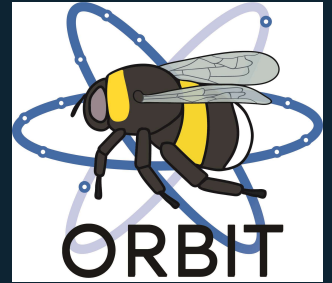




Pollinator Academy

Genus: *Megachile*



Female



Male

Genus: *Megachile* Latreille, 1802

Clade: Anthophila

Family: Megachilidae

SubFamily: Megachilinae

Tribe: Megachilini

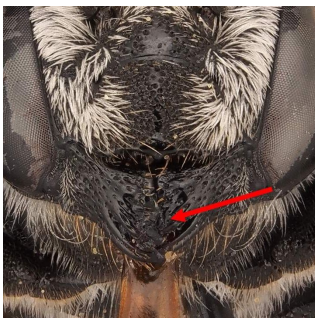
Number of species of this genus found in Europe: 76

Morphology & diagnosis

Megachile are medium to large sized bees (7-17mm). They are stocky species with black cuticula. The forewings bear two equally large submarginal cells and an elliptical marginal cell. They don't have arolia between the tarsal claws. They have simple scutellum and axillae. They don't have a pygidial plate. *Megachile* is recognized by the absence of arolia, Females have a ventral scopa and usually have beveled intermediate areas (cutting edges) on the mandibles. There are four exposed, well sclerotized sterna in the male. Males of many species have special forelegs with widened tibiae and femorae, flattened and white tarsus.

Summary of distinctive traits

- Stout mandible usually with a wide distal edge and cutting edges in-between teeth (a)
- 2 subequal submarginal cells, the second recurrent vein always prefurcal (b)
- Black cuticula
- Arolium absent (c)
- Ventral scopa in females (d)



(a) *Megachile apicalis*
Female



(b) *Megachile genalis*
Female



(c) *Megachile genalis*
Female



(d) *Megachile alpicola*
Female

General comments on identification to species level

Important diagnostic characters are found on the mandibles, male's metasomal sterna and genitalia.

Morphologically similar genera, and how to distinguish them

- ***Megachile* - *Lithurgus***

Megachile species do not have pygidial plate.

Lithurgus species have a pygidial plate.

- ***Megachile* - *Osmia*, *Hoplitis*, *Heriades*, *Chelostoma*, *Haetosmia*, *Hofferia*, *Stenoheriades*, *Protosmia***

Megachile species have no arolium.

Osmia, *Hoplitis*, *Heriades*, *Chelostoma*, *Haetosmia*, *Hofferia*, *Stenoheriades* & *Protosmia* species have an arolium.

- ***Megachile* - *Coelioxys***

Megachile species have simple rounded axillae. Omaulus not carinate. Eyes usually without pubescence. Females do have a scopa. In males the metasomal tergum 6 often has a large preapical carina that may be crenulate, emarginate medially, reduced to two spines or absent. Gena of males without jugal fovea.

Coelioxys species have spined axillae. Omaulus carinate. Eye usually covered by a short pilosity. Females don't have a scopa. The metasomal tergum 6 of the males appears multispinose with at least two pairs of long, preapical spines. Gena of males with a jugal fovea.

- ***Megachile* - *Aglaoapis*, *Dioxys*, *Ensliniana*, *Metadioxys* & *Paradioxys***

