

A new species of the presocial potter wasp genus *Calligaster* de Saussure, 1852 (Hymenoptera, Vespidae, Eumeninae) from Vietnam

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Abstract

Taxonomic notes are presented on the genus *Calligaster* de Saussure (Vespidae: Eumeninae) from Vietnam. A new species, *Calligaster inflata* **sp. nov.** is described and figured together with its nest. The male genitalia are redescribed for *C. himalayensis*. A key is provided to all known species of the group in the Oriental Region.

Keywords

Calligaster, Eumeninae, key, new species, Oriental, Vietnam

Introduction

Potter wasps in the genus *Calligaster* have been considered to be one of several subsocial or presocial lineages as species fully progressive provision their brood (Cowan 1991). Their nests are made of many small pieces of leaves, as in the genus *Zethus* Fabricius, and they nest together with sisters (Nugroho et al. 2016). *Calligaster* is a small genus, with only six species distributed in the Oriental Region. Two of these species, *C. cyanoptera* de Saussure, 1855 and *C. viridipennis* Giordani Soika, 1960, are found in Indonesia; two others, *C. ilocana* Selis, 2022 and *C. williamsi* Bequaert, 1940, are from the

Philippines; while *C. etchellsii* (Cameron, 1909) is endemic to Malaysia and *C. himalayensis* (Cameron, 1904) is widely distributed from India through China to Laos and Vietnam. The last species has hitherto been the only species recorded in Vietnam.

In the present work, based on specimens deposited in the Institute of Ecology and Biological Resources, Hanoi, Vietnam (IEBR), one species of the genus *Calligaster* is described as new to science, together with its nest. In addition, the male genitalia of *C. himalayensis* are redescribed in added detail, and a key is provided to all known species in the genus.

Materials and methods

The material examined in the present study is deposited in the collections of the Institute of Ecology and Biological Resources (IEBR), Hanoi, Vietnam. Adult morphological and color characters were observed on pinned specimens with the aid of a stereomicroscope. The male terminal sterna and genitalia were dissected out, cleared in KOH, and mounted in hand-washing gel for observation and photography with a stereomicroscope. Terminology follows Bohart and Stange (1965) and Carpenter and Cumming (1985), while measurements follow Nguyen (2020); terminology for male genitalia follows that of Kojima (1999) and Nguyen et al. (2023). Measurements of body parts were made with an ocular micrometer attached to a stereomicroscope, with accuracy to 0.1 mm. Nest characters were examined after the nest had been air-dried, and the terminology of Williams (1919) was used for nest characters. Photographic images of the wasps were obtained using a Nikon SMZ 800N Digital StereoMicroscope with ILCE-5000L/WAP2 digital camera attached, using Helicon Focus 7 software for stacking; the plates were edited with Adobe Photoshop CS6.

Systematics

Genus *Calligaster* de Saussure

Calligaster de Saussure, 1852: 22. Type species: *Calligaster cyanoptera* de Saussure, 1852, by subsequent designation of Ashmead (1902: 205).

Note. A complete diagnosis of the genus has been recently provided by Nugroho et al. (2016) and is therefore not repeated here.

Calligaster inflata CQ Nguyen, Dang & Nguyen, sp. nov.

<https://zoobank.org/2B61AAEB-9084-4DCE-B009-336788716F9D>

Figs 1–10

Holotype (deposited in IEBR). VIETNAM: ♀; Vinh Phuc province, Ngoc Thanh, Me Linh; 21°23'N, 105°42'E, 50 m a.s.l.; 18 April 2013; Nest-13-ML-Eu-03; D. T. Hoa leg.

Diagnosis. This species can be distinguished from congeners by the following combination of characters: Head in frontal view with inner compound eye margins 1.1 times further apart from each other at clypeus than at vertex. Clypeus in frontal view wider than high, about 1.3 times as wide as high, apical margin produced and round medially. Propodeum deeply excavated medially, with the excavation nearly two-fifths of propodeal width and its margins marked laterally by ridges, dorsal surface largely smooth, with some sparse strong punctures near concavity, posterior and lateral surfaces bordered by blunt edge. First metasomal tergum with a median longitudinal carina and next to this on each side consisting of a few rows of quite elongate punctures, this part occupying one-third the width of the tergum, the other area on tergum with strong and sparse punctures, interspaces between punctures smooth and usually larger than their diameter; tergum II with small and sparse punctures, interspaces between punctures much larger than puncture diameter, about 3 to 4 times larger than their diameter.

