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First DNA barcodes and records of Sciaridae (Insecta, Diptera) from Romania

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Abstract: Sciaridae or the dark-winged fungus gnats fauna of southern and eastern Europe is very poorly known. A total of 29 species were identified from Romania, of which 20 species are reported here for the first time from the country. An updated checklist of dark-winged fungus gnats (Sciaridae) of Romania is provided. DNA barcodes of 39 specimens belonging to 21 species were successfully sequenced, of which some were previously unknown or undetected.

Key words: Checklist, distribution, dark-winged fungus gnats, Malaise trap

The Romanian Sciaridae fauna is very poorly known. The first dark-winged fungus gnats records were published by Thalhammer (1899). Three articles reported additional species collected from caves (Lengersdorf and Leruth, 1940; Lengersdorf, 1949; Decu-Burghele, 1963). Most of our knowledge about the Romanian sciarid fauna derives from Nico Hondru. He reported 68 species for the first time and described 5 new species, which he collected in the southern parts (Dobrogea, Romanian Plain, and Iron Gates Gorge) of the country (Hondru, 1965, 1968a, 1968b, 1975). Since 1975 only one additional species was reported by Pârvu (2004). Other works only refer to the previously reported data (Pârvu, 2005, 2008). In the Checklist of Romanian Fauna (Moldovan et al., 2007) only 20 species were reported, species published by Hondru (1968b) being absent from the list. The latest version of Fauna Europaea (Heller and Menzel, 2013) also ignored Hondru (1968b) and lists only 21 sciarid species that are known from Romania. After summarizing the literature data for all of Romania, we compiled 87 species occurring in the country, previous to this paper.

The checklist, however, cannot be taken as a revised fauna of the Romanian Sciaridae, because certainly some of the identifications by Hondru are doubtful as the material has not been checked in light of modern taxonomy. Unfortunately Hondru's material was not available to us, and it is not even known whether it still exists.

The present paper aims to improve the faunistic knowledge of dark-winged fungus gnats in Romania, provide an updated checklist of Sciaridae, and publish the first DNA barcodes for some species.

The material was collected by sweep-netting or by a Malaise trap placed in Alexandru Borza Botanical Garden, Cluj-Napoca, Romania, between 2013 and 2015, and identified by Kai Heller and Jukka Salmela. The barcoded specimens were mounted on slides and will be deposited in the Zoological Museum of Bonn (ZFMK). Individual catalogue numbers of the vouchers are given (e.g., ZFMK-TIS-2571441).

Collection localities:

Loc. 1. Cluj-Napoca, Alexandru Borza Botanical Garden, 390 m, 46.7613°N, 23.5865°E, Malaise trap along a small artificial brook between trees. A small wet muddy area with invasive *Fallopia* sp. is located near the trap.

Loc. 2. Bicaz-Chei, Munticel Mt., Cheile Şugăului, 710 m, 46.8261°N, 25.8476°E, limestone canyon with Norway spruce (*Picea abies*) and European beech (*Fagus sylvatica*) dominated forest.

Loc. 3. Salatruc, Nemira Mts., Uz Valley, 510 m, 46.3342°N, 26.4084°E, European beech (*Fagus sylvatica*) dominated forest.

Loc. 4. Catrusa, Bodoc Mts., 740 m, 46.1620°N, 26.0534°E, European beech (*Fagus sylvatica*) dominated forest.

Selected specimens were sent to the German Barcoding of Life Project (GBOL), where the COI barcode sequence was analyzed by standard methods. For 39 out of 42 specimens a sequence was successfully obtained.

From these few samples, 150 specimens belonging to 29 species were identified. Here we list those species that were previously not reported from Romania or that are

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otherwise important records in connection with the DNA results. Other species collected in Cluj-Napoca (Loc. 1) and Catrusa (Loc. 4) but previously reported from Romania are listed in Table 1. The updated checklist of dark-winged fungus gnats (Sciaridae) of Romania is listed in Table 2.

Bradysia barbarossae Mohrig & Mamaev, 1970

Material examined: Loc. 3. Date: 24.08.2014, 1 male (ZFMK-TIS-2571441).

DNA barcode: BOLD:ACP0037.

A rarely found European species, usually confined to dry habitats. The DNA barcode is hereby reported for the first time.

