

Preliminary faunistic assessment of weevils living in areas of the Nature 2000 Site „Eastern Cluj Hills” (Romania) impacted by human (Coleoptera: Curculionoidea)

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Summary: From the areas impacted by human pressure in the Nature 2000 Site „Eastern Cluj Hills” (Romania), 102 weevil species (Coleoptera: Curculionoidea) are recorded in a relatively short period and irregularly collecting (June and August 2014, May-June 2015 and 2016). The most diverse and rich (42 species) weevil fauna occur grasslands of Bădești. *Mecinus plantaginis* is recorded for the first time from Romania, and *Mogulones larvatus*, *Argoptochus quadrisignatus*, *Lixus cylindrus* and *L. angustus*, are rare in the country. The most common are: *Protapion apricans*, *Mecinus pyraster*, *Tychius quinquepunctatus*, *Phyllobius pyri*, *Ph. betulinus* and *Anthonomus rubi*, and the most numerous populations form: *Sciaphobus caesius*, *Larinus obtusus*, *Eusomus ovulum*, *Foucartia ptochoides* and species of genera: *Sitona*, *Phyllobius* and *Polydrusus*. These preliminary results suggests much higher diversity and richness of weevils in the Nature 2000 Site „Eastern Cluj Hills”, what should be confirmed by further study.

Key words: weevils, faunistic, rare species, Eastern Cluj Hills, Romania

Introduction

Weevils in a broad sense (Superfamily Curculionoidea) is one of the largest group of phytophagous beetles in the world (LAWRENCE and NEWTON 1995, ALONSO-ZARAZAGA and LYAL 1999, RHEINHEIMER and HASSLER 2010), well representing in the Palaearctic Region (ALONSO – ZARAZAGA *et al.* 2017). Study of the richness and diversity of organisms currently living in protected areas of the Carpathians, especially from Nature 2000 Sites, including weevils, is one of the priority tasks of modern faunistic research in Romania, as well as in other countries of the Carpathian Basin (CRIȘAN *et al.* 1999; GUȘĂ 2005; GUȘĂ and BLAGA 2006; KNUTELSKI 2005, KNUTELSKI and SUROWIAK 2011; KOCs 1996; MAZUR 2002, 2011; PEŠIĆ 2002, 2014; PEŠIĆ *et al.* 2018; PODLUSSÁNY 1981, 1986, 1992; PODLUSSÁNY and KOCs 1995, 1997; PROCHEȘ 1998; STEJSKAL 2004; TEODOR 1993a, 1993b; TEODOR and CRIȘAN 1996, 2002, 2010; TEODOR and DĂNILĂ 1994, 1997, 2011; TEODOR and MANOLE 1996; TEODOR and MILIN 2013; TEODOR *et al.* 1999, 2000, 2001, 2010). This study is a continuation of that process and are a contribution to the knowledge the overall biodiversity of protected natural areas in Romania, as well as in all area of the Carpathians. Currently, there are no published data on the weevils from the Nature 2000 Site “Eastern Cluj Hills”.

Assessment diversity and richness of weevils living in the areas impacted by different kind of human pressure, especially meadows, in the Nature 2000 Site

„Eastern Cluj Hills” (Romania, Transylvania), was the aim of our study. We also have been wanted to find out how meadow weevils respond to various forms of human impact in the study area. At the beginning, we adopted the hypothesis that the diversity and richness of weevil species on meadows traditionally and mechanically mowed with light mowers (Brielmaier mowers) and on extensively grazed and abandoned, should be higher than on meadows mowed with heavy equipment and intensively grazed.

Study area

The Cluj Hills are located in the South-Eastern part of the Someșan Plateau. Within this geographical unit, the site of community importance ROSCI0295 Eastern Cluj Hills (Dealurile Clujului de Est) and the protected natural area of national importance Fânațele Clujului are delimited, sites in which the studies concerning weevils were performed (POP 2012, RÁKOSY *et al.* 2018). The study of weevils was conducted in different biotopes: mixed deciduous forests and meadows (hay meadows and pastures) at 12 localities within or in the vicinity of the site with 31 different biotopes (Fig. 1): extensively grazed meadows (PE) and intensively grazed meadows (PI), along with traditionally mowed meadows (MT), mechanically mowed meadows with Brielmaier mowers (MB), mechanically mowed meadows with heavy equipment (tractor) (MH) and abandoned fields (AA).

Localities description:

1. Dăbâca – Pâglișa: DPD - Pădurea Dumbrava (Dumbrava forest), mixed deciduous forest; DFD - hay meadow with shrubs, near Dumbrava forest;

2. Bădești (Fig. 2): BMT₄ - hay meadow, traditionally mowed; BMB₄ - hay meadow, mowed mechanically with Brielmaier mowers; BMH₄ - hay meadow mowed mechanically with heavy equipment; BAA₄ - hay meadow abandoned;

3. Chidea (Fig. 3): CPE₁ - meadow with shrubs, extensively grazed; CAA₁ - hay meadow abandoned;

4. Dăbâca (Fig. 4 and 5): DPC - Pădurea Ciungilor (Ciungilor forest), mixed deciduous forest; DFPC - hay meadow near Ciungilor forest; DLP - apple orchard, grazed; DPE₃ - pasture, extensively grazed; DPI₃ - pasture, intensively grazed;

5. Luna de Jos – Dealul Cocoșului (Cocoșului Hill): LPE₂ - meadow with shrubs: *Rosa*, *Crategus* etc, extensively grazed; LPI₂ - meadow, intensively grazed, currently with luxurious vegetation;

6. Luna de Jos – Răscruci (Fig. 6): LMT₂ - Fânațul Domnesc, meadow traditionally mowed,

but currently intensively grazed; LMB₂ - Fânațul Domnesc, meadow, mowed mechanically with Brielmaier mowers, now grazed; LMH₂ - Fânațul Sătesc, meadow, mowed mechanically with heavy equipment; LAA₂ - Fânațul Sătesc, hay meadow abandoned, now strongly grazed;

7. Deușu (Fig. 7): DPS - mixed deciduous forest; DPP - meadow (hay meadow) near the forest;

8. Satu Lung (Fig. 8): SLMT₃ - hay meadow, traditionally mowed; SLMB₃ - hay meadow, mowed mechanically with Brielmaier mowers; SLMH₃ - hay meadow, mowed mechanically with heavy equipment; SLAA₃ - hay meadow abandoned;

9. Borșa Cătun: BCMT₁ - hay meadow, traditionally mowed; BCMB₁ - hay meadow, mowed mechanically with Brielmaier mowers; BCMH₁ - hay meadow, mowed mechanically with heavy equipment;