Description. Holotype. Female (Fig. 9). Body length (head + mesosoma + first two metasomal segments) 20 mm; forewing length 17 mm.

Body black except two faint yellow spots on frons just above antennal toruli, dark ferruginous marks near apical margin and at base of mandible, and dark brown propodeal valvula. Wings subhyaline, veins brown.

Body covered with dense, suberect, golden setae on head, mesosoma, and metasomal segment I, and black setae on metasomal segments II–VI; setae longer on metanotum and dorsal surface of propodeum than on other body parts. Clypeus with coarse punctures, punctures in middle tend to unite and form large longitudinal punctures, with interspace strongly raised to form reticulations; frons with dense, deep, flat-bottom punctures, interspaces between punctures narrower than their diameters and raised to form reticulation; vertex less densely punctate, interspaces between punctures usually narrower than their diameter and not raised to form reticulations; punctures on gena dense, strong, well-defined, gena with a smooth band along occipital carina running from near base to near vertex. Pronotum, mesoscutum, and metapleuron with dense coarse punctures, punctures larger than punctures on frons; mesoscutum with some smooth areas between punctures medially, with deep parapsidal furrows running from apical margin to mid length, and two short and shallow longitudinal furrows laterally; punctures on mesoscutellum similar to those near apical margin of mesoscutum; metanotum with a shallow furrow medially, punctures smaller than those on mesoscutum; margins of concavity of propodeum marked laterally by ridges, propodeum with deep longitudinal fovea medially running from base to mid length of propodeum, with a short longitudinal carina running from fovea to apical margin, rugosely striated area occurring along two sides of fovea and carina; dorsal surface of propodeum largely smooth, with some sparse strong punctures near concavity; lateral surface of propodeum with strong, dense, well-defined punctures, interspaces between punctures smooth but raised to from carina apically; apical margin above valvulae round. First metasomal tergum with a median longitudinal carina bordered on each side by a few rows of quite elongate punctures, this part occupying one-third width of tergum, other area on tergum with strong sparse punctures, interspaces between punctures smooth and

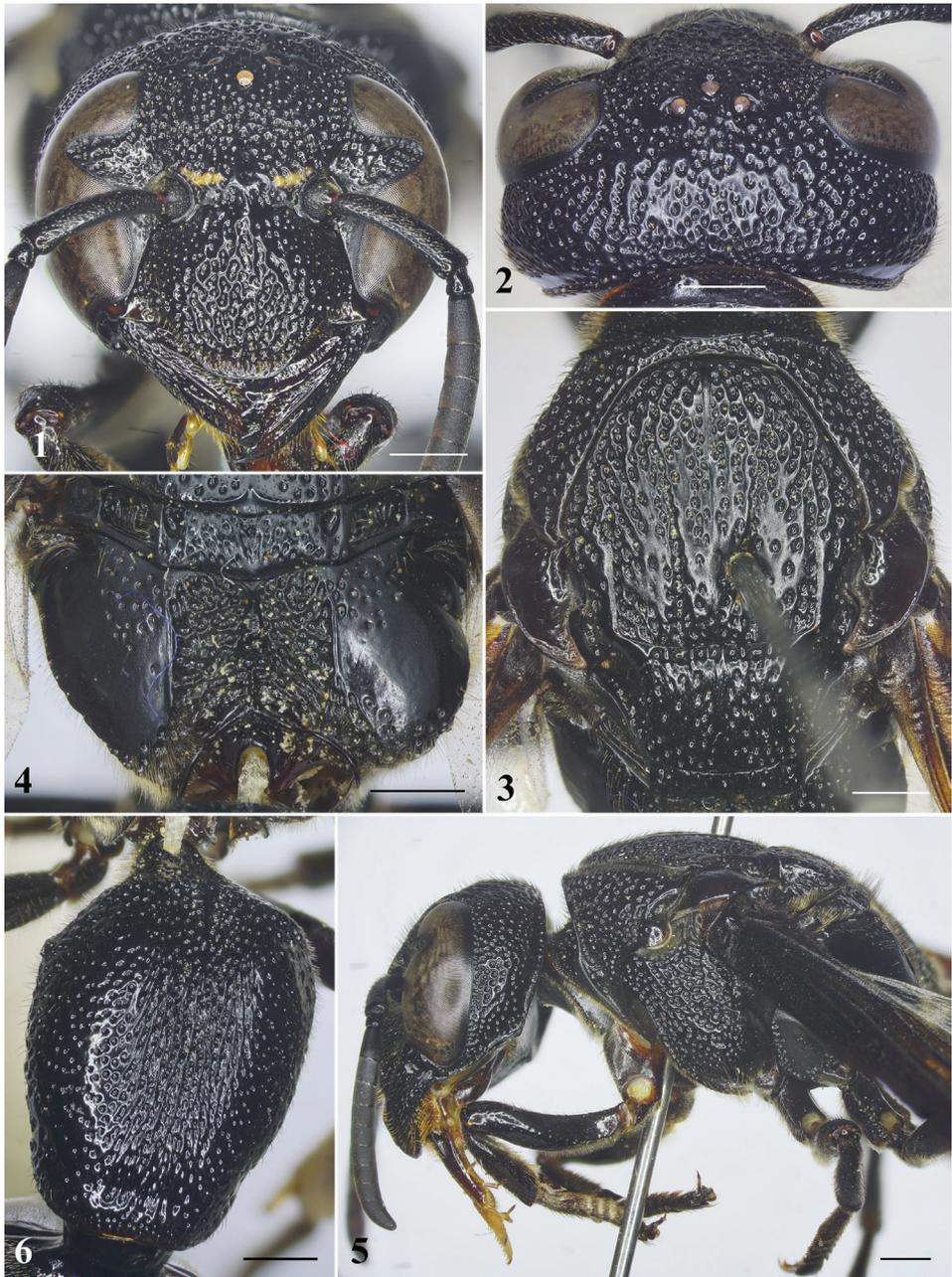
usually larger than their diameter; tergum II with small sparse punctures, interspaces between punctures much larger than puncture diameter, about 3 to 4 times larger than their diameter; punctures on terga III–V larger and denser than punctures on tergum II; punctures on tergum VI sparse but larger than punctures on tergum II; punctures on sternum II larger and denser than on tergum II; punctures on sterna III–V larger and denser than on sternum II.

