



## Genus: *Psarus*



*Psarus abdominalis* male

---

(© Sander Bot, licensed to the EU under CC-BY-NC 4.0)

**Genus:** *Psarus* Latreille, 1804

**Family:** Syrphidae

**Subfamily:** Eristalinae

**Tribe:** Rhingiini

**Number of species of this genus found in Europe:** 1

---

## Description

Only one *Psarus* species occurs in Europe, *P. abdominalis*. *Psarus* are small sized (5-10 mm) and elongated, black and almost bare flies with a protruding frontal prominence, long antennae and a mostly luminous deep red abdomen.

### Head

The face is shiny black, but has two silvery dust stripes extending from the eye margin to the mouth edge just below the facial tubercle. The face is strongly concave under the antennal base and it has a strongly protruding mouth edge and a distinct facial tubercle. The frontal prominence is long protruded and black. The antenna is almost as long as the distance from the tip of the frontal prominence to the dorsal occiput. The scape is shorter than the pedicel, which in turn is only slightly shorter than the basoflagellomere. The scape and pedicel are black, the basoflagellomere is brownish black with a more or less white shimmering base. The arista is yellowish white. The arista is clearly three segmented and consists of a very short basal segment, a slightly longer second segment and a long apical segment. It is placed dorsally just anteriorly of the middle of the basoflagellomere dorsal margin. The eye is separated (dichoptic) in both sexes. In males, the narrowest point of the frons is as wide as the base of the ocellar triangle. In females, the frons is wider anteriorly than posteriorly. The female has one small dust spot situated on the widest part of the frons along each eye margin.

### Thorax

The entire thorax is coarsely punctured and slightly glossy black with very short (barely visible) pale (whitish) hairs. The postpronotum is heavily dusted on the inner median half, as is the anterior part of the thorax next to the postpronotum.

## Wings

The wings are infuscated, with a shaded crossvein r-m and brown wing markings in the central part around the vein m-cu and the base of wing cell  $r_{2+3}$ . The pterostigma is brownish yellow. The calypter is yellowish-white and the haltere is yellow.

## Legs

The legs are dark, with black femora and brown tibia and tarsi.

## Abdomen

The abdomen is predominantly deep red and, like the thorax, has extremely short, barely visible whitish hairs. Tergite 1 is completely black, tergites 2 and 4 are usually predominantly red and tergite 3 entirely red. Tergite 2 is laterally red on 1/3 of the tergite edges and posteriorly red along the margin, otherwise it is black to a varying degree. Tergite 3 can be completely red or have a black spot along the posterior margin, which anteriorly may extend out as a triangle or a central stripe. Tergite 4 is often black, sometimes with a red anterior margin. The genital capsule of the male and tergite 5 of the female are completely black. The sternites are predominantly reddish-yellow, but the anterior margins of the sternites 2 and 3 can be partly dark brown to blackish. Sternite 5 of the female is black.

---

# General comments on identification to species level

## Differential diagnosis

*Psarus* is an easily recognizable genus as it has a rather small body size (5-10 mm), a deep red coloured abdomen and a conspicuously elongated antenna that is placed on a strong frontal prominence (antennifer). The general habitus only resembles *Pyrophaena granditarsa* in the field, but this species does not have elongated antenna placed on a frontal prominence. The species can be distinguished from other Syrphidae genera by a combination of the following characters: The postpronotum is haired,

which excludes all Syrphinae. The antenna is longer than the head and is implanted on a strong frontal prominence (antennifer), which excludes the majority of other hoverfly genera in which the antenna is shorter than the head and not placed on a frontal prominence. The scutellum lacks marginal spines which excludes the genus *Microdon*. The antenna has a dorsal arista, which excludes other genera with long antennae that have an apical arista like *Callicera*, *Ceriana* and *Sphiximorpha*. The largest part of the abdomen is red in *Psarus*, which excludes the genus *Sphecomyia* (Hadrava 2022).

The species resembles hymenopterans such as the blood bee *Sphecodes* sp. and predatory wasps belonging to the genera *Astata* and *Tachysphex*.



