

New records of blackflies (Diptera: Simuliidae) from Romania

Matúš KÚDELA & Viera STLOUKALOVÁ

Abstract

Blackfly fauna of Romania is very poorly known, the majority of the existing data is older than 40 years and true identity of these species remains unclear due to taxonomic incoherence and lacking material. Pupae, pupal exuviae and larvae of blackflies were collected on various places in Romanian Carpathian Mts. during 2006 and 2007. This paper presents the records of nine blackfly species in Romania: *Prosimulium latimucro*, *P. rufipes*, *P. tomosvaryi*, *Simulium argenteostriatum*, *S. argyreatum*, *S. maximum*, *S. monticola*, *S. reptans* and *S. equinum*.

Key words: Simuliidae, Romania, Carpathian Mts., faunistics

The blackfly fauna of Romania is insufficiently known. Although there exists a comprehensive monograph on blackflies of Romania (DINULESCU 1966), from the present point of view the data included here are problematic at least. Many of the species listed could not have been identified considering the present taxonomic knowledge and/or their presence in Romania seems not to be likely due to their geographic distribution (for more details see STLOUKALOVÁ and JEDLIČKA 2007). Newer data are practically missing, the few published recent records of blackflies (PARVU 2003, 2004) are identified according to DINULESCU (1966), and thus of similar reasons, they are not coherent with present taxonomic knowledge.

The closest well known blackfly faunas consist of approximately 40-46 species: 46 species are known from Slovakia (JEDLIČKA 1996, JEDLIČKA and KNOZ 2006), 45 species from Austria (CAR and LECHTHALER 2002) and 40 species from Serbia (ŽIVKOVIĆ 1967, 1969, 1975, CROSSKEY & PETERSON 1972, CROSSKEY and HOWARD 2004). Presence of 67 valid species has been published from Romania (DINULESCU 1966). However, whereas the faunas of Slovakia, Austria and Serbia are similar to each other with just small differences in the species composition that may be accidental or they may follow natural uniqueness of the countries, the list of DINULESCU (1966) – and also the revised distribution given in the Inventory of world blackflies (CROSSKEY and HOWARD 2004) – show a high degree of dissimilarity to the previous faunas.

Because the published descriptions of the Romanian blackflies (DINULESCU 1966) do not allow taxonomic correction of the data and we were not

able to locate the material, the best way how to increase the knowledge on Romanian blackfly fauna seems to be a new comprehensive research.

Pupae, pupal exuviae and larvae of blackflies were collected on various places in Romanian Carpathians during June 2006 and May and June 2007. The material is preserved in ethanol and deposited in the collections of Department of Zoology, Comenius University in Bratislava. The species were identified according to KNOZ (1965) and JEDLIČKA & all. (2004). Following species have been identified:

Prosimulium latimucro (Enderlein, 1925)
Retezat Mts.:

Gura Bucurei, springs on foots of Mt. Peleaga (45°20'19"N; 22°53'40"E), 1600 m a.s.l.; 1.6.2007; 5 larvae

This is the first record of *P. latimucro* from Romania. Although previously *P. latimucro* has been recorded as *P. conistylum* Rubtsov, 1956 from several other countries, the recent record (PARVU 2003) of adult female *P. conistylum* (misspelled as *P. conystilum*) may not be considered for a record of *P. latimucro*. PARVU (2003) identified the species according to DINULESCU (1966) – where the description of adult *P. conistylum* does not correspond to *P. latimucro* (as the descriptions of larva and pupa do).

