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PRELIMINARY RESEARCH ON *MESOSTIGMATA* MITES (*ACARI*) FROM A SPRUCE FOREST IN THE BUCEGI MASSIF IN ROMANIA

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Abstract. This communication presents preliminary results of studies on the mite fauna observed in the spruce stands of the Bucegi Massif in central Romania. In the collected material a total of 6436 specimens were found, which were classified to 62 species from 15 families. The most numerous were the species *Veigaia nemorensis* (1660 individuals), *Leptogamasus parvulus* (804) and *Leptogamasus tectegynellus* (694), whereas *Veigaia nemorensis* (224 samples), *Neopodocinum mrciaki* (150) and *Pachyseius humeralis* (150) were observed in the biggest number of samples. In the litter layer a total of 4842 specimens were found of mites belonging to 54 species, whereas in the humus layer it was 1594 specimens belonging to 47 species. The species similarity index between mite communities of the litter and humus layers was very high and amounts to over 77%.

Key words: mites, *Acari*, *Mesostigmata*, litter, Bucegi Massif, Romania

INTRODUCTION

The Carpathian Mountains are one of the bigger mountains ranges in Europe, with considerable biological diversification. The differentiation in terms of altitude, rocks and soil, precipitation, as well as vegetation has resulted in the abundance and diversity of acarifauna. Studies on mites found in these mountains have been conducted for several years in Poland [Skorupski and Gwiazdowicz 1996, Gwiazdowicz and Sznajdrowski 2000, Gwiazdowicz and Cichocki 2002] and Slovakia [Fenda and Mašan 2003, Mašan and Fenda 2003).

Unfortunately, the fauna of mites from order *Mesostigmata* found in the Romanian part of the Carpathian Mountains is relatively little known. Exceptions in this respect are studies concerning family Parasitidae conducted by Juvara-Bals [1974, 1976] and studies conducted in several Carpathian ranges by Honciuc and Stănescu [2003]. For

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this reason in 2003 an international research project was initiated, the objective of which was to determine the diversity of acarifauna in the Carpathian Mountains in Romania and to compare the obtained results with those found in other countries. In this way it will be possible to determine distribution ranges of selected species and to define their site preferences, e.g. such as.

This communication presents preliminary results of investigations on the acarifauna in spruce stands of the Bucegi Massif.

METHODS AND RESEARCH AREA

Field studies covered spruce stands of the Bucegi Massif in central Romania (N – 45°23'587''; E – 025°31'959'') and samples were collected in the years 2001-2003. A total of 336 samples were collected using the MacFadyen soil core. Each sample was divided into the litter (OLF) and humus (OH) layer. The extraction was performed with modified Berlese-Tullgren funnels.

The Bucegi Massif is situated on the east of the Meridionali Carpathiens. The borders of this massif are: on east Prahova Valley, on west Dâmbovița Valley, on north Brașov city and on south Curburii Subcarpathians. The Bucegi Massif has two parts in the north-southern direction, linked by the "Omul" peak, the highest in this part of the Carpathian Mts. (2507 m altitude). To the east there is a big rock wall named "Abruptul Prahovean". The whole massif is crossed by numerous streams, affluents of the Prahova river. This zone is representative for the forest ecosystems with spruce *Picea abies*, with beech *Fagus sylvatica* and their mixture. From the geological point of view, this massif has a coarcal structure.

The ecosystem with spruce is situated on a slope of 20°, on the east side of the mountain. This forest has trees from 40 to 120 years old and the proportion of the cover is 85% and the consistence is 0.7. The herbaceous layer and the shrub layer are missing. The litter layer is continuous and thin (1-2 cm) and humus is of moder-mull type.

