Programme
and
Book of Abstracts
TH 6
Collembolan morphospecies (Hexapoda: Collembola) in serpentine soils: a case study in a natural ecosystem in northeastern Portugal
M. Alice Pinto, Margaux Rosenzwieg, Marisa Monteiro, Felicía Fonseca, José Paulo Sousa, Sônia A.P. Santos

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). Serpentized 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 serpentizing area of 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 serpentized 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 34, representing a total abundance of 3212 collembolans. The Simpson Diversity Index and richness were 27 and 34, respectively. The species accumulation curves showed that the estimated number of morphospecies was 36.

TH 7
Collembolan communities in a sustainable system for production of woody biomass for energy: abundance and diversity of morphospecies
Sônia A.P. Santos, Margaux Rosenzwieg, Marisa Monteiro, M. Alice Pinto, Felicía Fonseca, José Paulo Sousa, João C. Azevedo

Wddy 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 36.

TH 8
Diversity and abundance of soil arthropods on maize fields with different farm practices in Northern Portugal
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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 Diptera. 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 abundant 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 Klitov

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 Kermakalsky 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