Prosimulium rufipes (Meigen, 1830)
Gurghiului Mts.:

Bucin, small tributary of Târnava Mica River (46°38'31"N; 25°16'41"E), 1170 m a.s.l.; 12.6.2006; 13 pupae

Bucin, Târnava Mica River (46°38'00"N; 25°16'40"E), 1160 m a.s.l.; 12.6.2006; 1 pupa
 Lotrului Mts.:
 Obârsia Lotrului, Lotru River above Lacul Vidra (45°25'46"N; 23°38'54"E), 1340 m a.s.l.; 14.6.2006; 1 pupal exuvia
 Gilaului Mts.:
 Iara above Valea Ierii (46°37'26"N; 23°26'03"E), 760 m a.s.l.; 28.5.2007; 2 pupae
 Bihor Mts.:
 Arieș River above Arieșeni (46°30'41"N; 22°41'32"E), 1100 m a.s.l.; 30.5.2007; 1 pupal exuvia, 11 larvae
 Retezat Mts.:
 Gura Bucurei, small stream (45°20'19"N; 22°53'40"E), 1600 m a.s.l.; 1.6.2007; 1 larva
 Gura Bucurei, stream Peleaga (45°20'19"N; 22°53'40"E), 1600 m a.s.l.; 1.6.2007; 12 larvae
 Lâpușnicu Mare (45°18'07"N; 22°50'24"E), 1300 m a.s.l.; 1.6.2007; 2 pupae
 small tributary of Lâpușnicu Mare (45°17'48"N; 22°49'25"E), 1250 m a.s.l.; 1.6.2007; 1 larva
 small tributary of Lâpușnicu Mare (45°19'01"N; 22°46'05"E), 1130 m a.s.l.; 1.6.2007; 10 pupae
 Lâpușnicu Mare (45°18'58"N; 22°45'48"E), 1100 m a.s.l.; 1.6.2007; 2 larvae
 Râul Mare above Clopotiva (45°21'49"N; 22°44'54"E), 900 m a.s.l.; 1.6.2007; 2 pupae, 1 larva
 Râul Mare above Clopotiva (45°28'30"N; 22°50'02"E), 520 m a.s.l.; 2.6.2007; 1 pupa

These are the first reliable records of *P. rufipes* from Romania. The recent record (PARVU 2003) of adult female *P. conistylum* (misspelled as *P. conystilum*) may correspond to *P. rufipes* because *P. conistylum* is a synonym of *P. rufipes*. However, he determined it according to DINULESCU (1966), and the identification of adult females in the key of DINULESCU (1966) is not reliable – the number of mandibular and maxilar teeth is very variable with overlapping values between species, and thus it can not be used for identification (STLOUKALOVÁ 1999).

Prosimulium tomosvaryi (Enderlein, 1921)
 Harghita Mts.:
 Vlăhița, at Vlăhița saddle (46°19'58"N; 25°37'16"E), 910 m a.s.l.; 12.6.2006; 11 pupal exuviae
 Gilaului Mts.:
 Iara above Valea Ierii (46°37'26"N; 23°26'03"E), 760 m a.s.l.; 28.5.2007; 2 pupal exuviae

DINULESCU (1966) mentioned the occurrence of *P. tomosvaryi* (as *Prosimulium pseudohirtipes*

Smart, 1945, *Prosimulium vigintiquaterni* Enderlein, 1929 and *Prosimulium duodecimfilium* Rubzov, 1955) in Bihor Mts., Codru Moma Mts., Godeanui Mts., Retezat Mts., Bucegi Mts. and Mehedinti Mts.

Simulium (Simulium) argenteostriatum Strobl, 1898
 Bihor Mts.:
 Crișul Pietros above Pietroasa (46°35'N; 22°36'E), 500 m a.s.l.; 31.5.2007; 2 pupae
 Retezat Mts.:
 Râul Mare above Clopotiva (45°28'30"N; 22°50'02"E), 520 m a.s.l.; 2.6.2007; 1 pupa, 3 cocoons, 5 larvae

Occurrence of *S. argenteostriatum* on several localities in Romania is given by DINULESCU (1966). *Simulium simici* Zivkovitsch, 1959, also reported by DINULESCU (1966) is presently considered to be a synonym of *S. argenteostriatum* (e.g. CROSSKEY and HOWARD 2004).

Simulium (Simulium) argyreatum Meigen, 1838
 Gilaului Mts., Iara above Valea Ierii (46°37'26"N; 23°26'03"E), 760 m a.s.l.; 28.5.2007; 2 pupae

Previously the occurrence of *S. argyreatum* (as *Odagmia rheophila* Knoz, 1961) has been published from several localities in Romania (DINULESCU 1966).