Bradysia fenestralis (Zetterstedt, 1838)

Material examined: Loc. 1. Date: 02.07.2015-01.08.2015, 1 male (ZFMK-TIS-2571453).

DNA barcode: BOLD:AAV1366.

A common species with Holarctic distribution, also reported from Canada by DNA barcoding (Telfer et al., 2015).

Bradysia lobata Hondru, 1968

Material examined: Loc. 1. Date: 12.08.2015-22.08.2015, 1 male (ZFMK-TIS-2571442).

DNA barcode: BOLD:ACZ9867.

The species is widely distributed over Europe, but was originally described from Romania. The identity of the barcode between specimens from Norway, Germany, and Romania confirms the existence of one single and clearly defined species.

Bradysia neopraecox Rudzinski, 1996

Material examined: Loc. 3. Date: 18.07.2013, 1 male (ZFMK-TIS-2571469).

DNA barcode: BOLD:ADG3272.

This is the second record of the species after the original description from Turkey and the first report of its DNA barcode.

Bradysia nitidicollis (Meigen, 1818)

Material examined: Loc. 1. Date: 02.07.2015-01.08.2015, 1 male (ZFMK-TIS-2571455).

DNA barcode: BOLD:ABA6471.

A very common species, also reported from Canada by DNA barcoding (Telfer et al., 2015).

Bradysia pectoralis (Staeger, 1840)

Material examined: Loc. 2. Date: 24.08.2014, 1 male (ZFMK-TIS-2571440).

DNA barcode: BOLD:ACG3678.

The species is commonly found in humid beech forests all over Europe.

Bradysia scabricornis Tuomikoski, 1960

Material examined: Loc. 1. Date: 01.06.2015-18.06.2015, 1 male (ZFMK-TIS-2571468); 01.08.2015-22.08.2015, 2 males (ZFMK-TIS-2571447, ZFMK-TIS-2571448).

DNA barcode: BOLD:ABA0929.

A common and widespread species, also reported from Canada by DNA barcoding (Telfer et al., 2015).

Bradysia subaffinis Mohrig & Krivosheina, 1989

Material examined: Loc. 1. Date: 01.07.2015-01.08.2015, 1 male (ZFMK-TIS-2571454).

DNA barcode: BOLD:ACM7641.

A poorly known but apparently widespread species, which was originally described from Far East Russia, but was later reported also from Europe and Taiwan. For the first time we identified the DNA barcode of this species and the distribution on BOLD confirms this wide distribution with records from Far East Russia, Romania, and Germany.

Bradysia trivittata (Staeger, 1840)

Material examined: Loc. 1. Date: 27.10.2015-13.11.2015; 2 males (ZFMK-TIS-2571474; ZFMK-TIS-2571475).

DNA barcode: BOLD:ACE4654.

A very common and worldwide distributed species, which shows genetic polymorphism. On BOLD there are 11 different BINs with genetic distances of less than 2% to each other, which are assigned to this species.

Corynoptera flavosignata Menzel & Heller, 2006

Material examined: Loc. 1. Date: 01.06.2015-18.06.2015, 1 male (ZFMK-TIS-2571482).

DNA barcode: BOLD:ACO9479.

Table 1. Sciaridae collection data in Cluj-Napoca (Loc. 1) and Catrusa (Loc. 4).

Species	Number of males	Date	Collection location
Bradysia vagans (Winnertz, 1868)	1, 4	27.08.2015–17.09.2015; 01.08.2015–22.08.2015	Loc. 1
Corynoptera flavicauda (Zetterstedt, 1855)	1	01.06.2015–18.06.2015	Loc. 1
Corynoptera forcipata (Winnertz, 1867)	5	01.08.2015–22.08.2015	Loc. 1
Corynoptera tetrachaeta Tuomikoski, 1960	1	01.08.2015–22.08.2015	Loc. 1
Lycoriella lundstromi (Frey, 1948)	1	01.08.2015–22.08.2015	Loc. 1
Scatopsciara atomaria (Zetterstedt, 1851)	4	01.12.2015–31.12.2015	Loc. 1
Schwenckfeldina carbonaria (Meigen, 1830)	1, 3	25.8.2014; 01.12.2015–31.12.2015	Loc. 4; Loc. 1

Table 2. Actual checklist of dark-winged fungus gnats (Sciaridae) of Romania. Author(s) and name by which the species was originally reported are also listed. New species for Romania are marked with an asterisk.

