

Neither lost nor quite forgotten:
tracing 19th and early 20th century bee types
in the collections of Oxford and Paris
(Hymenoptera, Apoidea)

Thomas James WOOD



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Neither lost nor quite forgotten: tracing 19th and early 20th century bee types in the collections of Oxford and Paris (Hymenoptera, Apoidea)

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ABSTRACT

Historical collections are an indispensable aspect of the study of biodiversity, but dispersed, lost, or confused types render this study challenging. Efforts are presented here to trace obscure types of bee species described by French authors, predominantly in the museums of Oxford and Paris. Lectotypes are designated for the following taxa: *Anthophora aerizusa* Vachal, 1903; *Anthophora atrocaerulea* Sichel, 1869; *Anthophora expleta* Vachal, 1910; *Anthophora hastula* Vachal, 1910; *Anthophora nigrovittata* Dours, 1869; *Anthophora padiola* Vachal, 1910; *Crocisa nubica* Lepeletier, 1841; *Xylocopa micans* Lepeletier, 1841; and *Xylocopa vidua* Lepeletier, 1841. *Amegilla* (*Aframegilla*) *nila* Eardley, 1994 is synonymised with *Amegilla* (*Aframegilla*) *expleta* (Vachal, 1910) n. syn. *Anthophora atrocaerulea* is considered to have been incorrectly described from “Célèbes” (Sulawesi); it is actually senior to the African *Amegilla* (*Aframegilla*) *regalis* (Cockerell, 1946) n. syn. In reverse, *Crocisa calcarata* Vachal, 1903 was uncertainly described from Africa, and is actually conspecific with the Australasian *Thyreus nitidulus* (Fabricius, 1804) n. syn. *Xylocopa crassa* Lepeletier, 1841 is considered to be from the Indo-Malayan region and is formally synonymised with *Xylocopa* (*Platynopoda*) *tenuiscapa* Westwood, 1840 n. syn. and *Xylocopa marginella* Lepeletier, 1841 is formally synonymised with *Xylocopa* (*Platynopoda*) *latipes* (Drury, 1773) n. syn. Due to the uncertainty over the original collecting locality of *X. latipes* a neotype from Indonesia (Java) is designated. *Ctenoplectra alluaudi* Vachal, 1903 has been misinterpreted, and is actually conspecific with *Ctenoplectra antinorii* Gribodo, 1884 n. syn. Additionally, *Scapter ugandica* Cockerell, 1944 is conspecific with *Ctenoplectrina nigrotestacea* (Magretti, 1895) n. syn. A new species of *Amegilla* with metallic hairs *Amegilla* (*Zonamegilla*) *sicheli* n. sp. is described from Sulawesi (Indonesia) following the clarification of the identity of *Amegilla atrocaerulea*. *Amegilla stantoni* (Cockerell, 1911) is synonymised with *Amegilla whiteheadi* (Cockerell, 1910) n. syn., and *Amegilla whiteheadi majui* n. subsp. is described from the island of Maju (Indonesia).

KEY WORDS

Apidae,
Indonesia,
Africa,
lectotypifications,
neotypification,
new synonyms,
new combinations,
new subspecies,
new species.

RÉSUMÉ

Ni perdus ni tout à fait oubliés : à la recherche des types d'abeilles du XIX^e et du début du XX^e siècle dans les collections d'Oxford et de Paris (Hymenoptera, Apoidea).

Les collections historiques sont un aspect indispensable de l'étude de la biodiversité, mais les types dispersés, perdus ou mal interprétés rendent cette étude difficile. Les efforts déployés pour retrouver des types méconnus d'abeilles décrites par des auteurs français, principalement dans les muséums d'Oxford et de Paris, sont ici présentés. Des lectotypes sont désignés pour les taxons suivants : *Anthophora aerizusa* Vachal, 1903 ; *Anthophora atrocaerulea* Sichel, 1869 ; *Anthophora expleta* Vachal, 1910 ; *Anthophora hastula* Vachal, 1910 ; *Anthophora nigrovittata* Dours, 1869 ; *Anthophora padiola* Vachal, 1910 ; *Crocisa nubica* Lepeletier, 1841 ; *Xylocopa micans* Lepeletier, 1841 ; et *Xylocopa vidua* Lepeletier, 1841. *Amegilla* (*Aframegilla*) *nila* Eardley, 1994 est synonymisée avec *Amegilla* (*Aframegilla*) *expleta* (Vachal, 1910) n. syn. *Anthophora atrocaerulea* est considérée comme ayant été incorrectement décrite des « Célèbes » (Sulawesi) ; elle est en réalité le synonyme senior d'une espèce africaine *Amegilla* (*Aframegilla*) *regalis* (Cockerell, 1946) n. syn. À l'inverse, *Crocisa calcarata* Vachal, 1903 a été décrite de manière incertaine d'Afrique et est en réalité conspécifique de l'espèce australasienne *Thyreus nitidulus* (Fabricius, 1804) n. syn. *Xylocopa crassa* Lepeletier, 1841 est considérée comme provenant de la région indomalaise et est formellement synonymisée avec *Xylocopa* (*Platynopoda*) *tenuiscapa* Westwood, 1840 n. syn. et *Xylocopa marginella* Lepeletier, 1841 est formellement synonymisée avec *Xylocopa* (*Platynopoda*) *latipes* (Drury, 1773) n. syn. En raison de l'incertitude quant au lieu de collecte d'origine de *X. latipes*, un néotype provenant d'Indonésie (Java) est désigné. *Ctenoplectra alluaudi* Vachal, 1903 a été mal interprété et est en réalité conspécifique avec *Ctenoplectra antinorii* Gribodo, 1884 n. syn. De plus, *Scrapper ugandica* Cockerell, 1944 est conspécifique avec *Ctenoplectrina nigrotestacea* (Magretti, 1895) n. syn. Une nouvelle espèce d'*Amegilla* à poils de couleur métallique, *Amegilla* (*Zonamegilla*) *sicheli* n. sp., est décrite de Sulawesi (Indonésie) suite à la clarification de l'identité d'*Amegilla atrocaerulea*. *Amegilla stantoni* (Cockerell, 1911) est synonymisée avec *Amegilla whiteheadi* (Cockerell, 1910) n. syn., et *Amegilla whiteheadi majui* n. subsp. est décrite de l'île de Maju (Indonésie).

MOTS CLÉS

Apidae,
Indonésie,
Afrique,
lectotypifications,
néotypification,
synonymes nouveaux,
combinaisons nouvelles,
sous-espèce nouvelle,
espèce nouvelle.

INTRODUCTION

Historical collections form the basis for our understanding of both the past distribution of insect species, and also the basis for informing and defining species concepts. Many historical insect names have been widely used without a clear understanding of what material they were actually based on, and the possibility for misinterpretation and misapplication presents a threat to nomenclatural stability. This is particularly accentuated for historical material gathered from far flung corners of the globe, for which it is not even clear if the collecting locality has been correctly reported.

The most challenging to interpret insect collections can be found in Europe, which has both the oldest natural history museums and the longest history of entomological study, with professional natural historians, museum workers, and individuals of private means assembling, curating, and describing taxa from the 18th century onwards. Due to the long period of historical study, the often patchy or non-existent documentation indicating the origin and current location of material, and the ambiguity associated with such old material described with highly variable levels of precision, this can make interpreting currently available names for insect species problematic. Given the importance of maintaining stable biological nomenclature for global communication and hence effective action (Jiménez-Mejías *et al.* 2024), it is imperative that historical type material is definitively located and clearly dealt with.

Within the insects, bees are a diversified group with approximately 21 000 species globally (Michener 2007; Ascher & Pickering 2025). They present numerous taxonomic challenges in delineating species, and in many groups subtle characters such as surface sculpture, puncture density, patterns of pubescence, or combinations of these characters must be used to separate taxa. This poses a problem for historical bee names which are usually accompanied with insufficiently precise descriptions to allow recognition without consultation of the type material. Consequently, where type material is currently lost, untraceable, or simply in an unknown repository, the application of certain names remains an open question. The current work focuses on this issue, specifically concentrating on some bee taxa described by 19th and early 20th century French workers, Amédée Louis Michel Lepeletier, comte de Saint-Fargeau (best known as Lepeletier) (1770-1845), Frédéric Jules Sichel (1802-1868), Jean Antoine Dours (1824-1874), and Joseph Vachal (1838-1911).

These French workers described bees widely and from a variety of sources. Consequently, many of their type specimens are dispersed, and are not always easy to trace (Baker 1994; Rasmussen 2012; Vivallo 2019; Wood & Bossert 2025). In particular, Lepeletier (1841) described bees in part from two important collections – those of Pierre François Marie Auguste Dejean (1780-1845) and Jean Guillaume Audinet-Serville (1775-1858). These collections were dispersed; that of Dejean was partially acquired by John Obadiah Westwood (1805-1893) between 1841-1854 (see Baker 1994) and placed

in the Hope Entomological Collections (Oxford University Museum of Natural History, Oxford) and that of Serville was partially acquired by Maximilian Spinola (1780-1857) and is now housed in the Museo Regionale di Scienze Naturali in Turin (Casolari & Casolari Moreno 1980; Baker 1994). Remaining Lepeletier material was sent to the Muséum national d'Histoire naturelle in Paris. Consequently, the work of Lepeletier therefore contrasts that other historical authors like Giovanni Gribodo (1846-1924) for whom the vast majority of their utilised type material remains in their personal and collectively-housed collection located in a single museum (Penati & Mariotti 2015).

Whilst our understanding of the dispersal of Lepeletier's material continues to improve, the work of inspecting these collections, tracing individual specimens, and confirming their identity has only been partially conducted (e.g. Baker 1994; Vivallo 2019). For other workers mentioned above, the situation is even less clear, and careful searches of boxes of unlabelled or partially labelled material must be conducted. The often poorly and obscurely labelled type specimens of workers such as Vachal are well known (e.g. Rasmussen 2012), and hence one must search collections exhaustively in order to be confident that type material is truly absent. The current work presents the results of such recently conducted searches as a contribution to our understanding of these historical specimens, and with nomenclatural implications for the contemporary study of the global bee fauna.

MATERIAL AND METHODS

For the purpose of this work, as in Wood & Bossert (2025), taxa are arranged genus by genus alphabetically in their currently accepted combination, not in the combination of their original description, in order to group related species together closely. However, the original name is used for each species entry. Hence, species described as *Anthophora* Latreille, 1803 but currently placed in *Amegilla* Friese, 1897 are listed under *Amegilla*, and species described as *Anthophora* and remaining in that genus are listed under *Anthophora*.

Concerning authorship of certain names which appear in the monograph of Dours (1869), it is necessary to clarify this point. Dours worked extensively with Sichel on bee taxonomy, particularly Anthophorinae Dahlbom, 1835. Although Sichel died before the publication of Dours (1869) which is explicitly a single author work, under IZCN (1999) Article 50.1.1, Sichel satisfies the criteria of availability other than the actual publication for certain specific names due to the information given by Dours (1869: 7) in the introduction:

“Ce sont ces divergences, sur lesquelles nous n'avons pas eu le temps de nous mettre d'accord, qui me décident à faire paraître cette étude sous mon nom seul, me réservant d'indiquer avec le soin le plus religieux les articles dont M. Sichel a fourni la rédaction. J'ajoute de suite que c'est grâce aux matériaux immenses qu'il avait accumulés, matériaux toujours généreusement mis à ma disposition, que cet opusculé a pu voir le jour.”

[It is these discrepancies, on which we have not had the time to agree, that have motivated me to publish this study under my own name, reserving myself the right to indicate with the most religious care the articles for which Mr. Sichel was responsible. Let me add at once that it is thanks to the immense materials he had accumulated, materials always generously placed at my disposal, that this small work was able to see the light of day.]

Therefore, Sichel should be considered the taxon authority for species indicated thusly by Dours. In the case of this present work, this concerns the name *Anthophora atrocaerulea* Sichel, 1869 which was treated as authored by Dours by Brooks (1988: 511, 560).

Morphological terminology follows Michener (2007), with the exception of the marginal “zones” of the terga, which are referred to as marginal “areas”, “antennal segments” which are numbered A1-12(13) (rather than scape, pedicel, and antennomeres 1-10(11)), and “nervulus” rather than vein cu-v in the forewing. Specimens were measured from the centre of the clypeus at the front of the head to the apical tip of the metasoma to the nearest 0.5 mm. Photographs were taken using an Olympus E-M1 Mark II with a 60 mm macro lens. Additional close-ups were taken with the addition of a Mitutoyo M Plan Apo 5X infinity corrected objective lens. Photographs were stacked using Helicon Focus B (HeliconSoft, Ukraine) and plates were prepared in GNU Image Manipulation Program (GIMP) 2.10. Post-processing of some images was made in Photoshop Elements (Adobe Systems, USA) in order to improve lighting to highlight specific characters.

For the new species and subspecies of *Amegilla* (*Zonamegilla*) Popov, 1950 that are described here, given the challenges posed by the identification of this group by their largely homogenous morphology, minimalistic descriptions are given, supplemented by a precise diagnosis. In diagnoses, the defining characters of a species are given, with those of the indicated comparison species given in parentheses. Unless otherwise stated, all specimens were identified by myself. In the case of other listed identifiers, specimen inspection and validation was conducted. In addition to the type material presented, where it was possible to locate new country records, these are presented as well. In the distributional information, new country records are indicated with an asterisk.

ABBREVIATIONS

Institutions

MCZ	Museum of Comparative Zoology, Harvard;
MNHN	Muséum national d'Histoire naturelle, Paris;
MRAC	Musée royal de l'Afrique centrale, Tervuren;
MSNG	Museo Civico di Storia Naturale “Giacomo Doria”, Genoa;
MSNT	Museo Regionale di Scienze Naturali, Turin;
NHMD	Natural History Museum of Denmark, Copenhagen;
NHMK	Natural History Museum, London;
OUMNH	Oxford University Museum of Natural History, Oxford;
RBINS	Royal Belgian Institute of Natural Sciences, Brussels;
RMNH	Naturalis Biodiversity Center, Leiden;

SEMC	Snow Entomological Museum Collection, University of Kansas Natural History Museum, Lawrence;
USNM	Smithsonian National Museum of Natural History, Washington D.C.;
ZMHB	Museum für Naturkunde, Berlin.

Morphology

A	antennal segments,
S	metasomal sterna,
T	metasomal terga.

SYSTEMATICS

REMARK

A total of 22 primary types (holotypes and lectotypes) and eight secondary types (paralectotypes and syntypes) of 24 species from six genera could be examined (Table 1).

Family APIDAE Latreille, 1802
Subfamily ANTHOPHORINAE Dahlbom, 1835
Genus *Amegilla* Friese, 1897

Anthophora aerizusa Vachal, 1903
(Figs 1; 2)

Anthophora aerizusa Vachal, 1903a: 378.

MATERIAL EXAMINED. — **Gabon** • 1 ♂ (invalid neotype); Ogooué, Congo; R. W. Brooks det.; [MNHN-EY-EY33378](#).
Sierra Leone • 1 ♂ (lectotype by present designation); Sierra Leone; [MNHN-EY-EY58555](#) • 1 ♀; Sierra Leone; [MNHN-EY-EY58556](#) (paralectotype by present designation) • 1 ♀; swamp nr. York; 27.X.1991; G. G.M. Schulten leg.; T. J. Wood det.; RMNH, ZMA. INS.834654.
Unknown • 1 ♂; Congo; collection Ernest André 1914; T. J. Wood det.; [MNHN-EY-EY58558](#).

CURRENT STATUS. — *Amegilla* (*Aframegilla*) *aerizusa* (Vachal, 1903) (Brooks 1988).

DISTRIBUTION. — Sierra Leone, Cameroon, and Gabon (Vachal 1903a; Brooks 1988; Ascher & Pickering 2025). The SEMC record KSEM1323337 from Kenya (GBIF; Ascher & Pickering 2025) is doubtful due to the differing ecoregion which does not contain tropical forest; revision is required.

REMARKS

Anthophora aerizusa was described based on a female and male from Sierra Leone, without any additional information as to collector or collecting date; Vachal stated that the material was in “*ma collection*”, this being placed in the MNHN in 1911 (Rasmussen 2012). Brooks (1988: 558) introduced a confusing situation because he stated that he was unable to find this type material in the MNHN, and hence designated a neotype from Gabon (also MNHN). What is surprising is that searches of the MNHN general collection (not Vachal specimen boxes) produced the two original Vachal syntypes from Sierra Leone (Figs 1; 2), with the male labelled as lectotype by Brooks in 1983!

TABLE 1. — Summary of the type specimens from the Muséum national d’Histoire naturelle (MNHN) and the Oxford University Museum of Natural History (OUMNH) collections examined during this study.

Family	No. type specimens		
	No. species	Primary	Secondary
Family Apidae Latreille, 1802			
Subfamily Anthophorinae Dahlbom, 1835			
<i>Amegilla</i> Friese, 1897	6	6	2
<i>Anthophora</i> Latreille, 1803	2	2	1
Subfamily Nomadinae Latreille, 1802			
Tribe Melectini Westwood, 1839			
<i>Thyreus</i> Panzer, 1806	5	4	3
Subfamily Xylocopinae Latreille, 1802			
Tribe Ctenoplectrini Cockerell, 1930			
<i>Ctenoplectra</i> Kirby, 1826	1	1	
<i>Ctenoplectrina</i> Cockerell, 1930	1	1	
Tribe Xylocopini Latreille, 1802			
<i>Xylocopa</i> Latreille, 1802	9	8	2
Total	24	22	8

As highlighted by Rasmussen (2012: 9), Vachal rarely indicated that a specimen was part of a type series, and usually provided just simple identification without indicating the genus or year of determination. This can be seen in the type material for *Anthophora aerizusa* (Figs 1A; 2A), with just “*aerizusa* Vach.” and either a ♀ or ♂ symbol. Based on this pattern, the two specimens are recognised as Vachal’s original type material, and the neotype designation of Brooks (1988) is therefore invalid; the male labelled as lectotype by Brooks in 1983 is now formally published here, by present designation. It is unclear why Brooks did not simply publish the original type material as a lectotype designation. Morphologically, the original type material is conspecific with the specimen selected by Brooks as the neotype, and so the treatment as a species of *Amegilla* (*Aframegilla*) Popov, 1950 and current species concept is justified and maintained.

