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Ecological analysis of the flora of saline sites in the northern part of Banat region in Vojvodina Province (Serbia)

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Abstract: A long-term floristic study has determined the presence of 410 plant taxa in the flora of saline sites in northern Banat, the Vojvodina Province, Serbia. Of the determined taxa, 363 were included in the ecological analysis of the saline flora, i.e., all 348 determined species, all 14 determined subspecies and, because of its specific importance, only one variety, *Aster tripolium* var. *pannonicus* (Jacq.) Beck. Based on the analysis of mean values of ecological indexes (LANDOLT, 1977), we concluded that the saline soil of the studied region is moderately dry (F – 2.65), moderately basic (R – 3.30), moderately abundant with nitrogen (N – 3.08) and humus (H – 2.,95), poorly aerated (D – 3.89), highly saline (S_+ - 22.31 %), with a favorable thermal regime (T – 4.03), with the dominance of heliophytes (L – 3.85) which are well adapted to the conditions of the moderate continental climate (K – 3.24) that characterizes the studied region.

Keywords: Vojvodina Province, northern Banat, saline sites, flora, ecological index.

Introduction

Most of the natural plant cover of the Vojvodina Province (Serbia) has been eradicated as the crop and animal productions gradually intensified. There still remains about 10% of land which has a fairly well-developed natural plant cover. These areas exhibit halophytic characteristics because those are predominantly salinas. In recent years these areas have been exposed to the anthropogenic factor at an increasing rate. It is characteristic for the plant cover of the saline sites in the Vojvodina Province that it had developed intrazonally within the zonal forest-steppe community of the alliances *Aceri tatarici-Quercion* Zólyomi et Jakucs 1957 and *Festucion rupicolae* (*sulcatae*) Soó (1940) 1964.

Numerous authors have studied the saline flora and vegetation (SLAVNIĆ 1948; BODROGKÖZY & GYÖRFFY 1970; PARABUĆSKI 1979, 1980; KUJUNDŽIĆ 1980; KNEŽEVIĆ 1994, BUDAK 1998, SÁDOVSKÝ et al., 2004; ELIÁŠ et al., 2008, DÍTĚ et al. 2008; KNEŽEVIĆ et al. 2008). In recent years, in addition to floristic and phytocoenological studies, we have focused our attention on the bioindication ecology of halophytes.

The use of ecological indices as indicator values provides an opportunity to characterize all aspects of a plant species in a succinct, simple and comparable way. When characteristics of plant species are defined in that manner, they may be used for the assessment of ecological characteristics and quality class of a given site. In other words, each plant species may serve as a test organism that reflects the conditions, status and quality of its environment. Such plant species are most sensitive biodiversity indicators which characterize not only parts of their environment but also the entire environment as an integral system, reflecting not only the consequences of processes that take place in the environment but also their causes (STOJANOVIĆ et al. 1994).

The objective of this study was to outline the ecological characteristics of saline sites in northern Banat, the Vojvodina Province, on the basis of an analysis of ecological indices of the recorded taxa.

Materials and methods

The boundaries of the studied region are the watercourses of the rivers Tisza and Zlatica and the state border with Hungary and Romania. The saline sites in the region are predominated by limeless solonetz soils, which possess more or less columnar structure. Solonchak soils occur sporadically, in isolated spots. These soils had developed in consequence to the alluvial salinization by waters from the Carpathian basin (NEJGEBAUER et al. 1971). The subsequent regulation of the Tisza and Zlatica watercourses had prevented surface flooding, resulting in the occurrence of salt leaching in the studied saline sites.

The ecological indexes used in the analysis of basic environmental factors (humidity - F, chemical reaction - R, content of nitrogen and nitrogen compounds - N, content of humus (organomineral substances) - H, dispersion (aeration) of the substrate - D, salinity - S, light - L, temperature - T, and continentality - K) were taken from the publication ‘Ökologische Zeigerwerte zur Schweizer Flora’

(LANDOLT 1977). The taxa which had not been mentioned by LANDOLT were characterized according to the publication 'Monograph of Flora of Vascular Plants on the Saline Soils in the Banat Region (Yugoslavia)" (KNEŽEVIĆ 1994). In that publication, the criteria for determination of ecological indices were the papers of SOÓ (1964-1980), BORHIDY (1993), BODROGKÖZY (1970), KNEŽEVIĆ (1983), KNEŽEVIĆ et al. (1994, 1996, 1998, 2005, 2008), JANJATOVIĆ et al. (1990, 1992, 1995) and MERKULOV et al. (1999) and our own on-site observations. The supplement provides ecological indices for the recorded species, subspecies and one variety. The ecological indices supplied by LANDOLT are given in **bold** characters and those estimated by ourselves in normal characters.

Results and discussion

In a long-term floristic study of the flora of saline sites in the examined region, presence of 410 taxa of vascular plant was determined (KNEŽEVIĆ et al. 2005). Of the determined taxa, 363 were included in the ecological analysis of the saline flora, i.e., all 348 determined species, all 14 determined subspecies and, because of its specific importance, only the variety *Aster tripolium* var. *pannonicus* (Jacq.) Beck.

Tab. 1 shows the following parameters for the analyzed taxa: number of taxa with a certain numerical value of ecological index, their percentages and, except for the relationship with salinity, mean values of the ecological indexes.

Relationship between plants and humidity of the site (F)

The analysis of the ecological indexes for humidity (F) indicated the predominance of plant species with the ecological indexes F_2 (131 taxa; 36.09%), adapted to dry sites, and F_3 (102 taxa; 28.10%), adapted to moderately dry sites. The number of plant species with the ecological index F_1 was lower (53 taxa; 14.60%). Those were xerophytes, i.e., indicators of extremely dry sites. After the xerophytes there followed the indicators of humid sites, i.e., the plant species with the ecological index F_4 (45 taxa; 12.40%). The plant species with the ecological index F_5 were fewest (32 taxa; 8.81%). This group contained indicators of high humidity of the site.

The mean value of the ecological indexes for humidity for the analyzed taxa was 2.65, indicating that the saline sites in the studied region are moderately dry.

Relationship between plants and chemical reaction of the site (R)

There was a large dominance of neutrophilous species with the ecological index R_3 (212 taxa; 58.40%). The proportion of indicators of neutral to basic chemical reaction of the site, designated with the ecological index R_4, was also significant (129 taxa; 35.54%). There was a small number of indicators of acidic substrate, with by the ecological index R_2 (20 taxa; 5.51%). The presence of indicators of highly acidic sites, labeled as R_1, and indicators of highly basic sites, labeled as R_5, was minimal (1 taxon each; 0.27%).

The mean value of the ecological indexes for chemical reaction of the site was 3.30, indicating that the saline sites in the studied region are moderately basic.

