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Marijampolė Botanical Center

MONITORING REPORT
(2011–2013–2015)

DIVERSITY, DISTRIBUTION OF VEGETATION AND THEIR SUITABILITY FOR THE AQUATIC WARBLER TO BREED IN TULKIARAGĖ POLDER

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Marijampolė, 2015

1. Characterisation of vegetation

1.1. Compendium of plant communities

In 2011, the vegetation of Tulkiaragė polder belonged to 2 vegetation classes. In 2015, recorded 12 associations, 1 phytocenon and 4 types rankless units (Table 1). The grassland vegetation predominates. Single trees and shrubs are observed in all territory except the eastern part where they grow more abundantly.

Table 1

Plant communities in Tulkiaragė polder, 2011–2015 yrs.

Class or rankless unit	Association or rankless unit	2011		2013		2015	
		Area, ha	%	Area, ha	%	Area, ha	%
Phragmito-Magnocaricetea Klika in Klika et Novák 1941	*Caricetum acutiformis* Sauer 1937	2.25	0.57	2.25	0.57	2.25	0.57
	Caricetum distichae (Steffen 1931) Jonas 1933	14.69	3.69	14.69	3.69	-	-
	Mosaic of the ecotonal *Magnocaricion* alliance plant communities with prevailing plant species like *Carex acuta, Filipendula ulmaria* ir *Phalaroides arundinacea*	-	-	-	-	14.69	3.69
	Caricetum gracilis Graebner et Hueck 1931	127.43	32.04	127.43	32.04	127.43	32.04
	Galio palustris-Caricetum ripariae Balátová-Tuláčková et al. 1993	0.18	0.05	0.18	0.05	0.18	0.05
	Peucedano-Calamagrostietum canescentis Weber 1979	2.25	0.57	2.25	0.57	2.25	0.57
	Phalaridetum arundinaceae (W. Koch	26.28	6.61	26.28	6.61	26.28	6.61

	1926) Libbert 1931						
	Phragmitetum austral-lis Schmale 1939	116.44	29.28	116.44	29.28	116.44	29.28
	Thelypteridi-Phragmi-tetum Kuiper 1957	23.32	5.86	23.32	5.86	23.32	5.86
Molinio-Arrhenatheretea elatioris R. Tx. 1937	*Alopecuretum pratensis* Kojić *et al*. 2003 *sensu lato*	0.38	0.10	0.38	0.10	0.38	0.10
	Caricetum cespitosae (Steffen 1931) Klika et Šmarda 1940	2.88	0.72	2.88	0.72	2.88	0.72
	Deschampsietum ces-pitosae Horvatić 1930	0.4	0.10	0.4	0.10	0.4	0.10
	Filipendulo-Gera-nietum W.Koch 1926	5.32	1.34	5.32	1.34	5.32	1.34
	Lysimachio-Filipen-duletum ulmariae Hadač et al., 1997	50.92	12.80	50.92	12.80	50.92	12.80
Rankless units	Ecotonal plant communities with *Filipendulion* alliance characteristic plants	0.48	0.12	0.48	0.12	0.48	0.12
	Willow overgrowths and *Alnus glutinosa* tree groups	2.10	0.53	2.10	0.53	2.10	0.53
	Cultivated meadow	12.59	3.17	12.59	3.17	12.59	3.17
	Ruderal plant over-growths (classifiable unit distinguished by dr D. Matulevičiūtė)	9.76	2.45	9.76	2.45	9.76	2.45
	Total:	**397.67**	**100.00**	**397.67**	**100.00**	**397.67**	**100.00**

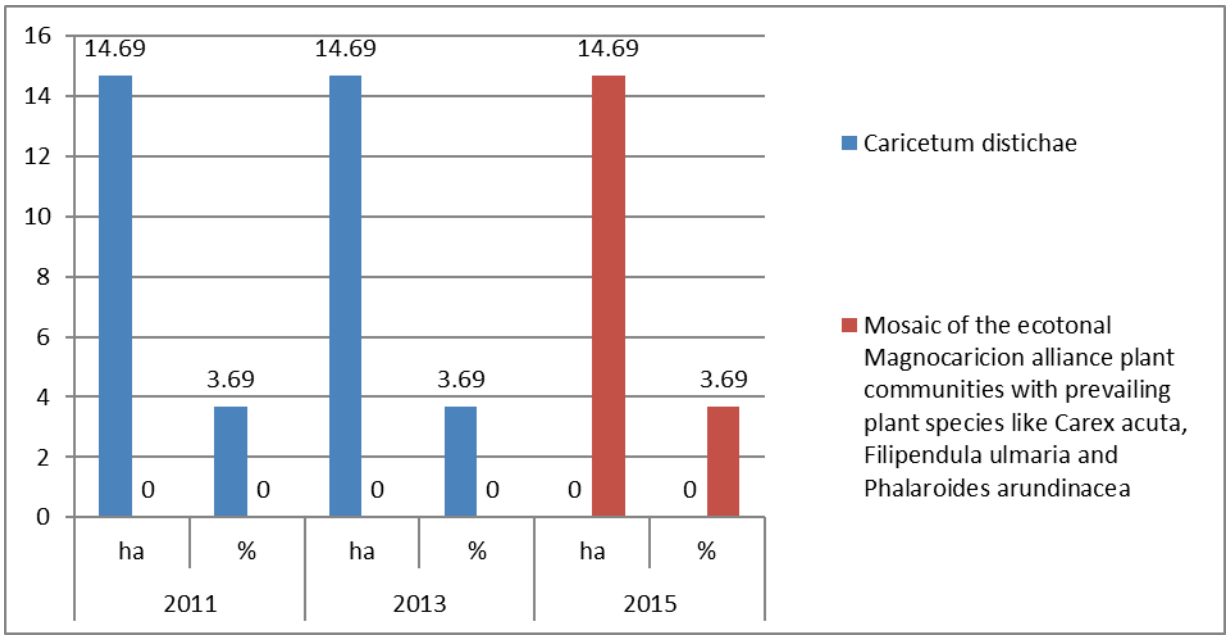

Fig. 1. Plots changes of the *Caricetum distichae* and ecotonal *Magnocaricion* alliance plant communities with prevailing plants like *Carex acuta, Filipendula ulmaria* and *Phalaroides arundinacea*, 2011–2015 yrs.

The coverage of vegetation classes

Table 2

Vegetation class	2011		2013		2015	
	Area, ha	%	Area, ha	%	Area, ha	%
Phragmito-Magnocaricetea	312.84	78.67	312.84	78.67	312.84	78.67
Molinio-Arrhenatheretea elatioris	59.90	15.06	59.90	15.06	59.90	15.06
Rankless units	24.93	6.27	24.93	6.27	24.93	6.27
Total:	397.67	100.00	397.67	100.00	397.67	100.00

1.2. General characterisation of vegetation

1.2.1. Grasslands

In Tulkiaragė polder, plant communities from the *Phragmito-Magnocaricetea* class, comprised by tall forbs of halophytes, attain dominance. These plant communities distributed in the area of 313.95 ha and it makes up 78.88 % of all territory (Table 2). Among of them, the largest plots are covered by the plant communities from the *Magnocaricion elatae* (174.19 ha or 43.77 % of territory total), whereas communities from the *Phragmition* alliance are distributed in the area of 139.76 ha and it makes up 35.12 %. In western and northern parts of the territory tall sedge and reed communities are often observed in the largest areas of Tulkiaragė polder where groundwater level is the highest. In some parts of habitats of the *Phragmitetum australis, Thelypteridi-Phragmitetum* and *Caricetum gracilis* the water is stagnant there during mid-period of vegetation.

Fertile meadow (*Molinio-Arrhenatheretea*) class plant communities are distinguished in the dryer areas. These communities are distributed in the area of 57.82 ha and it makes up 14.53 %.

In a lot of cases, due to a high groundwater level, cultivated meadows have been succeeded and fodder plants disappeared. In sites, where groundwater level is favourable for mezophytes, overgrowths of cultivated plants are observed. 3.16 % of polder area is covered by this type of vegetation and mostly it is observed in eastern and some of it in southern marginal part of the polder. In some sites cultivated plants along with ruderal comprise vegetation mosaic. Ruderal plant overgrowths are distinguished in the area of 2.45 %.

1.2.2. Woody vegetation.

In Tulkiaragė polder woody plants are not of prevailing component there and it makes just 0.53% of all territory coverage. Just small clumps are formed by scrubs and trees which are singly distributed in all territory, and usually near canals. Groups of woody plants are distinguished in eastern part of the polder. There are numerous of *Salix aurita, S. cinerea* and *S. fragilis.*

1.2.3. Protected plant species

In southern and western parts of Tulkiaragė polder the species *Scutellaria hastifolia* has been found there, which is registered in the Red Data Book of Lithuania and it is of 2(V) category. Small patches of these plants has found their niche on polder embankments, canal margins and in naturalizing cultivated meadows and community of the *Descahmpsietum cespitosae*. Majority of *Scutellaria hastifolia* plants have been fertile.

2. Coverage of plant communities

312 contours of vegetation have been distinguished and their size varied in extent – from 0.03 ha to 13.81 ha (Table 2.). A large part (42.63 %) of contours are smaller than 0.5 ha and 33.65 % of contours are larger than 1 ha. Due to influence of antropogeniztion (polder vegetation is fragmented by canal system), there are a lot of contours of various size. Hidrological regime is conditioned by canals, which determined character of vegetation.

Table 2

Coverage of vegetation contours, 2011, 2013 and 2015 yrs.

