ESKİŞEHİR TEKNİK ÜNİVERSİTESİ BİLİM VE TEKNOLOJİ DERGİSİ C- YAŞAM BİLİMLERİ VE BİYOTEKNOLOJİ

Eskişehir Technical University Journal of Science and Technology C- Life Sciences and Biotechnology

2020, 9(1), pp. 13 - 25, DOI: 10.18036/estubtdc.526538

TAXONOMIC NOTES ON SOME DWARF SPIDERS (ARANEAE: LINYPHIIDAE) FROM TURKEY

Tarık DANIŞMAN[1,*] İlhan COŞAR[2], Kadir Boğaç KUNT[3, 4]

[1] Department of Biology, Faculty of Sciences and Arts, Kırıkkale University, Kırıkkale, Turkey
[2] Health Services Vocational School, Kırıkkale University, Kırıkkale, Turkey
[3] Department of Biology, Faculty of Science, Eskişehir Technical University, Eskişehir, Turkey
[4]Cyprus Wildlife Research Institute, Taşkent, Kyrenia, Cyprus

ABSTRACT

This study is based on Linyphiidae species collected from different regions of Turkey between 2009–2013. In total, 8 species of linyphiid spiders are recorded from Turkey. These species; *Gonatium nemorivagum* (O. P.-Cambridge, 1875), *G. rubens* (Blackwall, 1833), *Mecopisthes silus* (O. P.-Cambridge, 1873), *Pelecopsis elongata* (Wider, 1834), *P. mengei* (Simon, 1884), *Sauron rayi* (Simon, 1881), *Walckenaeria corniculans* (O. P.-Cambridge, 1875) and *W. dysderoides* (Wider, 1834). All these species are illustrated and presented in detail.

Keywords: Araneae, Linyphiidae, New records, Spider, Turkey

ÖZET

Bu çalışma, 2009-2013 yılları arasında Türkiye'nin çeşitli bölgelerinden toplanan Linyphiidae türlerine dayanmaktadır. Toplamda Türkiye'den 8 Linifiid örümcek türü kaydedildi. Bu türler; *Gonatium nemorivagum* (O. P.-Cambridge, 1875), *G. rubens* (Blackwall, 1833), *Mecopisthes silus* (O. P.-Cambridge, 1873), *Pelecopsis elongata* (Wider, 1834), *P. mengei* (Simon, 1884), *Sauron rayi* (Simon, 1881), *Walckenaeria corniculans* (O. P.-Cambridge, 1875) ve *W. dysderoides* (Wider, 1834)'dir. Bütün bu türler ayrıntılı bir şekilde resmedilmiş ve sunulmuştur.

Anahtar Kelimeler: Araneae, Linyphiidae, Yeni kayıtlar, Örümcek, Türkiye

1. INTRODUCTION

The Linyphiidae Blackwall, 1859 is one of the largest spider families with 4552 described species [12]. A total of 116 species in 64 genera of Linyphiidae are known in Turkey [1]. With latest records; Danışman (2014) recorded *Walckenaeria furcillata* (Menge, 1869), Danışman and Coşar(2014) recorded *Araeoncus tauricus* Gnelitsa, 2004, Topçu et., al (2014) described *Troglohyphantes turcicus*,Topçu, Türkeş, Seyyar, Demircan and Karabulut, 2014, Türkeş et., al. (2015) described *Abacoproeces topcui* Türkeş, Karabulut, Demir and Seyyar, 2015, and recorded *Araeoncus tauricus* Gnelitsa, 2005, *Erigonoplus globipes* (L. Koch, 1872), *Megalepthyphantes pseudocollinus* Saaristo, 1997 and *Styloctetor romanus* (O. P.-Cambridge, 1873). Demircan and Topçu (2015) recorded *Centromerus valkanovi* Deltshev, 1983, Danışman and Coşar (2016) recorded; *Walckenaeria cirriceps* Thaler, 1996, Demircan and Topçu (2016) recorded *Porrhomma convexum* (Westring, 1851), the number of linyphiid species in Turkey has since increased to 127 in the same 66 genera.

In this paper, we present 8 new reports of linyphiids for the fauna of Turkey. These are *Gonatium nemorivagum* (O. P.-Cambridge, 1875), *G. rubens* (Blackwall, 1833), *Mecopisthes silus* (O. P.-Cambridge, 1873), *Pelecopsis elongata* (Wider, 1834), *P. mengei* (Simon, 1884), *Sauron rayi* (Simon,

*Corresponding Author:tarikdani@yahoo.com
Received: 13.02.2019 Published: 31.01.2020

1881), *Walckenaeria corniculans* (O. P.-Cambridge, 1875) and *W. dysderoides* (Wider, 1834). The total number of linyphiids recorded from Turkey is currently 135 species.

2. METHODS

This study is based on the materials collected from different regions of Turkey. The specimens were taken through leaf litter by means of hand aspirator and sifter. Specimens were preserved in 70 % ethanol. Chiefly well known identification keys were used for identification [7,8,9]. Pictures were taken using a Leica S8APO microscope equipped with a Leica DC 160 camera. SEM microphotographs were made with JEOL JSM-5600 at the University of Kırıkkale. Measurements are given in milimeter (mm). Depositories: ETZM, Eskişehir Technical University Zoology Museum (Eskişehir, Turkey) and KUAM, Arachnological Museum of Kırıkkale University.

3. RESULTS AND DISCUSSION

Gonatium nemorivagum (O. P.-Cambridge, 1875), Figures 1-2

Material examined: 1♂, 1♀, Kırklareli Province, Demirköy, Sarpdere Village, 41°51'34.2"N 27°34'43.6"E, 29.09.2009. Leg. K.B.Kunt; 1♂, 2♀♀, Burdur Province, Yeşilova, 37°31'32.6"N 29°39'19.4"E, 16.10.2009. Leg. T.Danışman.

Male description. Total length 2.4. Prosoma orange-brown, with poor grey markings (Figures 1A and 1B). Prosoma has sulci behind the lateral eyes (Figure 1A). Cymbium margin with notches. Palpal tibial apophysis multiple and complex. Pedipalp characteristics, as in Figure 1C and 1D.

