NEW RESULTS OF THE HUNGARIAN-ROMANIAN ECOLOGICAL AND SOCIO-ECONOMICAL RESEARCH COOPERATION IN THE MAROS-VALLEY

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Introduction

River valleys play specific role in the geological, ecological and social systems of the Carpathian Basin. They cross regions of varied basic rock and climate, connect distant habitats, therefore they may mediate several impacts across different landscapes. The rivers are also very important in landscape formation of the Great Plain. River valleys, such as the Maros valley, are often divided by political borders that manifests in social and land use differences, and as a consequence may have a strong effect on the natural communities.

In 2010, a new joint research project was organized by the Department of Ecology, University of Szeged and the Department of Ecology and Environmental protection,"Vasile Goldiş" Western University Arad. The aim of this project was to improve the ecological research activity and quality in the southern region of the Great Plain. As a result of the research activity, we completed a monograph (Körmöczi 2011) that summarized the main activities and some conclusions of the common investigations. This project was continued in 2011, focusing mainly on the nature, on the effects of the land use differences and on the role of the river in shaping the landscape and biota. We investigated the landscape and habitat structure of transboundary territories, anthropogenic background of the landscape differences, properties of animal assemblages of quickly changing habitats – islands and reefs, and the phylogenetics of certain rear animal species.

Expected results and impacts

The investigations performed parallel in the transboundary region may contribute significantly to the knowledge of the recent state of the flora and fauna. The knowledge on the structure of natural communities may reveal the effect of land use practices and that of the riparian habitats as green corridor.

With the above knowledges we may contribute to the elaboration of efficient and sustainable land use models that support and enhance the life quality of the trans-boundary region's inhabitants, and at the same time preserve the natural landscape and biodiversity.

Common implementation of this researc project may improve the research efficiency of the partner universities, and may result extended further cooperations in the fields of ecology and nature conservation.

Members of the project team

This project was carried out in the framework of *Hungary-Romania Cross-border Cooperation program 2007-2013* as a joint research activity of "Vasile Goldiş" Western University of Arad as the lead partner and of University of Szeged as the project partner.

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Head of the project management team was Aurel Ardelean, Rector of "Vasile Goldiş" Western University of Arad. Supervisors were László Körmöczi for the University of Szeged and Violeta Turcuş for "Vasile Goldiş" Western University of Arad. The project was managed by Iulia Daraban and Márta Zalatnai.

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VGWU: Vasile Goldiş Western University Arad; USZ: University of Szeged; BUAV: Banat University of Agricultural Sciences and Veterinary Medicine Timisoara; WUT: Western University Timisoara

Study area

Investigations were carried out in the lowland area of river Maros. Larger section if this river runs in Romania but most of the features of the floodplain are similar in Hungary and Romania. Eight representative areas were selected along the river; the names of the study sites are: 1: Szeged (N46° 14' E20° 14'); 2: Maroslele (N46° 14' E20° 17'); 3: Makó (N46° 11' E20° 29'); 4: Magyarcsanád (N46° 8' E20° 38'); 5: Igriş (N46° 7' E20° 48'); 6: Felnac (N46° 7' E21° 6'); 7: Vladimirescu (N46° 7' E21° 25'); 8: Păuliş (N46° 5' E21° 39') (Fig. 1). Size of the selected areas was 3 × 3 km each, and represented the landscape structure and land use practices most characteristic for the target area.

The project consists of four main fields of investigation. The landscape structure of the studied region is determined by the loose alluvium and the rather variable riverbeds of Mureş/Maros. Vegetation and land use are responsible primarily for the habitat structure, so we prepared habitat maps of the eight sample sites, and recorded the recent cenological state of natural/seminatural vegetation. Floristic records completed the vegetation survey, and new data are reported on some protected plant species and on the first occurrence of a new alien species (Bátori *et al.* 2012). Natural vegetation types are characteristic elements of landscapes, and provide habitat for the elements of the fauna. Our research activities consisted of the faunistic survey resulting important information on the arthropod fauna. Special attention was paid on the fauna of islands because the ant and spider assemblages are sensitive indicators of environmental disturbances. The third main investigation focused on the phylogenetics of certain animal species that are important from evolutionary point of view. At last, the main biotic impact on the landscapes is that of the man. In the fourth project part we attempt to reveal the relationships of the local inhabitants and the habitat types, and to evaluate the ecosystem goods and services characteristic for the target areas.

According to the four areas of interest, field data collections were implemented by four groups of experts on the basis of the objects and purposes. Two groups dealt with the vegetation and fauna of the sites selected. One group was responsible for phylogenetics (some results of this investigation are reported in Pénzes 2012).The fourth group met with representatives of the local inhabitants in order to make interviews for ecosystem goods and services evaluation. Details of the methodologies are described in each chapter.

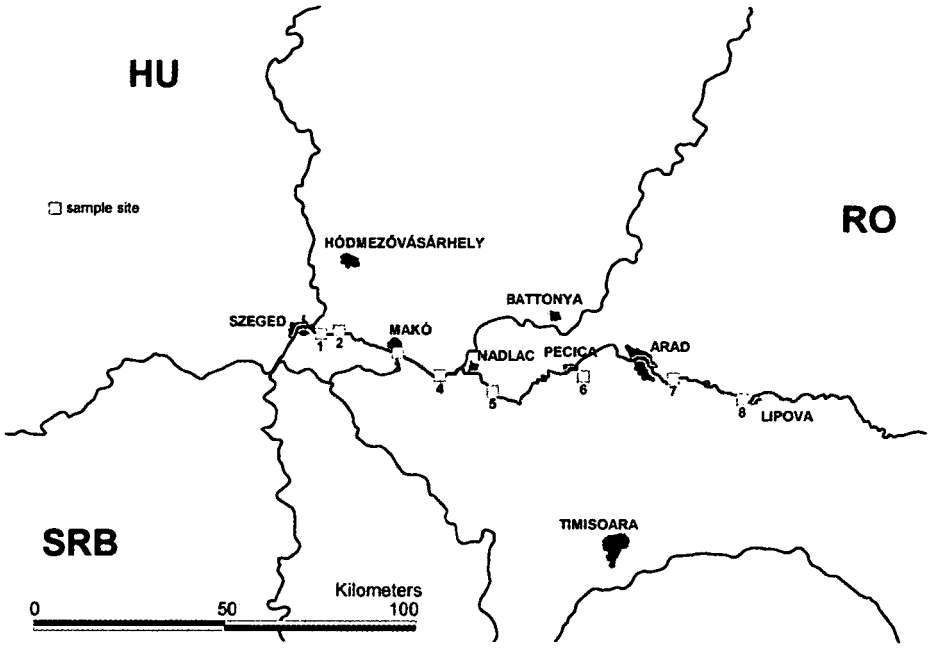

Figure 1. Location of the experimental sites in the trans-boundary region. The study sites are: 1: Szeged; 2: Maroslele; 3: Makó; 4: Magyarcsanád; 5: Igriş; 6: Felnac; 7: Vladimirescu; 8: Păuliş

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