



Pollinator Academy

Genus: *Osmia*



Female



Male

Genus: *Osmia* Panzer, 1806

Clade: Anthophila

Family: Megachilidae

SubFamily: Megachilinae

Tribe: Osmiini

Number of species of this genus found in Europe: 99

Morphology & diagnosis

The body shape, sculpture and pilosity is highly variable in this diversified genus. They are small to large sized bees (6-16mm). Their cuticula often has metallic reflection but can also be entirely black and in some species the gaster is red. Their forewings bear two submarginal cells, and the marginal cell is rounded at the tip. They have an arolia between the tarsal claws. Both segments 3 and 4 of the labial palpus project laterally. The clypeus may have remarkable protuberances in some species. The pronotal lobes are rounded, without carina. Except for the species of the subgenus *Hoplosmia*, axillae are not spined. The propodeal enclosure is vestigial without distinct carina bordering its posterior margin. The parapsidal lines of the scutum are short, usually punctiform, rarely longer than two mesonotal punctures. The first tergum is not carinate, transition between the declive and horizontal part being is convex. The labrum of female bears a fringe of long hairs but not a preapical tuft of long erect hairs. They have robust mandibles with a distal margin longer than half the length of the mandible. In males, the metasomal tergum 6 usually does not have a lateral tooth on the apical margin. The tergum 7 is strongly sclerotized and not hidden by large tergum 6. Their sternum 6 does not have basal flaps.

Only the males of the *Stenosmia* subgenus do not have lateral tooth on the T6 apical margin and basal flaps on the S6. They can be recognized by the remarkably long stigma on their anterior wings which is half as long as the marginal cell length.

Summary of distinctive traits

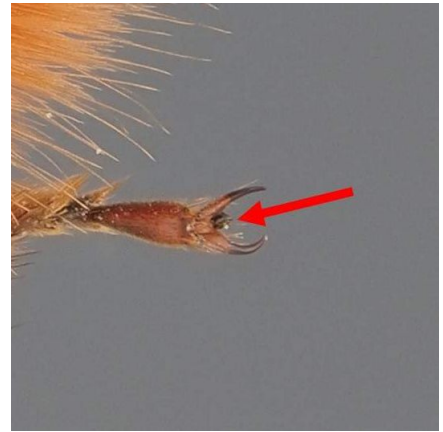
- 2 submarginal cells
- Ventral scopa in females
- Arolium present
- Robust mandibles
- Very short (point-like) parapsidal lines (except for the *Allosmia*, *Hoplosmia* and *Nasutosmia* subgenera)



(a) *Osmia cornuta* Male



(b) *Osmia cornuta* Female



(c) *Osmia cornuta* Female



(d) *Osmia cornuta* Female



(e) *Osmia andreoides* Female

General comments on identification to species level

Species identification criteria are numerous. They include hairs colour and cuticle hue, and punctation and shapes of various body parts (mandible, clypeus, vertex, mesonotum, propodeal enclosure, tergites, tibial spurs). It is recommended to open the

mandibles, legs and wings. Male identification often requires visibility of the last tergites and sternites as well as of genitalia.

Morphologically similar genera, and how to distinguish them

- ***Osmia - Hoplitis***

Osmia species have very short parapsidal lines, except for the subgenus *Hoplosmia*, but *Hoplosmia* species have spined axillae.

Hoplitis species have very long parapsidal lines, a strongly carinate pronotal lobe, and every species have rounded axillae.

- ***Osmia - Haetosmia***

Osmia species have no enlargement of the basitarsus of the anterior legs.

Haetosmia species have a strongly carinate pronotal lobe and a wide basitarsus on anterior legs.

- ***Osmia - Chelostoma & Hofferia***

Osmia species have long hairs at the apex of the labrum. Scutellum often shorter than the ITD.

Chelostoma & Hofferia species have no long hairs at the apex of the labrum. Scutellum as long or longer than the ITD.

- ***Osmia - Heriades & Stenoheriades***

Osmia species don't have a transverse carina on the T1.

Heriades & Stenoheriades species do have a transverse carina on the T1.