No.	Species	Author(s)	Reported as
1	*Bradysia affinis* (Zetterstedt, 1838)	Hondru, 1968b	*Bradysia affinis* Zett.
2	*Bradysia alpicola* (Winnertz, 1867)	Hondru, 1968b	*Bradysia mutabilis* Ldf.
3	*Bradysia barbarossae* Mohrig & Mamaev, 1970	*	
4	*Bradysia bicolor* (Meigen, 1818)	Hondru, 1968b	*Bradysia bicolor* Meig.
5	*Bradysia brevispina* Tuomikoski, 1960	Hondru, 1975	*Bradysia brevispina* Tuomikoski, 1960
6	*Bradysia cinerascens* (Grzegorzek, 1884)	Hondru, 1968b	*Bradysia lanicauda* Tuomik.
7	*Bradysia confinis* (Winnertz, 1867)	Hondru, 1965	*Bradysia confinis* Winn.. 1867
8	*Bradysia distincta* (Staeger, 1840)	Hondru, 1968b	*Bradysia distincta* Staeg.
9	*Bradysia fenestralis* (Zetterstedt, 1838)	*	
10	*Bradysia forficulata* (Bezzi, 1914)	Lengersdorf and Leruth, 1940	*Neosciara forficulata* Bezzi
11	*Bradysia fungicola* (Winnertz, 1867)	Hondru, 1965	*Bradysia fungicola* Winn.. 1867
12	*Bradysia giraudii* (Egger, 1862)	Thalhammer, 1899	*Bradysia giraudi* Schin.
13	*Bradysia hilaris* (Winnertz, 1867)	Hondru, 1968b	*Bradysia hilaris* Winn.
14	*Bradysia laurencei* Menzel & Mohrig, 2000	Hondru, 1968b	*Bradysia betuleti* Ldf.
15	*Bradysia leptoptera* Tuomikoski, 1960	Hondru, 1968b	*Bradysia leptoptera* Tuomik.
16	*Bradysia lobata* Hondru, 1968	Hondru, 1968	*Bradysia lobata* n. sp.
17	*Bradysia lobulifera* Frey, 1948	Hondru, 1968b	*Bradysia lobulifera* Frey.
18	*Bradysia neopraecox* Rudzinski, 1996	*	
19	*Bradysia nervosa* (Meigen, 1818)	Hondru, 1968b	*Bradysia nervosa* Frey.
20	*Bradysia nitidicollis* (Meigen, 1818)	*	
21	*Bradysia normalis* Frey, 1948	Hondru, 1968b	*Bradysia normalis* Frey.
22	*Bradysia pallipes* (Fabricius, 1787)	Hondru, 1968b	*Bradysia picipes* Zett.
23	*Bradysia pauperata* (Winnertz, 1867)	Thalhammer, 1899	*Bradysia pauperata* Winn.
24	*Bradysia pectoralis* (Staeger, 1840)	*	
25	*Bradysia peraffinis* Tuomikoski, 1960	Hondru, 1968b	*Bradysia peraffinis* Tuomik.
26	*Bradysia placida* (Winnertz 1867)	Hondru, 1968b	*Bradysia fimbricauda* Tuomik.
27	*Bradysia polonica* (Lengersdorf, 1929)	Hondru, 1968	*Bradysia spinidensa* n. sp.
28	*Bradysia praecox* (Meigen, 1818)	Thalhammer, 1899	*Bradysia praecox* (Meig.)
29	*Bradysia pratincola* Tuomikoski, 1960	Hondru, 1968b	*Bradysia pratincola* Tuomik.
30	*Bradysia regularis* (Lengersdorf, 1934)	Hondru, 1975	*Bradysia subnervosa* Frey, 1948
31	*Bradysia rufescens* (Zetterstedt, 1852)	Hondru, 1968b	*Bradysia rufescens* Zett.
32	*Bradysia scabricornis* Tuomikoski, 1960	*	
33	*Bradysia subaffinis* Mohrig & Krivosheina, 1989	*	
34	*Bradysia trivittata* (Staeger, 1840)	*	
35	*Bradysia vagans* (Winnertz, 1868)	Hondru, 1968b	*Bradysia callicera* Meig.
36	*Camptochaeta ofenkaulis* (Lengersdorf, 1925)	Decu-Burghele, 1963	*Corynoptera ofenkaulis* (Ldf.)
37	*Corynoptera bicuspidata* (Lengersdorf, 1926)	Komarova, 2012	*Corynoptera bicuspidata* (Lengersdorf, 1926)
38	*Corynoptera blanda* (Winnertz, 1867)	Komarova, 2012	*Corynoptera blanda* Tuomikoski, 1960
39	*Corynoptera concinna* (Winnertz, 1867)	Hondru, 1968b	*Corynoptera concina* Winn.