Based on the description, *Amegilla aerizusa* is likely the senior synonym of *Amegilla robiniae* Brooks, 1988 which was described from Sierra Leone based on a single male specimen. It has not yet been possible to trace the holotype on the MSNG collection (see Wood & Bossert 2025), but Brooks (1988: 548) writes: “*A. robiniae* is the only species of the subgenus *Aframegilla* which has blue metasomal bands of hair and yellow markings on the face of the male”, additionally giving characters related to S7+8 and the genital capsule. The statement is not correct, because *Amegilla aerizusa* itself presents yellow facial markings and blue metasomal hairbands, and was also described from Sierra Leone, suggesting conspecificity. Brooks described the facial markings of *Amegilla robiniae* as Aniline Yellow, the mesosomal hairs as Buckthorn Brown, and the metasomal hairs as Russian Blue; these colours are all presented by *Amegilla aerizusa*. However, the MNHN lectotype is not dissected, preventing comparison of the genitalia and internal sterna, and synonymy at the present time would be unwise without examining the type of *Amegilla robiniae*, but these suspicions are formally presented here pending further study.



FIG. 1. — *Anthophora aerizusa* Vachal, 1903 male lectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, metasoma, dorsal view.

Anthophora annos Vachal, 1903
(Fig. 3)

Anthophora annos Vachal, 1903a: 378.

MATERIAL EXAMINED. — Democratic Republic of the Congo • 1♀; Coquilhatville [Mbandaka]; 15.VIII.1926; T. J. Wood det.; RMNH, ZMA.INS.834647.

Sierra Leone • 1♀ (holotype); 10.V.1895; [MNHN-EY-EY58557](#).

CURRENT STATUS. — *Amegilla* (*incertae sedis*) *annos* (Vachal, 1903) (Brooks 1988).

DISTRIBUTION. — Sierra Leone, Cameroon, and Democratic Republic of the Congo* (Vachal 1903a; Friese 1922, as *Anthophora leucocephala*; Brooks 1988).

REMARKS

Vachal briefly described *Anthophora annos* from a single specimen from Sierra Leone, highlighting the specific pattern of yellow markings on the mandibles, labrum, clypeus, and narrowly on the supraclypeal area, the predominantly black pubescence except for the white hairs on the head and forelegs, and the almost bare metasoma. He indicated that the specimen was in “*ma collection*”, and searches in boxes of

predominantly unidentified Vachal material in the MNHN produced a single female specimen bearing a handwritten Vachal label. The locality label is not quite fully faded, and reads: “Sierra Leone, 10 May 1895”. Although no collector is indicated, based on additional MNHN specimens with the same label style, the collector may have been Eugène Anatole Auguste Victor Boulet (1847–1923).

The specimen is clearly the holotype due to the Vachal label and the close correspondence with the original description. Brooks (1988: 515) did not study this specimen, but placed it within *Amegilla* (*incertae sedis*), and synonymised *Anthophora leucocephala* Friese, 1922 under it (Brooks 1988: 560). Whilst *Amegilla annos* is an appropriate combination, no evidence was provided for the synonymy, and the type of *Anthophora leucocephala* should be investigated in the ZMHB collection to judge its validity. Based on the holotype of *Amegilla annos*, no placement beyond *incertae sedis* is possible at the present time; it does not show any obvious affinities, and without a confidently associated male, no action should currently be made given the challenge associated with correct phylogenetic placement of female specimens within the Anthophorinae (see the subgeneric classification scheme of Brooks 1988).

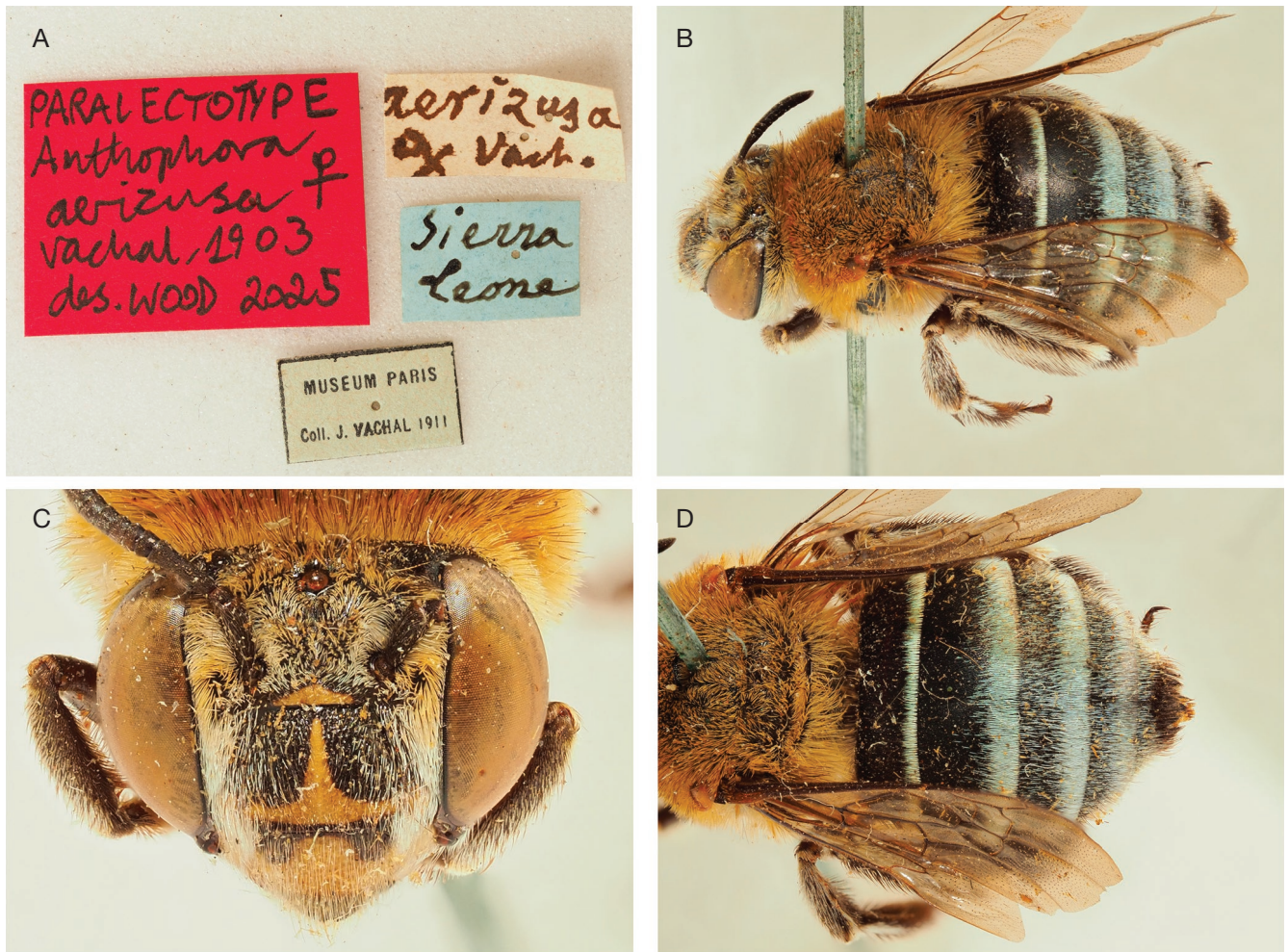


FIG. 2. — *Anthophora aerizusa* Vachal, 1903 female paralectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, metasoma, dorsal view.

Anthophora atrocaerulea Sichel, 1869
(Fig. 4)

Anthophora atro-caerulea Sichel in Dours, 1869: 60.

Anthophora regalis Cockerell, 1946: 22, n. syn.

MATERIAL EXAMINED. — **Cameroon** • 1♀ (holotype of *Anthophora regalis*); Metet; G. Schwab leg.; MCZ, MCZ:Ent:27598 (examined by photograph Fig. 5).

Côte d'Ivoire • 1♀; Baoulé; 1897; H. Pobéguin leg.; T. J. Wood det.; [MNHN-EY-EY58568](#).

Democratic Republic of the Congo • 1♀; Congo Belge Central, Prov de Maniema, Kindu; 1917; L. Burgeon leg.; T. J. Wood det.; [MNHN-EY-EY58569](#).

Gabon • 1♀; Congo, Ogooué, Samkita; 1911; F. Faure leg.; T. J. Wood det.; [MNHN-EY-EY58570](#) • 1♂, 3♀; Ogooué, Lambaréné; 1911; R. Ellenberger leg.; T. J. Wood det.; [MNHN-EY-EY58571](#), [EY58572](#), [EY58573](#), [EY58574](#) • 3♂; Ogooué, Lambaréné; 1912; R. Ellenberger leg.; T. J. Wood det.; [MNHN-EY-EY58575](#), [EY58576](#), [EY58577](#) • 1♂, 4♀; Ogooué, Lambaréné; 1913; R. Ellenberger leg.; T. J. Wood det.; [MNHN-EY-EY58578](#), [EY58579](#), [EY58580](#), [MNHN-EY-EY58581](#), [EY58582](#).

Celebes, recte Africa • 1♀ (lectotype by present designation, Fig. 4); [MNHN-EY-EY58546](#).

CURRENT STATUS. — *Amegilla* (*Aframegilla*) *atrocaerulea* (Sichel, 1869).

DISTRIBUTION. — Côte d'Ivoire, Cameroon, Gabon, Democratic Republic of the Congo (Cockerell 1946, as *Anthophora regalis*; present work). If *Amegilla atrocaerulea* (inclusive of *Amegilla regalis*) is recognised as a junior synonym of *Amegilla cincta*, then more widespread across tropical West and Central Africa east to Uganda (Smith 1879; Vachal 1903a; Meade-Waldo 1914; Brooks 1988; Ascher & Pickering 2025).

REMARKS

The type material of *Anthophora atrocaerulea* has been considered lost, as is the case for most material described by Dours due to the destruction of his collection in World War One. However, in the case of Dours (1869), many of the taxa described in this work were sources from multiple collections, particularly the collection of Sichel, who is the taxon authority in this case. *Anthophora atrocaerulea* was explicitly cited as coming from the collections of “Sichel, Dours”, and examination of the MNHN collection was able to find a single specimen bearing labels in the handwriting of Sichel reading: “*atrocaerulea* Sichel” and “Décrite” [described]. It is beneficial to reproduce the original description here:



FIG. 3. — *Anthophora annos* Vachal, 1903 female holotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, clypeus, frontal view detail.

“♀ *Nigra*. Thoracis, capitisque pilis rufis, vel ferrugineo-nigris partim viridescentibus. Abdominis 1-4 latè metallico-ceruleo marginatis. Femoribus nigro-ferrugineo pilosis, duobus anterioribus viridescentibus. Alis fumatis. (SICHEL)”

As discussed in the Material and methods, Sichel provided the description and so satisfies the criteria of availability other than the actual publication (Article 50.1.1); it is clear from the way that this description is presented that it was entirely the work of Sichel. The specimen itself meets the original description based on the partly green hairs of the head and mesosoma, the metallic blue hairbands on the apical margins of T1-4 (hairbands composed of distinctly flattened hairs, and with the hairbands broadening medially), and the legs with blackish-orangish hairs, with the first two pairs of legs also showing metallic green hairs on their outer faces. Due to this close match and the presence of handwritten Sichel labels, the specimen is considered to be a genuine syntype and is here designated as the lectotype. The type locality was given as “Célèbes” which is today the island known as Sulawesi in the Wallacean region of Indonesia, but the specimen has no legible information displayed on the other three labels which could indicate where it was caught.

Ignoring the published stated locality, the specimen itself is clearly an *Amegilla* (*Aframegilla*) species due to the presence of metallic hairs on the head, mesosomal dorsum, on the margins of T1-4 (hairs distinctly flattened), and also on the outer faces of the first two pairs of legs, and the absence of pale integumental marks on the paraocular areas. No other group of *Amegilla* shows this colour combination including flattened metallic hairs on the metasoma, even the *Amegilla* (*Zonamegilla*). Brooks (1988: 511) placed *atrocaerulea* into the genus *Amegilla* subgenus *Zonamegilla* based on the description and the stated type locality; the subgenus *Aframegilla* does not (based on current understanding) occur outside of Africa and the Arabian Peninsula. In the absence of any clear evidence to the contrary, the taxon must be considered to have been described at least in part from somewhere in Africa. Dours indicated specimens in his collection which may indeed have been from Sulawesi, but since these are lost, their identity will always remain obscure. Several *Amegilla* (*Zonamegilla*) species occur on the island (see new species descriptions below), and Dours may have confused them with *atrocaerulea*. The specimen described by Sichel however can therefore be recognised in the combination *Amegilla* (*Aframegilla*) *atrocaerulea*.



FIG. 4. — *Anthophora atrocaerulea* Sichel, 1869 female lectotype (MNHN): A, label details; B, habitus, dorsolateral view; C, head, frontal view; D, head, lateral view detail; E, habitus, lateral view; F, metasoma, dorsal view.

The question then becomes which African species is *Amegilla atrocaerulea*? It becomes the third oldest *Amegilla* (*Aframegilla*) name described, after *Amegilla cincta* (Fabricius, 1781) and the non-metallic *Amegilla nubica* (Lepelletier, 1841) (the type species of the subgenus). Based on the morphology, *Amegilla atrocaerulea* is very close to *Amegilla cincta* due to 1) the in-

termixed metallic green hairs on the head and mesosomal dorsum, 2) the well-defined broad apical hairbands composed of flattened metallic hairs on the marginal areas of T1-4, 3) the dark paraocular areas, 4) the presence of intermixed black, orange, and metallic greens on the outer faces of the fore and mid tibiae, and 5) the predominantly dark tibial scopae with



FIG. 5. — *Anthophora regalis* Cockerell, 1946 female holotype (MCZ): **A**, label details; **B**, head, frontal view; **C**, habitus, lateral view; **D**, habitus, dorsal view. Available under CC-BY-NC-SA 4.0 from <https://mczbase.mcz.harvard.edu/>

a strip of orangish hairs along the dorsal length of the hind tibiae. All of these characters are present in the holotype of *Amegilla cincta* (Fig. 6) with the exception that the tergal bands are emerald green, not blue.

Amegilla cincta itself has not always been well-understood. Originally described as *Andrena cincta* from “Malabaria” by Fabricius (1781: 473) which refers to the Malabar coast in south-western India. However, Meade-Waldo (1914: 56, as *Anthophora cincta*) summarises that this is incorrect, high-

lighting the comments of Smith (1879: 123-124) who argued that specimens agreeing with the type specimen in the Banks collection have been received from Sierra Leone, and hence the bee is African, not Indian. Cockerell (1919: 118) followed this concept following examination of Meade-Waldo determined specimens. Popov (1950: 258), in recognising *Amegilla* as a distinct genus for the first time, placed *Amegilla cincta* into this genus based on the description, treating it as being described from Africa. Lieftinck (1958) provided more



FIG. 6. — *Andrena cincta* Fabricius, 1781 female holotype (NHMUK). Available under CC0-1.0 <https://data.nhm.ac.uk/object/0d9fec7b-9f46-473f-bd24-10629a2fe221/1760005475174>

detail about possible syntypic specimens in the Fabricius collection in Kiel (now in NHMD, Copenhagen), and also treated *cincta* in the combination *Amegilla cincta* in line with the work of Popov.

The question then becomes, if the distinction is only based on the colour of the tergal bands, is this a genuine species-level difference? It is necessary here also to consider *Anthophora regalis*, described from Cameroon (Fig. 5). Cockerell (1946: 22) gave minimal diagnosis:

“Related to *A. expleta* Vachal, but that has the bands blue becoming white laterally. *A. vivida* Smith, type ♀, has the

hind tibiae all black, but a variety has a tuft of white at apex behind; *A. vivida* has emerald green bands, and no band on first tergite.”

Cockerell’s diagnosis is typically unhelpful, vaguely characterising *Amegilla expleta* (see next species entry), and incorrectly reporting that *Anthophora vivida* Smith, 1879 (= *Amegilla vivida*) was described based on the female sex, when it was described from a male specimen (Smith 1879: 120). The holotype of *Anthophora regalis* is clearly an *Amegilla* (*Aframegilla*), and was placed there by Brooks (1988: 506), who took no further action. Based on this holotype, there are no differences from

Amegilla atrocaerulea and it is here synonymised under it **n. syn.** It may be the case that both *Amegilla atrocaerulea* and *Amegilla regalis* are junior to *Amegilla cincta* given the minor colour differences and currently lack of documented structural differences, but further study is required. A conservative position is therefore adopted here, even though it is suspected that these minor colour differences are not representative of species-level differentiation.

Anthophora expleta Vachal, 1910
(Fig. 7)

Anthophora expleta Vachal, 1910a: 324.

Amegilla (*Aframegilla*) *nila* Eardley, 1994: 5, **n. syn.**

MATERIAL EXAMINED. — **Malawi** • 1♂; Ntchisi Forest; 25.XII.1974; H. R. Feijn leg.; T.J. Wood det. (C. D. Eardley 2015 det. as *Amegilla nila*); RMNH, ZMA.INS.1240875.

Tanzania • 1♀; Usambara, Nguelo [Ngwelo]; [MNHN-EY-EY58547](#) (lectotype by present designation) • 1♀; Tanganyika, Morogoro; 1963; Br. Ananias Denis leg.; T. J. Wood det.; RMNH, ZMA.INS.834652.

CURRENT STATUS. — *Amegilla* (*Aframegilla*) *expleta* (Vachal, 1910).

DISTRIBUTION. — Democratic Republic of the Congo, Tanzania, Malawi*, Zimbabwe (Vachal 1910a; Cockerell 1919; Eardley 1994, as *Amegilla nila*).

REMARKS

Vachal described a male specimen from “Mbiliwa à Wantu” [now within Lubumbashi] and a female from Nguelo, Usambara. He indicated that the male was from the MRAC collection, but that the female was in “*ma collection*”. Brooks (1988: 515) placed *Anthophora expleta* into the genus *Amegilla*, but left it as *incertae sedis* as he did not locate the type material. Eardley & Urban (2010: 441) stated that both male and female syntypes were present in the MRAC collection, but this is false, as Vachal explicitly stated that the female was in his collection.

Searches in the MNHN collection located this female which bore a handwritten Vachal label (Fig. 7A), and it can be recognised as an *Amegilla* (*Aframegilla*) species due to the abundant power-blue metallic pubescence on the tergal margins. The female is hereby designated as the lectotype, and the recognition of *Amegilla expleta* as part of the subgenus *Aframegilla* means that it is senior to *Amegilla* (*Aframegilla*) *nila* Eardley, 1994 **n. syn.** This latter taxon was described based on one female and four males from the eastern highlands of Zimbabwe (not examined) and the key diagnostic feature was indicated to be the restriction of metallic-blue pubescence to the tergal margins only, rather than extending also onto the tergal discs as in *Amegilla* (*Aframegilla*) *caelestina* (Cockerell, 1919) and *Amegilla* (*Aframegilla*) *cymatilis* Eardley, 1994 (Eardley 1994: 3, 7), and also *Amegilla* (*Aframegilla*) *caerulea* (Friese, 1905). This character of tergal discs free of metallic hairs is clearly present in the lectotype of *Amegilla expleta*, with the recognition of this synonymy aided by the presence of a male from Malawi in the RMNH collection which was

determined by Eardley as *Amegilla nila*, and which helps fill the distributional gap between the Democratic Republic of the Congo, Tanzania, and Zimbabwe.

