Phytosociological study of *Trifolio subterranei-Festucetum pseudovinae* ass. nov.

Penksza, Károly - Kapocsi, Judit - Engloner, Attila

Abstract

In 1996 and 1997 on the rediscovered Hungarian habitats (Hódmezõvásárhely, Mártély) of *Trifolium subterraneum* 10 cenological samples were taken according to the method of Braun-Blanquet (1951) using 4x4 meters sampling sites, among which the type was also determined. The samples were ranged as *Trifolio subterranei-Festucetum pseudovinae ass. nov.* The association was classified under the *Festucion pseudovinae* association group. The samples were also compared statistically with earlier samples the *Achilleo-Festucetum pseudovinae* association. The association was formed on sand soil, its charachter species is *Trifolium subterraneum*. Dominant species: *Vicia lathyroides, Veronica arvensis, Festuca pseudovina, Achillea setacea, Trifolium angulatum, Bromus mollis, Alopecurus pratensis*. Subdominant species: *Plantago lanceolata, Podospermum canum, Myosotis stricta.* In its composition the species of Festucion pseudovinae association group and indifferent species take part in the highest rate. In the samplings according to the relative ecological indexes of the species the coenotaxon is rich in species indicating the following characteristics of the habitat: Sub-, and Eumediterranean, basiphilous, extremely oligotrophic, moderately oligotrophic and mesotrophic, saltphobic, slightly and moderately salty, dry and humid. In the samples the rate of disturbance tolerant species, natural pioneers and ruderal competitors is high, but the rate of weeds is small. The association is rare in Hungary, only two habitats are known presently, this is why we recommend the protection of this cenotaxon.

Keywords: *Trifolium subterraneum, Festuca pseudovina, Achillea setacea,* association, Körös-Maros region, indicator values, salt vegetation

Introduction

Trifolium subterraneum is a unique species in the whole area of Hungary, besides its floristical investigation on the administrative area of Körös-Maros National Park its cenological investigation is also important.

The first data of *Trifolium subterraneum L.* was reported by Halász (1889) from Makó without exact localisation and proving herbarium sample. In the publication titled ”Flora of the Area East of the River Tisza” by Soó and Máthé (1938) earlier literature data were also processed, so the data from Makó collected by Halász (1889) was also adapted as the distribution place of *Trifolium subterraneum* near Hódmezõvásárhely. The first herbarium data of *Trifolium subterraneum L.* were collected by Tímár in 1943 (from Kismargitta near Hódmezõvásárhely). At the same time Tímár (1954) published it later with the localisation ”Mártély”.

Boros visited the surroundings of Hódmezõvásárhely several times to reconstruct the herbarium data of Tímár from 1943. At first he visited the territory on 25-26 August 1960 (Boros 1960), but he could not find it. On 16 May 1961 and on 31 August 1961 he managed to find it (Boros 1961), and he collected a herbarium sample from "Hódmezõvásárhely (Kishomok)". On 15 May 1968 Boros visited the area again and made the following remark "There is no trace of it. "(Boros 1968).

Since 1961 *Trifolium subterraneum* has been found again at first on the area of Kishomok, between the lines of the parcelled out orchards and on a pasture between Kishomok and Hódmezõvásárhely in 1996. It was also found near Mártély in 1997 (Penksza et al. 1997).

Trifolium subterraneum is common in the Mediterranean region (Tutin et al. 1968.) so in Balkan-Peninsula – the Mediterranean habitat that lies the nearest from the Hungarian habitats - are the constituents of different described associations (Horvat et al. 1974). According to Oberdorfer (1954) this species can be found in dry grasslands on slopes in Greece, in the stands of *Stipa tortilis* subassociation and *Plantago lagulopus* subassociation of *Poetum timoleontis Oberdorfer 54* association. In the case of South-Dalmatian grasslands it is mentioned as a species of the *Vulpio-Lotion Horvatić 49* association-group by Horvatić (1949). Stands in Macedonia appear in more wet conditions: it occurs together with *Cirsium canum, Orchis laxiflora, Ranunculus sardous, Lychnis flos-cuculi, Alopecurus pratensis* as the typical member of the *Trifolietosum nigricenti-subterranei Micevski 57.* In the samples taken by Horvatić (1962) near Dubrovnik *Trifolium subterraneum* can be found in *Psirulo-Trifolietum cherleri Horvatić 62* association.

Salt grassland association dominated by *Festuca pseudovina* was named as *Festuca pseudovina ass.* by Magyar (1928). He also published a general flora list of salt grasslands without cover rates. Later Soó (1933) referred to this name, when he published the synthetic tables of the samples describing the association. Soó (1933) published two subassociations of *Festucetum pseudovinae* as *achilletosum* and *artemisiosum*. In his work Soó (1933) describes that the two subassociations can not be distinguished as associations because the transition is continuous between them according to the soil quality. On the other hand in his later work these two subassociations are mentioned as *Achilleeto-Festucetum pseudovinae* and *Artemisieteo-Festucetum pseudovinae* associations, but in reality he wrote down the above mentioned two subassociations as associations only two years later (Soó 1947). However in his later vast work Soó (1964) considered valid the publication from 1945: *Achilleo-Festucetum pseudovinae Magyar (1928) Soó (1933) 1945*. In later publications mentioning these associations this name and date was also used. According to the Borhidi's correction (1996) the valid name is: *Achilleo setaceae-Festucetum pseudovinae Soó (1933) 1947 corr. Borhidi 1996*, in which Soó's description date, 1945 was ignored rightfully.

The vegetation of the alkali grasslands close to the sampling sites of our publication was investigated by Bodrogközy. Detailed cenological tables were published about the associations and subassociaitons of the alkali areas of Székkutas, Orosháza, Nagylak, Mezõhegyes and Békéssámson (Bodrogközy 1965a, 1965b, 1966, 1980, Bodrogközy and Horváth 1969), among which the two subassociations of *Achilleo-Festucetum pseudovinae Soó (1933) 1947 corr. Borhidi 1996* were also described (Bodrogközy 1965a). However Bodrogközy (1965a) published this name

incorrectly when he referred to the work of Soó (1933) as *Achilleo-Festucetum pseudovinae Magyar (1928) Soó 1933*, although in the cited publication the name of *Festucetum pseudovinae achilleosum and artemisiosum* is present.

In the following part of the publication the corrected name by Borhidi (1996) is used when referring the works of Soó and Bodrogközy.

