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The new annotated checklist of the wild bees of Europe (Hymenoptera: Anthophila)

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Abstract

At a time when nature conservation has become essential to ensure the long-term sustainability of our environment, it is widely acknowledged that conservation actions must be implemented within a solid taxonomic framework. In preparation for the upcoming update of the IUCN Red List, we here update the European checklist of the wild bees (*sensu* the IUCN geographical framework). The original checklist, published in 2014, was revised for the first time in 2017. In the present revision, we add one genus, four subgenera and 67 species recently described, 40 species newly recorded since the latest revision (including two species that are not native to Europe), 26 species overlooked in the previous European checklists and 63 published synonymies. We provide original records for eight species previously unknown to the continent and, as original taxonomic acts, we provide three new synonyms, we consider two names as *nomina nuda*, ten names as *nomina dubia*, three as *species inquirenda*, synonymize three species and exclude 40 species from the previous checklist. Around a hundred other taxonomic changes and clarifications are also included and discussed. The present work revises the total number of genera for IUCN Europe to 77 and the total number of species to 2,138. In addition to specifying the taxonomic changes necessary to update the forthcoming Red List of European bees, we discuss the sampling and taxonomic biases that characterise research on the European bee fauna and highlight the growing importance of range expansions and species invasions.

Key words: Biodiversity, conservation, continental checklist, decline, expansion, new synonym, pollinators, *species inquirenda, status resurrectus*, *nomen dubium*, non-natives species, *nomen nudum,* taxonomy

Introduction

Biotic losses are accelerating at an alarming rate globally (Del Claro & Dirzo 2021; Turvey & Crees 2019). Millions of hectares of natural habitats are cleared each year, a large part of the Earth's suitable land has already been converted to agriculture, and the global climate is changing, causing unprecedented disruptions for wildlife (Curtis *et al*. 2018; Dirzo *et al*. 2014; Hautier *et al*. 2015; IPBES 2019; Raven & Wagner 2021; Storch *et al*. 2022). There is overwhelming evidence that the combination of these global changes has induced a major biodiversity crisis, compared by some authors to a mass extinction (Ceballos *et al*. 2020; Cowie *et al*. 2022). Among the clades most severely affected by the ongoing biodiversity crisis are insects and a flurry of reports has drawn attention to significant declines in their abundance, biomass, diversity and spatial distribution (Forister *et al*. 2019; Hallman *et al*. 2020; Lister & Garcia 2018; Loboda *et al*. 2018; Wagner 2020; Wagner *et al*. 2021).

Wild bees (Hymenoptera: Anthophila), with over 20,000 species described globally (Michener 2007; Ascher & Pickering 2022), are one example of a highly emblematic insect group for which conservation is tightly linked to both human welfare and ecosystem health (Matias *et al*. 2017; Potts *et al*. 2016). Bees are not only key to the yield of ~85% of cultivated crop species globally, but also to the sexual reproduction of hundreds of thousands of other plant species, making them critical providers of ecosystem services (Garibaldi *et al*. 2013; Ollerton *et al*. 2011). In the last two decades however, high-profile reports have highlighted steep declines in both bee abundance and species diversity, most clearly in Europe and North America (Biesmeijer *et al*. 2006; Duchenne *et al*. 2020; LeBuhn & Vargas Luna 2021; Rasmont *et al*. 2021; Scheper *et al*. 2014; Zattara & Aizen 2021). Although a large part of the research on non-domesticated bees has focused on bumblebees (Cameron & Sadd 2020; Ghisbain 2021), there is mounting evidence that the patterns of decline are affecting many other bee genera (Nieto *et al*. 2014; Rasmussen *et al.* 2021; Zattara & Aizen 2021).

In a time when nature conservation has become key to ensuring the long-term sustainability of our environment, it is acknowledged that conservation actions must be taken within a robust, unambiguous taxonomic background (Garnett & Christidis 2017; Mace 2004; Orr *et al*. 2021). This is especially true for clades like bees, for which substantial taxonomic revisions are still underway across most genera and families globally (e.g. Bossert *et al*. 2022; Dorchin *et al*. 2018; Ferrari *et al*. 2020; Müller 2020; Onuferko *et al*. 2019; Orr *et al*. 2018; Williams *et al*. 2020). Although the current knowledge of the European bee fauna is substantial (Michez *et al*. 2019), new species are frequently described (e.g. Praz *et al*. 2019; Radchenko 2017; Wood *et al*. 2021), and other major nomenclatural changes still occur after more than 250 years of research on the continent (e.g. the description of a new genus by Wood *et al*. 2022a). Such updates, fundamental to refine the knowledge of the bee fauna of the continent, also demonstrate that many uncertainties persist regarding the taxonomy and distribution of European wild bees (Rasmont *et al*. 2017). These uncertainties not only hinder our ability to identify accurately both museum specimens

and freshly collected material, but also impede our understanding of their temporal and spatial distributions, limiting the efficiency of action plans. This issue was exemplified in the first Red List of European Bees in which ~55% of all bees reported in the continent had to be classified as "Data Deficient" (DD) (Nieto *et al*. 2014). In this work, although ~9% of bees were considered threatened, the real percentage of threatened taxa would have been between 4% (if none of the DD species was threatened) and ~60% (if all of the DD species were threatened). With data from other animal groups suggesting that unassessed and DD species are more likely to be threatened with extinction than their fully assessed counterparts (Caetano *et al*. 2022; Howard & Bickford 2014), it is clear that more work on the taxonomy and natural history of wild bee species is urgently required to accurately implement adequate conservation strategies for the European bee fauna (Potts *et al*. 2020).

In May 2019, the European Commission mandated a group of experts to develop a proposal for monitoring pollinators (including wild bees) and to analyse the capacity for its implementation. A report evaluating the possibility of an EU Pollinator Monitoring Scheme ('the EU-PoMS') was published in October 2020 and pointed out several gaps for its implementation, including insufficient taxonomic resources for bees (Potts *et al*. 2020). Following this, a series of projects were implemented (i) to strengthen taxonomic capacity in EU Member States regarding wild bees, (ii) to better understand the causes of decline of wild bees on the continent and (iii) to develop capacities to allow for their effective monitoring and conservation. The present work is therefore at the hub of the ongoing European projects ORBIT (Devel**o**ping resou**r**ces for European **b**ee **i**nventory and **t**axonomy, aiming to create and centralise taxonomic information about all the European bee species, 2021-2024), SPRING (**S**trengthening **p**ollinator **r**ecovery through **i**ndicators and monitori**ng**, aiming to train researchers on pollinator identification and refine sampling protocols to start a European-wide monitoring of pollinators, 2021-2023), SAFEGUARD (Safeguarding European wild pollinators, aiming to expand current assessments of the status and trends of European wild pollinators, 2021-2025), and PULSE (Providing technical and scientific support in measuring the pulse of European biodiversity using the Red List Index, aiming to update the European Red List of Bees, 2022-2023).

Within the context of the aforementioned projects, we provide a new, updated and annotated checklist of bee species occurring in the spatial area defined by the European borders proposed by the IUCN (henceforth IUCN Europe). The first available update was published by Rasmont *et al*. (2017), who revised the total number of bee species in Europe from 1,965 (in Nieto *et al*. 2014) to 2,051, increased the number of recognised genera from 75 to 77, and included changes to taxonomy and nomenclature. The present work is a new revision that includes the most recent taxonomic advances and revisions in order to stabilise the taxonomic backbone of the European bee fauna for the forthcoming European country records of wild bees (Reverté *et al.* in prep.), the new IUCN Red List (Boustani *et al.* in prep.) and the online ORBIT platform.

Material and methods

Bringing together new literature records and taxonomic updates for this work was made possible by (i) an exhaustive review of the literature published since the last update of the IUCN checklist of European bees (Rasmont *et al*. 2017), (ii) an in-depth revision of the literature omitted in the latter work and (iii) original information provided by the authors of the present work. For the present checklist, we did not consider the list provided by Michez *et al.* (2019), as the latter was not built as an update to the previous IUCN checklists and additions. This new list is mostly based on material directly examined by taxonomists and does not include data published online that has not otherwise been verified by European experts (e.g. observations reported on iNaturalist, Discover Life, GBIF).

Authors shared the work based on their own expertise on bee taxonomy: Petr Bogusch and Romain Le Divelec for Ammobatini, Ammobatoidini, Epeolini and *Sphecodes*; Thomas J. Wood for Andrenidae and *Thyreus*; Pierre Rasmont for Anthophorini; Jessica Litman and Max Kasparek for Anthidiini; Guillaume Ghisbain for Bombini; Michael Kuhlmann and Romain Le Divelec for Colletidae; Achik Dorchin for Eucerini; Simone Flaminio and Vladimir G. Radchenko for Halictidae; Christophe Praz for Megachilini; Guillaume Ghisbain, Denis Michez and Vladimir G. Radchenko for Melittidae; Maud Mignot and Jan Smit for *Nomada*; Andreas Müller for Osmiini. Authors keep the authority on the original taxonomic updates they apply here to their group(s) of expertise.

European borders

The geographical scope for this study is the territory considered in the regional assessment of Europe according to

IUCN (Fig. 1). The area includes the European mainland, which includes the European part of Turkey (Thrace). The natural limits on the eastern side are the Ural Mountains, which are included, and the Caucasus, which is not included. The European part of Russia includes the following Republics and administrative provinces: **North** (Murmansk Prov., Arkhangelsk Prov., Karelian Rep., Vologda Prov., Komi Rep.); **North-West** (Kaliningrad Prov., Leningrad Prov., Pskov Prov., Novgorod Prov.); **Centre** (Tver Prov., Yaroslavl Prov., Kostroma Prov., Smolensk Prov., Moscow Prov., Vladimir Prov., Ivanovo Prov., Nizhny Novgorod Prov., Kaluga Prov., Tula Prov., Ryazan Prov., Mordovian Rep., Bryansk Prov., Orel Prov., Lipetsk Prov., Tambov Prov., Penza Prov., Kursk Prov., Belgorod Prov., Voronezh Prov.); **East** (Kirov Prov., Udmurt Rep., Mari El Rep., Chuvash Rep., Tatar Rep., Ulyanovsk Prov., Samara Prov., Saratov Prov.); **South** (Rostov Prov., Volgograd Prov., Kalmyk Rep., Astrakhan Prov.).
European Island territories such as Great Britain, Ireland, Iceland, and Cyprus are included as well as the Macaronesian islands that are part of European countries (Azores, Madeira, Canary Islands). A detailed discussion on the European borders is given in Rasmont *et al*. (2017).

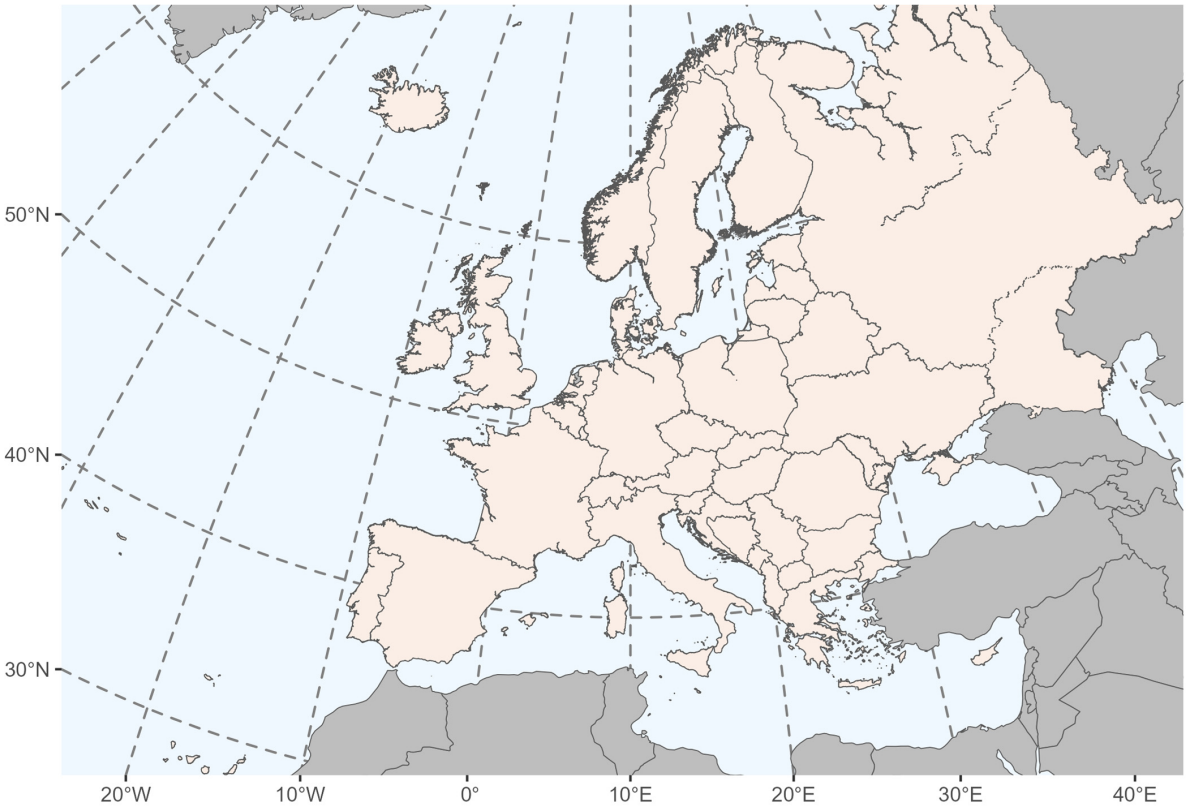

FIGURE 1. Map of IUCN Europe, corresponding to the geographical framework of this study.

How to read the catalogue

The species are ordered by family, subfamily and tribe presented in alphabetical order, and listed alphabetically within the following sections:

- Species recently described as new to science (i.e. new species described after 2017);
- Published synonymies (i.e. synonymies published after 2017);
- New synonymies (i.e. new synonymies proposed in this manuscript);
- Synonymic notes (i.e. notes related to future synonymisations in articles currently in preparation);
- Taxonomic changes (i.e. relevant changes published after 2017, such as new combinations, taxa upgraded to species rank or downgraded to subspecies rank);
- Taxonomic acts and clarifications (i.e. taxonomic acts here proposed and clarifications of interesting cases which generally led to changes in the new checklist of the European bees);
- Species recorded in Europe after 2017 (i.e. new to Europe but not new to science);
- Species overlooked in the previous European checklists (i.e. species recorded in Europe before 2017 but not included in the update of Rasmont *et al.* 2017);
- New species for Europe (new entries presented in this article for the first time);

- Species to be excluded from the European checklist (discussions and explanations of the exclusions of certain species from the new checklist).

The systematics at family, subfamily and tribe levels are mainly based on the hypotheses reviewed by Danforth *et al*. (2013) and followed by Michez *et al*. (2019). We considered here the tribes of Andrenidae proposed by Bossert *et al*. (2022), and the subfamilies of Apidae used in Bossert *et al*. (2019).

The following abbreviations are used for museums and private collections:
GGPC—Private collection of Gérard Le Goff, Barentin, (France)
IZKP—Institute of Systematic and Experimental Zoology, Polish Academy of Sciences, Kraków (Poland)
MNCN—Museo Nacional de Ciencias Naturales, Madrid (Spain)
MHNN—Muséum d'histoire naturelle de Neuchâtel (Switzerland)
MKPC—Private collection of Max Kasparek, Heidelberg (Germany)
MNHN—Muséum national d'Histoire naturelle, Paris (France)
MSPC—Private collection of Maximilian Schwarz, Ansfelden (Austria)
NHMUK—Natural History Museum, London (United Kingdom)
OÖLM—Oberösterreich Landesmuseum, Biologiezentrum, Linz (Austria)
PRUN—Research collection of Christophe Praz, University of Neuchatel (Switzerland)
RMNH—Naturalis Biodiversity Center, Leiden (the Netherlands)
SMF—Senckenberg Museum, Frankfurt (Germany)
SDEI—Senckenberg Deutsches Entomologisches Institut, Müncheberg (Germany)
SMNH—Steinhardt Museum of Natural History, University of Tel Aviv (Israel)
UAL—University of Almería, La Cañada de San Urbano Almería (Spain)
UCSI—Department of Agriculture, Food and Environment, University of Calabria, Rende (Italy)
UMONS—Laboratory of Zoology, University of Mons (Belgium)
ZISP—Zoological Institute, St. Petersburg (Russia)
ZMHB –Museum für Naturkunde, Berlin (Germany)
ZMKU—Research collection of Michael Kuhlmann, Zoological Museum, University of Kiel (Germany)
ZSM—Zoologische Staatssammlung München (Germany)

Results

Taxonomic update of the wild bee fauna of IUCN Europe

Family ANDRENIDAE Latreille, 1802

Tribe Andrenini Latreille, 1802

Species recently described as new to science

Andrena* (*Euandrena*) *amieti Praz, Müller & Genoud, 2019

Andrena (*Euandrena*) *amieti* Praz, Müller & Genoud, 2019: 20. Holotype ♀; Switzerland: Bernese Oberland: Oeschinensee (MHNN).

Distribution. France, Switzerland, Germany, Italy, Austria.

Andrena* (*Taeniandrena*) *antonellae Praz & Genoud, 2022

Andrena (*Taeniandrena*) *antonellae* Praz & Genoud in Praz *et al*., 2022: 390. Holotype ♀; Italy: Sardinia, Buggerru, Cala Domestica (PRUN).

Distribution. France (Corsica) and Italy (Sardinia).

Andrena (*Lepidandrena*) *baetica* Wood, 2020

Andrena (*Lepidandrena*) *baetica* Wood in Wood *et al*., 2020a: 202. Holotype ♀; Portugal: Alto Alentejo, Portalegre, Vaiamonte (OÖLM).

Distribution. Portugal, Spain.

Andrena (*Taeniandrena*) *benoisti* Wood & Praz, 2021

Andrena (*Taeniandrena*) *benoisti* Wood & Praz in Wood *et al.*, 2021: 162. Holotype ♀; Portugal: Minho, Confurco, Várzea Cova (OÖLM).

Distribution. Portugal, Spain.

Andrena (*Taeniandrena*) *contracta* Wood, 2022

Andrena (*Taeniandrena*) *contracta* Wood, 2022: 2. Holotype ♂; Spain: Sierra Nevada, Puerto de La Ragua, Barranco Maja Caco (OÖLM).

Distribution. Spain.

Andrena (*Avandrena*) *erodiorum* Wood & Ortiz-Sánchez, 2022
(Figs 2A, B)

Andrena (*Avandrena*) *erodiorum* Wood & Ortiz-Sánchez, 2022: 115. Holotype ♀; Spain: Castilla–La Mancha, Albacete, Torre de Gorgojí, Reolid (OÖLM).

Distribution. Spain.

Andrena (*Notandrena*) *foeniculae* Wood, 2020

Andrena (*Notandrena*) *foeniculae* Wood in Wood *et al.*, 2020a: 209. Holotype ♀; Portugal: Ribatejo, Tomar, Aqueduto do Convento de Cristo (OÖLM).

Distribution. Portugal, Spain.

Andrena (*Euandrena*) *fortipunctata* Wood, 2021

Andrena (*Euandrena*) *fortipunctata* Wood in Wood *et al.*, 2021: 165. Holotype ♂; Spain: in between Asturias and Castilla y León, Puerto de Pajares (RMNH).

Distribution. Spain.

***Andrena* (*Suandrena*) *gades* Wood & Ortiz-Sánchez, 2022**

Andrena (*Suandrena*) *gades* Wood & Ortiz-Sánchez, 2022: 118. Holotype ♂; Spain: Andalusia, Cádiz, Rota, Punta Candor (OÖLM).

Distribution. Spain.

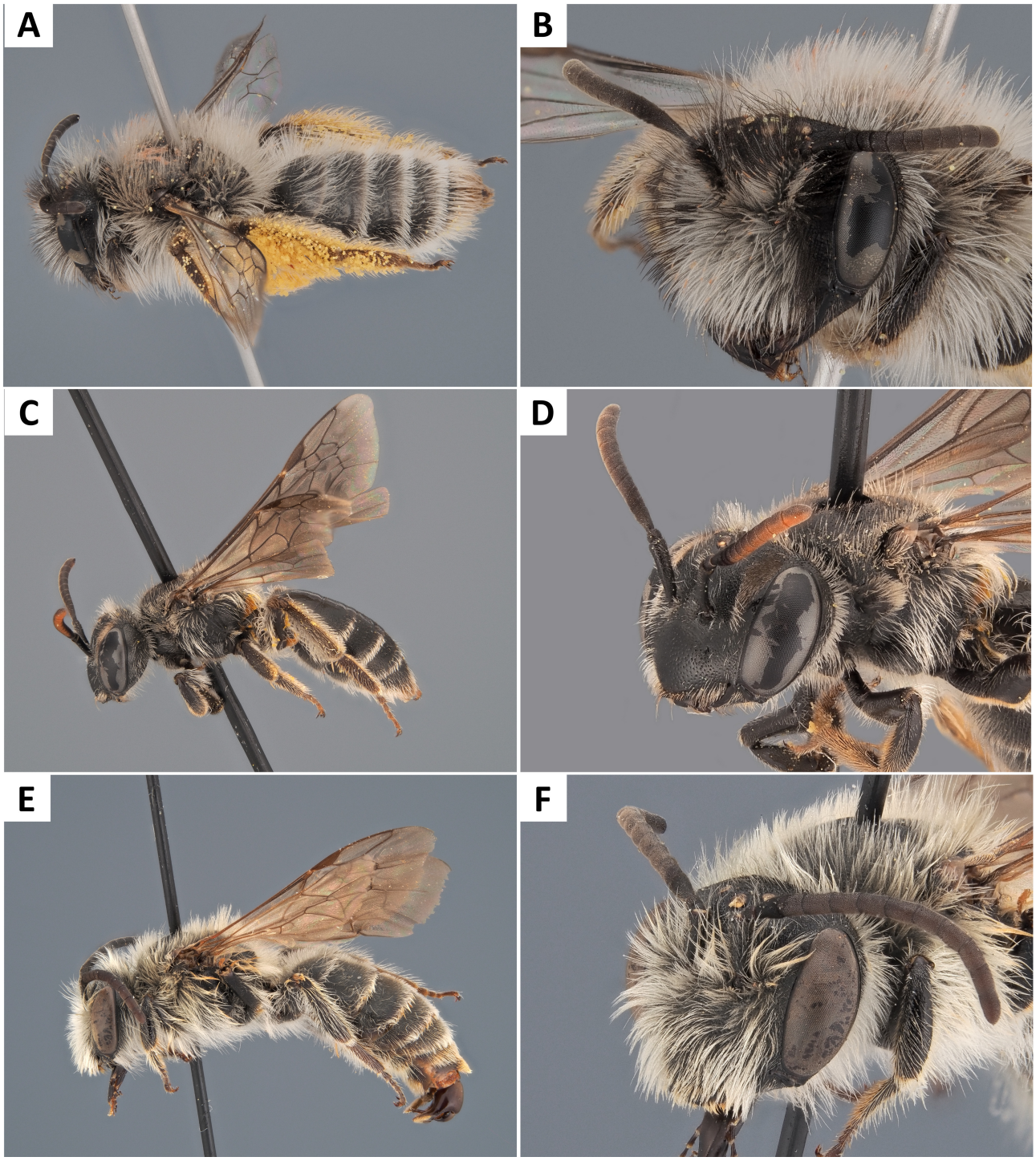

FIGURE 2. A. *Andrena erodiorum* Wood & Ortiz-Sánchez, 2022 female, habitus in lateral view. The species was recently described in Wood & Ortiz- Sánchez (2022) based on individuals collected in Spain. **B.** *A. erodiorum* female, head in oblique view. **C.** *Andrena juliana* Wood 2021, habitus in lateral view. The species was recently described in Wood *et al.* (2021) based on individuals collected in Portugal and Spain. **D.** *A. juliana* female, head in oblique view. **E.** *Andrena levante* Wood & Praz 2021 male, habitus in lateral view. The species was recently described by Wood *et al*. (2021) based on individuals collected in Spain. **F.** *A. levante* male, head in oblique view. Pictures by Paolo Rosa.

Andrena (*Truncandrena*) *ghisbaini* Wood, 2023

Andrena (*Truncandrena*) *ghisbaini* Wood, 2023c: 344. Holotype ♀; Spain: Málaga, PN Sierra de las Nieves, mountain peak S of Pinsapo Escalereta (OÖLM).

Distribution. Spain.

Andrena (*Ulandrena*) *graciliata* Wood, 2023

Andrena (*Ulandrena*) *graciliata* Wood, 2023a: 51. Holotype ♂; Cyprus: Limassol, Yermasoyia [Germasogeia] (OÖLM).

Distribution. Cyprus.

Andrena (*Euandrena*) *isolata* Wood, 2023

Andrena (*Euandrena*) *isolata* Wood, 2023c: 339. Holotype ♀; Spain: Granada, Sierra Nevada, Trevélez to Refugio La Campiñuela (OÖLM).

Distribution. Spain.

Andrena (*Avandrena*) *juliae* Wood, 2023

Andrena (*Avandrena*) *juliae* Wood, 2023c: 336. Holotype ♀; Cádiz, Parque Natural Los Alcornocales, Las Algamitas, Finca Murtas (OÖLM).

Distribution. Spain.

Andrena (*Notandrena*) *juliana* Wood, 2021
(Figs 2C, D)

Andrena (*Notandrena*) *juliana* Wood in Wood *et al.*, 2021: 174. Holotype ♀; Spain: Andalusia, Málaga, San Julián, 8 km SW of Málaga (RMNH).

Distribution. Portugal, Spain.

Andrena (*Simandrena*) *kocoureki* Wood, 2021

Andrena (*Simandrena*) *kocoureki* Wood, 2021: 5. Holotype ♀; Bulgaria: Blagoevgrad, Sandanski (OÖLM).

Distribution. Bulgaria.

Andrena (*Taeniandrena*) *laevicorpus* Wood, 2023

Andrena (*Taeniandrena*) *laevicorpus* Wood, 2023a: 41. Holotype ♀; Cyprus: W of Polis [Polis Chrysochous], E of Cedar Valley (OÖLM).

Distribution. Cyprus.

Andrena (*Taeniandrena*) *levante* Wood & Praz, 2021

(Figs 2E, F)

Andrena (*Taeniandrena*) *levante* Wood & Praz in Wood *et al.*, 2021: 156. Holotype ♂; Spain: Valencia, 80 km SW of Valencia, Reserva de Muela de Cortes (OÖLM).

Distribution. Spain.

Andrena (*Taeniandrena*) *lusitania* Wood & Ortiz-Sánchez, 2022

Andrena (*Taeniandrena*) *lusitania* Wood & Ortiz-Sánchez, 2022: 120. Holotype ♂; Portugal: Castelo Branco, Fundão, Vale Praz (OÖLM).

Distribution. Portugal, Spain.

Andrena (*Micrandrena*) *omnilaevis* Wood, 2020

Andrena (*Micrandrena*) *omnilaevis* Wood in Wood *et al.*, 2020a: 206. Holotype ♂; Portugal: Braga, Quinta do Confurco, Várzea Cova (OÖLM).

Distribution. Portugal, Spain.

Andrena (*Micrandrena*) *ortizi* Wood, 2023

Andrena (*Micrandrena*) *ortizi* Wood, 2023c: 342. Holotype ♀; Spain: Sierra Nevada, Mirador Monte Ahí de Cara (OÖLM).

Distribution. Spain.

Andrena (*Euandrena*) *pelagonia* Wood, 2021

Andrena (*Euandrena*) *pelagonia* Wood, 2021: 14. Holotype ♀; North Macedonia: Mount Kožuf, Smrdliva Voda (OÖLM).

Distribution. North Macedonia.

Andrena (*Micrandrena*) *pirinia* Wood, 2021

Andrena (*Micrandrena*) *pirinia* Wood, 2021: 11. Holotype ♀; Bulgaria: Blagoevgrad, Popina Luka (OÖLM).

Distribution. Bulgaria.

Andrena (*?Planiandrena*) *ramosa* Wood, 2022

Andrena (*?Planiandrena*) *ramosa* Wood in Wood *et al*., 2022b: 8. Holotype ♀; Spain: Andalusia, Sevilla, Aznalcázar (OÖLM).

Distribution. Spain.

***Andrena* (*Taeniandrena*) *taedium* Wood, 2023**

Andrena (*Taeniandrena*) *taedium* Wood, 2023a: 44. Holotype ♀; Lebanon: Horch Ehden, Ain al Bayada Gate (OÖLM).

Distribution. Greece, Turkey, Lebanon, Iran.

Published synonymies

***Andrena* (*Aciandrena*) *astrella* Warncke, 1975**

Synonymised with *Andrena fulica* Warncke, 1974 (Figs 3A, B), which is the senior synonym according to Wood *et al*. (2020b: 66).

***Andrena* (incertae sedis) *breviscopa* Pérez, 1895**

This taxon was misinterpreted by Warncke, and is a synonym of *A. numida* Lepeletier (Wood 2023c: 298).

***Andrena* (*Andrena*) *bulgariensis* Warncke, 1965**

Synonymised with *Andrena inconstans* Morawitz, 1877, which is the senior synonym according to Wood (2023a: 58).

***Andrena* (*Melandrena*) *creberrima* Pérez, 1895**

Synonymised with *Andrena discors* Erichson, 1841, which is the senior synonym according to Wood (2023c: 267).

***Andrena* (*Micrandrena*) *curtula* Pérez, 1895**

Synonymised with *A. spreta* Pérez, 1895, which is the senior synonym according to Wood (2023c: 287).

***Andrena* (*Truncandrena*) *espanola* Warncke, 1967**

Synonymised with *A. nigropilosa* Warncke, 1967, which is the senior synonym according to Wood (2023c: 306).

***Andrena* (*Melandrena*) *gallica* Schmiedeknecht, 1883**

Synonymised with *Andrena assimilis* Radoszkowski, 1876 (Figs 3C, D), which is the senior synonym according to Wood & Monfared (2022).

***Andrena* (*Melandrena*) *hispania* Warncke, 1967**

Synonymised with *Andrena morio* Brullé, 1832, which is the senior synonym according to Wood (2023c: 263).

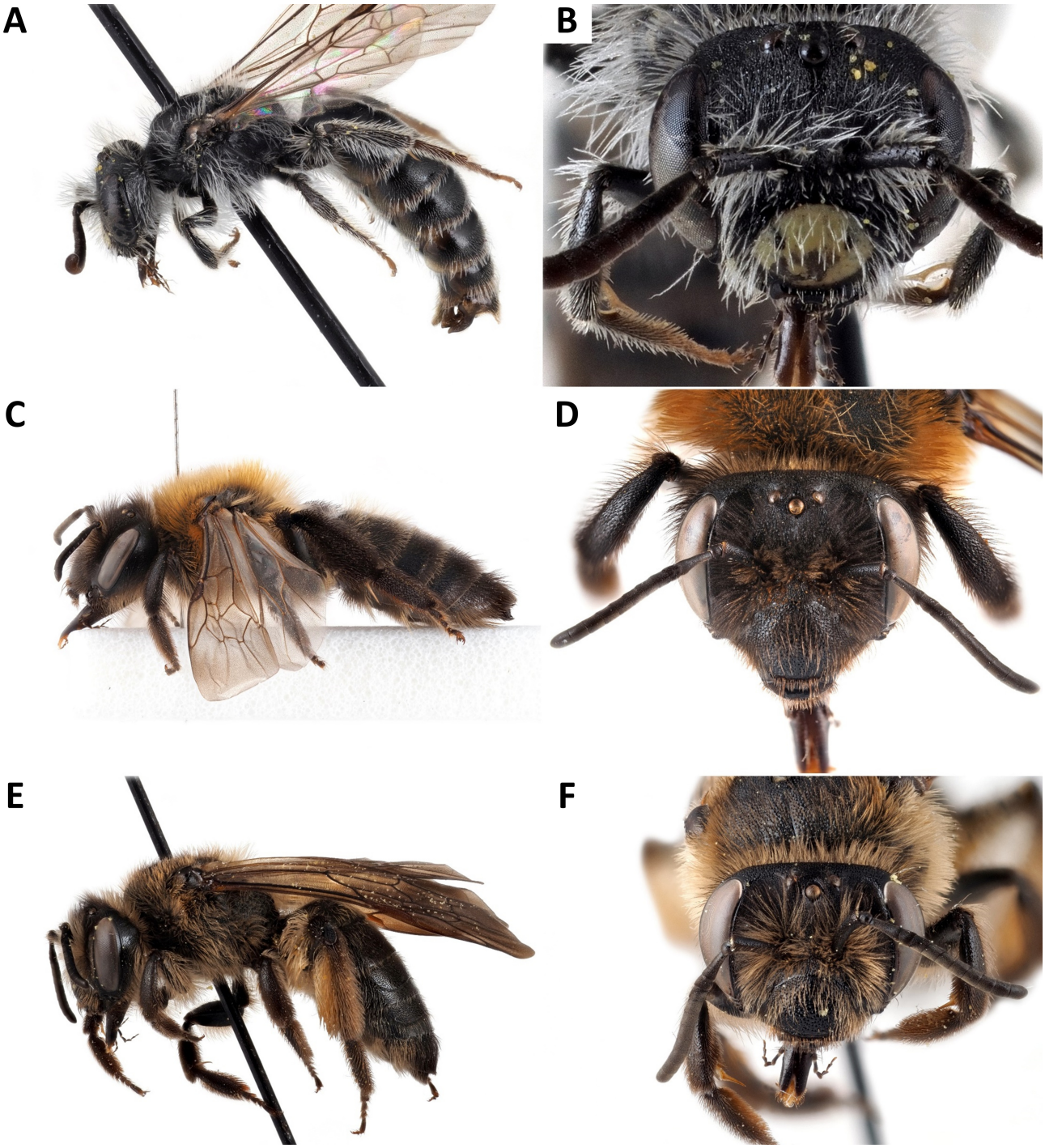

FIGURE 3. A. *Andrena fulica* Warncke, 1974 male, habitus in lateral view. The taxonomic review of Wood *et al.* (2020b) shows that the taxon *Andrena astrella* Warncke, 1975 is a junior synonym of this species. **B.** *A. fulica* male, frontal view of the head. **C.** *Andrena assimilis* Radoszkowski, 1876 female, habitus in lateral view. The taxonomic review of Wood & Monfared (2022) shows that the taxon *Andrena gallica* Schmiedeknecht, 1883 is a junior synonym of this species. **D.** *A. assimilis* female, frontal view of the head. **E.** *Andrena bimaculata* (Kirby, 1802) female, habitus in lateral view. Unpublished data from T.J. Wood agrees with the baseline of Gusenleitner & Schwarz (2002) and indicates that the taxon *Andrena oligotricha* Mavromoustakis, 1952 is a junior synonym of this species. **F.** *A. bimaculata* female, frontal view of the head. Pictures by Paolo Rosa.

***Andrena* (*Euandrena*) *impressa* Warncke, 1967**

Synonymised with *Andrena* (*Euandrena*) *lavandulae* Pérez, 1902, which is the senior synonym according to Wood (2023c: 261).

***Andrena* (*Leimelissa*) *ispida* Warncke, 1965**

Synonymised with *Andrena fallax* Eversmann, 1852, which is the senior synonym according to Astafurova *et al*. (2022).

***Andrena* (*Avandrena*) *siciliana* Warncke, 1980**

Synonymised with *Andrena heterodoxa* Pérez, 1903, which is the senior synonym according to Wood (2023a: 57).

***Andrena* (*Taeniandrena*) *similis* Smith, 1847**

Synonymised with *Andrena russula* Lepeletier, 1841, which is the senior synonym according to Praz *et al*. (2022).

***Andrena* (incertae sedis) *toelgiana* Friese, 1921**

Synonymised with *A. limbata* Eversmann, 1852 which is the senior synonym according to Wood (2023: 325).

***Andrena* (*Melandrena*) *vachali* Pérez, 1895**

Synonymised with *Andrena discors* Erichson, 1841, which is the senior synonym according to Wood (2023c: 267).

Synonymic notes

***Andrena* (*Plastandrena*) *cypricola* Mavromoustakis, 1952**

Synonym of *Andrena tibialis* (Kirby, 1802). *Andrena cypricola* was listed at the species rank by Gusenleitner & Schwarz (2002) and Varnava *et al*. (2020) but we do not consider this to be justified given the lack of variation in the genital capsule. Moreover, given the problems of introgression within the subgenus *Plastandrena*, detailed genetic work is needed before to be confident that additional taxa exist outside of the 'core' *Plastandrena* taxa.

***Andrena* (incertae sedis) *iohannescaroli* Nobile, 2000**

In the original description (Nobile 2000), the name and location of the collection housing the holotype are omitted, thereby not complying with Article 16.4.2 of the International Code of Zoological Nomenclature (ICZN, 1999). Consequently, because this species is not correctly described, we consider the name a ***nomen nudum***.

***Andrena* (*Plastandrena*) *oligotricha* Mavromoustakis, 1952**

Andrena oligotricha was considered to be a valid species by Varnava *et al*. (2020). However, we consider it a synonym of *Andrena bimaculata* (Kirby, 1802) (Figs 3E, F) based on genetic data (Wood 2023b), the lack of

morphological differentiation from *A. bimaculata*, particularly in the genital capsule, the presence of this red colour form in Turkey and the Levant, and we thus return to the hypothesis proposed by Gusenleitner & Schwarz (2002).

Andrena (*Simandrena*) *palumba* Warncke, 1974

This taxon will be synonymised with *Andrena rhypara* Pérez, 1903 as part of a revision of the Moroccan fauna conducted by Wood (in prep.).

Taxonomic changes

Cubiandrena Warncke, 1968

Andrena (*Cubiandrena*) Warncke, 1968: 72. Type species: *Andrena cubiceps* Friese, 1914, by original designation.
Cubiandrena: Dubitzky *et al*. 2010: 137. Elevated to genus rank and recently validated by Pisanty *et al*. (2022) by means of molecular analyses.

Andrena (*Micrandrena*) *acuta* Warncke, 1968

Andrena wollastoni acuta Warncke, 1968: 77.
Andrena acuta: Kratochwil 2020: 171. Upgraded to species rank.

Andrena (*Taeniandrena*) *afzeliella* (Kirby, 1802)

Melitta afzeliella Kirby, 1802: 169.
Andrena ovatula sensu auctorum: Warncke 1967: 248. Synonymised.
Andrena afzeliella: Praz *et al*. 2022: 383. Resurrected to species status.

Andrena (*Micrandrena*) *alma* Warncke, 1975

Andrena mariana alma Warncke, 1975c: 299
Andrena alma: Wood 2023c: 276. Upgraded to species rank.

Andrena (Micrandrena) ampla Warncke, 1967

Andrena proxima ampla Warncke, 1967: 229. Holotype ♀, Spain: Alberche (OÖLM).
Andrena ampla: Schmid-Egger 2005: 1038. Upgraded to species rank (overlooked by Nieto *et al.* 2014 and Rasmont *et al.* 2017).

Andrena (*Micrandrena*) *catula* Warncke, 1968

Andrena wollastoni catula Warncke, 1968: 77.
Andrena catula: Kratochwil 2020: 180. Upgraded to species rank.

Andrena (*Simandrena*) *cilissaeformis* Pérez, 1895

Andrena cilssaeformis Pérez, 1895: 42.
Andrena numida Warncke, 1967: 186. Synonymised (incorrectly).
Andrena cilissaeformis Lepeletier, 1841: Wood 2023c: 298. Resurrected to species status.

Andrena (*Euandrena*) *croatica* Friese, 1887

Andrena croatica Friese, 1887: 85.
Andrena bicolor Fabricius, 1775: Warncke 1967: 264. Synonymised.
Andrena croatica: Praz *et al*. 2019: 31. Resurrected to species status.

Andrena (*Taeniandrena*) *croceiventris* Morawitz, 1871

Andrena croceiventris Morawitz, 1871: 219.
Andrena russula croceiventris: Warncke 1967: 264.
Andrena croceiventris: Praz *et al*. 2022: 396. Returned to species status.

Andrena (Taeniandrena) eversmanniana Osytshnjuk, 1994

Andrena fulva Eversmann, 1852: 31, *nom. praeocc*., *nec Andrena fulva* (Müller, 1776).
Andrena marginata Fabricius, 1776: Warncke 1967: 273. Synonymised (incorrectly).
Andrena eversmanniana Osytshnjuk, 1994: 35, repl. name for *Andrena fulva* Eversmann.
Andrena eversmanniana: Astafurova *et al.* 2022: 398. Resurrected to species status.

Andrena (*Leimelissa*) *fallax* Eversmann, 1852

Andrena fallax Eversmann, 1852: 20.
Andrena chrysosceles (Kirby, 1802): Warncke 1967: 269. Synonymised (incorrectly).
Andrena fallax: Astafurova *et al*. 2022: 396. Returned to species status.
Andrena ispida Warncke, 1965: Astafurova *et al*. 2022: 396. Synonymised.

Andrena (*Micrandrena*) *gomerensis* Warncke, 1993

Andrena wollastoni gomerensis Warncke, 1993: 762.
Andrena gomerensis: Kratochwil 2020: 190. Upgraded to species rank.

Andrena (*Euandrena*) *lavandulae* Pérez, 1902

Andrena lavandulae Pérez, 1902: 176
Andrena bicolor Fabricius, 1775: Warncke 1967: 283. Synonymised (incorrectly).
Andrena angustior impressa Warncke, 1967: 234.
Andrena impressa: Wood *et al*. 2021: 151. Upgraded to species rank.
Andrena lavandulae Wood 2023c: 260. Resurrected to species status.

Andrena (*Micrandrena*) *lecana* Warncke, 1975

Andrena niveata lecana Warncke, 1975c: 298.
Andrena lecana Wood 2023c: 283. Upgraded to species rank.

