Diversity of bryophytes in agro-coenoses of Slovakia

Katarína Kresáňová[1], Katarína Mišíková-Janovicová[2] & Anna Kubinská[1]

[1] *Institute of Botany, Slovak Academy of Sciences, Dúbravská cesta 14, SK–84523 Bratislava, Slovakia; e-mail: katarina.kresanova@savba.sk, anna.kubinska@savba.sk*

[2] *Department of Botany, Faculty of Natural Sciences, Comenius University, Révová 39, SK–81102 Bratislava, Slovakia; e-mail: janovicova@fns.uniba.sk*

Abstract: In arable fields or outfields of Slovakia, 79 species of bryophytes were recorded as a result of field investigation and literature data. These include 12 species of liverworts, 2 species of hornworts and 65 species of mosses. *Bryum subapiculatum* is new for the Slovak bryoflora. Out of the total number 26 species are red-listed. The following endangered and rare species were recorded: *Phascum floerkeanum* (EN), *Acaulon muticum* (VU), *Pseudephemerum nitidum* (VU), *Phascum curvicolle* (VU), *Ephemerum recurvifolium* (VU), *Phaeoceros carolinianus* (VU), *Riccia bifurca* (VU), *Anthoceros agrestis* (NT), *Riccia cavernosa* (NT), *Ditrichum pusillum* (NT), *Entosthodon fascicularis* (NT), *Ephemerum serratum* (NT). Several new localities of these species were discovered. Distribution of species confined to arable land, e. g. *Phascum floerkeanum, Entosthodon fascicularis, Dicranella staphylina, Bryum rubens, B. klinggraeffii, B. violaceum, B. ruderale, Ditrichum pusillum*, was clarified. Agents influencing their diversity and threat are outlined, including comments to their ecology and life strategy.

Key words: agricolous bryophytes, diversity, ecology, life strategies, Slovakia.

Introduction

Uncovered arable soil of extensively managed fields is a refugium for ephemeral bryophytes (Janovicová & Kresáňová, 2000), many of which have disappeared from agro-coenoses during the last 50–60 years, due to changes in agriculture. The number of segetal species has been decreasing in intensively managed fields, being replaced by apophytic, widespread species confined to anthropogenic sites. On the other hand extensively managed fields lack apophytic species, or if they are present, they are not as abundant. This work presents the results of recent research on diversity of bryophytes in agro-coenoses in Slovakia, with remarks on their biology.

Agricolous species came to focus of studies only in the second half of the 20th century. Numerous taxa have been described relatively recently, e.g. mosses *Dicranella staphylina* (Whitehouse, 1969) or *Barbula tomaculosa* (Blockeel, 1981). Similarly, out of originally widely accepted complex of *Bryum erythrocarpum* agg., new taxa were delimited e.g. *Bryum sauteri, B. klinggraeffii, B. violaceum,* (Crundwell & Nyholm, 1964), *Bryum demaretianum* (Arts, 1992). Ecology and chorology of this aggregate, as well as the species *Dicranella staphylina,* were closely studied by Soldán, (1989a, b) in the territory of the former Czechoslovakia. Remarks on distribution of 33 bryophytes found in agro-coenoses in Germany were published by Fukarek (1998). Bisang (1995, 1996, 1998) investigated and analysed diaspore bank of field bryophytes, as well as their ecology. Life strategies and dynamics of bryocoenoses, including agricolous species, were targets of contribution published by During & Lloret (1996). An overview of information covering the topic of bryophytes on arable land (mostly in England) was presented by Porley (2001). He stressed the fact that agricolous species are not sufficiently studied and suggested necessary steps for further research in this sphere.

In Slovakia, the issue was studied by several authors, although it was not the principal topic. Information on their occurrence can be traced mostly in floristic works related to particular area. One of the first entries on bryophytes on fields is record from the valley Bošácka dolina in Biele Karpaty Mts (Holuby, 1959) Later, notes on hepatics from several regions of Slovakia were presented (Šmarda, 1961), particularly catchments area of the river Horná Topľa (Pospíšil, 1961), southern part of the plain Východoslovenská nížina (Peciar, 1967), eastern Slovakia (Peciar, 1969), Orava (Peciar, 1971), Ľubovnianska vrchovina hills and Pieniny Mts, (Pospíšil & Pospíšilová, 1986), Pieniny Mts (Pujmanová et al. 1989, 1990), region of Bratislava (Janovicová, 1998), area of Vyské Tatry Mts and Nízke Tatry Mts (Black-