Tab. 1. Ecological analysis of flora of saline sites in the northern part of Banat region in the Vojvodina Province

Ecological index	Numerical values of ecological index	Number of taxa	%	Mean value
F – humidity	1	53	14.60	**F – 2.65**
	2	131	36.09	
	3	102	28.10	
	4	45	12.40	
	5	32	8.81	
R – chemical reaction of the site	1	1	0.27	**R - 3.30**
	2	20	5.51	
	3	212	58.40	
	4	129	35.54	
	5	1	0.27	
N - nitrogen and nitrogen compounds	1	21	5.78	**N - 3.08**
	2	81	22.31	
	3	124	34.16	
	4	120	33.06	
	5	17	4.68	
H – humus	1	2	0.55	**H - 2.95**
	2	61	16.80	
	3	255	70.25	
	4	42	11.57	
	5	3	0.83	
D – dispersion (aeration)	1	0	0	**D - 3.89**
	2	5	1.38	
	3	119	32.78	
	4	149	41.05	
	5	90	24.79	
S – salinity	-	282	77.69	
	+	81	22.31	
L – light	1	0	0	**L - 3.85**
	2	2	0.55	
	3	82	22.59	
	4	264	72.73	
	5	15	4.13	
T – temperature	1	0	0	**T – 4.03**
	2	1	0.27	
	3	72	19.83	
	4	204	56.20	
	5	86	23.69	
K – continentality	1	1	0.27	**K - 3.24**
	2	45	12.40	
	3	195	53.72	
	4	108	29.75	
	5	14	3.86	

Relationship between plants and nitrogen and nitrogen compounds (N)

The analysis of the ecological indexes for the contents of nitrogen and nitrogen compounds indicated the prevalence of taxa with the ecological indexes N_3 (124 taxa; 34.16%) and N_4 (120 taxa; 33.06%). The proportion of taxa characterized by the index N_2 was significantly lower (81 taxa; 22.31%). The numbers of indicators of very poor sites, designated with the index N_1, and indicators of sites rich in nutrients, designated with the index N_5, were low (21 taxa or 5.78% and 17 taxa of 4.68%, respectively).

Based on the mean value amounting to 3.08, the saline sites in the studied region were considered to be moderately rich in biogenous nutrients.

Relationship between plants and humus content (H)

The analysis of the ecological indexes for the content of humus indicated a high predominance of taxa with the ecological index H_3 (255 taxa; 70.25%). This characterizes the studied saline sites as moderately rich in organomineral compounds. The indicators of low humus content designated with the ecological index H_2 were considerably fewer (61 taxa; 16.80%). The relative abundance of humus in the substrate was indicated by a small number of taxa with the ecological index H_4 (42 taxa; 11.57%). The numbers of indicators of humic sites, designated with the ecological index H_5, and indicators of sites poor in humus, designated with the ecological index H_1, were quite low (3 taxa or 0.83% and 2 taxa or 0.55%, respectively).

The mean value of the ecological index for humus content was 2.95, describing the studied site as moderately provided with humus.

Relationship between plants and dispersion (aeration) of the substrate (D)

Almost two thirds of the analyzed taxa were designated with the ecological indexes D_4 (149 taxa; 41.05%) and D_5 (90 taxa; 24.79%). Those were plant species adapted to a non-skeletal soil with a heavy mechanical composition. A significant presence of plant species designated with the ecological index D_3 (119 taxa; 32.78%) testified that the saline sites included also some well aerated locations. Indicators of soil with large particles, designated with the ecological index D_2, were scarce (5 taxa; 1.38%), while indicators of immature soil, i.e., plant species labeled with the ecological index D_5, could not be found at the saline sites of the studied region.

The mean value amounting to 3.89 indicates that the studied saline soils had unfavorable dispersion, i.e., poor aeration.

Relationship between plants and salinity (S)

The taxa designated with the ecological index S_+ made more than one fifth of the analyzed flora (81 taxa; 22.31%). This gives the halophytic character to the flora, despite the dominance of plants species designated with the ecological index S_- (282 taxa; 77.69%). The previous statement is based on the fact that the taxa bearing the ecological index S_- include numerous plants species which are tolerant to salinity as well as the species which avoid high salinity of the site by

completing their vegetation in the spring, when salt concentration in the substrate is low due to abundant rainfall.

Relationship between plants and light (L)

Plant species designated with the ecological index L_4 were dominant in the analyzed flora (264 taxa; 72.73%). These species are adapted to full light but they also tolerate a certain degree of shading. The number of taxa with the ecological index L_3 was considerably lower (82 taxa; 22.59%). These species are indicators of half-shade. There was a small number of species with the ecological index L_5 (15 taxa, 4.13%). These species do not tolerate shading. The species designated with the ecological index L_2 were few (2 taxa, 0.55%). They are indicators of full shade. Indicators of deep shade, designated with the ecological index L_1, were absent.

The mean value of 3.85 was an indication of dominance of heliophytes (L_4) over semi-sciophytes (L_3).

Relationship between plants and temperature (T)

The analysis of ecological indexes for temperature showed that thermophilous plant species designated as T_4 (204 taxa, 56.20%) and true thermophiles designated as T_5 (86 taxa, 23.69%) dominated the flora of the studied saline sites. The participation of taxa with the ecological index T_3 was lower (72 taxa, 19.83%). These species were indicators of moderately warm sites. The presence of taxa designated as T_2, indicators of cold sites, was insignificant (1 taxon, 0.27%). Taxa from very cold sites, designated as T_1, were completely absent.

The mean value of 4.03 indicated a favorable temperature regime of the sites.

The analysis of adaptation of the plant species of the studied flora to the continental climate showed that the largest number of plant species were designated with the ecological index K_3 (195 taxa, 53.72%). This was an indication that moderately continental conditions dominated in the studied region. A considerable influence of typical continental conditions resulted in a large presence of taxa designated with the ecological index K_4 (108 taxa, 29.75%). Plant species with the ecological index K_2, indicating an influence of sub-oceanic climate, were present in lower numbers (45 taxa, 12.40%). The number of plant species of typical continental regions, designated with the ecological index K_5, was small (14 taxa, 3.86%). The presence of oceanic plant species, designated with the ecological index K_1, was insignificant (1 taxon, 0.27%).

The mean value of 3.24 confirmed that the moderate continental climate of the studied region was under a considerable influence of the typical continental climate.

Based on the bioindicator values of the analyzed flora, the saline sites in the region surrounded by the rivers Tisza and Zlatica and the state border with Hungary and Romania may be characterized as moderately dry, moderately basic, moderately abundant with nutrients, moderately abundant with humus, but poorly aerated. Their plant cover has halophytic characteristics, with heliophytes predominating under a favorable thermal regime of the moderate continental climate of the studied region.

The obtained results indicate that the saline pastures of northern Banat have a low annual biomass production, as observed earlier for the saline pastures of southeastern Banat (VUČKOVIĆ 1985). Their more productive parts are used primarily for grazing and hay production, and only exceptionally for crop production. The poorest sites should be used for the construction of fishponds and infrastructure facilities, in order to preserve the neighboring tracts of fertile land. Precise locations for the construction of these facilities could be recommended by analyzing the indicator values of individual stands of the studied plant communities.

