



Genus: *Chrysogaster*



Chrysogaster solstitialis male

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Genus: *Chrysogaster* Meigen, 1803

Family: Syrphidae

Subfamily: Eristalinae

Tribe: Brachyopina

Number of species of this genus found in Europe: 8

Description

Head

The eye is bare, the male is holoptic and the female is dichoptic. The basoflagellomere of the antenna is small and subcircular, and is orange-red. The arista is bare. The frons is slightly swollen, and the male frons has a small median depression surrounded with longer erect black hairs. The female frons has transverse furrows extending from the eye margin to a central longitudinal furrow. The face of the male is broad and flattened and has a poorly defined facial tubercle, giving it a practically flat profile. The anterior part of the epistome of the male rarely protrudes significantly. The female face is concave with a dust band under the antennae, and the anterior part of the epistome protrudes.

Thorax

The mesonotum is more or less finely punctured, and is black to black-purple, metallic or dull with bronze reflections. The pleuron is of the same colour as the mesonotum, and much of it is often shiny, contrasting strongly with the dull area on the dorsal part of the tergites.

Wings

The wing is transparent but usually it has a yellowish or brownish tinge. The basal part of vein R has no longer setae on the dorsal part of the wing but on the vein Rs there are 6 to 10 very short and fine dorsal setae. When these setae are broken off only the insertion on Rs is still visible in the form of darker spots on the vein. Vein M_1 distinctly curves towards the base of the wing: the insertion of M_1 on R_{4+5} forms a right angle.

Vein M_1 is rectilinear in its basal $1/3$ ($\sim 1/4$), after that it curves clearly towards the base of the wing, this vein is never recurrent. The point of convergence between M_1 and M_2

is always closer to the base of the wing than is the point of intersection of the vein M_1 and vein R_{4+5} .

Legs

The legs are simple, and are brown to black. The hind femur has a row of spines ventrally. There is no postmetacoxal bridge.

Abdomen

The general shape of the abdomen is elongated: it is more oval in the female whereas the lateral margins are more parallel in the male. The maximum width of the abdomen lies at the juncture of the tergites 2 and 3. The general colour is identical to that of the thorax. The central part of tergites 2 to 4 is dull, and is flat or slightly depressed. The lateral margins of the tergites are shiny with a metallic reflection, with the exception of tergite 1 whose margin is dull on at least the anterior 1/4. There are longer white hairs on the middle of tergite 2 (however, they can be missing or shorter, as is the case in *C. virescens*). The rest of the tergites have very short hairs or may even be bare. The general colour of the sternites is a shiny black with the exception of sternite 1 which is dull. The hairs on the sternites are very short, whitish, and are directed backwards.

General comments on identification to species level

Differential diagnosis

Chrysogaster is closely related to *Lejogaster*, *Melanogaster*, *Orthonevra* and *Riponnensia*, all of which have a hairy postpronotum, bare eyes and short antennae. They have a bare, hair-like arista that sits dorsally upon the basoflagellomere. The mouth edge and/or the facial tubercle protrude and there are transverse grooves on the frons of the female. Wing vein R_{4+5} is straight, and cell r_{4+5} is closed before the wing tip. Crossvein r-m ends in the basal half of cell dm. The abdomen is parallel sided

or oval, and is black, often with a partial or complete metallic sheen. The scutellum has no subscutellar fringe.

The distinguishing characters between these genera are listed below:

Chrysogaster The male is holoptic and has a small facial tubercle whereas the female is dichoptic and it lacks a facial tubercle. The antenna is orange/red and the antenna is located within the ventral two thirds of the height of the head. Tergites 2-5 are dull in the middle and shiny at the margins so they have a large median dull area on the abdomen that contrasts with the shiny margins. Sternite 1 is dusted and dull, tergite 2 is dusted and dull, the tergites are velvety black or black with a purple or green sheen. There are long whitish and recumbent hairs across the median $\frac{1}{3}$ of the width of tergite 2. The basal section of vein R is bare and vein M_1 ends perpendicular to vein R_{4+5} and is straight.

Orthonevra The male is holoptic; females are dichoptic. Both sexes lack a facial tubercle. Tergites 2-5 are somewhat shiny black centrally and more metallic bronze to greenish at the margins resulting in a large median shiny blackish area on the abdomen that contrasts with the metallic bronze to greenish shiny margins. Sternite 1 lacks dusting and is strongly shiny. The lateral margins of tergite 1 are brightly shining. The basal section of vein R is bare and vein M_1 ends perpendicular to vein R_{4+5} but M_1 is bent inward in the middle, so that the apical part of vein M_1 is perpendicular or slightly recurrent to vein R_{4+5} , giving cell r_{4+5} a more or less rectangular appearance.

Lejogaster Males are dichoptic and both sexes lack a facial tubercle. The basoflagellomere is large in the male and completely black or partly yellowish to orange. The thorax and abdomen are greenish, but for one species (*L. tarsata*) it is partly purple to reddish. Tergites 2-5 are completely shiny. The basal section of radial vein R has some long hairs on the dorsal surface. In comparison with *Riponnensia*, the hind femora have no spines or spinose hairs apico-ventrally.

