

***CRIORHINA FLOCCOSA* (MEIGEN, 1822), A NEW HOVERFLY  
(DIPTERA: SYRPHIDAE) IN THE FAUNA OF CROATIA**Mihailo VUJIĆ<sup>1</sup> and Toni KOREN<sup>2</sup><sup>1</sup>HabiProt, Cankareva 9/13, 21000 Novi Sad, Serbia,  
e-mail: mihailovujic01@gmail.com<sup>2</sup>Association Hyla, Lipovec I, n. 7, 1000 Zagreb, Croatia,  
e-mail: toni.koren@hhdhyla.hr

**Abstract** – *Criorhina floccosa* is a large, bumblebee-mimic and saproxylic hoverfly which mainly inhabits deciduous forest habitats and its larvae develop in rot-holes, wet decaying roots, but also in live trunks. The range of this species includes almost all of Europe, but it had not been recorded in Croatia so far. *C. floccosa* was registered on the territory of Croatia for the first time in the Macelj Mt., on March 17, 2020. The specimen was caught on *Salix caprea* catkins, at the edge of a mixed deciduous forest of *Fagus* sp., *Quercus* sp. and *Castanea sativa*.

KEY WORDS: Eristalinae, faunistics, forest habitats, saproxylic insects

**Izveček – *CRIORHINA FLOCCOSA* (MEIGEN, 1822), NOVA MUHA  
TREPETAJKA (DIPTERA: SYRPHIDAE) V FAVNI HRVAŠKE**

*Criorhina floccosa* je velika, čmrlju podobna, saproksilna muha trepetavka, ki v glavnem naseljuje listavske gozdne habitate, njene ličinke pa se razvijajo v gnilobah, vlažnih propadajočih koreninah, pa tudi v živih deblih. Razpon razširjenosti vrste zajema skoraj vso Evropo, vendar na Hrvaškem doslej ni bila zabeležena. *C. floccosa* je bila 17. marca 2020 na ozemlju Hrvaške prvič registrirana na planini Macelj. Osebek je bil ujet na cvetovih *Salix caprea*, na robu mešanega listopadnega gozda bukve (*Fagus* sp.), hrasta (*Quercus* sp.) in kostanja (*Castanea sativa*).

KLJUČNE BESEDE: Eristalinae, favnistika, gozdni habitati, saproksilne žuželke

Hoverflies are a large family of flies (Diptera: Syrphidae), with over 6000 described species worldwide (Thompson, 2013). European hoverfly fauna numbers more than 920 species and in Croatia about 200 species were registered (Radenković, 2008;

Nedeljković, 2011; Speight, 2018). Hoverfly fauna of Croatia is generally poorly researched, and additional species are expected to be recorded in the country in the future. Some neighbouring countries have a better researched hoverfly fauna, such as Serbia (with over 412 species registered) and Slovenia (with over 310 species registered) and in both countries, new species are registered each year (De Groot & Govedič, 2008; De Groot *et al.*, 2010; Van Steenis *et al.*, 2013; Janević & De Groot, 2018; Miličić *et al.*, 2018; Vujić *et al.*, 2018; Šebić *et al.*, 2019; Van Steenis *et al.*, 2019; Vujić, 2020).

*Criorhina* Meigen, 1822 is a genus of large bee or bumblebee mimics and from other genera that are bee or bumblebee mimics (*Arctophila*, *Brachypalpus*, *Mallota*, *Pocota* etc.) can be separated by the typical form of antennae. In *Criorhina*, the third segment is much shorter than it is wide and the first segment is thinner and forms a stalk. Also, in contrast to *Pocota* or *Brachypalpus*, *Criorhina*'s face projects downwards and facial knob is present (van Veen, 2004). In Europe, 6 species of the genus *Criorhina* have been recorded so far: *C. asilica* (Fallen, 1816), *C. berberina* (Fabricius, 1805), *C. brevipila* Loew, 1871, *C. floccosa* (Meigen, 1822), *C. pachymera* (Egger, 1858) and *C. ranunculi* (Panzer, 1804). *C. berberina*, *C. floccosa* and *C. ranunculi* are bumblebee mimics, while *C. asilica*, *C. brevipila* and *C. pachymera* are bee mimics (Van Veen, 2004; Speight, 2018). In Croatia, 3 species of this genus were registered so far, *C. asilica*, *C. berberina* and *C. ranunculi* (Langhoeffler, 1919; Marcuzzi, 1941; Coe, 1956; Vujić & Milankov, 1990; Radenković, 2008).

