

NOTES ON THE NOMENCLATURE AND THE TYPE LOCALITIES OF HOVER WASPS (INSECTA, HYMENOPTERA, VESPIDAE, STENOGASTRINAE) DESCRIBED AFTER 1999, WITH A REVISED SPECIES CHECKLIST

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ABSTRACT

Availability under the International Code of Zoological Nomenclature (“the Code”) of the species-group names of hover wasps (vespid subfamily Stenogastrinae) described after 1999 is assessed. All names are proved to be available, though some of them are dubious in their availability if we apply unusually strictly the regulation on the depository of name-bearing type specimens in the Code. Their name-bearing type specimens are commented and discussed from the point of suitability of the “type locality” in the modern taxonomic work. They are also commented from the point of view of the Convention on Biological Diversity (CBD) and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS). A revised species checklist of the Stenogastrinae is given as an appendix.

Key words: hover wasp, nomenclature, species checklist, type depository, type locality

INTRODUCTION

Hover wasps, occurring in the Oriental and Papuan zoogeographic regions, form a monophyletic vespidae subfamily, Stenogastrinae, which may be the sister-group of either the clade of eusocial-wasps (Polistinae+Vespinae) (Carpenter, 1988; Pickett & Carpenter, 2010) or a clade combining these and the other five extant non-stenogastrine subfamilies of Vespidae (Hines et al., 2007, Piekarski et al., 2018, Huang et al., 2019; see also Brothers, 2021). Regardless of their phylogenetic position in the family Vespidae, the Stenogastrinae, currently comprising 76 valid species in seven genera (see Appendix), may be a key group in understanding the evolution of sociality in wasps, as the members of this subfamily show a great diversity in both social behavior and the structure of nests, their home of social life (Turillazzi, 2012).

The biological information and/or knowledge about taxonomic and/or phylogenetic positions as well as their life forms and distributions of species may be most efficiently shared among not only biologists but also in human societies in general through the use of scientific names, which are intended to be universal and are regulated under the international codes of nomenclature. For animals, the fourth edition of the International Code of Zoological

Nomenclature (International Commission on Zoological Nomenclature - ICZN 1999; hereafter “the Code”) is currently in force.

In zoology, when a species-group taxon (namely, a species or subspecies) is proposed in accordance with all of the relevant provisions of the Code (Chapter 4: Articles 10-20), its name becomes available. If any mandatory provision cannot be met, the name is unavailable. Although the term “*nomen nudum*” is often applied to any unavailable name, according to the Code’s Glossary this term is properly used for names that fail to meet some requirements of either Article 12 or Article 13, depending on the year of the name’s proposal. Since the present paper concerns with very recent names proposed under non-exceptional circumstances, only Articles 10, 11, 13 and, in particular 16 that actually applied when assessing their availability. Namely:

(1) “Every new name published after 1930” (Article 13.1) “... must be accompanied by a description or definition that states in words characters that are purported to differentiate the taxon” (Article 13.1.1);

(2) “Every new name published after 1999 ... must be explicitly indicated as intentionally new” (Article 16.1); and

(3) “Every new specific and subspecific name published after 1999 ... must be accompanied in the original publication” (Article 16.4) “by the explicit fixation of a holotype, or syntypes, for the nominal taxon” (Article 16.4.1.), “and, ... where the holotype or syntypes are extant specimens, by a statement of intent that they will be (or are) deposited in a collection and a statement indicating the name and location of that collection” (Article 16.4.2).

The most recent comprehensive species checklist of Stenogastrinae (Carpenter & Kojima, 1997) included 45 species in six genera [“seven genera” is mentioned by error in their *Abstract*], among which three species had two subspecies each. Since then, two genera, *Cochlischnogaster* Dong & Otsuka, 1997 and *Chalogaster* Carpenter & Starr, 2000 have been added, with the latter having been synonymized under the former (Carpenter, 2001), and 30 species have been newly described [namely, Dong & Otsuka (1997), two species; Turillazzi (1999), five; Carpenter & Starr (2000), one; Hashim et al. (2006), one; Saito et al. (2006), one; Saito & Kojima (2007), three; Saito (2009), three; Selis (2015), two; Abu Bakar et al. (2016), one; Selis (2018), nine; and Saito-Morooka et al. (2020), two]. In addition, Saito-Morooka et al. (2020) formally synonymized *Ischnogaster ornatifrons* Cameron, 1902 under *Eustenogaster micans* (de Saussure, 1852) [this synonymy was given with a question mark in Carpenter & Kojima (1997)], and one subspecies [*Eustenogaster eximia eximioides* (Dover &

Rao, 1922) in Carpenter & Kojima (1997)] was raised to species rank. As a consequence of these taxonomic works, 76 species in seven genera are currently recognized as valid, though a few taxa are still ambiguous in their taxonomic status.

In the present paper, we evaluate whether the specific names of hover wasps published after 1999 are available or not by assessing whether they fulfill the above-mentioned requirements of the Code that are applied to new names published after 1999. We also comment on the type localities, considering that the detailed geographic information (preferably the geographic coordinates) of the type localities could be biologically or scientifically important as not only hover wasps but also animals in general have habitat and altitudinal preferences, philopatric nature and prey/host specificity and as some of them could be products of localized speciation possibly due to the philopatric nature (Turillazzi, 2012). The origins of the specimens for the original descriptions (for example: specimens collected in scientific field work or those obtained in insect trading markets) are also commented either from the point of reliability and/or accuracy of the collection data, especially for the name-bearing type specimens in terms of the type localities or from the point of view of the Convention on Biological Diversity (CBD: entered into force on 29 December 1993) and especially its supplementary agreement, The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits arising from their Utilization (ABS: entered into force on 12 October 2014).

MATERIALS AND METHODS

The present study was conducted based entirely on the revision of publications, mainly original citations and the Code. Therefore, any specimens, including name-bearing types were not examined. Geographical information of a type locality that is not given in the original citation, when it is available, is added to ascertain or clarify the type locality (Recommendation 76A of the Code) and/or for a better understanding of characteristics of the locality. Such information was obtained mainly from web page(s).

RESULTS

A total of 23 species have been described in the subfamily Stenogastrinae after 1999, as new to science under the Code. The results of our evaluation on the availability of the specific names and of our analyses on the details of their type localities are given below.

***Cochlischnogaster spatulata* (Carpenter and Starr, 2000)**

Carpenter & Starr (2000) described a new genus and species, *Chalogaster spatulata*, in full accordance with the Code's requirements to make both taxon names available. The holotype was collected, as mentioned in ACKNOWLEDGEMENTS, in the scientific field work carried out in cooperation between the American Museum of Natural History (AMNH) and the Institute of Ecology and Biological Resources (IEBR). Its detailed collection data, including the coordinates of the collection locality is given (p. 5). The depository of the holotype is given (p. 5) as, "Holotype ... in ... (IEBR), Ha Noi", qualified as, "on long-term loan to ... (AMNH)." The type locality given in the paper is "Viet Nam: Quang Binh Prov., Cha Lo, 17°42'N 105°46'E" (P. 5). *Chalogaster* was synonymized under *Cochlischnogaster* Dong and Otsuka, 1997 by Carpenter (2001: 27).

***Eustenogaster gibbosa* Starr and van der Vecht, 2006**

Starr and van der Vecht in Hashim et al. (2006) described *Eustenogaster gibbosa* in full accordance with the Code's requirements to make a species-group name available. The holotype was collected by the first author of the paper at the FSC (University of Malaya Field Study Center) at Gombak, "located 15 km northeast of Kuala Lumpur, at an altitude of 300 m a.s.l." (p. 290) [geographic coordinate: about 03°19.5'N, 101°45'E], peninsular Malaysia. The depository of the holotype is given (p. 291) as "Museum of the University of Malaya, Kuala Lumpur, Malaysia", qualified as, "at present on long-term loan at the Museo di Storia Naturale — Zoologia "La Specola", Firenze, Italy".

***Eustenogaster nigra* Saito and Nguyen, 2006**

Saito and Nguyen in Saito et al. (2006) described *Eustenogaster nigra* in full accordance with the Code's requirements to make a species-group name available. The holotype was collected together with its nest at "Tam Dao (outside town), ca. 900 m [in altitude], Vinh Phuc" (p. 3) [geographic coordinate: about 21°27'N, 105°38'E] in Vietnam by the authors during their scientific field work. The depositories of the specimens examined are given in MATERIALS AND METHODS (p. 2) as, "Most of the Vietnamese specimens were collected by ourselves and are deposited in the Institute of Ecology and Biological Resources, Hanoi, Viet Nam (IEBR)", qualified as "long-term loans in the American Museum of Natural History (AMNH) and the Natural History Collection, Ibaraki University, Mito, Japan (IUNH)". The holotype was said to be "in IEBR; on long-term loan to IUNH." (p. 3) and we have returned it to the IEBR.

***Eustenogaster fumipennis* Saito, 2007; *E. latebricola* Saito, 2007; *E. spinicauda* Saito, 2007**

Saito in Saito and Kojima (2007) described the following three species in full accordance with the Code's requirements to make the species-group names available: *Eustenogaster fumipennis*, *E. latebricola* and *E. spinicauda*.

The holotypes of all the three species were collected well before the Convention on Biological Diversity (hereafter "CBD") entered into force on 29 December 1993 (*E. fumipennis*, in 1982; *E. latebricola*, in 1935; *E. spinicauda*, in or before 1960, judging from the attached label showing the identification by van der Vecht in 1960) and had been deposited in the below-mentioned museums. The depositories of the holotypes are specified as follows (p. 3): "Acronyms for the museums/institutions in which the specimens are deposited are as follows: AMNH, American Museum of Natural History, New York, USA; ...; RMNH, Nationaal Natuurhistorisch Museum, Leiden, the Netherlands". As for the holotypes, the depositories are mentioned, for *E. fumipennis* (p. 22) as "Holotype ... deposited in AMNH"; and for *E. latebricola* and *E. spinicauda* (pp. 26, 28) as "Holotype ... deposited in the RMNH".

The holotype of *E. fumipennis* was collected by an entomologist (C. K. Starr) and the type locality is given as "Antique; Alojipan, Culasi" (p. 22); Alojipan is a barangay (= the smallest political unit in the Philippines), at about 11°25'N, 122°08'E and with an average of altitude of 685 m, in Municipality of Culasi of Province Antique on Panay Island ("PhilAtlas: Alojipan", <https://www.philatlas.com/visayas/r06/antique/culasi/alojipan.html>: accessed on October 3, 2025).

The holotype of *E. latebricola* was collected by a botanist/entomologist (Maria Ernestine Walsh, and its collection locality given on the attached label is "S. Sumatra, 250 m., Res. Benkoelen, Macara Tenam"; "Res[identie] Benkoelen" is an administrative subdivision of the Dutch East Indies, which covered the several present-day provinces, namely Jambi, Bengkulu, South Sumatra (Palembang) and Lampung, and "Macara Tenam" could be erroneous reading of the handwritten "Moeara Tenam" [=Muara Tenam] given on the attached label, the locality is also known as Rawa Tenam [ca. 03°07'S, 105°03'E], which is a village in Pangkalan Lampam Subdistrict, Ogan Komering Ilir District, South Sumatra Province (Gresia Puteri, personal communication).