Simulium (Simulium) maximum (Knoz, 1961)
 Gurghiului Mts.:
 Bucin, small tributary of Târnava Mica River (46°38'31"N; 25°16'41"E), 1170 m a.s.l.; 12.6.2006; 18 pupae
 Bucin, Târnava Mica River (46°38'00"N; 25°16'40"E), 1160 m a.s.l.; 12.6.2006; 2 pupae
 Lotrului Mts.:
 Obârsia Lotrului, Lotru River above Lacul Vidra (45°25'46"N; 23°38'54"E), 1340 m a.s.l.; 14.6.2006; 4 pupae, 2 larvae
 Gilaului Mts.:
 stream above Muntele Baișorii (46°33'03"N; 23°20'03"E); 28.5.2007; 2 pupae, 2 pupal exuviae
 Retezat Mts.:
 Gura Bucurei, stream Peleaga (45°20'19"N; 22°53'40"E), 1600 m a.s.l.; 1.6.2007; 2 larvae
 small tributary of Lâpușnicu Mare (45°19'01"N; 22°46'05"E), 1130 m a.s.l.; 1.6.2007; 9 pupae, 18 larvae
 Lâpușnicu Mare (45°18'58"N; 22°45'48"E), 1100 m a.s.l.; 1.6.2007; 3 pupae, 4 larvae

Previously the occurrence of *S. maximum* – as *Odagmia maxima* KNOZ, 1961 – has been published from Bihor Mts., Zarandului Mts. and Almăjului Mts. (DINULESCU 1966).

Simulium (Simulium) monticola Friederichs, 1920
Harghita Mts.:
Vlăhița, at Vlăhița saddle (46°19'58"N; 25°37'16"E),
910 m a.s.l.; 12.6.2006; 1 pupal exuvia

Occurrence of *S. monticola* – as *Odagmia monticola* (Friederichs, 1920) – on numerous localities in Romania has been published by DINULESCU (1966).

Simulium (Simulium) reptans (Linnaeus, 1758)
Gilaului Mts.:
Iara above Valea Ierii (46°37'26"N; 23°26'03"E),
760 m a.s.l.; 28.5.2007; 2 pupae, 1 pupal exuvia
Bihor Mts.:
Arieș River above Albac (46°27'26"N; 22°55'35"E),
650 m a.s.l.; 30.5.2007; 79 pupae, 9 pupal exuviae,
8 larvae

Recorded from Romania by DINULESCU (1966). Besides *S. reptans* published DINULESCU (1966) the occurrence of several other closely related species (as *Simulium reptantoides* (EDWARDS 1915-1920) n. nov. Carlson 1962, *S. schönbaueri* Enderlein, 1920, *S. latimanus* Enderlein, 1921 and *S. knechteli* n. sp.). *S. reptantoides* and *S. latimanus* are considered to be synonyms of *S. reptans* (see CROSSKEY and HOWARD 2004), *S. knechteli* is a possible synonym of *S. reptans* (see CROSSKEY and HOWARD 2004) and the description of *S. schönbaueri* is very similar to *S. reptans*. The true *S. schönbaueri* is considered to be a synonym of *S. argenteostriatum* (see CROSSKEY and HOWARD 2004).

Simulium (Wilhelmia) equinum (Linnaeus, 1758)
Gilaului Mts.:
Luna de Sus, tributary of Someșul Mic (46°42'15"N; 23°26'16"E); 28.5.2007; 11 pupae, 3 pupal exuviae,
1 larva

DINULESCU (1966) recorded it from several places in Romania as *Wilhelmia equina* (Linné, 1746) and its synonym *Wilhelmia ivashentzovi* (Rubzov, 1940). Also other species listed by DINULESCU (1966) are synonyms of *S. equinum* (listed as *W. tertia* Baranov, 1926, *W. secunda* Baranov, 1926; see CROSSKEY and HOWARD 2004), however, their identity sensu DINULESCU (1966) is not clear.

