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Contribution to the syntaxonomy of the *Festuca trachyphylla*-grasslands

Příspěvek k syntaxonomii travinných společenstev s *Festuca trachyphylla*

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On the basis of relevé materials from Bohemia and Slovakia, a new association *Agropyro repentis-Festucetum trachyphyllae* Kovář has been established. Critical syntaxonomic remarks are comprised in the commentary.

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INTRODUCTION

In connection with the continuous "rejuvenation" of vegetation formations in an exploited landscape and with the changes of the genetic and ecological equipment of species, there arise new problems for the plant ecologists. One of them represents the placing of new specifically combined stands with adaptable dominant species in the traditional classification systems, which have already asserted themselves in practice. As an example may serve the short grass stands which are unified first of all by their synmorphological characters but, as a rule, differring by their syngenetic characters. It concerns the communities relatively rich in species, in which some species of the genus *Festuca* predominate. In the present paper one of the ranges of such stands is described, based upon several years' studies in Bohemia (middle and eastern part of the basin of the Labe river) and in Slovakia (basin of the Dunaj river).

METHODS

The syntaxonomic elaboration and evaluation of stands were carried out by the methods of the Zürich-Montpellier classification schol, using the seven-membered estimation scale of abundance and dominonce (Braun-Blanquet 1951).

The names of taxa of higher plants are given according to Ehrendorfer (1973). The infraspecific taxa in the tables are marked by an asterisk, the species names being omitted: *Arenaria serpyllifolia* L. subsp. *serpyllifolia*, *Crepis foetida* L. subsp. *rhoeadifolia* M. B., *Erigeron annuus* (L .)Pers. subsp. *septentrionalis* (Fern. et Wieg.) Wagenitz, *Festuca rubra* L. uabsp. *rubra*, *Poa palustris* L. subsp. *xerotica* Chrtek et Jirásek. The nomsencliture of bryophytes follows Pilous et Duda (1960).

The determinations of cations, nitrates and pH values were made an the water extract; those of sodium and potassium by means of flame photometry (Zeiss apparatus), of magnesium, calcium and iron by the atomic absorption spectrophotometer (Unicam). The nitrates were determined by means of the method used for analyses of surface waters (HRBÁČEK et al. 1972), and the phosphates according to Olsen from the extract with sodium bicarbonate at pH values 8,5 (OLSEN et al. 1954) colorimetrically (STEPHENS 1963).

DESCRIPTION OF THE ASSOCIATION

Based on the relevé materials acquired in extensive river alluvia (Labe — Bohemia; Dunaj — Slovakia), a new association is established in the following text:

Agropyro repentis-Festucetum trachyphyllae KOVÁŘ, ass. nova

Nomenclatural type: Tab. 1, relevé 3, holotypus hoc loco.

Characteristic species combination: *Agropyron repens, Arenaria *serpyllifolia, Artemisia vulgaris, Bromus mollis, Festuca trachyphylla, Lolium perenne, Lotus corniculatus, Phleum bertolonii, Plantago lanceolata, Poa *xerotica, Rubus caesius.*

The soil samples (in total 4; 2 exposed to the west, 2 to the east) for an orientating characterization of basic properties of the substratum were taken on August 14, 1978 (Table 1, relevés 3 and 6).

	pH	NO_3-N	Na	K	Ca	P	Mg	Fe	(mg/100 g)
E	6.27	0.20	0.38	13.13	19.13	3.56	3.15	traces	
	6.30	0.29	0.38	12.98	19.80	—	3.23	traces	
W	6.28	0.23	0.30	7.43	11.00	2.04	0.99	traces	
	6.27	0.23	0.30	8.03	19.49	—	1.05	traces	

From a comparison with ass. *Cerastio arvensi-Festucetum trachyphyllae* (KOVÁŘ 1975) it seems that *Agropyro-Festucetum* is less nitrophilous, but its substratum contains more calcium. The range of pH values also indicates less acid soils (in contradistinction to pH 4.9—5.9 in ass. *Cerastio-Festucetum*).

Agropyro repentis-Festucetum trachyphyllae ***crepidetosum rhoeadifoliae*** KOVÁŘ, subass. nova

The nomenclatural type is identical with that of the association.