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Supplement

Taxon	Ecological index								
	F	R	N	H	D	S	L	T	K
Abutilon theophrasti Meddik.	**2**	**3**	**4**	**3**	**4**	**-**	**4**	**5**	**3**
Achillea millefolium L.	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**3**	**3**
A. millefolium L. subsp. *collina* (Becker) Weis.	2	4	2	3	3	-	4	4	4
A. millefolium L. subsp. *pannonica* (Scheele) Hayek	2	3	4	4	3	-	4	4	4
A. setacea W. et K.	**1**	**3**	**2**	**2**	**3**	**-**	**4**	**5**	**5**
Acorellus pannonicus (Jacq.) Palla	**4**	**4**	**4**	**2**	**4**	**+**	**4**	**4**	**4**
Adonis aestivalis L.	**2**	**4**	**2**	**3**	**4**	**-**	**3**	**5**	**3**
A. flammea Jacq.	**2**	**4**	**2**	**3**	**4**	**-**	**3**	**5**	**3**
A. aestivalis L.	**2**	**4**	**2**	**3**	**4**	**-**	**3**	**5**	**3**
Agrimonia eupatoria L.	**2**	**4**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
Agropyrum cristatum (Schreb.) P.B.	2	3	2	3	3	-	4	4	4
A. repens (L.) Beauv.	**3**	**3**	**4**	**2**	**3**	**+**	**4**	**3**	**3**
Agrostis alba L.	**4**	**3**	**3**	**3**	**4**	**-**	**4**	**5**	**2**
Ajuga genevensis L.	**2**	**3**	**3**	**3**	**4**	**-**	**3**	**4**	**4**
Alisma lanceolatum With.	**5**	**3**	**3**	**3**	**5**	**-**	**4**	**4**	**3**
A. plantago-aquatica L.	**5**	**3**	**3**	**3**	**5**	**-**	**4**	**4**	**3**
Allium atropurpureum Waldst. Et Kit.	2	3	2	3	4	-	4	4	3
A. scorodoprasum L.	**4**	**3**	**4**	**4**	**5**	**-**	**3**	**5**	**3**
A. sphaerocephalum L.	**1**	**4**	**2**	**2**	**3**	**-**	**4**	**4**	**4**
A. vineale L.	**2**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**2**
Alopecurus geniculatus L.	**4**	**3**	**4**	**3**	**5**	**+**	**3**	**4**	**3**
A. pratensis L.	**4**	**3**	**4**	**3**	**5**	**-**	**4**	**3**	**3**
Althaea officinalis L.	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**5**	**4**
Amarantus albus L.	**1**	**3**	**4**	**3**	**3**	**-**	**4**	**4**	**3**
A. crispus (Lesp. et Thev.) Terr.	2	3	4	4	3	-	4	4	5
A. retroflexus L.	**2**	**3**	**4**	**3**	**3**	**-**	**4**	**4**	**3**
Anagallis arvensis L.	**3**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
Andropogon ischaemum L.	**2**	**3**	**2**	**2**	**3**	**-**	**5**	**5**	**4**
Antriscus caucalis M. B.	3	3	3	3	4	-	3	3	3
Arenaria serpyllifolia L.	**2**	**3**	**3**	**3**	**3**	**-**	**4**	**4**	**3**
Arrhenatherum elatius (L.) Mert. et Koch	**3**	**3**	**4**	**3**	**4**	**-**	**3**	**4**	**3**
Artemisia absinthium L.	**2**	**4**	**4**	**3**	**4**	**-**	**4**	**4**	**4**
A. austriaca Jacq.	2	3	3	3	3	-	4	4	4
A. maritima L. subsp. *monogyna* (W. et K.) Gams.	2	4	2	2	4	+	4	4	5
A. maritima L. subsp. *salina* (Willd.) Gams.	2	4	2	2	4	+	4	4	5
A. vulgaris L.	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**4**	**3**
Aster tripolium L. var. *pannonicus* (Jacq.) Beck	3	4	2	2	4	+	4	4	4
Astragalus cicer L.	**2**	**4**	**4**	**3**	**3**	**-**	**3**	**4**	**4**
Atriplex hastata L.	3	3	4	3	3	+	4	4	4
A. litoralis L.	3	3	2	2	4	+	3	4	3
A. tatarica L.	3	3	4	2	4	+	3	3	4
Ballota nigra L.	**2**	**3**	**5**	**3**	**4**	**-**	**4**	**5**	**4**
Beckmannia eruciformis (L.) Host.	5	4	4	3	5	+	4	3	4

Supplement – cont.

Taxon	Ecological index								
	F	R	N	H	D	S	L	T	K
Bellis perennis L.	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**3**	**3**
Berteroa incana (L.) DC.	**1**	**3**	**3**	**3**	**3**	**-**	**4**	**4**	**4**
Bidens cernuus L.	**5**	**3**	**5**	**4**	**4**	**-**	**4**	**4**	**3**
B. tripartitus L.	**5**	**3**	**5**	**4**	**4**	**-**	**4**	**4**	**3**
Bolboschoenus maritimus (L.) Palla	**5**	**4**	**3**	**3**	**5**	**+**	**4**	**4**	**3**
B. maritimus (L.) Palla var. *compactus* (Hoffm.)									
B. maritimus (L.) Palla var. *macrostachys* (Wild) Kneuc. f. *macrostachys*									
Bromus comutatus Schrad.	**2**	**3**	**3**	**3**	**5**	**-**	**3**	**4**	**3**
Bromus comutatus Schrad. f. *violaceus* Podp.									
Bromus erectus Huds.	**2**	**4**	**2**	**3**	**4**	**-**	**4**	**4**	**3**
B. inermis Leyss.	**2**	**4**	**3**	**3**	**3**	**-**	**4**	**4**	**4**
B. mollis L.	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**4**	**3**
Bupleurum pachnospermum Pančić	2	3	3	4	3	-	4	5	3
B. tenuissimum L.	**3**	**4**	**3**	**3**	**5**	**+**	**4**	**5**	**1**
Butomus umbellatus L.	**5**	**3**	**4**	**4**	**5**	**-**	**3**	**4**	**3**
Calystegia sepium (L.) R. Br.	**4**	**4**	**4**	**3**	**5**	**-**	**3**	**4**	**2**
Camphorosma annua Pall.	2	4	1	1	4	+	5	4	4
C. annua Pall. f. *nana* Moq.									
Capsella bursa pastoris (L.) Medik.	**2**	**3**	**4**	**3**	**4**	**-**	**4**	**3**	**3**
Carduus acanthoides L.	**1**	**3**	**4**	**3**	**3**	**-**	**4**	**5**	**2**
C. nutans L.	**2**	**4**	**4**	**2**	**3**	**-**	**4**	**4**	**3**
Carex divisa Huds	**4**	**4**	**3**	**3**	**3**	**+**	**5**	**5**	**2**
C. hirta L.	**3**	**3**	**3**	**3**	**4**	**-**	**3**	**4**	**3**
C. nutans Huds.	**3**	**3**	**3**	**3**	**3**	**-**	**4**	**5**	**4**
C. praecox Schreb	**2**	**4**	**2**	**2**	**3**	**-**	**4**	**4**	**4**
C. pseudocyperus L.	**5**	**4**	**3**	**4**	**5**	**-**	**4**	**4**	**4**
C. spicata Huds.	**3**	**3**	**4**	**3**	**5**	**-**	**4**	**3**	**3**
C. stenophylla Wahlbg.	**2**	**4**	**2**	**3**	**3**	**-**	**4**	**5**	**5**
C. vulpina L.	**5**	**4**	**2**	**4**	**4**	**-**	**3**	**4**	**3**
C. vulpina L. f. *minor* Peterm.									
C. vulpina L. f. *longibracteata* Beck									
Carthamus lanatus L.	**1**	**3**	**4**	**3**	**3**	**-**	**4**	**5**	**3**
Centaurea calcitrapa L.	**2**	**4**	**4**	**3**	**5**	**-**	**4**	**5**	**2**
C. cyanus L.	**2**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**4**
C. difusa Lam.	**1**	**4**	**4**	**2**	**3**	**-**	**4**	**5**	**3**
C. jacea L. subsp. *angustifolia* (Schrk.) Gugl.	**3**	**3**	**2**	**4**	**4**	**-**	**4**	**4**	**3**
C. jacea L. subsp. *angustifolia* (Schrk.) Gugl. var. *pannonica* (Heuff.) Gugl.									
C. scabiosa L. subsp. *sadleriana* (Janka) Aschers. et Graebn.	2	4	2	2	3	-	4	4	4
C. solstitialis L.	**2**	**3**	**4**	**2**	**4**	**-**	**4**	**4**	**4**
Centaurium pulchellum (Sw.) Druce.	**3**	**4**	**3**	**2**	**5**	**+**	**4**	**4**	**3**
C. uliginosum (W. et K.) Beck.	3	4	1	3	4	+	4	4	5

Supplement – cont.