Materials and Methods

In 1996-1997 on the rediscovered habitats of *Trifolium subterraneum* (Hódmezõvásárhely, Mártély) 10 cenological samples were taken using 4x4 meters sampling sites according to the method of Braun-Blanquet (1951). The cenological table was arranged according to Borhidi's cenogroups (1995). The names of species are according to Simon's nomenclature (1992).

Our cenological tables are compared with the synthetic tables published by Bodrogközy (1965a) from Orosháza that are two *facieses (Lotus corniculatus* var. *hirsutus* and *Euphorbia cyparissias* facieses) of the *achilleetosum Soó 1964* subassociation of *Achilleo-Festucetum pseudovinae Soó (1933) 1947 corr. Borhidi 1996* association since these are similar to the areas examined by us in the habitat conditions. The comparison was also made of the data according to the original association description of Soó (1933). Since Soó published only synthetic tables, the comparison was also made according to the synthetic tables. Percentile values were given to the A-D and constancy values according to Hortobágyi and Simon (1981), and the resulted percentile tables were appraised by Cluster-analysis using the SYN-TAX program (Podani 1993). The percentile values of the common and differential species in the four tables were compared and the difference in the percentile constancy values between our and Bodrogközy's tables and Soó's tables were calculated according to the following method: Soó's percentile values were subtracted from the previous values.

Relative ecological values were calculated weighting with cover rates according to Borhidi's works (1993, 1995). Simon's (1992) evaluation can not be calculated, because seven of the species in the samples have no TWR values.

At the description of the subassociation the work of Barkman et al.(1986) was taken into consideration.

Results

The cenological table of *Trifolio subterranei-Festucetum pseudovinae ass. nov.* is in Table 1.

Comparison of the subassociation with the synthetic tables of Soó (1933) and Bodrogközy (1965a)

Table 1. Cenological table of *Trifolio subterranei-Festucetum pseudovinae ass. nov.* 1-2: Hódmezővásárhely (12.06.1996.), 3-8: Hódmezővásárhely (09.06.1997.), 9-10: Mártély (10.06.1997.), Type sampling: 4.

Plot number	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	A-D	K
Cover %	85	85	70	90	75	85	80	95	100	100		
Secalietea												
Vicia pannonica				1-2							1-2	I
Chenopodietea												
Geranium pusillum				1					1	+	+-1	II
Sedo-Scleranthetea												
Vicia lathyroides	1	1	1	1	1	1	1-2	1	+	1	+-2	V
Sedo-Scleranthetalia												
Poa bulbosa	1										1	I
Festuco-Sedetalia												
Myosotis stricta	1	+		+	1	1			+	+	+-1	IV
Festuco-Brometea												
Achillea setacea	1	1-2	1	1	1-2	1-2		1	1		1-2	V
Molinio-Arrhenatheretea												
Alopecurus pratensis	2	1	1-2	1-2	1			1		1-2	1-2	V
Festuco-Puccinellietea												
Cerastium dubium	1	1	1								1	II
Lepidium perfoliatum	1										2	I
Podospermum canum			1-2	1	1	1		1-2	1	1	1-2	IV
Artemisio-Festucetalia												
Festuca pseudovina	2	1-2	4	3	4	3-4	3	3	3	3	1-4	V
Festucion pseudovinae												
Trifolium subterraneum	2	5	2	3	1-2	2	3	3	3-4	3-4	1-5	V
Trifolium angulatum				1	1			1	1	1	1	III
Aster sedifolius				1-2	1-2	1-2	1				1-2	II
Artemisia santonicum							1		1		1	II
Limonium gmelini				1	1		1		+		+-1	II
Trifolium micranthum			1	1	1				+		+-1	II
Ranunculus pedatus				2				1			+-1	I
Indifferens												
Erophila verna		+		+			+	+	+		+	III
Bromus mollis	3	2	2	2	1	2	3	2	1	2	1-3	V
Veronica arvensis	1	1	1	1	1	1	1	1	1	1	1	V
Plantago lanceolata			1	2	1	1-2	2	1	1	1-2	1-2	IV
Vicia hirsuta				2	1		1	1		1	1-2	III
Carex praecox		1-2		1			1	1	1	1	1-2	III
Poa angustifolia				2	2	3		2	1	2	1-2	III
Potentilla argentea	1					1			1	1	1	II
Taraxacum officinale			1	1	1					1	1	II
Valerianella locusta		1		+					+		+-1	II
Vicia angustifolia				1			1		1	1	1	II
Lotus corniculatus	2		1	1							1-2	I
Euphorbia cyparissias	2										2	I
Arenaria serpyllifolia	1										1	I
Capsella bursa-pastoris	1										1	I
Inula britannica			1								1	I
Medicago lupulina			1	1							1	I
Trifolium fragiferum			1								1	I

The results of the Cluster-analysis based on the percentile values of the synthetic tables of Soó, Bodrogközy and our research can be seen on Fig. 1. The facieses of the two subassociation of Bodrogközy (1965a) resembles each other most of all, although the difference between them is also considerable. The tables of our publication are nearer to these two tables, while the Soó's (1933) original tables describing the association differs from the other three synthetic tables considerably.

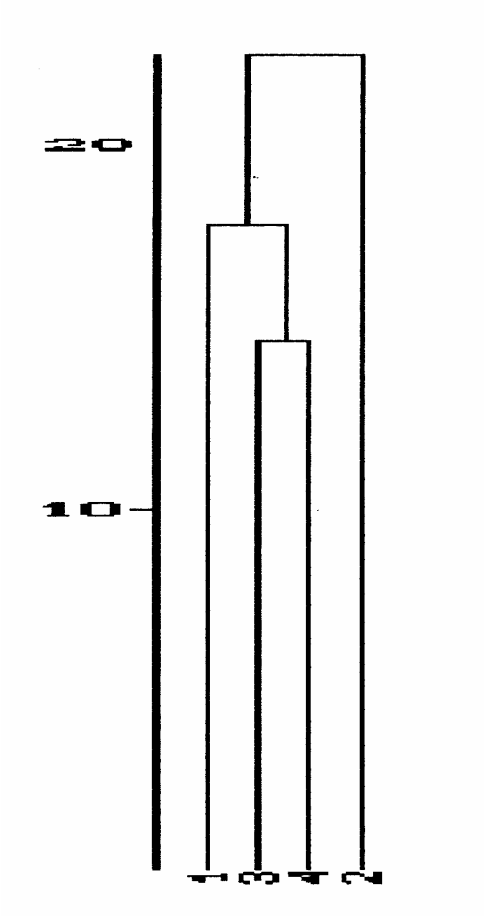


Fig. 1. Cluster-analisis based on the percentile values of the synthetic tables.
1: *Achilleo-Festucetum pseudovinae achilleetosum Lotus corniculatus var. hirsutus* facies (Bodrogközy 1965a)
2: *Achilleo-Festucetum pseudovinae achilleetosum Euphorbia cyparissias* facies (Bodrogközy 1965a)
3: *Achilleo-Festucetum pseudovinae achilleetosum* Soó (1933)
4: *Trifolio subterranei-Festucetum pseudovinae ass. nov.*

