

**REVISION OF THE GENUS *DASYSYRPHUS* ENDERLEIN, 1938  
(DIPTERA: SYRPHIDAE) IN THE FAUNA OF MACEDONIA**

**Vladimir T. Krpač<sup>1</sup>, Vujić Ante<sup>2</sup>, Šimić Smiljka<sup>2</sup>, Snežana Radenković<sup>2</sup>  
and Stanislava Lazarevska<sup>3</sup>**

<sup>1</sup>*Macedonian Museum of Natural History  
Boulevard Ilinden 86, Mk-91000 Skopje 55, Republic of Macedonia  
e-mail: [vkrapach@gmail.com](mailto:vkrapach@gmail.com)*

<sup>2</sup>*Department of Biology and Ecology, Faculty of Sciences  
Trg Dositeja Obradovića 2, 21000 Novi Sad, Republic of Serbia*

<sup>3</sup>*Faculty of Agricultural and Food Sciences  
Bul. Aleksandar Makedonski bb, 1000 Skopje, Republic of Macedonia*

*(Received March 11, 2009)*

**ABSTRACT.** Genus *Dasysyrphus* in Europe is presented with 10 species (SPEIGHT, 2004). PECK (1988) lists eight species, BICIK and LASKA (1996) and DOCZKAL (1996a) each added two species more. The results presented in this paper are an outcome of material revision on genus *Dasysyrphus* in the collections of the Macedonian Museum of Natural History in Skopje (Republic of Macedonia) (SKO) and Department of Biology and Ecology in Novi Sad (Republic of Serbia) (DBE). Genus *Dasysyrphus* is represented with seven species in Macedonia. Three of them [*Dasysyrphus friuliensis* (van der Goot 1960); *Dasysyrphus pauxillus* (Williston, 1887) and *Dasysyrphus postclaviger* (Stys & Moucha, 1962)] are for the first time registered for the territory of the Republic of Macedonia.

**Key words:** Diptera, Syrphidae, *Dasysyrphus*, fauna, Macedonia.

## INTRODUCTION

Revision of genus *Dasysyrphus* in Europe is necessary in order to avoid confusion and nomenclature problems appearing during determination. This genus is one of the best investigated genera in Macedonia. Initial data refer to GLUMAC (1968, 1972) and KRPAČ *et al.* (2001). From 10 species known for Europe seven are registered in Macedonia and three of them are listed for the first time for Macedonia: *Dasysyrphus friuliensis* (van der Goot, 1960); *Dasysyrphus pauxillus* (Williston, 1887) and *Dasysyrphus postclaviger* (Stys et Moucha, 1962).

Larvae of the *Dasysyrphus* species prey on aphids (ROTHERAY, 1993).

## MATERIAL AND METHODS

Results presented in this work are based upon determination and revision of 128 specimens of hoverflies of the genus *Dasysyrphus*, collected throughout the territory of the Republic of Macedonia, and deposited in the collections of the Macedonian Museum of Natural History - Skopje (SKO) and Department of Biology and Ecology - Novi Sad (DBE), Serbia. Insects were collected by means of entomological net. Laboratory elaboration of the material (preparation and labelling) was carried out in compliance with standard methods. Permanent preparations of male genitalia were prepared from extra specimens, by standard procedure, because only on the basis of differences in male genitalia construction is possible to precisely identify them.

Determination has been done by means of standard keys: SACK, 1928-32; STUBS and FALK, 1983 and VAN VEEN, 2004).

Systematics and taxonomy follow SPEIGHT (2004) and are adjusted to German checklist (SCHUMANN *et al.*, 1999), PECK (1988), and other publications.

In the species list are given literature data and data from current investigations.

## RESULTS AND DISCUSSION

By the newest revision of genus *Dasysyrphus* from 10 species existing in Europe in seven are registered for Macedonia.