*Criorhina floccosa* is a large bumblebee-mimic and saproxylic hoverfly. Its larvae develop in rot-hole of *Ulmus*, wet, decaying roots of *Fagus* stumps, within the mass of wet tree humus, but were also found in large, live trunks of *Acer pseudoplatanus*, 1.5m from the ground (Speight, 2018). Adults occur in deciduous forests, where they mainly visit flowers of trees or shrubs (*Cornus sanguinea*, *Crataegus*, *Photinia*, *Prunus spinosa*, *Ribes alpina*, *Rubus ideaus*, *Sorbus* spp.), but also visit white umbellifers (van Veen, 2004; Speight, 2018). This species can be separated from other *Criorhina* species by combination of morphological characters: barett (hypopleural ridge) bare, first and second basal cells of wings with extensive areas bare of microtrichia, femur 3 marginally thickened and not curved, tibia 1 and 2 with pale, short, adpressed hairs at the back, tergites from 2 to 4 without grey or yellowish dusted bands, tergite 2 with distinct side tufts of long yellow hairs, tergites 3 and 4 with short, dense reddish hairs (Van Veen, 2004; Speight, 2017).

During a survey of insects on the Macelj Mt. (northern Croatia), one female specimen was caught by a standard sweeping net method. The species was feeding on *Salix caprea* catkins together with bees and bumblebees, in deciduous forest of beech (*Fagus* sp.), oaks (*Quercus* spp.) and sweet chestnut (*Castanea sativa*). Identification was based on the morphological characters and performed by using keys in Van Veen, 2004 and Speight, 2017. The record was entered into the database of Croatian insects – Biologer.hr (<http://www.biologer.hr/>).



**Fig. 1:** *Criorhina floccosa*, female habitus (photo: T. Koren).

*Criorhina floccosa* (Meigen, 1822) (Fig. 1)

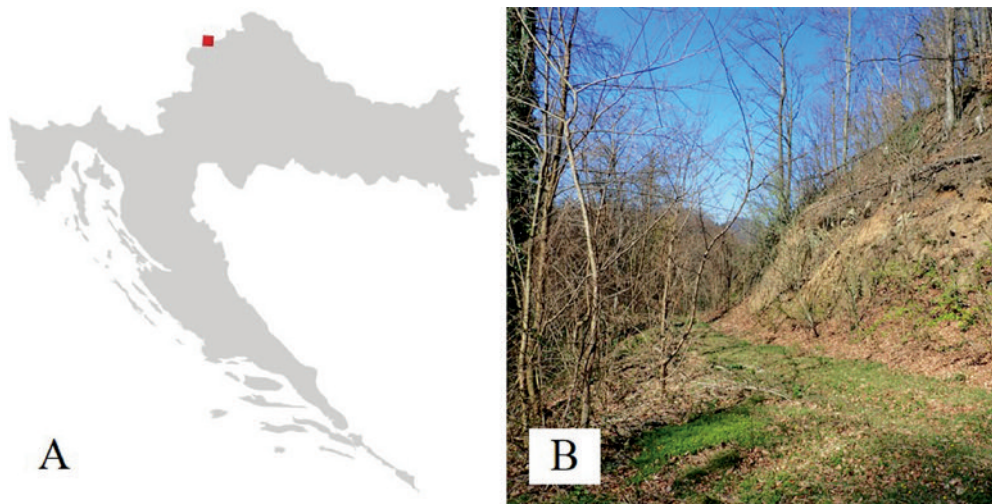
Material examined: CROATIA, Mt. Macelj, lat: 46.260041, long: 15.882631, 17.3.2020, 468m a.s.l., 1 ♀, leg. T. Koren.

Notes: New for the fauna of Croatia. One female specimen was caught next to the road in a deciduous forest, near to Macelj village in northern Croatia (Fig. 2).

The range of *C. floccosa* includes southern Sweden and Denmark south to the Pyrenees, from Ireland eastwards through central Europe, northern Italy, some parts of the former Yugoslavia, European parts of Russia as far as the Caucasus (Speight, 2018). In the former Yugoslavia, this species was registered in Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia and Slovenia (Strobl, 1898; Glumac, 1968; Vujić & Milankov, 1990; Vujić & Milankov, 1999; De Groot & Govedič, 2008; Radenković, 2008).

Speight, 2018 quotes that *C. floccosa* adults fly from the beginning of April to the beginning of July. Our specimen was registered on March 17<sup>th</sup>, and this early occurrence can be explained due to the unusually mild winter and the warm beginning of spring.

Further surveys of hoverflies of the country should yield new and interesting records. An important tool for this could be different citizen science platforms on



**Fig. 2:** The location where *C. floccosa* was collected in Croatia (A) and photo of the habitat (B); (photo: T. Koren).

which citizens can input their observations which can then be verified by local experts. We invite all experts and amateur entomologists visiting Croatia to import their data directly in the platform Biologer.hr (<http://www.biologer.hr/>) in order to expand the knowledge about Syrphidae of the country and region.

### Acknowledgements

The authors are thankful to Aleksa Maksimović for revision and correction of English of this article and Nina Vuković for identification of *Salix caprea*.