Table 2. (Continued).

40	*Corynoptera dubitata* Tuomikoski, 1960	Hondru, 1968b	*Corynoptera dubitata* Tuomik.
41	*Corynoptera flavicauda* (Zetterstedt, 1855)	Hondru, 1965	*Corynoptera nemoralis* Meig.. 1818
42	*Corynoptera flavosignata* Menzel & Heller, 2006	*	
43	*Corynoptera forcipata* (Winnertz, 1867)	Lengersdorf and Leruth, 1940	*Neosciara forcipata* Winn.,
44	*Corynoptera luteofusca* (Bukowski & Lengersdorf, 1936)	Hondru, 1968b	*Corynoptera luteofusca* Buk., Ldt.
45	*Corynoptera membranigera* (Kieffer, 1903)	Hondru, 1965	*Corynoptera trispina* Tuomik.. 1960
46	*Corynoptera parvula* (Winnertz, 1867)	Hondru, 1968b	*Corynoptera parvula* Winn.
47	*Corynoptera praeforcipata* Mohrig & Mamaev, 1987	*	
48	*Corynoptera saccata* Tuomikoski, 1960	Hondru, 1965	*Corynoptera saccata* Tuomik.. 1960
49	*Corynoptera sphenoptera* Tuomikoski, 1960	Hondru, 1968b	*Corynoptera sphaenoptera* Tuomik.
50	*Corynoptera subparvula* Tuomikoski, 1960	Hondru, 1965	*Corynoptera subparvula* Tuomik., 1960
51	*Corynoptera subtilis* (Lengersdorf, 1929)	Hondru, 1968b	*Corynoptera longicornis* Buk., Ldf.
52	*Corynoptera tetrachaeta* Tuomikoski, 1960	*	
53	*Corynoptera tridentata* Hondru, 1968	Hondru, 1968	*Corynoptera tridentata* n . sp.
54	*Corynoptera bistrispina* (Bukowski & Lengersdorf, 1936)	Hondru, 1968b	*Corynoptera bistrispina* Buk., Ldt.
55	*Corynoptera inexspectata* Tuomikoski, 1960	Hondru, 1968b	*Corynoptera inexpectata* Toumik.
56	*Corynoptera tetrachaeta* Tuomikoski, 1960	Hondru, 1968b	*Corynoptera tetrachaeta* Tuomik.
57	*Cosmosciara perniciosa* (Edwards, 1922)	*	
58	*Cratyna* (*Cratyna*) *ambigua* (Lengersdorf, 1934)	Hondru, 1968b	*Decembrina latiforceps* Buk., Ldf.
59	*Cratyna* (*Cratyna*) *schineri* (Winnertz, 1867)	Hondru, 1968b	*Plastosciara schineri* Winn.
60	*Cratyna* (*Peyerimhoffia*) *vagabunda* (Winnertz, 1867)	*	
61	*Epidapus* (*Epidapus*) *atomarius* (De Geer, 1778)	Lengersdorf and Leruth, 1940	*Epidapus atomarius* Degeer
62	*Epidapus* (*Epidapus*) *fagicola* Hondru, 1968	Hondru, 1968	*Epidapus* (*Epidapus*) *fagicola* n. sp.
63	*Epidapus* (*Epidapus*) *gracilis* (Walker, 1848)	Hondru, 1968b	*Epidapus gracilis* Winn.
64	*Epidapus* (*Epidapus*) *microthorax* (Börner, 1903)	Decu-Burghele, 1963	*Epidapus gracilicornis* Ldf.
65	*Epidapus* (*Epidapus*) *schillei* (Börner 1903)	Hondru, 1968b	*Epidapus titan* Frey.
66	*Epidapus* (*Pseudoaptanogyna*) *absconditus* (Vimmer, 1926)	Hondru, 1968b	*Lengersdorfia flabellata* Ldt.
67	*Leptosciarella* (*Hirtipennia*) *hirtipennis* (Zetterstedt, 1838)	Hondru, 1965	*Trichosia hirtipennis* Zett. 1838
68	*Leptosciarella* (*Leptosciarella*) *coarctata* (Winnertz, 1867)	Lengersdorf and Leruth, 1940	*Lycoria hispida* Winn.
69	*Leptosciarella* (*Leptosciarella*) *longistilis* (Hondru, 1968)	Hondru, 1968	*Trichosia* (*Leptosciarella*) *longistilis* n. sp.
70	*Leptosciarella* (*Leptosciarella*) *nudinervis* (Tuomikoski, 1960)	Hondru, 1968b	*Trichosia nudinervis* Tuomik.
71	*Leptosciarella* (*Leptosciarella*) *pilosa* (Staeger, 1840)	Thalhammer, 1899	*Trichosia* (*Leptosciarella*) *pilosa* Staeg.
72	*Leptosciarella* (*Leptosciarella*) *scutellata* (Staeger, 1840)	Hondru, 1965	*Trichosia elegans* Winn.. 1867
73	*Leptosciarella* (*Leptosciarella*) *subpilosa* (Edwards, 1925)	Hondru, 1965	*Trichosia subpilosa* Edw., 1925

