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Odontito-Ambrosietum Jarolímek et al. 1997 – a ruderal association new to Slovenia

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A ruderal association *Odontito-Ambrosietum* Jarolímek et al. 1997 is presented; this is new to Slovenia. The study was performed in the pre-Dinaric and sub-Pannonian phytogeographical region. Its position within the class *Artemisietea* is shown in a synoptic table of 118 relevés from Slovenia.

Key words: *Ambrosia artemisiifolia*, phytosociology, ruderal, vegetation, Artemisietea, Slovenia

Introduction

Ragweed (*Ambrosia artemisiifolia*) is a neophytic species of North American origin, which became very common in Slovenia quite some time ago. JOGAN and VREŠ (1998) consider its present occurrence to be steady.

Not only is there an increasing number of sites, but we can also see that the species occurs in large stands, where it reaches up to 120 cm in height. Slovakian authors (JAROLÍMEK et al. 1997) for the first time classified the stands into a separate association. They consider the phytocoenosis to be relatively rare in Slovakia. This, however, cannot be said of Slovenia, where the stands are very frequent and the plant is still spreading.

The ruderal vegetation of both the phytogeographical regions studied (pre-Dinaric and sub-Pannonian) has been studied by many authors (MARKOVIĆ 1984, 2000; ŠILC 2001), but they did not investigate stands dominated by *Ambrosia artemisiifolia*. Such populations are mentioned in ŠILC (2000), who did not, however, present any relevé material.

Study area

Our investigations cover the pre-Dinaric and sub-Pannonian region of Slovenia, according to the phytogeographical division by M. WRABER (1969).

According to Koppen's climatic system the research area lies in two climatic types. In the pre-Dinaric region the research area belongs to the moderate-continental type of cli-

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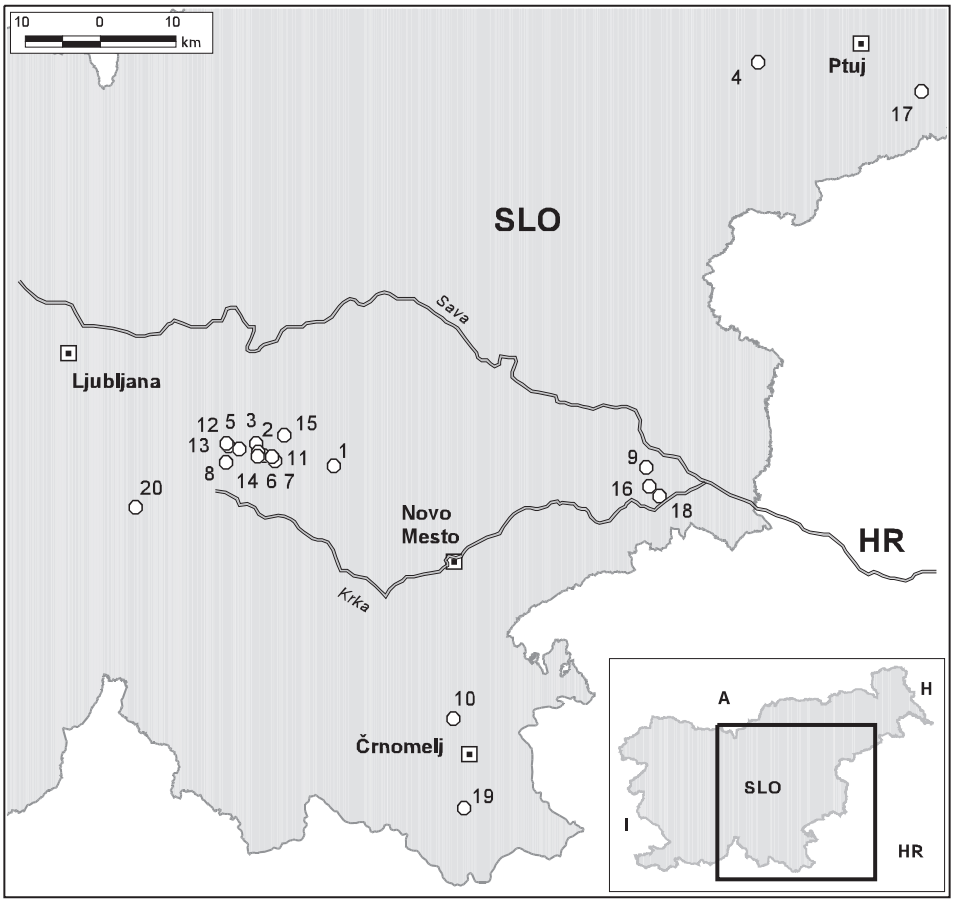

Fig. 1. Locations of relevés in Slovenia (SLO).

mate of central Slovenia (OGRIN 1996). Typical of this type are mean October temperatures which are higher than those of April, as well as the sub-continental rainfall regime with a mean annual rainfall of between 1000 and 1300 mm.

The sub-Pannonian phytogeographical region belongs to the type of moderate-continental climate of eastern Slovenia (Pannonian climate) (OGRIN 1996). Typical of this type are mean April temperatures which are higher than those of October or about the same. Rainfall regime is sub-continental with a mean annual rainfall of between 800 and 1000 mm.

Methods

For data collection the Braun-Blanquet approach (BRAUN-BLANQUET 1964, WESTHOFF and VAN DER MAAREL 1973) was used. For data processing the program packages SYN-TAX 2000 (PODANI 2001) and CANOCO (TER BRAAK and ŠMILAUER 1998) were applied.

We used original relevés. The PCoA (Principal Coordinate Analysis) method, together with the Wishart's Similarity Ratio as the coefficient of similarity and DCA (Detrended Corespondence Analysis), were applied. Cover and frequency values were transformed according to VAN DER MAAREL (1979). The relevés in the analytic table (Tab. 1) were arranged applying numerical methods.

The syntaxonomic nomenclature is according to MUCINA et al. (1993), whereas the nomenclature of vascular plants follows MARTINČIČ et al. (1999), except *Anthemis ruthenica* Bieb.

Results and Discussion

Synmorphology and phytosociological structure

The stands are dominated by *Ambrosia artemisiifolia*, which constitutes the upper herb layer. It is accompanied by *Chenopodium album*, *Artemisia vulgaris*, *Amaranthus retroflexus*, *Atriplex patula*, *Conyza canadensis* and *Lactuca serriola*.

More or less common in the lower layer are *Plantago lanceolata*, *Plantago major*, *Polygonum aviculare* agg. and *Potentilla reptans*.

Species of the alliance *Dauco-Melilotion* (such as *Daucus carota*, *Erigeron annuus*, *Cichorium intybus*) are well represented, as well as character species of the class *Artemisietea*: *Artemisia vulgaris*, *Convolvulus arvensis*, *Elytrigia repens*.

