COLEOPTERA OF THE KARST SYSTEM OF ROMANIA

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Abstract. A synthesis of over 35 years of coleopterological investigations carried out by the author in the karst system of Romania is presented. We aimed to provide a comprehensive study of the diversity and species richness of the coleopteran fauna of karst areas. The vertical distribution of species and the similarities in species composition between the karst areas of Romania are analyzed. A list of 810 coleopteran species identified to date in the karst system of Romania is presented, together with their epigean, endogean or subterranean records in the Carpathians and Dobrogea. 46% of the recorded species were found in subterranean environments (MSS and caves). Of these, only 13% were troglobionts (specialist cave dwelling species).

Key words: Coleoptera, exokarst, mesovoid shallow substratum (MSS), caves, Carpathians, Dobrogea.

1. INTRODUCTION

It is estimated that the karst in Romania covers at least 5,500 Km^2 (~ 2.3% of the total area of Romania) (ONAC & GORAN, 2019), or 6,745 Km^2 (2.83%) (BĂDESCU & TÎRLĂ, 2020), most of it developed in carbonate rocks. The karst developed in non-carbonate rocks (evaporitic karst in salt, gypsum and anhydrite) represents 259 Km^2, of which 48% is salt karst and 52% is gypsum and anhydrite karst (TÎRLĂ, 2019). The main karst areas are distributed in the Southern Carpathians (~ 2500 Km^2), the Apuseni Mountains (Western Carpathians) (~ 1740 Km^2), the Curvature Carpathians (~ 170 Km^2), the Eastern Carpathians (~ 840 km2) and Dobrogea (~ 1000 Km^2).

The troglobitic beetles of Romania have been studied in the last two centuries by numerous specialists: FRIVALDSKY (1880, 1883); BIRÓ (1897); CSIKI (1911, 1912, 1913); BOKOR (1927, 1928); JEANNEL (1930 a, b, c); IENIȘTEA (1955); DECU (1964); DECU AND NEGREA (1969), citing only a few of the most important studies published in the last centuries. Due to previous studies, we currently know approximately 124 troglobitic species and subspecies of Coleoptera, endemic to the Apuseni Mountains (Western Carpathians), different from those in the Southern or Eastern Carpathians, many of them limited to just a few caves, in restricted

Trav. Inst. Spéol. « Émile Racovitza », t. LXIV, p. 61–111, Bucarest, 2025
DOI: https://www.doi.org/10.59277/TISER.2025.03

geographical areas (NITZU *et al*., 2016). However, the distribution and frequency of the so-called unspecialized cave dwelling species (trogloxenes and troglophiles) as well as the epigean coleopteran fauna in the exokarst remained poorly known.

The trogloxene species – epigeous species, were considered up to recent as *occasional* visitors of the cave entrances. PROUS *et al.* (2004) pointed out that *the cave entrance functions as a "membrane of selective permeability", and most species of the epigean and hypogean environment are not able to cross this "membrane" (ecotonal zone) located at the cave entrance.* More recently, LUNGHI *et al*. (2014) stipulated: *The non-specialised cave dwelling species, were frequent in caves, but they did not occur randomly at the entrance of caves.* – depending by their physiological resistance.

In light of these new studies, if not all epigean species (found on exokarst) can populate the endokarst, the question is: how many species live on exokarst and which of these could be found in endokarst? It is obvious that, to answer this question, both exokarst and endokarst fauna need to be well studied.

This work represents an updated synthesis of the studies carried out by the author over 35 years of coleopterological studies on the exokarst (in forested and steppe regions) and endokarst (MSS, caves), from the carbonate and evaporitic karst areas of Romania.

Our goal was to identify as precisely as possible the species richness of Coleoptera of the karst system, aiming to observe how many of the epigeous/endogeous species identified on the exokarst are able to populate the endokarst (MSS, caves), together with specialized cave dwelling species (troglobiont), in different conditions and geographic areas of the Carpathians and Dobrogea.

2. MATERIAL AND METHODS

During a period of over 35 years, the author identified species of coleoptera sampled from 18 areas in the exokarst and endokarst (MSS and caves) of Romania (Fig. 1).

The methods used for sampling the fauna in the MSS consisted of special traps placed at different depths and in artificial micro-caves dug into limestone, more details being presented by NITZU *et al*. (2010). For the fauna sampled in caves, we used direct sampling (with tweezers and exhaustor), Barber traps, wind traps and light traps (at the cave entrances), and special traps for capturing beetles from limestone cracks (NITZU,1997; NITZU AND ILIE, 2003; NITZU, 2021). The species presented in this work are ordered taxonomically (at family level) and alphabetically (within each family). For a comprehensive synthesis, the names of species identified in epigeous/endogeous and subterranean habitats are presented in table form (Table 1), mentioning the major geographic areas of their records

(Southern, Western, Curvature, Eastern Carpathians and Dobrogea), followed by numbers (1–17) corresponding to the sites where the author identified the beetle species, according to Fig 1. For species mentioned in this synthesis, not identified by the author in the enumerated sites, the names of the authors, with reference to the biographical sources, are indicated in brackets (Table 1).

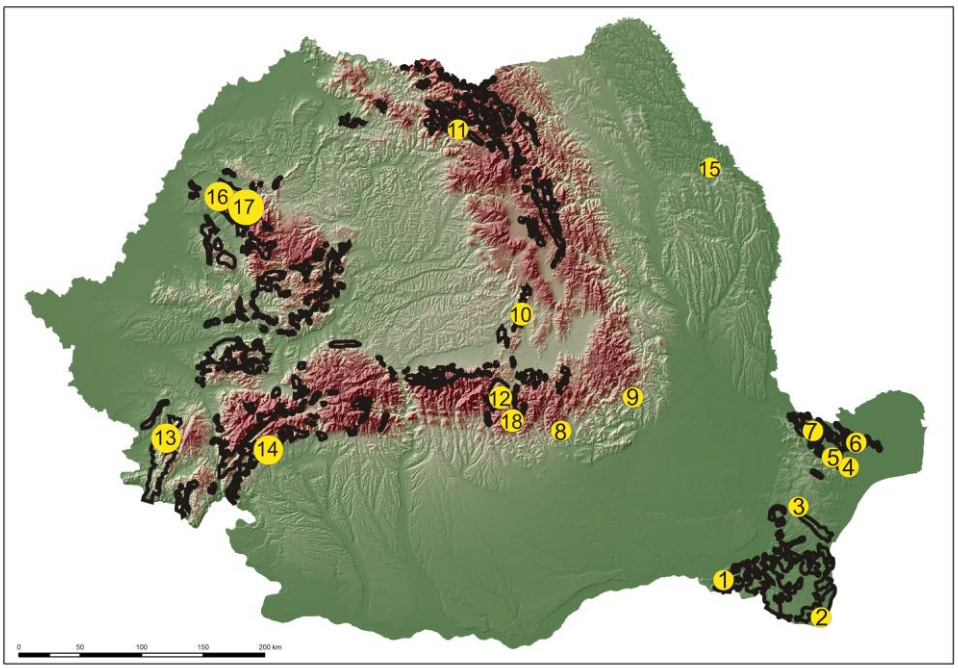

Figure 1. The main sampling sites investigated by the author for the coleopterological studies: 1 – Canaraua Fetii (1998); 2 – Movile-Limanu-Hagieni (1996–1998); 3–Cheia Dobrogei – Casian (1991–2000); 4 – Taşburun – Casavet – Popina Island (1991–1994); 5 – Babadag – Enisala (1991–1992); 6 – Beştepe (1993); 7 – Niculiţel (1998); 8 – Bertea (2001); 9 – Meledic (2001); 10 – Varghişului Gorges (2002–2004); 11 – Rodna Mountains (2005–2006); 12 – Piatra Craiului Massif (2002–2004); 13 – Aninei – Locvei Mountains (2001–2005); 14 – Motru Sec karst area (2004–2017); 15 – Caves from Repedea Hill (2021); 16 – Tăşad-Stracoş karst area (2016, 2024); 17 – Pădurea Craiului (2006, 2016); 18 – Leaota Mountains (2014–2015). (In brackets, the author's faunal investigation periods).

More detailed data on the sites and sampling methods were presented by NITZU (2001) for Dobrogea; NITZU AND ILIE (2003), NAE *et al*. (2005), NITZU *et al*. (2011), NITZU (2021) for the Southern Carpathians; NITZU *et al*. (2002), NITZU *et al*. (2007) for the Curvature Carpathians; NITZU *et al*. (2008) for the Eastern Carpathians and BORDA *et al*. (2024) for Western Carpathians. Other data, unpublished to date, refer to species identified by the author for grants or contracts or collected in various small-scale expeditions.

The caves with obligate, endemic cave dwelling species (troglobitic) were published by NITZU *et al*. (2016), and the non-obligate cave dwelling species, grouped on biospeleological zones and caves, were published by NITZU (2022). In this work, we present the updated synthesis of Coleoptera identified both on exokarst (soil, edaphon) and endokarst (MSS, caves) of Romania.

3. RESULTS AND DISCUSSIONS

A list of 810 species and subspecies of Coleoptera, belonging to 41 families in the karst system of Romania, distributed by habitats and geographical regions, is presented in Table 1. Of these, the families Carabidae, Leiodidae and Staphylinidae are the best represented in terms of species richness (Fig. 2).

Table 1

The species of Coleoptera identified in the karst system of Romina.

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Fam. Carabidae			
Abax carinatus (Duftschmid, 1812	**F:** CC (8)	**Tx:** D (1); SC (8)	
Abax parallelus (Duftschmid, 1812)	**F:** CC (8, 10); SC(SW) (13); SC (14; 18)	**Tx:** CC (10)	SC (14; 18)
Abax parallelepipedus Piller et Mittelpacher, 1783	**F:** CC (10); SC (14; 18)	**Tx:** CC (10)	SC (12; 14; 18)
Abax schuppeli Palliardi, 1825	**F:** SC(SW) (13)	**Tx:** SC(SW) (13)	
Acinopus picipes (Olivier, 1795)	**S**: D (1, 2, 4)		
Acupalpus elegans (Dejean, 1829)	**R:** D (4)		
Acupalpus flavicollis (Sturm, 1825)	**S:** CC (10)	CC (10)	
Acupalpus maculatus Schaum, 1860	**R:** D (3)		
Acupalpus meridianus (Linnaeus, 1767)	**R:** D (2, 4); CC (10)		
Agonum dolens (Sahlberg, 1827)	**F:** D (5)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Agonum duftschmidi J. Schmidt, 1994 (= *moestum*)	**F:** SC (14)		
Agonum lugens (Duftschmid, 1812)	**F-S:** D (3, 4, 5)		
Amara aenea (Degeer, 1774)	**S:** D (2, 3, 4, 6); SC (14)		
Amara anthobia Villa, 1833	**F:** D (5)		
Amara bifrons (Gyllenhal, 1810)	**F**	**Tx**: D (5) (Nufaru)	
Amara consularis (Duftschmid, 1812)	**S-F:** D (2)		
Amara ingenua (Duftschmid, 1812)	**S-F:** D (3)		
Amara lucida (Dufrschmid, 1812)	**F, S:** D (1)		
Amara ovata (Fabricius, 1792)	**F:** D (5)		
Amara saphyrea Dejean, 1828	**S:** D (6)		
Anisodactylus poeciloides pseudoaeneus Dejean, 1829	**S:** D (4)		
Anisodactylus signatus (Panzer, 1797)	**S:** D (4)		
Aptinus bombarda (Illiger, 1800)	**F:** SC (14)		
Asaphidion flavipes (Linnaeus, 1761)	**F:** D (1, 2); CC (10)		
Badister peltaus (Panzer, 1796)	**S, F:** D (4, 5)		
Badister meridionalis Puel, 1925	**S, F:** CC (8)		
Bembidion (Trepanes) articulatum (Panzer, 1796)	**R:** CC (10)	**Tx:** CC (10)	
Bembidion (Diplocampa) assimile Gyllenhal, 1810	**R:** D (4)		
Bembidion (Ocydromus) atlanticum megaspilum Walker, 1871	**R:** CC (9)		
Bembidion (Emphanes) axillare euxinum Apfelbeck, 1904	**R:** D (4)		
Bembidion (Philochthus) biguttatum (Fabricius, 1779)	**F, R:** D (3)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Bembidion (Peryphanes) dalmatinum Dejean, 1831	**R:** D (3); CC (8, 9); WC (17)	**Tx:** SC (VD, 1964); WC (17)	
Bembidion (Sinechostictus) doderoi Ganglbauer, 1891	**R:** CC (10)		
Bembidion (Ocydromus) fluviatile Dejean, 1831	**R:** SC (14)		
Bembidion (Bembidionetolitzkya) geniculatum Heer, 1837	**R:** CC (10)		
Bembidion (Semicampa) guttulatum Chaudoir, 1850	**R:** D (4)		
Bembidion (Ocydromus) incognitum J. Muller, 1931	**R:** SC(SW) (13)		
Bembidion (Metallina) lampros (Herbst, 1784)	**F, R:** D (1); CC (10)		
Bembidion (Synechostictus) millerianum Heyden, 1833	**R:** CC (10)		
Bembidion (Trepanes) octomaculatum (Goeze, 1777)	**R:** CC (10)		
Bembidion (Metallina) properans Stephens, 1829	**F-S, R:** D (1, 2, 3, 4); CC (8, 9)	**Tx:** D (2)	
Bembidion (Synechostictus) stomoides Dejean, 1831	**R:** CC (10)		
Bembidion (Peryphus) subcostatum Motschulsky, 1850	**R:** D (3); SC (14)		
Bembidion (s.str.) quadrimaculatum (Linnaeus, 1761)	**R:** D (4); CC (10)		
Bembidion (Notaphus) varium (Olivier, 1795)	**R:** D (2, 4)		
Bembidion (Emphanes) tenellum Erichson, 1837	**R:** D (4)		
Bembidion (Peryphus) tetracolum Say, 1823	**R:** CC (10); SC(SW) (13); SC (14)		
Bembidion (Bembidio-netolitzkya) tibiale (Duftschmid, 1812)	**R**: CC (10)		