Differential species: *Achillea collina, Crepis *rhoeadifolia, Medicago lupulina, Picris hieracioides, Silene alba, Trifolium dubium, Trifolium pratense, Trifolium repens, Verbena officinalis, Bryum argenteum.*

All localities where the subassociation occurs are situated in the basin of the Dunaj river in southern Slovakia. (However, an occurrence of analogous stands in southern Moravia or in the warmest regions of Bohemia is not impossible. The associations to which these stands show relations, viz. *Dauco-Picridetum* and *Dauco-Crepidetum*, are also reported from Prague — HEJNÝ et al. 1979). This subassociation (and the whole association as well) shows a characteristic feature of the whole group of synanthropic fescue grasslands, i.e. a conspicuous occurrence of species of the families *Viciaceae* and *Asteraceae*, indicating the succession juvenility.

Agropyro repentis-Festucetum trachyphyllae **sedetosum boloniensis,** Kovář, subass. nova

Nomenclatural type: Tab. 1, relevé 16, holotypus hoc loco.

Differential species: *Achillea *millefolium, Berteroa incana, Galium asperum, Pimpinella saxifraga, Rumex thyrsiflorus, Sedum acre, Sedum boloniense, Ceratodon purpureus.*

All localities where the subassociation occurs are situated in the alluvium of the lower part of the basin of the Labe river in the territory of Bohemia. Analogously as the former one, this subassociation is also mostly limited to the immediate vicinity of the river streams (regulated banks, sandy alluvia etc.). From the viewpoint of syntaxonomy, these stands incline most likely to the communities of the class *Sedo-Scleranthetea*, in spite of the class *Festuco-Brometea* is not insignificant. Its ecology has not yet been studied in detail.

Localization of relevés (Tab. 1):

1. Štúrovo, regulated river bank about 300 m S of the former bridge across the Dunaj river (opposite the Esztergom cathedral on the Hungarian river side), Kovář et Krahulec, 18. 6. 1975.
2. Štúrovo, right regulated river bank of the Dunaj river, Kovář, 18. 6. 1976.
3. Štúrovo, right regulated bank of the Dunaj river, Kovář et Mestenhauserová, 14. 8. 1978.
4. Štúrovo, alluvium between the regulation and private plots on the right bank of the Dunaj river, Kovář, 18. 6. 1976.
5. Štúrovo, right regulated bank of the Dunaj river, at the border of private plots towards the Kováčovské kopce hills, Kovář et Mestenhauserová, 14. 8. 1978.
6. Štúrovo, right regulated bank of the Dunaj river near the Kováčovské kopce hills, Kovář et Mestenhauserová, 14. 8. 1978.
7. Štúrovo, right regulated bank of the Dunaj river, 500 m upstream from the former bridge across the river, Kovář, 19. 6. 1976.
8. Štúrovo, regulated bank near the bends of the Dunaj river towards the Kováčovské kopce hills, Kovář, 19. 6. 1976.
9. Štúrovo, municipal lawn in a new housing estate near the river regulation, Kovář, 18. 6. 1976.
10. Štúrovo, bow of the regulated bank towards the railway line below the Kováčovské kopce hills, Kovář, 19. 6. 1976.
11. Štúrovo, right regulated bank of the Dunaj river, near the railroad bridge below the Kováčovské kopce hills, Kovář, 19. 6. 1976.
12. Šahy, grassland near a system of basins (oxbow arms) on the SE. border of the town, Kovář et Mestenhauserová, 13. 6. 1978.
13. Mělník, left regulated bank of the Labe river, about 500 m downstream from the end of a railway siding, Mestenhauserová, 30. 7. 1978.
14. Mělník, left regulated bank of the Labe river, about 100 m downstream from the bridge across the Labe, Mestenhauserová, 30. 7. 1978.
15. Mělník, left regulated river bank of the Labe river, between the railway siding of the transshipment point and the Labe bank, Kovář et Mestenhauserová, 22. 7. 1978.
16. Poděbrady—Libice, grassland along the railway embankment near the bridge crossing the railway line between Poděbrady and Libice, Kovář et Mestenhauserová, 5. 6. 1977.
17. Pardubice, regulated river bank near the mouth of a channel into the Labe river at a locality called Polabiny, Kovář, 5. 7. 1976.
18. Pardubice, left regulated bank of the Labe river, 300 m downstream from the bridge, Kovář, 5. 7. 1976.