Older literature data given by GLUMAC (1968) confirmed for Macedonia only three taxa so far registered as *Syrphus albostriatus* Fallen, 1817, *Syrphus tricinctus* (Fallen, 1817) and *Syrphus venustus* Meigen, 1822, while examples of the fourth taxon, registered as *Syrphus arcuatus* Fallen, 1817 were erroneously identified (refers to species *Syrphus venustus* Meigen, 1822).

KRPAČ *et al.* (2001), carrying out investigations in the National Park Mavrovo, lists for Macedonia one more species, *Dasysyrphus pinastris* (De Geer, 1776) sensu DOCZKAL (1996a).

In this work three more taxa new for Macedonia are added: *Dasysyrphus friuliensis* (van der Goot, 1960); *Dasysyrphus pauxillus* (Williston, 1887) and *Dasysyrphus postclaviger* (Stys et Moucha, 1962).

### ***Dasysyrphus albostriatus* (Fallen, 1817)**

syn. *Syrphus albostriatus* Fallen, 1817 in GLUMAC, 1968

**Published data:** as *S. albostriatus* in GLUMAC, 1968: 870; KRPAČ *et al.*, 2001: 181-182.

**Verified references:** as *S. albostriatus* with GLUMAC, 1968: Oteševo, in the hotel's neighborhood, forest meadow, 1♀, 23.06.1956., on flower *Orlaya grandiflora*, (leg. Glumac); Oteševo, in the hotel's neighborhood, in summertime, 1♀, 23.06.1956, (leg. Glumac); Oteševo, forest meadow, on flower *Orlaya grandiflora*, 2♀♀, 25.06.1956, (leg. Glumac); Oteševo, near the hotel, scrub, on leaves, 2♀♀, 25.08.1958, (leg. Glumac); Oteševo, near the hotel, scrub, on leaves, 1♂, 1♀, 27.08.1958, (leg. Glumac); Oteševo, near the hotel, scrub, on leaves, 1♂, 28.08.1958, (leg. Glumac); Oteševo, scrub, 1♂, 1♀, 29.08.1958, (leg. Glumac); Oteševo, scrub, on *Eryngium campestre*, 1♂, 30.08.1958, (leg. Glumac); Oteševo, meadow, on flower *Orlaya grandiflora*, 1♀, 13.06.1959, (leg. Glumac); Mavrovo, juniper forest, 1♂, 30.08.1959, (leg. Glumac); Oteševo, meadow, on *Eryngium campestre*, 1♀, 01.09.1959, (leg. Glumac); Dubrava, meadow, on *Ranunculus* sp., 1♂, 28.05.1960, (leg. Glumac); Dolina r. Radike, on leaves, 1♀, 31.05.1960, (leg. Glumac); Babuna, low scrub, on flower *Anthriscus* sp. and *Euphorbia* sp., 1♂, 04.06.1960, (leg. Glumac); valley of Radika river, on flower *Verbascum* sp., 1♂, 28.08.1966, (leg. Glumac).

KRPAČ *et al.*, 2001: Mavrovo, 1♀, 26.07.1994, (leg. Krpač); Lazaropole, 1♂, 07.10.1994, (leg. Krpač); Mavrovo, v. Ničpur, 1♂, 10.05.1996, (leg. Krpač); Mavrovo, v. Nikiforovo, 1♂, 10.07.1998, (leg. Krpač).

**New finding:** Kitka, Kadina Reka, 1♀, 08.06.1972, (leg. Čingovski); Šar Planina, Tri Vodi, 1♀, 30.08.1990, (leg. Krpač); Bistra planina, Mladenova Češma, 1♀, 26.06.1991, (leg. Krpač); Pelister, Kopanki, 1♂, 11.07.1991, (leg. Krpač).

**Comment:** *D. albostriatus* is registered as the migrant throughout Europe. Spread in Asia also. This species is registered on the entire Balkan Peninsula. In Macedonia it is frequent, widely spread and ordinary species. *D. albostriatus* is similar to species *D. eggeri* from which it can be differed, without any difficulty, according to determined characteristics (SPEIGHT, 2004).

