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Contribution to the knowledge of the myrmecofauna of the River Someș valley

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Abstract

In the present study the author contributes to the knowledge of the myrmecofauna of the River Someș by presenting a checklist of 20 species, containing also the *Myrmica salina* which is identified for the first time in Romania. The majority of the species are satellite, and only five species present core characteristics in the river valley. These are *Lasius niger*, *Tetramorium caespitum*, *Formica rufibarbis*, *F. cunicularia*, and *F. pratensis*. Most of them are opportunistic species.

The author launches the idea that occasional floods may have a decisive role in forming the ant-fauna of the riverbank.

Keywords: myrmecofauna, the River Someș valley

Introduction

Although continuous researches on the ants of Romania have been carried out since the 1950's (Paraschivescu 1978) the checklist of the species has not been accomplished yet as there are a lot of regions still to be searched by specialists.

Transylvania constitutes more or less an exception to these conditions, as the first studies in this region were carried out at the end of the XIX century by Müller and Worrel. Later Mocsáry and Rösler collected here and from the middle of the century studies on the ants of Transylvania were carried out mainly by Paraschivescu and additionally by Knechtel (Paraschivescu 1983). Nowadays Markó (1997a, 1997b) has begun myrmecofaunistic researches in Transylvania, publishing his first results on the myrmecofauna of the River Crișul Repede valley, and on different types of forests.

Little is known about the myrmecofauna of the River Someș valley. Only the upper part of the Someșul Mare river valley, one of the main branches of the Someș was studied by Paraschivescu (1978). Nothing is known about the valley of river Someșul Mic. Nevertheless zoogeographically it would be important to study these valleys as they may serve as ecological corridors for some species (Markó 1997b).

This study offers the first data to the knowledge of the myrmecofauna of river Someș, which study should be continued in the future.

Materials and methods

The sampling was carried out between 14-18 August of 1996 during the Someş Expedition. Five sample-sites were chosen along the River Someş from Dej, where the Someşul Mic and the Someşul Mare join and form the River Someş, to the Romanian-Hungarian border downstream Satu Mare. The sample sites were: Letca (Cluj county), Someş-Odorhei (Cluj county), Țicău (Sălaj county), Arduzel (Maramureş county) and Vetiş (Satu Mare county). Four of the sample sites are open, mainly sandy riverbanks, while one (Arduzel) is an oak-forest in a distance of 1.5 kilometres from the river, but still lying in its valley.

The sampling was effectuated by collecting the specimen from the ground and from the nests, or in the case of Arduzel 15 pitfall traps were used, arranged in a 10x20 m² grid (3x5 trap-lines). Water and sodium chloride were put in the traps. The specimen collected were preserved in 70 % ethyl alcohol.

The keys of Collingwood (1979), Petrov & Collingwood (1993), Seifert (1988, 1992) and Somfai (1959) were used for the identification of the specimen.

Results and discussions

In the collected material 20 species were identified (Table 1.), from which the *Myrmica salina* Ruzsky 1905 is reported for the first time in Romania (Paraschivescu 1978). Although this species is considered as a characteristic species for salinas, Seifert (1988) mentions that it does not inhabit salinas exclusively, nevertheless high salinity habitats seem to be preferred by this species on the basis of its dominance and abundance. In this case this species was found in an open grassland inside the dam at Vetiş, about 50 meters from the river, near a cornfield.

The number of species collected is not high at all, even if we consider that Paraschivescu (1978) summarised the number of known species to 74 to which Markó (1997b) added two new species (total 76). In addition on the basis of the Hungarian fauna which has been updated by Gallé et al. (in press) to more than 100 species, we can assume that the number of ant species living in Romania may well exceed the 100 limit, and considering this, the number of species reported from the River Someş valley is quite small.

