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A contribution to the Slovenian spider fauna – IV

Žan KURALT*, Rok KOSTANJŠEK

University of Ljubljana, Biotechnical Faculty, Department of Biology, Jamnikarjeva 101, 1000 Ljubljana, Slovenia
*E-mail: zan.kuralt@gmail.com

Abstract. We provide a list of 171 spider species from 27 families recently recorded in Slovenia. Among them are first records of *Nigma flavescens*, *Walckenaria alticeps*, *Pelecopsis parallela*, *Erigone autumnalis* and *Micaria subopaca* for Slovenia and a second record of *Zodarion rubidum*, a species just recently added to the Slovenian spider fauna.

Key words: first records, *Nigma flavescens*, *Walckenaria alticeps*, *Pelecopsis parallela*, *Erigone autumnalis*, *Micaria subopaca*, *Zodarion rubidum*

Izvleček. Prispevek k favni pajkov Slovenije – IV – V prispevku je predstavljen seznam 171 vrst pajkov iz 27 družin, ki so bile nedavno najdene v Sloveniji. Med temi gre za prve najdbe vrst *Nigma flavescens*, *Walckenaria alticeps*, *Pelecopsis parallela*, *Erigone autumnalis* in *Micaria subopaca* v Sloveniji in drugo najdbo v Sloveniji nedavno najdene vrste *Zodarion rubidum*.

Ključne besede: prve najdbe, *Nigma flavescens*, *Walckenaria alticeps*, *Pelecopsis parallela*, *Erigone autumnalis*, *Micaria subopaca*, *Zodarion rubidum*

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Introduction

The Slovenian spider fauna currently comprises 753 species (Kostanjšek & Kuntner 2015). As already noted in earlier contributions (Kostanjšek 2010, Kostanjšek & Gorjan 2013, Kuralt & Kostanjšek 2016), there is still a number of spider species expected to be found in Slovenia.

For instance, comparison of spider species listed in the Slovenian National spider checklist (Kostanjšek & Kuntner 2015) and the species present in the neighbouring countries uncover that most of the expected, yet missing, species in the Slovenian araneofauna most likely belong to the family Linyphiidae (Fig 1). Comprising generally smaller species often associated with colder habitats (e.g. Hagvar 1973, Relys 2000, Wiśniewski et al. 2018), the shortage of Linyphiidae in Slovenia indicates undersampling of spiders in Slovenia in general, as well as a lack of efficient sampling of cryptic habitats and habitats at higher altitudes. Several species with submediterranean distribution are also expected to be found in the south-western part of the country. Furthermore, as previous studies have revealed (e. g. Kostanjšek & Celestina 2008, Mammola et al. 2018), urban environments act as a surrogate habitat for species rarely found in nature and should not be neglected.

The last decade of araneological fieldwork in in Slovenia was mostly concentrated to »Biology Students Research Camps« (herein: biology camps) that traditionally take place in the second half of the July, resulting in sub-optimal conditions for spider research. High temperatures and low precipitation at that time impact spiders' activity and makes sampling, especially during daytime, less effective. Nevertheless, the work done at biology camps provides an unprecedented insight into the Slovenian spider fauna. In the past year, however, araneological fieldwork from biology camp was complemented with two other studies, (1) a short-term sampling at Draga pri Igu, and (2) monthly surveys of spider fauna at Škocjan Caves Park. Additionally, spiders from soil invertebrate sampling at Grebenje were handed over to us for identification.

Here we provide list of spider species collected in Slovenia during aforementioned studies and report on five new species records for the Slovenian fauna. We discuss the implications of these findings and provide recommendations for future araneological work in Slovenia.

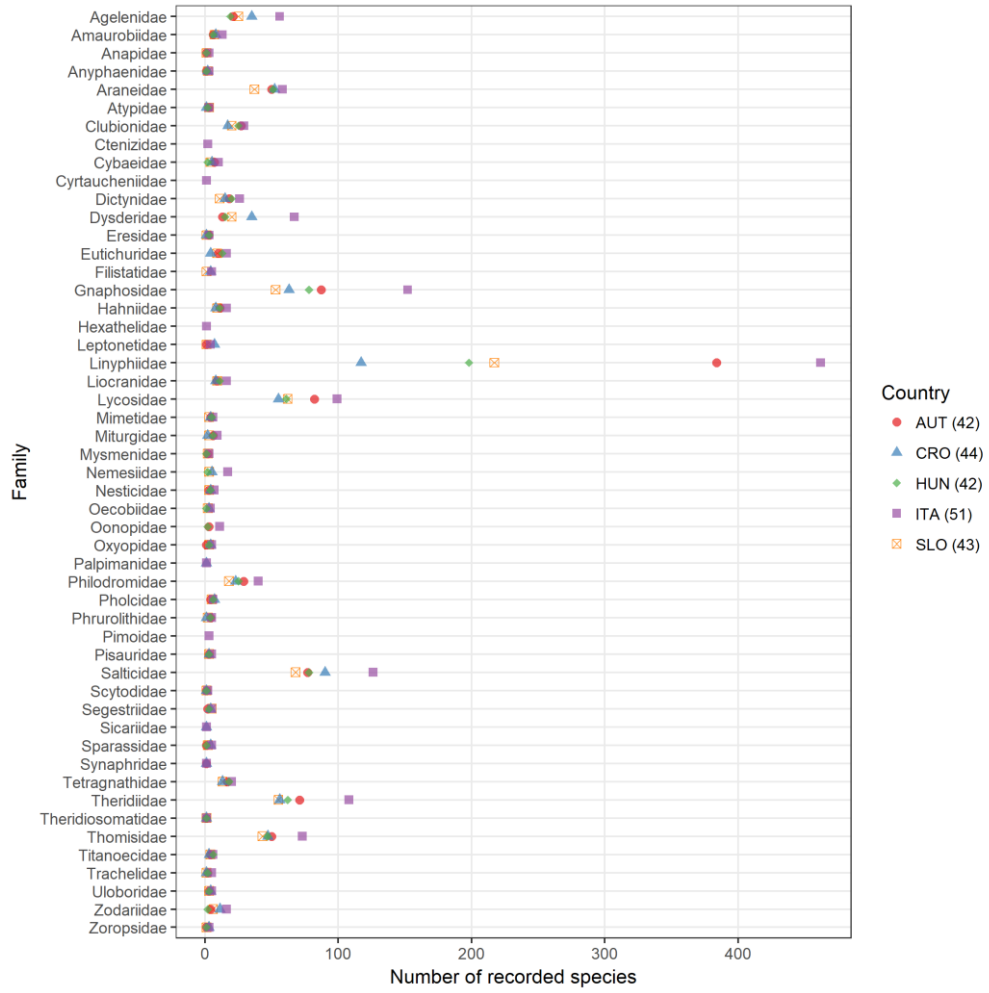

Figure 1. Number of recorded species per family for Slovenia and the neighbouring countries (AUT – Austria, CRO – Croatia, HUN – Hungary, ITA – Italy, SLO – Slovenia). Numbers in the brackets indicate count of families per country. There is a significant difference in the number of species of the Linyphiidae family between the countries. Country species lists were retrieved from Spiders of Europe (Nentwig et al. 2019).

Slika 1. Število zabeleženih vrst iz različnih družin v Sloveniji in sosednjih državah (AUT – Avstrija, CRO – Hrvaška, HUN – Madžarska, ITA – Italija, SLO – Slovenija). V oklepajih je navedeno število družin, zabeleženih v državi. Med državami je opaziti veliko razliko v število vrst iz družine Linyphiidae. Sezname vrst za vse države smo pridobili na spletnem portalu Spiders of Europe (Nentwig et al. 2019).

Materials and methods

Study area

Spiders were collected in different parts of the country (see Tab. 1 for full list of examined localities) in the period from 5. 2. 2016 to 17. 5. 2018. Extensive sampling was carried out on 19. 5. 2017 as a part of »Bioblitz Slovenija 2017« (Jogan et al. 2018), held at Draga pri Igu (Localities BioBlitz-1 to BioBlitz-12), where spiders were collected in various habitats at 12 sampling sites (note that soil samples were collected prior to the event on 17. 5. 2017). Another intensive survey lasted from 19. to 29. 7. 2017, as part of the annual »Biology Students Research Camp« in the Gorenjska region (Localities RTSB17-1 to RTSB17-34). The third survey, consisting of monthly examinations of araneofauna at Škocjan Caves Regional Park, lasted from May to September 2017 (Localities PSJ-1 to PSJ-19). Spiders were also obtained during soil invertebrates sampling near Grebenje village in 2016 and 2017 (Localities Grebenje-1 to Grebenje-24). The specimen of *Micaria subopaca* was coincidentally collected at the Department of Biology building in Ljubljana (Locality BioDept-1).

Table 1. Localities where spiders were collected. Sampling methods' abbreviations are: A – aspirator, F – forceps, RSN – round sweep net, LLS – leaf litter sifter, ILB – inverted leaf blower, SS – soil sampling.
Tabela 1. Lokacije vzorčenja pajkov. Kratice metod vzorčenja so: A – aspirator, F – pinceta, RSN – okrogla lovilna vreča, LLS – sejanje listne stelje, ILB – motorni sesalnik, SS – vzorci tal.