RESULTS AND CONCLUSIONS

On the basis of the collected material a total of 6436 specimens of mites of the order *Mesostigmata* were found belonging to 62 species (Table 1). The following species were most numerous in the collected material: *Veigaia nemorensis* (1660 specimens), *Leptogamasus parvulus* (804), *Zercon triangularis* (762), *Leptogamasus tectegynellus* (694). In turn, *Veigaia nemorensis* (224 samples), *Neopodocinum mrciaki* (150), *Pachyseius humeralis* (150), *Leptogamasus parvulus* (140) and *Pergamasus athiasae* (136) were observed in the biggest numbers of samples.

In the litter layer OLF a total of 4842 mite specimens were found, belonging to 54 species. These species are eudominant in this layer: *Veigaia nemorensis* (26%), *Zercon triangularis* (14%), *Leptogamasus parvulus* (13*%), Leptogamasus tectegynellus* (11%) and another are dominant like: *Neopodocinum mrciaki* (8%), *Zercon fageticola* (8%) and *Pachyseius humeralis* (6%).

Table 1. *Mesostigmatic* mites recorded from the Norway spruce forest litter of Bucegi Massif in Romania
Tabela 1. Roztocze z rzędu *Mesostigmata* wykazane w ściółce w drzewostanach świerkowych w Bucegi Massif w Rumunii

Family, species Rodzina, gatunek	Samples – Próby	
	Litter Ściółka	Humus Humus
1	2	3
Zerconidae		
Polonozercon tatrensis Błaszak, 1974	2	4
Prozercon kochi Sellnick, 1943	50	22
Prozercon traegardhi Halbert, 1923	10	20
Prozercon sellnicki Halaskova, 1963	8	4
Zercon carpathicus Sellnicki, 1958	6	2
Zercon fageticola Halaškova, 1969	384	96
Zercon peltatus peltadoides Halaškova, 1970	16	6
Zercon pinicola Halaškova, 1970	2	
Zercon romagniolus Sellnicki, 1944	4	
Zercon similis Willmann, 1953	2	
Zercon triangularis C.L. Koch, 1836	664	98
Parasitidae		
Eugamasus magnus Kramer, 1876		14
Parasitus furcatus G. and R. Canestrini, 1882	4	
Porrhostaspis lunulata Müller, 1859	6	2
Holoparasitus calcaratus C.L. Koch, 1839		4
Vulgarogamasus cornutosimilis Schweizer, 1949	4	2
Vulgarogamasus kraepelini Berlese, 1905	36	8
Vulgarogamasus oudemansi Berlese, 1903	6	8
Vulgarogamasus zschokkei Schweizer, 1922	44	8
Holoparasitus excisus Berlese, 1905		2
Leptogamasus doinae Juvara-Balş, 1981	4	
Leptogamasus parvulus Berlese, 1903	630	174
Leptogamasus tectegynellus Athias Henriot, 1967	524	170
Pergamasus alpinus Berlese, 1903	4	
Pergamasus athiasae Juvara-Balş, 1970	38	14
Pergamasus laetus Juvara-Balş, 1970	22	28
Pergamasus quisquiliarum Canestrini, 1882		4
Macrochelidae		
Geholaspis longispinosus Kramer, 1876	10	4
Macrocheles montanus Willmann, 1951	14	6
Neopodocinum mrciaki Sellnick, 1968	362	54
Eviphididae		
Eviphis ostrinus C.L. Koch, 1836	36	10