Female description. Total length 2.6. Prosoma reddish orange (Figures 2A and 2B). Epigyne with a cusp-shaped pocket on either side over the spermathecae, with scutum, characteristics as in Figure 2C.

Distribution: Southern Europe [12].

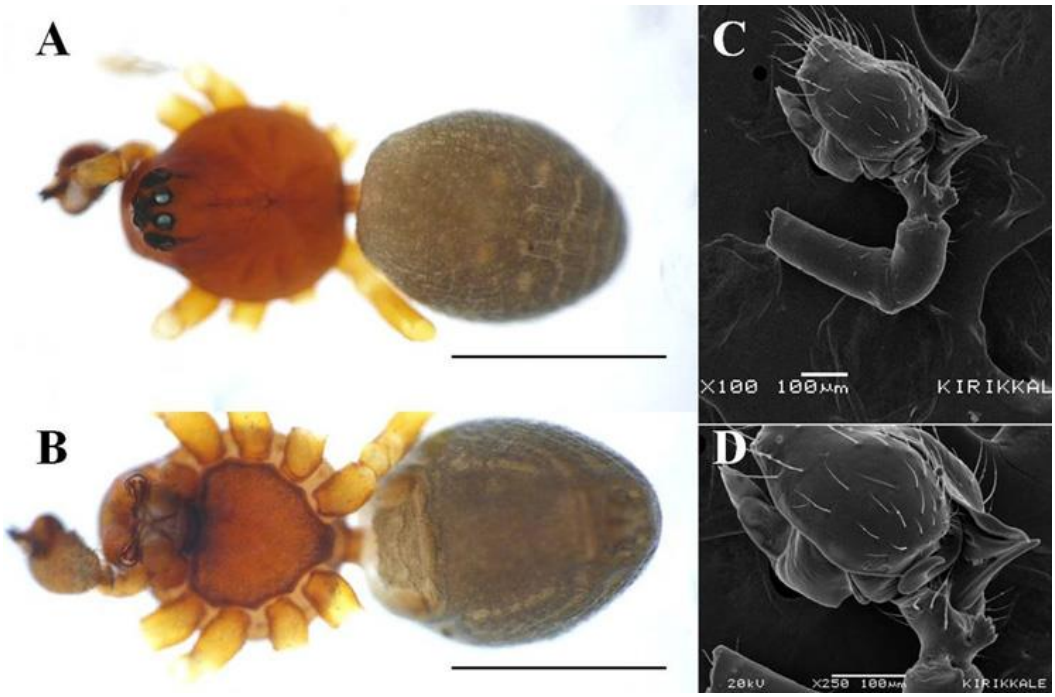

Figure 1. *Gonatium nemorivagum*, male. **A.** Dorsal view, **B**. Ventral view. (Scale: 1.0),**C-D.** Pedipalp, lateral view, SEM micrograph.

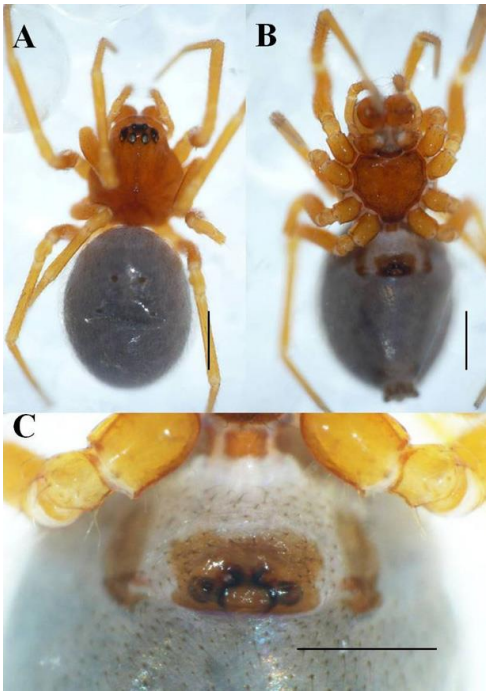

Figure 2. *Gonatium nemorivagum*, female. **A.** Dorsal view, **B**. Ventral view. (Scale: 0.5),**C.** Epigyne, ventral view (Scale: 0.2).

Gonatium rubens (Blackwall, 1833), Figure 3

Material examined: 1♂, Bursa Province, İnegöl, Güney Kestane Village, 39°56'43.6"N 29°43'23.4"E, 26.09.2010. Leg. K.B.Kunt.

Male description. Total length 2.6. Prosoma reddish brown to dirty yellow (Figures 3A and Figure 3B). Opisthosoma grey to dirty yellow (Figures 3C and Figure 3D). Palpal femur distally widened and strongly thickened, with small spines and conical hump. Cymbium with dorsal projections, margin with notches. Distal tibial apophysis long and curved. Pedipalp characteristics as in Figure 3E.

Distribution: Palearctic [12]

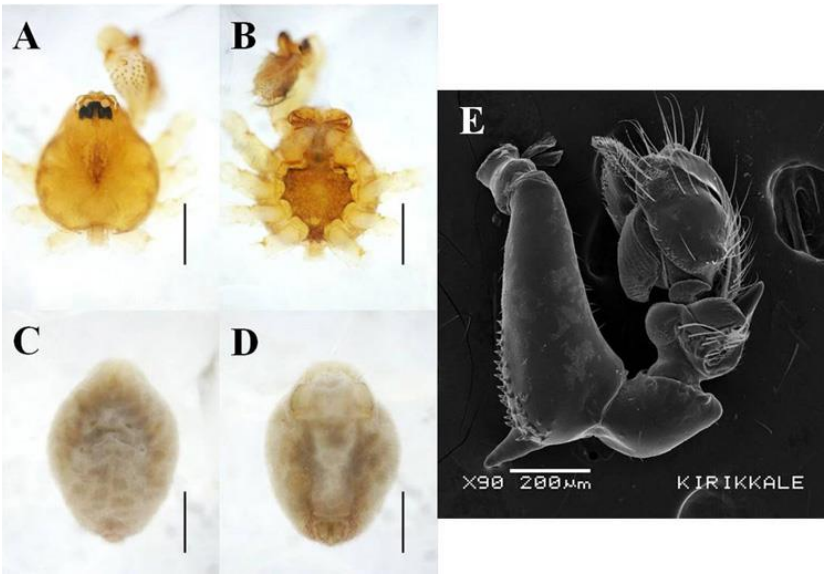

Figure 3. *Gonatium rubens*, male. Prosoma, **A.** Dorsal view, **B.** Ventral view, Abdomen, **C.** Dorsal view, **D.** Ventral view (Scale: 0.5), **E.** Pedipalp, retrolateral view, SEM micrograph.

