



Pollinator Academy

Genus: *Ammobates*



Female



Male

Genus: *Ammobates* Latreille, 1809

Clade: Anthophila

Family: Apidae

SubFamily: Nomadinae

Tribe: Ammobatini

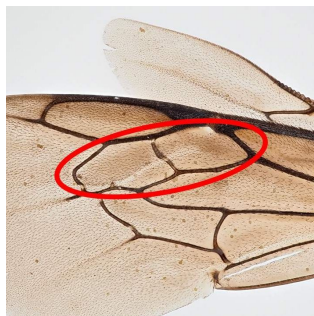
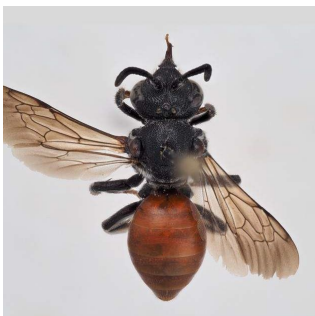
Number of species of this genus found in Europe: 14

Morphology & diagnosis

As members of the family Apidae, they have a long-tongue morphology. They are small to medium sized brood parasitic species (5-9mm). They are compact, black bees, and the first metasomal segments and legs are often red. The pilosity is very short and sparse, reduced to smooth white regions on the face, the sides of the mesosoma and metasomal terga. The clypeus is prominent and the labrum is relatively long. There is a strong variation in the number of segments of the maxillary palpi. The forewings are dark, with a smoky appearance. They have two submarginal cells. The size of the antennal scape is normal. Moreover, they show a vestigial basal area of the propodeum, the mandible of the females is unidentate and the labrum of the males very long. In the female the 6th sternite protrudes like an appendage of the 5th sternite, as a narrow two-pointed spine. In the male the 7th segment is clearly visible.

Summary of distinctive traits

- Black and/or red brood parasitic bees (a)
- 2 submarginal cells (b)
- Truncate marginal cell (c)
- Normal scapus (d)
- One-toothed mandible (e)
- Vestigial basal area of the propodeum (f)
- Labrum relatively long (g)



(a) *Ammobates muticus*
Female



(b) *Ammobates punctatus*
Female



(c) *Ammobates punctatus*
Female



(d) *Ammobates muticus*
Female

(e) *Ammobates muticus*
Male

(f) *Ammobates punctatus*
Female

(g) *Ammobates muticus*
Female

General comments on identification to species level

Species identification requires microscopic study of maxillary palpi, mesosoma punctuation, micropilosity, last sterna and genitalia in males.

Morphologically similar genera, and how to distinguish them

- ***Ammobates* - *Biastes***

Ammobates species have a normal scapus, longer. Females have a propodeal triangle faint and a unidentate mandible. Males have a labrum longer than wide. *Biastes* species have a short and wide scapus, less than twice as long as wide. Females have a clear propodeal triangle and a bidentate

mandible. Males have a labrum wider than long.

- ***Ammobates - Pasites***

Pasites and *Ammobates* are morphologically very close. *Ammobates* species have a protruding metanotum, sternite 5 surrounds only partially the basal part of sternite 6, sternite 6 is short and bidentate. Males have 13-segmented antennae. *Pasites* species have a flat metanotum, sternite 5 surrounds entirely the basal part of sternite 6, sternite 6 is long and sting-like. Males have 12-segmented antennae.

- ***Ammobates - Parammobatodes***

Ammobates have mandibles overlapping when closed, and the first recurrent vein joins submarginal cell 2 around the middle of its posterior margin or more basally. *Parammobatodes* have mandibles crossing before their apices, forming an angle smaller than 145°. The first recurrent vein joins submarginal cell 2 after the middle of its posterior margin.

- ***Ammobates - Clavipanurgus, Flavipanurgus, Panurginus, Panurgus & Simpanurgus***

Ammobates 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).

- ***Ammobates - Ammobatoides & Schmiedeknechtia***

Ammobates species have a truncated marginal cell, basal part 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.

Geographical distribution and global diversity

The genus *Ammobates* has around 50 described species in the world (Michener 2007), from which 14 species occur in Europe. Michener (2007) and Engel (2009) subdivided the genus into three subgenera: *Euphileremus*, *Xerammobates* and *Ammobates sensu stricto*, being this last one the most diversified. They occur in Europe, North and South Africa and Central and South Asia.

Presence in Europe

Albania, Austria, Belarus, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, France (mainland), Germany, Greece, Hungary, Italy (excluding Sardinia), Netherlands, Poland, Portugal (mainland), Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain (excluding Balearic Islands), Switzerland, Ukraine.

Biology

Seasonal life cycle

The species of *Ammobates* are brood parasitic bees, and they are strictly linked to the seasonality of their host species. They fly essentially in spring and summer. They have one generation per year and probably overwinter as prepupa.

Reproduction

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. 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 *Ammobates* 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. Females have a pin-shaped sternite, with which they probably drill a hole in the wall of the brood cell of the host, in order to deposit the egg. Like other Nomadinae, Ammobatini lay their eggs in a cavity in the wall of the host brood cell. The small mobile first instar larva kills the host larva or egg with its long and sharp jaws and then eats the food that was collected for the host. The larvae do not spin a cocoon before pupation.

Host species

The biology of Ammobates species has been little studied, but as far as is known they are brood parasites of bees of the family Apidae. Previous studies show that Ammobates specifically parasitizes nests of the genera *Ancyla*, *Anthophora* and *Eucera* (Apidae), all wild ground-dwelling bees (Warncke 1983; Vereecken et al. 2012).

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 *Ammobates* are therefore also automatically specialized on this plant, as their larvae only consumes the food resources accumulated by its hosts.



Type species: *Ammobates rufiventris* Latreille, 1809, by designation of Latreille, 1810.

Synonyms: *Phileremus* Latreille, 1809; *Ammobatoides* Schenck, 1869 (not Radoszkowski 1867);

Etymology: *Ammobates*, from the Greek *ammo-* = sand and *bate-* = walk. The common names in German and Dutch can

be translated by « bees that run on sand »

Common names:

FR: les ammobates

GER: der Sandgängerbienen

NL: de Zandloperbijen

List of species found in Europe:

1. *Ammobates (Ammobates) armeniacus* (Morawitz, 1876)
2. *Ammobates (Ammobates) biastoides* (Friese, 1895)
3. *Ammobates (Ammobates) dusmeti* (Popov, 1951)
4. *Ammobates (Ammobates) mavromoustakisi* (Popov, 1944)
5. *Ammobates (Euphileremus) melectoides* (Smith, 1854)
6. *Ammobates (Euphileremus) muticus* (Spinola, 1843)
7. *Ammobates (Ammobates) opacus* (Popov, 1951)
8. *Ammobates (Euphileremus) oraniensis* (Lepelletier, 1841)
9. *Ammobates (Ammobates) punctatus* (Fabricius, 1804)
10. *Ammobates (Ammobates) rufiventris* (Latreille, 1809)
11. *Ammobates (Ammobates) sanguineus* (Friese, 1911)
12. *Ammobates (Ammobates) similis* (Mocsáry, 1894)
13. *Ammobates (Ammobates) verhoeffi* (Mavromoustakis, 1959)
14. *Ammobates (Ammobates) vinctus* (Gerstaecker, 1869)

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Authors

Photographs: Paolo Rosa (ORBIT consortium)

Text: ORBIT consortium

Reviewers: Petr Bogusch (ORBIT consortium)

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