The exact origin of the holotype of *E. spinicauda* is unknown. Its collection locality given on the attached label is "Catbalogan [city with an area of about 275 km² and the altitude ranging

from 0 to about 1,330m (Wikipedia: Catbalogan: <https://en.wikipedia.org/wiki/Catbalogan>, accessed on October 3, 2025)], Samar” (p. 28), and thus its type locality is of rather wide range both in area and altitude. The writing “*Eustenogaster spinicauda*, ♀, m. det. J.v.d.Vecht, 1960” on the attached label indicates that the holotype was collected in or before 1960, when detailed information including geographic coordinates for the collection localities were seldom recorded and/or given on labels associated with specimens.

***Parischnogaster fei* Selis, 2015; *P. giglii* Selis, 2015**

Selis (2015) described two species, *Parischnogaster fei* and *P. giglii*. The depositories of the holotypes are stated in the Introduction (p. 131) as “Tutti gli esemplari citati, ottenuti da raccoglitori locali, sono conservati nella collezione dell’autore [All the specimens mentioned, obtained from local collectors, are kept in the author's collection].” The holotypes are deposited in the author’s private collection; although its location is not stated and it is not certain whether his private collection is under the condition as same as that of institutional standard, author’s postal address “Via dei Tarquini 22, I-01100 Viterbo, Italia” is clearly mentioned (p. 140), such the circumstances may meet the requirement of the Code (Article 16.4.2) and thus the names are deemed available; however, it could be noted that Recommendation 16C of the Code states “... author should deposit type specimens in an institution that maintain research collection ...” (see also Discussion of the present paper).

Both *P. fei* and *P. giglii* are represented by single specimens, with these holotypes respectively being a somewhat damaged female specimen (both antennae missing) labelled “Philippines-Mindanao-South Cotabato, I-2013, Leg. unknown” (p. 135), and a somewhat damaged male specimen (left antenna and terminal flagellomeres of right antenna missing) labelled “Philippines-Mindanao-Mt. Apo, XI-2013, Leg. unknown” (p. 137). Detailed information on the type localities in the sense of the standard in a modern taxonomic work is not given; that is, “South Cotabato” is one of the provinces in the Philippines, with an area about 3,935 km² and the altitude ranging from 0 to 2,286m (Wikipedia: South Cotabato: https://en.wikipedia.org/wiki/South_Cotabato, accessed on October 3, 2025); and “Mt. Apo”, if we restrict it to the natural park, has an area of about 659 km² and its altitude ranges from about 50m to 2,954m (Mount Apo Foundation, Inc.: <http://mafi.org.ph/mt-apo-park/>, accessed on October 3, 2025). Both can be, though the Code does not regulate the size and altitude of a type locality, too large in area and wide in altitudinal range to allow us to know detailed biological and geographic characteristics of the places where the type specimens were collected. Both specimens were collected in 2013, after the CBD entered into force and the Philippines ratified

the CBD in October 1993 but before the ABS entered into force or the Philippines became a Party of the Nagoya Protocol on 28 December 2015. The author legally received (or purchased) both specimens from the Philippine insect collector/trader with the authorized collecting and export permits (M. Selis, personal communication).

***Liostenogaster leonardi* Turillazzi and Turillazzi, 2016**

Turillazzi and Turillazzi in Abu Bakar et al. (2016) described *Liostenogaster leonardi* in full accordance with the Code's requirements to make a species-group name available. The holotype male was collected together with its nest at "Malaysian Peninsular. Bukit Fraser, Pahang State, (el. 1247 m a.s.l)" [= Fraser Hills; about 03°42.5'N, 101°44'E] by the authors during their field research on the biology of this hover wasp. The depository of the holotype is stated as "holotype male (MFSUM)" (p. 136), qualified as "holotype ... deposited at MZUF as a long-term loan from MFSUM" (p. 136); and the abbreviations of the museums are clearly mentioned on p. 136 as "MFSUM Museum of the Faculty of Sciences, University of Malaya, Kuala Lumpur, Malaysia" and "MZUF Museo di Storia Naturale dell'Università di Firenze, Sezione Zoologia, Florence, Italy".

***Liostenogaster bimaculate* Selis, 2018; *L. maculiceps* Selis, 2018; *Parischnogaster albofasciata* Selis, 2018; *P. mindanaonis* Selis, 2018; *P. simillima* Selis, 2018; *P. curviclepeus* Selis, 2018; *P. carpenteri* Selis, 2018; *P. nigerrima* Selis, 2018; *P. nigrirterga* Selis, 2018**

Selis (2018) described the following nine species from the Philippines based on the specimens collected during the period from 2014 to 2018 by local collector(s): *Liostenogaster bimaculata*, *L. maculiceps*, *Parischnogaster albofasciata*, *P. mindanaonis*, *P. simillima*, *P. curviclepeus*, *P. carpenteri*, *P. nigerrima* and *P. nigrirterga*. Regardless when the holotypes of these species were collected in terms of the ratification or becoming the Party of the CBD and ABS, the author legally received (or purchased) all the specimens from the Philippine insect collector/trader from whom the author obtained the holotypes of *Parischnogaster fei* Selis, 2015 and *P. giglii* Selis, 2015 (M. Selis, personal communication), which however was not mentioned in the original citation.

Acronyms of the collections are given (p. 384) as "... MSNVE—Museo Civico di Storia Naturale, Venezia, Italy; MSVI—Private collection of Marco Selis, Viterbo, Italy" and mentioned in parentheses after the citations of collecting data. Though a clear statement of intent that the holotypes will be (or are) deposited in the collections, which is required by the Code (Article 16.4.2) was not made, for the stability of names and considering the fact that such writings of depositories commonly appear in taxonomic papers, all these names but

Parischnogaster simillima would be deemed available. The type depository of the eight species other than *P. simillima* is MSNVE, while type deposit of *P. simillima* is MSVI. The situation is the same as that for *P. fei* and *P. giglii*, and the author's postal address and contact e-mail address are clearly mentioned (p. 384), such circumstances may meet the requirement of the Code (Article 16.4.2) and thus the name is deemed available.

As shown below, the type localities for all these nine species are not given in detail but at the level of the municipality [= local government unit below province and above village-level unit in the Philippines]. The type locality mentioned for *Liostenogaster bimaculata*, *Parischnogaster mindanaonis* and *P. simillima* is “Esperanza”, which is Municipality of Esperanza (with an area of about 324 km² and altitude ranging from 31m to 237m) in Province of Sultan Kudarat in Mindanao Island (Wikipedia: Esperanza, Sultan Kudarat, https://en.wikipedia.org/wiki/Esperanza,_Sultan_Kudarat, accessed on October 3, 2025); “Mt. Apo” for *Liostenogaster maculipenis* could be about 659 km² as mentioned for the type locality of *P. giglii*; “Compostela Valley” for *P. albofasciata* is Municipality of Compostela (with an area of about 287 km² and altitude ranging from about 65m to 465m) in Province of Davao de Oro in Mindanao Island (Wikipedia: Compostela, Davao de Oro, https://en.wikipedia.org/wiki/Compostela,_Davao_de_Oro, accessed on October 3, 2025); “Balingasag” for *P. carpenteri* is Municipality of Balingasag (with an area of about 147 km² and altitude ranging from about 0m to 365m) in Mindanao Island (Wikipedia: Balingasag, <https://en.wikipedia.org/wiki/Balingasag>, accessed on October 3, 2025); “Baco” for *P. curriclypeus* is Municipality of Baco (with an area of about 216 km² and altitude ranging from 0m to 480m) in Province of Oriental Mindoro in Mindoro Island (Wikipedia: Baco, Oriental Mindoro, https://en.wikipedia.org/wiki/Baco,_Oriental_Mindoro, accessed on October 3, 2025); “Banaue” for *P. nigerrima* is Municipality of Banaue (with an area of about 191 km² and altitude ranging from t 481m to 2,689m) in Province of Ifgao in Luzon Island (Wikipedia: Banaue, <https://en.wikipedia.org/wiki/Banaue>, accessed on October 3, 2025); and “Tanay” for *P. nigriterga* is Municipality of Tanay (with an area of 200 km² and altitude ranging from nearly 0m to about 1,465m) in Province of Rizal in Luzon Island.

***Eustenogaster multifolia* Saito-Morooka, 2020; *E. sumatraensis* Saito-Morooka, 2020**

Saito-Morooka in Saito-Morooka et al. (2020) described two species, *Eustenogaster multifolia* and *E. sumatraensis*, mostly in accordance with the Code's requirements to make the species-group names available but without satisfactorily specifying the depository of the holotype of *E. sumatraensis*. Acronyms of the collections are given in MATERIAL AND

METHODS (p. 135) as “... MZB, Museum Zoologicum Bogoriense, Indonesian Institute of Sciences, Cibinong, Bogor, Indonesia...” For *Eustenogaster multifolia*, the depository of the holotype is given (p. 135) as, “**HOLOTYPE: Female, deposited in the MZB, INDONESIA**”. For *E. sumatraensis* only “HOLOTYPE, ♀ (MZB)” is mentioned (p. 136), and therefore the requirement of Article 16.4.2 is, in strict sense, not fulfilled; however, for the stability of names and considering that such the writings of depositories are more or less common in taxonomic papers, the name is deemed available.

The type localities mentioned are “Tekuk Kabung [= Teluk Kabung]” for *E. multifolia* and “Muko Muko [ca. 2°50’S 101°25’E; Sumatra Island]” for *E. sumatraensis*. Saito-Morooka et al. (2020) overlooked figure 1 in Ohgushi et al. (1983), in which the places where the holotypes were collected were pointed in the map, and thus they did not give the geographic coordinate of “Teluk Kabang” and gave incorrect geographic coordinate for “Muko Muko”. “Teluk Kabung” is in Bungus Teluk Kabung, District (“Kecamatan” in Indonesian) in Padang City, West Sumatra and at about 01°02’S 100°24’E and about 90m in altitude. “Muko Muko” where the holotype was collected is beside Lake Maninjau, in Province of West Sumatra (see Ohgushi et al., 1983), at about 00°17.5’S 100°09’E and about 460m in altitude, but not Muko Muko in Province of Bengkulu, of which geographic coordinate is that Saito-Morooka et al. (2020) gave. The type locality of *Eustenogaster sumatraensis* has accordingly been corrected as “Muko Muko (about 00°17.5’S 100°09’E, about 460 m alt.), West Sumatra” (for the correction of erroneous statement of a type locality, see Recommendation 76A.2 of the Code).

The holotypes of both species were collected in 1980, well before the CBD entered into force, during the field research cooperatively carried out by Indonesian and Japanese scientists. They are deposited in the MZB, one of the CITES registered scientific institutions in Indonesia.

DISCUSSION

The above-mentioned analyses on the name-bearing type specimens of the stenogastrine species described after 1999 showed that the descriptions of new species based on the specimens obtained through international trade markets would create problems in the taxonomy and/or biodiversity sciences and also from the CBD and ABS point of view. Of the 23 species described after 1999, 12 species were described based on the specimens collected in the field research conducted by scientists and/or deposited in museums/research institutions. The remaining 11 species were described based on the specimens obtained through international insect trade markets.