The percentile rate of the common and different species of the four tables can be seen on Fig. 2. According to the comparison by pairs the most common species (33%) can be found between our samples and Bodrogközy's (1965a) samples of the *facies Lotus corniculatus* var. *hirsutus* of *Achilleo-Festucetum pseudovinae Soó (1933) 1947 corr. Borhidi 1996 achilleetosum Soó 1964* subassociation. The rate of the common species was 19% according to the comparison with Soó's original samples. The rate of the common species was 22% between the Bordrogközy's and Soó's samples.

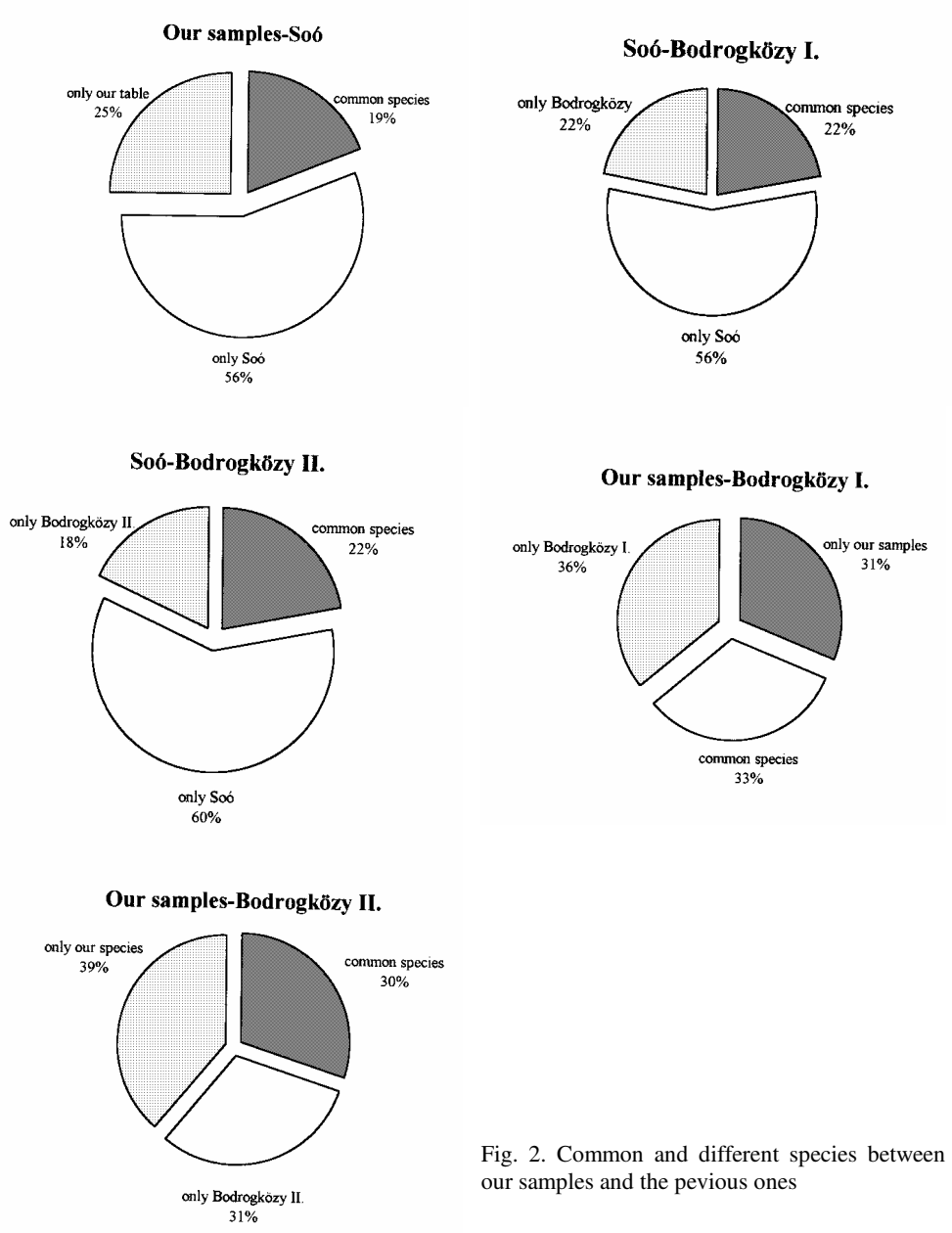
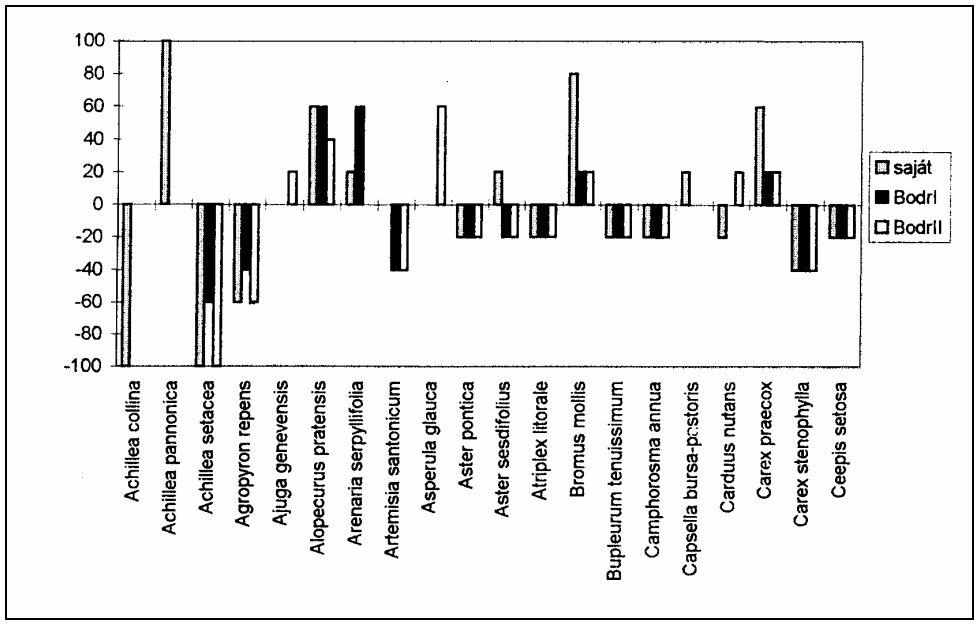
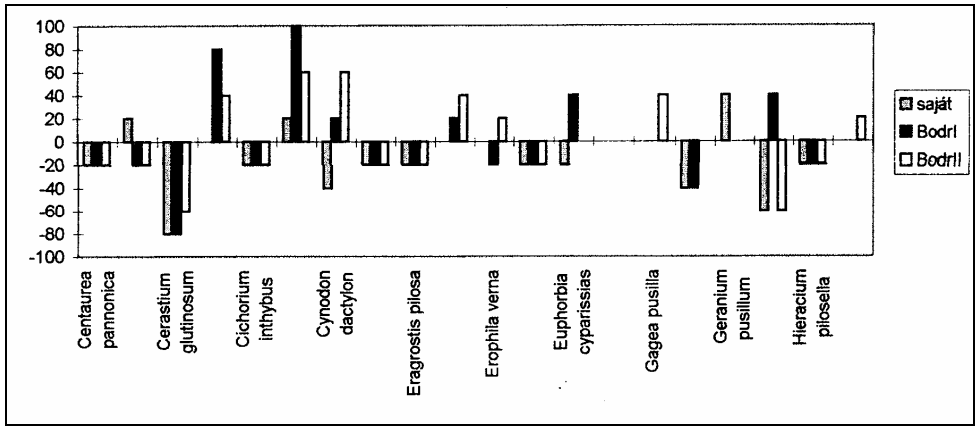