10. Fânațele Clujului: FCPE₄ - hay meadow with shrubs, extensively grazed;

11. Pădureni: PPI₄ - pasture, intensively grazed, located in the vicinity of the site, near Fânațele Clujului;

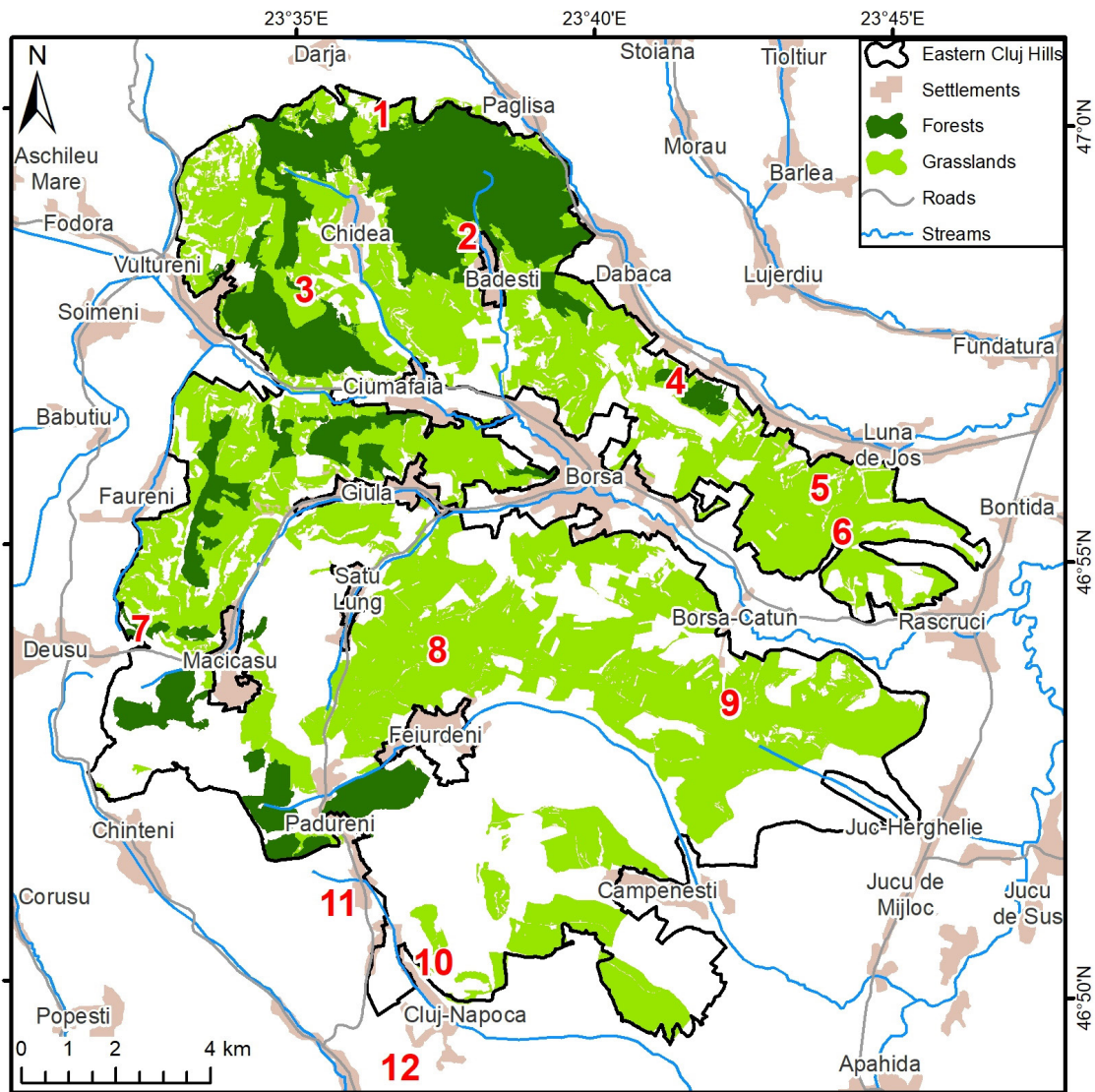


Fig. 1. Study areas in the Natura 2000 Site „Eastern Cluj Hills”: 1. Dăbâca – Pâglișa, 2. Bădești; 3. Chidea, 4. Dăbâca, 5. Luna de Jos – Dealul Cocoșului, 6. Luna de Jos – Răscruci, 7. Deușu, 8. Satu Lung, 9. Borșa Cătun, 10. Fânațele Clujului, 11. Pădureni, 12. Cluj-Napoca – Dealul Sfântu Gheorghe (map Andrei CRIȘAN and L.A. TEODOR).



Fig. 2. Bădești, mechanically mowed hay meadow with Brielmaier mowers, photo: TEODOR L.A.



Fig. 3. Chidea, abandoned hay meadow with shrubs, photo: TEODOR L.A..



Fig. 4. Dăbâca, Ciungilor mixed deciduous forest and hay meadow near the forest, photo: TEODOR L.A.



Fig. 5. Dăbâca, grazed apple orchard, photo: TEODOR L.A.



Fig. 6. Luna de Jos – Râscruci: Fânașul Domnesc, mechanically mowed meadow with Brielmaier mowers, photo: TEODOR L.A.



Fig. 7. Deușu, mixed deciduous forest and meadows near the forest, photo: CRIȘAN A.



Fig. 8. Satu Lung, traditionally mowed hay meadow, photo: CRIȘAN A.

12. Cluj-Napoca – Dealul Sfântu Gheorghe (Sfântu Gheorghe Hill): DSPI₁ - meadow with shrubs intensively grazed, located in the vicinity of the site, near Fânațele Clujului.

Material and methods

Weevils were collected irregularly during 2014-2016: in June and August 2014, May and June 2015, and 2016. From trees and bushes they were sampled by shaking tree and shrub branches, using the umbrella net, and from meadows by sweeping plants with sweep net. Sifting the litter with an entomological sieve and directly from the vegetation by hand picking or using an entomological tweezers, weevils were additionally collected. A total of 1242 individuals were collected.

Beetles were dissected, kept and analyzed, using the stereo microscope OLYMPUS SZ51. For identification to the species level different keys for weevils determination were used (DIECKMANN 1980, 1988; FREUDE, HARDE and LOHSE 1981, 1983; BEHNE 1994, 1998; COLENNELLI 2004; BOROVEC and PELLETIER 2009; SKUHROVEC 2009; SKUHROVEC *et al.* 2010; RHEINHEIMER and HASSLER 2010; CALDARA and FOGATO 2013; STÜBEN *et al.* 2011, 2013, 2014, 2015). Based on LÖBL and SMETANA (2011, 2013) and ALONSO – ZARAZAGA *et al.* (2017), the current nomenclature and systematics were established, and according to TEODOR and VLAD (2007) current distribution of weevils species in Romania were checked.