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	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Bembidion (Bembidio-netolitzkya) varicolor (Fabricius, 1801)	**R:** CC (10)		
Brachinus crepitans (Linnaeus, 1758	**F:** D (2)		
Brachinus elegans Chaudoir, 1842 (=g*anglbaueri* Apfelbeck, 1904)	**F:** D (3)		
Brachinus explodens Duftschmid, 1812	**F-S:** D (1, 2, 5)		
Broscus cephalotes Linnaeus, 1758	**R**: CC (10)		
Calathus ambiguus (Paykull, 1790)	**F, S:** D (2, 4, 5)	**Tx:** D (5)	
Calathus erratus (C.R. Sahlberg, 1827)	**S, F:** D (2)		
Calathus fuscipes (Goeze, 1777)	**F:** D (1, 2, 3, 5); CC (8)		
Calathus melanocephalus (Linnaeus, 1758)	**F:** D (1, 2, 3, 5); CC (8)		
Calathus mollis erythroderus Gemminger & Harold, 1868	**F:** D (3)		
Calosoma sycophantha Linnaeus, 1758	**F:** D (3, 5); SC (14)		
Carabus auronitens escheri Palliardi, 1825	**F:** CC (10); SC (18)		
Carabus cancellatus Illiger, 1798	**F:** SC (14, 18)		
Carabus convexus Fabricius, 1755	**F:** D (1, 5, 7); CC (10), SC (14)		
Carabus coriaceus vicinus Waltl, 1838	**F:** D (1, 2, 3, 5)		
Carabus coriaceus rugifer Kraatz, 1877	**F:** CC (8); SC (18)	**Tx:** SC (12)	
Carabus gigas Creutzer, 1799	**F:** SC (14)	**Tx:** SC (14)	
Carabus granulatus Paykull, 1790	**F:** CC (10)		
Carabus graecus morio Mannerheim, 1830	**F, S:** D (2,3, 5)		
Carabus intricatus Linnaeus, 1761	**F:** SC (14)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Carabus irregularis Fabricius, 1792	**F:** SC (18)		
Carabus linnei Panzer, 1810	**F:** SC (18)		SC (18)
Carabus marginalis Fabricius, 1794	**F:** CC (10)		
Carabus montivagus montivagus Palliardi, 1825	**F:** D (1, 5)		
Carabus linnei Panzer, 1812			SC (12)
Carabus obsoletus carpathicus Pallieardi. 1825	**F:** CC (10)		
Carabus planicollis Kuster, 1827	**F:** SC (18)		
Carabus scheidleri kollari Palliardi, 1825	**F:** SC(SW) (13)		
Carabus ullrichi Germar, 1824	**F:** SC(SW) (13); SC (14)		
Carabus variolosus Fabricius, 1787	**F, R**: CC (10)		
Carabus violaceus wolffi Dejean, 1826	**F:** CC (8); SC (18)		
Chaetoduvalius saetosus amblygonus Jeannel 1926		**Tb:** WC (EN *et al*., 2016)	
Chlaenius decipiens (Dufour, 1820)	**R:** D (2)		
Chlaenius nitidulus (Schrank, 1781)	**R:** D (3)		
Chlaenius nitidulus (Schrank, 1781)	**R:** D (3); CC (10)	**Tx**: CC (10)	
Chlaenius tristis (Schaller, 1783)	**F, R:** D (3)		
Chlaenius vestitus (Paykull, 1790)	**R:** D (1, 2, 3)		
Chlaenus spoliatus (Rossi, 1790)	**R:** D (1, 2, 3, 4)		
Clivina collaris (Herbst, 1784)	**R-F:** D (2); SC(SW) (13)		
Clivina fossor (Linnaeus, 1758)	**R-F:** D (5); CC (10)		
Clivina laevifrons Chaudoir, 1850	**R-F:** D (3)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Clivina subterranea Decu, Nitzu, Juberthie, 1996		**Tb, R:** D (2)	
Cychrus caraboides (Linnaeus, 1758)	**F:** SC (18)		SC (12); SC (18)
Cychrus semigranosus Palliardi, 1825	**F:** SC (14)		sC (14)
Cymindis humeralis (Fourcroy, 1785)	**F:** SC (8)		
Cymindis lineata (Quensel, 1806)	**S:** D (3, 4, 5)		
Cymindis variolosa (Fabricius, 1794)	**S:** D (3)		
Ditomus obscurus Dejean, 1825	**S:** D (1, 2)		
Dolichus halensis (Schaller, 1783)	**S:** D (2)		
Duvalius bedelensis Janak et Moravec, 1989		**Tb:** SC (EN *et al*., 2016)	
Duvalius budae (Kenderessy, 1879)		**Tb:** SC (EN *et al*., 2016)	
Duvalius budae baznosanui Mallasz, 1928		**Tb:** SC (EN *et al*., 2016)	
Duvalius budae dioszeghyi Mallasz 1928		**Tb:** SC (EN *et al*., 2016)	
Duvalius budae malomvicensis (Ganglbauer, 1900) (= *lepsii* Malasaz, 1928)		**Tb:** SC (EN *et al*., 2016)	
Duvalius cicioarae Jeannel, 1930		**Tb:** SC (EN *et al*., 2016)	
Duvalius coiffaiti Decou, 1967		**Tb:** WC (EN *et al*., 2016)	
Duvalius cognatus (J. Frivaldszkyi, 1879)		**Tb:** WC (EN *et al*., 2016)	
Duvalius cognatus ghardanus Jeannel 1928		**Tb:** WC (EN *et al*., 2016)	
Duvalius cognatus nuptialis (Csiki, 1912)		**Tb:** WC (EN *et al*., 2016)	
Duvalius delamarei Decou, 1967		**Tb:** SC (EN *et al*., 2016)	
Duvalius deubelianus (Csiki, 1903)		**Tf:** SC (12) (EN *et al*., 2016)	SC (12)
Duvalius dieneri Csiki, 1910	**E:** SC (RJ, 1928)		

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	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Duvalius gaali (Mallasz, 1928)		**Tb:** SC (EN *et al*., 2016)	
Duvalius gracilis Petri, 1912	**E:** SC (RJ, 1928)		
Duvalius hegeduesi jonescoi (Jeannel, 1919)		**Tf:** SC (EN *et al*., 2016)	MC (SW): VD&all, 2006
Duvalius herculis (J. Frivaldszkyi, 1889)		**Tb:** SC(SW) (13); (NE *et al*., 2016)	
Duvalius hickeri (Knirsch 1913)		**Tb:** WC (EN *et al*, 2016)	
Duvalius hickeri infernus (Knirsch, 1913)		**Tb:** WC (EN *et al*., 2016)	
Duvalius kimakowiczi Ganglbauer, 1891	**E:** SC (RJ, 1928)		
Duvalius laevigatus (Bokor 1913)		**Tb:** WC (EN *et al*., 2016)	
Duvalius mallaszi gabriellae (Mallasz, 1916).		**Tb:** WC (EN *et al*., 2016)	
Duvalius mandibularis Jeannel, 1930		**Tb:** WC (EN *et al*., 2016)	
Duvalius milleri (J. Frivaldszkyi, 1862)		**Tf:** SC(SW) (13); (EN *et al*., 2016)	SC(SW) (13)
Duvalius nannus Jeannel, 1931		**Tb:** SC (EN *et al*., 2016)	
Duvalius oltenicus Jeannel, 1928		**Tb:** SC (14); (EN *et al*., 2016)	
Duvalius onaci Moldovan, 1993		**Tb:** WC (OTM, 1993; EN at al., 2016)	
Duvalius paroecus Frivaldszky, 1878		**Tb:** WC (17); (EN *et al*., 2016)	
Duvalius paroecus dryops (Bokor 1913)		**Tb:** WC (EN *et al*., 2016)	
Duvalius paroecus elemeri (Mihok, 1911)		**Tb:** WC (EN *et al*., 2016)	
Duvalius paroecus csikii (Mihok, 1912		**Tb:** WC (EN *et al*., 2016)	
Duvalius paroecus mocsaryi (Csiki, 1913)		**Tb:** WC (EN *et al*., 2016)	
Duvalius (Biharotrechus) paroecus montistartari Jeannel, 1928		**Tb:** WC (EN *et al*., 2016)	
Duvalius paroecus taxi (Breit, 1911)		**Tb:** WC (EN *et al*., 2016)	

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	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Duvalius poporogui Decou, 1973		**Tb:** SC (EN *et al*., 2016)	
Duvalius proceroides Jeannel, 1926	**E:** EC (RJ, 1928)		
Duvalius procerus (Putzeys, 1847)		**Tf:** SC (EN *et al*., 2016)	
Duvalius redtenbacheri (I. Frivaldszky von Frivald & J. Frivaldszky 1857)		**Tb:** WC (EN *et al*., 2016)	
Duvalius redtenbacheri almosi (Bokor, 1921)		**Tb:** WC (EN *et al*., 2016)	
Duvalius redtenbacheri angustatus Jeannel, 1928		**Tb:** WC (EN *et al*., 2016)	
Duvalius redtenbacheri biharensis Csiki, 1911		**Tb:** WC (17)	
Dvalius redtenbacheri biroi (Csiki, 1905)		**Tb:** WC (17); (EN *et al*., 2016)	
Duvalius redtenbacheri extensus Winkler, 1933		**Tb:** WC (EN *et al*., 2016)	
Duvalius redtenbacheri jeanneli Winkler 1933		**Tb:** WC (EN *et al*., 2016)	
Duvalius redtenbacheri vidaretensis (Bokor, 1921)		**Tb:** WC (EN *et al*., 2016)	
Duvalius ruthenus arcticollis Jeannel, 1928	**E:** EC (RJ, 1928)		
Duvalius ruthenus trisetifer Jeannel, 1926	**E:** EC (RJ, 1928)		
Duvalius (Biharotrechus) scarisoarae (Knirsch, 1913)		**Tb:** WC (EN *et al*., 2016)	
Duvalius sziladyi (Csiki, 1904)		**Tb:** WC (EN *et al*., 2016)	
Duvalius sziladyi anubis (Bokor, 1913)		**Tb:** WC (EN *et al*., 2016)	
Duvalius sziladyi dilatatus Bokor		**Tb:** WC (EN *et al*., 2016)	
Duvalius sziladyi pseudoparoecus (Csiki, 1905)		**Tb:** WC (EN *et al*., 2016)	
Duvalius spiessi Jeannel et Mallasz, 1928		**Tb:** SC (14) (EN *et al*, 2016)	
Duvalius spinifer Jeannel, 1928		**Tb:** SC (14) (EN *et al*., 2016)	

