Pollinator Academy

Genus: *Epeolus*

Female

Male

Genus: *Epeolus* Latreille, 1802

Clade: Anthophila

Family: Apidae

SubFamily: Nomadinae

Tribe: Epeolini

Number of species of this genus found in Europe: 18

Morphology & diagnosis

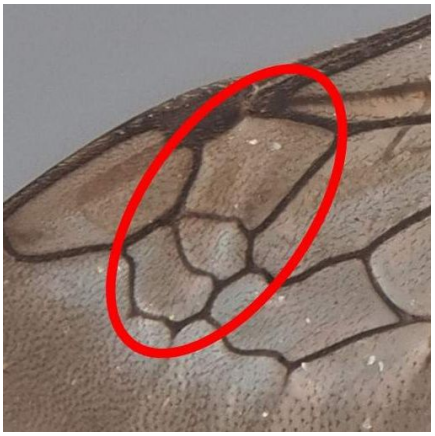
As members of the family Apidae, they have a long tongue morphology. The species of the genus *Epeolus* show a small to medium size (5-13mm). The body of *Epeolus* is normally bulky and black, with areas of a reddish or brownish colour. These areas present normally patches of dense hair, white to golden in colour, commonly very close to the cuticle which gives them a velvety aspect (tomentum). The maxillary palpi counts with 2 segments. They have three subequal sized submarginal cells in the wings, the first one being a tiny bit longer and distinguishable from the other two. The axilla is tooth-shaped. The legs are partly red, and the scutellum in the females is red in some species. In the male the abdominal segments 4-5 are covered with bristles ciliated. The sexual dimorphism is clearly differentiable in the field, but it could be difficult for novices: an important trait in the differentiation between sexes is the colour of the eyes (i.e. the males show pale green to azur eyes, while the females have dark reddish or blackish eyes). This trait is clearly visible on macrophotographies, and can aid in sex differentiation.

Summary of distinctive traits

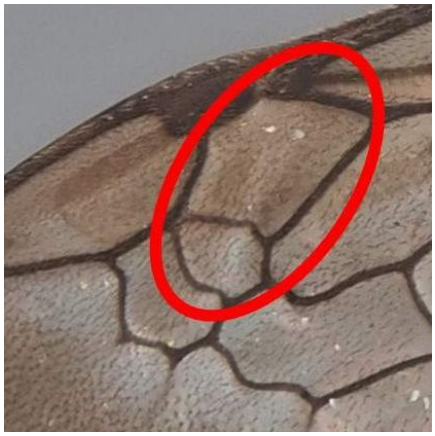
- Robust body shape (a)
- No scopa (brood parasitic bees) (b)
- 3 submarginal cells (c)
- Submarginal cell 1 larger than 2 and 3 (d)
- Marginal cell with apex distant from anterior margin of the wing (e)
- Axillae pointed (f)

(a) *Epeolus julliani* Male

(b) *Epeolus julliani* Male

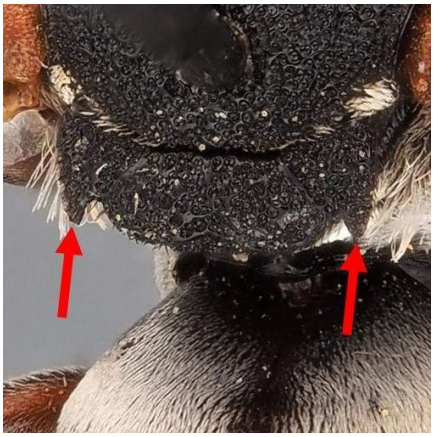


(c) *Epeolus julliani* Male



(d) *Epeolus julliani* Male

(e) *Epeolus julliani* Male



(f) *Epeolus julliani* Male

General comments on

identification to species level

The identification of males and females must be carried out on the basis of microscope observation, notably by examining the last sternites, maxillary palpi, punctuations on the thorax, the structure of the (micro-)pilosity and, for males, by using the three-dimensional structure of the genitalia.