Well represented are the characteristic species of the class *Stellarietea mediae*: *Chenopodium album*, *Echinochloa crus–galli*, *Chenopodium polyspermum*, *Atriplex patula*, *Conyza canadensis* and others.

An important share among the accompanying species is constituted by the species of cultivated meadows of the class *Molinio-Arrhenatheretea*: *Achillea millefolium* agg., *Plantago lanceolata*, *Taraxacum officinale*, *Potentilla reptans*, *Galium mollugo*.

Synecology

The stands are found on recently deposited rubble, recently levelled terrain, along roads, on gravel sites, and more rarely in fields or stubble. In its original stands Ragweed grows as a dominant pioneer on abandoned farming areas, and is also common along roads, construction sites and other disturbed areas (BAZZAZ 1974).

In the study area Ragweed is most common on embankments along recently constructed roads. BAZZAZ (1968) estimates that its coverage is especially substantial in fields which were ploughed in early spring and then left alone. The seeds of Ragweed germinate at or near the soil surface in daylight (BAZZAZ 1968), which is typical of open, disturbed sites, such as newly developed road embankments. Characteristic of the species is a high production of seeds, which are extremely resistant and are viable even after bedding twenty years and more in the seed bank (KOFOL-SELIGER 2001). Once the seeds from the seed bank are exposed due to anthropogenic impact (such as construction or cultivation), Ragweed will totally dominate the site.

Tab. 1. *Odontito-Ambrosietum artemisiifoliae* Jarolímek et al. 1997 in Slovenia and communities dominated by *Ambrosia artemisiifolia*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Number of relève	76	109	77	101	107	111	108	266	296	297	239	267	78	110	269	215	102	268	229	265			
Relevé area (m^2)	17	20	10	20	15	25	20	10	10	10	8	30	50	25	10	10	8	10	50	10			
Altitude (m)	300	320	320	245	310	310	320	390	168	189	302	333	340	310	331	160	200	152	154	531			
Exposition	SW	SW	/	/	/	/	SW	/	/	/	S	/	/	/	/	/	/	/	/	/			
Slope (degrees)	20	30	/	/	/	/	30	/	/	/	10	/	/	/	/	/	/	/	/	/			
Cover herb layer (%)	100	60	90	100	100	100	60	70	70	90	90	80	90	100	70	70	60	80	70	100			
Number of sp.	15	23	22	25	18	18	27	21	14	27	17	26	25	19	21	15	12	15	20	17	1	2	3
Characteristic species of the association *Odontito-Ambrosietum artemisiifoliae*																							
Ambrosia artemisiifolia	5	5	4	5	5	4	3	3	4	4	4	3	4	5	4	3	4	4	4	4	100	100	100
Differential species of the association																							
Setaria pumila	.	.	.	.	.	.	1	+	+	1	+	+	.	+	.	.	+	1	2	.	50	50	87
Amaranthus retroflexus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	1	15	42	13
Chenopodium strictum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33	.
Odontites vernus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	20
***Trifolium arvense-Ambrosia artemisiifolia*-Gesellschaft**																							
Trifolium arvense	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	25	100
Dauco-Melilotion																							
Daucus carota	+	+	+	.	.	.	+	+	.	1	.	.	+	+	1	+	.	.	.	+	55	67	7
Erigeron annuus	+	.	+	.	+	.	+	+	2	1	.	.	.	.	.	1	.	.	+	+	50	8	13
Cichorium intybus	.	.	+	.	.	+	.	+	.	+	+	.	+	.	+	.	.	.	.	.	35	25	.
Picris hieracioides	+	+	.	.	.	.	1	.	.	1	.	.	.	.	.	+	.	.	.	.	25	17	.
Verbena officinalis	.	.	.	r	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	10	8	.
Melilotus albus	.	.	.	.	.	.	.	.	.	2	.	.	.	.	.	.	1	.	.	.	10	8	.
Echium vulgare	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33	.
Reseda lutea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Melilotus officinalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.

Tab. 1. – continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Verbascum densiflorum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Artemisietea																							
Artemisia vulgaris	.	+	1	1	.	.	+	+	+	2	+	+	+	.	.	.	+	.	.	.	55	75	47
Convolvulus arvensis	+	+	+	+	+	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	35	33	60
Elytrigia repens	.	.	.	.	1	1	.	1	.	.	.	1	.	.	.	+	.	.	.	+	30	17	80
Silene latifolia ssp. *alba*	.	.	.	.	.	.	+	.	.	.	2	.	+	.	.	.	.	.	.	+	20	25	40
Tussilago farfara	.	.	.	r	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	15	.	.
Linaria vulgaris	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	.	.	.	.	.	10	17	.
Carex hirta	.	.	.	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	10	.	.
Saponaria officinalis	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	8	.
Medicago sativa	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	42	.
Dipsacus laciniatus	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	5	.	.
Carduus acanthoides	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33	7
Chondrilla juncea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	25	27
Tanacetum vulgare	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	25	.
Arctium lappa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	25	.
Malva neglecta	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Ballota nigra	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Berteroa incana	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Stellarietea mediae																							
Chenopodium album	1	+	1	1	+	+	.	.	1	.	+	+	1	+	+	.	1	1	2	2	80	25	100
Polygonum aviculare agg.	.	.	1	+	.	.	+	1	1	.	+	+	.	.	+	+	+	+	+	1	65	58*	93
Echinochloa crus-galli	.	.	+	+	.	.	.	+	.	1	+	2	+	1	.	.	.	1	+	1	55	42	33
Atriplex patula	.	+	.	2	.	+	2	1	.	+	1	2	.	.	+	.	.	.	.	.	45	25	7
Chenopodium polyspermum	+	.	.	+	+	.	+	+	.	.	.	+	+	+	.	.	.	.	+	.	45	.	.
Conyza canadensis	.	.	.	.	+	.	+	1	.	+	.	.	+	+	.	+	.	.	.	2	40	33	87
Cirsium arvense	.	.	+	1	.	1	+	.	.	.	.	+	.	+	.	.	.	.	+	.	35	.	47

