DIVERSITY OF SOIL MITES (ACARI: MESOSTIGMATA) AND GASTROPODS (GASTROPODA) FAUNA FROM LEAOTA MOUNTAINS - ROMANIA

MANU Minodora, LOTREAN Nicolae, CIOBOIU Olivia, POP Oliviu Grigore

Abstract. In the period May-September 2016, the diversity of soil mites (Acari: Mesostigmata) and fauna of gastropods (Gastropoda) was investigated in Leaota Mountains. In total 44 transects were investigated, located in 13 types of habitats. Considering the mite fauna, 52 species were identified. The highest value of Shannon index was recorded in natural beech forest, in comparison with the planted spruce forest, where this parameter recorded the lowest value. From the conservative point of view, *Pergamasus laetus* Juvara-Bals, 1970 was identified as an endemic species for Romania. Another two rare species were signaled: *Veigaia propinqua* Willmann, 1936 and *V. transisalae* (Oudemans, 1902). *Iphidosoma multiclavatum* Willmann, 1953 was signaled for the first time in Romania. Taking into account the gastropod fauna (Gastropoda), 26 species were investigated. The most favorable habitats for these invertebrates were deciduous and spruce forest. One endemic species for Romania was identified: *Mastus venerabilis* (L. Pfeiffer, 1855).

Keywords: abundance, diversity, gastropods, habitat, mites.

Rezumat. Diversitatea faunei de acarieni edafici (Acari: Mesostigmata) şi de gastropode (Gastropoda) din Munţii Leaota - România. În perioada mai - septembrie 2016, s-a realizat studiul diversităţii faunei de acarieni edafici (Acari: Mesostigmata) şi a gastropodelor (Gastropoda) din munţii Leaota. Au fost investigate 44 de transecte, localizate în 13 tipuri de habitate. Analizând fauna de acarieni, au fost identificate 52 de specii. Cea mai mare valoare a indicelui de diversitate Shannon s-a obţinut în pădurea naturală de fag, în comparaţie cu plantaţia de molid, unde acest parametru a scăzut semnificativ. Din punct de vedere conservativ, au fost identificate: o specie endemică pentru România, *Pergamasus laetus* Juvara-Bals, 1970; două specii rare: *Veigaia propinqua* Willmann, 1936 şi *V. transisalae* (Oudemans, 1902) şi o specie nouă semnalată pentru ţara noastră: *Iphidosoma multiclavatum* Willmann, 1953. Analizând fauna de gastropode, au fost identificate 26 de specii. Cele mai favorabile habitate identificate pentru aceste specii au fost pădurile de amestec şi de molid. A fost identificată şi o specie endemică pentru România: *Mastus venerabilis* (L. Pfeiffer, 1855).

Cuvinte cheie: abundenţă, diversitate, gastropode, habitat, acarieni.

INTRODUCTION

Biodiversity is essential for "ecosystem services" that nature provides: climate-air, water regulation, food production, fuels, medicine and raw materials. Biodiversity is essential to maintain the long-term viability of forestry, agriculture or other activities that are the base for industrial processes (HEINK et al., 2016). The necessity of biodiversity conservation is an urgent and complex process, because the human communities cannot live and cannot develop outside of natural ecosystems, independently of them. In this context, an inventory of invertebrate species, identification of the national or European species with conservative value, represent the first step toward their conservation. Majority of the soil invertebrates are considered biological indicators for the conservation status of a terrestrial ecosystem (HILTY & MERENLENDER, 2000).

Biodiversity conservation requires the protection not only of community interest species, but of other groups of fauna (soil invertebrates) as well, that have an important ecological role in ecosystems. Often, the invertebrate groups are neglected, due to the identification difficulties or to the lack of specialists in systematics. Therefore, in this paper, we propose to present the diversity of the two main groups of invertebrates, mites and gastropods, which have not been studied in Leaota Mountains and which have an important role in the decomposition / transformation of primary (plant debris) or secondary (invertebrates) organic matter. These two groups of invertebrate fauna (Acari: Mesostigmata) and (Gastropoda) are biological indicators for forest habitats quality and riparian areas in particular (BLOCH, 2012; WALTER & PROCTOR, 2013).