Andrena (*Truncandrena*) *nigropilosa* Warncke, 1967

Andrena truncatilabris nigropilosa Warncke, 1967: 225
Andrena truncatilabris espanola Warncke, 1967: 224
Andrena espanola Nieto *et al*. 2014: 44.
Andrena nigropilosa Wood 2023c: 306. Upgraded to species rank, including *A. espanola* as a junior subjective synonym.

Andrena (*Plastandrena*) *nigrospina* Thomson, 1872

Andrena nigrospina Thomson, 1872: 80.
Apis carbonaria Linnaeus, 1767, auct.
Andrena pilipes Fabricus, 1781: Gusenleitner & Schwarz 2002: 594.
Andrena nigrospina: Schmid-Egger & Patiny 1997: 37. Recognised as a valid taxon.

Notes. A two-taxon model based on the work of Schmid-Egger & Patiny (1997) is followed here with a bivoltine *A. pilipes* that has a more southerly distribution and a univoltine *A. nigrospina* that has a more northerly distribution. Additional detail is given in Wood (2023b; 2023c)

Andrena (*Micrandrena*) *obsoleta* Pérez, 1895

Andrena obsoleta Pérez, 1895: 44.
Andrena obsoleta auctorum: Warncke 1967: 186.
Andrena mariana solda Warncke, 1974: 40.
Andrena obsoleta Wood 2023c: 273. Recognised as a valid taxon.

Notes. This taxon was used in a *sensu auctorum* by Warncke; it is actually a valid species (Wood 2023c: 273), and in a European context it is found only in Sicily.

Andrena (*Taeniandrena*) *ovata* Schenck, 1853

Andrena ovata Schenck, 1853: 133.
Andrena ovatula (Kirby, 1802): Warncke 1967: 295. Synonymised.
Andrena ovata: Praz *et al*. 2022: 399. Resurrected to species status.

Andrena (*Pruinosandrena*) *parata* Warncke, 1967

Andrena pruinosa parata Warncke, 1967: 233.
Andrena parata: Wood 2023c: 311. Upgraded to species status.

Andrena (*Euandrena*) *pileata* Warncke, 1975

Andrena allosa pileata Warncke, 1975a: 85.
Andrena pileata: Praz *et al*. 2019: 31. Upgraded to species rank.

Andrena (*Suandrena*) *portosanctana* Cockerell, 1922

Andrena portosanctana Cockerell, 1922: 32.
Andrena maderensis portosanctana Warncke, 1967: 208.
Andrena portosanctana: Kratochwil *et al*. 2014: 1540. Returned to species status (overlooked by Nieto *et al*. 2014 and Rasmont *et al*. 2017).

Andrena (*Taeniandrena*) *poupillieri* Dours, 1872

Andrena poupillieri Dours, 1872: 430.
Andrena ovatula poupillieri Warncke 1967: 176.
Andrena poupillieri: Wood 2023c: 300. Returned to species status.

Andrena (*Micrandrena*) *tenostra* Warncke, 1975

Andrena mariana tenostra Warncke, 1975c: 300
Andrena tenostra: Wood 2023c: 273. Upgraded to species rank.

Andrena (*Notandrena*) *varuga* Warncke, 1975

Andrena varuga reperta Warncke, 1974: 48.
Andrena varuga Warncke, 1975c: 312.
Andrena reperta varuga Gusenleitner & Schwarz 2002: 633.
Andrena varuga: Wood 2023c: 292. Upgraded to species rank (distinct from *A. reperta*).

Andrena (*Taeniandrena*) *vocifera* Warncke, 1975

Andrena gelriae vocifera Warncke, 1975b: 136.
Andrena vocifera: Praz *et al*. 2022: 406. Upgraded to species rank.

Cubiandrena cubiceps (Friese, 1914)

Andrena cubiceps Friese, 1914: 223.
Cubiandrena cubiceps: Dubitzky *et al*. 2010: 144.

Taxonomic acts and clarifications

Andrena (*Hoplandrena*) *carantonica* Pérez, 1902

Considered to be a *nomen dubium* by Wood *et al*. (2022c).

Andrena (*Notandrena*) *erythrocnemis* Morawitz, 1870 *sensu auctorum*

This taxon was used incorrectly by Warncke (Gusenleitner & Schwarz 2002; Proshchalykin *et al*. 2017) as *Andrena erythrocnemis sensu auctorum*, and the name is replaced in the European list by *A. griseobalteata* Dours, 1872. Wood (2023c: 361) designated a neotype for *A. griseobalteata* from southern France.

Andrena (*Truncandrena*) *oulskii* Radoszkowski, 1867 *sensu auctorum*

Listed by Nieto *et al*. (2014). This identification was based on a misapplication of the type concept: the true *Andrena oulskii* belongs to the subgenus *Truncandrena*, whereas European material is a member of the subgenus *Ulandrena*. The type material of *Andrena oulskii* was clarified by Wood (2021); the correct name for European material is *A.* (*Ulandrena*) *biguttata* Friese, 1923.

Andrena (*Ulandrena*) *osychniukae* Osytshnjuk, 1977 and *Andrena* (*Ulandrena*) *polemediana* Mavromoustakis, 1956

In the new checklist of the European species these two taxa are included within *Andrena abbreviata* Dours, 1873 *sensu lato*. A comprehensive molecular revision of these taxa is required for clarity due to ongoing taxonomic confusion.

***Andrena* (*Hoplandrena*) *scotica* Perkins, 1916**

This name replaces the use of *Andrena carantonica sensu auctorum*, *Andrena carantonica* Pérez, 1902 is treated as a *nomen dubium* (see above).

Species recorded in Europe after 2017

***Andrena* (*Notandrena*) *falcinella* Warncke, 1975**

Distribution. First recorded for Europe by Wood & Monfared (2022) from Limassol in Cyprus. Outside Europe known from Turkey, Israel and Iran.

***Andrena* (*incertae sedis*) *laurivora* Warncke, 1974**

Distribution. First recorded for Europe by Wood *et al.* (2021) from Huelva and Sevilla in Spain. Outside Europe known only from Morocco.

***Andrena* (*Avandrena*) *melacana* Warncke, 1967**

Distribution. First recorded for Europe by Wood & Ortiz-Sánchez (2022) from Albacete, Cádiz, Granada, and Málaga in Spain. Outside Europe known from Morocco, Algeria, and Tunisia.

***Andrena* (*Truncandrena*) *varia* Pérez, 1895**

Distribution. First recorded for Europe by Ortiz-Sánchez (2020) from Córdoba in Spain. Outside Europe known from Morocco, Algeria, and Tunisia.

New species for Europe

***Andrena* (*Notandrena*) *hebescens* Wood, 2020**

Distribution. New record (!) SPAIN: ♀, Canary Is., Fuerteventura, La Costilla, 12.iii.1935, (OÖLM). Outside Europe known only from Morocco.

***Andrena* (*Chrysandrena*) *henotica* Warncke, 1975**

Distribution. New record (!) CYPRUS: ♀, Nicosia, Kykkos, 800 m, 11.v.2014, leg. M. Kafka (OÖLM). Outside Europe known from Turkey and Israel.

Species overlooked in the previous European checklists

***Andrena* (*Suandrena*) *portosanctana* Cockerell, 1922**

Considered as a subspecies of *Andrena maderensis* by Warncke (1967), returned to species rank by Kratochwil *et al.* (2014) but overlooked in the last update of Rasmont *et al.* (2017).

Species to be excluded from the European checklist

***Andrena* (*Trucandrena*) *derbentina* Morawitz, 1886**

Distribution. The only verified records of this species are from the Caucasus.

***Andrena* (*Melandrena*) *grandilabris* Pérez, 1903**

Distribution. This species is present only in eastern Turkey and Iran (see Wood & Monfared 2022). European citations from Cyprus refer to misidentified material of *Andrena elmaria* Gusenleitner, 1998. Not present in Europe.

***Andrena* (*Euandrena*) *majalis* Morawitz, 1876**

Distribution. The only verified records of this species are from Central Asia.

***Andrena* (*incertae sedis*) *wolfi* Gusenleitner & Scheuchl, 2000**

Distribution. Levant only, from Israel and to Syria and Jordan (Wood unpublished data). Not present in Europe.

Tribe Panurgini Leach, 1815

Genus described

***Halopanurgus* Wood, Patiny & Bossert, 2022**
(Figs 4A, B)

Halopanurgus Wood, Patiny & Bossert in Wood *et al.* 2022a: 190. Type species: *Camptopoeum baldocki* Wood & Cross, 2017, by original designation.

Species recently described as new to science

***Halopanurgus baldocki* (Wood & Cross, 2017)**
(Figs 4A, B)

Camptopoeum baldocki Wood & Cross, 2017: 286. Holotype ♂; Portugal: Algarve, Cacela Velha (NHMUK).
Halopanurgus baldocki: Wood *et al.* 2022a: 190. New combination.

Distribution. Portugal, Spain.

Taxonomic changes

***Halopanurgus fuzetus* (Patiny, 1999)**
(Figs 4C, D)

Flavipanurgus fuzetus Patiny, 1999: 58.
Halopanurgus fuzetus: Wood *et al.* 2022a: 194. New combination.

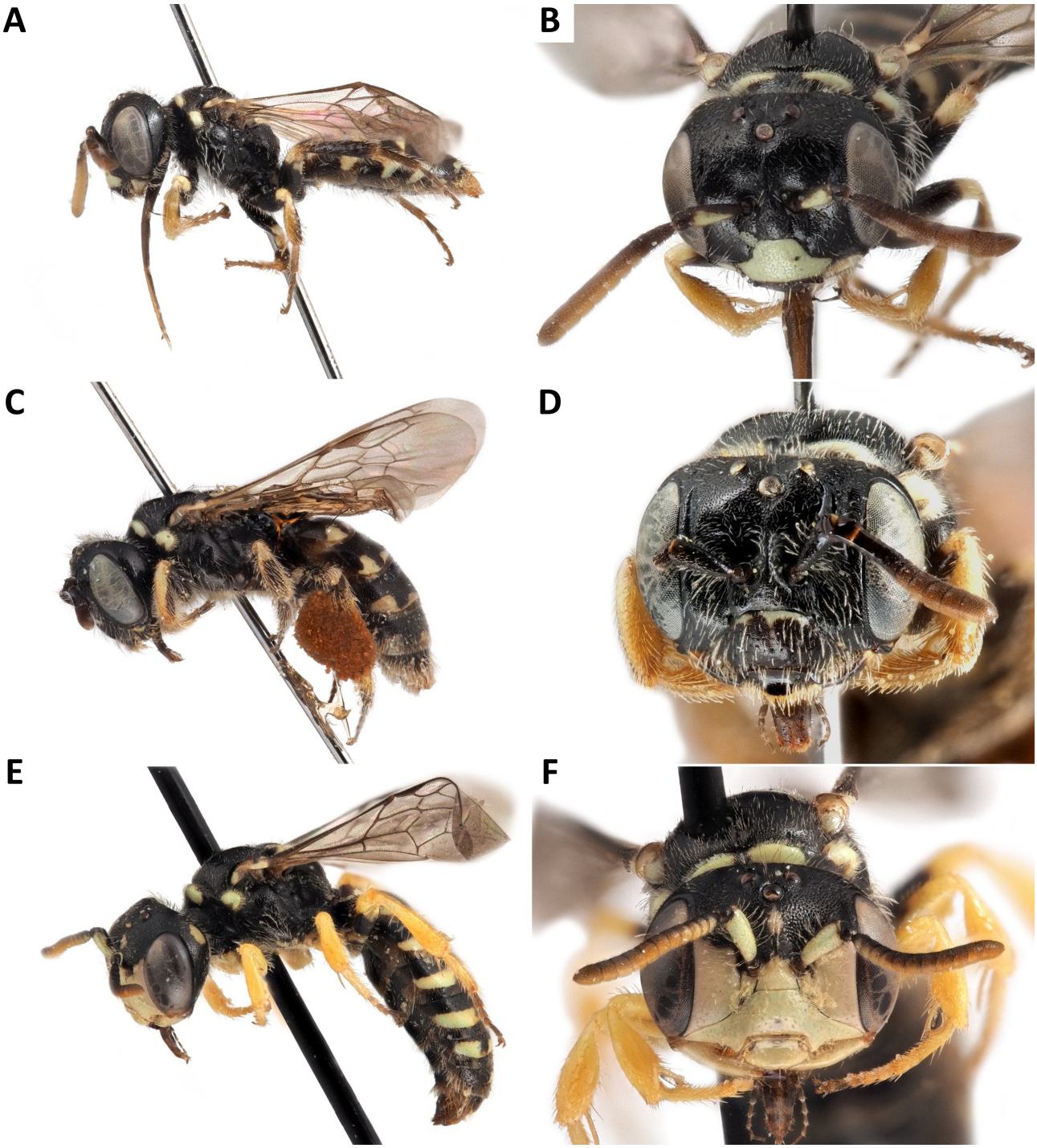

FIGURE 4. A. *Halopanurgus baldocki* (Wood & Cross, 2017) male, habitus in lateral view. The species was originally described under the genus *Camptopoeum* Spinola, 1843, and then served as the type species for the newly described genus *Halopanurgus* Wood, Patiny & Bossert, 2022 (Wood *et al.* 2022a). **B.** *H. baldocki* male, oblique view of the head. **C.** *Halopanurgus fuzetus* (Patiny, 1999) female, habitus in lateral view. The species was originally described as *Flavipanurgus fuzetus* by Patiny 1999 but was later shown to belong to the genus *Halopanurgus*. **D.** *H. fuzetus* female, oblique view of the head. **E.** *Flavipanurgus kastiliensis* (Warncke, 1987) male, habitus in lateral view. The species was initially considered to be a subspecies of *Flavipanurgus ibericus* (Warncke, 1972) before being upgraded to species rank in Wood & Cross (2018). **F.** *F. kastiliensis* male, frontal view of the head. Pictures by Paolo Rosa.

***Flavipanurgus kastiliensis* (Warncke, 1987)**
(Figs 4E, F)

Panurgus ibericus kastiliensis Warncke, 1987: 86.
Flavipanurgus kastiliensis: Cross & Wood 2018: 564. Upgraded to species rank.

Species overlooked in the previous European checklists

***Panurginus alticolus* Morawitz, 1875**

Distribution. Russia (Samara Prov., Volgograd Prov., Orenburg Prov., Bashkir Rep.) (Romankova & Astafurova 2011).

Family APIDAE Latreille, 1802

Tribe Ammobatini Handlirsch, 1925

Published synonymies

***Ammobates globosus* Mavromoustakis, 1954**

Synonymised with *Ammobates biastoides* (Friese, 1895), which is the senior synonym according to Warncke (1983: 294). This change was overlooked in Nieto *et al.* (2014) and Rasmont *et al.* (2017).

Tribe Ancylaini Michener, 1944

Species to be excluded from the European checklist

***Ancyla nitida* Friese, 1922**

Distribution. Given that we could not locate specimens to verify the old and doubtful records of this species from Cyprus, we deleted this taxon from the checklist of the European species (Varnava *et al*. 2020).

***Ancyla oraniensis* Lepeletier, 1841**

Distribution. North African species, not present in Europe.

Tribe Anthophorini Dahlbom, 1835

Published synonymies

***Amegilla magnilabris* (Fedtschenko, 1875)**

In Nieto *et al*. (2014) as a valid species. This species was synonymised with *Amegilla savignyi* (Lepeletier, 1841) by Brooks (1988), yet never revalidated. In the present list we follow the interpretation of the latter author until further taxonomic work is done.

***Anthophora salviae* (Panzer, 1805)**

Synonymised with *Anthophora crinipes* Smith, 1854, which is the valid name according to Maghni *et al*. (2017). The latter authors and Scheuch & Willner (2016) considered the basionym *Lasius salviae* Panzer, 1805 a *nomen dubium*.

***Anthophora thomsonii* (Saunders, 1882)**

Synonymised with *Anthophora atriceps* Pérez, 1879, which is the senior synonym, according to Baldock *et al.* (2018). This taxon was described as *Podalirius thomsonii* Saunders, 1882, but the name in use was *thomsoni* (with only one –i), which is an incorrect subsequent spelling.

New synonymies

***Anthophora senicula* Pérez, 1902**

We synonymise here *Anthophora senicula* Pérez, 1902, **syn. nov.** with *Anthophora* (*Pyganthophora*) *balearica* (Friese, 1896), the name with priority. Type series were revised in MNHN and SMF, respectively.

Taxonomic acts and clarifications

***Anthophora andalusica* Pérez, 1902**

Morphologically, the type specimen of this taxon (examined in MNHN) is an abraded female belonging to the subgenus *Pyganthophora* Brooks*,* 1988 that may be synonymous with *Anthophora retusa meridionalis* Pérez, 1879. However, given the degraded nature of the specimen, it is safer to regard *A. andalusica* a ***nomen dubium*.**

***Anthophora cincrea* (Friese, 1896)**

This taxon was described by Friese as *Podalirius cincreus*. The name is a misspelling of the Latin adjective *cinereus* [= grey], referring to the body hair coloration. An original incorrect spelling can be emended, but the emendation would generate a secondary homonym of *A. cinerea* Eversmann, 1852, thus creating instability of the system. We therefore prefer to keep the original misspelling *cincreus*, nevertheless the name is an adjective and must be modified in accordance with the feminine genus gender of *Anthophora*. For this reason, in the new checklist we use the name *Anthophora cincrea* (Friese, 1896).

***Anthophora* (*Pyganthophora*) *erschowi* Fedtschenko, 1875**

The type series was revised in ZISP. The specimens of the series are only females, all belonging to the difficult group of *Anthophora aestivalis* (Panzer, 1801), in which generally only males can be reliably identified. The name *Anthophora erschowi* is therefore considered as a ***species inquirenda*** and removed from the present checklist. Material under this name requires revision.

***Anthophora* (*Pyganthophora*) *rubricrus* Dours, 1869**

The type series of *Anthophora rubricrus* from Greece was destroyed during the WWI bombing of the museum of Amiens (France). Only one species is likely to correspond to *A. rubricrus* Dours which is found in Syros today, and

therefore corresponds with the type locality (J. Devalez, pers. comm.). However, without type material and reliably identified specimens from the taxon author, we consider *Anthophora rubricrus* a ***species inquirenda*** and remove it from the present checklist.

***Anthophora* (*Paramegilla*) *segnis* Eversmann, 1852**

Eversmann (1852) gives as *locus typicus* "*in prov. Orenburg. Australi, Saratoviensi et Astrachanensi"*. Proshchalykin *et al.* (2019), without revision of the type series, suggest a likely synonymy with *Anthophora podagra* Lepeletier, 1841. However, after examination of the type series in IZKP, the species looks more related to *Anthophora prshewalskyi* Morawitz, 1880. *Anthophora segnis* is here considered as the senior synonym of *Anthophora prshewalskyi* **syn. nov.**

***Anthophora* (*Pyganthophora*) *ventilabris* Lepeletier, 1841**

In Nieto *et al.* (2014) erroneously as *Anthophora ventrilabris* Lepeletier, 1841, an incorrect subsequent spelling.

Species recorded in Europe after 2017

***Anthophora* (*Lophanthophora*) *cinerascens* Lepeletier, 1841**

Distribution. Russia (Orenburg Prov.) (Proshchalykin *et al*. 2019). Outside Europe known from north Africa, Israel, Pakistan, Central Asia.

***Anthophora* (*Paramegilla*) *segnis* Eversmann, 1852**

Distribution. Crimea. Outside Europe known from Turkey, Turkmenistan, Kazakhstan and China (Levchenko *et al*. 2017).

New species for Europe

***Anthophora* (*Paramegilla*) *balassogloi* (Radoszkowski, 1877)**

Distribution. New record (!) RUSSIA: 3♂ and 5♀, Bashkortostan (Adzanov), 3.vii.1955, leg. Nikiforuk (ZISP); 7♀, idem, 8.vii.1956; 1♀, idem 9.vii.1956; 2♀, idem, 10.vii.1956; 5♂ and 1♀, idem, 12.vii.1956; 6♂ and 1♀, idem, 13.vii.1956; 1♂ and 2♀, Isyangulovo, 10.vii.1956, leg. Nikiforuk (ZISP); 1♂, idem 13.vii.1956. Outside Europe known from the Caucasus, Ural Mountains, Turkey, Armenia (Ascher & Pickering 2022).

***Anthophora* (*Lophanthophora*) *crysocnemis* Morawitz, 1877**

Distribution. New record (!) RUSSIA: 1♀, Sarepta [=Volgograd], leg. Bakker (ZISP). Outside Europe known from Armenia and Kazakhstan (!): 1♀, Yanvartsevo, 21.v.1949, leg. Rudolf (ZISP).

Remarks. Brooks (1988) erroneously classified this species into the subgenus *Anthomegilla* Marikovskaya, 1976. This species undoubtedly belongs to the subgenus *Lophanthophora* Brooks, 1988.

***Anthophora* (incertae sedis) *raddei* Morawitz, 1875**

Distribution. New record (!) BULGARIA: 1♂ and 4♀, Plovdiv, 6–20.vi.1909, leg. A. Gutbier (ZISP). Outside Europe known from Armenia (Morawitz 1875) and Iran (Alfken 1935).

Remarks. This species was classified by Brooks (1988) in the subgenus *Paramegilla* Friese, 1897 but the species is difficult to classify in the current system.

Species to be excluded from the European checklist

***Anthophora* (*Anthophora*) *lanata* (Klug, 1845)**

Remarks. Listed by Nieto *et al.* (2014), but the status of this species is doubtful, and it might be a subspecies of *A.* (*Anthophora*) *canescens* Brullé, 1832. Waiting for a proper taxonomic revision, we choose to exclude it from the present checklist and to consider it a ***species inquirenda*.**

Tribe Melectini Westwood, 1839

Taxonomic changes

***Melecta baerii* (Radoszkowski, 1865)**

Melecta baerii (Radoszkowski, 1865) was previously misspelt as *Melecta baeri* (Radoszkowski, 1865) in the Red List of Nieto *et al.* (2014).

***Thyreus aberrans* (Morawitz, 1875)**

This taxon has been confused, as the location of the type material is uncertain. According to Proshchalykin (pers. comm.) the type could be located in Moscow. The species was described from Uzbekistan as *Crocisa aberrans*, and its identity is unclear. Lieftinck (1968) notes that in the original description, the scutellum has the posterior margin truncate, with the apex produced into a median lobe. This does not fit any known *Thyreus* species, and is reminiscent of a Dioxyine bee. Without a type, the concept is unclear, and the name must be treated as a ***nomen dubium***. Records from the European part of Russia must therefore be considered to be unclear due to this taxonomic uncertainty. We therefore remove this taxon from the European checklist.

***Thyreus piceus* (Meyer, 1921)**

This taxon is known only from the type specimen which is a female collected from the island of Poros in Greece. The type appears to be lost, as it cannot be located in the Berlin collection (Lieftinck 1968). Without a type, this name must be considered a ***nomen dubium*** given the impossibility to conclusively conclude on its identity based only on the description.

***Thyreus plumatus* (Meyer, 1921)**

This taxon is known only from the type specimen which is a male collected from Milan in Italy. The type appears to be lost, as it cannot be located in the Berlin collection (Lieftinck 1968). Without a type, this name must be considered a ***nomen dubium*** given the impossibility to conclusively conclude on its identity based only on the description.

Species recorded in Europe after 2017

***Melecta amanda* Lieftinck, 1980**

Distribution. Recorded for the first time by Levchenko *et al*. (2017) from the south of the European part of Russia. Outside Europe known from Iran.

Species overlooked in the previous European checklists

***Melecta alcestis* Lieftinck, 1980**

Distribution. Described from the European part of Russia (Orenburg). Only known from the type specimens (unpublished).

***Melecta diacantha* Eversmann, 1852**

Distribution. Described from the European part of Russia (Urals) (Levchenko *et al*. 2017).

***Melecta eversmanni* Radoszkowski, 1893**

Distribution. Described from the European part of Russia (Orenburg) (Radoszkowski 1893; Proshchalykin *et al*. 2019). Outside Europe known from Uzbekistan.

***Melecta rutenica* Radoszkowski, 1893**

Distribution. The type locality given by Radoszkowski (1893) is Ciechocinek, Poland. However, as discussed by Lieftinck (1980), this is an error. The lectotype specimens is labelled as "Nickon: p. Stani" which is an unclear locality. However, the specimen is labelled by Radoszkowski and was considered to be a valid lectotype by Lieftinck (1980). In Europe, the species has only confidently been recorded from Ukraine (Kirill ravine, Kiev).

Species to be excluded from the European checklist

***Thyreus tricuspis* (Pérez, 1883)**

Listed by Nieto *et al.* (2014) for Europe, but only present in north Africa.

Tribe Bombini Latreille, 1802

Species recently described as new to science

***Bombus* (*Melanobombus*) *bisiculus* Lecocq, Biella, Martinet & Rasmont, 2019**

Bombus (*Melanobombus*) *bisiculus* Lecocq, Biella, Martinet & Rasmont, 2019: 7. Holotype ♂; Italy: Sicily, Isnello (UMONS).

Individuals of the taxon described recently with the name *Bombus bisiculus* have been recorded traditionally as *B. lapidarius decipiens* Pérez, 1879, because individuals of the new taxon share a yellow-banded colour pattern that

has been given by some the status of a subspecies within *B. lapidarius* (Linnaeus, 1758). But based on its divergence from *Bombus lapidarius* in northern Europe in *COI* barcodes and CLGS (cephalic labial gland secretions, believed to function as sex-specific pheromones in bumblebees), Lecocq *et al*. (2019) described the new taxon from southern Italy and Sicily as a separate species, *B. bisiculus* Lecocq, Biella, Martinet & Rasmont, 2019 (the name *decipiens* Pérez was applied originally to yellow-banded individuals of *B. lapidarius* from the Pyrenees and the Iberian Peninsula).

In a revision of the *Melanobombus* bumblebees world-wide, Williams *et al*. (2020) noted from a re-analysis of *COI* barcodes based in part on sequences provided by Lecocq *et al*. (2015), that some individuals ('*lapidarius* SE Europe') were grouped in the tree together with the new taxon *Bombus bisiculus*. This group of individuals was not explicitly reported or discussed by Lecocq *et al.* (2019) when they formally described *B. bisiculus*. These SE Europe sequences came from unbanded specimens from Slovakia, the Czech Republic, Serbia, Bulgaria, and Hungary that are phenotypically identical to the typical *B. lapidarius* (Linnaeus, 1758), not to the yellow-banded taxon *bisiculus* of Lecocq *et al*. (2019).

More significantly, Williams *et al*. (2020) highlighted that the SE Europe samples also produce CLGS mixtures (as reported by Lecocq *et al.* 2015), that are typical of *B. lapidarius*, not of *B. bisiculus*. Williams *et al*. (2020) therefore suggested that the definition of *Bombus bisiculus* by Lecocq *et al*. (2019) as a yellow-banded bumblebee species diverging in both *COI* barcodes and CLGS from *B. lapidarius* appears to be contradicted by the dataset of Lecocq *et al*. (2015) when the whole of Europe is considered. Williams *et al*. (2020) therefore concluded that there is disagreement between the two independent lines of evidence (*COI* and CLGS) from Lecocq *et al*. (2013, 2015, 2019), not the corroboration that would be required to support species status for the taxon *bisiculus*: the SE Europe bees have the *COI* of *bisiculus* but the CLGS of *lapidarius.*

In the absence of corroboration between *COI* and CLGS (a required combination for deserving a species status following Lecocq *et al.* 2013, 2015, 2019), we here consider the taxon *bisiculus* as a subspecies of *B. lapidarius*. Further genetic sequencing and semio-chemical data from Eastern Europe and the Balkans are required to understand more in detail the evolutionary history of these lineages.

Distribution. Southern Italy. Records from Bulgaria, the Czech Republic, Hungary, Serbia, and Slovakia need confirmation.

Taxonomic changes

Bombus (*Megabombus*) *reinigiellus* (Rasmont, 1983)

Megabombus reinigiellus Rasmont, 1983: 43.
Bombus hortorum reinigiellus: Ghisbain *et al*. 2021b: 8. Downgraded to subspecies rank.

The taxon *reinigiellus* Rasmont, 1983 was re-assessed as a subspecies of *Bombus hortorum* (Linnaeus, 1761) by Ghisbain *et al*. (2021b) based on genetic and semio-chemical analyses.

Bombus (*Pyrobombus*) *konradini* Reinig, 1965

Bombus lapponicus konradini Reinig, 1965:105.
Bombus konradini: Martinet *et al*. 2018a: 205. Upgraded to species rank.

The taxon *konradini* Reinig, 1965 was re-assessed as a valid species by Martinet *et al*. (2018a) based on genetic and semio-chemical analyses.

Bombus (*Thoracobombus*) *mocsaryi* Kriechbaumer, 1877
(Figs 5A, B)

Bombus mocsaryi Kriechbaumer, 1877: 253.
Bombus laesus mocsaryi: Brasero *et al*. 2021: 10. Downgraded to subspecies rank.

The taxon *mocsaryi* Kriechbaumer, 1877 (Figs 5A, B) was re-assessed as a subspecies of *Bombus laesus* Morawitz (1875) (Figs 5C, D) by Brasero *et al*. (2021) based on genetic and semio-chemical analyses.

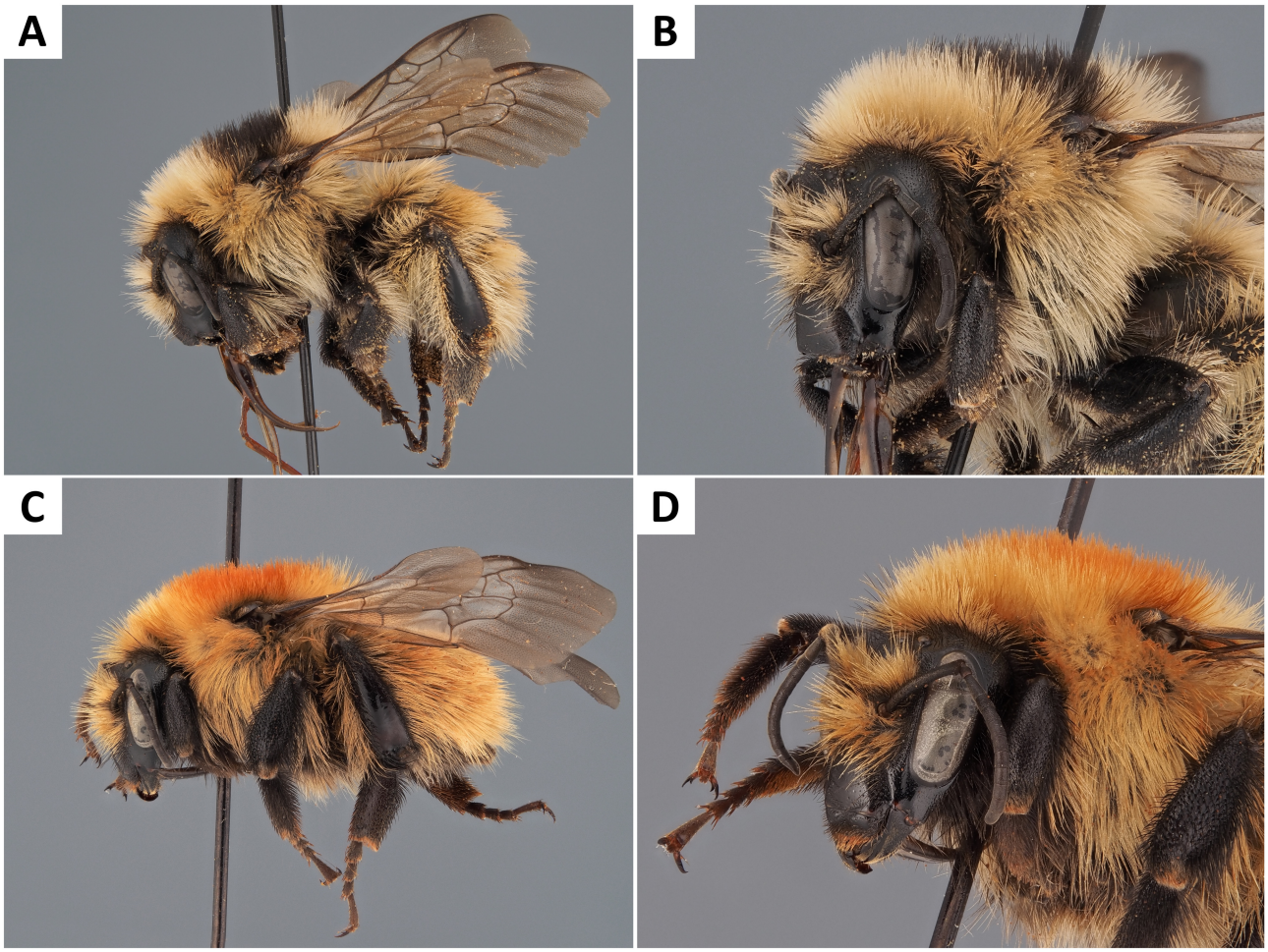

FIGURE 5. A. *Bombus laesus mocsaryi* Kriechbaumer, 1877 female, habitus in lateral view. The taxon *mocsaryi* was recently shown to be conspecific with the taxon *laesus* Morawitz, 1875 by Brasero *et al*. (2021). **B.** *B. laesus mocsaryi* female, head in oblique view. **C.** *Bombus laesus laesus* female, habitus in lateral view. **D.** *B. laesus laesus* female, head in oblique view. Pictures by Paolo Rosa.

Taxonomic acts and clarifications

Bombus (*Alpinobombus*) *polaris* Curtis, 1835 and *Bombus* (*Alpinobombus*) *pyrrhopygus* Friese, 1902

There is an ongoing debate as to whether the Nearctic taxon *polaris* Curtis, 1835 and Palaearctic taxon *pyrrhopygus* Friese, 1902 should be considered as conspecific or heterospecific.

Based on a lack of statistical differentiation in CLGS, Martinet *et al*. (2018b) consider these taxa as conspecific, grouping them under the oldest available name *Bombus* (*Alpinobombus*) *polaris* Curtis, 1835. These authors also base their argument on the fact that a previous study by Williams *et al*. (2015) showed no differentiation in the slowly-evolving *PEPCK* nuclear gene between these two taxa (despite showing a significant differenciation based on *COI*).

However, a detailed revision of the world *Alpinobombus* Skorikov, 1914 species by Williams *et al.* (2019) concluded that *Bombus polaris* Curtis, 1835 and *Bombus pyrrhopygus* Friese, 1902 could be considered as two differentiated species. The decision of Williams *et al*. (2019) is based on the following evidence: (i) a species coalescent in the *COI* marker demonstrated by the Poisson-tree-process procedure (*cf*. Zhang *et al*. 2013); (ii) diagnostic differences in the 16S gene; (iii) differences in morphology and colour patters between both taxa. Furthermore, according to Williams *et al*. (2019), the lack of statistical differentiation in CLGS cannot be used as a

convincing argument of conspecificity, as the absence of co-occurrence between both taxa might have removed any selective pressure that might otherwise have enhanced barriers to interbreeding by driving evolutionary divergence in sex pheromones. Williams *et al*. (2019) also note that a significant difference in CLGS would not be required to consider both taxa as conspecific following the unified species concept of de Queiroz (2007) because (i) the status of both taxa as independently evolving lineages (EILs) is automatically maintained by the wide sea barrier and (ii) the existence of these two separate EILs is directly evidenced by their two species' coalescents in the *COI* gene.

Here we follow the latter interpretation and consider the Nearctic taxon *polaris* Curtis, 1835 and Palaearctic taxon *pyrrhopygus* Friese, 1902 as distinct species, with only *Bombus pyrrhopygus* occurring in IUCN Europe. Additional work is required to better understand the evolutionary history of this highly interesting species complex.

***Bombus* (*Thoracobombus*) *muscorum pereziellus* (Skorikov, 1922)**
(Figs 6A, B)

Agrobombus pereziellus Skorikov, 1922: 150.
Bombus muscorum pereziellus: Lecocq *et al.* 2014: 243. Downgraded to subspecies rank.

The taxon *pereziellus* (Figs 6A, B) was re-assessed as a subspecies of *Bombus muscorum* (Linnaeus, 1758) (Figs 6C, D) by Lecocq *et al*. (2014) based on genetic and semio-chemical analyses. This taxonomic update was omitted in Rasmont *et al*. (2017).

FIGURE 6. A. *Bombus muscorum pereziellus* Skorikov, 1922 female, habitus in lateral view. The taxon *pereziellus* was shown to be conspecific with the taxon *muscorum* (Linnaeus, 1758) by Lecocq *et al*. (2014). This taxonomic update was omitted in Rasmont *et al*. (2017). **B.** *B. muscorum pereziellus* female, head in oblique view. **C.** *Bombus muscorum pereziellus* female, habitus in lateral view. **D.** *B. muscorum pereziellus* female, head in oblique view. Pictures by Paolo Rosa.

***Bombus* (*Psithyrus*) *vestalis perezi* (Schulthess-Rechberg, 1886)**
(Figs 7A, B)

Psithyrus perezi Schulthess-Rechberg, 1886: 275.
Bombus vestalis perezi: Lecocq *et al.* 2014: 243. Downgraded to subspecies rank.

The taxon *perezi* (Figs 7A, B) was re-assessed as a subspecies of *Bombus vestalis* Geoffroy (1785) (Figs 7C, D) by Lecocq *et al*. (2014) based on genetic and semio-chemical analyses. This taxonomic update was omitted in Rasmont *et al*. (2017).

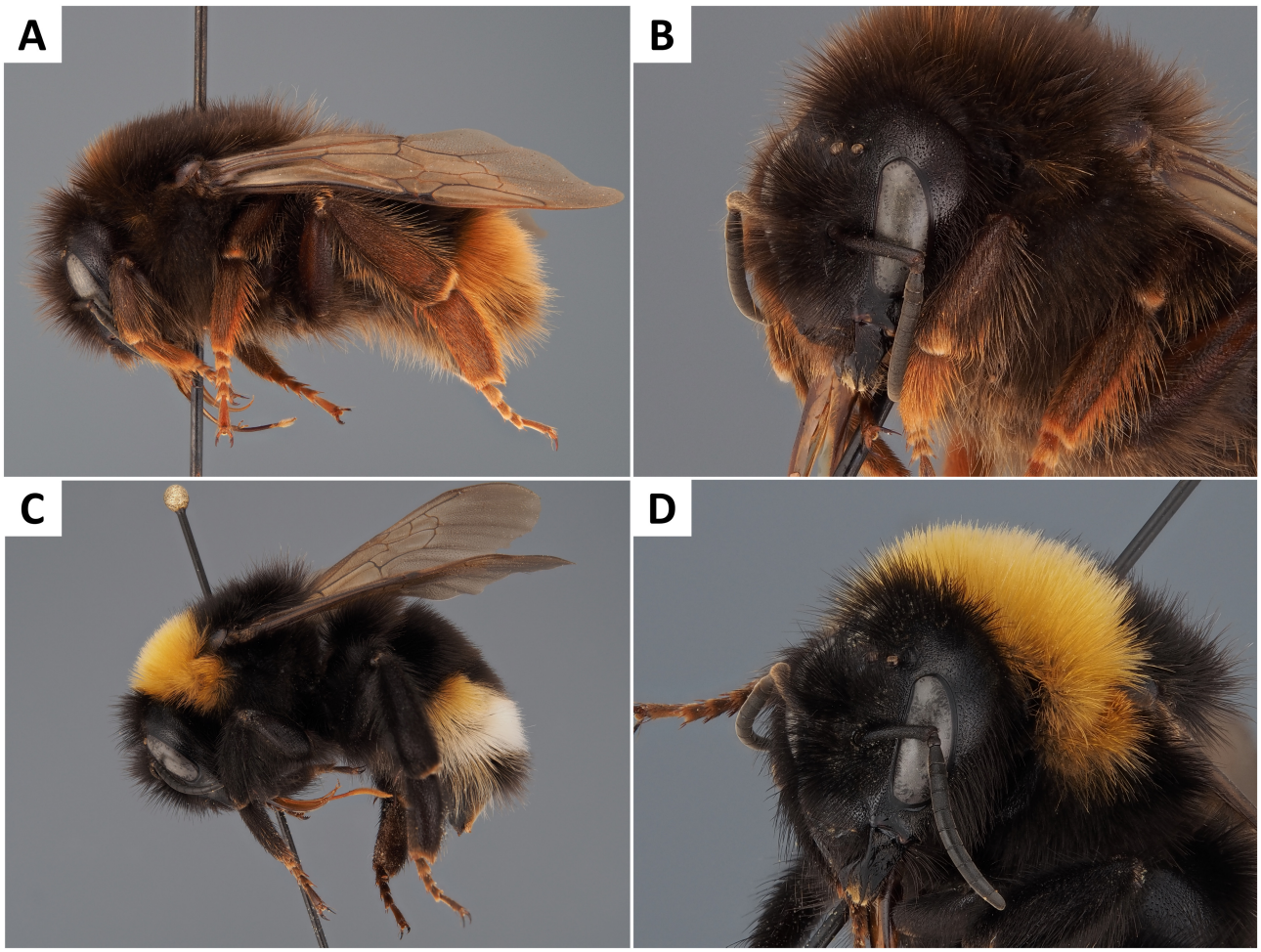

FIGURE 7. A. *Bombus vestalis perezi* Schulthess-Rechberg, 1886 female, habitus in lateral view. The taxon *perezi* was shown to be conspecific with the taxon *vestalis* Geoffroy, 1785 by Lecocq *et al*. (2014). This taxonomic update was omitted in Rasmont *et al*. (2017). **B.** *B. vestalis perezi* female, head in oblique view. **C.** *Bombus vestalis vestalis* female, habitus in lateral view. **D.** *B. vestalis vestalis* female, head in oblique view. Pictures by Paolo Rosa.

Tribe Ceratinini Latreille, 1802

Species to be excluded from the European checklist

Ceratina (*Euceratina*) *zwakhalsi* Terzo & Rasmont, 1998

Remarks. Listed by Nieto *et al.* (2014) yet only recorded from SW-Turkey. This species is therefore removed from the present list.