Tab. 1. – continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Setaria viridis	1	+	.	+	.	.	.	.	.	+	.	.	.	.	+	.	+	+	.	.	35	8	27
Polygonum persicaria	1	+	.	.	.	.	1	.	+	.	.	1	.	.	.	.	.	+	1	.	35	.	7
Fallopia convolvulus	.	.	.	.	.	.	2	+	1	.	.	.	.	+	+	.	.	.	+	.	30	.	73
Lactuca serriola	.	.	.	.	.	+	.	+	+	+	.	.	.	+	.	.	.	.	.	+	30	25	53
Digitaria sanguinalis	.	.	.	+	.	.	.	+	1	.	+	.	.	.	.	.	.	+	.	.	25	.	47
Capsella bursa-pastoris	.	.	.	.	+	.	.	.	.	.	.	.	+	.	+	.	.	.	.	1	20	.	13
Cynodon dactylon	.	.	.	1	.	.	.	.	.	+	.	.	.	.	.	.	.	+	+	.	20	17	.
Sonchus asper	.	.	.	.	.	.	+	+	.	.	.	+	.	.	.	.	.	.	.	+	20	.	.
Mentha arvensis	.	1	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	.	1	.	20	.	.
Stellaria media	.	.	.	+	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	15	8	53
Galinsoga parviflora	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	1	15	25	33
Polygonum lapathifolium	.	.	.	.	.	.	.	.	.	.	.	+	1	+	.	.	.	.	.	.	15	8	.
Sonchus oleraceus	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	+	.	.	15	.	.
Myosotis arvensis	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	.	.	.	10	.	20
Anagallis arvensis	.	.	.	.	.	.	.	.	.	+	.	.	+	.	.	.	.	.	.	.	10	.	60
Amaranthus powellii	.	.	.	+	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	10	17	.
Anthemis arvensis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	+	.	10	8	.
Veronica arvensis	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	+	.	.	.	.	10	.	7
Oxalis stricta	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	2	.	10	.	7
Geranium molle	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	10	.	.
Chamomilla recutita	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	10	.	.
Sorghum halepense	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+	.	.	.	10	.	.
Cerastium glomeratum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	10	.	.
Panicum capillare	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	10	.	.
Viola arvensis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	5	.	67
Papaver rhoeas	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	5	.	27
Veronica persica	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	5	.	13
Matricaria perforata	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	5	33	60

Tab. 1. – continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Scleranthus annuus	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	20
Panicum miliaceum	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	5	17	7
Equisetum arvense	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	5	17	7
Anthemis ruthenica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	73
Vicia hirsuta	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	67
Amaranthus hybridus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20
Centaurea cyanus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	20
Atriplex tatarica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	42	.
Anchusa officinalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8	27
Oxalis dillenii	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33
Erodium cicutarium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33
Consolida regalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33
Falcaria vulgaris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	13
Vicia villosa	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	27
Portulaca oleracea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8	7
Descurainia sophia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Eragrostis minor	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Molinio-Arrhenatheretea																							
Achillea millefolium agg.	+	1	+	+	1	+	+	.	.	.	+	+	1	.	1	+	.	+	1	+	75	67	20*
Plantago lanceolata	.	+	+	+	+	.	+	.	.	.	+	+	+	+	1	+	+	.	1	.	65	42	20
Taraxacum officinale	.	+	+	+	.	.	+	+	1	+	.	+	+	+	+	+	.	.	.	.	60	33	67
Potentilla reptans	+	1	+	+	2	2	1	+	.	+	.	.	.	.	.	.	.	.	+	.	50	8	.
Galium mollugo	+	+	.	.	.	+	+	.	.	+	.	.	+	.	+	.	+	.	.	.	40	.	13
Medicago lupulina	.	.	.	.	.	.	+	.	.	.	.	+	+	+	+	+	.	.	.	.	30	50	27
Arrhenatherum elatius	+	.	1	+	1	+	.	.	.	.	.	.	.	.	+	.	.	.	.	.	30	8	.
Ranunculus repens	.	.	.	.	.	1	.	.	.	.	.	+	+	1	+	+	.	.	.	.	30	.	.
Dactylis glomerata	.	+	+	.	+	+	+	.	.	.	.	.	.	.	.	.	+	.	.	.	30	.	.

Tab. 1. – continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Pastinaca sativa	.	+	+	.	.	+	1	.	+	+	.	.	.	.	.	.	.	.	.	.	30	.	.
Trifolium repens	.	.	.	.	.	.	.	.	.	.	.	+	+	+	+	+	.	.	.	.	25	25	20
Trifolium pratense	.	1	.	.	.	.	.	.	.	+	.	+	+	1	.	.	.	.	.	.	25	17	40
Centaurea jacea	+	+	+	.	.	.	.	.	.	.	.	.	+	.	.	1	.	.	.	.	25	.	.
Vicia cracca	+	.	+	.	.	.	+	.	.	+	.	.	.	.	+	.	.	.	.	.	25	.	.
Festuca pratensis	.	+	1	+	+	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	25	.	.
Rumex obtusifolius	.	.	.	.	+	+	.	.	.	.	.	+	+	.	.	.	.	.	.	.	20	.	.
Centaurea nigrescens	.	.	.	.	.	.	.	.	+	+	.	.	.	.	+	.	.	.	+	.	20	.	.
Stachys palustris	.	+	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	+	.	15	.	.
Poa trivialis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	+	15	.	.
Lotus corniculatus	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	.	.	.	10	8	.
Leucanthemum ircutianum	.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	.	.	.	.	10	.	.
Ranunculus acris	.	+	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	10	.	.
Lolium perenne	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	5	42	.
Agrostis stolonifera	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	8	.
Cirsium oleraceum	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.
Holcus lanatus	.	.	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.
Phalaris arundinacea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	5	.	.
Other species																							
Plantago major	.	.	1	.	+	.	.	+	+	+	.	+	+	+	+	.	.	+	.	+	55	33	40
Calystegia sepium	.	+	.	+	.	+	+	.	.	.	+	1	.	+	.	.	.	+	.	.	40	.	.
Glechoma hederacea	.	+	.	+	+	.	.	.	.	.	.	+	.	.	.	.	.	.	+	.	25	.	.
Polygonum mite	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	+	+	.	.	15	.	.
Bidens tripartita	.	.	.	+	.	.	.	.	.	+	+	.	.	.	.	.	.	.	.	.	15	.	.
Fallopia dumetorum	.	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	10	17	.
Galeopsis speciosa	.	.	.	.	.	.	.	.	.	.	1	.	+	.	.	.	.	.	.	.	10	.	.
Aegopodium podagraria	.	+	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	10	.	.

Tab. 1. – continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Galium verum	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	10	17	.
Pimpinella saxifraga	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	10	8	.
Xanthium strumarium	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	5	17	.
Urtica dioica	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	5	25	.
Rubus caesius	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	5	8	7
Cruciata glabra	+	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5	.	.
Eupatorium cannabinum	.	.	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	5	.	.
Populus nigra	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	33	.
Rorippa sylvestris	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	25	.
Poa annua	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	17	.
Solidago gigantea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8	13
Gypsophila muralis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	47
Herniaria hirsuta	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	47
Other species																					37	51	24

Legend:
1. *Odontito-Ambrosietum* – ŠILC hoc loco (20 relevés)
2. *Odontito-Ambrosietum* – JAROLÍMEK et al. (1997) (12 relevés)
3. *Trifolium arvense-Ambrosia artemisiifolia*-Gesellschaft – PINKE (2000) (15 relevés)

Dates and locations of relevés given in Tab. 1.

