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Original Article

Contribution to the knowledge of jumping spiders (Araneae: Salticidae) from vicinity of Jagodina, Central Serbia

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***Abstract*:**
Stanković, B.: Contribution to the knowledge of jumping spiders (Araneae: Salticidae) from vicinity of Jagodina, Central Serbia, Biologica Nyssana, 3 (1), September 2012: 37-42.

During last 10 years, based on personal collectings, 21 species from 14 genera of Salticidae (Araneae) are recorded from vicinity of Jagodina: *Ballus chalybeius, Carrhotus xanthogramma, Evarcha arcuata, Evarcha falcata, Heliophanus auratus, Heliophanus cupreus, Heliophanus flavipes, Heliophanus kochii, Icius hamatus, Icius subinermis, Leptorchestes berolinensis, Macaroeris nidicolens, Marpissa muscosa, Marpissa nivoyi, Mendoza canestrinii, Pellenes tripunctatus, Phintella castriesiana, Phlegra fasciata, Pseudeuophrys erratica, Pseudeuophrys lanigera, Salticus scenicus.* All those species are provided with habitat notes and global distribution. New records for the spider fauna of Serbia are *Heliophanus kochii* (Simon 1868), *Icius subinermis* (Simon, 1937), *Marpissa nivoyi* (Lucas, 1846) and *Mendoza canestrinii* (Ninni, 1868).

Key words: Salticidae, Jumping spiders, Jagodina, Serbia.

Introduction

The Salticidae Blackwall, 1841 or jumping spiders, are the most diverse globally distributed spider family mostly tropical, with 5337 species placed in 573 genera (Platnick, 2011). In the spider fauna of Europe, this family is represented with 396 species (Helsdingen, 2010). The salticid fauna of Serbia is not yet fully known. According to Deltshev *et al*. (2003), only 49 species of jumping spiders have been recorded in Serbia. Stanković (2010) reported two species of Salticidae as new for the fauna of Serbia: *Icius hamatus* (C. L. Koch, 1846) and *Pseudeuophrys lanigera* (Simon, 1871).

In this paper, original faunistic records and habitat notes of 21 species from 14 genera of jumping spiders from vicinity of Jagodina with information of globally distribution and zoogeographic analysis are presented. New species records for the spider fauna of Serbia are: *Heliophanus kochii* (Simon, 1868), *Icius subinermis* (Simon, 1937), *Marpissa nivoyi* (Lucas, 1846) and *Mendoza canestrinii* (Ninni, 1868).

Materials and methods

Study area. All specimens of the jumping spiders species were collected in wide vicinity of Jagodina (the central part of Serbia) (UTM EP16,17,26,27; 21°11‘-21°21‘, 43°56‘-44°03‘; altitude range 109-300m). The study area included parts of middle Morava valley and southeastern Šumadija. It belongs to the Peripannonic region of Serbia. There are three landscapes types (biomes) in the study area: biome of submediterranean Oak woodlands, biome of South European deciduous montane woodlands and biome of South European

deciduous woods in lowland and inundated areas (Matvejev & Puncer, 1989). The climate is moderately continental. According to the relevant meteorological station in Ćuprija, the average annual air temperatures are between 11.2 and 11.7°C approximately, and the average annual rainfall is 619 *mm*. During the eight month period of March-November, the average monthly air temperatures were higher to 10°C.

Collection, preservation and identification of specimens. The material has been collected mainly during last 10 years by hand, sweep net and pitfall trapping by the author. Material was preserved in 70% ethyl alcohol with added glycerin (9:1 by volume) and kept in the author's collection. Determinations, photographs and drawings were made using stereomicroscope (BTC STM-1 x20) and light microscope (Meopta) from preserved specimens. For new records, photos or original drawings of the male palp or female epigyne are presented.

Determinations were made mainly according to Prószyński (1976, 1979, 1997, 2003, 2005), Heimer & Nentwig (1991), Rakov & Logunov (1996a), Rakov (1997), Logunov (1996, 1998b, 1999b), Żabka (1997) and Metzner (1999, 2011). The nomenclature follows Platnick (2011).

Results and discussion

Ballus chalybeius (Walckenaer, 1802)

Material examined: 1♂, Đurđevo brdo near Jagodina, 17.06.2007; 1♂, Đurđevo brdo – Ćelijan, 2.07.2007; 1♂, Đurđevo brdo, 23.04.2010; 1♂, Jagodina, 13.05.2011.
Distribution: Europe, North Africa to Central Asia (Platnick, 2011).
Habitat: high density shrubs of *Ligustrum vulgare, Prunus spinosa, Rosa sp., Crataegus monogyna*, also urban habitats, gardens (present data).