***Mecopisthes silus* (O. Pickard-Cambridge, 1873) Figure 4**

Material examined: 1♂, Kırıkkale Province, Ahılı Village, 39°49'10.0"N 33°29'45.3"E, 21.11.2012. Leg. T.Danışman.

Male description. Total length 1.4. Prosoma dark brown, with the clypeus protruding, concave and narrow front (Figures 4A and 4B). Opisthosoma black to dark grey. Male pedipalp with dagger-shaped suprategular apophysis. Embolus long and twisted. Pedipalp characteristics as in Figure 4C.

Distribution: Europe, Russia [12].

Figure 4. *Mecopisthes silus*, male. **A.** Dorsal view, **B.** Ventral view. (Scale: 0.5). **C.** Pedipalp, retrolateral view, SEM micrograph.

***Pelecopsis elongata* (Wider, 1834) Figures 5-6**

Material examined: 1♂, 1♀, Ankara Province, Metu Campus, 39°53'19.3"N 32°46'49.2"E, 15.11.2014. Leg. K.B. Kunt; 14♂♂, 12♀♀, Ankara Province, Çamlıdere, 40°29'10.0"N 32°28'11.9"E, 30.09.2013. Leg. T. Danışman.

Male description. Total length 1.8-2.1. Prosoma orange-brown to dirty brown, dorsally with radial rows of impressed dots (Figure 5A and 5B). Cephalic region of prosoma sharply elevated from thorax (Figure 5C). Opisthosoma black to dark grey. Pedipalp characteristics as in Figure 5D**.**

Female description. Total length 2.1. Prosoma brown to orange-brown, dorsally without pits. Cephalic region of prosoma not elevated from thorax (Figures 6A and 6B). Opisthosoma black to dark grey. Epigynal plate tri-oval shaped, characteristics as in Figure 6C.

Distribution: Europe, Russia, Israel [12].

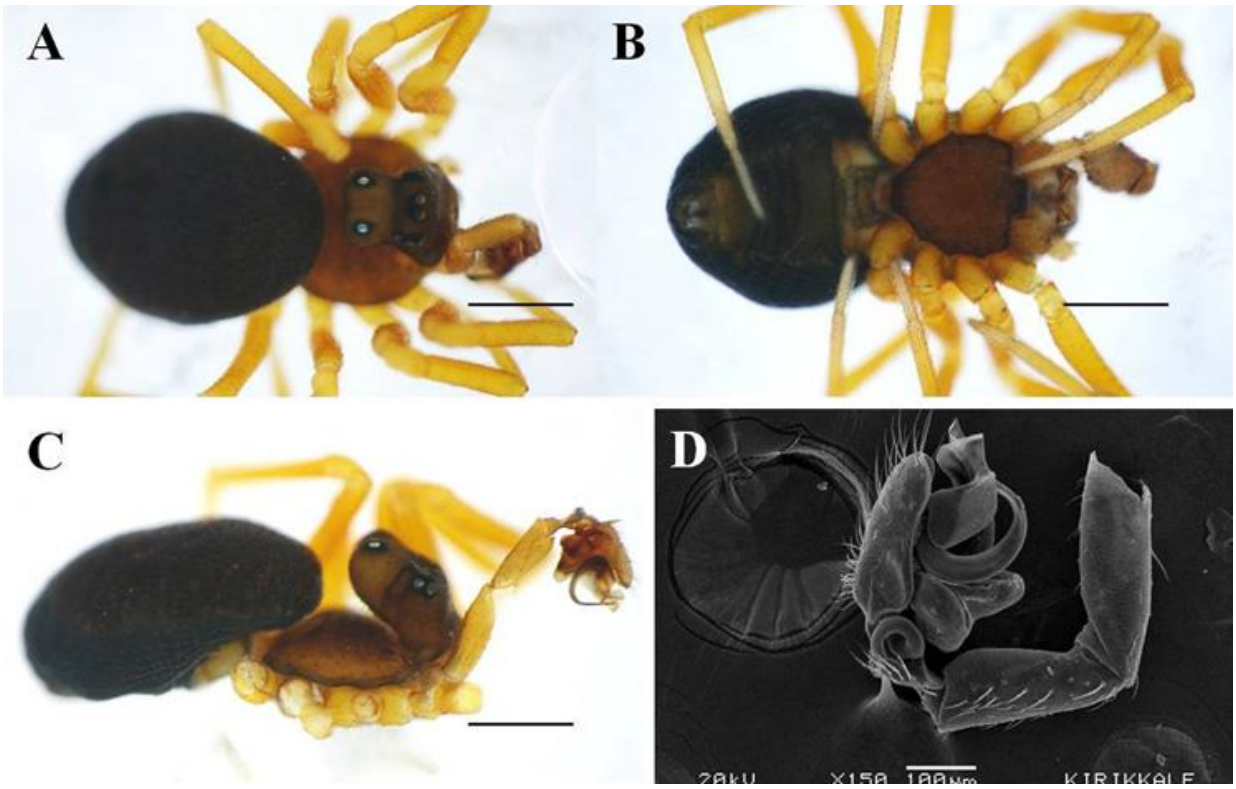

Figure 5. *Pelecopsis elongata*, male. **A.** Dorsal view, **B.** Ventral view, **C.** Lateral view. (Scale: 0.5), **D.** Pedipalp, retrolateral view, SEM micrograph.