MATERIALS AND METHODS

In the period May - September 2016, an inventory of soil mites (Acari: Mesostigmata) and gastropods (Gastropoda) was made in Leaota Mountains. Leaota Mountains are located in central Romania, North of the city Târgovişte, Dâmboviţa County. They are part of the Southern Carpathians group of the Carpathian Mountains and have as neighbours Bucegi Mountains to the east and Piatra Craiului to the west. The maximum altitude was 2133 meters. The average annual temperature oscillated between 6^0C (at 1000 meters altitude) and 0^0C (at 2000 meters altitude). The annual quantities of precipitations increase with altitude, from 900 mm in the south part to more than 1200 mm at altitudes higher than 1500 meters (MURĂTOREANU, 2009).

Gastropods collecting was made using the transect method. 44 transects were investigated, with length between 100 and 500 meters, and width between 10 and 20 meters, in concordance with field topometry. The altitude of the transects varied from 680 to 2015 meters (Fig. 1). Taking account of the investigated habitats, transects were classified as following: riparian with *Myricaria germanica* (L.) Desv. (1 transect); riparian/deciduous forest edge (10 transects); riparian/beech forest (1 transect); riparian/spruce forest (1 transect); deciduous forests (11 transects); beech forest (2 transects); spruce forest (8

transects); meadows (2 transects); deciduous forest edge (4 transects); spruce forest edge (1 transect); beech-birch forest edge (1 transect); spruce forest edge/swamp (1 transect) and scree/deciduous forest (1 transect) (Table 1).

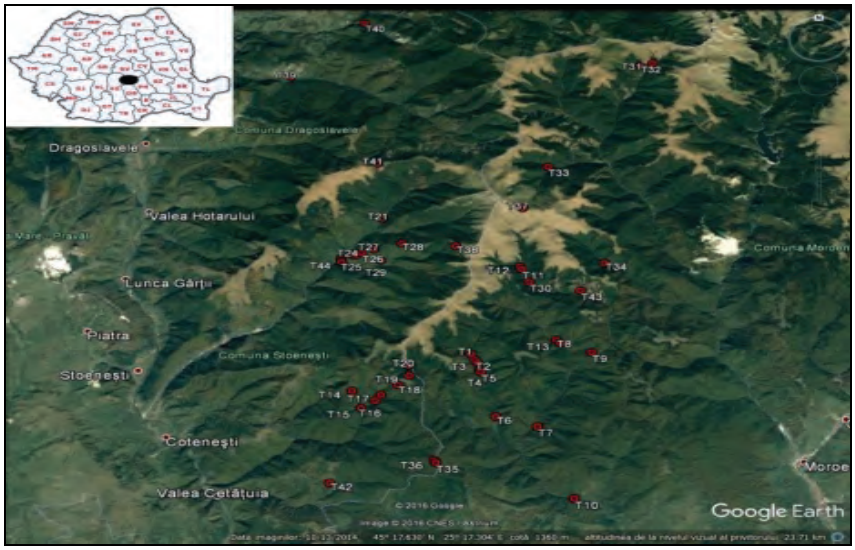

Figure 1. Geographical characterization of investigated transects from Leaota Mountains (original).

Table 1. Investigated transects from Leoata Mountains.