Head: In frontal view 1.1 times as wide as high (Fig. 1), in dorsal view 1.7 times as wide as long. Vertex well developed, strongly produced behind compound eye, without cephalic fovea (Fig. 2). Distance from posterior ocelli to apical margin of vertex about 2.3 times distance from posterior ocelli to inner compound eye margin (Fig. 2). Occipital carina incomplete, evanescent dorsally, weakly widened laterally, slightly produced at one-third length from base (Fig. 5). Inner compound eye margins in frontal view 1.1 times further apart from each other at clypeus than at vertex (Fig. 1). Clypeus in frontal view wider than high, about 1.3 times as wide as high, apical margin produced and round medially (Fig. 1); in lateral view disc of clypeus gradually and weakly convex from base to near apical margin, then depressed to apical margin. Mandible with four prominent teeth. Antennal scape about 4.7 times as long as its maximum width; flagellomere I about 1.5 times as long as its maximum width, flagellomere II as wide as long, flagellomeres III–IX wider than long, terminal flagellomere bullet-shaped, about 1.2 times as long as its basal width.

Mesosoma: About 1.1 times as wide as head and 1.1 times longer than wide in dorsal view. Pronotal carina complete, raised into low lamella, angulate at lateral corner before attaining dorsal part, reaching ventral corner of pronotum. Mesoscutum slightly convex, shorter than wide, 0.9 times as long as wide between tegulae (Fig. 3). Disc of mesoscutellum rectangular, nearly flat, with lateral margin truncate. Disc of metanotum weakly produced posteromedially. In lateral view, mesoscutellum at same level as mesoscutum (Fig. 5). Propodeum deeply excavated medially (Fig. 4), with excavation nearly two-fifths of propodeal width and its margins marked laterally by ridges, posterior and lateral surfaces bordered by blunt edge.

Metasoma: Metasomal tergum I in dorsal view strongly widened after short, basal, parallel-sided part to one-third basally, then gradually narrowly to apical margin (Fig. 6), 1.4 times as long as wide, in lateral view strongly convex from base to apical margin. Metasomal segment II petiolate at base (Figs 7, 8), tergum II in dorsal view wider than long, 1.05 times as wide as long (Fig. 8), and shorter than tergum I; sternum II in lateral view straight from base to about one-half length, then straight to apical margin (Fig. 7), and slightly produced medially. Terga I–VI not raised and without lamellae (Figs 7, 8).