In light of the original description combined with the comments of Cockerell (1919: 118) who highlighted that “*Anthophora expleta*” was one of “several [African] species of *Anthophora* with more or less blue colour on the abdomen”, it is unclear why Brooks placed *Amegilla expleta* as *incertae sedis*.

Anthophora hastula Vachal, 1910
(Figs 8; 9)

Anthophora hastula Vachal, 1910b: 533.

MATERIAL EXAMINED. — **Eritrea** • 1♂, 1♀; Asmara, Eritrea; J. Vachal det.; [MNHN-EY-EY58565](#), [MNHN-EY-EY58566](#).

Ethiopia • 1♂; Ethiopie Merid, Tchafianani; 1-30.IV.1905; M. de Rothschild leg.; J. Vachal det.; [MNHN-EY-EY58545](#) (lectotype by present designation) • 1♀; Ethiopie Merid, Tchafianani; 1-30.IV.1905; M. de Rothschild leg.; J. Vachal det.; [MNHN-EY-EY58544](#) (paralectotype by present designation).

Kenya • 1♀; Afrique Orient. Angl., Kisoumou (Victoria-Nyanza) [Kisumu]; 1-30.IX.1904; Ch. Alluaud leg.; R. Benoist det.; [MNHN-EY-EY58567](#).

CURRENT STATUS. — *Amegilla* (*Zebramegilla*) *hastula* (Vachal, 1910) **n. comb.**

DISTRIBUTION. — Nominally Ethiopia, Eritrea, and Kenya (Vachal 1910b), but revision of African *Amegilla* (*Zebramegilla*) is required.

REMARKS

Anthophora hastula was not studied by Brooks, and was placed as *Anthophorini incertae sedis* (Brooks 1988: 450). Searches in the MNHN produced specimens of *Anthophora hastula* in boxes of predominantly unrevised anthophorine material from the Vachal collection. Vachal explicitly described the species based on a male and female from Tchafianani, and indicated that he also had “*un couple*” from Asmara. It was possible to find these Eritrean specimens, but it is ambiguous as to whether they are actually part of the type series. In any case, the male from Tchafianani is here designated as the lectotype. This precise locality cannot currently be traced, but can be considered to be within modern Ethiopian territory. Morphologically, *Anthophora hastula* can be placed as *Amegilla* (*Zebramegilla*) *hastula* **n. comb.** due to the lack of arolia between the tarsal claws, yellow-marked supraclypeal and lower paraocular areas, moderate body size, black and white banded metasoma, and lack of metallic hairs anywhere on the body.

The status of *Amegilla hastula* and indeed all East African *Amegilla* (*Zebramegilla*) Brooks, 1988 species is unclear due to the lack of revision, and the biogeographical boundaries between Egypt, Sudan, the Arabian Peninsula, the Horn of Africa, and East Africa are currently completely unclear for this group of bees. Deep revision is required, ideally using molecular tools, with work beginning on the North African and Levantine fauna (TJW, P. Rasmont, pers. obs.). *Amegilla hastula* does not appear to match any *Amegilla* (*Zebramegilla*) species I have examined to date, particularly due to the long A3 which equals A4+5.



FIG. 7. — *Anthophora expleta* Vachal, 1910 female lectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, habitus, lateral view; **E**, metasoma, dorsal view; **F**, metasomal terga 2-4, dorsal view detail.

Anthophora padiola Vachal, 1910
(Fig. 10)

Anthophora padiola Vachal, 1910b: 533.

MATERIAL EXAMINED. — Kenya • 1♂ (lectotype by present designation); Afrique Orient. Angl., sud du Lac Rodolphe [Lake Turkana],

entre le chemin de fer et le lac; 1-31.VIII.1905; M. de Rothschild leg.; J. Vachal det.; [MNHN-EY-EY58559](#).

CURRENT STATUS. — *Amegilla* (*Zebramegilla*) *padiola* (Vachal, 1910) n. comb.

DISTRIBUTION. — Nominally Kenya (Vachal 1910b), but revision of African *Amegilla* (*Zebramegilla*) is required.



FIG. 8. — *Anthophora hastula* Vachal, 1910 male lectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, Antenna, frontal view detail; **E**, metasoma, dorsal view; **F**, metasomal terga 5-7, posterior view detail.

REMARKS

Anthophora padiola was not studied by Brooks, and was placed as *Anthophorini incertae sedis* (Brooks 1988: 450). As for *Anthophora hastula*, one specimen of *Anthophora padiola* was found in predominantly undetermined material

from the Vachal collection. Originally described based on two males from “Nairobi et du sud du lac Rodolphe (VIII), Afrique orientale anglaise”, only the specimen from Lake Rodolphe [Lake Turkana] could be located; it does not bear a typical Vachal label written with thick black ink, possibly



FIG. 9. — *Anthophora hastula* Vachal, 1910 female paralectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, metasoma, dorsal view.

because this material was described shortly before the end of Vachal's life when his typical *modus operandi* may have been disrupted, but the specimen matches the description:

“Diffère de *A. torrida* Sm. par l'article 3 des antennes pas plus long que l'article 5; par son chaperon tout jaune; par la base du prototarse 3 en dehors avec un bouquet de poils gris jaunâtre.”

This short A3 that equals A5 (slightly exceeding the length of A4), almost entirely yellow-marked face (with black markings limited to the areas around the tentorial pits), and short brush of pale hairs as the base of the hind basitarsus are all visible, and the specimen can be accepted as syntypic; it is here designated as the lectotype in the absence of the specimen from Nairobi. Morphologically, it can be placed as *Amegilla* (*Zebramegilla*) *padiola* n. comb. due to the lack of arolia between the tarsal claws, yellow-marked supraclypeal and lower paraocular areas, moderate body size, black and white banded metasoma, lack of metallic hairs anywhere on the body, and typical genital capsule. As for *Amegilla hastula*, a deep revision of East African *Amegilla* (*Zebramegilla*) is required.

CLARIFICATION OF THE *AMEGILLA* (*ZONAMEGILLA*) SPECIES PRESENT ON THE ISLAND OF SULAWESI

Dealing with the subgenus *Amegilla* (*Zonamegilla*) in South-east Asia is highly challenging due to the very small morphological differences displayed by species. This resulted in many taxa being described as varieties or subspecies of *Amegilla zonata* (Linnaeus, 1758), the oldest name in the group and the type species of the subgenus (Popov 1950). Cockerell (1910: 412) wrote, when talking about “variation” inside *Amegilla zonata*: “Nevertheless, in the moist tropical islands of the Malay Archipelago it has developed several distinct forms, which are probably constant and for the most part confined to particular islands”. This is quite an understatement, as there is a swarm of currently undescribed diversity, particularly east of the Wallace Line (pers. obs.).

The challenge of characterising species is rendered more complex by the uncertain identity of *Amegilla zonata* itself, having been described based on the female sex only (Baker 1996). Given the challenges of correct sex association, the identity of the male is somewhat ambiguous, but a consensus exists in the limited available literature that it is the male with



FIG. 10. — *Anthophora padiola* Vachal, 1910 male lectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, metasoma, dorsal view; **E**, hind tibiae and tarsi, lateral view; **F**, genital capsule *partim*, dorsal view detail.

large and flattened more-or-less rectangular apical blades of the gonocoxae and reduced black markings around the tentorial pits (Liefertinck 1975; Baker 1996; Engel 2007), i.e., not the *Amegilla zonata* of Cockerell (1910) and subsequent works. Baker (1996) synonymised *Amegilla cingulifera* (Cockerell, 1910) under *Amegilla zonata*, giving it a broad distribution

from India to southern China and Taiwan south to the Malay Peninsula at least as far south as Perlis (Liefertinck 1975; Baker 1996).

Whilst a case may need to be written to the ICZN to decisively and unambiguously fix the application of this name, it is the concept of Liefertinck and Baker that is followed here,

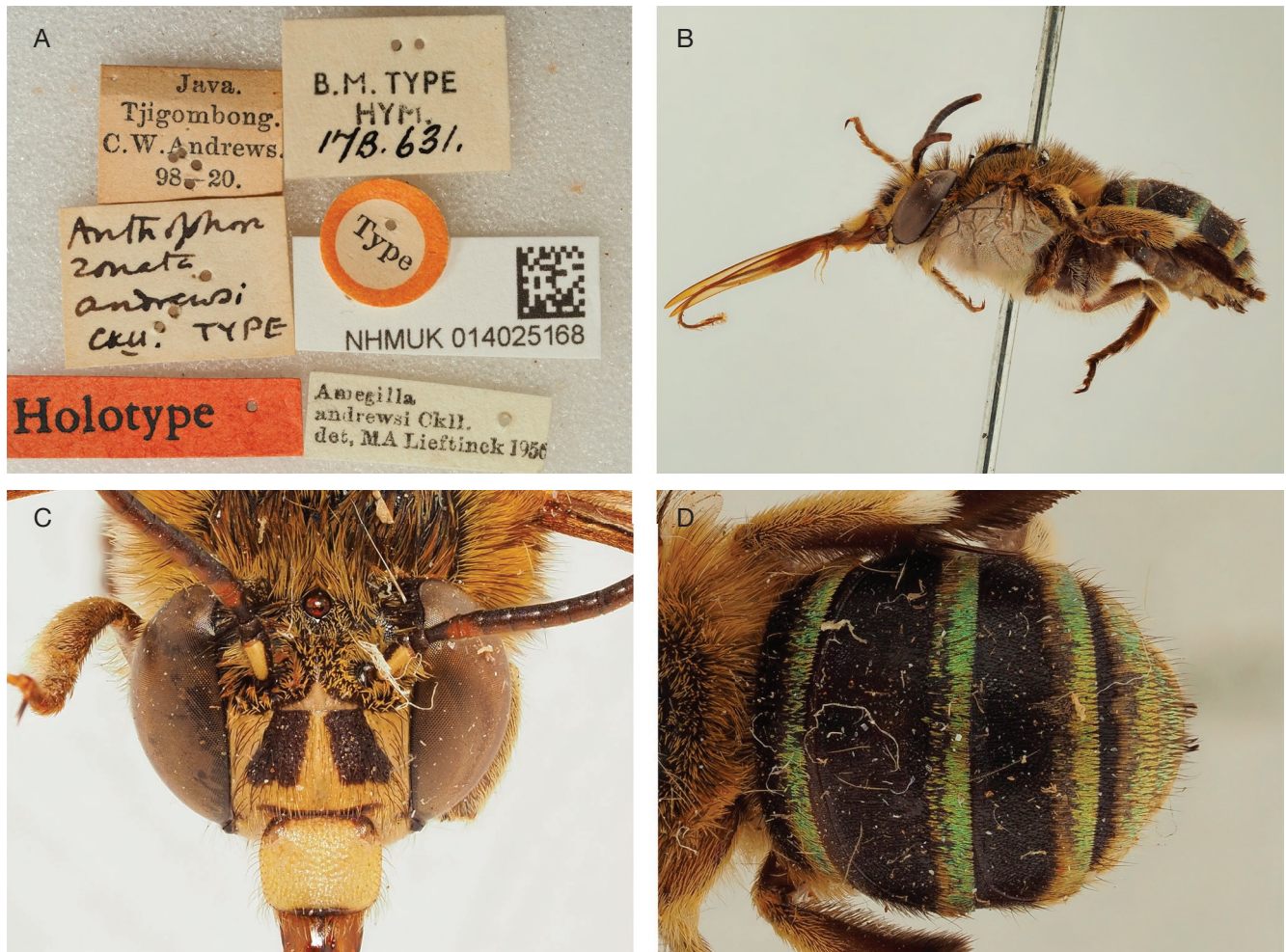


FIG. 11. — *Anthophora andrewsi* Cockerell, 1910 male holotype (NHMUK): **A**, label details; **B**, habitus, lateral view; **C**, head, frontal view; **D**, metasoma, dorsal view.

with *Amegilla zonata* not considered to be present on the islands of Borneo, Sumatra, Java, or further east. When dealing with the fauna of Sulawesi, it is necessary to resolve the application of the names described by Cockerell, specifically *Amegilla andrewsi* (Cockerell, 1910) (Fig. 11), *Amegilla borneensis* (Cockerell, 1910) (Fig. 12), *Amegilla stantoni* (Cockerell, 1911), *Amegilla samarensis* (Cockerell & LeVeqe, 1925), and *Amegilla whiteheadi* (Cockerell, 1910) (Fig. 13). Three of the five taxa and all five taxa were considered to be valid at a specific level by Liefstinck (1975) (*Amegilla samarensis* and *Amegilla stantoni* not explicitly mentioned) and Brooks (1988), respectively, and the work of the latter is consequently used as the current taxonomic baseline.

Amegilla (Zanamegilla) whiteheadi
(Cockerell, 1910)
(Fig. 13)

Anthophora zonata ssp. *whiteheadi* Cockerell, 1910: 412.

Anthophora zonata ssp. *stantoni* Cockerell, 1911: 233, n. syn.

MATERIAL EXAMINED. — **Philippines** • 1♀ (holotype of *Anthophora zonata* ssp. *whiteheadi*); Cape Engano [Engaño], Luzon; Whitehead leg.; NHMUK • 1♀ (holotype of *Anthophora zonata* ssp. *stantoni*); Manila, PI; W. A. Stanton leg.; USNM (examined by photograph only). Additional specimens of *Amegilla whiteheadi* are listed in Supplementary material 1.

DISTRIBUTION. — Malaysia (Borneo), Philippines, Indonesia (Java, Sumatra: Lampung, East Kalimantan, Sumbawa, Flores, Sulawesi, including the Talaud Islands Regency and Sangihe Islands Regency, and the Sula Islands: Taliabu) (Fig. 16).

REMARKS

Cockerell described *Amegilla whiteheadi* based on the female sex from the northernmost part of the island of Luzon. Unfortunately, female *Amegilla (Zanamegilla)* are often impossible to identify without first characterising the species using the male sex, understanding the overall range, and then detecting meaningful female characters once range overlaps are understood or excluded. In his only work on *Amegilla (Zanamegilla)* species, Liefstinck (1975: 289) stated that there were six species of *Amegilla (Zanamegilla)* in East Asia with the fifth sternum “deeply triangularly or semicircularly excavated”, these being *Amegilla andrewsi*, *Amegilla buruensis* (Cockerell, 1911),



FIG. 12. — *Anthophora borneensis* Cockerell, 1910 male holotype (NHMUK): **A**, label details; **B**, habitus, lateral view; **C**, head, frontal view; **D**, metasoma, dorsal view.

TABLE 2. — Characters to facilitate identification of male specimens of *Amegilla* (*Zonamegilla*) species found on the islands of Java, Borneo, Sulawesi, and the Philippines. The colouration of the tergal hairbands character should be used with caution, as it is subject to change depending on the condition of the specimen.

Character	<i>Amegilla andrewsi</i> (Cockerell, 1910)	<i>Amegilla borneensis</i> (Cockerell, 1910)	<i>Amegilla whiteheadi</i> (Cockerell, 1910) s. str.
Clypeus	With large sub-rectangular black markings	With large sub-rectangular black markings	With narrow black markings confined to the clypeal margins around the tentorial pits
Ratio of A3:A4 (measured ventrally)	1.5-1.8 : 1	2-2.1 : 1	1.1-1.3 : 1
Pubescence of the scutum and scutellum	Light golden brown intermixed with black	Greyish to whitish blue intermixed with black	Light yellow brown intermixed with black
Typical colour of the tergal hairbands	Distinctly metallic green, sometimes yellowish metallic green	Dark metallic blue	Bright light sky blue
Pubescence of hind tibia	Covered with buff to light brown hairs	Black with variable white hairs, sometimes forming a narrow line along the dorsal margin of the tibia to white hairs covering 75% of the tibia	Covered with buff to light brown hairs
Pubescence of hind basitarsi	With a few buff to light brown hairs present basally	Entirely black	Partially to entirely covered with buff to light brown hairs, with at least the basal half covered
Sternum 5	With a moderately deep semi-circular emargination, surface not obscured by hairs	With weak and shallow emargination that is partially obscured by the presence of a dense patch of black hairs medially	With a very deep semi-circular emargination, surface not obscured by hairs
Sternum 6	Apically with a semicircular depression, this depression medially with a longitudinal keel terminating with a small hair patch	With a longitudinal keel terminating with a small hair patch	Apically with a semicircular depression, this depression medially with a longitudinal keel terminating with a small hair patch
Distribution (partial)	Java, Borneo (probably also the Malay Peninsula)	Borneo, Sumatra, Bangka, Malay Peninsula (broadly, pending detailed revision)	Philippines, Sulawesi, Sula Islands, Borneo, Sumatra (southern islands), Java, Sumbawa, Flores



FIG. 13. — *Anthophora whiteheadi* Cockerell, 1910 female holotype (NHMUK): **A**, label details; **B**, habitus, dorsal view; **C**, head, frontal view; **D**, metasoma, dorsal view.

Amegilla dulcifera (Cockerell, 1926), *Amegilla flammeozonata* (Dours, 1869), and *Amegilla whiteheadi*. This contrasts species like *Amegilla ternatensis* (Cockerell, 1910) (Indonesia: North Maluku) which has the apical margin of S5 straight. *Amegilla buruensis* is restricted to the South Maluku islands (Indonesia: Ambon, Buru, Ceram; pers. obs.), *Amegilla dulcifera* is found in China, Taiwan, and Japan (Ascher & Pickering 2025), and *Amegilla flammeozonata* is one of the species in the unclear group of brown non-metallic *Amegilla* (*Zonamegilla*) which requires further investigation and delineation. The most abundant *Amegilla* (*Zonamegilla*) species present on Sulawesi has a deeply emarginate S5; assessment of *Amegilla andrewsi* (described from Java) and *Amegilla whiteheadi* (described from the Philippines) is necessary.