1. 2. 8. 2000, Dolenjska, Trebnje, Breza, Pluska, along the road,
2. 30. 8. 2000, Dolenjska, Ivančna Gorica, Velike Pece, Glogovica, at the motorway crossover, fill roadside slope,
3. 2. 8. 2000, Dolenjska, Ivančna gorica, Studenec, along the road,
4. 23. 8. 2000, Štajerska, Šikole, Dravsko polje, newly deposited sand along the road,
5. 30. 8. 2000, Dolenjska, Ivančna gorica, stadium, sand and building material, macadam,
6. 30. 8. 2000, Dolenjska, Ivančna Gorica, Artiža vas, discarded soil between the fields,
7. 30. 8. 2000, Dolenjska, Dob pri Šentvidu, Vidač, at the motorway crossover, cut roadside slope,
8. 22. 8. 2001, Dolenjska, Ivančna gorica, Kršišče pod Brezovico, discarded inert waste from IMP Livar,
9. 13. 9. 2001, Krška kotlina, Drnovo, corn stubble,
10. 20. 9. 2001, Bela krajina, Kot pri Semiču, parking lot at the Mizarstvo Rom,
11. 24. 7. 2001, Dolenjska, Dob pri Šentvidu, highway roadside slope, near Rdeči Kal,
12. 22. 8. 2001, Dolenjska, Ivančna gorica, Zgornja Drama, levelled terrain along highway,
13. 2. 8. 2000, Dolenjska, Zg. Draga, Malo Hudo, soil dump for the construction of the motorway,
14. 30. 8. 2000, Dolenjska, Ivančna Gorica, Artiža vas, under the motorway crossover, levelled terrain, sand,
15. 24. 8. 2001, Dolenjska, Sela at the village of Radohova vas, deposited soil along the road,
16. 14. 6. 2001, Krška kotlina, Hrastje at Cerklje, deposited soil,
17. 23. 8. 2000, Štajerska, Siget, Dravsko polje, gravel along the Drava river,
18. 23. 8. 2001, Krška kotlina, Cerklje at the Krka river, deposited soil along the road,
19. 19. 7. 2001, Bela krajina, Dragatuš, cornfield,
20. 22. 8. 2001, Dolenjska, Turjak, Laporje, deposited soil, sand.

Less frequent species in alphabetic order; number; cover value:

Aegopodium podagraria 2: +, 15: +; *Agrostis stolonifera* 6: +; *Amaranthus powellii* 4: +, 7: +; *Anagallis arvensis* 10: +, 13: +; *Anthemis arvensis* 16: 1, 19: +; *Apera spica-venti* 13: +; *Arctium* sp. 10: 1; *Arenaria serpyllifolia* 16: 1, 20: +; *Aster novae-angliae* 2: 2; *Barbarea vulgaris* 17: +; *Brassica oleracea* 1: 1; *Brassica* sp. 6: +; *Centaurea stenolepis* 12: +, 14: +; *Cerastium glomeratum* 15: +, 16: +; *Chamomilla recutita* 16: +, 17: +; *Chelidonium majus* 11: +; *Cirsium oleraceum* 1: +; *Cruciata glabra* 1: +; *Euonymus europaea* 5: r; *Eupatorium cannabinum* 13: r; *Euphorbia helioscopia* 19: +; *Fallopia dumetorum* 2: +, 17: +; *Festuca rubra* agg. 6: +; *Fumaria officinalis* 16: +; *Galega officinalis* 17: +; *Galeopsis* sp. 7: r; *Galeopsis speciosa* 11: 1, 13 +; *Galium verum* 1: +; *Geranium dissectum* 12: +; *Geranium molle* 4: +, 20: +; *Holcus lanatus* 17: +; *Hypericum perforatum* 15: +; *Knautia arvensis* 6: +, 16: +; *Lathyrus pratensis* 15: +; *Legousia speculum-veneris* 16: +; *Leontodon autumnalis* 15: +; *Lepidium virginicum* 17: +; *Leucanthemum ircutianum* 13: +, 14: +; *Lolium multiflorum* 14: +; *Lolium perenne* 12: +; *Lotus corniculatus* 13: +, 15: +; *Microrrhinum minus* 13: +; *Myosotis arvensis* 7: +, 16: +; *Oxalis stricta* 10: +, 19: 2; *Panicum capillare* 10: +, 20: +; *Petrorhagia saxifraga* 16: +; *Phalaris arundinacea* 17: +; *Phleum pratense* 12: +; *Pimpinella saxifraga* 5: +, 15: +; *Polygala vulgaris* 15: +; *Polygonum orientale* 2: +; *Prunella vulgaris* 19: +; *Ranunculus acris* 2: +, 7: +; *Rubus caesius* 11: +; *Senecio vulgaris* 4: r; *Silene* sp. 17: +; *Sinapis arvensis* 12: +; *Solanum nigrum* 1: +; *Sonchus* sp. 4: +; *Sorghum halepense* 9: +, 17: +; *Stachys sylvatica* 13: r.; *Urtica dioica* 20: 1; *Verbascum austriacum* 17: +; *Veronica arvensis* 10: +, 16: +; *Viola* sp. 14: +; *Xanthium strumarium* 17: +.

Other communities with *Ambrosia artemisiifolia*

Ragweed stands were first mentioned by ELIÁŠ (1987) for Slovakia. MUCINA (1993) created the syntaxon *Odontito-Ambrosietum*, without presenting any relevé material. *Ambrosia artemisiifolia*, *Odontites vernus*, *Plantago lanceolata*, *Achillea millefolium* and *Daucus carota* are mentioned as important species. The association was validated by

JAROLÍMEK et al. (1997). The association was classified into the alliance *Dauco-Melilotion* and the class *Artemisietea*. The characteristic species of the association are *Odontites vernus* and *Ambrosia artemisiifolia*, whereas *Amaranthus retroflexus*, *Chenopodium strictum* and *Setaria pumila* are mentioned as differential species.

Similar stands, *Atriplici nitentis-Ambrosietum,* have been described on banks of deposited waste material by SMETANA (1999), but without the table material. They are classified into the class *Artemisietea*. It is our assumption that these are stands similar in nature.

