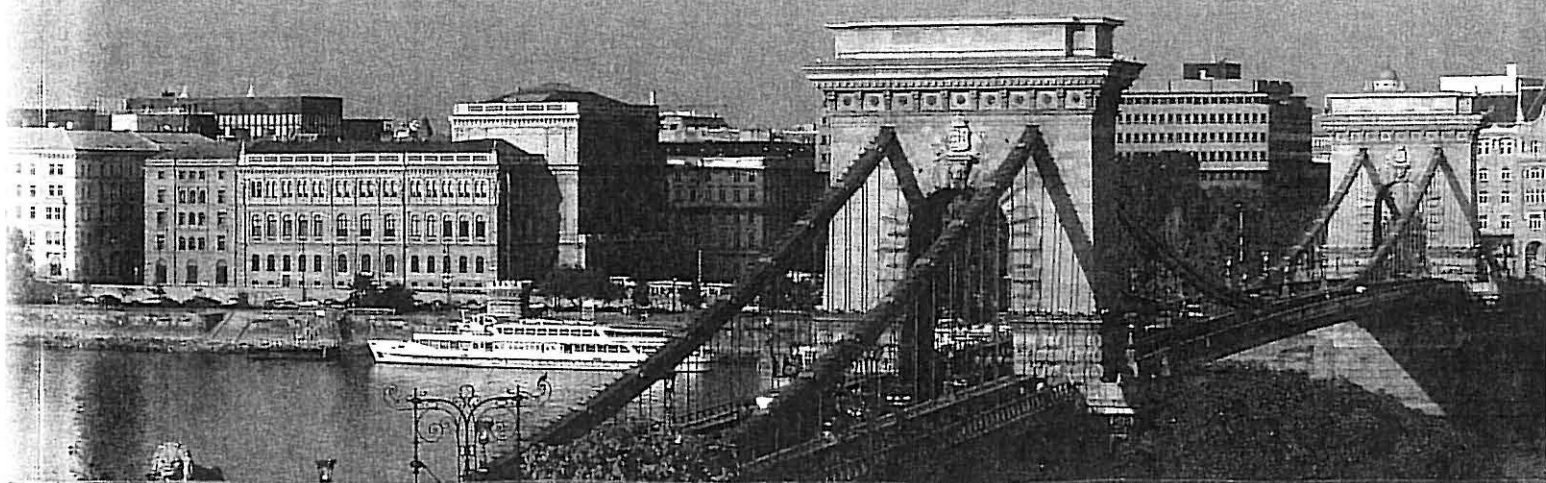




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TH 6

Collembolan morphospecies (Hexapoda: Collembola) in serpentine soils: a case study in a natural ecosystem in northeastern Portugal

M. Alice Pinto¹, Margaux Rosenzweig¹, Marisa Monteiro¹, Felícia Fonseca¹, José Paulo Sousa², Sónia A.P. Santos¹

¹ CIMO/Escola Superior Agrária, Instituto Politécnico de Bragança, Campus de Santa Apolónia, Apartado 1172, 5301-855 Bragança, Portugal, saps@ipb.pt

² IMAR-CIC/Departamento de Ciências da Vida, Faculdade de Ciências e Tecnologia da Universidade de Coimbra, Lg. Marquês de Pombal, 3004-517 Coimbra, Portugal

Serpentine soils represent challenging habitats for plants and soil dwelling organisms, such as collembolans, because they typically exhibit high levels of heavy metals (e.g. chromium, cobalt, and nickel). Serpentinized areas cover about 8000 ha in Northeastern Portugal. While the plant communities are well studied, the collembolans are virtually unknown. The data presented here represent the first effort to describe the structure of a collembolan community, using morphospecies as a surrogate of species, in a serpentinized area occupied by a natural forest of *Quercus rotundifolia* and *Quercus faginea* located nearby Bragança (Portugal). Sampling was performed during the last week of September of 2008 in a serpentinized area near Bragança (Portugal). At each of the 29 sampling points (distributed along two transects) collembolans were collected with a soil core (5 cm diameter x 10 cm depth). The collembolans were extracted from the soil (using a McFadyen apparatus), sorted, counted and finally identified to morphospecies level. The number of morphospecies observed was 37. The total abundance in the mineral horizon (1862 individuals) was not significantly different from the organic horizon (1883 individuals). The Simpson Diversity Index and Richness were higher in the organic horizon (21.7 and 35 species, respectively) than in the mineral horizon (9.9 and 30 species, respectively). The species accumulation curves showed that the estimated number of morphospecies for the mineral horizon is 36 while for the organic horizon is 38.