Locality ID	Locality	Lat. Long.	Altitude a.s.l.	Date	Sampling methods	Legator
RTSB17-01	forest edge; Velika gmajna; 1 km NW from Hraše pri Preddvoru	46.30091697°N 14.373234°E	477 m	20. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-02	mixed forest; Velika gmajna; 1 km NW from Hraše pri Preddvoru	46.30149499°N 14.37204503°E	489 m	20. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-03	mixed forest; Velika gmajna; 1 km NW from Hraše pri Preddvoru	46.30189296°N 14.37050904°E	501 m	20. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-04	forest clearing; Velika gmajna; 1 km NW from Hraše pri Preddvoru	46.30229797°N 14.37040301°E	503 m	20. 7. 2017	F, A, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-05	forest clearing; Velika gmajna; 1 km NW from Hraše pri Preddvoru	46.30398198°N 14.370301°E	517 m	20. 7. 2017	F, A, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-06	mixed forest; Velika gmajna; 1 km NW from Hraše pri Preddvoru	46.303582°N 14.37010403°E	514 m	20. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-07	cave; P-1 (Brezovica); Češnjica pri Kropi	46.2916°N 14.2172°E	580 m	20. 7. 2017	PT, A, F	D. Škufca, A. Kos, G. Benko, G. Makovec, A. Podrug
RTSB17-08	cave; P-5 (Brezovica); Češnjica pri Kropi	46.291°N 14.2173°E	560 m	20. 7. 2017	PT, A, F	D. Škufca, A. Kos, G. Benko, G. Makovec, A. Podrug
RTSB17-09	riparian forest; Brdo Estate; 500 m W from Breg ob Kokri	46.29026399°N 14.41165103°E	488 m	21. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt

Locality ID	Locality	Lat. Long.	Altitude a.s.l.	Date	Sampling methods	Legator
RTSB17-10	riparian zone; Brdo Estate; 1 km W from Hotemaže	46.28653002°N 14.41033498°E	471 m	21. 7. 2017	F, A	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-11	oak forest; Brdo Estate; 1 km NE from Srakovlje	46.28486998°N 14.379878°E	445 m	21. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-12	mixed forest; Udin boršt; 1 km E from Cegelnica	46.27705101°N 14.33570604°E	436 m	22. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-13	mixed forest; Udin boršt; 1 km E from Cegelnica	46.27959601°N 14.33398498°E	443 m	22. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-14	riparian forest; Udin boršt; 1,5 km E from Cegelnica	46.28601504°N 14.32982999°E	433 m	22. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-15	riparian forest; Petrovc; 200 m NE from bridge over the Kokra River at Predoslje	46.264533°N 14.391465°E	411 m	22. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-16	meadow; Savski otok; S del Savskega otoka	46.244062°N 14.351125°E	355 m	22. 7. 2017	F, A, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-17	construction waste dumpsite; Šenčurska gmajna; 1,5 km S from Šenčur	46.23055°N 14.417874°E	386 m	22. 7. 2017	F	M. Vek, A. Pekolj, L. Fon Mervič, R. Karner, D. Lenarčič, J. Perutka, J. Prevc, K. Prot, L. Recer, L.L. Zamuda
RTSB17-18	mixed forest; Rupa; 350 m N from Rupa	46.259701°N 14.364561°E	406 m	22. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt, R. Kostanjšek
RTSB17-19	meadow; stream Bela; 1 km SW from Preddvor	46.29678302°N 14.41079498°E	484 m	23. 7. 2017	F, A, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-20	riparian forest; stream Bela; 1 km SW from Preddvor	46.29756002°N 14.41024303°E	483 m	23. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-21	mixed forest; Možjanca; 900 m E from Možjanca	46.29116303°N 14.46115999°E	680 m	23. 7. 2017	F, A, LLS, RSN, ILB	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-22	meadow; Štefanja Gora; 1 km W from Štefanja Gora	46.28984397°N 14.46989997°E	685 m	23. 7. 2017	F, A, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-23	urban area; OŠ Predoslje; Predoslje	46.266463°N 14.387378°E	420 m	19. - 28. 7. 2017	F, A	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-24	meadow; Matizovec; 2,5 km NE from Podljubelj	46.415245°N 14.307888°E	1070 m	25. 7. 2017	F, A	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-25	cave; Jama pri Taboru; Rovte	46.2761°N 14.2411°E	460 m	23. 7. 2017	PT, A, F	D. Škufca, A. Kos, G. Benko, G. Makovec, A. Podrug
RTSB17-26	cave; Lisična jama; Njivica	46.2647°N 14.244°E	480 m	23. 7. 2017	PT, A, F	D. Škufca, A. Kos, G. Benko, G. Makovec, A. Podrug
RTSB17-27	cave; Gipsova jama; Vincarje	46.1626°N 14.2982°E	434 m	22. 7. 2017	PT, A, F	D. Škufca, A. Kos, G. Benko, G. Makovec, A. Podrug
RTSB17-28	mixed forest; Mostec; 700 m NW from Šišenski hrib	46.06168597°N 14.47992104°E	322 m	26. 7. 2017	F, A, LLS, RSN, ILB	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt

Locality ID	Locality	Lat. Long.	Altitude a.s.l.	Date	Sampling methods	Legator
RTSB17-29	meadow; Department of Biology; 200 m SW from Ljubljana ZOO	46.05152501°N 14.47049299°E	297 m	26. 7. 2017	F, A, RSN, ILB	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-30	meadow; Spodnje Tenetiše; 700 m N from Tenetiše	46.30153899°N 14.34912002°E	434 m	26. 7. 2017	F, A, RSN, ILB	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-31	riparian forest; Nova vas; 1,2 km NE from Preddvor	46.31152896°N 14.42868096°E	514 m	26. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-32	riparian zone; Brdo Estate; 780 m S from Srednja Bela	46.286271°N 14.39456°E	446 m	26. 7. 2017	A, F	D. Vinko, A. Tratnik, A. Janović, D. Kablar, R. Kraševec, K. Mazinjanin
RTSB17-33	urban area; Rupa; 1 km N from Kranj	46.25702°N 14.365558°E	401 m	27. 7. 2017	A, F	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
RTSB17-34	riparian forest; Rupovščica canyon; 1,5 km N from Kranj	46.262537°N 14.364868°E	400 m	27. 7. 2017	F, A, LLS, RSN	N. Pajek Arambašić, M. Ferle, M. Velkavrh, E. Premate, N. Šramel, N. Štrekelj, Ž. Kuralt
PSJ-1	thermophilic meadow; Betanja; 200 m N from Betanja	45.668327°N 13.994555°E	390 m	13. 5. 2017	F, A, RSN, ILB	R. Kostanjšek, Ž. Kuralt
PSJ-2	thermophilic meadow; Betanja; 200 m N from Betanja	45.668327°N 13.994555°E	390 m	24. 6. 2017	F, A, RSN, ILB	R. Kostanjšek, Ž. Kuralt
PSJ-3	thermophilic meadow; Betanja; 160 m NW from Betanja	45.66721°N 13.991662°E	380 m	13. 5. 2017	F, A, RSN, ILB	R. Kostanjšek, Ž. Kuralt
PSJ-4	thermophilic meadow; Betanja; 160 m NW from Betanja	45.66721°N 13.991662°E	380 m	24. 6. 2017	F, A, RSN, ILB	R. Kostanjšek, Ž. Kuralt
PSJ-5	thermophilic meadow; Betanja; 160 m NW from Betanja	45.66721°N 13.991662°E	380 m	17. 7. 2017	F, A, RSN, ILB	R. Kostanjšek, Ž. Kuralt
PSJ-6	thermophilic meadow; Betanja; 160 m NW from Betanja	45.66721°N 13.991662°E	380 m	30. 8. 2017	F, A, RSN, ILB	R. Kostanjšek, Ž. Kuralt
PSJ-7	thermophilic meadow; Betanja; 160 m NW from Betanja	45.66721°N 13.991662°E	380 m	30. 9. 2017	F, A, RSN, ILB	R. Kostanjšek, Ž. Kuralt
PSJ-8	thermophilic forest; Matavun; 300 m NW from Matavun	45.66548°N 13.988209°E	375 m	13. 5. 2017	F, A, RSN, ILB, LLS	R. Kostanjšek, Ž. Kuralt
PSJ-9	thermophilic forest; Matavun; 300 m NW from Matavun	45.66548°N 13.988209°E	375 m	24. 6. 2017	F, A, RSN, ILB, LLS	R. Kostanjšek, Ž. Kuralt
PSJ-10	thermophilic forest; Matavun; 300 m NW from Matavun	45.66548°N 13.988209°E	375 m	17. 7. 2017	F, A, RSN, ILB, LLS	R. Kostanjšek, Ž. Kuralt
PSJ-11	thermophilic forest; Matavun; 300 m NW from Matavun	45.66548°N 13.988209°E	375 m	30. 8. 2017	F, A, RSN, ILB, LLS	R. Kostanjšek, Ž. Kuralt
PSJ-12	thermophilic forest; Matavun; 300 m NW from Matavun	45.66548°N 13.988209°E	375 m	30. 9. 2017	F, A, RSN, ILB, LLS	R. Kostanjšek, Ž. Kuralt
PSJ-13	under stones and stone wall; Škocjan; 150m S from Škocjan	45.663913°N 13.99365°E	409 m	13. 5. 2017	F, A	R. Kostanjšek, Ž. Kuralt

