

THE MONITORING AND MAPPING OF THE HIGH PLANT SPECIES

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Abstract. This paper concerns the methods for the monitoring and mapping of species in a direct connection with the monitoring of biodiversity in Romania. There are mentioned a set of biodiversity indicators, which could be used in the plant species monitoring and mapping. The modern mapping in Romania is organized on a standard protocol using facilities from Biodiversity Information Management System (BIMS).

Key words: monitoring, biodiversity indicators, plant species, mapping, BIMS

Introduction

The monitoring of biodiversity is based on international conventions. The basic requirements are to assess status and trends in biodiversity and the effectiveness of policy in order to show that objectives to reduce, halt or reserve biodiversity loss have been achieved. Monitoring provides the data for indicators but data are also needed for identifying priorities, devising strategies, targeting actions and assessing effects of policies.

In 1999, G. Dihoru did a short and relevant history of plant mapping and included it in "Mapping the plants of Romania".

Starting with 2002, the mapping in Romania is organized on a standard protocol using facilities from Biodiversity Information Management System (BIMS). BIMS is a component of the Biodiversity Conservation Management Project (BCMP). One of the objectives of BCMP's includes developing of a prioritized national strategy for establishing an effective system of protected areas, building public support for biodiversity conservation, establishing a national biodiversity information management system (BIMS).

Material and methods

Monitoring of plant species

The monitoring of species has a direct relation with the monitoring of biodiversity. The monitoring of both plant and animal species has some common aspects regarding their methods. Some objectives of the monitoring (Young et al. 2002) were mention in recent conferences:

- Measuring status and trends in biodiversity.

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- Quantifying impacts (positive as well as negative) of anthropogenic influences on biodiversity and the impacts of policies and actions not directly related to the conservation and sustainable use of biodiversity.

- Assessing the impacts of policies and actions specifically focusing on the conservation and sustainable use of biodiversity.

Indicators of plant biodiversity

The use of indicators is a necessity for biodiversity monitoring. The efforts of the European Environmental Agency are very well known for development and implementation in European countries of a good methodology and practice.

In this direction it is recommended to use the best adequate core indicators. Regarding the plant species, using the biodiversity indicators are correlated with database and processing databases. The good way for using databases is to obtain the chorology maps of the plant species.

There are mentioned a set of plant biodiversity indicators, which could be used in the plant species monitoring and mapping:

- specific diversity of plant species from the habitats;
- status of threatened species;
- endangered plant populations and the selection of threatened plant species.

Mapping of plant species

As mentioned by G. Dihoru in 1999, mapping the plants of Romania does not follow a universally agreed upon protocol. In last decade, the specialists trained specifically in mapping but accumulation of chorological information increased considerably in this time. The base is *Flora of Romania* (Săvulescu 1952-1976) but there are numerous regional floras and many monographs that have added new and reliable chorological information.

During the time, the mapping methods were different. G. Dihoru (1999) has mentioned short historical information about mapping methods used in Romania. In present, there are used two main methods: method use by *Atlas Florae Europaeae* based on the grid-cells divided into 50 km x 50 km and the method used by *Atlas Florae Romaniae* (Oltean & Ştefănuţ 2002).

The modern method for the species mapping developed in BIMS use a user interface (Arc View scripts) to facilitate data input having all necessary topographic information (maps, satellite images) available in background. To increase the management efficiency and evaluate the existing PA network, data from literature and other sources need to be mapped. Taxonomic nomenclature was developed in order to avoid data introduction errors and difficulties in data analyses generated by synonyms. Generally the location for species was related to toponimes (name of villages, rivers, mountains, etc). To facilitate location introduction a toponimes nomenclature was developed. Also other nomenclature was developed ta-king in account that standard information is much easier to be processed.

An opportunity for mapping is offer by Biodiversity Information Management System (BIMS) in Romania.

BIMS has following objectives:

- To provide the information basis to assess/demonstrate/defend/improve the effectiveness of the existing Protected Area network;

Having said that, it should be defined the overall structure of the BIMS database using Microsoft Access software or a similar, widely used software package that can be used on a PC.

Starting from 2002 we are using modern mapping in Romania and we organized a standard protocol using facilities from BIMS.

BIMS is an open system and can be used both for plant and animal species.

For the specific objectives proposed from BIMS, a team from Institute of Biology used this system for distribution of high plant species included in Red List. The aim of this study was to identify new sites to be protected and update existing datasets.

The species taken into account were included in "Red List of higher plants from Romania" (Oltean et al. 1994) and have a threatened status according with IUCN at the national level.

The distributions of plant species according with core set of indicators represent a possible way for plant species monitoring.

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MONITORIZAREA ȘI CARTAREA SPECIILOR DE PLANTE SUPERIOARE

Rezumat: În articol sunt prezentate metode de monitorizare și cartare a speciilor în directă conexiune cu monitorizarea biodiversității în România. Sunt menționați indicatorii de biodiversitate care pot fi utilizați în monitorizarea și cartarea speciilor de plante. Metodele moderne, folosite în prezent și în România, sunt organizate în baza unui protocol standard care utilizează facilitățile oferite de managementul sistemului informațional cu privire la biodiversitate, respectiv Biodiversity Information Management System (BIMS).

Cuvinte cheie: monitorizare, indicatori de biodiversitate, specii de plante, cartare, sistem informațional-BIMS