Melanogaster The male is holoptic (with the exception of *M. nigricans*) and has a facial tubercle, the female is dichoptic and it lacks a facial tubercle. The arista is dark brown

to black. Tergites 2-5 are completely shiny, but a dull area can be present. Sternite 1 is dusted and dull, tergite 2 is dusted and dull, the tergites are velvety black or black with a purple or green sheen. There are only short/very short hairs across the median $\frac{1}{3}$ of the width of tergite 2. In all species the basal section of vein R is bare. Vein M_1 ends perpendicular to vein R_{4+5} and is straight. The ventral surface of the hind femur has spinose hairs.

Riponnensia Males are holoctic and both sexes lack a facial tubercle. Tergites 2-5 are dull in the central part and shiny at the margins so they have a large median dull area on the abdomen. Sternite 1 is shiny, tergite 2 is shiny on the central part, the tergites have a green to bronze colour. The basal section of radial vein R has some long hairs on the dorsal surface. The vein M_1 ends perpendicular to vein R_{4+5} but the middle part of M_1 is bend inward creating an S-shaped vein. There are spines or spinose hairs present apico-ventrally on the hind femora.



Chrysogaster coerulea male head lateral



Chrysogaster rondanii male habitus



Chrysogaster cemiteriorum female antenna

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Geographical distribution and global diversity

Chrysogaster has a wide distribution and is known from Nearctic, the Palearctic and the Afrotropical regions. Confusion with closely related genera such as *Orthonevra* and *Melanogaster* means that the exact distribution and numbers of species involved is not always clear. In the Afrotropical region 10 species are described as *Chrysogaster*, but some will probably turn out to belong to the genus *Orthonevra* after more research (Kirk-Spriggs & Sinclair 2021). In the Nearctic there seems to be only one species present (*C. antitheus*) (VanDyk et al 2020).

In the Palearctic zone there are currently 8 known species, that range (depending on the species) from the western part of the Palearctic eastwards to western Siberia, central Asia but also in Turkey, Iran and North Africa. (IUCN 2021)

Presence in Europe

Andorra, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Isle of Man, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Moldova, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Russian Federation - European Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom.

Biology

Chrysogaster species can be found in a variety of wetland habitats, around fens, in marshes, stream valleys and bogs. They also occur in herb-rich grasslands near small streams, flower rich woodland edges close to running water, and in small open areas with flushes and streams in moist deciduous forests. There may be some association with base-rich habitats but some species such as *C. virescens* seem to prefer strongly acidic habitats. Adults may wander some distance from breeding grounds and can be

found in flowery situations that range from calcareous grasslands to quarries and ruderal areas.

Adults fly relatively low over the vegetation and often settle on foliage of bushes and trees or flowers.

Flowers visited include white and yellow umbels, but also *Filipendula* spp., *Ilex* spp., *Iris* spp., *Ranunculus* spp., *Rubus* spp., *Rosa rugosa*, *Prunus avium*, *Sarothamnus scoparius*, *Thapsia villosa*, *Smyrniium perfoliatum*, *Ferulago sylvatica*, *Tordylium apulum*, *Euphorbia* spp., *Cornus* spp., *Galium* spp., *Sambucus* spp., *Senecio jacobaea*, *Sorbus aucuparia*, *Prunus padus*, *Prunus spinosa*, *Salix* spp. and *Crataegus* spp.

The larval habitat is not fully understood, but they are known to be aquatic, favouring shallow water close to the shore, where they are probably filter-feeders among decaying plants. Larvae of *C. solstitialis* have been found in mud containing a large amount of decaying wood and other vegetation at the edge of ponds and streams in woodland areas, and can also be found on the surface of organically enriched mud beneath the fallen leaves of trees, in very shallow (1 cm) water of seepages and spring-fed pools within deciduous woodland. Rotheray (1993) provides a useful introduction to larvae of this genus.

The flight period ranges from March until September; as far as is known, all species have a somewhat extended flight period and are probably univoltine but each one differs with some flying earlier in the season (e.g. *C. virescens* and others flying later on (e.g. *C. solstitialis*).

(IUCN 2021, Speight 2020a, 2020b, Vujić 1999)



Type species: *Eristalis solstitialis* Fallén, 1817

Common names:

FI - vaskiset;
SV - ängsblomflugor;
NB - engblomsterfluer

List of species found in Europe:

1. *Chrysogaster basalis* Loew, 1857
2. *Chrysogaster coerulea* Strobl in Czerny & Strobl, 1909
3. *Chrysogaster cemiteriorum* (Linnaeus, 1758)
4. *Chrysogaster mediterraneus* Vujić, 1999
5. *Chrysogaster musatovi* Stackelberg, 1952
6. *Chrysogaster rondanii* Maibach & Goeldlin, 1995
7. *Chrysogaster solstitialis* (Fallén, 1817)
8. *Chrysogaster virescens* Loew, 1854

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Attributions

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