T	Toponimy	Alt.	Habitat	T	Toponimy	Alt.	Habitat
T1	Frumușelu Valley	1140	Riparian/deciduous forest	T23	Tâncava Mountain	988	Deciduous forest (7Fa/3Mo)
T2	Frumușelu Valley	1108	Riparian/deciduous forest	T24	Tâncava Mountain	1116	Deciduous forest (7Fa/3Mo)
T3	Frumușelu Valley	1085	Riparian/deciduous forest	T25	Tâncava Mountain	1161	Deciduous forest (7Fa/3Mo)
T4	Frumușelu Valley	1040	Deciduous forest edge	T26	Tâncava Mountain	1232	Deciduous forest (7Fa/3Mo)
T5	Frumușelu Valley	1033	Deciduous forest edge	T27	Tâncava Mountain	1379	Deciduous forest (6Fa/4Mo)
T6	Frumușelu Valley	875	Riparian/deciduous forest	T28	Tâncava Mountain	1388	Deciduous forest (6Fa/4Mo)
T7	Vaca Valley	817	Riparian/deciduous forest	T29	Tâncava Mountain	1121	Deciduous forest (6Fa/4Mo)
T8	Vaca Valley	1001	Deciduous forest edge	T30	Raciu Valley	1364	Natural spruce forest/swamp
T9	Vaca Valley	1162	Deciduous forest (spruce + beeh)	T31	Strunguliţa Valley	1550	Natural spruce forest
T10	Ialomicioara Valley	680	Riparian with *Myricaria germanica*	T32	Strunguliţa Valley	1648	Natural spruce forest
T11	Raciu Valley	1456	Natural spruce forest	T33	Mitarca Mountain	1475	Natural spruce forest
T12	Raciu Valley	1409	Riparian with *Salix silesiaca*/deciduous forest	T34	Răteiul Mountain	1334	Riparian/spruce forest edge
T13	Vaca Valley	991	Riparian/deciduous forest	T35	Piscul Pleşcioarele	1175	Deciduous forest edge/natural regeneration
T14	Piscul Socetului	1099	Natural beech forest	T36	Plaiul Găvanele	1196	Beech forest
T15	Fiaşului Valley	873	Riparian/beech forest	T37	Leaota peak	2015	Alpine meadow
T16	Muchea Marginea Domnească	963	Deciduous forest	T38	Tâncava Mountain	1676	Natural spruce forest
T17	Muchea Marginea Domnească	1039	Deciduous forest	T39	Cheile Ghimbavului	818	Scree/beech-birch forest edge
T18	Muchea Marginea Domnească	1211	Deciduous forest	T40	Crovului Valley	1060	Natural deciduous forest
T19	Muchea Marginea Domnească	1347	Spruce forest edge	T41	Râiosul Mountain	1685	Alpine meadow
T20	Muchea Marginea Domnească	1377	Natural spruce forest	T42	Piscul Pleaşa Popii	821	Riparian/deciduous forest
T21	Bădenilor Valley	1072	Riparian/deciduous forest	T43	Raciu Valley	1339	Spruce forest plantation
T22	Tâncava Valley	923	Riparian/deciduous forest	T44	Tâncava Valley	923	Riparian/deciduous forest

Alt. = altitude; T= transect

Collecting was made by hand, with a forceps or exhaustor from the substrate: soil, litter, leaf layer, under the stones, logs, barks, from plants, cliff and cracks. In order to identify the species, the determination key was used (GROSSU 1956, 1983, 1986, 1993; CIOBOIU, 2004).

For mites, soil samplings were collected randomly, with MacFadyen soil core, by 5 cm diameter. The sampling was made to 10 cm depth. The extraction of the mites was made in 10–14 days by the Berlese – Tullgren method, modified by BALOGH (1972). The samples were kept in a refrigerator till the next extraction. In total, 50 samples, 52 species with 257 individuals were analyzed, from 5 types of forest ecosystems: natural deciduous forests with spruce predominance (T9), natural deciduous forests with beech predominance (T13), natural spruce forest (T11), natural beech forest (T15) and one planted spruce forest, one year old (T43). Counting and identification of the mites were made under a Zeiss binocular and microscope using the most actual identification keys (GHILIAROV & BREGETOVA, 1977; KARG, 1993; MASAN, 2003a, b; MASAN & FENDA, 2004; GWIAZDOWICZ, 2007; MASAN, 2007; MASAN & HALLIDAY, 2010; 2014). Preservation of the mites was made in an alcohol and glycerin mixture. All identified specimens are deposited in the mite collection of the Institute of Biology – Ecological Stationary from Posada.

The population parameters were analyzed: numerical abundance and species diversity (number of species). Mite diversity (Shannon index), dominance (D), and equitability (J) were calculated using the PAST software (HAMMER et al., 2001). From the conservative point of view, the rare, endemic or Carpathian species were signaled.