Contour No.	Plant community	2011		2013		2015	
		Area, ha	%	Area, ha	%	Area, ha	%
1	*Peucedano-Calamagros-tietum canescentis*	0,16	0,04	0,16	0,04	0,16	0,04
2	Shrubs	0,03	0,01	0,03	0,01	0,03	0,01
3	*Caricetum gracilis* 98 %, *Peucedano-Calamagros-tietum canescentis* 1%, *Phragmitetum australis* 1 %	0,60	0,15	0,60	0,15	0,60	0,15
4	Ruderal plant overgrowth	0,39	0,10	0,39	0,10	0,39	0,10
5	*Caricetum cespitosae* 91 %, *Peucedano-Cala-*	1,11	0,28	1,11	0,28	1,11	0,28

	magrostietum canescentis 3%, *Filipendulo-Geranietum* 5%, *Phragmitetum australis* 1 %						
6	Ruderal plant overgrowth	0,54	0,14	0,54	0,14	0,54	0,14
7	*Caricetum acutiformis*	0,49	0,12	0,49	0,12	0,49	0,12
8	*Caricetum cespitosae* 98 %, *Peucedano-Calamagrostietum canescentis* 1%, *Caricetum distichae* 1%	0,28	0,07	0,28	0,07		
	Caricetum cespitosae 98 %, *Peucedano-Calamagrostietum canescentis* 1%, mosaic of plant communities with predominat *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 1%					0,28	0,07
9	*Caricetum cespitosae* 95 %, *Peucedano-Calamagrostietum canescentis* 5%	0,65	0,16	0,65	0,16	0,65	0,16
10	*Caricetum gracilis*	1,94	0,49	1,94	0,49	1,94	0,49
11	*Caricetum gracilis* 60 %, *Peucedano-Calamagrostietum canescentis* 40 %	0,16	0,04	0,16	0,04	0,16	0,04
12	*Phragmitetum australis*	11,17	2,81	11,17	2,81	11,17	2,81
13	*Phragmitetum australis*	6,64	1,67	6,64	1,67	6,64	1,67
14	*Phragmitetum australis*	0,11	0,03	0,11	0,03	0,11	0,03
15	*Phragmitetum australis*	0,83	0,21	0,83	0,21	0,83	0,21
16	*Phalaridetum arundinaceae*	0,10	0,03	0,10	0,03	0,10	0,03
17	*Caricetum gracilis* 40 %, *Peucedano-Calamagrostietum canescentis* 30 %, *Caricetum acutiformis* 10 %, *Caricetum cespitosae* 5 %, ruderal plant overgrowth 15 %	0,74	0,19	0,74	0,19	0,74	0,19
18	*Lysimachio-Filipenduletum ulmariae*	3,31	0,83	3,31	0,83	3,31	0,83
19	*Filipendulo-Geranietum*	0,38	0,10	0,38	0,10	0,38	0,10
20	*Caricetum distichae*	0,52	0,13	0,52	0,13		
	Mosaic of plant communites with predominant					0,52	0,13

	Carex acuta, Filipendula ulmaria and *Phalaridetum arundinacea*						
21	*Caricetum gracilis* 80 %, *Caricetum cespitosae* 20 %	1,57	0,39	1,57	0,39	1,57	0,39
22	*Caricetum ripariae*	0,18	0,05	0,18	0,05	0,18	0,05
23	*Caricetum gracilis* with sparse reeds	0,12	0,03	0,12	0,03	0,12	0,03
24	*Caricetum gracilis*	1,09	0,27	1,09	0,27	1,09	0,27
25	*Caricetum gracilis* 74 %, *Phalaridetum arundinaceae* 15 %, *Peucedano-Calamagrostietum canescentis* 10 %, *Caricetum cespitosae* 1 %	1,09	0,27	1,09	0,27	1,09	0,27
26	*Caricetum gracilis* 95 %, *Peucedano-Calamagrostietum canescentis* 5 %	0,53	0,13	0,53	0,13	0,53	0,13
27	*Phragmitetum australis*	0,59	0,15	0,59	0,15	0,59	0,15
28	*Phragmitetum australis*	0,81	0,20	0,81	0,20	0,81	0,20
29	*Phragmitetum australis*	0,81	0,20	0,81	0,20	0,81	0,20
30	*Caricetum gracilis*	0,67	0,17	0,67	0,17	0,67	0,17
31	*Phragmitetum australis*	0,85	0,21	0,85	0,21	0,85	0,21
32	*Peucedano-Calamagrostietum canescentis* 55 %, *Phalaridetum arundinaceae* 40 %, *Caricetum distichae* 5 %	0,15	0,04	0,15	0,04		
	Peucedano-Calamagrostietum canescentis 55 %, *Phalaridetum arundinaceae* 40 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 5 %					0,15	0,04
33	*Peucedano-Calamagrostietum canescentis*	0,94	0,24	0,94	0,24	0,94	0,24
34	*Caricetum gracilis*	0,47	0,12	0,47	0,12	0,47	0,12
35	*Phalaridetum arundinaceae* 60 %, *Phragmitetum australis* 40 %	1,34	0,34	1,34	0,34	1,34	0,34
36	*Caricetum gracilis*	0,32	0,08	0,32	0,08	0,32	0,08
37	*Peucedano-Calamagrostietum canescentis*	0,06	0,02	0,06	0,02	0,06	0,02

38	*Phragmitetum australis*	0,54	0,14	0,54	0,14	0,54	0,14
39	*Caricetum gracilis* 90 %, *Peucedano-Calamagrostietum canescentis* 10 %	1,04	0,26	1,04	0,26	1,04	0,26
40	*Phragmitetum australis*	0,55	0,14	0,55	0,14	0,55	0,14
41	*Phragmitetum australis*	0,76	0,19	0,76	0,19	0,76	0,19
42	*Caricetum gracilis* 95 %, *Peucedano-Calamagrostietum canescentis* 5 %	3,49	0,88	3,49	0,88	3,49	0,88
43	*Caricetum gracilis* 60 %, *Caricetum distichae* 40 %	3,03	0,76	3,03	0,76		
	Caricetum gracilis 60 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 40 %					3,03	0,76
44	Ruderal plant overgrowths	3,89	0,98	3,89	0,98	3,89	0,98
45	*Alopecuretum pratensis*	0,37	0,09	0,37	0,09	0,37	0,09
46	*Filipendulo-Geranietum* 94 %, *Deschampsietum cespitosae* 4 %, *Caricetum distichae* 1 %, *Alopecuretum pratensis* 1 %	1,11	0,28	1,11	0,28		
	Filipendulo-Geranietum 94 %, *Deschampsietum cespitosae* 4 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 1 %, *Alopecuretum pratensis* 1 %					1,11	0,28
47	*Caricetum gracilis* 95 %, *Peucedano-Calamagrostietum canescentis* 5 %	2,78	0,70	2,78	0,70	2,78	0,70
48	*Phragmitetum australis*	2,45	0,62	2,45	0,62	2,45	0,62
49	*Caricetum gracilis*	0,17	0,04	0,17	0,04	0,17	0,04
50	*Phragmitetum australis*	0,91	0,23	0,91	0,23	0,91	0,23
51	Ecotonal *Filipendulion* alliance plant communities	0,48	0,12	0,48	0,12	0,48	0,12
52	*Caricetum gracilis* 99 %, *Peucedano-Calamagrostietum canescentis* 1 %	2,35	0,59	2,35	0,59	2,35	0,59

53	*Filipendulo-Geranietum*	0,81	0,20	0,81	0,20	0,81	0,20
54	*Caricetum gracilis* 97 %, *Caricetum ripariae* 2 %, *Phalaridetum arundinaceae* 1 %	4,49	1,13	4,49	1,13	4,49	1,13
55	Naturalizing cultivated meadow	1,46	0,37	1,46	0,37	1,46	0,37
56	*Caricetum gracilis* 80 %, *Filipendulo-Geranietum* 15%, *Caricetum distichae* 4 %, *Caricetum cespitosae* 1 %	0,93	0,23	0,93	0,23		
	Caricetum gracilis 80 %, *Filipendulo-Geranietum* 15%, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 4 %, *Caricetum cespitosae* 1 %					0,93	0,23
57	*Caricetum gracilis* 60 %, *Caricetum distichae* 40 %	1,02	0,26	1,02	0,26		
	Caricetum gracilis 60 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 40 %					1,02	0,26
58	*Caricetum distichae*	0,34	0,09	0,34	0,09		
	Mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea*					0,34	0,09
59	*Caricetum acutiformis*	1,45	0,36	1,45	0,36	1,45	0,36
60	Ruderal plant overgrowth	0,45	0,11	0,45	0,11	0,45	0,11
61	*Phalaridetum arundinaceae* 80 %, *Caricetum gracilis* 20 %	0,31	0,08	0,31	0,08	0,31	0,08
62	Ruderal plant overgrowth	0,31	0,08	0,31	0,08	0,31	0,08
63	*Caricetum gracilis* 85 %, *Filipendulo-Geranietum* 15 %	0,71	0,18	0,71	0,18	0,71	0,18
64	Ruderal plant overgrowth	1,85	0,47	1,85	0,47	1,85	0,47
65	*Caricetum gracilis* 91 %,	0,70	0,18	0,70	0,18	0,70	0,18