Carrhotus xanthogramma (Latreille, 1819)

Material examined: 1♂, Panjevački rit, on young leaves of *Verbascum nigrum*, 11.05.2005; 1♀, Đurđevo brdo, 4.06.2006; 1♂, road for vill. Gornje Štiplje, in oak wood, 9.07.2008; 1♂, Rit-vill.Bukovče, 28.05.2009.
Distribution: Amphi-Eurasian subboreal-subtropical species (Logunov & Guseinov, 2001).
Habitat: low vegetation, meadows, on oak trunk, shrubs and bushes (present data).

Evarcha arcuata (Clerck, 1757)

Material examined: 1♂, Crni vrh, near vill.Gornje Štiplje, 14.07.2005; 2♀♀, Đurđevo brdo, 5.-20.04.2007; 2♀♀, Đurđevo brdo, 10.-20.07.2007; 1♂, Panjevački rit, 14.05.2008; 1♂, Jagodina, graveyard, 5.06.2010.
Distribution: Trans-Euroasian temperate species (Logunov & Guseinov, 2001).
Habitat: low vegetation, bushes, grassy habitat, meadows (present data).

Evarcha falcata (Clerck, 1757)

Material examined: 1♂, Rit-vill.Ribnik, 28.05.2009; 1♀, Lipar, 4.07.2010.
Distribution: Euro-Siberian temperate species (Logunov & Guseinov, 2001).
Habitat: meadows, grass and bushes in oak woods (*Quercetum confertae-cerris* Rudski) (present data).

Heliophanus auratus (C.L.Koch, 1835)

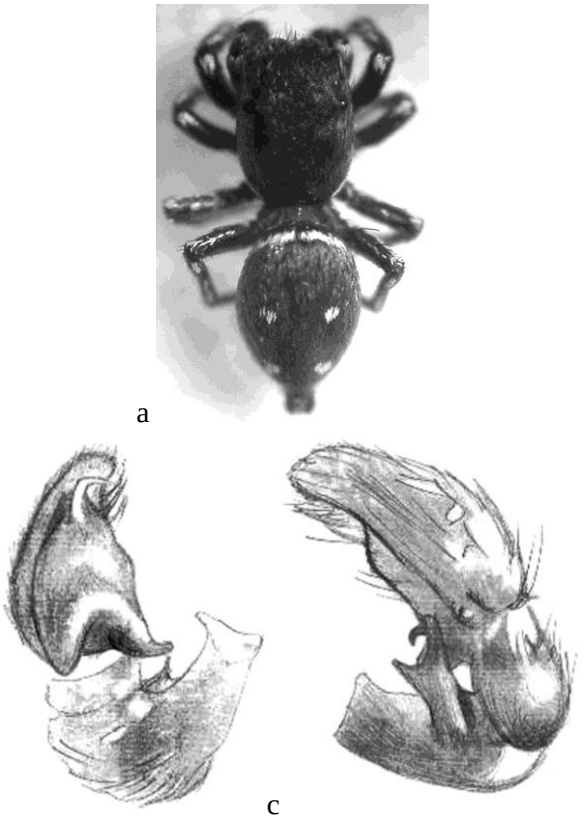
Material examined: 1♀, Jagodina, near r.Belica, 1.06.2007; 1♂, Rit-vill.Ribnik, 28.05.2009; 1♂, Glogovačke bare, 17.07.2010.
Distribution: Euro-Siberio-Central Asian temperate species (Logunov & Guseinov, 2001).
Habitat: wet meadows-grass vegetation, agricultural fields (present data).

Heliophanus cupreus (Walckenaer, 1802)

Material examined: 1♂, vicinity of Jagodina, 3.08.2005; 1♂, Đurđevo brdo, 4.06.2006; 1 juv., Jagodina, 19.06.2006; 2♂♂, Đurđevo brdo, 17.06.2007; 2♂♂, vill.Ribare, bank of Velika Morava, 10.08.2008; 1♀, Rit - vill. Ribnik, r.Belica valley, 28.05.2009; 1♂, Lipar, 25.04.2010.
Distribution: Euro-Caucasian (Rakov & Logunov, 1996a).
Habitat: meadows, shrubs, gardens, vineyards, agricultural fields (present data).

