Pollinator Academy

Genus: *Milesia*

Milesia crabroniformis male habitus

Genus: *Milesia* Latreille, 1804

Family: Syrphidae

Subfamily: Eristalinae

Tribe: Milesiini

Number of species of this genus found in Europe: 3

Description

Head

The colour of face is yellow, and the face is dusted yellow and laterally yellow pilose. The gena are yellow or brownish black, shiny. The lunule is yellow and shiny. The frontal triangle is yellow, dusted yellow, covered with yellow hairs. Frons is yellow, yellow dusted and dorsally with yellow hairs. Eye bare. Ocellar triangle is yellow, yellow dusted and with long yellow hairs or shiny black; equilateral. Occiput is yellow and heavily yellow dusted, with long yellow to white hairs. Antenna are yellow, the basoflagellomere is rounded. The arista is situated dorsally, with short semi-erect hairs at base, the length of the hairs is less than half of the basal diameter of the arista.

Thorax

The scutum is black, with a distinct yellow dusted pattern in the front half and a narrow yellow band at the hind margin shortly before the scutellum, covered mostly in yellow hairs, but with some black hairs laterally and between the wings. Postpronotum is yellow with yellow dusting and yellow hairs. Posterior anepisternum and dorsal part of katepisternum with large yellowish dusted spots. Anterior anepisternum, ventral part of katepisternum and metasternum are black. The posterior spiracle is medially wide open (in *Milesia semiluctifera*-group), or only open in the dorsal part (*Milesia crabonifomis*-group). Scutellum yellow-orange or black in anterior half and yellow in posterior half, with yellow hairs, subscutellar hair fringe complete, yellow.

Wings

Wing membrane is hyaline to yellowish, in *Milesia semiluctifera* with an apical blackish spot. The wings are densely covered with microtrichia, including the alula, except at very base in cell cup. The veins are black to yellow in basal part and along anterior margins, vein R_{4+5} is weakly sinuate

with vein M_1 reaching R_{4+5} at an acute angle, cell r_1 is closed well before wing margin, the cross-vein r-m is obtuse and is placed in apical half of discal cell. The pterostigma is hyaline to yellow.

Legs

Femora are almost completely orange, ventrally or at base black, with yellow to black short hairs. The front femur in the male with a basoventral depressed area (in the *Milesia craboniformis*-group) or not modified (in *M. semiluctifera*). Male hind femur with an apicoventral long spine. Fore and mid tibia yellow with yellow hairs. Hind tibia yellow with indistinct brownish to black markings in the middle and apically orange to brown or completely yellow. The tarsi are yellow or dark red to brown, with yellow hairs.

Abdomen

Tergite 1 completely brown to black with mostly black hairs. Tergites 2-4 black, and laterally with big sharply demarcated yellow spots, in some species additionally with yellow bands at their hind margins. Hairs are short, yellow to black. Sternite 1 is black, sternites 2 and 3 whitish yellow with a triangular central black spot. Sternite 4 largely black, covered with yellow and (to a varying degree) black hairs. Female tergite 5 is medially submembraneous and laterally compressed.

General comments on identification to species level

Differential diagnosis

The genus *Milesia* consists of large-sized hoverflies (body length 14-27 mm, in non-European species up to 35 mm) and *Milesia crabroniformis* is the largest European hoverfly species. Because of their large size, their brown/black and yellow colourful appearance and yellow to brown legs they cannot be confused with any other hoverfly genus. In addition to the general appearance, other important diagnostic characters include a hairy postpronotum, short antenna with a dorsal arista, the wing vein R_{4+5} weakly sinuate with vein M_1 reaching R_{4+5} at an acute angle, cell r_1 closed well before wing margin, a hairy metasternum (bare in the related genus *Palumbia*) and the male hind femur with a spine apicoventrally.

Milesia crabroniformis male habitus

Milesia semiluctifera male habitus

Milesia cretica male habitus

Geographical distribution and global diversity

Milesia has its greatest species diversity in the Oriental (Indomalayan) region, but they also occur in the Palaearctic, Afrotropical and Nearctic regions. They reach the northern part of the Neotropical region, but are not distributed in Australasia and Antarctica. Globally about 77 species are known, and three species have been recorded for Europe. A complete key to European species is given by Bot et al. (2022) including the endemic species *M. cretica* of Crete Island, outside Greece also other keys like Syrph-the-Net keys or Séguy (1961) can be used.

Presence in Europe

Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, France, Gibraltar, Greece, Hungary, Italy, Moldova, Montenegro, North Macedonia, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Switzerland, Turkey.

Biology

Adult behaviour and flower preferences. *Milesia* hoverflies are sitting on low branches or on tree trunks close to their larval habitat or are flying in forests and forest clearings. In forests they can fly high up in the canopy. Flower visiting occurs on white flowering tall herbs such as *Eupatorium cannabinum*, *Sambucus ebulus* or white-flowering Apiaceae. *Milesia* species also tend to have a flower preference for ivy (*Hedera helix*) in autumn, where they can be found in open areas for example on overgrown rocks, and relatively far from their breeding sites. Males can be territorial, waiting for females close to larval habitats and attacking all larger insects passing by.

Reproduction and larval biology. Larvae of *Milesia* are (semi)aquatic saprophages associated with wet detritus in tree cavities, decaying stumps and rot holes of deciduous trees. They belong to the saproxylic dead wood fauna of old suitable forest stands. Larvae pass three larval stages until they pupate either near their larval habitat in drier places, however larval biology of many *Milesia* species is still largely unknown.

Seasonal life cycle. The developmental cycle is incompletely known, possibly as in other saproxlic species developing in dead wood. Larval development may take more than one year. Seasonal occurrence is species specific with some species flying from late summer in July to October, other species appearing mainly in autumn.

Type species: *Syrphus crabroniformis* Fabricius, 1775

List of species found in Europe:

1. *Milesia crabroniformis* (Fabricius, 1775)
2. *Milesia cretica* Bot & van Steenis in Bot et al. 2022

3. *Milesia semiluctifera* (Villers, 1789)

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Attributions

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