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	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Duvalius spinifer tismanae Jeannel 1928		**Tb:** SC (EN *et al*., 2016)	
Duvalius stilleri (Reitter, 1913).		**Tb:** SC (SW) (EN *et al*., 2016)	
Duvalius stilleri cernisorensis Decou, 1962		**Tb:** SC (SW) (EN *et al*., 2016)	
Duvalius stilleri longulus Jeannel, 1928		**Tb:** SC (SW) (EN *et al*., 2016)	
Duvalius subterraneus sobrinus Jeannel, 1926	**E:** EC (11)		
Duvalius voitestii Jeannel, 1930		**Tb:** SC (EN *et al*., 2016)	
`		**Tb:** EC (11)	
Duvaliopsis bielzi Seidlitz, 1867	**E:** SC (RJ, 1928)		
Duvaliopsis meliki meliki meliki Csiki, 1912	**E:** EC (RJ, 1928)		
Duvaliopsis meliki pauperculus Knirsch, 1925	**E:** EC (RJ, 1928)		
Duvaliopsis pilosellus calimanensis Knirsch, 1924	**E:** EC (RJ, 1928)		
Duvaliopsis transsylvanica (Csiki 1902).		**Tf:** CC (10); (EN *et al*., 2016)	
Dyschirius agnatus (Motschulsky, 1844)	**R:** CC (10)		
Dyschirius digitatus (Dejean, 1825)	**R:** CC (10)		
Dyschirius luticola Chaudoir, 1850	**R:** D (4)		
Dyschirius salinus Schaum, 1843	**R:** D (1)		
Dyschirius tristis Stephens, 1827	**R:** D (4)		
Harpalus distinguendus (Duftschmid, 1812)	**F, S:** D (2, 4)		
Harpalus flavicornis Dejean, 1829	**S-F:** D (3)		
Harpalus neglectus Serville, 1821	**S, F:** D (5)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Harpalus pseudoserripes (Reitter, 1900)	**S:** D (6)		
Harpalus roubali Schauberger, 1928	**F, S:** CC (8)		
Harpalus saxicola Dejean, 1829	**S:** D (3, 6)		
Harpalus serripes (Quensel, 1806)	**F, S:** D (2, 3, 4, 5, 6)		
Harpalus sulphuripes Germar, 1824	**F:** CC (10)		
Harpalus tardus (Panzer, 1797(	**S:** D (1, 2, 3, 4, 5, 6)		
Harpalus tenebrosus Dejean, 1829	**S:** D (2)		
Harpalus vernalis (Duftschmid, 1812)	**S:** D (1, 2, 4, 6)		
Laemostenus (Pristonychus) euxinicus Nitzu, 1998			*Cleitric: D (2)*
Laemostenus (Pristonychus) terricola punctatus (Dejean, 1828)	**F:** D (2, 5)	**Tf:** (D, 2); SC (SW) (13)	
Lebia humeralis Dejean, 1825	**S:** D (3)		
Leistus ferrugineus (Linnaeus, 1758)	**F:** D (1); CC (8)		
Leistus rufomarginatus Duftschmid, 1812	**F:** D (5, 7)		
Licinus cassideus (Fabricius, 1792)	**S:** D (2, 3)		
Licinus punctatulus (Fabricus, 1792)	**S:** D (2)		
Licinus silphoides (Rossi, 1790)	**S:** D (2)		
Limnastis galilaeus Brulle, 1875			*Cleitric: D (2)*
Limodromus assimilis (Paykull, 1790)	**R:** CC (8,10); SC (18)		
Limodromus krynickii (Sperk, 1835)	**R:** D (3)		
Microlestes minutulus (Goeze, 1777)	**S:** D (3, 4)		
Molops piceus (Panzer, 1793)	**F:** CC (10); SC(SW) (13); SC (14)		CC (10)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Myas chalybaeus Palliardi, 1825	**F:** D (1); SC (14)		
Nebria brevicollis (Fabricius, 1792)	**F:** D (1, 3)		
Nebria rufescens (Stroem, 1768)	**F, R:** CC (10)		
Notiophilus biguttatus (Fabricus, 1779)	**F:** CC (10)	**Tx:** CC (10)	
Notiophilus rufipes Curtis, 1829	**F:** D (1, 2, 3, 5); SC (14)		SC (14)
Oodes gracilis Villa, 1833	**F, S:** D (6)		
Ophonus (Metophonus) azureus (Fabricius, 1773)	**F-S:** D (2, 5)		
Ophonus (Metophonus) cordatus (Duftschmid, 1812)	**F:** D (5)		
Ophonus (Metophonus) cribricollis Dejean, 1829	**S:** D (2)		
Ophonus (Metophonus) rupicola Sturm, 1818	**S:** D (2)		
Ophonus sabulicola ponticus Schauberger, 1926	**S:** D (1)		
Oxypselaphus obscurus (Herbst, 1784)	**R, S:** D (3)		
Paranchus albipes (Fabricius, 1796)	**R:** CC (10); **F:** SC (14)	**Tx:** SC (14)	
Paratachys bistriatus (Dudftschmid, 1812)			CC (10)
Parazuphium chevrolati (Castelnau, 1833)			Cleitric: D (2)
Parophonus maculicornis (Duftschmid, 1812)	**F:** D (5)		
Parophonus mendax (Rossi, 1790)			Cleitric D (2)
Patrobus styriacus Chaudoir, 1871		**Tx:** WC (VD, 1964)	
Perigona nigriceps (Dejean, 1831)	**S:** D (2)		
Philorhizus notatus (Stephens, 1827)	**F:** CC (10)		CC (10)
Platynus banaticus (J. Frivaldszky, 1865)		**Tx:** SC(SW) (13)	

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Platynus glacialis Reitter,1877	**F:** SC (18)	**Tx:** SC (NE, 2022)	SC (12, 18)
Platynus scrobiculatus (Fabricius, 1801)	**F:** SC(SW) (13); WC (17)	**Tx:** SC (SW) (13); WC (17); (NE, 2022)	
Poecilus cupreus (Linnaeus, 1758)	**F:** D (1, 5); CC (10)		
Poecilus punctulatus (Schaller, 1783)	**F, S:** D (4, 5)		
Pogonus littoralis (Duftschmid, 1812)	**R:** D (4)		
Polistichus connexus (Fourcroy, 1785)	**S:** D (4, 5, 6)		
Porotachys bisulcatus (Nicolai, 1822)			Cleitric: D (2)
Pseudophonus rufipes (De Geer, 1774)	**F, S:** D (2, 5); CC (8)		
Pterostichus cylindricus (Herbst, 1784)	**F:** D (3); SC(SW) (13)		
Pterostichus findeli Dejean, 1828	**F:** SC (18)		SC (12)
Pterostichus foveolatus (Duftschmid, 1812)	**F:** SC (18)		
Pterostichus gracilis (Dejean, 1828)	**F:** D (5)		
Pterostichus hungaricus (Dejean, 1828)	**F:** D (1)		
Pterostichus melanarius (Illiger, 1798)	**F:** D (1, 2)		
Pterostichus melas (Creutzer, 17990	**F:** CC (10)		
Pterostichus niger (Schaller, 1783)	**F:** D (1, 2, 3); CC (8); SC(SW) (13); SC (18)		SC(SW) (13)
Pterostichus nigrita (Paykull, 1790)	**F:** D (3); CC (10)		
Pterostichus oblongopunctatus (Fabricius, 1787)	**F:** SC (18)		SC (18)
Pterostichus pillosus wellensii (Drapiez, 1819)	**F, S:** SC (18)		SC (12)
Pterostichus strenuus (Panzer, 1796)	**F, R:** CC (10)	**Tx:** SC (12)	
Pterostichus unctulatus (Duftschmid, 1812)	**F:** SC (18)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Stenolophus discophorus (Fischer de Waldheim, 1823)	**R:** D (4)		
Stenolophus mixtus (Herbst, 1784)	**R:** D (2, 3, 4, 5)		
Stenolophus teutonus (Schrank, 1781)	**R:** D (2)		
Stomis pumicatus (Panzer, 1796)	**F:** SC (14)		SC (14)
Syntomus obscuroguttatus (Duftschmid, 1812)	**F-S:** D (3)		
Tachys micros (Fischer de Waldheim, 1828)	**R:** D (3,4)		
Tachys scutellaris Stephens, 1829	**R:** SC (9)		
Tacyta nana (Gyllenhal, 1810)	**F-S:** SC (14)		
Tachyura diabrachys (Kolenati, 1845)	**R:** D (4); CC (9, 10)		
Trechoblemus micros (Herbst, 1784)	**R:** SC		
Trechus austriacus Dejean, 1831	**F:** D (1)	**Tx:** D (3)	Cleitric D (1, 2)
Trechus banaticus (nec bannaticus auct.) Dejean, 1831			MC(SW): VD&all, 2006
Trechus cardioderus Putzeys, 1870	**F:** CC (8); SC (14)	**Tx:** CC (8)	
Trechus latus Putzeys, 1847	**F:** WC (17)	**Tx:** EC (11); CC; WC (17); (VD, 1964)	
Trechus obtusus Erichson, 1837	**R:** CC (10)		
Trechus quadristriatus (Schrank, 1781)	**F:** D (2, 3, 5)		
Trechus pulchellus Putzeys, 1846	**F:** SC (18); WC (17)	**Tx:** SC (VD, 1964; WC (17); (EN, 2022)	
Trechus striatulus Putzeys, 1847		**Tx:** EC (15)	
Trichotichnus laevicollis (Duftschmid, 1812)	**F:** SC (18)		
Zabrus spinipes (Fabricius, 1798)	**S:** D (1, 2, 3, 4, 6)		
Zabrus tenebrioides (Goeze, 17770	**S, F:** D (1, 2, 3, 4)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Fam. Leiodidae			
Agathidium laevigatum Erichson, 1848	**F:** D (3)		SC (14)
Amphicyllis globus (Fabricius, 1792)	**F:** CC (8); SC (14)		
Apocatops nigrita Erichson, 1837	**F:** CC (10)	**Tf**: CC (10); EC (15); SC (SW) (13); WC (VD, 1964)	
Banatiola vandeli Decu, 1967		**Tb:** SC (SW) (EN *et al*., 2016)	
Catops chrysomeloides (Panzer, 1798)	**F:** D (3)		
Catops coracinus Kellner, 1846	**F:** SC (18)	**Tx:** WC (VD, 1964)	
Catops fuliginosus Erichson, 1837	**S, F:** (D3); sC (14)	**Tx:** D (3); SC (14)	SC(SW) (13)
Catops fuscus (Panzer, 1794)	**F:** SC (18)	**Tf:** D (3); CC (10); SC (12); (VD; 1964)	
Catops grandicollis Erichson, 1837	**F:** SC (14)		sC (14)
Catops kirbyi (Spence, 1815)	**F:** SC (14, 18)		
Catops longulus Kellner, 1846	**F:** SC (14)	**Tx:** CC (10); WC (17); (VD, 1964)	CC (10)
Catops neglectus Kraatz, 1852			SC(SW) (13)
Catops nigricans (Spence, 1815)	**S, F:** D (3)	**Tx:** D (3); SC (VD, 1964)	
Catops picipes (Fabricius, 1787)	**F:** CC (10); SC (14, 18)	**Tf:** CC (10); SC (12, 14); SC (EN, 2022) WC (17); (VD, 1964)	SC (12); sC (14); SC (18)
Catops subfuscus Kellner, 1846		**Tx:** CC (10); SC (14)	SC(SW) (13); SC (14); SC (18)
Catops tristis (Panzer, 1794)	**F:** CC (10); SC(SW) (13); SC (18)	**Tf:** CC (10); EC (11)	SC (12); SC(SW) (13); SC (18)
Choleva angustata (Fabricius, 1781)	**F:** SC (14)	**Tx:** SC (14); WC (16, 17); (VD, 1964)	
Choleva cisteloides dacica Jeannel, 1922		**Tf:** WC (16, 17); (EN, 2022; VD, 1964)	
Choleva glauca Britten, 1918		**Tf:** CC (10); SC; WC (17); (VD, 1964)	
Choleva nivalis (Kraatz, 1856)		**Stf:** WC (NE, 2022, VD, 1964)	CC (10)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Choleva oblonga Latreille, 1807		**Tx:** SC; WC (VD, 1964)	Cleitric (D, 3)
Choleva spadicea (Sturm, 1839)	**F:** SC (18)	**Stf:** SC; WC (VD, 1964)	SC (14)
Choleva macedonica Karaman, 1954		**Tf:** SC, (NE, 2024)	
Closania orghidani Decu, 1959		**Tf:** SC (EN *et al*., 2016)	
Closania winkleri Jeannel, 1928		**Tb:** SC (14); (NE *et al*, 2016)	
Closania winkleri elongata Jeannel 1930		**Tb:** SC (EN *et al*., 2016)	
Closania winkleri planicollis Jeannel, 1930		**Tb:** SC (EN *et al*., 2016)	
Colenis immunda (Sturm, 1807)	**F:** SC (14)		
Drimeotus attenuatus attenuatus Bokor, 1913		**Tb:** WC (EN *et al*., 2016)	
Drimeotus blidarius Knirsch, 1925		**Tb:** WC (EN *et al*., 2016)	
Drimeotus (Drimeotus) bokori Csiki, 1911		**Tb:** WC (EN *et al*., 2016)	
Drimeotus bokori thoracicus Knirsch, 1913		**Tb:** WC (EN *et al*., 2016)	
Drimeotus (Drimeotus) chyzeri vicinus Jeannel, 1930		**Tb:** WC (EN *et al*., 2016)	
Drimeotus (Drimeotus) entzi Biro, 1897		**Tb:** WC (EN *et al*., 2016)	
Drimeotus entzi gracilis Jeannel 1930		**Tb:** WC (EN *et al*., 2016)	
Drimeotus hickeri Knirsch, 1913		**Tb:** WC (EN *et al*., 2016)	
Drimeotus horvathi Biro, 1897		**Tb:** WC (EN *et al*., 2016)	
Drimeotus kovacsi Miller, 1856 [as *D. osoiensis* Moldovan, 2000]		**Tb:** WC (16)	
Drimeotus kovacsi viehmanni Ienistea 1955		**Tb:** WC (EN *et al*., 2016)	
Drimeotus kraatzi J. & E. Frivaldszky, 1857		**Tb:** WC (EN *et al*., 2016)	
Drimeotus laevimarginatus cryophilus Jeannel 1923		**Tb:** WC (EN *et al*., 2016)	