First, the quality of the specimens for description is discussed. The numbers of species

described based on a single specimen (namely the holotype), multiple specimens of the same sex of the holotype and multiple specimens of both sexes are respectively none, five and seven for the 12 species described based on specimens collected in the scientific field research and/or deposited in museums/institutions, and respectively five, two and four for the 11 species described based on specimens obtained from international trade markets. Furthermore, the holotypes of *Parischnogaster fei* Selis, 2015 and *P. giglii* Selis, 2015, which were obtained from international trade markets are not in good condition, lacking antennae or antennal articles. These observations show that description of species based on specimens obtained from trade markets may generally provide less information on characters useful for taxonomic work than those described based on specimens systematically collected in scientific field researches and/or deposited in museums/institutions. Unless they have high commercial values, such as butterflies and stag beetles in cases of insects, specimens available in trade markets are those collected much less systematically compared with those collected in scientific field researches and have been deposited in museums/institutions.

Second, the information on localities where the specimens used for description were collected is considered here. The detailed information on the collection localities is generally important for our understanding of the ecological characteristics, such as habitat preference, and also the small-scaled biogeographical traits, such island or altitudinal distribution patterns, of the given a species-group taxon. This is especially the case for species, such as stenogastrines, that might have localized distribution, low dispersal ability and phoretic nature. As shown in the RESULTS, detailed information on the collection localities is in general seldom provided for specimens available in markets. When the detailed information of the collection localities for the holotypes are not provided, the type localities would be wide ranges both in area and altitude.

Lastly, the issues related to the CBD and ABS are commented. Regardless of the means by which the specimens used in descriptions of a given species have been obtained, when it is required by regulations that the specimens were legally obtained, it should be clearly acknowledged in the papers in which the species are described. Especially in the cases where the specimens obtained from international trade markets after the CBD and/or ABS entered into force, detailed information on the official permits relating CBD and/or ABS, such as collecting and export permits, should be provided together with the description of species in order to avoid ethical misunderstanding, namely unnecessary suspicion if the work were based on illegally obtained specimens.

As far as a species group taxon is described in accordance with the Code's requirements, its name is available regardless the quality and quantity of the specimen(s) on which the description of the taxon is based. Though it is urgent issue, under the conditions that mass and rapid species extinctions and decrease of biodiversity on the earth due to human activities are underway, to reveal the biodiversity of the earth by describing yet undescribed species group taxa as quickly as possible, the description should be based on specimens in the best possible condition for better taxonomic practices, which may provide us with better understanding of the biodiversity on our planet (Braby et al., 2024). Another point to be noted is on depositories of specimens, especially of the name-bearing type specimens. While the Code allows the name-bearing type specimens to be deposited in private collections when required conditions such as “a statement indicating the name and location of that collection” are fulfilled, best practices in modern taxonomy encourage deposition in public permanent museums/institutions to ensure secure storage and accessibility for future generations. This could be a key factor in avoiding ambiguous taxonomic status of a given species-group taxon based on future actions to achieve greater taxonomic stability and a revision of the family Stenogastrinae using integrative taxonomy (morphology, genomics, and other biological characteristics such as nesting behavior), and to build a robust identification tool and specimen database.

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APPENDIX: REVISED SPECIES CHECKLIST OF THE SUBFAMILY STENOGASTRINAE

Based on the checklist of Carpenter & Kojima (1997; Journal of the New York Entomological Society 104: 21–36), the present checklist adds nomenclatural changes and descriptions of new taxa (species) that have been made after Carpenter & Kojima (1997). The information on the type localities, such as geographic coordinate and altitude, that is not mentioned in the original citation is also given when the details of the type locality are specified.

Distribution records given under “Distribution” are presented according to mainly geographical rather than administrative divisions.

Each publication is cited in abbreviated form and is also listed in “**REFERENCES**” of the main text.

Acronyms of the museums/institutions where the name-bearing type specimens are deposited are as follows:

AMNH, American Museum of Natural History, New York, USA;

BMNH, The Natural History Museum, London, UK;

BPBM, Bernice P. Bishop Museum, Honolulu, USA;

IEBR, Institute of Ecology and Biological Resources, Vietnamese Academy of Science and Technology – VAST, Hanoi, Vietnam (currently reorganized as a part of the Institute of Biology, VAST);

IUNH, Natural History Collection of Ibaraki University, Mito, Japan;

KIZ, Kunming Institute of Zoology, Chinese Academy of Science, Kunming, Yunnan, China;

MFSUM, Museum of the Faculty of Sciences, University of Malaya, Kuala Lumpur, Malaysia

MHNG, Museum d'Histoire Naturelle, Geneve, Switzerland

MNHN, Laboratoire d'Entomologie, Museum National d'Histoire Naturelle, Paris, France;

MSNG, Museo Civico di Storia Naturale, Via Brigata Liguria, Genova, Italy;

MSNF, Museo di Storia Naturale – Zoologia “La Specola”, Firenze, Italy;

MSNM, Museo Civico di Storia Naturale, Corso Venezia, Milano, Italy;

MSNVE, Museo Civico di Storia Naturale, Venezia, Italy;

MSVI, private collection of Marco Selis, [Via dei Taraquini 22] Viterbo, Italy;

MZB, Museum Zoologicum Bogoriense, Research Center for Biosystematics and Evolution, National Research and Innovation Agency – BRIN [previously Research Center for Biology, The Indonesian Institute of Science – LIPI], Cibinong, Bogor, Indonesia;

MZUF, Museo di Storia Naturale dell'Università, Sezione di Zoologia, Florence, Italy, including the specimens tentatively deposited in the MZUF as a long-term loan from the MFSUM (MZUF/MFSUM);

NHMW, Zoologische Sammlung, Naturhistorisches Museum, Wien, Austria;

NMNH, U. S. National Museum of Natural History, Washington DC, USA;

OUM, Hope Entomological Collection, University Museum, Oxford, UK;

RMNH, Biodiversity Center, Naturalis (previously the Rijksmuseum van Natuurlijke Historie), Leiden, The Netherlands;

SEHU, Systematic Entomology, Hokkaido University Museum, Sapporo, Japan;

UMM, Museum of the University of Malaya, Kuala Lumpur, Malaysia;

UPLB, Museum of Natural History, University of the Philippines at Los Baños, College, Laguna, the Philippines;

USNM, U. S. National Museum of Natural History, Washington, USA;

ZMA, Biodiversity Center, Naturalis (previously Zoologisch Museum Amsterdam), Leiden, The Netherlands;

ZMB, Universität Humboldt, Zoologisches Museum, Invalidenstrasse, Berlin, Germany;

ZSI, Zoological Survey of India, Kolkata, India.

1. Genus *Anischnogaster* van der Vecht, 1972

Anischnogaster van der Vecht, 1972, Zool. Meded. 47: 240, 241, genus.

Type species: *Ischnogaster iridipennis* Smith, 1859, by original designation.

(1) *dubia* van der Vecht, 1972

Anischnogaster dubia van der Vecht, 1972, Zool. Meded. 47: 242 (key), 247, figs. 24–36, female, male - “N.W. New Guinea...Araucaria Camp, 800 m” [“four kilometers southwest of Bernhard Camp” (see Archibold et al., 1942); Bernhard Camp: ca. 3°25'S 139°07'E] (holotype female RMNH); also from Hollandia [=Jayapura] and Torricelli Mountains in Northeastern New Guinea Island, and Japen Island.

Distribution: Japen I., northern parts of New Guinea I. (van der Vecht, 1972)

(2) *iridipennis* (Smith, 1859)

Ischnogaster iridipennis Smith, 1859, J. Proc. Linn. Soc., Zool. 3: 166, male – “Aru” (lectotype OUM). – Meade-Waldo, 1914, Ann. Mag. Nat. Hist (8) 14: 405 (syn.: *Ischnogaster*

malayaensis Cameron). – van der Vecht, 1972, Zool. Meded. 47: 242 (designation of lectotype).

Ischnogaster malayaensis Cameron, 1906b, Tijdschr. Ent. 49: 231, female – “Etna Bay” [ca. 3°56’S 134°45’E] (ZMA). – Meade-Waldo, 1914, Ann. Mag. Nat. Hist. (8) 14: 405 (syn. of *Ischnogaster iridipennis* Smith).

Ischnogaster coriaceus du Buysson, 1907, Notes Leyden Mus. 29: 79, male – “Nouvelle Guinée” (RMNH). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 255 (in subgenus *Parischnogaster*). – van der Vecht, 1972, Zool. Meded. 47: 243 (syn. of *Anischnogaster iridipennis* (Smith)).

Stenogaster iridipennis; von Schulthess, 1927, Suppl. Ent. 16: 86, 87 (? or *Parischnogaster*).

Parischnogaster ? *coriaceus*; von Schulthess, 1927, Suppl. Ent. 16: 87.

Parischnogaster ? *malayaensis*; von Schulthess, 1927, Suppl. Ent. 16: 87.

Anischnogaster iridipennis; van der Vecht, 1972, Zool. Meded. 47: 241, 242, figs. 1–13, 57, 58 (syms.: *Ischnogaster malayaensis* Cameron, *Ischnogaster coriaceus* du Buysson).

Distribution: Aru Is., Misool I., Waigeo I., New Guinea I. (van der Vecht, 1972).

(3) *laticeps* van der Vecht, 1972

Anischnogaster laticeps van der Vecht, 1972, Zool. Meded. 47: 242 (key), 249, figs. 37–46, 59, female, male – “North West New Guinea, Araucaria Camp, 800 m” [“four kilometers southwest of Bernhard Camp” (see Archibold et al., 1942); Bernhard Camp: ca. 3°25’S 139°07’E] (holotype female RMNH); ; also from Holandia [=Jayapura], Humboldt Bay [=Yos Sudarso Bay], Toricelli Mts., and Fly River.

Distribution: New Guinea I. except Doberai (also called Bird’s Head or Vogelkop) Peninsula (van der Vecht, 1972).

(4-1) *loriai lorai* (du Buysson, 1909)

Ischnogaster lorai du Buysson, 1909, Ann. Mus. Civ. Stor. Nat. Genova 44: 313, male – “Nouvelle Guinée S. E. Moroka, 1300 m” [ca. 08°22’S 147°30’E] (MSNG). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 254 (in subgenus *Ischnogaster*)

Parischnogaster ? *loriai*; von Schulthess, 1927, Suppl. Ent. 16: 87.

Anischnogaster lorai lorai; van der Vecht, 1972, Zool. Meded. 47: 242, 251, 253, figs. 47–56, pl. 1.

Distribution: New Guinea I. except Doberai (also called Bird's Head or Vogelkop) Peninsula (van der Vecht, 1972).

(4-2) *loriai maculata* van der Vecht, 1972

Anischnogaster loriai maculata van der Vecht, 1972, Zool. Meded. 47: 253, female, male – “N. E. New Guinea...Mt. Kaindi, Nami Ck., 1700 m” [Mt. Kaindi: ca. 07°24'S 146°44'E] (holotype male BPBM); also from other localities in northeastern parts of New Guinea I.

Distribution: northeastern parts of New Guinea I. (van der Vecht, 1972).

(5) *spilaspis* (Cameron, 1913)

Ischnogaster spilaspis Cameron, 1913, Bijdr. Dierk. 19: 78, male – “Waigeu” [= Waigeo I.] (ZMA).

Anischnogaster spilaspis; van der Vecht, 1972, Zool. Meded. 47: 242 (key), 246, figs. 14–23 (“The original description...no doubt...based on a male” “a female from 'Waigeoe, 31 Dec.', labelled “*Ischnogaster spilaspis* Cam. type by Cameron is in Mus. Amsterdam”, but “It appears uncertain whether the true type [male] is still in existence”).

