Pollinator Academy

Genus: *Chiasmognathus*

Genus: *Chiasmognathus* Engel, 2006

Clade: Anthophila

Family: Apidae

SubFamily: Nomadinae

Tribe: Ammobatini

Number of species of this genus found in Europe: 1

Morphology & diagnosis

The description of this genus is quite recent (Engel 2006), on the basis of a species previously placed in the genus *Parammobatodes* (*P. gussakovskii* Popov, 1951). *Chiasmognathus* bees are among the smallest bees known in the world (2-4mm). The pedicel connecting the scape to the antennal flagellum is broad, and their mandibles are elongated and straight crossing over at right angles. Their hindwings lack any jugal lobe.

Summary of distinctive traits

- Extremely small bees (less than 4mm)
- Cleptoparasites of Nomioidini (Halictidae)
- 2 submarginal cells
- Marginal cell truncate
- Lack a jugal lobe in hindwing
- Pedicel enlarged and basally tightly adapted to the scape
- Mandibles crossing at right angle instead of overlapping
- Males and females have antennae with 12 segments

General comments on *Chiasmognathus* species identification

Only one species known from Europe. However, its minute size and late discovery suggests that the genus is ill-known.

Morphologically similar genera, and how to distinguish them

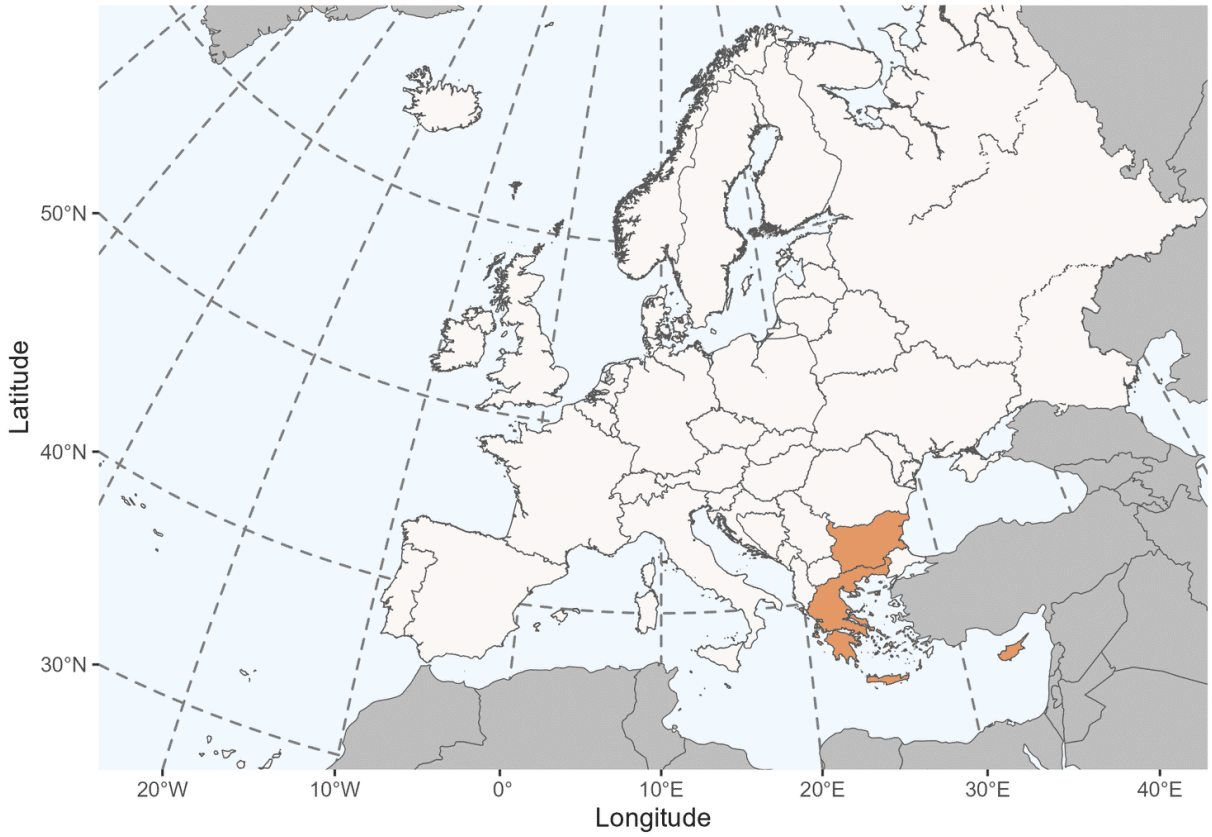
- ***Chiasmognathus* - *Parammobatodes***
  Chiasmognathus have mandibles crossing at right angle. They are smaller than 4 mm and lack a jugal lobe at the hindwing. *Parammobatodes* have mandibles crossing less (up to 145°) and tend to be larger although with overlap (2.5 to 8mm), and have a jugal lobe.

- ***Chiasmognathus - Ammobatoides & Schmiedeknechtia***
  Chiasmognathus species have a truncated marginal cell, basal part of submarginal cell 1 is about as long as that of submarginal cell 2. Males have non-converging eyes. *Ammobatoides & Schmiedeknechtia* species have an oval or pointed marginal cell, basal part of submarginal cell 1 is around twice as long as that of submarginal cell 2. Males have strongly converging eyes.

- ***Chiasmognathus - Clavipanurgus, Flavipanurgus, Panurginus, Panurgus & Simpanurgus***
  Chiasmognathus species have a somewhat protruding clypeus and a long-tongue morphology (segments 1 and 2 of maxillary palpi are strongly elongated). *Clavipanurgus, Flavipanurgus, Panurginus, Panurgus & Simpanurgus* species have a flat clypeus and a short-tongue morphology of mouthparts (short maxillary palpi).

Geographical distribution and global diversity

The genus *Chiasmognathus* has a broad spatial distribution including the east of the Mediterranean Basin (Cyprus, Crete, Greece), certain African countries (Egypt, Niger and Kenya), Middle East (United Arab Emirates, Israel, Oman, Turkey, Yemen), Asia Minor (kyrgyzstan, Tajikistan) and as far as Sri Lanka (Engel 2010). Given their size and their geographical distribution, more species of the genus will be probably described in the future.



Presence in Europe

Bulgaria, Cyprus, Greece (including Crete).

Biology

Seasonal life cycle

The species of *Chiasmognathus* are brood parasitic bees, and they are strictly linked to the seasonality of their host species. They fly essentially in spring and summer.

Reproduction

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 seconds. Mating on this genus 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.

Nesting

The females of *Chiasmognathus* 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

The *Chiasmognathus* appear are associated to small ground-dwelling species of the genera *Nomioides* and *Ceylalictus* (Halictidae, Nomioidinae).

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, as their host bee is in some cases specialized on certain plant species, the concerned species of *Chiasmognathus* are therefore also automatically specialized on this plant, as their larvae only consumes the food resources accumulated by its hosts.

Type species: *Parammobatodes gussakovskii* Popov, 1951, monobasic.

Synonyms: n/a

Etymology: *Chiasmognathus*, however, is a name based on Greck terms *chiasmos* (« that which crosses ») and *gnathos* (« mandibles ») with reference to morphological characteristics of species of the genus which have elongate mandibles crossed at right angles.

Common names: n/a

List of species found in Europe:

1. *Chiasmognathus (Chiasmognathus) orientanus* Warncke, 1983

References

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