

Vegetation of trampled habitats in the Czech Republic: a formalized phytosociological classification



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Ruderal vegetation has been traditionally classified into many vegetation units in the Central European syntaxonomy. The units are mostly distinguished on the basis of expert opinion, usually without any detailed analysis. Large data set of phytosociological relevés, extracted from the Czech National Phytosociological Database, was used for revision of the current classification of the vegetation in trampled habitats in the Czech Republic. The relevés belonging to the class *Polygono arenastri-Poëtea annuae* Rivas-Martínez 1975 corr. Rivas-Martínez et al. 1991 were analysed using a procedure of formalized reproduction of an expert-based vegetation classification. To define the associations in a formal way, the Cocktail method was used. The definitions of particular associations were created using the geographically stratified data set of 27 315 relevés of all vegetation types of the Czech Republic. The associations were delimited mostly by dominance of species and also by combinations of sociological species groups created by the Cocktail method. Taking into account the results of the previous cluster analyses, seven associations were defined. Some of the traditionally recognized associations were rejected because of their unclear delimitation and the lack of good diagnostic species.

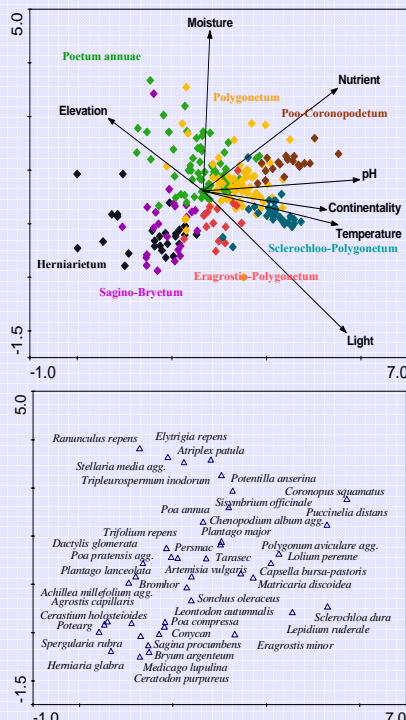
Vegetation of trampled habitats

Vegetation types classified into the class *Polygono arenastri-Poëtea annuae* include pioneer, species-poor, low-growing stands with prevailing therophytes, which tolerate frequent disturbances and adverse environmental conditions of the compacted soils. They colonize trampled habitats or places crossed by vehicles and are very common in human settlements and their surroundings.

Synoptic table of communities defined by the Cocktail method. The percentage constancy values are shown. Diagnostic species are ranked by decreasing fidelity (** Phi > 0.50, * Phi > 0.25). Fidelity was calculated using mean covers instead of percentage constancies. Non-diagnostic species are ranked by decreasing occurrence frequency.