Nest. (Fig. 10). One nest of this species was collected at Me Linh Station for Biodiversity of the Institute of Ecology and Biological Resources (IEBR), Vinh Phuc Province on 23 March 2013. The nest consists of four cells, each bent at the neck and enlarged at the bottom. The inner diameter of the open end of cells varied from 5 to 6 mm. The oldest cell was strongly secured to a twig of a tree, and from its underside the second cell and then those following depend. The length of cells measured 35 to 36 mm. There was a well-defined roof covering the entrance of the cells (Fig. 10). The entrance of the cell was closed up with leaf-bits. Those plugs were concave and smooth surfaced on the outer side,



Figures 1–6. *Calligaster inflata* sp. nov. **1** head, frontal view **2** head, dorsal view **3** mesosoma, dorsal view **4** propodeum, dorsal view **5** head and mesosoma, lateral view **6** metasomal tergum I, dorsal view. Scale bars: 1 mm.

rather crude on the inner surface. Three of them had a small hole on the wall of the cell and the remaining cell was intact. Three cells with a small hole on the wall were opened for examination of structural details. Unfortunately, they were empty except for their

cocoons. The cocoon was 20 to 21 mm long. They were thickest in the part facing the open end of the cells and thinner at the wall of the cells. The feces and the prey remain were always at the bottom of the cells and positioned outside the cocoon. The intact cell was preserved and a female wasp emerged from it on 18 April 2013.



Figures 7–9. *Calligaster inflata* sp. nov. **7** metasoma, lateral view **8** metasomal terga II–VI, dorsal view **9** habitus, laterodorsal view. Scale bars: 1 mm.



Figure 10. *Calligaster inflata* sp. nov. nest. Scale bar: 1 cm.

Distribution. Vietnam (northern part).

Etymology. The specific epithet is from the Latin *inflatus* (meaning swollen), and refers to the swollen metasomal segment I in this species.

Remarks. The new species is similar to *C. himalayensis* in that both have the clypeus, frons, and mesoscutum with coarse dense punctures, with interspaces between the punctures smaller than a puncture diameter and raised to form reticulation; and the lateral part of metasomal tergum I with strong sparse punctures. However, it differs from *C. himalayensis* in having metasomal tergum I about 1.4× as long as wide, with a median longitudinal carina and next to this on each side consisting of a few rows of noticeably elongate punctures, this part occupying one-third the width of the tergum (metasomal tergum I about 1.8× as long as wide, with a median longitudinal carina and next to this on each side consisting of a few longitudinal striae, this part occupying about half the width of the tergum in *C. himalayensis*); and body punctures larger and coarser than in *C. himalayensis*.

***Calligaster himalayensis* (Cameron, 1904)**

Figs 11–21

Zethus himalayensis Cameron, 1904: 13, ♀, “Sikkim” (The Natural History Museum, London).

Calligaster himalayensis; Bequaert 1928: 157 (holotype examined; possibly a valid species).

Zethus himalayensis [!]; Giordani Soika 1941: 216 (incorrect spelling of *Zethus himalayensis* Cameron; syn. of *C. cyanoptera* de Saussure).