Examination of males of *Amegilla whiteheadi* from across the Philippines as well as type material of *Amegilla andrewsi* (Fig. 11) and *Amegilla borneensis* (Fig. 12) allows discriminative morphological characters to be compiled (Table 2). Males of *Amegilla whiteheadi* from across the Philippines are identical with males from Sulawesi in all key characters including the reduced black facial markings, light hairs overing the major-

ity of the outer face of the hind basitarsus, bright light sky blue metallic hairs comprising the tergal hairbands, S5 with a deep semicircular incision, S6 with a semicircular depression containing a longitudinal keel, and genital capsule with a distinct notch or kink in the outer margins of the gonocoxae (Figs 14; 15). There are very slight differences in colouration, but these are not considered to be significant, and bees on Sulawesi are considered conspecific with *Amegilla whiteheadi* from the Philippines.

Concerning additional taxa described from the Philippines, Cockerell described *Amegilla stantoni* from Manila based on a single specimen, arguing that: “The abdominal bands are essentially as in true *zonata*, not at all as in *whiteheadi*”. This statement is impossible to make with confidence, given that the type of *Amegilla whiteheadi* has been wetted and is in poor condition, and given that only two different single specimens are being considered with no estimate of intraspecific variation. Consequently, the colouration of the hairbands is indicative of very little. In contrast, the specimen of *Amegilla stantoni* (photographs available on the Smithsonian website; <https://collections.nmnh.si.edu/search/ento/>) is in excellent condition,



FIG. 14. — *Anthophora whiteheadi* Cockerell, 1910 male (non-type) from Manila (Luzon) (RMNH): **A**, habitus, lateral view; **B**, head, frontal view; **C**, legs, lateral view; **D**, metasoma, dorsal view; **E**, Sterna 4-6, ventral view; **F**, genital capsule, dorsal view.

and shows the same colour pattern (bands bright light sky blue) as fresh specimens from 1) the Philippines islands; and 2) Sulawesi. From the area around Manila, the *locus typicus* of *Amegilla stantoni*, only two male types could be detected. The first is typical *Amegilla whiteheadi* with the deeply emarginate S5 and genital capsule with a clear kink in the outer margin

of the gonocoxae (Fig. 14; see Appendix I for full specimen details), and the second was referable to *Amegilla samarensis* with the margin of S5 sinuate and without a clear kink in the outer margin of the gonocoxae (see following section). Given the three available names from the Philippines, the two male morphologies, and the female differences (*Amegilla whiteheadi*



FIG. 15. — *Anthophora whiteheadi* Cockerell, 1910 male (non-type) from Manado (Sulawesi) (RMNH): **A**, habitus, lateral view; **B**, head, frontal view; **C**, legs, lateral view; **D**, metasoma, dorsal view; **E**, Sterna 4-6, ventral view; **F**, genital capsule, dorsal view.

and *Amegilla stantoni* smaller, with bright light sky blue apical hairbands that are relatively broad, *Amegilla samarensis* larger, dark turquoise blue, and comparatively narrow), and since *Amegilla whiteheadi* and *Amegilla stantoni* were both described from the island of Luzon, *Amegilla whiteheadi* is considered to be a specimen in degraded condition and the senior name of

the species that was subsequently described *Amegilla stantoni* **n. syn.** Examination of female specimens from the Philippines and Indonesia (Java) that have been wetted reveals that the colouration of the tergal hairbands changes from the colour observed in *Amegilla stantoni* to that observed in *Amegilla whiteheadi*, supporting this action.

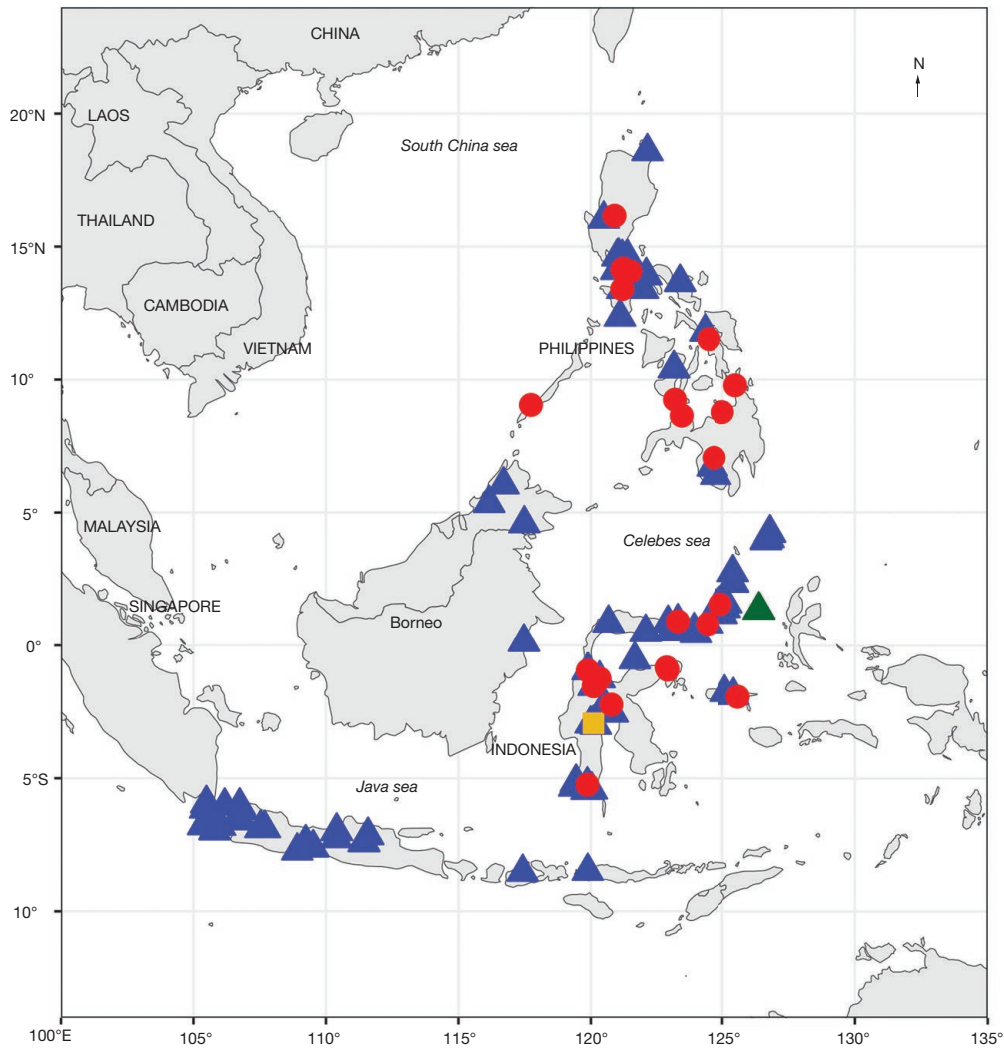


FIG. 16. — Distribution map for selected *Amegilla* (*Zonamegilla*) species: *Amegilla sicheli* n. sp. (orange square); *Amegilla whiteheadi* (Cockerell, 1910) (blue triangles); *Amegilla whiteheadi majui* n. subsp. (dark green triangle); *Amegilla samarensis* (Cockerell & LeVeque, 1925) (red dots).

Revision of material in the RMNH collection allowed the overall range of *Amegilla whiteheadi* to be clarified, with specimens from some of the small islands south of Sumatra, Java, northern and eastern Borneo, Sulawesi including outlying islands, the Sula Islands, and the Philippines (Fig. 16; see Appendix I). On Sulawesi, *Amegilla whiteheadi* is an abundantly collected predominantly lowland species that is present along the coast and close to urban areas. In the RMNH collection, some of the material presented here was separated as *Amegilla wallaceana* Liefstinck, an unpublished manuscript name. Many visitors to the island collected it, including 19th century collectors such as Eltio Alegondas Forsten (1811-1843; collections made between 1840-1842, see van Wingerden 2020), Hermann von Rosenberg (1817-1888; collections made between 1863-1864, see in den Bosch 1985), and Hans Fruhstorfer (1866-1922). Given the abundance of this species, it is a little surprising that it was not collected by Alfred Russel Wallace during his three visits to

Sulawesi in 1856/1857 (predominantly around Makassar) and 1859 (predominantly around Manado and Tondano) (Wood *et al.* 2025). The presence of *Amegilla whiteheadi* on Sulawesi is supported by a specimen determined by Donald Baker in 2001 that is in the SEMC (KSEM942907; Ascher & Pickering 2025).

Specimens that are here considered to be *Amegilla whiteheadi* which were collected from the Talaud Islands Regency and Sangihe Islands Regency display noticeably darker mesosomal hair, this being almost ginger. Males however are the same, and this is considered to represent simple variation. They geographically bridge the gap between the southern Philippine islands and northern Sulawesi. Specimens were also available from the island of Maju which is located half-way between Sulawesi and the island of Halmahera (North Maluku). These specimens show a different colour pattern, though no structural differences, and are described below as a subspecies.



FIG. 17. — *Amegilla whiteheadi majui* n. subsp. female paratype (RMNH): **A**, habitus, lateral view; **B**, head, frontal view; **C**, hind tibial scopa, lateral view; **D**, metasoma, dorsal view.

Amegilla (Zonamegilla) whiteheadi majui n. subsp.
(Figs 17; 18)

[urn:lsid:zoobank.org:act:31634947-8281-4AA6-B702-2B3B837BC884](https://zoobank.org/urn:lsid:zoobank.org:act:31634947-8281-4AA6-B702-2B3B837BC884)

TYPE MATERIAL. — **Holotype**. Indonesia • 1♂; N. W. Moluccas, Majau Isl. [Maju]; 7.XI.1953; A. M. R. Wegner leg.; RMNH, RMNH.INS.1717050.

Paratypes. Indonesia • 6♂, 12♀; N. W. Moluccas, Majau Isl. [Maju]; 7.XI.1953; A. M. R. Wegner leg.; RMNH.

DIAGNOSIS. — *Amegilla whiteheadi majui* n. subsp. presents no structural differences from the nominate subspecies. However, females present much brighter orange-red pubescence on the dorsal and lateral parts of the mesosoma (Fig. 17A), and the tergal hairbands are tinged with orange to Mother-of-Pearl (Fig. 17D), whereas they are a clearer green-turquoise blue in typical *Amegilla whiteheadi* (c.f. Figs 14D; 15D, not when wetted as in Fig. 13D). Males show the same differences in colouration (Fig. 18A; D), with the same sternal and genital characters as typical *Amegilla whiteheadi* including a deep emargination in the apical margin of S5 and a longitudinal keel on S6 (Figs 18E-H). Given that differences between the population on Maju island and populations on the other islands highlighted above are purely based on colour, it is not considered necessary to make a full structural description.

ETYMOLOGY. — Named after the island of Maju. The name is in the genitive form.

DISTRIBUTION. — Indonesia (North Maluku: Maju) (Fig. 16).

Amegilla (Zonamegilla) samarensis
(Cockerell & LeVeque, 1925)
(Fig. 19)

Amegilla whiteheadi ssp. *samarensis* Cockerell & LeVeque, 1925: 170.

MATERIAL EXAMINED. — **Indonesia** • 1♂; Celebes; M. A. Lieftinck det.; RMNH • 1♀; M-Celebes, Palu-Valley; 8.V.1955; H. H. F. Hamann leg.; M. A. Lieftinck det.; RMNH • 1♀; N. Celebes; 1917; Dr. W. Kaudern leg.; M. A. Lieftinck det.; RMNH • 1♀; N. Celebes, Bolaang Mon. gondau [Bolaang Mongondow], Labuan Boroko; 1-30.VI.1949; C. Franssen leg.; M. A. Lieftinck det.; RMNH • 3♂, 1♀; N. Celebes, Minahasa, Mapangit; 1-31.V.1949; C. Franssen leg.; M. A. Lieftinck det.; RMNH • 1♀; N. Celebes, Modinging; 1060 m a.s.l.; 1-30.VI.1941; F. Dupont leg.; M. A. Lieftinck det.; RMNH • 1♀; Lore-Lindu N. P. nr. Dongi-Dongi shelter, malaise trap; -1.2500°S, 120.3300°E [co-ordinates provided]; c. 1100 m a.s.l.; 6-9.XII.1985; C. V. Achterberg leg.; T. J. Wood det.; RMNH • 1♀; Sulawesi, Tengah, Lore Lindu N. P., Marena, Hihia, 10 km N

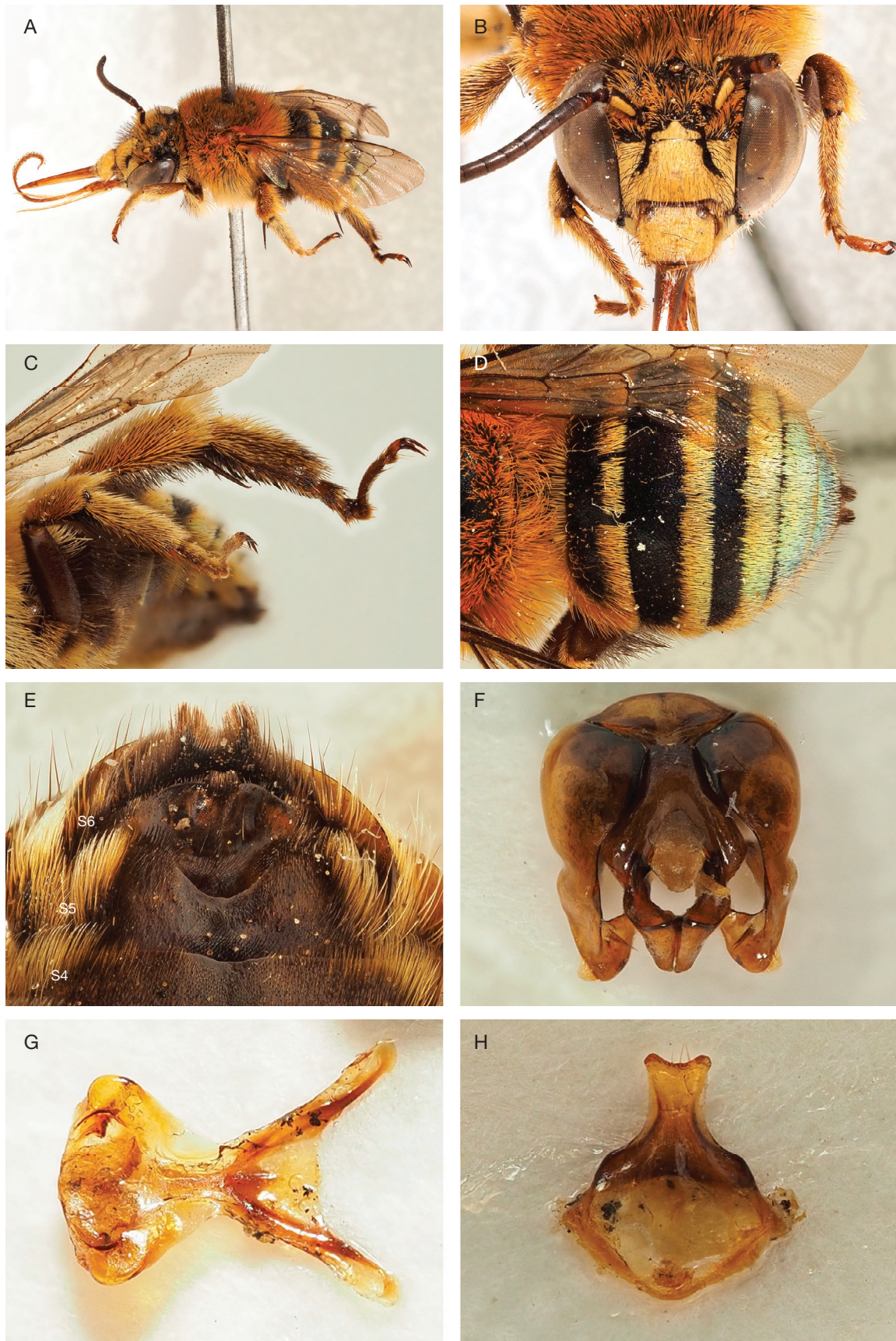


FIG. 18. — *Amegilla whiteheadi majui* n. subsp. male holotype (RMNH): **A**, habitus, lateral view; **B**, head, frontal view; **C**, legs, lateral view; **D**, metasoma, dorsal view; **E**, Sterna 4-6, ventral view; **F**, genital capsule, dorsal view; **G**, S7, dorsal view; **H**, S8, ventral view.



FIG. 19. — *Amegilla samarensis* (Cockerell & LeVeque, 1925) female holotype (NHMUK): **A**, label information; **B**, habitus, lateral view; **C**, head, frontal view; **D**, metasoma, dorsal view.

Gimpu, lowland rainforest; 360 m a.s.l.; 20.III.1985; J. P. & M. J. Duffels leg.; T. J. Wood det.; RMNH • 1♀; SW Celebes, Malino; 1000 m a.s.l.; 1-30.VI.1936; L. J. Toxopeus leg.; M. A. Liefstinck det.; RMNH • 1♀; C. Sulawesi, Sungai Anowah, 41 km N of Wotu, along Trans-Sulawesi Highway; 650 m a.s.l.; 24.X.1993; J. P. & M. J. Duffels leg.; RMNH • 1♂; C Sulawesi, nr Luwuk, Bunga, malaise trap; c. 300 m a.s.l.; 11-14.XI.1989; C. van Achterberg leg.; RMNH • 1♂; C Sulawesi, nr Luwuk, Salodik, malaise trap; c. 400 m a.s.l.; 11-14.XI.1989; C. van Achterberg leg.; RMNH • 1♂; Sula Isl., Mangole, near Buya, malaise trap; c. 465 m a.s.l.; 13.X.-2.XI.1993; C. van Achterberg leg.; RMNH.