Results

We recorded 102 species in total (12 localities with 31 different biotopes) in the Nature 2000 Site „Eastern Cluj Hills” (Romania, Transylvania) (Table 1). *Mecinus plantaginis* is recorded for the first time

from Romania and *Mogulones larvatus*, *Argoptochus quadrisignatus*, *Lixus cylindrus* and *L. angustus* are rare in the country (Table 1).

Mecinus plantaginis, Satu Lung, 20.V.2016, SLMB₃ - hay meadow, mowed mechanically with Brielmaier mowers, one female collected by sweeping plants with sweep net, leg. and det. L. A.TEODOR. Present in Hungary and Serbia (ALONSO – ZARAZAGA *et al.* 2017) and in Central Europe, as well as in Southern and Eastern Europe, in South-Eastern Russia, Mongolia and China (RHEINHEIMER and HASSLER 2010, CALDARA and FOGATO 2013). Feed on *Plantago media* (Plantaginaceae).

Mogulones larvatus, Dăbâca, 11.VIII.2014, DFPC - hay meadow near Ciungilor forest, one male collected by sweeping plants with sweep net, leg. and det. L. A.TEODOR. In Romania has been found up to now in Transylvania: Piatra Craiului Mountains (HOLDHAUS and DEUBEL 1910), Sighișoara, Bazna, Râșnov, Șirnea (PETRI 1912), Șura Mare (ENDRÖDI 1969), Băile Homorod, Nicolești (PODLUSSÁNY and KOCs 1997), Cheile Vârghișului (KOCs 2013) and Banat: Herculane (ENDRÖDI 1969). Eurosiberian species (RHEINHEIMER and HASSLER 2010, STÜBEN *et al.* 2014). Feed on species of *Pulmonaria* and *Echium* (Boraginaceae).

Argoptochus (Argoptochus) quadrisignatus, Luna de Jos – Răscruci, 19.V.2016, LMB₂ - Fânațul Domnesc, meadow, mowed mechanically with Brielmaier mowers, one male collected by shaking shrub branches, using the umbrella net, leg. and det. L. A.TEODOR. In Romania has been found by now only in two locations, one from Transylvania: Sânpetru near Brasov (PETRI 1925/'26) and one from Moldavia: in the surroundings of Iași (MARCu 1944-1947). Distributed in Eastern Germany, Southern Poland, Czech Republic, Slovakia, Ukraine, Northern Black Sea (Russia), Republic of Moldova and

Romania (STÜBEN *et al.* 2015). It is poliphagous species (DIECKMANN 1980).

Lixus (Callistolixus) cylindrus, Satu Lung, 5.VI.2015, SLMT₃ - hay meadow, traditionally mowed, one male collected by sweeping plants with sweep net, leg. A. CRIȘAN, det. L. A. TEODOR. In Romania has been found by now in Transylvania: Sibiu, Gușterița (HAMPE 1852, BIELZ 1887, PETRI 1912), Valea Serbuta near Șura Mare (Sibiu County) (SCHNEIDER 1970, 1990), Aghireș (Sălaj County) (MERKL *et al.* 2016), Banat: Domogled (Herculane) (KUTHY 1900) and Crișana: Remeți (Bihor County) (KUTHY 1900). Occur in the south of Central Europe, East, South – East and South of Europe (RHEINHEIMER and HASSLER 2010). Lives on species of *Peucedanum* and *Laserpitium* (Apiaceae).

Lixus (Ortholixus) angustus, Satu Lung, 22.VII.2016, SLAA₃ - hay meadow abandoned, one male collected by sweeping plants with sweep net, leg. A. CRIȘAN, det. L. A. TEODOR. In Romania has been found by now in Transylvania: Hamba near Sibiu (PETRI 1925/'26), Banat: Herculane (MARCUS 1964), Crișana: Oradea (MARCUS 1964) and Moldavia: Ponoare and „Eminescu forest” Ipotești (TEODOR and DĂNILĂ 1994, 1997, 2011). In contradiction with the above mentioned bibliographic data, in the recent Palearctic catalogs (LÖBL and SMETANA 2011, 2013, ALONSO – ZARAZAGA *et al.* 2017), is not specified the presence of this species in Romania, but only in some neighboring countries: Hungary and Ukraine. We put it on the list of Romanian weevil species (TEODOR and ANTONIE VLAD 2007), but with the wrong name: *Lixus (Ortholixus) angustatus* (HERBST, 1795) instead of *L. (Ortholixus) angustus* HERBST, 1795. Our record, in Satu Lung, confirm again the presence of this weevil in Romania. Polyphagous species occur in Europe and Western Asia (RHEINHEIMER and HASSLER 2010).

The most numerous in individuals are populations of *Sciaphobus caesius* (242 individuals), *Larinus obtusus* (226 individuals), *Eusomus ovulum* (154 individuals) and *Foucartia ptochoides* (132 individuals), some species of genera: *Protapion*, *Sitona*, *Phyllobius* and *Polydrusus* are also numerous (Table 1).

The most abundant are: *Sciaphobus caesius* – collected in 27 biotopes at 11 localities, *Eusomus ovulum* – 27, 10 localities and *Larinus obtusus* – 24 biotopes at 11 localities.

The most richness and various weevil fauna occur in Bădești (42 species), followed by Satu Lung (33), Chidea (30), Dăbâca (29), Luna de Jos – Râscruci (29), Pădureni (24), Pădureni, PPI₄ – pasture intensively grazed (24), Bădești, BAA₄ – hay meadow abandoned (21) and BMB₄ – hay meadow, mowed mechanically with Brielmaier mowers (21). The most poor weevil fauna has been found in Dăbâca – Pâglișa (DFD) – hay meadow near Dumbrava Forest (2 species), Dăbâca (DPE₃) – pasture extensively grazed (2), Dăbâca – Pâglișa (DPD) – Dumbrava mixed deciduous forest (3).

The richness of weevil species in other biotopes is between 5 and 19 (Table 1).

The results of our preliminary study show no differences between the richness and diversity of weevils depending on the type and degree of human impact in the meadows studied (Fig. 9). However, this requires further and more detailed and more intensive study.

Discussion

The weevils (102 species) that we recorded the Nature 2000 Site „Eastern Cluj Hills” and their diversity (Table 1) it is a preliminary good result if we compare it with those regarding weevils from other similar protected areas. For example, in the Zasavica Special Nature Reserve (Serbia) 86 weevil species were collected (PEŠIĆ *et al.* 2018), in Ječmeniště dry grasslands area (Czech Republic) 168 weevil species were recorded (STEJSKAL 2004) and 172 weevil species were recorded in Nature 2000 Site “Cusma” (TEODOR *et al.* 2010).