Heliophanus flavipes (Hahn, 1832)

Material examined: 1♀, Jagodina – vill. Rakitovo, along bank of river Lugomir, 19.04.2006; 1♂, vill.Bukovče, 28.05.2009; 2♀♀, Panjevački rit, 31.05.2009; 1♂ juvenile, vill.Končarevo, near r.Velika Morava, 23.07.2010.
Distribution: Trans Palearctic temperate species (Logunov & Guseinov, 2001).
Habitat: high grass meadows, wet grassy habitat, in the litter of populus woods (present data).



a b c

Figure 1. *Heliophanus kochii*, male, dorsal view (a), male palp, ventral (b), lateral view (c).

Heliophanus kochii (Simon 1868), Fig. 1.

Material examined: 1♂, vill.Ribare, 30.06.2003; 1♂, Jagodina – vill.Rakitovo, along bank of river Lugomir, 1.05.2005; 1♀, Jagodina, near river Belica, 2.08.2007; 1♂, vill.Končarevo, lake Predor, 29.05.2009.
Distribution: Palearctic (Platnick, 2011). New for Serbia.
Habitat: grassy meadows (present data).

Icius hamatus (C. L. Koch, 1846)

Material examined: only previous records (Stanković, 2010): 1♂, Jagodina, 21.07.1998; 1♀, Đurđevo brdo near Jagodina in dry grassy habitat, 12.06.2005.
Distribution: Widely distributed in Mediterranean regions (southern Europe, Mediterranean Islands and north Africa) (Alicata & Cantarella 1993).
Habitat: urban habitat, in grass (present data).

Icius subinermis (Simon, 1937), Fig. 2.

Material examined: 1♀, Jagodina, 19.06.2004.
Distribution: Presumably western Mediterranean range (Alicata & Cantarella, 1993), although the species has been found in Germany (Platnick, 2011), Slovenia (Kostanjšek & Fišer, 2005) and Switzerland (Blick et al., 2004). New for Serbia.
Habitat: *I.subinermis* favors moist habitats, for example near streams or on moist meadows. It builds a silken retreat in infructescences of rushes or under rocks near rivers or creeks. It will retreat there when the weather is unfavorable (Bellmann, 1997); urban habitat (present data);
Remarks: The records of Mediterranean species *I.subinermis*, indicates the possibility of the introduction with imported fruits and spread into synanthropic habitats, like second Mediterranean species from this genus *Icius hamatus*, recorded in Central and West Europe (Tomasiewicz & Wesołowska, 2006). However, another possibility, may be indicates spread of distribution from Macedonia.

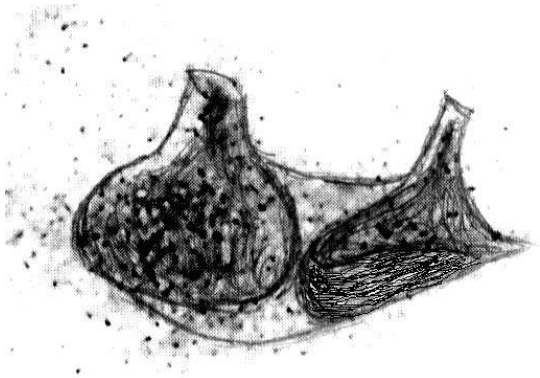
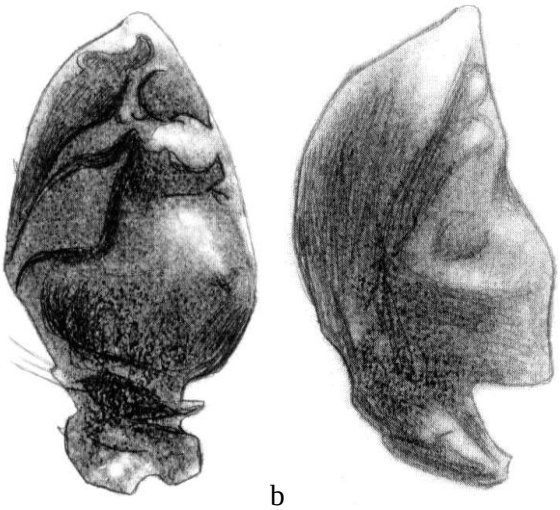


Figure 2. *Icius subinermis*, epigyne.



a b

Figure 3. *Leptorchestes berolinensis*, male palp, ventral (a), lateral view (b).