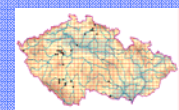
Group Number	1	2	3	4	5	6	7
Number of relevés	28	25	72	67	15	18	31
<i>Herniaria glabra</i>	100**	16	.	1	7	.	6
<i>Sagina procumbens</i>	29	100**	6	.	13	.	.
<i>Bryum argenteum</i>	29	76*	7	3	7	.	6
<i>Poa annua</i>	68	76	100**	61	87	39	32
<i>Eragrostis minor</i>	.	.	.	1	100**	.	.
<i>Chenopodium botrys</i>	.	.	.	.	13*	.	.
<i>Coronopus squamatus</i>	.	.	4	4	.	100**	3
<i>Sclerochloa dura</i>	.	.	.	4	.	.	100*
<i>Polygonum aviculare</i> agg.	50	48	51	100**	100	100*	100
Other species with the highest frequency							
<i>Plantago major</i>	61	68	85	64	87	78	10
<i>Lolium perenne</i>	36	16	57	72	47	50	94
<i>Tarax. sect. Ruderalia</i>	36	60	81	40	73	17	23
<i>Matricaria discoidea</i>	43	40	58	43	27	28	74
<i>Capsella bursa-pastoris</i>	32	24	33	27	20	17	58
<i>Trifolium repens</i>	50	40	42	28	33	.	10
<i>Trifolium pratense</i>	18	12	21	28	33	17	19
<i>Lepidium ruderalis</i>	11	12	3	25	33	.	61
<i>Coryza canadensis</i>	50	16	4	7	60	6	.
<i>Chenopodium album</i> agg.	14	8	10	25	60	6	.
<i>Achillea millefolium</i> agg.	39	12	11	22	27	6	.
<i>Ceratodon purpureus</i>	36	56	3	3	7	.	3
<i>Artemisia vulgaris</i>	21	12	18	19	27	6	.
<i>Medicago lupulina</i>	36	28	1	6	13	.	.
<i>Cerastium holosteoides</i>	14	32	7	3	20	.	.
<i>Plantago lanceolata</i>	32	8	10	13	13	.	.
<i>Agrostis capillaris</i>	36	28	7	3	.	.	.
<i>Sonchus oleraceus</i>	11	16	6	7	33	.	.
<i>Chenopodium glaucum</i>	.	.	.	.	.	67	.
<i>Poa pratensis</i> s.lat.	21	4	12	1	20	.	6
<i>Spergularia rubra</i>	32	24	3	1	.	.	.
<i>Potentilla argentea</i>	46	4	6	1	.	.	3
<i>Poa compressa</i>	25	8	8	3	13	.	.
<i>Leontodon autumnalis</i>	18	12	7	9	7	.	.
<i>Puccinellia distans</i>	.	.	4	1	13	28	6
<i>Setaria viridis</i>	4	.	.	4	40	.	.
<i>Potentilla anserina</i>	.	.	18	6	13	6	3
<i>Sisymbrium officinale</i>	4	4	11	13	13	.	.
<i>Bromus hordeaceus</i>	11	4	7	6	.	.	13

DCA ordination diagrams of relevés and species. Relevé groups were created by the Cocktail definitions. Ellenberg indicator values (averages for relevés) and altitude are projected as supplementary variables.



Associations distinguished in the Cocktail classification and their formal definitions. The species group *Lolium perenne* includes species *Lolium perenne*, *Poa annua* and *Plantago major*, which have a statistical tendency to occur together in vegetation.

Association	Formal definition
<i>Herniarietum glabrae</i>	<Herniaria glabraUP05>OR<Herniaria glabraUP05>
<i>Sagino-Bryetum argentei</i>	<Sagina procumbensUP05>AND<Bryum argenteumUP05>OR<Sagina procumbensUP25>
<i>Poetum annuae</i>	<Poa annuaUP50>OR<Poa annuaUP25>AND<## Lolium perenne>
<i>Polygonetum avicularis</i>	<Polygonum aviculare agg UP50>NOT<Coronopus squamatusUP05>OR<Eragrostis minorUP05>
<i>Eragrostio-Polygonetum avicularis</i>	<Eragrostis minorUP05>AND<## Lolium perenne>OR<Polygonum aviculare agg UP05>
<i>Poo-Coronopodetum squamati</i>	<Coronopus squamatusUP05>AND<Coronopus squamatusUP05>
<i>Sclerochloa-Polygonetum avicularis</i>	<Sclerochloa duraUP05>AND<Sclerochloa duraUP05>



Community with dominant *Herniaria glabra* occurs in open habitats with permeable gravelly soils, mostly at railway stations.

Herniarietum glabrae



Community occurring in moist and half-shaded habitats of paving fissures mostly in towns. Usually with well-developed moss layer.

Sagino procumbentis-Bryetum argentei



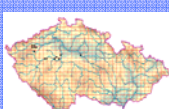
Frequent community dominated by *Poa annua*, usually in half-shaded habitats on fresh soils.

Poetum annuae



Thermophilous community in sun-exposed habitats, mostly colonizing sandy dried soils along pavements.

Eragrostio-Polygonetum avicularis



Rare community with endangered *Coronopus squamatus* occurs in nutrient rich habitats of farmyards and outlets in countryside.

Poo-Coronopodetum squamati



Thermophilous spring community dominated by endangered *Sclerochloa dura*, occurs on roads in villages, vineyards and fields.

Sclerochloa-Polygonetum avicularis



Widely distributed community with dominant *Polygonum aviculare* agg., mostly in intensively trampled sunny habitats.

Polygonetum avicularis