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Drimeotus laevimarginatus csikii Mihok, 1912		**Tb:** WC (EN *et al*., 2016)	
Drimeotus laevimarginatus dieneri Bokor, 1913		**Tb:** WC (EN *et al*., 2016)	
Drimeotus laevimarginatus hungaricus Csiki, 1912		**Tb:** WC (EN *et al*., 2016)	
Drimeotus laevimarginatus montistartari Jeannel, 1930		**TB:** WC (EN *et al*., 2016)	
Drimeotus laevimarginatus subterraneus Knirsch, 1913		**Tb:** WC (EN *et al*, 2016)	
Drimeotus mihoki Csiki, 1912)		**Tb:** WC (EN *et al*., 2016)	
Drimeotus mihoki condoricus Knirsch 1913		**Tb:** WC (EN *et al*., 2016)	
Drimeotus mihoki corlatensis Jeannel, 1930		**Tb:** WC (EN *et al*., 2016)	
Drimeotus (Bihorites) mihoki rothi Jeannel, 1923		**Tb:** WC (EN *et al*., 2016)	
Drimeotus octaviani Moldovan, 1997		**Tb:** WC (OTM, 2000); (EN *et al*., 2016)	
Drimeotus ormayi Reitter, 1889		**Tb:** WC (EN *et al*., 2016)	
Drimeotus (Drimeotus) puscariui Jeannel 1930		**Tb:** WC (OTM, 2000)	
Fissocatops westi (Krogerus, 1931)	**F:** SC(SW) (13)	**Tx:** SC (14)	
Hydnobius latifrons (Curtis, 1840)	**F:** SC (14)		
Liodes cinnamomea (Panzer, 1793)	**S:** (D, 3)	**Tx:** D (3)	Cleitric (D, 3)
Mehadiella paveli Frivaldszky, 1880			MC(SW): VD&all,2006
Nargus anisotomoides (Spence, 1815)	**F:** SC (14)		SC(SW) (13)
Nargus badius (Sturm, 1839)		**Tf:** SC (VD, 1964); WC (EN, 2022)	SC: VD&all, 2006
Nargus (Demochrus) brunneus (Sturm, 1839)	**F:** D (3)		SC(SW) (13)
Nargus (Demochrus) wilkinii (Spence, 1815)	**F:** D (3); SC(SW) (13); SC (14)		SC(SW) (13)
Nemadus colonoides (Kraatz, 1851)		**Tx:** SC(SW) (13)	
Pholeuon angusticolle bihariense Csiki, 1912		**Tb:** WC (EN *et al*., 2016)	

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	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Pholeuon angusticolle mihoki Csiki, 1911		**Tb:** WC (EN *et al*., 2016)	
Pholeuon comani Ienistea, 1955		**Tb:** WC (EN *et al*., 2016)	
Pholeuon gracile gracile Frivaldszky, 1861		**Tb:** WC (17); (EN *et al*., 2016)	
Pholeuon (Parapholeuon) gracile bokorianum Csiki, 1911		**Tb:** WC (GR, 2011; EN *et al*., 2016)	
Pholeuon gracile chappuisi Jeannel, 1930		**Tb:** WC (17); (EN *et al*., 2016)	
Pholeuon knirschi Breit 1911		**Tb:** WC (EN *et al*., 2016)	
Pholeuon knirschi brevicule Jeannel, 1923		**Tb:** WC (EN *et al*., 2016)	
Pholeuon knirschi cetatense Jeannel, 1930		**Tb:** WC (EN *et al*., 2016)	
Pholeuon knirschi convexum Knirsch, 1913		**Tb:** WC (EN *et al*., 2016)	
Pholeuon knirschi dieneri Mihok 1912		**Tb:** WC (EN *et al*., 2026)	
Pholeuon (Pholeuon) knirschi elemeri Csiki, 1912		**Tb:** WC (EN *et al*., 2016)	
Pholeuon knirschi frivaldszkyi Csiki, 1912		**Tb:** WC (EN *et al*., 2016)	
Pholeuon (Pholeuon) knirschi gyleki Moczarski, 1912		**Tb:** WC (EN *et al*., 2016)	
Pholeuon knirschi serbani Ienistea, 1955		**Tb:** WC (EN *et al*., 2016)	
Pholeuon (s.str) leptodirum attila Csiki, 1912		**Tb:** WC (EN *et al*, 2016)	
Pholeuon leptodirum biroi Csiki 1912		**Tb:** WC (EN *et al*., 2016)	
Pholeuon leptodirum hazayi J. Frivaldszky 1884		**Tb:** WC (EN *et al*., 2016)	
Pholeuon leptodirum janitor Jeannel, 1923		**Tb:** WC (EN *et al*., 2016)	
Pholeuon leptodirum winkleri Jeannel, 1923		**Tb:** WC (EN *et al*., 2016)	

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Pholeuon mocsaryi Csiki, 1911 [as *P. angustiventre* Racovitza, 1996]		**Tb:** WC (17); (EN *et al*., 2016)	
Pholeuon proserpinae Knirsch, 1913		**Tb:** WC (EN *et al*., 2016)	
Pholeuon proserpinae brachyonotos Jeannel, 1923		**Tb:** WC (EN *et al*., 2016)	
Pholeuon proserpinae glaciale Jeannel, 1923		**Tb:** WC (EN *et al*., 2016)	
Pholeuon proserpinae intermittens Knirsch, 1913.		**Tb:** WC (EN *et al*., 2016)	
Protopholeuon hungaricum (Csiki, 1904)		**Tb:** WC (EN *et al*., 2016)	
Ptomaphagus sericatus (Chaudoir, 1845)	**F:** SC(SW) (13)		SC(SW) (13)
Ptomaphagus subvillosus (Goeze, 1777)			SC (14)
Ptomaphagus validus (Kraatz, 1852)			SC(SW) (13)
Ptomaphagus variicornis (Rosenhauer, 1847)	**F:** SC (18)	**Tx:** WC (VD, 1964)	
Sciodrepoides fumatus (Spence, 1815)	**F:** SC (14)		
Sciodrepoides watsoni (Spence, 1815)	**S, F:** D (2); SC (14, 18)	**Tx :** CC (8); SC (14)	SC(SW) 13
Sophrochaeta chappuisi Jeannel, 1930		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta dacica Ienistea, 1955		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta globosa Jeannel, 1928		**Tf:** SC	SC(SW): VD&all, 2006
Sophrochaeta insignis (J. Frivaldszky, 1880)		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta jeanneli Decu, 1959		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta kovalitzkyi Knirsch, 1913)	**E:** SC (MI, 1955)		
Sophrochaeta longicornis Jeannel, 1931		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta mihoki Bokor, 1921		**Tf:** SC (EN *et al*., 2016)	MC(SW): VD&all, 2006