### ***Dasysyrphus friuliensis* (van der Goot, 1960)**

**New finding:** Pelister, 1♂, 1♀, 05.06.1990, (leg. Krpač); Pelister, 1♀, 19.07.1990, (leg. Krpač); Pelister, Begova Češma, on flower *Euphorbia helioscopia*, 3♂♂, 1♀, 12.06.1991, (leg. Krpač); Pelister, Palisnopje 1♂, 12.06.1991, (leg. Topukova); Pelister, Kopanki, on flower *Ranunculus illiacus*, 3♂♂, 13.06.1991, (leg. Krpač); Pelister, Crvena Reka, on flower *Ranunculus* sp. 1♂, 2♀♀, 13.06.1991, (leg. Krpač); Pelister, Jorgov Kamen, on flower *Scorzonera albida*, 2♂♂, 2♀♀, 13.06.1991, (leg. Krpač); Pelister, Crvena Reka, 1♂, 1♀, 14.06.1991, (leg. Krpač); Pelister, Crveni Steni, on flower *Caudus* sp., 1800 a.s.l., 1♂, 11.07.1991, (leg. Krpač); Oteševo, 2♂♂, 14.07.1991, (leg. Krpač); Jablanica, 1♂, 07.06.1995, (leg. Krpač); Pelister, Caparska Preseka, meadow, on flower *Verbascum longifolium*, 1♂, 15.06.2002, (leg. Krpač).

**Comment:** This species is notified as rare on the Balkan Peninsula, registered only for several localities in Montenegro, Bulgaria and Greece. Our investigations showed that in Macedonia this species is not rare. It is registered for the first time, but on several localities and in greater number of specimen.

### ***Dasysyrphus pauxillus* (Williston, 1887)**

**New finding:** Pelister, Begova Češma, 1♂, 12.06.1991, (leg. Krpač).

**Comment:** This species is for the first time registered in Macedonia. DOCZKAL (1996a), described the differences between *D. pinastri*, *D. pauxillus* and *D. lenensis*. There are no evident differences in abdominal color between North American specimens of *D. pauxillus* [as illustrated VOCKEROTH (1992)], and European ones [BICIK and LASKA (1996) and DOCZKAL (1996a)]. Within the frame of variability of this species VOCKEROTH (1992) is appointing that several taxa under this name can be replaced with species from North America. Probably European authors often use the name *D. pauxillus* for many taxa from Europe, because of insufficiently comparison with Villiston's typical material. BICIK and LASKA (1996) are listened the differences separating the species *D. pauxillus* from the *D. nigricornis* (Verrall).

### ***Dasysyrphus pinastri* (De Geer, 1776) sensu Doczkal (1996a)**

**Published data:** KRPAČ *et al.*, 2001:181-182.

**Verified references:** (KRPAČ *et al.*, 2001): Mavrovo, Pilana, ass. *Orno-Quercetum petreae*, 1♂, 10.05.1996., (leg. Krpač); Mavrovo, Trnica, ass. *Orno-Quercetum petreae*, 1♂, 06.06.1996., (leg. Krpač).

**New finding:** Pelister, Kopanki, meadow, 1♂, 12.06.1991, (leg. Krpač); Pelister, Begova Češma, 1♂, 12.06.1991, (leg. Krpač); Pelister, Jorgov Kamen, on flower of *Ranunculus* sp., 3♀♀, 13.06.1991, (leg. Krpač); Pelister, Crvena Reka, on flower *Ranunculus* sp., 3♂♂, 1♀, 13.06.1991, (leg. Krpač); Pelister, Kopanki, 2♂♂, 13.06.1991, (leg. Krpač); Pelister, Crvena