Stands dominated by Ragweed have been also described by PINKE (2000), who classified them as *Trifolium arvense-Ambrosia artemisiifolia*-Gesellschaft and included them in the class *Stellarietea mediae*. He describes the community as fragmentary. The stubble community changes due to the invasion of Ragweed on the stubbly field. MUCINA (1993) mentions the association *Odontito-Ambrosietum* for Hungary, which leads us to the conclusion that *Trifolium arvense-Ambrosia artemisiifolia*-Gesellschaft presents a stage of succession into the association *Odontito-Ambrosietum.*

Some stands classified by HULINA (1978) in the association *Echinochloo-Setarietum pumile* are also similar to the stands described so far, as Ragweed has a high coverage, whereas the species of the class *Stellarietea mediae* show minor cover.

Syntaxonomy

Syntaxonomic classification is difficult due to a similar number of species of the classes *Stellarietea mediae* and *Artemisietea*. We therefore compared the stands investigated with similar associations of the class *Stellarietea mediae* and the alliance *Dauco-Melilotion* of the class *Artemisietea* from Slovenia in the synoptic table (Tab. 2). Transitional character of the stands between both higher syntaxa is manifest. Nevertheless, we can consider the occurrence of the species *Stellarietea mediae* as a succession remnant of the community of annual weeds. PINKE (2000) came to the same conclusion. Due to their dynamic role he treats the stands with Ragweed as a fragmentary community, even MUCINA (1993) in Hungary mentioning the association *Odontito-Ambrosietum.*

Species of the class *Artemisietea* are rare in the associations classified in the class of *Stellarietea mediae* in Table 2, since cultivation prevents the growth of perennial weeds. On the other hand, there are more annual weeds in the associations of the class *Artemisietea*. This points to a transition from communities of annual weeds to perennial ruderal communities. As a rule, in vegetation subject to heavy human impact characteristic species are highly inconstant among different syntaxonomical levels (PIGNATTI et al. 1995). In this way we can explain the high number of species from other classes in the stands investigated.

The stands are mostly characterised by *Ambrosia artemisiifolia*, which is according to JAROLÍMEK et al. (1997) the characteristic species of the association *Odontito-Ambrosietum* and the alliance *Dauco-Melilotion.* It dominates the stands and gives them their typical appearance.

Species of the class *Stellarietea mediae* on the other hand, amply differentiate stands with *Ambrosia artemisiifolia* from others of the class *Artemisietea*. JAROLÍMEK et al. (1997) also selected the differential species of the association from the species of the class *Stellarietea mediae*. Regardless of the numerous species of the class *Stellarietea mediae*, we decided to classify the stands in the class *Artemisietea*.

Tab. 2. Associations of the class *Stellarietea mediae* and the alliance *Dauco-Melilotion* (class *Artemisietea*) in Slovenia.

		1	2	3	4	5	6	7	8	9	10	11
	Number of relevés	17	14	14	20	10	11	2	11	5	4	10
	Echinochloo-Setarietum											
DCS 1	*Echinochloa crus-galli*	76	86	36	55	.	.	.	.	.	.	.
DCS 1	*Galinsoga parviflora*	100	.	21	15	.	.	.	9	.	.	.
DCS 1, dif. 4	*Amaranthus retroflexus*	71	64	100	15	20	.	.	.	.	.	.
DCS 1	*Chenopodium album*	100	79	86	80	10	.	.	9	20	75	20
DCS 1, dif. 4	*Setaria pumila*	53	50	50	50	50	45	.	18	.	.	10
DCS 1	*Cirsium arvense*	41	14	21	35	40	18	.	27	20	.	40
DCS 1	*Fallopia convolvulus*	6	14	7	30	.	.	.	9	.	25	30
	Oxalido-Chenopodietum polyspermi											
char. 2	*Chenopodium polyspermum*	12	93	29	45	.	.	.	.	.	25	.
char. 2	*Oxalis stricta*	.	14	7	10	.	9	.	.	20	50	20
	Mercurialietum annuae											
char. 3	*Mercurialis annua*	41	29	100	.	.	9	.	.	.	.	.
	Odontito-Ambrosietum											
char. 4	*Ambrosia artemisiifolia*	.	.	.	100	.	.	.	.	.	.	10
	Dauco-Picridetum											
char. 5, 6	*Picris hieracioides*	.	.	.	25	90	91	2	18	60	50	.
char. 5, 6	*Daucus carota*	6	.	14	55	100	100	2	73	80	100	60
	Echio-Melilotetum											
char. 7, 8, 9, 10	*Melilotus albus*	.	.	7	10	20	.	2	73	60	100	40
char. 7, 8, 9, 10	*Melilotus officinalis*	.	.	.	.	50	45	1	82	80	100	.
char. 7, 8, 9, 10	*Echium vulgare*	.	.	.	.	.	.	1	36	80	.	.
	Tanaceto-Artemisietum											
char. 11	*Tanacetum vulgare*	.	.	.	.	.	.	.	.	40	75	100
char. 11	*Artemisia vulgaris*	6	.	.	55	.	18	2	82	.	100	90
	POLYGONO-POETEA											
	Plantago major	.	36	.	55	40	.	1	45	.	50	20
	Polygonum aviculare agg.	24	57	21	65	10	.	.	9	.	25	.
	Poa annua	29	.	7	.	.	.	.	9	20	25	.
	BIDENTETEA											
	Polygonum lapathifolium	29	71	.	15	.	.	.	9	.	25	.
	Bidens tripartita	18	36	.	15	.	.	.	.	.	.	10
	Rorippa sylvestris	24	14	7	.	.	.	.	18	.	.	.
	Polygonum mite	.	.	.	15	.	.	.	.	.	25	20
	STELLARIETEA MEDIAE											
	Lactuca serriola	6	7	21	30	10	36	1	.	20	.	10
	Polygonum persicaria	59	71	50	35	.	9	.	18	.	25	10
	Anagallis arvensis	12	29	36	10	50	18	.	9	.	25	.