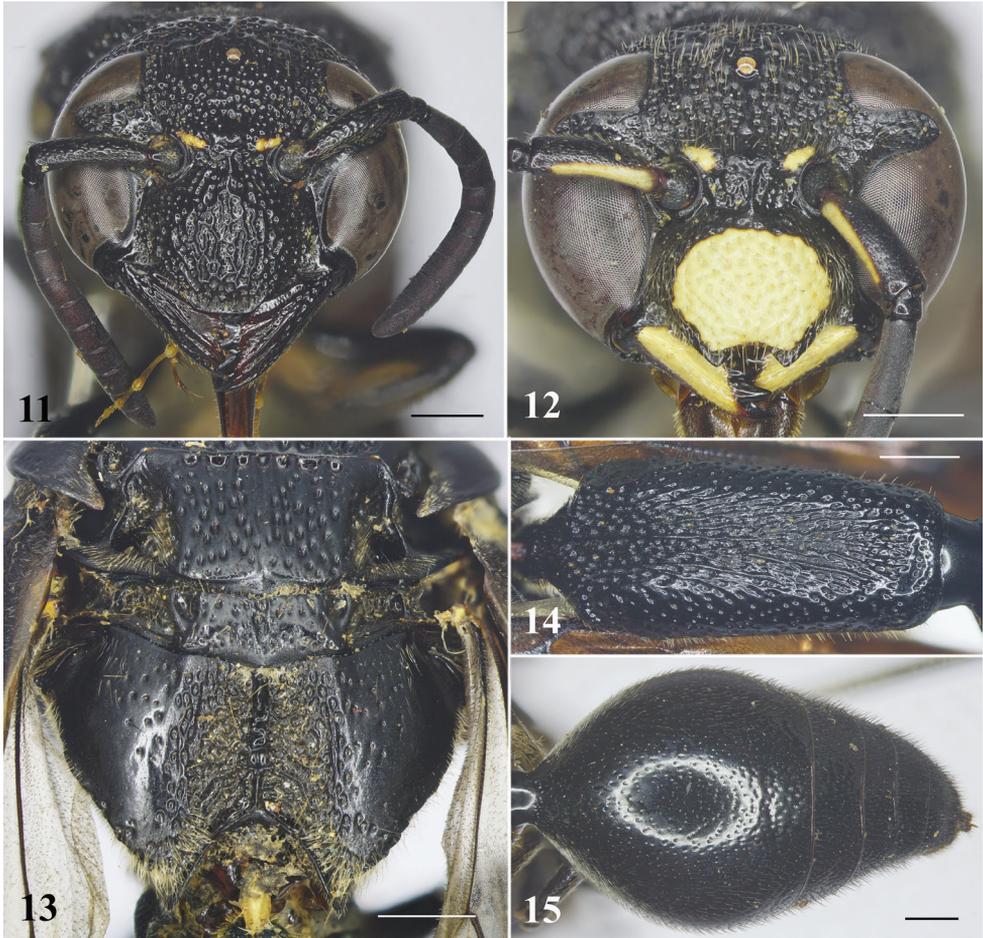
Note. This species was recorded from Vietnam by Nguyen et al. (2014) and Nugroho et al. (2016). The species occurs in the northern and central parts, as well as the Tay Nguyen highlands. Refer to Nugroho et al. (2016) for the diagnosis of this species.

Material examined. VIETNAM: 1♂, Cao Bang, Nguyen Binh, Thanh Cong, 22°32.5'N, 105°53'E, alt. 1000 m, 8 Aug. 2012, Lien Thi Phuong Nguyen et al. leg.; 1♀, Cao Bang, Tra Linh, Ho Thang Hen, 22°45'47.5"N, 106°53'35.7"E, alt. 619 m, 20 May 2023, Lien Thi Phuong Nguyen, Ngat Thi Tran, Cuong Quang Nguyen leg.; 1♀, 1♂, Tuyen Quang, Ham Yen, Phu Luu, Cham Chu NP, alt. 200 m, Jun. 2011, Lien Thi Phuong Nguyen leg.; 1♀, Son La, Moc Chau, Chieng Son, Chieng Ve, 21 Jun. 2015, Long Dang Khuat leg.; 1♀, Dien Bien, Dien Bien, Pa Thom, 20°17'50"N, 102°54'37"E, alt. 693 m, 01 Mar. 2023, Hoa Thi Dang leg.; 1♀, 1♂, Dien Bien, Tua Chua, Muong Fang, 21°50'46"N, 103°22'53"E, alt. 735 m, 04 Mar. 2023, Hoa Thi Dang leg.; 1♂, Vinh Phuc, Me Linh, Me Linh Station, 25 May 2013, Nest#ML-2013-Eum 1, Lien Thi Phuong Nguyen leg.; 1♀, Vinh Phuc, Me Linh, Me Linh Station, 2 Jun. 2018, Cuong Quang Nguyen leg.; 1♀, 1♂, Vinh Phuc, Me Linh, Me Linh Station, 01 Jul. 2020, Hoa Thi Dang leg.; 1♂, Hoa Binh, Ngo Luong, Ngoc Son NR, 20°25'13.3"N, 105°18'36"E, alt. 200 m, 27 Aug. 2020, Ngat Thi Tran leg.; 1♂, Thanh Hoa, Ba Thuoc, Thanh Son, alt. 200 m, 16–18 Jun. 2003, Huong Thi Thu Nguyen leg.; 1♀, Thanh Hoa, Thuong Xuan, Van Xuan, Hon Can, Xuan Lien NP, 19°52'27.5"N, 105°14'20.8"E, alt. 106 m, 24 Aug. 2012, Lien Thi Phuong Nguyen leg.; 1♂, Thanh Hoa, Quan Hoa, Pu Hu NP, 20°29'13.3"N, 104°57'47.2"E, alt. 408 m, 13 Jun. 2016, Lam Xuan Truong, Dac Dai Nguyen, Ngat Thi Tran, Linh Ngoc Ha leg.; 1♀, Ha Tinh, Vu Quang NP, 18°17'45"N, 105°22'29"E, alt. 78 m, 12 Jun. 2023, Cuong Quang Nguyen, Lien Thi Phuong Nguyen, Ngat Thi Tran leg.; 1♀, Quang Nam, Song Thanh, Cha Vai, alt. 400–600 m, 29 Apr. 2005, collectors from the Insect Systematic Department (IEBR) leg.; 1♀, Kom Tum, Dak Ha, Dak Mar, Dak Uy SUF, 14°33'04.6"N, 107°55'08.0"E, 19 Jun. 2012, alt. 630 m, Lien Thi Phuong Nguyen leg.; 3♂♂, Gia Lai, Chu Se, 14 Apr. 2013, Lien Thi Phuong Nguyen leg.; 1♀, Gia Lai, KBang, Kon Chu Rang NR, 14°31'10.4"N, 108°36'24.9"E, 6 Sep. 2018, Lam Xuan Truong, Tuan Viet Luong leg.; 1♀, Dak Lak, Buon Me Thuot city, Tan Hoa, 28 Jul. 2020], QH-L22-01, Bui Thi Quynh Hoa leg., 2♀♀, Dak Nong, Dak Giong, Dak Som, Ta Dung NP, 11°50'16.1"N, 107°59'16.7"E, alt. 475 m, 6 May 2016, Nest#VN-TN-2016-E-01, Lien Thi Phuong Nguyen, Dai Dac Nguyen, Ngat Thi Tran leg.