Tribe Epeolini Linsley & Michener, 1939

Species recently described as new to science

***Epeolus ibericus* Bogusch, 2018**
(Figs 8A, B)

Epeolus ibericus Bogusch in Bogusch & Hadrava, 2018: 28. Holotype ♀; Portugal: Caparica, 18.vii.1982, leg. K. Guichard (NHMUK).

Distribution. Portugal and Spain (Bogusch & Hadrava 2018). Outside Europe known from Morocco (Bogusch 2021).

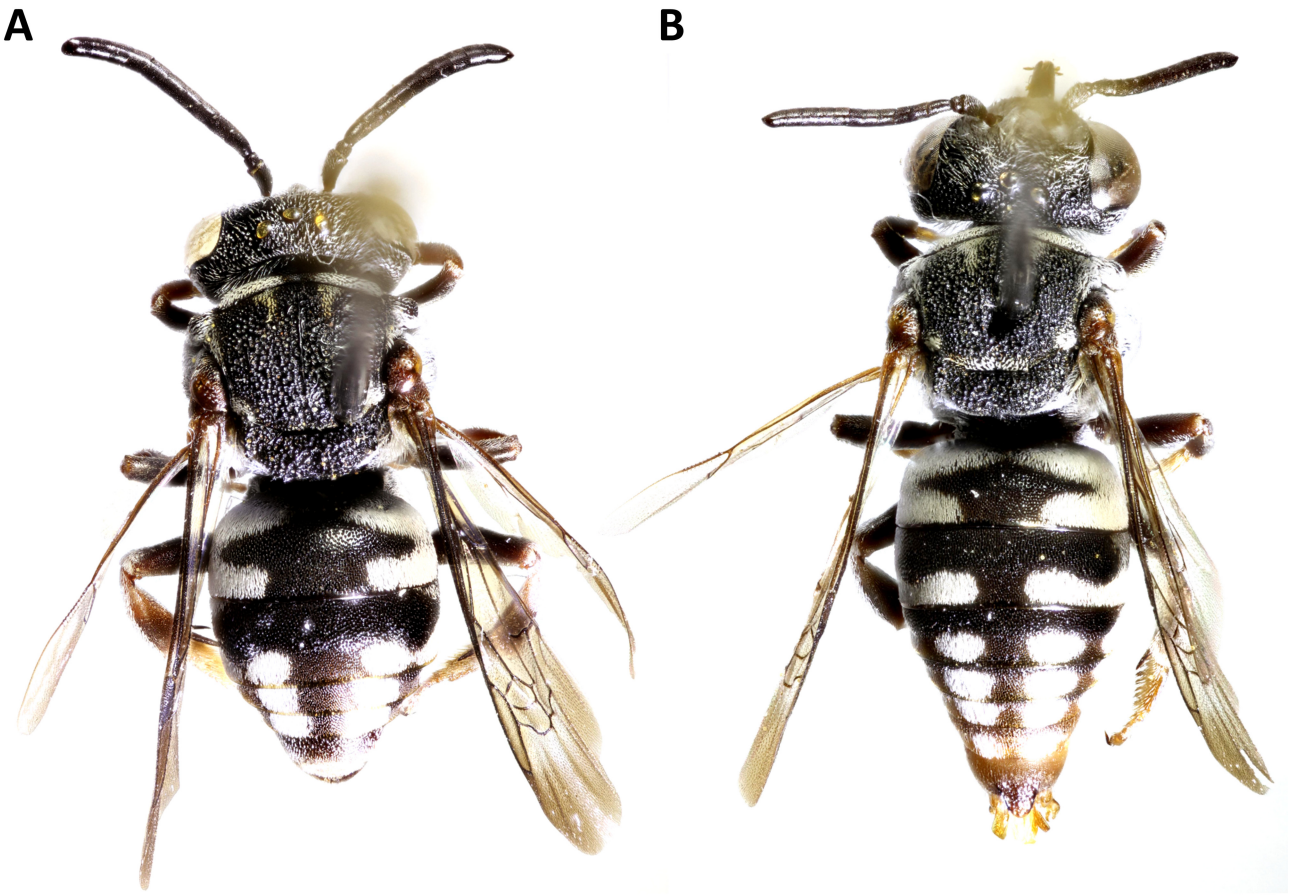

FIGURE 8. A. *Epeolus ibericus* Bogusch, 2018 female, habitus in dorsal view. The species was recently described by Bogusch in Bogusch & Hadrava (2018). In Europe, it is found in Portugal and Spain. **B.** *E. ibericus* male, habitus in dorsal view. Pictures by Petr Bogusch.

Taxonomic acts and clarifications

***Epeolus julliani* Pérez, 1884**
(Figs 9A, B)

This taxon was recently synonymised with *Epeolus transitorius* Eversmann, 1852 by Bogusch & Hadrava (2018). However, it is now recognized as a distinct species (Le Divelec 2021b; Astafurova & Proshchalykin 2022). Both *Epeolus julliani* and *E. transitorius* occur in Europe.

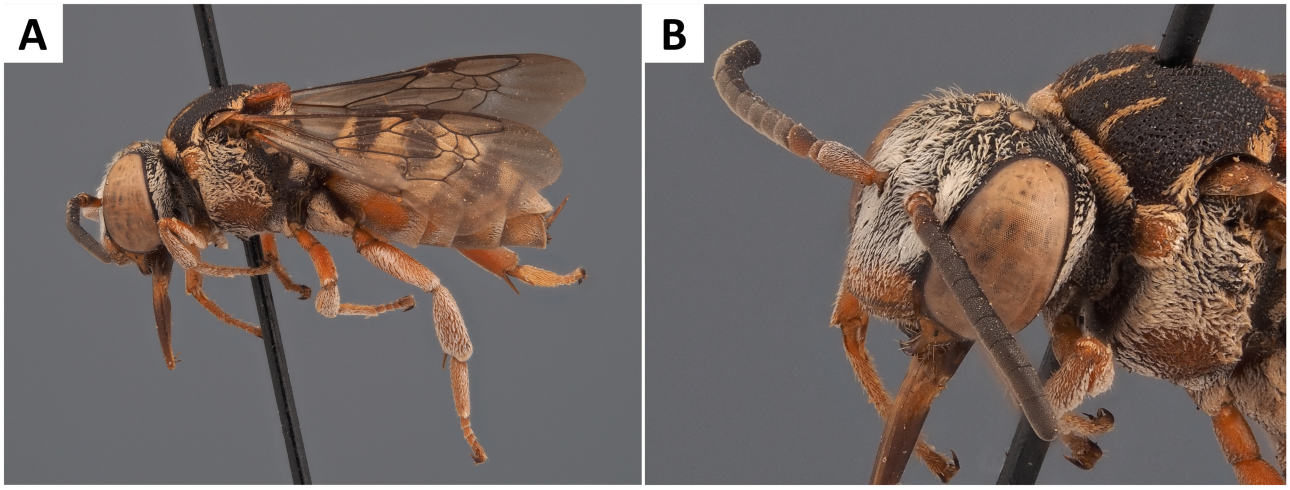

FIGURE 9. A. *Epeolus julliani* Pérez, 1884 female, habitus in lateral view. The taxon had been synonymised with *Epeolus transitorius* Eversmann, 1852 by Bogusch & Hadrava (2018) but is now recognized as a distinct species based on the work of Le Divelec (2021b). **B.** *E. julliani* female, head in oblique view. Pictures by Paolo Rosa.

Epeolus minutus Radoszkowski, 1888

This name is here considered to be a ***nomen dubium*** as no type specimens are preserved, and no further specimens have been attributed to this species (Bogusch & Hadrava 2018).

Species recorded in Europe after 2017

Epeolus bischoffi (Mavromoustakis, 1954)

Distribution. First recorded for Europe by Bogusch & Hadrava (2018) from Cyprus. Outside Europe known from Turkey, Syria, Lebanon, Israel and Jordan.

Tribe Eucerini Latreille, 1802

Species recently described as new to science

Eucera (*Eucera*) *dafnii* Dorchin, 2019

Eucera (*Eucera*) *dafnii* Dorchin, 2019: 465. Holotype ♂; Israel: Tel Yizhaq south NR (SMNH).

Distribution. Bulgaria, Greece, North Macedonia. Outside Europe known from Iran, Israel, Palestine, Syria and Turkey (Dorchin 2019).

Tetralonia gennargentui (Nobile, Catania & Bella, 2021)

Eucera (*Tetralonia*) *gennargentui* Nobile, Catania & Bella in Catania *et al*. 2021: 5. Holotype ♀; Italy: Sardinia, Nuoro, Fonni, Gennargentu Massif, Bruncu Spina (UCSI).

Distribution. Italy (Sardinia).

Published synonymies

***Eucera* (*Synhalonia*) *alternans* (Brullé, 1832)**

Eucera rufa (Lepeletier, 1841), which is the junior synonym, is retained by Dorchin (2023) as the valid name for this species under the principle of name stability.

***Eucera* (*Synhalonia*) *cressa* (Tkalců, 1984)**

Synonymised with *Eucera tricincta* Erichson, 1835, which is the senior synonym according to Kuhlmann *et al.* (2022).

***Eucera* (*Eucera*) *decolorata* Gribodo, 1924**

Synonymised with *Eucera confinis* Pérez, 1895, which is the senior synonym according to Dorchin (2023).

***Eucera* (*Eucera*) *eucnemidea* Dours, 1873**

Synonymised with *Eucera grisea* Fabricius, 1793, which is the senior synonym according to Dorchin (2023).

***Eucera* (*Synhalonia*) *fedtschenkoi* Dalla Torre, 1896**

Synonymised with *Eucera intermedia* (Morawitz, 1875), which is the original name (nec *Melissodes intermedia* Cresson, 1872 (= *Eucera belfragei* (Cresson 1872), synonymy in: Ascher & Pickering (2022)), listed as *Eucera* in Dalla Torre (1896)).

***Eucera* (*Eucera*) *graeca* Radoszkowski, 1876**

Synonymised with *Eucera proxima* Morawitz, 1875, which is the senior synonym according to Dorchin (2023).

***Eucera* (*Eucera*) *hispaliensis* Pérez, 1902**

Synonymised with *Eucera longicornis* (Linnaeus, 1758), which is the senior synonym according to Dorchin (2023).

***Eucera* (*Synhalonia*) *lucasi* Gribodo, 1893**

Synonymised with *Eucera obscura* (Brullé, 1832) (= *Macrocera obscura* Brullé, 1832), which is the senior synonym according to Dorchin (2023).

***Eucera* (*Eucera*) *maxima* Tkalců, 1987**

Synonymised with *Eucera taurea* Vachal, 1907, which is the senior synonym according to Dorchin (2023).

***Eucera* (*Eucera*) *obsoleta* Pérez, 1910**

Synonymised with *Eucera terminata* Pérez, 1895, which is the senior synonym according to Dorchin (2023).

***Eucera* (*Synhalonia*) *radoszkovskyi* (Morawitz, 1872)**

Synonymised with *Eucera alborufa* (Radoszkowski, 1871), which is the senior synonym according to Augul (2018).

***Eucera* (*Synhalonia*) *zeta* Dalla Torre, 1896**

Synonymised with *Eucera melectoides* (Radoszkowski, 1893), which is the senior synonym [= *Macrocera melectoides* Radoszkowski, 1893, nec *Tetralonia melectoides* Smith, 1879 = *Florilegus melectoides* (Smith, 1879)].

Taxonomic changes

Based on Dorchin (2023) and Freitas *et al*. (in press), the following name changes are proposed in Dorchin (2023): *Tetralonia* Spinola, 1838 is re-established as genus, including *Tetraloniella* Ashmead, 1899 (Dorchin *et al*. 2018), *Cubitalia* Friese, 1911 is established as subgenus of *Eucera* Scopoli, 1770 and *Synhalonia* Patton, 1879 is retained as subgenus of *Eucera* as in Michener (2000). Therefore, the following 19 combinations established for species previously included in the genus *Tetraloniella* Ashmead, 1899 (Nieto *et al*. 2014) are now transferred to the genus *Tetralonia* Spinola, 1839.

Tetralonia alticincta (Lepeletier, 1841), *T. cinctella* (Saunders, 1908), *T. dentata* (Germar, 1839), *T. fulvescens* Giraud, 1863, *T. glauca* (Fabricius, 1775), *T. graja* (Eversmann, 1852), *T. hohmanni* Tkalců, 1993, *T. iberica* Dusmet y Alonso, 1926, *T. inulae* Tkalců, 1979, *T. julliani* (Pérez, 1879), *T. lanzarotensis* Tkalců, 1993, *T. lyncea* Mocsáry, 1879, *T. nana* Morawitz, 1873, *T. pollinosa* (Lepeletier, 1841), *T. ruficornis* (Fabricius, 1804), *T. salicariae* (Lepeletier, 1841), *T. scabiosae* Mocsáry, 1881, *T. strigata* (Lepeletier, 1841), and *T. vicina* Morawitz, 1875.

***Eucera* (*Eucera*) *pollinosa* Smith, 1854**

This species was previously referred to as *Eucera chrysopyga* Pérez, 1879 (Nieto *et al*. 2014), as when *Eucera* and *Tetralonia* were treated as a single genus *Eucera pollinosa* Smith became a junior homonym of *Eucera pollinosa* Lepeletier, 1841. Now that *Tetralonia* is restored as a genus, *Eucera pollinosa* Lepeletier is moved to *Tetralonia*, and *Eucera pollinosa* Smith is no longer a junior homonym and becomes the senior synonym of *Eucera chrysopyga* Pérez. *Eucera pollinosa* Smith was made a *nomen protectum* by Dorchin (2023).

***Eucera* (*Eucera*) *palaestinae* Friese, 1922**

This taxon, originally proposed in the combination *Eucera notata* var. *palaestinae* Friese, 1922, was previously misspelt as *Eucera palestinae* Friese, 1922.

***Eucera* (*Synhalonia*) *ruficollis* (Brullé, 1832)**

This name was resurrected from synonymy with *Eucera alternans* (Brullé, 1832) after nearly 200 years (Dorchin 2023), the latter which itself was incorrectly interpreted (see above).

Species recorded in Europe after 2017

***Eucera* (*Eucera*) *aequata* Vachal, 1907**
(Fig. 10)

Distribution. First recorded for Europe by Dorchin (2019) from Cyprus (Akrotiri and Limassol). Outside Europe known from Turkey, Syria, Israel and Palestine (Dorchin 2019).

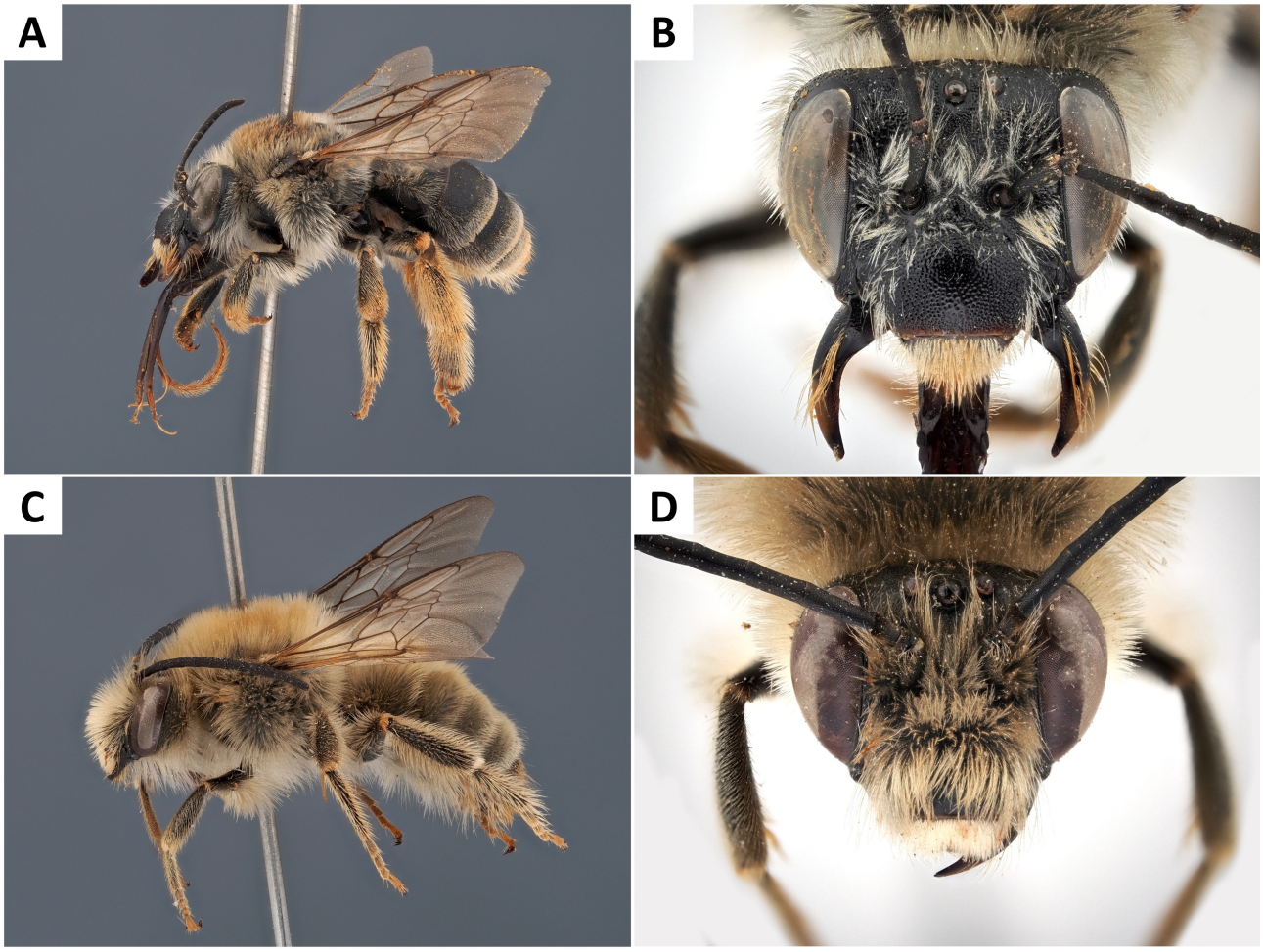

FIGURE 10. A. *Eucera aequata* Vachal, 1907 female, habitus in lateral view. The species was newly recorded for Europe (in Cyprus) by Dorchin *et al.* (2019). **B.** *E. aequata* female, frontal view of the head. **C.** *Eucera aequata* male, habitus in lateral view. **D.** *E. aequata* male, frontal view of the head. Pictures by Paolo Rosa.

***Eucera* (*Cubitalia*) *breviceps* Friese, 1911**

Distribution. Listed as *Eucera* aff. *breviceps* Friese, 1911 in the key to Eucerini species of France in Aubert (2020). Reported from northern Italy and south-eastern France by M. Aubert (pers. comm.). Outside Europe known from Turkey, Syria, Georgia.

***Eucera* (*Eucera*) *ferghanica* Morawitz, 1875**

Distribution. Recorded for the European part of Russia (south of European part; Levchenko *et al.* 2017). Outside Europe known from Iran and Uzbekistan.

***Eucera* (*Eucera*) *punctatissima* Pérez, 1895**

This name was incorrectly interpreted as synonymous with the unrelated species *Eucera impressiventris* Pérez, 1895 from north-western Africa (Dorchin 2023). It was recently found in southern Portugal by Thomas Wood (reported as *E. decolorata* by Baldock *et al*. 2018).

***Eucera* (*Cubitalia*) *tristis* Morawitz, 1875**

Distribution. *Eucera tristis* Morawitz, 1875 as *Cubitalia tristis* was recorded from Crimea (Levchenko *et al*. 2017). Outside Europe it is known from Russia (Dagestan), Georgia and Turkey.

Species overlooked in the previous European checklists

***Eucera* (*Eucera*) *atriceps* Morawitz, 1877**

The taxonomic status of *Eucera atriceps* is unclear. Further work is needed to evaluate its relationships with *E. nigripes* Morawitz.

Distribution. *Eucera atriceps* Morawitz, 1877 was recorded from Crimea (Friese 1896; Sitdikov & Pesenko 1988; Levchenko *et al*. 2017). Outside Europe it is known from Armenia and Kazakhstan.

Species to be excluded from the European checklist

***Eucera commixta* Dalla Torre & Friese, 1895**

Eucera commixta Dalla Torre & Friese (*nomen novum* proposed for *Tetralonia nigrifacies* Dours, 1873 nec *Eucera nigrifacies* Lepeletier, 1841), listed as such by Nieto *et al*. (2014), was originally described from Algeria and south France. The type series is considered to be lost and specimens described from France are likely not conspecific (Dorchin, 2023).

Distribution. This taxon occurs in Algeria and other reported localities are doubtful due to uncertain identification and confusion with similar species.

***Eucera* (*Synhalonia*) *distinguenda* (Morawitz, 1875)**

Distribution. The data records from Romania (Iuga 1958) are doubtful as the species is only known from dry environments from central Asia.

***Eucera* (*Eucera*) *nigripes* Klug, 1845**

Listed from Greece in https://westpalbees.myspecies.info and from Italy in www.discoverlife.it, but according to S. Risch (pers. comm.) it does not occur there.

Distribution. Turkey, Azerbaijan, Lebanon, Israel and Palestine.

***Eucera* (*Eucera*) *sogdiana* Morawitz, 1875**

Distribution. No verified occurrence data of this species in Europe. The nearest record is from central Anatolia.

Eucera (*Synhalonia*) *spectabilis* (Morawitz, 1875)

Available records from Europe are probably erroneous.

Distribution. Turkey, Georgia, Uzbekistan, Kazakhstan, Kyrgyzstan, Iran, Pakistan.

Tribe Nomadini Latreille, 1802

Species recently described as new to science

Nomada achaica Schwarz & Smit, 2020

Nomada achaica Schwarz & Smit, 2020: 684. Holotype ♀; Greece: Peloponnese, Chelmos Mt., Piste W Avgo, ± 1900 m, 4.vi.2008, leg. A.W. Ebmer (MSPC).

Distribution. Greece (Peloponnese).

Nomada acutispina Schwarz & Smit, 2018

Nomada acutispina Schwarz & Smit in Smit, 2018: 106. Holotype ♀; Turkey: Antalya, 4.vi.1985, leg. M. Schwarz (MSPC).

Distribution. Greece (Crete). Outside Europe known from Turkey and Israel (Smit 2018).

Nomada aeginaica Schwarz & Smit, 2018

Nomada aeginaica Schwarz & Smit in Smit, 2018: 108. Holotype ♀; Greece: Peloponnese, Chelmos Mt., 1900 m, 2.vi.1962, leg. M. Schwarz (MSPC).

Distribution. Greece (Peloponnese). Outside Europe known from Armenia and Turkey (Smit 2018).

Nomada breviceps Schwarz, Smit & Ockermüller, 2019

Nomada breviceps Schwarz, Smit & Ockermüller in Schwarz *et al.*, 2019: 6. Holotype ♀; Graecia: Peloponnese, Trikala, 17.iv.1963, leg. Kl. Warncke (MSPC).

Distribution. Greece (Peloponnese). Outside Europe known from Turkey (Schwarz *et al.* 2019).

Nomada breviscapa Schwarz & Smit, 2018

Nomada breviscapa Schwarz & Smit in Smit, 2018: 122. Holotype ♂; Greece: Samos, Kerkis SE-Anstieg, 1200 m, 20.iv.1999, leg. A.W. Ebmer (MSPC).

Distribution. Greece (Samos) (Smit 2018).

Nomada crenulata Schwarz & Smit, 2018

Nomada crenulata Schwarz & Smit in Smit, 2018: 132. Holotype ♀; Turkey: Konya, 27.v.1965, leg. M. Schwarz (MSPC).

Distribution. Greece (Alexandropolis) (Smit 2018) and Limnos (leg. Devalez 2012). Outside Europe known from Azerbaijan and Turkey.

Nomada ebmeri Schwarz & Smit, 2018

Nomada ebmeri Schwarz & Smit in Smit, 2018: 140. Holotype ♂; Greece: Phocis, Delphi, 12.iv.1963, leg, W. Grünwaldt (MSPC).

Distribution. Greece. Outside Europe known from Turkey and Syria (Smit 2018).

Nomada elsei Schwarz & Smit, 2018

Nomada elsei Schwarz & Smit in Smit, 2018: 142. Holotype ♀; Spain: Andalusia, Vélez Blanco, 3.vi.72, leg. W. Gross (MSPC).

Distribution. Spain.

Nomada filicornis Schwarz & Smit, 2018

Nomada filicornis Schwarz & Smit in Smit, 2018: 149. Holotype ♀; Turkey: Antalya, 7.vi.1965, leg. M. Schwarz (MSPC).

Distribution. Italy (Sicily), Greece (Crete), Cyprus. Outside Europe known from Turkey, Syria and Jordan (Smit 2018).

Nomada gageae Schwarz & Smit, 2018

Nomada gageae Schwarz & Smit in Smit, 2018: 158. Holotype ♀; Cyprus: Limassol, 25.i.1948, leg. Mavromoustakis (MSPC).

Distribution. Cyprus.

Nomada halophila Wood, 2022

Nomada halophila Wood, 2022: 5. Holotype ♀; Spain: Andalusia, Málaga, Campillos, Laguna Dulce, 4.vi.2021, leg. T. J. Wood (OÖLM).

Distribution. Spain.

Nomada lapillula Schwarz & Smit, 2018

Nomada lapillula Schwarz & Smit in Smit, 2018: 174. Holotype ♂; Greece: Thessaly, Larissa, 15.v.1962, leg. Kl. Warncke (MSPC).

Distribution. Greece. Outside Europe known from Turkey and Israel (Smit 2018).

Nomada legoffi Dufrêne, 2021

Nomada legoffi Dufrêne, 2021: 438. Holotype ♀; France: Corsica, Saint-Julien valley, east of Bonifacio, 50 m, 7.x.1900, C. Ferton (MNHN).

Distribution. France (Corsica).

Nomada luteipes Schwarz & Smit, 2018

Nomada luteipes Schwarz & Smit in Smit, 2018: 181. Holotype ♀; Turkey: Hakkari, Tanin-Pass, 2300–2600 m, 3.vi.1980, leg. M. Schwarz (MSPC).

Distribution. Bulgaria and Greece (Crete). Outside Europe known from Turkey and Iran (Smit 2018).

Nomada maxschwarzi Smit, 2018

Nomada maxschwarzi Smit, 2018: 185. Holotype ♀; Greece: Lesvos, Agiassos, 600–700 m, 5.vi.1992, leg. J.P. Duffels (RMNH).

Distribution. Greece (Lesvos).

Nomada montarco Álvarez Fidalgo, 2023

Nomada montarco Álvarez Fidalgo, 2023: 9. Holotype ♀; Spain: Montarco, 15.vi.1924, leg. P. Álvarez Fidalgo (MNCN).

Distribution. Spain (Montarco).

Nomada nigrifrons Schwarz & Smit, 2018

Nomada nigrifrons Schwarz & Smit in Smit, 2018: 193. Holotype ♀; Turkey: Hakkari, Suvari-Halil-Pass, 2500 m, 2.vi.1980, leg. M. Schwarz (MSPC).

Distribution. Greece (Lesvos) (Smit 2018). Outside Europe known from Turkey and Israel.

Nomada nigrilabris Schwarz & Smit, 2018

Nomada nigrilabris Schwarz & Smit in Smit, 2018: 194. Holotype ♀; Turkey: Mersin, Namrun, 14.v.1967, leg. F. Resse (MSPC).

Distribution. Greece. Outside Europe known from Turkey and Israel (Smit 2018).

Nomada opaciformis Schwarz & Smit, 2018

Nomada opaciformis Schwarz & Smit in Smit, 2018: 200. Holotype ♀; Turkey: Tuncell, 13.vi.1973, leg. Kl. Warncke (MSPC).

Distribution. Greece (Rhodes). Outside Europe known from Turkey and Israel (Smit 2018).

Nomada ottomanensis Schwarz & Smit, 2018

Nomada ottomanensis Schwarz & Smit in Smit, 2018: 203. Holotype ♀; Turkey: Mersin, Namrun, 10.v.–3.vi.1963, leg. F. Schubert (MSPC).

Distribution. Greece (Lesvos, Rhodes). Outside Europe known from Turkey and Israel (Smit 2018).

Nomada pilosa Schwarz & Gusenleitner, 2017

Nomada pilosa Schwarz & Gusenleitner, 2017: 980. Holotype ♀; Turkey: Konya, 5.vi.1967, leg. J. Gusenleitner (MSPC)

Distribution. Ukraine, Crimea and southern Russia. Outside Europe known from Turkey and Iran (Smit 2018).

Nomada pyrgosica Schwarz & Smit, 2018

Nomada pyrgosica Schwarz & Smit in Smit, 2018: 214. Holotype ♀; Cyprus: Gazimagusa Dipkarpaz, Kiles point, 29.iii.2012, leg. Schwenninger (MSPC).

Distribution. Cyprus. Outside Europe known from Turkey (Smit 2018).

Nomada simulatrix Schwarz & Smit, 2018

Nomada simulatrix Schwarz & Smit in Smit, 2018: 227. Holotype ♀; Greece: Phocis, Delphi, 8.iv.1963, leg, W. Grünwaldt (MSPC).

Distribution. Greece.

Nomada smiti Schwarz, 2018

Nomada smiti Schwarz in Smit, 2018: 229. Holotype ♀; Spain: Madrid, Casa de Campo, 4.v.1965, leg. V. Llorente (MSPC).

Distribution. Spain.

Nomada tarsalis Schwarz & Smit, 2018

Nomada tarsalis Schwarz & Smit in Smit, 2018: 235. Holotype ♀; Israel: Elom, 27.iii.1946, leg. Bytinski-Salz (MSPC).

Distribution. Bulgaria, East Aegean Islands. Outside Europe known from Turkey, Israel and Iran (Smit 2018).

Nomada teunisseni Schwarz & Smit, 2018

Nomada teunisseni Schwarz & Smit in Smit, 2018: 237. Holotype ♂; Cyprus: Akanthou, 12.iii.1981, leg. H. Teunissen (MSPC).

Distribution. Cyprus.

Nomada tuberculifera Schwarz & Smit, 2018

Nomada tuberculifera Schwarz & Smit in Smit, 2018: 241. Holotype ♀; Greece: Crete, Sitia, 18.v.1963, leg. M. Schwarz (MSPC).

Distribution. Greece (Peloponnese, Crete). Outside Europe known from Turkey.

Nomada unica Schwarz & Smit, 2018

Nomada unica Schwarz & Smit in Smit, 2018: 243. Holotype ♀; Turkey: Konya, 5.viii.1987, leg. J. Gusenleitner (MSPC).

Distribution. Greece. Outside Europe known from Turkey and Israel (Smit 2018).

Nomada warnckei Schwarz & Smit, 2018

Nomada warnckei Schwarz & Smit in Smit, 2018: 247. Holotype ♀; Turkey: Hakkari, Suvari–Halil–Pass, 2500 m, 2.vi.1980, leg. M. Schwarz (MSPC).

Distribution. Greece (Lesvos). Outside Europe known from Turkey (Smit 2018).

Nomada yermasoyiae Schwarz, Smit & Gusenleitner 2018

Nomada yermasoyiae Schwarz, Smit & Gusenleitner, 2018: 1422. Holotype ♀; Cyprus: Cherkes, 23.iii.1950, leg. Mavromoustakis (MSPC).

Distribution. Cyprus. Outside Europe known from Israel (Smit 2018).

Published synonymies

Nomada ferghanica Morawitz, 1875

Synonymised with *Nomada numida* Lepeletier, 1841, which is the senior synonym according to Smit (2018).

Nomada lagrecai Nobile, 1990

Synonymised with *Nomada hungarica* Dalla Torre & Friese, 1894, which is the senior synonym according to Smit (2018).

Nomada longipalpis Schwarz & Smit, 2020

Described as a new species in Schwarz & Smit. (2020), then synonymised with *Nomada kriesteni* Schwarz & Gusenleitner, 2013, which is the senior synonym according to Schwarz & Smit (2021).

Nomada obscuriceps Schwarz & Levchenko, 2017

Synonymised with *Nomada mitaii* Proshchalykin, 2010, which is the senior synonym according to Proshchalykin *et al.* (2019).

Nomada transitoria Schmiedeknecht, 1882

Synonymised with *Nomada corcyraea* Schmiedeknecht, 1882, which is the senior synonym according to Schwarz & Gusenleitner (2015).

Taxonomic acts and clarifications

Nomada cypriaca (in Schwarz, 1999)

Incorrect subsequent spelling of *Nomada cypria* Mavromoustakis, 1952 and *N. cypricola* Mavromoustakis, 1957 (Schwarz 1999).

Nomada glabella Thomson, 1870

More cryptic species are being found in the *Nomada panzeri* group, and future changes are expected based on ongoing studies. The name *Nomada glabella* sensu Stöckert (1954) does not match the lectotype (Falk *et al.* 2022) and additional work is needed on this species complex. For now *Nomada glabella* is considered as a ***species inquirenda*** and therefore not included in the European checklist.

Nomada jaramense Dusmet y Alonso, 1913

Incorrect subsequent spelling of *Nomada jaramensis* Dusmet y Alonso, 1913.

Nomada minuscula Noskiewicz, 1930

For some authors and in Nieto *et al.* (2014), *Nomada minuscula* is a subspecies of *Nomada sheppardana* (Kirby, 1802) (Smit 2018). Here we follow the opinion Scheuchl (2000) and Scheuchl & Willner (2016) and consider both taxa as heterospecific. Both are therefore listed in the present checklist.

Distribution. Portugal, Spain, France, Germany, Switzerland (extinct), Austria, Italy (mainland, Sicily), Slovenia, Czech Republic, Greece, Serbia, Hungary, Poland, Ukraine and European part of Russia (Smit 2018; Baldock *et al.* 2018). Outside Europe known from Morocco, Algeria, Tunisia.

Nomada rufa Rossi, 1790

Species originally described from Italy by Rossi (1790). It was considered as a valid species by Balzan *et al.* (2016). We here consider the name *Nomada rufa* a ***nomen dubium***; while it likely has priority on other names currently in use, it cannot be correctly attributed to any taxon as the type series is lost and the original description is ambiguous. Material under this name should be revised, and the taxon is for now excluded from the European checklist.

Nomada siciliensis Dalla Torre & Friese, 1894

The status of this taxon is uncertain. The description of this species was based on a single male collected in Sicily (Santa Ninfa, Trapani province) (Dalla Torre & Friese 1894). The holotype was destroyed, and no other specimen of this taxon is known (Smit 2018; M. Schwarz, pers. comm.). The name was considered a *nomen dubium* by Smit (2018) and is therefore not considered in the present checklist.

Nomada subcornuta (Kirby, 1802)

A recent genetic study suggests that it is a distinct species from *Nomada fulvicornis* Fabricius, 1793 (Falk *et al*. 2017). Both species are therefore considered as valid and are included in the present checklist.

Distribution. United Kingdom, Belgium, Netherlands, Germany, Czech Republic, Hungary, Estonia, Finland, Sweden, Norway, Russia.

***Nomada tormentillae* Alfken, 1901**

Nomada tormentillae Alfken, 1901 is treated as a valid species by some authors (Scheuchl & Willner 2016) and as a subspecies or form of *N. roberjeotiana* Panzer, 1799 by others (Amiet *et al*. 2007; Smit 2018; M. Schwarz, pers. comm.). DNA barcode analyses suggest that the two taxa are genetically very close, but distinct, supporting their treatment as two species (Schmidt *et al*. 2015). Awaiting future revisions, we consider both species as valid, and both are included in the present checklist.

Species recorded in Europe after 2017

***Nomada collarae* Schwarz, 1964**

Distribution. First recorded for Europe by Smit (2018) from Greece, North Macedonia, Bulgaria and Croatia. Outside Europe known from Turkey and Iraq.

***Nomada ecarinata* Morawitz, 1888**

Distribution. First recorded from the central European part of Russia (Levchenko *et al.* 2017). Also present in Ukraine. Outside Europe known from Mongolia, China and Japan.

***Nomada guichardi* Schwarz, 1981**

Distribution. First recorded for Europe by Smit (2018) from Greece. Outside Europe known from Turkey and Iraq.

***Nomada lutea* Eversmann, 1852**

Distribution. First recorded for Europe by Levchenko *et al.* (2017) from Crimea. Outside Europe known from Russia and Kazakhstan.

***Nomada mitaii* Proshchalykin, 2010**

Distribution. First recorded for European part of Russia (Udmurtia) by Levchenko *et al*. (2017, under the name *Nomada obscuriceps* Schwarz & Levchenko, 2017, later synonymised by Proshchalykin *et al.* 2019). Also present in Ukraine and Crimea. Outside Europe known from Russia (Eastern Siberia, Far East), Mongolia.

***Nomada oralis* Schwarz, 1981**

Distribution. First recorded for Europe by Smit (2018) from Greece (Rhodes). Outside Europe known from Turkey (Schwarz, 1981).

***Nomada piliventris* Morawitz, 1877**

Distribution. First recorded for Europe by Smit (2018) from Greece. Outside Europe known from Turkey.

***Nomada yarrowi* Schwarz, 1981**

Distribution. First recorded for the European part of Russia by Levchenko *et al.* (2017). Outside Europe known from Turkey.

Species overlooked in the previous European checklists

***Nomada dubia* Eversmann, 1852**

Distribution. Described from European part of Russia (Orenburg Prov.: Spasskoe) (Proshchalykin *et al*. 2019). Outside Europe known from Western Asia.

***Nomada rubricosa* Eversmann, 1852**

Distribution. Described from European part of Russia (Orenburg Prov.: Spasskoe) (Proshchalykin *et al*. 2019). Outside Europe known from Kazakhstan.

New species for Europe

***Nomada nigrospina* Schwarz & Smit, 2018**

Nomada nigrospina Schwarz & Smit, 2018: 892. Holotype ♀; Turkey: Kayseri, Pinarbasi, 12.vi.1973, leg. K. Warncke (MSPC).

Distribution. New record (!) GREECE: Platanos, Keutriki, Lakonia, Taygetos, Sparti (unpublished data from J. Smit). Outside Europe known from Turkey.

Species to be excluded from the European checklist

***Nomada perezi* Dusmet y Alonso, 1913**

The status of this species is uncertain, therefore this species is not included in the present checklist (Alexander & Schwarz 1994).

Family COLLETIDAE Lepeletier, 1841

Tribe Colletini Lepeletier, 1841

Species recently described as new to science

***Colletes jansmiti* Kuhlmann, 2018**

Colletes jansmiti Kuhlmann in Kuhlmann & Smit (2018): 1250. Holotype ♀; Spain, Andalusia, Ronda la Vieja (ZMKU).

Distribution. Spain.

Species recorded in Europe after 2017

***Colletes anceps* Radoszkowski, 1891**

Distribution. European part of Russia (Proshchalykin & Kuhlmann, 2020). Outside Europe known from Russia, Iran, Kazakhstan, Turkmenistan, Uzbekistan, Pakistan, Tajikistan, Kyrgyzstan and China [Xinjiang].

***Colletes conradti* Noskiewicz, 1936**

Distribution. South of the European part of Russia (Astrakhan Prov.) (Proshchalykin & Kuhlmann 2020). Outside Europe known from Uzbekistan, Kyrgyzstan, Tajikistan, Kazakhstan, China (Qinghai, Xinjiang).

Species overlooked in the previous European checklists

***Colletes kozlovi* Friese, 1913**

Distribution. European part of Russia (Astrakhan Prov., Buryatia Rep.) (Kuhlmann & Proshchalykin 2014). Outside Europe known from Dagestan, Siberia, Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan, Tajikistan, Mongolia, China (Inner Mongolia, Qinghai, Gansu, Ningxia, Xinjiang).

***Colletes subnitens* Noskiewicz, 1936**

Distribution. European part of Russia (Kalmykia Rep.) (Kuhlmann & Proshchalykin 2014). Outside Europe known from Kazakhstan and Iran.

***Colletes wacki* Kuhlmann, 2002**

Distribution. European part of Russia (Astrakhan Prov.) (Kuhlmann & Proshchalykin 2014). Outside Europe known from Siberia and Mongolia.

Tribe Hylaeini Viereck, 1916

Published synonymies

***Hylaeus* (*Prosopis*) *praenotatus* Förster, 1871**

This species was reinstated as a European species by Ortiz-Sánchez *et al.* (2002). The main diagnostic trait that they mention is the red colour of the first tergum (e.g. Ortiz-Sánchez *et al.* 2003). The type of *H. praenotatus* is a black specimen of *H. gibbus* Saunders, 1850 (Le Divelec 2022). The records of *H. praenotatus* sensu Ortiz-Sánchez *et al.* (2003) might refer to any of three European species of the *gibbus* species-group that can exhibit black to reddish gaster: *H. gibbus*, *H. incongruus* Förster, 1871 and *H. purpurissatus* (Vachal, 1895). We do not include *H. praenotatus* in the present checklist. Barcoded specimens of this taxon reported from Portugal by Baldock *et al.* (2018) genetically match *H. incongruus* (T.J. Wood, unpublished data).

***Hylaeus* (*Prosopis*) *stigmorhinus* (Pérez, 1895)**

The history of this taxon is rather complex. Depending on the authors, it has been treated as a distinct species (e.g. Nadig & Nadig 1933; Benoist 1959; Leclercq 1964), a synonym either of *H. pictus* (Smith, 1853) (Straka &

Bogusch 2011) or *H. praenotatus* (Ortiz-Saìnchez *et al.* 2002; Ornosa & Ortiz-Saìnchez 2004). Examination of the types reveals it is a junior synonym of *Hylaeus purpurissatus* (Vachal, 1895) (Le Divelec 2022).