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Sophrocharta merkli (J. Frivaldszky, 1883)	**E:** SC (MI, 1955)	**Stf:** SC (MI, 1955)	
Sophrochaeta motasi Decu, 1959		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta obtusa Jeannel 1931		**Tf:** SC (EN *et al*., 2016)	
Sophrochaeta oltenica Jeannel et Mallasz, 1930		**Tb:** SC (14); (EN *et al*., 2016)	
Sophrochaeta oltenica densepunctata Jeannel, 1931		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta orghidani Ienistea, 1955		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta racovitzai Decu, 1959		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta reitteri (J. Frivaldszky, 1884)		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta reitteri mallaszi Bokor, 1928		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta reitteri parallela Jeannel, 1928		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta reitteri retezati Mallasz, 1928		**Tb:** SC (EN *et al*., 2016)	
Sophrochaeta rothi Jeannel, 1924		**Tf:** SC (EN *et al*., 2016)	
Sophrochaeta subaspera Jeannel, 1928		**Tf:** SC (14); (EN *et al*., 2016)	
Sophrochaeta subaspera arcticollis Jeannel, 1931		**Tf:** SC (14); (EN *et al*., 2016)	
Tismanella chappuisi Jeannel, 1928		**Tb:** SC (EN *et al*., 2016)	
Tismanella chappuisi arcuata Jeannel, 1930		**Tb:** SC (EN *et al*., 2016)	
Tismanella chappuisi convexipennis Jeannel, 1930		**Tb:** SC (EN *et al*., 2016)	
Tismanella chappuisi diversa Decu, 1961		**Tb:** SC (EN *et al*., 2016)	
Tismanella winkleriana Jeannel, 1931		**Tb:** SC (EN *et al*., 2016)	
Fam. Leptinidae			
Leptinus testaceus Muller, 1817		**Tf:** SC; WC (VD, 1964)	SC (14)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Fam. Staphylinidae			
Acrolocha amabilis (Heer, 1841)	**F:** SC (14)	**Tx:** WC (EN, 2022)	
Aleochara curtula (Goeze, 1777)	**F:** D (3); SC (14)		SC (14)
Aleochara diversa (Sahlberg, 1876)	**F:** SC (18)	**Tf:** SC (VD, 1964); SC(SW) (13); WC (VD, 1964)	
Aleochara erythroptera Gravenhorst, 1806			SC (18)
Aleochara funebris Wollaston, 1864	**F:** SC (14); WC (16)	**Tx:** SC (14); SC(SW) (13); SC (VD, 1964); WC (16)	
Aleochara haemoptera Kraatz. 1856	**R:** SC (14)		sC (14)
Aleochara milleri Kraatz, 1862	**F, S:** D (3)	**Tx:** D (3)	
Aleochara sanguinea (Linnaeus, 1758)	**F:** SC (14)		
Aloconota currax (Kraatz, 1856)		**Tx:** SC (VD, 1964)	
Aloconota insecta (Thomson, 1856)		**Tx:** SC (EN, 2022); WC (VD, 1964)	
Anaulacaspis (=Falagria) nigra (Gravenhorst, 1802)	**R:** D (4)		
Anotylus insecatus (Gravenhorst, 1806)	**R:** SC (18)		
Anotylus mutator Lohse, 1963	**R:** SC (14)		
Anotylus nitidulus (Gravenhorst, 1806)	**R**: SC (14)		
Anotylus sculpturatus Gravenhorst, 1806	**R:** D (1, 2); CC (10); SC(SW) (13); SC (14)	**Tx:** CC (10); SC (12)	SC(SW) (13); SC (14)
Anotylus tetracarinatus (Block, 1799)	**R:** SC (14); SC (18)		
Anthobium melanocephalum (Illiger, 1794)	**F:** SC(SW) (13); SC (14, 18)		
Anthophagus caraboides (Linnaeus, 1758)			CC (10)
Astrapeus ulmi (Rossi, 1790)	**F, S:** D (4, 5)		Cleitric (D,2)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Atheta contristata (Kraatz, 1856)	**F:** SC (14)	**Tx:** SC (14)	
Atheta crassicornis (Fabricius, 1792)	**F:** SC (14, 18)	**Tx:** SC (14)	
Atheta ermischi Benik, 1934	**F:** CC (8)	**Tx:** D (3)	
Atheta europaea Likovsky, 1984			SC(SW) (13)
Atheta incognita (Sharp, 1869)	**F:** CC (10)	**Tx:** CC (10)	
Atheta laevana (Mulsant & Rey, 1852	**F:** SC (18)		
Atheta nigritula (Gravenhorst, 1802)	**R:** SC (14)		
Atheta (Bessobia) occulata (Erichson, 1837)			SC (14)
Atheta (Philhygra) palustris (Kiesenwetter, 1844)	**R:** D (3)		
Atheta revicollis (Baudi is Selve, 1848)			SC(SW) (13)
Atheta rugulosa Heer, 1839			SC (14)
Atheta sodalis (Erichson, 1837)	**F:** SC (14)	**Tx:** SC (14)	SC (18)
Atheta spelaea Erichson, 1839		**Tf:** D (1, 2, 3); SC (SW) (13); WC (VD, 1964)	
Autalia longicornis Scheerpeltz, 1947	**F, R:** SC (14)		
Bisnius fimetarius (Gravenhorst, 1802)	**R:** SC (14)		
Bledius (Hesperohilus) femoralis (Gyllenhal, 1827)	**R:** D (1)		
Bledius (Hesperohilus) fracticornis (Paykull, 1790)	**R:** D (4)		
Bledius tricornis (Herbst, 1784)	**R:** D (3)		
Bolitochara obliqua Erichson, 1837			SC (14)
Brachygluta retovskii Simon, 1883	**R:** CC (9)		
Bryaxis carpathicus (Saulcy, 1875)	**F:** CC (8)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Bryaxis glabricollis Reichenbach, 1816	**F:** CC (10); SC (14)	**Tx:** CC (10)	SC (14)
Bryaxis goliath (Jeannel, 1922)		**Tx:** WC (VD, 1964)	
Bryaxis heydeni (Reitter, 1879)			SC (18)
Bryaxis nigripennis (Aube, 1844)			SC (12)
Bryaxis nodicornis (Aube, 1833)	**F:** SC(SW) (13); SC (14)	**Tx:** SC (SW) (13)	SC (12); SC(SW) (13); SC (14)
Bryaxis reitteri (Saulcy, 1875)	**F:** CC (10); SC (14)		SC (14)
Bryaxis ruthenus (Saulcy, 1877)	**F:** CC (10)	**Tx:** CC (10)	
Bryaxis sculptifrorns (Reitter, 1880)	**F:** SC (14, 18)		
Bryaxis simplex (Baudi, 1869)	**F:** CC (8)		
Bythinus acutangulus Reitter, 1878	**F:** SC (14)		
Carpelimus (Trogophloeus) augustae Bernheim, 1901	**R:** D (2)		Cleitric D (2)
Carpelimus (Trogophloeus) bilineatus Stephens, 1834	**R:** D (3)	**Tx:** D (2, 3)	Cleitric D (3)
Carpelinus (Trogophloeus) elongatulus Erichson, 1939		**Tx:** CC (8); WC (VD, 1964)	
Carpelimus (Trogophloeus) lindrothi Palm, 1943	**R:** D (3)		
Cephennium carpathicum Saulcy, 1878		**Tx;** SC (12)	
Coprophilus striatulus (Fabricius, 1793)		**Tx:** SC (14)	
Cordalia obscura (Gravenhors, 1802)	**F:** D (3)		SC (14)
Creophilus maxillosus (Linnaeus, 1758)		**Stf:** SC (14)	
Decumarrelus sarbui Poggi, 1995		**Tb:** D (2)	
Deleaster dichrous (Gravenhorst, 1802)	**F:** WC (16)	**Tx:** WC (VD, 1964)	
Deliphrosoma prolongatum (Rottenberg, 1873)			SC (12)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Dexiogyia forticornis A. Strand, 1939	**F:** CC (10)		CC (10)
Dinaraea arcana (Erichson, 1839)	**F:** CC (10)	**Tx:** CC (10); SC(SW) (13)	
Drusilla canaliculata (Fabricius, 1787)	**F, S:** D (1, 4)	**Tx;** SC (12); WC (VD, 1964)	Cleitric (D, 2)
Euconnus oblongus (Sturm, 1838)			SC (14, 18)
Euconnus motschulskii Motschulsky, 1837	**F:** SC (14)		SC (14)
Falagrioma thoracica (Stephens, 1832)			SC (14)
Gabrius lividipes (Baudi, 1848)	**R:** D (3); SC (14)		
Gabrius nigritulus (Gravenhorst, 1802)		**Tx:** WC (VD, 1964)	
Geostiba circellaris (Gravenhorst, 1806)	**F:** CC (10)	**Tx:** CC (10)	CC (10)
Geostiba lucens G. Benick, 1970	**F:** SC (14)		
Gnypeta carbonaria (Mannerheim, 1830)		**Tx:** WC (VD, 1964)	
Habrocerus capillaricornis (Gravenhorst, 1806)	**E:** D (2); CC (10)		
Haploglossa gentilis (Markel, 1845)	**F:** CC (10)	**Tx:** CC (10)	
Heterotops dissimilis (Gravenhorst, 1802)	**E:** D (3)		
Hypomedon melanocephalus (Fabricius, 1792)	**F:** D (3)		
Ilyobates nigricollis (Paykull, 1800)	**F:** D (3)		
Ischnoglossa prolixa (Gravenhorst, 1802)	**F:** SC (14)		SC (14)
Lathrobium brunnipes (Fabricius, 1793)	**R:** CC (10)		
Lathrobium dilutum Erichson, 1839	**R:** CC (9)		
Lathrobium fulvipenne (Gravenhorst, 1806)	**R, F:** D (3)		
Leptomastax mehadiensis Frivaldszky, 1880			Cleitric (D, 2)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Leptusa eximia Kraatz, 1856	**F:** SC (18)		
Leptusa globulicollis (Mulsant & Rey, 1853)			SC (12); SC(SW) (13)
Leptusa ruficollis (Erichson, 1839)	**F:** CC (10)		CC (10)
Leptusa schaschli Ganglbauer, 1897			SC(SW) (13)
Leptusa subcarpathica Roubal, 1931	**F:** SC (18)		SC (18)
Lesteva longoelytrata (Goeze, 1777)	**F:** SC(SW) (13)	**Tx:** SC; WC (VD, 1964, EN, 2022)	
Lesteva monticola Kiesenwetter, 1847		**Tx:** WC (16); (VD, 1964)	
Lesteva nivicola Fauvel, 1871	**F:** WC (17)	**Tx:** WC (17)	
Liogluta longiuscula (Gravenhorst, 1802)	**F:** D (3)		
Liogluta microptera C. G. Thomson, 1867	**F:** CC (8)		
Medon brunneus (Erichson, 1839)	**F:** CC10; SC (14)		CC (10)
Medon dilutus (Erichson, 1839)		**Tx**: SC(SW) (13)	
Medon dobrogicus (Decu & Georgescu, 1996		**Tb:** D (2)	
Medon fusculus (Mannerheim, 1830 (= *Medon paradobrogicus* Decu & Georgescu, 1996	**S, F:** D (1, 3, 5)	**Tx:** D (1)	Cleitric (D, 2)
Medon ferrugineus (Erichson, 1840)	**F-S:** sC (14)		SC (14)
Medon ripicola (Kraatz, 1854)		**Tx:** SC(SW) (13)	
Megarthrus sinuatocollis (Boisduval & Lacordaire, 1835)			SC (18)
Metopsia clypeata (Muller, 1821)		**Tx:** SC(SW) (13)	
Micropeplus porcatus (Fabricius, 1792)	**F:** D (3); SC (14)		SC (14)
Mycetoporus bauderi Mulsant & Rey, 1875	**F:** D (3)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Mycetoporus bimaculatus Lacordaire, 1835	**F:** CC (10)	**Tx:** CC (10)	
Mycetophorus clavicornis (Stephens, 1832)		**Tx:** WC (VD, 1962)	
Mycetoporus forticornis Fauvel, 1875	**F:** D (3)		
*Nehemitropia lividipennis (Mannerheim, 1830) =Nehemitropia sordida (*Marshham,1802)	**F:** SC (14)		Cleitric: D (2)
Neobisnius prolixus (Erichson.1839)	**R:** D (3)		
Neohilara subterranea (Mulsant & Rey, 1853)		**Tf:** CC (8)	
Neuraphes parallelus (Chaudoir, 1845)	**F:** CC (10)		
Ocalea badia Erichson, 1837	**F:** SC (14)		SC (14)
Ocalea picata (Stephens, 1832)		**Tx:** SC (VD, 1964)	
Ocalea rivularis Miller, 1851		**Tx:** SC (VD, 1964)	
Ochthephilus brachypterus Jeannel & Jarrige, 1949		**Tx:** SC (VD, 1964)	
Ocypus biharicus (G. Muller, 1926)	**F:** SC(SW) (13); SC (18)		SC (18)
Ocypus mus (Brulle, 1832)	**F:** D (3)		
Ocypus nitens Schrank, 1781	**F:** SC(SW) (13)		SC (18)
Ocypus olens (Muller, 1764)	**F:** D (1, 2, 5); SC (18)		
Ocypus megacephalus (Nordm. 1837)			SC (12)
Ocypus ophthalmicus (Scopoli, 17630	**S, F:** D (3)		
Ocypus nitens (Schrank, 1781)	**R:** SC (14); SC (18)		
Omalium caesum Gravenhorst, 1806	**F:** SC (14, 18)	**Tx:** SC (14)	
Omalium riparium Thomson, 1857	**R:** SC (18)		SC (18)
Omalium rivulare (Paykull, 1792)	**R, F:** D (3); SC (14, 18)	**Tx:** SC (14); WC (16)	SC (14)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Omalium rugatum Mulsant & Rey, 1880	**R, F:** D (3)		
Omalium validum Kraatz, 1858	**R, F:** SC (18)	**Stf:** SC (12, 14)	SC(SW) (13)
Othius angustus Stephens, 1833		**Tx:** SC (EN, 2022)	
Othius melanocephalus (Gravenhorst, 1806)	**F:** CC (10)	**Tx:** SC (12); WC (VD, 1964)	
Othius punctulatus Goeze, 1777	**F, R:** D (3)		CC (10)
Ousipalia caesula (Erichson, 1839)		**Tx:** SC(SW) (EN, 2022)	
Oxypoda alternans (Gravenhorst, 1802)	**F:** SC (14)		
Oxypoda lugubris Kraatz, 1856	**F:** SC (14)		
Oxypoda opaca (Gravenhorst, 1802)			SC (14, 18)
Oxypoda rufa Kraatz, 1856			Cleitric D (3); SC (14)
Oxytelus laqueatus (Marsham, 1802)	**F, R:** SC (14)		
Oxytelus piceus (Linnaeus, 1767)	**F:** SC (14)	**Tx:** SC (12)	
Pachnida nigella (Erichson, 1939)	**R:** D (3)		
Parabolitobius inclinans (Gravenhorst, 1806)	**F:** SC (14, 18)		
Parocyusa rubicunda (Erichson, 1837)	**F:** D (3)		
Paederus limnophilus Erichson, 1840	**R:** SC(SW) (13)		
Pederidius ruficollis Fabricius, 1777	**R:** CC (10)		
Phyllodrepa nigra (Gravenhorst, 1806)		**Tx:** WC (VD, 1964)	
Philonthus atratus (Gravenhorst, 1802)	**R:** D (3)		
Philonthus concinuus (Gravenhorst, 1802)	**F:** SC (9)		
Philonthus corruscus (Gravenhorst, 1802)	**E:** D (2)		
Philonthus corvinus Erichson, 1839		**Tx:** SC(SW) (13)	