	Peucedano-Calamagrostietum canescentis 1 %, *Caricetum acutiformis* 1 %						
66	*Caricetum gracilis* 91 %, *Peucedano-Calamagrostietum canescentis* 1 %, *Caricetum acutiformis* 1 %	0,53	0,13	0,53	0,13	0,53	0,13
67	*Caricetum gracilis* 91 %, *Peucedano-Calamagrostietum canescentis* 1 %, *Caricetum acutiformis* 1 %	0,39	0,10	0,39	0,10	0,39	0,10
68	*Caricetum gracilis* 91 %, *Peucedano-Calamagrostietum canescentis* 1 %, *Caricetum acutiformis* 1 %	0,66	0,17	0,66	0,17	0,66	0,17
69	*Caricetum gracilis* 91 %, *Peucedano-Calamagrostietum canescentis* 1 %, *Caricetum acutiformis* 1 %	0,72	0,18	0,72	0,18	0,72	0,18
70	*Lysimachio-Filipenduletum ulmariae*	0,22	0,06	0,22	0,06	0,22	0,06
71	*Filipendulo-Geranietum*	0,08	0,02	0,08	0,02	0,08	0,02
72	*Peucedano-Calamagrostietum canescentis* 70 %, *Phalaridetum arundinaceae* 25 %, *Phragmitetum australis* 5 %	0,44	0,11	0,44	0,11	0,44	0,11
73	*Phragmitetum australis*	2,00	0,50	2,00	0,50	2,00	0,50
74	*Caricetum gracilis*	3,69	0,93	3,69	0,93	3,69	0,93
75	*Caricetum gracilis* 99 %, *Peucedano-Calamagrostietum canescentis* 1 %	0,84	0,21	0,84	0,21	0,84	0,21
76	*Caricetum gracilis* 99 %, *Peucedano-Calamagrostietum canescentis* 1 %	0,24	0,06	0,24	0,06	0,24	0,06
77	*Caricetum gracilis* 99 %, *Peucedano-Calamagrostietum canescentis* 1 %	0,43	0,11	0,43	0,11	0,43	0,11
78	*Filipendulo-Geranietum*	1,34	0,34	1,34	0,34	1,34	0,34
79	*Filipendulo-Geranietum*	0,09	0,02	0,09	0,02	0,09	0,02
80	*Filipendulo-Geranietum*	0,32	0,08	0,32	0,08	0,32	0,08
81	*Phalaridetum*	0,03	0,01	0,03	0,01	0,03	0,01

	arundinaceae						
82	*Phalaridetum arundinaceae*	0,03	0,01	0,03	0,01	0,03	0,01
83	*Lysimachio-Filipenduletum ulmariae*	0,66	0,17	0,66	0,17	0,66	0,17
84	*Caricetum gracilis*	0,75	0,19	0,75	0,19	0,75	0,19
85	*Caricetum gracilis* 70 %, *Peucedano-Calamagros-tietum canescentis* 30 %	0,08	0,02	0,08	0,02	0,08	0,02
86	*Caricetum gracilis*	0,43	0,11	0,43	0,11	0,43	0,11
87	*Phragmitetum australis*	1,09	0,27	1,09	0,27	1,09	0,27
88	*Caricetum gracilis*	1,73	0,43	1,73	0,43	1,73	0,43
89	*Lysimachio-Filipenduletum ulmariae*	0,28	0,07	0,28	0,07	0,28	0,07
90	*Lysimachio-Filipenduletum ulmariae*	0,13	0,03	0,13	0,03	0,13	0,03
91	*Lysimachio-Filipenduletum ulmariae*	0,24	0,06	0,24	0,06	0,24	0,06
92	*Lysimachio-Filipenduletum ulmariae*	0,07	0,02	0,07	0,02	0,07	0,02
93	*Lysimachio-Filipenduletum ulmariae*	0,27	0,07	0,27	0,07	0,27	0,07
94	*Lysimachio-Filipenduletum ulmariae*	0,31	0,08	0,31	0,08	0,31	0,08
95	*Thelypteridi-Phragmitetum australis*	13,81	3,47	13,81	3,47	13,81	3,47
96	*Phalaridetum arundinaceae*	0,35	0,09	0,35	0,09	0,35	0,09
97	*Caricetum gracilis*	0,54	0,14	0,54	0,14	0,54	0,14
98	*Phragmitetum australis*	8,50	2,14	8,50	2,14	8,50	2,14
99	*Phalaridetum arundinaceae*	0,14	0,04	0,14	0,04	0,14	0,04
100	*Caricetum gracilis*	0,62	0,16	0,62	0,16	0,62	0,16
101	*Caricetum gracilis*	0,12	0,03	0,12	0,03	0,12	0,03
102	*Phalaridetum arundina-ceae* 80 %, *Lysimachio-Filipenduletum ulmariae* 20 %	0,27	0,07	0,27	0,07	0,27	0,07
103	*Phragmitetum australis*	6,15	1,55	6,15	1,55	6,15	1,55
104	*Lysimachio-Filipenduletum ulmariae*	0,15	0,04	0,15	0,04	0,15	0,04
105	*Lysimachio-Filipenduletum ulmariae*	0,52	0,13	0,52	0,13	0,52	0,13
106	*Caricetum gracilis*	0,31	0,08	0,31	0,08	0,31	0,08
107	*Phalaridetum arundinaceae*	0,42	0,11	0,42	0,11	0,42	0,11
108	Ruderal plant overgrowth	2,21	0,56	2,21	0,56	2,21	0,56

109	*Lysimachio-Filipenduletum ulmariae*	1,83	0,46	1,83	0,46	1,83	0,46
110	*Caricetum distichae*	0,14	0,04	0,14	0,04		
	mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea*					0,14	0,04
111	*Phragmitetum australis*	1,19	0,30	1,19	0,30	1,19	0,30
112	*Caricetum acutiformis*	0,20	0,05	0,20	0,05	0,20	0,05
113	*Caricetum cespitosae* 95 %, *Peucedano-Calamagrostietum canescentis* 5%	0,56	0,14	0,56	0,14	0,56	0,14
114	*Phalaridetum arundinaceae*	0,12	0,03	0,12	0,03	0,12	0,03
115	*Lysimachio-Filipenduletum ulmariae*	0,15	0,04	0,15	0,04	0,15	0,04
116	*Caricetum gracilis*	0,16	0,04	0,16	0,04	0,16	0,04
117	*Caricetum gracilis*	0,24	0,06	0,24	0,06	0,24	0,06
118	*Caricetum gracilis*	0,07	0,02	0,07	0,02	0,07	0,02
119	*Caricetum gracilis*	0,61	0,15	0,61	0,15	0,61	0,15
120	*Caricetum gracilis*	0,11	0,03	0,11	0,03	0,11	0,03
121	*Caricetum gracilis*	0,09	0,02	0,09	0,02	0,09	0,02
122	*Lysimachio-Filipenduletum ulmariae*	0,14	0,04	0,14	0,04	0,14	0,04
123	*Caricetum cespitosae* 99 %, *Filipendulo-Geranietum* 1 %	0,08	0,02	0,08	0,02	0,08	0,02
124	*Lysimachio-Filipenduletum ulmariae*	2,89	0,73	2,89	0,73	2,89	0,73
125	*Lysimachio-Filipenduletum ulmariae*	0,10	0,03	0,10	0,03	0,10	0,03
126	*Lysimachio-Filipenduletum ulmariae*	0,10	0,03	0,10	0,03	0,10	0,03
127	*Caricetum gracilis*	0,03	0,01	0,03	0,01	0,03	0,01
128	*Phragmitetum australis*	8,84	2,22	8,84	2,22	8,84	2,22
129	*Caricetum gracilis*	0,18	0,05	0,18	0,05	0,18	0,05
130	*Caricetum gracilis*	0,20	0,05	0,20	0,05	0,20	0,05
131	*Caricetum gracilis*	0,34	0,09	0,34	0,09	0,34	0,09
132	*Caricetum gracilis*	0,13	0,03	0,13	0,03	0,13	0,03
133	*Lysimachio-Filipenduletum ulmariae*	0,69	0,17	0,69	0,17	0,69	0,17
134	*Caricetum gracilis*	0,15	0,04	0,15	0,04	0,15	0,04
135	*Caricetum gracilis*	0,55	0,14	0,55	0,14	0,55	0,14
136	*Caricetum gracilis*	0,31	0,08	0,31	0,08	0,31	0,08
137	*Caricetum gracilis*	0,29	0,07	0,29	0,07	0,29	0,07