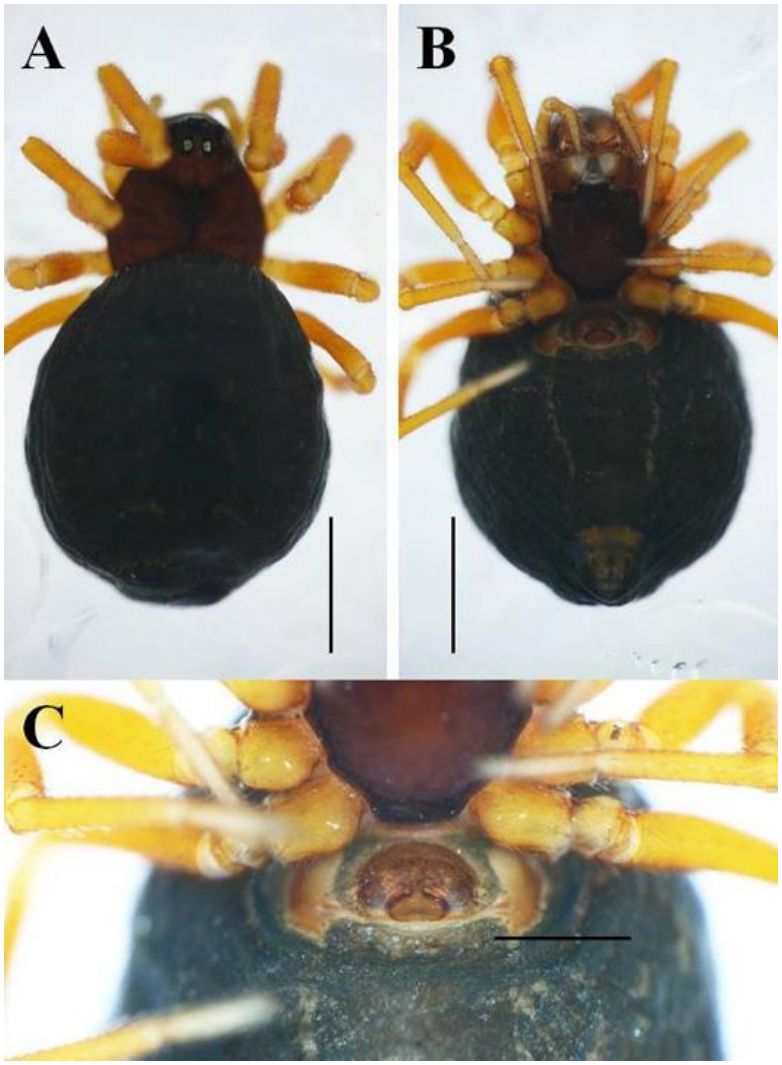

Figure 6. *Pelecopsis elongata*, female. **A**. Dorsal view, **B.** Ventral view (Scale: 0.5), **C.** Epigyne, ventral view (Scale: 0.2).

***Pelecopsis mengei* (Simon, 1884) Figures 7-8**

Material examined: 1♂, 1♀, Bursa Province, Uludağ, 40°04'19.5"N 29°13'09.8"E, 25.09.2010. Leg. K.B. Kunt.

Male description. Total length 1.9. Prosoma orange-brown to yellow, dorsally with radial rows (Figures 7A and 7B). Cephalic region of prosoma elevated to form a large lob (Figure 7C). Opisthosoma yellow to dirty grey. Pedipalp with tubular suprategular apophysis which apparently formed by a rolled up suprategular membrane. Tibial apophysis long, pointed and slightly bent. Pedipalp characteristics as in Figure 7D**.**

Female description. Total length 2.1. Prosoma brown to orange-brown (Figures 8A and 8B). Cephalic region of prosoma not elevated to form a large lob (Figure 8C). Opisthosoma yellow to dirty grey. Epigyne with only vague median plate, characteristics as in Fig 8D.

Distribution: Holarctic [12].

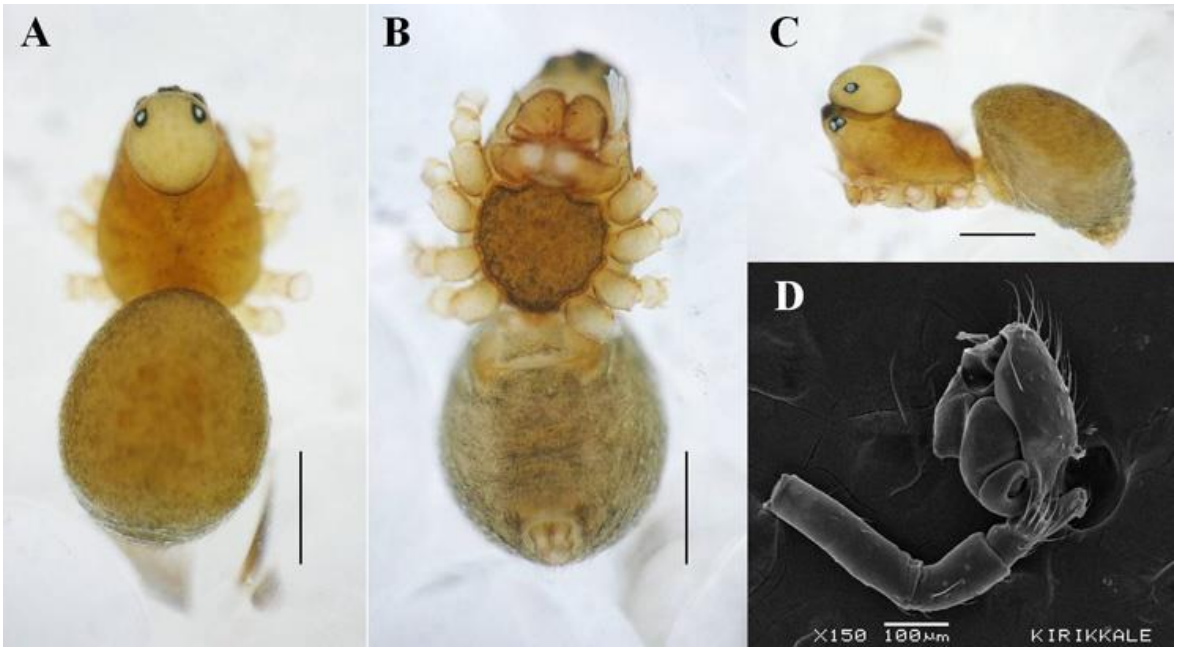

Figure 7. *Pelecopsis mengei*, male. **A.** Dorsal view, **B.** Ventral view, **C.** Lateral view (Scale: 0.5), **D.** Pedipalp, lateral view, SEM micrograph.