Reka, 1♀, 14.06.1991, (leg. Krpač); Oteševo, 1♀, 14.07.1991, (leg. Krpač); Pelister, Jorgov Kamen, 1700 a.s.l., 1♀, 29.07.1992, (leg. Krpač); Nidže, above Reder, meadow, on flower *Veronica chamaedrys* and *Ranunculus* sp., 3♂♂, 3♀♀, 13.06.2002, (leg. Krpač); Nidže, Kajmakčalan, meadow, on flower of *Ranunculus* sp., 1950-2200 a.s.l., 1♂, 13.06.2002, (leg. Krpač). Nidže, above Reder, meadow, on flower of *Veronica chamaedrys*, 2♂♂, 1♀, 14.06.2002, (leg. Krpač); Nidže, Kajmakčalan, meadow, on flower of *Ranunculus* sp., 2200 a.s.l., 4♀♀, 14.06.2002, (leg. Krpač); Pelister, Lovačka Kuća, meadow, 3♂♂, 3♀♀, 15.06.2002, (leg. Krpač); s. Mavrovo, meadow, on flower *Euphorbia* sp., 1♂, 17.05.2003, (leg. Krpač).

**Comment:** *D. pinastri* was found in the mountains: Nidže, Bistra (in high mountainous meadows) and Pelister (in dark conifer *Pinus peuce* forests), as well as in the canyon of the Radika river. Some authors *D. pinastri* have treated as *D. lunulatus*. GOELDLIN (1974) re-defined this species and marked it as a lectotype. VOCKEROTH (1986, 1992) has disputed the identity of lectotype of the species *D. lunulatus*, turning towards the manuscript of Thompson and Nielsen who were claiming that *D. lunulatus* is synonym of *D. venustus* and suggested the name *D. pinastri* (De Geer) to be used for *D. lunulatus*. Unfortunately, there is not neotype marked as *D. pinastri*. VOCKEROTH (1986) has defined his own concept of this species only on the basis of definitions given by COE (1953) and VAN DER GOOT (1981) - separate *D. lunulatus* from the *D. lenensis* (Bag.) and *D. nigricornis* (Verrall) (SPEIGHT, 2004).

#### ***Dasysyrphus postclaviger* (Stys et Moucha, 1962)**

**New finding:** Pelister, 2♂♂, 05.06.1990, (leg. Krpač); Pelister, Palisnopje, 1♂, 12.06.1991, (leg. Krpač); Pelister, Jorgov Kamen towards Crveni Steni, 1800 a.s.l., on raspberry, 3♀♀, 11.07.1991, (leg. Krpač); Pelister, Kopanki, in coniferous forest, 1600 a.s.l., 1♀, 11.07.1991, (leg. Krpač); Mavrovo, Bunec, 1♂, 24.05.1995, (leg. Krpač); Nidže, Reder, meadow, on flower of *Veronica chamaedrys*, 1♂, 14.06.2002, (leg. Krpač); Nidže, Kajmakčalan, meadow, on flower of *Ranunculus* sp., 1♂, 14.06.2002, (leg. Krpač); Pelister, Lovečka Kuća, 1♂, 15.06.2002, (leg. Krpač).

**Comment:** *D. postclaviger* is mountaneous species, rare in Macedonia and has not been registered for Macedonia so far. According to available data its areal is not completely clear, due to inadequate separation from the similar species *D. friuliensis* (van der Goot) and *D. hilaris* (Zetterstedt) (SPEIGHT, 2004). On Balkan Peninsula it is noticed in Macedonia (where it is not so rare species), in Montenegro and Serbia (unpublished, Šimić *et al.*, 2001- check list).

#### ***Dasysyrphus tricinctus* (Fallen, 1817)**

syn. *Syrphus tricinctus* (Fallen, 1817) in GLUMAC, 1968

**Published data:** as *S. tricinctus* in GLUMAC, 1968: 871.

**Verified references:** as *S. tricinctus* (GLUMAC, 1968): Mavrovo, river valley, on scrub, 1♀, 27.08.1966, (leg. Glumac) SKO.

