.

The following species are known for the Australian region: *Chrysis agilis* Smith, 1874; *C. bipartita* Smith, 1874; *C. cristovalensis* Montrouzier, 1864; *C. curtisensis* Linsenmaier, 1982; *C. festina* Smith, 1874; *C. intrudens* Smith, 1865; *C. parvimediate* Linsenmaier, 1982; *C. perthensis* Linsenmaier, 1982; *C. sollicita* Mocsáry, 1913; *C. tasmanica* Mocsáry, 1889; *C. xysa* Bohart, 1985; *C. yallin-gupia* Linsenmaier, 1982; *C. zylla* Bohart, 1985.

KIMSEY & BOHART (1991) included in the *smaragdula* group other Oriental species traditionally considered to be placed in the subgenus *Octochrysis* Mocsáry, 1914, *Chrysis decemdentata* group (LINSENMAIER 1959), yet these species are clearly distinct because of the different structure of the first tergum; the completely different shape of the black spots on sternum II and the different structure of the internal segments (ROSA & HALADA 2021). The *decemdentata* group includes *Chrysis decemdentata* Linsenmaier, 1959, *C. kartikeya* Rosa & Halada, 2021 and *C. lamellata* Mocsáry, 1914.

Another Oriental species group with large species bearing six teeth on the apical margin of tergum III is the *oculata* group, whose members are often confused with those of the *smaragdula* group. Members of the *oculata* group can be identified by the combination of the following characters: reduced first flagellomere in both sexes; mesopleural tooth with associated denticles; short malar space; short pronotum, and six double-edged teeth at the apex of tergum III.

The *oculata* group currently includes the following species: *Chrysis maharadsha* Mocsáry, 1913, *C. obscura* Smith, 1860, *C. oculata* Fabricius, 1775, *C. orientalis* Guérin-Méneville, 1842, *C. stilboides* Spinola, 1838, *C. thakur* Mocsáry, 1913, *C. violaceiventris* Mocsáry, 1899 (KIMSEY & BOHART 1991; ROSA & HALADA 2021).

ACKNOWLEDGMENTS

We thanks Marilù Tavano (MSNG) for the invoice of specimens from the Invrea collection, which includes specimens of the Gribodo collection; Frederique Bakker (RMNH), Marco Valerio Bernasconi (NMLU), Yvonnick Gerard (RBINS), James Hogan (OUMNH), Andrew Polaszek (NHMUK), Claire Villemant and Agnièle Turret-Alby (MNHN), Dominique Zimmermann and Manuela Vizek (NHMW) for the access to museum collections and type material, for the loan of several specimens and sending images of type specimens and localities labels of specimens previously examined; Gian Luca Agnoli (Bologna, Italy) for providing specimens from his private collection; Simone Flaminio (CREA, Bologna, Italy) for generating the map by using the Free and Open Source QGIS v. 3.26.

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ABSTRACT

Chrysis poggii n. sp. is described from Indonesia (Java, Sumatra, and the nearby smaller islands of Ambon, Bali, Bawean, Flores, Kangean, Sumbawa, and Palau Panaitan). Specimens of this taxon were previously misidentified as *C. comottii* Gribodo, 1884 (repl. name for *C. insularis* Smith, 1859 nec Guérin-Méneville, 1842) by most taxonomists, thus obscuring its real identity and its distribution.

Chrysis feana Mocsáry, 1893 sp. resurr. and *C. fukaii* Rohwer, 1991 sp. resurr. are resurrected from the previous synonymy with *C. parallela* Brullé, 1846. *Chrysis lepcha* Cameron, 1902 is synonymised with *C. principalis* Smith, 1874. Pictures of types and updated lists for the Oriental and Australian species belonging to the *smaragdula*, *decemdentata* and *oculata* groups are given.

RIASSUNTO

Sull'identità di *Chrysis comottii* Gribodo, *C. feana* Mocsáry, *C. fukaii* Rohwer e *C. lepcha* Cameron, con descrizione di *C. poggii* n. sp. (Hymenoptera, Chrysididae).

Viene descritta *Chrysis poggii* n. sp. dell'Indonesia (Giava, Sumatra e isole minori di Ambon, Bali, Bawean, Flores, Kangean, Sumbawa e Palau Panaitan). Gli esemplari di questa nuova specie erano stati precedentemente confusi con *C. comottii* Gribodo, 1884 (nome di sostituzione per *C. insularis* Smith, 1859 nec Guérin-Ménéville, 1842) dalla maggior parte dei tassonomi, nascondendo così la reale identità e distribuzione di *C. comottii*.

Chrysis feana Mocsáry, 1893 sp. resurr. e *C. fukaii* Rohwer, 1991 sp. resurr. vengono rivalidate dalla precedente sinonimia con *C. parallela* Brullé, 1846, mentre *C. lepcha* Cameron, 1902 viene posta in sinonimia di *C. principalis* Smith, 1874. Sono fornite foto dei tipi delle specie in esame e liste aggiornate delle specie appartenenti ai gruppi *smaragdula*, *decemdentata* e *oculata* per la fauna orientale ed australiana.

Tipografia R.I. - Genova
di Damonte Claudio