RESULTS AND DISCUSSIONS

Concerning the predator mite fauna, in Leaota Mountains, there were described 52 species, from a potential number of 97 species (that had been recorded in Bucegi Natural Park), which represents 19.25% of the Romanian fauna of Acari-Mesostigmata (in total 275 species) (STĂNESCU & JUVARA-BALŞ, 2005; MANU, 2012a). All these 52 species were grouped in 16 families: Epicriidae (1.92%), Parasitidae (23.07%), Ascidae (1.92%), Veigaiidae (7.69%), Macrochelidae (7.69%), Pachylaelapidae (9.61%), Laelapidae (5.76%), Zerconidae (15.38%), Eviphididae (3.84%), Trachytidae (9.61%), Urodiaspididae (3.84%), Urodinychidae (1.92%), Dinychidae (1.92%), Uropodidae (3.84%) and Trematuridae (1.92%) (Table 2). In total 257 of mite individuals were identified. If we take into consideration the number of individuals, we observed that in spruce forest (T11), a mature and complex ecosystem, it was described the highest number of individuals, in comparison with the others investigated ecosystems. On the opposite, it is the planted *Picea abies* (Karst) forest (T43), where only 22 mite individuals were signaled. Considering the species diversity (the number of species), the highest value of Shannon index was recorded in natural beech forest (T15), in comparison with the planted spruce forest, where this parameter recorded the lowest value (Table 2).

Analyzing the dominant species, we observed that in natural forest ecosystems, *Veigaia nemorensis* Koch 1939 and *Hypoaspis aculeifer* Canestrini 1883 had the highest ecological role, species that are ubiquitous and with wide ecological plasticity (SKORUPSKI et al., 2009; RUF & BEDANO, 2010; MANU et al., 2013). In spruce forest, the characteristic species was *Neopodocinum mrciacki* Sellnick 1968, a psychrophilous montane species, but also *Prozercon traegardhi* (Halbert 1923) and *Parazercon radiatus* Tragardh 1931, which strongly prefer acid coniferous forest (MASAN, 2003a, b; MASAN & FENDA, 2004). In deciduous forest, with dominance of *Fagus sylvatica* L., *Pachydellus vexillifer* (Willmann 1956) and *Trachytes aegrota* (C. L. Koch 1841) were abundant species (Fig. 2).

Uropodids (mites species belonging to the families Trachytidae, Urodiaspididae, Urodinychidae, Dinychidae, Uropodidae and Trematuridae) were identified mostly in natural forest ecosystems, where the anthropogenic impact was reduced. These mites live in forest microhabitats, rich in organic matter, as litter-fermentation layers, dead wood, and bryophytes from soil or bark. Uropodids are stenotopic species. They are microphagous, zoophagous or omnivorous, consuming biolytic food. The ecologic homogeneity of this group of mites, coupled with the population response to changes in environmental factors, confers attributes of ideal biological indicators, especially in forest ecosystem (HUŢU, 1993; BŁOSZYK et al., 2003).

From the conservative point of view, in Leaota Mountains, there were signaled rare mite species, as *Veigaia propinqua* Willmann 1936 and *V. transisalae* (Oudemans 1902). One endemic species *Pergamasus laetus* Juvara-Balş 1970 was identified in natural deciduous forests with spruce predominance. It was signaled in other forest ecosystems from different mountains from Romania, as: Bucegi, Harghita, Ciucaş, Făgăraş, Baiului, Lotrului and Căpăţânii (STĂNESCU & JUVARA-BALŞ, 2005; MANU 2012b; MANU et al., 2013).

A new species for Romania was discovered, in natural beech forest: *Iphidosoma multiclavatum* Willmann 1953 (Table 2).

Considering the gastropods fauna from Leaota Mountains, 26 species were identified, classified in: Enidae (11.53%), Clausiliidae (23.07%), Endodontidae (3.84%), Arionidae (7.62%), Limacidae (15.38%), Bradybaenidae (3.84%), Hygromiidae (11.53%), Helicidae (15.38%) şi Zonitidae (7.68%) (Table 3). Analyzing the terrestrial gastropods from Leaota Mountains, 26 species were identified, which represent 22.60% of the total fauna from Romania (115 species) (CUTTELOD et al., 2011). Comparing with other mountains closed to the studied area, as Bucegi Massif, where 105 species were described, the number of species is lower, due to the sampling and to the short period of research.

