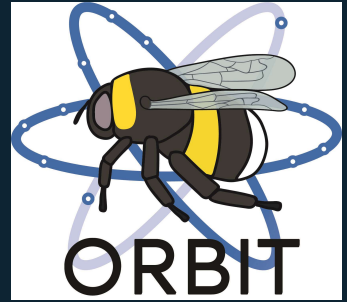




Pollinator Academy

Genus: *Colletes*



Female



Male

Genus: *Colletes* Latreille, 1802

Clade: Anthophila

Family: Colletidae

SubFamily: Colletinae

Tribe: Colletini

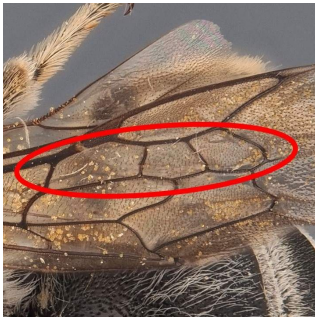
Number of species of this genus found in Europe: 61

Morphology & diagnosis

Colletes are medium to large sized bees (7-16mm). The body colour is consistently black, with yellowish grey, sometimes orange to orange-brown, often dense pubescence. Their tongues are short, wide and bifid at the tip, generating a two-lobed tongue making them easy to recognise. This trait is shared with the genus *Hylaeus*, of the same family. The forewings bear three submarginal cells, being the first one the largest and the other two being of subequal size. The second recurrent vein show a characteristic S shape. The abdomen is relatively conical and bulging dorsally, being the two first segments the broadest and of similar size. The abdomen also shows bands of white hair that are not interrupted in the middle in most species, generally clearly delimited and of constant length. The hairs are feathered, which makes the pubescence appear felt-like.

Summary of distinctive traits

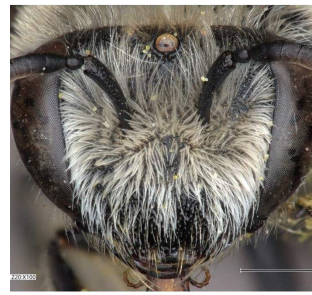
- 3 submarginal cells ($1 > 2 = 3$) (a)
- Second recurrent vein is sigmoid ("S" shaped) (b)
- Face with eyes converging towards the clypeus (c)
- Glossa ('tongue') short and bifid (d)



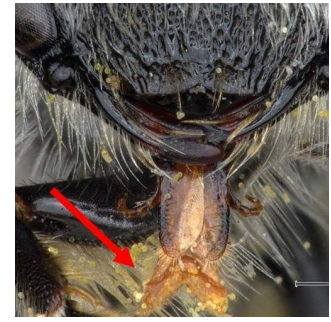
(a) *Colletes nasutus* Male



(b) *Colletes nasutus* Male



(c) *Colletes noskiewiczi*
Female



(d) *Colletes noskiewiczi*
Female

General comments on identification to species level

Identification of many *Colletes* species is challenging due to the often subtle differences particularly between closely related species and sometimes a reference collection is required to produce reliable results.

Colletes identification requires genitalia and exposure (dissection) of seventh sternite for the males. Among others sculpture of propodeum and first tergites are important to identify the females, thus spreading the wings is required.

Morphologically similar genera, and how to distinguish them

Colletes - Halictus & Andrena

Colletes has submarginal cells 2 and 3 of equivalent size. The tongue is bifid. The second recurrent vein is "S"-shaped, T1 and T2 are the largest segments of the metasoma.

Halictus & Andrena have submarginal cells 2 smaller than 3, a tongue pointed and the second recurrent vein is arched or straight. T3 and T4 are the largest segments of the metasoma.