SYNTAXONOMIC REMARKS

The group of stands, to which ass. *Cerastio arvensi-Festucetum trachyphyllae* Kovář 1980 and ass. *Agropyro repentis-Festucetum trachyphyllae* belong, can be characterized as closed, mesophilous to thermophilous (xerophi-

Tab. 1. — *Agropyro repentis-Festucetum trachyphyllae* subass. *crepidetosum rhoeadifoliae* (relevés 1—12) and subass. *sedetosum boloniensis* (relevés 13—18)

Relevé No.	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18		
Slope, exposure	20°/S	15°/E	15°/E	15°/E	15°/E	15°/W	15°/W	—	—	—	—	—		—	—	—	—	—	—		
Altitude (m)	110	110	110	110	110	110	110	110	110	110	110	120		150	150	150	200	220	220		
Area analyzed (m²)	12	6	8	8	16	9	20	20	25	6	25	25		4	8	8	12	16	25		
Total cover (%)	85	95	90	95	90	75	90	85	95	95	85	95		85	60	65	95	85	90		
Number of species	34	28	29	26	25	24	32	28	29	28	27	33		22	23	22	31	25	25	$\bar{x} = 27$	
Association species																					
Festuca trachyphylla	4	5	5	5	4	4	5	5	4	4	5	5	V	4	3	3	4	3	5	V	V
Agropyron repens	1	2	1	.	1	1	.	1	1	+	.	+	IV	1	+	r	+	1	+	V	V
Artemisia vulgaris	+	1	1	.	+	+	1	1	1	1	+	2	V	.	1	+	.	+	+	IV	V
Plantago lanceolata	3	1	2	2	1	2	2	3	2	3	3	2	V	+	1	+	2	2	+	V	V
Bromus mollis	+	+	2	1	.	+	2	1	2	2	2	1	V	r	+	+	.	.	+	IV	V
Lolium perenne	1	r	+	+	.	r	.	1	2	1	1	.	IV	+	2	1	.	1	r	V	IV
*Arenaria *serpyllifolia*	+	.	r	1	r	+	2	.	.	1	2	1	IV	+	+	+	r	.	+	V	II
Lotus corniculatus	t	r	1	r	.	.	+	1	2	+	1	1	IV	1	+	+	+	+	.	IV	IV
Phleum bertolonii	r	1	2	2	.	.	1	1	2	.	.	2	IV	.	.	.	r	+	.	II	II
Rubus caesius	r	.	.	.	.	.	.	.	.	r	.	r	II	.	r	.	.	.	.	I	II
*Poa *xerotica*	r	.	.	.	.	.	.	r	.	.	.	.	I	+	.	.	.	.	1	II	II
Subass. *crepidetosum rhoeadifoliae*																					
Achillea collina	2	2	r	2	2	1	3	3	r	1	3	+	V	.	.	.	.	.	.		IV
Trifolium repens	r	3	3	2	1	+	1	2	.	2	2	2	V	.	.	.	.	.	.		IV
Trifolium pratense	+	+	+	+	+	+	.	1	.	+	1	1	V	.	.	.	.	.	.		III
Trifolium dubium	.	r	3	r	.	.	1	+	+		1	1	IV	.	.	.	+	.	.	I	III
Medicago lupulina	2	1	2	r	.	+	.	.	1	3	.	.	IV	.	.	+	.	.	.	I	III
Silene alba	.	r	+	.	+	+	.	.	r	1	1	r	IV	.	.	.	.	.	.		III
Verbena officinalis	.	.	+	r	r	r	.	.	r	1	+	.	III	.	.	.	.	.	.		II
*Crepis *rhoeadifolia*	.	.	1	.	+	.	r	.	+	r	.	+	III	.	.	.	.	.	.		II
Picris hieracioides	+	+	.	1	.	.	.	r	.	.	+	+	III	.	.	.	.	.	.		II
Subass. *sedetosum boloniensis*																					
*Achillea *millefolium*	.	.	.	.	.	.	.	.	.	.	.	.		r	+	+	1	+	1	V	II
Rumex thyrsiflorus	.	.	.	.	.	.	.	.	.	.	.	.		2	+	1	+	.	+	V	II
Berteroa incana	.	.	.	.	.	.	.	.	.	.	.	.		1	+	1	r	.	r	V	II
Pimpinella saxifraga	.	.	.	.	.	.	.	.	.	.	.	.		+	+	.	+	.	r	IV	II

Tab. 1. (Contd.)