The male genitalia of this species were described by Giordani Soika (1960) but are redescribed here with added detail.

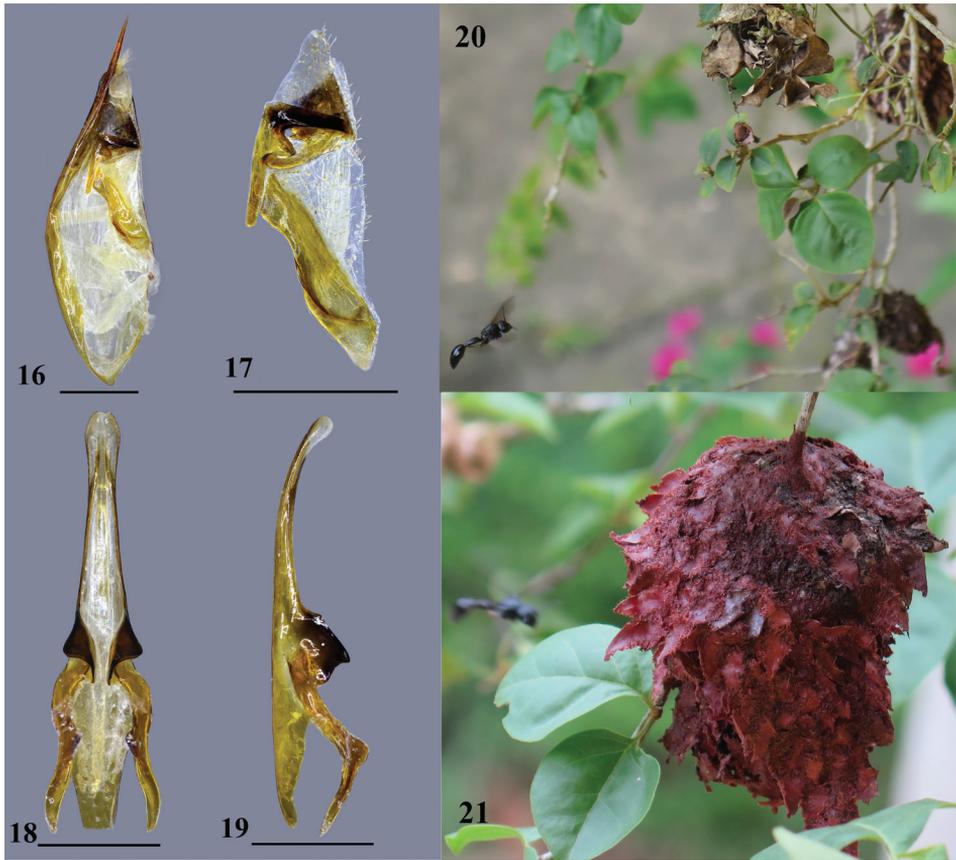
Description. Male genitalia. As in Figs 16–19. Parameral spine with setae (Fig. 16). Volsella flattened, wide on inner aspect, without setae at top (Fig. 16). Digitus gradually narrow from base to apex, with round apex, with setae on apical half (Fig. 17). Penis valve (Fig. 18), about 1.9 times as long as basal apodeme, in profile apical part strongly produced into a large pointed lobe (Fig. 19), with apical part smooth (Fig. 19), middle rod slightly shorter than basal apodeme (Figs 18, 19).

