

A new character for identification of females of *Eristalinus aeneus* (Scopoli, 1763) and *E. sepulchralis* (Linnaeus, 1758) (Diptera: Syrphidae)

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The main character traditionally used for separating females of *Eristalinus aeneus* (Scopoli, 1763) and *E. sepulchralis* (Linnaeus, 1758) is the density and extent of pubescence of the compound eyes. As this feature can be difficult to see without a microscope, alternative characters were explored. The pattern of microtomentum (dusting, pollinosity) on the frons and vertex can be used to separate the species: *E. aeneus* females have a nearly lustrous area around the ocellar triangle and frequently also along the upper margins of the compound eyes. In *E. sepulchralis* the area is clearly and rather uniformly grey dusted, dull to slightly shining. Variation of the character across Europe is briefly discussed; its validity outside Europe remains to be tested. The character states are illustrated by photographs of museum specimens and pictures taken in the field.

Leväsurrin *Eristalinus aeneus* (Scopoli, 1763) ja töpösurrin *E. sepulchralis* (Linnaeus, 1758) naaraat on perinteisesti määritetty silmien karvoituksen pituuden ja tiheyden perusteella. Karvoitustuntomerkin tulkinta ei kuitenkaan ole aina helppoa eikä se näy ilman hyvää luuppia tai mikroskooppia. Lajit ovat erotettavissa myös päälaen ja silmäkolmion ympäristön pölytyneisyyden perusteella: leväsurrilla pistesilmien ympäristö ja usein myös verkkosilmien takareunan yläosa on kiiltävän musta, mikrokarvoitukseton. Töpösurrilla vastaava alue on tasaisen harmaan mikrokarvoituksen peittämä. Myös otsan keskiosan kuvioinnissa on ero: töpösurrilla on otsan keskellä soikea tumma täplä, joka voi puuttua; leväsurrin otsassa on tumma pystyviiru, jonka yläpäässä on hopeanhoitoinen pilkku.

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Males of the two spotted-eyes *Eristalinus* species present in Europe north of the Alps, i.e. *Eristalinus sepulchralis* (Linnaeus, 1758) and *E. aeneus* (Scopoli, 1763), are easily identifiable by the width of the frons between upper compound eyes: eyes touching in *E. aeneus*, but clearly separated in *E. sepulchralis*. The females, however, have traditionally been primarily identified by the distribution of hairs on the compound eyes, which is a more difficult character to observe and interpret (van Veen 2004, Haarto & Kerppola 2007, Bartsch et al. 2009). The examination of collected specimens in the author's collection and in the Finnish Museum of Natural History (MZH), together with numerous pictures of the two species online, revealed another character that may be helpful especially for preliminary field identification or identification from photographs.

Adult females of *Eristalinus aeneus* have an almost lustrous area on the upper frons and vertex surrounding the ocellar triangle (Fig. 1b–c, Fig. 2) The lower/anterior edge of the area lacking microtomentum (dusting, pollinosity) on the upper frons is poorly defined, but the posterior margin between the shining and tomentose area on the vertex is usually clearly defined. In North European material the lustrous area is rather large and extends to the upper occiput as a narrow black wedge or band along the upper posterior margin of the compound

eyes. The dusting on the frons shows a dark vertical stripe with a silvery patch at its upper end near the anterior ocellus.

In contrast, the area around the ocellar triangle in adult females of *E. sepulchralis* is clearly and uniformly dulled by ash-grey microtomentum (Fig. 1a, Fig. 3). The microtomentum is somewhat darker and weaker on the vertex than on the lower frons or laterally on the occiput. The density of the microtomentum varies somewhat and some specimens have an upper frons that could be called subshining, but they all lack lustrous areas. The frons is rather uniformly grey, mostly with a small roundish darker spot near the middle.

Three examined *Eristalinus aeneus* females from the eastern Mediterranean area have more extensive dusting on vertex with the non-tomentose area restricted to the ocellar triangle and the area between ocellars and compound eyes (see Fig. 1c, a specimen from Turkey). The validity of the frontal/vertex microtomentum character requires further validation especially in specimens not from Europe. The female of the third European *Eristalinus* with spotted eyes, *Eristalinus megacephalus* Rossi, 1794, has a frons like that of *E. sepulchralis*, but the two species are unlikely to be confused with each other based on other characters.



Figure 1. Females of *Eristalinus*. a) *Eristalinus sepulchralis* from Finland. Specimen <http://id.luomus.fi/GV.87095>; b) *Eristalinus aeneus* from Finland. Specimen <http://id.luomus.fi/GV.50738>; c) *Eristalinus aeneus* from Turkey. Specimen <http://id.luomus.fi/GJ.1343>.

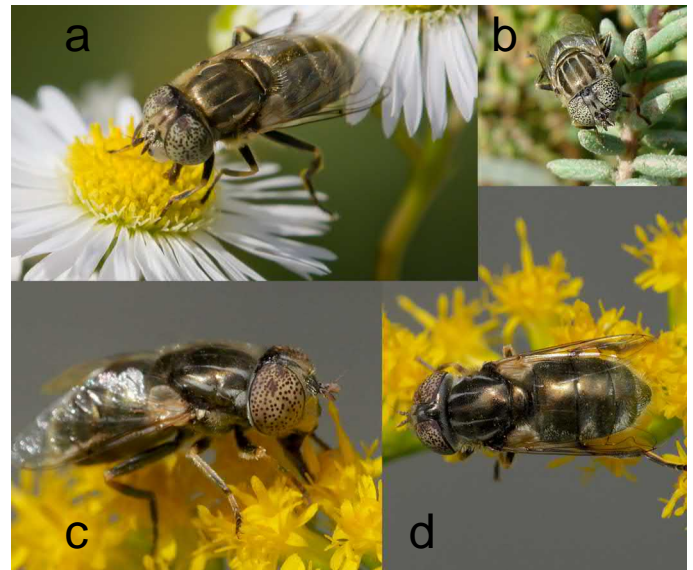


Figure 2. Females of *Eristalinus aeneus*. a) Isarkanalausleitung, Höllriegelskreutz bei München, Germany, 2010-08-22, photographed by Richard Bartz (CC-BY-SA 3.0); b) near Cagiz, Spain, 2012-09-24, by Gail Hampshire (CC-BY 2.0); c-d) Maierhöfen, Deutschland, 2021-09-07, by Lorin Timaeus (CC BY 4.0).

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Figure 3. Females of *Eristalinus sepulchralis*. a) Parc de Woluwé, Brussels, Belgium, 2016-06-12, by Frank Vassen (CC-BY 2.0); b-c) Wrexham, North Wales, U.K., 2009-08-08, by Janet Graham (CC-BY 2.0); d) Ebro delta, Catalunya, Spain, 2015-06-21, by S. Rae (CC-BY 2.0); e) Hopeakivenlahti, Kokkola, Finland, 2020-08-13, by Pentti Ketola (CC-BY-NC 4.0).