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Philonthus decorus (Gravenhorst, 1802)	**F:** SC (18)		SC (18)
Philonthus intermedius (Boisduval, Lacordaire, 1835)	**R:** D (1)		
Philonthus laminatus (Creutzer, 1799)	**F:** D (1)		
Philonthus quisquilarius (Gyllenhal, 1810)	**R:** D (3)		
Philonthus salinus Kiesenwetter, 1844	**R:** D (4)		
Philonthus scribai Fauvel, 1867	**E**: D (2)		
Philonthus splendens (Fabricius, 1792)	**F:** SC (18)		
Philonthus succicola Thomson, 1860			SC (14)
Philonthus vernalis (Gravenhorst, 1802)	**R:** D (3)		
Phloeonomus pusillus (Gravenhorst, 1806)	**F:** SC (14)		
Phloeostiba lapponica (Zetterstedt, 1838)	**R:** SC (14)		
Placusa incompleta Sjöberg, 1934	**F:** SC (14)		
Placusa tachypoides (Waltl, 1838)	**F:** SC (14)		
Plataraea spaethi (Bernheim, 1898)	**F-S:** D (3)	**Tx:** D (3)	
Platyola fuscicornis Mulsant & Rey, 1874		**Tx** CC (8)	
Platystethus alutaceus Thomson, 1861	**F:** WC (17)	**Tx:** WC (VD, 1964)	
Platystethus capito Heer, 1839		**Tx:** WC (VD, 1964)	
Platysthetus cornutus (Gravenhorst, 1802)	**R:** D (3)	**Tx:** D (3)	
Proteinus brachypterus (Fabricius, 1792)		**Tx:** WC (VD, 1964)	SC(SW) (13); SC (14)
Proteinus crenulatus Pandelle, 1867			CC (10)
Proteinus laevigatus Hochhuth, 1872		**Tx:** SC (14); SC (EN, 2022)	SC(SW) (13)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Proteinus longicornis Dodero, 1923	**F:** SC (14)	**Tx:** SC (14); WC (17); (VD, 1964)	SC (12, 18)
Proteinus macropterus (Gyllenhal, 1808)	**F:** SC (18)	**Tx:** SC (12)	
Proteinus ovalis Stephens, 1832	**F:** WC (16)	**Tx:** WC (16); (EN, 2022)	SC(SW) (13)
Pycnota paradoxa Mulsant & Rey, 1861)	**E:** D (2)		
Quedius cincticollis carpaticola Roubal, 1924		**Tx:** SC(SW) (13)	
Quedius cinctus (Paykull, 1790)	**F:** SC (14)	**Tx:** SC (14)	
Quedius collaris Erichson, 1840)	**F:** SC (18)		SC (12)
Quedius fulgidus (Fabricius, 1787)	**E:** D (2)	**Tx:** D (2); SC (12)	
Quedius fuliginosus (Gravenhorst, 1802)	**S:** D (2)		
Quedius fumatus (Stephens, 1833)			SC (12)
Quedius humeralis Stephens, 1832	**F:** CC (8, 10); SC (14)	**Tx:** SC(SW); WC (16); (VD, 1964)	
Quedius inverae Gridelli, 1924		**Tx:** WC (EN, 2022)	
Quedius (Microsaurus) lateralis (Gravenhorst, 1802)	**F:** SC (14)	**Tx:** SC (14)	
Quedius maurorufus (Gravenhorst, 1806)		**Tx:** WC (VD, 1964)	
Quedius mesomelinus Marsham, 1802	**F:** SC (14)	**Tf:** CC (10); EC (11, 15); SC (12, 14); SC(SW) (13); WC (16) (17); (VD, 1966, EN, 2022)	SC (12); SC (14); SC (18)
Quedius infuscatus Erichson, 1840	**F:** D (3)		
Quedius nemoralis Baudi, 1848	**F:** D (3); SC (14)		
Quedius nigriceps Kraatz, 1857	**F:** D (3); CC (8); SC (14)		
Quedius picipes (Mannerheim, 1831)		**Tx:** SC(SW) (13)	
Quedius puncticollis (Thomson, 1867)			SC (14)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Quedius umbrinus Erichson, 1839	**F:** D (3)	**Tx:** WC (VD, 1964)	
Remus sericeus Holme, 1837	**R:** D (3)		
Rugilus (=Stilicus) orbiculatus (Paykull, 1789)	**R, S:** D (2)		
Rugilus (=Stilicus) rufipes	**R:** D (3); CC (8)	**Tx:** SC (12)	
Rybaxis longicornis (leah, 1817)	**E**: D (3)		
Sepedophilus testaceus (Fabricius, 1792)	**F, S:** D (3, 4, 5); CC (8)		
Silusa rubiginosa Erichson, 1837 (?)			SC(SW) (13)
Stenichnus pelliceus Holdhaus, 1908			SC (18)
Stenus asphaltinus Erichson, 1840	**R:** SC (14)		SC (14)
Stenus calcaratus Scriba, 1864	**R:** D (3)		
Stenus coarcticollis Eppelsheim, 1890		**Tx:** WC (VD, 1964)	
Stenus geniculatus Gravenhorst, 1806	**R:** CC (10)		
**Stenus glacialis* Heer, 1838			SC (18)
Stenus fossulatus Erichson, 1840	**R:** D (4)		
Stenus humilis Erichson, 1839	**R:** CC (8)		
Stenus lustrator Erichson, 1839			SC (18)
Syntomium aeneum (P.J. Muller, 1821)			SC (18)
Tachinus humeralis Gravenhorst, 1802		**Tx**: SC (14)	
Tachinus lignorum (Linnaeus, 1758)	**F:** SC (14, 18)	**Tx:** SC (14)	
Tachynus marginellus (Fabricius, 1781)	**F:** SC (18)		
Tachinus pallipes (Gravenhorst, 1806)	**F:** SC (18)	**Tx:** WC (17)	

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Tachinus rufipennis (Gyllenhal, 1810)		**Tx:** WC (VD, 1964)	
Tachinus subterraneus (Linnaeus, 1758)	**F:** SC (14)	**Tf:** SC (14); WC (VD, 1964)	
Tachyporus hypnorum (Fabricius, 1775)	**F:** D (1, 3); CC (8)		
Tachyusa constricta (Erichson, 1839)	**S, R:** D (3)		
Tasgius ater (Gravenhorst, 1802)	**F:** D (1, 2, 3, 5)		
Tasgius globurifer (Fourcroy, 1785)	**S:** D (4)		
Tasgius predator (Gravenhorst, 1802)	**F:** D (4)		
Tasgius winkleri (Bernhauer, 1906)	**F:** CC (10)	**Tx:** CC (10)	
Taxicera deplanata (Gravenhorst, 1802)			SC (18)
Tetartopeus rufonitidus (Reitter, 1909)	**R:** D (3, 4)		
Tychobythinus ottonis Ganglbauer, 1896			SC(SW) (13); SC (18)
Xantholinus decorus Erichson, 1839	**R:** SC (14)		
Xantholinus relucens (Gravenhorst, 1806)			Cleitric: D (2)
Zyras (Pella) humeralis (Gravenhorst, 1802)	**F:** SC(SW) (13)		
Fam. Ptiliidae			
Acrotrichis atomaria De Geer, 1774	**F:** SC (14)		SC (14)
Acrotrichis montandoni (Allibert, 1844)	**F:** D (3)		
Fam, Silphidae			
Ablataria laevigata (Fabricius, 1775)	**F**: D (4, 5)		
Nicrophorus fossor Erichson, 1837	**F:** D (2); SC (14)		
Nicrophorus humator (Gleditsch, 1767)	**F:** SC (14)		
Nicrophorus investigator Zetterstedt, 1824	**F:** SC (14)	**Tx:** SC (14)	