Tab. 2. – continued

	1	2	3	4	5	6	7	8	9	10	11
Conyza canadensis	.	21	.	40	40	18	.	36	40	50	20
Sonchus asper	29	43	43	20	.	9	.	36	40	.	20
Capsella bursa-pastoris	65	57	64	20	.	.	.	9	20	.	20
Sonchus oleraceus	35	57	29	15	.	9	.	27	.	25	.
Solanum nigrum	24	29	71	5	40	18	.	.	.	.	.
Setaria viridis	18	14	43	35	.	55	.	.	.	.	.
Cynodon dactylon	6	14	14	20	40	.	.	.	.	.	.
Digitaria sanguinalis	41	36	36	25	.	18	.	.	.	.	.
Senecio vulgaris	29	50	71	5	20	.	.	.	.	.	.
Veronica persica	100	64	100	5	.	.	.	18	.	.	.
Diplotaxis muralis	41	7	36	.	.	9	1	.	.	.	.
Geranium columbinum	.	14	.	.	30	.	1	18	.	.	10
Amaranthus hybridus agg.	71	29	50	10	.	.	.	.	.	.	.
Stellaria media	88	93	100	15	.	.	.	.	.	.	.
Cerastium glomeratum	.	29	.	10	.	.	1	.	.	50	.
Viola arvensis	.	.	7	5	.	.	.	9	.	.	10
Euphorbia helioscopia	35	57	29	5	.	.	.	.	.	.	.
Geranium dissectum	.	.	7	5	40	.	.	.	.	.	10
Sinapis arvensis	.	50	.	5	.	.	1	.	.	25	.
Lamium purpureum	29	14	29	.	.	.	.	.	.	25	.
Sonchus arvensis	18	14	.	.	20	.	.	.	.	.	10
Apera spica-venti	.	.	.	5	.	.	.	.	40	.	10
Sorghum halepense	12	.	.	10	20	.	.	.	.	.	.
Anthemis arvensis	.	.	.	10	.	9	.	.	20	.	.
Fumaria officinalis	.	21	14	5	.	.	.	.	.	.	.
Diplotaxis tenuifolia	.	.	.	.	.	.	1	9	20	.	.
Amaranthus patulus	24	7	21	.	.	.	.	.	.	.	.
Lamium amplexicaule	6	7	7	.	.	.	.	.	.	.	.
Anisantha sterilis	6	7	.	.	.	9	.	.	.	.	.
Atriplex patula	.	7	.	45	.	.	.	.	.	.	.
Geranium molle	.	.	.	10	.	.	.	.	.	25	.
Myosotis arvensis	.	.	.	10	.	18	.	.	.	.	.
Mentha arvensis	12	.	.	20	.	.	.	.	.	.	.
Lolium multiflorum	.	.	7	5	.	.	.	.	.	.	.
Panicum capillare	.	.	.	10	.	9	.	.	.	.	.
Matricaria perforata	.	.	.	5	.	.	.	.	20	.	.
Cerinthe minor	.	.	.	.	10	.	.	.	20	.	.
Amaranthus blitum	.	7	21	.	.	.	.	.	.	.	.
Erodium cicutarium	6	.	14	.	.	.	.	.	.	.	.
Amaranthus graecizans	6	7	.	.	.	.	.	.	.	.	.
Portulaca oleracea	24	14	.	.	.	.	.	.	.	.	.
Chenopodium ficifolium	6	14	.	.	.	.	.	.	.	.	.
Bromus hordeaceus	.	.	.	.	.	.	.	18	20	.	.
Crepis taraxacifolia	.	.	7	.	.	27	.	.	.	.	.
Lepidium virginicum	.	.	.	5	.	.	.	.	.	25	.
ARTEMISIETEA											
Convolvulus arvensis	35	43	57	35	50	55	1	64	40	25	30
Elytrigia repens	12	14	7	30	50	36	2	73	20	.	40
Erigeron annuus	18	7	.	50	30	27	.	73	60	75	90
Cichorium intybus	.	14	.	35	40	27	1	64	80	25	60
Verbena officinalis	.	.	7	10	.	9	.	27	.	50	20
Linaria vulgaris	.	.	.	10	30	64	.	.	40	.	20

Tab. 2. – continued

	1	2	3	4	5	6	7	8	9	10	11
Silene latifolia ssp. *alba*	.	.	.	20	.	.	.	18	20	.	20
Tussilago farfara	.	.	.	15	.	.	.	18	.	50	10
Saponaria officinalis	.	.	.	5	.	.	.	27	.	75	.
Medicago sativa	.	.	.	5	.	27	.	.	20	.	.
Myosoton aquaticum	.	.	.	.	.	.	.	9	.	25	20
Oenothera biennis	.	.	.	.	.	.	.	.	40	25	20
Reseda lutea	.	.	.	.	30	36	.	.	60	.	.
Silene vulgaris	.	.	.	.	10	9	.	.	.	25	.
Salvia verticillata	.	.	.	.	.	.	.	36	60	.	.
Cirsium vulgare	.	.	.	.	.	.	.	55	.	.	20
Verbascum austriacum	.	.	.	5	.	.	.	.	.	50	.
GALIO-URTICETEA											
Calystegia sepium	41	50	36	40	30	27	.	18	40	25	70
Eupatorium cannabinum	.	.	.	5	.	.	1	18	20	50	30
Rubus caesius	.	.	.	5	.	9	.	27	20	25	60
Glechoma hederacea	.	.	7	25	.	9	.	9	40	.	.
Urtica dioica	.	.	.	5	.	.	.	36	60	25	40
Aristolochia clematitis	.	7	14	.	10	18	1	.	.	.	.
Clematis vitalba	.	.	.	.	40	18	1	27	.	25	.
Aegopodium podagraria	.	7	.	10	.	.	.	.	20	.	10
Helianthus tuberosus	.	7	.	.	.	.	.	9	.	50	10
Galeopsis pubescens	.	.	.	.	.	.	.	36	20	.	20
Galium aparine	.	.	.	.	.	.	.	.	20	25	20
Galeopsis speciosa	.	.	.	10	.	.	.	.	.	50	.
Lamium maculatum	.	.	.	.	.	.	.	9	.	50	.
Solidago gigantea	.	.	.	.	.	.	.	.	.	25	30
Echinocystis lobata	.	.	.	.	.	.	.	.	.	25	10
Fallopia dumetorum	.	.	.	10	.	.	.	.	.	.	20
MOLINIO-ARRHENATHERETEA											
Medicago lupulina	6	36	14	30	30	18	.	73	60	75	10
Trifolium pratense	6	7	7	25	.	9	1	73	80	100	30
Pastinaca sativa	.	7	.	30	40	27	2	100	60	100	40
Trifolium repens	12	21	14	25	50	.	1	64	.	25	40
Potentilla reptans	.	7	.	50	20	18	.	18	80	25	30
Plantago lanceolata	.	.	.	65	50	18	1	36	100	50	40
Ranunculus repens	12	21	.	30	.	9	.	36	40	50	50
Vicia cracca	.	.	7	25	.	18	.	55	60	50	50
Dactylis glomerata	.	.	.	30	30	9	.	55	60	25	90
Taraxacum officinale	41	50	57	60	.	.	.	64	20	.	10
Rumex obtusifolius	18	43	.	20	.	.	.	36	40	75	30
Agrostis stolonifera agg.	6	14	.	5	.	.	.	18	40	25	20
Poa trivialis	12	14	.	15	.	9	.	.	40	25	30
Lolium perenne	18	.	.	5	20	.	.	18	80	50	50
Achillea millefolium agg.	.	.	.	75	.	.	2	73	60	50	80
Galium mollugo agg.	.	.	.	40	.	18	.	64	80	25	70
Lotus corniculatus	.	.	.	10	60	55	.	18	.	25	10
Arrhenatherum elatius	.	.	.	30	.	.	1	27	40	.	10
Holcus lanatus	.	.	.	5	.	.	.	18	60	25	40
Lathyrus pratensis	.	.	.	5	40	27	.	9	.	.	40
Rumex crispus	12	21	14	.	.	.	.	.	.	50	10
Centaurea jacea	.	.	.	25	.	.	.	45	80	.	30
Cirsium oleraceum	.	.	.	5	.	.	.	9	20	.	30
Festuca pratensis	.	.	.	25	.	.	.	27	60	.	30
Ranunculus acris	.	.	.	10	.	.	.	27	.	25	30