Relevé No.	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18		
Galium asperum		.	.	.	.	.	.	.	.	.	.	.		+	.	.	+	+	.	III	I
Sedum boloniense	.	.	.	.	.	.	.	.	.	.	.	.		.	.	1	+	2	.	III	I
Sedum acre	.	.	.	.	.	.	.	.	.	.	.	.		3	2	.	.	.	r	III	I
Molinio-Arrhenatheretea and subordinate units																					
Arrhenatherum elatius	+	+	1	1	+	.	+	1	.	.	.	1	IV	1	2	.	r	.	r	IV	IV
Daucus carota	+	2	+	2	+	+	.	2	1	.	.	2	IV	r	.	.	.	+	.	II	IV
Festuca rubra	+	2	1	.	.	.	.	1	2	.	.	.	III	.	.	.	+	1	+	III	III
Taraxacum officinale	r	r	+	.	r	.	.	+	1	.	.	1	III	.	.	+	.	1	.	II	III
Leontodon hispidus	.	1	.	.	.	.	.	.	.	.	1	2	III	.	.	.	3	+	r	III	III
Dactylis glomerata	.	+	1	.	.	+	.	+	.	1	.	.	III	.	.	.	r	+	.	II	II
Centaurea jacea	.	.	.	.	.	.	1	.	+	+	.	2	II	.	+	.	+	.	+	III	II
Poa angustifolia	+	+	1	.	+	.	.	.	.	r	.	.	III	.	.	.	.	+	.	I	II
Festuca pratensis	.	+	.	.	.	.	.	1	.	.	.	.	I	.	.	.	.	.	.		I
Vicia cracca	.	.	r	.	.	.	.	.	.	.	.	.	I	.	.	.	.	r	.	I	I
Tragopogon orientalis	.	.	.	.	.	.	r	r	.	.	.	.	I	.	.	.	.	.	.		I
Leucanthemum ircutianum	.	.	.	.	.	.	.	r	.	.	.	.	I	.	.	.	.	.	r	I	I
Galium mollugo	.	.	.	.	.	.	r	.	.	.	.	.	I	+	.	.	.	.	.	I	I
Pastinaca sativa	.	.	.	.	.	.	+	.	.	.	.	.	I	.	.	.	.	r	.	I	I
Knautia arvensis	.	.	.	.	.	.	.	.	.	+	.	.	I	.	.	.	+	.	.	I	I
Trifolium hybridum	.	.	.	.	.	.	.	1	.	.	.	+	I	.	.	.	.	.	.		I
Allium angulosum	.	.	1	.	.	.	.	.	.	.	+	.	I	.	.	.	.	.	.		I
Festuco-Brometea and subordinate units																					
Euphorbia esula	.	.	.	.	.	.	.	r	.	+	r	.	II	.	+	.	.	.	.	I	II
Coronilla varia	.	.	.	.	+	.	.	.	+	.	.	.	I	.	.	.	2	.	+	II	II
Medicago sativa	.	r	.	1	.	.	.	.	.	.	.	r	II	.	.	.	.	+	r	II	II
Festuca rupicola	.	.	.	.	.	.	.	.	.	.	.	.		.	r	.	.	+	.	II	I
Ononis spinosa	.	.	r	.	.	.	r	.	.	.	.	.	I	.	.	.	.	.	.		I
Petrorhagia prolifera	.	.	.	.	.	.	.	.	.	.	+	.	I	+	.	1	.	.	.	II	I
Sedo-Scleranthetea and subordinate units																					
Potentilla argentea	.	.	.	.	.	r	.	+	.	+	.	.	II	2	.	2	2	.	.	III	II
Euphorbia cyparissias	.	.	.	.	.	+	r	.	.	r	.	.	II	.	.	.	.	.	.		I
Vicia hirsuta	.	.	.	.	.	.	r	.	.	.	.	.	I	.	.	.	+	.	.	I	I
Hypericum perforatum	.	.	.	r	.	.	.	.	.	.	.	.	I	.	.	.	r	.	r	II	I

Tab. 1. (Contd.)

