Pollinator Academy

Genus: *Triepeolus*

Genus: *Triepeolus* Robertson,1901

Clade: Anthophila

Family: Apidae

SubFamily: Nomadinae

Tribe: Epeolini

Number of species of this genus found in Europe: 1

Morphology & diagnosis

The species of the genus *Triepeolus* show a medium size (7-11mm). They have a long tongue morphology and three subequal sized submarginal cells in the wings, the first one being a tiny bit longer and distinguishable from the other two. The body of *Triepeolus* is normally black including the legs, with areas of a reddish or brownish colour. These lighter 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). They present one pointed and thin tooth at each side of the

scutellum. The metasoma shows a decreasing width towards the tip, giving it a triangular shape. On the tergites this pilosity is normally limited to the sides and is forming bands interrupted in the middle. The shape of the axilla is tooth-shaped. 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. Male maxillari palpi counts with 3 segments.

Summary of distinctive traits

- Robust body shape
- No scopa (brood parasitic bees)
- Long-mouthparts
- 3 submarginal cells
- Submarginal cell 1 larger than 2 and 2 smaller than 3
- Marginal cell with apex distant from anterior margin of the wing
- Axillae pointed

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 mesosoma, 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

- ***Triepeolus - Epeolus***

  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 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 frange of hairs, the mandible often has a preapical tooth.

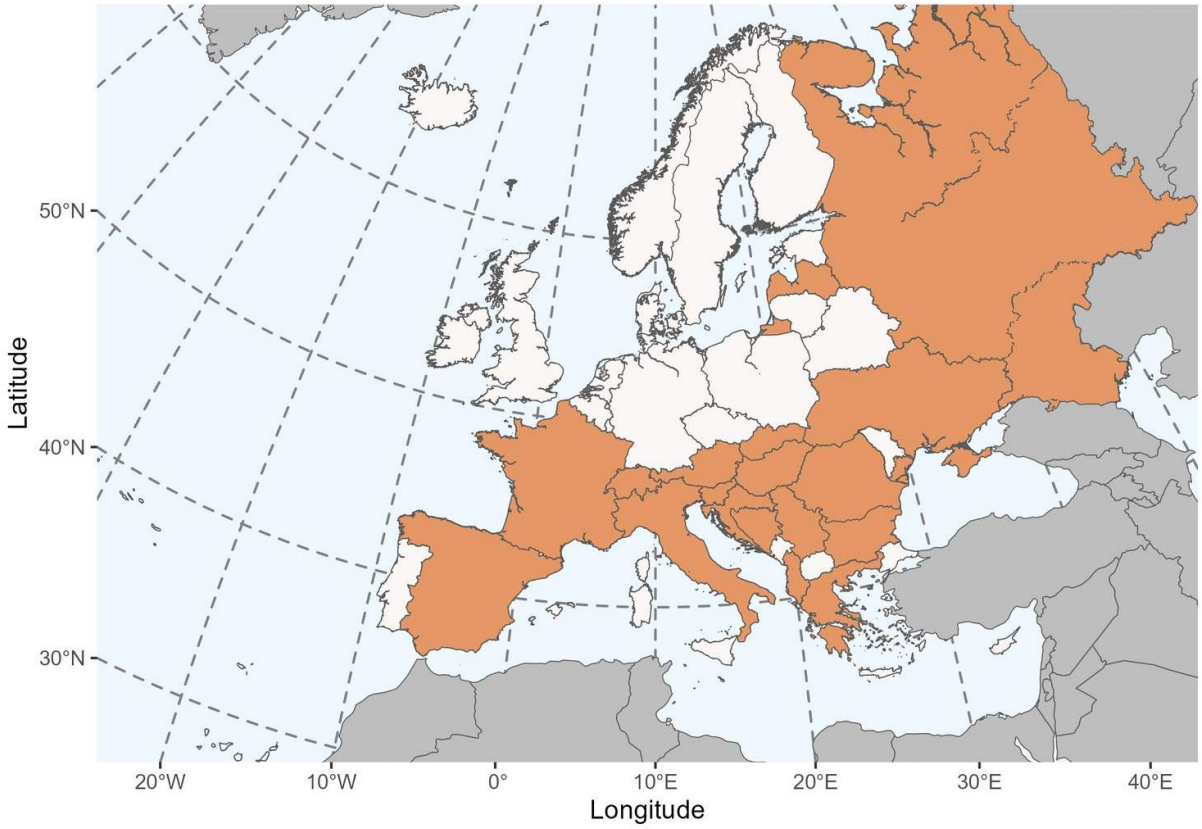
- ***Triepeolus - Nomada***

  Triepeolus species have a marginal cell more oval, with an apex clearly separated from the wing's anterior margin.