Our preliminary data (Fig. 9), have not confirmed the hypothesis that the diversity and richness of the weevil species should be higher in the traditionally mowed meadow, following those mechanically mowed with the light mowers (Brielmaier mowers) and those abandoned and lower in the mowed meadows with the heavy equipment, and that it should be higher in the extensive pastures and lower in the intensive pastures. For example, the traditional mowed meadow from Borșa Cătun has only 8 species, while the traditional mowed meadow from Bădești has 18 species. Some meadows, such as the one mechanically mowed with the Brielmaier mowers from Bădești (21 species), the abandoned meadow from Bădești (21 species) and the intensively grazed pasture from Pădureni (24 species) have more weevil species than the traditionally mowed meadows. The least weevil species were in the meadow extensively grazed in Dăbâca (2 species) while in the intensively grazed meadow of the same locality there were 9 species, and the majority of species were in the intensively grazed meadow in Pădureni (Fig. 9). Probably the floristic composition of each meadow is the main factor that influences the number of weevil species and not the different ways of mowing and grazing, as well as the abandonment of meadows. Diversity and number of weevil species recorded only in a short research period (102 species) and bibliographic data, which showing that some of the meadows on this Site have the largest floristic diversity in Europe (WILSON *et al.* 2012), suggests that the diversity and richness of weevil species in the Nature 2000 Site „Eastern Cluj Hills” is much larger, aspect which can be confirmed by further weevils research in this area. On the other hand, quantitative study should be carried out covering the entire growing season and a greater number of samples at each localities, which would also allow

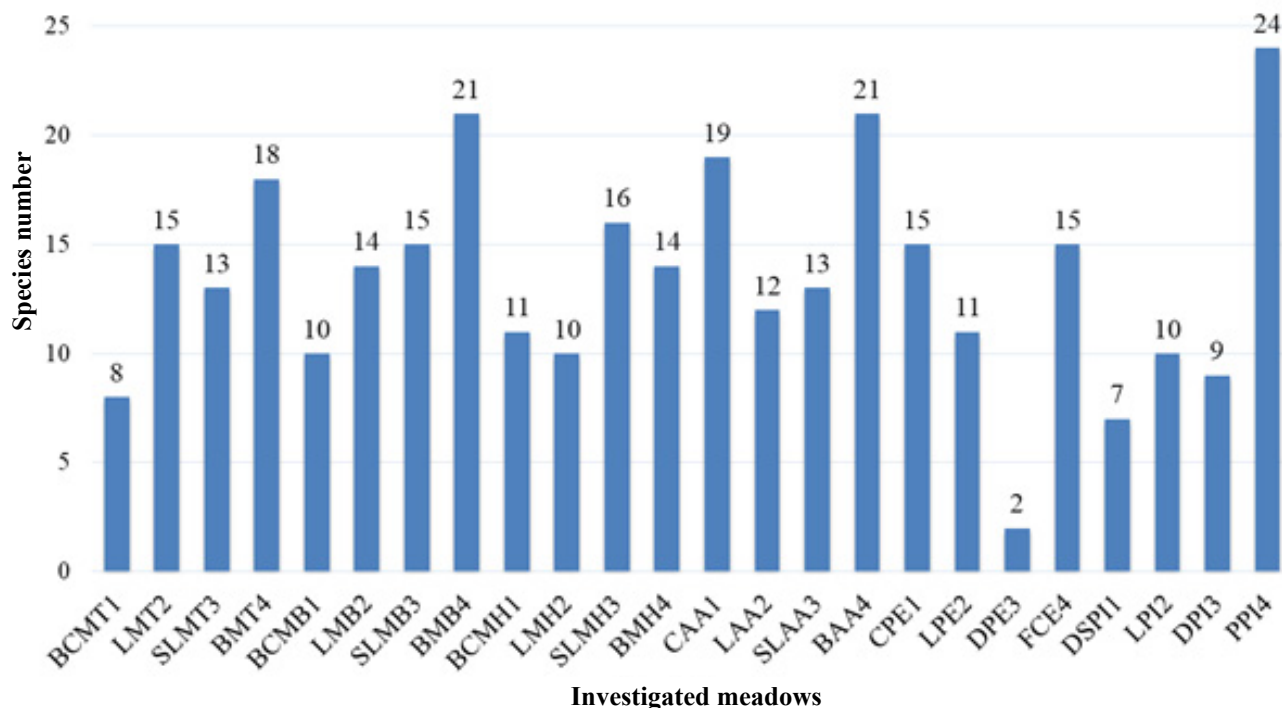


Fig. 9. Richness of weevil species in studied meadows of the Nature 2000 Site “Eastern Cluj Hills”.

Abbreviations: BAA₄ = Bădești, hay meadow 4, abandoned; BMB₄ = Bădești, hay meadow 4, mechanically mowed with Brielmaier mowers; BMH₄ = Bădești, hay meadow 4, mechanically mowed with heavy equipment; BMT₄ = Bădești, hay meadow 4, traditionally mowed; BCMB₁ = Borșa Cătun, hay meadow 1, mechanically mowed with Brielmaier mowers; BCMH₁ = Borșa Cătun, hay meadow 1, mechanically mowed with heavy equipment; BCMT₁ = Borșa Cătun, hay meadow 1, traditionally mowed; CAA₁ = Chidea, hay meadow with shrubs 1, abandoned; CPE₁ = Chidea, meadow with shrubs 1, extensively grazed; DPE₃ = Dăbâca, pasture 3, extensively grazed; DPI₃ = Dăbâca, pasture 3, intensively grazed; DSPI₁ = Cluj, Dealul Sfântu Gheorghe, meadow with shrubs 1, intensively grazed; FCPE₄ = Fânațele Clujului, hay meadow with shrubs 4, extensively grazed; LAA₂ = Luna de Jos – Râscruci: Fânațul Sătesc, hay meadow 2, abandoned, now strongly grazed; LMB₂ = Luna de Jos – Râscruci: Fânațul Domnesc, hay meadow 2, mechanically mowed with Brielmaier mowers, now grazed; LMH₂ = Luna de Jos – Râscruci: Fânațul Sătesc, hay meadow 2, mechanically mowed with heavy equipment; LMT₂ = Luna de Jos – Râscruci, Fânațul Domnesc, hay meadow 2, traditionally mowed, but currently intensively grazed; LPE₂ = Luna de Jos – Dealul Cocoșului, meadow with shrubs 2, extensively grazed; LPI₂ = Luna de Jos – Dealul Cocoșului, meadow 2, intensively grazed, currently with luxurious vegetation; PPI₄ = Pădureni, pasture 4, intensively grazed; SLAA₃ = Satu Lung, hay meadow 3, abandoned; SLMB₃ = Satu Lung, hay meadow 3, mechanically mowed with Brielmaier mowers; SLMH₃ = Satu Lung, hay meadow 3, mechanically mowed with heavy equipment; SLMT₃ = Satu Lung, hay meadow 3, traditionally mowed.

statistical analysis and then the hypothesis adopted at the beginning could be unambiguously maintained or refuted. These preliminary results of our study do not allow an unambiguous answer to the problem posed.