Taxonomic acts and clarifications

Hylaeus (*Dentigera*) *biarmicus* (Warncke, 1992)

Hylaeus biarmicus was removed from the Spanish list because of the many doubts regarding the record of Warncke (Ortiz-Saìnchez *et al.* 2002; Ortiz-Saìnchez 2011). However, in a recent publication by Dathe (2022), this species is redescribed, its presence is confirmed in Spain and its status as a valid species is confirmed.

Hylaeus (*Spatulariella*) *decipiens* Förster, 1871

This species was overlooked in the previous European checklists. Erlandsson (1987) restored the specific status of *Hylaeus decipiens* that was previously considered to be a synonym of *H. hyalinatus* Smith, 1842 (Dathe 1980). The examination of the holotype (Germany, Götting, ♂, Giraud collection, MNHN) however reveals that *H. decipiens* is a distinct species from *H. hyalinatus* Smith, 1842, as Erlandsson (1987) suggested (Le Divelec 2021a). On the other hand, Erlandsson (1987) did not take into account the numerous subspecies within *Spatulariella* described by Pittioni (1950) and Warncke (1981) of which the taxonomic status is still unclear. In addition, Erlandsson (1987) placed great emphasis on coloration, whereas this character is unreliable and highly variable in this group. The published diagnoses for this taxon are therefore unreliable, the association of sexes has to be confirmed and the distribution to be reviewed. It should be noted that the species was described by Förster (1871) based on material collected by J. Giraud from Götting, whereas Giraud in his catalogue (https://science.mnhn.fr/catalogue/ey-bib-giraud2/page/234) wrote that his specimens of *H. decipiens* were collected on the French Alps. Awaiting a taxonomic revision of the subgenus, we consider *H. decipiens* as a valid species and include it in the present checklist.

Hylaeus (*Spatulariella*) *hyalinatus milossus* (Warncke, 1981)

This taxon is known only by its original description in which it was described as a subspecies of *Hylaeus hyalinatus*. It was raised to species level on the portal Westpalbees by Kuhlmann *et al.* (2022), without justification. This taxon is probably a junior synonym, most likely of *H. longimacula* (Alfken, 1936). Awaiting for a revision of the *Spatulariella* subgenus, we leave it as an unclear subspecies of *H. hyalinatus*.

Hylaeus (*Hylaeus*) *moricei* (Friese, 1898)

Warncke (1972, 1986, 1992a) considered the name *Hylaeus nigrifacies* Bramson, 1879 to have priority over *H. moricei* and designated a neotype of *H. nigrifacies* to fix the nomenclature (Warncke 1986). Although a lectotype is not currently designated, the name *H. moricei* has been used more frequently than *H. nigrifacies* in recent years. We here follow Warncke's interpretation and consider *H. moricei sensu auctorum* as *H. nigrifacies* Bramson, 1879. This species includes three subspecies that require further investigation: the nominate subspecies which is distributed from eastern Germany to Iran, *H. n. moricei* in Israel and Egypt, and *H. n. rhenana* (Warncke, 1986) distributed from Spain to western Germany (Warncke 1992a). According to Schmidt *et al*. (2015), European *COI* sequences are assigned to two significantly divergent BINs (Barcode Index Numbers). Whether these two BINs correspond to distinct subspecies remains to be investigated. We only retain *Hylaeus nigrifacies* in the present checklist, awaiting further revision.

Hylaeus (*Dentigera*) *pallidicornis* Morawitz, 1876
(Figs 11A, B)

The European records of *Hylaeus breviceps* Morawitz, 1876 in Dathe (1980) refer to *Hylaeus* (*Dentigera*) *pallidicornis* (Dathe & Proshchalykin 2017).

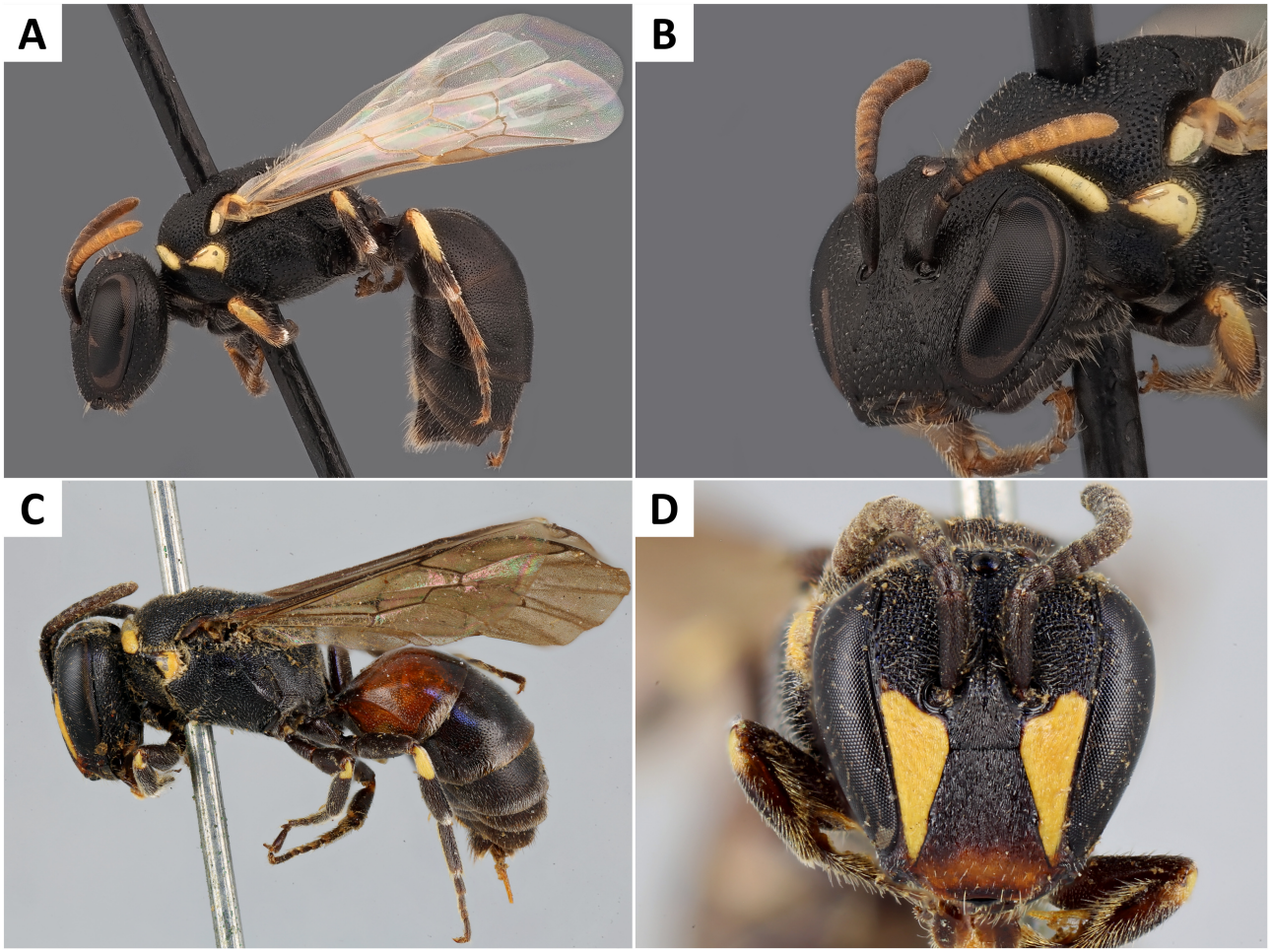

FIGURE 11. A. *Hylaeus pallidicornis* Morawitz, 1876 female, habitus in lateral view. The European records of *Hylaeus breviceps* Morawitz, 1876 in Dathe (1980) refer to this species (Dathe & Proshchalykin 2017). **B.** *H. pallidicornis* female, head in frontal view. **C.** *Hylaeus purpurissatus* (Vachal, 1895) female, habitus in lateral view. Examination of type series by Le Divelec (2022) revealed that *H. purpurissatus* is the senior synonym of *Hylaeus stigmorhinus* (Pérez, 1895). **D.** *H. purpurissatus* female, head in frontal view. Pictures A and B by Paolo Rosa, pictures C and D by Romain Le Divelec.

***Hylaeus* (*Prosopis*) *purpurissatus* (Vachal, 1895)**
(Figs 11C, D)

A sixth species has been recently recognized within the *H. gibbus* species-group, *H. purpurissatus*, which has regularly been referred to as *Prosopis stigmorhina* Pérez, 1895 (= *H. stigmorhinus*) in the past (Le Divelec 2022).

Species recorded in Europe after 2017

***Hylaeus* (*Prosopis*) *hyrcanius* Dathe, 1980**

Distribution. European part of Russia (Astrakhan Prov., Kalmykia Rep.) (Proshchalykin *et al.* 2017). Outside Europe known for Caucasus, from Krasnodar Prov. to Dagestan, Turkey and Iran (Proshchalykin & Dathe 2021).

Species overlooked in the previous European checklists

Hylaeus (*Hylaeus*) *mariannae* Theunert, 2013

Hylaeus (*Hylaeus*) *mariannae* Theunert, 2013: 63. Holotype ♀; France: Corsica, around Punta Stranciacone (SDEI).

Distribution. France (Corsica).

Hylaeus (*Spatulariella*) *moniae* Nobile & Tomarchio, 1998

Spatulariella moniae Nobile & Tomarchio, 1998: 294. Holotype ♂; Italy: Sicily, Mount Etna, Monterosso, m 450, m 450, 23.VIII.1996 (Tomarchio coll.)

Species only known by its original description (Nobile & Tomarchio 1998), based on two Sicilian males. According to this description, the species is very close to *H. punctatus* (Brullé, 1832). The species is included in the present checklist, but further investigations of the subgenus *Spatulariella* are needed to assess the taxonomic status of this taxon that could be a synonym.

Distribution. Italy (Sicily).

Species to be excluded from the European checklist

Hylaeus (*Dentigera*) *breviceps* Morawitz, 1876

Distribution. The European records of *Hylaeus breviceps* in Dathe (1980) refer to *Hylaeus* (*Dentigera*) *pallidicornis* Morawitz, 1876 (Dathe & Proshchalykin 2017). However, a few recent records in Dagestan may indicate that the species could be widely distributed in the European part of Russia (Proshchalykin & Dathe 2021).

Family HALICTIDAE Thomson, 1869

Note: in Europe, within the subfamily Halictinae, the tribe Halictini contains only the genera *Halictus*, *Lasioglossum*, *Seladonia, Sphecodes*, and *Thrincohalictus*. The genera *Nomiapis,* and *Pseudapis* are found in the subfamily Nomiinae, the genera *Ceylalictus* and *Nomioides* are found in the subfamily Nomioidinae, while the genera *Dufourea, Rhophitoides, Rophites* and *Systropha* are found in the subfamily Rophitinae. For the two latter subfamilies, the tribal system is not yet well-established. Therefore, the changes and additions proposed here for the family Halictidae will be divided by subfamilies (Halictinae, Nomiinae and Rophitinae).

Moreover, the generic and subgeneric classification of Halictini has remained unclear. We follow the position that *Seladonia* is a valid genus that is sister to *Halictus* (with *Thrincohalictus* being sister to *Seladonia* + *Halictus*; Danforth *et al*. 1999). For now, we maintain the *Halictus* subgeneric classification system of Yu. A. Pesenko (2004a); though this system requires molecular appraisal and validation, it is here used as the *status quo* in the absence of supported consensus.

Subgeneric classification of *Lasioglossum* is also highly challenging, due to the substantial incongruence between existing systems and molecular data (Gibbs *et al*. 2012, 2013). A new, global subgeneric classification system for *Lasioglossum* is currently being prepared (J. Gibbs & J. Gardner, *in litt*.), so for the purpose of this checklist we use the subgeneric classification system adopted by Kuhlmann *et al*. (2022), which was based on the conclusions of Gibbs *et al*. (2013). It should therefore be considered an intermediate classification until stability is achieved with the forthcoming global revision.

Subfamily Halictinae Thomson, 1869

Species recently described as new to science

***Halictus* (*Tytthalictus*) *toparensis* Pauly & Ortiz-Sánchez, 2017**

Halictus toparensis Pauly & Ortiz-Sánchez, 2017: 68. Holotype ♂; Spain: Andalusia, Almería, Topares, Vélez Blanco, 30.vii.2006, 1200 m, leg. F.J. Ortiz-Sánchez (UAL).

Distribution. Spain.

Published synonymies

***Lasioglossum* (*Hemihalictus*) *sabulosum* (Warncke, 1986)**

Synonymised with *Lasioglossum* (*Hemihalictus*) *monstrificum* (Morawitz, 1891), which is the senior synonym according to Pauly & Belval (2017).

***Seladonia* (*Pachyceble*) *nivalis* Ebmer, 1985**

Synonymised with *Seladonia* (*Pachyceble*) *leucahenea* (Ebmer, 1972), which is the senior synonym according to Pauly & Ortiz-Sánchez (2017).

***Sphecodes banaszaki* Nobile & Turrisi, 2004**

Synonymised with *Sphecodes combai* Nobile & Turrisi, 2004, which is the senior synonym according to Astafurova & Proshchalykin (2021).

***Sphecodes iosephi* Nobile & Turrisi, 2004**

Synonymised with *Sphecodes combai* Nobile & Turrisi, 2004, which is the senior synonym according to Astafurova & Proshchalykin (2021).

***Sphecodes marcellinoi* Nobile & Turrisi, 2004**

Synonymised with *Sphecodes combai* Nobile & Turrisi, 2004, which is the senior synonym according to Astafurova & Proshchalykin (2021).

***Sphecodes tomarchioi* Nobile & Turrisi, 2004**

Synonymised with *Sphecodes combai* Nobile & Turrisi, 2004, which is the senior synonym according to Astafurova & Proshchalykin (2021).

***Sphecodes walteri* Nobile & Turrisi, 2004**

Synonymised with *Sphecodes combai* Nobile & Turrisi, 2004, which is the senior synonym according to Astafurova & Proshchalykin (2021).

Taxonomic changes

The following new combinations are proposed for species previously included in the genus *Vestitohalictus* Blüthgen, 1961 (Rasmont *et al.* 2017) and now transferred to the genus *Seladonia* Robertson, 1918 subgenus *Vestitohalictus*:

Seladonia (*Vestitohalictus*) *concinna* (Brullé, 1840); *S.* (*V.*) *inpilosa* (Ebmer, 1975); *S.* (*V.*) *microcardia* (Pérez, 1895); *S.* (*V.*) *vestita* (Lepeletier, 1841).

The following new combinations are proposed for species previously included in the genus *Vestitohalictus* and now transferred to the genus *Seladonia* subgenus *Mucoreohalictus* Pesenko, 2004:

Seladonia (*Mucoreohalictus*) *cyprica* (Blüthgen, 1937); *S.* (*M.*) *mucorea* (Eversmann, 1852); *S.* (*M.*) *pollinosa* (Sichel, 1860); *S.* (*M.*) *pseudomucorea* (Ebmer, 1975); *S.* (*M.*) *tuberculata* (Blüthgen, 1925).

Remark. There is no consensus on the generic treatment of *Seladonia*. Further molecular works are critically needed to clarify the correct placement of this taxon within Halictidae (see comment above).

***Lasioglossum* (*Hemihalictus*) *medinai* (Vachal, 1895)**

Previously considered as synonym of *Lasioglossum villosulum* (Kirby, 1802) by Blüthgen (1923), resurrected by Pauly *et al*. (2019).

Distribution. Spain, France (mainland, Corsica), Italy, Switzerland, Austria, Bosnia and Herzegovina, Albania, Romania, Greece (including Crete), Russia and Cyprus. Outside Europe known from Turkey and north Africa to Israel (Pauly *et al*. 2019).

Taxonomic acts and clarifications

***Lasioglossum* (*Sphecodogastra*) *algericolellum* (Strand, 1909)**

Pauly & Ortiz-Saìnchez (2017) consider *L. algericolellum* a valid species and not a synonym of *L. pauxillum* (Schenck, 1853) as pointed out by Blüthgen (1922). This difference is supported by genetic sequences (A. Pauly, unpublished data, T.J. Wood, unpublished data), and so we add it to the European list as a valid species.

Distribution. Spain, Portugal, France. Outside Europe in Morocco and Algeria.

***Sphecodes combai* Nobile & Turrisi, 2004**

The seven *Sphecodes* described by Nobile & Turrisi (2004) were synonymised by Schwarz & Gusenleitner (2012). They synonymised *S. combai* with *S. marginatus* Hagens, 1882. Nobile & Turrisi (2013) rejected this treatment. Finally, Astafurova & Proshchalykin (2021) examined the holotypes and resurrected *S. combai*. They synonymised five of the *Sphecodes* described by Nobile & Turrisi (2004) with *S. combai* and confirmed the synonymy of *S. campadellii* Nobile & Turrisi, 2004 with *S. geoffrellus* (Kirby, 1802).

Distribution. Italy, Sardinia, Sicily, Greece.

***Sphecodes annae* Campadelli & Nobile (2000)**

In the original description (Campadelli & Nobile 2000), the name and location of the collection housing the holotype are omitted, thereby not complying with Article 16.4.2 of the International Code of Zoological Nomenclature (ICZN 1999). Consequently, because this species is not correctly described, we consider the name ***nomen nudum***. The taxon is therefore not included in the checklist.

Species overlooked in the previous European checklists

***Lasioglossum* (*Sphecodogastra*) *edessae* Ebmer, 1974**

Distribution. Cyprus (Nicosia) (Ebmer 1995). Outside Europe known from Turkey.

***Lasioglossum* (*Lasioglossum*) *fallax* (Morawitz, 1874)**

Distribution. Crimea (Proshchalykin & Astafurova 2012); European part of Russia: Rostov Prov. (Pesenko 1972), Volgograd Prov. (Blüthgen 1925), Bashkir Rep. (Ebmer 1998). Outside Europe known from Georgia, Turkey, Iran and Turkmenistan.

***Lasioglossum* (*Hemihalictus*) *pallidum* (Radoszkowski, 1888)**

Distribution. European part of Russia (Volgograd Prov.) (Proshchalykin *et al*. 2017). Outside Europe known from Turkmenistan and Afghanistan.

***Lasioglossum* (*Dialictus*) *pseudoleptocephalum* (Blüthgen, 1923)**

Distribution. Spain and Portugal (Ebmer 1976; Pauly & Ortiz-Sánchez 2017; Baldock *et al*. 2018). Outside Europe known from Morocco.

***Seladonia* (*Vestitohalictus*) *pulverea* (Morawitz, 1873)**

Distribution. Cyprus (Astafurova *et al*. 2017). Also present in Ukraine, Crimea and European part of Russia. Outside Europe known from Dagestan, Turkey, Iran, Afghanistan, Central Asia, Mongolia, China.

***Sphecodes aetnensis* Nobile, 1996**

Sphecodes aetnensis Nobile, 1996: 149. Holotype ♂; Italy: Sicily, Tremestieri Etneo, 300 m, 20.x.1992 (Turrisi Coll.).

Species only known by its original description (Nobile 1996), based on a single male. The species is included in the European checklist but further investigations are needed to validate the status of this taxon.

Species to be excluded from the European checklist

***Lasioglossum* (*Sphecodogastra*) *rupestre* (Warncke, 1984)**

The only report for Europe of this species is erroneous because it is based on a single deformed specimen of *Lasioglossum tricinctum* (Schenck, 1874) (Ebmer 1995).

Subfamily Nomiinae

Species recently described as new to science

***Nomiapis paulyi* Wood & Le Divelec, 2022**
(Fig. 12)

Nomiapis paulyi Wood & Le Divelec, 2022: 16. Holotype ♀; Spain: Segovia, Camino Natural Vía Verde Valle del Eresma, 18.vii.2019, leg. TJWC (RMNH). Barcoded, reference TJW_028, BOLD WPATW767-22.

Some specimens from Corsica and Sardinia have been assigned with doubt to *Nomiapis rufiventris* that is known from Sicily and north Africa (see Wood & Le Divelec 2022). The recent acquisition of *COI* sequences of Sardinian specimens supports the assignment of Sardinian records to *N. paulyi* (Wood, unpublished data). A Corsican specimen from Cavallo Island is also morphologically similar to *N. paulyi*.

Distribution. Portugal, Spain, Corsica and Sardinia.

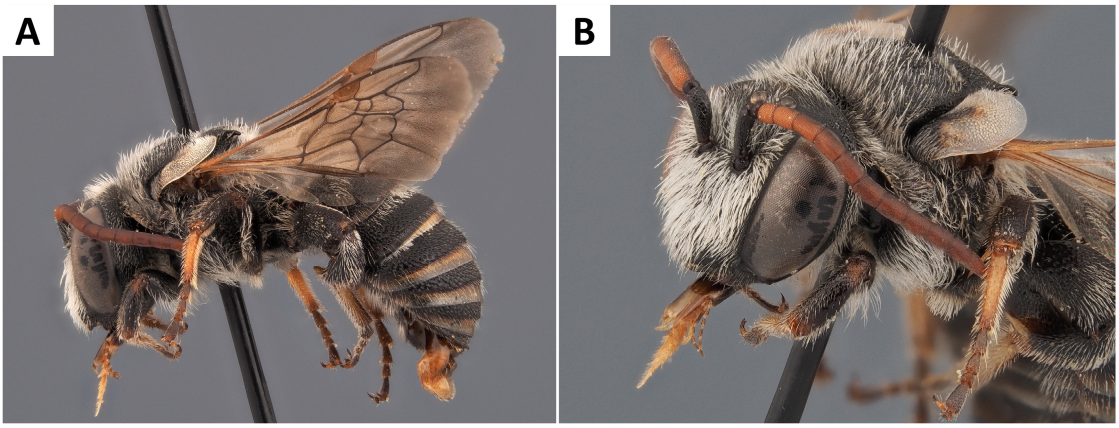

FIGURE 12. A. *Nomiapis paulyi* Wood & Le Divelec, 2022 male paratype, habitus in lateral view. The species was recently described in Wood & Le Divelec (2022) based on individuals collected in Portugal and Spain. **B.** *N. paulyi* male paratype, head in oblique view. Pictures by Paolo Rosa.

***Nomiapis susannae* Arens, 2018**

Nomiapis susannae Arens in Arens, 2018: 104. Holotype ♂; Greece: Kalogria (Achaia), 14.v.2000, leg. W. Arens (ZSM).

Taxonomic acts and clarifications

***Nomiapis rufiventris* (Spinola, 1838)**

This taxon is now considered to be a distinct species from *Nomiapis bispinosa* (Brullé, 1832) (Wood & Le Divelec 2022). It was previously referred to as *Nomiapis unidentata albocincta* (Lucas, 1849) but at least two taxa (*N. rufiventris* and *N. paulyi*) have been confused under this name.

Distribution. Italy (Sicily). Some populations from eastern Spain and the Balearic Islands require further investigations. According to new molecular data (*COI*), specimens mentioned from Sardinia and Corsica can be assigned with confidence to *N. paulyi* (see above). Outside Europe known from Morocco, Algeria, Tunisia, Libya, and Egypt.

Species recorded in Europe after 2017

***Nomiapis fugax* (Morawitz, 1877)**

Recorded in the European part of Russia (Astrakhan Prov., Kalmyk Rep.) by Astafurova & Proshchalykin (2017). It had been listed by Pittioni (1950) from Cyprus based on a misidentification (Varnava *et al*. 2020).

Distribution. Russia (south of the European part). Outside Europe known from northern Africa, Armenia, Azerbaijan, Turkey, Iran, Pakistan, Central Asia and China (Levchenko *et al*. 2017).

Species overlooked in the previous European checklists

***Pseudapis elegantissima* (Popov, 1959)**

Distribution. European part of Russia: Astrakhan Prov., Baskunchak Lake (Astafurova & Pesenko 2006). Outside Europe known from Azerbaijan, Iran, Kazakhstan, Turkmenistan, Uzbekistan, and Tajikistan.

***Nomioides* (*Nomioides*) *pulverosus* Handlirsch, 1888**

Distribution. European part of Russia: Kalmyk Rep., Artezian (Pesenko 2004b).

Subfamily Rophitinae Schenk, 1866

Taxonomic acts and clarifications

***Systropha grandimargo* Pérez, 1905**

This taxon is now recognized as distinct from *Systropha planidens* Giraud, 1861 (Wood & Le Divelec 2022).

Distribution. Portugal, Spain, France.

Species to be excluded from the European checklist

***Rophites foveolatus* Friese, 1900**

Friese (1900) described this species from a single male specimen from 'Greece', providing only a very short diagnosis "standing between *R. canus* and *R. quinquespinosus*". Warncke (1979) treated this taxon as a valid species but raised doubts as to the correctness of this locality, suggesting that it is more likely to be in Turkey. Ebmer & Schwammberger (1986) found no European material in their revision of *Rophites*, supporting the position of Warncke. We exclude this species from the European list until European specimens are found,

Distribution. Turkey, Armenia, Azerbaijan.

Family MEGACHILIDAE Latreille, 1802

Tribe Anthidiini Ashmead, 1899

Species recently described as new to science

***Pseudoanthidium* (*Pseudoanthidium*) *kaspareki* Le Divelec & Litman, 2021**
(Fig. 13A)

Pseudoanthidium (*Pseudoanthidium*) *kaspareki* Le Divelec & Litman in Litman *et al.*, 2021: 35. Holotype ♂; Turkey: Antalya, Side, 70 km E Antalya, 29.vii–07.viii.2001, leg. P. Tymer (OÖLM).

Distribution. Greece (mainland and East Aegean Islands) (Litman *et al.* 2021; Kasparek, unpublished data). Outside of Europe, known from Turkey.

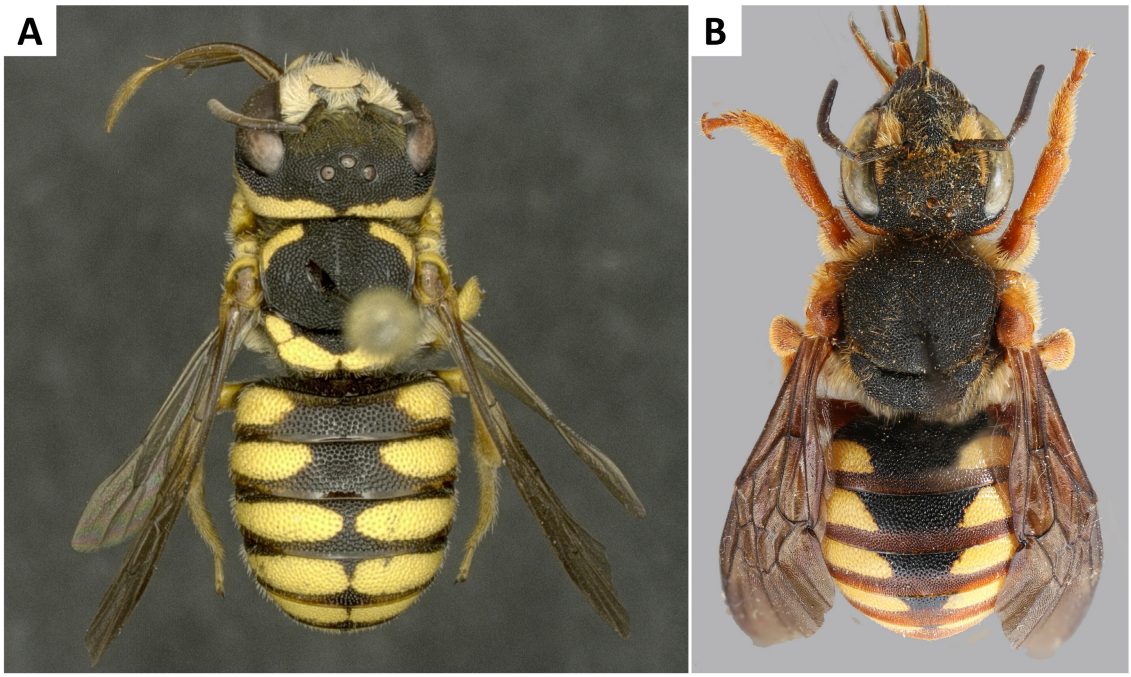

FIGURE 13. A. *Pseudoanthidium kaspareki* Le Divelec & Litman, 2021 male, habitus in dorsal view. The species was recently described by Le Divelec & Litman in Litman *et al.* (2021). In Europe, it is found in mainland Greece and the East Aegean Islands. Picture by Jessica Litman. **B.** *Rhodanthidium rufocinctum* (Alfken, 1930) female, habitus in dorsal view. This taxon was recently upgraded to species rank by Kasparek (2019a). It is endemic to Crete and Malta and is the only island-endemic anthidiine species in Europe. Picture by Max Kasparek

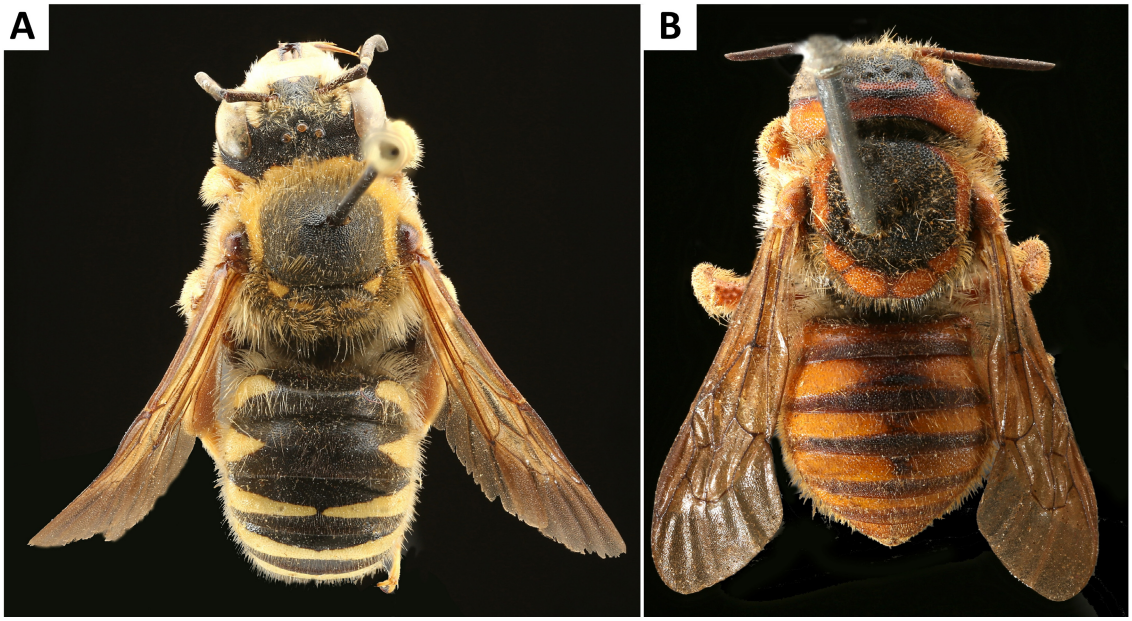

FIGURE 14. A. *Trachusa balcanica* Kasparek, 2018 male, habitus in dorsal view. This species was recently described by Kasparek (2018) from Bulgaria. It is also recorded from Greece, Hungary, North Macedonia and Serbia. **B.** *Trachusa varia* (Oliver, 1789) female, habitus in dorsal view. This species was originally described from Spain but has not been found in Europe for more than 200 years. It is possible that the holotype was caught in Melilla, a Spanish enclave in Morocco. Pictures by Max Kasparek.

***Trachusa* (*Archianthidium*) *balcanica* Kasparek, 2018**
(Fig. 14A)

Trachusa (*Archianthidium*) *balcanica* Kasparek, 2018: 124. Holotype ♂; Bulgaria: Blagoevgrad, Sandanski, June 1972, leg. K. Poláček (MKPC).

Distribution. Bulgaria, Greece, Hungary, North Macedonia, Serbia (Kasparek 2018).

Published synonymies

***Rhodanthidium* (*Asianthidium*) *ducale* (Morawitz, 1875)**

Synonymised with *Rhodanthidium caturigense* (Giraud, 1863), which is the senior synonym according to Kasparek (2021: 50).

Taxonomic changes

***Rhodanthidium* (*Rhodanthidium*) *rufocinctum* (Alfken, 1930)**
(Fig. 13B)

Anthidium rufocinctum Alfken, 1930: 28.
Anthidium (*Rhodanthidium*) *septemdentatum rufocinctum*: Warncke 1980: 156.
Rhodanthidium (*Rhodanthidium*) *rufocinctum* (Alfken, 1930): Kasparek 2019a: 88. Returned to species status.

***Trachusa* (*Paraanthidium*) *integra* (Eversmann, 1852)**

Anthidium integrum Eversmann, 1852: 83.
Anthidium interruptum Fabricius, 1781 (partim): *Anthidium integrum* Eversmann, 1852 regarded as synonym of *A. interruptum* by Friese (1898), Warncke (1980) and others.
Trachusa (*Paraanthidium*) *integra* (Eversmann, 1852): Kasparek 2020b: 22. Returned to species status.

Distribution. Described by Eversmann (1852) from Sarepta (Volgograd) on the basis of a single male. Type material hosed at IZKP (Proshchalykin *et al*. 2017; Kasparek 2020b). Species status resurrected by Kasparek (2020b).

Taxonomic acts and clarifications

***Afranthidium* (*Mesanthidium*) *carduele malacopygum* (Gribodo, 1894)**

In keeping with Warncke (1980), *Afranthidium malacopygum* is regarded as a subspecies of *Afranthidium carduele*: *Afranthidium* (*Mesanthidium*) *carduele malacopygum* (Gribodo, 1894). In Europe, this subspecies is found in Iberia; it is also known from Morocco and Algeria. The subspecies *Afranthidium* (*Mesanthidium*) *carduele carduele* (Morawitz, 1875) is known from North Macedonia, Greece, Bulgaria, the Caucasus and the Middle East, but the characters of the two subspecies are sometimes overlapping (Kasparek, 2022).

***Anthidiellum troodicum* Mavromoustakis, 1949**
(Fig. 15)

In keeping with Müller (1996), the east Mediterranean populations (south-eastern Europe and Turkey) of *Anthidiellum breviusculum* (Pérez, 1890) s.l. are assigned species rank as *Anthidiellum troodicum* Mavromoustakis, 1949. The

name *Anthidiellum breviusculum* (Pérez, 1890) is to be applied to the west Mediterranean populations only (France, Portugal, Spain; Kasparek *et al*. 2023).

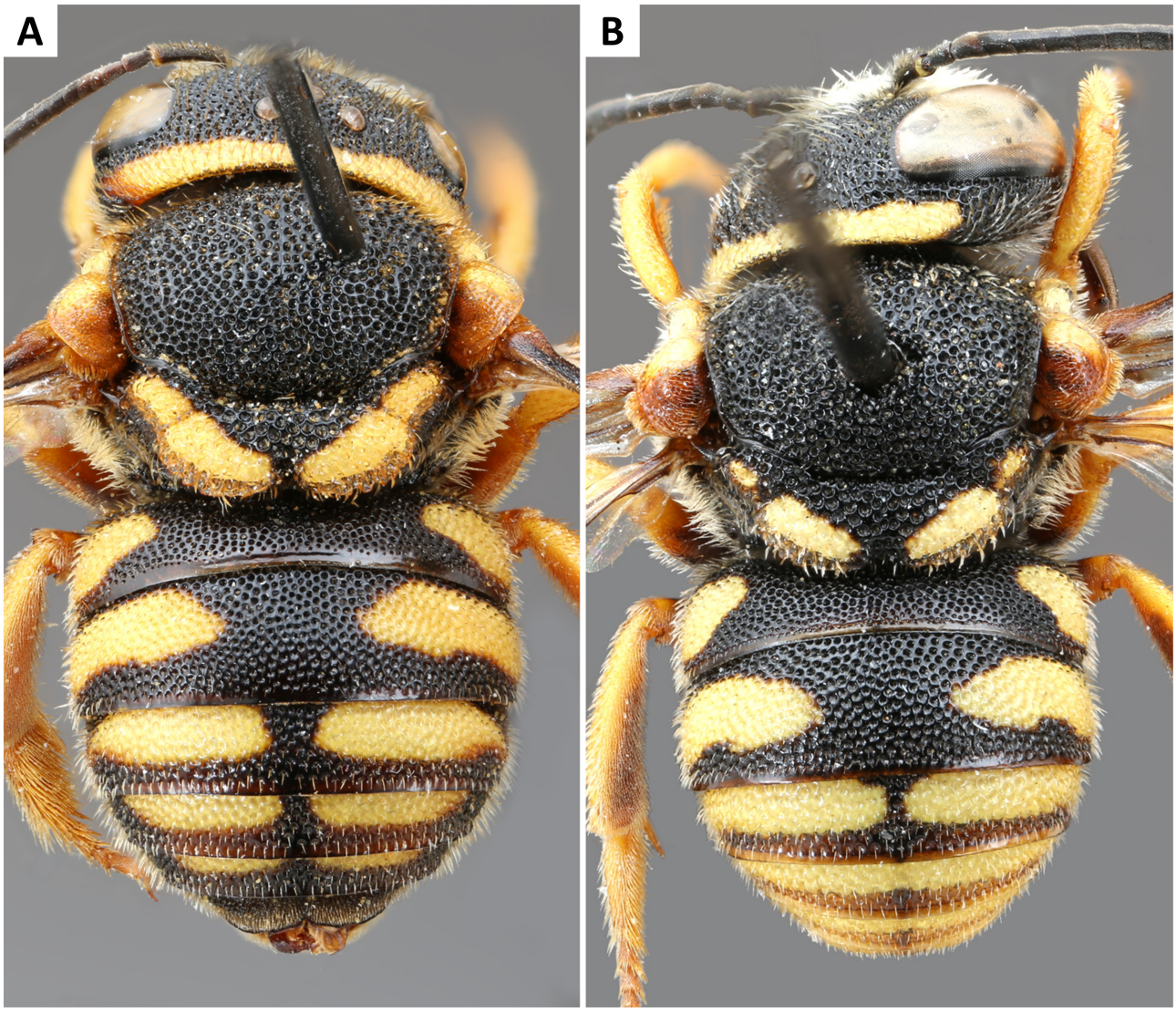

FIGURE 15. A. *Anthidium troodicum* Mavromoustakis, 1949 female, habitus in dorsal view. The taxon was considered as a subspecies of *A. breviusculum* (Pérez, 1890) but has recently been upgraded to species rank by Kasparek *et al.* (2022). **B.** *A. troodicum* male, habitus in dorsal view. Pictures by Max Kasparek.

Eoanthidium nasiculum Pasteels, 1969

Eoanthidium nasicum (Friese, 1917) was listed as present in the East Aegean islands by Rasmont *et al*. (2017) and Michez *et al*. (2019). This taxon is now attributed to *Eoanthidium nasiculum* Pasteels, 1969 (Kasparek 2019b). Its distribution in Europe is limited to these islands.

Icteranthidium ovasi (Warncke, 1980)

The taxonomic identity of the specimens reported from Bulgaria on DiscoverLife (Ascher & Pickering 2022 and previous versions) and subsequently cited in various papers is unclear. It is most likely that these individuals do not belong to this taxon but rather to an as-of-yet undescribed species (Kasparek 2022). We do not include this species in the new list.

***Stelis* (*Heterostelis*) *hungarica* Noskiewicz, 1962**

Described by Noskiewicz (1962) from Hungary and not found again since then (Kasparek 2015). Treated as a synonym of *Stelis annulata* (Lepeletier, 1841) by Warncke (1992c), but considered a valid species by Kasparek (2015). The species is therefore included in the present checklist.

***Trachusa* (*Paraanthidium*) *varia* (Olivier, 1789)**
(Fig. 14B)

The species was described from "Spain" by Fabricius as *Apis rufipes* Fabricius, 1787 *nec* Fabricius, 1781 (note that *Apis varia* Olivier is a replacement name) and has not been found again in Europe since then. It cannot be ruled out that the material actually came from northern Africa, for instance from Melilla, the Spanish enclave in Morocco (Kasparek 2020b). We keep the species in the present checklist, but surveys further confirming the presence of the species in Europe would be welcome.

Species recorded in Europe after 2017

***Eoanthidium (Eoanthidium) pasteelsi* (Warncke, 1980)**

Distribution. First recorded for Europe by Grace (2010) from Lesvos as *Anthidiellum judaeense anale* Pasteels, 1969. It was later recorded from Chios (Kasparek 2020a) and from Kato Fana, leg. J. Devalez (Ascher & Pickering 2022). The latter record is listed under *Eoanthidium judaeense anale*, which was replaced by the name *E. pasteelsi* in Warncke (1980). See also Kasparek (2022). Outside Europe known from Armenia and Turkey.

***Pseudoanthidium* (*Pseudoanthidium*) *stigmaticorne* (Dours, 1873)**

Distribution. Both Warncke (1980) and Aguib *et al*. (2010) considered *Pseudoanthidium* (*Pseudoanthidium*) *stigmaticorne* (Dours, 1873) as restricted to northern Africa but both morphological and molecular data indicate that *P. stigmaticorne* is also present throughout much of Europe (Litman *et al*. 2021). Portugal, Spain, France (including Corsica), Italy (including Sardinia and Sicily), Croatia, Greece, Bulgaria, Romania, Crimea, Russia (European part), Cyprus. Outside Europe known from Algeria, Azerbaijan, Iran, Israel and Palestine, Jordan, Morocco, Syria, Tunisia, Turkey and Turkmenistan.

***Stelis* (*Stelis*) *murina* Pérez, 1884**

This taxon was treated as subspecies of *Stelis phaeoptera* (Kirby, 1802) by Warncke (1992c) and others, but was re-established as a valid species by Baker (1999). Recorded from several (mainly southern) European countries, although not all records are clearly separated from *S. phaeoptera* (see Kasparek 2015). The subspecies *Stelis* (*Stelis*) *murina cretica* Mavromoustakis, 1963 was described from Crete (Mavromoustakis 1963).

Distribution. Spain (including Canary Islands), France, Italy, Croatia, and Greece. Outside Europe, it occurs in northern Africa. Occurrence in Cyprus needs confirmation (Varnava *et al.* 2020).