Relevé No.	1	2	3	4	5	6	7	8	9	10	11	12		13	14	15	16	17	18		
Artemisietea vulgaris and subordinate units																					
Cichorium intybus	+	.	.	.	.	.	+	1	+	.	+	.	III	1	.	.	.	.	r	II	II
Anchusa officinalis	.	.	.	1	+	.	1	.	r	.	1	.	III	.	.	r	.	.	.	I	II
Carduus acanthoides	+	.	.	r	r	.	.	.	.	.	r	.	II	.	.	.	.	.	.		II
Oenothera depressa	.	.	.	.	.	.	.	r	.	.	+	r	II			.	.	r	.	I	II
Oenothera biennis	.	.	.	.	.	.	.	.	.	.	.	.		.	+	.	.	.	r	II	I
Tanacetum vulgare	.	.	.	.	.	.	r	.	.	r	.	.	I	2	.	r	.	.	.	II	II
Linaria vulgaris	.	.	.	.	.	.	r	.	.	.	.	.	I	.	+	.	.	.	.	I	I
Melilotus officinalis	.	.	.	.	r	.	.	.	.	.	.	+	I	.	.	.	.	.	.		I
Tripleurospermum inodorum	+	.	.	.	.	.	.	.	.	+	.	.	I	.	+	.	.	.	.	I	I
Erysimum durum	.	.	.	.	.	.	.	.	.	.	.	.		+	.	r	.	.	.	II	I
Agropyretea repentis and subordinate units																					
Convolvulus arvensis	r	.	.	1	+	1	.	.	.	r	+	.	III	.	.	r	.	.	.	I	II
Cardaria draba	+	+	1	.	.	r	r	.	.	.	.	1	III	r	.	.	.	.	.	I	II
Cirsium arvense	r	2	.	.	+	.	.	.	+	.	.	.	II	.	.	.	.	+	.	I	II
Lathyrus tuberosus	+	.	r	.	.	.	.	.	.		.		I	.	.	.	.	.	.		I
Lactuca serriola	.	.	.	.	.	.	.	.	.	.	.	1	I	.	r	+	.	.	.	II	I
Potentilla reptans	.	.	.	.	.	.	.	.	.	.	+	.	I	.	r	.	+	.	.	II	I
Saponaria officinalis	.	.	.	.	.	.	r	.	.	.	.	r	I	.	.	.	.	.	.		I
Bromus tectorum	+	.	.	.	.	.	.	.	r	.	1	.	II	.	.	.	.	.	.		I
*Erigeron *septentrionalis*	.	.	.	.	.	.	r	.	.	.	.	+	I	.	.	.	.	.	.		I
Conyza canadensis	.	.	.	.	+	.	.	.	+	.	.	.	I	.	.	.	.	.	.		I
Mosses																					
Bryum argenteum	+	1	1	+	1	+	+	1	2	+	1	1	V	.	.	.	.	.	.		IV
Brachythecium albicans	+	.	.	.	.	.	.	.	.	.	+	r	II	.	.	.	.	.	.		I
Ceratodon purpureus	.	.	.	.	+	.	.	.	.	.	.	.	I	.	1	2	+	+	+	V	II

Only in one relevé present: *Achillea crithmifolia* (relevé No. 10) r, *Agrostis stolonifera* (6) +, *Allium oleraceum* (15) r, *Allium vineale* (1) +, *Bromus sterilis* (9) 3, *Capsella bursa-pastoris* (4) r, *Centaurea rhenana* (6) r, *Equisetum arvense* (18) +, *Erophila verna* (1) +, *Fragaria vesca* (16) +, *Galeopsis bifida* (17) r, *Gratiola officinalis* (12) r, *Hieracium bauhinii* (16) +, *Hordeum murinum* (9) 1, *Iva xanthiifolia* (12) r, *Lathyrus pratensis* (9) r, *Lithospermum arvense* (7) r, *Lythrum hyssopifolium* (12) r, *Lythrum virgatum* (7) +, *Myosotis arvensis* (16) +, *Raphanus raphanistrum* (2) r, *Reseda lutea* (1) r, *Reseda luteola* (4) r, *Rumex acetosa* (4) +, *Setaria glauca* (6) +, *Silene vulgaris* (17) +, *Sisymbrium loeselii* (15) r, *Trifolium arvense* (6) r, *Trifolium aureum* (5) r, *Urtica dioica* (14) r, *Valerianella dentata* (16) r, *Veronica arvensis* (4) r, *Veronica chamaedrys* (16) +, *Vicia tetrasperma* (16) +.

lous) communities of semicultural, cultural and ruderal (synantrophic), mainly short grass stands on heterogeneous substrata of planar, colline to submontane zones, colonizing the convex, concave, or plain parts of artificial formations which are very often of linear shape (e.g. regulated river banks, embankments, dams, earth dumps etc.) and of grassy areas of intramural housing quarters and of extramural synanthropized meadows in Central Europe. It concerns often the succession stages and/or the anthropically blocked stages (by trampling etc.) of cultural high grass stands.