Megachile species have rounded postero-lateral margin of the scutellum. Females

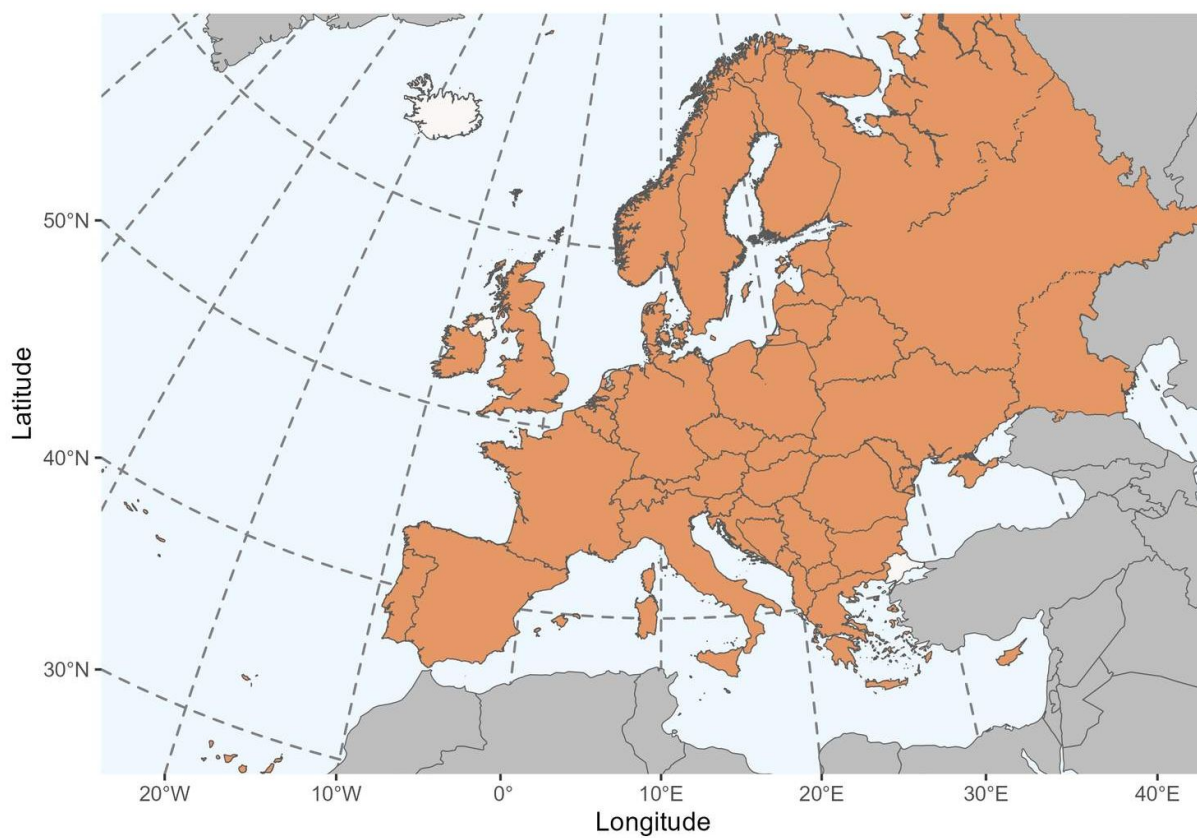
have a ventral scopa.

Aglaoapis, *Dioxys*, *Ensliniana*, *Metadioxys* & *Paradioxys* species have 2 spine-like postero-lateral projections of the scutellum. Females have no scopa.

Geographical distribution and global diversity

They have a cosmopolitan distribution and include more than 1400 species and 55 subgenera described at the global scale. The hotspot of diversity of this genus is found in tropical regions (Ascher & Pickering, 2014). The colonization abilities of this genus are remarkable. Two species of *Megachile* (*Callomegachile*) have been introduced and established in Europe. Nine subgenera are found in the European fauna:

Anodonteutricharaea, *Callomegachile*, *Chalicodoma*, *Chelostomoides*, *Creightonella*, *Eutricharaea*, *Megachile*, *Pseudomegachile* and *Xanthosarus* (Trunz et al., 2016; Praz, 2017).



Presence in Europe

They are present everywhere in Europe except Iceland and Northern Ireland.

Biology

Seasonal life cycle

Megachile species may be univoltine or bivoltine.

Reproduction

Males emerge earlier than females and patrol the area where there are the plants visited by the females. The copula takes place in the flowers or on the ground.