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Nicrophorus vespiloides Herbst, 1784	**F:** SC (14, 18)	**Tx:** SC (14)	
Oiceoptoma thoracicum (Linnaeus, 1758)	**F:** SC (14, 18)		
Phosphuga atrata Linnaeus, 1758	**F:** D (3); SC (14, 18)		SC (12, 14)
Silpha carinata Herbst, 1783	**F:** D (1); CC (10)	**Tx:** CC (10)	
Silpha tristis Illiger, 1798		**Tx:** D (4)	
Thanatophilus rugosus (Linnaeus, 1758)	**F:** D (1, 2)		
Xylodrepa quadripunctata (Linnaeus, 1758)	**F:** D (5)		
Fam. Agyrtidae			
Necrophilus subterraneus (Dahl, 1807)	**F:** SC (18)		SC (12)
Fam. Histeridae			
Dendrophilus punctataus (Herbst, 1792)	**F:** SC (14)		
Chalcionellus amoenus (Erichson, 1834)	**F, R**: D (3)		
Epierus comptus Erichson, 1834	**F:** WC (16)	**Tx:** WC (EN, 2022)	
Gnathoncus buyssoni Auzat, 1917	**E:** D (5)		
Gnathoncus nanus (Scriba, 1790)		**Tx:** SC (EN, 2022)	Cleitric D (2)
Gnathoncus nannetensis (Marseul, 1862)		**Tx:** SC (SW) (13)	
Hister unicolor Linnaeus, 1758	**F, S:** D (4, 5, 6)		
Hister quadrimaculatus Linnaeus, 1758	**S:** D (1, 2)		
Margarinotus (Paralister) carbonarius (Hoffmann, 1803)	**F:** SC (14)		
Margarinotus purpurascens (Herbst, 1792)	**F:** D (1, 2, 3, 4, 5)		
Margarinotus (Ptomister) striola (Sahlberg, 1819)	**R:** SC (14, 18)		
Pholioxenus schatzmayri (J. Muller, 1910)	**E:** D: (2)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Saprinus quadristriatus (Tulberg, 1794)	**E:** D (4)		
Saprinus semistriatus (Scriba, 1790)		**Tx:** SC (14)	
Fam. Hydrophilidae			
Cercyon granaries Erichson, 1837	**R:** CC (8)		
Cercyon haemorrhoidalis (Fabricius, 1775	**R:** D (3); SC (14)		
Cercyon convexiusculus Stephens, 1829	**R:** D (3)		
Fam. Helophoridae			
Helophorus griseus Herbst, 1793	**R:** D (3)		
Helophorus nubilus Fabricius, 1776	**R:** CC (8)		
Fam. Hydraenidae			
Ochthebius nanus Stephens, 1829	**R:** CC (8)		
Fam. Trogidae			
Trox hispidus Pontoppidan, 1763	**S:** D (6); SC (14); SC(SW) (VD, 1964)		
Fam. Geotrupidae			
Anoplotrupes stercorosus (Scriba, 1791)	**F:** CC (10); SC(SW) (13); SC (14, 18)	**Tx:** SC (14)	
Bolbelasmus unicornis (Schrank, 1789)	**F:** D (5)		
Geotrupes stercorarius (Linnaeus, 1758	**F:** SC (14)	**Tx:** SC (12)	
Lethrus apterus (Laxmann, 1770)	**S:** D (1, 3, 4)		
Trypocopris vernalis (Linnaeus, 1758)	**F:** D (1, 2, 5); SC (14)		
Fam. Scarabaeidae			
Agrilinus sordidus (Fabricius, 1775)	**F, R:** SC (14)		
Calamosternus granarius (Linnaeus, 1767)	**F:** CC (10)		
Copris lunaris (Linnaeus, 1758)	**F:** SC (14)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Esymus pusillus (Herbst, 1789)	**R:** SC (14)		
Limarus maculatus (Sturm, 1800)	**F:** SC (18)		
Limarus zenkeri (Germar, 1813)	**F:** SC (14)		
Melinopterus prodromus (Brahm, 1790)	**F:** SC (14)		
Onthophagus coenobita (Herbst, 1783)	**F:** SC (14)		
Onthophagus verticicornis (Laicharting, 1781)	**F:** SC (14)		
Onthophagus vitulus (Fabricius, 1776)	**S, F:** (2, 5)		
Plagiogonus putridus (Geoffroy in Fourcroy, 1785)	**F:** SC(SW) (13)		
Pleurophorus caesus (Panzer, 1796)	**S:** D (1, 2, 4, 5); SC(SW) (13)		
Sisyphus schaefferi (Linnaeus, 1758)	**F, R:** SC (14)		
Volinus sticticus (Panzer, 1798)	**F:** SC (14)		
Fam. Lucanidae			
Dorcus parallelepipedus (Linnaeus, 1758)	**F:** SC (14)	**Tx:** SC (14)	
Platycerus caraboides (Linnaeus, 1758)	**F:** SC (14)		
Fam. Meloidae			
Meloe rugosus Marsham 1802	**F-S:** D (3)		
Fam. Tenebriondidae			
Accanthopus (Enoplopus) velikensis (Piller et Mitterpacher, 1783)	**F:** SC (14)		
Asida sabulosa (Fuesslin, 1775)	**S:** D (1, 2)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Blaps halophila Fischer, 1822	**S:** D (3)		
Blaps lethifera Fischer, 1822	**F, S:** D (1, 2, 3)	**Tx:** D (1, 2)	
Blaps mortisaga (Linnaeus, 1758)	**F:** D (3, 7)	**Tx**: D (1, 3)	Microcave: D (2)
Blaps mucronata Latreiile, 1804	**F:** D (1)	**Tx:** WC (EN, 2022)	Diaclase: D (4)
Crypticus quisquilius (Linnaeus, 1761)	**F, S:** D (2, 5)		
Gnaptor spinimanus (Pallas, 1781)	**F:** D (1, 2, 3, 5, 6)		
Gonocephalum pusillum (Fabricius, 1791)	**S:** D (2, 3, 6)		
Helops caeruleus (Linnaeus, 1758)	**F:** SC (14)		
Laena pilosissima Reitter, 1906	**S-F:** D (2, 5)		
Nalassus laevioctostriatus (Goeze, 1777)	**F:** D (3)		
Odocnemis exarata Germar, 1817	**S, F:** D (1)		
Opatrum sabulosum (Linnaeus, 1761)	**S:** D (2, 5, 4, 6)		
Pedinus femoralis (Linnaeus, 1767)	**S:** D (2, 3, 4)		
Pimelia subglobosa Pallas, 1781	**S:** D (2, 6)		
Scaphidema metallicum (Fabricius, 1792)	**F:** D (3)	**Tx:** EC (15)	
Fam. Anthicidae			
Anthicus antherinus (Linnaeus, 1761)	**S:** D (3)		
Anthicus gracilis (Panzer, 1797)	**S:** D (4)		
Anthicus hispidus (Rossi, 1792)	**S:** D (2, 4)		
Anthicus humilis Germar, 1824	**S:** D (1, 2); CC (9)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Anthicus longicollis Schmidt, 1842	**S:** D (4)		
Anthicus schmidtii Rosenhauer, 1847	**S:** CC (8)		
Endomia tenuicollis (Rossi, 1792)	**S:** D (2)		
Formicomus pedestris (Rossi, 1790)	**F, S:** D (3, 4)		
Notoxus monoceros (Linnaeus, 1758)	**F:** CC (10)		
Notoxus trifasciatus Rossi, 1792	**F, S:** CC (8); SC (14)		
Fam. Cleridae			
Necrobia violacea (Linnaeus, 1757)	**F:** D (1, 2, 3, 5)		
Fam. Scirtidae			
Contacyphon palustris (Thomson, 1855)	**R:** SC		
Fam. Elateridae			
Agriotes pilosellus (Schönherr, 1817)	**F, R:** SC (14)		
Agriotes lineatus (Linnaeus, 1767)	**S:**D (1, 2)		
Dima elateroides Charpentier, 1825	**S:** SC (14, 18)		SC (14)
Drasterius bimaculatus (Rossi, 1790)	**S:** D (3, 4) (under stones)		
Melanotus castanipes (Paykull, 1800)	**F, R:** SC (14)		
Melanotus rufipes (Herbst, 1784)	**S:** D (1, 2)		
Melanotus villosus (Geoffroy, 1785)	**F, R:** SC (14)		
Zorochros meridionalis (Cast, 1840)	**R:** CC (9)		
Zorochros quadriguttatus (Castelnau, 1840)	**R, F:** SC (18)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Fam. Omalisidae			
Omalisus fontisbellaquaei Geoffroy, 1785	**F:** SC (14)		
Fam. Buprestidae			
Agrilus olivicolor Kiesenwetter, 1857	**F:** SC (14)		
Fam. Throscidae			
Aulonothroscus brevicollis (Bonvouloir, 1859)	**F:** CC (10)		
Fam. Ptinidae			
Anobium punctatum (De Geer, 1774)		**Tx:** SC(SW) (13)	
Mesocoelopus collaris Mulsant & Rey, 1864	**S:** D (2)		
Ptinus dubius Sturm, 1833	**F:** WC (17)	**Tx:** WC (EN, 2022)	
Ptinus fur (Linnaeus, 1758)		**Tx:** D (3); SC (12)	SC(SW) (13)
Ptinus testaceus (Olivier, 1790)		**Tx:** D (3)	
Tipnus unicolor (Piller & Mitterpacher, 1783)		**Tx:** SC (VD, 1964)	
Fam. Salpingidae			
Aglenus brunneus (Gyllenhal, 1813)		**Tx:** D (2)	
Fam. Dermestidae			
Dermestes laniarius Illiger, 1802	**F:** D (1, 2, 3)		
Dermestes latissimus Bielz, 1850	**F:** SC (18)	**Tx:** SC (12)	
Dermestes mustelinus Erichson, 1846	**S:** D (4)		
Fam. Byrrhidae			
Byrrhus pustulatus (Forster, 1771)	**F:** D (5)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Simplocaria semistriata Fabricius, 1794	**R:** D (2)		
Pedilophorus auratus (Duftschmid, 1825)		**Tx** SC (14)	
Fam. Monotomidae			
Monotoma brevicollis Aube, 1837	**S:** D (2)		
Monotoma longicollis Gyllenhal, 1827	**S:** D (2)		
Monotoma spinicollis Aube, 1837	**S:** D (2)		
Fam. Zopheridae			
Nosodomodes diabolicus (Schaufuss, 1862)			SC (14)
Nosodomodes (Corticus) tuberculatus (Germar, 1831)	**R, S:** SC (14)		
Pycnomerus sulcicollis (Germar, 1824)	**F:** SC (14)		
Fam. Endomychidae			
Hylaia rubricollis (Germar, 1817)	**F:** SC (14)	**Tx:** SC (14)	SC(SW) (13); SC (14)
Mycetaea subterranea (Fabricius, 1801)	**F:** SC(SW) (13); SC (14)	**Tx:** SC (14); SC(SW) (13)	SC(SW) (13); SC (14)
Fam. Bothrideridae			
Anommatus duodecimstriatus (Muller, 1821)			SC (14)
Anommatus oltenicus Nitzu, 2003			SC (14)
Fam. Erotylidae			
**Xenoscelis costipennis* (Fairmaire, 1852)	**S:** D (4) -Popina Island		
Fam. Corylophidae			
Sericoderus lateralis (Gyllenhal, 1827)	**F:** SC(SW) (13)		SC (14)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Fam. Silvanidae			
Uleiota planata (Linnaeus, 1761)	**F:** SC(SW) (13)		
Fam. Nitidulidae			
Amphotis marginata (Fabricius, 1781)		**Tx:** SC(SW) (13)	
Cychramus variegatus (Herbst, 1792)	**F:** SC (18)		
Epuraea marseuli Reitter, 1872			SC (18)
Epuraea melanocephala (Marsham, 1802)	**F:** SC (14, 18)		SC (14)
Epuraea neglecta (Heer, 1841)		**Tx:** SC(SW) (13)	
Omosita depressa (Linnaeus, 1758)	**F, R:** SC (14)		
Omosita discodea (Fabricius, 1775)	**F, R:** SC (14)		
Pocadius ferrugineus (Fabricius, 1775)	**R:** SC (14)		
Soronia punctatissima (Illiger, 1794)		**Tx:** SC(SW) (13); (EN, 2022)	
Fam. Cucujidae			
Placonotus modestus (Say, 1827) = (*Laemophloeus testaceus*)	**R:** SC (14)		
Fam. Cryptophagidae			
Atomaria bicolor Erichson, 1846	**R:** SC (14, 18)		
Atomaria carpathica Reitter, 1875	**F:** SC (18)		
Atomaria gibbula Erichson, 1846	**F:** WC (16)	**Tx:** WC (VD, 1964)	
Atomaria pusilla (Paykull, 1798)		**Tx:** WC (VD, 1964)	
Cryptophagus axillaris Reitter, 1875		**Tx:** SC; WC (VD,1964)	
Cryptophagus confusus Bruce, 1936		**Tx:** D (3)	

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Cryptophagus cellaris (Scopoli, 1763)			SC (14)
Cryptophagus cylindrus Kiesenwetter, 1858		**Tx:** SC (12)	
Cryptophagus dentatus (Herbst, 1793)	**F:** SC (14)		SC (14)
Cryptophagus deubeli Ganglbauer, 1897	**F:** SC (14)	**Tf:** CC (8, 10); EC (15)	CC (10); SC (12); SC(SW) (13); SC (14)
Cryptophagus labilis Erichson, 1846	**F:** SC (14)	**Tx:** D (3)	
Cryptophagus nitidulus Milliere, 1852		**Tx:** SC (SW) (VD, 1964)	SC (14)
Cryptophagus pallidus Sturm, 1845	**F:** SC (14); WC (16)	**Tx:** WC (16)	
Cryptophagus pilosus Gyllenhal, 1828	**F:** SC (18)		
Cryptophagus pubescens Sturm, 1845	**F:** SC (18)		
Cryptophagus quercinus Kraatz, 1852	**F:** D (3); SC(SW) (13); SC (14); WC (16)	**Tx:** SC (14); WC (16)	SC(SW) (13)
Cryptophagus schmidti Sturm, 1845		**Tx:** D (1)	D (1, 2)
Cryptophagus scanicus (Linnaeus, 1758)	**F:** CC (10)	**Tx:** CC (10)	SC(SW) (13)
Cryptophagus scutellatus Newman, 1834	**F:** SC (14)	**Tx:** SC (14); WC (VD, 1964)	
Cryptophagus setulosus Sturm, 1845	**S:** D (2)		
Fam. Alexiidae			
Sphaerosoma globosum (Sturm, 1807)	**F:** SC (14, 18)	**Tx:** SC (SW) (13)	
Sphaerosoma laevicolle Reitter, 1883			SC (12)
Sphaerosoma pilosum (Panzer, 1793)	**F:** SC (18)		SC (18)
Fam. Monotomidae (Rhizophaginae)			
Rhizophagus ferrugineus (Paykull, 1800)			SC (14)

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Rhizophagus parallelicollis Gyllenhal, 1827	**F:** SC (14, 18)		SC (14)
Rhizophagus puncticollis C.R. Sahlberg, 1837	**F:** SC (14)	**Tx:** SC (14)	
Fam. Mycetophagidae			
Litargus connexus (Fourcroy, 1785)	**F:** SC (14)		
Fam. Latridiidae			
Cartodere nodifer (Westwood, 1839)	**F:** CC (8); SC (18)		SC (18)
Dienerella ruficollis (Marsham, 1802)	**F:** SC (18)		SC(SW) (13)
Dienerella separanda (Reitter, 1887)			SC(SW) (13)
Enicmus minutus (Linnaeus, 1767)	**F:** CC (8)		
Melanophthalma distinguenda (Comolli, 1837)	**S:** D (4)		
Metophthalmus hungaricus Reitter, 1908	**F:** SC (14)		SC (14)
Migneauxia inflata Rosenhauer, 1856			D (2) Cleitric
Fam. Chrysomelidae			
Chrysolina rossia (Illiger, 1802)	**F:** D (5)		
Hermaeophaga mercurialis Fabricius, 1792	**F:** CC (10)	**Tx:** CC (10)	
Mantura obtusata (Gyllenhal, 1813)	**F:** SC (14)		SC (14)
Minota obesa (Waltl, 1839)	**F, R:** SC (14)		
Oomorphus concolor kolbei (Scholz, 1926)		**Tx:** SC (SW) (13)	
Pachnephorus villosus (Duftschmid, 1825)	**E:** D (2)		
Sclerophaedon orbicularis (Suffrian, 1851)		**Tx:** SC (SW) (13)	
Timarcha rugulosa Herrich-Schaffer, 1838	**F:** CC (10)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Timarcha tenebricosa (Fabricius, 1775)	**F:** SC (14)		SC (14)
Fam. Cerambycidae			
Cerambyx scopolii Füssli, 1775	**F:** SC (14)		
Dorcadion condensatum adampolum Pic, 1917	**S:** D (2)		
Dorcadion equestre Poda, 1761	**S:** D (2, 4, 5)		
Dorcadion fulvum Scopoli, 1763	**S:** D (2)		
Dorcadion mürrayi Küster, 1847	**S:** D (2, 3)		
Dorcadion pedestre Poda, 1761	**S:** D (4, 5, 6)		
Dorcadion scopolii Herbst, 1784	**S:** D (3)		
Dorcadion tauricum Waltl, 1838	**S:** D (1, 2, 3)		
Morimus funereus Mulsant, 1863	**F:** SC (14)		
Neodorcadion bilineatum Germar, 1824	**S:** D (2, 4)		
Prionus coriarius (Linnaeus, 1758)	**F:** SC (14)		
Saphanus piceus (Laicharting, 1784)	**F:** SC (14)		
Fam. Anthribidae			
Platystomos albinus (Linaeus, 1758)	**F:** SC (14)		
Fam. Curculionidae			
Acalles camelus (Fabricius, 1792)	**F:** SC (18)		
Acalles echinatus Germar, 1824	**F:** SC (14)		SC (14)
Anisandrus dispar (Fabricius, 1792)	**F:** SC (14, 18)		
Brachycerus foveicollis Gyllenhal, 1833	**S:** D (2, 4)		