From the viewpoint of presence of syntaxonomically significant species (characteristic, differential etc.), the stands concerned occupy a position on the border of the following classes: *Molinio-Arrhenatheretea*, *Sedo-Scleranthetea*, *Festuco-Brometea*, *Nardo-Callunetea*, *Koelerio-Corynephoretea*, *Artemisietea vulgaris*, *Agropyretea repentis*.

The communities mentioned are cultivated either in the meadow or in pasture. The significant presence of species of the class *Molinio-Arrhenatheretea* and of the subordinate units is documented in the association tables. That would indicate most likely the belonging of the stands concerned to this class, especially to the alliance *Arrhenatherion*. The relations of the stands under study to other vegetation units are expressed in the rank of subassociation. Subass. *Agropyro-Festucetum crepidetosum rhceadifoliae* can be syngenetically deduced from the range of communities of the alliance *Dauco-Melilotion* (ass. *Dauco-Picridetum* or ass. *Dauco-Crepidetum rhoeadifoliae*). Subass. *Agropyro-Festucetum sedetosum boloniensis* is more closely related to order *Trifolio arvensi-Festucetalia* (alliance *Hyperico perforato-Scleranthion perennis*). Most related is ass. *Cerastio arvensi-Festucetum trachyphyllae*, which, however, is even more of a "meadow" character.

The relation of both associations with *Festuca trachyphylla* to higher syntaxa is still to be investigated in more detail. The syntaxonomic relationship to alliance *Festucion rubrae*, as suggested by PASSARGE (1964) is evident. In contradiction to it, there occurs not very frequently the combination of *Agrostis tenuis*, *Anthoxanthum odoratum* and *Briza media* in our communities, and the presence of *Alchemilla* species is not a typical character, either. The ecologically plastic species *Festuca rubra* forms a number of communities which are of a similar physiognomy, although — as regards their succession, development and ecology — they can be relatively far from each other. Analogous regularities are known e.g. in some dominant species of grassland swamps and river reeds (*Phalaris arundinacea*), ruderal grasslands and fishpond shores (*Calamagrostis epigeios*) etc.

The following remarks deal with the analogous and synmorphologically similar communities with the dominant species of the genus *Festuca*, whose relationship with the mentioned associations with *Festuca trachyphylla* is more or less close and can be subjected to discussion in the future.

The relations between the vicarious associations *Trifolio-Festucetum rubrae* OBERDORFER 1957 and *Anthroxantho-Agrostetum tenuis* SILLINGER 1933 em. JURKO 1971 and to their superior units have been discussed by BLAŽKOVÁ (1973). The first-mentioned association has been recorded by NEUHÄUSL (1972) from the Bohemian-Moravian Highlands. In all cases the stands of meadow or pasture character are concerned; they bear the features of the order *Nardetalia*, analogously as in the stands from the Krkonoše (Giant Mts.), which were placed in the alliance *Nardo-Agrostidion tenuis* SILLINGER