Leptorchestes berolinensis (C. L. Koch, 1846), Fig. 3

Material examined: the suburb of Jagodina, road for vill.Štiplje: (2♂♂, 1♀), 16.05.2002; (1♀, 1 juvenile), 22.06.2002; (1♂, 1♀), 2.07.2003; 1♂, 9.06.2004.

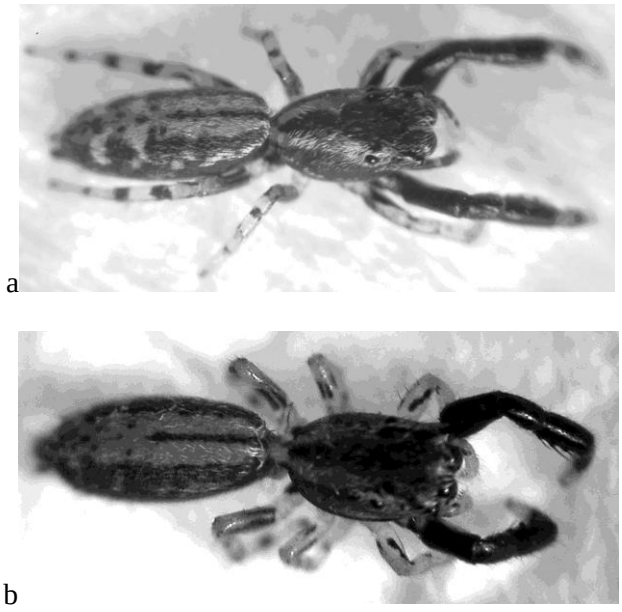
Distribution: Europe to Turkmenistan (Platnick, 2011). This is a second records of *L.berolinensis* in Serbia.
Habitat: sunny walls, tree barks, wood, in grass and fences (present data).

Macaroeris nidicolens (Walckenaer, 1802)

Material examined: 1♂ juvenile, Đurđevo brdo, 23.06.2004; 1♂, bank of Velika Morava, vill.Ribare, 14.06.2005; 1♂ juvenile, Jagodina, 13.07.2005; 1♂ juvenile, Jagodina – Rusko groblje, 5.07.2008; 1♀ juvenile, Đurđevo brdo, 28.06.2009.
Distribution: west Palearctic subboreal species (Logunov & Rakov, 1998), occuring from the Canary Islands and Madeira (Wunderhich, 1991) to Turkmenistan (Fet, 1983).
Habitat: grassy vegetation, woods (present data).

Marpissa muscosa (Clerck, 1757)

Material examined: Jagodina: 1♀, 12.05.2002; 1♀, 25.04.2004; 2♀♀, 17.08.2006; 1♀, ?.07.2008.
Distribution: European temperate species (Logunov & Guseinov, 2001).
Habitat: this species was collected only in urban habitat - at shadow and dry places around the houses, external walls of the houses (present data).



a

b

Figure 4. *Marpissa nivoyi,* female - dorsal view - adult (a) and juvenile (b).

Marpissa nivoyi (Lucas, 1846), Fig.4.

Material examined: Jagodina: 1♀ juvenile, 11.05.2011; 1♀, 22.05.2011.
Distribution: South European – Central Asian subboreal species (Logunov & Guseinov, 2001). New for Serbia.
Habitat: urban habitat: gardens, tree-line, on leave of *Tilia sp.* (present data).

Mendoza canestrinii (Ninni, 1868), Fig. 5.

Material examined: 1♂, Rit-vill. Ribnik (river Belica valley), 3.05.2009.
Distribution: Trans-Eurasian subboreal-subtropical species (Logunov & Guseinov, 2001), with the easternmost localities in China (Schenkel, 1963; Wesołowska, 1981). New for Serbia.
Habitat: swamp, on leave of *Iris sp.* (present data).

Figure 5. *Mendoza canestrinii*, male - lateral view

Pellenes tripunctatus (Walckenaer, 1802)

Material examined: 1♀, Lipar, 28.05.2003.
Distribution: Euro-Siberian temperate species (Logunov & Guseinov, 2001).
Habitat: in grass of edge of oak woods (present data).