Species overlooked in the previous European checklists

***Stelis* (*Stelis*) *aculeata* Morawitz, 1880**

Distribution. First recorded for Europe in Crimea by Fateryga *et al*. (2013). Outside Europe known from Turkey to Kazakhstan, Turkmenistan, Tajikistan, Mongolia, south and east Siberia and NE China.

Species to be excluded from the European checklist

***Eoanthidium judaeense* (Mavromoustakis, 1945)**

Listed by Rasmont *et al*. (2017) and Michez *et al*. (2019) as a European species. The relevant taxon should be treated as *Eoanthidium* (*Eoanthidium*) *pasteelsi* (Warncke, 1980), previously regarded as a subspecies of *E. judaeense* (see above).

Distribution. *Eoanthidium judaeense* is found in the countries of the Levant and south-eastern Turkey. The distribution of *E. pasteelsi* extends from the eastern Aegean islands across Turkey to the Caucasus (Kasparek 2020a).

***Pseudoanthidium* (*Pseudoanthidium*) *cribratum* (Morawitz, 1875)**

Distribution. *Pseudoanthidium cribratum* was listed as present on mainland Greece and the East Aegean Islands (Lesvos and Rhodes) on the last European Red List. A recent taxonomic revision, however, demonstrated that the distribution of *P. cribratum* lies entirely outside of Europe. This species is found in Iran, Israel and Palestine, Jordan, Kazakhstan, Kyrgyzstan, Syria, Tajikistan, Turkey (the Asian part), Turkmenistan and Uzbekistan (Litman *et al.* 2021).

Tribe Megachilini Latreille, 1802

Published synonymies

***Megachile* (*Eutricharaea*) *atratula* Rebmann, 1968**

The species was described from Italy but was overlooked in previous checklists. It was synonymised with *Megachile* (*Eutricharae*) *pusilla* Pérez, 1894, which is the senior synonym according to Praz & Bénon (2023).

***Megachile* (*Eutricharaea*) *bioculata* Pérez, 1902**

Synonymised with *Megachile* (*Eutricharaea*) *leachella* Curtis 1828, which is the senior synonym according to Praz & Bénon (2023).

***Megachile* (*Eutricharaea*) *discriminata* Rebmann, 1968**

Synonymised with *Megachile* (*Eutricharae*) *leachella* Curtis, 1828, which is the senior synonym according to Praz & Bénon (2023).

***Megachile* (*Creightonella) heinrichi* (Tkalců, 1979)**

Synonymised with *Megachile* (*Eutricharae*) *doriae* Magretti, 1890, which is the senior synonym according to Praz (2017).

***Megachile* (*Eutricharaea*) *ichnusae* Rebmann, 1968**

Synonymised with *Megachile* (*Eutricharae*) *leachella* Curtis, 1828, which is the senior synonym according to Praz & Bénon (2023).

***Megachile* (*Anodonteutricharaea*) *lanigera* Alfken, 1933**

Synonymised with *Megachile* (*Anodonteutricharaea*) *albohirta* (Brullé, 1839), which is the senior synonym according to Praz (2017).

***Megachile* (*Anodonteutricharaea*) *larochei* Tkalců, 1993**

Synonymised with *Megachile* (*Anodonteutricharaea*) *albohirta* (Brullé, 1839), which is the senior synonym according to Praz (2017).

***Megachile* (*Eutricharaea*) *mavromoustakisi* van der Zanden, 1992**

Synonymised with *Megachile* (*Eutricharaea*) *troodica* Mavromoustakis, 1953, which is the senior synonym according to Praz (2017).

***Megachile* (*Eutricharaea*) *picicornis* Morawitz, 1877**

Synonymised with *Megachile* (*Eutricharaea*) *marginata* Smith, 1853, which is the senior synonym according to Praz (2017).

***Megachile* (*Eutricharaea*) *pilidens* Alfken, 1924**

Synonymised with *Megachile* (*Eutricharaea*) *argentata* (Fabricius, 1793), which is the senior synonym according to Praz & Bénon (2023).

***Megachile* (*Creightonella*) *rhodosiaca* Rebmann, 1972**

Synonymised with *Megachile* (*Creightonella*) *doriae* Magretti, 1890, which is the senior synonym according to Praz (2017).

***Megachile* (*Megachile*) *semipleta* Cockerell, 1921**

Synonymised with *Megachile* (*Megachile*) *versicolor* Smith, 1844, which is the senior synonym according to Praz (2017).

***Megachile* (*Eutricharaea*) *sexmaculata* Alfken, 1924**

Synonymised with Megachile (*Eutricharaea*) *melanogaster* Eversmann, 1852, which is the senior synonym according to Praz (2017).

***Megachile* (*Eutricharaea*) *striatella* Rebmann, 1968**

The species was considered as doubtfully European by Rasmont *et al.* (2017). It was later synonymised with *Megachile* (*Eutricharae*) *pusilla* Pérez, 1894 (a European species), which is the senior synonym according to Praz & Bénon (2023).

New synonymies

Megachile (*Eutrichaeae*) *atlantica* Benoist, 1934

Megachile atlantica Benoist, 1934, **syn. nov.** of *Megachile* (*Eutricharaea*) *giraudi* Gerstäcker, 1869. This widely distributed taxon shows some geographic variation in the colour of the vestiture. In western Europe [Spain, France and in the Susa Valley (type locality of *M. giraudi*; see lectotype designation in Praz 2017: 9)], the scopa is dark on S5 and S6, white on S2–S4. In eastern Europe (populations sometimes delineated as "*M. bicoloriventris* Mocsáry, 1878") and in southern Italy, the scopa is nearly entirely dark, white only on S2 and medially on S3. North-western African populations are as the western European ones, except that the entire body vestiture (except the scopa) is orange-red. Benoist (1934) described *M. atlantica* based on a single female specimen from Morocco (holotype, MNHN). He then described the male of *M. atlantica*, pointing to some minor differences compared to *M. giraudi* (Benoist 1940). Zanden (1989: 80) treats *M. atlantica* as a valid species and reports it from Sicily and Algeria. Upon inspection of additional specimens from the entire range of *M. giraudi*, these minor morphological differences fall within the range of variation observed within *M. giraudi*, and *M. atlantica* **syn. nov.** is placed in synonymy with *M. giraudi*.

Material examined. Lectotype of *M. giraudi* (see Praz 2017: 9); Holotype of *M. atlantica*: ♀, labelled as follows: 1. "Ras El Ma, 21.vi.28" [handwritten]. 2. "*atlantica*" [handwritten, handwriting of R. Benoist]; 3. "Muséum Paris Coll. R. Benoist" [printed]; 4. "Holotype *M. atlantica* Ben. det. Zanden 1996".

Taxonomic acts and clarifications

Megachile (*Chalicodoma*) *albocristata* Smith, 1853, *M. hungarica* Mocsáry, 1877, *M. lefebvrei* (Lepeletier, 1841), *M. lucidifrons* Ferton, 1905 and *M. roeweri* (Alfken, 1927)

This group includes five taxa in Europe, known as the *lefebvrei* group (Praz 2017): *Megachile albocristata* Smith, 1853, *M. hungarica* Mocsáry, 1877, *M. lefebvrei* (Lepeletier, 1841) (with the subspecies *M. lefebvrei albida* Pérez, 1897), *M. lucidifrons* Ferton, 1905 and *M. roeweri* (Alfken, 1927). The status of these five taxa requires further investigation. They differ in the colour of the vestiture and the nature of the tergal fasciae in the female sex (see Fateryga & Proshchalykin 2020): in *Megachile lefebvrei*, the vestiture is predominantly grey-white and the tergal fasciae are interrupted medially; in *M. albocristata*, the vestiture is predominantly black, sometimes with spots of white hairs laterally on the tergites; *M. lucidifrons* is similar to the latter, but the vestiture is entirely black; in *M. hungarica*, the vestiture is grey-white and the tergal fasciae are continuous; *M. roeweri* is similar to *M. hungarica* but the vestiture is predominantly brown. Each taxon has a distinct geographic distribution: in the narrow sense, *M. lefebvrei* is present in northern Africa and on the Iberian Peninsula (subspecies *albida*: Ortiz-Saìnchez *et al*. 2012), and possibly in southern France (Benoist 1940); *M. roeweri* on the islands of Crete and Cyprus; *M. albocristata* in south-eastern Europe (Greece, Balkans, Italy) and as far east as Crimea (Fateryga & Proshchalykin 2020); *M. lucidifrons* in Sardinia and Corsica; and *M. hungarica* in central Europe (Slovakia, parts of Greece, Hungary, Ukraine), but also in the Levant (Tkalců 1973). Some authors have considered one widely distributed, geographically variable species, *M. lefebvrei* (e.g. Fateryga *et al*. 2018). While *Megachile lefebvrei*, *M. lucidifrons* and *M. roeweri* have clearly delimited geographic distributions, *M. hungarica* and *M. albocristata* have a parapatric distribution in south-east Europe; in addition, the disjunct presence of *M. albocristata* on Crimea suggests that both taxa may have overlapping ranges. Based on this distribution pattern and the narrow contact zone in south-east Europe, Tkalců (1973) advocates for the recognition of *M. albocristata*, *M. hungarica* and *M. lefebvrei* as distinct species. In addition, he mentions subtle, but constant sculptural differences among these taxa, without giving further details. By contrast Fateryga and Proshchalykin (2020) mention that the populations from Dagestan are intermediate between *Megachile albocristata* and *M. hungarica*. Future work is needed to settle the status of the taxa allied to *M. lefebvrei* in Europe (Praz *et al*., in prep.), and for now these five taxa are treated as separate species.

Megachile (*Chalicodoma*) *albonotata* Radoszkowski, 1886, *M. cressa* (Tkalců, 1988) and *M. rufescens* Pérez, 1879

This group includes three taxa in Europe: *Megachile rufescens* Pérez, 1879, *M. cressa* (Tkalců, 1988) and *M. albonotata* Radoszkowski, 1886 (with the subspecies *M. albonotata setulosa* (Pérez, 1895) and *M. albonotata italica* (Tkalců, 1988)). The taxa represent allopatric, geographic forms mostly differing in the colour of the vestiture in the female sex: *Megachile albonotata s. str.* has brownish grey vestiture with conspicuous lateral spots of hairs on the tergal margins, and is present in south-east Europe (Tkalců 1974). The subspecies *Megachile albonotata italica*, restricted to central and southern Italy, differs in the absence of spots of hairs on the tergal margins (Tkalců 1988), and the subspecies *M. albonotata setulosa*, restricted to the Iberian Peninsula by the lighter vestiture (Ortiz-Saìnchez *et al*. 2012). *M. cressa*, only known from the island of Crete, differs in the narrower tergal fasciae and, according to Tkalců (1988), subtle sculptural differences. Lastly, Tkalců (1974) treats *M. rufescens* as a distinct species, present only in southern France, differing from *M. albonotata* in the reduced tergal fasciae. Future work is needed to elucidate the status of these taxa forms, all three of which are retained as valid species here.

Megachile (*Chalicodoma*) *apennina* Benoist, 1940

Megachile pyrenaica f. *nigricans* Benoist, 1935: 102; *nom. preoccup*., nec *M. nigricans* Cameron, 1898, *M. nigricans* Friese, 1913 and *M. nigricans* Alfken, 1913.
Megachile muraria var. *apennina* Benoist, 1940: 43.
Megachile benoisti Tkalců, 1977: 236. Nomen novum pro *Megachile nigricans* Benoist, 1935.

This taxon differs from *Megachile pyrenaica* Lepeletier, 1841 in the dark, nearly entirely black vestiture. No sculptural differences are known between the two taxa. It is closely allied to *Megachile pyrenaica* and may be an infraspecific form of the latter. While *Megachile pyrenaica* is widely distributed throughout the mountainous areas of the Palearctic, *M. apennina* is nearly entirely restricted to central and southern Italy. While it could easily be treated as a geographic form (e.g., a subspecies) of *M. pyrenaica*, two facts support its recognition as a distinct taxon: first, a disjunct population of *M. apennina* is present on the island of Cephalonia (H. Paulus and C. Praz, unpublished data), next to nominal populations of *M. pyrenaica* in the Peloponnese; second, no intermediate population is known between *M. pyrenaica* and *M. apennina*. The status of *Megachile apennina* requires further investigation, and for now this taxon is retained as a valid species.

Megachile (*Eutricharaea*) *argentata* (Fabricius, 1793)

This species was confirmed as a senior synonym of the widespread European species *Megachile pilidens* Alfken, 1924. It is therefore reported new to Europe, but has always been a widespread species considered under previous names (Praz & Bénon 2023).

Megachile (*Chalicodoma*) *baetica* (Gerstaecker, 1869)

This taxon has often been considered as a subspecies or a "form" of the widely distributed *Megachile parietina* (Geoffroy, 1785). *Megachile baetica* differs from the latter in the colour of the vestiture in the female sex (predominantly brown in *M. baetica*, black in *M. parietina*). *Megachile baetica* is mostly found on the Iberian Peninsula, although it reaches the south-eastern part of France. Benoist (1940) noted that no sculptural character separates the two taxa, and that the populations in south-eastern France are intermediate, leading him to treat *M. baetica* as an infraspecific "form" of *M. parietina*. By contrast, Ortiz-Saìnchez *et al*. (2012) report both taxa from the Iberian Peninsula, each with a distinct geographic distribution pattern: *M. baetica* is present at low elevations in various locations in Spain and Portugal, while *M. parietina* is mostly found at high elevations in the Sierra Nevada. This pattern suggests that the range of both taxa overlap and that each shows a distinct climatic niche, supporting their recognition as valid taxa. Future work is needed to settle the status of *M. baetica* (Praz *et al*., in prep.), and we treat both species as valid for now.

Megachile (***Callomegachile***) ***breviceps*** **Friese, 1898**

Considered to be a *nomen dubium* by Praz (2017). This taxon, described based on a single female putatively from Spain, was probably based upon a mislabeled specimen, as it does not belong to any known Palearctic taxon. It is therefore not regarded as a European species for the purposes of this work.

Megachile **(*Megachile*)** ***dacica*** **Mocsáry, 1879**

Considered to be a *nomen dubium* by Praz (2017). The taxon is therefore not included in the present checklist.

Megachile **(*Creightonella)*** ***doriae*** **Magretti, 1890**

Distribution. Included in the new checklist of the European bees as a consequence of the synonymisation of *Megachile rhodosiaca* Rebmann, 1972 and *M. heinrichi* (Tkalců, 1979) with *Megachile doriae* Magretti, 1890 by Praz (2017) (see below).

Megachile **(*Chalicodoma*)** ***ghilianii*** **Spinola, 1843**

The type specimen appears to be missing from the Spinola collection (Casolari & Casolari 1980). The original description suggests it could be a specimen of *Megachile pyrenaica*. In the absence of type, this name is here treated as a ***nomen dubium*** and therefore not included in the present checklist.

Megachile (Eutricharaea) ***gothalauniensis*** **Pérez, 1902**

Unclear taxonomic status. The name is treated as a ***nomen dubium*** here, and therefore not included in the present checklist.

Megachile **(*Xanthosarus*)** ***maackii*** **Radoszkowski, 1874**

Considered to be a *nomen dubium* by Praz (2017), who examined the syntype in Krakow, concluding that the material was ambiguous. Future work is needed to assess whether it truly is a synonym of *M. nigriventris* or a valid species, but what is clear is that no European material matches the type of *M. maackii*. Therefore, *M. maackii* is excluded from the present checklist.

Megachile **(*Eutricharaea*)** ***posti*** **Mavromoustakis, 1952**

In Nieto *et al*. (2014) considered as subspecies of *Megachile basilaris* Morawitz, 1875. Praz (2017) elevated *Megachile posti* to species rank and, as a consequence, in the list of European bees, *Megachile posti* Mavromoustakis is listed and no longer *M. basilaris*.

Megachile (Eutricharaea) ***pruinosa*** **Pérez, 1897**

The type of this species was investigated, it is a female collected in France (Avignon). Its identity remains unclear; the name is here treated as a ***nomen dubium*** and is excluded from the present checklist.

***Megachile pugillatoria* Costa, 1863**

The type of this species could not be located. This name is treated here as a ***nomen dubium*** and is excluded from the present checklist.

***Megachile* (*Eutricharaea*) *pusilla* Pérez, 1884**

This species has previously been referred to as *M. concinna* in Europe, a taxon considered to be restricted to the Afrotropical region by Soltani *et al*. (2017). The taxon occurring in Europe is referred to as *M. pusilla* Pérez, 1884.

***Megachile punctatissima* Spinola, 1806 (in: Nieto *et al.* 2014)**

Incorrect subsequent spelling of *Stelis punctulatissima* (Kirby, 1802) (Praz 2017), listed in the present checklist.

***Megachile* (*Eutricharaea*) *schmiedeknechti* Costa, 1884**

This taxon is treated as a subspecies of *M. argentata* (Praz & Bénon 2023). It is restricted to the islands of Corsica, Sardinia and Malta.

Species recorded in Europe after 2017

***Coelioxys* (*Allocoelioxys*) *mielbergi* Morawitz, 1880**

Distribution. Russia (Sarepta [=Volgograd]). Outside Europe known from Uzbekistan, Turkmenistan and Tajikistan (Fateryga & Proshchalykin 2020).

***Megachile* (*Callomegachile*) *disjunctiformis* Cockerell, 1911**

Distribution. First recorded for Europe from Italy (Bortolotti *et al.* 2018). Non-native species. Outside Europe known from East Asia, from China to Japan.

***Megachile* (*Pseudomegachile*) *flavipes* Spinola, 1838**

Distribution. First recorded from Europe by Dorchin & Praz (2018) from Greece (Crete, Heraklion). In addition, Dorchin & Praz (2018) mention doubtful records from Cyprus. Possibly these specimens have been mislabeled, or are based on introduced individuals, which is not impossible given that the species nests in above-ground cavities. Outside Europe known from northern Africa to Middle East and Central Asia (Ascher & Pickering 2022).

***Megachile* (*Eutricharaea*) *inexspectata* Rebmann, 1968**

Distribution. First recorded for Europe by Varnava *et al.* (2020) from Paphos, Cyprus. Also present in East Aegean Islands. Outside Europe known from northern Africa (Morocco) and western Asia (Praz & Bénon 2023).

***Megachile* (*Chelostomoides*) *otomita* Cresson, 1878**

Distribution. First recorded for Europe from Tenerife by Strudwick & Jacobi (2018). Non-native species. Outside Europe known from Central America.

***Megachile* (*Pseudomegachile*) *syriaca* Dorchin & Praz, 2018**

Distribution. Recorded from two females from Spain. Since this occurrence represents a distant and isolated record for a species otherwise known from the Levant, Dorchin & Praz (2018) indicated that these two specimens could have been mislabelled. We temporarily keep the species in the present checklist but further surveys confirming its occurrence are needed.

***Megachile* (*Pseudomegachile*) *tecta* Radoszkowski, 1888**

Distribution. First recorded for Europe from Russia (Kalmyk Rep.) by Fateryga *et al*. (2018). Outside Europe known from Dagestan, Kazakhstan, Turkmenistan, Iran, Kyrgyzstan, and China.

***Megachile* (*Anodonteutricharaea*) *thevestensis* Ferton, 1908**

Distribution. First recorded for Europe from Portugal by Baldock *et al*. (2018). Also present in Spain (Ortiz-Sánchez 2020). Outside Europe known from northern Africa.

Species overlooked in the previous European checklists

***Megachile saussurei* Radoszkowski, 1874**

Distribution. Described from the European part of Russia (Saratov). Outside Europe known from Turkey and Central Asia. Mentions from Spain are erroneous and refer to *Megachile syriaca* (Dorchin & Praz 2018; see note above).

Species to be excluded from the European checklist

***Megachile* (*Chalicodoma*) *rufitarsis* (Lepeletier, 1841)**

Distribution. The presence of *Megachile rufitarsis* only relies on old unverified literature records (Benoist 1935, from the Balearic Islands). Given that we could not locate specimens to verify this doubtful record, we deleted this taxon from the checklist of the European species.

***Megachile* (*Eutricharaea*) *walkeri* Dalla Torre, 1896**

Distribution. The presence of *Megachile walkeri* relies on old, unverified literature records. We delete this taxon from the checklist of the European species.

Tribe Osmiini Newman, 1834

Species recently described as new to science

***Hoplitis* (*Hoplitis*) *galichicae* Müller, 2016**

Hoplitis (*Hoplitis*) *galichicae* Müller, 2016: 168. Holotype ♂; North Macedonia, N.P. Galicica (MSPC).

Distribution. North Macedonia.

***Protosmia* (*Protosmia*) *lusitanica* Le Goff & Gonçalves, 2018**

Protosmia (*Protosmia*) *lusitanica* Le Goff & Gonçalves, 2018: 188. Holotype ♀; Portugal, Beja, Mértola, São Sebastião dos Carros (GGPC).

Distribution. Portugal, Spain.

Published synonymies

***Chelostoma* (*Gyrodromella*) *proximum* Schletterer, 1889**

Synonym of *Chelostoma* (*Gyrodromella*) *rapunculi* (Lepeletier, 1841), the senior synonym according to Müller (2015).

***Chelostoma* (*Chelostoma*) *siciliae* Müller, 2012**

Synonym of *Chelostoma* (*Chelostoma*) *stefanii* Nobile, 1995, the senior synonym as proposed by Müller (2022).

***Hoplitis* (*Alcidamea*) *abnormis* Zanden, 1992**

Synonym of *Hoplitis* (*Alcidamea*) *subbutea* (Warncke, 1991), the senior synonym as proposed by Müller (2022).

***Hoplitis* (*Anthocopa*) *cretaea* (Tkalců, 1992)**

Synonym of *Hoplitis* (*Anthocopa*) *bisulca* (Gerstaecker, 1869), the senior synonym as proposed by Müller (2022).

***Stenoheriades hofferi* Tkalců, 1984**

Synonym of *Stenoheriades coelostoma* (Benoist, 1935), the senior synonym as proposed Müller & Trunz (2014).

Taxonomic changes

***Hoplitis (Anthocopa) corcyraea* (Tkalců, 1979)**

Anthocopa yermasoyiae corcyraea Tkalců, 1979: 319.
Hoplitis corcyraea: Müller 2022: Upgraded to species rank.

Hoplitis (*Hoplitis*) *perambigua* (Peters, 1975)

Osmia anthocopoides perambigua Peters, 1975: 51.
Hoplitis anthocopoides perambigua (Peters, 1975): Zanden 1988: 121.
Hoplitis perambigua: Müller 2016: 171. Upgraded to species rank.

Hoplitis (*Hoplitis*) *stecki* (Frey-Gessner, 1908)

Osmia mucida stecki Frey-Gessner, 1908: 283.
Hoplitis mucida stecki (Frey-Gessner, 1908): Zanden 1988: 121.
Hoplitis stecki: Müller *et al*. 2017: 107. Upgraded to species rank.

Hoplitis (*Anthocopa*) *taurica* (Radoszkowski, 1874)

Pseudosmia taurica Radoszkowski, 1874: 157.
Hoplitis (*Pseudosmia*) *taurica* (Radoszkowski, 1874): Zanden 1988: 119.
Osmia (Helicosmia) dimidiata Morawitz, 1870: Ungricht *et al*. 2008: 147. Synonymised.
Hoplitis (*Anthocopa*) *taurica*: Ivanov *et al.* 2013: 676. Resurrected to species status and overlooked in Nieto *et al.* (2014) and Rasmont *et al.* (2017).

Hoplitis (*Alcidamea*) *turcestanica* (Dalla Torre, 1896)

Osmia turcestanica Dalla Torre, 1896: 414.
Osmia caularis Morawitz, 1875: Warncke 1991: 726. Synonymised.
Hoplitis (*Alcidamea*) *turcestanica*: Fateryga & Proshchalykin 2020: 226. Resurrected to species status.

Osmia (*Osmia*) *kohlii* Ducke, 1899

Osmia kohlii Ducke, 1899 was previously misspelt as *Osmia kohli* Ducke, 1899.

Osmia (*Pyrosmia*) *leucopyga* Ducke, 1899

Osmia (*Pyrosmia*) *leucopyga* Ducke, 1899: 214.
Osmia (*Pyrosmia*) *lobata* Friese, 1899: Warncke 1992b: 910. Synonymised.
Osmia (*Pyrosmia*) *leucopyga*: Müller 2022. Resurrected to species status.

Osmia (*Allosmia*) *nuda* Friese, 1899

Osmia nuda Friese, 1899: 328.
Osmia (*Allosmia*) *rufohirta* Latreille, 1811: Synonymy proposed online by Müller (2022), but not formally published.
Osmia (*Allosmia*) *nuda*: Müller 2022. Resurrected to species status.

Taxonomic acts and clarifications

Osmia (*Helicosmia*) *cinctella* Dours, 1873

Considered to be a *nomen dubium* by Müller (2022) and therefore not included in the present checklist.

Species recorded in Europe after 2017

***Hoplitis* (*Anthocopa*) *caucasicola* Müller, 2012**

Distribution. First recorded for Europe by Levchenko *et al*. (2017) for the European part of Russia. Outside Europe known from Turkey and Georgia (Levchenko *et al.* 2017).

***Osmia* (*Melanosmia*) *disjuncta* Tkalců, 1995**

First recorded for Europe by Johansson & Paukkunen (2017) from Sweden, Finland and Russia. Outside Europe known from Siberia and Mongolia (Müller 2022).

New species for Europe

***Hoplitis* (*Chlidoplitis*) *onychophora* (Mavromoustakis, 1939)**

Distribution. New record (!) CYPRUS: 1♀, 1♂, Kykkos, 11.v.2014 (unpublished data from A. Müller). Outside Europe known from Turkey, Syria and the Levant (Müller, 2014).

Species overlooked in the previous European checklists

***Hoplitis* (*Chlidoplitis*) *teucrii* (Benoist, 1927)**

Added to the European list by Müller (2014). Overlooked by Rasmont *et al*. (2017).

Distribution. The species occurs in southern Spain and Morocco.

Species to be excluded from the European checklist

***Haetosmia vechti* (Peters, 1974)**

Distribution. Listed for Europe by Nieto *et al*. (2014) based on a highly doubtful record from Greece. The species occurs from central Turkey eastwards over northern Iran to south-eastern Turkmenistan and southwards to the Levant (Müller & Griswold 2017).

***Heriades* (*Heriades*) *labiata* Pérez, 1895**

Distribution. Listed for Europe by Nieto *et al*. (2014) based on doubtful records from Spain. Confidently determined records are currently known only from Algeria (Müller 2022).

***Hoplitis* (*Alcidamea*) *caularis* (Morawitz, 1875)**

Distribution. Listed for Europe by Nieto *et al*. (2014). The species presumed occurrence in Europe was based on the erroneous synonymisation of *Hoplitis* (*Alcidamea*) *turcestanica* (Dalla Torre, 1896) with *H. caularis* by Warncke (1991) (Fateryga & Proshchalykin 2020). Confidently determined records of *Hoplitis caularis* are currently known only from Central Asia (Müller 2022).

***Hoplitis* (*Anthocopa*) *furcula* (Morawitz, 1875)**

Distribution. Listed for Europe by Nieto *et al*. (2014) based on doubtful records from Greece. Confidently determined records are currently known only from central Asia (Müller 2022).

***Hoplitis* (*Alcidamea*) *grandiscapa* (Pérez, 1895)**

Distribution. Listed for Europe by Nieto *et al*. (2014) based on a highly doubtful record from Sardinia. Confidently determined records are currently known only from Algeria (Müller 2022).

***Hoplitis* (*Alcidamea*) *laboriosa* (Smith, 1878)**

Distribution. Listed for Europe by Nieto *et al*. (2014). The species occurs in Kazakhstan, Mongolia and China (Müller 2022).

***Hoplitis* (*Formicapis*) *maritima* (Romankova, 1985)**

Distribution. Listed for Europe by Nieto *et al*. (2014). The species occurs in Mongolia and the Russian Far East (Müller & Mauss 2016).

***Hoplitis* (*Hoplitis*) *mucida* (Dours, 1873)**

Distribution. Listed for Europe by Nieto *et al*. (2014) as the European subspecies *Hoplitis mucida stecki* (Frey-Gessner, 1908), which was recently elevated to species rank by Müller *et al*. (2017). *Hoplitis mucida* occurs in northern Africa and the Levant.

***Hoplitis* (*Pentadentosmia*) *nitidula* (Morawitz, 1877)**

Distribution. Listed for Europe by Nieto *et al*. (2014) based on doubtful records from southern European Russia. The species occurs from Armenia eastwards to western and central Asia (Müller 2022).

***Osmia* (*Helicosmia*) *cyanescens* Morawitz, 1875**

Distribution. Listed for Europe by Nieto *et al*. (2014). The species occurs in central Asia (Müller 2022).

***Osmia* (*Helicosmia*) *dlabolae* Tkalců, 1978**

Distribution. Listed for Europe by Nieto *et al*. (2014) based on doubtful records from Greece. Confidently determined records are currently known only from central Turkey (Müller 2022).

***Osmia* (*Pyrosmia*) *lobata* Friese, 1899**

Distribution. Listed for Europe by Nieto *et al*. (2014). The species presumed occurrence in Europe was based on the erroneous synonymisation of *Osmia* (*Pyrosmia*) *leucopyga* Ducke, 1899 with *Osmia lobata* by Warncke (1992b). Confidently determined records of *Osmia lobata* are currently known only from Algeria (Müller 2022).

***Osmia* (*Helicosmia*) *tunensis* (Fabricius, 1787)**

Distribution. Listed for Europe by Nieto *et al*. (2014). The species occurs in northern Africa and was assumed by several authors to be present also on Sicily and Malta. However, as the specimens from Sicily and Malta differ from mainland European individuals of *Osmia* (*Helicosmia*) *aurulenta* (Panzer, 1799) only by the length and colour of the body pilosity, they were assigned to the latter species by Müller (2022).

***Protosmia* (*Protosmia*) *stigmatica* (Pérez, 1895)**

Distribution. Listed for Europe by Nieto *et al*. (2014) based on doubtful records from Spain, France and Greece. Confidently determined records are currently known only from Algeria (Müller 2022).

***Stenoheriades asiatica* (Friese, 1921)**

Distribution. Listed for Europe by Nieto *et al*. (2014) based on previously rejected synonymy with *Stenoheriades coelostoma* (Benoist, 1935). Currently know only from Turkey and Syria.

Family MELITTIDAE Schenck, 1860

Tribe Dasypodaini Sagemehl, 1882

Species recently described as new to science

***Dasypoda* (*Heterodasypoda*) *michezi* Radchenko, 2017**

Dasypoda (*Heterodasypoda*) *michezi* Radchenko, 2017: 167. Holotype ♂; Portugal: Almograve (RMNH).

Distribution. Portugal. **New record (!)** SPAIN: ♀, Aznalcázar [37.280470, -6.231925], 25.iv.[20]18, leg. Molina F.P. (UMons).

Remarks. Original description based only on males. The female of the species was later described by Ghisbain *et al*. (2021c).

Synonymic notes

***Dasypoda sinuata* Pérez, 1895**
(Fig. 16)

This taxon will be synonymised with *Dasypoda panzeri* Spinola, 1838 as part of a revision of the north African fauna of *Dasypoda* conducted by Ghisbain *et al*. (in prep).

Species overlooked in the previous European checklists

***Melitta sibirica* (Morawitz, 1888)**

Distribution. East of European part of Russia. Outside Europe known from Tajikistan, Kyrgyzstan, Mongolia, China (NC) and India (Proshchalykin & Astafurova 2017).

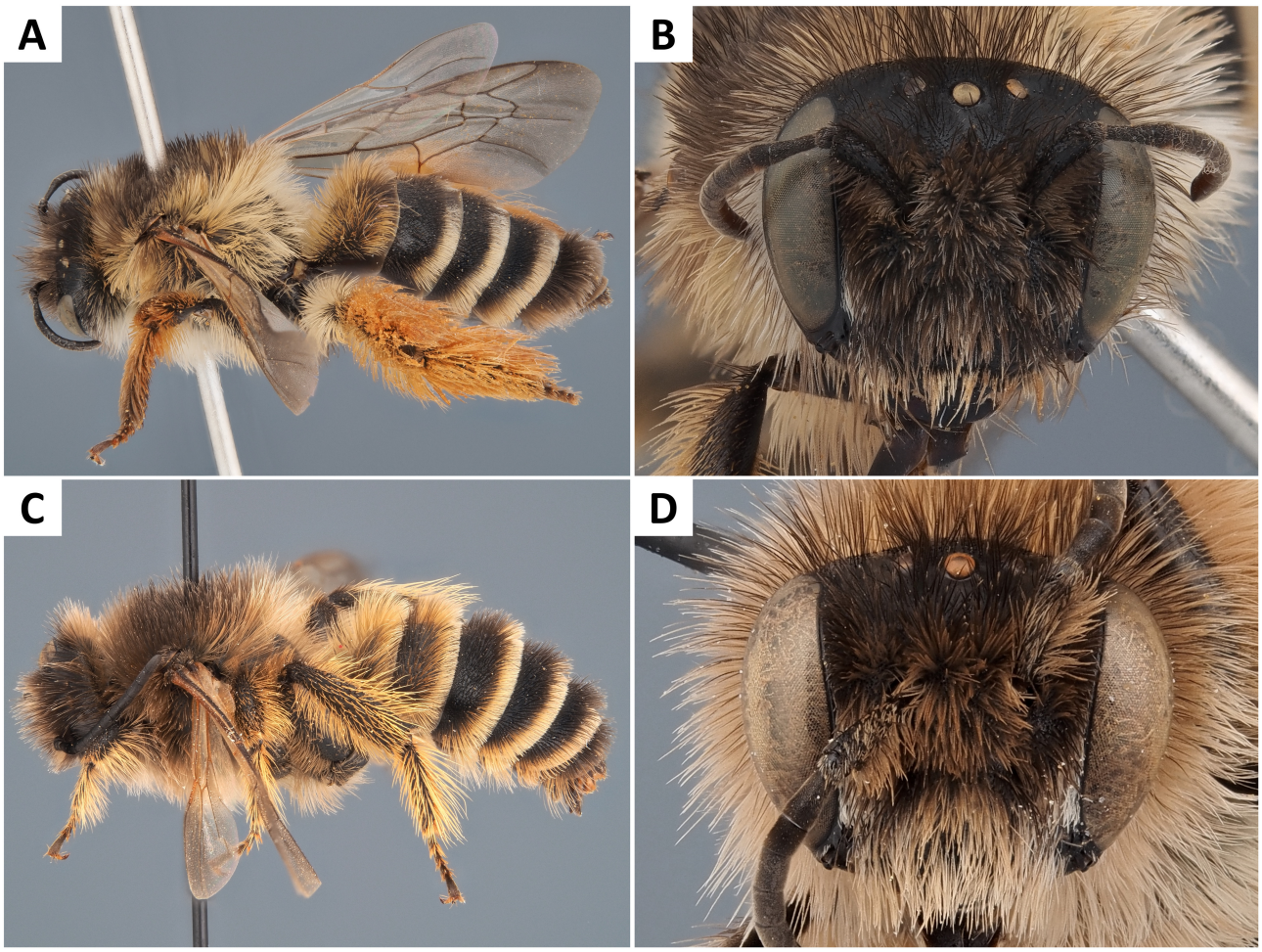

FIGURE 16. A. *Dasypoda panzeri* Spinola, 1838 female, habitus in lateral view. The taxon is included in the European checklist solely because of its presence in the Canary Islands, an archipelago showing strong biogeographic affinities with north Africa. **B.** *D. panzeri* female, head in frontal view. **C.** *Dasypoda panzeri* male, habitus in lateral view. **D.** *D. panzeri* male, habitus in frontal view. Pictures by Paolo Rosa.