Nesting

They are solitary species. This genus exhibits a high diversity of nesting habits (Praz 2017). Depending on the species, they may dig their nest actively, use pre-existing cavities or usurpate nest of other Aculeata. They include aerial nesting species, underground nesting species and other species that can both nest underground and above ground. They may build their or use pre-existing cavities in dead wood, plant stems, hard soil, sand, on rocks (in crevices of rocks, in-between rocks). Some species are mason bees and build exposed nest with mud and/or pebbles on rocks and on bushes twigs. If some species only have one nesting behaviour other are generalist and may use any pre-existing cavities. Many species only use mud and/or resin to build the cells of their nest while other cut bites of leaves that they mixed with leaf pulp to cover the wall of their nest and build the cells. A few species cut bites of petals instead.

Parasites

Their cleptoparasites are species of the genus *Coelioxys* and Dioxyine bees.

Floral preferences

The pollen diet of *Megachile* is as diversified as their nesting behaviour, including many polylectic species (broadly polylectic to species with clear preferences) to strictly oligolectic species (Praz 2017). They are important pollinators of crops, with one species, *Megachile rotundata*, being managed for alfalfa pollination. During flower visits females make a buzzing noise and hold up the abdomen characteristic way upwards.



Type species: *Apis centuncularis* Linnaeus, 1758, by designation of Curtis, 1828, pl. 218.

Synonyms: *Anthemois* Robertson, 1903; *Cyphopyga* Robertson, 1903.

Etymology: the origin of this name comes from the Greek root 'mega', meaning 'large', and 'chilo', meaning 'lip'

Common names:

FR: les Mégachiles

EN: the leavecutter bees

GER: der Mörtel- und Blattschneiderbienen

NL: de behangersbijen

List of species found in Europe:

1. *Megachile (Creightonella) albisecta* (Klug, 1817)
2. *Megachile (Chalicodoma) albocristata* Smith, 1853
3. *Megachile (Anodonteutricharaea) albohirta* (Brullé, 1839)
4. *Megachile (Chalicodoma) albonotata* Radoszkowski, 1886
5. *Megachile (Megachile) alpicola* Alfken, 1924
6. *Megachile (Xanthosarus) analis* Nylander, 1852
7. *Megachile (Eutricharaea) anatolica* Rebmann, 1968
8. *Megachile (Chalicodoma) apennina* Benoist, 1940
9. *Megachile (Eutricharaea) apicalis* Spinola, 1808
10. *Megachile (Eutricharaea) argentata* (Fabricius, 1793)
11. *Megachile (Chalicodoma) baetica* (Gerstaecker, 1869)
12. *Megachile (Eutricharaea) binominata* Smith, 1853
13. *Megachile (Megachile) bombycina* Radoszkowski, 1874
14. *Megachile (Eutricharaea) burdigalensis* Benoist, 1940
15. *Megachile (Eutricharaea) canariensis* Pérez, 1902

16. *Megachile (Chalicodoma) canescens* (Brullé, 1832)
17. *Megachile (Megachile) centuncularis* (Linnaeus, 1758)
18. *Megachile (Xanthosarus) circumcincta* (Kirby, 1802)
19. *Megachile (Chalicodoma) cressa* (Tkalčů, 1988)
20. *Megachile (Chalicodoma) cypricola* Mavromoustakis, 1938
21. *Megachile (Eutricharaea) deceptor* Pérez, 1890
22. *Megachile (Xanthosarus) diabolica* Friese, 1898
23. *Megachile (Callomegachile) disjunctiformis* Cockerell, 1911
24. *Megachile (Creightonella) doriae* Magretti, 1890
25. *Megachile (Pseudomegachile) ericetorum* (Lepeletier, 1841)
26. *Megachile (Pseudomegachile) farinosa* Smith, 1853
27. *Megachile (Eutricharaea) fertoni* Pérez, 1895
28. *Megachile (Eutricharaea) flabellipes* Pérez, 1895
29. *Megachile (Pseudomegachile) flavipes* Spinola, 1838
30. *Megachile (Pseudomegachile) foersteri* Gerstäcker, 1869
31. *Megachile (Chalicodoma) fuerteventurae* Tkalčů, 1994
32. *Megachile (Xanthosarus) fulvimana* Eversmann, 1852
33. *Megachile (Megachile) genalis* Morawitz, 1880
34. *Megachile (Eutricharaea) giraudi* Gerstaecker, 1869
35. *Megachile (Eutricharaea) hohmanni* Tkalčů, 1994
36. *Megachile (Chalicodoma) hungarica* Mocsáry, 1877
37. *Megachile (Eutricharaea) inexpectata* Rebmann, 1968
38. *Megachile (Xanthosarus) lagopoda* (Linnaeus, 1761)