Distribution: Waigeo I., Doberai (also called Bird's Head or Vogelkop) Peninsula (van der Vecht, 1972).

2. Genus *Cochlischnogaster* Dong and Otsuka, 1997

Cochlischnogaster Dong and Otsuka, 1997, J. Southwest Agric. Univ. 19 (3): 205, 206 (key), 210, genus.

Type species: *Cochlischnogaster daduganensis* Dong and Otsuka, 1997, by original designation.

Cochlischnogaster Dong and Otsuka, 1994, Acta Ent. Sin. 37 (4): 450. Nomen nudum.

Chalogaster Carpenter and Starr, 2000, Am. Mus. Novitat. 3291: 1, 3, genus.

Type species: *Chalogaster spatulata* Carpenter and Starr, 2000, by original designation and monotypy. Synonymized by Carpenter (2001, Nat. Hist. Bull. Ibaraki Univ. 5: 27).

(6) *daduganensis* Dong and Otsuka, 1994

Cochlischnogaster daduogangensis Dong and Otsuka, 1994, Acta Ent. Sin. 37 (4): 451. Nomen nudum.

Cochlischnogaster daduganensis Dong and Otsuka, 1997, J. Southwest Agric. Univ. 19 (3): 205, 210, figs. 10–24, female, male, nest – [Type locality: Dadugang, Xishuanbanna, Yunnan Province, China (see Li et al., 2015)] (holotype female KIZ).

Distribution: China: Yunnan (Dong & Otsuka, 1997).

(7) *menglunensis* Dong and Otsuka, 1997

Cochlischnogaster menglunensis Dong, in Dong and Otsuka, 1997, J. Southwest Agric. Univ. 19 (3): 205, 211, figs. 25–29, female - [Type locality: Rezhisuo, Menglllum Town, Yunnan Province, China (see Li et al., 2015)] (holotype female KIZ). Generic affiliation is doubted by Carpenter (2001, Nat. Hist. Bull. Ibaraki Univ. 5: 27).

Distribution: China: Yunnan (Dong & Otsuka, 1997).

(8) *spatulata* (Carpenter and Starr, 2000)

Chalogaster spatulata Carpenter and Starr, 2000, Am. Mus. Novitat. 3291: 1, 3, male, female – “Viet Nam: Quang Binh Prov., Cha Lo, 17°42’N 105°46’E, ... 298 m” (holotype male IEBR; now AMNH as long-term loan); also from Chiang Mai Province and Loei Province in Thailand.

Distribution: central Vietnam, northern Thailand (Carpenter & Starr, 2000)

3. Genus *Eustenogaster* van der Vecht, 1969

Eustenogaster van der Vecht, 1969, in Yoshikawa et al. Nature and Life in S. E. Asia 6: 165, genus.

Type species: *Ischnogaster micans* de Saussure, 1852, by original designation.

Paravespa Bell, 1936, J. Bombay Nat. Hist. Soc. 38: fig. 1, 803, 806, genus (2 species).

Type species: *Paravespa eva* Bell, 1936 [= *Stenogaster eximioides* Dover and Rao, 1922], by subsequent designation of van der Vecht and Carpenter, 1990, Zool. Verh., Leiden 260: 44. Junior homonym of *Paravespa* Radoszkowski, 1886.

Eustenogaster [!] Saito et al., 2006. Amer. Mus. Novitat. (3534): 1. Incorrect spelling of *Eustenogaster* van der Vecht, 1969.

(9) *agilis* (Smith, 1860)

Ischnogaster agilis Smith, 1860, J. Proc. Linn. Soc., Zool. 5, Suppl.: 89, male—“Makassar” [ca. 05°8.5’S 119°25’E] (OUM).

Stenogaster agilis; von Schulthess, 1927, Suppl. Ent. 16: 85.

Eustenogaster agilis; Carpenter, 1988, J. New York Ent. Soc. 96: 174.

Distribution: Sulawesi I. except for northern parts (Gorontalo, North Sulawesi) of the island (Saito & Kojima, 2007).

(10) *calyptodoma* (Sakagami and Yoshikawa, 1968)

Stenogaster calyptodoma Sakagami and Yoshikawa, 1968, Annot. Zool. Japon. 41 (2): 77, figs.

1-2, 4, 6, female – “Kampong Astana near Kuching, Sarawak, Malaysian Borneo” [ca. 01°34.5'N 110°20'E, alt. ca. 7 m] (SEHU).

Eustenogaster calyptodoma; Yoshikawa et al., 1969, in Nature and Life in S. E. Asia 6: 157.

Distribution: Malay Peninsula south of the Isthmus of Kra, Borneo I., Sumatra I. (Saito & Kojima, 2007).

(11) *clypeata* Saito, 2009

Eustenogaster clypeata Saito, 2009, Spec. Div. 14: 18, 19 (figs 1–12), 20, 23 (key), female – “Chantaburi, Thailand” [ca. 12°36.5'N 102°16'E, alt. ca. 5 m] (RMNH).

Distribution: Chantaburi Province in southeastern Thailand (Saito, 2009).

(12) *eximia* (Bingham, 1890)

Ischnogaster eximius Bingham, 1890, J. Bombay Nat. Hist. Soc. 5: 244, male – “Ceylon” [= Sri Lanka] (BMNH). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 256 (in subgenus *Ischnogaster*).

Ischnogaster eximia; Dalla Torre, 1904, Genera Insect. 19: 83 (catalogue).

Stenogaster eximia; Dover and Rao, 1922, J. Asiat. Soc. Bengal (N. S.) 18: 241. – Dover, 1925 (1924), J. Asiat. Soc. Bengal (N. S.) 20: 301 (syn.: *Stenogaster eximioides* Dover and Rao); 1931, J. Fed. Malay St. Mus. 16: 256 (syn.: *Ischnogaster ornatifrons* Cameron).

Stenogaster eximius; von Schulthess, 1927, Suppl. Ent. 16: 85.

Eustenogaster eximia; Iwata, 1976, Evol. Instinct: 275 (ethology). – Krombein, 1976, Loris 13 (6): 303. – Saito-Morooka et al., 2020, Treubia 47(2): 141.

Eustenogaster eximia eximia; Das and Gupta, 1984 (1983), Or. Ins. 17: 401 (catalogue).

Distribution: Sri Lanka, Yunnan [recorded by Dong and Otsuka, 1997, but its occurrence needs confirmation], Thailand, Malay Peninsula (Saito & Kojima, 2007).

(13) *eximioides* (Dover and Rao, 1922)

Stenogaster eximioides Dover and Rao, 1922, J. Proc. Asiat. Soc. Bengal (N. S.) 18: 242, male – “Nadgani, Nilgiri Hills. 2,500 ft.” [= Nadugani, Tamil Nadu, Gudalur; ca. 11°28' N 76°24.5'E] (lectotype ZSI). – Dover, 1925 (1924), J. Asiat. Soc. Bengal (N. S.) 20: 301 (syn. of *Stenogaster eximia* (Bingham)). – Das and Gupta, 1989, Or. Ins. Monogr. 11: 28 (designation of lectotype).

Paravespa eva Bell, 1936, J. Bombay Nat. Hist. Soc. 38: 803, fig. 1, female, male – “N. Kanara District, Bombay” [= North Carana, Bombay Presidency = Uttara Kannada, Karnataka; ca. 14.6°N 74.7°E] (lectotype female BMNH). – Das and Gupta, 1984 (1983), Or. Ins. 17: 402 (syn. of *Eustenogaster eximia eximioides*). – Saito-Morooka et al., 2020, Treubia 47(2): 140–141 (designation of lectotype; syn. of *Eustenogaster eximioides* (Dover and Rao))

Eustenogaster eximioides; Iwata, 1976, Evol. Instinct: 275 (ethology). – Saito-Morooka et al., 2020, Treubia 47(2): 140–141.

Eustenogaster eximia eximioides; Das and Gupta, 1984 (1983), Or. Ins. 17: 402 (syn.: *Paravespa eva* Bell; cat.).

“*Ischnogaster eximia eximioides*”; van der Vecht and Carpenter, 1990, Zool. Verh., Leiden 260: 44 (designation as type species of *Paravespa* Bell).

Distribution: Western Ghats of the Indian Subcontinent (Dover & Rao, 1922; Bell, 1936; Saito & Kojima, 2007).

(14) *fraterna* (Bingham, 1897)

Ischnogaster fraterna Bingham, 1897, Fauna Brit. India, Hym. 1: 377 (key), 378, female, male – “Tenasserim” [Tanintharyi Region in Myanmar; ca. 13°00'N 98°45'E] (BMNH).

Stenogaster fraterna; Dover and Rao, 1922, J. Proc. Asiat. Soc. Bengal (N. S.) 18: 240. – Dover, 1925 (1924), J. Asiat. Soc. Bengal (N. S.) 20: 301 (syms.: *Ischnogaster scitula* Bingham, *Stenogaster scitula* var. *assamensis* Dover and Rao).

Eustenogaster fraterna; Iwata, 1976, Evol. Instinct: 275 (ethology).

Distribution: Eastern slope of the Himalaya [Northeast India (Assam, Sikkim); northern Myanmar]; Thailand; Malay Peninsula (Saito & Kojima, 2007).

(15) *fulvipennis* (Cameron)

Ischnogaster fulvipennis Cameron, 1902, J. Straits Branch R. Asiat. Soc. 37: 106, female, male – “Mt. Penrissen, Sarawak” [ca. 01°07.5'N 110°13'E; about 60 km southwest of Kuching]

(BMNH). – Dover, 1929, Bull. Raffles Mus. 2: 45 (syn. of *Stenogaster micans* (de Saussure)).

? *Ischnogaster fuscipes* Cameron, 1903, J. Straits Branch R. Asiat. Soc. 39: 171, sex not stated – “Klackang” [unidentified locality in Sarawak, Borneo I.; probably erroneous label reading for “Kuching”] (BMNH). – Carpenter and Kojima, 1997 (1996), J. New York Entomol. Soc. 104: 25 (? syn. of *Eustenogaster fulvipennis* (Cameron)).

Stenogaster fulvipennis; von Schulthess, 1927, Suppl. Ent. 16: 86.

Eustenogaster fulvipennis; Carpenter, 1988, J. New York Ent. Soc. 96: 175.

Distribution: Borneo I. (Carpenter & Kojima, 1997; Saito & Kojima, 2007).

(16) *fumipennis* Saito, 2007

Eustenogaster fumipennis Saito, in Saito and Kojima, 2007, Zootaxa 1556: 1, 7, 10 (figs. 26–31), 16 (fig. 57), 21, female, – The Philippines; Panay Island “Antique: Alojipan, Culasi” [ca. 11°25’N, 122°08’E, average altitude 685 m] (AMNH). – Selis, 2018, Zootaxa 4514 (3), 384, 385, 386 (figs.), female, male.

Distribution: Luzon I., Panay I., Negros I., Mindanao I. (Saito & Kojima, 2007; Selis, 2018).

