



Pollinator Academy

Genus: *Protosmia*



Female



Male

Genus: *Protosmia* Ducke, 1900

Clade: Anthophila

Family: Megachilidae

SubFamily: Megachilinae

Tribe: Osmiini

Number of species of this genus found in Europe: 13

Morphology & diagnosis

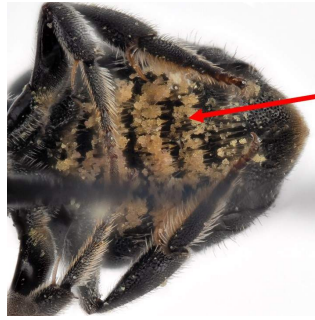
Protosmia are small to medium sized bees (3-10mm) with an elongated body looking similar to some *Hoplitis* species (e.g. subgenus *Micreariades*) or to *Heriades*. Some species have an entirely black cuticula while some have red metasomal terga. They have a white and sparse pilosity across the body, forming apical fringes at the end of the metasomal terga. Their forewings bear two submarginal cells, and the marginal cell is rounded at the tip. They have an arolium between the tarsal claws. Both segments 3 and 4 of the labial palpus project laterally. The pronotal lobes are rounded, without carina. Their axillae are simple, not spined. The parapsidal lines of the scutum are long (at least as long as four mesonotal punctures). The first tergum is rounded. The pronotal lobes are not conspicuously carinate but may have very shallow carinulae. The propodeal enclosure is variable (vestigial or subhorizontal and hardly as long as the metanotum), without distinct carina bordering its posterior margin. The females have a notable tuft of long hair at the apex of the labrum. They usually have unusual mandibles with serrulate distal margin (e.g. *P. glutinosa*), sickle-shaped mandibles (e.g. *P. capitata*), or tree-toothed mandibles with a remarkably homogeneous and matte sculpture made of very fine homogeneous and subcontiguous punctation. The metasomal tergum 6 of the males has lateral flaps. The metasomal tergum 7 is weakly sclerotized and completely hidden below the tergum 6. The metasomal sternum 1 prolonged, bulged or with distinct projection.

Summary of distinctive traits

- 2 submarginal cells (a)
- Ventral scopa in females (b)
- Arolium present (c)
- Labrum with a preapical tuft of long hairs (d)



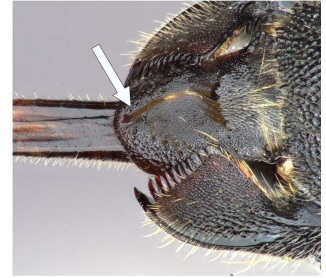
(a) *Protosmia exenterata*
Female



(b) *Protosmia exenterata*
Female



(c) *Protosmia exenterata*
Male



(d) *Protosmia glutinosa*
Female

General comments on identification to species level

Mandibles should be open, genitalia extracted and metasomal sternita of the males should be made clearly visible in order to properly identify the species.

Morphologically similar genera, and how to distinguish them

- ***Protosmia* - *Chelostoma***

Protosmia females have a labrum with an apical tuft of hairs. In males, T7 is entirely hidden by T6.

Chelostoma females have a no apical brush on the labrum. Males have visible T7 under T6.

- ***Protosmia* - *Hofferia***

Protosmia species have a preapical tuft of long hairs on the labrum.

Hofferia species do not have long hairs on the apex of the labrum.

- ***Protosmia* - *Heriades* & *Stenoheriades***

Protosmia species have simple axillae, do not have a propodeal enclosure bordered posteriorly by a carina and don't have a transverse carina on the T1.

Heriades & *Stenoheriades* species have spined axillae, a propodeal enclosure bordered by a carina on its posterior margin and do have a transverse carina on the T1.

- ***Protosmia* - *Haetosmia***

Protosmia species do not have a dilated probasitarsus and do not have carinate pronotal lobes.

Haetosmia species have a strongly carinate pronotal lobe and a dilated probasitarsus.