1933 (suballiance *Festuco rubrae-Nardion*) by KROPÁČOVÁ (KROPÁČOVÁ et SÝKOROVÁ-HRUBCOVÁ 1972). In order *Nardetalia* (alliance *Violion caninae*) is placed ass. *Thymo-Festucetum* OBERDORFER et GÖRS apud GÖRS 1968 (OBERDORFER 1978) without any reference to the previously mentioned *Thymo (pulegioidis)-Festucetum* BARTSCH 1940 classified in the system: *Thero-Airion*, *Festuco-Sedetalia*, *Festuco-Brometea* (OBERDORFER 1957). The influence of fertilization and of other cultural processes within the mentioned range of stands are manifested by a shift towards the order *Arrhenatheretalia*, as in the case of the stands of "*Festucetum rubrae*" reported by VÁLEK (1960) from the Beskydy Mts., where probably the ass. *Geranio-Trisetetum* KNAPP 1951 (BLAŽKOVÁ 1973) or the range of ass. *Festuco-Cynosuretum* TÜXEN 1940 apud BÜKER 1942, as from eastern Slovakia discussed by JURKO (1971), are involved. The xerothermous group of stands represents the grasslands with *Festuca rupicola*, mentioned as early as by SILLINGER (1929) from the White Carpathians and subsequently evaluated by TLUSTÁK (1975) as *Anthoxantho-Agrostetum rupicolae* JURKO 1971. More closely related to the communities of the class *Festuco-Brometea* are the stands reported from Germany (KNAPP 1944, WEBER 1972). The community with *Festuca rubra* and *Viscaria viscosa*, as given by HUNDT (1958), corresponds with the community *Allio-Festucetum* with *Allium montanum* (OBERDORFER 1957). These stands also show the presence of *Festuca ovina* (also "*Festucetum ovinae*" — MIKYŠKA 1929), which often figure as dominant species in the communities of the class *Sedo-Scleranthetea*, e.g. in ass. *Cerastio arvensi-Agrostetum pusillae* MORAVEC 1967 (alliance *Hyperico perforato-Scleranthion perennis*), *Festucetum ovinae* TÜXEN (1928) 1937 (alliance *Plantagini-Festucion*), or *Viscario-Festucetum* BRAUN-BLANQUET 1938 (alliance *Phleo-Sedion*). The nomenclature of syntaxa is rather complicated by changes of knowledge or of conception of taxa within the genus *Festuca* (the identification problems: *Festuca ovina* agg., *F. duvalii*, *F. trachyphylla*, *F. capillata*, *F. longifolia* etc.). It is possible to quote the case of "*Festuca ovina vulgaris*", the dominant of the ass. *Sileno-Festucetum* (LIBBERT 1933). The association is characterized by many species of the order *Brometalia* and of subordinate units: *Dianthus carthusianorum*, *Phleum phleoides*, *Centaurea rhenana*, *Botrychium lunaria*, *Scabiosa columbaria* etc. The Central European grasslands (with *Agrostis tenuis*) on sands were evaluated by HUECK (1931), who used the mentioned Libbert's name, within the framework of the alliance *Bromion erecti*. KRAUSCH (KRAUSCH 1959 sec. OBERDORFER 1978) classifies similar stands (basiphilous *Sileno-Festucetum* and more acidophilous *Diantho deltoidis-Armerietum*) within the limits of the order *Festuco-Sedetalia*. KNAPP (1948) uses the name *Armerio-Festucetum* (order *Corynephoretalia*). Recently, OBERDORFER (1978) gives it as *Armerio-Festucetum trachyphyllae* (LIBBERT 1933) KNAP 1948 ex HOHENESTER 1960 and places it in the system as follows:

Festuco-Brometea
Koelerio-Phleion phleoidis
(*Viscario-Festucetum heteropachyos*, *Agrostio-Brometum*, *Armerio-Festucetum trachyphyllae*, *Silene otites-Koeleria gracilis*-community, *Dianthus deltoides-Agrostis tenuis*-community)

The identification of Libbert's records (LIBBERT 1933), which most probably refer to stands of the order *Brometalia*, with the stands recorded by

HOHENESTER (1960), which contain very few species of the *Brometalia* and subordinate units, but at the same time many species of the *Koelerio-Corynephoretea* and/or of the *Sedo-Scleranthetea* and subordinate units, results in a wide conception of the association. The stands given by LIBBERT are close to subass. *Cerastio-Festucetum armerietosum* elongatae KOVÁŘ 1981.

In conclusion of this abridged survey of knowledge and opinions of the short grasslands, an analogous deduction presents itself as that by VICHEREK (1962): this author reports from the alluvium of the Dyje river (southern Moravia) the "association with *Festuca vallesiaca* and *Acetosella vulgaris* subsp. *tenuifolia*", which occupies an analogous position in the ecological chain of the fluvial alluvium as the communities with *Festuca trachyphylla* discussed here. VICHEREK places this association provisionally in the alliance *Koelerion glaucae*, but he also points to the competency to reserve an independent alliance for these communities in the future. For the same reason, the associations *Cerastio arvensi-Festucetum trachyphyllae* and *Agropyro repentis-Festucetum trachyphyllae* have not yet been classified to the higher units.

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SOUHRN

Příspěvek přináší popis nové travinné asociace s dominantní *Festuca trachyphylla:* ass. *Agropyro repentis-Festucetum trachyphyllae* KOVÁŘ, subass. *crepidetosum rhoeadifoliae* KOVÁŘ, subass. *sedetosum boloniensis* KOVÁŘ.

V komentáři jsou rozvedeny a diskutovány některé aspekty klasifikace kostřavových trávníků v současné, permanentně „zraňované" krajině.

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