

FLORISTICAL AND COENOLOGICAL DATA TO THE WESTERN TERRITORY OF THE KÖRÖS–MAROS REGION I.

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In the Körös–Maros Region 24 areas were investigated. The following species are new floristical records in the areas along the River Tisza and east to it: *Festuca heterophylla* Lam., *Agrostis vinealis* Salisb., *Cerastium subtetrandrum* (Lange) Murb. This publication contains data on the distribution and literature about the following *Trifolium* species: *Trifolium micranthum* Viv., *Trifolium ornithopodioides* (L.) Sm., *Trifolium subterraneum* L. Rediscovered habitat of *Trifolium subterraneum* is also mentioned. Presently one new known presence of *Lythrum tribracteatum* Salzm. in the territory east of the River Tisza completed with coenological samples are described.

Key words: floristical data, *Trifolium subterraneum*

INTRODUCTION

On behalf of the Nature Conservation Directorate of Körös–Maros Region floristical and coenological data were collected on the western part of their territory.

During the fieldwork we tried to collect the complete flora list of the confinable areas, and coenological relevés were made to describe the associations found. From these observations the most interesting data are published in this paper.

The first botanical survey of the territory was done by Kitaibel (GOMBOCZ 1945). Floristical records are presented by HALÁSZ (1889) and BORBÁS (1880a, b, 1881, 1883, 1891). Besides the writing of the flora of the county Békés (BORBÁS 1881). The flora of Tótkomlós was written by JANKÓ (1886) in which 350 species were mentioned. Since he does not consider his work complete this is why the plants are assorted according to the following main habitat types: a streamlet, called Száraz-ér, fields and meadows, plough-lands and stubble-fields, edge of vineyards and banks of ditch, alkaline areas, and the surroundings of roads. Floristical survey was made by THAISZ (1903) in the county Csanád, in

which he makes the knowledge about the county more complete with 241 species. During his collecting trips BOROS 27 times visited the Körös–Maros Region between 1922 and 1968.

Besides the publications of floristical data TIMÁR's work has also large importance in the vegetation research of the Great Hungarian Plain. A phytogeographical description was presented by TIMÁR (1952a) about the southeast part of the plain. In his publication 909 species are mentioned from the flood area of Berettyó and Körös rivers, 705 species from the flood area of Maros river, 757 species from the Békés–Csanád loess area, and a historical description is also presented. *Lythreto-Pulicarietum* association was described first by TIMÁR (1952b) from the mud of the salty areas near Szeged. TIMÁR (1954) reported data about the area east of the river Tisza (Crisicum). In this work 483 species are mentioned from which 186 are Spermatophyta. TIMÁR published a work on the phytogeography of Tiszazug in which plant associations are described and also the history of vegetation investigations. Floristical and ecological analysis on 424 species are presented in the following four main habitats: floodplains (220), halophyte vegetation (237), loess grasslands (144), sandy grasslands (168). A study about the zonation of the shore of soda-salty waters was also published by TIMÁR (1957). Data on the relict loess grasslands were presented by KISS (1964, 1968). MOLNÁR (1992, 1996) gave a floristical description of Pitvaros-grasslands, and presented vegetation and landscape history of this territory from the Middle Ages to the present. CSATHÓ (1986) published data on the flora of a loess grassland near Kistompapuszta. The list of floristical, coenological, and vegetation historical publications can be found in the Bibliography of KERTÉSZ (1995).

In the Crisicum the soda-salty areas of Székkutas, Orosháza, Nagylak, Mezőhegyes and Békéssámszon were examined by BODROGKÖZY (1965a, b, 1966, 1980), BODROGKÖZY and HORVÁTH (1969). Besides the description of associations and subassociations detailed coenological tables and the connection between vegetation and soil parameters are also presented. Many alkaline associations are described by RAPAICS (1927a, b). ZÓLYOMI (1958), and V. SIPOS and VARGA (1995) give new data to the coenological processing of loess grasslands. They detected the presence of *Festuca valesiaca* for the first time. BAGI (1991) presented remarks about the nature conservational evaluation of salty areas that are worth for consideration.

MATERIALS AND METHODS

The investigated areas are seen on Fig. 1. Areas 1–5, 8 and 9 belong to the county Csongrád (east of the River Tisza), while areas 6 and 7 are found in the southwest corner of the county Békés. The following days were spent on the

area: 24–27 May, 13–16, 28–30 June and from 29 August to 1 September in 1996.

Coenological samples were collected according to the BRAUN-BLANQUET (1951) method, but the cover rate of the species were given in percent. The nomenclature of names follows SIMON (1992), but for identification ROTH-MALER's (1994) work was also used. Herbarium data were examined at the herbarium of the Department of Botany and Plant Physiology, Agricultural University, Gödöllő, and the herbarium of the Hungarian Natural History Museum (BP).