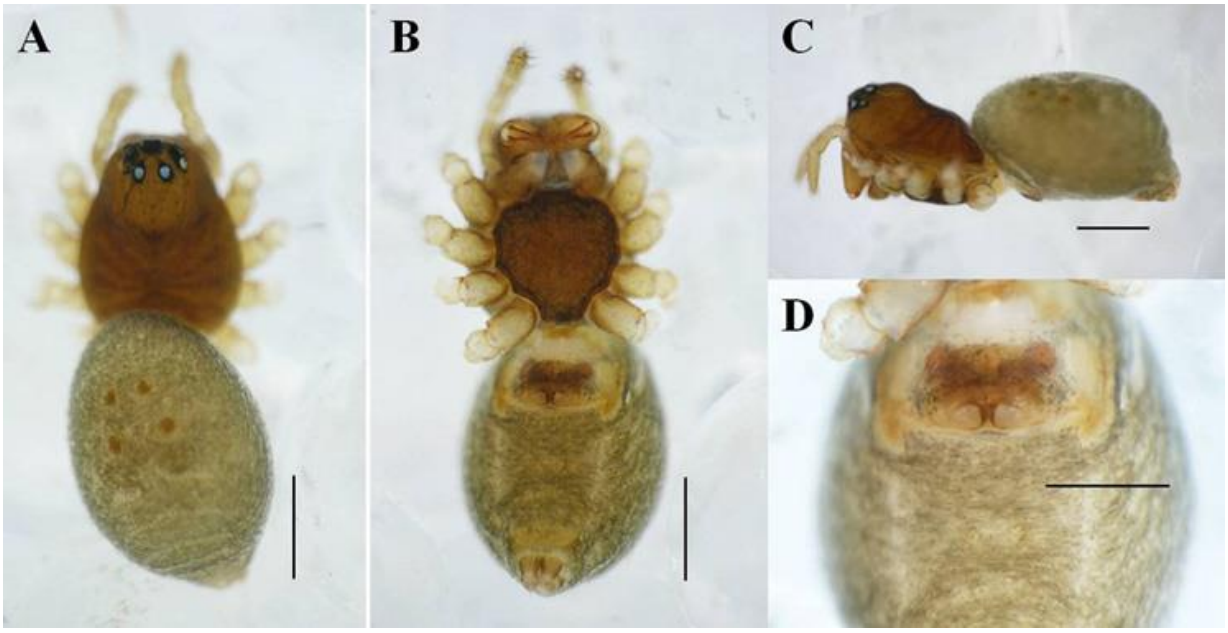

Figure 8. *Pelecopsis mengei*, female. **A.** Dorsal view, **B.** Ventral view, **C.** Lateral view (Scale: 0.5), **D**. Epigyne, ventral view (Scale: 0.2).

***Sauron rayi* (Simon, 1881), Figures 9-10**

Material examined: 5♂♂, 8♀♀, Kastamonu Province, Azdavay, Ballıdağ, 41°32'22.2"N 33°23'35.1"E, 26.09.2010. Leg. T. Danışman.

Male description. Total length 1.5. Prosoma dirty brown, with conical projection between posterior median eyes, thereon with some bent bristles (Figure 9A-D).Opisthosoma dirty grey.Male palpal tibia with multiple simple apophyses. Pedipalp characteristics as in Figures 9E and 9F.

Female description. Total length 2.0. Prosoma brown to orange-brown (Figure 10A and 10B). Cephalic region of prosoma without conical projection. Opisthosoma yellow to dirty grey. Epigyne with only vague tri-oval shaped plate, characteristics as in Figure 10C.

Distribution: Europe [12].