Taxa	*Ecological preferences and occurrence of species in the karst areas identified by the author (1–18) according to Fig. 1 and from previous references (see abbreviations)*		
	Epigeous/endogeous records	Hypogeous records	
		Caves	MSS
Cycloderes pilosus (Fabricius, 1794)	**S:** D (3)		
Dodecastichus inflatus (Gyllenhal, 18340			SC (18)
Trachyphloeus alternans Gyllenhal, 1834	**S:** D (2, 3)		
Otiorhynchus adonis Apfelbeck, 1906	**F:** SC(SW) (13)		SC(SW) (13)
Otiorhynchus coarctatus Stierlin, 1861			SC (18)
Otiorhynchus deubeli Ganglbauer, 1896			SC (18)
Otiorhynchus kollari Gyllenhal, 1834			SC (18)
Otiorhynchus multipuncatatus (Fabricius, 1792)	**F:** SC (14)		
Otiorhynchus obtusus Boheman, 1842	**F:** SC (18)		SC (18)
Otiorhynchus populeti Boheman, 1843	**F:** SC(SW) (13)		SC(SW) (13)
Otiorhynchus raucus (Fabricius, 1777)	**F, R:** SC (14)		SC (18)
Otiorhynchus rotundus Marseul, 1873			SC (18)
Otiorhynchus velutinus Germar, 1823	**S:** D (2)		
Ruteria hypocrita (Boheman, 1837)	**F:** SC (14); SC (18)		
Stomodes gyrosicollis Boheman, 1843		**Tx:** SC (SW) (13)	
Xyleborus monographus (Fabricius, 1792)	**F:** SC (14)		
Xylosandrus germanus (Blandford, 1894)	**F:** SC (18)		

Legend: **F**=forested areas; **S**=steppe; **R**= riparian habitat; **E**= endogeous; D=Dobrogea; CC=curvature Carpathians, EC=Eastern Carpathians; SC=Southern Carpathians; SC (SW) = Southwestern part of the Southern Carpathians (Aninei-Locvei Mountains), (1 to 18) = numbers correspond to the studied areas by the author, according to Fig.1. VD, 1964 - DECU V., 1964; VD *et al*. – DECU V *et al*., 2006; EN, 2022 – NITZU E., 2022; EN *et al*., 2016 – NITZU E. *et al*., 2016; MI, 1955 – IENISTEA, M., 1955; OTM,1993; OTM 2000 – MOLDOVAN O. T., 1993; 2000; GR, 2011 – RACOVITA G., 2011; RJ, 1928 – JEANNEL R., 1928.

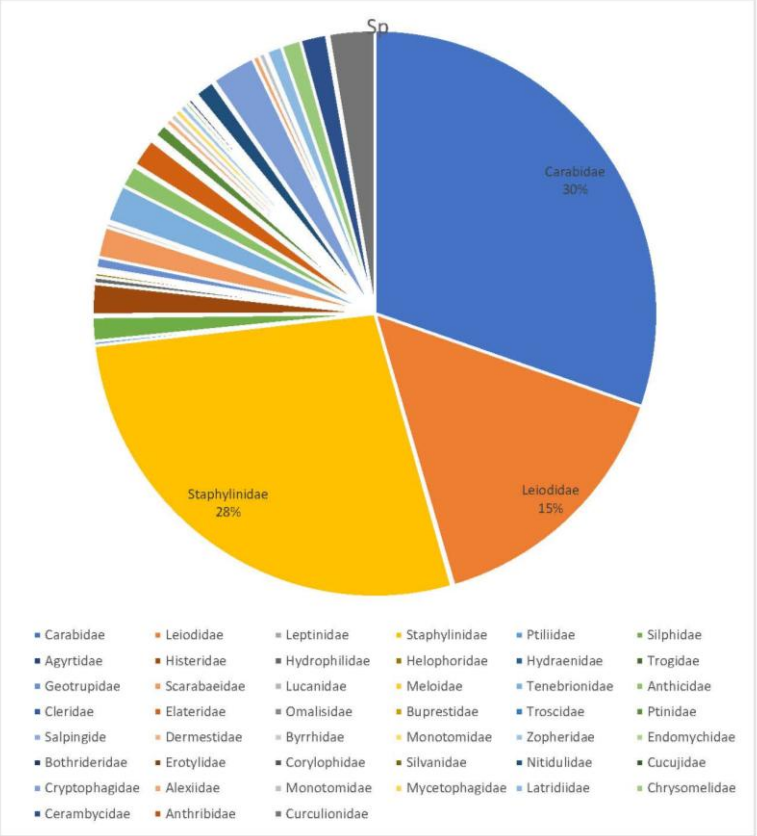


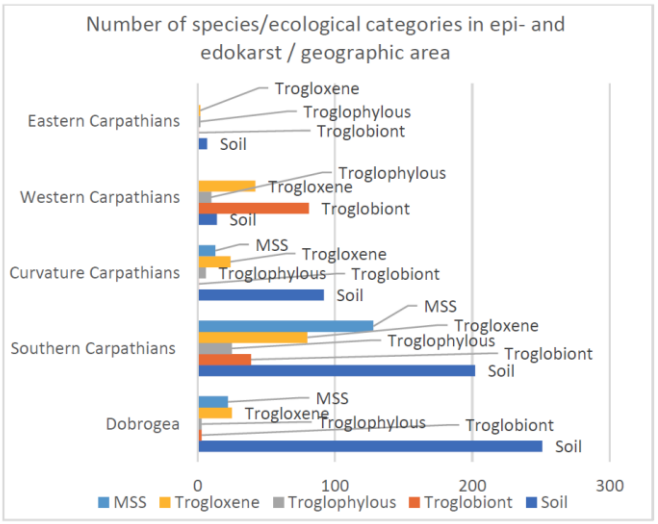
Figure 2. The percentage of species and their distribution per families.

A comparison between the number of species identified on exokarst (epigeous /endogeous), and in endokarst (troglobionts, troglophile, trogloxene and species from MSS) in each geographic area is presented in Fig. 3, A. The largest number of epigeous species was observed in Dobrogea, followed by that in the Southern Carpathians. The troglobiont species are the best represented in the Western Carpathians (Apuseni Mountains), followed by those in the Southern Carpathians. Regarding the differences between epigean species in the Apuseni Mountains and the Southern Carpathians, these could primarily be the consequence of insufficient faunal studies in this region on the exokarst.

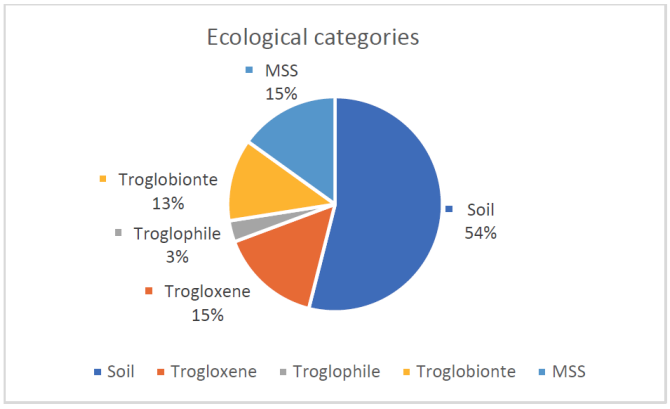
The fauna of Dobrogea, the Southern and Curvature Carpathians has been relatively well studied in recent years, so no major differences are expected in future studies concerning the number of species (especially from the endokarst). For the Western Carpathians, the troglobitic fauna has been the best studied in Romania and not many differences are expected in future investigations, but the species richness of the exokarst and MSS is expected to be much higher than that known to date. In the future, more studies are needed to reveal the real species richness of the exokarst of

the Apuseni Mountains. The fauna of the karst areas of the Eastern Carpathians is poorly studied and more future investigations are needed.

Overall, in Romanian karst areas, troglobitic, trogloxene and other species found in MSS are represented relatively proportionally (Fig. 3, B). The low proportion of troglophilous species could be explained as a possible erroneous inclusion of some possible troglophilous species in the category of trogloxene species. This is because it is very difficult to demonstrate the conditions of troglophily (TRAJANO ET CARVALHO, 2017), that is, to demonstrate that a given species is dependent on caves at least in some phase of its life cycle.



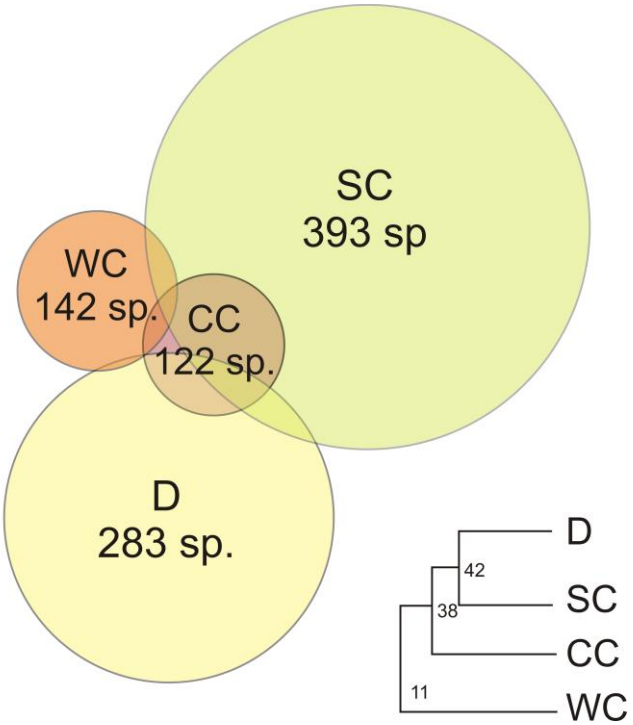
A



B

Figure 3. A – The number of species identified in exo- and endokarst on major geographic areas; B – The percentual distribution of species per ecological categories in the karst system of Romania.

Regarding the troglobitic coleopteran fauna (specialists), there are no similarities between the main geographical areas. The troglobitic fauna of the Southern Carpathians is totally different from that of the Apuseni Mountains and that of Dobrogea, even at the genera level. The similarity of faunas between regions is given only by epigeous/endogeous shared species between Dobrogea (D), the Southern (SC), Western (WC) and the Curvature Carpathians (CC) (Table 1, Fig. 4). In the Wenn diagram (Fig. 4), the diameters of the circles are proportional to the total species richness of the karst areas. The matrix on the left shows the number of epigeal/trogloxene species shared between regions. The dendrogram on the right was constructed based on the species shared between regions.



	D	CC	SC	WC
D	-	29	42	6
CC		-	38	11
SC			-	32
WC				-

Figure 4. The Wenn diagram illustrating the number of unique and shared species between the karst of Dobrogea (D), Southern Carpathians (SC), Western Carpathians (WC) and Curvature Carpathians (CC).

4. CONCLUSIONS

Related to the total area of the karst in Romania (~ 2.3% of the total area of the country), the species richness of Coleoptera identified so far in the karst system is relatively high – representing 11.89% of the total number of Coleoptera species

inventoried in the Romanian fauna (updated after NITZU, 2004). It is worth mentioning that in this work we only considered soil and underground species, not arboricolous species (species that live on trees), planticolous species (species that live on herbaceous plants) or aquatic species, which were also considered for the Romanian fauna, totaling 6810 species (information updated after NITZU, 2004). Of a total of 810 species and subspecies recorded in the karst system, 46% were found in the superficial underground (MSS) and deep underground (caves) environments. Of these, only 13% were troglobionts (specialist cave dwelling species).

The presented data should be complemented with new faunal studies, especially for the karst areas of the Eastern Carpathians and for the exokarst fauna of the Western Carpathians.

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