(17) *gibbosa* Starr and van der Vecht, 2006

Eustenogaster gibbosa Starr and van der Vecht, in Hashim et al. 2006, Tropical Zoology 19: 289, female, – “Malaysia, Gombak FSC” [= University of Malaya Field Study Center at Gombak], “located 15 km northeast of Kuala Lumpur, at an altitude of 300 m a.s.l.” [ca. 03°19.5’N 101°45’E] (holotype female UMM, now MSNF as long-term loan). – Selis, 2018, Zootaxa 4514 (3), 385.

Distribution: Malay Peninsula, Singapore, Borneo I., Sumatra I., Mentawai Is., Krakatau Is., Java I., Bangka Is. Palawan I. (Hashim et al. 2006; Saito & Kojima, 2007; Selis, 2018).

(18) *hauxwellii* (Bingham, 1894)

Ischnogaster rufo-maculata Bingham, 1894, J. Bombay Nat. Hist. Soc. 8: 385, female – “Tenasserim (Salween Valley, Tavoy)” [= Dawei; ca. 14°05’N 98°12’E] (BMNH); 1897, Fauna Brit. India, Hym. 1: 377, 379 (*rufomaculata*). – Das and Gupta, 1984 (1983), Or. Ins. 17: 402 (syn. of *Eustenogaster hauxwellii* (Bingham), acting as first reviser).

Ischnogaster hauxwellii Bingham, 1894, J. Bombay Nat. Hist. Soc. 8 (3): 386, pl. 1 fig. 4, female, male – “Tenasserim (Atran and Ye Valleys)” [Atran: ca. 16°01’N 97°39.5’E; Ye Town: ca. 15°15’N 97°51.5’E] (BMNH).

Ischnogaster hauxwelli [!]; Dalla Torre, 1904, Gen. Ins. 19: 84 (syn. of *Ischnogaster micans* de Saussure).

? *Stenogaster bicarinata* Dover and Rao, 1922, J. Proc. Asiat. Soc. Bengal (N. S.) 18: 242, male – “Ten miles south of Kuching, Sarawak, Borneo” (ZSI). – Carpenter and Kojima, 1997 (1996), J. New York Entomol. Soc. 104: 26 (? syn. of *Eustenogaster hauxwellii* (Bingham)).

Stenogaster rufomaculata; Dover and Rao, 1922, J. Proc. Asiat. Soc. Bengal (N. S.) 18: 241.

Stenogaster micans var. *hauxwelli* [!]; von Schulthess, 1927, Suppl. Ent. 16: 85.

Stenogaster rufomaculatus; von Schulthess, 1927, Suppl. Ent. 16: 86 (catalogue).

Stenogaster nigromaculata [!]; Dover, 1931, J. Fed. Malay. St. Mus. 16: 256.

Eustenogaster hauxwellii; Iwata, 1976, Evol. Instinct: 274. – Das and Gupta, 1984 (1983), Or. Ins. 17: 402 (syn.: *Ischnogaster rufomaculata* Bingham, acting as first reviser; catalogue; distribution).

Distribution: Eastern slope of the Himalaya [Northeastern India (Sikkim); northern Myanmar; northern Thailand]; Cambodia, Singapore, Borneo I., Sumatra I., Bangka I., Krakatau Is., Java I., Bali I., Mindanao I. (Saito & Kojima, 2007).

(19) *latebricola* Saito, 2007

Eustenogaster latebricola Saito, in Saito and Kojima, 2007, Zootaxa 1556: 1, 6, 8, 13 (figs. 39–45), 14 (figs. 46–49), 17 (fig. 58), 18 (fig. 59J, V), 25, female, male – holotype female “S. Sumatra, 250 m, Res. Benkoelen, Mocara Tenam” [= Moeara Tenam = Muara Tenam = Rawa Tenam; ca. 03°07’S 105°03’E] (RMNH).

Distribution: Malay Peninsula; Borneo I.; Sumatra I., Krakatau Is., Java I., Bangka I. (Saito & Kojima, 2007).

(20) *luzonensis* (Rohwer, 1919)

Stenogaster micans var. *Luzonensis* Rohwer, 1919, Bull. Hawaii. Sugar Pltrs. Assoc. Exp. Stat., Ent. Ser. 14 (1): 3a, 16, male, female – “Mt. Makiling, Luzon, P. I.” [ca. 14°06’~14°15’N 121°09’E~121°16’E; peak: 14°08’09”N 121°11’38”E, 1090 m alt.] (holotype female NMNH).

Stenogaster micans var. *luzonicus* [!]; von Schulthess, 1927, Suppl. Ent. 16: 85.

Eustenogaster luzonensis; Carpenter, 1988, J. New York Ent. Soc. 96: 175.

Distribution: Luzon I. (Saito & Kojima, 2007).

(21) *micans* (de Saussure, 1852)

Ischnogaster micans de Saussure, 1852, Ann. Soc. Ent. France (2) 10: 24, female – “Java” (RMNH). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 254 (in subgenus *Ischnogaster*). – Kojima and van Achterberg, 1997, Zool. Meded., Leiden, 71: 163 (designation of lectotype).

Ischnogaster ornatifrons Cameron, 1902, J. Straits Branch R. Asiat. Soc. 37: 105, female – “Santubong, Kuching, Sarawak” [Mt. Santubong: peak alt. 810 m, ca. 01°44’N 110°20’E] (BMNH). – Meade-Waldo, 1914, Ann. Mag. Nat. Hist. (8) 14: 463 (in subgenus *Parischnogaster*). – Carpenter and Kojima, 1997, J. New York Entomol. Soc. 104: 26 (? syn. of *Eustenogaster micans* (de Saussure)). – Saito-Morooka et al., 2020, Treubia 47(2): 142–143. (syn. of *Eustenogaster micans* (de Saussure)).

Stenogaster micans; von Schulthess, 1927, Suppl. Ent. 16: 81, 85. – Dover, 1929, Bull. Raffles Mus. 2: 45 (syn.: *Ischnogaster fulvipennis* Cameron).

Stenogaster ornatifrons; von Schulthess, 1927, Suppl. Ent. 16: 86.

Eustenogaster micans; van der Vecht, 1969, in Yoshikwa et al. Nature and Life in S. E. Asia 6: 165.

Holischnogaster micans; Lee, 1982, Hornets Agric. Regions China: 133.

Distribution: Yunnan (?), Myanmar, Thailand, Singapore, Malay Peninsula, Borneo I., Sumatra I., Bangka Is., Java I. (Saito & Kojima, 2007).

(22) *multifolia* Saito-Morooka, 2020

Eustenogaster multifolia Saito-Morooka, in Saito-Morooka et al., 2020, Treubia 47(2): 135–136, female – “Tekuk Kabung [= Teluk Kabung]” [ca. 01°02’S 100°24’E, alt. 90 m] (MZB). Distribution: Sumatra I. (Saito-Morooka et al., 2020).

(23) *nigra* Saito and Nguyen, 2006

Eustenogaster nigra Saito and Nguyen, in Saito et al., 2006, Amer. Mus. Novitat. (3534): 2, female, male, nest. Holotype female – “Viet Nam: Tam Dao (outside town), ca. 900 m, Vinh Phuc” [ca. 21°27’N 105°38’E] (IEBR).

Distribution: Yanping in Fujian of China, possibly Yunnan, Hong Kong, northern Vietnam, northern Thailand (Saito & Kojima, 2007).

(24) *palavanica* Reyes, 1988

Eustenogaster palavanica Reyes, 1988, Philipp. Ent. 7 (4): 387, 392 (key), figs. 25–29, female, male – “Irawan River, 2000 ft, Mt. Beaufort, Palawan” [ca. 09°50’N, 118°39’E] (holotype male BPBM).

Distribution: Palawan I. (Reyes, 1988).

(25) *panaiensis* Saito, 2009

Eustenogaster panaiensis Saito, 2009, Spec. Div. 14: 16, 17 (figs 1–12), 18, 23 (key), 24 (key), female, male – holotype female, “Panay Island, Philippine ... Antique, Alojipan, Culasi” [ca. 11°25’N, 122°08’E, average altitude 685 m] (AMNH) – Selis, 2018, Zootaxa 4514 (3), 385.

Distribution: Luzon I.; Panay I.; Mindanao I. (Saito, 2009; Selis, 2018).

(26) *scitula* (Bingham, 1897)

Ischnogaster scitula Bingham, 1897, Fauna Brit. India, Hym. 1: 377 (key), 379, female – “Rangit Valley, Sikkim; Margherita, Assam” [Rangit Valley: ca. 27°17’N 88°17’E; Margherita: ca. 27°17’N 95°40’E, alt. 160 m] (BMNH). – Dover, 1925 (1924), J. Asiat. Soc. Bengal (N. S.) 20: 301 (syn. of *Stenogaster fraterna* (Bingham)).

Stenogaster scitula; Dover and Rao, 1922, J. Proc. Asiat. Soc. Bengal (N. S.) 18: 240.

Stenogaster scitula var. *assamensis* Dover and Rao, 1922, J. Proc. Asiat. Soc. Bengal (N. S.) 18: 240, male – “Margherita, Assam” [ca. 27°17’N 95°40’E, alt. 160 m] (ZSI). – Dover, 1925 (1924), J. Asiat. Soc. Bengal (N. S.) 20: 301 (syn. of *Stenogaster scitula* (Bingham)).

Stenogaster seitula [!]; Lee, 1982, Hornets Agric. Regions China: 130.

Eustenogaster scitula; Das and Gupta, 1984 (1983), Or. Ins. 17: 402 (syn.: *Stenogaster scitula* var. *assamensis* Dover and Rao).

Distribution: Northeastern parts of Indian Subcontinent [India (Assam, Meghalaya, Sikkim)], Yunnan, Bhutan, Myanmar, Vietnam, Malay Peninsula (Srinivassan & Kumar, 2009; Nidup et al. 2017; Saito & Kojima, 2007).

(27) *spinicauda* Saito, 2007

Eustenogaster spinicauda Saito, in Saito and Kojima, 2007, Zootaxa 1556: 1, 7, 8, 15 (figs. 50–56), 17 (fig. 58), 18 (fig. 59M, Y), 27, female, male – holotype female “Catbalogan, Samar” [ca. 11°47’N 124°53’E] (RMNH). – Selis, 2018, Zootaxa 4514 (3), 385.

Distribution: Cebu I., Samar I., Leyte I., Mindoro I., Mindanao I. (Saito & Kojima, 2007; Selis, 2018).

(28) *sumatraensis* Saito-Morooka, 2020

Eustenogaster sumatraensis Saito-Morooka, in Saito-Morooka *et al.*, 2020, Treubia 47(2): 136–138, female –“Muko Muko (about 00°17.5’S 100°09’E, about 460 m alt.), West Sumatra” [corrected in the main text of this paper]; in the original citation, “Muko Muko [ca. 2°50’S 101°25’E; Sumatra Island]” is given.

Distribution: Sumatra I., Malay Peninsula (Saito-Morooka *et al.*, 2020).

(29) *vietnamensis* Saito, 2009

Eustenogaster vietnamensis Saito, 2009, Spec. Div. 14: 20, 21 (figs 18–22), 22, 24 (key), male – “Dambri, Bao Loc, Lam Dong, 800m” [ca. 11°38.5’N 107°44.5’E] (IEBR). – Saito-Morooka *et al.*, 2020, Treubia 47(2): 139–140 (description of female).

Distribution: Vietnam (Saito, 2009; Saito-Morooka *et al.*, 2020).