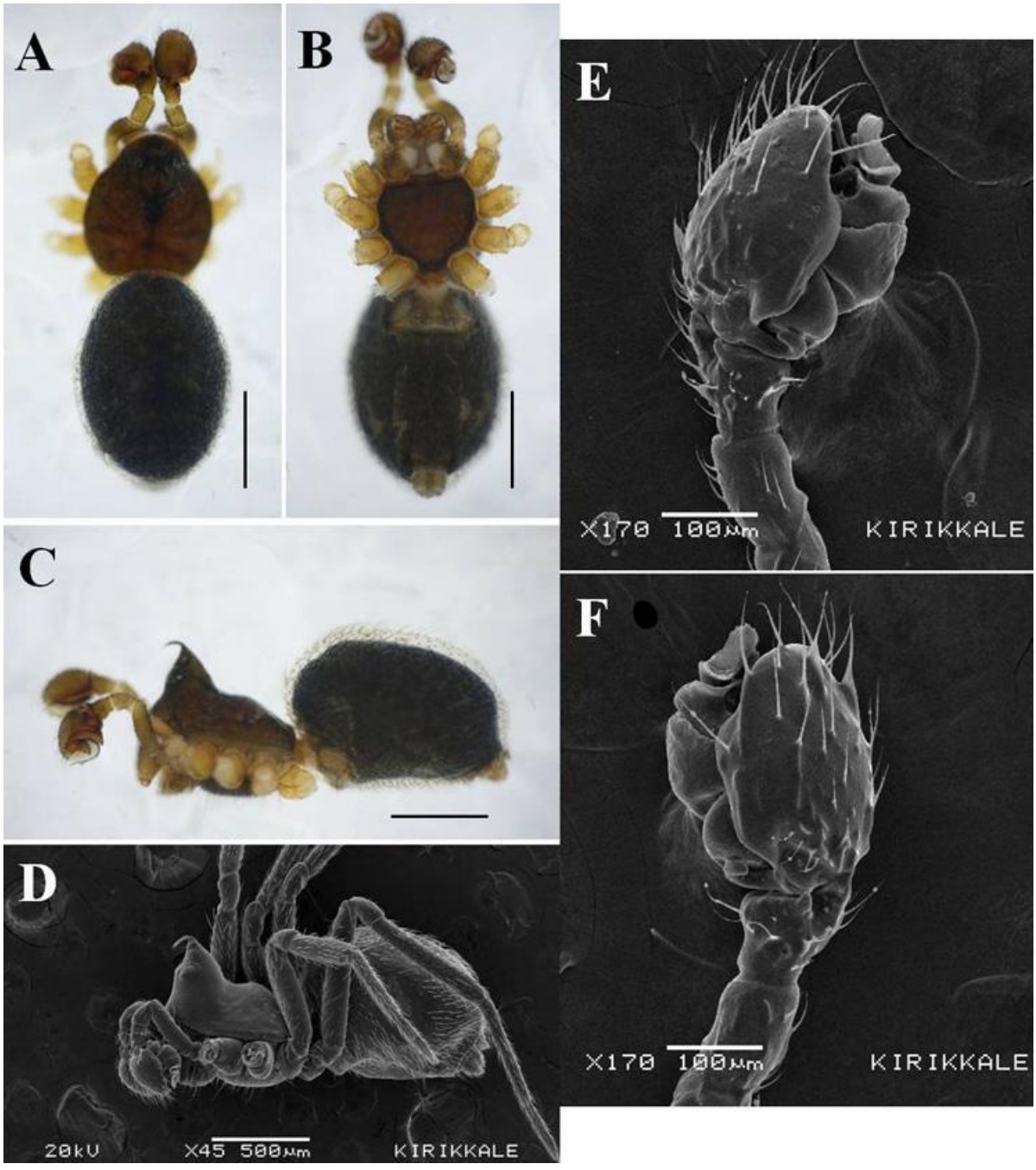

Figure 9. *Sauron rayi*, male. **A.** Dorsal view, **B.** Ventral view, **C.** Lateral view (Scale: 0.5), **D**. Lateral view, **E-F.** Pedipalp prolateral and retrolateral view, SEM micrograph.

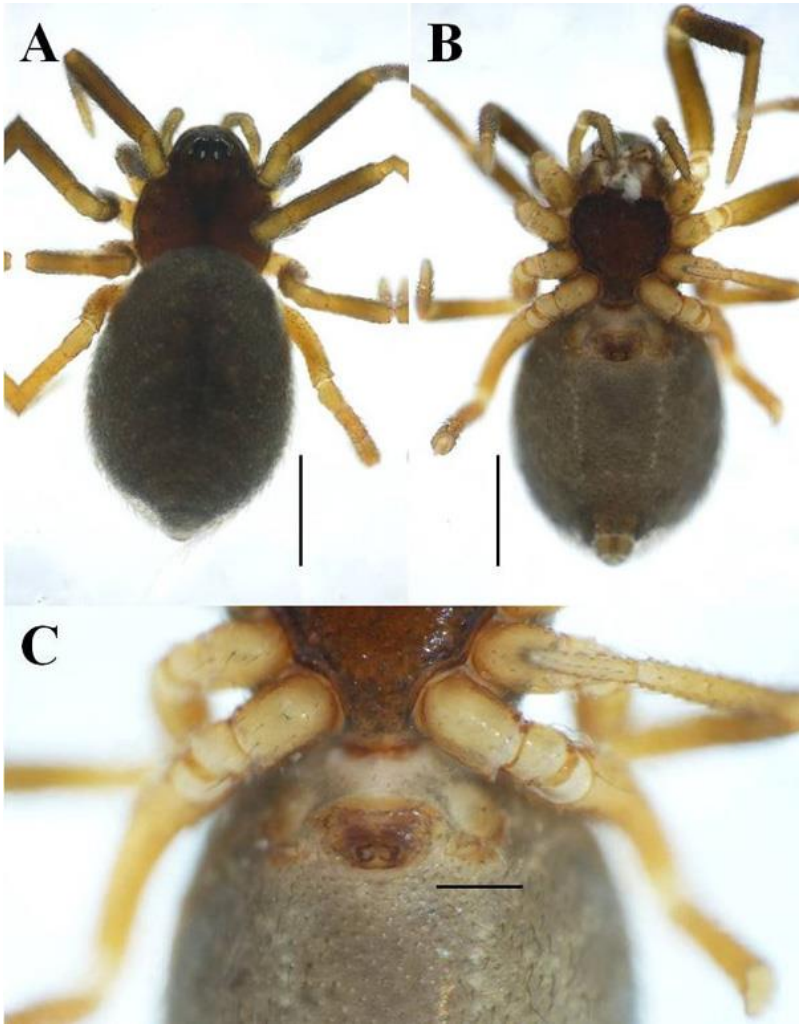

Figure 10. *Sauron rayi*, female. **A.** Dorsal view, **B.** Ventral view. (Scale: 0.5), **C.** Epigyne, ventral view (Scale: 0.2).

***Walckenaeria corniculans* (O. P.-Cambridge, 1875), Figures 11-12**

Material examined: 1♂, 1♀, Ankara Province, Çamlıdere, 40°29'10.0"N 32°28'11.9"E, 30.09.2013. Leg. T. Danışman.

Male description. Total length 2.5. Prosoma reddish orange, with cone shaped projection, thereon with some hairs (Figures 11A and 11B). Opisthosoma dirty grey. Palpal tibia with complex apophyses. Pedipalp characteristics as in Figure 11C.

Female description. Total length 2.9. Prosoma dirty yellow to orange (Figure 12A and 12B). Cephalic region of prosoma without conical projection. Opisthosoma grey. Epigyne with rectangle-shaped plate. Spermathecae visible through epigyne, separated by half of their diameter, as in Figure 12C.

Distribution: Europe, North Africa [12].