The greatest number of species was found in the forests (14 species) and not in the riverbank, where the number of species does not exceed even 10. Only five species were found to have more than 0,5 constancy: *Tetramorium caespitum*, *Lasius niger*, *Formica rufibarbis*, *F. cunicularia*, and *F. pratensis*. All of these species are common, and according to Pisarski's categories (in Gallé 1994), most of them are opportunistic species: *Tetramorium caespitum*, *Formica rufibarbis*, *F. cunicularia*, while *Lasius niger* is an aggressive, and *Formica pratensis* is a territorial species. Thus it seems to be obvious that these riverbanks are preferred mainly by a few species, barring the occasional disturbance caused by the flood. Gallé (1966, 1967, 1969) observed that

Species / Sampling sites	Letca	Someş-Odorhei	Cheile Jicăului	Arduzel	Vetiş
1. <i>Myrmica rubra</i> (L.)			X	X	
2. <i>Myrmica salina</i> Ruzsky					X
3. <i>Myrmecina graminicola</i> (Latreille)				X	
4. <i>Tetramorium caespitum</i> (Linné)	X	X	X	X	X
5. <i>Stenamma westwoodi</i> Westwood		X		X	
6. <i>Leptothorax nylanderi</i> (Förster)				X	
7. <i>Diplorhoptrum fugax</i> Latreille		X			X
8. <i>Dolichoderus quadripunctatus</i> Linné				X	
9. <i>Prenolepis nitens</i> (Mayr)				X	
10. <i>Camponotus fallax</i> (Nylander)				X	
11. <i>Camponotus truncatus</i> (Spinola)				X	
12. <i>Lasius niger</i> (Linné)	X	X	X	X	X
13. <i>Lasius platythorax</i> Seifert				X	
14. <i>Lasius brunneus</i> (Latreille)			X	X	
15. <i>Lasius flavus</i> (Fabricius)			X		X
16. <i>Formica rufibarbis</i> Fabricius	X			X	X
17. <i>Formica cunicularia</i> Latreille	X	X			X
18. <i>Formica cinerea</i> Mayr	X	X			
19. <i>Formica pratensis</i> Retzius	X	X		X	X
20. <i>Formica polyctena</i> Förster					X
Total no. of species	6	7	5	14	9

Table 1.: The checklist of collected species

Lasius niger was present all along the Tisza river in its flood area, while *Tetramorium caespitum*, which also had a great constancy in the valley of the Tisza, preferred the damsides and the top of the dam, which were not affected by the flood. In the case of the Someş we could not observe such segregation.

At Someş-Odorhei 8 *Tetramorium caespitum* nests were observed on 2 m² on a riverbank with hardly any vegetation cover, indicating its preference for such habitats.

The number of species related to the number of inhabited sample-sites (Figure 1.) reveals the fact that the majority of species is not characteristic for the riverbank of the Someş. Most of them are satellite while only a few species can be considered as core. The relation presented above does not support Hanski's theory (1982), which says that this relation shows a bimodality: the majority of species are satellite and core while the number of species occurring in not too much but also not too few sample-sites is small. Nevertheless we cannot consider that our study denies this theory because the number of samples is too small to jump to such conclusions.

Considering each data it can be concluded that there are only very few species preferring the riverbanks, and as such they are able to tolerate the perturbation caused by an eventual flood in the searched sample sites at the river Someş.

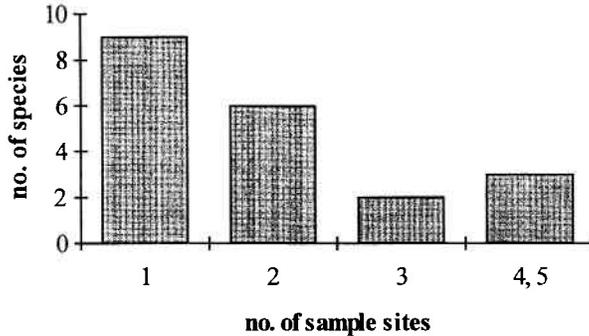


Figure 1. Relation between number of species and inhabited sample sites

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