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Table 1. Weevil species recorded in the Nature 2000 Site “Eastern Cluj Hills” in 2014-2016

Abbreviations: **BAA**₄ = Bădești, hay meadow 4, abandoned; **BMB**₄ = Bădești, hay meadow 4, mechanically mowed with Brielmaier mowers; **BMH**₄ = Bădești, hay meadow 4, mechanically mowed with heavy equipment; **BMT**₄ = Bădești, hay meadow 4, traditionally mowed; **BCMB**₁ = Borșa Cătun, hay meadow 1, mechanically mowed with Brielmaier mowers; **BCMH**₁ = Borșa Cătun, hay meadow 1, mechanically mowed with heavy equipment; **BCMT**₁ = Borșa Cătun, hay meadow 1, traditionally mowed; **CAA**₁ = Chidea, hay meadow with shrubs 1, abandoned; **CPE**₁ = Chidea, meadow with shrubs 1, extensively grazed; **DFD** = Dăbâca (Pâglișa) hay meadow with shrubs near Dumbrava forest; **DFPC** = Dăbâca, hay meadow near Ciungilor forest; **DPE**₃ = Dăbâca, pasture 3, extensively grazed; **DPI**₃ = Dăbâca, pasture 3, intensively grazed; **DLP** = Dăbâca, apple orchard, grazed; **DPC** = Dăbâca, Ciungilor forest, mixed deciduous forest; **DPD** = Dăbâca (Pâglișa), Dumbrava forest, mixed deciduous forest; **DPP** = Deușu, meadow (hay meadow) near the forest; **DPS** = Deușu, mixed deciduous forest; **DSPI**₁ = Cluj, Dealul Sfântu Gheorghe, meadow with shrubs 1, intensively grazed; **FCPE**₄ = Fânațele Clujului, hay meadow with shrubs 4, extensively grazed; **LAA**₂ = Luna de Jos – Râscruci: Fânațul Sătesc, hay meadow 2, abandoned, now strongly grazed; **LMB**₂ = Luna de Jos – Râscruci: Fânațul Domnesc, hay meadow 2, mechanically mowed with Brielmaier mowers, now grazed; **LMH**₂ = Luna de Jos – Râscruci: Fânațul Sătesc, hay meadow 2, mechanically mowed with heavy equipment; **LMT**₂ = Luna de Jos – Râscruci, Fânațul Domnesc, hay meadow 2, traditionally mowed, but currently intensively grazed; **LPE**₂ = Luna de Jos – Dealul Cocoșului, meadow with shrubs 2, extensively grazed; **LPI**₂ = Luna de Jos – Dealul Cocoșului, meadow 2, intensively grazed, currently with luxurious vegetation; **N** = total number of individuals; **PPI**₄ = Pădureni, pasture 4, intensively grazed; **SLAA**₃ = Satu Lung, hay meadow 3, abandoned; **SLMB**₃ = Satu Lung, hay meadow 3, mechanically mowed with Brielmaier mowers; **SLMH**₃ = Satu Lung, hay meadow 3, mechanically mowed with heavy equipment; **SLMT**₃ = Satu Lung, hay meadow 3, traditionally mowed; * rare species in Romania; ** new for Romanian fauna.

Nr. crt.	Taxa	Date	N	Localities / biotopes	Nr. crt.	Taxa	Date	N	Localities / biotopes
Superfamily Curculionoidea					Family Attelabidae				
Subfamily Attelabinae					Tribe Apoderini				
1	<i>Apoderus (Apoderus) coryli</i> LINNAEUS, 1758	19.VI.2014	1	DPC	6	<i>Apion cruentatum</i> WALTON, 1844	26.V.2016	2	BMB ₄ , CPE ₁
Tribe Attelabini					Tribe Rhynchitini				
2	<i>Attelabus nitens</i> SCOPOLI, 1763	19.VI.2014	2	DPD, DFD	7	<i>Aspidapion (Koestlinia) aeneum</i> FABRICIUS, 1775	21.VI.2016	1	FCPE ₄
Subfamily Rhynchitinae					Tribe Rhynchitini				
3	<i>Involvulus (Teretriorhynchites) pubescens</i> FABRICIUS, 1775	20.V.2016	1	SLMH ₃	8	<i>Ceratapion (Echinostroma) basicorne</i> ILLIGER, 1807	19.V.2016	1	LMB ₂
4	<i>Neocoenorhinus (Neocoenorhinus) germanicus</i> HERBST, 1797	19.V.2016 20.V.2016 26.V.2016	4 3 2	LPI ₂ , LAA ₂ SLAA ₃ , SLMH ₃ BAA ₄ , CAA ₁	9	<i>Catapion pubescens</i> KIRBY, 1811	19.VI.2014 20.V.2016	1 1	DFPC SLAA ₃
Family Brentidae					Subfamily Apioninae				
Subfamily Apioninae					Tribe Apionini				
5	<i>Alocentron curvirostre</i> GYLLENHAL, 1833	19.V.2016	1	LMB ₂	10	<i>Catapion seniculus</i> KIRBY, 1808	20.V.2016 26.V.2016	2 2	PPI ₄ BMT ₄ , BMH ₄
					11 <i>Cyanapion (Cyanapion) columbinum</i> GERMAR, 1817				
					12 <i>Eutrichapion (Cnemapion) vorax</i> HERBST, 1797				
					13 <i>Eutrichapion (Eutrichapion) viciae</i> PAYKUL, 1800				

Nr. crt.	Taxa	Date	N	Localities / biotopes
14	<i>Eutrichapion (Psilocalymma) punctiger</i> PAYKULL, 1792	19.VI.2014	2	DPP, DFPC
		20.V.2016	1	PPI ₄
		26.V.2016	2	CPE ₁ , CAA ₁
		21.VI.2016	2	CAA ₁ , PPI ₄
		23.VI.2016	1	DPI ₃
15	<i>Hemitrichapion (Dimesomyops) pavidum</i> GERMAR, 1817	19.VI.2014	2	DLP, DPP
		19.V.2016	1	LMT ₂
		26.V.2016	1	BMT ₄
		21.VI.2016	1	BMH ₄
16	<i>Holotrichapion (Holotrichapion) ononis</i> KIRBY, 1808	20.V.2016	1	SLMH ₃
		26.V.2016	2	BMB ₄ , BMT ₄
17	<i>Ischnopterapion (Ischnopterapion) loti</i> KIRBY, 1808	19.VI.2014	1	DFPC
18	<i>Ischnopterapion (Chlorapion) virens</i> HERBST, 1797	19.VI.2014	2	DPP
		19.V.2016	1	LPI ₂
		22.VI.2016	1	SLMH ₃
		23.VI.2016	1	DPE ₃
19	<i>Oxystoma pomonae</i> FABRICIUS, 1798	19.V.2016	1	DPI ₃
		26.V.2016	1	BAA ₄
20	<i>Perapion (Perapion) curtirostre</i> GERMAR, 1817	26.V.2016	3	CAA ₁ , BAA ₄
21	<i>Protapion apricans</i> HERBST, 1787	19.VI.2014	1	DPC
		20.V.2016	3	SLMH ₃ , PPI ₄
		26.V.2016	6	BMT ₄ , BMH ₄ , CPE ₁ , CAA ₁
		23.VI.2016	1	LAA ₂
22	<i>Protapion fulvipes</i> FOURCROY, 1785	19.V.2016	1	DPI ₃
		20.V.2016	2	SLMB ₃ , SLMH ₃
		26.V.2016	1	CPE ₁
23	<i>Protapion gracilipes</i> DIETRICH, 1857	26.V.2016	2	BAA ₄