Table 2. (Continued).

74	*Leptosciarella* (*Leptosciarella*) *viatica* (Winnertz, 1867)	Hondru, 1965	*Trichosia* (*Leptosciarella*) *viatica* Winn., 1861
75	*Leptosciarella* (*Leptosciarella*) *melanoma* (Mohrig & Menzel, 1990)	*	
76	*Lycoriella* (*Lycoriella*) *agraria* (Felt, 1898)	Lengersdorf and Leruth, 1940	*Neosciara cellaris* Ldf.,
77	*Lycoriella* (*Lycoriella*) *castanescens* (Lengersdorf 1940)	Hondru, 1968b	*Lycoriella fucorum* Frey.
78	*Lycoriella* (*Lycoriella*) *ingenua* (Dufour, 1839)	Hondru, 1968b	*Lycoriella solani* Winn.
79	*Lycoriella* (*Lycoriella*) *lundstromi* (Frey, 1948)	Hondru, 1968b	*Lycoriella lundströmi* Frey.
80	*Lycoriella* (*Lycoriella*) *subterranea* (Märkel, 1844)	Hondru, 1968b	*Lycoriella wanderwieli* Schmitz.
81	*Lycoriella* (*Lycoriella*) *auripila* (Winnertz, 1867)	Hondru, 1968b	*Lycoriella auripilla* Winn.
82	*Lycoriella* (*Coelostylina*) *eflagellata* Tuomikoski, 1960	Hondru, 1965	*Lycoriella eflagellata* Tuomik., 1960
83	*Lycoriella* (*Lycoriella*) *lundstromi* (Frey, 1948)	*	
84	*Lycoriella* (*Lycoriella*) *pallidior* Tuomikoski, 1960	Hondru, 1968b	*Lycoriella pallidior* Tuomik.
85	*Lycoriella* (*Hemineurina*) *venosa* (Staeger, 1840)	Hondru, 1968b	*Lycoriella venosa* Staeg.
86	*Neosciara biarmata* Lengersdorf, 1953	Hondru, 1968b	*Lycoriella (Hemineurina) biarmata* Ldt.
87	*Peyerimhoffia vagabunda* (Winnertz, 1867)	Hondru, 1968b	*Plastosciara (Peyerimhoffia) brachyptera* Kieff.
88	*Phytosciara* (*Dolichosciara*) *flavipes* (Meigen 1804)	Thalhammer, 1899	*Phytosciara (Dolichosciara) flavipes* Meig.
89	*Phytosciara* (*Prosciara*) *porrecta* (Lengersdorf, 1929)	Pârvu, 2004	*Phytosciara (Prosciara) porrecta* (Lengersdorf, 1929)
90	*Phytosciara* (*Prosciara*) *ungulata* (Winnertz 1867)	Hondru, 1965	*Phytosciara ungulata* Winn.. 1867
91	*Pnyxia scabiei* (Hopkins, 1895)	*	
92	*Pseudolycoriella bruckii* (Winnertz, 1867)	*	
93	*Pseudolycoriella hispana* (Lengersdorf, 1957)	*	
94	*Pseudolycoriella paludum* (Frey, 1948)	*	
95	*Scatopsciara* (*Scatopsciara*) *atomaria* (Zetterstedt 1851)	Hondru, 1968b	*Scaphosciara vivida* Winn.
96	*Scatopsciara* (*Scatopsciara*) *calamophila* Frey, 1948	*	
97	*Scatopsciara* (*Scatopsciara*) *geophila* (Tuomikoski, 1960)	Hondru, 1968b	*Scaptosciara geophyla* Tuomik.
98	*Schwenckfeldina carbonaria* (Meigen, 1830)	Thalhammer, 1899	*Schwenckfeldina carbonaria* (Meig.)
99	*Sciara analis* Schiner, 1863	Hondru, 1968b	*Sciara annalis* Egg.
100	*Sciara flavimana* Zetterstedt, 1851	Hondru, 1975	*Sciara flavimana* Zetterstedt, 1838
101	*Sciara hemerobioides* (Scopoli, 1763)	Hondru, 1975	*Sciara thomae* L.
102	*Sciara humeralis* Zetterstedt, 1851	Hondru, 1975	*Sciara humeralis* Zetterstedt, 1838
103	*Scythropochroa quercicola* (Winnertz, 1869)	Hondru, 1968b	*Scythopochroa quercicola* Ldf.
104	*Trichosia (Trichosia) morio* (Fabricius, 1794)	Lengersdorf and Leruth, 1940	*Trichosia caudata* Walk.
105	*Trichosia* (*Trichosia*) *splendens* Winnertz, 1867	Hondru, 1965	*Trichosia splendens* Winn.. 1867
106	*Xylosciara* (*Protoxylosciara*) *longiforceps* (Bukowski & Lengersdorf, 1936)	Hondru, 1968b	*Xylosciara (Protoxylosciara) longiforceps* Buk., Ldt.
107	*Zygoneura* (*Zygoneura*) *sciarina* Meigen, 1830	Thalhammer, 1899	*Zygoneura sciarina* Meig.
104	*Trichosia* (*Trichosia*) *morio* (Fabricius, 1794)	Lengersdorf and Leruth, 1940	*Trichosia caudata* Walk.