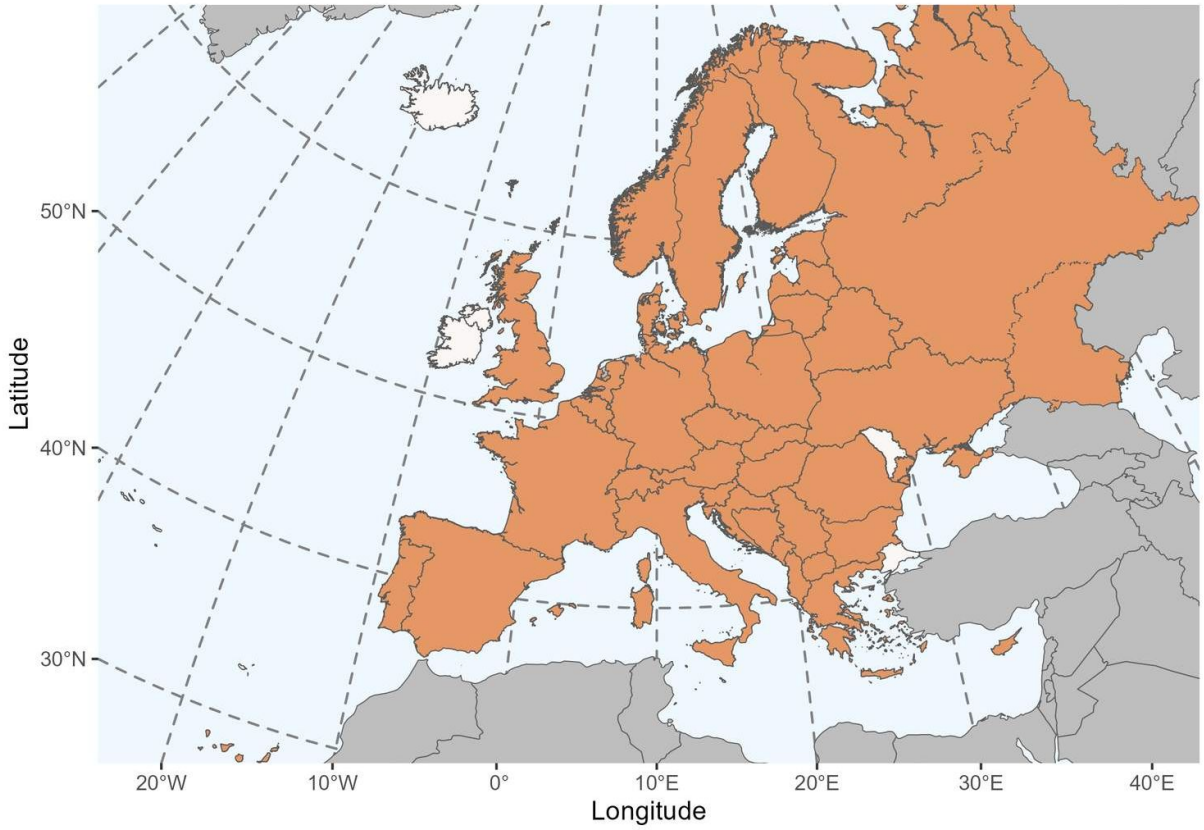
Morphologically similar genera, and how to distinguish them

- ***Epeolus - Triepeolus***
  Epeolus species have submarginal cells 2 and 3 of equivalent size, the nervulus is arched but not bent at right angle, apical margin of sternite 3 doesn't have a fringe of hairs, the mandible often has a preapical tooth.
  Triepeolus species have submarginal cells 2 smaller than 3, the nervulus is bent at right angle, apical margin of sternite 3 has a frange of hairs like 4 or 5, the mandible lack a preapical tooth.

- ***Epeolus - Nomada***
  Nomada species have a marginal cell pointed following the wing's anterior margin.
  Epeolus species have a marginal cell more oval, with an apex clearly separated from the wing's anterior margin.

Geographical distribution and global diversity

The distribution of the genus Epeolus shows a large spatial extension: they are present from the west coast of North and Central America to Japan encompassing Europe, but they are also present in Africa as south as the Cape region. In Europe the diversity of this genus is relatively low according to Bogusch & Hadrava (2018), which only found 17 species to be present in Europe. Some of these species are extremely rare and insular (such as Epeolus compar Alfken, 1938 in Sardinia and Corsica; Epeolus sigillatus Alfken, 1930 in Crete, or Epeolus siculus Giordani Soika, 1944 in Sicily).



