

Source: Derek Antonelli, White Pine chapter meeting 02-12-13

Table 1. Relative frequency and percent cover for plant species found along the south transect in the *Spiraea* thicket south of Hager Lake.

Name	1955 ¹²		1992 ¹³		2012 ¹⁴	
	Rel. Freq.	% Cover	Rel. Freq.	% Cover	Rel. Freq.	% Cover
<i>Spiraea douglasii</i>	100.0	77.1	100.0	78.1	100.0	64.7
<i>Sphagnum</i> spp.	4.0	2.5	55.0	16.6	65.0	45.9
<i>Carex lasiocarpa</i>	36.0	7.2	33.3	3.5	32.5	2.9
<i>Lycopus uniflorus</i>	24.0	2.9	41.7	7.5	32.5	2.7
<i>Aulacomnium palustre</i>			13.3	1.3	27.5	6.1
<i>Lycopodiella inundata</i>			8.3	5.2	2.5	0.1
<i>Comarum palustre</i>	22.0	4.7	5.0	0.5		
<i>Calliergon stramineum</i>			56.7	5.0		
<i>Dulichium arundinaceum</i>			16.7	1.7	7.5	2.8
<i>Menyanthes trifoliata</i>			18.3	1.5	12.5	2.1
<i>Carex arcta</i>			3.3	1.3	10.0	2.1
<i>Kalmia microphylla</i>			6.7	2.4	5.0	0.1
<i>Carex brunnescens</i>					12.5	1.3
<i>Drosera anglica</i>			15.0	0.8	5.0	0.4
<i>Lysimachia thysiflora</i>			13.3	0.8	7.5	0.2
<i>Carex interior</i>			15.0	0.8		
<i>Agrostis scabra</i>			21.7	0.8		
<i>Alnus rhombifolia</i>	2.0	0.8				
<i>Viola macloskeyi</i>			16.7	0.6		
<i>Hypericum majus</i>			13.3	0.5		
<i>Pinus monticola</i>					5.0	0.4
<i>Lophozia</i> sp.					2.5	0.4
<i>Viola palustris</i>	2.0	0.3				
<i>Juncus ensifolius</i>	2.0	0.3				
<i>Polytrichum juniperinum</i>			3.3	0.3		
<i>Chamerion angustifolium</i>			1.7	0.3		
<i>Catoscopium nigratum</i>					7.5	0.2
<i>Amelanchier alnifolia</i>			5.0	0.1	2.5	0.1
unknown moss (moss 6)					5.0	0.1
<i>Crataegus douglasii</i>			5.0	0.1		
<i>Calamagrostis canadensis</i>			1.7	0.04	2.5	0.1
<i>Scheuchzeria palustris</i>			3.3	0.1		
<i>Pinus contorta</i>					2.5	0.1
<i>Dicranum tauricum</i>					2.5	0.1
<i>Lycopodium annotinum</i>			1.7	0.04		
<i>Drosera rotundifolia</i>			1.7	0.04		

¹² Includes plot lines S 5 through S 25 that Rumely completed in 1955

¹³ Includes plot lines S 5 through S 30 that Bursik completed in 1992

¹⁴ Includes plot lines S 15 through S 30 that we completed in 2012

Table 2. Relative frequency and percent cover for species found in the *Sphagnum* moss mat along the south transect on the south side of Hager Lake.