39. *Megachile (Megachile) lapponica* Thomson, 1872
40. *Megachile (Eutricharaea) leachella* Curtis, 1828
41. *Megachile (Chalicodoma) lefebvrei* (Lepeletier, 1841)
42. *Megachile (Eutricharaea) leucomalla* Gerstaecker, 1869
43. *Megachile (Megachile) ligniseca* (Kirby, 1802)
44. *Megachile (Chalicodoma) lucidifrons* Ferton, 1905
45. *Megachile (Chalicodoma) manicata* Giraud, 1861
46. *Megachile (Eutricharaea) marginata* Smith, 1853
47. *Megachile (Xanthosarus) maritima* (Kirby, 1802)
48. *Megachile (Eutricharaea) melanogaster* Eversmann, 1852
49. *Megachile (Megachile) melanopyga* Costa, 1863
50. *Megachile (Eutricharaea) minutissima* Radoszkowski, 1876
51. *Megachile (Chalicodoma) montenegrensis* Dours, 1873
52. *Megachile (Xanthosarus) nigriventris* Schenck, 1870
53. *Megachile (Megachile) octosignata* Nylander, 1852
54. *Megachile (Eutricharaea) opacifrons* Pérez, 1897
55. *Megachile (Chelostomoides) otomita* Cresson, 1878
56. *Megachile (Chalicodoma) parietina* (Geoffroy, 1785)
57. *Megachile (Eurymella) patellimana* Spinola, 1838
58. *Megachile (Megachile) pilicrus* Morawitz, 1878
59. *Megachile (Eutricharaea) posti* Mavromoustakis, 1952
60. *Megachile (Eutricharaea) pusilla* Pérez, 1884
61. *Megachile (Megachile) pyrenaea* Pérez, 1890

62. *Megachile (Chalicodoma) pyrenaica* (Lepeletier, 1841)
63. *Megachile (Chalicodoma) roeweri* Alfken, 1928
64. *Megachile (Eutricharaea) rotundata* (Fabricius, 1787)
65. *Megachile (Chalicodoma) rufescens* (Pérez, 1879)
66. *Megachile (Pseudomegachile) saussurei* Radoszkowski, 1874
67. *Megachile (Callomegachile) sculpturalis* Smith, 1853
68. *Megachile (Eutricharaea) semicircularis* van der Zanden, 1996
69. *Megachile (Chalicodoma) sicula* (Rossi, 1792)
70. *Megachile (Pseudomegachile) syriaca* Dorchin & Praz, 2018
71. *Megachile (Pseudomegachile) tecta* Radoszkowski, 1888
72. *Megachile (Eutricharaea) tenuistriga* Alfken, 1938
73. *Megachile (Anodonteutricharaea) thevestensis* Ferton, 1908
74. *Megachile (Anodonteutricharaea) troodica* Mavromoustakis, 1953
75. *Megachile (Megachile) versicolor* Smith, 1844
76. *Megachile (Xanthosarus) willughbiella* (Kirby, 1802)

Subgenera found in Europe:

- *Anodonteutricharaea* Tkalců, 1993
- *Callomegachile* Michener, 1962
- *Chalicodoma* Lepeletier, 1841
- *Chelostomoides* Robertson, 1901
- *Creightonella* Cockerell, 1908
- *Eutricharaea* Thomson, 1872
- *Megachile* s.str. Latreille, 1802

- *Pseudomegachile* Friese, 1898
 - *Xanthosarus* Robertson, 1903
-

References

Müller, A., Krebs, A. and Amiet, F. 1997. *Bienen: Mitteleuropäische Gattungen, Lebensweise, Beobachtung*. Naturbuch Verlag, Augsburg.