Taxon	Ecological index							
	F	R	N	H	D	S	L	T	K
C. umbellatum Gilib.	**3**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
C. umbellatum Gilib. f. *humile* (Dvorak) Soó									
Cephalaria transsilvanica (L.) Schrad.	1	4	1	1	2	-	4	4	3
Cephalaria transsilvanica (L.) Schrad. var. *allionii* (Kern.) Ravy									
Cerastium arvense L.	**2**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
C. banaticum (Roch.) Heuff.	3	3	3	3	4	-	4	3	3
C. brachypetalum Desp.	**1**	**4**	**1**	**3**	**3**	**-**	**4**	**4**	**3**
C. caespitosum Gilib.	**3**	**3**	**3**	**3**	**4**	**-**	**3**	**3**	**3**
C. dubium (Bast.) Schwarz.	**4**	**3**	**3**	**3**	**4**	**-**	**3**	**5**	**2**
C. pumilum Curt.	**1**	**4**	**2**	**3**	**3**	**-**	**4**	**4**	**2**
C. semidecandrum L.	**2**	**4**	**2**	**3**	**3**	**-**	**4**	**4**	**3**
Chenopodium album L.	**2**	**3**	**4**	**3**	**4**	**-**	**4**	**3**	**3**
Ch. glaucum L.	**3**	**3**	**5**	**3**	**4**	**+**	**4**	**4**	**4**
Ch. polyspermum L.	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**4**	**3**
Ch. rubrum L.	**3**	**3**	**5**	**3**	**4**	**+**	**4**	**3**	**4**
Ch. rubrum L. subsp. *botryo* (i) des Sm.	3	3	5	3	4	+	4	3	4
Ch. vulvaria L.	**2**	**3**	**5**	**3**	**3**	**-**	**4**	**4**	**4**
Chondrilla juncea L.	**2**	**3**	**3**	**3**	**3**	**-**	**4**	**5**	**3**
Chrysopogon gryllus (L.) Trin.	**1**	**3**	**2**	**2**	**3**	**-**	**4**	**5**	**3**
Ch. gryllus (L.) Trin. f. *flavencens* (Schur) Soó									
Cichorium intybus L.	**2**	**4**	**3**	**3**	**5**	**-**	**5**	**4**	**3**
Cirsium arvense (L.) Scop.	**3**	**3**	**4**	**3**	**4**	**+**	**3**	**4**	**3**
C. arvense (L.) Scop. var. *vestitum* Wimm. et Grab.									
C. canum (L.) All.	**4**	**3**	**2**	**3**	**3**	**-**	**4**	**3**	**4**
C. lanceolatum (L.) Scop.	**3**	**3**	**4**	**4**	**4**	**-**	**3**	**3**	**3**
Consolida orientalis (Gay.) Schröd.	2	3	4	3	3	-	3	4	2
C. regalis S.F.Gray.	**2**	**5**	**3**	**3**	**3**	**-**	**3**	**4**	**4**
Convolvulus arvensis L.	**2**	**4**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
C. arvensis L. f. *microphyllus* Opiz									
Corispermum nitidum Kit.	2	4	2	3	3	-	4	4	4
Crepis capillaris (L.) Wallr.	**3**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
C. foetida L. subsp. *rhoadifolia* (M.B.) Fiori et Paol.	**1**	**3**	**4**	**3**	**3**	**-**	**4**	**5**	**3**
C. setosa Hall.	**1**	**3**	**4**	**3**	**3**	**-**	**4**	**5**	**3**
C. setosa Hall. f. *gracilis* Rohlena									
Crypsis aculeata (L.) Aitt.	3	4	1	2	5	+	4	4	4
Cynodon dactylon (L.) Pers.	**2**	**3**	**3**	**3**	**3**	**-**	**4**	**5**	**2**
Daucus carota L.	**2**	**3**	**2**	**3**	**3**	**-**	**4**	**4**	**3**
Descurainia sophia (L.) Weeb.	**2**	**3**	**4**	**3**	**4**	**-**	**4**	**3**	**4**
D. sophia (L.) Weeb. var. *sophia* f. *minus* Bolzon ap. Hegi									
Dianthus pontederae Kerner	2	4	3	3	3	-	4	4	4
Dipsacus laciniatus L.	**3**	**4**	**4**	**3**	**5**	**-**	**4**	**5**	**3**
Echium vulgare L.	**1**	**3**	**4**	**2**	**3**	**-**	**5**	**4**	**4**
Epilobium adnatum Griseb.	**4**	**3**	**3**	**4**	**5**	**-**	**3**	**4**	**2**

Supplement – cont.