Locality ID	Locality	Lat. Long.	Altitude a.s.l.	Date	Sampling methods	Legator
PSJ-14	under stones and stone wall; Škocjan; 150m S from Škocjan	45.663913°N 13.99365°E	409 m	17. 7. 2017	F, A	R. Kostanjšek, Ž. Kuralt
PSJ-15	under stones and stone wall; Škocjan; 150m S from Škocjan	45.663913°N 13.99365°E	409 m	30. 8. 2017	F, A	R. Kostanjšek, Ž. Kuralt
PSJ-16	under stones and stone wall; Škocjan; 150m S from Škocjan	45.663913°N 13.99365°E	409 m	30. 9. 2017	F, A	R. Kostanjšek, Ž. Kuralt
PSJ-17	thermophilic meadow; Betanja; 200 m N from Betanja	45.669157°N 13.994193°E	395 m	17. 7. 2017	F, A, RSN, ILB	R. Kostanjšek, Ž. Kuralt
PSJ-18	thermophilic meadow; Betanja; 200 m N from Betanja	45.669157°N 13.994193°E	395 m	30. 8. 2017	F, A, RSN, ILB	R. Kostanjšek, Ž. Kuralt
PSJ-19	thermophilic meadow; Betanja; 200 m N from Betanja	45.669157°N 13.994193°E	395 m	30. 9. 2017	F, A, RSN, ILB	R. Kostanjšek, Ž. Kuralt
BioBlitz-1	meadow; meadow at hunter's lodge; 740 m S from Draga	45.940594°N 14.546413°E	300 m	19. 5. 2017	F, A, RSN, ILB	A. Celestina, R. Kostanjšek, S. Kralj Fišer, Ž. Kuralt
BioBlitz-2	mixed forest; Draška reber; 1 km S from Draga	45.938115°N 14.547604°E	300 m	19. 5. 2017	F, A, LLS	A. Celestina, R. Kostanjšek, T. Knapič, Ž. Kuralt, M. Gregorič
BioBlitz-3	meadow; meadow at middle pond; 1.2 km S from Draga	45.93693°N 14.548203°E	300 m	19. 5. 2017	F, A, RSN, ILB	A. Celestina, R. Kostanjšek, S. Kralj Fišer, Ž. Kuralt, M. Gregorič
BioBlitz-4	mixed forest; Šviglov gozd; 550 m S from Draga	45.941536°N 14.546578°E	300 m	19. 5. 2017	F, A	A. Celestina, R. Kostanjšek, T. Knapič, Ž. Kuralt, M. Gregorič
BioBlitz-5	mixed forest; Gmajna; 650 m S from Draga	45.941532°N 14.551181°E	300 m	19. 5. 2017	F, A, LLS	A. Celestina, R. Kostanjšek, T. Knapič, Ž. Kuralt, M. Gregorič, N. Sivec, M. Velkavrh
BioBlitz-6	riparian forest; riparian forest at Veliki ribnik; 950 m S from Draga	45.938527°N 14.551°E	300 m	19. 5. 2017	F, A	A. Celestina, R. Kostanjšek, T. Knapič, Ž. Kuralt, M. Gregorič
BioBlitz-7	riparian zone; embankement between first and second pond; 600 m S from Draga	45.941478°N 14.5487°E	300 m	19. 5. 2017	F, A	A. Celestina, R. Kostanjšek, T. Knapič, Ž. Kuralt, M. Gregorič
BioBlitz-8	meadow; meadow E of Veliki ribnik; 600 m S from Draga	45.938648°N 14.551909°E	300 m	19. 5. 2017	F, A, RSN	A. Celestina, R. Kostanjšek, T. Knapič, Ž. Kuralt, M. Gregorič
BioBlitz-9	mixed forest soil; Šviglov gozd; 550 m S from Draga	45.941388°N 14.546148°E	300 m	17. 5. 2017	SS	F. Kljun
BioBlitz-10	riparian forest soil; riparian forest at Veliki ribnik; 950 m S from Draga	45.938484°N 14.550005°E	300 m	17. 5. 2017	SS	F. Kljun
BioBlitz-11	mixed forest soil; NW forest slope; 1.6 km S from Draga	45.933555°N 14.551714°E	300 m	17. 5. 2017	SS	F. Kljun
BioBlitz-12	mixed forest soil; SE forest slope; 1.6 km S from Draga	45.934036°N 14.549683°E	300 m	17. 5. 2017	SS	F. Kljun

Locality ID	Locality	Lat. Long.	Altitude a.s.l.	Date	Sampling methods	Legator
Grebenje-1	mixed forest soil; Grebenje; 150 m E from Grebenje	45.799391°N 14.632649°E	620 m	5. 2. 2016	SS	F. Kljun
Grebenje-2	mixed forest soil; Grebenje; 150 m E from Grebenje	45.799391°N 14.632649°E	620 m	23. 3. 2016	SS	F. Kljun
Grebenje-3	mixed forest soil; Grebenje; 150 m E from Grebenje	45.799391°N 14.632649°E	620 m	13. 5. 2016	SS	F. Kljun
Grebenje-4	mixed forest soil; Grebenje; 150 m E from Grebenje	45.799391°N 14.632649°E	620 m	30. 6. 2016	SS	F. Kljun
Grebenje-5	mixed forest soil; Grebenje; 150 m E from Grebenje	45.799391°N 14.632649°E	620 m	12. 8. 2016	SS	F. Kljun
Grebenje-6	mixed forest soil; Grebenje; 150 m E from Grebenje	45.799391°N 14.632649°E	620 m	30. 9. 2016	SS	F. Kljun
Grebenje-7	mixed forest soil; Grebenje; 150 m E from Grebenje	45.799391°N 14.632649°E	620 m	25. 11. 2016	SS	F. Kljun
Grebenje-8	mixed forest soil; Grebenje; 150 m E from Grebenje	45.799391°N 14.632649°E	620 m	15. 2. 2017	SS	F. Kljun
Grebenje-9	xerophillic meadow soil; Grebenje; 150 m NE from Grebenje	45.799708°N 14.632331°E	630 m	5. 2. 2016	SS	F. Kljun
Grebenje-10	xerophillic meadow soil; Grebenje; 150 m NE from Grebenje	45.799708°N 14.632331°E	630 m	23. 3. 2016	SS	F. Kljun
Grebenje-11	xerophillic meadow soil; Grebenje; 150 m NE from Grebenje	45.799708°N 14.632331°E	630 m	13. 5. 2016	SS	F. Kljun
Grebenje-12	xerophillic meadow soil; Grebenje; 150 m NE from Grebenje	45.799708°N 14.632331°E	630 m	30. 6. 2016	SS	F. Kljun
Grebenje-13	xerophillic meadow soil; Grebenje; 150 m NE from Grebenje	45.799708°N 14.632331°E	630 m	12. 8. 2016	SS	F. Kljun
Grebenje-14	xerophillic meadow soil; Grebenje; 150 m NE from Grebenje	45.799708°N 14.632331°E	630 m	30. 9. 2016	SS	F. Kljun
Grebenje-15	xerophillic meadow soil; Grebenje; 150 m NE from Grebenje	45.799708°N 14.632331°E	630 m	25. 11. 2016	SS	F. Kljun
Grebenje-16	xerophillic meadow soil; Grebenje; 150 m NE from Grebenje	45.799708°N 14.632331°E	630 m	15. 2. 2017	SS	F. Kljun
Grebenje-17	mulched meadow soil; Grebenje; 150 m NE from Grebenje	45.799689°N 14.632271°E	630 m	5. 2. 2016	SS	F. Kljun
Grebenje-18	mulched meadow soil; Grebenje; 150 m NE from Grebenje	45.799689°N 14.632271°E	630 m	23. 3. 2016	SS	F. Kljun
Grebenje-19	mulched meadow soil; Grebenje; 150 m NE from Grebenje	45.799689°N 14.632271°E	630 m	13. 5. 2016	SS	F. Kljun

Locality ID	Locality	Lat. Long.	Altitude a.s.l.	Date	Sampling methods	Legator
Grebenje-20	mulched meadow soil; Grebenje; 150 m NE from Grebenje	45.799689°N 14.632271°E	630 m	30. 6. 2016	SS	F. Kljun
Grebenje-21	mulched meadow soil; Grebenje; 150 m NE from Grebenje	45.799689°N 14.632271°E	630 m	12. 8. 2016	SS	F. Kljun
Grebenje-22	mulched meadow soil; Grebenje; 150 m NE from Grebenje	45.799689°N 14.632271°E	630 m	30. 9. 2016	SS	F. Kljun
Grebenje-23	mulched meadow soil; Grebenje; 150 m NE from Grebenje	45.799689°N 14.632271°E	630 m	25. 11. 2016	SS	F. Kljun
Grebenje-24	mulched meadow soil; Grebenje; 150 m NE from Grebenje	45.799689°N 14.632271°E	630 m	15. 2. 2017	SS	F. Kljun
BioDept-1	inside a building; Department of Biology; 200 m SW from ZOO Ljubljana	46.051281°N 14.47038°E	296 m	17. 5. 2018	A	Ž. Kuralt

Sampling methods, identification and specimen preparation

To cover as many microhabitats as possible, a variety of sampling methods (forceps, aspirator, round sweep net, inverted leaf blower, leaf litter sifter, soil sampling) were used in targeted spider sampling. Specimens were preserved in denatured 70% ethanol. Soil samples were acquired using soil sampling probe with diameter of 21 cm and later extracted using modified Tullgren-Berlese funnels. The specimens were identified by commonly used determination keys (Roberts 1995, Oger 2016, Nentwig et al. 2019,). The identity of *E. autumnalis* was additionally supported by recent paper by Bellvert et al. (2018). Extraction, identification, preparation and observation of the specimens were performed at the Department of Biology of the Biotechnical Faculty, University of Ljubljana.