Updated checklist of the wild bee fauna of Europe

Family Andrenidae Latreille, 1802

Tribe Andrenini Latreille, 1802

Genus *Andrena* Fabricius, 1775

Subgenus *Aciandrena* Warncke, 1968
Andrena aciculata Morawitz, 1886
Andrena chelma Warncke, 1975
Andrena chersona Warncke, 1972
Andrena fulica Warncke, 1974
Andrena hillana Warncke, 1968
Andrena lamiana Warncke, 1965
Andrena spolata Warncke, 1968
Andrena tenuiformis Pittioni, 1950
Andrena vacella Warncke, 1975
Andrena volgensis Osytshnjuk, 1994

Subgenus *Aenandrena* Warncke, 1968
Andrena aeneiventris Morawitz, 1872
Andrena bisulcata Morawitz, 1877
Andrena chaetogastra Pittioni, 1950
Andrena hedikae Jaeger, 1934
Andrena hystrix Schmiedeknecht, 1883

Subgenus *Andrena* Fabricius, 1775
Andrena apicata Smith, 1847
Andrena batava Pérez, 1902
Andrena clarkella (Kirby, 1802)
Andrena fucata Smith, 1847
Andrena fulva (Müller, 1766)
Andrena helvola (Linnaeus, 1758)
Andrena inconstans Morawitz, 1877
Andrena lapponica Zetterstedt, 1838
Andrena mitis Schmiedeknecht, 1883
Andrena nycthemera Imhoff, 1868
Andrena praecox (Scopoli, 1763)
Andrena rogenhoferi Morawitz, 1872
Andrena synadelpha Perkins, 1914
Andrena varians (Kirby, 1802)

Subgenus *Avandrena* Warncke, 1968
Andrena avara Warncke, 1967
Andrena canohirta (Friese, 1923)
Andrena erodiorum Wood & Ortiz-Sánchez, 2022
Andrena heterodoxa Pérez, 1903
Andrena juliae Wood, 2023
Andrena melacana Warncke, 1967
Andrena panurgina De Stefani, 1889

Subgenus *Biareolina* Dours, 1873
Andrena lagopus Latreille, 1809

Subgenus *Blandandrena* Wood, 2023
Andrena blanda Pérez, 1895

Subgenus *Brachyandrena* Pittioni, 1948
Andrena colletiformis Morawitz, 1874
Andrena limonii Osytshnjuk, 1983
Andrena miegiella Dours, 1873

Subgenus *Bryandrena* Wood, 2023
Andrena florea Fabricius, 1793

Subgenus *Campylogaster* Dours, 1873
Andrena erberi Morawitz, 1871

Subgenus *Charitandrena* Hedicke, 1933
Andrena hattorfiana (Fabricius, 1775)

Subgenus *Chlorandrena* Pérez, 1890
Andrena abrupta Warncke, 1967
Andrena agnata Warncke, 1967
Andrena astica Warncke, 1967
Andrena boyerella Dours, 1872
Andrena cinerea Brullé, 1832
Andrena cinereophila Warncke, 1965
Andrena clypella Strand, 1921
Andrena crepidis Schwenninger, 2015
Andrena curtivalvis Morice, 1899
Andrena damara Warncke, 1968
Andrena elata Warncke, 1975
Andrena exquisita Warncke, 1975
Andrena gordia Warncke, 1975
Andrena humabilis Warncke, 1965
Andrena humilis Imhoff, 1832
Andrena isis Schmiedeknecht, 1900
Andrena kamarti Schmiedeknecht, 1900
Andrena leucolippa Pérez, 1895
Andrena livens Pérez, 1895
Andrena nigroolivacea Dours, 1873
Andrena orientana Warncke, 1965
Andrena panurgimorpha Mavromoustakis, 1957
Andrena pastellensis Schwenninger, 2007
Andrena rhenana Stöckhert, 1930
Andrena rhyssonota Pérez, 1895
Andrena sagittaria Warncke, 1968
Andrena senecionis Pérez, 1895
Andrena stabiana Morice, 1899
Andrena taraxaci Giraud, 1861
Andrena tricuspidata Scheuchl, 2010

Subgenus *Chrysandrena* Hedicke, 1933
Andrena colonialis Morawitz, 1886
Andrena fertoni Pérez, 1895
Andrena fulvago (Christ, 1791)
Andrena glandaria Warncke, 1975
Andrena henotica Warncke, 1975
Andrena hesperia Smith, 1853
Andrena merula Warncke, 1969

Subgenus *Cnemidandrena* Hedicke, 1933
Andrena denticulata (Kirby, 1802)
Andrena freygessneri Alfken, 1904
Andrena fuscipes (Kirby, 1802)
Andrena nigriceps (Kirby, 1802)
Andrena simillima Smith, 1851
Andrena tridentata (Kirby, 1802)

Subgenus *Cordandrena* Warncke, 1968
Andrena cordialis Morawitz, 1877
Andrena cypria Pittioni, 1950
Andrena torda Warncke, 1965
Andrena vaulogeri Pérez, 1895

Subgenus *Cryptandrena* Pittioni, 1948
Andrena brumanensis Friese, 1899
Andrena rotundata Pérez, 1895
Andrena ventricosa Dours, 1873

Subgenus *Didonia* Gribodo, 1894
Andrena mucida Kriechbaumer, 1873

Subgenus *Euandrena* Hedicke, 1933
Andrena allosa Warncke, 1975
Andrena amieti Praz, Müller & Genoud, 2019
Andrena angustior (Kirby, 1802)
Andrena asperula Osytshnjuk, 1977
Andrena bicolor Fabricius, 1775
Andrena capillosa Morawitz, 1876
Andrena chrysopus Pérez, 1903
Andrena croatica Friese, 1887
Andrena fortipunctata Wood, 2021
Andrena fulvata Stöckhert, 1930
Andrena fulvida Schenck, 1853
Andrena glidia Warncke, 1965
Andrena granulosa Pérez, 1902
Andrena isolata Wood, 2023
Andrena kornosica Mavromoustakis, 1954
Andrena lavandulae Pérez, 1902
Andrena limosa Warncke, 1969
Andrena montana Warncke, 1973
Andrena pelagonia Wood, 2021
Andrena pileata Warncke, 1975

Andrena ramosa Wood, 2022
Andrena robusta Warncke, 1975
Andrena roseipes Alfken, 1933
Andrena rudolfae Osytshnjuk, 1986
Andrena ruficrus Nylander, 1848
Andrena rufula Schmiedeknecht, 1883
Andrena solenopalpa Benoist, 1945
Andrena symphyti Schmiedeknecht, 1883
Andrena verae Osytshnjuk, 1986
Andrena vulpecula Kriechbaumer, 1873

Subgenus *Graecandrena* Warncke, 1968
Andrena graecella Warncke, 1965
Andrena helenica Warncke, 1965
Andrena hyemala Warncke, 1973
Andrena impunctata Pérez, 1895
Andrena montarca Warncke, 1975
Andrena nebularia Warncke, 1975
Andrena passerina Warncke, 1974
Andrena pelopa Warncke, 1975
Andrena schwarzi Warncke, 1975
Andrena verticalis Pérez, 1895
Andrena walishanovi Osytshnjuk, 1994

Subgenus *Hamandrena* Dubitzky, 2010
Andrena grozdanici Osytshnjuk, 1975
Andrena nasuta Giraud, 1863
Andrena stepposa Osytshnjuk, 1977

Subgenus *Holandrena* Pérez, 1890
Andrena decipiens Schenck, 1861
Andrena fimbriata Brullé, 1832
Andrena flavilabris Schenck, 1874
Andrena forsterella Osytshnjuk, 1978
Andrena labialis (Kirby, 1802)
Andrena labiatula Osytshnjuk, 1993
Andrena variabilis Smith, 1853
Andrena wilhelmi Schuberth, 1995

Subgenus *Hoplandrena* Pérez, 1890
Andrena bucephala Stephens, 1846
Andrena clusia Warncke, 1966
Andrena ferox Smith, 1847
Andrena nuptialis Pérez, 1902
Andrena rosae Panzer, 1801
Andrena scotica Perkins, 1916
Andrena trimmerana (Kirby, 1802)

incertae sedis
Andrena aegyptiaca Friese, 1899
Andrena alluaudi Benoist, 1961
Andrena chalcogastra Brullé, 1839

Andrena corax Warncke, 1967
Andrena curiosa (Morawitz, 1877)
Andrena ebmerella Scheuchl, 2011
Andrena garrula Warncke, 1965
Andrena grossella Grünwaldt, 1976
Andrena hyacinthina Mavromoustakis, 1958
Andrena hypopolia Schmiedeknecht, 1884
Andrena incisa Eversmann, 1852
Andrena lateralis Morawitz, 1876
Andrena laurivora Warncke, 1974
Andrena macroptera Warncke, 1974
Andrena mediovittata Pérez, 1895
Andrena monacha Warncke, 1965
Andrena murana Warncke, 1967
Andrena muscaria Warncke, 1965
Andrena numida Lepeletier, 1841
Andrena ornata Morawitz, 1866
Andrena ranunculorum Morawitz, 1877
Andrena relata Warncke, 1967
Andrena seminuda Friese, 1896
Andrena sibthorpi Mavromoustakis, 1952

Subgenus *Leimelissa* Osychnyuk, 1984
Andrena fallax Eversmann, 1852

Subgenus *Lepidandrena* Hedicke, 1933
Andrena baetica Wood, 2020
Andrena caprimulga Warncke, 1975
Andrena curvungula Thomson, 1870
Andrena dorsalis Brullé, 1832
Andrena florivaga Eversmann, 1852
Andrena gamskrucki Warncke, 1965
Andrena mocsaryi Schmiedeknecht, 1884
Andrena pandellei Pérez, 1895
Andrena paucisquama Noskiewicz, 1924
Andrena rufizona Imhoff, 1834
Andrena sardoa Lepeletier, 1841
Andrena tuberculifera Pérez, 1895

Subgenus *Leucandrena* Hedicke, 1933
Andrena argentata Smith, 1844
Andrena barbilabris (Kirby, 1802)
Andrena dinizi Warncke, 1975
Andrena larisana Warncke, 1965
Andrena leptopyga Pérez, 1895
Andrena mistrensis Grünwaldt, 2005
Andrena parviceps Kriechbaumer, 1873
Andrena sericata Imhoff, 1868
Andrena tunetana Schmiedeknecht, 1900
Andrena ventralis Imhoff, 1832

Subgenus *Limbandrena* Wood, 2023
Andrena limbata Eversmann, 1852

Subgenus *Margandrena* Warncke, 1968
Andrena marginata Fabricius, 1776
Andrena pellucens Pérez, 1895

Subgenus *Melanapis* Cameron, 1902
Andrena fuscosa Erichson, 1835

Subgenus *Melandrena* Pérez, 1890
Andrena albopunctata (Rossi, 1792)
Andrena assimilis Radoszkowski, 1876
Andrena atrotegularis Hedicke, 1923
Andrena barbareae Panzer, 1805
Andrena bicolorata (Rossi, 1790)
Andrena chrysopyga Schenck, 1853
Andrena cineraria (Linnaeus, 1758)
Andrena comta Eversmann, 1852
Andrena cussariensis Morawitz, 1886
Andrena danuvia Stöckhert, 1950
Andrena discors Erichson, 1841
Andrena dubiosa Kohl, 1905
Andrena elmaria Gusenleitner, 1998
Andrena flavipes Panzer, 1799
Andrena florentina Magretti, 1883
Andrena fuscocalcarata Morawitz, 1877
Andrena gravida Imhoff, 1832
Andrena hungarica Friese, 1887
Andrena korleviciana Friese, 1887
Andrena limata Smith, 1853
Andrena magna Warncke, 1965
Andrena metallescens Cockerell, 1906
Andrena morio Brullé, 1832
Andrena nigroaenea (Kirby, 1802)
Andrena nitida (Müller, 1776)
Andrena nitidemula Scheuchl & Hazir, 2012
Andrena pyropygia Kriechbaumer, 1873
Andrena pyrozonata Friese, 1921
Andrena soror Dours, 1872
Andrena stigmatica Morawitz, 1895
Andrena thoracica (Fabricius, 1775)
Andrena vaga Panzer, 1799
Andrena vulcana Dours, 1873

Subgenus *Micrandrena* Ashmead, 1899
Andrena abjecta Pérez, 1895
Andrena acuta Warncke, 1968
Andrena alfkenella Perkins, 1914
Andrena alfkenelloides Warncke, 1965
Andrena alma Warncke, 1975
Andrena alutacea Stöckhert, 1942
Andrena ampla Warncke, 1967
Andrena anthrisci Blüthgen, 1925
Andrena bayona Warncke, 1975

Andrena biarmica Warncke, 1975
Andrena caneibia Strand, 1915
Andrena catula Warncke, 1968
Andrena cervina Warncke, 1975
Andrena corssubalpina Theunert, 2006
Andrena dargia Warncke, 1965
Andrena distinguenda Schenck, 1871
Andrena djelfensis Pérez, 1895
Andrena dourada Kratochwil & Scheuchl, 2013
Andrena enslinella Stöckhert, 1924
Andrena exigua Erichson, 1835
Andrena fabrella Pérez, 1903
Andrena falsifica Perkins, 1915
Andrena floricola Eversmann, 1852
Andrena fria Warncke, 1975
Andrena fumida Pérez, 1895
Andrena gomerensis Warncke, 1993
Andrena icterina Warncke, 1974
Andrena illyrica Warncke, 1975
Andrena lecana Warncke, 1975
Andrena lindbergella Pittioni, 1950
Andrena lineolata Warncke, 1968
Andrena longibarbis Pérez, 1895
Andrena magunta Warncke, 1965
Andrena mariana Warncke, 1968
Andrena minutula (Kirby, 1802)
Andrena minutuloides Perkins, 1914
Andrena nana (Kirby, 1802)
Andrena nanaeformis Noskiewicz, 1925
Andrena nanula Nylander, 1848
Andrena nitidula Pérez, 1903
Andrena niveata Friese, 1887
Andrena obsoleta Pérez, 1895
Andrena oedicnema Warncke, 1975
Andrena omnilaevis Wood, 2020
Andrena orana Warncke, 1975
Andrena ortizi Wood, 2023
Andrena paganettina Warncke, 1965
Andrena pandosa Warncke, 1968
Andrena pauxilla Stöckhert, 1935
Andrena pirinia Wood, 2021
Andrena proxima (Kirby, 1802)
Andrena pusilla Pérez, 1903
Andrena quadrimaculata Friese, 1921
Andrena querquedula Warncke, 1975
Andrena roripae Osytshnjuk, 1993
Andrena rugothorace Warncke, 1965
Andrena rugulosa Stöckhert, 1935
Andrena rugulosella Osytshnjuk, 1993
Andrena sandanskia Warncke, 1973
Andrena saxonica Stöckhert, 1935
Andrena semilaevis Pérez, 1903

Andrena sillata Warncke, 1975
Andrena simontornyella Noskiewicz, 1939
Andrena spreta Pérez, 1895
Andrena stoeckhertella Pittioni, 1948
Andrena strohmella Stöckhert, 1928
Andrena subopaca Nylander, 1848
Andrena taprobana Warncke, 1975
Andrena tenostra Warncke, 1975
Andrena tenuistriata Pérez, 1895
Andrena tiaretta Warncke, 1974
Andrena tomora Warncke, 1975
Andrena tringa Warncke, 1973
Andrena wollastoni Cockerell, 1922

Subgenus *Nobandrena* Warncke, 1968
Andrena anatolica Alfken, 1935
Andrena asiatica Friese, 1921
Andrena athenensis Warncke, 1965
Andrena compta Lepeletier, 1841
Andrena flavobila Warncke, 1965
Andrena funerea Warncke, 1967
Andrena nobilis Morawitz, 1874
Andrena probata Warncke, 1973

Subgenus *Notandrena* Pérez, 1890
Andrena aerinifrons Dours, 1873
Andrena bellidis Pérez, 1895
Andrena binominata Smith, 1853
Andrena chrysosceles (Kirby, 1802)
Andrena curvana Warncke, 1965
Andrena falcinella Warncke, 1975
Andrena foeniculae Wood, 2020
Andrena fulvicornis (Schenck, 1853)
Andrena griseobalteata Dours, 1872
Andrena hebescens Wood, 2020
Andrena juliana Wood, 2021
Andrena langadensis Warncke, 1965
Andrena leucophaea Lepeletier, 1841
Andrena microthorax Pérez, 1895
Andrena nigroviridula Dours, 1873
Andrena nitidiuscula Schenck, 1853
Andrena pallitarsis Pérez, 1903
Andrena pontica Warncke, 1972
Andrena ranunculi Schmiedeknecht, 1883
Andrena schlettereri Friese, 1896
Andrena semiflava Lebedev, 1932
Andrena stellaris Warncke, 1965
Andrena ungeri Mavromoustakis, 1952
Andrena urdula Warncke, 1965
Andrena varuga Warncke, 1975

Subgenus *Opandrena* Robertson, 1902
Andrena schencki Morawitz, 1866

Subgenus *Orandrena* Warncke, 1968
Andrena monilia Warncke, 1967
Andrena oralis Morawitz, 1876

Subgenus *Oreomelissa* Hirashima & Tadauchi, 1975
Andrena coitana (Kirby, 1802)

Subgenus *Ovandrena* Wood, 2023
Andrena farinosa Pérez, 1895
Andrena oviventris Pérez, 1895

Subgenus *Pallandrena* Warncke, 1968
Andrena braunsiana Friese, 1887
Andrena pallidicincta Brullé, 1832

Subgenus *Parandrenella* Popov, 1958
Andrena atrata Friese, 1887
Andrena dentiventris Morawitz, 1874
Andrena figurata Morawitz, 1866
Andrena nisoria Warncke, 1969
Andrena taxana Warncke, 1975

Subgenus *Plastandrena* Hedicke, 1933
Andrena afrensis Warncke, 1967
Andrena agilissima (Scopoli, 1770)
Andrena apiformis Kriechbaumer, 1873
Andrena asperrima Pérez, 1895
Andrena bimaculata (Kirby, 1802)
Andrena nigrospina Thomson, 1872
Andrena pilipes Fabricius, 1781
Andrena tibialis (Kirby, 1802)

Subgenus *Poecilandrena* Hedicke, 1933
Andrena crassana Warncke, 1965
Andrena hybrida Warncke, 1975
Andrena labiata Fabricius, 1781
Andrena limassolica Mavromoustakis, 1948
Andrena neovirida Grünwaldt, 2005
Andrena olympica Grünwaldt, 2005
Andrena potentillae Panzer, 1809
Andrena semirubra Morawitz, 1876
Andrena sphecodimorpha Hedicke, 1942
Andrena standfussorum Scheuchl, 2010
Andrena viridescens Viereck, 1916

Subgenus *Pruinosandrena* Wood, 2023
Andrena nilotica Warncke, 1967
Andrena parata Warncke, 1967
Andrena pruinosa Erichson, 1835

Subgenus *Rufandrena* Warncke, 1968
Andrena orbitalis Morawitz, 1871

Subgenus *Scitandrena* Warncke, 1968
Andrena scita Eversmann, 1852

Subgenus *Simandrena* Pérez, 1890
Andrena antigana Pérez, 1895
Andrena cilissaeformis Pérez, 1895
Andrena combinata (Christ, 1791)
Andrena confinis Stöckhert, 1930
Andrena congruens Schmiedeknecht, 1884
Andrena dorsata (Kirby, 1802)
Andrena kocoureki Wood, 2021
Andrena lepida Schenck, 1861
Andrena mehelyi Alfken, 1936
Andrena nucleola Warncke, 1973
Andrena propinqua Schenck, 1853
Andrena rhypara Pérez, 1903
Andrena susterai Alfken, 1914
Andrena thomsonii Ducke, 1898
Andrena transitoria Morawitz, 1871
Andrena vetula Lepeletier, 1841

Subgenus *Stenomelissa* Hirashima & LaBerge, 1965
Andrena lonicera Warncke, 1973

Subgenus *Suandrena* Warncke, 1968
Andrena aegypticola Friese, 1899
Andrena cyanomicans Pérez, 1895
Andrena gades Wood & Ortiz-Sánchez, 2022
Andrena maderensis Cockerell, 1922
Andrena notata Warncke, 1968
Andrena portosanctana Cockerell, 1922
Andrena savignyi Spinola, 1838
Andrena suerinensis Friese, 1884

Subgenus *Taeniandrena* Hedicke, 1933
Andrena aberrans Eversmann, 1852
Andrena afzeliella (Kirby, 1802)
Andrena antonellae Praz & Genoud, 2022
Andrena benoisti Wood & Praz, 2021
Andrena contracta Wood, 2022
Andrena croceiventris Morawitz, 1871
Andrena eversmanniana Osytshnjuk, 1994
Andrena fuliginata Pérez, 1895
Andrena gelriae van der Vecht, 1927
Andrena gredana Warncke, 1975
Andrena intermedia Thomson, 1870
Andrena laevicorpus Wood, 2023
Andrena lathyri Alfken, 1899
Andrena leucopsis Warncke, 1967

Andrena levante Wood & Praz, 2021
Andrena lusitania Wood & Ortiz-Sánchez, 2022
Andrena ovata Schenck, 1853
Andrena ovatula (Kirby, 1802)
Andrena phoenicura Warncke, 1975
Andrena poupillieri Dours, 1872
Andrena producta Warncke, 1973
Andrena russula Lepeletier, 1841
Andrena taedium Wood, 2023
Andrena vocifera Warncke, 1975
Andrena wilkella (Kirby, 1802)

Subgenus *Tarsandrena* Osychnyuk, 1984
Andrena ehnbergi Morawitz, 1888
Andrena tarsata Nylander, 1848

Subgenus *Trachandrena* Robertson, 1902
Andrena haemorrhoa (Fabricius, 1781)

Subgenus *Troandrena* Warncke, 1975
Andrena saettana Warncke, 1975
Andrena troodica Warncke, 1975

Subgenus *Truncandrena* Warncke, 1968
Andrena albopicta Radoszkowski, 1874
Andrena caneae Strand, 1915
Andrena delphiensis Warncke, 1965
Andrena doursana Dufour, 1853
Andrena ghisbaini Wood, 2023
Andrena ferrugineicrus Dours, 1872
Andrena fuligula Warncke, 1965
Andrena medeninensis Pérez, 1895
Andrena minapalumboi Gribodo, 1894
Andrena mucronata Morawitz, 1871
Andrena nigropilosa Warncke, 1967
Andrena optata Warncke, 1975
Andrena paramythensis Mavromoustakis, 1957
Andrena pareklisiae Mavromoustakis, 1957
Andrena rotundilabris Morawitz, 1878
Andrena schmiedeknechti Magretti, 1883
Andrena serraticornis Warncke, 1965
Andrena truncatilabris Morawitz, 1877
Andrena tscheki Morawitz, 1872
Andrena ululа Warncke, 1969
Andrena varia Pérez, 1895
Andrena villipes Pérez, 1895

Subgenus *Ulandrena* Warncke, 1968
Andrena abbreviata Dours, 1873
Andrena acerba Warncke, 1967
Andrena biguttata Friese, 1923
Andrena cantiaca Warncke, 1975

Andrena combaella Warncke, 1966
Andrena concinna Smith, 1853
Andrena crecca Warncke, 1965
Andrena elegans Giraud, 1863
Andrena fulvitarsis Brullé, 1832
Andrena graciliata Wood, 2023
Andrena heinrichi Grünwaldt, 2005
Andrena kriechbaumeri Schmiedeknecht, 1883
Andrena neocypriaca Mavromoustakis, 1956
Andrena polita Smith, 1847
Andrena resoluta Warncke, 1973
Andrena schulzi Strand, 1921
Andrena trikalensis Warncke, 1965
Andrena westensis Warncke, 1965

Genus *Cubiandrena* Warncke, 1968

Cubiandrena cubiceps (Friese, 1914)

Tribe Melliturgini Newman, 1834

Genus *Melitturga* Latreille, 1809

Subgenus *Melitturga* Latreille, 1809
Melitturga clavicornis (Latreille, 1806)
Melitturga praestans Giraud, 1861
*Melitturga syriac*a Friese, 1899
Melitturga taurica Friese, 1922

Subgenus *Petrusianna* Patiny, 1998
Melitturga caudata Pérez, 1879
Melitturga spinosa Morawitz, 1892

Tribe Panurgini Leach, 1815

Genus *Camptopoeum* Spinola, 1843

Subgenus *Camptopoeum* Spinola, 1843
Camptopoeum friesei Mocsáry, 1894
Camptopoeum frontale (Fabricius, 1804)
Camptopoeum nasutum (Spinola, 1838)

Subgenus *Epimethea* Morawitz, 1876
Camptopoeum variegatum (Morawitz, 1876)

Genus *Clavipanurgus* Warncke, 1972

Clavipanurgus sculpturatus (Morawitz, 1873)

Genus *Flavipanurgus* Warncke, 1972

Flavipanurgus flavus (Friese, 1897)
Flavipanurgus granadensis (Warncke, 1987)
Flavipanurgus ibericus (Warncke, 1972)
Flavipanurgus kastiliensis (Warncke, 1987)
Flavipanurgus merceti (Vachal, 1910)
Flavipanurgus venustus (Erichson, 1835)

Genus *Halopanurgus* Wood, Patiny & Bossert, 2022

Halopanurgus baldocki (Wood & Cross, 2017)
Halopanurgus fuzetus (Patiny, 1999)

Genus *Panurginus* Nylander, 1848

Panurginus albopilosus (Lucas, 1849)
Panurginus alpinus (Warncke, 1972)
Panurginus alticolus Morawitz, 1875
Panurginus annulatus (Sichel, 1859)
Panurginus brullei (Lepeletier, 1841)
Panurginus corpanus (Warncke, 1972)
Panurginus herzi Morawitz, 1892
Panurginus labiatus (Eversmann, 1852)
Panurginus lactipennis Friese, 1897
Panurginus montanus Giraud, 1861
Panurginus romani Aurivillius, 1914
Panurginus schwarzi (Warncke, 1972)
Panurginus sericatus (Warncke, 1972)
Panurginus turcomanicus Popov, 1936
Panurginus tyrolensis Richards, 1932

Genus *Panurgus* Panzer, 1806

Subgenus *Pachycephalopanurgus* Patiny, 1999
Panurgus canescens Latreille, 1811
Panurgus meridionalis Patiny, Ortiz-Sánchez & Michez, 2005

Subgenus *Panurgus* Panzer, 1806
Panurgus banksianus (Kirby, 1802)
Panurgus calcaratus (Scopoli, 1763)
Panurgus canarius Warncke, 1972
Panurgus cephalotes Latreille, 1811
Panurgus corsicus Warncke, 1972
Panurgus dargius Warncke, 1972
Panurgus dentipes Latreille, 1811
Panurgus oblitus Warncke, 1972
Panurgus perezi Saunders, 1882
Panurgus pici Pérez, 1895
Panurgus siculus Morawitz, 1872

Genus *Simpanurgus* Warncke, 1972

Simpanurgus phyllopodus (Warncke, 1972)

Family Apidae Latreille, 1802

Tribe Ammobatini Handlirsch, 1925

Genus *Ammobates* Latreille, 1809

Subgenus *Ammobates* Latreille, 1809
Ammobates armeniacus Morawitz, 1876
Ammobates biastoides (Friese, 1895)
Ammobates dusmeti Popov, 1951
Ammobates mavromoustakisi Popov, 1944
Ammobates opacus Popov, 1951
Ammobates punctatus (Fabricius, 1804)
Ammobates rufiventris Latreille, 1809
Ammobates sanguineus Friese, 1911
Ammobates similis Mocsáry, 1894
Ammobates verhoeffi Mavromoustakis, 1959
Ammobates vinctus Gerstaecker, 1869

Subgenus *Euphileremus* Popov, 1951
Ammobates melectoides (Smith, 1854)
Ammobates muticus Spinola, 1843
Ammobates oraniensis (Lepeletier, 1841)

Genus *Chiasmognathus* Engel, 2006

Chiasmognathus orientanus (Warncke, 1983)

Genus *Parammobatodes* Popov, 1931

Parammobatodes maroccanus (Warncke, 1983)
Parammobatodes minutus (Mocsáry, 1878)

Genus *Pasites* Jurine, 1807

Pasites maculatus Jurine, 1807

Tribe Ammobatoidini Michener, 1944

Genus *Ammobatoides* Radoszkowski, 1867

Ammobatoides abdominalis (Eversmann, 1852)
Ammobatoides luctuosus (Friese, 1911)
Ammobatoides okalii Kocourek, 1990
Ammobatoides scriptus (Gerstaecker, 1869)

Genus *Schmiedeknechtia* Friese, 1896

Schmiedeknechtia oraniensis Friese, 1896

Tribe Ancylaini Michener, 1944

Genus *Ancyla* Lepeletier, 1841

Ancyla asiatica Friese, 1922
Ancyla cretensis Friese, 1902
Ancyla holtzi Friese, 1902
Ancyla nigricornis Friese, 1902
Ancyla orientalica Warncke, 1979

Genus *Tarsalia* Morawitz, 1895

Tarsalia ancyliformis Popov, 1935
Tarsalia hirtipes Morawitz, 1895

Tribe Anthophorini Dahlbom, 1835

Genus *Amegilla* Friese, 1897

Subgenus *Amegilla* Friese, 1897
Amegilla canifrons (Smith, 1854)
Amegilla garrula (Rossi, 1790)
Amegilla ochroleuca (Pérez, 1879)
Amegilla quadrifasciata (de Villers, 1789)

Subgenus *Micramegilla* Brooks, 1988
Amegilla andresi (Friese, 1914)
Amegilla fasciata (Fabricius, 1775)
Amegilla nigricornis (Morawitz, 1873)
Amegilla velocissima (Fedtschenko, 1875)

Subgenus *Zebramegilla* Brooks, 1988
Amegilla albigena (Lepeletier, 1841)
Amegilla salviae (Morawitz, 1876)
Amegilla savignyi (Lepeletier, 1841)

Genus *Anthophora* Latreille, 1803

Subgenus *Anthophora* Latreille, 1803
Anthophora canescens Brullé, 1832
Anthophora crinipes Smith, 1854
Anthophora fulvitarsis Brullé, 1832
Anthophora plumipes (Pallas, 1772)
Anthophora punctilabris Pérez, 1879
Anthophora senescens Lepeletier, 1841
Subgenus *Caranthophora* Brooks, 1988

Anthophora dufourii Lepeletier, 1841
Anthophora pubescens (Fabricius, 1781)

Subgenus *Clisodon* Patton, 1879
Anthophora furcata (Panzer, 1798)

Subgenus *Dasymegilla* Brooks, 1988
Anthophora quadrimaculata (Panzer, 1798)

Subgenus *Heliophila* Klug, 1807
Anthophora bimaculata (Panzer, 1798)
Anthophora fulvodimidiata Dours, 1869
Anthophora lanzarotensis (Tkalců, 1993)
Anthophora lieftincki (Tkalců, 1993)
Anthophora pulverosa Smith, 1854

incertae sedis
Anthophora laevigata Spinola, 1808
Anthophora porphyrea Westrich, 1993
Anthophora purpuraria Westrich, 1993
Anthophora raddei Morawitz, 1875
Anthophora uniciliata Sichel, 1860

Subgenus *Lophanthophora* Brooks, 1988
Anthophora affinis Brullé, 1832
Anthophora agama Radoszkowski, 1869
Anthophora atricilla Eversmann, 1846
Anthophora cinerascens Lepeletier, 1841
Anthophora crysocnemis Morawitz, 1877
Anthophora dispar Lepeletier, 1841
Anthophora hispanica (Fabricius, 1787)
Anthophora mucida Gribodo, 1873
Anthophora robusta (Klug, 1845)
Anthophora rutilans Dours, 1869

Subgenus *Melea* Sandhouse, 1943
Anthophora plagiata (Illiger, 1806)

Subgenus *Mystacanthophora* Brooks, 1988
Anthophora borealis Morawitz, 1864

Subgenus *Paramegilla* Friese, 1897
Anthophora astragali Morawitz, 1878
Anthophora balassogloi (Radoszkowski, 1877)
Anthophora balneorum Lepeletier, 1841
Anthophora deserticola Morawitz, 1873
Anthophora dubia Eversmann, 1852
Anthophora femorata (Olivier, 1789)
Anthophora ferruginea Lepeletier, 1841
Anthophora fulvipes Eversmann, 1846
Anthophora gallica Dalla Torre & Friese, 1895
Anthophora gracilipes Morawitz, 1873
Anthophora harmalae Morawitz, 1878

Anthophora ireos (Pallas, 1773)
Anthophora larvata Giraud, 1863
Anthophora nigrovittata Dours, 1869
Anthophora podagra Lepeletier, 1841
Anthophora ponomarevae Brooks, 1988
Anthophora quadricolor (Erichson, 1840)
Anthophora segnis Eversmann, 1852
Anthophora socia (Klug, 1845)

Subgenus *Petalosternon* Brooks, 1988
Anthophora calcarata Lepeletier, 1841
Anthophora crassipes Lepeletier, 1841
Anthophora orotavae (Saunders, 1904)

Subgenus *Pyganthophora* Brooks, 1988
Anthophora aestivalis (Panzer, 1801)
Anthophora albosignata (Friese, 1896)
Anthophora alluaudi Pérez, 1902
Anthophora altaica Radoszkowski, 1882
Anthophora atriceps Pérez, 1879
Anthophora atroalba Lepeletier, 1841
Anthophora balearica (Friese, 1896)
Anthophora cincrea (Friese, 1896)
Anthophora dalmatica Pérez, 1902
Anthophora leucophaea Pérez, 1879
Anthophora monacha (Erichson, 1849)
Anthophora nigriceps Morawitz, 1886
Anthophora orientalis Morawitz, 1877
Anthophora pedata Eversmann, 1852
Anthophora pruinosa Smith, 1854
Anthophora retusa (Linnaeus, 1758)
Anthophora rogenhoferi Morawitz, 1872
Anthophora romandii Dours, 1869
Anthophora senilis Eversmann, 1846
Anthophora sichelii Radoszkowski, 1869
Anthophora testaceipes Morawitz, 1888
Anthophora ventilabris Lepeletier, 1841
Anthophora vernalis Morawitz, 1877

Genus *Habropoda* Smith, 1854

Habropoda ezonata Smith, 1854
Habropoda tarsata (Spinola, 1838)
Habropoda zonatula Smith, 1854

Tribe Apini Latreille, 1802

Genus *Apis* Linnaeus, 1758

Subgenus *Apis* Linnaeus, 1758
Apis mellifera Linnaeus, 1758

Tribe Biastini Linsley & Michener, 1939

Genus *Biastes* Panzer, 1806

Biastes brevicornis (Panzer, 1798)
Biastes emarginatus (Schenck, 1853)
Biastes truncatus (Nylander, 1848)

Tribe Bombini Latreille, 1802

Genus *Bombus* Latreille, 1802

Subgenus *Alpigenobombus* Skorikov, 1914
Bombus wurflenii Radoszkowski, 1859

Subgenus *Alpinobombus* Skorikov, 1914
Bombus alpinus (Linnaeus, 1758)
Bombus balteatus Dahlbom, 1832
Bombus hyperboreus Schonherr, 1809
Bombus pyrrhopygus Friese, 1902

Subgenus *Bombias* Robertson, 1903
Bombus confusus Schenck, 1861

Subgenus *Bombus* Latreille, 1802
Bombus cryptarum (Fabricius, 1775)
Bombus lucorum (Linnaeus, 1761)
Bombus magnus Vogt, 1911
Bombus patagiatus Nylander, 1848
Bombus renardi Radoszkowski, 1884
Bombus sporadicus Nylander, 1848
Bombus terrestris (Linnaeus, 1758)
Bombus xanthopus (Kriechbaumer, 1870)

Subgenus *Cullumanobombus* Vogt, 1911
Bombus cullumanus (Kirby, 1802)
Bombus semenoviellus Skorikov, 1910
Subgenus *Kallobombus* Dalla Torre, 1880
Bombus soroeensis (Fabricius, 1777)

Subgenus *Megabombus* Dalla Torre, 1880
Bombus argillaceus Scopoli, 1763
Bombus consobrinus Dahlbom, 1832
Bombus gerstaeckeri Morawitz, 1881
Bombus hortorum (Linnaeus, 1761)
Bombus ruderatus (Fabricius, 1775)
Bombus saltuarius (Skorikov, 1923)

Subgenus *Melanobombus* Dalla Torre, 1880
Bombus lapidarius (Linnaeus, 1758)
Bombus sichelii Radoszkowski, 1859

Subgenus *Mendacibombus* Skorikov, 1914
Bombus mendax Gerstäcker, 1869

Subgenus *Psithyrus* Lepeletier, 1833
Bombus barbutellus (Kirby, 1802)
Bombus bohemicus Seidl, 1838
Bombus campestris (Panzer, 1801)
Bombus flavidus Eversmann, 1852
Bombus norvegicus (Sparre-Schneider, 1918)
Bombus quadricolor (Lepeletier, 1832)
Bombus rupestris (Fabricius, 1793)
Bombus sylvestris (Lepeletier, 1832)
Bombus vestalis (Geoffroy, 1785)

Subgenus *Pyrobombus* Dalla Torre, 1880
Bombus brodmannicus Vogt, 1909
Bombus cingulatus Wahlberg, 1854
Bombus glacialis Friese, 1902
Bombus haematurus Kriechbaumer, 1870
Bombus hypnorum (Linnaeus, 1758)
Bombus jonellus (Kirby, 1802)
Bombus konradini Reinig, 1965
Bombus lapponicus (Fabricius, 1793)
Bombus modestus Eversmann, 1852
Bombus monticola Smith, 1849
Bombus pratorum (Linnaeus, 1761)
Bombus pyrenaeus Pérez, 1879

Subgenus *Sibiricobombus* Vogt, 1911
Bombus niveatus Kriechbaumer, 1870

Subgenus *Subterraneobombus* Vogt, 1911
Bombus distinguendus Morawitz, 1869
Bombus fragrans (Pallas, 1771)
Bombus subterraneus (Linnaeus, 1758)

Subgenus *Thoracobombus* Dalla Torre, 1880
Bombus armeniacus Radoszkowski, 1877
Bombus deuteronymus Schulz, 1879
Bombus humilis Illiger, 1806
Bombus inexspectatus (Tkalců, 1963)
Bombus laesus Morawitz, 1875
Bombus mesomelas Gerstäcker, 1869
Bombus mlokosievitzii Radoszkowski, 1877
Bombus mucidus Gerstäcker, 1869
Bombus muscorum (Linnaeus, 1758)
Bombus pascuorum (Scopoli, 1763)
Bombus pomorum (Panzer, 1805)
Bombus ruderarius (Müller, 1776)
Bombus schrencki Morawitz, 1881
Bombus sylvarum (Linnaeus, 1761)
Bombus veteranus (Fabricius, 1793)
Bombus zonatus Smith, 1854

Tribe Ceratinini Latreille, 1802

Genus *Ceratina* Latreille, 1802

Subgenus *Ceratina* Latreille, 1802
Ceratina cucurbitina (Rossi, 1792)

Subgenus *Dalyatina* Terzo, 2007
Ceratina parvula Smith, 1854

Subgenus *Euceratina* Hirashima, Moure & Daly, 1971
Ceratina acuta Friese, 1896
Ceratina albosticta Cockerell, 1931
Ceratina callosa (Fabricius, 1794)
Ceratina chalcites Germar, 1839
Ceratina chalybea Chevrier, 1872
Ceratina chrysomalla Gerstaecker, 1869
Ceratina cyanea (Kirby, 1802)
Ceratina cypriaca Mavromoustakis, 1949
Ceratina dallatorreana Friese, 1896
Ceratina dentiventris Gerstaecker, 1869
Ceratina gravidula Gerstaecker, 1869
Ceratina loewi Gerstaecker, 1869
Ceratina mandibularis Friese, 1896
Ceratina mocsaryi Friese, 1896
Ceratina moricei Friese, 1899
Ceratina nigroaenea Gerstaecker, 1869
Ceratina nigrolabiata Friese, 1896
Ceratina sakagamii Terzo, 1998
Ceratina saundersi Daly, 1983
Ceratina teunisseni Terzo & Rasmont, 1997
Ceratina zandeni Terzo, 1998

Subgenus *Neoceratina* Perkins, 1912
Ceratina bispinosa Handlirsch, 1889
Ceratina schwarzi Kocourek 1998

Subgenus *Pithitis* Klug, 1807
Ceratina tarsata Morawitz, 1872

Tribe Epeolini Robertson, 1903

Genus *Epeolus* Latreille, 1802

Epeolus alpinus Friese, 1893
Epeolus aureovestitus Dours, 1873
Epeolus bischoffi (Mavromoustakis, 1954)
Epeolus compar Alfken, 1938
Epeolus cruciger (Panzer, 1799)
Epeolus fallax Morawitz, 1872
Epeolus fasciatus Friese, 1895

Epeolus flavociliatus Friese, 1899
Epeolus ibericus Bogusch, 2018
Epeolus intermedius Pérez, 1884
Epeolus julliani Pérez, 1884
Epeolus productulus Bischoff, 1930
Epeolus schummeli Schilling, 1849
Epeolus siculus Soika, 1944
Epeolus sigillatus Alfken, 1930
Epeolus tarsalis Morawitz, 1874
Epeolus transitorius Eversmann, 1852
Epeolus variegatus (Linnaeus, 1758)

Genus *Triepeolus* Robertson, 1901

Triepeolus tristis (Smith, 1854)

Tribe Epeoloidini Linsley & Michener, 1939

Genus *Epeoloides* Giraud, 1863

Epeoloides coecutiens (Fabricius, 1775)

Tribe Eucerini Latreille, 1802

Genus *Eucera* Scopoli, 1770

Subgenus *Cubitalia* Friese, 1911
Eucera breviceps Friese, 1911
Eucera morio Friese, 1911
Eucera parvicornis Mocsáry, 1878
Eucera tristis Morawitz, 1875
Subgenus *Eucera* Scopoli, 1770
Eucera aequata Vachal, 1907
Eucera albofasciata Friese, 1895
Eucera algira Lepeletier, 1841
Eucera atriceps Morawitz, 1877
Eucera barbiventris Pérez, 1902
Eucera bidentata Pérez, 1887
Eucera caerulescens Friese, 1899
Eucera caspica Morawitz, 1873
Eucera cineraria Eversmann, 1852
Eucera clypeata Erichson, 1835
Eucera codinai Dusmet y Alonso, 1926
Eucera collaris Dours, 1873
Eucera confinis Pérez, 1895
Eucera curvitarsis Mocsáry, 1879
Eucera cypria Alfken, 1933
Eucera dafnii Dorchin, 2019
Eucera dalmatica Lepeletier, 1841
Eucera digitata Friese, 1896

Eucera dimidiata Brullé, 1832
Eucera ebmeri Risch, 1999
Eucera elongatula Vachal, 1907
Eucera excisa Mocsáry, 1879
Eucera fasciata Risch, 1999
Eucera ferghanica Morawitz, 1875
Eucera flavicornis Risch, 2003
Eucera furfurea Vachal, 1907
Eucera gaullei Vachal, 1907
Eucera gracilipes Pérez, 1895
Eucera grisea Fabricius, 1793
Eucera helvola Klug, 1845
Eucera hispana Lepeletier, 1841
Eucera interrupta Bär, 1850
Eucera kullenbergi Tkalců, 1978
Eucera laxiscopa Alfken, 1935
Eucera longicornis (Linnaeus, 1758)
Eucera matalae Tkalců, 2003
Eucera microsoma Cockerell, 1922
Eucera nigrescens Pérez, 1879
Eucera nigrifacies Lepeletier, 1841
Eucera nigrilabris Lepeletier, 1841
Eucera notata Lepeletier, 1841
Eucera numida Lepeletier, 1841
Eucera obliterata Pérez, 1896
Eucera oraniensis Lepeletier, 1841
Eucera palaestinae Friese, 1922
Eucera pannonica Mocsáry, 1878
Eucera paraclypeata Sitdikov, 1988
Eucera parnassia Pérez, 1902
Eucera penicillata Risch, 1997
Eucera pollinosa Smith, 1854
Eucera proxima Morawitz, 1875
Eucera pseudeucnemidea Risch, 1997
Eucera punctatissima Pérez, 1895
Eucera puncticollis Morawitz, 1876
Eucera punctulata Alfken, 1942
Eucera pythagoras Risch, 2003
Eucera rufipes Smith, 1879
Eucera seminuda Brullé, 1832
Eucera squamosa Lepeletier, 1841
Eucera syriaca Dalla Torre, 1896
Eucera taurea Vachal, 1907
Eucera taurica Morawitz, 1871
Eucera terminata Pérez, 1895
Eucera vittulata Noskiewicz, 1934
Eucera vulpes Brullé, 1832

Subgenus *Synhalonia* Patton, 1879
Eucera brachycera (Gribodo, 1893)
Eucera hungarica Friese, 1896
Eucera intermedia (Morawitz, 1875)

Eucera lanuginosa Klug, 1845
Eucera maroccana (Dusmet y Alonso, 1928)
Eucera mastrucata (Morawitz, 1875)
Eucera mediterranea Friese, 1896
Eucera melectoides (Radoszkowski, 1893)
Eucera obscura (Brullé, 1832)
Eucera plumigera (Kohl, 1905)
Eucera pollinaris (Kirby, 1802)
Eucera quilisi (Dusmet y Alonso, 1926)
Eucera rufa (Lepeletier, 1841)
Eucera ruficollis (Brullé, 1832)
Eucera transitoria (Morawitz, 1875)
Eucera tricincta Erichson, 1835
Eucera velutina (Morawitz, 1873)
Eucera vernalis (Morawitz, 1875)
Eucera alborufa (Radoszkowski, 1872)

Genus *Tetralonia* Spinola, 1839

Tetralonia alticincta (Lepeletier, 1841)
Tetralonia cinctella Saunders, 1908
Tetralonia dentata (Germar, 1839)
Tetralonia fulvescens Giraud, 1863
Tetralonia gennargentui (Nobile, Catania & Bella, 2021)
Tetralonia glauca (Fabricius, 1775)
Tetralonia graja (Eversmann, 1852)
Tetralonia hohmanni Tkalců, 1993
Tetralonia iberica Dusmet y Alonso, 1926
Tetralonia inulae Tkalců, 1979
Tetralonia julliani (Pérez, 1879)
Tetralonia lanzarotensis Tkalců, 1993
Tetralonia lyncea Mocsáry, 1879
Tetralonia malvae (Rossi, 1790)
Tetralonia nana Morawitz, 1874
Tetralonia pollinosa (Lepeletier, 1841)
Tetralonia ruficornis (Fabricius, 1804)
Tetralonia salicariae (Lepeletier, 1841)
Tetralonia scabiosae Mocsáry, 1881
Tetralonia strigata (Lepeletier, 1841)
Tetralonia vicina Morawitz, 1876

Tribe Melectini Westwood, 1839

Genus *Melecta* Latreille, 1802

Subgenus *Eupavlovskia* Popov, 1955
Melecta funeraria Smith, 1854
Melecta obscura Friese, 1895

Subgenus *Melecta* Latreille, 1802
Melecta aegyptiaca Radoszkowski, 1876

Melecta albifrons (Forster, 1771)
Melecta alcestis Lieftinck, 1980
Melecta amanda Lieftinck, 1980
Melecta baerii (Radoszkowski, 1865)
Melecta canariensis Lieftinck, 1958
Melecta caroli Lieftinck, 1958
Melecta curvispina Lieftinck, 1958
Melecta diacantha Eversmann, 1852
Melecta duodecimmaculata (Rossi, 1790)
Melecta eversmanni Radoszkowski, 1893
Melecta festiva Lieftinck, 1980
Melecta fulgida Lieftinck, 1980
Melecta gracilipes Lieftinck, 1980
Melecta grandis Lepeletier, 1841
Melecta guichardi Lieftinck, 1980
Melecta italica Radoszkowski, 1876
Melecta leucorhyncha Gribodo, 1893
Melecta luctuosa (Scopoli, 1770)
Melecta mundula Lieftinck, 1983
Melecta prophanta Lieftinck, 1980
Melecta rutenica Radoszkowski, 1893
Melecta tuberculata Lieftinck, 1980