Amiet, F., Herrmann, M., Müller, A. and Neumeyer, R. 2004. Apidae 4: *Anthidium*, *Chelostoma*, *Coelioxys*, *Dioxys*, *Heriades*, *Lithurgus*, *Megachile*, *Osmia*, *Stelis*. Centre Suisse de Cartographie de la Faune (CSCF)/Schweizerische Entomologische Gesellschaft (SEG).

Ascher, J.S. and Pickering, J. 2014. Discover Life bee species guide and world checklist (Hymenoptera: Apoidea: Anthophila). Available at: http://www.discoverlife.org/mp/20q?guide=Apoidea_species&flags=HAS:&guide=Apoidea_species&cl=El.

Bortolotti, L, Luthi, F, Flaminio, S, Bogo, G, Sgolastra, F. 2018. First record of the Asiatic bee *Megachile disjunctiformis* in Europe. Bulletin of Insectology 71 (1): 143-149

Else, G.R. 2012. Bees, Wasps and Ants Recording Society. *Megachile circumcincta*.

Else, G. R. 2012. Bees Wasps & Ants Recording Society 2013. *Megachile maritima*.

Else, G. R. 2013. Bees, Wasps & Ants Recording Society. *Megachile willughbiella*.

Erlandsson, S. 1955. Die schwedischen Arten der Gattung *Coelioxys* Latr. (Hym. Apidae). *Opuscula Entomologica* 20: 174-191.

Fabre JH 1882. *Nouveaux souvenirs entomologiques. Études sur l'instinct et les mœurs des insectes*. Delagrave, Paris, 355 pp.

Gogala, A. 2013. Bee Fauna of Slovenia: Checklist of Species (Hymenoptera, Apoidea). Available at: <http://www2.pms-lj.si/andrej/apoidea.htm>.

Le Goff G 2007. La nidification de *Megachile (Chalicodoma) pyrenaica* Lepeletier dans la province de Granada (Espagne) (Hymenoptera Apoidea Megachilidae). *Lambillionea* 107: 277–281.

Meng, Y. H. and Xu, H. L. 2008. Nesting behavior of *Megachile leachella* (Hymenoptera: Megachilidae). *Acta Entomologica Sinica* 11: 012.

Michener, C. D. 2007. *The bees of the world, second edition*. Baltimore, The Johns Hopkins University Press.

Pasteels, J.J. 1970. Espèces nouvelles de Megachilidae (Hymenoptera Apoidea) d'Afrique Noire. I. *Creightonella* Cockerell et *Chalicodoma* Lepeletier. *x*, 72: 205-232.

Peeters, T.M.J., Raemakers, I.P. and Smit, J. 1999. Voorlopige atlas van de Nederlandse bijen (Apidae). European Invertebrate Survey Nederland, Leiden.

Praz C. (2017) Subgeneric classification and biology of the leafcutter and dauber bees (genus *Megachile* Latreille) of the western Palearctic (Hymenoptera, Apoidea, Megachilidae). *Journal of Hymenoptera Research*, 55, 1-54.

Strudwick, T, Jacobi, B. 2018. The American Resin bee *Megachile (Chelostomoides) otomita* Cresson, 1878 established on Tenerife, Canary Islands (Spain) (Hymenoptera, Anthophila). *AMPULEX* 10

Trunz V., Packer L., Vieu J., Arrigo N. & Praz C. (2016) Comprehensive phylogeny, biogeography and new classification of the diverse bee tribe Megachilini: Can we use DNA barcodes in phylogenies of large genera? *Molecular Phylogenetics and Evolution*, 103, 45-259.

Attributions

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