Nr. crt.	Taxa	Date	N	Localities / biotopes
24	<i>Protapion interjectum</i> DESBROCHERS des LOGES, 1895	20.V.2016	1	BCMT ₁
25	<i>Protapion ononidis</i> GYLLENHAL, 1827	26.V.2016	11	BMT ₄ , BAA ₄
		21.VI.2016	9	BMH ₄ , BMT ₄ , BMB ₄
		22.VI.2016	3	SLMH ₃ , SLMB ₃
		23.VI.2016	1	LMT ₂
26	<i>Protapion nigrirtarse</i> KIRBY, 1808	19.VI.2014	3	DFPC
		19.V.2016	2	LMH ₂
		20.V.2016	3	SLMT ₃ , SLMB ₃ , BCMH ₁
		26.V.2016	5	BMB ₄ , BMH ₄ , DSPI ₄
		21.VI.2016	1	CAA ₁
27	<i>Protapion ruficrus</i> GERMAR, 1817	23.VI.2016	1	LMB ₂
27	<i>Protapion ruficrus</i> GERMAR, 1817	19.VI.2014	14	DPP, DFPC
		11.VIII.2014	1	DFPC
		20.V.2016	5	SLMT ₃ , SLMH ₃ , BCMH ₁
		26.V.2016	3	BMB ₄
28	<i>Protapion trifolii</i> LINNAEUS, 1768	21.VI.2016	4	CAA ₁ , BAA ₄ , BMB ₄
		20.V.2016	2	BCMh ₁ , PPI ₄
		26.V.2016	1	BMH ₄
Family Curculionidae				
Subfamily Conoderinae				
Tribe Baridini				
29	<i>Malvaevora timida timida</i> ROSSI, 1792	11.V.2016	1	FCPE ₄
		26.V.2016	3	FCPE ₄
Tribe Ceutorhynchini				
30	<i>Ceutorhynchus erysimi</i> FABRICIUS, 1787	19.V.2016	1	LMH ₂
		20.V.2016	1	SLMT ₃
31	<i>Ceutorhynchus parvulus</i> CH. BRISOUT de BARNEVILLE, 1869	19.V.2016	1	LPI ₂
32	<i>Ceutorhynchus turbatus</i> SCHULTZE, 1903	19.V.2016	1	LMH ₂

Nr. crt.	Taxa	Date	N	Localities / biotopes
33	<i>Ceutorhynchus sulcicollis</i> PAYKUL, 1800	26.V.2016	1	CPE ₁
34	<i>Ceutorhynchus posthumus</i> GERMAR, 1824	26.V.2016	1	CPE ₁
35	<i>Coeliastes lamii</i> FABRICIUS, 1792	26.V.2016	1	FCPE ₄
36	<i>Glocianus punctiger</i> GYLLENHAL, 1837	19.VI.2014	1	DPP
		20.V.2016	1	BCM _H ₁
		26.V.2016	1	CAA ₁
		24.VI.2016	1	FCPE ₄
37	<i>Mogulones euphorbiae</i> CH. BRISOUT de BARNEVILLE, 1866	26.V.2016	3	BMB ₄ , CPE ₁
		20.V.2016	1	PPI ₄
38	<i>*Mogulones larvatus</i> SCHULTZE, 1897	11.VIII.2014	1	DFPC
39	<i>Thamiocolus pubicollis</i> GYLLENHAL, 1837	19.VI.2014	2	DFPC
		26.V.2016	2	BMT ₄ , BAA ₄
		21.VI.2016	4	BMT ₄ , BAA ₄ , BMB ₄
40	<i>Trichosirocalus troglodytes</i> FABRICIUS, 1787	19.VI.2014	1	DFPC
		20.V.2016	1	PPI ₄
		26.V.2016	5	BMB ₄ , FCPE ₄
		21.VI.2016	4	DSPI ₁ , PPI ₄
41	<i>Rhinoncus pericarpus</i> LINNAEUS, 1758	26.V.2016	2	BMB ₄ , BAA ₄
Tribe Orobittidini				
42	<i>Orobittis cyaneus</i> LINNAEUS, 1758	26.V.2016	4	BMB ₄ , BAA ₄
Subfamily Curculioninae				
Tribe Anthonomini				
43	<i>Anthonomus (Anthonomus)</i> <i>pedicularius</i> LINNAEUS, 1758	19.VI.2014	3	DPS
44	<i>Anthonomus (Anthonomus)</i> <i>pomorum</i> LINNAEUS, 1758	26.V.2016	1	FCPE ₄

Nr. crt.	Taxa	Date	N	Localities / biotopes
45	<i>Anthonomus (Anthonomus) rubi</i> HERBST, 1795	20.V.2016	4	SLMT ₃ , SLAA ₃ , SLMH ₃
		21.VI.2016	1	PPI ₄
		22.VI.2016	1	BCMB ₁
		23.VI.2016	1	LPI ₂
Tribe Mecinini				
46	<i>Cleopomiarus distinctus</i> BOHEMAN, 1845	23.VI.2016	1	LMT ₂
47	<i>Gymnetron veronicae</i> GERMAR, 1821	26.V.2016	1	CPE ₁
48	<i>Mecinus labilis</i> HERBST, 1795	26.V.2016	1	PPI ₄
49	<i>Mecinus plantaginis</i> EPPELSHEIMER, 1875	20.V.2016	1	SLMB ₃
50	<i>**Mecinus pyraster</i> HERBST, 1795	20.V.2016	1	SLMH ₃
		26.V.2016	1	FCPE ₄
		21.VI.2016	2	DSPI ₁ , PPI ₄
51	<i>Miarus ajugae</i> HERBST, 1795	20.V.2016	1	SLAA ₃
		26.V.2016	3	BMB ₄
Tribe Rhamphini				
Subtribe Rhamphina				
52	<i>Pseudorchestes pratensis</i> GERMAR, 1821	26.V.2016	1	FCPE ₄
Tribe Smicronychini				
53	<i>Smicronyx (Smicronyx)</i> <i>jungermanniae</i> REICH, 1797	19.VI.2014	1	DPP
Tribe Tychiini				
Subtribe Tychiina				
54	<i>Tychius cuprifer</i> PANZER, 1799	19.V.2016	1	LMH ₂
		20.V.2016	4	PPI ₄ , SLAA ₃ , BCM _H ₁
		26.V.2016	2	CPE ₁ , PPI ₄
55	<i>Tychius picirostris</i> FABRICIUS, 1787	20.V.2016	1	SLAA ₃
		26.V.2016	11	BMT ₄ , FCPE ₄ , CPE ₁ , CAA ₁ , PPI ₄
		21.VI.2016	1	DSPI ₁