Natural spruce forest from Frumuşelu Valley

Natural beech forest from Fiaşului Valley

Natural deciduous forest from Muchia Marginea Domnească

Scree/beech-birch forest edge from Cheile Ghimbavului

Figure 2. Investigated habitats from Leaota Mountains (original).

Table 2. Mite species (Acari: Mesostigmata) identified in Leaota Mountains.

No.	Species	T9	T11	T13	T15	T43	Total
	Family Epicriidae						
1	*Epicrius canestrinii* Haller 1881			1			1
	Family Parasitidae						
2	*Leptogamasus parvulus* Berlese 1903				1	2	3
3	*Leptogamasus* sp.1		3		9		12
4	*Leptogamasus* sp.2		4		3		7
5	*Leptogamasus suecicus* (Trägardh 1936)			1			1
6	*Lysigamasus conus* (Karg 1971)				6		6
7	*Lysigamasus lapponicus* (Trägårdh 1910)			2			2
8	*Pergamasus crassipes* Berlese 1906		2			2	4
9	*Pergamasus laetus* Juvara-Balş 1970	1					1
10	*Pergamasus quisquiliarum* (Canestrini & Canestrini 1882)				2	2	4
11	*Parasitus furcatus* (G. & R. Canestrini 1882)				1		1
12	*Porrhostaspis lunulata* Muller 1859				1		1
13	*Parasitellus* sp.				1		1

	Family Ascidae						
14	*Arctoseius venustulus* (Berlese,1917)	1					1
	Family Veigaiidae						
15	*Veigaia nemorensis* C. L.Koch 1939	12	24	4	13	4	57
16	*Veigaia exigua* Berlese 1917					1	1
17	*Veigaia propinqua* Willmann 1936		2				2
18	*Veigaia transisalae* (Oudemans 1902)	1					1
	Family Macrochelidae						
19	*Neopodocinum mrciaki* Sellnick 1968	6	15				21
20	*Macrocheles montanus* (Willmann 1951)	1			2		3
21	*Macrocheles opacus* (C.L.Koch 1839)				1		1
22	*Macrocheles* sp.				1		1
	Family Pachylaelapidae						
23	*Pachydellus furcifer* Oudemans 1903		1	1			2
24	*Pachydellus vexillifer* (Willmann 1956)			6			6
25	*Pachydellus* sp.				2		2
26	*Olopachys suecicus* Sellnick 1950			1			1
27	*Olopachys vysotskajae* Koroleva 1976				4		4
	Family Laelapidae						
28	*Pachyseius humeralis* Berlese 1910	2					2
29	*Hypoaspis aculeifer* Canestrini 1883	5	16	5		7	33
30	*Hypoaspis oblonga* (Halbert 1915)	1	2				3
	Family Zerconidae						
31	*Zercon peltadoides* Halaskova 1970	1				1	2
32	*Zercon carpathicus* Sellnick 1958		2				2
33	*Zercon romagniolus* Sellnick 1944			1			1
34	*Parazercon radiatus* (Berlese 1910)		23				23
35	*Prozercon sellnicki* Halaskova 1963	1				1	2
36	*Prozercon traegardhi* Halbert 1923		11	1			12
37	*Prozercon fimbriatus* (C. L. Koch 1839)		2				2
38	*Prozercon* sp.				2		2
	Family Eviphididae						
39	*Eviphis ostrinus* (C.L. Koch 1836)				3		3
40	*Iphidosoma multiclavatum* Willmann 1953				1		1
	Family Trachytidae						
41	*Trachytes aegrota* (C.L. Koch 1841)	1		13	3		17
42	*Trachytes irenae* Pecina 1970	1			4		5
43	*Trachytes minimasimilis* Masan 1999			3			3
44	*Trachytes pauperior* Berlese 1914		1	1		1	3
45	*Trachytes* sp.		2			1	3
	Family Urodiaspididae						
46	*Urodiaspis pannonica* Willmann 1951				1		1
47	*Urodiaspis* sp.		1	1			2
	Family Urodinychidae						
48	*Uroobovella* sp.		1		1		2
	Family Dinychidae						
49	*Dinychus carinatus* Berlese 1903			2			2
	Family Uropodidae						
50	*Discourella* sp.				1		1
51	*Neodiscopoma splendida* (Kramer 1882)			2	2		4
	Family Trematuridae						
52	*Leiodinychus orbicularis* (C. L. Koch 1882)		1				1
	Taxa _S	13	18	16	23	10	52