The epigyne of female specimens was observed with Olympus SZX7 stereomicroscope and photographed with Olympus XC30 camera.

For electron microscopic observation, the male pedipalps were briefly sonicated in ultrasonic bath PIO Sonis 2 T, air-dried, mounted on aluminium stubs and sputter-coated with platinum. The prepared samples were observed with a Jeol JSM-7500F field emission scanning electron microscope.

Specimens are deposited in the Department of Biology, Biotechnical Faculty, University of Ljubljana.

Results

Altogether, 716 adult spider specimens (204 males, 511 females) belonging to 171 species from 27 families were identified (see Tab. 2 for the list of species).

Table 2. Species list of the examined spiders. New records for the Slovenian fauna are marked with an asterisk. For abbreviations of localities see Tab. 1. Numbers next to gender symbol refer to number of collected individuals.
Tabela 2. Seznam zabeleženih vrst pajkov. Prve najdbe za Slovenijo so označene z zvezdico. Natančen opis lokalitet je v Tab. 1. V oklepajih je navedeno število in spol ujetih in določenih pajkov.

	Family / Species	Localities
	AGELENIDAE	
1	*Agelena labyrinthica*	RTSB17-11 (1 ♀); RTSB17-24 (1 ♀); RTSB17-31 (1 ♀); PSJ-14 (2 ♀)
2	*Allagelena gracilens*	RTSB17-10 (2 ♀ 2 ♂); RTSB17-28 (1 ♀)
3	*Coelotes terrestris*	Grebenje-6 (1 ♂)
4	*Histopona torpida*	RTSB17-02 (1 ♀); RTSB17-03 (1 ♀); RTSB17-21 (1 ♀); PSJ-9 (1 ♀)
5	*Tegenaria silvestris*	RTSB17-03 (1 ♀); RTSB17-13 (1 ♀); RTSB17-20 (1 ♀); RTSB17-21 (1 ♀); PSJ-6 (1 ♀)
	AMAUROBIIDAE	
6	*Amaurobius fenestralis*	PSJ-9 (2 ♀)
	ANAPIDAE	
7	*Comaroma simoni*	BioBlitz-5 (1 ♀ 2 ♂)
	ANYPHAENIDAE	
8	*Anyphaena accentuata*	BioBlitz-3 (1 ♂); BioBlitz-5 (1 ♀)
	ARANEIDAE	
9	*Aculepeira ceropegia*	BioBlitz-3 (1 ♂)
10	*Araneus alsine*	RTSB17-10 (1 ♂)
11	*Araneus angulatus*	RTSB17-17 (1 ♀); RTSB17-17 (1 ♀); BioBlitz-4 (1 ♀)
12	*Araneus diadematus*	RTSB17-05 (1 ♂); RTSB17-09 (1 ♀); RTSB17-23 (1 ♀)
13	*Araneus marmoreus*	RTSB17-14 (1 ♀)
14	*Araneus triguttatus*	PSJ-9 (1 ♂)
15	*Araniella cucurbitina*	PSJ-4 (1 ♀); Bioblitz-8 (1 ♂)
16	*Argiope bruennichi*	RTSB17-10 (1 ♀ 1 ♂); RTSB17-19 (1 ♀); RTSB17-22 (1 ♂); RTSB17-29 (3 ♀); RTSB17-30 (2 ♀ 1 ♂); PSJ-18 (1 ♂)
17	*Cercidia prominens*	PSJ-18 (1 ♀); PSJ-1 (1 ♀)
18	*Cyclosa conica*	RTSB17-02 (1 ♀)
19	*Cyclosa oculata*	Bioblitz-8 (1 ♀)
20	*Hypsosinga pygmaea*	Bioblitz-8 (1 ♂); RTSB17-19 (1 ♀ 1 ♂)
21	*Hypsosinga sanguinea*	PSJ-3 (1 ♂); BioBlitz-3 (2 ♂)
22	*Larinioides sclopetarius*	BioBlitz-7 (1 ♀)
23	*Larinioides suspicax*	BioBlitz-7 (1 ♀)
24	*Leviellus thorelli*	BioBlitz-7 (1 ♀)
25	*Mangora acalypha*	RTSB17-11 (2 ♀); PSJ-9 (3 ♀); PSJ-2 (1 ♀ 1 ♂); PSJ-4 (1 ♀); BioBlitz-3 (2 ♂)

	Family / Species	Localities
26	*Nuctenea umbratica*	RTSB17-01 (2 ♀); RTSB17-10 (1 ♀); RTSB17-18 (1 ♂); RTSB17-23 (3 ♀ 3 ♂); BioBlitz-7 (1 ♀)
27	*Singa hamata*	BioBlitz-3 (2 ♂)
28	*Zilla diodia*	BioBlitz-5 (3 ♀)
	CLUBIONIDAE	
29	*Clubiona neglecta*	RTSB17-30 (1 ♀); PSJ-5 (1 ♀)
30	*Clubiona phrahmitis*	BioBlitz-6 (1 ♂)
31	*Clubiona pseudoneglecta*	RTSB17-18 (1 ♀); PSJ-2 (1 ♀); PSJ-4 (1 ♀)
32	*Clubiona terrestris*	RTSB17-18 (1 ♂); PSJ-2 (1 ♂)
	CYBAEIDAE	
33	*Cybaeus raymondi*	RTSB17-03 (1 ♀)
	DICTYNIDAE	
34	*Argenna subnigra*	Grebenje-11 (2 ♂); Grebenje-12 (1 ♀); Grebenje-15 (1 ♂); Grebenje-17 (1 ♀ 1 ♂); Grebenje-19 (1 ♀); Grebenje-9 (1 ♀)
35	**Nigma flavescens*	BioBlitz-1 (2 ♂)
	DYSDERIDAE	
36	*Dysdera crocata*	RTSB17-18 (1 ♀)
37	*Dysdera ninni*	RTSB17-14 (1 ♂)
38	*Harpactea hombergi*	RTSB17-20 (1 ♀)
	GNAPHOSIDAE	
39	*Drassodes lapidosus*	PSJ-14 (1 ♀)
40	*Echemus angustifrons*	PSJ-9 (1 ♀)
41	*Haplodrassus kulczynskii*	Grebenje-11 (1 ♀ 1 ♂); Grebenje-15 (1 ♂); Grebenje-16 (1 ♂)
42	**Micaria subopaca*	BioDept-1 (1 ♂)
43	*Trachyzelotes pedestris*	PSJ-13 (1 ♀)
	HAHNIIDAE	
44	*Hahnia pusilla*	Grebenje-14 (1 ♂); Grebenje-8 (1 ♀); BioBlitz-11 (4 ♀ 2 ♂); BioBlitz-12 (5 ♀ 1 ♂); BioBlitz-9 (5 ♀)
	LINYPHIIDAE	
45	*Agyneta saxatilis*	PSJ-6 (1 ♀)
46	*Agyneta fuscipalpa*	RTSB17-16 (1 ♀)
47	*Agyneta rurestris*	RTSB17-29 (1 ♂)
48	*Centromerus cavernarum*	Grebenje-22 (1 ♀)
49	*Centromerus silvicola*	BioBlitz-2 (1 ♀)
50	*Centromerus sylvaticus*	Grebenje-23 (1 ♀)
51	*Diplocephalus helleri*	RTSB17-24 (1 ♂)
52	*Diplocephalus latifrons*	Grebenje-9 (1 ♀)
53	*Diplostyla concolor*	RTSB17-09 (1 ♀); RTSB17-29 (1 ♀); Grebenje-21 (1 ♀)
54	*Entelecara acuminata*	BioBlitz-1 (2 ♀); BioBlitz-2 (1 ♂)
55	*Erigone atra*	Grebenje-19 (1 ♀)
56	**Erigone autumnalis*	Grebenje-11 (1 ♂); Grebenje-9 (2 ♂)
57	*Erigone dentipalpis*	RTSB17-29 (1 ♂)
58	*Erigone longipalpis*	BioBlitz-1 (1 ♂)