138	*Caricetum gracilis*	0,36	0,09	0,36	0,09	0,36	0,09
139	*Caricetum gracilis*	0,46	0,12	0,46	0,12	0,46	0,12
140	*Caricetum gracilis*	0,13	0,03	0,13	0,03	0,13	0,03
141	*Caricetum gracilis*	0,62	0,16	0,62	0,16	0,62	0,16
142	*Caricetum gracilis*	0,10	0,03	0,10	0,03	0,10	0,03
143	*Lysimachio-Filipenduletum ulmariae*	0,51	0,13	0,51	0,13	0,51	0,13
144	*Caricetum gracilis*	0,50	0,13	0,50	0,13	0,50	0,13
145	*Lysimachio-Filipenduletum ulmariae*	2,22	0,56	2,22	0,56	2,22	0,56
146	*Phragmitetum australis*	0,10	0,03	0,10	0,03	0,10	0,03
147	*Lysimachio-Filipenduletum ulmariae*	0,64	0,16	0,64	0,16	0,64	0,16
148	*Lysimachio-Filipenduletum ulmariae*	0,39	0,10	0,39	0,10	0,39	0,10
149	*Phragmitetum australis*	0,08	0,02	0,08	0,02	0,08	0,02
150	*Lysimachio-Filipenduletum ulmariae*	0,21	0,05	0,21	0,05	0,21	0,05
151	*Thelypteridi-Phragmitetum australis*	1,80	0,45	1,80	0,45	1,80	0,45
152	*Phragmitetum australis*	1,22	0,31	1,22	0,31	1,22	0,31
153	*Thelypteridi-Phragmitetum australis*	0,36	0,09	0,36	0,09	0,36	0,09
154	*Thelypteridi-Phragmitetum australis*	7,34	1,84	7,34	1,84	7,34	1,84
155	*Lysimachio-Filipenduletum ulmariae*	0,17	0,04	0,17	0,04	0,17	0,04
156	*Caricetum gracilis*	0,41	0,10	0,41	0,10	0,41	0,10
157	*Caricetum gracilis*	0,25	0,06	0,25	0,06	0,25	0,06
158	*Caricetum gracilis*	0,16	0,04	0,16	0,04	0,16	0,04
159	*Lysimachio-Filipenduletum ulmariae*	1,27	0,32	1,27	0,32	1,27	0,32
160	*Lysimachio-Filipenduletum ulmariae*	2,38	0,60	2,38	0,60	2,38	0,60
161	*Phalaridetum arundinaceae*	0,19	0,05	0,19	0,05	0,19	0,05
162	*Phragmitetum australis*	1,01	0,25	1,01	0,25	1,01	0,25
163	*Phragmitetum australis*	0,04	0,01	0,04	0,01	0,04	0,01
164	*Phragmitetum australis*	0,92	0,23	0,92	0,23	0,92	0,23
165	*Phragmitetum australis*	1,14	0,29	1,14	0,29	1,14	0,29
166	*Lysimachio-Filipenduletum ulmariae*	0,70	0,18	0,70	0,18	0,70	0,18
167	*Caricetum gracilis*	0,32	0,08	0,32	0,08	0,32	0,08
168	*Caricetum gracilis*	0,93	0,23	0,93	0,23	0,93	0,23
169	*Caricetum gracilis*	0,45	0,11	0,45	0,11	0,45	0,11
170	*Lysimachio-Filipendule-*	0,60	0,15	0,60	0,15	0,60	0,15

	tum ulmariae 90 %, *Caricetum gracilis* 10 %						
171	*Phragmitetum australis*	0,37	0,09	0,37	0,09	0,37	0,09
172	*Phragmitetum australis*	1,27	0,32	1,27	0,32	1,27	0,32
173	*Caricetum gracilis*	1,11	0,28	1,11	0,28	1,11	0,28
174	*Caricetum gracilis*	1,52	0,38	1,52	0,38	1,52	0,38
175	*Phragmitetum australis*	0,22	0,06	0,22	0,06	0,22	0,06
176	*Caricetum gracilis*	0,85	0,21	0,85	0,21	0,85	0,21
177	*Caricetum gracilis*	0,80	0,20	0,80	0,20	0,80	0,20
178	*Caricetum gracilis*	0,27	0,07	0,27	0,07	0,27	0,07
179	*Lysimachio-Filipenduletum ulmariae*	1,72	0,43	1,72	0,43	1,72	0,43
180	*Lysimachio-Filipenduletum ulmariae*	0,84	0,21	0,84	0,21	0,84	0,21
181	*Lysimachio-Filipenduletum ulmariae*	0,29	0,07	0,29	0,07	0,29	0,07
182	*Lysimachio-Filipenduletum ulmariae*	0,08	0,02	0,08	0,02	0,08	0,02
183	*Lysimachio-Filipenduletum ulmariae*	0,06	0,02	0,06	0,02	0,06	0,02
184	*Lysimachio-Filipenduletum ulmariae*	0,56	0,14	0,56	0,14	0,56	0,14
185	*Lysimachio-Filipenduletum ulmariae*	0,63	0,16	0,63	0,16	0,63	0,16
186	*Phragmitetum australis*	0,28	0,07	0,28	0,07	0,28	0,07
187	*Phragmitetum australis*	6,44	1,62	6,44	1,62	6,44	1,62
188	*Lysimachio-Filipenduletum ulmariae*	1,99	0,50	1,99	0,50	1,99	0,50
189	*Caricetum gracilis*	0,21	0,05	0,21	0,05	0,21	0,05
190	*Caricetum gracilis*	0,37	0,09	0,37	0,09	0,37	0,09
191	*Caricetum gracilis*	0,47	0,12	0,47	0,12	0,47	0,12
192	*Caricetum gracilis*	0,91	0,23	0,91	0,23	0,91	0,23
193	*Lysimachio-Filipenduletum ulmariae*	0,76	0,19	0,76	0,19	0,76	0,19
194	*Lysimachio-Filipenduletum ulmariae*	0,17	0,04	0,17	0,04	0,17	0,04
195	*Lysimachio-Filipenduletum ulmariae*	1,52	0,38	1,52	0,38	1,52	0,38
196	*Phragmitetum australis*	2,67	0,67	2,67	0,67	2,67	0,67
197	*Caricetum gracilis*	2,31	0,58	2,31	0,58	2,31	0,58
198	*Lysimachio-Filipenduletum ulmariae*	0,12	0,03	0,12	0,03	0,12	0,03
199	*Phragmitetum australis*	0,18	0,05	0,18	0,05	0,18	0,05
200	*Caricetum gracilis*	0,91	0,23	0,91	0,23	0,91	0,23
201	*Caricetum gracilis*	1,68	0,42	1,68	0,42	1,68	0,42
202	*Caricetum gracilis*	1,22	0,31	1,22	0,31	1,22	0,31

203	*Lysimachio-Filipenduletum ulmariae*	0,29	0,07	0,29	0,07	0,29	0,07
204	*Phragmitetum australis*	0,43	0,11	0,43	0,11	0,43	0,11
205	*Phragmitetum australis*	0,05	0,01	0,05	0,01	0,05	0,01
206	*Caricetum distichae* 60 %, *Phalaridetum arundinaceae* 40 %	0,25	0,06	0,25	0,06		
	Mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 60 %, *Phalaridetum arundinaceae* 40 %					0,25	0,06
207	*Phragmitetum australis*	2,15	0,54	2,15	0,54	2,15	0,54
208	*Lysimachio-Filipenduletum ulmariae* 70 %, *Phalaridetum arundinaceae* 30 %	0,29	0,07	0,29	0,07	0,29	0,07
209	Cultivated meadow	4,34	1,09	4,34	1,09	4,34	1,09
210	*Caricetum distichae*	3,44	0,86	3,44	0,86		
	Mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea*					3,44	0,86
211	*Caricetum gracilis* 99 %, *Phalaridetum arundinaceae* 1 %	9,60	2,41	9,60	2,41	9,60	2,41
212	*Phalaridetum arundinaceae* 40 %, *Lysimachio-Filipenduletum ulmariae* 30 %, *Caricetum distichae* 30 %	0,80	0,20	0,80	0,20		
	Phalaridetum arundinaceae 40 %, *Lysimachio-Filipenduletum ulmariae* 30 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 30 %					0,80	0,20
213	*Phragmitetum australis*	0,53	0,13	0,53	0,13	0,53	0,13
214	*Phragmitetum australis*	1,17	0,29	1,17	0,29	1,17	0,29
215	*Caricetum gracilis* 99 %, *Phalaridetum*	6,43	1,62	6,43	1,62	6,43	1,62

	arundinaceae 1 %						
216	Cultivated meadow	5,50	1,38	5,50	1,38	5,50	1,38
217	Cultivated meadow	0,18	0,05	0,18	0,05	0,18	0,05
218	Shrubs	0,64	0,16	0,64	0,16	0,64	0,16
219	*Caricetum gracilis* 75 %, *Caricetum distichae* 20 %, *Phalaridetum arundinaceae* 5 %	0,82	0,21	0,82	0,21		
	Caricetum gracilis 75 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 20 %, *Phalaridetum arundinaceae* 5 %					0,82	0,21
220	*Caricetum distichae* 70 %, *Phalaridetum arundinaceae* 20 %, *Lysimachio-Filipenduletum ulmariae* 10 %	1,85	0,47	1,85	0,47		
	Mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 70 %, *Phalaridetum arundinaceae* 20 %, *Lysimachio-Filipenduletum ulmariae* 10 %					1,85	0,47
221	*Caricetum gracilis* 90 %, *Phalaridetum arundinaceae* 10 %	2,79	0,70	2,79	0,70	2,79	0,70
222	*Lysimachio-Filipenduletum ulmariae*	0,80	0,20	0,80	0,20	0,80	0,20
223	Shrubs	0,40	0,10	0,40	0,10	0,40	0,10
224	*Lysimachio-Filipenduletum ulmariae* 80 %, *Phalaridetum arundinaceae* 18 %, cultivated plant overgrowth 2 %	0,66	0,17	0,66	0,17	0,66	0,17
225	*Lysimachio-Filipenduletum ulmariae* 80 %, *Caricetum distichae* 15 %, *Phalaridetum arundinaceae* 5 %	3,79	0,95	3,79	0,95		
	Lysimachio-Filipendule-					3,79	0,95