RESULTS AND DISCUSSION

As a result of fieldwork the presence of the following species must be mentioned: *Festuca heterophylla* Lam. (Tompahát – 5, Fig. 1), *Agrostis vinealis* Salisb. (Battonya-Kistompapuszta – 7, Fig. 1) and *Cerastium subtetrandrum*



Fig. 1. Sampling localities in the investigated area at the Körös–Maros Region

(Lange) Murb. (Békéssámson – 6, Fig. 1). No former data has yet been published on these species from the area. These are new floristical data for the areas east of the River Tisza and the areas near the River Tisza.

The rare species of the genus *Trifolium* are important. *Trifolium micranthum* Viv. was mentioned by SOÓ and MÁTHÉ (1938) from the following places: Konyár–Gáborján–Hencida, Orosi-p., Gyula, Szeghalom, Fás, Kétegyháza, Újkígyós, Elek, Nagyér (Nagymajlát), Száraz-ér m., Korhány. It was presented by KOVÁCS and MOLNÁR (1981) from the following places: Szeghalom, Gyula, Újkígyós, Elek, Kétegyháza, Fás, Orosháza. MOLNÁR (1994) completed it with data on Szarvas, Bika-zug. The following herbarium data were found (the name of the collector and the date of collecting can be seen after the name of the place): Kétegyháza – Soó 1923, Újkígyós – Soó 1924, Kővágószőlős – Soó 1930, Fás – Csapody 1956, Gyula (Bicer dűlő) – Boros 1922, Szentes, Hódmezővásárhely (Kis-homok, Hargitta) – Jávorka and Csapody 1958, Derekegyház – Rigler 1930, Szolnok – Lengyel 1923, Tápiógyörk – Lengyel 1949, Karcag – Lengyel 1930, Püspökladány – Lengyel 1930.

The latest data on the territory were collected by Jávorka and Csapody in 1958 in the area of Kis-homok. Beside these localities we found it on further three sites. One of them is south of Hódmezővásárhely, a part of the area called Nagysziget (3, Fig. 1). The second one is on the area near the 42 km mark between Hódmezővásárhely and Szentes (4, Fig. 1). The third one is at Deszk (8, Fig. 1).

For *Trifolium ornithopodioides* (L.) Sm. have fewer data in the literature. SOÓ and MÁTHÉ (1938) Nagygyanté, Orosi-p., Békéscsaba, Nagyér (Nagymajlát), Korhány. KOVÁCS and MOLNÁR (1981) published data from Békéscsaba, Orosháza, and MOLNÁR (1994) from Szarvas (Mezőtúr road). The herbarium has data on four finding places only (Újkígyós – Boros 1924, Tótkomlós – Boros 1938, Sándorfalva – Boros 1937, Deszk – Boros 1937). Compared to the former species it has less documented data, furthermore the latest data is reported from 1938. It was found between Hódmezővásárhely and Szentes (4, Fig. 1).

Herbarium data of *Trifolium subterraneum* L. were collected by Timár in 1943 (Kismargitta), and by Boros in 1961 (Hódmezővásárhely, Kis-homok). Data of SOÓ and MÁTHÉ (1938) from Makó was not found in the BP herbarium. TIMÁR (1954) published it from Mártély in opposition to the specimen in the BP herbarium. However, this area is not far from the present finding place, its presence is possible there as well. BOROS visited the habitat several times, on 16 May 1961 and on 31 August 1961 he managed to find it. At first he visited the territory 25–26 August 1960, but he could not find it. From his notes it turns out that he was looking for it, and perhaps he wanted to reconstruct TIMÁR's data. On the 15 May 1968 BOROS visited the area again and made the following remark "There is no trace of it". At first time we could find or rediscover it on the area of Kis-homok between the lines of the parcelled orchards (1, Fig. 1). Later a

new huge population was found between Kis-homok and Hódmezővásárhely (2, Fig. 1) that is until now the largest known population in Hungary. It has no coenological samples made in Hungary yet. Since the habitat was found after mowing here we publish the flora list only without cover rates.

About the coenosystematical status of *Trifolium subterraneum* HORVAT *et al.* (1974) gave information. The coenosystematical status of this species is different according to the publications of different authors in several countries. The different opinion is not necessarily the result of the different views of authors, but the species play different role in the associations of various geographical units. *Trifolium subterraneum* can be found under wide range of habitat conditions. According to OBERDORFER (1954) in Greece this species can be found in dry grasslands on slopes, in the stands of *Stipa tortilis* subassociation and *Plantago lagopus* subassociation of *Poetum timoleontis* Oberdorfer association. In the case of South Dalmatian grasslands it is mentioned as a species of the *Vulpio-Lotion* Horvatic association-group. Stands in Macedonia appear in more wet conditions. It is surprising that it occurs together with *Cirsium canum*, *Orchis laxiflora*, *Ranunculus sardous*, *Lychnis flos-cuculi* and *Alopecurus pratensis* as the typical member of the *Trifolietosum nigricenti-subterranei* Micevski and *Ranunculetosum neapolitani* subassociation. Examining the synthetic table of sub-Mediterranean dry grasslands in the samples taken by HORVATIC (1949) near Dubrovnik *Trifolium subterraneum* can be found in *Psirulo-Trifolietum cherleri* Horvatic association. According to SIMON's (1992) nature conservation categories the status of this species is natural pioneer (TP), of course without any ground, since it is a protected species by law, and with its only one known habitat it must be among the unique species.