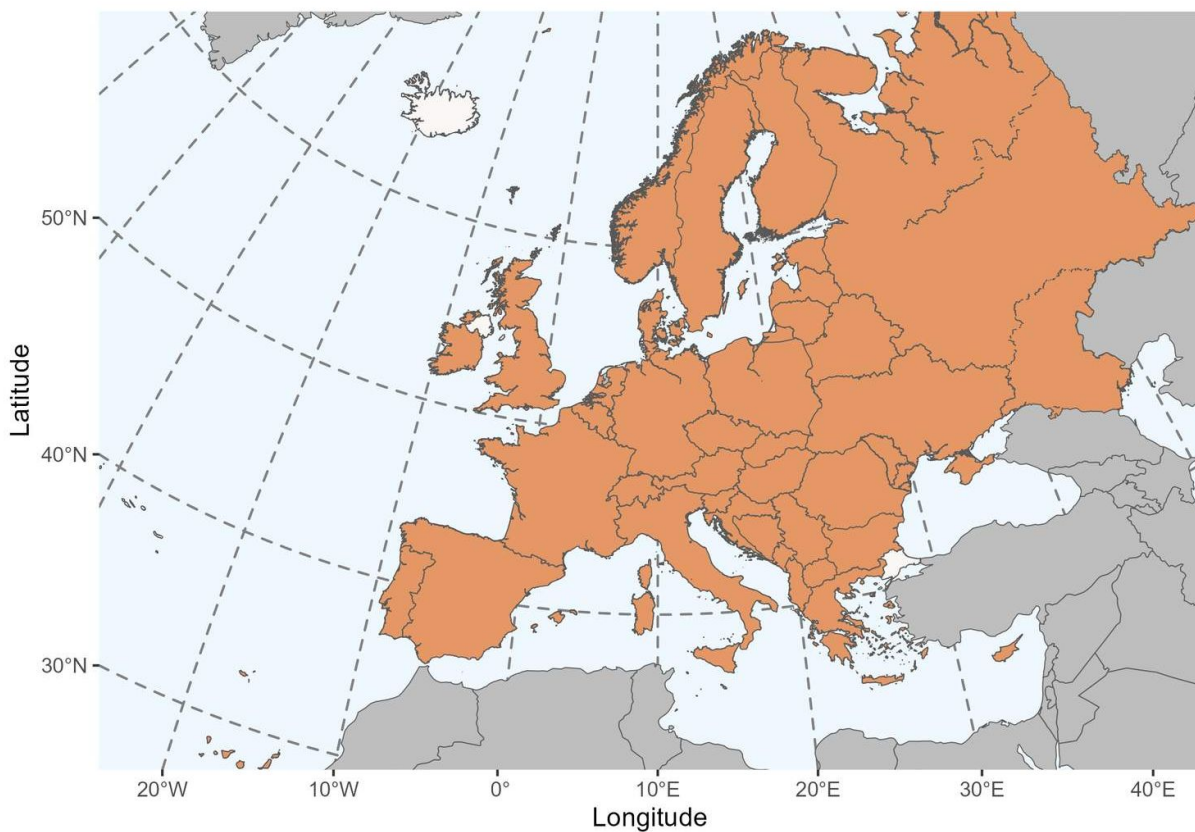
- ***Osmia - Protosmia***

Osmia species have a vestigial propodeal triangle and a stout body-shape.

Protosmia species have a marked propodeal triangle and a slender body-shape.

Geographical distribution and global diversity

This genus shows a cosmopolite distribution. There are more than 340 described species at the global scale. Most of the species occur in temperate areas of all continents except South America.



Presence in Europe

They are present almost in the entirety of Europe except Iceland.

Biology

Seasonal life cycle

They are univoltine summer species. They overwinter as a pupa.

Reproduction

Males emerge a few days earlier and show a strong territorial behaviour. Their territories include nests where females will emerge. They try to copulate as soon as females emerge for the first time. Other males set their territories on patches of flowers. Females only mate once. The male can hold the female for a period from a few minutes to half an hour before the copula, and during this time the animals rub their antennae together. The copula itself lasts a few seconds.

Nesting

They are solitary species that can sometimes nest in aggregations. The construction of the nest is very variable between species. Some species make their nest in cavities in dead wood, some dig their nest in sand dunes, some make their nest in all kinds of natural or artificial cavities they can find.

Parasites

Known bee cleptoparasites of this genus include species of the genera *Stelis* and *Coelioxys*.

Floral preferences

There is variation between species in the level of plant specialization. Some species are polylectic, while other are oligolectic on the families Fabaceae, Asteraceae, Boraginaceae, Brassicaceae or Lamiaceae.