	tum ulmariae 80 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 15 %, *Phalaridetum arundinaceae* 5 %						
226	*Phragmitetum australis*	8,48	2,13	8,48	2,13	8,48	2,13
227	Shrubs	0,84	0,21	0,84	0,21	0,84	0,21
228	*Lysimachio-Filipenduletum ulmariae* 50 %, *Caricetum distichae* 25 %, *Phalaridetum arundinaceae* 20 %, *Caricetum gracilis* 5 %	0,31	0,08	0,31	0,08		
	Lysimachio-Filipenduletum ulmariae 50 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 25 %, *Phalaridetum arundinaceae* 20 %, *Caricetum gracilis* 5 %					0,31	0,08
229	*Lysimachio-Filipenduletum ulmariae* 50 %, *Caricetum distichae* 25 %, *Phalaridetum arundinaceae* 20 %, *Caricetum gracilis* 5 %	1,40	0,35	1,40	0,35		
	Lysimachio-Filipenduletum ulmariae 50 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 25 %, *Phalaridetum arundinaceae* 20 %, *Caricetum gracilis* 5 %					1,40	0,35
230	*Phragmitetum australis*	0,90	0,23	0,90	0,23	0,90	0,23
231	*Lysimachio-Filipenduletum ulmariae* 40 %, *Caricetum distichae* 30 %, *Phalaridetum*	0,21	0,05	0,21	0,05		

	arundinaceae 20 %, *Caricetum gracilis* 10 %						
	Lysimachio-Filipendule-tum ulmariae 40 %, mosaic of plant commu-nites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaride-tum arundinacea* 30 %, *Phalaridetum arundinaceae* 20 %, *Caricetum gracilis* 10 %					0,21	0,05
232	*Caricetum distichae* 50 %, *Phalaridetum arundinaceae* 20 %, *Lysimachio-Filipendule-tum ulmariae* 30 %	1,43	0,36	1,43	0,36		
	Mosaic of plant commu-nites with predominant *Carex acuta, Filipendula ulmaria* and *Phalari-detum arundinacea* 50 %, *Phalaridetum arundinaceae* 20 %, *Lysimachio-Filipendu-letum ulmariae* 30 %					1,43	0,36
233	*Caricetum gracilis* 95 %, *Phalaridetum arundinaceae* 5 %	1,81	0,45	1,81	0,45	1,81	0,45
234	*Caricetum distichae* 40 %, *Phalaridetum arundinaceae* 30 %, *Lysimachio-Filipendule-tum ulmariae* 30 %	0,52	0,13	0,52	0,13		
	Mosaic of plant commu-nites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaride-tum arundinacea* 40 %, *Phalaridetum arundina-ceae* 30 %, *Lysimachio-Filipenduletum ulmariae* 30 %					0,52	0,13
235	*Caricetum distichae* 40 %, *Phalaridetum arundinaceae* 30 %, *Lysimachio-Filipendule-*	2,91	0,73	2,91	0,73		

	tum ulmariae 30 %						
	Mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 40 %, *Phalaridetum arundinaceae* 30 %, *Lysimachio-Filipenduletum ulmariae* 30 %					2,91	0,73
236	*Phragmitetum australis*	2,22	0,56	2,22	0,56	2,22	0,56
237	*Caricetum gracilis* 95 %, *Phalaridetum arundinaceae* 5 %	1,33	0,33	1,33	0,33	1,33	0,33
238	*Caricetum gracilis* 95 %, *Phalaridetum arundinaceae* 5 %	1,10	0,28	1,10	0,28	1,10	0,28
239	*Lysimachio-Filipenduletum ulmariae* 70 %, *Caricetum distichae* 30 %	0,76	0,19	0,76	0,19		
	Lysimachio-Filipenduletum ulmariae 70 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 30 %					0,76	0,19
240	*Lysimachio-Filipenduletum ulmariae* 95 %, *Phalaridetum arundinaceae* 5 %	0,50	0,13	0,50	0,13	0,50	0,13
241	*Lysimachio-Filipenduletum ulmariae* 90 %, *Caricetum distichae* 10 %	2,74	0,69	2,74	0,69		
	Lysimachio-Filipenduletum ulmariae 90 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 10 %					2,74	0,69
242	*Caricetum gracilis* 85 %, *Caricetum distichae* 15 %;2	6,11	1,54	6,11	1,54		
	Caricetum gracilis 85 %, mosaic of plant					6,11	1,54

	communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 15 %						
243	*Caricetum gracilis* 95 %, *Phalaridetum arundinaceae* 5 %	5,22	1,31	5,22	1,31	5,22	1,31
244	*Lysimachio-Filipendule-tum ulmariae* 80 %, *Caricetum distichae* 10 %, *Phalaridetum arundinaceae* 10 %	1,25	0,31	1,25	0,31		
	Lysimachio-Filipendule-tum ulmariae 80 %, mosaic of plant commu-nites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaride-tum arundinacea* 10 %, *Phalaridetum arundinaceae* 10 %					1,25	0,31
245	*Phalaridetum arundina-ceae* 60 %, *Lysimachio-Filipenduletum ulmariae* 40 %	0,10	0,03	0,10	0,03	0,10	0,03
246	*Phalaridetum arundina-ceae* 40 %, *Lysimachio-Filipenduletum ulmariae* 30 %, *Caricetum distichae* 20 %, *Caricetum gracilis* 10 %	0,34	0,09	0,34	0,09		
	Phalaridetum arundina-ceae 40 %, *Lysimachio-Filipenduletum ulmariae* 30 %, mosaic of plant communites with predo-minant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundina-cea* 20 %, *Caricetum gracilis* 10 %					0,34	0,09
247	*Caricetum gracilis*	2,41	0,61	2,41	0,61	2,41	0,61
248	*Lysimachio-Filipendule-tum ulmariae* 80 %,	1,19	0,30	1,19	0,30		

	Caricetum distichae 10 %, *Phalaridetum arundinaceae* 10 %						
	Lysimachio-Filipendule-tum ulmariae 80 %, mosaic of plant commu-nites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaride-tum arundinacea* 10 %, *Phalaridetum arundinaceae* 10 %					1,19	0,30
249	*Lysimachio-Filipendule-tum ulmariae* 80 %, *Caricetum distichae* 10 %, *Phalaridetum arundinaceae* 10 %	2,68	0,67	2,68	0,67		
	Lysimachio-Filipendule-tum ulmariae 80 %, mo-saic of plant communites with predominant *Carex acuta, Filipendula ulma-ria* and *Phalaridetum arundinacea* 10 %, *Phalaridetum arundinaceae* 10 %					2,68	0,67
250	*Caricetum gracilis* 95 %, *Phalaridetum arundinaceae* 5 %	1,84	0,46	1,84	0,46	1,84	0,46
251	*Caricetum gracilis* 95 %, *Phalaridetum arundinaceae* 5 %	1,32	0,33	1,32	0,33	1,32	0,33
252	*Phragmitetum australis*	1,14	0,29	1,14	0,29	1,14	0,29
253	*Phragmitetum australis*	0,10	0,03	0,10	0,03	0,10	0,03
254	*Phragmitetum australis*	3,02	0,76	3,02	0,76	3,02	0,76
255	*Phragmitetum australis*	0,63	0,16	0,63	0,16	0,63	0,16
256	*Caricetum gracilis* 95 %, *Phalaridetum arundinaceae* 4 %, *Caricetum distichae* 1 %	1,44	0,36	1,44	0,36		
	Caricetum gracilis 95 %, *Phalaridetum arundina-ceae* 4 %, mosaic of plant communites with predo-minant *Carex acuta, Filipendula ulmaria* and *Phalaridetum*					1,44	0,36

	arundinacea 1 %						
257	*Lysimachio-Filipenduletum ulmariae* 50 %, *Phalaridetum arundinaceae* 45 %, *Caricetum distichae* 5 %	0,07	0,02	0,07	0,02		
	Lysimachio-Filipenduletum ulmariae 50 %, *Phalaridetum arundinaceae* 45 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 5 %					0,07	0,02
258	*Lysimachio-Filipenduletum ulmariae* 50 %, *Phalaridetum arundinaceae* 45 %, *Caricetum distichae* 5 %	0,15	0,04	0,15	0,04		
	Lysimachio-Filipenduletum ulmariae 50 %, *Phalaridetum arundinaceae* 45 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 5 %					0,15	0,04
259	*Lysimachio-Filipenduletum ulmariae* 50 %, *Phalaridetum arundinaceae* 45 %, *Caricetum distichae* 5 %	0,08	0,02	0,08	0,02		
	Lysimachio-Filipenduletum ulmariae 50 %, *Phalaridetum arundinaceae* 45 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 5 %					0,08	0,02
260	*Caricetum gracilis*	1,62	0,41	1,62	0,41	1,62	0,41
261	*Phragmitetum australis*	2,10	0,53	2,10	0,53	2,10	0,53
262	Cultivated meadow	2,55	0,64	2,55	0,64	2,55	0,64
263	*Phragmitetum australis*	0,23	0,06	0,23	0,06	0,23	0,06