A not very common species, mainly found in forests. The BIN of that species was previously recorded from Bulgaria and is hereby identified. Two neighboring BINs (BOLD:ACO7603 and BOLD:ACP3571) indicate that this may be a complex of cryptic species.

Corynoptera praeforcipata Mohrig & Mamaev, 1987

Material examined: Loc. 1. Date: 01.06.2015-18.06.2015, 1 male (ZFMK-TIS-2571466).

DNA barcode: BOLD:AAM9224.

A common species with Holarctic distribution.

Corynoptera tridentata Hondru, 1968

Material examined: Loc. 1. Date: 01.06.2015-18.06.2015, 3 males (ZFMK-TIS-2571458, ZFMK-TIS-2571463 and ZFMK-TIS-2571481).

DNA barcode: BOLD:ADF9383 and BOLD:ACP0262.

The species is widely distributed in Europe and was originally described from Romania. The three specimens from one and the same place are divided into two different BINs but do not show morphological differences. Furthermore, there are in total currently 28 different BINs, mainly from Bulgaria and Germany, in a range of 10% genetic variability, which all have the same morphological appearance and are assigned to *Corynoptera tridentata*. It is not clear if this is a complex of many cryptic species or if it is only one species with unusual genetic variability. A similar and also still unresolved case was found for *Trichosia edwardsi* (Lengersdorf), studied by Heller et al. (2016).

Cosmosciara perniciosa (Edwards, 1922)

Material examined: Loc. 1. Date: 01.06.2015-18.06.2015, 1 male (ZFMK-TIS-2571464).

DNA barcode: Not successful.

A cosmopolitan species, reported as injurious in greenhouses.