4. Genus *Liostenogaster* van der Vecht

Liostenogaster van der Vecht, 1969, in Yoshikawa *et al.* Nature and Life in S. E. Asia 6: 165, genus. Type species: *Ischnogaster nitidipennis* de Saussure, 1853, by original designation. *Lioschnogaster* [!]; Dong and Otsuka, 1997, J. Southwest Agric. Univ. 19 (3): 206.

(30) *abstrusa* Turillazzi, 1999

Liostenogaster abstrusa Turillazzi, 1999, Tropical Biol. 12: 347, male, female - holotype male “Malaysian Peninsula. Genting Tea Estate, Genting Sempah (el. 610 m), Pahang State” [ca. 03°21’N 101°47’E] (MZUF as a long term loan from MFSUM).

Distribution: Malay Peninsula south of the Isthmus of Kra (Turillazzi, 1999).

(31) *bimaculata* Selis, 2018

Liostenogaster bimaculata Selis, 2018, Zootaxa. 4514(3): 387. figs 6–11, female, male – holotype female “Philippines Mindanao, Agusan, Esperanza” (MSNVE).

Distribution: Samar I., Mindanao I. (Selis, 2018).

(32) *campanulae* Turillazzi, 1999

Liostenogaster campanulae Turillazzi, 1999, Tropical Biol. 12: 350, male, female – holotype male “Malaysian Peninsula. Genting Tea Estate, Genting Sempah (el. 610 m), Pahang State” [ca. 03°21’N 101°47’E] (MZUF as a long term loan from MFSUM).

Distribution: Malay Peninsula south of the Isthmus of Kra, Sumatra I. (Turillazzi, 1999).

(33) *filicis* Turillazzi, 1982

Liostenogaster lunata Carpenter, 1982, Syst. Ent. 7: 34. *nomen nudum*

Liostenogaster filicis Turillazzi, 1999, Tropical Biol. 12: 343, male, female – holotype male

“Malaysian Peninsula. Genting Tea Estate, Genting Sempah (el. 610 m), Pahang State” [ca. 03°21'N 101°47'E] (MZUF as a long term loan from MFSUM).

Distribution: Malay Peninsula, Myanmar, Laos (Turillazzi, 1999).

(34) *flaviplagiata* (Cameron, 1902)

Ischnogaster flaviplagiatus Cameron, 1902, J. Straits Branch R. Asiat. Soc. 37: 104, female –

“Kuching, Sarawak” [ca. 01°33'N 110°20'E] (BMNH).

Parischnogaster flavoplagiatus [!]; von Schulthess, 1927, Suppl. Ent. 16: 87.

Stenogaster flavoplagiata [!]; Dover, 1931, J. Fed. Malay. St. Mus. 16: 256 (syn. of *Stenogaster nitidipennis* (de Saussure)).

Liostenogaster flaviplagiata; Turillazzi and Carfi, 1996, Trop. Zool. 9 (1): 19.

Distribution: Malay Peninsula, Borneo I., Sumatra I. (Turillazzi & Carfi, 1996).

(35) *flavolineata* (Cameron, 1902)

Ischnogaster flavolineata Cameron, 1902, J. Straits Branch R. Asiat. Soc. 37: 108, female –

“Lingga, Sarawak” (BMNH). – Meade-Waldo, 1914, Ann. Mag. Nat. Hist. (8) 14: 463 (in subgenus *Parischnogaster*).

Ischnogaster butteli von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3):

255, 257, figs. F, J–L, male, female (in subgenus *Parischnogaster*) – “Malacca, Taiping Hills,...Maxwell's Hill, Taiping” [Maxwell's Hill = Bukit Larut: ca. 04°51.5' N 100°47.5' E, alt. ca 100 m] (ZMB). – Meade-Waldo, 1914, Ann. Mag. Nat. Hist. (8) 14: 463 (in subgenus *Parischnogaster*; “This species is distinct from *I. flavolineata* Cam.”). – Dover, 1931, J. Fed. Malay. St. Mus. 16: 256 (syn. of *Stenogaster flavolineata* (Cameron)).

Parischnogaster butteli; von Schulthess, 1927, Suppl. Ent. 16: 86.

Parischnogaster flavolineatus; von Schulthess, 1927, Suppl. Ent. 16: 87 (distr.).

Stenogaster flavolineata; Dover, 1929, Bull. Raffles Mus. 2: 45.

Liostenogaster flavolineata; Carpenter, 1988, J. New York Ent. Soc. 96: 174.

Distribution: Malay Peninsula south of the Isthmus of Kra, Singapore, Borneo I., Sumatra I. (Carpenter & Kojima, 1997).

(36) *leonardi* Turillazzi & Turillazzi, 2016

Liostenogaster leonardi Turillazzi & Turillazzi in Abu Bakar *et al.* 2016, Tropical Zoology. 29(3): 136, figs 1-16, female, male – holotype male “Malaysian Peninsular. Bukit Fraser, Pahang State (el. 1247 m a.s.l)” [= Fraser Hills: ca. 03°42.5’ N 101°44’E] (MZUF/MFSUM).

Distribution: Malay Peninsula south of the Isthmus of Kra (Abu Bakar *et al.*, 2016).

(37) *maculiceps* Selis, 2018

Liostenogaster maculiceps Selis, 2018, Zootaxa. 4514(3): 389. figs 12-16, female, male – holotype female “Philippines Mindanao, Mt. Apo” (MSNVE).

Distribution: Mindanao I. (Selis, 2018).

(38) *nitidipennis* (de Saussure, 1853)

Ischnogaster nitidipennis de Saussure, 1853, Ét. Fam. Vesp. 2: 10, male – “Selon l'étiquette, Cayenne!?? mais il est évident à mes yeux que cet insecte ne peut venir que de Java, de la Nouvelle-Guinée, ou de la Polynésie” [According to the label, Cayenne!?? but it is obvious to me that this insect can only come from Java, New Guinea, or Polynesia; “Cayenne” is a town in French Guiana, South America] (MNHN). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 255 (in subgenus *Parischnogaster*).

Parischnogaster nitidipennis; von Schulthess, 1927, Suppl. Ent. 16: 88.

Stenogaster nitidipennis; Dover, 1929, Bull. Raffles Mus. 2: 46; 1931, J. Fed. Malay. St. Mus. 16: 256 (syn.: *Stenogaster flavoplagiata* [!]) (Cameron)).

Liostenogaster nitidipennis; Iwata, 1976, Evol. Instinct: 275 (ethology).

Distribution: China: Yunnan, Myanmar, Thailand, Malay Peninsula, Singapore, Borneo I., Sumatra I., Java I., Bali I, Luzon I, Palawan I. (Turillazzi & Carfi, 1996).

(39) *pardii* Turillazzi and Carfi, 1996

Liostenogaster pardii Turillazzi and Carfi, 1996, Trop. Zool. 9 (1): 19, 20, figs. 1–22, male, female, nest – “Malaysian Peninsula. Genting Sempah, Genting Tea Estate (elev. 610 m), Pahang State” [ca. 03°21’ N 101°47’E] (holotype male MSNF); also from Selangor and Sarawak.

Distribution: Malay Peninsula south of the Isthmus of Kra, Borneo I. (Turillazzi & Carfi, 1996)

(40) *picta* (Smith, 1860)

Ischnogaster pictus Smith, 1860, J. Proc. Linn. Soc., Zool. 5, Suppl.: 89, female – “Makassar” [ca. 5°8'S 119°25'E] (OUM).

Ischnogaster picta; Dalla Torre, 1894, Cat. Hym. 9: 113 (cat.).

Stenogaster pictus; von Schulthess, 1927, Suppl. Ent. 16: 86.

Liostenogaster picta; Turillazzi and Carfi, 1996, Trop. Zool. 9 (1): 19.

Distribution: Sulawesi I. (Turillazzi, 1999).

(41) *topographica* Turillazzi, 1999

Liostenogaster topographica Turillazzi, 1999, Tropical Biol. 12: 336, male, female – holotype male “Malaysian Peninsula. Genting Tea Estate, Genting Sempah (el. 610 m), Pahang State” [ca. 03°21' N 101°47'E] (MZUF as a long-term loan from MFSUM).

Distribution: Malay Peninsula south of the Isthmus of Kra, Borneo I. (Turillazzi, 1999).

(42) *tutua* Turillazzi, 1999

Liostenogaster tutua Turillazzi, 1999, Tropical Biol. 12: 340, male, female – holotype male “Malaysian Peninsula. Genting Tea Estate, Genting Sempah (el. 610 m), Pahang State” [ca. 03°21' N 101°47'E] (MZUF as a long-term loan from MFSUM).

Distribution: Malay Peninsula south of the Isthmus of Kra (Turillazzi, 1999).

(43) *varipicta* (Rohwer, 1919)

Stenogaster varipictus Rohwer, 1919, Bull. Hawaii. Sugar Pltrs. Assoc. Exp. Stat., Ent. Ser. 14 (1): 3a, 15, female – “Los Baños, Luzon, P. I. [ca. 14°10' N 121°14.5'E]” (NMNH).

Parischnogaster ? varipictus; von Schulthess, 1927, Suppl. Ent. 16: 88.

Liostenogaster varipicta; Carpenter, 1982, Syst. Ent. 7: 34.

Liostenogaster variapicta [!]; Reyes, 1988, Philipp. Ent. 7 (4): 396.

Distribution: Malay Peninsula south of the Isthmus of Kra, Singapore, Sumatra I., Borneo I., Palawan I., Luzon I., Visayas, Mindanao I. (Turillazzi, 1999).

(44) *vechti* Turillazzi, 1988

Liostenogaster arcuata Hansell, 1987, Oxford Surv. Evol. Biol. 4: 167. *Nomen nudum*.

Liostenogaster vechti Turillazzi, 1988, Tropic. Zool. 1: 193, 194, figs. 1–20, female, male – “Bukit Fraser (Fraser Hill), Jeriau Waterfall (910 m a.s.l.), Pahang State [ca. 03°43.5' N 101°42.5'E]” (holotype male MSNF); also from other localities in Pahang State.

Distribution: Malay Peninsula south of the Isthmus of Kra, Sumatra I. (Turillazzi & Carfi, 1996).

5. Genus *Metischnogaster* van der Vecht

Metischnogaster van der Vecht, 1977, Tijdschr. Ent. 120: 59, 60, genus.

Type species: *Ischnogaster cilipennis* Smith, 1857, by original designation.

(45) *cilipennis* (Smith, 1857)

Ischnogaster cilipennis Smith, 1857a, Cat. Hym. Brit. Mus., Hym. 5: 92, male – “Malacca (Mount Ophir)” [peak: ca. 2°22.5'N 102°36.5'E, alt. 1,276 m] (lectotype BMNH). – du Buysson, 1909, Ann. Mus. Civ. Stor. Nat. Genova 44: 312 (syn.: *Ischnogaster drewseni* (de Saussure)). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 255 (in subgenus *Parischnogaster*). – van der Vecht, 1977, Tijdschr. Ent. 120: 64 (designation of lectotype).

Parischnogaster cilipennis; von Schulthess, 1927, Suppl. Ent. 16: 87 (syn.: *Ischnogaster drewseni* de Saussure).

Stenogaster cilipennis; Dover, 1931, J. Fed. Malay St. Mus. 16: 256 (distr.).

Metischnogaster cilipennis; van der Vecht, 1977, Tijdschr. Ent. 120: 63, 64.