Fig. 2. Common and different species between our samples and the pevious ones

The difference between the percentile constancy values of our and Bodrogközy's two synthetic tables from the percentile values of the original Soó's table can be seen on Fig. 3. The –20% difference means, for example, that the species was given 20% less value in the Soó's publication than the values in our or Bodrogközy's tables. +40% means higher Soó-constancy value of the given species. –100% means that the given species was not in Soó's tables, while in our or Bodrogközy's samples it was given V, that is 100% constancy value. +100% is just the opposite of it. The species with same constancy value as in Soó's publication has 0 value in the table. In conformity with the results of Fig. 2. there is also a larger similarity between our and Bodrogközy's results. The constancy values differs from Soó's ones with similar extent in many cases. Among the species *Artemisia sanctonicum* and *Camphorosma annua* deserve attention, which have larger cover rates in Soó's (1933) samples that means the samples were taken on a more alkali areas. *Bromus mollis*, natural disturbance tolerant species also shows significant difference compared to Soó's samples. Its higher cover rate refers to more degraded characteristics of grasslands. The sequential samples in time shows higher and higher cover rate of *Bromus mollis*. The great differences in the cases of the genera, for example, *Achillea, Myosotis, Taraxacum, Veronica* and *Vicia* can be explained perhaps with the difference of identifications. Other species that have larger cover rates in our samples compared to the literature data: *Myosotis stricta, Poa angustifolia, Podospermum canum, Vicia hirsuta, Vicia angustifolia, Carex praecox, Trifolium angulatum*. The following species can be found only our samples: *Trifolium subterraneum, Vicia lathyroides, Veronica arvensis*.




100
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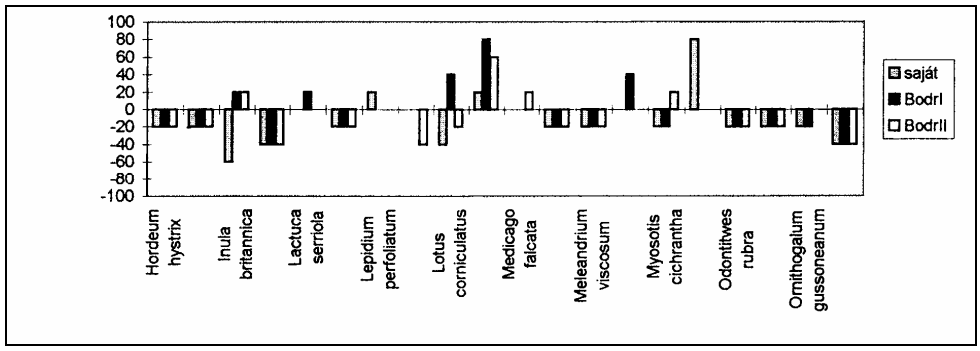
saját
Bodrl
Bodrll
Centaurea pannonica
Cerastium glutinosum
Cichorium inthybus
Cynodon dactylon
Eragrostis pilosa
Erophila verna
Euphorbia cyparissias
Gagea pusilla
Geranium pusillum
Hieracium pilosella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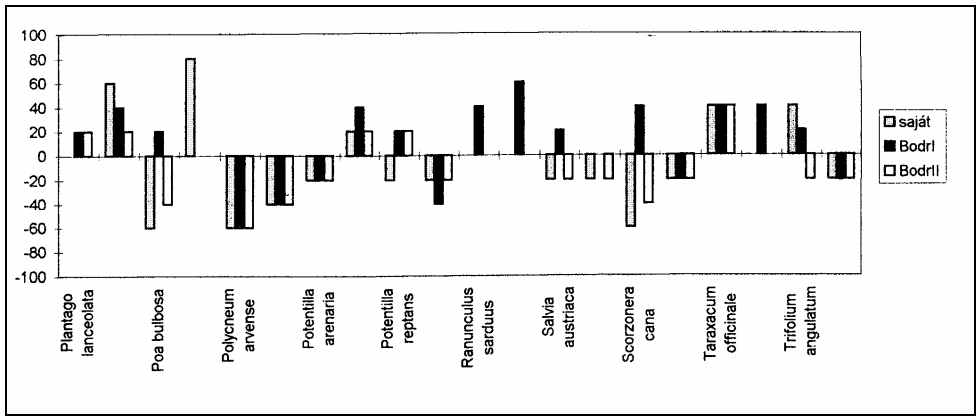
Bodrl
Bodrll
Hordeum hystrix
Inula britannica
Lactuca serriola
Lepidium perfoliatum
Lotus corniculatus
Medicago falcata
Meleandrium viscosum
Myosotis cichrantha
Odontitwes rubra
Ornithogalum gussoneanum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saját
Bodrl
Bodrll
Plantago lanceolata
Poa bulbosa
Polycneum arvense
Potentilla arenaria
Potentilla reptans
Ranunculus sarduus
Salvia austriaca
Scorzonera cana
Taraxacum officinale
Trifolium angulatum