Philippines • 1♀ (holotype of *Anthophora whiteheadi* ssp. *samarensis*); Samar; 2.VI.1924; R. C. McGregor leg.; NHMUK • 1♀; Bur. Agr., P. I.; C. R. Jones leg.; M. A. Liefstinck det.; RMNH • 2♂; Dapitan, Mindanao; C. F. Baker leg.; M. A. Liefstinck det.; RMNH • 1♀; Imugan, Luzon; M. A. Liefstinck det.; RMNH • 1♀; Isl. Biliran; C. F. Baker leg.; M. A. Liefstinck det.; RMNH • 1♀; Los Banos; C. F. Baker leg.; M. A. Liefstinck det.; RMNH • 1♂; Los Banos, Lag., Phil.; 30.V.1951; H. M. & D. Townes leg.; M. A. Liefstinck det.; RMNH • 2♀; Luzon; M. A. Liefstinck det.; RMNH • 1♂; Misamis Or., Mt. Balatukan, 15 km SW of Gingoog; 1000-2000 m a.s.l.; 27-30.IV.1960; H. H. Torrevillas leg.; M. A. Liefstinck det.; RMNH • 1♂; Mt. Banahao [Mount Banahaw], Luzon; M. A. Liefstinck det.; RMNH • 1♀; Mt. Maquiling [Mount Makiling]; 22.VIII.1949; L. B. Uichanco leg.; M. A. Liefstinck det.; RMNH • 1♀; Mt. Maquiling [Mount Makiling]; 294 m a.s.l.; 7.VIII.1949; S. Calastro

leg.; M. A. Liefstinck det.; RMNH • 1♀; Mt. Maquiling [Mount Makiling]; 380 m a.s.l.; 22.XI.1948; P. Alfonso leg.; M. A. Liefstinck det.; RMNH • 3♀; Mt. Maquiling [Mount Makiling], Luzon; C. F. Baker leg.; M. A. Liefstinck det.; RMNH • 1♂, 1♀; Negros Or., Mt. Talinas; 1020 m a.s.l.; 29.VI.1958; H. E. Milliron leg.; M. A. Liefstinck det.; RMNH • 1♀; Palawan, 8-13 km E of Tarumpitao Pt.; 70 m a.s.l.; 21.V.1958; H. E. Milliron leg.; M. A. Liefstinck det.; RMNH • 1♀; Pikit Cot. [Cotabato], Phil.; 13.VI.1953; H. Townes leg.; M. A. Liefstinck det.; RMNH • 1♂; St. Luis Calapan, Mindero, Phil.; 13.IV.1954; H. M. & D. Townes leg.; M. A. Liefstinck det.; RMNH • 1♂; Surigao, Mindanao; M. A. Liefstinck det.; RMNH.

DISTRIBUTION. — Philippines and Indonesia (Sulawesi, Sula Islands: Mangole) (Fig. 16).

REMARKS

Amegilla samarensis was described from a single female from the island of Samar, and the holotype specimen (NHMUK) is actually labelled as “*Anthophora zonata samarensis*” (Fig. 19), but it was published as *Anthophora whiteheadi* ssp. *samarensis* (Cockerell & LeVeque 1925: 170). Examination of the RMNH collection has revealed many specimens determined by Liefstinck from the Philippines and Sulawesi. This included the undescribed male of *Amegilla samarensis* (Fig. 20) which can be



FIG. 20. — *Amegilla samarensis* (Cockerell & LeVeque, 1925) male (non-type) (RMNH): **A**, habitus, lateral view; **B**, head, frontal view; **C**, metasoma, dorsal view; **D**, Sterna 4-6, ventral view.

immediately separated from *Anthophora whiteheadi* due to the apical margin of S5 which is essentially straight, with only very weak scalloping (Fig. 20D), with the surface of S6 also lacking a semi-circular depression and longitudinal keel (Fig. 20D). Females are slightly more challenging to recognise, but can be separated as in *Amegilla whiteheadi* the tibial scopae is almost entirely composed of yellowish hairs with a line of black hairs along the ventral margin of the hind tibiae, whereas in *Amegilla samarensis* the tibial scopae is composed of predominantly dark brown hairs with a broad line of dusky yellowish hairs along the dorsal margin of the hind tibiae. Whilst this is a colour difference, it has been able to examine a large number of *Amegilla whiteheadi* female specimens from Sulawesi and elsewhere, and the character appears stable. Moreover, the colouration of the tergal hairbands is bright light sky blue in *Amegilla whiteheadi* and dark turquoise blue in *Amegilla samarensis*. The hairbands are also comparatively broad in *Amegilla whiteheadi*, occupying around 25% of T2, 40% of T3 and more than 50% of T4, whereas in *Amegilla samarensis* they occupy <20% of T2 and around 25% of T3 and T4. With these differences combined, separation can be made with confidence.

Amegilla (*Zonamegilla*) *sicheli* n. sp.
(Fig. 21)

[urn:lsid:zoobank.org:act:6C341602-6401-4F73-A03A-300CEDF211A0](https://zoobank.org/act:6C341602-6401-4F73-A03A-300CEDF211A0)

TYPE MATERIAL. — **Holotype**. Indonesia • 1♀; C. Celebes [Sulawesi], Todjamboe, Palopo [-2.9333, 120.1000]; 800 m a.s.l.; 15.VI.1941; H. & E. Vonk leg.; RMNH, RMNH.INS.1716684.

DIAGNOSIS. — *Amegilla sicheli* n. sp. can quickly be recognised as an *Amegilla* due to the first recurrent vein in the forewing joining the middle of the second submarginal cell and the absence of arolia between the tarsal claws. Recognition at a subgeneric level is in principle more challenging due to the lack of a male, with the subgeneric classification of Brooks (1988) largely based on male characters. Due to weak characters and largely indistinguishable females these subgenera were not recognised by Michener (2007), and the problem of recognising *Amegilla* subgenera in South-east Asia was extensively discussed by Carion *et al.* (2025) and partly by Wood & Bossert (2025). In practice, material from Indonesia falls into two groups; subgenus *Glossamegilla* Brooks, 1988 which can be functionally recognised due to the relatively long tongue and absence of metallic pubescence, and subgenus *Zonamegilla* which can be functionally recognised due to the relatively short tongue



FIG. 21. — *Amegilla (Zonamegilla) sicheli* n. sp. female holotype (RMNH): **A**, habitus, dorsal view; **B**, head, frontal view; **C**, tongue, lateral view detail; **D**, mesosoma, dorsolateral view; **E**, hind tibial scopa, dorso-lateral view; **F**, metasoma, T3-6 dorsal view detail.

and presence of metallic pubescence (though taxa around *Amegilla flammeozonata* Dours, 1869 lack such pubescence). In the case of *Amegilla sicheli* n. sp., the abundant metallic pubescence allows placement in the *Zonamegilla*.

The specimen itself is remarkably similar to *Amegilla atrocaerulea* at first glance, but careful examination shows that it cannot be the

same due to the distinctly flattened nature of the metallic hairs comprising the metasomal hairbands in *Amegilla atrocaerulea* (and *Amegilla cincta*), whereas these are simple and distinctly unflattened in *Amegilla sicheli* n. sp. (compare Fig. 21F and Fig. 4F). The metasomal hairbands are also distinctly broadened medially in *Amegilla atrocaerulea*, whereas they maintain a uniform length in *Amegilla*

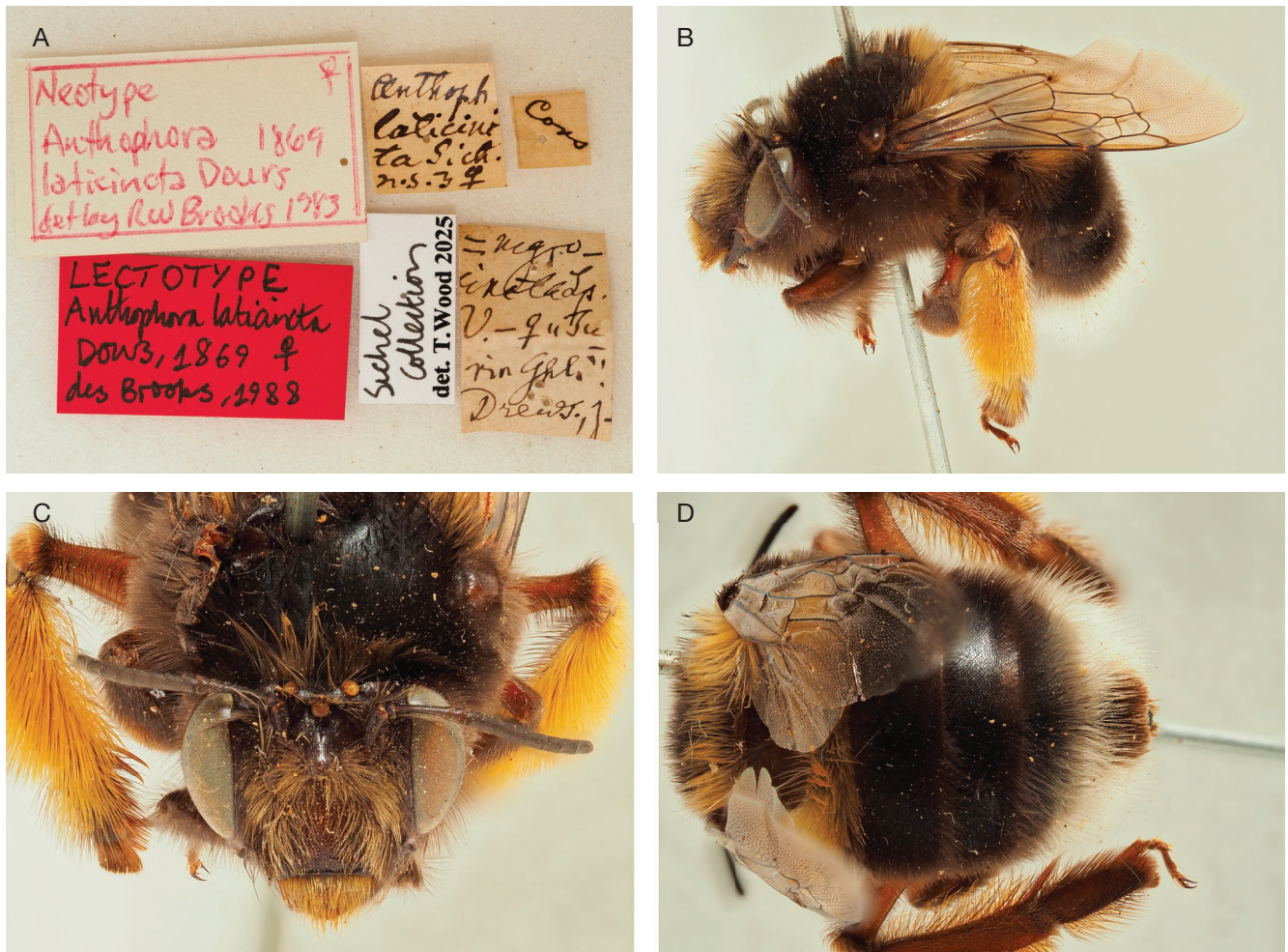


FIG. 22. — *Anthophora laticincta* Dours, 1869 female lectotype (MNHN): A, label details; B, habitus, dorsolateral view; C, head, frontal view; D, metasoma, dorsal view.

sicheli n. sp. Finally, the galea of *Amegilla atrocaerulea* has subtle but distinct longitudinal striations on its surface (Fig. 4D), whereas *Amegilla sicheli* n. sp. lacks such striations (Fig. 21C). Finally, the specimen of *Amegilla sicheli* n. sp. is of known provenance, coming from collectors who are known to have been present on Sulawesi at this time and collected Odonata from the *locus typicus* in April 1941 (van Tol 1987: 159), and so it is definitively considered to be from the island of Sulawesi, whereas *Amegilla atrocaerulea* is definitively considered to be from tropical Africa.

Due to the lack of any kind of formal revision of *Amegilla* (*Zonamegilla*) species (the monograph mentioned by Lieftinck 1975 was never completed), and the large number of undescribed species to the east of the Wallace Line, care needs to be taken when working with this group of bees. *Amegilla sicheli* n. sp. however can be recognised due to the unique combination of head, scutum, scutellum, fore and mid tibiae and tarsi, and apical margins of T1-4 with aquamarine metallic hairs (Fig. 21); this is unique within the Indo-Australian *Zonamegilla* fauna.

Specifically, for the other two *Amegilla* (*Zonamegilla*) species present on the island of Sulawesi, *Amegilla sicheli* n. sp. can also be diagnosed by the reduced pale facial markings other than on the clypeus (Fig. 21B), with very small yellow markings on the supraclypeal area and lower paraocular areas (in *Amegilla whiteheadi* and *Amegilla samarensis* with broad yellow markings present adjacent to the clypeus on the supraclypeal and paraocular areas), antennal scape dark (variably yellow marked in both compar-

son species), tibial scopae predominantly black with intermixed black and white hairs along the dorsal margin of the hind tibiae (Fig. 21E; in *Amegilla whiteheadi* with the tibial scopae composed predominantly of yellowish hairs with a line of black hairs along the ventral margin of the hind tibiae, and in *Amegilla samarensis* with the tibial scopae composed of predominantly dark brown hairs with a broad line of dusky yellowish hairs along the dorsal margin of the hind tibiae).

ETYMOLOGY. — Named after Frédéric Jules Sichel for his work on anthophorine bees, even if much of it was posthumously published by Dours; Sichel's collection provided (and continues to provide) remarkable specimens of scientific interest. The name is in the genitive form.

DISTRIBUTION. — Indonesia (Sulawesi) (Fig. 16).

DESCRIPTION

Female

Body length. 20 mm (Fig. 21A).

Head. Predominantly dark, with small pale maculation on supraclypeal area, lower paraocular areas, anterior margin of clypeus with narrow longitudinal stripe medially, major-

ity of labrum except along base, and majority of mandibles except apices (Fig. 21B). Outer surface of galea smooth and polished (Fig. 21C). Gena, vertex, frons, and paraocular areas with electric green metallic hairs with longer fine black hairs intermixed. Antennae with A3 exceeding A4+5, shorter than A4-6.

Mesosoma. Mesosoma predominantly covered with mixture of yellowish, electric green metallic, and black hairs, appearing greyish at distance (Fig. 21D). Mesosoma ventrally with pubescence becoming white, laterally on propodeum with long black hairs intermixed. Legs with outer faces of fore and mid tibiae and tarsi with metallic green hairs, hind legs with tibial scopae predominantly composed of black hairs, with intermixed black and white hairs along the dorsal margin of the hind tibiae, white hairs extending onto hind basitarsi (Fig. 21E). Wings hyaline.

Metasoma. Terga dark, covered with dense hair-bearing punctures, punctures separated by 0.5-1 puncture diameters; surface finely microreticulate, dull to weakly shining in places. Tergal discs covered with predominantly decumbent black hairs, tergal margins with hairs electric green, forming dense apical hairbands which obscure the underlying surface (Fig. 21F). Hairbands covering around 20% of T1-2, 30% of T3, and up to 50% of T4. T5 laterally with scattered white hairs, predominantly with black pubescence. Pygidial plate rounded, laterally with faintly raised fine carina, internal surface smooth and featureless.

Male

Unknown.

REMARKS

Co-ordinates for the collecting locality were taken from van Tol (1987). Despite many Sulawesi *Amegilla* specimens available for study, no additional material of *Amegilla sicheli* n. sp. has been located. Targeted searches at higher altitudes may be necessary.

Genus *Anthophora* Latreille, 1803

Anthophora laticincta Dours, 1869
(Fig. 22)

Anthophora lati-cincta Dours, 1869: 124.

MATERIAL EXAMINED. — France • 1 ♀ (lectotype des. Brooks 1988); Cors [Corse = Corsica]; MNHN-EY-EY58560 • 1 ♀ (paralectotype, not originally labelled as such by Brooks); Cors; MNHN-EY-EY58563.

CURRENT STATUS. — *Anthophora* (*Anthophora*) *subterranea* (Germar, 1826) (Brooks 1988).

DISTRIBUTION. — Pan-Mediterranean (Brooks 1988; Rasmont 2014, as *Anthophora canescens* Brullé, 1832 recte 1833; Ascher & Pickering, as *Anthophora canescens*).

REMARKS

Described from Corsica based on specimens from “Collection Sichel, Dours” (Dours 1869: 125). As Dours’ collection is lost, material was sought in the MNHN collection, and Brooks (1988: 555) designated a lectotype from this collection. However, inspection of the MNHN general *Anthophora* collection revealed that the specimen was actually confusingly labelled as neotype by Brooks. Considering this specimen itself, the two main labels with written information are in the handwriting of Sichel, as was the case for *Anthophora atrocaerulea*. Since Dours explicitly stated that specimens could be found in “Collection Sichel, Dours”, this indicates that the specimen is a genuine syntype. Importantly, the transcription of the label information by Brooks of “Cors/Anthoph laticincta Sich n. s. 3 females/ = nigro-cincta Lp. v. female a Jurin ghli/ Drews, J.” does match the specimen in question, and so it can be accepted as a valid lectotype designation despite the neotype label; it has now been properly labelled as the lectotype (Fig. 22A).

Additionally, in the Sichel collection (adjacent to but not integrated into the general collection), a second specimen with the same label information was located which is also syntypic, as it is labelled as *laticincta* by Sichel. This does not appear to have been inspected by Brooks, as it lacks any of his labels. This second female has now been labelled as paralectotype following Brooks’ valid lectotype designation.

Anthophora nigrovittata Dours, 1869
(Fig. 23)

Anthophora nigro-vittata Dours, 1869: 98, ♀.

MATERIAL EXAMINED. — France • 1 ♀ (lectotype by present designation); Cors [Corse = Corsica]; MNHN-EY-EY58562.

CURRENT STATUS. — Listed as a junior synonym of *Anthophora balneorum* Lepeletier, 1841 by Brooks (1988: 560), but the *balneorum*-group is currently under molecular and morphological revision (TJW, P. Rasmont, pers. comm.). It will likely be retained as a distinct Corso-Sardinian species endemic to these two islands based on preliminary results.

DISTRIBUTION. — As *Anthophora balneorum*, West Mediterranean (Brooks 1988); as *Anthophora nigrovittata*, Corsica and Sardinia only (Rasmont 2014).

REMARKS

As for *Anthophora laticincta*, *Anthophora nigrovittata* was described from Corsica based on specimens from “Collection Sichel, Dours” (Dours 1869: 99). In the Sichel collection, a single specimen bearing Sichel’s handwriting was located. The specimen is labelled as coming from Corsica, and is labelled as “A. nigrovittata n.s. ♀ ♂” (Fig. 23A). This is clearly one of Sichel’s specimens, and as it morphologically corresponds to the description it is hereby designated as the lectotype.



FIG. 23. — *Anthophora nigrovittata* Dours, 1869 female lectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, metasoma, dorsal view.

Subfamily NOMADINAE Latreille, 1802
Tribe MELECTINI Westwood, 1839
Genus *Thyreus* Panzer, 1806

Crocisa calcarata Vachal, 1903
(Fig. 24)

Melecta nitidula Fabricius, 1804: 386.

Crocisa calcarata Vachal, 1903a: 382, **n. syn.**

MATERIAL EXAMINED. — **Unclear** • 1♂ (holotype of *Crocisa calcarata* Vachal, 1903); Chanchamayo, Afr? [recte Australasian region]; [MNHN-EY-EY58548](#).

OTHER MATERIAL. — **Indonesia** • 1♀; Ambon, recte Australia, NHMD, not examined].