Subgenus *Paracrocisa* Alfken, 1937
Melecta guilochei Dusmet y Alonso, 1915

Genus *Thyreus* Panzer, 1806

Thyreus affinis (Morawitz, 1874)
Thyreus elegans (Morawitz, 1877)
Thyreus hellenicus Lieftinck, 1968
Thyreus hirtus (De Beaumont, 1940)
Thyreus histrionicus (Illiger, 1806)
Thyreus hohmanni Schwarz, 1993
Thyreus orbatus (Lepeletier, 1841)
Thyreus picaron Lieftinck, 1968
Thyreus ramosus (Lepeletier, 1841)
Thyreus scutellaris (Fabricius, 1781)
Thyreus truncatus (Pérez, 1883)

Tribe Nomadini Latreille, 1802

Genus *Nomada* Scopoli, 1770

Nomada accentifera Pérez, 1895
Nomada achaica Schwarz & Smit, 2020
Nomada acutispina Schwarz & Smit, 2018
Nomada aeginaica Schwarz & Smit, 2018
Nomada agrestis Fabricius, 1787
Nomada alboguttata Herrich-Schäffer, 1839

Nomada alpigena Schwarz, Gusenleitner & Mazzucco, 1999
Nomada argentata Herrich-Schäffer, 1839
Nomada argentea (Schwarz, 1966)
Nomada ariasi Dusmet y Alonso, 1913
Nomada armata Herrich-Schäffer, 1839
Nomada arrogans Schmiedeknecht, 1882
Nomada atroscutellaris Strand, 1921
Nomada babyi Schwarz & Standfuss, 2007
Nomada baccata Smith, 1844
Nomada barcelonensis Cockerell, 1917
Nomada basalis Herrich-Schäffer, 1839
Nomada beaumonti Schwarz, 1967
Nomada bifasciata Olivier, 1811
Nomada bispinosa Mocsáry, 1883
Nomada blepharipes Schmiedeknecht, 1882
Nomada bluethgeni Stöckhert, 1943
Nomada bolivari Dusmet y Alonso, 1913
Nomada bouceki Kocourek, 1985
Nomada braunsiana Schmiedeknecht, 1882
Nomada breviceps Schwarz, Smit & Ockermüller, 2019
Nomada breviscapa Schwarz & Smit, 2018
Nomada cadiza Schwarz & Gusenleitner, 2013
Nomada calimorpha Schmiedeknecht, 1882
Nomada carnifex Mocsáry, 1883
Nomada caspia Morawitz, 1895
Nomada castellana Dusmet y Alonso, 1913
Nomada cherkesiana Mavromoustakis, 1955
Nomada collarae Schwarz, 1964
Nomada concolor Schmiedeknecht, 1882
Nomada confinis Schmiedeknecht, 1882
Nomada conjungens Herrich-Schäffer, 1839
Nomada connectens Pérez, 1884
Nomada corcyraea Schmiedeknecht, 1882
Nomada coronata Pérez, 1895
Nomada coxalis Morawitz, 1877
Nomada crenulata Schwarz & Smit, 2018
Nomada cretensis Schulz, 1906
Nomada cristata Pérez, 1895
Nomada cruenta Schmiedeknecht, 1882
Nomada cypria Mavromoustakis, 1952
Nomada cypricola Mavromoustakis, 1955
Nomada diacantha Schwarz, 1981
Nomada dira Schmiedeknecht, 1882
Nomada discedens Pérez, 1884
Nomada discrepans Schmiedeknecht, 1882
Nomada distinguenda Morawitz, 1874
Nomada dolosa Mocsáry, 1883
Nomada dubia Eversmann, 1852
Nomada duplex Smith, 1854
Nomada ebmeri Schwarz & Smit, 2018
Nomada ecarinata Morawitz, 1888
Nomada elsei Schwarz & Smit, 2018

Nomada emarginata Morawitz, 1877
Nomada eos Schmiedeknecht, 1882
Nomada errans Lepeletier, 1841
Nomada erythrocephala Morawitz, 1871
Nomada fabriciana (Linnaeus, 1767)
Nomada facilis Schwarz, 1967
Nomada fallax Pérez, 1913
Nomada femoralis Morawitz, 1869
Nomada fenestrata Lepeletier, 1841
Nomada ferruginata (Linnaeus, 1767)
Nomada filicornis Schwarz & Smit, 2018
Nomada flava Panzer, 1798
Nomada flavigenis Schwarz & Standfuss, 2007
Nomada flavilabris Morawitz, 1875
Nomada flavinervis Brullé, 1832
Nomada flavoguttata (Kirby, 1802)
Nomada flavopicta (Kirby, 1802)
Nomada fucata Panzer, 1798
Nomada fulvicornis Fabricius, 1793
Nomada furva Panzer, 1798
Nomada furvoides Stöckhert, 1943
Nomada fusca Schwarz, 1986
Nomada fuscicornis Nylander, 1848
Nomada gageae Schwarz & Smit, 2018
Nomada glaberrima Schmiedeknecht, 1882
Nomada glaucopis Pérez, 1890
Nomada goodeniana (Kirby, 1802)
Nomada gransassoi Schwarz, 1986
Nomada gredosiana Schwarz & Gusenleitner, 2013
Nomada gribodoi Schmiedeknecht, 1882
Nomada gruenwaldti Schwarz, 1979
Nomada guichardi Schwarz, 1981
Nomada guttulata Schenck, 1859
Nomada halophila Wood, 2022
Nomada hera Schwarz, 1965
Nomada hirtipes Pérez, 1884
Nomada hispanica Dusmet y Alonso, 1913
Nomada hungarica Dalla Torre & Friese, 1894
Nomada illustris Schmiedeknecht, 1882
Nomada immaculata Morawitz, 1874
Nomada imperialis Schmiedeknecht, 1882
Nomada incisa Schmiedeknecht, 1882
Nomada insignipes Schmiedeknecht, 1882
Nomada integra Brullé, 1832
Nomada italica Dalla Torre & Friese, 1894
Nomada jaramensis Dusmet y Alonso, 1913
Nomada kervilleana Pérez, 1913
Nomada kohli Schmiedeknecht, 1882
Nomada kornosica Mavromoustakis, 1958
Nomada kriesteni Schwarz & Gusenleitner, 2013
Nomada lamellata Schwarz, 1977
Nomada lapillula Schwarz & Smit, 2018

Nomada lateritia Mocsáry, 1883
Nomada lathburiana (Kirby, 1802)
Nomada laticrus Mocsáry, 1883
Nomada legoffi Dufrêne, 2021
Nomada leucophthalma (Kirby, 1802)
Nomada limassolica Mavromoustakis, 1955
Nomada linsenmaieri Schwarz, 1974
Nomada litigiosa Gribodo, 1893
Nomada lucidula Schwarz, 1967
Nomada lutea Eversmann, 1852
Nomada luteipes Schwarz & Smit, 2018
Nomada maculicornis Pérez, 1884
Nomada mandibularis Schwarz & Gusenleitner, 2013
Nomada marshamella (Kirby, 1802)
Nomada mauritanica Lepeletier, 1841
Nomada mavromoustakisi Schwarz & Standfuss, 2007
Nomada maxschwarzi Smit, 2018
Nomada melanopyga Schmiedeknecht, 1882
Nomada melathoracica Imhoff, 1834
Nomada merceti Alfken, 1909
Nomada minuscula Noskiewicz, 1930
Nomada mitaii Proshchalykin, 2010
Nomada mocsaryi Schmiedeknecht, 1882
Nomada moeschleri Alfken, 1913
Nomada montarco Álvarez Fidalgo, 2023
Nomada moravitzii Radoszkowski, 1876
Nomada mutabilis Morawitz, 1870
Nomada mutica Morawitz, 1872
Nomada nausicaa Schmiedeknecht, 1882
Nomada nesiotica Mavromoustakis, 1958
Nomada nigrifrons Schwarz & Smit, 2018
Nomada nigrilabris Schwarz & Smit, 2018
Nomada nigrospina Schwarz & Smit, 2018
Nomada nigrovaria Pérez, 1895
Nomada nobilis Herrich-Schäffer, 1839
Nomada noskiewiczi Schwarz, 1966
Nomada numida Lepeletier, 1841
Nomada obscura Zetterstedt, 1838
Nomada obtusifrons Nylander, 1848
Nomada oculata Friese, 1921
Nomada opaca Alfken, 1913
Nomada opaciformis Schwarz & Smit, 2018
Nomada oralis Schwarz, 1981
Nomada orbitalis Pérez, 1913
Nomada ottomanensis Schwarz & Smit, 2018
Nomada pallispinosa Schwarz, 1967
Nomada panurgina Morawitz, 1869
Nomada panzeri Lepeletier, 1841
Nomada pastoralis Eversmann, 1852
Nomada pectoralis Morawitz, 1877
Nomada piccioliana Magretti, 1883
Nomada piliventris Morawitz, 1877

Nomada pilosa Schwarz & Gusenleitner, 2017
Nomada platythorax Schwarz, 1981
Nomada pleurosticta Herrich-Schäffer, 1839
Nomada polemediana Mavromoustakis, 1957
Nomada posthuma Blüthgen, 1949
Nomada priesneri Schwarz, 1965
Nomada propinqua Schmiedeknecht, 1882
Nomada pruinosa Pérez, 1895
Nomada pulchra Arnold, 1888
Nomada pygidialis Schwarz, 1981
Nomada pyrgosica Schwarz & Smit, 2018
Nomada radoszkowskii Łoziński, 1922
Nomada rhenana Morawitz, 1872
Nomada roberjeotiana Panzer, 1799
Nomada rostrata Herrich-Schäffer, 1839
Nomada rubiginosa Pérez, 1884
Nomada rubricollis Schwarz, 1967
Nomada rubricosa Eversmann, 1852
Nomada rubricoxa Schwarz, 1977
Nomada rubriventris Schwarz, 1981
Nomada ruficornis (Linnaeus, 1758)
Nomada rufipes Fabricius, 1793
Nomada rufoabdominalis Schwarz, 1963
Nomada sabulosa Radoszkowski, 1876
Nomada sanguinea Smith, 1854
Nomada scheuchli Schwarz & Standfuss, 2007
Nomada serricornis Pérez, 1884
Nomada sexfasciata Panzer, 1799
Nomada sheppardana (Kirby, 1802)
Nomada sicula Schwarz, 1974
Nomada signata Jurine, 1807
Nomada similis Morawitz, 1872
Nomada simulatrix Schwarz & Smit, 2018
Nomada smiti Schwarz, 2018
Nomada standfussi Schwarz, 2007
Nomada stigma Fabricius, 1805
Nomada stoeckherti Pittioni, 1951
Nomada striata Fabricius, 1793
Nomada subcornuta (Kirby, 1802)
Nomada succincta Panzer, 1798
Nomada sybarita Schmiedeknecht, 1882
Nomada symphyti Stöckhert, 1930
Nomada tarsalis Schwarz & Smit, 2018
Nomada tenella Mocsáry, 1883
Nomada teunisseni Schwarz & Smit, 2018
Nomada thersites Schmiedeknecht, 1882
Nomada tormentillae Alfken, 1901
Nomada trapeziformis Schmiedeknecht, 1882
Nomada tridentirostris Dours, 1873
Nomada trispinosa Schmiedeknecht, 1882
Nomada tuberculifera Schwarz & Smit, 2018
Nomada umbrosa Schmiedeknecht, 1882

Nomada unica Schwarz & Smit, 2018
Nomada unispinosa Schwarz, 1981
Nomada verna Schmiedeknecht, 1882
Nomada villosa Thomson, 1870
Nomada warnckei Schwarz & Smit, 2018
Nomada yarrowi Schwarz, 1981
Nomada yermasoyiae Schwarz, Smit & Gusenleitner, 2018
Nomada zonata Panzer, 1798

Tribe Xylocopini Latreille, 1802

Genus *Xylocopa* Latreille, 1802

Subgenus *Copoxyla* Maa, 1954
Xylocopa iris (Christ, 1791)

Subgenus *Koptortosoma* Gribodo, 1894
Xylocopa pubescens Spinola, 1838

Subgenus *Mesotrichia* Westwood, 1838
Xylocopa nigrita (Fabricius, 1775)

Subgenus *Proxylocopa* Hedicke, 1938
Xylocopa olivieri Lepeletier, 1841

Subgenus *Rhysoxylocopa* Hurd & Moure, 1963
Xylocopa amedaei Lepeletier, 1841
Xylocopa cantabrita Lepeletier, 1841

Subgenus *Xylocopa* Latreille, 1802
Xylocopa valga Gerstaecker 1872
Xylocopa violacea Linnaeus, 1758
Subgenus *Xylocopoides* Michener, 1954
Xylocopa virginica (Linnaeus, 1771)

Family Colletidae Lepeletier, 1841

Tribe Colletini Latreille, 1802

Genus *Colletes* Latreille, 1802

Colletes abeillei Pérez, 1903
Colletes acutiformis Noskiewicz, 1936
Colletes acutus Pérez, 1903
Colletes albomaculatus (Lucas, 1849)
Colletes anceps Radoszkowski, 1891
Colletes anchusae Noskiewicz, 1924
Colletes brevigena Noskiewicz, 1936
Colletes canescens Smith, 1853
Colletes carinatus Radoszkowski, 1891
Colletes cariniger Pérez, 1903

Colletes caskanus (Strand, 1919)
Colletes caspicus Morawitz, 1874
Colletes chengtehensis Yasumatsu, 1935
Colletes collaris Dours, 1872
Colletes conradti Noskiewicz, 1936
Colletes creticus Noskiewicz, 1936
Colletes cunicularius (Linnaeus, 1761)
Colletes cyprius Noskiewicz, 1936
Colletes daviesanus Smith, 1846
Colletes dimidiatus Brullé, 1840
Colletes dinizi Kuhlmann, Ortiz & Ornosa, 2001
Colletes dusmeti Noskiewicz, 1936
Colletes eous Morice, 1904
Colletes escalerai Noskiewicz, 1936
Colletes floralis Eversmann, 1852
Colletes fodiens (Fourcroy, 1785)
Colletes foveolaris Pérez, 1903
Colletes gallicus Radoszkowski, 1891
Colletes graeffei Alfken, 1900
Colletes halophilus Verhoeff, 1944
Colletes hederae Schmidt & Westrich, 1993
Colletes hethiticus Warncke, 1978
Colletes hylaeiformis Eversmann, 1852
Colletes impunctatus Nylander, 1852
Colletes inexpectatus Noskiewicz, 1936
Colletes intricans Spinola, 1838
Colletes jansmiti Kuhlmann, 2018
Colletes kozlovi Friese, 1913
Colletes ligatus Erichson, 1835
Colletes maidli Noskiewicz, 1936
Colletes marginatus Smith, 1846
Colletes merceti Noskiewicz, 1936
Colletes meyeri Noskiewicz, 1936
Colletes mlokossewiczi Radoszkowski, 1891
Colletes moricei Saunders, 1904
Colletes nasutus Smith, 1853
Colletes nigricans Gistel, 1857
Colletes noskiewiczi Cockerell, 1942
Colletes pannonicus Hölzler & Mazzucco, 2011
Colletes perezi Morice, 1904
Colletes pulchellus Pérez, 1903
Colletes punctatus Mocsáry, 1877
Colletes schmidi Noskiewicz, 1962
Colletes senilis (Eversmann, 1852)
Colletes sidemii Radoszkowski, 1891
Colletes sierrensis Frey-Gessner, 1903
Colletes similis Schenck, 1853
Colletes squamulosus Noskiewicz, 1936
Colletes standfussi Kuhlmann, 2003
Colletes subnitens Noskiewicz, 1936
Colletes succinctus (Linnaeus, 1758)
Colletes tardus Noskiewicz, 1936

Colletes tuberculatus Morawitz, 1894
Colletes tuberculiger Noskiewicz, 1936
Colletes wacki Kuhlmann, 2002
Colletes wolfi Kuhlmann, 1999

Tribe Hylaeini Viereck, 1916

Genus *Hylaeus* Fabricius, 1793

Subgenus *Abrupta* Méhelÿ, 1935
Hylaeus cornutus Curtis, 1831

Subgenus *Dentigera* Popov, 1939
Hylaeus biarmicus (Warncke, 1992)
Hylaeus brachycephalus (Morawitz, 1868)
Hylaeus brevicornis Nylander, 1852
Hylaeus conformis Förster, 1871
Hylaeus glacialis Morawitz, 1872
Hylaeus gredleri Förster, 1871
Hylaeus imparilis Förster, 1871
Hylaeus intermedius Förster, 1871
Hylaeus kahri Förster, 1871
Hylaeus pallidicornis Morawitz, 1876
Hylaeus penalaris Dathe, 1979
Hylaeus pilosulus (Pérez, 1903)
Hylaeus punctus Förster, 1871
Hylaeus rubicola Saunders, 1850
Subgenus *Hylaeus* Fabricius, 1793
Hylaeus adriaticus (Warncke, 1972)
Hylaeus angustatus (Schenck, 1861)
Hylaeus annulatus (Linnaeus, 1758)
Hylaeus cardioscapus Cockerell, 1924
Hylaeus communis Nylander, 1852
Hylaeus deceptorius (Benoist, 1959)
Hylaeus gracilicornis (Morawitz, 1867)
Hylaeus hellenicus Dathe, 2000
Hylaeus ibericus Dathe, 2000
Hylaeus koenigsmanni Dathe, 1981
Hylaeus leptocephalus (Morawitz, 1870)
Hylaeus mariannae Theunert, 2013
Hylaeus nigrifacies Bramson, 1879
Hylaeus nigritus (Fabricius, 1798)
Hylaeus nivaliformis Dathe, 1977
Hylaeus nivalis (Morawitz, 1867)
Hylaeus paulus Bridwell, 1919
Hylaeus pyrenaicus Dathe, 2000
Hylaeus scutellaris Morawitz, 1873
Hylaeus sidensis (Warncke, 1981)
Hylaeus trifidus (Alfken, 1936)
Hylaeus tyrolensis Förster, 1871

Subgenus *Koptogaster* Alfken, 1912
Hylaeus bifasciatus (Jurine, 1807)
Hylaeus punctulatissimus Smith, 1842

Subgenus *Lambdopsis* Popov, 1939
Hylaeus annularis (Kirby, 1802)
Hylaeus crassanus (Warncke, 1972)
Hylaeus dilatatus (Kirby, 1802)
Hylaeus euryscapus Förster, 1871
Hylaeus pfankuchi (Alfken, 1919)
Hylaeus rinki (Gorski, 1852)
Hylaeus scutellatus (Spinola, 1838)

Subgenus *Mehelyana* Sandhouse, 1943
Hylaeus friesei (Alfken, 1904)

Subgenus *Nesoprosopis* Perkins, 1899
Hylaeus pectoralis Förster, 1871

Subgenus *Paraprosopis* Popov, 1939
Hylaeus ater (Saunders, 1903)
Hylaeus azorae (Warncke, 1992)
Hylaeus canariensis Erlandsson, 1983
Hylaeus clypearis (Schenck, 1853)
Hylaeus hohmanni Dathe, 1993
Hylaeus lineolatus (Schenck, 1861)
Hylaeus maderensis (Cockerell, 1921)
Hylaeus pictipes Nylander, 1852
Hylaeus sinuatus (Schenck, 1853)
Hylaeus soror (Pérez, 1903)
Hylaeus styriacus Förster, 1871
Hylaeus taeniolatus Förster, 1871
Subgenus *Patagiata* Blüthgen, 1949
Hylaeus difformis (Eversmann, 1852)

Subgenus *Prosopis* Fabricius, 1804
Hylaeus absolutus (Gribodo, 1894)
Hylaeus confusus Nylander, 1852
Hylaeus convergens Dathe, 2000
Hylaeus coriaceus (Pérez, 1895)
Hylaeus duckei (Alfken, 1904)
Hylaeus garrulus (Warncke, 1981)
Hylaeus gazagnairei (Vachal, 1891)
Hylaeus gibbus Saunders, 1850
Hylaeus hyrcanius Dathe, 1980
Hylaeus incongruus Förster, 1871
Hylaeus meridionalis Förster, 1871
Hylaeus pictus (Smith, 1853)
Hylaeus purpurissatus (Vachal, 1895)
Hylaeus rugicollis Morawitz, 1873
Hylaeus signatus (Panzer, 1798)
Hylaeus teruelus (Warncke, 1981)

Hylaeus trinotatus (Pérez, 1895)
Hylaeus variegatus (Fabricius, 1798)

Subgenus *Spatulariella* Popov, 1939
Hylaeus alpinus (Morawitz, 1867)
Hylaeus cypricola (Warncke, 1972)
Hylaeus decipiens Förster, 1871
Hylaeus hyalinatus Smith, 1842
Hylaeus hyperpunctatus (Strand, 1909)
Hylaeus longimaculus (Alfken, 1936)
Hylaeus moniae Nobile & Tomarchio, 1998
Hylaeus punctatus (Brullé, 1832)
Hylaeus sulphuripes (Gribodo, 1894)

Family Halictidae Thomson, 1869

Subfamily Halictinae Thomson, 1869

Genus *Halictus* Latreille, 1804

Subgenus *Acalcaripes* Pesenko, 1984
Halictus patellatus Morawitz, 1874

Subgenus *Argalictus* Pesenko, 1984
Halictus fatsensis Blüthgen, 1936
Halictus luganicus Blüthgen, 1936
Halictus senilis (Eversmann, 1852)
Halictus subsenilis Blüthgen, 1955

Subgenus *Halictus* Latreille, 1804
Halictus brunnescens (Eversmann, 1852)
Halictus quadricinctus (Fabricius, 1776)
Halictus rufipes (Fabricius, 1793)
Subgenus *Hexataenites* Pesenko, 1984
Halictus cochleariatarsis (Dours, 1872)
Halictus frontalis Smith, 1853
Halictus fulvipes (Klug, 1817)
Halictus resurgens Nurse, 1903
Halictus scabiosae (Rossi, 1790)
Halictus sexcinctus (Fabricius, 1775)

Subgenus *Monilapis* Cockerell, 1931
Halictus adjikenticus Blüthgen, 1923
Halictus candiae Ebmer, 2014
Halictus carinthiacus Blüthgen, 1936
Halictus centaureae Ebmer, 1985
Halictus compressus (Walckenaer 1802)
Halictus consobrinus Pérez, 1895
Halictus crenicornis Blüthgen, 1923
Halictus grossellus Ebmer, 1978
Halictus gruenwaldti Ebmer, 1975

Halictus langobardicus Blüthgen, 1944
Halictus nicosiae Blüthgen, 1923
Halictus pentheri Blüthgen, 1923
Halictus ponticus Blüthgen, 1934
Halictus pseudotetrazonius Strand, 1921
Halictus pyrenaeus Pérez, 1903
Halictus quadripartitus Blüthgen, 1923
Halictus rossicus Ebmer, 1978
Halictus sajoi Blüthgen, 1923
Halictus simplex Blüthgen, 1923
Halictus tetrazonianellus Strand, 1909
Halictus tetrazonius (Klug, 1817)

Subgenus *Platyhalictus* Pesenko, 1984
Halictus alfkenellus Strand, 1909
Halictus constantinensis Strand, 1910
Halictus fumatipennis Blüthgen, 1923
Halictus graecus Blüthgen, 1933
Halictus holomelaenus Blüthgen, 1936
Halictus jaramielicus Blüthgen, 1923
Halictus lussinicus Blüthgen, 1936
Halictus mediterranellus Strand, 1909
Halictus minor Morawitz, 1876
Halictus tridivisus Blüthgen, 1923

Subgenus *Protohalictus* Pesenko, 1985
Halictus rubicundus (Christ, 1791)
Subgenus *Tytthalictus* Pesenko, 1984
Halictus asperulus Pérez, 1895
Halictus maculatus Smith, 1848
Halictus toparensis Pauly & Ortiz-Sánchez, 2017

Genus *Lasioglossum* Curtis, 1833

Subgenus *Biennilaeus* Pesenko, 2007
Lasioglossum marginatum (Brullé, 1832)

Subgenus *Dialictus* Robertson, 1902
Lasioglossum aeratum (Kirby, 1802)
Lasioglossum akroundicum (Blüthgen, 1937)
Lasioglossum albovirens (Pérez, 1895)
Lasioglossum algirum (Blüthgen, 1923)
Lasioglossum alpigenum (Dalla Torre, 1877)
Lasioglossum andromeda Ebmer, 1978
Lasioglossum annulipes (Morawitz, 1876)
Lasioglossum apostoli Ebmer, 1970
Lasioglossum ariadne Ebmer, 1981
Lasioglossum aureimontanum Ebmer, 1970
Lasioglossum aureolum (Pérez, 1903)
Lasioglossum bavaricum (Blüthgen, 1930)
Lasioglossum collopiense (Pérez, 1903)

Lasioglossum corsicanum (Blüthgen, 1931)
Lasioglossum cupromicans (Pérez, 1903)
Lasioglossum danuvium (Blüthgen, 1944)
Lasioglossum duckei (Alfken, 1909)
Lasioglossum ellipticeps (Blüthgen, 1923)
Lasioglossum gilanum (Blüthgen, 1931)
Lasioglossum hethiticum Ebmer, 1970
Lasioglossum kirgisicum Ebmer, 1972
Lasioglossum leucopus (Kirby, 1802)
Lasioglossum lissonotum (Noskiewicz, 1926)
Lasioglossum littorale (Blüthgen, 1924)
Lasioglossum loetum (Brullé, 1840)
Lasioglossum mandibulare (Morawitz, 1866)
Lasioglossum montivolans Ebmer, 1970
Lasioglossum morio (Fabricius, 1793)
Lasioglossum musculoides Ebmer, 1974
Lasioglossum nitidulum (Fabricius, 1804)
Lasioglossum orihuelicum (Blüthgen, 1924)
Lasioglossum podolicum (Noskiewicz, 1925)
Lasioglossum pseudoleptocephalum (Blüthgen, 1923)
Lasioglossum smeathmanellum (Kirby, 1802)
Lasioglossum soror (Saunders, 1901)
Lasioglossum tauricum Ebmer, 1972
Lasioglossum virens (Erichson, 1835)
Lasioglossum viride (Brullé, 1840)
Lasioglossum wollastoni (Cockerell, 1922)

Subgenus *Hemihalictus* Cockerell, 1897
Lasioglossum angusticeps (Perkins, 1895)
Lasioglossum angustipes Ebmer, 1972
Lasioglossum arctifrons (Saunders, 1903)
Lasioglossum asellum (Pérez, 1895)
Lasioglossum bluethgeni Ebmer, 1971
Lasioglossum brevicorne (Schenck, 1868)
Lasioglossum buccale (Pérez, 1903)
Lasioglossum clypeare (Schenck, 1853)
Lasioglossum clypeiferellum (Strand, 1909)
Lasioglossum convexiusculum (Schenck, 1853)
Lasioglossum corvinum (Morawitz, 1877)
Lasioglossum crassepunctatum (Blüthgen, 1923)
Lasioglossum denislucum (Strand, 1909)
Lasioglossum dolichocephalum (Blüthgen, 1923)
Lasioglossum elegans (Lepeletier, 1841)
Lasioglossum erraticum (Blüthgen, 1931)
Lasioglossum griseolum (Morawitz, 1872)
Lasioglossum hilare Ebmer, 1972
Lasioglossum ibericum Ebmer, 1975
Lasioglossum intermedium (Schenck, 1868)
Lasioglossum laevidorsum (Blüthgen, 1923)
Lasioglossum limbellum (Morawitz, 1876)
Lasioglossum lucidulum (Schenck, 1861)
Lasioglossum marginellum (Schenck, 1853)

Lasioglossum maurusium (Blüthgen, 1935)
Lasioglossum medinai (Vachal, 1895)
Lasioglossum mesosclerum (Pérez, 1903)
Lasioglossum minutissimum (Kirby, 1802)
Lasioglossum monstrificum (Morawitz, 1891)
Lasioglossum nitidiusculum (Kirby, 1802)
Lasioglossum pallidum (Radoszkowski, 1888)
Lasioglossum parvulum (Schenck, 1853)
Lasioglossum pauperatum (Brullé, 1832)
Lasioglossum peregrinum (Blüthgen, 1923)
Lasioglossum phoenicurum (Warncke, 1975)
Lasioglossum pleurospeculum Herrmann, 2001
Lasioglossum pressithorax Ebmer, 1974
Lasioglossum pseudoplanulum (Blüthgen, 1924)
Lasioglossum punctatissimum (Schenck, 1853)
Lasioglossum puncticolle (Morawitz, 1872)
Lasioglossum pygmaeum (Schenck, 1853)
Lasioglossum quadrinotatulum (Schenck, 1861)
Lasioglossum quadrisignatum (Schenck, 1853)
Lasioglossum rufitarse (Zetterstedt, 1838)
Lasioglossum salinum (Morawitz, 1876)
Lasioglossum samaricum (Blüthgen, 1935)
Lasioglossum semilucens (Alfken, 1914)
Lasioglossum sexstrigatum (Schenck, 1870)
Lasioglossum sphecodimorphum (Vachal, 1892)
Lasioglossum strictifrons (Vachal, 1895)
Lasioglossum subaenescens (Pérez, 1896)
Lasioglossum tarsatum (Schenck, 1868)
Lasioglossum transitorium (Schenck, 1868)
Lasioglossum truncaticolle (Morawitz, 1877)
Lasioglossum tschibuklinum (Blüthgen, 1931)
Lasioglossum villosulum (Kirby, 1802)

Subgenus *Lasioglossum* Curtis, 1833
Lasioglossum acephaloides (Blüthgen, 1931)
Lasioglossum aphrodite Ebmer, 2014
Lasioglossum bicallosum (Morawitz, 1873)
Lasioglossum bimaculatum (Dours, 1872)
Lasioglossum bischoffi (Blüthgen, 1931)
Lasioglossum breviventre (Schenck, 1853)
Lasioglossum chalcodes (Brullé, 1839)
Lasioglossum costulatum (Kriechbaumer, 1873)
Lasioglossum cristula (Pérez, 1896)
Lasioglossum eurasicum Ebmer, 1972
Lasioglossum euxanthopus Pesenko, 1986
Lasioglossum euxinicum Ebmer, 1972
Lasioglossum fallax (Morawitz, 1874)
Lasioglossum glaciegenitum Ebmer, 1972
Lasioglossum haesitans (Blüthgen, 1931)
Lasioglossum kotschyi Ebmer, 1981
Lasioglossum kussariense (Blüthgen, 1925)
Lasioglossum laevigatum (Kirby, 1802)

Lasioglossum laterale (Brullé, 1832)
Lasioglossum lativentre (Schenck, 1853)
Lasioglossum leucomontanum Ebmer, 1981
Lasioglossum niveocinctum (Blüthgen, 1923)
Lasioglossum pallens (Brullé, 1832)
Lasioglossum perclavipes (Blüthgen, 1934)
Lasioglossum prasinum (Smith, 1848)
Lasioglossum prunellum (Warncke, 1975)
Lasioglossum pseudocaspicum (Blüthgen, 1923)
Lasioglossum quadrinotatum (Kirby, 1802)
Lasioglossum ragusanum (Blüthgen, 1931)
Lasioglossum rostratum (Eversmann, 1852)
Lasioglossum sexmaculatum (Schenck, 1853)
Lasioglossum sexnotatulum (Nylander, 1852)
Lasioglossum sexnotatum (Kirby, 1802)
Lasioglossum subfasciatum (Imhoff, 1832)
Lasioglossum tungusicum Ebmer, 1978
Lasioglossum xanthopus (Kirby, 1802)

Subgenus *Leuchalictus* Warnke, 1975
Lasioglossum aegyptiellum (Strand, 1909)
Lasioglossum albocinctum (Lucas, 1849)
Lasioglossum alinense (Cockerell, 1924)
Lasioglossum callizonium (Pérez, 1896)
Lasioglossum discus (Smith, 1853)
Lasioglossum gorkiense (Blüthgen, 1931)
Lasioglossum leucozonium (Schrank, 1781)
Lasioglossum majus (Nylander, 1852)
Lasioglossum zonulus (Smith, 1848)

Subgenus *Pyghalictus* Warncke, 1975
Lasioglossum castilianum (Blüthgen, 1931)
Lasioglossum glabriusculum (Morawitz, 1872)
Lasioglossum politum (Schenck, 1853)
Lasioglossum trichopygum (Blüthgen, 1923)

Subgenus *Rostrohalictus* Warncke, 1975
Lasioglossum longirostre (Morawitz, 1876)

Subgenus *Sphecodogastra* Ashmead, 1899
Lasioglossum albipes (Fabricius, 1781)
Lasioglossum algericolellum (Strand, 1909)
Lasioglossum anellum (Vachal, 1905)
Lasioglossum articulare (Pérez, 1895)
Lasioglossum boreale Svensson, Ebmer & Sakagami, 1977
Lasioglossum calceatum (Scopoli, 1763)
Lasioglossum capitale (Pérez, 1903)
Lasioglossum damascenum (Pérez, 1910)
Lasioglossum debilior (Pérez, 1910)
Lasioglossum dusmeti (Blüthgen, 1924)
Lasioglossum edessae (Ebmer, 1974)
Lasioglossum epipygiale (Blüthgen, 1924)

Lasioglossum euboeense (Strand, 1909)
Lasioglossum fratellum (Pérez, 1903)
Lasioglossum fulvicorne (Kirby, 1802)
Lasioglossum imbecillum Ebmer, 1974
Lasioglossum immunitum (Vachal, 1895)
Lasioglossum interruptum (Panzer, 1798)
Lasioglossum laeve (Kirby, 1802)
Lasioglossum laticeps (Schenck, 1868)
Lasioglossum limbelloides (Blüthgen, 1931)
Lasioglossum lineare (Schenck, 1868)
Lasioglossum malachurum (Kirby, 1802)
Lasioglossum mediterraneum (Blüthgen, 1926)
Lasioglossum minutulum (Schenck, 1853)
Lasioglossum nigripes (Lepeletier, 1841)
Lasioglossum obscuratum (Morawitz, 1876)
Lasioglossum pauxillum (Schenck, 1853)
Lasioglossum setulellum (Strand, 1909)
Lasioglossum setulosum (Strand, 1909)
Lasioglossum subfulvicorne (Blüthgen, 1934)
Lasioglossum subhirtum (Lepeletier, 1841)
Lasioglossum tricinctum (Schenck, 1874)
Lasioglossum vergilianum (Pérez, 1903)

Genus *Seladonia* Robertson, 1918

Subgenus *Mucoreohalictus* Pesenko, 2004
Seladonia cyprica (Blüthgen, 1937)
Seladonia mucorea (Eversmann, 1852)
Seladonia pollinosa (Sichel, 1860)
Seladonia pseudomucorea (Ebmer, 1975)
Seladonia tuberculata (Blüthgen, 1925)

Subgenus *Pachyceble* Moure, 1940
Seladonia confusa (Smith, 1853)
Seladonia gavarnica (Pérez, 1903)
Seladonia leucahenea (Ebmer, 1972)
Seladonia tumulorum (Linnaeus, 1758)

Subgenus *Seladonia* Robertson, 1918
Seladonia cephalica (Morawitz, 1874)
Seladonia cretella Pauly & Devalez, 2015
Seladonia gemmea (Dours, 1872)
Seladonia gemmella Pauly, 2015
Seladonia kessleri (Bramson, 1879)
Seladonia orientana Pauly & Devalez, 2015
Seladonia phryganica Pauly & Devalez, 2015
Seladonia seladonia (Fabricius, 1794)
Seladonia semitecta (Morawitz, 1874)
Seladonia submediterranea Pauly, 2015
Seladonia smaragdula (Vachal, 1895)
Seladonia subaurata (Rossi, 1792)

Subgenus *Vestitohalictus* Blüthgen, 1961
Seladonia concinna (Brullé, 1840)
Seladonia inpilosa (Ebmer, 1975)
Seladonia microcardia (Pérez, 1895)
Seladonia pulverea (Morawitz, 1873)
Seladonia semitica (Blüthgen, 1955)
Seladonia vestita (Lepeletier, 1841)

Genus *Sphecodes* Latreille, 1804

Sphecodes aetnensis Nobile, 1996
Sphecodes albilabris (Fabricius, 1793)
Sphecodes algeriensis Alfken, 1914
Sphecodes alternatus Smith, 1853
Sphecodes anatolicus Warncke, 1992
Sphecodes atlanticus Warncke, 1992
Sphecodes barbatus Blüthgen, 1923
Sphecodes combai Nobile & Turrisi, 2004
Sphecodes crassanus Warncke, 1992
Sphecodes crassus Thomson, 1870
Sphecodes creticus Warncke, 1992
Sphecodes cristatus Hagens, 1882
Sphecodes croaticus Meyer, 1921
Sphecodes cypricus Blüthgen, 1938
Sphecodes dusmeti Blüthgen, 1924
Sphecodes ephippius (Linnaeus, 1767)
Sphecodes ferruginatus Hagens, 1882
Sphecodes geoffrellus (Kirby, 1802)
Sphecodes gibbus (Linnaeus, 1758)
Sphecodes gomerensis Warncke, 1992
Sphecodes hirtellus Blüthgen, 1923
Sphecodes hyalinatus Hagens, 1882
Sphecodes intermedius Blüthgen, 1923
Sphecodes larochei Warncke, 1992
Sphecodes longuloides Blüthgen, 1923
Sphecodes longulus Hagens, 1882
Sphecodes majalis Pérez, 1903
Sphecodes marginatus Hagens, 1882
Sphecodes miniatus Hagens, 1882
Sphecodes monilicornis (Kirby, 1802)
Sphecodes niger Hagens, 1874
Sphecodes nomioidis Pesenko, 1979
Sphecodes olivieri Lepeletier, 1825
Sphecodes pellucidus Smith, 1845
Sphecodes piceohirtus Blüthgen, 1958
Sphecodes pinguiculus Pérez, 1903
Sphecodes pseudocrassus Blüthgen, 1924
Sphecodes pseudofasciatus Blüthgen, 1925
Sphecodes puncticeps Thomson, 1870
Sphecodes reticulatus Thomson, 1870
Sphecodes rubicundus Hagens, 1875

Sphecodes rubripes Spinola, 1838
Sphecodes ruficrus (Erichson, 1835)
Sphecodes rufiventris (Panzer, 1798)
Sphecodes scabricollis Wesmael, 1835
Sphecodes schenckii Hagens, 1882
Sphecodes spinulosus Hagens, 1875
Sphecodes zangherii Noskiewicz, 1931

Genus *Thrincohalictus* Blüthgen, 1955

Thrincohalictus prognathus (Pérez, 1912)

Subfamily Nomiinae Robertson, 1904

Genus *Nomiapis* Cockerell, 1919

Nomiapis bispinosa (Brullé, 1832)
Nomiapis diversipes (Latreille, 1806)
Nomiapis equestris (Gerstaecker, 1872)
Nomiapis femoralis (Pallas, 1773)
Nomiapis fugax (Morawitz, 1877)
Nomiapis monstrosa (Costa, 1861)
Nomiapis paulyi Wood & Le Divelec, 2022
Nomiapis rufiventris (Spinola, 1838)
Nomiapis susannae Arens, 2018
Nomiapis valga (Gerstaecker, 1872)

Genus *Pseudapis* Kirby, 1900

Pseudapis elegantissima (Popov, 1949)

Subfamily Nomioidinae Börner, 1919

Genus *Ceylalictus* Strand, 1913

Ceylalictus variegatus (Olivier, 1789)

Genus *Nomioides* Schenck, 1867

Nomioides chalybeatus Blüthgen, 1934
Nomioides deceptor Blüthgen, 1937
Nomioides facilis (Smith, 1853)
Nomioides fortunatus Blüthgen, 1937
Nomioides minutissimus (Rossi, 1790)
Nomioides pulverosus Handlirsch, 1888

Subfamily Rophitinae Schenck, 1866

Genus *Dufourea* Lepeletier, 1841

Subgenus *Cephalictoides* Cockerell, 1924
Dufourea paradoxa (Morawitz, 1867)

Subgenus *Cyprirophites* Warncke, 1979
Dufourea coeruleocephala Morawitz, 1872
Dufourea cypria Mavromoustakis, 1952
Dufourea iris Ebmer, 1987
Dufourea styx Ebmer, 1976

Subgenus *Dentirophites* Warncke, 1979
Dufourea gaullei Vachal, 1897
Dufourea lusitanica Ebmer, 1999

Subgenus *Dufourea* Lepeletier, 1841
Dufourea alpina Morawitz, 1865
Dufourea balearica Ebmer, 2015
Dufourea fortunata Ebmer, 1993
Dufourea halictula (Nylander, 1852)
Dufourea minuta Lepeletier, 1841
Dufourea similis Friese, 1898
Dufourea trautmanni Dusmet, 1935
Dufourea wolfi Ebmer, 1989

Subgenus *Glossadufourea* Ebmer, 1993
Dufourea longiglossa Ebmer, 1993

Subgenus *Halictoides* Nylander, 1848
Dufourea dentiventris (Nylander, 1848)
Dufourea graeca Ebmer, 1976
Dufourea inermis (Nylander, 1848)

Subgenus *Merrophites* Warncke, 1979
Dufourea merceti Vachal, 1907

Genus *Rhophitoides* Schenck, 1861

Rhophitoides canus (Eversmann, 1852)
Rhophitoides epiroticus Schwammberger, 1975

Genus *Rophites* Spinola, 1808

Rophites algirus Pérez 1895
Rophites clypealis Schwammberger, 1976
Rophites hartmanni Friese, 1902
Rophites hellenicus Ebmer, 1984
Rophites leclercqi Schwammberger, 1971

Rophites quinquespinosus Spinola, 1808
Rophites thracius Ebmer, 1993

Genus *Systropha* Illiger, 1805

Systropha curvicornis (Scopoli, 1770)
Systropha grandimargo Pérez, 1905
Systropha planidens Giraud, 1861