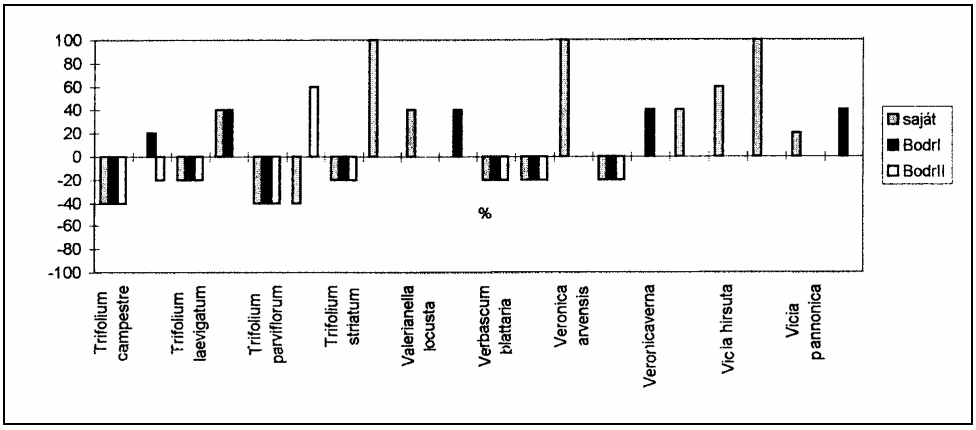


Fig. 3. Differences between the percentile constancy values of our tables and Bodrogközy's two synthetic tables from the original Soó's percentile values

The Characteristics of the Investigated Plant Association:

The cover rates of the samples of the investigated subassociation are between 70-100%. The base rock of the Hungarian habitats are sand and sand-loess. Sample 4. is designated as type sample that can be found between Hódmezõvásárhely Kishomok and Hódmezõvásárhely, 150 meters south to the main road 47., and 250 meters from the eastern border of Kishomok. Dominant species of the association: *Trifolium subterraneum, Veronica arvensis, Trifolium angulatum, Bromis mollis, Alopecurus pratensis, Vicia lathyroides*. Subdominant species are the following: *Plantago lanceolata, Podospermum canum, Myosotis stricta*. Charachter species of the association is *Trifolium subterraneum* (that can reach the 50% cover rate in some places). The early spring aspect of the association is poor, only some efemer (*Erophila verna, Veronica arvensis*) species and the flowering specimens of *Carex stenophylla* can be found. The early summer aspect is the most splendid and it is mowed. In autumn besides the flowering of *Limonium gmelini* it is characterised by the second flowering of *Leguminosae* species. By this time *Trifolium subterraneum* grows up and flowers again. Numerous species of the association are the members of the *Festucion pseudovinae* association-group (*Trifolium subterraneum, Trifolium angulatum, Aster sedifolius, Artemisia sanctonicum, Limonium gmelini, Trifolium micranthum, Ranunculus pedatus*) and indifferent species (*Bromus mollis, Veronica arvensis, Plantago lanceolata, Vicia hirsuta, Carex praecox, Poa angustifolia, Potentilla argentea, Taraxacum officinale, Valerianella locusta, Vicia angustifolia, Lotus corniculatus, Euphorbia cyparissias, Arenaria serpyllifolia, Capsella bursa-pastoris, Inula britannica, Medicago lupulina, Trifolium fragiferum).*

The Classification of the Presented Coenotaxon

The punctual cenosystematical status of the association:
Festuco-Puccinellietea Soó 1968
Artemisio-Festucetalia pseudovinae Soó 1968
Festucion pseudovinae Soó 1933
Trifolio subterranei-Festucetum pseudovinae ass.nov.

Distribution of the Species According to the Relative Ecological Index Numbers

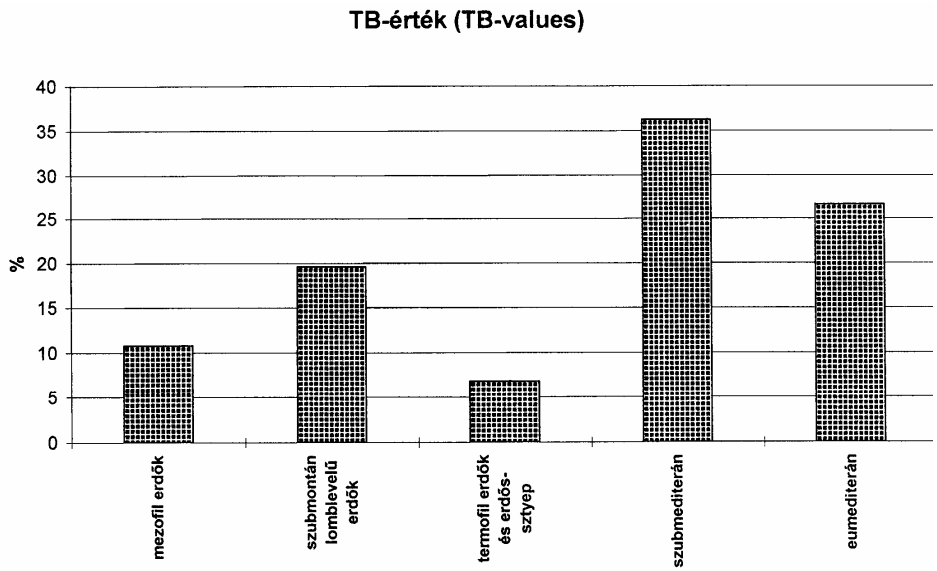
According to the relative temperature indexes 36% are Submediterranean (value 8), 27% are Eumediterranean (value 9) species (Fig. 4.).