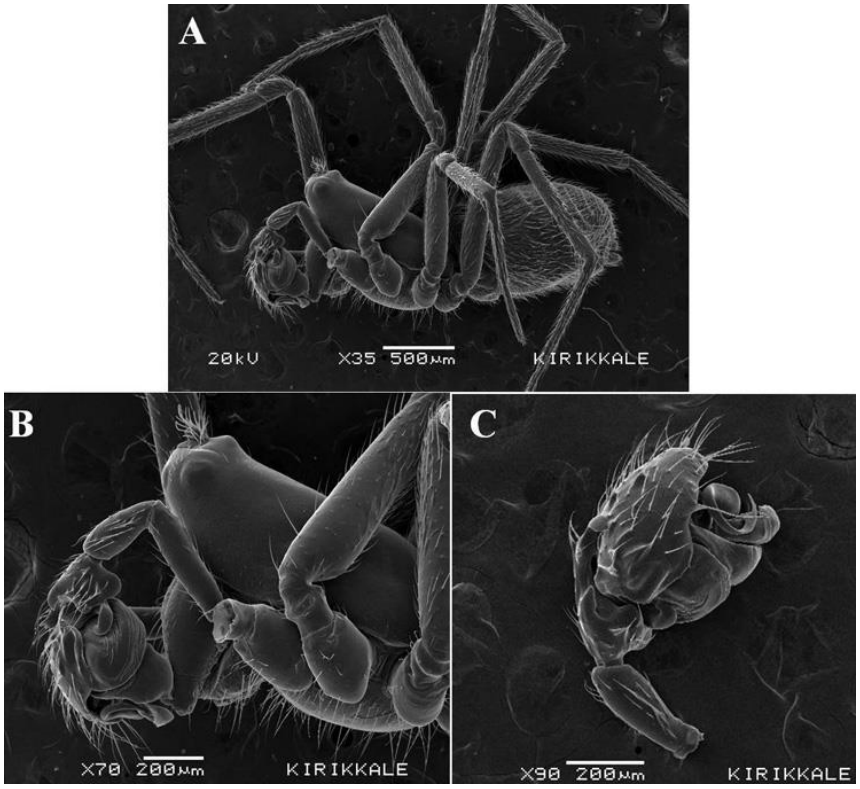

Figure 11. *Walckenaeria corniculans*, male. **A.** Lateral view, **B.** Prosoma and pedipalp, lateral view, **C.** Pedipalp retrolateral view, SEM micrographs.

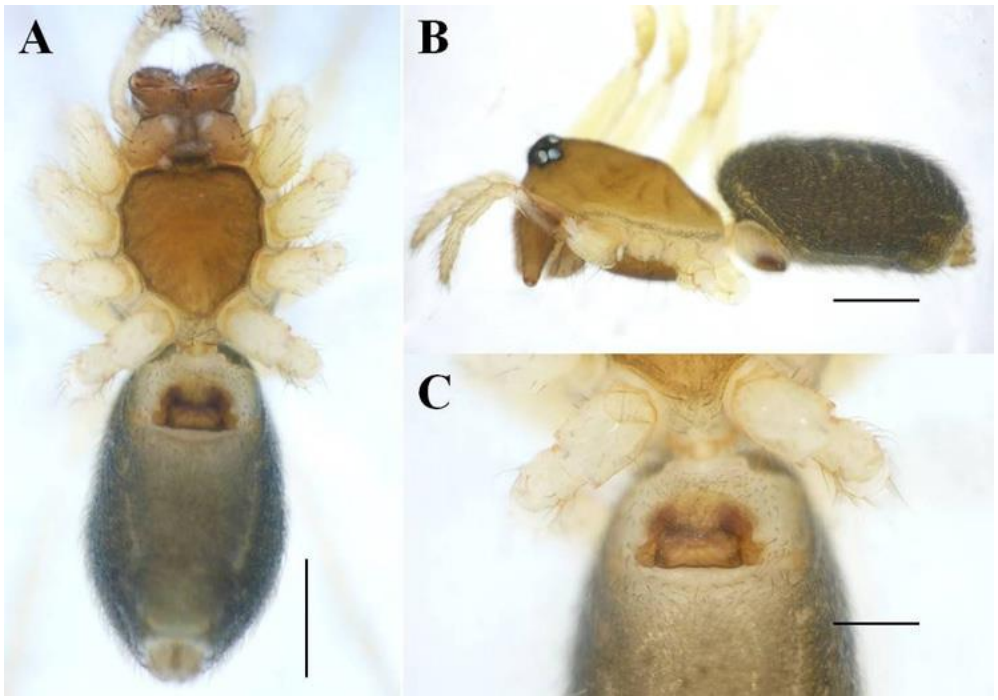

Figure 12. *Walckenaeria corniculans*, female. **A.** Ventral view, **B.** Lateral view (Scale: 0.5), **C.** Epigyne, ventral view (Scale: 0.2).

***Walckenaeria dysderoides* (Wider, 1834), Figures 13-14**

Material examined: 1♂, Kastamonu Province, Ballıdağ, 41°33'58.6"N 33°20'49.8"E, 28.04.2013. Leg. T. Danışman; 1♀, Azdavay, Ballıdağ, 41°32'22.2"N 33°23'35.1"E, 28.04.2013. Leg. T. Danışman; 1♀, Çankırı Province, Ilgaz, İnköy, 40°54'05.3"N 33°39'04.1"E, 27.06.2012. Leg. T. Danışman.

Male description. Total length 1.9. Prosoma reddish brown, ocular area flattened laterally (Figure 13A and 13B). Opisthosoma dirty grey. Male palpal tibia with long process. Paracymbium typical elongated, as in Figure 13C.

Female description. Total length 2.1. Prosoma brown to orange-brown (Figure 14A and 14B). Opisthosoma light grey. Epigyne with a pocket on either side, with scapus. Epigynal scutum characteristics as in Figure14C.

Distribution: Palearctic [12].