Distribution: Malay Peninsula, Borneo I., Sumatra I. (van der Vecht, 1977).

(46) *drewseni* (de Saussure, 1857)

Ischnogaster drewseni de Saussure, 1857, Ann. Soc. Ent. France (3) 5: 315, male – “Poulo-Pinang, île de l'Archipel Indien” [= Penang Island: ca. 5°22' N 100°15.5'E] (MHNG). – du Buysson, 1909, Ann. Mus. Civ. Stor. Nat. Genova 44: 312 (syn. of *Ischnogaster cilipennis* Smith). – von Schulthess, 1927, Suppl. Ent. 16: 87 (syn. of *Parischnogaster cilipennis* (Smith)).

Ischnogaster drewsenii [!]; Dalla Torre, 1894, Cat. Hym. 9: 113 (cat.).

Stenogaster drewseni; Pagden, 1962, Malay. Nat. J. 16: 95 (ethology).

Metischnogaster drewseni; van der Vecht, 1977, Tijdschr. Ent. 120: 64 (key), 69.

Distribution: Malay Peninsula, Singapore, Borneo I., Sumatra I., Belitung I., Java I., Palawan I. (van der Vecht, 1977)

6. Genus *Parischnogaster* von Schulthess

Parischnogaster von Schulthess, 1914, Zool. Jb. (Abt. Syst. Geogr. Biol. Tiere) 37: 255, subgenus of *Ischnogaster* Guérin.

Type species: *Ischnogaster mellyi* de Saussure, 1852, by original designation.

Holischnogaster van der Vecht, 1977, Tijdschr. Ent. 120: 60, 70, genus.

Type species: *Holischnogaster gracilipes* van der Vecht, 1977, by original designation and monotypy.

(47) *albofasciata* Selis, 2018

Parischnogaster albofasciata Selis, 2018, Zootaxa, 4514(3), 392, figs 23–29, male – “Philippines, Mindanao, Compostela Vally” (MSNVE).

Distribution: Mindanao I. (Selis, 2018).

(48) *alternata* Sakagami, 1969

? *Stenogaster sarawakensis* Dover and Rao, 1922, J. Proc. Asiat. Soc. Bengal (N. S.) 18: 240, female – “10 miles south of Kuching, Sarawak, Borneo” [Kuching: ca. 01°33' N 110°20'E] (ZSI). – Carpenter and Kojima, 1997 (1996), J. New York Entomol. Soc. 104: 29 (? syn. of *Parischnogaster alternata* Sakagami).

Parischnogaster alternata Sakagami, 1969, in Yoshikawa *et al.*, Nature and Life in S. E. Asia 6: 155, female, male – “Fraser's Hill, Malaya” [ca. 03°42.5' N 101°44'E] (holotype male SEHU); also from another locality in Peninsular Malaysia.

Parischnogaster alternate [!]; Kojima, 1990, Japan. J. Ent. 58 (3): 517.

Distribution: Malay Peninsula, Singapore, Borneo I. (Carpenter & Kojima, 1997).

(49) *aurifrons* (Smith, 1862)

Ischnogaster aurifrons Smith, 1862, J. Proc. Linn. Soc., Zool. 6: 58, female – “Celebes (Tondano)” [ca. 01°18' N 124°55'E] (OUM).

Stenogaster aurifrons; von Schulthess, 1927, Suppl. Ent. 16: 85, 86 (? or *Parischnogaster*).

Parischnogaster aurifrons; Carpenter and Kojima, 1997 (1996), J. New York Entomol. Soc. 104: 21, 30.

Distribution: Sulawesi I. (Carpenter & Kojima, 1997).

(50) *carpenteri* Selis, 2018

Parischnogaster carpenteri Selis, 2018, Zootaxa, 4514(3), 394, figs 30–37, female – “Philippines, Mindanao, Balingasag” (MSNVE).

Distribution: Mindanao I., Mindoro I. (Selis, 2018).

(51) *curviclepeus* Selis, 2018

Parischnogaster curviclepeus Selis, 2018, Zootaxa, 4514(3), 397, figs 38–43, male – “Philippines, Mindoro, Baco” (MSNVE).

Distribution: Mindoro I. (Selis, 2018).

(52) *depressigaster* (Rohwer, 1919)

Stenogaster depressigaster Rohwer, 1919, Bull. Hawaii. Sugar Pltrs. Assoc. Exp. Stat., Ent. Ser. 14 (1): 3a, 16, male – “Los Baños, Luzon, P. I.” [ca. 14°10’N 121°55’E; average altitude 100 m] (USNM).

Parischnogaster ? depressigaster [!]; von Schulthess, 1927, Suppl. Ent. 16: 87.

Parischnogaster depressigaster; Iwata, 1967, Nature Life S. E. Asia 5: 260 (ethology).

Distribution: Luzon I. (Carpenter & Kojima, 1997; Selis, 2018).

(53) *fei* Selis, 2014

Parischnogaster fei Selis, 2014, Boll. Mus. St. Nat. Venezia, 65: 135, figs. 9-13, female – “Mindanao, South Cotabato.” (MSVI).

Distribution: Mindanao I. (Selis, 2014).

(54) *giglii* Selis, 2014

Parischnogaster giglii Selis, 2014, Boll. Mus. St. Nat. Venezia, 65: 137, figs. 14-18, male – “Mindanao, Mt. Apo” (MSVI).

Distribution: Mindanao I. (Selis, 2014, 2018).

(55) *gracilipes* (van der Vecht, 1977)

Holischnogaster gracilipes van der Vecht, 1977, Tijdschr. Ent. 120: 73, figs. 38 – 49, female, male – “Borneo: Sabah...Mt. Kinabalu, 5000 ft” (MSNM); also from other localities in Borneo and Sumatra.

Parischnogaster gracilipes; Carpenter, 1988, J. New York Ent. Soc. 96: 175.

Distribution: Borneo I., Sumatra I. (Carpenter & Kojima, 1997).

(56) *jacobsoni* (du Buysson, 1913)

Ischnogaster jacobsoni du Buysson, 1913, Bull. Mus. Hist. Nat. Paris 7: 436, male – “Java, Noesa Kambangan” [= Nusa Kambangan, a small island adjacent to Java I.; [ca. 7°45’S 108°55’E] (MNHN).

Parischnogaster jacobsoni; von Schulthess, 1927, Suppl. Ent. 16: 81, 87.

Distribution: China (Yunnan), Malay Peninsula south of Isthmus of Kra, Borneo I., Sumatra I., Java I. (including Nusa Kambangan) (Carpenter & Kojima, 1997).

(57) *mellyi* (de Saussure, 1852)

Ischnogaster mellyi de Saussure, 1852, Ann. Soc. Ent. France (2) 10: 25, pl. 2 fig. 1, male – “Java” (male MHNG). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 256 (in subgenus *Parischnogaster*).

Ischnogaster nigrifrons Smith, 1857b, J. Proc. Linn. Soc., Zool.: 113, female – “Borneo (Sarawak)” (OUM). – Das and Gupta, 1984 (1983), Or. Ins. 17: 401 (syn. of *Parischnogaster mellyi* (de Saussure)).

Stenogaster nigrifrons; Dover and Rao, 1922, J. Proc. Asiat. Soc. Bengal (N. S.) 18: 241. – Dover, 1929, Bull. Raffles Mus. 2: 45; 1931, J. Fed. Malay St. Mus. 16: 255 (syns.: *Ischnogaster nigricans* Cameron, *Ischnogaster serrei* du Buysson).

Parischnogaster mellyi; von Schulthess, 1927, Suppl. Ent. 16: 82, 87. – Das and Gupta, 1984 (1983), Or. Ins. 17: 401 (syn.: *Ischnogaster nigrifrons* Smith).

Parischnogaster nigrifrons; von Schulthess, 1927, Suppl. Ent. 16: 83, 87.

Stenogaster mellyi; Pagden, 1962, Malay. Nat. J. 16: 95.

Parischnogaster nigriformis [!]; Dong and Otsuka, 1997, J. Southwest Agric. Univ. 19 (3): 205. Distribution: India (Assam, Meghalaya, Sikkim), China (Yunnan), Bhutan, Myanmar, Vietnam, Thailand, Malay Peninsula, Singapore, Borneo I., Sumatra I., Java I., Mindanao I. (Carpenter & Kojima, 1997).

(58) *mindanaonis* Selis, 2018

Parischnogaster mindanaonis Selis, 2018, Zootaxa, 4514(3), 399, figs 48–57, male – “Philippines, Mindanao, Agusan, Esperanza” (MSNVE).

Distribution: Mindanao I. (Selis, 2018).

(59) *nigerrima* Selis, 2018

Parischnogaster nigerrima Selis, 2018, Zootaxa, 4514(3), 404, figs 58–62, female – “Philippines, Luzon, Ifugao, Banaue” (MSNVE).

Distribution: Luzon I. (Selis, 2018).

(60-1) *nigricans nigricans* (Cameron, 1902)

Ischnogaster nigricans Cameron, 1902, J. Straits Branch R. Asiat. Soc. 37: 105, female – “Kuching, Sarawak” [ca. 01°33'N 110°20'E] (BMNH). – Meade-Waldo, 1914, Ann. Mag. Nat. Hist. (8) 14: 463 (in subgenus *Parischnogaster*). – Dover, 1931, J. Fed. Malay St. Mus. 16: 255 (syn. of *Stenogaster nigrifrons* (Smith)).

Parischnogaster nigricans; von Schulthess, 1927, Suppl. Ent. 16: 87.

Parischnogaster nigrcanis [!]; Dong and Otsuka, 1997, J. Southwest Agric. Univ. 19 (3): 205.

Parischnogaster nigrians [!]; Dong and Otsuka, 1997, J. Southwest Agric. Univ. 19 (3): 210.

Distribution: China (Yunnan), Malay Peninsula south of Isthmus of Kra, Singapore, Borneo I., Sumatra I., Bangka I., Krakatau Is., Java I., Kangean I. (Carpenter & Kojima, 1997; Dong & Otsuka, 1997).

(60-2) *nigricans serrei* (du Buysson, 1905)

Ischnogaster serrei du Buysson, 1905, Bull. Soc. Ent. France: 281, female, male – “Batavia” [= Jakarta] (MNHN). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 255 (in subgenus *Parischnogaster*). – Dover, 1931, J. Fed. Malay St. Mus. 16: 255 (syn. of *Stenogaster nigrifrons* (Smith)).

Parischnogaster serrei; von Schulthess, 1927, Suppl. Ent. 16: 88 (cat.).

Stenogaster serripes [!]; von Schulthess, 1935, Rev. Suisse Zool. 42: 299.

Parischnogaster serres [!]; Dong and Otsuka, 1997, J. Southwest Agric. Univ. 19 (3): 205 [probably misidentification].

Distribution: Java I. (Carpenter & Kojima, 1997).

(61) *nigriterga* Selis, 2018

Parischnogaster nigriterga Selis, 2018, Zootaxa, 4514(3), 405, figs 63–67, female – “PH-Luzon, Rizal, Tanay” (MSNVE).

Distribution: Luzon I. (Selis, 2018).

(62) *simillima* Selis, 2018

Parischnogaster simillima Selis, 2018, Zootaxa, 4514(3), 408, figs 68–74, male – “PH-Mindanao, Agusan, Esperanza” (MSVI).