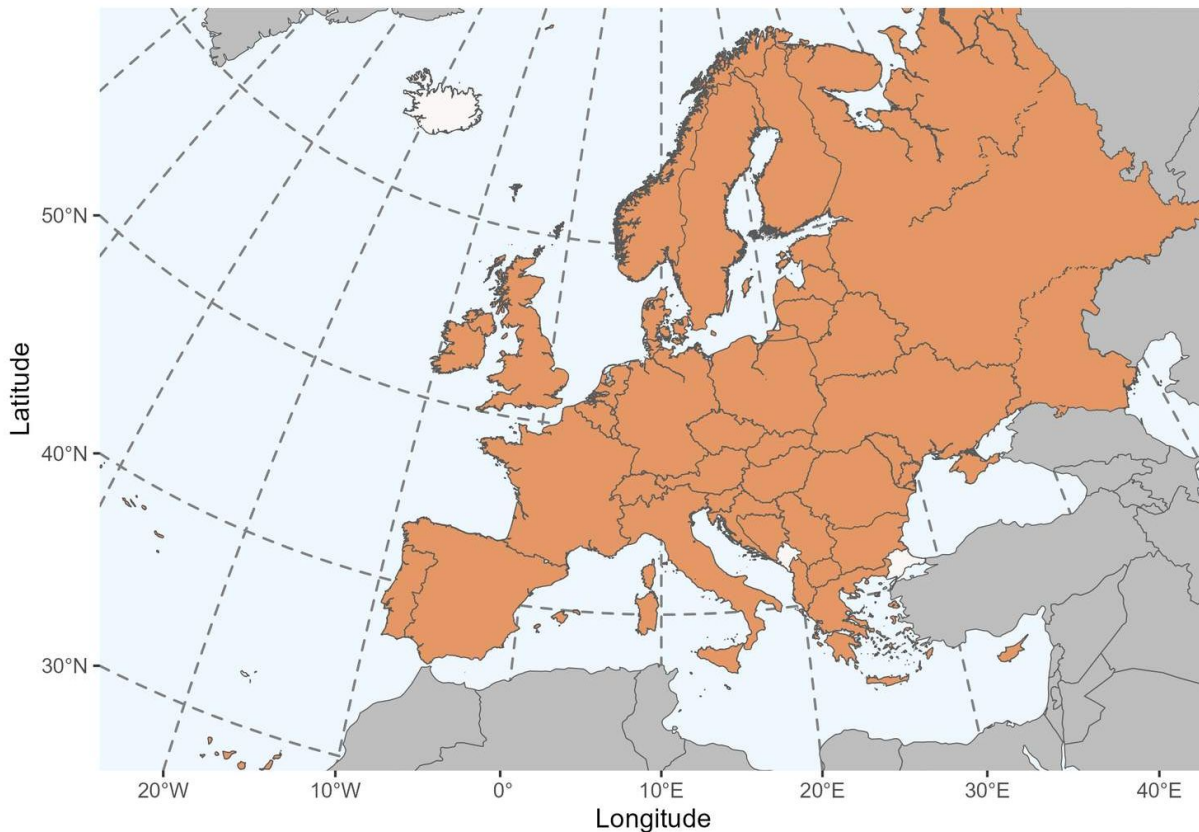
- ***Colletes - Apis***

Colletes females have a hairy scopa on the hind legs.

Apis females have a corbicula on the hind legs.

Geographical distribution and global diversity

This genus has a distribution encompassing temperate and tropical regions in both hemispheres, except on the Indo-Australian region (Michener 2007). More than 500 species have been described at the global scale, with the potential number of species being around 700 (Kuhlmann et al. 2009; Kuhlmann & Proshchalykin 2014). They show the greatest diversity in the temperate regions in both hemispheres (Bystriakova et al. 2018). In the Western Palearctic more than 120 species have been found.



Presence in Europe

They are present in all European countries except Iceland.

Biology

Seasonal life cycle

Most species are univoltine. The different species of the genus encompass almost the entire year. Some species emerge in early February in Southern Europe, while those species appear when winter ends in northern countries. There are spring species, summer species and late season species, such as *Colletes hederæ* that is flying from the end of summer up to early November. The activity period of individual specimens lasts up to a few weeks. Males normally start flying earlier than females.

Reproduction

In some species swarms of up to several thousand males patrol the nests of the previous year and several at a time try to copulate with each female emerging. As in most cases in solitary bees, the copula occurs close to where the individuals emerge, commonly on vegetation or on the ground, and it lasts a few minutes.

Nesting

All species are solitary and ground-nesting. Some species display aggregations that can be up to thousands of individuals. Nests are lined with a secretion produced by the Dufour gland, which resembles cellophane, and give them their name.