1	2	3
Ascidae		
Arctoseius cetratus Sellnick, 1940	12	14
Arctoseius eremitus Berlese, 1918	10	4
Arctoseius magnanalis Evans, 1958	14	10
Arctoseius semiscissus Berlese, 1892	50	16
Arctoseius venustulus Berlese, 1917		2
Proctolaelaps juradeus Schweizer, 1949	6	4
Zerconopsis remiger Kramer, 1876	4	
Laelapidae		
Hypoaspis aculeifer Canestrini, 1883	58	88
Veigaiaiidae		
Veigaia exigua Berlese, 1916	26	26
Veigaia cervus Kramer, 1876	14	4
Veigaia nemorensis C.L. Koch, 1839	1 266	394
Veigaia propinqua Willmann, 1936	18	
Rhodacaridae		
Rhodacarellus kreuzi Karg, 1965	20	16
Pachylaelapidae		
Pachylaelaps furcifer Oudemans, 1903	12	6
Pachyseius humeralis Berlese, 1910	306	152
Digamasellidae		
Dendrolaelaps foveolatus Leitner, 1949	4	2
Dendrolaelaps rotundus Hirschmann, 1960	6	28
Ameroseiidae		
Epicriopsis rivus Karg, 1971	6	
Trachytidae		
Trachytes aegrota C.L. Koch, 1841	60	14
Trachytes irenae Pecina, 1970	8	
Trachytes pauperior Berlese, 1914	8	26
Trematuridae		
Trichouropoda calcarata Hirschmann et Zirngiebl-Nicol, 1961		6
Trichouropoda obscurasimilis Hirschmann et Zirngiebl-Nicol, 1961	14	
Trichouropoda punctata Hirschmann et Zirngiebl-Nicol, 1961	8	
Urodinychidae		
Dinychus carinatus Berlese, 1903		4
Dinychus perforatus Kramer, 1882	2	
Urodiaspis pannonica Willmann, 1952		6
Urodiaspis tecta Kramer, 1876	10	4
Uroobovella obovata Canestrini et Berlese, 1884	2	4
Uroobovella pulchella Berlese, 1904	2	
Uropodidae		
Uropoda splendida Kramer, 1882	4	
Number of species	54	47
Number of specimens	4 842	1 594

In the humus layer OH a total of 1594 mite specimens were observed, belonging to 47 species. *Veigaia nemorensis* (17%) is an eudominant species, *Leptogamasus parvulus* (7%), *Leptogamasus tectegynellus* (7%) and *Pachyseius humeralis* (6%) are dominant species in this layer.

Estimated species similarity of groups found in the litter and humus layers it was found that it is very high and amounted to over 77%.

On the basis of the investigations conducted so far it may be stated that the fauna of mites found in the Bucegi Massif is very diverse and distinctly diverges from that shown e.g. in the Polish part of the Carpathian Mountains [Skorupski and Gwiazdowicz 1996, Gwiazdowicz and Sznajdrowski 2000, Gwiazdowicz and Cichocki 2002]. Some species, such as e.g. *Pergamasus athiasae*, *Pergamasus laetus* and *Leptogamasus doinae* have so far been found only in Romania.

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WSTĘPNE BADANIA NAD ROZTOCZAMI Z RZĘDU *MESOSTIGMATA* (*ACARI*) Z DRZEWOSTANÓW ŚWIERKOWYCH W BUCEGI MASSIF W RUMUNII

Streszczenie. Przedstawiono wstępne wyniki badań nad fauną roztoczy wykazanych w drzewostanach świerkowych Bucegi Massif w środkowej Rumunii. W zebranym materiale wyodrębniono 6436 osobników, które zaklasyfikowano do 62 gatunków z 15 rodzin. Najliczniej występowały takie gatunki, jak *Veigaia nemorensis* (1660 osobników), *Leptogamasus parvulus* (804) i *Leptogamasus tectegynellus* (694), z kolei w największej liczbie prób odnotowano: *Veigaia nemorensis* (224 prób), *Neopodocinum mrciaki* (150) i *Pachyseius humeralis* (150). W warstwie ściółki wykazano 4842 osobniki roztoczy należących do 54 gatunków, a w warstwie humusu 1594 osobniki reprezentujące 47 gatunków. Stwierdzono bardzo wysokie podobieństwo gatunkowe zgrupowań występujących w warstwie ściółki i warstwie humusu – jego wskaźnik wynosi ponad 77%.

Słowa kluczowe: roztocze, *Acari*, *Mesostigmata*, ściółka, Bucegi Massif, Rumunia

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