Phintella castriesiana (Grube, 1861)

Material examined: 1♀, vicinity of Jagodina, weeds near road, 11.06.2006; 1♀, Jagodina, near r.Belica, 26.05.2008; 1♂, vicinity of Jagodina, on leaves of dock, 19.04.2011.
Distribution: Amphi-Eurasian subboreal species (Logunov & Guseinov, 2001).
Habitat: in broad-leaved vegetation, weeds (present data).

Phlegra fasciata (Hahn, 1926)

Material examined: 1♀, Đurđevo brdo – Ćelijan, in grass, 2.07.2007.
Distribution: Trans-Eurasian temperate-subtropical species (Logunov & Guseinov, 2001).
Habitat: At sunny and dry places, in grass, on stones and on banks of waters (Nentwig et al., 2010).

Pseudeuophrys erratica (Walckenaer, 1826)

Material examined: 1♀, Jagodina, 29.04.2002; 1♀, Jagodina, near r.Belica, 3.06.2004; 1♂, Panjevački rit, 17.06.2008; 1♀, Đurđevo brdo, 1.07.2008; 1

juvenile, Jagodina, 23.04.2009; 1♂, Rit - vill.Bukovče, 15.05.2011; 1♂, Jagodina, 24.08.2011.
Distribution: Trans-Eurasian temperate species (Logunov & Guseinov, 2001). In Nearctic found in New Jersey (Logunov, 1998b).
Habitat: lowland grassy vegetation, meadows in the river valley, also urban habitat (present data).

Pseudeuophrys lanigera (Simon, 1871)

Material examined: Jagodina, indoors in my apartment on the 8th floor: (4 ♀♀ juvenile, 1♀) unknown data; 1♀, ?.09.2002; (1♂, 1♀ juvenile), 04.2003; 1♂, ?.08.2004; (1♀, 1♂), 11.2004; 1♀, 3.10.2009; 1♀ juvenile, 11.03.2010; 1♀, 5.10.2010; (1♂, 1♀), 12.04.2011; 1♂, 7.08.2011.
Distribution: Western, central and southern Europe, eastward to the Caucasus Mts (Logunov 1998b, Logunov & Guseinov, 2001).
Habitat: synanthropic species, walls of buildings (present data).

Salticus scenicus (Clerck, 1757)

Material examined: Jagodina: 1♀, 12.05.2002; 1♂, 4.08.2003; 1♀, 24.07.2006; 1♂, 7.07.2009; 1♂, vill.Bukovče, on wall of school, 21.07.2005; 1♀, Đurđevo brdo, 13.05.2007.
Distribution: Holarctic temperate species (Logunov & Guseinov, 2001).
Habitat: on sunny walls and barks (present data).

Conclusion

Total of 21 species from 14 genera of family Salticidae are presented. New records for the spider fauna of Serbia are: *Heliophanus kochii* (Simon 1868), *Icius subinermis* (Simon, 1937), *Marpissa nivoyi* (Lucas, 1846) and *Mendoza canestrinii* (Ninni, 1868).

From the results presented in this study, a total of 55 species of Salticidae registered in Serbia. In the area and vicinity of Jagodina registered 38.2% of total. Zoogeographical analysis of species found in the region Jagodina (Fig. 6), it can be concluded that the widespread species (holarctic, palearctic) most represented with 18 species or 86%. The largest number of species with transpalearctic distribution, 8 species or 38,1%, followed by 7 westpalearctic species (33.3%), 3 mediterranean species (14,3%), 2 amphipalearctic species (9.5%), and the 1 holarctic species (4.8%). Jumping spiders are grouped into zoogeographical categories according to Prószyński (1976), Logunov (1992), Szuts et al. (2003).

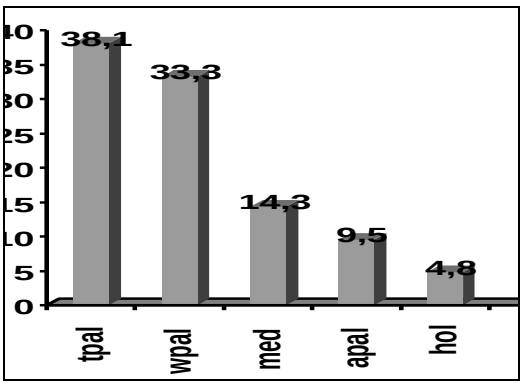


Figure 6. – Zoogeografical composition of jumping spider fauna *(Araneae: Salticidae)* from vicinity of Jagodina.
(tpal – transpalearctic, wpal – westpalearctic, med – mediterranean, apal – amphipalearctic, hol – holarctic).

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