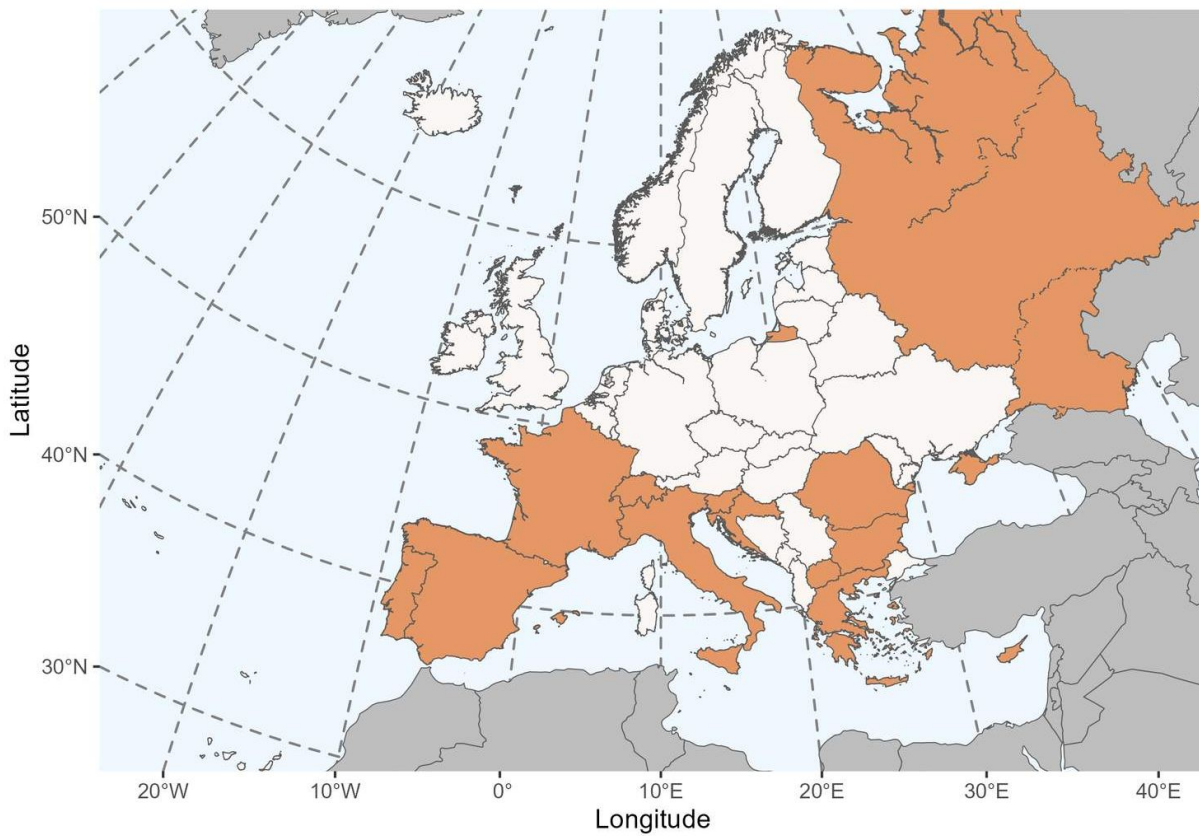
- ***Protosmia* - *Osmia* & *Hoplitis***

Protosmia females have a labrum with an apical tuft of hairs. In males, T7 is entirely hidden by T6.

Osmia & *Hoplitis* females have a labrum with a loose apical fringe of hairs. In males, T7 is sclerotized and well visible.

Geographical distribution and global diversity

This genus has a Holarctic distribution, with most of the species being found in the West Palearctic. A total of 31 species have been described in this genus so far, one of them in the North-West United States and one in Asia.



Presence in Europe

Bulgaria, Croatia, Cyprus, France, Greece, Italy, North Macedonia, Portugal, Romania, Russian Federation, Slovenia, Spain, Switzerland, Ukraine.

Biology

Seasonal life cycle

They are univoltine summer species.

Reproduction

Details about the reproduction of this genus are unknown.

Nesting

They are solitary species nesting in pre-existing cavities such as empty snail shells, abandoned nests of other aculeates, small crevices in stones and insect burrows in dead wood or in vertical ground.

Parasites

Broodparasitic bees of this genus are unknown.

Floral preferences

They are polylectic, but they show preferences for Fabaceae and Lamiaceae.



Type species: *Heriades glutinosus* Giraud, 1871, by designation of Michener, 1943: 86 and Sandhouse, 1943: 592.

Synonyms: n/a

Etymology: this name comes from the Greek root 'proto', meaning 'primitive', and 'osme', meaning 'smell'

Common names: n/a

List of species found in Europe:

1. *Protosmia (Nanosmia) asensioi* Griswold & Parker, 1988
2. *Protosmia (Chelostomopsis) capitata* (Schletterer, 1889)
3. *Protosmia (Protosmia) exenterata* (Pérez, 1895)
4. *Protosmia (Protosmia) glutinosa* (Giraud, 1871)
5. *Protosmia (Chelostomopsis) longiceps* (Friese, 1899)
6. *Protosmia (Protosmia) lusitanica* Le Goff & Gonçalves, 2018

7. *Protosmia (Nanosmia) minutula* (Pérez, 1896)
8. *Protosmia (Protosmia) monstrosa* (Pérez, 1895)
9. *Protosmia (Nanosmia) montana* Müller, 2012
10. *Protosmia (Protosmia) paradoxa* (Friese, 1899)
11. *Protosmia (Protosmia) sideritis* Tkalců, 1978
12. *Protosmia (Protosmia) tauricola* Popov, 1961
13. *Protosmia (Protosmia) tiflensis* (Morawitz, 1876)

Subgenera found in Europe:

- *Chelostomopsis* Cockerell, 1925
- *Nanosmia* Griswold, 1998
- *Protosmia* s.str. Duce, 1900

References

Griswold T.L. 2013. New Palearctic bee species of *Protosmia* subgenus *Nanosmia* (Hymenoptera : Megachilidae). *Journal of Melittology*, 20 : 1-9.

Le Goff G., Gonçalves A.R. 2018. Une nouvelle espèce de *Protosmia* Duce, 1900 découverte au Portugal: *Protosmia (Protosmia) lusitanica* nov. sp. (Apoidea, Megachilidae, Osmiini). *Entomofauna*, 39(1): 187-191.

Müller A. 2017. Palearctic *Protosmia* bees of the subgenus *Chelostomopsis* (Megachilidae, Osmiini): biology, taxonomy and key to species. *Zootaxa*, 4227(2) : 287-294.

Attributions

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