Nr. crt.	Taxa	Date	N	Localities / biotopes
56	<i>Tychius quinquepunctatus</i> LINNAEUS, 1758	19.VI.2014	4	DPP, DFPC
		20.V.2016	1	SLAA ₃
		26.V.2016	9	BMB ₄ , BMH ₄ , BAA ₄ , CPE ₁
		22.VI.2016	1	SLMT ₃
		23.VI.2016	1	LPE ₂
Subfamily Entiminae				
Tribe Otiorhynchini				
57	<i>Otiorhynchus (Cryphiphorus) ligustici</i> LINNAEUS, 1758	19.V.2016	1	LMT ₂
		20.V.2016	1	BCMT ₁
		26.V.2016	1	BMT ₄
Tribe Phyllobini				
58	<i>*Argoptochus (Argoptochus) quadrisignatus</i> BACH, 1856	19.V.2016	1	LMB ₂
59	<i>Phyllobius (Nemoicus) oblongus</i> LINNAEUS, 1758	20.V.2016	2	BCMB ₁ , SLMB ₃
60	<i>Phyllobius (Phyllobius) betulinus</i> BECHSTEIN & SCHARFENBERG, 1805	19.V.2016	1	LMB ₂
		20.V.2016	6	BCMB ₁ , BCMT ₁ , BCM _H ₁ , SLMH ₃
		26.V.2016	5	FCPE ₄ , CAA ₁ , PPI ₄
61	<i>Phyllobius (Hoplophyllobius) pilicornis</i> DESBROUCHERS des LOGES, 1873	26.V.2016	3	CPE ₁ , BMH ₄
62	<i>Phyllobius (Phyllobius) pyri</i> LINNAEUS, 1758	19.V.2016	6	LPE ₂ , LMB ₂ , LMT ₂ , LAA ₂
		20.V.2016	1	SLMB ₃
		26.V.2016	1	BAA ₄
63	<i>Phyllobius (Phyllobius) seladonius</i> BRULLÉ, 1832	26.V.2016	2	BAA ₄ , CPE ₁
		21.VI.2016	1	BMT ₄
Tribe Polydrusini				
64	<i>Liophloeus (Liophloeus) tessulatus</i> O. F. MÜLLER, 1776	26.V.2016	1	CAA ₁
65	<i>Polydrusus (Chrysoyphis) thalassinus</i> GYLLENHAL, 1834	19.VI.2014	1	DPD
		26.V.2016	2	BMH ₄

Nr. crt.	Taxa	Date	N	Localities / biotopes
66	<i>Polydrusus (Eurodrusus) confluens</i> STEPHENS, 1831	20.V.2016	27	BCMB ₁ , SLMB ₃ , BCMT ₁ , SLMH ₃ , SLMT ₃
		26.V.2016	3	BMB ₄ , BAA ₄ , PPI ₄
67	<i>Polydrusus (Eurodrusus) pilosus</i> GREDLER, 1866	20.V.2016	1	SLMB ₃
68	<i>Polydrusus (Eustolus) flavipes</i> DE GEER, 1775	26.V.2016	1	BAA ₄
69	<i>Polydrusus (Eustolus) impressifrons</i> GYLLENHAL, 1834	19.V.2016	1	DPI ₃
70	<i>Polydrusus (Eustolus) pterygomalis</i> BOHEMAN, 1840	19.V.2016	1	DPI ₃
71	<i>Polydrusus (Poecilodrusus) viridicinctus</i> GYLLENHAL, 1834	19.VI.2014	1	DPS
Tribe Psallidiini				
72	<i>Mesagroicus obscurus</i> BOHEMAN, 1840	19.V.2016	1	LMB ₂
Tribe Sciaphilini				
73	<i>Brachysomus villosulus</i> GERMAR, 1824	20.V.2016	2	BCM _H ₁
74	<i>Foucartia ptochoides</i> BACH, 1856	19.V.2016	87	LAA ₂ , LPE ₂ , LPI ₂ , LMH ₂ , LMB ₂ , LMT ₂
		20.V.2016	26	BCMB ₁ , SLMB ₃ , BCM _H ₁ , SLMH ₃
		26.V.2016	11	CAA ₁
		22.VI.2016	4	SLMH ₃ , SLMB ₃ , SLAA ₃
		23.VI.2016	4	LPI ₂ , LMB ₂
75	<i>Parafoucartia squamulata</i> HERBST, 1795	19.V.2016	1	LMB ₂
		20.V.2016	1	SLAA ₃

Nr. crt.	Taxa	Date	N	Localities / biotopes
76	<i>Paophilus afflatus</i> BOHEMAN, 1883	19.VI.2014	1	DPP
		19.V.2016	29	LPE ₂ , LPI ₂ , LMB ₂ , LMT ₂
		20.V.2015	7	BCMB ₁ , BCMT ₁ , SLMT ₃
		26.V.2016	4	PPI ₄
		21.VI.2016	3	DSPI ₁ , CAA ₁
		23.VI.2016	6	LPE ₂ , LMB ₂
77	<i>Sciaphobus (Sciaphobus)</i> <i>caesius</i> HAMPE, 1870	19.VI.2014	42	DPS, DPC, DLP, DPP
		11.VIII.2014	1	DPP
		19.V.2016	32	LPE ₂ , LPI ₂ , LMH ₂ , LMT ₂ , LMB ₂
		20.V.2016	25	SLAA ₃ , SLMT ₃ , SLMB ₃ , BCMB ₁ , BCMH ₁ , SLMH ₃ , BCMT ₁ , BMT ₄
		26.V.2016	31	BMB ₄ , BAA ₄ , CPE ₁ , CAA ₁ , PPI ₄
		21.VI.2016	28	BMB ₄ , BMT ₄ , BAA ₄ , DSPI ₁
		22.VI.2016	14	SLMH ₃ , SLMB ₃ , SLAA ₃ , BCMB ₁
		23.VI.2016	69	LMB ₂ , LAA ₂ , LMT ₂ , LPI ₂ , LPE ₂ , LPE ₃ , DPI ₃