	Family / Species	Localities
59	*Frontinellina frutetorum*	RTSB17-04 (2 ♀); RTSB17-13 (1 ♀); PSJ-9 (1 ♀); Bioblitz-8 (1 ♀ 2 ♂)
60	*Gonatium hilare*	RTSB17-11 (1 ♀)
61	*Gonatium rubens*	BioBlitz-12 (2 ♀); BioBlitz-9 (7 ♀)
62	*Leptyphantes obscurus*	RTSB17-10 (1 ♂)
63	*Linyphia hortensis*	PSJ-9 (1 ♀); BioBlitz-2 (1 ♂); BioBlitz-5 (2 ♀); BioBlitz-6 (1 ♀)
64	*Linyphia triangularis*	RTSB17-09 (2 ♀ 6 ♂); RTSB17-11 (2 ♀ 1 ♂); RTSB17-12 (2 ♀ 1 ♂); RTSB17-14 (1 ♀ 2 ♂); RTSB17-18 (4 ♂); RTSB17-21 (1 ♀); RTSB17-34 (1 ♂); PSJ-12 (1 ♀)
65	*Maso sundevalli*	BioBlitz-1 (1 ♀); BioBlitz-2 (2 ♀)
66	*Mermessus trilobatus*	Grebenje-1 (4 ♀ 1 ♂); Grebenje-11 (1 ♀); Grebenje-12 (2 ♀ 1 ♂); Grebenje-13 (1 ♀); Grebenje-14 (4 ♀ 1 ♂); Grebenje-15 (1 ♀ 1 ♂); Grebenje-16 (2 ♀); Grebenje-17 (2 ♀ 1 ♂); Grebenje-18 (2 ♀); Grebenje-19 (2 ♀ 3 ♂); Grebenje-2 (1 ♀); Grebenje-20 (6 ♀); Grebenje-21 (8 ♀ 4 ♂); Grebenje-22 (5 ♀ 1 ♂); Grebenje-23 (1 ♀ 3 ♂); Grebenje-24 (3 ♀ 2 ♂); Grebenje-5 (1 ♀); Grebenje-6 (2 ♀); Grebenje-9 (4 ♀ 1 ♂)
67	*Micrargus herbigradus*	Grebenje-13 (2 ♀); Grebenje-3 (1 ♀); Grebenje-5 (1 ♂); Grebenje-6 (1 ♀); Grebenje-7 (2 ♀ 1 ♂); Grebenje-8 (2 ♀ 3 ♂); BioBlitz-12 (1 ♂)
68	*Micrargus subaequalis*	Grebenje-12 (2 ♀); Grebenje-19 (1 ♀ 1 ♂); Grebenje-20 (1 ♀)
69	*Microlinyphia pusilla*	RTSB17-29 (1 ♀)
70	*Microneta viaria*	BioBlitz-5 (7 ♀)
71	*Nematogmus sanguinolentus*	RTSB17-29 (1 ♂); RTSB17-30 (1 ♂); BioBlitz-1 (2 ♀); BioBlitz-6 (1 ♀)
72	*Neriene clathrata*	RTSB17-28 (1 ♀); RTSB17-29 (1 ♀); RTSB17-29 (1 ♀)
73	*Neriene emphana*	BioBlitz-2 (1 ♀)
74	*Neriene peltata*	BioBlitz-5 (2 ♀ 1 ♂)
75	*Neriene radiata*	RTSB17-05 (1 ♀); PSJ-8 (1 ♂)
76	*Oedothorax agrestis*	BioBlitz-10 (1 ♀); BioBlitz-11 (6 ♀); BioBlitz-12 (6 ♀); BioBlitz-2 (2 ♀); BioBlitz-6 (4 ♀ 1 ♂)
77	*Oedothorax apicatus*	RTSB17-34 (1 ♀)
78	*Palliduphantes pallidus*	Grebenje-8 (1 ♀)
79	*Panamomops affinis*	BioBlitz-2 (1 ♂)
80	**Pelecopsis parallela*	PSJ-6 (1 ♀)
81	*Pocadicnemis pumila*	BioBlitz-1 (7 ♀); BioBlitz-2 (1 ♀)
82	*Porrhoma pallidum*	RTSB17-27 (1 ♀)
83	*Stemonyphantes lineatus*	Grebenje-8 (1 ♀)
84	*Tapinocyba insecta*	Grebenje-19 (1 ♀); Grebenje-22 (6 ♀ 5 ♂); Grebenje-23 (2 ♀ 3 ♂); Grebenje-24 (1 ♀)
85	*Tapinocyba pallens*	Grebenje-24 (1 ♂)
86	*Tenuiphantes alacris*	BioBlitz-2 (4 ♀); BioBlitz-5 (1 ♀)
87	*Tenuiphantes cristatus*	BioBlitz-5 (1 ♀)
88	*Tenuiphantes flavipes*	RTSB17-18 (1 ♀); RTSB17-20 (1 ♀); RTSB17-28 (2 ♀ 4 ♂); RTSB17-29 (1 ♀); RTSB17-23 (1 ♀); Grebenje-6 (1 ♀); BioBlitz-5 (2 ♀)
89	*Tenuiphantes mengei*	RTSB17-29 (1 ♀); RTSB17-31 (1 ♀)

	Family / Species	Localities
90	*Tenuiphantes tenebricola*	RTSB17-31 (1 ♀); BioBlitz-2 (1 ♀)
91	*Tenuiphantes tenuis*	RTSB17-23 (1 ♀)
92	*Tiso vagans*	Grebenje-21 (1 ♀); Grebenje-22 (1 ♂); Grebenje-24 (1 ♀)
93	*Troglohyphantes cf. sordellii*	RTSB17-08 (1 ♀)
94	**Walckenaria alticeps*	BioBlitz-2 (1 ♂)
	LIOCRANIDAE	
95	*Apostenus fuscus*	RTSB17-02 (1 ♀)
96	*Liocranum rupicola*	PSJ-16 (1 ♀)
97	*Phrurolitus festivus*	RTSB17-13 (1 ♀)
	LYCOSIDAE	
98	*Arctosa lutetiana*	RTSB17-09 (1 ♀); Grebenje-10 (1 ♀); Grebenje-17 (1 ♀)
99	*Aulonia albimana*	RTSB17-13 (2 ♀); BioBlitz-1 (1 ♂); Bioblitz-8 (1 ♂)
100	*Hogna radiata*	PSJ-6 (1 ♀); PSJ-19 (1 ♀)
101	*Pardosa alacris*	BioBlitz-5 (2 ♂)
102	*Pardosa amentata*	RTSB17-10 (3 ♀); RTSB17-11 (1 ♀); RTSB17-14 (1 ♀)
103	*Pardosa hortensis*	PSJ-14 (1 ♀)
104	*Pardosa lugubris*	RTSB17-02 (4 ♀); RTSB17-03 (1 ♀); RTSB17-04 (3 ♀); RTSB17-10 (1 ♀); RTSB17-21 (3 ♀); RTSB17-22 (1 ♀); RTSB17-31 (1 ♀); Grebenje-3 (1 ♂); PSJ-9 (4 ♀); PSJ-13 (1 ♀); PSJ-14 (1 ♀); BioBlitz-1 (3 ♀); BioBlitz-2 (3 ♀ 1 ♂); BioBlitz-3 (6 ♀); BioBlitz-4 (2 ♀); BioBlitz-5 (11 ♀)
105	*Piratula hygrophila*	BioBlitz-6 (1 ♀)
106	*Piratula knorri*	RTSB17-14 (2 ♀); RTSB17-15 (1 ♀); RTSB17-20 (2 ♀); RTSB17-34 (6 ♀); BioBlitz-6 (2 ♀ 1 ♂)
107	*Trochosa terricola*	RTSB17-18 (2 ♀); Grebenje-6 (1 ♀); BioBlitz-3 (1 ♀)
	MITURGIDAE	
108	*Zora armillata*	RTSB17-12 (1 ♀); PSJ-12 (1 ♀)
109	*Zora spinimana*	RTSB17-30 (2 ♀); PSJ-6 (1 ♀); PSJ-8 (1 ♀); BioBlitz-4 (1 ♂); BioBlitz-5 (4 ♀ 2 ♂); BioBlitz-9 (1 ♀)
	NESTICIDAE	
110	*Nesticus cellulanus*	RTSB17-26 (1 ♀)
	OXYOPIDAE	
111	*Oxyopes lineatus*	PSJ-4 (2 ♀ 1 ♂)
	PHILODROMIDAE	
112	*Philodromus albidus*	RTSB17-23 (1 ♀)
113	*Philodromus collinus*	RTSB17-10 (1 ♀)
	PHOLCIDAE	
114	*Holocnemus pluchei*	RTSB17-33 (1 ♀)
115	*Pholcus opilionides*	RTSB17-01 (1 ♂); RTSB17-23 (3 ♀); PSJ-16 (1 ♂)
116	*Pholcus phalangoides*	RTSB17-23 (2 ♀ 1 ♂)
	PISAURIDAE	
117	*Dolomedes fimbriatus*	RTSB17-32 (1 ♀)
118	*Pisaura mirabilis*	RTSB17-10 (1 ♀); RTSB17-11 (1 ♀); RTSB17-22 (1 ♀); RTSB17-29 (1 ♀); PSJ-3 (1 ♀ 2 ♂); PSJ-1 (1 ♀); BioBlitz-3 (1 ♂)