  Nomada species have a marginal cell pointed following the wing's anterior margin.

Geographical distribution and global diversity

The genus *Triepeolus* shows a high diversity in both North and Central America (about 140 species). It is also present in South America. In Europe, there is only one recorded species *Triepeolus tristis* (Smith, 1854).



Presence in Europe

Albania, Austria, Bosnia & Herzegovina, Bulgaria, Croatia, France (mainland), Germany, Greece (except Crete), Hungary, Italy (mainland), Lithuania, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain (mainland), Switzerland, Ukraine.

Biology

Seasonal life cycle

Triepeolus are brood parasitic bees, and they are strictly linked to the seasonality of their host species. They fly on July-august.

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

Triepeolus 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 brood parasitic 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

The species *Triepeolus tristis* (Smith, 1854) parasites exclusively solitary Eucerini ground-dwelling bees, specially *Tetralonia alticincta, Tetralonia dentata, Tetralonia malvae* and *Tetralonia salicariae.*

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. However, their host bee is in some cases specialized on certain plants, such as *Tetralonia malvae* (Malavaceae), *Tetralonia dentata* (Asteraceae) or *Tetralonia salicariae* (purple loosestrife). Then, *Triepeolus tristis* is therefore also automatically specialized on these plants, as their larvae only consumes the food resources accumulated by its hosts.

Type species: *Epeolus concavus* Cresson, 1878, by original designation.

Synonyms: *Synepeolus* Cockerell, 1921;

Etymology: There are different sources for the name of the genus *Epeolus* and the derived name *Triepeolus*. 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. *Triepeolus (Triepeolus) tristis* (Smith, 1854)

References

Amiet F., Herrmann M., Müller A. & Neumeyer R., 2007. Apidae 5. *Ammobates, Ammobatoides, Anthophora, Biastes, Ceratina, Dasypoda, Epeoloides, Epeolus, Eucera, Macropis, Melecta, Melitta, Nomada, Pasites, Tetralonia, Thyreus, Xylocopa*. Fauna Helvetica 20. Centre suisse de cartographie de la faune (CSCF), Neuchâtel, 356 pp.

Bogush P. & Hadrava J., 2018. European bees of the genera *Epeolus* Latreille, 1802 and *Triepeolus* Robertson, 1901 (Hymenoptera: Apidae: Nomadinae: Epeolini): taxonomy, identification key, distribution, and ecology. *Zootaxa* 4437 (1): 1-60.

Bischoff H., 1930. Beitrag zur Kenntnis paläarktischer Arten der Gattung *Epeolus. Deutsche entomologische Zeitschrift* 1930: 1–15.

Friese H., 1895. *Die Bienen Europas*. 1. *Schmarotzerbienen*. Freilander und Sohn, Berlin, 218 pp.

Guichard K.M., 1974. *Colletes halophila* Verhoeff (Hym., Apidae) and its *Epeolus* parasite at Swanscombe in Kent, with a key to the British species of *Colletes* Latreille. *Entomologist's Gazzette* 25: 195–199.

Latreille P.A., 1802. *Histoire naturelle, general et particular, des Crustacés et des Insectes.* Historie naturelle des Crustacés et des Insectes 3: 1–467.

Rightmyer M.G., 2004. Phylogeny and classification of the parasitic bee tribe Epeolini. *Scientific papers, Natural History Museum,the University of Kansas* 33: 1-51.

Rightmyer M.G., 2008. A review of the cleptoparasitic bee genus *Triepeolus* (Hymenoptera: Apidae). Part I. *Zootaxa* 1710: 1-170.

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