**New finding:** Šar Planina, Popova Šapka, 1♀, 15-18.07.1958., (leg. S. Joksimović); Goten planina, 1♂, 2♀♀, 27.05.1988, (leg. Krpač); r. Radika, Lukovo Polje, 1♂, 06.09.1994, (leg. Krpač); v. Lazaropole, 3♂♂, 07.10.1994, (leg. Krpač); Nidže, above Reder, meadow, on flower of *Ranunculus* sp., 1♂, 13.06.2002, (leg. Krpač).

**Comment:** This species is registered on the entire Balkan Peninsula and it settles down mainly in forests. In Macedonia it is not very rare species as GLUMAC (1968) told, but it is registered only in individual examples on several localities on higher altitudes.

#### ***Dasysyrphus venustus* (Meigen, 1822)**

syn. *Syrphus venustus* Meigen, 1822 in GLUMAC, 1968

sub. *Syrphus arcuatus* Fallen, 1817 in GLUMAC, 1968

**Published data:** as *S. venustus* Meigen, 1822 in GLUMAC, 1968: 871; (KRPAČ *et al.*, 2001:181-182).

**Erroneous literature data:** as *S. arcuatus* in GLUMAC, 1968: 870: Mavrovo, mixed forest, on flower *Euphorbia* sp., 1♀, 30.05.1960., (leg. Glumac) SKO (= *D. venustus*).

**Verified references:** as *S. venustus* Meigen, 1822 in GLUMAC, 1968: Kožuf planina, Golema Poljana, 1♂, 18.06.1956., (leg. Bogoevski) DBE.

(KRPAČ *et al.*, 2001): Mavrovo, Bunec, ass. *Festuco heterophyllae* Fagetum, 1♀, 25.05.1995, (leg. Krpač); Bistra planina, Carevec, ass. *Fagetum subalpinum scardo-pindicum*, 1♀, 17.06.1994, (leg. Mihajlova) SKO.

**New finding:** Goten Mt, 1♀, 27.05.1988, (leg. Krpač); Bistra Mt, Carevec, 1♀, 17.06.1994, (leg. Mihajlova); Mavrovo, v. Nikiforovo 2♂♂, 23.05.1995, (leg. Krpač); Mavrovo, 2♂♂, 1♀, 24.05.1995, (leg. Krpač); Galičnik 1♂, 24.05.1995, (leg. Krpač); Mavrovo, Bunec 1♀, 25.05.1995, (leg. Krpač); Jablanica, 2♀♀, 07.06.1995, (leg. Krpač); Galičica, 1♂, 3♀♀, 08.05.1995, (leg. Krpač); Nidže, Kajmakčalan, 2200 a.s.l., on flower of *Ranunculus* sp., 1♀, 14.06.2002, (leg. Krpač).

**Comment:** This species occupies a very wide area. It is the most frequent in forests ecosystems. In Macedonia it was noticed at only two localities and in a few number of specimen, but our investigations showed that it is not as rare as GLUMAC (1968) assumed. Revision of material from the collection of Museum SKO we found out that specimen belonging to *S. arcuatus*, and published with GLUMAC (1968), refer to *D. venustus*. Today concept of this species is confused and temporary. Since revision is in process, it is expected clarification of status of this taxon and extending adequate basis for difference from similar species (SPEIGHT, 2004).

## CONCLUSION

Upon revision of literature data and re-determination of the specimens of genus *Dasysyrphus* (Diptera: Syrphidae) from the area of Macedonia seven taxa are stated. Three of them [*Dasysyrphus friuliensis* (van der Goot, 1960); *Dasysyrphus pauxillus* (Williston, 1887) and *Dasysyrphus postclaviger* (Stys et Moucha, 1962)] are registered in the fauna of hoverflies of Macedonia for the first time. It is amounting 42,85% newly stated species.

Upon revision and re-determination of Museum material SKO and as a result of the recent taxonomic investigations worldwide, we have discovered that one taxon of species listed by GLUMAC (1968), was erroneously identified. Specimen referred to *S. arcuatus* are revised and referred to *D. venustus*. *S. arcuatus* is excluded from the list of hoverflies of Macedonia.