Nest. Three nests comprising 15 cells of this species were collected at Me Linh Station for Biodiversity of the Institute of Ecology and Biological Resources (IEBR), Vinh



Figures 11–15. *Calligaster himalayensis* 11, 13–15 female 12 male 11 head, frontal view 12 head, frontal view 13 mesoscutellum, metanotum, and propodeum, dorsal view 14 metasomal tergum I, dorsal view 15 metasomal terga II–VI, dorsal view. Scale bars: 1 mm.

Phuc Province on 1st July 2020. These nests were made on the branch of bougainvillea. They were not only protected by the roof like the nest of *C. inflata*, but the entire nests were covered with leaves (Fig. 21). The detailed structure of these nests was similar nest of *C. inflata*: the nests consisted of four to six cells, each bent at the neck and enlarged at the bottom; the inner diameter of open end of cells varied from 6 to 6.5 mm; the oldest cell was strongly secured to a twig of a tree, and from its underside the second cell and then those following depend; the entrance of the cell was closed up with leaf-bits; those plugs were concave and smooth surfaced on the outer side, rather crude on the inner surface. The length of the cells measured 32 to 40 mm. Among 15 cells in three nests examined, three individuals developed to the mature stage (two females and one male), other 12 cells died. Of 12 dead cells, three died at the larval stage for unknown reasons; six cells with a small hole in the wall and they were empty except for their cocoons;



Figures 16–21. *Calligaster himalayensis*. 16–19 male genitalia 16 inner aspect of paramere with volsella and digitus 17 volsella and digitus 18 aedeagus, ventral view 19 aedeagus, lateral view 20–21 adult and nest. Scale bars: 1 mm.

the other three cells containing prepupae were attacked by an eulophid species. The cocoon was 20 to 22 mm long. They were thickest in the part facing the open end of cells and thinner at the wall of the cells. The feces and the prey remain were always at the bottom of the cells and positioned outside the cocoon.

Distribution. India: Sikkim; China: Guangdong, Hong Kong; Laos; Vietnam.

Key to species of the genus *Calligaster* in the Oriental Region

This key is based on those by Nugroho et al (2016) and Selis and Femia (2022) (unless the sexes are specified, the character states given in the key can be applied to both sexes). The characters of *C. cyanoptera*, *C. etchellsii*, *C. viridipennis*, *C. williamsi*, and *C. ilocana* were taken from Bequaert (1928), Giordani Soika (1960), Nugroho et al. (2016), and Selis and Femia (2022). *Calligaster himalayensis* and *C. inflata* sp. nov. were examined based on specimens from Vietnam.