Taxon	Ecological index								
	F	R	N	H	D	S	L	T	K
Eragrostis megastachya (Koel.) Link	**1**	**4**	**2**	**2**	**3**	**-**	**4**	**5**	**3**
E. pilosa (L.) P.B.	**1**	**2**	**3**	**2**	**3**	**-**	**4**	**5**	**3**
Erigeron canadensis L.	**2**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
Erodium cicutarium (L.) L. Hérit.	**2**	**3**	**3**	**3**	**3**	**-**	**4**	**4**	**3**
Erophila verna (L.) Schevall.	**2**	**3**	**2**	**3**	**3**	**-**	**4**	**4**	**3**
Eryngium campestre L.	**2**	**4**	**3**	**3**	**3**	**-**	**4**	**5**	**3**
Euclidium syriaca (L.) R. Br.	**1**	**3**	**4**	**3**	**4**	**-**	**4**	**4**	**4**
Euphorbia cyparissias L.	**2**	**3**	**2**	**3**	**4**	**-**	**4**	**3**	**3**
E. glareosa M.B.	1	4	1	4	4	-	4	4	4
E. palustris L.	**4**	**4**	**4**	**4**	**5**	**+**	**3**	**4**	**2**
E. platyphyllos L.	**3**	**3**	**3**	**3**	**4**	**-**	**3**	**4**	**2**
E. seguieriana Neck.	**1**	**4**	**2**	**3**	**2**	**-**	**4**	**4**	**4**
Falcaria vulgaris Bernh.	**2**	**4**	**2**	**3**	**3**	**-**	**4**	**5**	**4**
Festuca arundinacea Schreb.	**4**	**4**	**4**	**3**	**5**	**-**	**4**	**3**	**3**
F. pratensis Huds.	**3**	**3**	**4**	**4**	**4**	**-**	**4**	**3**	**3**
F. vallesiaca Sch.	**1**	**3**	**2**	**2**	**3**	**-**	**4**	**4**	**5**
F. vallesiaca Sch. subsp. *pseudovina* (Hack.) A. et G.	1	3	2	2	3	+	4	4	5
F. vallesiaca Sch. subsp. *pseudovina* (Hack.) A. et G. f. *rutila* Hack.									
Filago germanica L.	**1**	**2**	**3**	**2**	**3**	**-**	**4**	**5**	**3**
Filipendula hexapetala Gilib.	**2**	**3**	**2**	**3**	**5**	**-**	**4**	**4**	**3**
Fragaria viridis Duchense	**2**	**3**	**3**	**3**	**4**	**-**	**3**	**5**	**4**
Gagea pratensis (Pers.) Dumort.	**2**	**4**	**4**	**3**	**5**	**-**	**4**	**5**	**4**
Galega officinalis L.	**4**	**3**	**4**	**3**	**4**	**-**	**3**	**5**	**3**
Galium aparine L.	**3**	**3**	**5**	**3**	**4**	**-**	**3**	**4**	**3**
G. pedemontanum All.	**2**	**2**	**2**	**3**	**3**	**-**	**3**	**5**	**3**
G. tricorne Stokes	2	3	2	3	5	-	3	4	3
G. verum L.	**2**	**4**	**2**	**3**	**5**	**-**	**4**	**4**	**4**
Geranium columbinum L.	**3**	**3**	**3**	**3**	**3**	**-**	**4**	**4**	**3**
G. molle L.	**2**	**3**	**4**	**3**	**3**	**-**	**4**	**4**	**3**
G. sanguineum L.	**2**	**4**	**2**	**3**	**3**	**-**	**3**	**4**	**4**
Glechoma hederacea L.	**3**	**3**	**3**	**3**	**4**	**-**	**3**	**4**	**3**
Glyceria fluitans (L.) R. Br.	**5**	**4**	**3**	**4**	**5**	**-**	**4**	**3**	**3**
G. maxima (Hartm.) Holombg.	**5**	**4**	**5**	**3**	**5**	**-**	**4**	**4**	**3**
Glycyrrhiza echinata L.	3	3	2	3	3	-	4	4	3
Gratiola officinalis L.	**5**	**3**	**3**	**4**	**5**	**+**	**3**	**4**	**4**
G. officinalis L. f. *inundata* (Kit in Schultes) Soó									
Gypsophila muralis L.	**3**	**2**	**1**	**2**	**3**	**-**	**4**	**4**	**4**
G. muralis L. var. *muralis* f. *capillaris* Fick. et Schube									
Heleocharis palustris (L.) R.Br.	**5**	**4**	**2**	**4**	**5**	**-**	**4**	**3**	**3**
Heleochloa alopecuroides (Pill. et Mitterp.) Host	**4**	**3**	**3**	**3**	**3**	**-**	**4**	**5**	**3**
H. schoenoides (L.) Host	4	4	3	3	4	+	4	5	3
Helminthia echioides (L.) Gärtn.	**3**	**3**	**4**	**4**	**4**	**-**	**4**	**5**	**2**
Herniaria incana Lam.	**1**	**3**	**2**	**2**	**3**	**-**	**4**	**3**	**4**

Supplement – cont.

Taxon	Ecological index								
	F	R	N	H	D	S	L	T	K
Hibiscus trionum L.	**3**	**3**	**3**	**3**	**4**	**-**	**4**	**5**	**4**
Hieracium pilosella L.	**2**	**3**	**2**	**3**	**4**	**-**	**4**	**3**	**4**
Holosteum umbellatum L.	**1**	**3**	**3**	**3**	**3**	**-**	**4**	**5**	**3**
Hordeum maritimum subsp. *gussoneanum* (Parl.) A. et G.	2	4	3	3	5	+	5	4	3
H. murinum L.	**2**	**3**	**4**	**2**	**3**	**-**	**4**	**4**	**4**
Hypericum perforatum L.	**2**	**3**	**3**	**3**	**5**	**-**	**3**	**4**	**3**
Inula britannica L.	**4**	**4**	**3**	**3**	**4**	**+**	**3**	**5**	**3**
Juncus articulatus L.	**4**	**3**	**2**	**3**	**5**	**-**	**4**	**3**	**3**
J. atratus Krock.	**4**	**2**	**3**	**4**	**5**	**-**	**4**	**4**	**2**
J. bufonius L.	**4**	**2**	**3**	**3**	**5**	**-**	**4**	**3**	**3**
J. compressus Jacq.	**4**	**3**	**3**	**3**	**5**	**+**	**4**	**3**	**3**
J. compressus Jacq. var. *coartactus* E. Meyer ex Busch.									
J. compressus Jacq. var. *compressus* f. *porphyrocarpus* J. Murr.									
J. conglomeratus L.	**4**	**2**	**3**	**4**	**5**	**-**	**4**	**3**	**2**
J. gerardi Lois.	**4**	**3**	**3**	**3**	**4**	**+**	**5**	**3**	**4**
Kickxia elatine (L.) Dum.	**2**	**3**	**3**	**3**	**4**	**-**	**4**	**5**	**2**
Knautia arvensis (L.) Coult.	**2**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
Kochia laniflora (Gmel.) Borb.	2	4	1	3	3	-	4	4	5
K. prostrata (L.) Schrad.	**1**	**3**	**4**	**2**	**3**	**+**	**5**	**5**	**4**
K. prostrata (L.) Schrad. l. *rubens* Lag.									
Koeleria gracilis Pers.	**1**	**3**	**2**	**3**	**3**	**-**	**4**	**3**	**3**
K. gracilis f. *violacea* R. et Sch.									
Lactuca saligna L.	**1**	**3**	**4**	**3**	**4**	**+**	**4**	**5**	**4**
L. serriola L.	**2**	**3**	**3**	**2**	**3**	**-**	**4**	**5**	**4**
Lamium amplexicaule L.	**2**	**3**	**4**	**4**	**4**	**-**	**4**	**3**	**3**
L. purpureum L.	**3**	**4**	**4**	**3**	**4**	**-**	**4**	**3**	**3**
Lathyrus aphaca L.	**2**	**3**	**3**	**3**	**4**	**-**	**3**	**4**	**4**
L. aphaca L. var. *aphaca* f. *laetus* Posp.									
L. hirsutus L.	**2**	**4**	**3**	**3**	**3**	**-**	**3**	**4**	**4**
L. tuberosus L.	**2**	**4**	**3**	**3**	**5**	**-**	**4**	**4**	**4**
Leonurus cardiaca L.	**2**	**4**	**5**	**3**	**4**	**-**	**4**	**4**	**4**
L. marrubiastrum L.	**3**	**4**	**4**	**3**	**3**	**-**	**3**	**5**	**2**
Lepidium campestre (L.) R.Br.	**2**	**4**	**4**	**2**	**4**	**-**	**4**	**3**	**3**
L. draba L.	**2**	**3**	**4**	**3**	**4**	**-**	**3**	**4**	**4**
L. perfoliatum L.	**3**	**4**	**3**	**3**	**5**	**-**	**4**	**5**	**4**
L. ruderale L.	**2**	**3**	**4**	**2**	**3**	**-**	**4**	**4**	**4**
L. ruderale L. f. *humile* Roch.									
Linaria genistifolia (L.) Mill.	2	4	2	3	3	-	4	4	4
L. vulgaris Mill.	**2**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
Lithospermum officinale L.	**3**	**4**	**3**	**3**	**4**	**-**	**3**	**4**	**3**
Lolium perenne L.	**3**	**3**	**4**	**3**	**5**	**-**	**4**	**3**	**3**
Lotus corniculatus L.	**2**	**4**	**3**	**3**	**4**	**-**	**4**	**3**	**3**
Lotus corniculatus L. var. *pilosus* (Jord.) Posp.									