Among the floristical data the presence of *Lythrum tribracteatum* Salzm. must be emphasized. This species is only mentioned in the works of TIMÁR (1952a, 1954) and SOÓ and MÁTHÉ (1938) only from a few places, mainly from the areas near the River Tisza. From Crisicum the following data can be found: ricefields of Nagysziget in Hódmezővásárhely (TIMÁR 1954), Vésztő, Malompuszta, Mezőtúr, Malomfok (SOÓ and MÁTHÉ 1938). We have gone through on some of the above mentioned territories, but any similar habitats have not been found yet. In the herbarium there were no specimens from Crisicum. According to the herbarium sheets, which were collected from some places near the rivers Duna and Tisza, specimens were not put into the collection after 1948. We found it on a mildly alkali wet area near Batida (9, Fig. 1).

Interesting plant association of the soda-salty mud vegetation is *Lythrum tribracteatum*-*Lythrum hyssopifolia* ass. Slavnic (Table 1). This association was rediscovered if we accept the opinion of SOÓ according to which *Cypero-Juncetum gnaphalietosum luteo-albi* Bodrogközy, which was described near the river Tisza by BODROGKÖZY (1958) (In the work of SOÓ (1980) the date is wrong, be-

Table 1. *Lythrum hyssopifolium*-*Lythrum tribracteatum* ass. Slavnic 1951. Batida, 29 June 1996

Species	Plot number				
	1	2	3	4	5
<i>Alopecurus pratensis</i>		1–2	2	2	4
<i>Beckmannia eruciformis</i>	2			1	2
<i>Chenopodium botryoides</i>	4	15	10	10	5
<i>Cichorium intybus</i>			2		
<i>Gypsophila muralis</i>					1
<i>Inula britannica</i>	2	2	5	2	2–3
<i>Lotus tenuis</i>			5	5	5–10
<i>Lythrum hyssopifolia</i>	10	5	5	10	5
<i>Lythrum tribracteatum</i>	10	20	5	15	10
<i>Lythrum virgatum</i>			3	10	10
<i>Matricaria inodora</i>	5	15	10	10	15
<i>Mentha pulegium</i>	1	2	3	5	5
<i>Myosotis arvensis</i>	1	1	1	1	1
<i>Plantago major</i> subsp. <i>intermedia</i>	2	10	2	5	5
<i>Polygonum aviculare</i>	3	5	5	10	5–10
<i>Pulicaria vulgaris</i>	15	3	2	10	1
<i>Ranunculus lateriflorus</i>		5	3	5	5
<i>Rorippa sylvestris</i>	10	10	10	5	10
<i>Rumex stenophyllus</i>	20	10	10	5	7

cause the author described it in 1958) is synonymous with *Lythrum tribracteatum*-*Lythrum hyssopifolia* ass. Slavnic. This opinion is not well-founded, because in the description of BODROGKÖZY (1958) one of the character species of the association, *Lythrum tribracteatum* is missing. *Lythrum tribracteatum* from the area of Hungary was first published in coenological sample by TIMÁR (1952b). He gave new name to this association *Lythro-Verbenetum vulgaris* Timár. Neither of the samples contain *Verbena supina* from which the association gained its name by TIMÁR (1954). In the relevés of TIMÁR (1954) the two *Lythrum* species can be found in only one or two relevés with the cover rate of 1, but in our samples they have larger cover rate. Our samples are closer to that of described by TIMÁR but not similar with that. However, it is most likely that our samples can be considered the first published Hungarian stand of *Lythrum tribracteatum*-*Lythrum hyssopifolia* ass. Slavnic. According to SIMON's opinion (1992) *Lythrum tribracteatum* is a weed. It is a strange contradiction that the pioneer associations consist

of only weed species. According to our opinion *Lythrum tribracteatum* would be worth protecting.

The mentioned plant species do not enjoy high reputation and status in the Hungarian flora. The characteristic plant species of the dessicated alkali bottoms (*Lythrum tribracteatum*, *Polygonum minus*, *Leonurus marrubiastrum*, *Plantago major* subsp. *intermedia*) have to be considered not as weeds but at least natural pioneers in the SIMON's system (1992). Status of *Trifolium subterraneum*, which was not known from any recent places in Hungary, should be reconsidered. Until now only BAGI (1991) protested against the undeserved botanical judgement of soda-salty areas and because of the status of *Festuca pseudovina* being a disturbing tolerant and not stand constituent or attendant species. We would like to support this opinion with the publication of these data. In spite of the secondary character of sodic areas it can preserve many Hungarian species, its plant associations are rare in Hungary and Europe and the conservation of them is an important task.

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