Name	1955 ¹⁵		1992 ¹⁶		2012 ¹⁷	
	Rel. Freq.	% Cover	Rel. Freq.	% Cover	Rel. Freq.	% Cover
<i>Sphagnum</i> spp.	91.3	66.9	97.9	76.1	92.9	70.4
<i>Vaccinium oxycoccos</i>	48.7	7.3	92.9	17.0	77.1	18.4
<i>Kalmia microphylla</i>	52.7	14.1	77.1	12.5	74.3	6.7
<i>Scheuchzeria palustris</i>	49.3	6.6	98.6	20.8	62.9	3.8
<i>Carex limosa</i>	40.0	9.4	59.3	8.1	55.7	3.4
<i>Eriophorum chamissonis</i>	0.7	0.1	0.7	0.02	92.9	20.0
<i>Menyanthes trifoliata</i>	60.7	7.5	68.6	6.1	72.9	5.5
<i>Carex rostrata</i>	56.0	16.1	12.1	1.6	5.0	0.3
<i>Carex lasiocarpa</i>	30.0	10.1	41.4	4.7	26.4	2.9
<i>Drosera anglica</i>	52.0	7.4	29.3	2.9	37.9	6.8
<i>Drosera rotundifolia</i>	25.3	4.0	85.0	8.2	52.1	3.2
<i>Calliergon stramineum</i>			82.9	7.5	5.0	0.1
<i>Dulichium arundinaceum</i>	7.3	3.7	14.3	2.3	15.7	1.3
<i>Lycopodiella inundata</i>	2.0	0.1	7.9	4.3	6.4	1.7
<i>Comarum palustre</i>	28.0	4.4	10.7	0.3	6.4	0.3
<i>Lycopus uniflorus</i>	20.0	2.1	12.9	2.3	4.3	0.1
<i>Viola macloskeyi</i>	25.3	0.9	15.7	0.7		
<i>Eleocharis quinqueflora</i>			10.7	1.1	9.3	0.4
<i>Spiraea douglasii</i>	2.0	0.3			4.3	0.7
<i>Carex canescens</i>			8.6	0.9		
<i>Eriophorum gracile</i>	4.0	0.5	0.7	0.02		
<i>Carex echinata</i>			3.6	0.4		
<i>Lysimachia thysiflora</i>	2.7	0.2	7.1	0.2		
<i>Carex interior</i>	2.0	0.1			2.1	0.2
Unknown moss	1.3	0.1				
<i>Cystopteris fragilis</i>	0.7	0.1				
<i>Epilobium palustre</i>	2.7	0.1				
<i>Viola nephrophylla</i>					2.1	0.1
<i>Agrostis scabra</i>			1.4	0.04		
<i>Spiranthes romanzoffiana</i>	0.7	0.02				
<i>Polytrichum juniperinum</i>	0.7	0.02				
<i>Pellia epiphylla</i>	0.7	0.02				

¹⁵ Includes plot lines S 30 through S 100 that Rumely completed in 1955

¹⁶ Includes plot lines S 35 through S 100 that Bursik completed in 1992

¹⁷ Includes plot lines S 35 through S 100 that we completed in 2012

Table 3. Relative frequency and percent cover for species found in the lake margin and littoral zone along the north transect south of the reference point "G" on the north side of Hager Lake.

Name	1955 ¹⁸		1992 ¹⁹		2012 ²⁰	
	Rel. Freq.	% Cover	Rel. Freq.	% Cover	Rel. Freq.	% Cover
<i>Carex lasiocarpa</i>	26.0	15.9	50.0	16.1	66.7	32.3
<i>Nuphea lutea</i>	18.0	5.3	42.5	21.9	16.7	6.1
<i>Dulichium arundinaceum</i>	34.0	12.6	25.0	1.6	13.3	1.9
<i>Sphagnum</i> spp.			40.0	9.7	10.0	3.1
<i>Schoenoplectus acutus</i>	40.0	5.0	70.0	3.9	40.0	3.1
<i>Brasenia schreberi</i>	22.0	7.5				
<i>Potamogeton natans</i>	44.0	5.1				
<i>Lycopus uniflorus</i>			40.0	2.6	20.0	0.5
<i>Viola macloskeyi</i>			32.5	1.8	3.3	0.1
<i>Spiraea douglasii</i>			22.5	1.2	10.0	0.3
<i>Schoenoplectus subterminalis</i>					3.3	1.3
<i>Pellia epiphylla</i>			7.5	1.1		
<i>Eleocharis palustris</i>	6.0	0.9	2.5	0.1		
<i>Lysimachia thyrsiflora</i>			25.0	0.9		
<i>Carex interior</i>					10.0	0.7
<i>Drosera rotundifolia</i>			25.0	0.6		
<i>Hypericum majus</i>			12.5	0.6		
<i>Comarum palustre</i>	2.0	0.3	7.5	0.2		
<i>Calliergon stramineum</i>			10.0	0.3		
<i>Carex echinata</i>			10.0	0.3		
<i>Carex limosa</i>			5.0	0.1		

¹⁸ Includes plot lines N -20 through N 0 that Rumely completed in 1955

¹⁹ Includes plot lines N -15 through N 0 that Bursik completed in 1992

²⁰ Includes plot lines N -10 through N 0 that we completed in 2012

Table 4. Relative frequency and percent cover for species found in the *Spiraea* zone along the north transect north of the reference point “G” on the north side of Hager Lake.