Supplement – cont.

Taxon	Ecological index								
	F	R	N	H	D	S	L	T	K
L. tenuis Kit.	**3**	**4**	**2**	**3**	**5**	**+**	**4**	**4**	**2**
Lycopus europaeus L.	**5**	**3**	**3**	**5**	**5**	**-**	**3**	**4**	**3**
L. europaeus L. f. *turfosus* Beck									
L. exaltatus L.	**5**	**4**	**4**	**4**	**5**	**-**	**3**	**5**	**4**
Lysimachia nummularia L.	**4**	**3**	**4**	**3**	**5**	**-**	**2**	**4**	**2**
L. vulgaris L.	**4**	**3**	**3**	**4**	**5**	**-**	**3**	**4**	**3**
Lythrum hyssopifolia L.	**4**	**2**	**3**	**3**	**5**	**+**	**4**	**5**	**3**
L. salicaria L.	**4**	**3**	**3**	**4**	**5**	**-**	**3**	**4**	**3**
L. virgatum L.	**4**	**3**	**4**	**4**	**5**	**-**	**3**	**4**	**4**
Marrubium peregrinum L.	2	4	2	2	5	-	4	4	4
M. vulgare L.	**2**	**4**	**5**	**3**	**4**	**-**	**4**	**5**	**4**
Matricaria chamomilla L.	3	3	3	3	4	+	4	4	3
M. chamomilla L. f. *salina (*Schur) Jáv.									
M. inodora L.	3	3	4	4	4	+	4	3	3
M. suaveolens (Pursh) Buch.	**3**	**3**	**5**	**3**	**5**	**-**	**4**	**4**	**3**
Medicago falcata L.	**2**	**4**	**2**	**3**	**3**	**-**	**4**	**4**	**4**
M. lupulina L.	**2**	**4**	**3**	**3**	**4**	**-**	**3**	**4**	**3**
M. lupulina L. f. *canescens* (Menvh.) Soó									
Melilotus officinalis (L.) Pallas	**2**	**4**	**3**	**3**	**3**	**-**	**4**	**4**	**3**
Mentha aquatica L.	**5**	**3**	**3**	**4**	**5**	**-**	**3**	**4**	**3**
Mentha aquatica L. f. *erromera* Top.									
M. longifolia (L.) Huds.	**4**	**4**	**4**	**3**	**5**	**-**	**3**	**3**	**3**
M. pulegium L.	**4**	**3**	**4**	**4**	**5**	**+**	**3**	**5**	**2**
M. pulegium L. f. *lactea* Borb.									
Muscari racemosum (L.) Mill.	**2**	**4**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
Myosotis caespitose (Schultz.)	**5**	**2**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
M. collina Hoffm.	**1**	**3**	**2**	**2**	**3**	**-**	**4**	**4**	**4**
M. palustris (L.) Nath.	**4**	**3**	**4**	**4**	**5**	**-**	**3**	**3**	**2**
Myosurus minimus L.	**4**	**2**	**2**	**3**	**5**	**-**	**4**	**4**	**2**
Nigella arvensis L.	**2**	**4**	**3**	**3**	**3**	**-**	**4**	**4**	**2**
Odontites rubra Gilib.	**3**	**3**	**4**	**3**	**5**	**+**	**3**	**4**	**3**
Oenanthe aquatica (L.) Poiret in Lam.	**5**	**4**	**3**	**3**	**5**	**-**	**4**	**4**	**4**
O. silaifolia M.B.	5	4	3	3	5	+	4	4	3
Oenothera biennis L.	**2**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
O. strigosa (Rydb.) Mach. et Bush	3	3	3	3	4	-	4	4	3
Ononis spinosa L.	**2**	**3**	**2**	**3**	**5**	**-**	**4**	**4**	**3**
Onopordon acanthium L.	**2**	**4**	**5**	**3**	**4**	**-**	**4**	**4**	**4**
Ornithogalum gussonei Ten.	**2**	**4**	**3**	**4**	**4**	**-**	**4**	**5**	**4**
O. nutans L.	**3**	**3**	**3**	**3**	**4**	**-**	**4**	**5**	**2**
O. umbellatum L.	**3**	**4**	**3**	**3**	**4**	**-**	**4**	**4**	**2**
Orobanche caryophyllacea Sm.	**2**	**4**	**2**	**3**	**3**	**-**	**4**	**4**	**4**
Panicum crus-galli L.	**3**	**3**	**5**	**3**	**4**	**-**	**3**	**4**	**3**
Papaver dubium L.	**2**	**2**	**3**	**3**	**4**	**-**	**3**	**4**	**4**

Supplement – cont.

Taxon	Ecological index								
	F	R	N	H	D	S	L	T	K
P. rhoeas L.	**2**	**4**	**3**	**3**	**4**	**-**	**3**	**4**	**3**
Parentucellia latifolia (L.) Car.	3	3	2	3	3	+	4	3	2
P. latifolia (L.) Car. f. *albiflora* (Raul.) Dunjić									
Pastinaca sativa L.	**2**	**4**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
Peplis portula L	**4**	**2**	**3**	**3**	**5**	**-**	**4**	**4**	**2**
Petrorhagia prolifera (L.) P. W. Ball.	**1**	**2**	**2**	**3**	**3**	**-**	**4**	**5**	**3**
Peucedanum officinale L.	**2**	**4**	**2**	**3**	**5**	**-**	**3**	**5**	**3**
Pholiurus pannonicus (Host) Trin.	3	4	2	3	5	+	4	4	4
Phragmites communis Trin.	**5**	**3**	**3**	**3**	**4**	**+**	**3**	**3**	**3**
Picris hieracioides L.	**2**	**4**	**4**	**2**	**4**	**-**	**4**	**4**	**3**
Pimpinella saxifraga L.	**2**	**3**	**2**	**3**	**4**	**-**	**4**	**3**	**4**
Plantago altissima L.	4	3	2	3	4	-	4	4	3
P. lanceolata L.	**2**	**3**	**3**	**3**	**4**	**-**	**3**	**3**	**3**
P. lanceolata L. var. *lanceolata*									
P. lanceolata L.var. *sphaerostachya* M.etK.									
P. major L.	**3**	**3**	**4**	**3**	**5**	**+**	**4**	**3**	**3**
P. maritima L.	2	4	2	2	4	+	3	3	5
P. media L.	**2**	**4**	**2**	**3**	**4**	**-**	**4**	**3**	**3**
P. schwarzenbergiana Schur.	3	3	3	2	5	+	4	4	4
P. tenuiflora W. et K.	3	4	1	3	5	+	4	3	4
Poa annua L.	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**3**	**3**
P. bulbosa L.	**1**	**3**	**3**	**2**	**3**	**-**	**5**	**4**	**4**
P. bulbosa L. f. *vivipara* Koel.									
P. pratensis L.	**3**	**3**	**3**	**4**	**4**	**-**	**4**	**3**	**3**
P. trivialis L.	**3**	**3**	**4**	**3**	**4**	**-**	**3**	**3**	**3**
Podospermum canum C.A. Mey.	2	4	2	2	4	+	4	4	3
P. canum C.A. Mey. var. *integrifolia* (Schur) Soó									
P. canum C.A. Mey. var. *tenuissima* Borb.									
Polygonum arenarium W. et K.	1	3	1	2	2	-	4	4	4
P. aviculare L.	**3**	**3**	**4**	**3**	**5**	**-**	**4**	**3**	**3**
P. aviculare L.subsp. *aequale* (Lindm.) A.et G.	3	3	3	3	4	-	4	3	3
P. lapathifolium L.	**3**	**3**	**4**	**3**	**3**	**-**	**5**	**3**	**3**
P. lapathifolium L. var. *tomentosum* (Schrk.) Bay.									
P. mite Schrank	**4**	**3**	**4**	**3**	**4**	**-**	**3**	**4**	**2**
P. patulum M.B.	2	4	2	2	4	+	4	4	4
P. persicaria L.	**3**	**3**	**4**	**3**	**3**	**-**	**4**	**3**	**3**
Portulaca oleracea L.	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**4**	**3**
Potentilla anserina L.	**3**	**3**	**4**	**3**	**5**	**+**	**4**	**3**	**3**
P. argentea L.	**1**	**2**	**2**	**2**	**3**	**-**	**4**	**3**	**4**
P. argentea L. var. *tenuiloba* (Jord.) M. Gusuleac.									
P. leucopolitana Müll.	**1**	**3**	**2**	**2**	**3**	**-**	**4**	**5**	**4**
P. reptans L.	**3**	**3**	**4**	**3**	**5**	**-**	**4**	**3**	**3**
P. supina L.	**3**	**4**	**4**	**3**	**5**	**-**	**4**	**5**	**3**
Prunella vulgaris L.	**3**	**3**	**3**	**3**	**4**	**-**	**4**	**3**	**3**