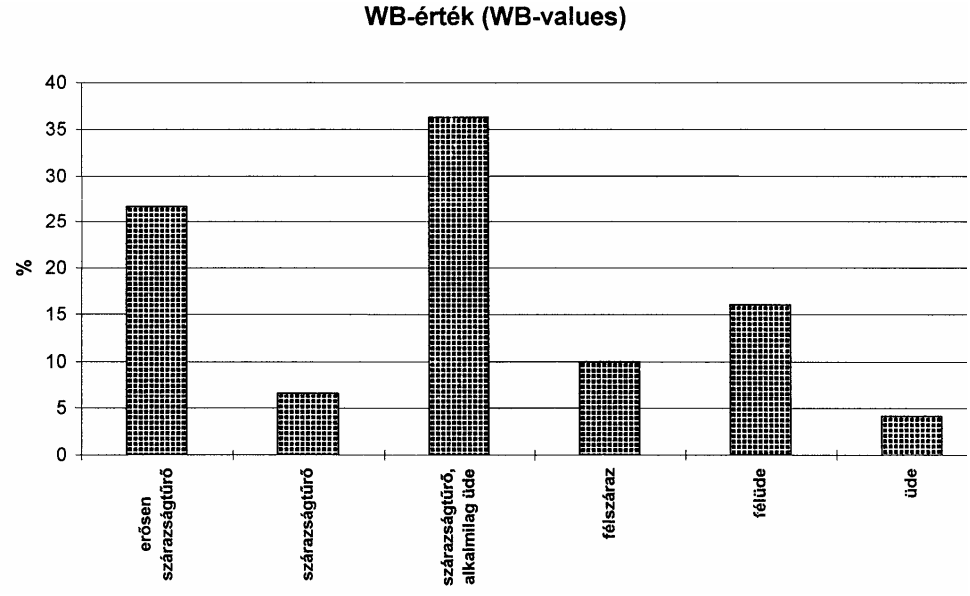
In the case of the relative water demand (Fig. 5.) two projecting cusps can be observed. 65% of the species are considerably drought tolerant (value 1), drought tolerant and occasionally humid habitat indicator (value 3) species. The rate of the semihumid habitat indicator species is also considerable (value 5).

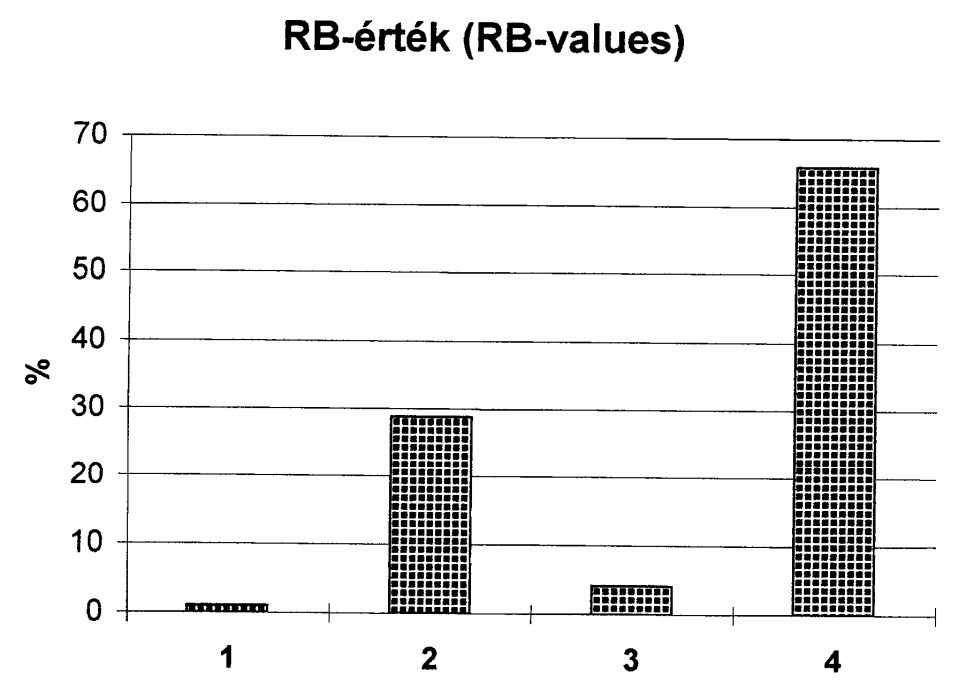
In the case of the soil reaction the rate of basiphilous plants is 65% (value 8), and the rate of the neutral species is 30 % (value 6). (Fig. 6.).

According to the salt tolerance (Fig. 7.) the rate of saltphobic species (value 1) is significant (30%), that is not typical on alkali soil. The rate of the species indicating slightly (value 4) and moderately (value 6) alkali environs is also considerable: 32% and 29%.

According to the social forms (Fig. 8.) the rate of disturbing tolerance species is high (26%), but the rare specialists are present in the same rate in the association. The largest part of the species are competitors (35%).




WB-érték (WB-values)
%
40
35
30
25
20
15
10
5
0
erősen szárazságtűrő
szárazságtűrő
szárazságtűrő, alkalmilag üde
félszáraz
félüde
üde