	Family / Species	Localities
	SALTICIDAE	
119	*Ballus chalybeius*	PSJ-9 (2 ♀)
120	*Evarcha arcuata*	RTSB17-05 (1 ♀); RTSB17-10 (1 ♀); RTSB17-30 (1 ♀ 3 ♂); PSJ-6 (1 ♀); PSJ-18 (2 ♀); PSJ-18 (1 ♀); Bioblitz-8 (1 ♂)
121	*Evarcha falcata*	RTSB17-04 (1 ♀); RTSB17-18 (1 ♀); PSJ-1 (1 ♂); PSJ-14 (1 ♂); BioBlitz-1 (2 ♂); BioBlitz-3 (1 ♂)
122	*Evarcha laetabunda*	PSJ-7 (1 ♂)
123	*Heliophanus cupreus*	PSJ-9 (1 ♂); BioBlitz-1 (1 ♂)
124	*Heliophanus flavipes*	PSJ-6 (1 ♀); PSJ-18 (1 ♀); PSJ-1 (1 ♀)
125	*Marpissa muscosa*	RTSB17-23 (1 ♀); PSJ-16 (1 ♀); PSJ-13 (1 ♂)
126	*Neon reticulatus*	RTSB17-28 (2 ♀); BioBlitz-11 (1 ♀); BioBlitz-2 (1 ♂)
127	*Pellenes tripunctatus*	PSJ-1 (1 ♀)
128	*Phlegra fasciata*	RTSB17-15 (1 ♀); BioBlitz-1 (1 ♀)
	SPARASSIDAE	
129	*Micrommata virescens*	BioBlitz-1 (1 ♂); BioBlitz-2 (1 ♀)
	TETRAGNATHIDAE	
130	*Meta menardi*	RTSB17-07 (1 ♀); RTSB17-25 (1 ♀)
131	*Metellina mengei*	PSJ-9 (1 ♀); BioBlitz-6 (1 ♀)
132	*Metellina merianae*	RTSB17-01 (1 ♀); RTSB17-18 (1 ♀)
133	*Metellina segmentata*	RTSB17-09 (1 ♀); RTSB17-18 (1 ♀); RTSB17-31 (1 ♀); PSJ-8 (1 ♂); Bioblitz-8 (2 ♀)
134	*Pachygnatha degeeri*	RTSB17-29 (2 ♂); Grebenje-19 (1 ♂); Grebenje-22 (1 ♂); Grebenje-23 (1 ♂); BioBlitz-1 (1 ♂)
135	*Pachygnatha listeri*	RTSB17-29 (1 ♂)
136	*Tetragnatha montana*	RTSB17-20 (1 ♀)
137	*Tetragnatha extensa*	RTSB17-11 (2 ♀); BioBlitz-2 (2 ♂); BioBlitz-7 (1 ♂)
138	*Tetragnatha pinicola*	RTSB17-05 (1 ♂); RTSB17-10 (2 ♂)
	THERIDIIDAE	
139	*Crustulina guttata*	BioBlitz-1 (2 ♀)
140	*Cryptachea riparia*	RTSB17-23 (1 ♂)
141	*Dipoena melanogaster*	BioBlitz-4 (1 ♀)
142	*Enoplognatha ovata*	RTSB17-09 (1 ♀); RTSB17-11 (1 ♀); RTSB17-12 (2 ♀); RTSB17-14 (1 ♀); RTSB17-21 (2 ♀); RTSB17-22 (2 ♀); PSJ-2 (5 ♀); PSJ-4 (1 ♀)
143	*Enoplognatha thoracica*	Grebenje-10 (2 ♂)
144	*Episinus truncatus*	RTSB17-10 (1 ♀); RTSB17-11 (1 ♀)
145	*Neottiura bimaculata*	RTSB17-12 (1 ♀); RTSB17-29 (1 ♀); Grebenje-13 (1 ♀); Bioblitz-8 (1 ♂)
146	*Parasteatoda lunata*	RTSB17-01 (2 ♀); RTSB17-31 (6 ♀)
147	*Parasteatoda simulans*	RTSB17-18 (1 ♀)
148	*Parasteatoda tepidariorum*	RTSB17-01 (2 ♀); RTSB17-23 (9 ♀); RTSB17-33 (1 ♀); RTSB17-23 (2 ♀)
149	*Platnickina tinta*	RTSB17-23 (1 ♀)
150	*Robertus lividus*	RTSB17-09 (1 ♀)
151	*Steatoda bipunctata*	RTSB17-23 (4 ♀)

	Family / Species	Localities
152	*Steatoda paykulliana*	PSJ-14 (1 ♀)
153	*Steatoda triangulosa*	RTSB17-23 (1 ♂)
154	*Theridion melanurum*	RTSB17-12 (1 ♀)
155	*Theridion varians*	RTSB17-09 (1 ♀)
	THOMISIDAE	
156	*Diaea dorsata*	RTSB17-11 (1 ♀); RTSB17-21 (1 ♀); PSJ-1 (1 ♂)
157	*Misumena vatia*	RTSB17-11 (1 ♀ 1 ♂); RTSB17-19 (1 ♂); RTSB17-22 (1 ♂); RTSB17-18 (1 ♀); BioBlitz-2 (1 ♂); BioBlitz-3 (2 ♂)
158	*Ozyptila claveata*	Grebenje-10 (1 ♀); Grebenje-11 (1 ♂); Grebenje-12 (1 ♀); Grebenje-15 (1 ♀ 1 ♂); Grebenje-17 (1 ♂); Grebenje-9 (1 ♀ 1 ♂)
159	*Ozyptilla praticola*	RTSB17-23 (2 ♀)
160	*Ozyptilla simplex*	Bioblitz-8 (1 ♀ 2 ♂)
161	*Synaema globosum*	BioBlitz-3 (1 ♂); Bioblitz-8 (2 ♀ 1 ♂)
162	*Tmarus piger*	RTSB17-34 (1 ♀); PSJ-1 (1 ♀); BioBlitz-3 (3 ♂)
163	*Xysticus bifasciatus*	RTSB17-22 (1 ♀); Grebenje-24 (1 ♀)
164	*Xysticus cor*	PSJ-6 (1 ♂)
165	*Xysticus cristatus*	PSJ-3 (1 ♀ 1 ♂); BioBlitz-1 (1 ♀); BioBlitz-3 (4 ♀ 1 ♂); BioBlitz-7 (1 ♀)
166	*Xysticus erraticus*	Grebenje-22 (1 ♀); Grebenje-9 (1 ♀); PSJ-1 (3 ♀)
167	*Xysticus kochi*	BioBlitz-3 (4 ♀ 5 ♂); BioBlitz-6 (1 ♀); Bioblitz-8 (2 ♀)
168	*Xysticus lanio*	PSJ-3 (1 ♀); BioBlitz-3 (1 ♂)
169	*Xysticus ulmi*	BioBlitz-2 (1 ♀); Bioblitz-8 (1 ♂)
	ULOBORIDAE	
170	*Hyptiotes paradoxus*	RTSB17-18 (4 ♀ 4 ♂); PSJ-16 (1 ♀)
	ZODARIIDAE	
171	*Zodarion rubidum*	RTSB17-23 (1 ♂)

Photographic material of new and interesting records

Erigone autumnalis Emerton, 1882 (Linyphiidae)

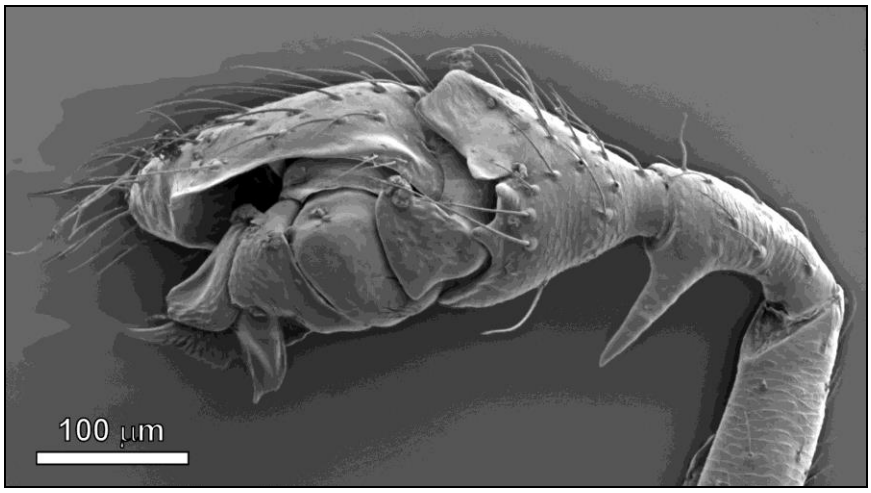

Figure 2. Lateral view of *Erigone autumnalis* left male pedipalp with specific shape of patellar apophysis and distinctive structure of bulbar sclerites. Specimen was collected in soil samples from xerophilic meadow in Grebenje village on 13. 5. 2016.
Slika 2. Stranski pogled na značilne oblike skleritov bulba in apofize na pateli levega pedipalpa samca vrste *Erigone autumnalis*. Osebek je bil najden v talnih vzorcih z dne 13. 5. 2016, odvzetih na termofilnem travniku v Grebenjah.

Pelecopsis parallela (Wider, 1834) (Linyphiidae)

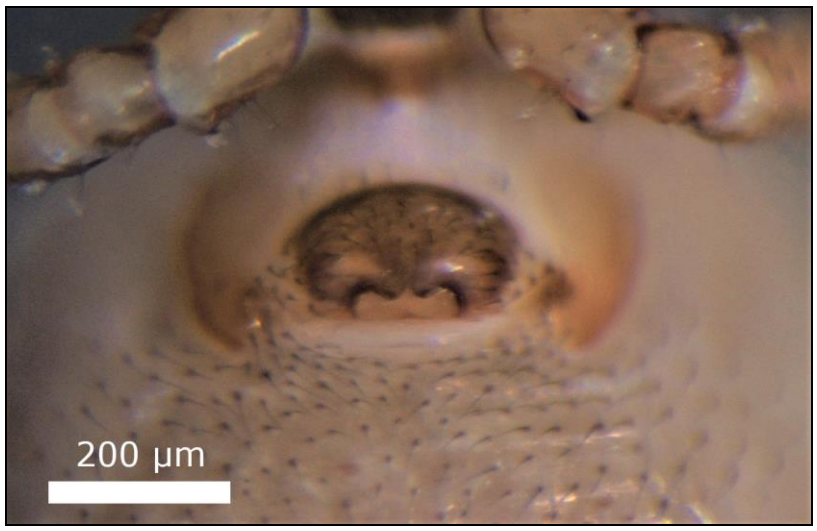

Figure 3. Ventral side of *Pelecopsis parallela* showing the distinctive epigynal morphology. Specimen was collected in a thermophilic meadow near Betanja Village on 30. 8. 2017.
Slika 3. Trebušna stran *Pelecopsis parallela* z značilno oblikovano epigino. Osebek je bil ujet 30. 8. 2017 na termofilnem travniku v bližini vasi Betanja.