Type species: *Apis bicornis* Linnaeus, 1758 = *Apis rufa* Linnaeus, 1758, by designation of Latreille, 1810: 439.

Synonyms: n/a

Etymology: this name comes from the Greek root 'osme', meaning 'smell'

Common names:

FR: les Osmies

GER: der Mauerbienen

NL: metselbijen

List of species found in Europe:

1. *Osmia (Helicosmia) aeruginosa* Warncke, 1988
2. *Osmia (Helicosmia) alfkenii* Ducke, 1900
3. *Osmia (Melanosmia) alticola* Benoist, 1922
4. *Osmia (Pyrosmia) amathusica* Mavromoustakis, 1937
5. *Osmia (Hoplosmia) anceyi* Pérez, 1879
6. *Osmia (Erythrosmia) andrenoides* Spinola, 1808
7. *Osmia (Osmia) apicata* Smith, 1853
8. *Osmia (Hemiosmia) argyropyga* Pérez, 1879
9. *Osmia (Osmia) ariadne* Peters, 1978
10. *Osmia (Helicosmia) aurulenta* Panzer, 1799
11. *Osmia (Hemiosmia) balearica* (Schmiedeknecht, 1885)
12. *Osmia (Neosmia) bicolor* (Schrank, 1781)
13. *Osmia (Osmia) bicornis* (Linnaeus, 1758)
14. *Osmia (Hoplosmia) bidentata* Morawitz, 1876
15. *Osmia (Allosmia) bischoffi* Atanassov, 1938
16. *Osmia (Helicosmia) breviata* Warncke, 1988

17. *Osmia (Metallinella) brevicornis* (Fabricius, 1798)
18. *Osmia (Helicosmia) caerulescens* (Linnaeus, 1758)
19. *Osmia (Pyrosmia) cephalotes* Morawitz, 1870
20. *Osmia (Osmia) cerinthidis* Morawitz, 1876
21. *Osmia (Neosmia) cinnabarina* Pérez, 1895
22. *Osmia (Helicosmia) clypealis* Morawitz, 1872
23. *Osmia (Nasutosmia) corniculata* (van der Zanden, 1998)
24. *Osmia (Osmia) cornuta* (Latreille, 1805)
25. *Osmia (Hoplosmia) croatica* Friese, 1893
26. *Osmia (Pyrosmia) cyanoxantha* Pérez, 1879
27. *Osmia (Pyrosmia) dilaticornis* Morawitz, 1875
28. *Osmia (Helicosmia) dimidiata* Morawitz, 1871
29. *Osmia (Melanosmia) disjuncta* Tkalčů, 1995
30. *Osmia (Hoplosmia) distinguenda* (Tkalčů, 1974)
31. *Osmia (Helicosmia) dives* Mocsáry, 1877
32. *Osmia (Helicosmia) dusmeti* van der Zanden, 1998
33. *Osmia (Hoplosmia) elegans* (Tkalčů, 1992)
34. *Osmia (Osmia) emarginata* Lepeletier, 1841
35. *Osmia (Erythrosmia) erythrogastra* Ferton, 1905
36. *Osmia (Hoplosmia) fallax* Pérez, 1895
37. *Osmia (Pyrosmia) ferruginea* Latreille, 1811
38. *Osmia (Pyrosmia) forticornis* van der Zanden, 1989
39. *Osmia (Helicosmia) frieseana* Ducke, 1899

40. *Osmia (Pyrosmia) gallarum* Spinola, 1808
41. *Osmia (Pyrosmia) hellados* van der Zanden, 1984
42. *Osmia (Helicosmia) heteracantha* Pérez, 1895
43. *Osmia (Hemiosmia) iberica* van der Zanden, 1987
44. *Osmia (Melanosmia) inermis* (Zetterstedt, 1838)
45. *Osmia (Neosmia) jason* Benoist, 1929
46. *Osmia (Osmia) kohlii* Ducke, 1899
47. *Osmia (Helicosmia) labialis* Pérez, 1879
48. *Osmia (Hoplosmia) larochei* Tkalců, 1993
49. *Osmia (Pyrosmia) laticauda* Stanek, 1969
50. *Osmia (Melanosmia) laticeps* Thompson, 1872
51. *Osmia (Helicosmia) latreillei* (Spinola, 1806)
52. *Osmia (Helicosmia) leaiana* (Kirby, 1802)
53. *Osmia (Pyrosmia) leucopyga* Ducke, 1899
54. *Osmia (Hoplosmia) ligurica* Morawitz, 1868
55. *Osmia (Tergosmia) lunata* Benoist, 1928
56. *Osmia (Helicosmia) madeirensis* van der Zanden, 1991
57. *Osmia (Melanosmia) maritima* Friese, 1885
58. *Osmia (Helicosmia) melanogaster* Spinola, 1808
59. *Osmia (Allosmia) melanura* Morawitz, 1872
60. *Osmia (Helicosmia) mirhiji* Mavromoustakis, 1957
61. *Osmia (Pyrosmia) moreensis* van der Zanden, 1984
62. *Osmia (Osmia) mustelina* Gerstaecker, 1869