	Individuals	34	113	45	65	22	257
	Dominance_D	0.188	0.137	0.135	0.088	0.169	
	Shannon_H	2.056	2.277	2.359	2.762	2.031	
	Equitability_J	0.801	0.787	0.850	0.881	0.882	

The dominant species were *Ena montana* (Draparnaud 1801), identified in 19 transects; *Clausilia dubia* Draparnaud 1805 in 13 transects; *Arion subfuscus* (Draparnaud 1805), *Faustina faustina* (Rossmassler 1837) observed in 20 transects and *Lehmannia marginata* (O. F. Müller 1774) signaled in 16 transects. These species preferred deciduous and spruce forests.

Ena montana (Draparnaud 1801) is an endemic species for Europe, according to IUCN criteria. *Clausilia dubia* Draparnaud 1805 is an eurytopic species. In Europe, as well as in Romania, it inhabits humid deciduous and mixed forests, where it lives in leaf litter and under bark. In the mountains, it prefers shaded rocks in open places. This Central European species inhabits large areas but its populations are usually isolated (SULIKOWSKA-DROZD, 2005).

Table 3. Gastropod species (Gastropoda) identified in Leaota Mountains.

No.	Taxon	Total no. ind.	Transects
	Family Enidae		
1	*Ena montana* (Draparnaud 1801)	26	T4, T5, T8, T9, T11, T20, T23, T24, T25, T26, T27, T28, T29, T30, T31, T32, T33, T35, T43
2	*Merdigera obscura* (O. F. Muller 1774)	3	T7, T39
3	*Mastus venerabilis* (L. Pfeiffer 1855)	4	T39
	Family Clausiliidae		
4	*Clausilia dubia* Draparnaud 1805	28	T3, T6, T9, T23, T24, T25, T26, T27, T28, T29, T35, T39, T40
5	*Cochlodina laminata* (Montagu 1803)	9	T9, T23, T24, T25, T26, T27, T28, T29
6	*Macrogastra tumida* (Rossmassler 1836)	4	T1, T2, T35, T38
7	*Laciniaria plicata* (Draparnaud 1805)	1	T37
8	*Alopia nixa* (M. Kimakowicz 1894)	1	T32
9	*Bulgarica cana* (Held 1836)	1	T4, T39
	Family Endodontidae		
10	*Discus ruderatus* (Ferussac 1821)	16	T4, T5, T8, T9, T23, T24, T25, T26, T27, T28, T29, T30, T35, T43
	Family Arionidae		
11	*Arion circumscriptus* Johnston 1828	9	T11, T19, T20, T31, T32, T33, T44
12	*Arion subfuscus* (Draparnaud 1805)	24	T1, T2, T9, T11, T19, T20, T21, T23, T24, T25, T26, T27, T28, T29, T31, T32, T33, T34, T41, T42
	Family Limacidae		
13	*Limax cinereoniger* Wolf 1803	12	T14, T23, T24, T25, T26, T27, T28, T29, T31, T36
14	*Lehmannia marginata* (O. F. Müller 1774)	20	T9, T11, T14, T19, T20, T23, T24, T25, T26, T27, T28, T29, T31, T32, T33, T36
15	*Bielzia coerulans* Bielz 1851	5	T13, T15, T21, T22
16	*Limax maximus* (Linnaeus 1758)	5	T31, T33, T41, T44
	Family Bradybaenidae		
17	*Fruticicola fruticum* (O. F. Müller 1774)	15	T1, T2, T3, T6, T7, T10, T12, T13, T14, T15, T21, T22, T36
	Family Hygromiidae		
18	*Monachoides vicinus* (Rossmässler 1842)	13	T1, T2, T3, T6, T7, T10, T12, T13, T14, T15, T21, T22, T36
19	*Euomphalia strigella* (Draparnaud 1801)	5	T4, T5, T8, T30, T35
20	*Helicella obvia* (Menke 1821)	13	T37, T39
	Family Helicidae		
21	*Arianta arbustorum* (Linnaeus, 1758)	4	T16, T17, T18
22	*Faustina faustina* (Rossmassler 1837)	34	T4, T5, T7, T8, T9, T14, T16, T17, T18,T23, T24, T25, T26, T27, T28, T29, T30, T35, T36, T44
23	*Cepaea vindobonensis* (Ferussac 1821)	2	T39
24	*Helix lucorum* Linnaeus 1758	5	T13, T15, T21, T22
	Family Oxychilidae		
25	*Oxychilus deubeli* (Wagner 1914) syn. *O. orientalis* (Clessin 1887)	6	T3, T6, T8, T34, T39
26	*Oxychilus glaber* (Rossmassler 1835)	1	T14
	TOTAL	266	