*Psarus abdominalis* female head



*Psarus abdominalis* femal abdomen



*Pyrophaena granditarsa* male habitus

(© Sander Bot, licensed to the EU under CC-BY-NC 4.0)

## Geographical distribution and global diversity

This genus is a European endemic and the only species in the genus. It occurs from France in the west to European parts of Russia in the east, and from Latvia in the north to Greece in the south (Mengual & Ssymank 2015). In eastern Europe, the species has

a restricted and fragmented distribution, but in Ukraine it is still common in some places (Grigory Popov, pers. comm.). It is considered as regionally extinct in several European countries such as Sweden, the Netherlands, and Belgium (Bot & Van de Meutter 2019, Speight 2020).

## Presence in Europe

Bulgaria, Czech Republic, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Moldova, Montenegro, North Macedonia, Poland, Romania, Russian Federation - European Russia, Switzerland, Ukraine.

---

## Biology

This genus is most often found in well-drained, dry thermophilous *Quercus* forests with mature or overmature trees and a diverse herbaceous flora, including Eastern thermophilous oak forests of *Quercus frainetto* and *Q. cerris*. Other habitats include ancient olive groves with *Quercus coccifera* maquis as undergrowth, and *Pinus pinaster* forests mixed with *Quercus*. In northwestern Europe, most records are from oak coppice forests (*Quercus petraea* and probably also *Q. robur*) with abundant flowering forest edges or in meadows close by (Dussaix 2013, Mengual and Ssymank 2015, Reemer et al. 2009, Speight 2020, Standfuss and Claussen 2007, Stuke 2000). Ssymank (pers. comm. 2020) suggests a relationship with pockets of ancient oak forests, which are more and more under threat by changing forest management.

The adults are usually visiting flowers when observed. In western Europe they mainly visit *Geranium sanguineum* but, in Ukraine, *Cotinus coggygria* is frequently visited (Popov 2009). Other visited flowers include *Malva sylvestris*, *Eryngium campestre*, *Convolvulus arvensis*, *Anthriscus sylvestris*, *Berteroa*, *Dianthus*, *Potentilla* and *Veronica* (Mengual and Ssymank 2015).

The adults fly fast from flower to flower similar to *Eumerus* species, and it is difficult to distinguish this species if numerous *Eumerus ornatus* are visiting the same *Geranium sanguineum*. The males sometimes sit on branches or leaves and return to the same

spot repeatedly (Mengual and Ssymank 2015). The larvae are unknown. Several authors suggest a relationship with *Geranium sanguineum*, but a relationship with old *Quercus* trees seems more likely (Mengual and Ssymank 2015).



**Type species:** *Syrphus abdominalis* Fabricius, 1794

## List of species found in Europe:

1. *Psarus abdominalis* (Fabricius, 1794)

---

## References

ArtDatabanken. (2020). Artfakta 2020 Red List of Swedish Species online database. Stockholm. Available at: <http://artfakta.artdatabanken.se/>.

Bartsch, H., Binkiewicz, E., Klintbjer, A., Rådén, A. & Nasibov, E. (2009b). Blomflugor: Eristalinae & Microdontinae. *Nationalnyckeln till Sveriges flora och fauna*, DH 53b. ArtDatabanken, SLU, Uppsala. : 478.

Borodin, O.I. and Borodina, O.A. (2014). Taxonomical structure of the hoverflies (Diptera: Syrphidae) of the Belarus fauna. *Series Biological Sciences, Agricultural Sciences 2*: 7-12.

Bot, S. and Van de Meutter, F. (2019). *Veldgids Zweefvliegen*. KNNV Uitgeverij, Zeist.

Dussaix, C. (2013). Syrphes de la Sarthe: éthologie, écologie, répartition et développement larvaire (Diptera, Syrphidae). *Invertébrés armoricains, les Cahiers du Gretia* 9 : 284pp.

Hadrava, J. (2022). Faunistic records of the critically endangered *Psarus abdominalis* (Diptera: Syrphidae) from the Czech Republic. *Klapalekiana*, 58: 43–49.