RB-érték (RB-values)
%
70
60
50
40
30
20
10
0
1
2
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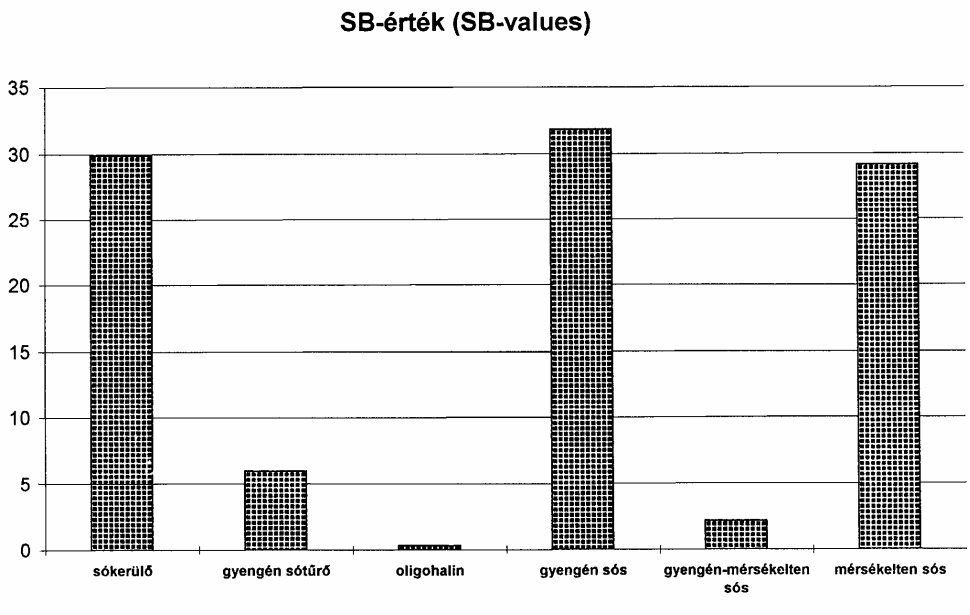
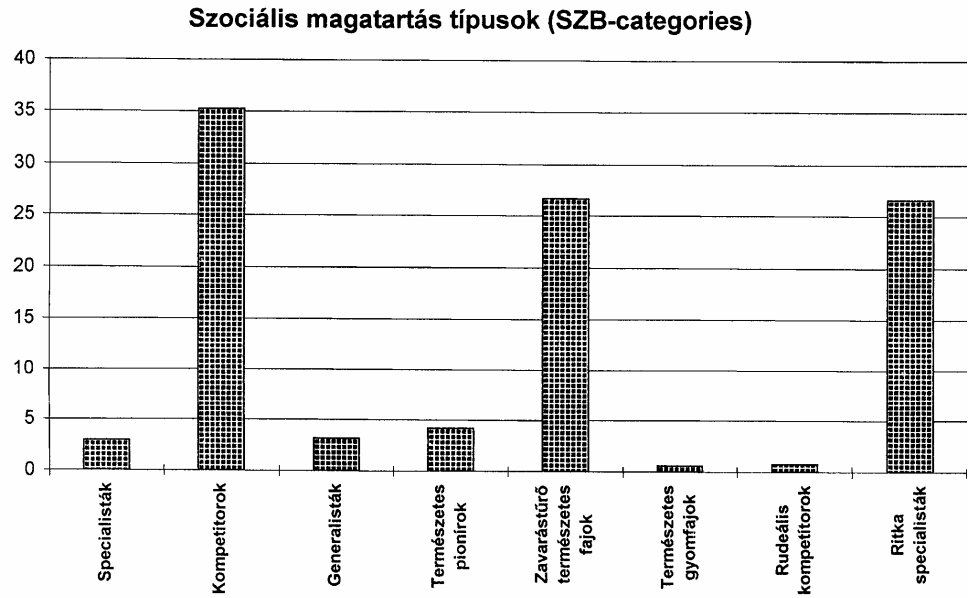
4


SB-érték (SB-values)
35
30
25
20
15
10
5
0
sókerülő
gyengén sótűrő
oligohalin
gyengén sós
gyengén-mérsékelten sós
mérsékelten sós


Szociális magatartás típusok (SZB-categories)
40
35
30
25
20
15
10
5
0
Specialisták
Kompetitorok
Generalisták
Természetes pionírok
Zavarástűrő természetes fajok
Természetes gyomfajok
Rudeális kompetitorok
Ritka specialisták

Discussion

Comparing our samples with the literature data (Soó 1933, Bodrogközy 1965a) can be observed that the dominant species *Festuca pseudovina* and *Achillea setacea* – that are also character species according to Bodrogközy (1965a) – are common with the species of *Achilleo setaceae-Festucetum pseudovinae Soó (1933) 1947 corr. Borhidi 1996* association. The samples show significant differences from the samples of Soó and Bodrogközy mainly because of the differential species: *Trifolium subterraneum, Vicia lathyroides, Veronica arvensis*. There is also little similarity according to the species composition and the dominance of the species with the Soó's table (1933) as the type of the association. The samples of Bodrogközy's subassociation (1965a) have larger similarity with our samples, but the number of the common species is also little (33%). The differences can be the result of the mosaic-like sampling sites, in this case the different placing out the sampling squares itself can result different results. It is very hard to find totally homogeneous patch in proper size during the field research of the alkali vegetation. It can be well observed in Soó's table (1933) where plant species of open alkali soil can be found also (*Camphorosma annua*). Soil parameters have specially great role in determination of vegetation units on alkali soil (Bodrogközy 1965a, 1965b, 1966, 1980, Bodrogközy and Horváth 1969). The looser sand soil makes possible the survival of *Trifolium subterraneum* with its special reproduction strategy – besides the present of alkali indicator species. One part of the species difference is the result of accidental elements (Table 1.). Dominant species are partly common with the species of the typical Soó's association and the species of its different subassociations. Besides the cover rate of dominant (*Trifolium subterraneum, Veronica arvensis, Bromus mollis, Vicia lathyroides*) and subdominant species (*Podospermum canum, Myosotis stricta*) show significant differences.

Because of the high cover rates and great quantities of *Leguminosae* species our samples are related to the Balkan associations (Horvat et al. 1974). The distribution according to the relative temperature demand is also strengthens the relationship with Balkan grasslands. More than 60% of the species are Sub- and Eumediterranean flora elements.

The relative water demand of the species in the association (two projecting cusps show the considerably drought tolerant and occasionally humid habitat indicator species) coincide with Bodrogközy's (1980) statement: he also emphasised that the plants of drought tolerant and humid habitats are present at the same time in this association. In the case of the soil reaction great part of the plants are basiphilous that was expectable as a result of the calciferous-sand and sandy-loess base rock. Because of the habitat requirements of indifferent species that can be found in great quantities in the association, the rate of neutral habitat indicators is considerable. The distribution of salt tolerant and saltphobic species also proves Bodrogközy's (1980) statement according to the alkali zone on these habitats (where the investigated association and subassociation was formed) is significant deep in the soil, this is why their vegetation is not typical alkali one. 30% of the species in our samples are also saltphobic. Besides indicator species of alkalisation can be found also: species of moderately alkali habitat are present in 30%. According to the social forms the rate of disturbing tolerance species is high, but the rare specialists (that is resulted by the presence of *Trifolium subterraneum*, and its significant cover rate) are present in the same rate in the association. The outstandingly high rate of competitors refers to the fact that the cenotaxon is not too degraded. It is derived from the presence and the high cover rate of *Festuca pseudovina*.

The maintenance of the plant association is not inhibited by the present cultivation method (mowing and grazing). The survival of *Trifolium subterraneum* is not endangered by this activity, because by the time of mowing the plant has hidden away its crops under the soil.

Trifolium subterraneum, the important Hungarian species of the investigated cenotaxon would deserve the unique status, since it has only two recent occurrence. Its habitats near Hódmezõvásárhely and Mártély must be protected with using the present cultivation methods.