Parasites

Species of brood parasitic bees of the genera *Epeolus* and *Sphecodes* are parasites of *Colletes*.

Floral preferences

Many of the species of the genus are strictly oligolectic on one plant genus (including e.g. *Anchusa*, *Cynoglottis* and *Odontites*). Other species display floral preferences even though they are not oligolectic, they normally forage on members of the same plant family (Ericaceae or Asteraceae) (Müller & Kuhlmann 2008). A few species are polylectic.



Type species: *Apis succincta* Linnaeus, 1758, monobasic.

Synonyms: *Evodia* Panzer, 1806; *Monia* Westwood, 1875;
Monidia Cockerell, 1905; *Rhynchocolettes* Moure, 1943.

Etymology: The name is derived from the Greek root 'kolletes', meaning 'sticky', as a reference to the cellophane-like substance secreted by the Dufour gland used to cover the internal part of the larval cells.

Common names:

FR: les collètes

GER: die Seidenbienen

NL: de zijdebijen (= silky bees)

EN: the Plasterer Bees

List of species found in Europe:

1. *Colletes abeillei* (Pérez, 1903)
2. *Colletes acutiformis* (Noskiewicz, 1936)
3. *Colletes acutus* (Pérez, 1903)
4. *Colletes albomaculatus* (Lucas, 1849)
5. *Colletes anchusae* (Noskiewicz, 1924)
6. *Colletes brevigena* (Noskiewicz, 1936)
7. *Colletes canescens* (Smith, 1853)
8. *Colletes carinatus* (Radoszkowski, 1891)

9. *Colletes cariniger* (Pérez, 1903)
10. *Colletes caskanus* (Strand, 1919)
11. *Colletes caspicus* (Morawitz, 1874)
12. *Colletes chengtehensis* (Yasumatsu, 1935)
13. *Colletes collaris* (Dours, 1872)
14. *Colletes creticus* (Noskiewicz, 1936)
15. *Colletes cunicularius* (L., 1761)
16. *Colletes cyprius* (Noskiewicz, 1936)
17. *Colletes daviesanus* (Smith, 1846)
18. *Colletes dimidiatus* (Brullé, 1840)
19. *Colletes dinizi* (Kuhlmann, Ortiz & Ornos, 2001)
20. *Colletes dusmeti* (Noskiewicz, 1936)
21. *Colletes eous* (Morice, 1904)
22. *Colletes escalerae* (Noskiewicz, 1936)
23. *Colletes floralis* (Eversmann, 1852)
24. *Colletes fodiens* (Fourcroy, 1785)
25. *Colletes foveolaris* (Pérez, 1903)
26. *Colletes gallicus* (Radoszkowski, 1891)
27. *Colletes graeffei* (Alfken, 1900)
28. *Colletes halophilus* (Verhoeff, 1944)
29. *Colletes hederæ* (Schmidt & Westrich, 1993)
30. *Colletes hethiticus* (Warncke, 1978)
31. *Colletes hylaeiformis* (Eversmann, 1852)

32. *Colletes impunctatus* (Nylander, 1852)
33. *Colletes inexpectatus* (Noskiewicz, 1936)
34. *Colletes intricans* (Spinola, 1838)
35. *Colletes jansmiti* (Kuhlmann 2018)
36. *Colletes ligatus* (Erichson, 1835)
37. *Colletes maidli* (Noskiewicz, 1936)
38. *Colletes marginatus* (Smith, 1846)
39. *Colletes merceti* (Noskiewicz, 1936)
40. *Colletes meyeri* (Noskiewicz, 1936)
41. *Colletes mlokoszewiczi* (Radoszkowski, 1891)
42. *Colletes moricei* (Saunders, 1904)
43. *Colletes nasutus* (Smith, 1853)
44. *Colletes nigricans* (Gistel, 1857)
45. *Colletes noskiewiczzi* (Cockerell, 1942)
46. *Colletes pannonicus* (Hözlner & Mazzucco, 2011)
47. *Colletes perezii* (Morice, 1904)
48. *Colletes pulchellus* (Pérez, 1903)
49. *Colletes punctatus* (Mocsáry, 1877)
50. *Colletes schmidi* (Noskiewicz, 1962)
51. *Colletes senilis* (Eversmann, 1852)
52. *Colletes sidemii* (Radoszkowski, 1891)
53. *Colletes sierrensis* (Frey-Gessner, 1903)
54. *Colletes similis* (Schenk, 1853)