Nr. crt.	Taxa	Date	N	Localities / biotopes
78	<i>Eusomus ovulum</i> GERMAR, 1824	19.VI.2014	2	DPC, DLP
		19.V.2016	41	DPI ₃ , LPE ₂ , LPI ₂ , LMH ₂ , LAA ₂ , LMT ₂ , LMB ₂
		20.V.2016	53	BCMH ₁ , BCMT ₁ , SLMH ₃ , BCMB ₁ , SLMB ₃ , SLMT ₃ , SLA ₃ , PPI ₄
		26.V.2016	21	BMB ₄ , BMT ₄ , BAA ₄ , FCPE ₄ , CPE ₁ , CAA ₁ , PPI ₄
		21.VI.2016	15	BMB ₄ , BMT ₄ , FCPE ₄ , DSPI ₁ , PPI ₄
		22.VI.2016	10	BCMT ₁ , BCMB ₁ , BCMH ₁ , SLMT ₃
		23.VI.2016	16	LMB ₂ , LAA ₂ , LMT ₂ , LMH ₂ , LPI ₂ , LPE ₂ , DPI ₃
Tribe Sitonini				
79	<i>Sitona (Sitona) hispidulus</i> FABRICIUS, 1776	19.VI.2014	1	DPS
		20.V.2016	1	SLAA ₃
		21.VI.2016	2	PPI ₄
		23.VI.2016	1	LPE ₂
80	<i>Sitona (Sitona) humeralis</i> STEPHENS, 1831	26.V.2016	2	PPI ₄
		21.VI.2016	1	FCPE ₄
		23.VI.2016	1	LMB ₂
81	<i>Sitona (Sitona) inops</i> GYLLENHAL, 1832	19.V.2016	3	LMH ₂ , LMT ₂
		20.V.2016	5	SLMT ₃ , SLMH ₃
		23.VI.2016	1	LPE ₂
82	<i>Sitona (Sitona) languidus</i> (GYLLENHAL, 1834)	19.VI.2014	1	DPS
		19.V.2016	1	LAA ₂
83	<i>Sitona (Sitona) lateralis</i> GYLLENHAL 1834 (= <i>ononidis</i> SHARP, 1860)	19.V.2016	3	LPI ₂
		26.V.2016	20	BMB ₄ , BMT ₄ , CAA ₁
		21.VI.2016	6	BMT ₄

Nr. crt.	Taxa	Date	N	Localities / biotopes
84	<i>Sitona (Sitona) obsoletus</i> <i>obsoletus</i> GMELIN, 1790 (= <i>lepidus</i> GYLLENHAL 1834)	21.VI.2016	1	PPI ₄
85	<i>Sitona (Sitona) puncticollis</i> Stephens, 1831	21.VI.2016	1	PPI ₄
86	<i>Sitona (Sitona) striatellus</i> GYLLENHAL, 1834	19.V.2016	1	LAA ₂
		20.V.2016	1	SLMB _{3,2}
		26.V.2016	2	BMB _{4,2} , BAA _{4,2} , CAA ₁
		21.VI.2016	3	BMT _{1,4,2} , BMB _{4,2} , BMH ₄
87	<i>Sitona (Sitona) sulcifrons</i> THUNBERG, 1789	19.VI.2014	1	DPS
		11.VIII.2014	1	DFPC
		26.V.2016	5	BMB _{4,2} , BAA ₄
88	<i>Sitona (Sitona) tenuis</i> ROSENHAUER, 1847	11.VIII.2014	1	DFPC
89	<i>Sitona (Sitona) waterhousei</i> WALTON, 1846	19.VI.2014	1	DPS
		19.V.2016	1	LPI ₂
		20.V.2016	1	BCMB ₁
		26.V.2016	8	BMB _{4,2} , BAA _{4,2} , BMH _{4,2} , PPI ₄
		23.VI.2016	1	LPE ₂
Tribe Tanymecini				
90	<i>Tanymecus (Tanymecus)</i> <i>palliatius</i> FABRICIUS, 1787	21.VI.2016	1	BAA ₄
		23.VI.2016	1	1♀ DPI ₃
Subfamily Hyperinae				
Tribe Hyperini				
91	<i>Donus intermedius</i> (BOHEMAN, 1842)	19.VI.2014	1	DPS
		11.VIII.2014	1	DPS
		21.VI.2016	1	BMT ₄
92	<i>Hypera (Boreohypera)</i> <i>diversipunctata</i> SCHRANK, 1798	26.V.2016	1	BMB ₄
93	<i>Hypera (Dapalinus)</i> <i>contaminata</i> HERBST, 1795	26.V.2016	1	CAA ₁

Nr. crt.	Taxa	Date	N	Localities / biotopes
94	<i>Hypera (Dapalinus) meles</i> FABRICIUS, 1792	19.V.2016	5	DPE ₃ , DPI ₃ , LMT ₂
		20.V.2016	1	PPI ₄
		26.V.2016	1	BMT _{4,2} , BMB ₄
		21.VI.2016	1	BMT ₄
95	<i>Hypera (Hypera) miles</i> PAYKULL, 1792	26.V.2016	1	CAA ₁
Subfamily Lixinae				
Tribe Lixini				
96	<i>Larinus (Larinomesius) obtusus</i> GYLLENHAL, 1836	19.VI.2014	46	DPS, DPC, DLP, DFPC, DFD, DPD
		11.VIII.2014	7	DFPC
		26.V.2016	34	BMB _{4,2} , BMT _{4,2} , BAA _{4,2} , BMH _{4,2} , CAA ₁
				21.VI.2016
		22.VI.2016	22	SLMT ₃ , SLMB ₃ , SLMH ₃ , BCMT ₁ , BCM ₁
		23.VI.2016	24	LMT ₂ , LMB ₂ , LMH ₂ , LAA ₂ , LPE ₂ , LPI ₂
97	<i>Larinus (Phyllonomeus) sturnus</i> SCHALLER, 1783	11.VIII.2014	1	DFPC
		23.VI.2016	1	LMH ₂
98	<i>Larinus (Phyllonomeus)</i> <i>turbinatus</i> GYLLENHAL, 1836	11.VIII.2014	2	DFPC
		21.VI.2016	1	BMH ₄
99	<i>*Lixus (Callistolixus) cylindrus</i> FABRICIUS, 1781	23.VI.2016	1	LMT ₂
		5.VI.2015	1	SLMT ₃
100	<i>*Lixus (Ortholixus) angustus</i> HERBST, 1795	22.VI.2016	1	SLAA ₃

Nr. crt.	Taxa	Date	N	Localities / biotopes
Subfamily Mesoptiliinae				
Tribe Magdalidini				
101	<i>Magdalis (Edo) ruficornis</i> LINNAEUS, 1758	19.V.2016	1	LMT ₂

Nr. crt.	Taxa	Date	N	Localities / biotopes
Subfamily Molytinae				
Tribe Lepyriini				
102	<i>Lepyrus capucinus</i> (SCHALLER, 1783)	20.V.2015	1	FCPE ₄
		19.V.2016	2	LAA ₂ , LMT ₂
		20.V.2016	2	SLMB ₃
		26.V.2016	1	BMT ₄