## References:

- [1] BICIK, V., LASKA, P., (1996): Revision of type material of *Scaeva obscura* Zetterstedt, 1838 (Diptera, Syrphidae). *Acta Univ. Palacki, Olomouc, Fac. rer. nat., Biol.*, 33 (1993-95): 7-14.
- [2] COE, R. (1953) Diptera: Syrphidae. *Handbks. ident. Br. insects*, R. ent. Soc. London 10 (1): 1-98.
- [3] DOCZKAL, D., (1996a): Schweibfliegen aus Deutschland: Erstnachweise und wenig bekannte Arten (Diptera, Syrphidae). *Volucella*, 2: 36-62.

- [4] GLUMAC, S., (1968): Sirfide (Syrphoidae, Diptera) u Makedoniji. *Godišnjak Filozofskog fakulteta u Novom Sadu*. Knjiga 11, Novi Sad, 1968: 845-880.
- [5] GLUMAC, S., (1972): *Catalogus Faune Jugoslavije, Syrphoidea. III/6*. Slovenska Akademija znanosti i umjetnosti: 1-71. Ljubljana.
- [6] GOEGLIN DE TIEFENAU, P., (1974): Contribution a l'etude systematique et ecologique des Syrphidae (Dipt.) de la Suisse occidentale. *Bull. Soc. Ent. Suisse*, 47: 151-252.
- [7] KRPAČ, V., ŠIMIĆ, S., VUJIĆ, A., (2001a): New data on hoverflies (Diptera, Syrphidae) in the National Park Mavrovo. *75 years Macedonian Museum of Natural History, Skopje*: 179-185.
- [8] PECK, L. V., (1988): Syrphidae. In SOOS, A. and PAPP, L., (eds.): *Catalogue of Palaearctic Diptera*, Akad. Kaido. Budapest 8: 11-230.
- [9] ROTHERAY, G. E. (1993): Color guide to hoverfly larve. *Dipterist Digest* 9:1-156.
- [10] SACK, P. (1928-32): *Die Fliegen der Palaerktischen Region, 31. Syrphidae*. Stuttgart (Schweizerbart), 1-451.
- [11] SCHUMANN, H., BAHRMANN, R., STARK, A. (1999): Checkliste der Dipteren Deutschlands. *Studia Dipterologica, Supplement 2*: 195-203.
- [12] SPEIGHT, M. C. D. (2004): Species accounts of European Syrphidae (Diptera) 2004. In: SPEIGHT, M.C.D., CASTELLA, E., SARTHOU, J.-P. and MONTEIL, C. (eds.): *Syrph the Net, the database of European Syrphidae*, vol. 44, 235 pp., Syrph the Net publications, Dublin.
- [13] STUBBS, A. E., FALK, S. J., (1983): *British hoverflies: an illustrated identification guide*. Br. Ent. Nat. Hist. Soc., London, 253pp.
- [14] VAN DER GOOT, V. S., (1981): De zweefvliegen van Niirdwest - Europa en Europees Rusland, in het bijzonder van de Benelux. KNNV, Uitgave, Amsterdam, No. 32: 275.
- [15] VAN VEEN, M. (2004): *Hoverflies of Northwest Europe: identification keys to the Syrphidae*. KNNV Publishing, Utrecht: 256pp.
- [16] VOCKEROTH, J. R. (1986): Nomenclatural notes on Nearctic *Eupeodes* (including *Metasyrphus*) and *Dasysyrphus* (Diptera: Syrphidae). *Can. Ent.*, 118: 199-204.
- [17] VOCKEROTH, J. R., (1992): The flower flies of the Subfamily Syrphinae of Canada, Alaska and Grenland (Diptera, Syrphidae). *The insects and arachnids of Canada*. Agriculture, Canada, Pt. 18, 1-456.