Family Megachilidae Latreille, 1802

Tribe Anthidiini Ashmead, 1899

Genus *Afranthidium* Michener, 1948

Subgenus *Capanthidium* Pasteels, 1969
Afranthidium schulthessii (Friese, 1897)

Subgenus *Mesanthidium* Popov, 1950
Afranthidium carduele (Morawitz, 1875)

Genus *Anthidiellum* Cockerell, 1904

Anthidiellum breviusculum (Pérez, 1890)
Anthidiellum strigatum (Panzer, 1805)
Anthidiellum troodicum Mavromoustakis, 1949

Genus *Anthidium* Fabricius, 1804

Subgenus *Anthidium* Fabricius, 1804
Anthidium caspicum Morawitz, 1880
Anthidium cingulatum Latreille, 1809
Anthidium dalmaticum Mocsáry, 1884
Anthidium diadema Latreille, 1809
Anthidium florentinum (Fabricius, 1775)
Anthidium loti Perris, 1852
Anthidium manicatum (Linnaeus, 1758)
Anthidium montanum Morawitz, 1865
Anthidium punctatum Latreille, 1809
Anthidium septemspinosum Lepeletier, 1841
Anthidium spiniventre Friese, 1899
Anthidium taeniatum Latreille, 1809
Anthidium wuestneii Mocsáry, 1887

Subgenus *Gulanthidium* Pasteels, 1969
Anthidium rotundum Warncke, 1980

Subgenus *Proanthidium* Friese, 1898
Anthidium oblongatum (Illiger, 1806)

Anthidium undulatiforme Friese, 1917
Anthidium undulatum Dours, 1873

Genus *Eoanthidium* Popov, 1950

Subgenus *Eoanthidium* Popov, 1950
Eoanthidium clypeare (Morawitz, 1874)
Eoanthidium insulare (Morawitz, 1874)
Eoanthidium nasiculum Pasteels, 1969
Eoanthidium pasteelsi (Warncke, 1980)

Genus *Icteranthidium* Michener, 1948

Icteranthidium cimbiciforme (Smith, 1854)
Icteranthidium ferrugineum (Fabricius, 1787)
Icteranthidium grohmanni (Spinola, 1838)
Icteranthidium laterale (Latreille, 1809)

Genus *Pseudoanthidium* Friese, 1898

Subgenus *Exanthidium* Pasteels, 1969
Pseudoanthidium eximium (Giraud, 1863)

Subgenus *Pseudoanthidium* Friese, 1898
Pseudoanthidium alpinum (Morawitz, 1874)
Pseudoanthidium canariense (Mavromoustakis, 1954)
Pseudoanthidium kaspareki Le Divelec & Litman, 2021
Pseudoanthidium nanum (Mocsáry, 1880)
Pseudoanthidium scapulare (Latreille, 1809)
Pseudoanthidium stigmaticorne (Dours, 1873)
Pseudoanthidium tenellum (Mocsáry, 1880)

Subgenus *Royanthidium* Pasteels, 1969
Pseudoanthidium melanurum (Klug, 1832)
Pseudoanthidium reticulatum (Mocsáry, 1884)

Genus *Rhodanthidium* Isensee, 1927

Subgenus *Asianthidium* Popov, 1950
Rhodanthidium caturigense (Giraud, 1863)

Subgenus *Rhodanthidium* Isensee, 1927
Rhodanthidium acuminatum (Mocsáry, 1884)
Rhodanthidium infuscatum (Erichson, 1835)
Rhodanthidium rufocinctum (Alfken, 1930)
Rhodanthidium septemdentatum (Latreille, 1809)
Rhodanthidium siculum (Spinola, 1838)
Rhodanthidium sticticum (Fabricius, 1787)

Genus *Stelis* Panzer, 1806

Subgenus *Heterostelis* Timberlake, 1941
Stelis annulata (Lepeletier, 1841)
Stelis gigantea Friese, 1921
Stelis hispanica Dusmet y Alonso, 1921
Stelis hungarica Noskiewicz, 1962
Stelis ruficornis Morawitz, 1872

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Stelis ortizi Schwarz & Gusenleitner, 2010
Stelis rhodia Mavromoustakis, 1960

Subgenus *Protostelis* Friese, 1895
Stelis signata (Latreille, 1809)

Subgenus *Pseudostelis* Popov, 1956
Stelis denticulata Friese, 1899
Stelis minuta Lepeletier & Audinet-Serville, 1825

Subgenus *Stelidomorpha* Morawitz, 1875
Stelis aegyptiaca (Radoszkowski, 1876)
Stelis nasuta (Latreille, 1809)
Stelis pentelica Mavromoustakis, 1963

Subgenus *Stelis* Panzer, 1806
Stelis aculeata Morawitz, 1880
Stelis breviuscula (Nylander, 1848)
Stelis franconica Blüthgen, 1930
Stelis iugae Noskiewicz, 1962
Stelis minima Schenck, 1861
Stelis murina Pérez, 1884
Stelis odontopyga Noskiewicz, 1926
Stelis orientalis Warncke, 1992
Stelis ornatula (Klug, 1807)
Stelis phaeoptera (Kirby, 1802)
Stelis punctulatissima (Kirby, 1802)
Stelis scutellaris Morawitz, 1894
Stelis simillima Morawitz, 1876

Genus *Trachusa* Panzer, 1804

Subgenus *Archianthidium* Mavromoustakis, 1939
Trachusa balcanica Kasparek, 2018
Trachusa laeviventris (Dours, 1873)
Trachusa laticeps (Morawitz, 1873)
Trachusa pubescens (Morawitz, 1872)

Subgenus *Paraanthidium* Friese, 1898
Trachusa dumerlei (Warncke, 1980)
Trachusa integra (Eversmann, 1852)

Trachusa interrupta (Fabricius, 1781)
Trachusa varia (Olivier, 1789)

Subgenus *Trachusa* Panzer, 1804
Trachusa byssina (Panzer, 1798)

Tribe Dioxyini Cockerell, 1902

Genus *Aglaoapis* Cameron, 1901

Aglaoapis tridentata (Nylander, 1848)

Genus *Dioxys* Lepeletier & Serville, 1825

Dioxys ardens Gerstaecker, 1869
Dioxys atlantica Saunders, 1904
Dioxys cincta (Jurine, 1807)
Dioxys lanzarotensis Tkalců, 2001
Dioxys moesta Costa, 1883
Dioxys pumila Gerstaecker, 1869

Genus *Ensliniana* Cameron, 1901

Ensliniana bidentata (Friese, 1899)

Genus *Metadioxys* Popov, 1947

Metadioxys graecus (Mocsáry, 1877)

Genus *Paradioxys* Mocsáry, 1894

Paradioxys pannonicus (Mocsáry, 1877)

Tribe Lithurgini Newman, 1834

Genus *Lithurgus* Latreille, 1825

Lithurgus chrysurus Fonscolombe, 1834
Lithurgus cornutus (Fabricius, 1787)
Lithurgus tibialis Morawitz, 1875

Tribe Megachilini Latreille, 1802

Genus *Coelioxys* Latreille, 1809

Subgenus *Allocoelioxys* Tkalců, 1974
Coelioxys acanthopyga Alfken, 1940

Coelioxys acanthurus (Illiger, 1806)
Coelioxys argenteus Lepeletier, 1841
Coelioxys artemis Schwarz, 2001
Coelioxys brevis Eversmann, 1852
Coelioxys caudatus Spinola, 1838
Coelioxys coturnix Pérez, 1884
Coelioxys echinatus Förster, 1853
Coelioxys elegantulus Alfken, 1934
Coelioxys elsei Schwarz, 2001
Coelioxys emarginatus Förster, 1853
Coelioxys haemorrhoa Förster, 1853
Coelioxys mielbergi Morawitz, 1880
Coelioxys obtusus Pérez, 1884
Coelioxys polycentris Förster, 1853

Subgenus *Austrocleptria* Rocha-Filho, 2016
Coelioxys afer Lepeletier, 1841

Subgenus *Coelioxys* Latreille, 1809
Coelioxys quadridentatus (L., 1758)

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Coelioxys lanceolatus Nylander, 1852
Coelioxys obtusispina Thomson, 1872

Subgenus *Liothyrapis* Cockerell, 1911
Coelioxys decipiens Spinola, 1838

Subgenus *Melissoctonia* Rocha-Filho, 2016
Coelioxys conoideus (Illiger, 1806)

Subgenus *Paracoelioxys* Gribodo, 1884
Coelioxys alatus Förster, 1853
Coelioxys elongatus Lepeletier, 1841
Coelioxys inermis (Kirby, 1802)
Coelioxys mandibularis Nylander, 1848
Coelioxys osmiae Alfken, 1928

Subgenus *Rozeniana* Rocha-Filho, 2016
Coelioxys aurolimbatus Förster, 1853
Coelioxys rufescens Lepeletier & Serville, 1825

Genus *Megachile* Latreille, 1802

Subgenus *Anodonteutricharaea* Tkalců, 1993
Megachile albohirta (Brullé, 1839)
Megachile thevestensis Ferton, 1908
Megachile troodica Mavromoustakis, 1953

Subgenus *Callomegachile* Michener, 1962
Megachile disjunctiformis Cockerell, 1911
Megachile sculpturalis Smith, 1853

Subgenus *Chalicodoma* Lepeletier, 1841
Megachile albocristata Smith, 1853
Megachile albonotata Radoszkowski, 1886
Megachile apennina Benoist, 1940
*Megachile baetic*a (Gerstaecker, 1869)
Megachile canescens (Brullé, 1832)
Megachile cressa (Tkalců, 1988)
Megachile cypricola Mavromoustakis, 1938
Megachile fuerteventurae Tkalců, 1993
Megachile hungarica Mocsáry, 1877
Megachile lefebvrei (Lepeletier, 1841)
Megachile lucidifrons Ferton, 1905
Megachile manicata Giraud, 1861
Megachile montenegrensis Dours, 1873
Megachile parietina (Geoffroy, 1785)
Megachile pyrenaica (Lepeletier, 1841)
Megachile roeweri Alfken, 1928
Megachile rufescens (Pérez, 1879)
Megachile sicula (Rossi, 1792)

Subgenus *Chelostomoides* Robertson, 1901
Megachile otomita Cresson, 1878

Subgenus *Creightonella* Cockerell, 1908
Megachile albisecta (Klug, 1817)
Megachile doriae Magretti, 1890
Subgenus *Eurymella* Pasteels, 1965
Megachile patellimana Spinola, 1838

Subgenus *Eutricharaea* Thomson, 1872
Megachile argentata (Fabricius, 1793)
Megachile anatolica Rebmann, 1968
Megachile apicalis Spinola, 1808
Megachile binominata Smith, 1853
Megachile burdigalensis Benoist, 1940
Megachile canariensis Pérez, 1902
Megachile deceptoria Pérez, 1890
Megachile fertoni Pérez, 1895
Megachile flabellipes Pérez, 1895
Megachile giraudi Gerstaecker, 1869
Megachile hohmanni Tkalců, 1994
Megachile inexspectata Rebmann, 1968
Megachile leachella Curtis, 1828
Megachile leucomalla Gerstaecker, 1869
Megachile marginata Smith, 1853
Megachile melanogaster Eversmann, 1852
Megachile minutissima Radoszkowski, 1876
Megachile opacifrons Pérez, 1897
Megachile posti Mavromoustakis, 1952
Megachile pusilla Pérez, 1884
Megachile rotundata (Fabricius, 1787)
Megachile semicircularis van der Zanden, 1996
Megachile tenuistriga Alfken, 1938

Subgenus *Megachile* Latreille, 1802
Megachile alpicola Alfken, 1924
Megachile bombycina Radoszkowski, 1874
Megachile centuncularis (Linnaeus, 1758)
Megachile genalis Morawitz, 1880
Megachile lapponica Thomson, 1872
Megachile ligniseca (Kirby, 1802)
Megachile melanopyga Costa, 1863
Megachile octosignata Nylander, 1852
Megachile pilicrus Morawitz, 1878
Megachile pyrenaea Pérez, 1890
Megachile versicolor Smith, 1844

Subgenus *Pseudomegachile* Friese, 1898
Megachile ericetorum (Lepeletier, 1841)
Megachile farinosa Smith, 1853
Megachile flavipes Spinola, 1838
Megachile foersteri Gerstäcker, 1869
Megachile saussurei Radoszkowski, 1874
Megachile syriaca Dorchin & Praz, 2018
Megachile tecta Radoszkowski, 1888

Subgenus *Xanthosarus* Robertson, 1903
Megachile analis Nylander, 1852
Megachile circumcincta (Kirby, 1802)
Megachile diabolica Friese, 1898
Megachile fulvimana Eversmann, 1852
Megachile lagopoda (Linnaeus, 1761)
Megachile maritima (Kirby, 1802)
Megachile willughbiella (Kirby, 1802)
Megachile nigriventris Schenck, 1870

Tribe Osmiini Newman, 1834

Genus *Chelostoma* Latreille, 1809

Subgenus *Chelostoma* Latreille, 1809
Chelostoma comosum Müller, 2012
Chelostoma diodon Schletterer, 1889
Chelostoma edentulum Pérez, 1895
Chelostoma emarginatum (Nylander, 1856)
Chelostoma florisomne (Linnaeus, 1758)
Chelostoma grande (Nylander, 1852)
Chelostoma lucens (Benoist, 1928)
Chelostoma mocsaryi Schletterer, 1889
Chelostoma stefanii Nobile, 1995
Chelostoma transversum (Friese, 1897)

Subgenus *Foveosmia* Warncke, 1991
Chelostoma campanularum (Kirby, 1802)
Chelostoma distinctum (Stoeckhert, 1929)

Chelostoma forcipatum (Benoist, 1928)
Chelostoma foveolatum (Morawitz, 1868)
Chelostoma hellenicum (Benoist, 1938)
Chelostoma incognitum Müller, 2012
Chelostoma laticaudum (Benoist, 1938)
Chelostoma longifacies Müller, 2012
Chelostoma styriacum Schwarz & Gusenleitner, 1999

Subgenus *Gyrodromella* Michener, 1997
Chelostoma aegaeicum Müller, 2012
Chelostoma handlirschi Schletterer, 1889
Chelostoma nasutum Pérez, 1895
Chelostoma rapunculi (Lepeletier, 1841)

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Chelostoma ventrale Schletterer, 1889

Genus *Haetosmia* Popov, 1952

Haetosmia circumventa (Peters, 1974)

Genus *Heriades* Spinola, 1808

Subgenus *Heriades* Spinola, 1808
Heriades crenulata Nylander, 1856
Heriades rubicola Pérez, 1890
Heriades truncorum (Linnaeus, 1758)

Subgenus *Michenerella* Krombein, 1950
Heriades punctulifera Schletterer, 1889

Subgenus *Rhopaloheriades* Griswold & Michener, 1998
Heriades clavicornis Morawitz, 1875

Genus *Hofferia* Tkalců, 1984

Hofferia schmiedeknechti (Schletterer, 1889)

Genus *Hoplitis* Klug, 1807

Subgenus *Alcidamea* Cresson, 1864
Hoplitis acuticornis (Dufour & Perris, 1840)
Hoplitis bicallosa (Morawitz, 1876)
Hoplitis bispinosa van der Zanden, 1992
Hoplitis brachypogon (Pérez, 1879)
Hoplitis campanularis (Morawitz, 1877)
Hoplitis ciliaris (Pérez, 1902)
Hoplitis claviventris (Thomson, 1872)

Hoplitis curtula (Pérez, 1896)
Hoplitis curvipes (Morawitz, 1871)
Hoplitis fulva (Eversmann, 1852)
Hoplitis galbula (Warncke, 1991)
Hoplitis grossepunctata (Kohl, 1905)
Hoplitis leucomelana (Kirby, 1802)
Hoplitis limassolica (Mavromoustakis, 1937)
Hoplitis mitis (Nylander, 1852)
Hoplitis mollis Tkalců, 2000
Hoplitis occidentalis Müller, 2012
Hoplitis praestans (Morawitz, 1893)
Hoplitis princeps (Morawitz, 1872)
Hoplitis stellaris (Warncke, 1991)
Hoplitis subbutea (Warncke, 1991)
Hoplitis tridentata (Dufour & Perris, 1840)
Hoplitis tuberculata (Nylander, 1848)
Hoplitis turcestanica (Dalla Torre, 1896)

Subgenus *Anthocopa* Lepeletier & Serville, 1825
Hoplitis agis (Benoist, 1929)
Hoplitis albiscopa (Friese, 1899)
Hoplitis anipuncta (Alfken, 1935)
Hoplitis antigae (Pérez, 1895)
Hoplitis batyamae (van der Zanden, 1986)
Hoplitis bisulca (Gerstaecker, 1869)
Hoplitis caucasicola Müller, 2012
Hoplitis corcyraea (Tkalců, 1979)
Hoplitis cristatula (Van der Zanden, 1990)
Hoplitis cypriaca (Mavromoustakis, 1938)
Hoplitis dalmatica (Morawitz, 1871)
Hoplitis fasciculata (Alfken, 1934)
Hoplitis graeca (Tkalců, 2001)
Hoplitis grumi (Morawitz, 1894)
Hoplitis jakovlevi (Radoszkowski, 1874)
Hoplitis manuelae Müller, 2012
Hoplitis mocsaryi (Friese, 1895)
Hoplitis nicolaei Müller, 2012
Hoplitis obtusa (Friese, 1899)
Hoplitis papaveris (Latreille, 1799)
Hoplitis peniculifera Müller, 2012
Hoplitis perezi (Ferton, 1895)
Hoplitis pulchella (Pérez, 1895)
Hoplitis saundersi (Vachal, 1891)
Hoplitis saxialis (van der Zanden, 1994)
Hoplitis serainae Müller, 2012
Hoplitis taurica (Radoszkowski, 1874)
Hoplitis villosa (Schenck, 1853)
Hoplitis yermasoyiae (Mavromoustakis, 1938)
Hoplitis zaianorum (Benoist, 1927)

Subgenus *Chlidoplitis* Griswold, 1998
Hoplitis lysholmi (Friese, 1899)

Hoplitis onychophora (Mavromoustakis, 1939)
Hoplitis teucrii (Benoist, 1927)

Subgenus *Formicapis* Sladen, 1916
Hoplitis robusta (Nylander, 1848)

Subgenus *Hoplitis* Klug, 1807
Hoplitis adunca (Panzer, 1798)
Hoplitis annulata (Latreille, 1811)
Hoplitis anthocopoides (Schenck, 1853)
Hoplitis benoisti (Alfken, 1935)
Hoplitis bihamata (Costa, 1885)
Hoplitis carinata (Stanek, 1969)
Hoplitis fabrei van der Zanden, 1987
Hoplitis fertoni (Pérez, 1891)
Hoplitis galichicae Müller, 2016
Hoplitis hilbera Müller, 2012
Hoplitis holmboei (Mavromoustakis, 1949)
Hoplitis idaensis (Warncke, 1991)
Hoplitis insularis (Schmiedeknecht, 1885)
Hoplitis jheringii (Ducke, 1898)
Hoplitis lepeletieri (Pérez, 1879)
Hoplitis lithodorae Müller, 2012
Hoplitis loti (Morawitz, 1867)
Hoplitis manicata (Morice, 1901)
Hoplitis marchali (Pérez, 1902)
Hoplitis monticola Müller, 2012
Hoplitis ochraceicornis (Ferton, 1902)
Hoplitis pallicornis (Friese, 1895)
Hoplitis perambigua (Peters, 1975)
Hoplitis pici (Friese, 1899)
Hoplitis ravouxi (Pérez, 1902)
Hoplitis stecki (Frey-Gessner, 1908)
Hoplitis strymonia Tkalců, 1999
Hoplitis submanicata van der Zanden, 1984
Hoplitis tkalcuella Le Goff, 2003

Subgenus *Megahoplitis* Tkalců, 1993
Hoplitis tigrina (Morawitz, 1972)

Subgenus *Micreriades* Mavromoustakis, 1958
Hoplitis antalyae Tkalců, 2000
Hoplitis haemi Tkalců, 2001
Hoplitis illyrica (Noskiewicz, 1926)
Hoplitis mazzuccoi (Schwarz & Gusenleitner, 2005)
Hoplitis parnesica (Mavromoustakis, 1958)
Hoplitis tenuispina (Alfken, 1936)

Subgenus *Pentadentosmia* Warncke, 1991
Hoplitis cadiza (Warncke, 1991)
Hoplitis laevifrons (Morawitz, 1872)
Hoplitis moricei (Friese, 1899)

Hoplitis pomarina (Warncke, 1991)
Hoplitis quinquespinosa (Friese, 1899)

Subgenus *Stenosmia* Michener, 1941
Hoplitis albatera (Warncke, 1991)

Subgenus *Tkalcua* Kocak & Kemal 2010
Hoplitis zandeni (Teunissen & van Achterberg, 1992)

Genus *Osmia* Panzer, 1806

Subgenus *Allosmia* Tkalců, 1974
Osmia bischoffi Atanassov, 1938
Osmia melanura Morawitz, 1871
Osmia nuda Friese, 1899
Osmia rufohirta Latreille, 1811
Osmia rutila Erichson, 1835
Osmia sybarita Smith, 1853

Subgenus *Erythrosmia* Schmiedeknecht, 1885
Osmia andrenoides Spinola, 1808
Osmia erythrogastra Ferton, 1905

Subgenus *Helicosmia* Thomson, 1872
Osmia aeruginosa Warncke, 1988
Osmia alfkenii Ducke, 1900
Osmia aurulenta Panzer, 1799
Osmia breviata Warncke, 1988
Osmia caerulescens (Linnaeus, 1758)
Osmia clypearis Morawitz, 1872
Osmia dimidiata Morawitz, 1871
Osmia dives Mocsáry, 1877
Osmia dusmeti van der Zanden, 1998
Osmia frieseana Ducke, 1899
Osmia heteracantha Pérez, 1895
Osmia labialis Pérez, 1879
Osmia latreillei (Spinola, 1806)
Osmia leaiana (Kirby, 1802)
Osmia madeirensis van der Zanden, 1991
Osmia melanogaster Spinola, 1808
Osmia nasoproducta Ferton, 1909
Osmia niveata (Fabricius, 1804)
Osmia niveocincta Pérez, 1897
Osmia notata (Fabricius, 1804)
Osmia palmae Tkalců, 2001
Osmia signata Erichson, 1835
Osmia subcornuta Morawitz, 1875

Subgenus *Hemiosmia* Tkalců, 1975
Osmia argyropyga Pérez, 1879
Osmia balearica (Schmiedeknecht, 1885)

Osmia iberica van der Zanden, 1987
Osmia uncicornis Pérez, 1895

Subgenus *Hoplosmia* Thomson, 1872
Osmia anceyi Pérez, 1879
Osmia bidentata Morawitz, 1876
Osmia croatica Friese, 1893
Osmia distinguenda (Tkalců, 1974)
Osmia elegans (Tkalců, 1992)
Osmia fallax Pérez, 1895
Osmia larochei Tkalců, 1993
Osmia ligurica Morawitz, 1868
Osmia olgae (Tkalců, 1978)
Osmia padri (Tkalců, 1974)
Osmia picena (Tkalců, 1999)
Osmia pinguis Pérez, 1895
Osmia scutellaris Morawitz, 1868
Osmia spinigera Latreille, 1811
Osmia spinulosa (Kirby, 1802)

Subgenus *Melanosmia* Schmiedeknecht, 1885
Osmia alticola Benoist, 1922
Osmia disjuncta Tkalců, 1995
Osmia inermis (Zetterstedt, 1838)
Osmia laticeps Thomson, 1872
Osmia maritima Friese, 1885
Osmia nigriventris (Zetterstedt, 1838)
Osmia parietina Curtis, 1828
Osmia pilicornis Smith, 1846
Osmia steinmanni Müller, 2002
Osmia svenssoni Tkalců, 1983
Osmia uncinata Gerstaecker, 1869
Osmia xanthomelana (Kirby, 1802)

Subgenus *Metallinella* Tkalců, 1966
Osmia brevicornis (Fabricius, 1798)

Subgenus *Nasutosmia* Griswold & Michener, 1998
Osmia corniculata (van der Zanden, 1989)
Osmia nasuta (Friese, 1899)

Subgenus *Neosmia* Tkalců, 1974
Osmia bicolor (Schrank, 1781)
Osmia cinnabarina Pérez, 1895
Osmia jason Benoist, 1929

Subgenus *Osmia* Panzer, 1806
Osmia apicata Smith, 1853
Osmia ariadne Peters, 1978
Osmia bicornis (Linnaeus, 1758)
Osmia cerinthidis Morawitz, 1875
Osmia cornuta (Latreille, 1805)
Osmia emarginata Lepeletier, 1841

Osmia kohlii Ducke, 1899
Osmia mustelina Gerstaecker, 1869
Osmia nigrohirta Friese, 1899
Osmia tricornis Latreille, 1811

Subgenus *Pyrosmia* Tkalců, 1975
Osmia amathusica Mavromoustakis, 1937
Osmia cephalotes Morawitz, 1870
Osmia cyanoxantha Pérez, 1879
Osmia dilaticornis Morawitz, 1875
Osmia ferruginea Latreille, 1811
Osmia forticornis van der Zanden, 1989
Osmia gallarum Spinola, 1808
Osmia hellados van der Zanden, 1984
Osmia laticauda Stanek, 1969
Osmia leucopyga Ducke, 1899
Osmia moreensis van der Zanden, 1984
Osmia nana Morawitz, 1873
Osmia saxicola Ducke, 1899
Osmia submicans Morawitz, 1870
Osmia teunisseni van der Zanden, 1981
Osmia versicolor Latreille, 1811
Osmia viridana Morawitz, 1874
Subgenus *Tergosmia* Warncke, 1988
Osmia lunata Benoist, 1928
Osmia mirhiji Mavromoustakis, 1957
Osmia rhodoensis (van der Zanden, 1983)
Osmia tergestensis Ducke, 1897

Genus *Protosmia* Ducke, 1900

Subgenus *Chelostomopsis* Cockerell, 1925
Protosmia capitata (Schletterer, 1889)
Protosmia longiceps (Friese, 1899)

Subgenus *Nanosmia* Griswold, 1998
Protosmia asensioi Griswold & Parker, 1988
Protosmia minutula (Pérez, 1896)
Protosmia montana Müller, 2012

Subgenus *Protosmia* Ducke, 1900
Protosmia exenterata (Pérez, 1895)
Protosmia glutinosa (Giraud, 1871)
Protosmia lusitanica Le Goff & Gonçalves, 2018
Protosmia monstrosa (Pérez, 1895)
Protosmia paradoxa (Friese, 1899)
Protosmia sideritis Tkalců, 1978
Protosmia tauricola Popov, 1961
Protosmia tiflensis (Morawitz, 1876)

Genus *Stenoheriades* Tkalců, 1984

Stenoheriades coelostoma (Benoist, 1935)
Stenoheriades maroccana (Benoist, 1928)

Family Melittidae Schenck, 1860

Tribe Dasypodaini Sagemehl, 1882

Genus *Dasypoda* Latreille, 1802

Subgenus *Dasypoda* Latreille, 1802
Dasypoda dusmeti Quilis, 1928
Dasypoda hirtipes (Fabricius, 1793)
Dasypoda morawitzi Radchenko, 2016
Dasypoda panzeri Spinola, 1838
Dasypoda pyriformis Radoszkowski, 1887

Subgenus *Heterodasypoda* Michez, 2004
Dasypoda albimana Pérez, 1905
Dasypoda michezi Radchenko, 2017
Dasypoda morotei Quilis, 1928
Dasypoda pyrotrichia Förster, 1855
Subgenus *Megadasypoda* Michez, 2004
Dasypoda argentata Panzer, 1809
Dasypoda braccata Eversmann, 1852
Dasypoda frieseana Schletterer, 1890
Dasypoda spinigera Kohl, 1905
Dasypoda suripes (Christ, 1791)
Dasypoda toroki Michez, 2004
Dasypoda visnaga (Rossi, 1790)

Subgenus *Microdasypoda* Michez, 2004
Dasypoda cingulata Erichson, 1835
Dasypoda crassicornis Friese, 1896
Dasypoda iberica Warncke, 1973

Tribe Macropidini Robertson, 1904

Genus *Macropis* Panzer, 1809

Macropis europaea Warncke, 1973
Macropis frivaldszkyi Mocsáry, 1878
Macropis fulvipes (Fabricius, 1804)

Tribe Melittini Schenck, 1860

Genus *Melitta* Kirby, 1802

Melitta aegyptiaca (Radoszkowski, 1891)
Melitta budashkini Radchenko & Ivanov, 2012
Melitta budensis (Mocsáry, 1878)
Melitta dimidiata Morawitz, 1876
Melitta haemorrhoidalis (Fabricius, 1775)
Melitta hispanica Friese, 1900
Melitta iberica Warncke, 1973
Melitta kastiliensis Warncke, 1973
Melitta leporina (Panzer, 1799)
Melitta maura (Pérez, 1896)
Melitta melanura (Nylander, 1852)
Melitta murciana Warncke, 1973
Melitta nigricans Alfken, 1905
Melitta schmiedeknechti Friese, 1898
Melitta seitzi Alfken, 1927
Melitta sibirica (Morawitz, 1888)
Melitta tomentosa Friese, 1900
Melitta tricincta Kirby, 1802
Melitta udmurtica Sitdikov, 1986

Discussion

Here we present an update on the knowledge to the species diversity and taxonomy of the bee fauna of Europe, considering all the advances made after the publication of the last addition to the checklist of IUCN European bees (Rasmont *et al*. 2017) and considering material that was overlooked by that work. An updated total of 2,138 species belonging to 77 genera are recorded within IUCN Europe.

After the latest revision of the first checklist (Rasmont *et al*. 2017), we report one new genus for science (*Halopanurgus*), four new subgenera, 67 species recently described, 40 species newly recorded since the latest revision (including two species non-native to Europe), 26 species overlooked in the previous European checklists and 63 published synonymies. We provide original records for eight species previously unknown to the continent and, as original taxonomic acts, we consider two names as a *nomina nuda*, ten names as *nomina dubia*, three *species inquirenda,* synonymise three species and exclude 37 species from the previous checklist. Around a hundred other taxonomic changes and clarifications are also included. The final count of species per family, tribe and genus is available in **Table 1**, and the cumulative number of valid bee species by year of description for Europe is shown in **Fig. 17**.

Biases in taxonomic knowledge

Despite all the work that has been, and is being, conducted in bee taxonomy in Europe, substantial knowledge gaps are still present, hampering the complete understanding of the bee fauna of the continent. Three main phenomena are causing this bias: (i) large parts of Europe are still poorly investigated, (ii) some bee genera and species-groups have not received proper taxonomic attention and (iii) the lack of centralised online data storage system that includes digitised, verified species data (including high quality pictures of type specimens and available occurrence data) at the European level. These points are discussed in the next paragraphs.

Despite a long tradition of sampling and research on the natural history of wild bees in Europe (Michez *et al*. 2019), some geographic areas remain largely overlooked. A notable example is the Iberian peninsula, from where a large proportion of the total number of recently described species (after the update of 2017) come. Despite a long history of study of this fauna (e.g. the early works of Erichson 1835; Lepeletier 1841; Dours 1873; Pérez 1895; Friese 1897), numerous bee species continue to be described from the peninsula (since 2017 see Radchenko 2017; Wood & Cross 2017; Kuhlmann & Smit 2018; Le Goff & Gonçalves 2018; Smit 2018; Wood *et al*. 2020a, 2021, 2022; Wood, 2023c). The region was also shown to host a new, unexpected bee genus, *Halopanurgus*, which is endemic to the Iberian peninsula (Wood *et al*. 2022a). It is therefore clear that more field work and taxonomic

revisions will likely highlight the presence of additional new species, most probably including endemics, with a subsequent need to continuously update the checklists and occurrence data from Spain and Portugal (Baldock *et al*. 2018; Bartomeus *et al*. 2022). Another important example is Greece, from where many of the new species added to the European checklist have been found (mostly brood parasitic bees belonging to the genus *Nomada*). Due to its clear faunal affinity with Turkey, the most species-rich country of the Mediterranean (cf. Lhomme *et al*. 2020), there is no doubt that Greece remains a country with a high potential, both for discovering new species for science and new species for Europe.

In addition to geographical biases, some genera have received very little attention in recent decades, preventing any taxonomic update and addition to the IUCN checklist of the European bee fauna. This is particularly notable for the tribe Melectini, a tribe of parasitic bees including two genera in Europe (*Melecta* Latreille and *Thyreus* Panzer) whose natural rarity in the wild largely hampers taxonomic revisions. In the case of *Melecta*, no large-scale revision has followed the monograph of Lieftinck (1980) on the Palaearctic species, which was published more than 40 years ago. There is no doubt that in-depth genetic and phylogeographic analyses would illuminate taxonomic changes in this poorly studied group of bees, as it has been the case for the closely related bee genus *Brachymelecta* Linsley in North America (Onuferko *et al*. 2021). In the absence of proper taxonomic revisions and resources to identify these bees, limited verified occurrence data are published, hampering conservation efforts for these rare insects. Other bee genera such as *Eucera, Tarsalia,* and *Megachile* also fall into the category of bees that have received very little to no attention over recent years. In the absence of proper taxonomic works that elucidate the species boundaries and refine our understanding of the distribution of species in these groups, unambiguous updates of their conservation status remain pending.

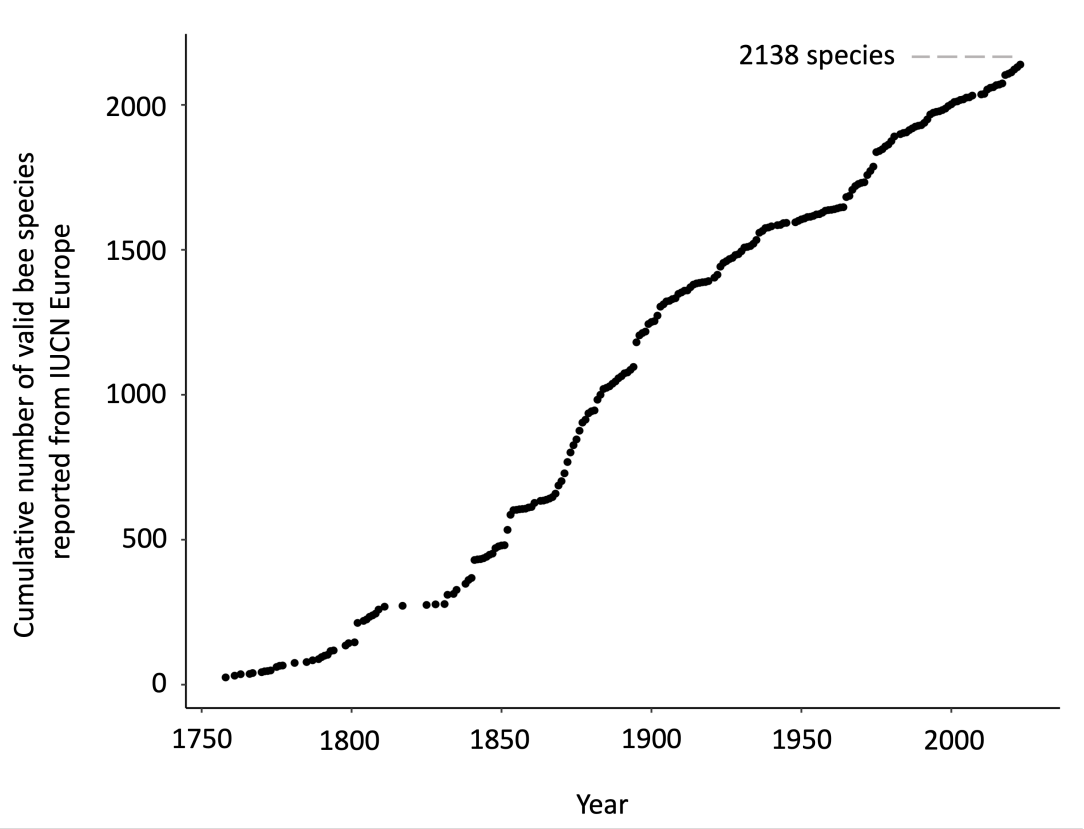

FIGURE 17. Cumulative number of valid bee species by year of description for IUCN Europe following the present update.

In parallel to the needs to overcome the geographical sampling biases and taxonomic gaps, there is an urgent need for a centralised online data storage system allowing open access to digitised data of bee species. This type of storage system would include a unified list of the bee species found across the continent and would be enriched with taxonomic references, species (re-)description and diagnoses (if no updated species key is available at the continental scale), high quality pictures of the most important diagnostic characters, life history traits, ecological data and a section gathering the available genetic data on the species in question (Garnett *et al*. 2020; Orr *et al*. 2021).

In this context, the digitisation and photographic documentation of type specimens (currently scattered across the continent) would be a priority, in particular for the type specimens that are not hosted in their country of origin.

Species expansions and invasions

From the point of view of biodiversity, recent decades have been marked by waves of species extinctions and negative population trends in bees (Nieto *et al*. 2014; Zattara & Aizen 2021). These declines have understandably received attention from naturalists and conservation biologists, as highlighted by numerous country checklists and reports (e.g. Drossart *et al*. 2019; Quaranta *et al*. 2018; Ghisbain & Rasmont 2022). What is slightly overshadowed however when considering the interaction between global changes and bees is the fact that changes in climate, land-use and global human trading systems can also facilitate the invasion and subsequent expansion of new bee species from other continents (reviewed in Ghisbain *et al*. 2021a). A noticeable example of such an invasion in Europe is that of the giant resin bee (*Megachile sculpturalis* Smith) and its fast progression across the continent over the last few years (Ivanov & Fateryga 2019; Lanner *et al*. 2021; Le Féon *et al*. 2021; Ortiz-Sánchez & Baquero 2021; Ribas-Marquès & Díaz-Calafat 2021). Other non-native congeneric species have recently been added to the European fauna, including *Megachile disjunctiformis* Cockerell (Bortolotti *et al*. 2018) and *Megachile otomita* Cresson (Strudwick & Jacobi 2018). Other recent examples of non-native species recorded in Rasmont *et al*. (2017) involve carpenter bees (genus *Xylocopa* Latreille) whose transport worldwide is largely facilitated by the trade of wood (Ghisbain *et al*. 2021a). As international trades continue to intensify with Europe, further newcomers are expected to establish on the continent in coming years. In parallel to human-driven transport, steadily increasing evidence shows that a subset of bee species and populations are expanding along at least one margin of their distribution range following global changes in temperature and habitats, as for instance observed in the expanding bumblebee species *B. haematurus*, *B. schrenki* and *B. semenoviellus* (reviewed in Ghisbain *et al.* 2021a and Rasmont *et al*. 2021).

Final perspectives

Taxonomy is a constantly evolving science. In this regard, further improvements, re-assessments and revisions will be needed for better understanding the bee fauna of Europe. At the time of writing, several works are revising the taxonomic status of large species complexes, including "well-known bee groups". Validating our present knowledge should therefore also remain a priority, as our knowledge about a significant part of the currently accepted European fauna cannot be taken for granted.

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TABLE 1. Updated number of bee species per genus within the IUCN European framework.

Family	Tribe	Genus	Number of species
ANDRENIDAE	**Andrenini**	*Andrena*	477
		Cubiandrena	1
	Melitturgini	*Melitturga*	6
	Panurgini	*Camptopoeum*	4
		Clavipanurgus	1
		Flavipanurgus	6
		Halopanurgus	2
		Panurginus	15
		Panurgus	13
		Simpanurgus	1
APIDAE	**Ammobatini**	*Ammobates*	14
		Chiasmognathus	1
		Parammobatodes	2
		Pasites	1
	Ammobatoidini	*Ammobatoides*	4
		Schmiedeknechtia	1
	Ancylaini	*Ancyla*	5
		Tarsalia	2
	Anthophorini	*Amegilla*	11
		Anthophora	77
		Habropoda	3
	Apini	*Apis*	1
	Biastini	*Biastes*	3
	Bombini	*Bombus*	68
	Ceratinini	*Ceratina*	26
	Epeolini	*Epeoloides*	1
		Epeolus	18
		Triepeolus	1
	Eucerini	*Eucera*	89
		Tetralonia	21
	Melectini	*Melecta*	26
		Thyreus	11
	Nomadini	*Nomada*	222
	Xylocopini	*Xylocopa*	9
COLLETIDAE	**Colletini**	*Colletes*	66
	Hylaeini	*Hylaeus*	88
HALICTIDAE	**Halictini**	*Halictus*	49
		Lasioglossum	180
		Seladonia	28
		Thrincohalictus	1
	Nomiini	*Nomiapis*	10
		Pseudapis	1
	Nomioidini	*Ceylalictus*	1

.....Continued on the next page

TABLE 1. (Continued**)**

Family	Tribe	Genus	Number of species
		Nomioides	6
	Rophitini	*Dufourea*	20
		Rhophitoides	2
		Rophites	7
		Systropha	3
	Sphecodini	*Sphecodes*	48
MEGACHILIDAE	**Anthidiini**	*Afranthidium*	2
		Anthidiellum	3
		Anthidium	17
		Eoanthidium	4
		Icteranthidium	4
		Pseudoanthidium	10
		Rhodanthidium	7
		Stelis	26
		Trachusa	9
	Dioxyini	*Aglaoapis*	1
		Dioxys	6
		Ensliniana	1
		Metadioxys	1
		Paradioxys	1
	Lithurgini	*Lithurgus*	3
	Megachilini	*Coelioxys*	28
		Megachile	76
	Osmiini	*Chelostoma*	24
		Haetosmia	1
		Heriades	5
		Hofferia	1
		Hoplitis	100
		Osmia	99
		Protosmia	13
		Stenoheriades	2
MELITTIDAE	**Dasypodaini**	*Dasypoda*	19
	Macropidini	*Macropis*	3
	Melittini	*Melitta*	19
TOTAL	31 tribes	77 genera	**2138 species**

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