CURRENT STATUS. — *Thyreus nitidulus* (Fabricius, 1804) **n. syn.**

DISTRIBUTION. — From Sulawesi and the southern Philippines to the Solomon Islands and northern Australia (Lieftinck 1959; 1962).

REMARKS

Vachal described *C. calcarata* from a single male specimen, indicating uncertainty over the label information, writing “*Afr. australis.*?”. Eardley (1991: 39) included the taxon in his revision of sub-Saharan Melectini and examined the holotype, treating it correctly as *Thyreus calcaratus*, and stating that he was unable to trace the collecting locality. New examination of the specimen shows that it is predominantly covered with almost adpressed strongly flattened metallic blue hairs. These flattened hairs are strongly characteristic of the species (or species complex) *Thyreus nitidulus* (Fabricius, 1804) (Lieftinck 1959; 1962) which occurs from Sulawesi and Timor to northern Australia and the Solomon Islands (type ♀, Indonesia: Ambon, recte Australia, NHMD). The species *Thyreus wallacei* (Cockerell, 1905) (Philippines, Palawan, ?Sula Islands) also has similar flattened hairs, but 1) these hairs are lanceolate and do not branch apically whereas the type of *T. calcaratus* has the hairs slightly but distinctly branching apically (Fig. 24), and 2) this species has a strongly produced pair of spots of flattened hairs situated anterolaterally on the scutellum, whereas the type of



FIG. 24. — *Crocisa calcarata* Vachal, 1903 male holotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, dorso-frontal view; **D**, mesosoma, dorsal view; **E**, metasoma, dorsal view; **F**, genital capsule, dorsolateral view.

T. calcaratus has weakly produced spots situated basolaterally (Fig. 24B, D).

Based on these distinctive flattened metallic hairs, *T. calcaratus* must be considered to have been collected in South-east Asia, not Africa. However, its specific identity is somewhat unclear. Morphologically, it does not match any of the subspecies of

T. nitidulus delineated by Liefstinck (1959; 1962). Specifically, the presence of weakly produced basolateral spots of metallic blue hairs on the scutellum and the extent of metallic blue hairs on T1 which cover almost the entire surface does not match a currently recognised name. In examining material identified by Liefstinck in the RMNH and MNHN collections, the



FIG. 25. — *Thyreus nitidulus* (Fabricius, 1804) *sensu lato* male (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, dorso-frontal view; **D**, habitus, dorsal view.

closest form was a specimen from the MNHN collection (ex. coll. Pérez) labelled as coming from “Ile Dammer” [=Damar Island, Pulau Damer] to the north-east of Timor (Fig. 25). This specimen was labelled as “ssp. inedita” by Liefertinck, i.e., an undescribed or unpublished subspecies. It shares the surface of T1 that is almost entirely covered with metallic blue hairs, but has only the slightest indication of metallic blue hairs basolaterally on the scutellum.

Given the complexity in *T. nitidulus sensu lato* (Liefertinck 1959; 1962) due to a lack of structural differences despite the numerous differences in pubescence, and the need to further investigate this potential species complex using molecular tools, it seems most prudent to synonymise *T. calcaratus* under the broad *T. nitidulus* concept of Liefertinck pending further revisions (see full synonymy in Liefertinck 1959; 1962). With additional careful investigation and characterisation of *T. nitidulus sensu lato* on more islands in the Wallacean region, including small islands such as Damer, it may be possible to understand more precisely where *T. calcaratus* was actually collected and what its true status may be. For now, what can be said with confidence is that it is definitively excluded from the African *Thyreus* fauna.

Crocisa calceata Vachal, 1903 (Figs 26; 27)

Crocisa calceata Vachal, 1903a: 380.

MATERIAL EXAMINED. — **Central African Republic** • 1♀; Fort Sibut, Haut Chari, Congo français; Le Moullet leg.; T. J. Wood det.; [MNHN-EY-EY58584](#) (ex. coll. De Gaulle 1919).

Gabon • 1♂ (lectotype by present designation); Lastourville; 1.VIII.-30.IX.1898; Bouysson leg.; [MNHN-EY-EY58550](#).

Sierra Leone • 1♀ (paralectotype by present designation); [MNHN-EY-EY58549](#).

CURRENT STATUS. — *Thyreus calceatus* (Vachal, 1903) (Eardley 1991).

DISTRIBUTION. — Senegal, Sierra Leone, Nigeria, Cameroon, Gabon, Central African Republic*, Republic of the Congo, Democratic Republic of the Congo, Uganda, Ethiopia, Kenya, Tanzania, Malawi, Zambia, Mozambique, Zimbabwe, Namibia, Lesotho, South Africa (Eardley 1991; Ascher & Pickering 2025).

REMARKS

Vachal described *C. calceata* from specimens from Lastourville [Gabon], Sierra Leone, Ouganda [Uganda], Dakar [Senegal], and the Belgian Congo [Democratic Republic of the Congo].



FIG. 26. — *Crocisa calceata* Vachal, 1903 male lectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, metasoma, dorsal view; **E**, hind legs, lateral view; **F**, genital capsule, dorsal view.

Eardley (1991: 42) wrote: “Cockerell (1937b), in taking Lastourville as the type locality of this species, designated the specimen from this locality as the lectotype of this species”. Cockerell (1937: 28) specifically wrote: “Lastourville, being the first locality cited is to be taken as the type-locality of *C. calceata*”.

Under ICZN (1999) Article 74.5 this does not constitute a valid lectotype designation, as Cockerell did not use the term lectotype or its equivalent (e.g. “the type”), he did not examine the material directly, and did not *explicitly* select a syntype to act as the unique name-bearing type of the taxon. His writing only *implicitly* indicates that the syntype from



FIG. 27. — *Crocisa calceata* Vachal, 1903 female paralectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, mesosoma, dorsal view; **E**, hind legs, lateral view; **F**, metasoma, dorsal view.

Lastourville should be representative of the species. This is a minor quibble, and in order to maintain consistency with the revision of Eardley, this male specimen from Lastourville is hereby designated as the lectotype. An additional paralectotype from Sierra Leone is present in the MNHN collection that was not recognised by Eardley as being part

of the original type series, even though he examined and determined it (Fig. 27A).

Finally, the genital capsule from the lectotype male had been extracted and stored in a glycerine vial. It was possible to extract the capsule and mount it on card, though some aspects of the capsule were obscured by thick gelatine (Fig. 26F).



FIG. 28. — *Crocisa delumbata* Vachal, 1903 male paralectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, mesosoma, dorsal view; **D**, metasoma, dorsal view.

Crocisa delumbata Vachal, 1903
(Fig. 28)

Crocisa delumbata Vachal, 1903a: 381.

MATERIAL EXAMINED. — Sierra Leone • 1♂ (paralectotype); [MNHN-EY-EY58551](#).

OTHER MATERIAL. — Democratic Republic of the Congo • 1♀, 1♂, RBINS, not examined.

CURRENT STATUS. — *Thyreus delumbatus* (Vachal, 1903) (Eardley 1991).

DISTRIBUTION. — ?Sierra Leone, Democratic Republic of the Congo, Uganda, Sudan, Djibouti, Kenya, Tanzania, Zimbabwe, Botswana, Mozambique, Namibia, Eswatini, South Africa (Eardley 1991; Ascher & Pickering 2025).

REMARKS

Vachal described the species based on two females from Boma in the Belgian Congo from the RBINS collection (not examined for the present paper) and one male from Sierra Leone in “*ma collection*”. Eardley (1991: 21) could not find the male,

and so designated one of the RBINS females as lectotype. Searches in the MNHN collection were able to locate this male which bears a handwritten Vachal label. It has now been labelled as paralectotype, but the more pressing issue is that its occurrence in Sierra Leone is somewhat at odds with its reported distribution which is more typically eastern in Africa (Eardley 1991; Ascher & Pickering 2025). Further revision of West African *Thyreus* material is necessary to better understand the distribution of this species; the utility and stability of the presence of absence of a small pair of light patches of pubescence on the scutellum as an identification and species delineation character in African *Thyreus* requires investigation and validation. At the present time, the morphology of this paralectotype does not seem consistent with “*Thyreus delumbatus*” specimens from East Africa (pers. obs.).

Crocisa interrupta Vachal, 1903
(Figs 29; 30)

Crocisa interrupta Vachal, 1903a: 382.

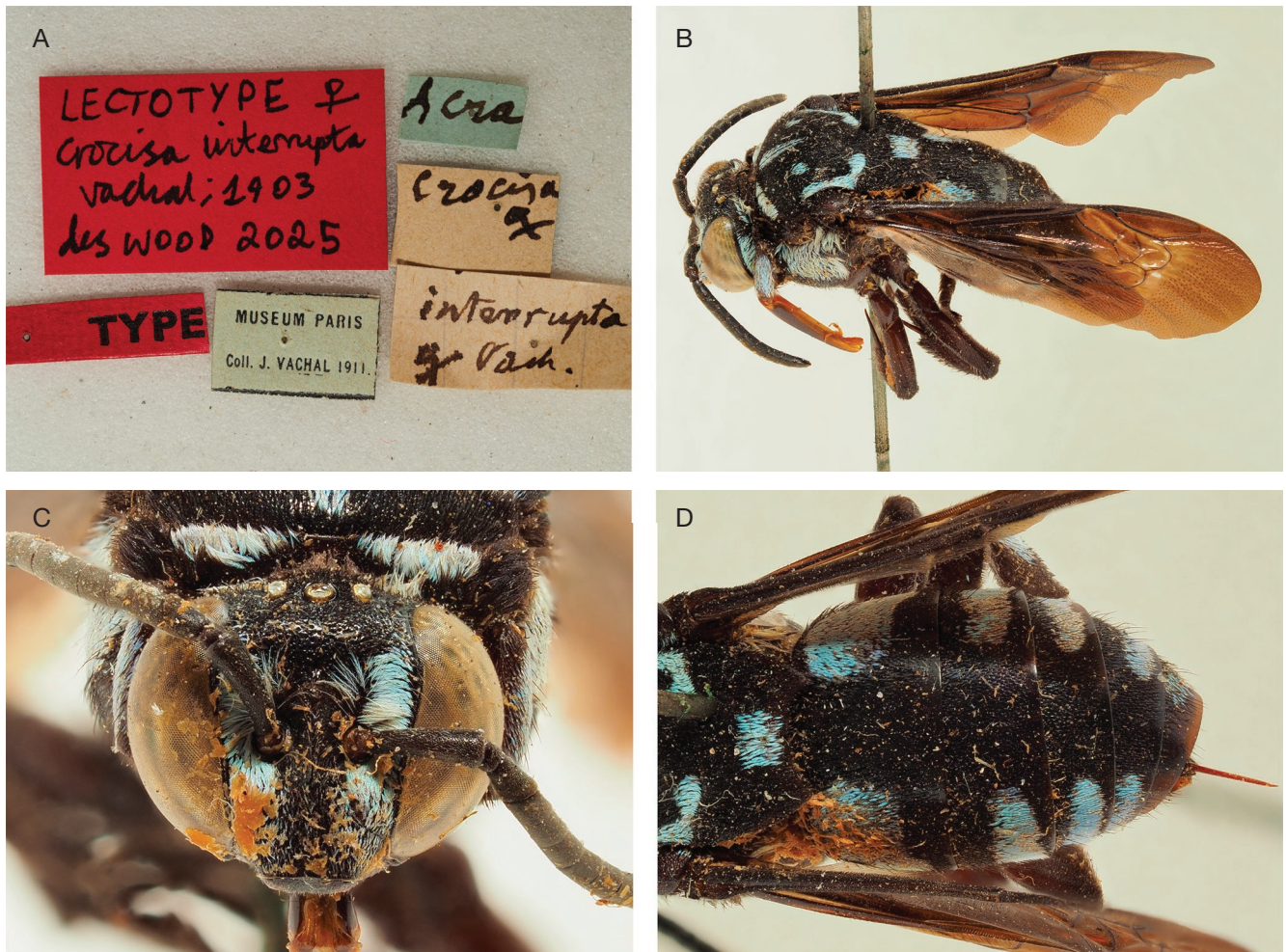


FIG. 29. — *Crocisa interrupta* Vachal, 1903 female lectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, metasoma, dorsal view.

MATERIAL EXAMINED. — Equatorial Guinea • 1♂ (paralectotype by present designation); Congo, Bata; 25.IX.1897; Bouyssou leg.; [MNHN-EY-EY58553](#).

Ghana • 1♀ (lectotype by present designation); Accra [Accra]; [MNHN-EY-EY58552](#).

CURRENT STATUS. — *Thyreus interruptus* (Vachal, 1903) (Eardley 1991).

DISTRIBUTION. — Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Nigeria, Equatorial Guinea, Gabon, Cameroon, Central African Republic, Democratic Republic of the Congo, Uganda (Eardley 1991; Ascher & Pickering 2025).

REMARKS

Vachal described *C. interrupta* from specimens from Accra [Ghana], Batah [Equatorial Guinea], Sierra Leone, and “des chutes de Samlia” [Gabon, see Madl 2021]. Eardley (1991: 37) wrote: “A female from Accra, Ghana, was designated as the lectotype of this species by Cockerell and Mackie (1933)”. Cockerell & Mackie (1933: 36) wrote: “Accra must be considered the type locality”. As for *C. calceata*, this does not constitute a valid lectotype designation under Article 74.5 because the authors did not explicitly select a syntype to act as the unique name-bearing type of the taxon. In order to maintain

consistency with the revision of Eardley, this female specimen from Accra is hereby designated as the lectotype (Fig. 29A). An additional paralectotype from Equatorial Guinea is present in the MNHN collection that was not recognised by Eardley as being part of the original type series, even though he examined and determined it (Fig. 30A).

Crocisa nubica Lepeletier, 1841 (Fig. 31)

Crocisa nubica Lepeletier, 1841: 453.

MATERIAL EXAMINED. — Chad • 3♀; Gassi (N'Djamena); 2.III.1992; G. G. M. Schulten leg.; T. J. Wood det.; RMNH, ZMA.INS.1240882. Nigeria • 1♂; Jebba, Bacita environs; 6.XII.1973; G. F. Mees leg.; T. J. Wood det.; RMNH, RMNH.INS.778424 • 1♂; Nguru, MVP light trap; 1-7.IV.1994; H. Bottenberg leg.; T. J. Wood det.; RMNH, RMNH.INS.156236.

Senegal • 1♀; Dakar; 1906; G. Melou leg.; T. J. Wood det.; [MNHN-EY-EY58583](#).

Sudan • 1♀; Khartoum; 10.III.1924; H. H. King leg.; M. A. Lieftinck det.; RMNH, RMNH.INS.722238 • 1♀; Soudan-Egyptien, Khartoum et env.; 1907; Ch. Alluaud leg.; T. J. Wood det.; [MNHN-](#)



FIG. 30. — *Crocisa interrupta* Vachal, 1903 male paralectotype (MNHN): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, metasoma, dorsal view.

EY-EY35576 • 1♀; W. Darfur, S. Jebel Murra, Kallikitting [Kalokit-ting]; 4,450 ft a.s.l.; 2.VI.1932; M. Steele leg.; M. A. Liefstinck det.; RMNH, RMNH.INS.722230.

Togo • 1♂; R. Maritime, Lac de Togo, Kpene; 23-30.XI.1980; G. G. M. Schulten leg.; T. J. Wood det.; RMNH, ZMA.INS.1240864.

Unclear • 1♀ (lectotype by present designation); La Nubie [probably Sudan]; **MNHN-EY-EY58561**.

CURRENT STATUS. — *Thyreus nubicus* (Lepelletier, 1841) (Liefstinck 1968).

DISTRIBUTION. — Senegal*, Togo*, Nigeria, Chad, Sudan, Egypt (Lepelletier 1841; Morice & Szépligeti 1904; Cockerell & Mackie 1933; Liefstinck 1968).

REMARKS

Lepelletier (1841) described this bee based on the female sex explicitly from the Dejean collection with a *locus typicus* of *La Nubie*. Neither Liefstinck (1968) nor Eardley (1991) could locate this material, it was not mentioned by Baker (1994), and new searches in the OUMNH collection were also fruitless. It was therefore a surprise to open the Lepelletier boxes at the MNHN and find the mesosoma and first two metasomal segments of a specimen labelled as *Crocisa nubica* in Lepelletier's handwriting.

Examination of this specimen shows that it matches Lepelletier's description and illustration, with the large size, strongly infusate forewings, and coalescent lateral white spots on the scutellum which reach but do not continue onto the scutellum. It is also consistent with the use of this name by Liefstinck (1968). It is unclear why this specimen is not in the Dejean collection in Oxford, but it could well have been misplaced by Lepelletier and not returned. It is however syntypic, and can confidently be said not to be present in the Latreille-Dejean-Lepelletier collection based on past and present searches. Given that the number of specimens used by Lepelletier to describe the species is unknown, although this fragment is the likely holotype, it is here designated as the lectotype to cement its existence and presence in the MNHN.

Although Liefstinck (1968: 106) raised doubts about the records of *T. nubicus* from Chad and Cameroon by Strand (1912) and Meyer (1921), its presence in at least Chad can be confirmed based on newly examined material. Literature records of *T. nubicus* from tropical Africa must be treated with suspicion given the demonstrated presence of this species in xeric habitats on the edge of



FIG. 31. — *Crocisa nubica* Lepeletier, 1841 female lectotype (MNHN): **A**, label details; **B**, habitus, dorsal view; **C**, mesosoma, dorsal view; **D**, forewing, dorsal view; **E**, mesosoma, lateral view; **F**, Scutellum and first two metasomal segments, dorsal view.

the Sahara desert. In this context, the specimen from Togo is somewhat peculiar since it is labelled as coming from the coast; further investigation is required. The host bee species could help shed light on its ecology, but this

is currently unknown. Since most records come from Sudan, it would seem to be the likelier *terra typica* out of Sudan and Egypt, the two together likely comprising Lepeletier's *La Nubie*.

Subfamily XYLOCOPINAE Latreille, 1802
Tribe CTENOPLECTRINI Cockerell, 1930
Genus *Ctenoplectra* Kirby, 1826

Ctenoplectra alluaudi Vachal, 1903
(Fig. 32)

Ctenoplectra alluaudi Vachal, 1903b: 99.

MATERIAL EXAMINED. — Côte d'Ivoire • 1 ♀ (not ♂) (holotype); Assinie; MNHN-EY-EY58564.

CURRENT STATUS. — *Ctenoplectra antinorii* Gribodo, 1884 n. syn.