Tab. 2. – continued

	1	2	3	4	5	6	7	8	9	10	11
Stachys palustris	18	7	.	15	.	.	.	9	.	.	.
Mentha longifolia	6	.	.	.	.	.	.	.	40	25	20
Carex hirta	.	.	.	10	.	.	.	18	40	.	50
Prunella vulgaris	.	.	.	5	.	.	.	27	20	.	10
Symphytum officinale	.	14	.	.	.	.	.	18	.	50	10
Phleum pratense	.	.	.	5	.	.	.	18	.	.	10
Agrostis gigantea	.	.	.	.	.	.	.	45	20	.	20
Ajuga reptans	.	.	.	.	.	18	.	9	.	25	.
Leucanthemum ircutianum	.	.	.	10	.	9	.	.	.	.	.
Festuca rubra agg.	.	.	.	5	.	.	.	.	.	25	.
Trisetum flavescens	.	.	.	.	.	.	.	36	20	.	.
Rumex acetosa	.	.	.	.	.	.	.	9	.	.	10
Poa pratensis	.	.	.	.	.	.	.	27	.	.	30
Salvia pratensis	.	.	.	.	.	18	.	.	40	.	.
Lycopus europaeus	.	.	.	.	.	.	.	.	.	25	20
Poa angustifolia	.	.	.	.	.	36	.	.	.	25	.
Carex flacca	.	.	.	.	.	9	.	27	.	.	.
Crepis biennis	.	.	.	.	.	.	.	.	20	.	10
Leontodon autumnalis	.	.	.	5	.	.	.	.	.	.	10
Pimpinella major	.	.	.	.	.	.	.	.	20	.	10
Poa compressa	.	.	.	.	.	27	.	.	.	.	10
Ranunculus sardous	.	7	.	.	.	.	.	9	.	.	.
Tragopogon pratensis ssp. *orientalis*	.	.	.	.	30	.	.	18	.	.	.
TRIFOLIO-GERANIETEA											
Trifolium medium	.	.	.	.	.	9	.	.	20	.	10
Medicago falcata	.	.	.	.	10	18	.	.	20	.	.
Agrimonia eupatoria	.	.	.	.	.	.	.	9	.	.	10
Origanum vulgare	.	.	.	.	.	18	.	9	.	.	.
Clinopodium vulgare	.	.	.	.	.	.	.	.	20	.	10
OTHERS											
Hypericum perforatum	6	.	.	10	30	36	.	27	60	.	30
Equisetum arvense	35	21	14	5	.	.	.	9	.	50	40
Microrrhinum minus	6	14	.	5	.	27	.	.	.	50	.
Scrophularia nodosa	.	.	.	.	.	.	.	27	40	50	20
Veronica chamaedrys	.	.	.	.	.	9	.	18	20	.	20
Euphorbia cyparissias	.	.	.	.	40	18	.	.	20	.	10
Arenaria serpyllifolia	.	.	7	10	.	.	.	9	20	.	.
Phalaris arundinacea	.	.	.	5	.	.	.	.	.	50	10
Sanguisorba minor	.	.	.	.	50	36	.	18	.	.	.
Buphthalmum salicifolium	.	.	.	.	.	9	.	9	40	.	.
Petrorhagia saxifraga	.	.	.	5	.	.	.	9	20	.	.
Brassica sp.	.	.	.	10	.	.	.	.	.	25	.
Dorycnium herbaceum	.	.	.	.	.	.	.	18	20	.	.
Fragaria vesca	.	.	.	.	.	9	.	.	20	.	.
Galeopsis tetrahit	.	.	.	.	.	.	.	9	.	.	10
Pimpinella saxifraga	.	.	.	10	.	.	.	.	.	.	10
Scabiosa triandra	.	.	.	.	20	.	1	.	.	.	.
Stachys sylvatica	.	.	.	5	.	.	.	.	.	.	10
Other species	1	3	7	26	8	32	5	33	7	19	27

Legend:
Stellarietea mediae R. Tx., Lohmeyer et Preising in R. Tx. 1950
Panico-Setarion Sissingh in Westhoff et al. 1946
1. *Echinochloo-Setarietum* – SELJAK (1989)

Spergulo-Oxalidion Görs in Oberd. et al. 1967
2. *Panico-Chenopodietum polyspermi* – SELJAK (1989)
Veronico-Euphorbion Sissingh ex Passarge 1964
3. *Mercurialietum annuae* – KALIGARIČ (1992)
Artemisietea vulgaris Lohmeyer et al. in R. Tx. 1950
Dauco-Melilotion Görs 1966
4. *Odontito-Ambrosietum* – ŠILC hoc loco
5. *Dauco-Picridetum* – KALIGARIČ (1992)
6. *Dauco-Picridetum* – SELJAK (1989)
7. *Echio-Melilotetum* – ČARNI (1993)
8. *Echio-Melilotetum* – MARKOVIĆ (1984)
9. *Echio-Melilotetum* – MARKOVIĆ (2000)
10. *Echio-Melilotetum* – ŠILC (2001)
11. *Tanaceto-Artemisietum* – MARKOVIĆ (2000)

DSC- diagnostic species combination
diff.- differential species
char.- characteristic species

The abundant presence of the perennial species of the class *Molino-Arrhenathereatea* is a further reason to exclude *Odontito-Ambrosietum* from the class *Stellarietea mediae*.

A situation similar to the previous is shown in Figure 2. The relevés evidently concentrate into three groups. Axis 1 represents the transition from annual weeds to perennial ruderals. Axis 2 represents the moisture and nitrophile gradient.

In the synoptic part of the table (Tab. 1), communities dominated by the species *Ambrosia artemisiifolia* are presented. All three syntaxa are similar in their floristic composition.