264	*Phragmitetum australis*	1,40	0,35	1,40	0,35	1,40	0,35
265	*Lysimachio-Filipenduletum ulmariae* 85 %, *Phalaridetum arundinaceae* 5 %, *Caricetum gracilis* 5 %, *Phragmitetum australis* 5 %	0,51	0,13	0,51	0,13	0,51	0,13
266	*Lysimachio-Filipenduletum ulmariae* 85 %, *Phalaridetum arundinaceae* 5 %, *Caricetum gracilis* 5 %, *Phragmitetum australis* 5 %	0,56	0,14	0,56	0,14	0,56	0,14
267	*Lysimachio-Filipenduletum ulmariae* 85 %, *Phalaridetum arundinaceae* 5 %, *Caricetum gracilis* 5 %, *Phragmitetum australis* 5 %	1,38	0,35	1,38	0,35	1,38	0,35
268	*Lysimachio-Filipenduletum ulmariae* 85 %, *Phalaridetum arundinaceae* 5 %, *Caricetum gracilis* 5 %, *Phragmitetum australis* 5 %	1,94	0,49	1,94	0,49	1,94	0,49
269	*Phragmitetum australis*	3,39	0,85	3,39	0,85	3,39	0,85
270	*Phalaridetum arundinaceae* 95 %, *Caricetum gracilis* 5 %	2,38	0,60	2,38	0,60	2,38	0,60
271	*Phalaridetum arundinaceae* 80 %, *Caricetum gracilis* 20 %	7,65	1,92	7,65	1,92	7,65	1,92
272	*Phragmitetum australis*	0,41	0,10	0,41	0,10	0,41	0,10
273	*Phragmitetum australis*	0,59	0,15	0,59	0,15	0,59	0,15
274	*Caricetum gracilis*	0,24	0,06	0,24	0,06	0,24	0,06
275	*Phalaridetum arundinaceae* 60 %, *Caricetum gracilis* 20 %, *Lysimachio-Filipenduletum ulmariae* 15 %, *Phragmitetum australis* 5 %	1,82	0,46	1,82	0,46	1,82	0,46
276	*Caricetum gracilis* 99 %, *Phragmitetum australis* 1 %	1,79	0,45	1,79	0,45	1,79	0,45
277	*Caricetum gracilis* 99 %, *Phragmitetum australis* 1 %	2,25	0,57	2,25	0,57	2,25	0,57

278	*Phalaridetum arundinaceae* 80 %, *Caricetum distichae* 10 %, *Caricetum gracilis* 10 %	1,33	0,33	1,33	0,33		
	Phalaridetum arundinaceae 80 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 10 %, *Caricetum gracilis* 10 %					1,33	0,33
279	*Phragmitetum australis*	10,25	2,58	10,25	2,58	10,25	2,58
280	*Caricetum gracilis* 70 %, *Phalaridetum arundinaceae*10 %, *Lysimachio-Filipenduletum ulmariae* 10 %, *Caricetum distichae* 10 %	4,09	1,03	4,09	1,03		
	Caricetum gracilis 70 %, *Phalaridetum arundinaceae*10 %, *Lysimachio-Filipenduletum ulmariae* 10 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 10 %					4,09	1,03
281	*Phragmitetum australis*	0,77	0,19	0,77	0,19	0,77	0,19
282	*Phragmitetum australis*	0,17	0,04	0,17	0,04	0,17	0,04
283	*Caricetum gracilis* 60 %, *Phalaridetum arundinaceae* 30 %, *Caricetum distichae* 10 %	0,79	0,20	0,79	0,20		
	Caricetum gracilis 60 %, *Phalaridetum arundinaceae* 30 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 10 %					0,79	0,20
284	*Caricetum gracilis* 90 %, *Phalaridetum arundinaceae* 10 %	6,09	1,53	6,09	1,53	6,09	1,53
285	*Caricetum gracilis* 90 %,	0,76	0,19	0,76	0,19	0,76	0,19

	Phalaridetum arundinaceae 10 %						
286	*Caricetum gracilis* 90 %, *Phalaridetum arundinaceae* 10 %	0,46	0,12	0,46	0,12	0,46	0,12
287	*Lysimachio-Filipenduletum ulmariae* 60 %, *Phalaridetum arundinaceae* 40 %	0,47	0,12	0,47	0,12	0,47	0,12
288	*Phalaridetum arundinaceae* 50 %, *Lysimachio-Filipenduletum ulmariae* 20 %, *Caricetum distichae* 15 %, *Caricetum gracilis* 15 %	2,10	0,53	2,10	0,53		
	50 %, *Lysimachio-Filipenduletum ulmariae* 20 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 15 %, *Caricetum gracilis* 15 %					2,10	0,53
289	Shrubs	0,19	0,05	0,19	0,05	0,19	0,05
290	*Phragmitetum australis*	0,35	0,09	0,35	0,09	0,35	0,09
291	*Phragmitetum australis*	0,19	0,05	0,19	0,05	0,19	0,05
292	*Phragmitetum australis*	0,12	0,03	0,12	0,03	0,12	0,03
293	*Caricetum gracilis*	0,19	0,05	0,19	0,05	0,19	0,05
294	*Phalaridetum arundinaceae*	0,20	0,05	0,20	0,05	0,20	0,05
295	*Phalaridetum arundinaceae*	0,70	0,18	0,70	0,18	0,70	0,18
296	*Phragmitetum australis*	0,38	0,10	0,38	0,10	0,38	0,10
297	*Phragmites australis* and shrubs	0,51	0,13	0,51	0,13	0,51	0,13
298	*Phalaridetum arundinaceae* 60 %, *Caricetum gracilis* 20 %, *Lysimachio-Filipenduletum ulmariae* 15 %, *Phragmitetum australis* 5 %	2,57	0,65	2,57	0,65	2,57	0,65
299	*Caricetum gracilis* 90 %, *Phalaridetum arundinaceae* 10 %	2,22	0,56	2,22	0,56	2,22	0,56
300	*Caricetum gracilis* 90 %, *Phalaridetum*	6,63	1,67	6,63	1,67	6,63	1,67

	arundinaceae 10 %						
301	*Phalaridetum arundinaceae* 70 %, *Caricetum distichae* 30 %	0,77	0,19	0,77	0,19		
	Phalaridetum arundinaceae 70 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 30 %					0,77	0,19
302	*Phragmitetum australis*	0,32	0,08	0,32	0,08	0,32	0,08
303	*Phalaridetum arundinaceae* 70 %, *Caricetum distichae* 30 %	1,15	0,29	1,15	0,29	1,15	0,29
	Phalaridetum arundinaceae 70 %, mosaic of plant communites with predominant *Carex acuta, Filipendula ulmaria* and *Phalaridetum arundinacea* 30 %					1,15	0,29
304	*Phalaridetum arundinaceae*	0,28	0,07	0,28	0,07	0,28	0,07
305	*Phragmitetum australis*	0,51	0,13	0,51	0,13	0,51	0,13
306	*Phragmitetum australis*	0,42	0,11	0,42	0,11	0,42	0,11
307	*Caricetum gracilis*	0,24	0,06	0,24	0,06	0,24	0,06
308	*Phragmitetum australis*	0,70	0,18	0,70	0,18	0,70	0,18
309	*Caricetum gracilis*	0,19	0,05	0,19	0,05	0,19	0,05
310	*Phragmitetum australis*	0,72	0,18	0,72	0,18	0,72	0,18
311	*Caricetum gracilis*	0,14	0,04	0,14	0,04	0,14	0,04
312	*Phragmitetum australis*	0,35	0,09	0,35	0,09	0,35	0,09
	Total:	397,84	100,00	397,84	100,00	397,84	100,00

3. Brief characterizations of plant communities

Alopecuretum pratensis

1. Physiognomy. Heterogeneous grassland where a layer of tracery *Alopecurus pratensis* and a lower thick field of variuos grass are distinguished.
2. Coverage of shrubs. No shrub layer.
3. Tussocks. Micro conformation is plain.
4. Stability. Dynamic plant community, which depends on farming activities.
5. Variations of species composition. *Filipendula ulmaria* plants flourish rather abundantly.
6. Successions, reasons and tendency. Succesional ways are conditioned by future land-use.
7. Farming and intensity. Mowing.

8. The key factors in the development of community. Farming acitivies and hydrological conditions.
9. Vegetation changes. In 2013, in monitoring plot almost double number of species detected than in 2011, however, prevailing species plants abundance and coverage (just *Filipendula ulmaria* increased) remained unchanged. Most likely, in 2011, authors who carried out monitoring, limited described area to lesser than 100 meters in square. In 2015, investigated territory mowed. Decresment of the plant speacies (less 7 species then in 2013) recorded. Due to mowing, coenopopulation of the *Alopecurus pratensis* became more vital and abundant but on the other hand *Filipendula ulmaria* diminished.

Caricetum acutiformis

1. Physiognomy. The overgrowth of *Carex acutiformis* monodominat.
2. Coverage of shrubs. No shrubs layer.
3. Tussocks. No tussocks.
4. Stability. Relatively stable.
5. Variations of species composition. Variations are not established.
6. Successions, reasons and tendency. Generally, fertile meadows are succeeded by this community due to waterlogging or absence of farming activities.
7. Farming and intensity. Mowing.
8. The key factors in the development of community. Fluctuations of hydrological regime and haymaking.
9. Vegetation changes. In 2013, plant communities species composition remained unchanged, just abundance of *Phragmites australis* increased. In 2015, investigated plots mowed. In mowed area abundance of *Carex acutiformis* decreased but abundance of *Carex acuta* increased. Abundance of *Phragmites australis* remained stable.

Caricetum cespitosae

1. Physiognomy. Tall grassland where prominent *Carex cespitosa* and *Filipendula ulmaria* plants thrive.
2. Coverage of shrubs. No shrubs layer.
3. Tussocks. Scarce, but tall tussocks.
4. Stability. Relatively stable.
5. Variations of species composition. *Filipendula ulmaria* plants may grow abundanlty.
6. Successions, reasons and tendency. This community develped from fertile meadow community due to waterlogging or absence of farming activities.
7. Farming and intensity. Mowing.
8. The key factors in the development of community. Hydrological regime and land use.
9. Vegetation changes. In 2013, plant communities' species composition changed slightly. Multipications of *Filipendula ulmaria, Veronica longifolia* and *Carex disticha* has been observed. In 2015, due to mowing, coenopopulation of *Carex cespitosa* diminished but on the other hand coenopopulation of *Alopecurus pratensis* and *Bistorta major* increased. *Glechoma hederacea*, *Lysimachia nummularia* found a niche in the plant community.