Distribution: Mindanao I. (Selis, 2018).

(63) *striatula* (du Buysson, 1905)

Ischnogaster striatulus du Buysson, 1905, Bull. Soc. Ent. France: 282, female – “Sumatra” (MNHN). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 255 (in subgenus *Parischnogaster*).

? *Ischnogaster clypealis* Cameron, 1906a, J. Straits Branch R. Asiat. Soc. 46: 122, female – “Bidi...Kuching” [Bidi: ca. 01°23'N 110°08'E, alt. 30 m; Kuching: ca. 01°33'N 110°20'E] (BMNH). – Carpenter and Kojima, 1997 (1996), J. New York Entomol. Soc. 104: 31 (? syn. of *Parischnogaster striatula* (du Buysson)).

Ischnogaster foveatus du Buysson, 1907, Notes Leyden Mus. 29: 80, male – “Salawatti” [= Salawati Island in Raja Ampat Islands, ca. 01°6.5'S 130°52'E; possibly based on erroneous locality labeling] (RMNH). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 255 (in subgenus *Parischnogaster*).

? *Ischnogaster levifoveatus* Meade-Waldo, 1914, Ann. Mag. Nat. Hist. (8) 14: 462, male (in subgenus *Parischnogaster*) – “BORNEO: Sarawak, Mt. Matang” [ca. 01°36'N 110°11'E, alt. 230 m] (BMNH). – Carpenter and Kojima, 1997 (1996), J. New York Entomol. Soc. 104: 31 (? syn. of *Parischnogaster striatula* (du Buysson)).

? *Parischnogaster costulatus* von Schulthess, 1927, Suppl. Ent. 16: 82, female – “Sumatra, Lubuk Sulasih, 1000 m” (NHMW). – Carpenter and Kojima, 1997 (1996), J. New York Entomol. Soc. 104: 31 (? syn. of *Parischnogaster striatula* (du Buysson)).

Parischnogaster striatulus; von Schulthess, 1927, Suppl. Ent. 16: 82 (syn.: *foveatus* du Buysson)

Parischnogaster striatulo [!]; von Schulthess, 1927, Suppl. Ent. 16: 82.

Parischnogaster striolatus [!]; von Schulthess, 1927, Suppl. Ent. 16: 83.

Parischnogaster foveatus; von Schulthess, 1927, Suppl. Ent. 16: 87, 88 (syn.: *Parischnogaster striatulus* (du Buysson)).

Parischnogaster? *levifoveatus*; von Schulthess, 1927, Suppl. Ent. 16: 87.

Distribution: Thailand, Malay Peninsula, Borneo I., Sumatra I., Salawati I. [occurrence doubtful] (Carpenter & Kojima, 1997).

(64) *timida* (Williams, 1928)

? *Ischnogaster strandi* du Buysson, 1910, Bull. Soc. Ent. France: 39, male, female – “Philippines: Samar” (ZMB). – Carpenter and Kojima, 1997 (1996), J. New York Entomol. Soc. 104: 32 (? syn. of *Parischnogaster timida* (Williams)).

Parischnogaster strandi; von Schulthess, 1927, Suppl. Ent. 16: 88.

Stenogaster timidus Williams, 1928, Bull. Hawaii. Sugar Pltrs. Assoc. Exp. Stat., Ent. Ser. 19: 170, pl. XXXIII fig. 228, female – “Molawin Falls, Mt. Makiling, Los Baños” [ca. 14°09.5’N 121°00’E, alt. 100 m] (BPBM).

Parischnogaster timida; Carpenter, 1988, J. New York Ent. Soc. 96: 175.

Distribution: Samar I., Luzon I. (Carpenter & Kojima, 1997).

(65) *unicuspata* Reyes, 1988

Parischnogaster unicuspatha Reyes, 1988, Philipp. Ent. 7 (4): 387, 400 (key), figs. 1, 69–75, 82, 85, 91–92, 109, female, male – “Palawan National Agricultural College, Aborlan, Palawan” [ca. 09°26’N 118°33’E, alt. 10 m] (holotype male UPLB); also from other localities in Palawan and Malaysia.

Distribution: Malay Peninsula south of the Isthmus Kra, Singapore, Borneo I., Palawan I. (Carpenter & Kojima, 1997).

7. Genus *Stenogaster* Guérin

Stenogaster Guérin, 1831, in Duperrey, Voyage Coquille, Zool., Ins., Atlas: pl. 9, fig. 9, genus.

Type species: *Stenogaster fulvipennis* Guérin, 1831, by monotypy.

Ischnogaster Guérin, 1838, in Duperrey, Voyage Coquille, Zool., Ins., Texte 2 (1): 268.

Unnecessary replacement name for *Stenogaster* Guérin, 1831, thought to be preoccupied by *Stenogaster* Solier, 1835 (Coleoptera).

(66) *adusta* van der Vecht, 1975

Stenogaster adusta van der Vecht, 1975, J. Aust. Ent. Soc. 14: 283, 287 (key), 291, figs. 21–33, female, male – “Misool...Fakal” [ca. 02°00’S 130°00’E] (holotype female RMNH).

Distribution: Misool I., northwestern parts of New Guinea I. (van der Vecht, 1975).

(67) *canaliculata* (Cameron, 1911)

Ischnogaster canaliculatus Cameron, 1911, Nova Guinea 9 (2), Zool.: 190, female – “Bivak Island” [ca. 05°01’S 138°39’E] (lectotype ZMA). – Meade-Waldo, 1914, Ann. Mag. Nat. Hist (8) 14: 405 (syn. of *Ischnogaster fulvipennis* [!] Guérin). – van der Vecht, 1975, J. Aust. Ent. Soc. 14: 299, 301 (designation of lectotype).

Stenogaster ? *canaliculatus*; von Schulthess, 1927, Suppl. Ent. 16: 85.

Stenogaster canaliculata; van der Vecht, 1975, J. Aust. Ent. Soc. 14: 298 (key), 299.

Distribution: Western parts of New Guinea I., except Doberai (Bird's Head or Vogelkop) Peninsula (van der Vecht, 1975).

(68) *concinna* van der Vecht, 1975

Stenogaster concinna van der Vecht, 1975, J. Aust. Ent. Soc. 14: 283, 285, 286 (key), 295, figs.

1a–b, 53–80, male, female – “S.W. New Guinea...Wataikwa River” [ca. 04°25' S 136°44'E] (holotype male BMNH); also from other localities in southern parts of New Guinea I.

Distribution: Southern parts of New Guinea I. (van der Vecht, 1975; Spradbery, 1975).

(69) *decorata* van der Vecht, 1975

Stenogaster decorata van der Vecht, 1975, J. Aust. Ent. Soc. 14: 283, 287 (key), 293, figs. 34–

51, female, male – “Misool...Fakal” [ca. 02°00' S 130°00'E] (holotype female RMNH); also from Yapen I.

Distribution: Misool I., Yapen I. (van der Vecht, 1975).

(70) *flavifrons* van der Vecht, 1975

Stenogaster flavifrons van der Vecht, 1975, J. Aust. Ent. Soc. 14: 283, 298 (key), 303, figs. 94–

103, female, male – “N.W. New Guinea...Japen, Mt. Baduri, 300 m” [in Aiam Range; Yapen I.: ca. 01°44.5' S 136°09'E] (BMNH).

Distribution: Yapen I. (van der Vecht, 1975).

(71) *fulgipennis* (Guérin, 1831)

Stenogaster fulgipennis Guérin, 1831, in Duperrey, Voyage Coquille, Zool., Ins., Atlas: pl. 9 fig.

9, sex and locality not stated (holotype male from “Dory, N. Guinea,” [= Manokwari: ca. 00°52' S 134°04'E] MSNG). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37 (3): 254 (in subgenus *Ischnogaster*). – Dover and Rao, 1922, J. Asiat. Soc. Beng. (N. S.) 18: 236, footnote (correct generic name). – Bequaert, 1926, Ent. Mitt. 15: 192 (generic name). – Guiglia, 1948, Ann. Mus. Civ. Stor. Nat. Giacomo Doria 63: 178 (location of type).

Ischnogaster fulgipennis; Guérin, 1838, in Duperrey, Voyage Coquille, Zool., Ins., Texte 2 (1):

269, “female” from “Dory, dans la Nouvelle-Guinée” [= Manokwari: ca. 00°52' S 134°04'E] [the description is evidently based on a male]. – de Saussure, 1852, Ann. Soc. Ent. France (2) 10: 23 “fem. ou ouvrière” [redescription of Guérin's type]; 1853, Ét. Fam. Vesp. 2: 7 (“female”). – von Schulthess, 1914, Zool. Jahrb. (Abt. Syst. Geogr. Biol. Tiere) 37: 254 (type of subgenus *Ischnogaster*).

Stenogaster fulgidipennis; Dalla Torre, 1894, Cat. Hym. 9: 113, invalid emendation.

Ischnogaster fulvipennis [!]; Meade-Waldo, 1914, Ann. Mag. Nat. Hist (8) 14: 405 (syn.: *Ischnogaster canaliculatus* Cameron).

Distribution: Doberai (Bird's Head or Vogelkop) Peninsula (van der Vecht, 1975).

(72) *glabra* van der Vecht, 1975

Stenogaster glabra van der Vecht, 1975, J. Aust. Ent. Soc. 14: 283, 299 (key), 303, figs. 104–110, male – “N.W. Guinea...Cyclops Mts., 1100 m” [ca. 02°32' S 140°36'E] (BMNH).

Distribution: Cyclops Mountains in New Guinea I. (van der Vecht, 1975).

(73) *licina* van der Vecht, 1975

Stenogaster licina van der Vecht, 1975, J. Aust. Ent. Soc. 14: 283, 287 (key), 295, fig. 52, female – “N.W. Guinea...Road Ajamaru-Teminabuan, km 1–8” [Ajamaru: = Ayamaru, ca. 01°16' S 132°12'E; Teminabuan: ca. 01°26.5' S 132°00.5'E] (RMNH).

Distribution: Doberai (Bird's Head or Vogelkop) Peninsula (van der Vecht, 1975).

(74) *macilenta* van der Vecht, 1975

Stenogaster macilenta van der Vecht, 1975, J. Aust. Ent. Soc. 14: 283, 298 (key), 306, figs. 1c–e, 117–131, female, male – “N.W. New Guinea...Lower Mist Camp, 1550 m” (holotype female RMNH); also from other localities in New Guinea I.

Distribution: New Guinea I. except Doberai (Bird's Head or Vogelkop) Peninsula (van der Vecht, 1975).

(75) *pilosa* van der Vecht, 1975

Stenogaster pilosa van der Vecht, 1975, J. Aust. Ent. Soc. 14: 283, 299 (key), 305, figs. 111–116, male – “N.W. New Guinea...Cyclops Mts, Mt. Lina, 1100–1400 m” (BMNH).

Distribution: Cyclops Mountains in New Guinea I. (van der Vecht, 1975).

(76) *unicolor* (Smith, 1864)

Ischnogaster unicolor Smith, 1864, J. Proc. Linn. Soc., Zool. 7: 41, male – “Mysol; Waigiou” (lectotype OUM).s

Stenogaster unicolor; von Schulthess, 1927, Suppl. Ent. 16: 86.

Distribution: Waigeo I., Misool I. (van der Vecht, 1975).