63. *Osmia (Pyrosmia) nana* Morawitz, 1873
64. *Osmia (Helicosmia) nasoproducta* Ferton, 1909
65. *Osmia (Nasutosmia) nasuta* (Friese, 1899)
66. *Osmia (Melanosmia) nigriventris* (Zetterstedt, 1838)
67. *Osmia (Osmia) nigrohirta* Friese, 1899
68. *Osmia (Helicosmia) niveata* Fabricius, 1804
69. *Osmia (Helicosmia) niveocincta* Pérez, 1897
70. *Osmia (Helicosmia) notata* (Fabricius, 1804)
71. *Osmia (Allosmia) nuda* Friese, 1899
72. *Osmia (Hoplosmia) olgae* (Tkalčů, 1978)
73. *Osmia (Hoplosmia) padri* (Tkalčů, 1974)
74. *Osmia (Helicosmia) palmae* Tkalčů, 2001
75. *Osmia (Melanosmia) parietina* Curtis, 1828
76. *Osmia (Hoplosmia) picena* (Tkalčů, 1999)
77. *Osmia (Melanosmia) pilicornis* Smith, 1846\
78. *Osmia (Hoplosmia) pinguis* Pérez, 1895
79. *Osmia (Tergosmia) rhodoensis* (van der Zanden, 1983)
80. *Osmia (Allosmia) rufohirta* Latreille, 1811
81. *Osmia (Allosmia) rutila* Erichson, 1835
82. *Osmia (Pyrosmia) saxicola* Ducke, 1899
83. *Osmia (Hoplosmia) scutellaris* Morawitz, 1868
84. *Osmia (Helicosmia) signata* Erichson, 1835
85. *Osmia (Hoplosmia) spinigera* Latreille, 1811

86. *Osmia (Hoplosmia) spinulosa* (Kirby, 1802)
87. *Osmia (Melanosmia) steinmanni* Müller, 2002
88. *Osmia (Helicosmia) subcornuta* Morawitz, 1875
89. *Osmia (Pyrosmia) submicans* Morawitz, 1870
90. *Osmia (Melanosmia) svenssoni* Tkalčů, 1983
91. *Osmia (Allosmia) sybarita* Smith, 1853
92. *Osmia (Tergosmia) tergestensis* Ducke, 1897
93. *Osmia (Pyrosmia) teunissenii* van der Zanden, 1981
94. *Osmia (Osmia) tricornis* Latreille, 1811
95. *Osmia (Hemiosmia) unicoloris* Pérez, 1895
96. *Osmia (Melanosmia) uncinata* Gerstaecker, 1869
97. *Osmia (Pyrosmia) versicolor* Latreille, 1811
98. *Osmia (Pyrosmia) viridana* Morawitz, 1874
99. *Osmia (Melanosmia) xanthomelana* Kirby, 1802

Subgenera found in Europe:

- *Allosmia* Tkalčů, 1974
- *Erythrosmia* Schmiedeknecht, 1885
- *Helicosmia* Thomson, 1872
- *Hemiosmia* Tkalčů, 1975
- *Hoplosmia* Thomson 1872
- *Melanosmia* Schmiedeknecht, 1885
- *Metallinella* Tkalčů, 1966
- *Nasutosmia* Tkalčů and Michener, 1998

- *Neosmia* Tkalčů, 1974
- *Osmia* s.str. Panzer, 1806
- *Pyrosmia* Tkalčů, 1975
- *Tergosmia* Warncke, 1988

References

Nieuwenhuijsen H. 2014. Determinatietabel voor de Nederlandse soorten metselbijen (*Hoplitis* en *Osmia*). *Hymeno Varia*, 8 : 29-39.

Attributions

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