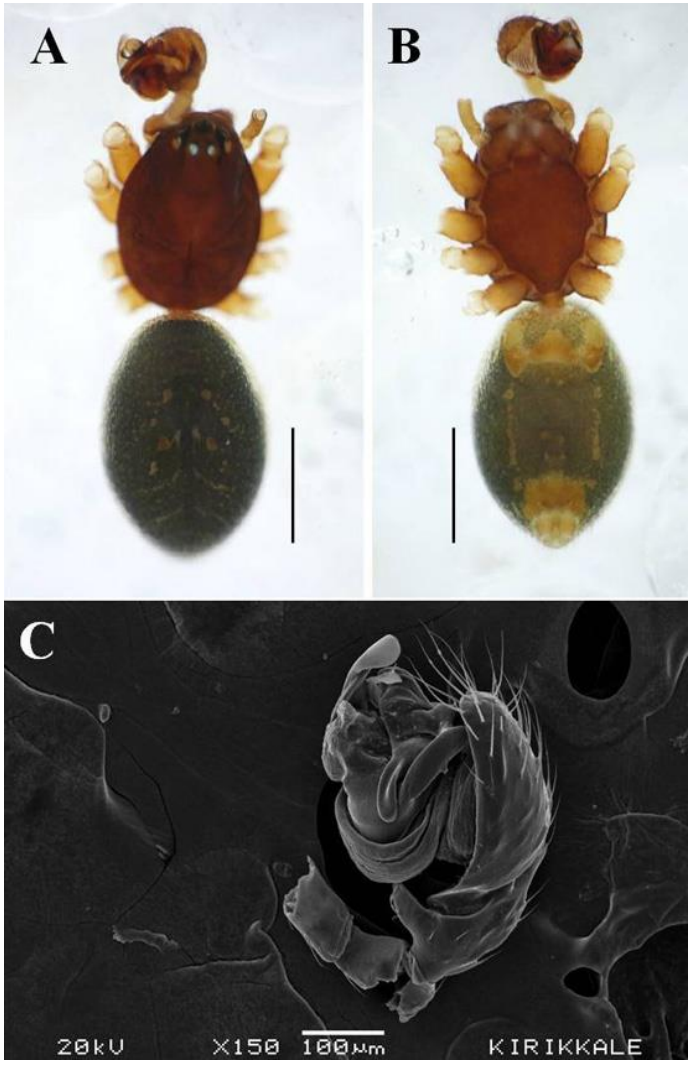

Figure 13. *Walckenaeria dysderoides*, male. **A.** Dorsal view, **B.** Ventral view (Scale: 0.5). **C.** Pedipalp retrolateral view, SEM micrograph.

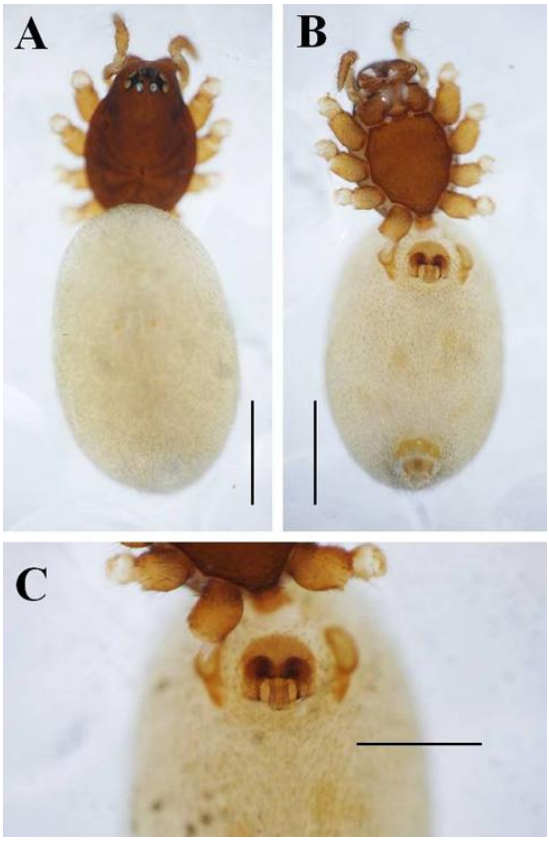

Figure 14. *Walckenaeria dysderoides*, female. **A.** Dorsal view, **B.** Ventral view (Scale: 0.5). **C.** Epigyne, ventral view (Scale: 0.2).

Including the new records listed above, the total number of Linyphiidae recorded from Turkey is now 135 species. Therefore, we expect that more new Turkish records will be found in the future for this family. The morphometric measurements and some characteristic features of the Turkish species are not different from the Palearctic specimens.

ACKNOWLEDGEMENTS

We thank Kırıkkale University Scientific and Technological Research Application and Research Center (KUBTUAM) for SEM.

REFERENCES

[1] Bayram A, Kunt KB. Danışman T. The Checklist of the Spiders of Turkey. Version 2017, Online at http://www.spidersofturkey.info

[2] Danışman T. First record of the linyphiid spider *Walckenaeria furcillata* (Menge, 1869) (Araneae, Linyphiidae) in Turkey. Serket 2014; 14(2): 68-70.

[3] Danışman T, Coşar İ. A poorly known species of the spider genus *Araeoncus* Simon, 1884 (Araneae, Linyphiidae) in Turkey. Serket 2014; 14(2): 71-72.

[4] Danışman T, Coşar İ. *Walckenaeria cirriceps* Thaler, 1996, a new record from Turkey (Araneae: Linyphiidae). Serket 2016; 15(1): 47-49.

[5] Demircan N, Topçu A. A contribution to the spider fauna of the European part of Turkey (Araneae). Serket 2015; 14(4): 176-183.

[6] Demircan N, Topçu A. First records for spider fauna of the European part of Turkey (Araneae). Serket 2016; 15(2): 85-91.

[7] Heimer S, Nentwig W. Spinnen Mitteleuropas. Verlag Paul Parey, Berlin und Hamburg, Germany: Blackwell Wissenschafts -Verlag, 1991.

[8] Roberts MJ. The Spiders of Great Britain And Ireland. Volume 2: Linyphiidae. Harley Books, Colchester, England, 1987.

[9] Roberts M J. Collins Field Guide: Spiders of Britain and Northern Europe. HarperCollins, London, 1995.

[10] Topçu A, Türkeş T, Seyyar O, Demircan N, Karabulut H. A new species of *Troglohyphantes* (Araneae: Linyphiidae) from a Turkish cave. Open Journal of Animal Sciences 2014; .4: 85-91.

[11] Türkeş T, Karabulut H, Demir H, Seyyar O. Contributions to the Linyphiidae fauna of Turkey (Arachnida: Araneae). Turk J Zool 2015; 39(4), 560-564.

[12] World Spider Catalog. Natural History Museum Bern, 2018, online at http://wsc.nmbe.ch, version 19.0, accessed on {17.01.2018}