Cratyna (*Peyerimhoffia*) *vagabunda* (Winnertz, 1867)

Material examined: Loc. 1. Date: 02.07.2015-01.08.2015, 1 male (ZFMK-TIS-2571452).

DNA barcode: BOLD:ACD7169.

A very common species, which shows genetic plasticity. There are currently 8 different identified BINs on BOLD, which may indicate that there is a complex of cryptic species involved.

Epidapus (*Epidapus*) *gracilis* (Walker, 1848)

Material examined: Loc. 1. Date: 01.10.2015-13.11.2015, 1 male (ZFMK-TIS-2571473).

DNA barcode: BOLD:ADG1595.

Species of *Epidapus* in the current sense have proven to be genetically extremely variable, most likely because the morphology of these reduced species offers few characters to distinguish the species. Five different BINs are currently assigned to *Epidapus gracilis* alone. The present one is only based on our Romanian specimen and the most isolated one, having a genetic distance of 19.64% to its nearest neighbor. If the speciation mechanism of this genus is not completely different from that of other genera, it must be assumed that there are a lot of cryptic *Epidapus* species, which need a revision.

Epidapus (*Epidapus*) *microthorax* (Börner, 1903)

Material examined: Loc. 1. Date: 11.06.2015-18.06.2015, 1 male (ZFMK-TIS-2571467).

DNA barcode: BOLD:ADG0552.

Here the same applies as for the previous species. Again, the present specimen is at this time the only representative of the BIN and has a nearest neighbor distance of 10.27%. *Epidapus microthorax* is an assemblage of six BINs, which at least form a coherent cluster in contrast to *E. gracilis*.

Leptosciarella (*Leptosciarella*) *melanoma* (Mohrig & Menzel, 1990)

Material examined: Loc. 1. Date: 01.06.2015-18.06.2015, 1 male (ZFMK-TIS-2571480).

DNA barcode: BOLD:ADF8509.

A new BIN originated from this single specimen, which has a genetic distance of 4% from the central and northern European *Le. melanoma* BIN BOLD:ACS7888. Further analysis is required as to whether this is a complex of cryptic species.

Pnyxia scabiei (Hopkins, 1895)

Material examined: Loc. 1. Date: 01.06.2015-18.06.2015, 1 male (ZFMK-TIS-2571465).

DNA barcode: BOLD:AAN5301.

A worldwide distributed species.

Pseudolycoriella bruckii (Winnertz, 1867)

Material examined: Loc. 1. Date: 01.06.2015-18.06.2015, 81 males (ZFMK-TIS-2571456, ZFMK-TIS-2571457).

DNA barcode: BOLD:ACJ1560.

The species is distributed in central and southern Europe, but not recoded from northern Germany and Scandinavia.

Pseudolycoriella hispana (Lengersdorf, 1957)

Material examined: Loc. 1. Date: 02.07.2015-01.08.2015, 6 males (ZFMK-TIS-2571450, ZFMK-TIS-2571451).

DNA barcode: BOLD:ADG0909.

Distributed in southern Europe. The COI sequence for that species was formerly not known.

Pseudolycoriella paludum (Frey, 1948)

Material examined: Loc. 1. Date: 01.06.2015-18.06.2015, 20 males (ZFMK-TIS-2571460, ZFMK-TIS-2571461, ZFMK-TIS-2571462).

DNA barcode: BOLD:ACP4204.

This third *Pseudolycoriella* species has a more northern distribution than the former ones and reaches up to Norway.

Scatopsciara (*Scatopsciara*) *calamophila* Frey, 1948

Material examined: Loc. 1. Date: 01.08.2015-22.08.2015, 2 males (ZFMK-TIS-2571476, ZFMK-TIS-2571477).

DNA barcode: BOLD:ABV1201.

A very common Holarctic species, by BIN matching also proven to be present in North America.

The results suggest a potentially species-rich but poorly researched Sciaridae fauna of Romania. Most of the recorded species proved to be common and widespread. Apart from possibly cryptic species, no clearly distinguishable new species were present, and the number of specimens was not very high. Nevertheless, this study helped to reveal some previously unknown or undetected DNA barcodes. The barcode reference for European Sciaridae is still far from being complete. The southern and eastern parts of Europe are particularly still underrepresented.

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