Caricetum distichae

1. Physiognomy. Monodominant overgrowths of *Carex disticha.*
2. Coverage of shrubs. No scrubs.
3. Tussocks. No tussocks.

4. Stability. Under the influence of constant hydrological and farming conditions, communities are stable, however, due to cessation of mowing or waterlogging of habitats they are succeeded by the *Lysimachio-Filipenduletum vulgaris*, seldom – *Thelypterido-Phragmitetum.*
5. Variations of species composition. In unmowed plant communities *Lysimachia vulgaris* or *Phragmites australis* begins to dominate.
6. Successions, reasons and tendency. These communities are formed on slightly more elevated ground than *Caricetum gracilis.* Fluctuations steadily proceed under the influence of inconstant hydrological conditions i.e. *Caricetum gracilis* have formed under the influence of water balance after heavy inundation of water, but in drier seasons it withers and steps aside for the *Caricetum distichae.* Very often these two communities along with *Phalaroides arundinacea* comprise a very complicated vegetation mosaic. In the lower reaches of Nemunas these fluctuations previously were described in old literature. Succession proceeds differently due to cessation of mowing of plant communities or the waterlogging during abnormal long floods.
7. Farming and intensity. Some plots have been mowed.
8. The key factors in the development of community. The fluctuation of hydrological regime, mowing.
9. Vegetation changes. In 2013, abundance of *Carex disticha* slightly decreased. In all places abundance of *Phalaroides arundinacea* cenopolulations increased, also, in some places, multiplication of *Pragmites australis* was determined. In plant communities *Carex acuta* started to grow abundantly. In 2015, *Caricetum distichae* was changed by other phytosenoses in both plots. In one plot, plant community transformes to *Caricetum gracilis* and in another one – to *Lysimachio vulgaris-Filipenduletum* phytocenoses. Typical *Caricetum distichae* plant communities vanished in whole Tukliaragė polder but not in all plots they were replaced by *Caricetum gracilis* or *Lysimachio vulgaris-Filipenduletum*. In many plots *Caricetum distichae* replaced by phytocesnoses of the *Magnocaricion* alliance with dominants like *Carex acuta*, *Filipendula ulmaria*, *Phalaroides arundinacea*. In some plots as a subdominant *Carex disticha* occurs.

Caricetum gracilis

1. Physiognomy. The overgrowth of *Carex acuta* monodominats.
2. Coverage of shrubs. No shrub layer.
3. Tussocks. No tussocks.
4. Stability. Like *Caricetum distichae*, under the influence of constant hydrological and farming conditions, communities are stable. In plots unmowed for a long time, plant community changed by *Thelypterido-Phragmitetum*. However, these fluctuations are not frequent and intense like *Caricetum distichae* because of *Caricetum gracilis* is one of the most stable sedge communities in Tulkiaragė polder. This is determined by the competitive ability of *Carex acuta* and its ability to form dense overgrowth, where, under the influence of inconstant environmental conditions, plants of other separate species hardly penetrate through and grow singly. *Caricetum gracilis* phytocenosis, without having been mowed, remains stable for many years if it is not overgrown by reeds.
5. Variations of species composition. The facies of *Caricetum gracilis* and *Phragmites australis* are described.
6. Successions, reasons and tendency. The widespread communities are confined to lower and wetter areas than *Caricetum distichae* or *Phalaridetum arundinaceae* in Tulkiaragė polder.

7. Farming and intensity. Some plots have been mowed.
8. The key factors in the development of community. The fluctuation of hydrological regime and mowing.
9. Vegetation changes. In 2013, essential vegetation changes not determined, except, that in some areas coverage of *Phragmites australis* increased. In 2015, plant communities remained stable but in late mowed areas incresment of species recorded.

Deschampsietum cespitosae

1. Physiognomy. Layer formed by sparse capitulums of the *Deschampsia cespitosa* as well as layer formed by dense leaves and dwarfish grasses are distinguished.
2. Coverage of shrubs. No shrub layer.
3. Tussocks. No tussocks.
4. Stability. These communities are sensitive to farming activities and hydrological conditions.
5. Variations of species composition. In some places *Filipendula ulmaria* plants grow abundantly.
6. Successions, reasons and tendency. Under the influence of poor aeration, the cultivated meadows have been changed by these communities. Due to absence of farming activities they may be overgrown by reeds.
7. Farming and intensity. Mowing.
8. The key factors in the development of community. Farming activities and hydrological regime.
2. Vegetation changes. In 2013, abundance and coverage of *Deschampsia caespitose* decreased. Multiplication of species such as *Veronica longifolia, Persicaria amphibia* and *Filipendula ulmaria* observed. In 2015, an investigated area was mowed. Abundance of *Deschampsia cespitosa* decreased significantly, but *Alopecurus pratensis* increased, therefore this plant community transforms to *Poo palustris-Alopecuretum pratensis.*

Galio palustris-Caricetum ripariae

1. Physiognomy. The overgrowths of *Carex riparia* monodominat distributed in small areas.
2. Coverage of shrubs. No shrub layer.
3. Tussocks. No tussocks are observed.
4. Stability. These communities are stable under the influence of constant hydrological and farming conditions.
5. Variations of species composition. Variations are not established because of communities are rare and occupy small areas.
6. Successions, reasons and tendency. The communities are distributed in wetter or similar to *Caricetum gracilis* habitats. In Tulkiaragė polder they occupy a small area; therefore it is not very significant in vegetation mosaic.
7. Farming and intensity. Mowing.
8. The key factors in the development of community. Not established.
9. Vegetation changes. In 2013, significant increase of *Phragmites arundinacea* coverage observed. In plant community rather abundant *Calystegia sepium* cenopopulations found their niche there. In 2015, coverage of *Phragmites australis* decreased. Coenopopulations of the *Carex acuta* and *Carex disticha* increased.

Lysimachio vulgaris-Filipenduletum

1. Physiognomy. It is a meadow plant community, which flourishes in the mid-level of flood-plain of polder where *Lysimachia vulgaris* or *Filipendula ulmaria* dominates. These communities are rich in sedges such as *Carex acuta* and especially *Carex disticha.* Also *Phalaroides arundinacea* grows in this plant community.
2. Coverage of shrubs. The communities are not covered or slightly covered by shrubs.
3. Tussocks. No tussocks are observed.
4. Stability. The communities are stadial. A composition of species is mixed and often is rich in nitrophites especially *Calystegia sepium*.
5. Variations of species composition. *Lysimachia vulgaris* (mostly) or *Filipendula ulmaria* dominates.
6. Successions, reasons and tendency. The communities have formed under the influence of cessation of mowing of the *Caricetum distichae* community in drier habitats or due to the saturation of *Phalaridetum arundinacea* or *Caricetum gracilis* phytocenosis in more soggy habitats. It's possible that as a consequence of constant mowing, communities of sedge regenerate.
7. Farming and intensity. Mowing.
8. The key factors in the development of community. Cessation of mowing and waterlogging.
9. Vegetation changes. In 2013, coverage increased of edificator *Filipendula ulmaria* as well as of species such as *Veronica longifolia, Persicaria amphibia, Calystegia sepium* and *Cirsium arvense*. Abundance decreased of some gramineous plants (*Festuca pratensis* and *F. rubra*). In 2015, in one of the mowed plant communities no esseantial alterations recorded: decrestment of *Equisetum palustre* and *Calystegia sepium* and increasment of *Geum rivale, Elytrigia repens, Alopecurus pratensis, Carex cespitosa, Glechoma hederacea, Cirsium arvense* coenopopulations observed. In other plant communities, which were mowed for a longer period of time alterations are significant – succession to *Poo palustris-Alopecuretum pratensis* observed. Firstly, coverage and abundance of *Filipendula ulmaria* decreased; secondly – significantly abundance of *Alopecurus pratensis, Gallium mollugo* and *Centaurea jacea* increased in the plot.

Phalaridetum arundinaceae

1. Physiognomy. Overgrowth of *Phalaroides arundinacea* monodominat.
2. Coverage of shrubs. No shrub layer.
3. Tussocks. No tussocks are observed.
4. Stability. The communities are stable under the influence of constant hydrological and farming conditions; however the formation of *Lysimachio-Filipenduletum vulgaris* starts, due to the saturation of habitat in some plots, but this process is not very intensive in Tulkiaragė polder.
5. Variations of species composition. The composition of species is uniform. *Phalaroides arundinacea* is a species of high competitive ability, which forms a dense and high herbal layer and its strong rootstocks are intertwined in the soil table, therefore separate species cannot thrive there and as a result, overgrowth of reed canary grass can expand easily in the area by rivalling tracery communities of *Caricetum distichae.*
6. Successions, reasons and tendency. These communities formed on slightly more elevated areas than *Caicetum gracilis* in Tulkiaragė polder. Under the influence of constant ecological conditions, reed canary grass tends to expand in the area.
7. Farming and intensity. Mowing.

8. The key factors in the development of community. Seasonal inundation of water, stability of ecological conditions and party – mowing.
9. Vegetation changes. Essential changes are not determined in 2011–2015.