Heimburg, H. (2018). *Checkliste der Schwebfliegen (Diptera: Syrphidae) Österreichs*. Institut für Biologie, Karl-Franzens-Universität.

IUCN. (2021). The IUCN Red List of Threatened Species. Version 2021-3. Available at: [www.iucnredlist.org](http://www.iucnredlist.org). (Accessed: 09 December 2021).

Mazánek, L. and Barták, M. (2004). Syrphidae (pestřenkovití). In: Farkaš, J., Král, D. and Škorpík, M (eds), *Red list of threatened species in the Czech Republic*, pp. 760. Praha.

Mengual, X & A. Ssymank. (2015). New records of *Psarus abdominalis* (Fabricius) (Diptera: Syrphidae), a threatened species in Europe. *Annales de la Société entomologique de France* (N.S.) 51(3): 197-207.

Popov, G.V. (2009). *Psarus abdominalis* (Fabricius, 1794). In: Akimova, I.A. (ed.), *Red Book of Ukraine, Animals*, pp. p. 286. Vidavnitstvo, Global Consulting, Kiev.

Reemer, M., Renema, W., van Steenis, W., Zeegers, T., Barendregt, A., Smit, J.T., van Veen, M.P., van Steenis, J. and van der Leij, L.J.J.M. (2009). *De Nederlandse zweefvliegen (Diptera: Syrphidae)*. KNV Uitgeverij, European Invertebrate Survey, Leiden, Nationaal Natuurhistorisch Museum Naturalis.

Speight, M.C.D. (2020). Species accounts of European Syrphidae, 2020. *Syrph the Net, the database of European Syrphidae (Diptera)*. *Syrph the Net publications*, Dublin 104: 1-314.

Speight, M.C.D., Castella, E. and Sarthou, J.-P. (2020). Syrph the Net. 2020. The Database of European Syrphidae. Syrph the Net on CD, Issue 12. *Syrph the Net Publications*, Dublin

Standfuss, K. and Claussen, C. (2007). Zum aktuellen Artenbestand der Schwebfliegen (Diptera, Syrphidae) in der Ölbaumzone SO-Thessaliens/Griechenland. *Volucella* 8: 147-164.

Stuke, J.H. (2000). Zur Bedeutung der Grissheimer Trockenaue für die Schwebfliegenfauna (Diptera: Syrphidae). In: Staatliche Naturschutzverwaltung Baden-Württemberg. (ed.), Vom Wildstrom zur Trockenaue. *Natur und Geschichte der Flusslandschaft am südlichen Oberrhein.*, pp. p 307-318. Weiher Verlag Regionalkultur, Ubstadt.

Treiber, R. (2014). La liste rouge des Syrphes menacés en Alsace. *Office des Données Naturalistes d'Alsace.*, Strasbourg.

Vujić, A., Šimić, S. and Radenković, S. (2001). Endangered species of hoverflies (Diptera:Syrphidae) on the Balkan Peninsula. *Acta Entomologica Serbica* 5(1/2): 93-105.

## Attributions

This factsheet was created by Taxo-Fly and is one of the outputs from a network of European Initiatives dedicated to pollinators, such as the EU Pollinator Monitoring Scheme (EUPoMS), the Preparatory Action for EU Pollinator Monitoring Scheme and Indicators (SPRING project), the Horizon 2020 Europe research projects (POSHBEE, SAFEGUARD), and European National action plans for pollinators.

### Authors

Photographs: Sander Bot (Taxo-Fly team)

Text: Jeroen van Steenis & Gerard Pennards (Taxo-Fly team)

Reviewer: Chris Palmer (Taxo-Fly team)

## License

The content of this factsheet is licensed under a Creative Commons Attribution-ShareAlike ([CC BY-SA](#)).

## Image rights

Most images created under the Taxo-Fly project have an open Creative Commons license ([CC BY 4.0](#)). However, some images are licensed to the European Union and shared under the Creative Commons license Attribution-NonCommercial 4.0 International ([CC-BY-NC 4.0](#)). This is indicated in the image caption.

