



ULST Timisoara
**Multidisciplinary Conference on
 Sustainable Development**



30-31 May 2024

The distribution of the great mushroom grass (*Androsace maxima* L.) in the Great Plains

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Abstract:

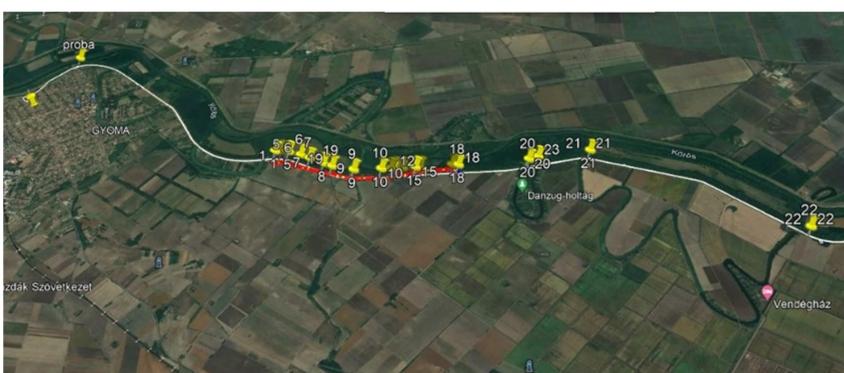
Our biological resources are decreasing worldwide. We live in an era of species extinction. Therefore, the reappearance of a species that has already disappeared is very important (Sih et al., 2000). The big mushroom grass (*Androsace maxima* L.) is a representative of disappeared regulation in the Great Hungarian Plains. A study from 2008 to 2010 showed an increase in the number of individuals of the isolated population. Despite the significant fluctuation of the individuals of the sedge, the weed population was considered stable and able to spread. In our work, we will complete the 2024 census of the population. On the occasion of the first field trip, we take up observation points. Based on these, we concluded that the population is spreading, compared to the results of the previous study. After that, we finish counting the number of units using the square method. We made a patch map of the degree of spread. Our results confirm the spread of the population and a significant increase in the number of individuals. Due to the sub-Mediterranean nature of the plant, we can assume that its spread is linked to warmer weather. To this end, we also examined the data series of a nearby meteorological station regarding the vegetation period of the plant. During our study, we also measured the intensity of seed formation. From the size of the seed production, we can deduce the following population size. In order to monitor the population of the large mushroom grass, our tests will be repeated next year.

• Introduction

Habitat loss is the biggest problem threatening biodiversity. In Hungary, habitat loss and transformation processes due to human influence, such as the formation of settlements, the expansion of agricultural areas, water management (flood control, inland water protection), are processes that have already taken place. During these processes, the ancient nature of the Great Plain was completely transformed (DEMETER ET AL., 2022). Our study area (the dam of Gyomaendrőd) falls within the largest-landscape of the Great Plain and the small- landscape of the Békési-sík (DÓVÉNYI ET AL., 2008). From the point of view of flora history and nature conservation, the flora of the loess lawn and loess wall is a natural habitat. The vegetation of the loess meadows and dams is also a refuge, where the loess grass-forming plant big mushroom grass (*Androsace maxima* L.) was found again. The big mushroom grass (*Androsace maxima* L.) can be observed in Hungary, in the loess-covered areas of the Central Mountains. It can also be found in the abandoned vineyards of the Balaton highlands (Zemplén, Börzsöny, Pilis, Buda Mountains (FARKAS 1999)). Nowadays, we find it on artificial structures (dams, kurgans) (JAKAB-TÓTH 2003). In the Great Plain, their existence was recorded only in Gyomaendrőd, Hódmezővásárhely and Bölcske (FARKAS, 1999). The big mushroom grass belongs to the genus (*Androsace* spp.) of the plant family (Primulacaceae). It is widespread in the sub-Mediterranean areas of Eurasia

• Material and method

The marking points were measured using GPS (Garmin Oregon 750t) coordinates. The recording was carried out in the Danzug backwater. At that time, the phenological stage of the plant was the time of full flowering. We visited the area for the second time on 21.March. At the noted points, we carried out a population estimation survey in 12 repetitions. To determine the number of individuals, we used Balázs Újvárosi's coenological method. The counting was done with a 1*1 m square. The results of the stem count were compared with the previously conducted survey. The phenological state of the plant was in the state of full flowering and the beginning of seed formation. To determine the dominance of the plant, we set up a scale of 1-3 scales. Level 1 of the scale confirmed the presence of the plant in small numbers. Level 2 of the scale means medium dominance of the plant. Level 3 of the scale expresses the dominance of the plant.



• Results and discussions

GPS point identifier	3. level of dominance	2. level of dominance	1. level of dominance	Absence area
004		156		
005			113	
006			122	
007			114	
008			121	
009		165		
010				*
011				*
012		169		
013				*
014	393			
015		182		
016				*
017		159		
018				*
019			121	
020	514			
021	378			

• Conclusions

In the next few years (2008-2011), researchers found that the population spread in the form of "stepping stones". In other words, relatively dense groups formed at not too great a distance. In the last year of the study, the number of individuals in the population decreased significantly, which the researchers considered to be a consequence of the weather. Continuing this research work, we covered the entire section of the weed dam and identified the plant in new places. The results of the study of the number and dominance of the plant support previous experiences. The plant spreads in the new distribution area in the form of "stepping stones". The frequency of the number of individuals in the distribution area shows different dominance. Sometimes the individuals are present in low numbers. There is an opportunity to spread further. In some places, the plant shows a medium dominance value. In some cases, it is represented by a large number of plants. With an outstanding number of individuals per square meter.

