Pollinator Academy

Genus: *Episyrphus*

Episyrphus balteatus male

(© Sander Bot)

Genus: *Episyrphus*

Family: Syrphidae

Subfamily: Syrphinae

Tribe: Syrphini

Number of species of this genus found in Europe: 1

Description

The single European species, *Episyrphus balteatus*, was formerly included in the genus *Syrphus*.

Head

The eye is bare. The face is dull yellow, without a brown or black medial stripe, and more or less straight in profile, without an elongate facial tubercle and ventrally not protruding anteriorly. The antenna is yellow, often brownish to brown dorsally, with the basoflagellomere (or "third segment") short oval.

There is little sexual dimorphism. The eyes do not meet on the frons in the female, as they do in the male. The rather narrow frons of the female is grey-dusted.

Thorax

The scutum is black and rather shiny, with sub-medial, longitudinal stripes of grey dusting. The scutellum is entirely yellow. The pleuron is mostly black, but becoming obscurely yellow-brown dorsally, with areas of grey, or greyish-yellow dusting. The dorsal and ventral katepisternal hair patches are separated throughout; a distinct tuft of hairs is present below the posterior spiracle. The metasternum is hairy.

Wings

The membrane is hyaline with sclerotized dots along the hind margin. The vein R_{4+5} is almost straight.

Legs

The legs are mostly yellow, with the hind tarsi darkened to greyish brown or yellow-brown.

Abdomen

A wide range of variability has been observed in this species, especially in the extent of orange yellow and black colouration of the abdomen, which colouration is considerably affected by temperature during pupal development as tested by Dušek & Láska (1974).

The coloration of the female abdomen is similar to the male, nevertheless there is an overwintering form of female that is usually of an extreme dark form with the tergite 1 frequently overlain by grey dusting and the anterior yellow area of the other tergites can also be partially dusted and the lateral margins of the tergites may be entirely black.

General comments on identification to species level

Differential diagnosis

Due to its uniquely marked tergites, *Episyrphus balteatus* is one of the most immediately recognisable of European syrphids – if not the most recognisable of them all. Tergites 2 – 5 are predominantly orange and each has two transverse black bands. The anterior black band on tergites 3 and 4 can be greatly reduced, but is only very rarely absent. Because E*. balteatus* is the only European species of *Episyrphus*, it can be identified using keys to the European syrphid genera.

Episyrphus balteatus is 9 – 13 mm long, with the abdomen almost parallel-sided in the male, but narrowly oval in the female. Together with its tergite markings, this combination of features distinguishes *E. balteatus* from other European syrphids, not only under the microscope but also, usually, in the field. In the field it can be confused with similarly-sized species like the closely related *Meliscaeva auricollis* and *M.*

cinctella, or some *Platycheirus* species, which have similar flight characteristics to *E. balteatus* and can be found flying with *E. balteatus* in the same habitats. A confirmatory feature distinguishing *E. balteatus* from all *Platycheirus* species is its partially yellow scutellum (black in all *Platycheirus* species). *E. balteatus* may be distinguished from *Meliscaeva* species by its hairy metasternum (metasternum is bare in *Meliscaeva*).

Episyrphus balteatus female abdomen, extreme dark overwintering form

Episyrphus balteatus female abdomen, extreme dark overwintering form

Episyrphus balteatus male habitus

Geographical distribution and global diversity

The single species known to Europe, *Episyrphus balteatus,* is well-known for its migrant behaviour, leading to observation of the species almost anywhere in Europe, from the edge of the Arctic to the Mediterranean and from Macaronesian islands to the Urals and the Caucasus. Occasional occurrences of the species on Northern European islands like the Faroes and Iceland are interpreted as due to the arrival of migrant individuals, rather than an indication of the existence of resident populations. Outside Europe, *E. balteatus* occurs eastwards through Asiatic parts of the Palaearctic Region

to the Pacific coast and southwards into North Africa. Its range also extends into the northern Oriental Region.

In addition to *E. balteatus* there are two *Episyrphus* species known from eastern parts of the Palaearctic. Seven species of the genus occur in the Afrotropical Region and another seven in the Oriental Region, and three species are known from Australia (Wright & Skevington 2013). The genus is absent from both North and South America.

Presence in Europe

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

Biology

The larva of *Episyrphus balteatus* is a generalist predator of aphids and other insects, on herbaceous plants, shrubs and the lower branches of trees. Short-lived vegetation types like cereal crops can generate immense populations of *Episyrphus balteatus*, which particularly exploits aphids on ruderal vegetation and herbaceous plants in general. Generation time of *Episyrphus balteatus* can be as little as three weeks, successive generations moving from one ephemeral larval food source to another, in the process often flying considerable distances and at higher altitudes than would be normal for local population movements. This translates to early-year populations hatched in southern Europe suddenly appearing further north, for instance with reports of large numbers of individuals arriving on the coasts of Britain or Ireland, or migrating through alpine passes. The species is known to overwinter both as a larva (in southern Europe) and as an adult (southern Europe and further north, in central and Atlantic parts of the continent). Overwintering adults reappear very early in the year, in February and March. The adult flies visit the flowers of a considerable number of

herbaceous plants, shrubs and trees, including the pollen-only flowers of grasses. Aphid honey-dew can also be a significant food source for them. In Mediterranean habitats of Europe *Episyrphus balteatus* largely disappears during the summer and it has been established that temperatures above 23°C significantly reduce successful larval development. The potential interest in this species as a biological control agent of crop aphids has led to an extensive literature on its behaviour, physiology and commercial culture.

Type species: *Musca balteata* De Geer, 1776

Common names:
FI - parvikirvarit;
SV - flyttblomflugor

List of species found in Europe:

1. *Episyrphus balteatus* (De Geer, 1776)

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Attributions

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