Figure 4. Dorsal view of *Pelecopsis parallela*.
Slika 4. *Pelecopsis parallela* s hrbtne strani.

Walckenaria alticeps (Denis, 1952) (Linyphiidae)

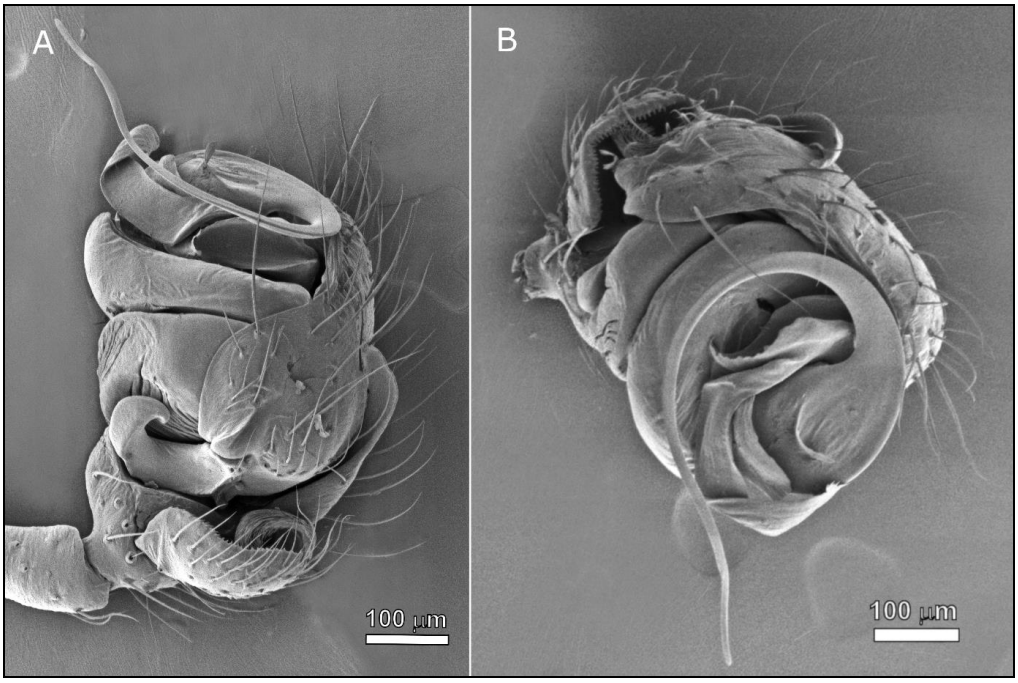

Figure 5. A – Lateral view of *Walckenaria alticeps* left male pedipalp with distinctive structure of bulbal sclerites and shape of embolus. B – Frontal view of *Walckenaria alticeps* right male pedipalp. Widely twisted embolus is ~0.3 mm in diameter. Specimen was collected on 19. 5. 2017 in mixed forest leaf litter at Draška reber.

Slika 5. A – Stranski pogled na značilne sklerotizirane strukture bulba (glave puščic) in embola (puščica) levega pedipalpa samca vrste *Walckenaria alticeps.* B – Frontalni pogled na značilno oblikovani embol desnega pedipalpa samca vrste *Walckenaria alticeps* premera ~0.3 mm. Osebek je bil ujet 19. 5. 2017 v listnem opadu mešanega gozda na Draški rebri.

Nigma flavescens (Walckenaer, 1830) (Dictynidae)

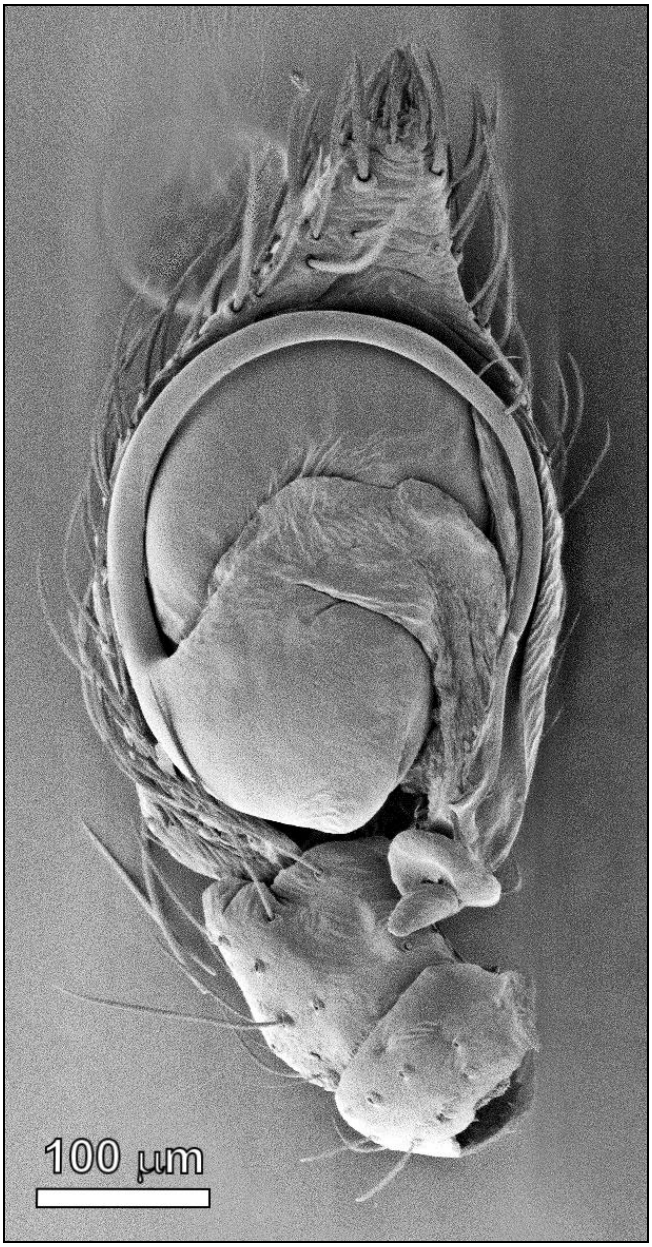

Figure 6. Ventral view of *Nigma flavescens* left male pedipalp depicting its distinctive structure. Specimen was collected on 19. 5. 2017 on forest edge near hunter's lodge at Draga.
Slika 6. Značilna struktura spodnje strani levega pedipalpa samca vrste *Nigma flavescens*. Osebek je bil ujet na gozdnem robu dne 19. 5. 2017 v bližini lovske koče Draga.

Zodarion rubidum Simon, 1914 (Zodariidae)