Supplement – cont.

Taxon	Ecological index								
	F	R	N	H	D	S	L	T	K
Prunus spinosa L.	**2**	**4**	**3**	**3**	**3**	**-**	**4**	**4**	**3**
P. spinosa L. f. *acuminate* (Clab.) Dom.									
Puccinellia limosa (Schur) Holmb.	3	4	2	2	4	+	4	4	4
Pulicaria vulgaris Gärtn.	**4**	**2**	**5**	**3**	**5**	**+**	**4**	**5**	**3**
Pycreus flavescens (L.) Rchb	**4**	**3**	**3**	**3**	**3**	**-**	**4**	**4**	**2**
Ranunculus acer L.	**3**	**3**	**3**	**3**	**4**	**-**	**3**	**3**	**4**
R. aquatilis L.	**5**	**3**	**4**	**4**	**5**	**-**	**3**	**4**	**2**
R. arvensis L.	**2**	**4**	**3**	**3**	**4**	**-**	**3**	**4**	**2**
R. lateriflorus DC.	4	3	1	3	5	+	4	4	4
R. paucistamineus Tsch.	**5**	**3**	**4**	**3**	**5**	**-**	**4**	**3**	**3**
R. pedatus W. et K.	**5**	**2**	**2**	**3**	**5**	**-**	**3**	**4**	**2**
R. repens L.	**4**	**3**	**4**	**3**	**5**	**-**	**3**	**3**	**3**
R. sardous Cr.	**4**	**3**	**3**	**3**	**5**	**+**	**4**	**4**	**2**
R. sceleratus L.	**4**	**4**	**5**	**4**	**5**	**+**	**4**	**4**	**3**
Rapistrum perenne (L.) All.	**2**	**3**	**4**	**3**	**4**	**-**	**3**	**5**	**4**
Rhinanthus borbasii (Dörfl.) Soó subsp. *borbasii*	2	4	3	3	3	+	3	3	5
Roripa austriaca (Cr.) Bess.	**4**	**3**	**4**	**3**	**3**	**-**	**3**	**4**	**4**
R. kerneri Menyh.	4	4	4	3	5	+	4	4	3
Rubus caesius L.	**4**	**3**	**4**	**3**	**4**	**-**	**2**	**4**	**3**
Rumex crispus L.	**3**	**3**	**4**	**2**	**4**	**+**	**4**	**3**	**3**
R. obtusifolius L.	**3**	**3**	**4**	**4**	**4**	**-**	**4**	**3**	**3**
R. palustris Sm.	**4**	**4**	**4**	**3**	**5**	**-**	**4**	**5**	**3**
R . patientia L.	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**5**	**4**
R. stenophyllus Ledeb.	**3**	**4**	**2**	**3**	**3**	**+**	**4**	**3**	**3**
Salsola ruthenica Iljin	**3**	**3**	**4**	**2**	**3**	**+**	**5**	**5**	**4**
S. soda L.	3	4	4	3	4	+	4	4	4
Salvia nemorosa L.	**2**	**3**	**4**	**3**	**4**	**-**	**4**	**5**	**4**
S. verticillata L.	**2**	**4**	**4**	**3**	**3**	**-**	**4**	**4**	**4**
Saponaria officinalis L.	**2**	**4**	**4**	**3**	**3**	**-**	**3**	**4**	**3**
Scabiosa ochroleucha L.	**1**	**4**	**2**	**3**	**3**	**-**	**4**	**5**	**5**
Schoenoplectus lacuster (L.) Palla	**5**	**3**	**3**	**4**	**4**	**-**	**5**	**4**	**3**
S. lacuster (L.) Palla f. *conglomeratus* (Junge) Soó									
Scilla autumnalis L.	**1**	**4**	**2**	**3**	**3**	**-**	**4**	**5**	**2**
Scleranthus annus L.	**3**	**1**	**2**	**3**	**3**	**-**	**4**	**4**	**4**
S. annus L. f. *minimus* Schur.									
Sclerochloa dura (L.) Beauv.	**1**	**3**	**3**	**2**	**5**	**-**	**5**	**5**	**4**
Scleropoa rigida (L.) Griseb.	**1**	**4**	**3**	**2**	**3**	**-**	**5**	**5**	**2**
Scutellaria hastifolia L.	**5**	**3**	**4**	**5**	**5**	**-**	**3**	**5**	**3**
Sedum caespitosum (Cav.) DC.	1	4	1	2	4	+	5	4	3
Senecio jacobea L.	**3**	**3**	**3**	**3**	**4**	**-**	**4**	**4**	**2**
S. vernalis W. et K.	**2**	**3**	**3**	**2**	**3**	**+**	**4**	**4**	**4**
Setaria glauca (L.) P.B.	**2**	**3**	**4**	**2**	**3**	**-**	**4**	**4**	**3**
S. viridis (L.) P.B.	**2**	**3**	**4**	**2**	**4**	**-**	**4**	**4**	**3**

Supplement – cont.