In the stands of the community *Trifolium arvense-Ambrosia artemisiifolia*-Gesellschaft we can find several species characteristic of the class *Stellaretea mediae* with a higher constancy, such as *Stellaria media, Matricaria perforata, Fallopia convolvulus, Anagalis arvensis* and *Viola arvensis*. The species *Trifolium arvense* constantly occurs in the stands and the species *Antemis ruthenica, Vicia hirsuta, Oxalis dillenii* etc., can be found only in these stands.

The comparison of the stands of the association *Odontito-Ambrosietum* from Slovenia and Slovakia points to a relatively close affinity between these stands. However, missing from the stands in Slovenia is the characteristic species *Odontites vernus,* whose constancy is also small in the Slovakian relevés. They are connected by the species from the alliance *Dauco-Melilotion* and the class *Molinio-Arrhenatheretea.* In the stands from Slovenia the species of the class *Stellarietea mediae* have a higher constancy than in the Slovakian stands, with *Chenopodium album, Atriplex patula* and *Echinochloa crus-galli* standing out. The species *Chenopodium polyspermum* and *Polygonum persicaria* are found only in the stands from Slovenia. We observed that the studied stands are well differentiated by the species *Echinochloa crus-galli, Atriplex patula, Chenopodium polyspermum* and *Polygonum persicaria*, which could be included into the differential species proposed by JAROLÍMEK et al. (1997), as they amply differentiate the association *Odontito-Ambrosietum* within the alliance *Dauco-Melilotion* (Tab. 2) in Slovenia.

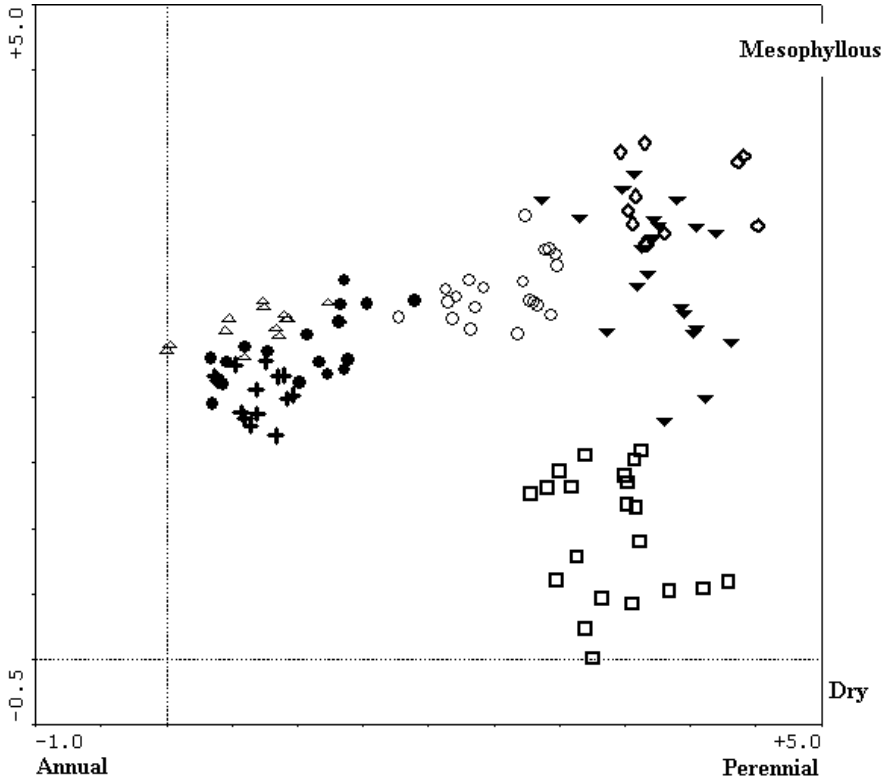

Fig. 2. Ordination (DCA) of the relevés from the synoptic Table 2. Symbols: △*: Echinochloo--Setarietum;* ●*: Panico-Chenopodietum;* ✚*: Mercurialietum annuae;* ○ *Odontito-Ambrosietum;* ▼*: Echio-Melilotetum;* ◇*: Artemisio-Tanacetum;* □*: Dauco-Picridetum.*

Figure 3 shows the ordination of different stands dominated by Ragweed. The relevés of the association *Odontito-Ambrosietum* from Slovenia and Slovakia are concentrated into one group, apart from the relevés of the community *Trifolia arvensis-Ambrosia artemisiifolia,* which are classified into the class *Stellarietea mediae*. Axis 1 shows the gradient from initial to more developed stands and Axis 2 shows the moisture gradient. The stands from Slovenia are more mesophilous (with prevailing species of the class *Molinio--Arrhenatheretea*), whereas the stands from Slovakia are dominated by the continental species typical of warm and dry sites.

We have decided to classify the stands from Slovenia into the association *Odontito--Ambrosietum artemisiifoliae* Jarolímek et al. 1997 and into the class *Artemisietea*.

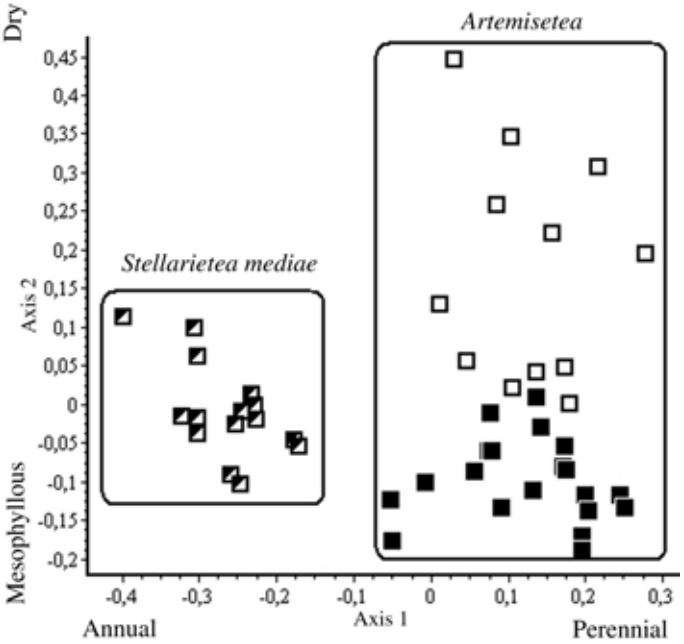

Fig. 3. Ordination (PCoA) of the relevés from the synoptic part of Table 1. Legend: ◩ - *Trifolium arvensis-Ambrosia artemisiifolia* (PINKE 2000), □ - *Odontito-Ambrosietum* (JAROLÍMEK et al. 1997), ■ - *Odontito-Ambrosietum* (ŠILC hoc loco).

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