DISTRIBUTION. — Côte d'Ivoire, Gabon, Democratic Republic of the Congo, Republic of the Congo, Ethiopia, Uganda, Rwanda, Kenya, Tanzania, and Malawi (Vachal 1903b, as *Ctenoplectra alluaudi*; Eardley 2003; Ascher & Pickering 2025; Wood & Bossert 2025).

REMARKS

Vachal (1903b) described *Ctenoplectra alluaudi* from Assinie which can be found today in Côte d'Ivoire. A single specimen was available in the MNHN, but it was in poor condition with both hind tibiae and the metasoma broken off, with one tibia and the metasoma glued to a piece of card (Figs 32B; 32E). Moreover, the specimen is female, as evidenced by the tibial scopa and oil collecting hairs on the ventral part of the metasoma (Fig. 32F), as well as 12 antennal segments. It can be concluded that the damage to the specimen occurred after Vachal's description, as he described characters on the dorsal surface of the metasoma which is now not visible since this side is glued to the card, exposing the ventral surface. The specimen is accompanied with a note in French which reads: "*Ctenoplectra alluaudi* Vachal, 1903 ♂ seen by C. Eardley returned October 2004 without label".

The specimen lacks one of Vachal's handwritten identification labels, but despite this lack of label, it can be recognised as the holotype of *Ctenoplectra alluaudi* due to the collecting information. There are no other suitable specimens in the MNHN collection; only two males are present – a male specimen of *Ctenoplectra antinorii* Gribodo, 1884 collected by Sjöstedt from Tanzania, and a paralectotype male of *Ctenoplectra armata* Magretti, 1895 from Ethiopia (see Wood & Bossert 2025 for the main type series).

In his revision of African Ctenoplectrini, Eardley (2003: 7, as *Ctenoplectrina alluaudi* [sic]) wrote: "The scutal punctation, absence of a scopa and structure of T7 and S7-S8 all resemble *C. politula*, indicating that *C. alluaudi* [sic] belongs to the genus *Ctenoplectrina*", noting that he examined the "male" holotype in the MNHN. As discussed by Wood & Bossert (2025), some of the choices made in this revision are difficult to interpret; the specimen is clearly female, not male. Because the specimen has tibial scopae and oil collecting hairs on the metasoma, it cannot be a member of the parasitic genus *Ctenoplectrina* Cockerell, 1930, as this lineage does not collect pollen and oil itself. Due to the very dense scutal punctures, *Ctenoplectra alluaudi* can simply be recognised as a junior synonym of *Ctenoplectra antinorii* n. syn. (type revised by Wood & Bossert 2025).

As to the additional specimens identified by Eardley as "*Ctenoplectrina alluaudi* [sic]", they must be revised to understand what they are and if they actually represent an undescribed *Ctenoplectrina* species. As noted in the next taxon entry, currently only one *Ctenoplectrina* species can be confidently said to have been described based on available examined type material and published descriptions.

Genus *Ctenoplectrina* Cockerell, 1930

Scapter ugandica Cockerell, 1944
(Fig. 33)

Ctenoplectra nigrotestacea Magretti, 1895: 162.

Scapter lactipennis Friese, 1909: 189.

Ctenoplectra paolii Guiglia, 1928: 491.

Ctenoplectra politula Cockerell, 1930: 360.

Scapter ugandica Cockerell, 1944: 805, n. syn.

MATERIAL EXAMINED. — Uganda • 1 ♀ (holotype of *Scapter ugandica*); Madi; 1-31.V.1927; G. D. H. Carpenter leg.; NHMUK. For additional examined material of *Ctenoplectrina nigrotestacea* as well as type specimen illustrations, see Wood & Bossert (2025).

CURRENT STATUS. — *Ctenoplectrina nigrotestacea* (Magretti, 1895) n. syn.

DISTRIBUTION. — Nigeria, Cameroon, Democratic Republic of the Congo, Ethiopia, Somalia, Uganda, Kenya, Tanzania, and South Africa (Cockerell 1944, as *Scapter ugandica*; Eardley 2003; Ascher & Pickering 2025; Wood & Bossert 2025).

REMARKS

Davies & Brothers (2006) noticed that *Scapter ugandica* actually belonged to the genus *Ctenoplectrina* due to the tongue morphology, lack of arolia, absence of facial foveae, wing morphology, lack of metabasitibial plate, and oil-collecting hairs on the sterna, though these are reduced and in combination with the lack of pollen collecting hairs on the hind tibiae (Fig. 33D) demonstrate placement in the parasitic *Ctenoplectrina*. Transferring it to this genus, they declined to further pursue its relationship with *Ctenoplectrina politula* "the only other formally described species".

This comment is intriguing, because at the time of publication both *Ctenoplectrina politula* and *Ctenoplectrina alluaudi* were considered part of this genus (Eardley 2003). Following the synonymy above of *Ctenoplectrina alluaudi* with *Ctenoplectra antinorii* and the cataloguing work of Wood & Bossert (2025) who identified *Ctenoplectra nigrotestacea* as the oldest available name for this parasitic taxon, it is possible to also place *S. ugandica* as a junior synonym of this species. Due to this recent change, the full synonymy is given above.

Scapter ugandica displays the typical traits of *Ctenoplectrina* as described by Davies & Brothers (2006), and due to the red legs is suitably placed under *Ctenoplectra nigrotestacea*. It is possible that this is a complex of species due to the wide geographic range, but at the present time this is unproven,



FIG. 32. — *Ctenoplectra alluaudi* Vachal, 1903 female holotype (MNHN): **A**, label details; **B**, habitus, lateral view; **C**, head, frontal view; **D**, mesosoma, dorsal view; **E**, hind tibiae and tarsi, dorsal view; **F**, mesosoma, ventral view.

and *Scapter ugandica* is such a junior synonym that other earlier names will have priority over it in any subsequent revision, particularly because it is almost identical to the holotype of *Ctenoplectra paolii* (see photographs in Wood & Bossert 2025). See Wood & Bossert (2025) for additional comments.

As a final comment, these actions render *Ctenoplectrina* monotypic at the present time, although Schaefer & Renner (2008) indicate that there is an undescribed *Ctenoplectrina* species in Nigeria and Togo. To my knowledge, no taxon description has been published since 2008, and given the



FIG. 33. — *Scapter ugandica* Cockerell, 1946 female holotype (NHMUK): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, hind leg, lateral view detail.

four available junior names (including one described from Nigeria), care must be taken to robustly differentiate any purportedly new species.

Tribe XYLOCOPINI Latreille, 1802

Genus *Xylocopa* Latreille, 1802

Xylocopa affinis Lepeletier, 1841
(Fig. 34)

Xylocopa affinis Lepeletier, 1841: 210.

MATERIAL EXAMINED. — French Guiana • 1♂ (syntype); Cay. [Cayenne]; OUMNH, ENT-HYME2848.

CURRENT STATUS. — *Xylocopa* (*Schoenherria*) *muscaria* (Fabricius, 1775) (Moure 1960; Hurd & Michener 1961; Hurd & Moure 1963; Hurd 1978).

DISTRIBUTION. — Central and South America (Ascher & Pickering 2025).

REMARKS

Xylocopa affinis was described from Cayenne from specimens from “Musées de MM. Serville et comte Dejean”. Searches in the OUMNH collection produced a single male labelled as *Xylocopa affinis* by Lepeletier and subsequently as *Xylocopa barbata* Fabricius, 1804 by Frederick Smith (blue label). It is not clear when Smith examined this material, but it is probably after 1854 as Smith (1854: 361) listed both *X. affinis* and *X. barbata* as distinct species. The nomenclatural situation surrounding *X. affinis*, *X. barbata*, and the senior synonym *Apis muscaria* Fabricius, 1804 was dealt with by Hurd (1959), Moure (1960), Hurd & Michener (1961); Opinion 657 (1963), and Hurd & Moure (1963). After the ICZN ruling (Opinion 657), Hurd & Moure (1963: 296, 298) newly synonymised both *X. affinis* and *X. barbata* under *X. muscaria*.

What is unclear is the process by which this synonymy was arrived at. Moure (1960: 139–140) writes for *X. muscaria*: “A complete account on this group is undertaken by Dr. Paul D. Hurd, Jr., and myself, to be published in a short time” and for *X. barbata*: “Its definite position will be discussed



FIG. 34. — *Xylocopa affinis* Lepeletier, 1841 male syntype (OUMNH): **A**, label details; **B**, habitus, lateral view; **C**, head, frontal view; **D**, habitus, dorsal view.

later in the paper with Dr. Paul D. Hurd, Jr.”. However, the synonymies proposed by Hurd & Moure (1963) do not have any associated justifying text. Later, Hurd (1978: 22) listed the MSNT as the depository for *X. affinis*, and indeed Casolari & Casolari Moreno (1980: 149) indicate the presence of a single specimen from “Cayenne” from “Serville”. Moure *et al.* (2007: 667) indicated that the holotype of *X. affinis* was in the MSNT.

Presumption of the holotype is an understandable position given the difficulty in tracing much of Lepeletier’s type material, but given the explicit mention in the original publication that material was also in the Dejean collection, is not a justified position. Whilst an “indication” published before 2000 that a species was thought to have been described from a single specimen can be considered a valid lectotype designation (ICZN 1999; Article 74.6, see also Vivalo 2019: 27), I cannot find published evidence for such an “indication” for *X. affinis* in the works of Hurd and Moure before 2000. Both the OUMNH and MSNT specimens must currently be considered to be syntypes. The OUMNH specimen is not currently designated as the lectotype pending study of the MSNT specimen.

Xylocopa cajennae Lepeletier, 1841 (Fig. 35)

Xylocopa cajennae Lepeletier, 1841: 203.

MATERIAL EXAMINED. — **French Guiana** • 1♂ (lectotype by present designation); Cayenne; OUMNH, ENT-HYME2849-01 • 1♂ (paralectotype by present designation); Cayenne; OUMNH, ENT-HYME2849-02.

CURRENT STATUS. — *Xylocopa* (*Neoxylocopa*) *fimbriata* Fabricius, 1804 (Moure 1960; Hurd & Moure 1963; Hurd 1978; Moure *et al.* 2007; Ascher & Pickering 2025).

DISTRIBUTION. — Central and South America (northern part) (Ascher & Pickering 2025).

REMARKS

Xylocopa cajennae was described from “Cayenne” from “Musées de MM. Serville et comte Dejean”. Erichson (1848: 591) was the first to suggest that *X. cajennae* may be the male of *Xylocopa fimbriata* Fabricius, 1804, and the name was variably treated by other authors including Schrottky (1902: 464) who listed it as a junior synonym of *X. fimbriata*.



FIG. 35. — *Xylocopa cajennae* Lepeletier, 1841 male lectotype (OUMNH): **A**, label details; **B**, habitus, lateral view; **C**, head, frontal view; **D**, habitus, dorsal view.

Moure (1960: 144) provided a summary, as *X. caiennae* [sic]. He wrote “The two specimens of *X. caiennae* are in the Hope Department of Entomology, Oxford”. This served as the basis for the listing of Hurd (1978: 78) who gave the OUMNH as the type repository. Although Moure was correct to give Oxford as the repository, and personally visited the collection before 1960, no modern determination or type designation labels have been left behind. Moure *et al.* (2007: 656) list “syntypes” in the OUMNH. Contemporary examination of the collection produced these two males, only one of which bears a Lepeletier label. This particular male specimen is in good condition, and is designated as the lectotype.

Xylocopa crassa Lepeletier, 1841
(Fig. 36)

Xylocopa crassa Lepeletier, 1841: 204.

MATERIAL EXAMINED. — Unclear • 1 ♀ (holotype); India?; OUMNH, ENT-HYME2850.

CURRENT STATUS. — *Xylocopa* (*Platynopoda*) *tenuiscapa* Westwood, 1840 n. syn.

DISTRIBUTION. — Southern Asia, from India to the Malay Peninsula (Ascher & Pickering 2025).

REMARKS

Xylocopa crassa was described as “*Sans indication de patrie. Musée de M. le comte Dejean, précédemment Latreille*”. Smith (1854: 346) wrote “*Hab. Africa*. This is probably the female of *torrida*, both having been sent together from Fernando Poo [Bioko, Equatorial Guinea] on more than one occasion, with a note to this effect”. This refers to *Xylocopa* (*Mesotrichia*) *torrida* (Westwood, 1838), a species of tropical Africa. Smith (1874: 260) repeated the synonymy, which was followed by Hurd & Moure (1963: 302) and Hurd (1978: 89). Hurd (1978: 89) indicated that the repository of *X. crassa* was unknown.

It is unclear why Smith wrote this, because *X. torrida* was described based on the male sex, and *X. crassa* based on the female sex, but with no evidence provided to link the two. Westwood (1838: 113) was imprecise in giving the *locus typicus* for *X. torrida* as “*Habitat in Africa tropicali occidentali*”. Smith’s writing does not indicate if he examined Lepeletier’s



FIG. 36. — *Xylocopa crassa* Lepeletier, 1841 female holotype (OUMNH): **A**, label details; **B**, habitus, lateral view; **C**, head, frontal view; **D**, habitus, dorsolateral view.

type, as is the case for other specimens (e.g. Smith 1854: 363, see below). Hurd (1978: 89) indicates that the repository for *X. torrida* is also unknown. Smith's sex association is therefore based on inference, and it is unclear if he examined the type of either species. His writing "having been sent together" cannot refer to type material, but instead newly received specimens.

Examination of the OUMNH collection produced a single badly damaged specimen labelled as *X. crassa* with a Lepeletier label which must be the holotype, given the stated presence only in the collection of Dejean. It bears a label reading "India?", which presumably was added by Lepeletier as it matches his handwriting, concluding in the description of the species that there was no prior indication of its geographic origin. Based on the large head with sparse punctures, it appears to be a *Xylocopa* (*Platynopoda*) Westwood, 1840 species. Although it is indeed superficially similar due to its large size, dark colouration, and carinate posterior margin of the scutellum, it does not belong to *X. torrida* due to the sparse punctures of the vertex that are clearly on average separated by much more than a puncture diameter (Fig. 36C; in *X. torrida* with the punctures of the vertex very dense, separated by 0.5 punctured

diameters with the exception of two impunctate areas above the lateral ocelli) and the deeply impressed divots situated dorsolaterally above the lateral ocelli (Fig. 36C; in *X. torrida* without such divots, surface here only weakly impressed).

Because the antennae are missing, it is not possible to distinguish between the different species of *Platynopoda* with confidence (a key morphological character for separating females; Hurd & Moure 1963). *Xylocopa crassa* could be declared to be a *nomen dubium* due to the specimen lacking this key morphological feature, but it is not unreasonable to synonymise it under *Xylocopa tenuiscapa* Westwood, 1840, a common species in India, the likely geographic origin of the material. Either way, the functional effect is the same.

Xylocopa dejeanii Lepeletier, 1841 (Fig. 37)

Xylocopa dejeanii Lepeletier, 1841: 209.

MATERIAL EXAMINED. — Indonesia • 1♂ (holotype); Java; OUMNH, ENT-HYME2851.



FIG. 37. — *Xylocopa dejeanii* Lepelletier, 1841 male holotype (OUMNH): **A**, label details; **B**, habitus, lateral view; **C**, habitus, dorsal view; **D**, mesosoma and fore-leg, fronto-lateral view.

CURRENT STATUS. — *Xylocopa* (*Zonohirsuta*) *dejeanii* Lepelletier, 1841 (Hurd & Moure 1963).

DISTRIBUTION. — South-east Asia, from India to the islands of Borneo, Java, and Sulawesi (van der Vecht 1953, as *X. collaris* ssp. *nigrocaerulea* Smith, 1874; Lieftinck 1955, as *X. collaris*; Ascher & Pickering 2025).

REMARKS

Xylocopa dejeanii was described from the island of Java from a single specimen, with Lepelletier noting: “Java, selon la note qui est sous l’individu unique du musée de M. le comte Dejean. Je la croirais plutôt américaine” [Java, based on the note placed below the unique individual from the Dejean collection. I believe it more likely to be American]. Lepelletier may have thought it American in origin due to its small body size and pubescence colouration; he described other similar-sized and coloured *Xylocopa* from the Americas in the same publication (e.g. see entries below).

Examination of the OUMNH collection produced a single male specimen bearing labels indicating both Java and Lepelletier’s sceptical note suggesting an American origin. It

can be unquestionably accepted as the holotype. Although the specimen is damaged and missing its head, it can easily be recognised as *X. dejeanii* due to the hind femur ventro-medially with a pointed tooth, the hind tibia apically with two teeth with the inner tooth shorter and apically rounded (Fig. 37C), and the colour pattern with buff hairs on the mesosoma, the outer faces of the fore legs, and the surface of T1 (Figs 37B–D). This colour pattern is a little darker than what is normally seen for Javan specimens which usually have buff hairs also partially covering T2 (present at least basally) and more extensively on the outer faces of the mid and hind tibiae, but this is considered to be just minor variation.

The decisive location of this holotype maintains the current concept for this widespread species, doubly important both nomenclaturally and given its recent molecular characterisation (Zhang *et al.* 2025). *Xylocopa dejeanii* is the priority name for the species, with *Xylocopa collaris* Lepelletier, 1841 unavailable as it is preoccupied by *Apis collaris* Olivier, 1789 = *Xylocopa flavicollis* (De Geer, 1778) (see Hurd & Moure 1963: 301). Previously, the name *X. collaris* Lepelletier was used for the Javan species (e.g. Lieftinck 1955).



FIG. 38. — *Xylocopa latreilleii* Lepeletier, 1841 male lectotype (OUMNH): **A**, label details; **B**, habitus, dorsal view; **C**, head, frontal view; **D**, foreleg, dorsal view.

Xylocopa latreilleii Lepeletier, 1841
(Fig. 38)

Xylocopa latreilleii Lepeletier, 1841: 206.

MATERIAL EXAMINED. — India • 1♂ (lectotype by present designation); Bengale/Bengalia; OUMNH, ENT-HYME2846.

CURRENT STATUS. — *Xylocopa* (*Platynopoda*) *tenuiscapa* Westwood, 1840 (Maa 1938; Hurd & Moure 1963).

DISTRIBUTION. — Southern Asia, from India to the Malay Peninsula (Ascher & Pickering 2025).

REMARKS

Xylocopa latreilleii was described from “Bengale” from “*Musées de MM. le comte Dejean et Serville*”. Cockerell (1929: 302) wrote “I saw *X. latreilleii* [sic] in the Hope collection at Oxford, but made no notes”, but it is unclear if he was referring to type material or not. Maa (1938: 323) noted the type locality “of *X. latreilleii* [sic] Lepel., ♀♂ from Bengal, in the

Hope Museum, Oxford University”, and treated the taxon as a junior synonym of *X. tenuiscapa*, a position followed by Hurd & Moure (1963: 308).