### References

- Coe, R. L.**, 1956: Diptere iz Jugoslavije prikupljene od maja do jula 1956, sa naznakom nalazišta i primedbama. *Glasnik prirodnjačkog muzeja srpske zemlje*, ser. B, 8 (2): 7596.
- De Groot, M. & Govedič, M.**, 2008: Checklist of the hoverflies (Diptera: Syrphidae) of Slovenia. *Acta entomologica slovenica*, 6(1): 67–87.
- De Groot, M., Luštrik, R., Faasen, T., Fekonja, D.**, 2010: Additions and omissions to the list of hoverfly fauna (Diptera: Syrphidae) of Slovenia. *Acta entomologica slovenica*, 18(2): 77–86.
- Glumac, S.**, 1968: Syrphidae (Syrphoidea, Diptera) u Makedoniji. *Godišnjak Filozofskog fakulteta u Novom Sadu*, 11 (2): 845–880.
- Janević, D. & De Groot, M.**, 2018: *Criorhina ranunculi* (Panzer) (Diptera: Syrphidae), a new hoverfly species for Slovenia. *Acta entomologica slovenica*, 26(2): 259–262.

- Langhoffer, A.**, 1919: Prilozi fauni diptera Hrvatske. *Glasnik Hrvatskog Prirodoslovnog Društva*, 29, 30, 31, 39, 40.
- Marcuzzi, G.**, 1941: Contributo alla conoscenza dei ditteri della Dalmazia (Tabanidae, Stratiomyidae, Syrphidae e Conopidae). *Estratto dal Bollettino della Societa Entomologica Italiana*, 73(4-5): 64-68.
- Miličić, M., Janković, M., Tot, T., Nedeljković, Z., Popov, S., Ivošević, B., Radenković, S. & Vujić, A.**, 2018: New findings of hoverfly fauna (Diptera: Syrphidae) of the western part of Serbia (Zlatibor and Raška districts). *Acta entomologica serbica*, 23(2): 43-66.
- Nedeljković, Z.**, 2011: Taksonomska analiza vrsta iz podfamilije Syrphinae (Diptera: Syrphidae) u Srbiji. Doktorska disertacija. Novi Sad.
- Radenković, S.**, 2008: Fauna podfamilije Eristalinae (Diptera: Syrphidae) u Srbiji. Doktorska disertacija. Novi Sad.
- Speight, M. C. D. & Sarthou, J.-P.**, 2017: StN keys for the identification of the European species of various genera of Syrphidae 2017. *Syrph the Net, the database of European Syrphidae (Diptera)*, Vol. 99, 139 pp, Syrph the Net publications, Dublin.
- Speight, M.C.D.**, 2018: Species accounts of European Syrphidae, 2018. *Syrph the Net, the database of European Syrphidae (Diptera)*, vol. 103, 302 pp., Syrph the Net publications, Dublin.
- Strobl, G.**, 1898: Fauna Diptera Bosne i Hercegovine i Dalmacije. *Glasnik zemaljskog muzeja BiH.*, 10 (2): 3837-466.
- Šebić, A., De Groot, M., Radenković, S. & Vujić, A.**, 2019: New records to the Slovenian hoverfly fauna (Diptera: Syrphidae). *Book of abstracts, 10<sup>th</sup> International Symposium on Syrphidae, 8<sup>th</sup>-12<sup>th</sup> September 2019*. Lesvos, Greece
- Thompson, F. C.**, 2013: Syrphidae. *Systema Dipterorum*, Version 1.5. 13354 records. Available on: <http://www.diptera.org/> [accessed on 5 September 2013].
- Van Steenis, J., Nedeljković, Z., Tot, T., Van der Ent, L.-J., Van Eck, A., Mazánek, L., Šebić, A., Radenković, S. & Vujić, A.**, 2019: New records of hoverflies (Diptera: Syrphidae) and the rediscovery of *Primocerioides regale* Violovitsh for the fauna of Serbia. *Biologia Serbica*, 41(1): 94-103.
- Van Steenis, W., De Groot, M., Van Steenis, J.**, 2013: New data on the hoverflies (Diptera: Syrphidae) of Slovenia. *Acta entomologica slovenica*, 21(2): 131-162.
- Van Veen, M.**, 2004: Hoverflies of Northwest Europe: identification keys to the Syrphidae. 256pp. *KNNV Publishing*, Utrecht.
- Vujić, A. & Milankov, V.**, 1990: Taksonomski status vrsta roda *Criorrhina* Meigen 1822 (Diptera: Syrphidae) zabeleženih u Jugoslaviji. *Glasnik Prirodnjačkog muzeja u Beogradu*, B 45: 105-114.
- Vujić, A. & Milankov, V.**, 1999: New data for the tribes Milesiini and Xylotini (Diptera, Syrphidae) on the Balkan Peninsula. *Dipteron*, 2: 113-132.

- Vujić, A., Radenković, S., Nedeljković, Z. & Šimić, S., 2018:** A new check list of hoverflies (Diptera: Syrphidae) of the Republic of Serbia. *Matica srpska Journal for Natural Sciences*, 135: 7-51.
- Vujić, M., 2020:** *Cheilosia herculana* Brădescu, 1982, a new hoverfly (Diptera: Syrphidae) species for the fauna of Serbia. *Acta entomologica serbica*, 25(1): xx-xx.

*Received / Prejeto:* 26. 3. 2020