Presence in Europe

Austria, Belarus, Belgium, Bosnia & Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom.

Biology

Seasonal life cycle

Epeolus are cuckoo-bees, and they are strictly linked to the seasonality of their host species. Some species in the southern areas start flying in spring (e.g. *Epeolus aureovestitus* Dours, 1873), while other species start flying in summer (e.g. *Epeolus*

cruciger (Panzer, 1799) or *Epeolus variegatus* (L., 1758)). A few species can be found in the beginning of autumn (e.g. *Epeolus fallax* Morawitz, 1872). They are univoltine.

Reproduction

Mating on this genera has been observed in very rare occasions, as these insects are highly inconspicuous and difficult to spot except where there are aggregations of nest of the host species. As in most cases in solitary bees, the copula occurs close to where the individuals emerge, commonly on vegetation or on the ground (Bergmark et al., 1984), and it lasts a few seconds.

Nesting

Epeolus never build their own nest: they exclusively depend on ground-nesting bees and their nests for reproduction. Then, the females are constantly patrolling the area searching nests of their host species. Once the hosts leave their nest to forage, they infiltrate into the host nests where they lay an egg on the reserves of food that the host has prepared for its own descendants. As most cuckoo bees, have a tough cuticle and a strong sting which can potentially use against their hosts if they encounter each other in the nest or in the vicinity.

Host species

They are exclusively associated with the genus *Colletes* (Colletidae) over their entire distribution area, including Europe.

Floral preferences

As brood parasitic bees, the females do not actively collect pollen to feed their larvae. Males and females are then seen visiting a diversity of flowers from which they collect the nectar and a small quantity of pollen for their own consumption, but they often visit the same flowers as their host. However, as their host bee is in some cases specialized on certain plant species, the concerned species of *Epeolus* are therefore also automatically specialized on this plant, as their larvae only consumes the food resources accumulated by its hosts.

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

Synonyms: *Trophocleptria Holmberg,* 1886*; Pyrrhomelecta Ashmead,* 1899*; Argyroselenis Robertson,* 1903*; Oxybiastes Mavromoustakis,* 1954.

Etymology: There are different sources for the name of the genus *Epeolus*. Latreille (1802) never clarified the etymology. It is believed that *Epeolus* would be a diminutive of Épeus (or Epios, the son of Panopeus), who, according to the Cyclics, built the wooden horse used in the war of Troy. The choice of this name would be used as a reference to the parasitic behaviour of these solitary bees, they do not build their own nest, but infiltrate the nests made by other species who become their hosts.

Common names:
FR: les épéoles
GER: der Filzbienen
NL: de viltbijen

List of species found in Europe:

1. *Epeolus (Epeolus) alpinus* Friese, 1893
2. *Epeolus (Epeolus) aureovestitus* Dours, 1873
3. *Epeolus (Epeolus) bischoffi* (Mavromoustakis, 1954)
4. *Epeolus (Epeolus) compar* Alfken, 1938
5. *Epeolus (Epeolus) cruciger* (Panzer, 1799)
6. *Epeolus (Epeolus) fallax* Morawitz, 1872
7. *Epeolus (Epeolus) fasciatus* Friese, 1895
8. *Epeolus (Epeolus) flavociliatus* Friese, 1899
9. *Epeolus (Epeolus) ibericus* Bogusch, 2018
10. *Epeolus (Epeolus) intermedius* Pérez, 1884

11. *Epeolus (Epeolus) julliani* Pérez, 1884
12. *Epeolus (Epeolus) productulus* Bischoff, 1930
13. *Epeolus (Epeolus) schummeli* Schilling, 1849
14. *Epeolus (Epeolus) siculus* Soika, 1944
15. *Epeolus (Epeolus) sigillatus* Alfken, 1930
16. *Epeolus (Epeolus) tarsalis* Morawitz, 1874
17. *Epeolus (Epeolus) transitorius* Eversmann, 1852
18. *Epeolus (Epeolus) variegatus* (L., 1758)

References

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Attributions

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