55. *Colletes squamulosus* (Noskiewicz, 1936)
 56. *Colletes standfussi* (Kuhlmann, 2003)
 57. *Colletes succinctus* (L., 1758)
 58. *Colletes tardus* (Noskiewicz, 1936)
 59. *Colletes tuberculatus* (Morawitz, 1894)
 60. *Colletes tuberculiger* (Noskiewicz, 1936)
 61. *Colletes wolfi* (Kuhlmann, 1999)
-

References

- Amiet F., Müller A. & Neumeyer R., 1999. Apidae 2: *Colletes*, *Dufourea*, *Hylaeus*, *Nomia*, *Nomioides*, *Rhopitoides*, *Rophites*, *Sphecodes*, *Systropha* (Fauna Helvetica 4). Centre suisse de cartographie de la faune (CSCF), Neuchâtel, 239 pp.
- Bystriakova N., Griswold T., Ascher J.S., & Kuhlmann M., 2018. Key environmental determinants of global and regional richness and endemism patterns for a wild bee subfamily. *Biodiversity and Conservation* 27(2): 287–309.
- Hefetz A., Fales H.M. & Batra S.W.T., 1979. Natural polyesters: Dufour's gland macrocyclic lactones form brood cell laminesters in *Colletes* bees. *Science* 204(4391): 415-417.
- Kuhlmann M., Almeida E.A.B., Laurence N. & Quicke D.L.J., 2009. Molecular phylogeny and historical biogeography of the bee genus *Colletes Latreille*, 1802 (Hymenoptera: Apiformes: Colletidae), based on mitochondrial COI and nuclear 28S sequence data. *Insect Systematics and Evolution* 40: 291-318.
- Kuhlmann M. & Proshchalykin M.Y., 2014. The bees of the genus *Colletes Latreille* 1802 of the European part of Russia, with keys to species (Hymenoptera: Apoidea:

Colletidae). *Zootaxa* 3878:201–247.

Kuhlmann M. & Smit J., 2018. Description of a new bee species from Spain, *Colletes jansmiti* Kuhlmann nov.sp., with a key to the females of the *C. albomaculatus*-group (Hymenoptera: *Colletidae*). *Linzer biol. Beitr.* 50/2: 1249-1254.

Kuhlmann M., Ascher J.S., Dathe H.H., Ebmer A.W., Hartmann P., Michez D., Müller A., Patiny S., Pauly A., Praz C., et al., 2014. Checklist of the Western Palaearctic bees. Direction : www.westpalbees.myspecies.info [visited on 25.iii.2019]

Müller A. & Kuhlmann M., 2008. Pollen hosts of western Palaearctic bees of the genus *Colletes* (Hymenoptera: *Colletidae*): the Asteraceae paradox. *Biological Journal of the Linnean Society* 95:719-733.

Proshchalykin M.Y. & Kuhlmann M., 2012. The bees of the genus *Colletes* Latreille 1802 of the Ukraine, with a key to species (Hymenoptera: Apoidea: *Colletidae*). *Zootaxa* 3488 1-40.

Attributions

This factsheet was created by ORBIT and is one of the outputs from a network of European Initiatives dedicated to pollinators, such as the EU Pollinator Monitoring Scheme (EUPoMS), the Preparatory Action for EU Pollinator Monitoring Scheme and Indicators (SPRING project), the Horizon 2020 Europe research projects (POSHBEE, SAFEGUARD), and European National action plans for pollinators.

Authors

Photographs: Paolo Rosa (ORBIT consortium)

Text: ORBIT consortium

Reviewers: Michael Kuhlmann (ORBIT consortium)

License

The content of this factsheet is licensed under a Creative Commons Attribution-ShareAlike ([CC BY-SA](#)).

Image rights

Most images created under the ORBIT project have an open Creative Commons license ([CC BY 4.0](#)). However, some images are licensed to the European Union and shared under the Creative Commons license Attribution-NonCommercial 4.0 International ([CC-BY-NC 4.0](#)). This is indicated in the image caption.