- 1 Clypeus and frons with dense coarse punctures, interspaces between punctures raised to form reticulation (Figs 1, 11). Mesoscutum with dense, strong or coarse punctures, interspaces between punctures smaller than puncture diameter and slightly or strongly raised to form reticulations (Fig. 3)..... **2**
- Clypeus and frons with strong punctures, interspaces between punctures smooth (figs 3–6 in Selis and Femia 2022). Mesoscutum with sparser and less-strong punctures, interspaces between punctures about 2–5 times puncture diameter (figs 7, 8 in Selis and Femia 2022) **4**
- 2 Metasomal tergum I less than 1.5 times as long as wide, with a median longitudinal carina and next to this on each side consisting of a few rows of noticeably elongate punctures, this part occupying one-third width of tergum (Fig. 6)..... ***C. inflata* sp. nov.**
- Metasomal tergum I about or greater than 1.8 times as long as wide, with a median longitudinal carina and next to this on each side consisting of a few longitudinal striae, this part occupying about half width of tergum (Fig. 14; figs 7, 9 in Nugroho et al. 2016) **3**
- 3 Metasomal segment I in dorsal view relatively slender, about 2.5 times as long as its maximum width (fig. 7 in Nugroho et al. 2016); tergum I hardly punctured, so that dorsal striae are more or less conspicuous. In male, proximal margin of penis valves in ventral view lobed at upper lateral margin (fig. 5 in Giordani Soika 1960), and in profile apical part strongly produced to a triangular lobe (fig. 6 in Giordani Soika, 1960) ***C. cyanoptera* de Saussure, 1852**
- Metasomal segment I in dorsal view shorter and stouter, about 1.8 times as long as its maximum width (fig. 9 in Nugroho et al. 2016); tergum I with dense distinct punctures, so that dorsal striae inconspicuous. In male, proximal margin of penis valves in ventral view without lobe at upper lateral margin (fig. 1 in Giordani Soika 1960), and in profile apical part strongly produced in to a sharply pointed lobe (Fig. 19; fig. 2 in Giordani Soika 1960) .. ***C. himalayensis* (Cameron, 1904)**
- 4 Male clypeus in frontal view about 2 times as wide as high; apical margin with a deep semi-elliptic emargination..... ***C. etchellsii* (Cameron, 1909)**
- Male clypeus in frontal view equal or less than 1.5 times as wide as high; apical margin with a shallower emargination **5**
- 5 Metasomal tergum I in lateral view strongly convex dorsally and in dorsal view strongly convex along lateral margins, with faint oblique striae. In male, proximal margin of penis valves in profile apical part weakly produced (fig. 8 in Giordani Soika 1960) ***C. viridipennis* Giordani Soika, 1960**
- Metasomal tergum I in lateral view flat dorsally and in dorsal view almost parallel along lateral margins, with a sharp longitudinal carina in the middle, flanked by a series of posteriorly diverging carinae. In male, proximal margin of penis valves in profile apical part strongly produced (figs 9, 10 in Selis and Femia 2022) **6**

- 6 Mesoscutum with parapsidal furrows shallow, with few punctures. Anterior margin of mesoscutellum with a shallow and irregular transverse furrow; mesoscutellum dull with fine punctures (fig. 8 in Selis and Femia 2022). Female clypeus more sparsely punctured on disc (fig. 6 in Selis and Femia 2022). Male clypeus regularly convex, apical emargination semicircular and as wide as deep (fig. 5 in Selis and Femia 2022). Head entirely black in both sexes ...
..... ***C. williamsi* Bequaert, 1940**
- Mesoscutum with parapsidal furrows well-defined and deep, densely punctured. Anterior margin of mesoscutellum crenate, forming six deep pits; mesoscutellum weakly shiny with big deep punctures and micropunctate interspaces (fig. 7 in in Selis and Femia 2022). Female clypeus more densely punctured on disc (fig. 4 in Selis and Femia 2022). Male clypeus with a median transverse depression, apical emargination wider than deep (fig. 3 in Selis and Femia 2022). Male with yellow lines on mandible and scape and rounded yellow spots above antennal insertions ***C. ilocana* Selis, 2022**

Discussion

Calligaster etchellsii (Cameron, 1909) was first described under the genus *Zeuthus* and was based on a single male from “Kuching, Borneo”. In the description of this species, Cameron mentioned that the, “clypeus almost as wide as long” (Cameron, 1909: 206). Bequaert (1928: 157) examined the holotype of this species and moved it to the genus *Calligaster*. He noted that, “This is quite a distinct species in the shape of the clypeus, which is unusually wide (twice as broad as high) and ends in a deep semi-elliptic emargination”. Nugroho et al. (2016) used the character of the clypeus as described by Bequaert (1928) (clypeus twice as broad as high) to separate the species from three other species. Neither Cameron (1909) nor Bequaert (1928) indicated how to measure the width of the clypeus in their studies so we could not know which measurement was correct. We visited the website of the NHML where the holotype of *C. etchellsii* was deposited, but no information on this species was found. In the study of Nugroho et al. (2016) and Selis and Femia (2022), the males of species of *Calligaster* usually have the clypeus much wider than high, about 1.4 to 1.5 times wider than high (though the proper method for measuring the height and width of the clypeus was not mentioned in their study). In our study, the width of the males of species of *Calligaster* (*C. himalayensis* and *C. inflata* sp. nov.) have the clypeus about 1.3 to 1.4 times wider than high (height of clypeus in frontal view is measured as a distance from the bottom of the dorsal emargination to the apex (medially), and width of the clypeus is measured between the extreme corners of the clypeus, at the widest point), and never “as wide as long” as mentioned by Cameron (1909). Accordingly, for the moment we tentatively use in the above key the character as mentioned in Bequaert (1928). Further extensive field sampling will be needed to obtain more specimens and study the taxonomy of this species carefully.

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