Phragmitetum australis

1. Physiognomy. Overgrowth of *Pragmites australis* monodominats.
2. Coverage of shrubs. No shrub layer.
3. Tussocks. No tussocks.
4. Stability. Under the constant conditions communities are stable and expand in the area very quickly.
5. Variations of species composition. No variations.
6. Successions, reasons and tendency. In various areas communities are formed in the wettest and waterlogged habitats of polder and have come to replace sedges and reed canary grasses communities (*Caricetum gracilis, Caricetum distichae, Phalaridetum arundinaceae*) because of absence of farming. A constant mowing would give an opportunity for communities of sedge or reed canary grass to regenerate.
7. Farming and intensity. Major part of the plant communites mowed.
8. The key factors in the development of community. Cessation of mowing, partly – flooding of habitats.
9. Vegetation changes. In 2013, plant communities remained stable. In 2015, in mowed plant communities, *Phragmites australis* decreased. In early mowed plant communities abundant coenopopulations of *Carex acuta, Phlaraoides arundinacea, Filipendula ulmaria, Urtica dioica* formed, therefore it is possible that their alterations, due to mowing, will be various. Unmowed plant communities remained stable.

Thelypteridi-Phragmitetum

1. Physiognomy. Overgrowth of monodominant *Phragmites australis* with an abundant intermixture of sedge.
2. Coverage of shrubs. No shrub layer.
3. Tussocks. No tussocks.
4. Stability. Under the constant conditions communities are stable and expand in the area very quickly.
5. Variations of species composition. No variations.
6. Successions, reasons and tendency. A constant mowing would give an opportunity for communities of sedge or Reed canary grass to regenerate.
7. Farming and intensity. Mowing.
8. The key factors in the development of community. Cessation of mowing.
9. Vegetation changes. In 2013, plant communities remained stable. In 2015, in mowed plant communities alterations are the same as in *Pragmitetum australis.*

Mosaic of the ecotonal *Magnocaricion* alliance plant communities with Prevailing plant species like *Carex acuta, Filipendula ulmaria* ir *Phalaroides arundinacea*

1. Physiognomy. Overgrowths of *Carex acuta, Filipendula ulmaria* and *Phalaroides arundinacea,* which are with an abundant intermixture of *Carex disticha* usually.
2. Coverage of shrubs. No shrub layer.
3. Tussocks. No tussocks.

4. Stability. Stadial plant communities. These plant communities transformed out of *Caricetum distichae* phytocenoses.
5. Variations of species composition. Plant community species composition and dominants variate very often.
6. Successions, reasons and tendency. Unknown. It is possible that due to constant mowing *Caricetum gracilis* or *Phalaridetum arundinacea* will find a niche there. Initial stadium of *Caricetum gracilis* formed in the plot No. 3.
7. Farming and intensity. Mowing.
8. The key factors in the development of community. Unknown.
9. Vegetation changes. Established just in 2015.

The overgrowths of ruderal plant species

1. Physiognomy. Phytocenoses of high nitrophils with *Anthriscus sylvestris* predomination.
2. Coverage of shrubs. No shrub layer.
3. Tussocks. No tussocks.
4. Stability. These communities are stadial.
5. Variations of species composition. Considerable variations are not common there.
6. Successions, reasons and tendency. The communities have formed under the influence of cessation of mowing in artificial habitats near canals. Trends of succession are vague.
7. Farming and intensity. Mowing.
8. The key factors in the development of community. Formation of canal embankment and cessation of mowing.
9. Vegetation changes. Overgrowths remained stable.


a

b

c

Fig. 2. *Caricetum distichae* (a, in 2011; b, in 2013) plant community transformation to *Caricetum gracilis* (c, in 2015). Tulkiaragė (LT02-3).


a

b

c

3 pav. *Caricetum distichae* (a, in 2011; b, in 2013) plant community transformation to *Lysimachio vulgaris-Filipenduletum* (c, in 2015). Tulkiaragė (LT02-4). In plant community *Filipendula ulmaria* and *Alopecurs pratensis* prevail, but 2015 year picture is blurred, therefor it is hard to see plants in it (c).

Fig. 4. In *Phragmitetum australis* (a, in 2011; b, in 2013) plant commmunities, after mowing abundant coenopopulations of *Carex acuta, Phalaroides arundinacea* and *Filipendula ulmaria* formed. (c, in 2015). Tulkiaragė (LT02-12).

4. Suitable plant communities for the Aquatic warbler

In Tulkiaragė polder, in the *Caricetum distichae* community (Contour 210), two singing males of Aquatic warbler (*Acrocephalus paludicola*) were observed in 2011. Until 2015, *Caricetum distichae* communities have been distinguished in 38 contours and they distributed in the area of a small scale (14.69 ha – 3.69 % of total vegetation area). However, it is the most important that these communities were observed in small plots – 4 contours plots are larger than 1 ha and one of it is just of 3 ha.

However, in 2013, it was established that abundance of *Carex disticha* edificator of *Caricetum distichae* plant community decreased. In 2015, *Caricetum distichae* phytocenoses lost their characteristic features – *Phalaroides arundinacea, Carex acuta* and *Filipendula ulmaria* started to dominate in the plant community.

5. Recommendations on management of the territory forming suitable plant communities for the Aquatic warbler

The vegetation in Tulkiaragė polder formed under the influence of both environmental and anthropogenic factors.

The key environmental factors, which fated distribution of vegetation are hydrological and trophic conditions. Thus, in order to form suitable plant communities for the Aquatic warbler in Tulkiaragė polder, attention must be paid to the intensity of grazing and mowing and favourable terms of flooding.

We recommend to start mowing of reedy vegetation of the *Caricetum distichae, Caricetum gracilis* and *Phalaridetum arundinaceae* communities as they are potencially suitable breeding ground for the aquatic warbler.

The assiduous mowing of vegetation (twice per year) is required in the areas where *Phragmitetum australis* and *Thelypterido-Phragmitetum* communities are distinguished and the trends of succession must be observed there too.

Hay must be taken away from the territory.

The extensive mowing or grazing can be applied in other areas occupied by plant communities from the *Molinio-Arrhenatheretea* class.

6. Changes of vegetation during 2011–2015

In 2013, in Tulkiaragė polder, no essential changes in vegetative cover determined. The contours of plant communities remained the same in size. Absolutely no alterations are observed in the communities from the *Phragmition* alliance. However, in many areas where phytocenosis from the *Magnocaricion* alliance are confined, multiplication of *Phragmites australis* is observed. In fertile meadow communities species such as *Filipendula ulmaria, Veronica longifolia* and *Persicaria amphibia* started to grow. These plants are characteristic to unmown meadows. So, during two years, tendency of vegetation development remained the same – sedge communities are overgrowing by reeds, meanwhile, fertile meadows grass communities where gramineous plants or sedges predominate – by overgrowths of meadowsweet.

In 2015, changes in plant communities recorded which occurred due to mowing. The most sensitive and rapid reaction to mowing was in plant communities of *Lysimachio vulgaris-Filipenduletum* and *Deschampsietum cespitosae.* Both plant communities started to succeed into *Poo palustris-Alopecuretum pratensis*. Abundance and vitality of *Phragmites australis* decreased and new coenopopulations formed or their abundance of *Phlaroides arundinacea, Carex acuta, Filipendula ulmaria, Urtica dioica* increased in the mowed reed beds (*Phragmitetum australis*, *Thelypteridi-Phragmitetum*). Due to proceeded mowing in the future, changes of plant community can be various – probably, formation of *Caricetum gracilis* will start, meanwhile, in drier plots – *Phalarietum arundinacea* and *Lysimachio vulgaris-Filipenduletum* will come to change plant community.

During last two years plant community of *Caricetum distichae* vanished (the same changes recorded in Šyša polder too). These plant communities replaced by *Caricetum gracilis, Lysimachio vulgaris-Filipenduletum, Phalaridetum arundinaceae.* These plant communities are of various dynamical stadiums, therefore according to peculiarities of their species composition they are assigned to *Magnocaricion* alliance.

7. Conclusions

1. Mowing of reed beds carried out in Tulkiaragė polder changed landscape – managed parts of the territory became more opened wetlands and home for intermixture of new sedge communities but mowing period was too short for formation of stable tall sedge communities. In mowed reed communities, reed coenopopulations became weak, their height and layer decreased but still they remained as dominants in the plant community.
2. Mowing significantly changed *Thelypterido-Phragmitetum* and *Phragmitetum ausralis* communities: started formation of stadial plant communities with prevailing *Carex acuta, Phalaroides arundinacea, Filipendula ulmaria* or mosaic comprised of these species with abundance intermixture of *Phragmites australis.* If we want to have stable tall sedge communities we must precede mowing even project will be ended.
3. Fluctuation changes of other grassland plant communities (mowed and unmowed) were observed in the area. Number of plant species increased in many plant communities due to dry summers.
4. In 2013, in Tulkiaragė meadows, *Caricetum distichae* communities declined in extent. *Carex disticha* coenopopulations became weak, abundance of this sedge species decreased. In 2015, *Carex disticha* abundance decreased even more, and *Carex gracilis, Phalaroides arundinacea* and *Filipendula ulmaria* began to predominate in the plant community. In some parts of the plant communities *Carex disticha* coenopopulations remained rather abundant, but these plants were already no longer as dominants in the communities, therefore changed plant communities could not be assigned to *Caricetum distichae* association. These changes occurred in both mowed and unmowed areas. Probably, *Caricetum distichae* communities vanished due to a longer than normal flooding period in 2012.
5. Trends determined in fertile mowed meadow communities. In many Tulkiaragė polder fertile meadow communities, due to absence of their mowing for many years they were reversed with prevailing *Filipendula ulmaria* coenopopulations. Gradually these plant communities changed to monodominat, species-poor *Lysimachia vulgaris-Filipenduletum*. During the time of monitoring, coenopopulations of *Filipendula ulmaria* obviously decreased in mowed plant communities. It was also recorded that mowed *Deschampsietum cespitosae* and *Lysimachia vulgaris-Filipenduletum* phytocenoses began to change to *Alopecuretum pratensis.*

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