On the opposite, there are habitat specific gastropods, as: *Mastus venerabilis* (L. Pfeiffer 1855) and *Cepaea vindobonensis* (Ferussac 1821) identified in scree/beech-birch forest edge habitat (T39); *Laciniaria plicata* (Draparnaud 1805) signalled in alpine meadow, on stone walls (T37), *Alopia nixa* (M. Kimakowicz 1894) observed in natural spruce forest (T32) and *Oxychilus glaber* (Rossmassler 1835) mentioned in natural beech forest (T14).

Cepaea vindobonensis (Ferussac 1821) is a thermophilic species inhabiting usually open warm shrub vegetation, preferably on sheltered southwards exposed slopes and valleys (NEUBERT, 2011).

Alopia nixa (M. Kimakiwicz 1894) is endemic for the Carpathians, included in the Slovak red list of species (KADLECIK, 2014). Another Carpathian element is considered the species *Monachoides vicinus* (Rossmässler, 1842) (PÁLL-GERGELY & ROIBU, 2011). From all 26 identified gastropods, the species *Mastus venerabilis* (L. Pfeiffer, 1855) is endemic for the Romanian fauna, being located in the South of the Carpathian Mountains and in Transylvania (PÁLL-GERGELY, 2011). In Leaota Mountains, it was located in a mixture habitat between scree area and beech-birch forest edge, on Cheile Ghimbavului. This species is very sensitive to the anthropogenic impact. The main threat of the local population is total or partial destroy of vegetation (forest cut, soil erosion, fire, etc.) (NEACȘU & CIOBOIU, 1999; PÁLL-GERGELY & ROIBU, 2011; PURICE & CIOBOIU, 2012; 2014).

CONCLUSIONS

In the period May-September 2016, the diversity of soil mites (Acari: Mesostigmata) and gastropods (Gastropoda) was investigated, from 13 types of habitats, in Leaota Mountains. Considering the mite fauna, in total 52 species were identified. The highest value of Shannon index was recorded in natural beech forest, in comparison with the planted spruce forest, where this parameter recorded a significant decrease. From the conservative point of view, there were identified: one endemic species for Romania, one new record for our country and two rare mite species. Taking into account the gastropod fauna, 26 species were investigated. The most favorable habitats for these invertebrates were deciduous and spruce forest. From the conservative point of view, one endemic species for Romania and one endemic species for Carpathian Mountains were signaled.

In conclusion, we can remark that natural forest ecosystems are characterized by higher species diversity, in comparison with planted forests. We note that this study was a preliminary one, requiring further research in Leaota Mountains, in order to complete the database achieved by this study.

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Manu Minodora
Institute of Biology of Romanian Academy, Department of Ecology, Taxonomy and Nature Conservation,
street Splaiul Independenţei, no. 296, code 0603100, PO-BOX 56-53, Bucharest, Romania.
E-mail address: minodora_stanescu@yahoo.com

Lotrean Nicolae
Argeş County Museum, Armand Călinescu Street, no. 44, 110047, Piteşti, Argeş, Romania.
E-mail address: lotrean_n@yahoo.com

Cioboiu Olivia
The Oltenia Museum, Craiova, Str. Popa Şapcă, No. 8, 200422, Craiova, Romania.
E-mail: oliviacioboiu@gmail.com; cioboiu.olivia@yahoo.com

Pop Oliviu Grigore
Foundation Conservation CARPATHIA, Şoseaua Cristianului 12, 3rd Floor, 500053 Braşov, Braşov County, Romania.
E-mail: o.pop@conservationcarpathia.org

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