TH 7

Collembolan communities in a sustainable system for production of woody biomass for energy: abundance and diversity of morphospecies

Sónia A.P. Santos¹, Margaux Rosenzweig¹, Marisa Monteiro¹, M. Alice Pinto¹, Felícia Fonseca¹, José Paulo Sousa², João C. Azevedo¹

¹ CIMO/Escola Superior Agrária, Instituto Politécnico de Bragança, Campus de Santa Apolónia, Apartado 1172, 5301-855 Bragança, Portugal. saps@ipb.pt

² IMAR-CIC/Departamento de Ciências da Vida, Faculdade de Ciências e Tecnologia da Universidade de Coimbra, Lg. Marquês de Pombal, 3004-517 Coimbra, Portugal.

Woody biomass for energy obtained from short rotation woody crops (SRWC) needs to be managed in a sustainable way, thus allowing ecosystem conservation. However, there is a gap in our knowledge concerning the effects of these crops on soil organisms, of which collembolans represent a good indicator of soil quality. On the other hand, soil biological sciences are strongly affected by the taxonomic skill crisis, with many groups of soil animals suffering from a taxonomic impediment in terms of identification. This problem can be reduced by using a para-taxonomic approach where morphospecies can be used as surrogates of taxonomic species. The objective of this work was to study the structure of collembolan communities in a SRWC experimental field using morphospecies. Abundance, richness, evenness and diversity indexes were used to describe the structure of the collembolan community and

species accumulation curves were computed to estimate species richness in the study area. Prior to the installation of the SRWC, 106 soil samples were collected at each defined sampling point (distributed along 14 transects) using a soil core (5 cm diameter x 10 cm depth). In the laboratory, collembolans were extracted from the soil (using a McFadyen apparatus), sorted, counted and finally identified to morphospecies level. The number of morphospecies observed was 34, representing a total abundance of 3221 collembolans. The Simpson Diversity Index and richness were 27 and 34, respectively. The species accumulation curves showed that the estimated number of morphospecies was 38.

TH 8

Diversity and abundance of soil arthropods on maize fields with different farm practices in Northern Portugal

Fátima Simão¹, Miguel A. Carretero², Maria José Amara^{1,2}, Amadeu M.V.M. Soares¹, Eduardo Mateos³

¹ CESAM & Departamento de Biologia, Universidade de Aveiro, 3810-193 Aveiro, Portugal

² CIBIO Centro de Investigação em Biodiversidade e Recursos Genéticos, Campus Agrário de Vairão, 4485-661 Vairão, Portugal

³ Departament de Biologia Animal, Facultat de Biologia, Universitat de Barcelona Avinguda Diagonal, 645 08028 - Barcelona Spain

The widespread use of pesticides in agricultural areas has been related to the destruction of habitat for non-target arthropods and, thus, community composition is expected to be affected. Our main aim was to evaluate soil surface arthropod communities and to test for differences in seasonal trends, community composition and group abundance in four maize fields in Northern Portugal. The fields were sampled using pitfall traps in November 2008 (Autumn) and May 2009 (Spring). Two fields used organic systems with no application of inorganic fertilizers or pesticides and two used conventional systems where inorganic fertilizers and herbicides were applied. A total of 6558 individuals belonging to 133 different arthropod groups were collected. The most abundant group was the Family Formicidae followed by the order Entomobryomorpha. Overall abundance and group richness varied more with season than with field type, both being greater in spring and in the conventional fields. Regarding abundances, Family Scelionidae was the most divergent group between management systems, showing a greater abundance in the conventional system. Results demonstrate that the arthropod soil community is modified by the agricultural management system, with particular groups being differentially affected.

TH 9-11: Carabid ecology

TH 9

Method for ecological monitoring based on research of ground beetle fauna (Coleoptera, Carabidae)

A. Konstantin Kitaev

Institute of Biochemistry and Genetics, Ufa Scientific Centre, Russian Academy of Science, Ufa, Russia

Carabidae is a suitable group for conducting ecological monitoring. We proposed the procedure based on our studies carried out at 2007-2008 in flood land territories in the Karmaskalinskiy Region of the Republic Bashkortostan.

Our methods were the following:

1. Choice of biotopes for the investigation
2. Determination of the basic sources of the anthropogenic influence