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A *Trifolio subterranei-Festucetum pseudovinae* ass. nov. cönológiai vizsgálata

A *Trifolium subterraneum* az ország egészére nézve unikális jellegű, ezért a Körös-Maros Nemzeti Park illetékességi területén folyó florisztikai kutatása mellett cönológiai feldolgozása is fontos. A *Trifolium subterraneum* újra felfedezett termőhelyein 1996-ban és 1997-ben 10 cönológiai felvétel készült 2x2 m-es kvadrátokban Braun-Blanquet (1951) módszere alapján. A felvételeinket összevetettük a területünkhöz termőhelyben és faji összetételben leginkább hasonló *Achilleo-Festucetum pseudovinae Soó (1933) 1947 corr. Borhidi 1996* társulás eredeti, a leírás alapjául szolgáló felvételekkel. Összevetettük még a *Achilleo-Festucetum pseudovinae Soó (1933) 1947 corr. Borhidi 1996* Bodrogközi (1965a) által közölt szubasszociációjának két faciesével (*Lotus corniculatus* var. *hirsutus* and *Euphorbia cyparissias* facies), mely felvételek Orosháza mellett készültek. Az összehasonlításhoz csak szintetikus

tabellát tudtunk felhasználni. Az A-D és a konstancia adatokhoz százalékos értékeket rendeltünk, majd az így kapott százalékos tabellákat Cluster analízissel értékeltük a SYN-TAX programcsomag felhasználásával (Podani 1993).

Saját felvételeink összevetésekor az irodalmi (Soó 1933, Bodrogközy 1965a) adatokkal a hasonlóság csak 22-33%. Ez az egyezési arány nem indokolja, hogy a felvételeinket az Achilleo-Festucetum pseudovinae társulásként, de még szubasszociációjaként is tekintsük. Ezért a felvételeket új társulásként értékeltük. A társulás neve és cönoszisztematikai besorolása a következő:
Festuco-Puccinellietea Soó 1968

Artemisio-Festucetalia pseudovinae Soó 1968

Festucion pseudovinae Soó 1933

Trifolio subterranei-Festucetum pseudovinae ass. nov.

A vizsgált asszociáció felvételeinek borítási értéke 70-100 % között változik. A hazai termőhelyeken az alapkőzet homok, illetve homokos lösz. Típusként a 4. felvételt jelöljük meg, ami Hódmezővásárhely Kishomok és Hódmezővásárhely között az 52-es főúttól délre 150 m-re, Kishomok keleti határától 250 m-re készült. A társulás karakter faja: *Trifolium subterraneum.* A társulás domináns fajai: *Festuca pseudovina* A*chillea setacea, Veronica arvensis, Trifolium angulatum, Bromus mollis, Alopecurus pratensis, Vicia lathyroides*. Szubdomináns fajai: *Plantago lanceolata, Podospermum canum, Myosotis stricta.* Az asszociáció kora tavaszi aszpektusa szegényes, csak néhány efemer (*Erophyla verna, Veronica arvensis*) és a *Carex stenophylla* virágzó példányai díszítik. Kora nyárra alakul ki teljes pompában, amikor rendszerint kaszálják. Ősszel a *Limonium gmelini* mellett a pillangósok másodvirágzása jellemzi. Ekkorra a *Trifolium subterraneum* is újra kifejlődik és virágzik. A társulás fajainak nagy hányadát a *Festucion pseudovinae* asszociációcsoport fajai (*Trifolium subterraneum, Trifolium angulatum, Aster sedifolius, Artemisia santonicum, Limonium gmelini, Trifolium micranthum, Ranunculus pedatus*,) és indifferens fajok (*Bromus mollis, Veronica arvensis, Plantago lanceolata, Vicia hirsuta, Carex praecox, Poa angustifolia, Potentilla argentea, Taraxacum officinale, Valerianella locusta, Vicia angustifolia, Lotus corniculatus, Euphorbia cyparissias, Arenaria serpyllifolia, Capsella bursa-pastoris, Inula britannica, Medicago lupulina, Trifolium fragiferum*) teszik ki. Jelentős arányban szerepelnek pillangósok is.

A nagy borítási értékkel rendelkező, nagy számban jelenlevő pillangós fajok következtében felvételeink rokonságot mutatnak a balkáni társulásokkal (Horvat et al. 1974) is. A relatív hőmérsékleti igény szerinti megoszlás is erősíti a hasonlóságot a balkáni gyepekhez. A fajok több mint 60%-a szubmediterrán és eumediterrán flóraelem.

A szubasszociáció fajainak relatív vízigény szerinti alakulása (két kiugró érték jelzi az erősen szárazságtűrő, valamint a szárazságtűrő, de alkalmilag üde fajokat). A relatív talajreakció szerint a fajok nagy hányada mészkedvelő, ami várható volt a meszes homok, ill. a homokos lösz alapkőzet következtében. A nagy arányban felépítő indifferens fajok termőhely igényéből adódik, hogy jelentős a neutrális termőhelyet jelzők aránya. A fajok 30%-a sókerülő, emellett a szikesedésre utaló fajok is megtalálhatóak: a mérsékelten sós termőhelyek fajai közel 30%-kal fordulnak elő. A szociális magatartási mutatók szerint magas ugyan a zavarástűrők aránya (28%), de a ritka specialisták ezzel megegyező arányban vesznek részt a társulás felépítésében. A cönotaxon nem túl erős degradációs jellegére utal, hogy a kompetítorok aránya kiemelkedően nagy. Ez részben a *Festuca pseudovina* jelenlétéből és annak nagy borítási értékeiből adódik.

A növény-együttes fennmaradását a jelenleg is alkalmazott művelési mód (kaszálják és legeltetik) nem akadályozza. A *Trifolium subterraneum* eltűnését ez a tevékenység nem veszélyezteti, hiszen a kaszálás idejére a növény már elrejti terméseit a talajba.

A vizsgált cönotaxon fontos hazai faja a *Trifolium subterraneum* miatt unikális státuszt érdemel meg, hiszen az országban csak két recens előfordulása van. Termőhelyeit Hódmezővásárhely és Mártély mellett védeni kell a jelenleg folyó hasznosítás mellett.

Author's addresses:

Penksza Károly
GATE Department of Plant Physiology and Systematics
H– 2103 Gödöllõ

Kapocsi Judit
Directorate of Körös-Maros National Park
H– 5541 Szarvas

Engloner Attila
GATE Department of Plant Physiology and Systematics
H– 2103 Gödöllõ