It is unclear if Maa ever visited the OUMNH collection, because only a single male could be produced bearing a label in Lepeletier’s handwriting. However, due to the combination of uniformly narrow antennal scape (not broadened and flattened apically) combined with the flattened and S-shaped fore basitarsus, it can conclusively be recognised as a junior synonym of *X. tenuiscapa*, supporting the position of Maa. Casolari & Casolari Moreno (1980: 148) indicate the presence of a single specimen of *X. latreilleii* in the MSNT collection from “Bengala” from the collection of “Serville”. This is highly likely to be a syntype from the Serville collection. It is unclear if this has ever been studied, and no precise published reference to it could be found. The single available OUMNH male can be designated as the lectotype (in Fig. 38A labelled only as syntype, lectotype label added subsequently by James Hogan, pers. comm.), conclusively supporting the current nomenclatural situation.



FIG. 39. — *Xylocopa marginella* Lepeletier, 1841 female holotype (OUMNH): **A**, label details; **B**, habitus, dorsal view; **C**, head, frontal view; **D**, habitus, dorso-lateral view.

Xylocopa marginella Lepeletier, 1841
(Fig. 39)

Xylocopa marginella Lepeletier, 1841: 205.

MATERIAL EXAMINED. — **Indonesia** • 1 ♀ (holotype); “Insula Java”; OUMNH, ENT-HYME2852.

CURRENT STATUS. — *Xylocopa* (*Platynopoda*) *latipes* (Drury, 1773) **n. syn.**

DISTRIBUTION. — South-east Asia, from north-eastern India (Assam, Nagaland, Sikkim, West Bengal) through southern China and Myanmar to the islands of Borneo, Java, and Bali (Maa 1938; Lieftinck 1955; Ascher & Pickering 2025).

REMARKS

Xylocopa marginella was described from “Java” from “*Musée du général comte Dejean*”. No author has been able to successfully trace the type material, but Maa (1940: 574)

suggested synonymy with *X. latipes*. Hurd & Moure (1963: 256) placed *X. marginella* in the subgenus *Platynopoda*, and noted that *X. marginella* may be a synonym of *X. latipes*, as proposed by Maa.

Examination of the OUMNH collection produced a single large *Xylocopa* (*Platynopoda*) specimen labelled as “♀”, “Xyl. marginella LeP” “Insula Java”. This is indisputably the holotype; it can be recognised as *X. latipes* due to A3 which is shorter than A4-6 (Fig. 39C) and due to the wings with purple to greenish iridescence (not golden as in *Xylocopa magnifica* (Cockerell, 1929) which does not reach the Indonesian islands). The proposed synonym of Maa (1940) can therefore be accepted. *Xylocopa marginella* is already listed as a synonym of *X. latipes* by Ascher & Pickering (2025). It is unclear if this synonymy has ever been formally made, and to ensure that this action exists, it is formally made here. Finally, whilst the morphological concept of *X. latipes* is quite clear, the exact provenance of the material used to describe it is not. This is discussed and resolved through a neotype designation below.



FIG. 40. — *Xylocopa micans* Lepeletier, 1841 male lectotype (OUMNH): **A**, label details; **B**, habitus, dorsolateral view; **C**, head, frontal view; **D**, hindleg, dorso-lateral view.

Xylocopa micans Lepeletier, 1841
(Fig. 40)

Xylocopa micans Lepeletier, 1841: 208.

MATERIAL EXAMINED. — United States of America • 1 ♂ (lectotype by present designation); “Georgia, Carolina”; OUMNH, ENT-HYME2845.

CURRENT STATUS. — *Xylocopa* (*Schoenherria*) *micans* Lepeletier, 1841 (Smith 1854; 1874; Hurd & Moure 1963; Hurd 1978; Moure *et al.* 2007; Ascher & Pickering 2025).

DISTRIBUTION. — Southern United States to Mexico and Central America (Ascher & Pickering 2025).

REMARKS

Xylocopa micans was described from “Caroline”, referring to the south-eastern part of what is now the United States of America (the Carolinas). Lepeletier described the species from material from the collections of “Musées de MM. Serville et comte Dejean”.

Smith (1854: 363) was the first to establish the synonymy between *X. micans* and *Xylocopa vidua* Lepeletier, 1841, with *X. vidua* considered to be the female to the male of *X. micans*. Smith (1854: 363) indicated that at least the type of *X. vidua* was in the collection of Westwood. Hurd (1978: 21) lists the repositories of *X. micans* and *X. vidua* as unknown, but overlooked Smith’s note. Smith (1879: 297) again writes “Having had an opportunity of seeing the types of the sexes, I have united them as constituting one species”. Baker (1994: 1191) indicated that Smith often pointed out types in the Westwood collection, and inspection of the OUMNH collection produced a male labelled as *Xylocopa micans* by Lepeletier.

As Casolari & Casolari Moreno (1980: 149) indicate only two specimens of *X. micans* in the Spinola collection from Texas collected by Pilate, these cannot be considered syntypic as they do not match the collecting information. As no other authors have located type material for *X. micans* (see Moure *et al.* 2007: 667), the male in the OUMNH is designated as the lectotype (newly labelled after Fig. 40A, James Hogan, pers. comm.); it conforms to the currently accepted species concept that is still recognisable despite the dermestid damage suffered by the specimen.

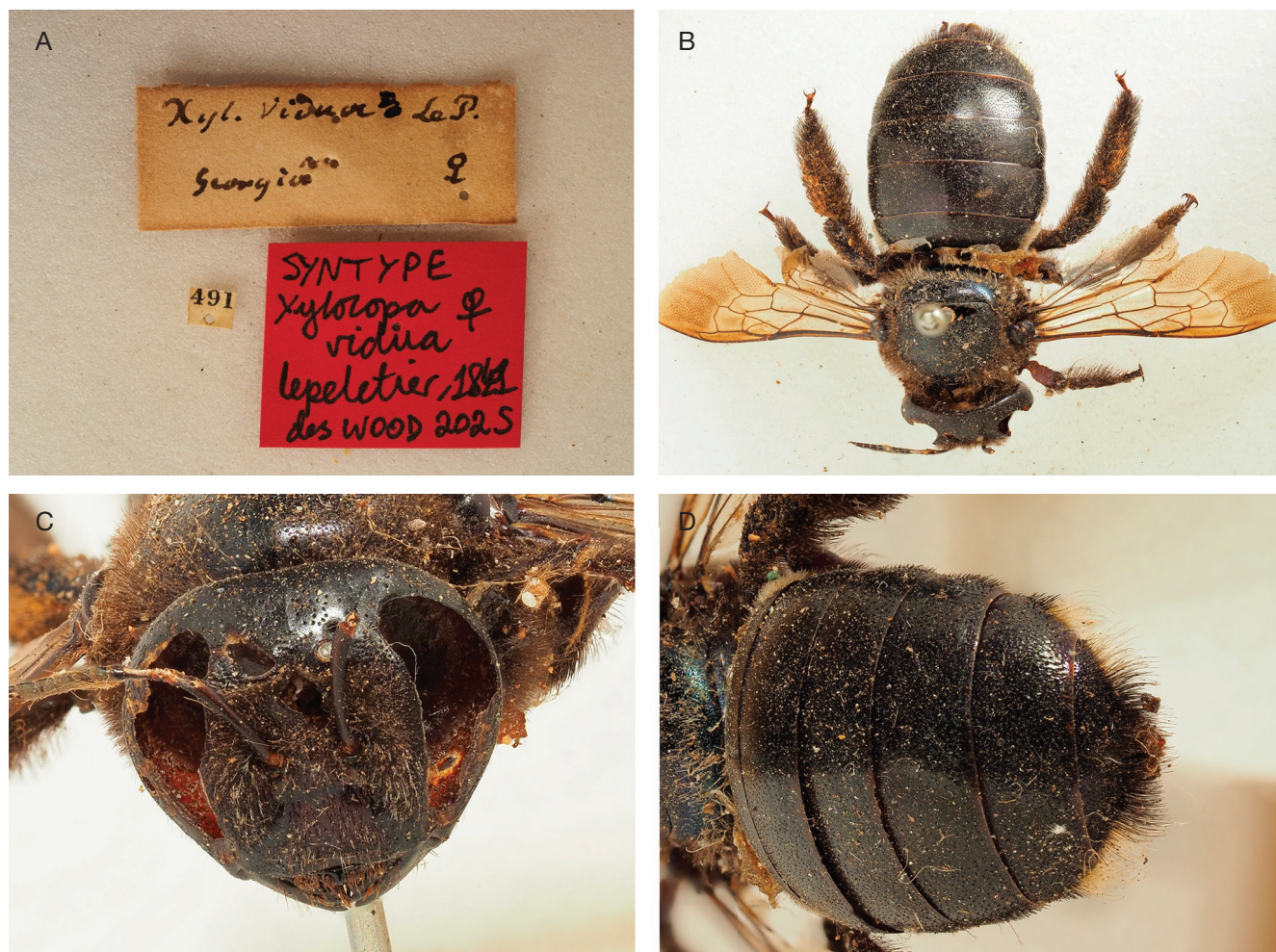


FIG. 41. — *Xylocopa vidua* Lepeletier, 1841 female lectotype (OUMNH): **A**, label details; **B**, habitus, dorsal view; **C**, head, frontal view; **D**, metasoma, dorsal view.

Xylocopa vidua Lepeletier, 1841
(Fig. 41)

Xylocopa vidua Lepeletier, 1841: 208.

MATERIAL EXAMINED. — United States of America • 1 ♀ (lectotype by present designation); Georgia; OUMNH, ENT-HYME2844.

CURRENT STATUS. — *Xylocopa* (*Schoenherria*) *micans* Lepeletier, 1841 (Smith 1854; 1874; Hurd & Moure 1963; Hurd 1978; Moure *et al.* 2007; Ascher & Pickering 2025).

DISTRIBUTION. — Southern United States to Mexico and Central America (Ascher & Pickering 2025).

REMARKS

Like *X. micans*, *X. vidua* was described from “Caroline”, but with specimens from “Musées de France et de M. le comte Dejean”. Examination of the OUMNH produced a single female labelled *Xylocopa vidua* by Lepeletier. As for *X. micans*, Hurd (1978: 21) lists no known type repository for *X. vidua*. It is possible that there is a syntype in the MSNT since Casolari & Casolari Moreno (1980: 149) indicate one specimen of *X. vidua* from “Caroline” from “Serville”. This

does not match the given repository information, but the specimen may be syntypic if Lepeletier made an error here. No material could be located during searches at the MNHN, and as no other authors have found type material for *X. vidua* (see Moure *et al.* 2007: 667), the OUMNH specimen can be hereby designated as the lectotype (newly labelled after Fig. 41A, James Hogan, pers. comm.) to cement the existing and well-established synonymy.

Xylocopa viridipennis Lepeletier, 1841
(Fig. 42)

Xylocopa viridipennis Lepeletier, 1841: 205.

MATERIAL EXAMINED. — India • 1 ♀ (holotype); India, ind. or. [India orientalis]; “Latr. Colln.” (Fig. 42A); OUMNH, ENT-HYME2847.

CURRENT STATUS. — *Xylocopa* (*Platynopoda*) *tenuiscapa* Westwood, 1840 (Maa 1938; Hurd & Moure 1963).

DISTRIBUTION. — Southern Asia, from India to the Malay Peninsula (Ascher & Pickering 2025).



FIG. 42. — *Xylocopa viridipennis* Lepeletier, 1841 female holotype (OUMNH): **A**, label details; **B**, habitus, lateral view; **C**, head, frontal view; **D**, habitus, dorsal view.

REMARKS

Xylocopa viridipennis was explicitly described from the “Latr. Colln.” and indicated to be in the “Musée de M. le comte De-jean”. Searches of the OUMNH found a single female specimen labelled *Xylocopa viridipennis* by Lepeletier. It is most probably the holotype of *X. viridipennis*. Maa (1938: 321-323) treated *X. viridipennis* as a junior synonym of *X. tenuiscapa* Westwood, 1840, a position followed by Hurd & Moure (1963: 318), and suggested that the type of *X. viridipennis* was probably in the MSNT. However, Casolari & Casolari Moreno (1980) do not list any specimens under this name, so this is considered to be unsupported in combination with the presence of the specimen in the OUMNH collection.

Examination of the *X. viridipennis* specimen supports the position that it is a junior synonym of *X. tenuiscapa*; A3 is as long as A4-6, rather than shorter than A4-6 as is the case in *X. latipes*, and the wings basally have greenish iridescence and the tergal discs of T3-4 are comparatively finely punctate, whereas *Xylocopa perforator* Smith, 1862 has greenish-purple iridescence and the discs are comparatively densely punctate (Hurd & Moure 1963). Moreover, *X. perforator* is only confi-

dently known from Sumatra eastwards (Liefstinck 1955), making collection from this region prior to the year 1833 (the death of Latreille) less likely than the stated *locus typicus* of India.

Xylocopa latipes (Drury, 1773) (Fig. 43)

Apis latipes Drury, 1773: 87, 88, plate XLVIII.

MATERIAL EXAMINED. — **Indonesia** • 1♂ (neotype by present designation); W. Java, Oedjoeng Genteng [Ujung Genteng]; 1.VII.1939; M. A. Liefstinck leg.; RMNH, RMNH.INS.1715473.

DISTRIBUTION. — South-east Asia, from north-eastern India (Assam, Nagaland, Sikkim, West Bengal) through southern China and Myanmar to the islands of Borneo, Java, and Bali (Maa 1938; Liefstinck 1955; Ascher & Pickering 2025).

REMARKS

As mentioned above in the entry for *X. marginella*, whilst the current use and interpretation of *X. latipes* is well established (e.g. Smith 1854; 1874; Maa 1938; 1940; Hurd & Moure



FIG. 43. —A, Illustration of *Apis latipes* Drury, 1773 (plate XLVIII, *partim*), number 2. Available from <https://www.biodiversitylibrary.org/bibliography/61910>. *Apis latipes* Drury, 1773 (= *Xylocopa latipes*) male neotype (RMNH). B, label details; C, habitus, dorsal view; D, foreleg, dorsal view detail.

1963), the provenance of the original material used to describe it is not. Drury (1773: 87–88, plate XLVIII; Fig. 43A) describes what is clearly a *Xylocopa* (*Platynopoda*) male with expanded fore tarsi which are flattened and pale ivory in colour. The antennal scape is also distinctly broadened apically. Drury claims to have received the specimen from “the island of Johanna, near Madagascar” which is the island now called Anjouan or Ndzuani in the Comoro Islands. This is well outside of the known range of *X. latipes*, as noted by Hurd & Moure (1963: 256): “If, as Drury (1773: 87) has stated, the type of *X. latipes* came from “... the island of Johanna near Madagascar”— well beyond the known geographic range of the species as currently understood – a reevaluation [sic] of this complex may be necessary”.

Currently, there does not seem to be any potential benefit that could possibly be gained by a re-evaluation of this group based on this reported type locality that is so far outside of the currently accepted range. As for *Xylocopa caerulea* (Fabricius, 1804) that was nominally described from New Caledonia, but which does not occur further east than Java and Borneo (Wood *et al.* 2025), it is beneficial to create a neotype to per-

manently fix the name and concept within its current usage in order to maintain nomenclatural stability (Jiménez-Mejías *et al.* 2024). In line with Article 75.3 of the Code (ICZN 1999), this neotype designation is necessary to clarify and cement the concept of *X. latipes* as a species of South-east Asia, as a species that can be immediately recognised in the male sex due to the combination of flattened and ivory-coloured fore tarsi and antennal scape that is broadened apically, and as a species for which type material has been lost and never located by any previous worker (e.g. Maa 1938: 327). The selected neotype matches Drury’s original description and illustration, being a male and sharing the flattened and ivory-coloured fore tarsi and antennal scape that is broadened apically (Fig. 43C, D).

The specimen does not come from close to the reported type locality, specifically because the type locality is so doubtful. The new locality was selected as western Java because this is within the known range of the species in its current treatment, and the species is commonly encountered on this island with large population size. This neotype designation is consistent with both current and past use of the name in

both taxonomic and ecological publications (e.g. Westwood 1840; Smith 1854, 1874; Maa 1938, 1940; Lieftinck 1955; Hurd & Moure 1963).

DISCUSSION

The location of these old types combined with revisions of more recently collected material has allowed for a number of limiting taxonomic issues to be resolved. Whilst most of the types of *Xylocopa* had, based on the descriptions, been correctly inferred to represent junior synonyms of widespread species (e.g. *Xylocopa latreillei* as a junior synonym of *X. tenuiscapa*) or had been correctly inferred to be the oldest available names for other widespread species (e.g. *Xylocopa dejeanii* and *Xylocopa micans*), the application of names within the genera *Amegilla* and *Thyreus* was much more confused due to their more challenging nature and the difficulties associated with taxon recognition based solely on descriptions.

As evidenced by placement of certain anthophorine names at only a tribal level (e.g. Brooks 1988), the imprecise descriptions typical of the 19th and early 20th century render recognition almost impossible. Given that these old names have nomenclatural priority under the ICZN Code, a lack of available or illustrated type material can be a fundamental barrier to the development or validation of robust species concepts, the scientific study of extant biodiversity, and the characterisation and description of undescribed species. The imaging of type collections therefore remains of critical importance (Warrit *et al.* 2023), with the present work contributing to the definitive location of sometimes obscure type specimens (e.g. Vivallo 2019; Wood & Bossert 2025; Wood *et al.* 2025), as well as broader efforts to publish images of as many bee type specimens as possible (e.g. Almeida *et al.* 2020; Astafurova *et al.* 2022; Astafurova & Proshchalykin 2024; Ivlev *et al.* 2025).

As a case in point, taxonomic work on *Amegilla* (*Zonamegilla*) in Sulawesi and Indonesia more broadly was partially to completely blocked due to uncertainties over the identity of *Amegilla atrocaerulea*, which was (nominally) the third oldest *Amegilla* (*Zonamegilla*) name after *Amegilla zonata* and *Amegilla elegans* (Smith, 1859) (described from the Kai islands; Wood *et al.* 2025). This new wave of documented type specimens will hopefully unblock and unlock a new period of biodiversity discovery and description in the bee world.

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SUPPLEMENTARY MATERIAL

SUPPLEMENTARY MATERIAL 1. — Full details for examined *Amegilla whiteheadi* (Cockerell, 1910) specimens in Indonesia. https://sciencepress.mnhn.fr/sites/default/files/documents/en/zoosystema2026v48a21_s1.xlsx. https://doi.org/10.5852/zoosystema2026v48a21_s1