Taxon	Ecological index							
	F	R	N	H	D	S	L	T	K
Silene alba (Mill.) Krause	**2**	**3**	**4**	**3**	**3**	**-**	**4**	**4**	**4**
S. multiflora (Ehrh.) Pers.	3	4	4	3	3	+	4	4	4
S. viscose (L.) Pers.	2	4	3	3	3	+	4	4	4
S. vulgaris (Moench) Garcke	**2**	**3**	**2**	**3**	**3**	**-**	**3**	**3**	**3**
Sinapis arvensis L.	**3**	**4**	**4**	**3**	**4**	**-**	**4**	**4**	**3**
Sisymbrium orientale L.	**2**	**3**	**4**	**3**	**4**	**-**	**4**	**5**	**2**
Sonchus arvensis L.	**3**	**3**	**4**	**4**	**4**	**+**	**3**	**4**	**3**
S. arvensis L. var. *uliginosus* (M.B.) Grec.									
S. asper (L.) Hill.	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**4**	**3**
Spergularia media (L.) Presl.	**3**	**3**	**3**	**3**	**3**	**+**	**4**	**4**	**3**
S. salina J. et C. Presl.	3	3	3	3	4	+	4	4	3
Stachys germanica L.	**1**	**4**	**3**	**3**	**4**	**-**	**4**	**5**	**3**
Statice gmelini Willd. subsp. *hungaricum* (Klokov) Soó	2	3	1	2	4	+	4	4	4
S. gmelini Willd. subsp. *hungaricum* (Klokov) Soó f. *acuminatum* (Schur) Soó									
S. gmelini Willd. subsp. *hungaricum* (Klokov) Soó f. *obtusum* (Schur) Soó									
S. gmelini Willd. subsp. *hungaricum* (Klokov) Soó f. *hungaricum* (Schur) Soó									
Symphytum officinale L.	**3**	**3**	**4**	**4**	**4**	**-**	**3**	**4**	**3**
Taraxacum officinale Weber	**3**	**3**	**4**	**3**	**4**	**+**	**4**	**3**	**3**
Taraxacum serotinum /W.et.K./Poir. subsp. *bessarabicum* /Horn./ Hand.-Mazz.	3	4	1	3	4	+	4	4	4
Teucrium scordium L.	**5**	**4**	**3**	**5**	**5**	**+**	**4**	**5**	**3**
Thalictrum lucidum L.	**4**	**4**	**3**	**4**	**5**	**-**	**3**	**4**	**4**
Thesium linophyllum L.	**1**	**4**	**2**	**3**	**3**	**-**	**3**	**4**	**4**
Thlaspi arvense L.	**3**	**3**	**4**	**4**	**4**	**-**	**3**	**3**	**3**
Th. perfoliatum L.	**2**	**4**	**3**	**3**	**4**	**-**	**4**	**4**	**3**
Thymus glabrescens Willd.	**1**	**4**	**2**	**2**	**3**	**-**	**4**	**5**	**5**
Th. marschallianus Willd.	1	3	1	3	2	-	4	4	4
Th. serpyllum L.	2	3	1	2	3	-	4	2	4
Torilis arvensis (Huds.) Link.	**2**	**4**	**4**	**2**	**4**	**-**	**4**	**5**	**3**
Trifolium angulatum W.et K.	3	4	2	3	4	+	4	4	3
T. arvense L.	**1**	**2**	**1**	**2**	**3**	**-**	**4**	**4**	**4**
T. campestre Schreb.	**2**	**3**	**2**	**3**	**4**	**-**	**4**	**4**	**3**
T.campestre Schreb. var. *minus* (Koch) Gremli									
T. filiforme L.	**2**	**3**	**2**	**3**	**3**	**-**	**4**	**5**	**2**
T. fragiferum L.	**3**	**4**	**2**	**3**	**5**	**+**	**4**	**4**	**3**
T. hybridum L.	**3**	**4**	**4**	**3**	**4**	**-**	**4**	**3**	**3**
T. ornithopodioides (L.) Sm.	1	3	1	2	3	+	4	4	2
T. parviflorum Ehrh.	**1**	**3**	**2**	**2**	**4**	**+**	**4**	**4**	**3**
T. pratense L.	**3**	**3**	**3**	**3**	**4**	**-**	**3**	**3**	**3**
T. repens L.	**3**	**3**	**4**	**3**	**5**	**+**	**4**	**3**	**3**
T. repens L. f. *microphyllum* Larg.-Fossat									
T. scabrum L.	**1**	**4**	**1**	**3**	**3**	**-**	**4**	**5**	**3**

Supplement – cont.

Taxon	Ecological index								
	F	R	N	H	D	S	L	T	K
T. striatum L.	**2**	**2**	**2**	**2**	**3**	**+**	**4**	**5**	**2**
T. strictum (L.) Jusl.	1	3	1	3	3	+	4	4	2
T. subterraneum L.	**1**	**2**	**2**	**3**	**3**	**-**	**4**	**5**	**2**
T. vesiculosum Savi.	1	3	1	3	3	+	4	4	3
Turgenia latifolia (L.) Hoffm.	2	4	4	3	4	-	4	4	3
Typha angustifolia L.	**5**	**4**	**3**	**3**	**5**	**+**	**4**	**4**	**3**
T. latifolia L.	**5**	**3**	**4**	**3**	**5**	**-**	**4**	**4**	**3**
T. laxmannii Lepech.	5	3	3	3	5	-	4	4	3
Typhoides arundinacea (L.) Mnch.	**5**	**3**	**4**	**3**	**4**	**-**	**3**	**4**	**3**
Valerianella locusta (L.) Betcke	**3**	**3**	**4**	**3**	**4**	**-**	**4**	**4**	**2**
Ventenata dubia (Leers.) F. Schultz	**1**	**3**	**2**	**2**	**3**	**-**	**3**	**5**	**3**
Verbascum blattaria L.	**2**	**4**	**4**	**3**	**3**	**+**	**4**	**5**	**3**
V. phoeniceum L.	**1**	**4**	**3**	**3**	**3**	**-**	**4**	**5**	**3**
Verbena officinalis L.	**3**	**3**	**4**	**3**	**5**	**-**	**4**	**4**	**3**
Veronica anagallis-aquatica L.	**5**	**3**	**4**	**4**	**5**	**-**	**4**	**4**	**3**
V. anagallis-aquatica L. f. *angustifolia* Krösche									
V. anagalloides Guss.	**5**	**3**	**4**	**4**	**5**	**-**	**4**	**5**	**2**
V. arvensis L.	**3**	**3**	**4**	**3**	**4**	**-**	**3**	**4**	**4**
V. prostrata L.	**2**	**3**	**3**	**3**	**3**	**-**	**4**	**4**	**5**
Vicia angustifolia L.	**2**	**3**	**3**	**3**	**4**	**-**	**4**	**5**	**4**
V. hirsuta (L.) S.F. Gray.	**2**	**3**	**2**	**3**	**4**	**-**	**4**	**3**	**3**
V. striata M. Bieberst.	**2**	**4**	**3**	**3**	**3**	**-**	**3**	**5**	**3**
Viola arvensis Murr.	**3**	**3**	**3**	**3**	**3**	**-**	**3**	**3**	**3**
Vulpia myuros (L.) Gmel.	**1**	**2**	**3**	**2**	**3**	**-**	**4**	**5**	**3**
Xanthium italicum Moretti	**3**	**3**	**5**	**3**	**2**	**+**	**4**	**5**	**3**
X. spinosum L.	**1**	**3**	**4**	**3**	**3**	**-**	**4**	**5**	**4**

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