Acknowledgments

This research was supported by the grants VEGA 1/2349/05 and APVV RPEU-0003-06.

REFERENCES

- CAR M., LECHTALER W. 2002. First records of *Simulium (Hellichiella) latipes* (MEIGEN), *Simulium ibariense* ZIVKOVICH & GRENIER, *Simulium codreanui* (SHERBAN) and the occurrence of *Simulium bezzii* (CORTI) (Diptera: Simuliidae) in Austria. *Limnologica*; **32**: 248-254.
- CROSSKEY R. W., HOWARD T. M. 2004. A revised taxonomic and geographical inventory of world blackflies (Diptera: Simuliidae). <http://www.nhm.ac.uk/entomology/projects/blackflies/index.html>, 13.2.2004, 86 pp.
- CROSSKEY R. W., PETERSON B. V. 1972. The Simuliidae described by N. Baranov and their types (Diptera). *Bull. British Mus. (Nat. Hist.)*; **27**: 189-214.
- DINULESCU G. 1966: Fauna Republicii Socialiste Romania. Insecta, Diptera, Fam. Simuliidae. Editura Academiei Republicii Socialiste Romania, Bucuresti, 604 pp.
- KNOZ J. 1965. To Identification of Czechoslovakian Black-Flies (Diptera, Simuliidae). *Folia Fac. Sci. Nat. Univ. Purkyn. Brun.*; **6**: 1-54.
- JEDLIČKA L. 1996. A synopsis of blackfly fauna of Slovakia (Diptera, Simuliidae). *Acta Zoologica Universitatis Comenianae*; **40**: 49-67.
- JEDLIČKA L., KNOZ J. 2006. Simuliidae, Newman 1834. In: JEDLIČKA L., STLOUKALOVÁ V., KÚDELA M. (eds.). Checklist of Diptera of the Czech Republic and Slovakia. Electronic version 1. <http://zoology.fns.uniba.sk/diptera> + CD-ROM: ISBN 80-969629-0-6.
- JEDLIČKA L., KÚDELA M., STLOUKALOVÁ V. 2004. Key to the identification of blackfly pupae (Diptera: Simuliidae) from Central Europe. *Biologia, Bratislava*; **59/Suppl. 15**: 157-178.
- PARVU C. 2003. Faunistic materials (Insecta: Diptera) for the knowledge of the biodiversity of Maramures Depression, Romania. *Travaux du Museum National d'Histoire Naturelle Grigore Antipa*; **45**: 227-277.
- PARVU C. 2004. Nematocerans (Diptera: Nematocera) from Piatra Craiului National Park (Romania). *Travaux du Museum National d'Histoire Naturelle Grigore Antipa*; **46**: 181-192.
- STLOUKALOVÁ V. 1999: Variability and identification of West Carpathians *Prosimulium* Species (Diptera, Simuliidae). *Acta Zoologica Universitatis Comenianae*; **43**: 69-80.
- STLOUKALOVÁ V., JEDLIČKA L. 2007. Black flies (Diptera: Simuliidae) of Carpathian Mts. In: Stloukalová V. (ed.). *Dipterologica bohemoslovaca*,

- Vol. 14. Acta Zool. Univ. Comeniana, **47**: 223-235
- ŽIVKOVIČ V. 1967. Simulide (Diptera, Simuliidae) Dunava na području Vojvodine. Acta. vet., Beograd; **17**: 433-438.
- ŽIVKOVIČ V. 1969. Simuliide (Diptera, Simuliidae) Vojvodine. II deo. Acta vet., Beograd; **19**: 397-306.
- ŽIVKOVIČ V. 1975. Present state of black flies (Diptera, Simuliidae) in the Derdap gorge (Iron gate) of the Danube in Yugoslavia. Acta vet., Beograd; **25**: 279-285.

Author's address:

Matúš KÚDELA & Viera STLOUKALOVÁ
Department of Zoology, Comenius University,
Mlynská dolina, SK-842 15 Bratislava, Slovakia,
e-mail: kudela@fns.uniba.sk

Received: 24.11.2007

Accepted: 14.12.2007

Printed: 28.10.2008