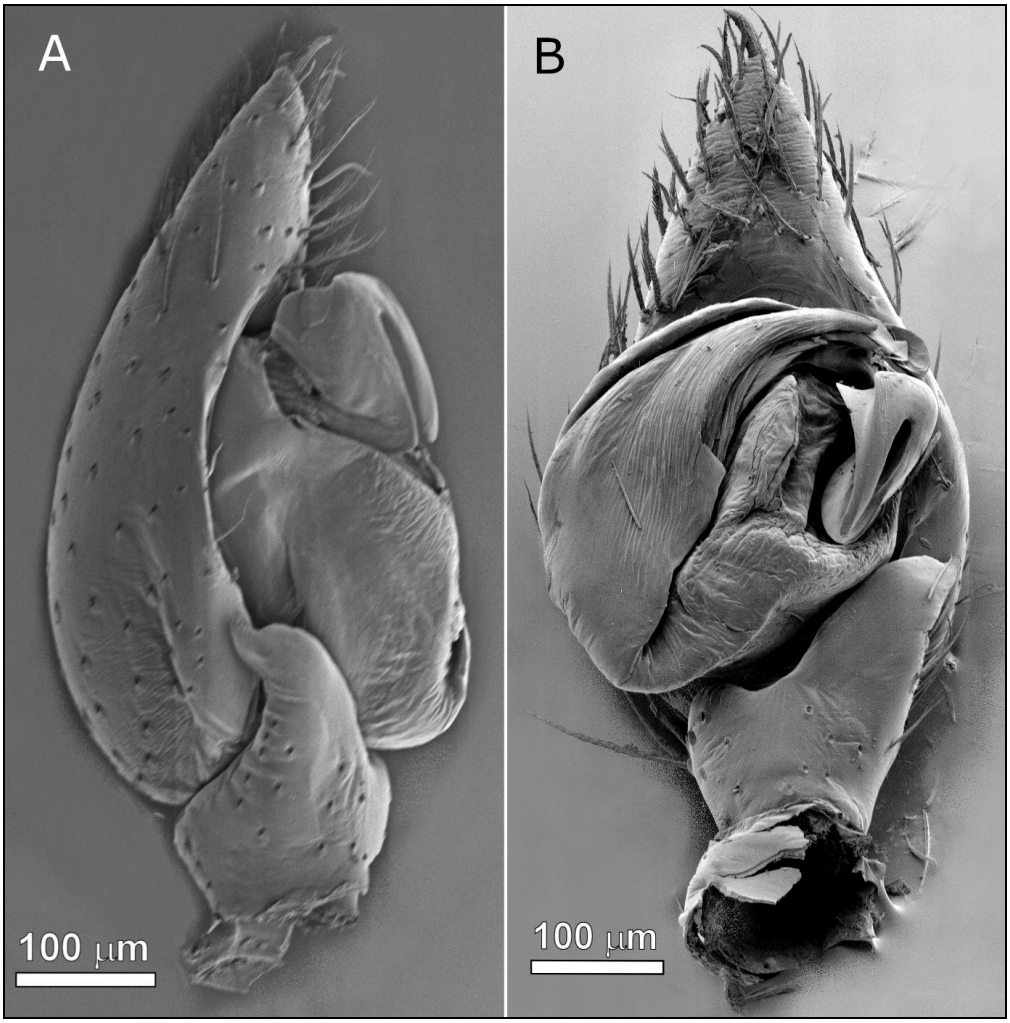

Figure 8. A – Lateral view of *Zodarion rubidum* right male pedipalp with distinctively shaped tibial apophysis. B – Ventral view at recognizable structure of *Zodarion rubidum* left male pedipalp. Specimen was collected in the vicinity od Predoslje Primary school during nighttime on 25. 7. 2017.

Slika 8. A – Stranski pogled na desni pedipalp samca vrste *Zodarion rubidum* z značilno oblikovano tibialno apofizo. B – Značilna struktura spodnje strani levega pedipalpa samca vrste *Zodarion rubidum*. Osebek je bil ujet ponoči v bližini osnovne šole Predoslje dne 25. 7. 2017.

Discussion

With 171 species and 27 families, the spider taxa presented in this paper covers 23% and 63% of currently known spider species and families in Slovenia, respectively. Approximately one third of the listed species belong to family Linyphiidae, which is consistent with the proportion of this family in the national spider checklist (Kostanjšek & Kuntner 2015).

Since its publication in 2015, the list of 738 species given in the national spider checklist (Kostanjšek & Kuntner 2015) has already seen additions. These include two new additions by Kuralt & Kostanjšek (2016) and 13 species from the existing literature, which were overlooked in the initially published checklist. These include *Clubiona diversa*, *Centromerus persimilis*, *Microlinyphia impigra, Trichoncus auritus*, *Agroeca lusatica*, *Hygrolycosa rubrofasciata*, *Zora parallela*, *Z. pardalis*, *Z. silvestris* and *Ozyptila sanctuaria* previously listed in Gregorič & Kuntner (2009), *Stalita pretneri* and *Palliduphantes spelaeorum* listed by Deltshev (2008) and *Alopecosa solitaria* reported in Slovenia by Giltay (1932). Updated version of Slovenian spider checklist comprising 753 species is available on-line (http://www.bioportal.si/katalog/araneae.php).

Additions to the Slovenian spider fauna, including five species in the present work, confirm the proverbial 'never-finished work with the checklists' and confirm predictions on undersampled spider fauna (Kostanjšek & Kuntner 2015, Kuralt & Kostanjšek 2016) as well as need of long-term systematic surveys of the spider fauna in Slovenia.

During the sampling at Škocjan Caves Regional Park, we collected *Pelecopsis parallela*, a first record of this species in Slovenia. Nevertheless, finding the species in Slovenia was somehow expected as it has a wide European distribution and is also present in all neighbouring countries (Lüscher et al. 2016, Nentwig et al. 2019).

In comparison to commonly used and accessible sampling techniques for spiders inhabiting the soil surface, like pitfall traps and leaf litter sifting, the sampling of soil-dwelling spiders inhabiting cryptic habitats in lower soil horizons are much more demanding and consequently less commonly used. In these techniques, the sampling of the soil by probe is followed by time consuming extraction of animals on Tullgren-Berlese funnels, which commonly require a dedicated extraction room for efficient extraction. To diminish the deficiency in soil-dwelling spiders we recently established a collaboration with the Research Group for Animal Ecology at the Biotechnical Faculty in Ljubljana, led by dr. Ivan Kos. Since the colleagues in the group are focused in other soil invertebrates, mainly centipedes (Chilopoda), they generously donated us the spiders from the already extracted material and provided us with access to their soil sampling probes and extraction equipment. Retrieving *Erigone autumnalis*, a new species for Slovenian spider fauna, from soil samples, the collaboration has already proved fruitful. Considering the poor sampling of deeper soil horizons for spiders in the past, further additions to the Slovenian spider fauna can be expected from this cryptic, yet faunistically rich habitat in the future.

Finding *Nigma flavescens* and *Walckenaria alticeps* during an intensive short-term (24 hour) survey at BioBlitz 2017 event (Jogan et al. 2018) emphasizes the importance of thorough samplings in our quest to fully describe the Slovenian spider fauna. Additionally, collecting *Walckenaria alticeps* in leaf litter and the discovery of *E. autumnalis* in soil samples support the claims of soil environment being one of the last frontiers in biodiversity research (Schmidt & Keith 2010, Menta 2012, Cameron et al. 2019).

The find of *Micaria subopaca* in an urban environment is surprising, as Nentwig et al. (2019) note that the species is mostly found on bark of coniferous trees where it preys on ants (Svenja 2015). We thus suspect the animal was accidentally brought to the building of Department of Biology from the field.

Most of the newly recorded species were expected to be found in Slovenia, as their presence has already been confirmed in the neighbouring countries (Nentwig et al. 2019), whereas *Erigone autumnalis* has only been confirmed in Spain, France, Switzerland (only in Tessin), Austria, Italy and Georgia. Nentwig et al. (2019) note that *E. autumnalis* is an alien species originating from North America and has been introduced to Europe on several occasions. Finding multiple animals in soil samples from a relatively small sampling area in Grebenje village suggest that the species has probably been overlooked.

Apart from being an important faunistic contribution as the second record of the species for the Slovenian fauna, the collection of *Zodarion rubidum* in the urban environment of the village Predoslje in NW Slovenia itself carries some implications that warrant discussion. The first record of *Z. rubidum* in Slovenia was recently reported by Kuralt & Kostanjšek (2016) from the Bela krajina region where a single female was collected in an urban environment during night-time sampling. Such isolated localities of the species were previously reported from Poland (Rozwałka & Gosik 2006), where collection site lay more than 400 km from other known localities. Nentwig et al. (2019) report that the species has been showing some spreading tendencies over the last decades, presumably facilitated by human activity (Rozwałka & Gosik 2006 and references therein), which could partially explain recent findings of the species in the country. At the same time, we should bear in mind that *Z. rubidum* is a nocturnal species (Pekár & Křál 2002), and that it might have been simply overlooked in previous, predominantly daytime sampling routine.

Survey of spider samplings in Slovenia quickly reveals a considerable bias towards day-time sampling of relatively accessible natural environments and little sampling effort. Considering the facts that (1) the majority of spider species are nocturnal (Foelix 2011), (2) semi-natural and urban habitats often act as surrogate habitats for species that are rarely found in natural environments (Kostanjšek & Celestina 2008, Mammola et al. 2018) and (3) cryptic and hardly accessible habitats provide niches for rarely found species, the future samplings in Slovenia should focus on temporally and spatially more evenly distributed samplings and application of sampling techniques, covering various cryptic or undersampled habitats, to ensure further additions to the Slovenian spider fauna.

Povzetek

Prispevek obravnava rezultate nedavnih favnističnih raziskav pajkov v Sloveniji. Predstavljen je seznam 171 vrst pajkov iz 27 družin, zabeleženih v Sloveniji v obdobju od 5. 2. 2016 do 30. 9. 2017. V tem obdobju je potekalo vzorčenje talnih nevretenčarjev v okolici vasi Grebenje, mesečna vzorčenja v Parku Škocjanske jame, vzorčenje v okviru dogodka BioBlitz Slovenija 2017 v Dragi pri Igu ter vzorčenje v okviru Raziskovalnega tabora študentov biologije 2017 v Predosljah pri Kranju. V prostorih Oddelka za biologijo Biotehniške fakultete Univerze v Ljubljani je bila naključno najdena vrsta *Micaria subopaca* (Gnaphosidae), ki pa je bila najverjetneje tja zanešena s terena.

Omenjenih 171 vrst iz 27 družin pokriva 23 % znanih vrst ter 63 % znanih družin pajkov vrst v Sloveniji. Med temi je tudi pet vrst, ki so bile v Sloveniji najdene prvič – *Erigone autumnalis* (Linyphiidae), *Pelecopsis parallela* (Linyphiidae), *Walckenaria alticeps* (Linyphiidae), *Micaria subopaca* (Gnaphosidae) ter *Nigma flavescens* (Dictynidae). Vrsta *Zodarion rubidum* (Zodariidae), ki je bil nedavno prvič najdena v jugovzhodnem delu države, je bil ponovno najdena v okolici Kranja.

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