Name	1955 ²¹		1992 ²²		2012 ²³	
	Rel. Freq.	% Cover	Rel. Freq.	% Cover	Rel. Freq.	% Cover
<i>Spiraea douglasii</i>	93.1	39.0	100.0	65.7	71.9	51.6
<i>Carex lasiocarpa</i>	76.9	50.7	65.8	10.5	20.0	2.7
<i>Pinus contorta</i>			13.3	9.2	43.8	28.0
<i>Polytrichum commune</i>			39.2	14.9	6.3	0.3
<i>Polytrichum juniperinum</i>	1.3	0.3	4.2	0.9	16.9	6.3
<i>Aulacomnium palustre</i>			17.5	2.8	13.1	1.5
<i>Salix geeyeriana</i>	5.0	2.4			0.6	0.1
<i>Trientalis europaea</i> ssp. <i>arctica</i>	1.9	0.6			3.8	1.8
<i>Phleum pratense</i>			16.7	1.3		
<i>Lycopus uniflorus</i>	5.6	0.8	0.8	0.3	1.9	0.1
<i>Agrostis scabra</i>			20.8	0.5	8.8	0.6
<i>Hypericum majus</i>			13.3	0.5	2.5	0.2
<i>Potentilla norvegica</i>			4.2	0.7		
<i>Sphagnum</i> spp.	0.6	0.4	5.0	0.1	1.9	0.1
<i>Populus tremuloides</i>	0.6	0.5				
<i>Senecio hydrophiloides</i>	1.3	0.3				
<i>Viola palustris</i>					1.3	0.3
<i>Agrostis stolonifera</i>	0.6	0.2				
<i>Carex subfusca</i>	0.6	0.2				
<i>Drosera rotundifolia</i>	1.3	0.2				
<i>Comarum palustre</i>	1.3	0.2				
<i>Carex brunnescens</i>					6.3	0.2
<i>Lysimachia thysiflora</i>			0.8	0.1	1.3	0.03
<i>Carex interior</i>			1.7	0.1		
<i>Hieracium albiflorum</i>			0.8	0.1		
<i>Amelanchier alnifolia</i>			3.3	0.1	1.3	0.03
<i>Veronica officinalis</i>					1.3	0.1
<i>Carex arcta</i>					1.3	0.1
<i>Aulacomnium androgynum</i>					3.8	0.1
<i>Carex rostrata</i>	0.6	0.1				
<i>Symphyotrichum spathulatum</i>	0.6	0.1				
<i>Prunella vulgaris</i>	0.6	0.1				
<i>Viola orbiculata</i>	0.6	0.1				
<i>Geum macrophyllum</i>	0.6	0.1				
<i>Carex canescens</i>					0.6	0.1
<i>Calamagrostis canadensis</i>					0.6	0.1
<i>Rhamnus alnifolia</i>					0.6	0.1
<i>Equisetum fluviatile</i>			2.5	0.1		
<i>Chamerion angustifolium</i>			2.5	0.1		
<i>Trifolium repens</i>			1.7	0.04		
<i>Calliergon stramineum</i>			0.8	0.02		

Name	1955 ²¹		1992 ²²		2012 ²³	
	Rel. Freq.	% Cover	Rel. Freq.	% Cover	Rel. Freq.	% Cover
<i>Galium trifidum</i>			0.8	0.02		
<i>Cirsium vulgare</i>			0.8	0.02		
<i>Kalmia microphylla</i>	0.6	0.02				
<i>Spiranthes romanzoffiana</i>	0.6	0.02				
unknown dicot herb					0.6	0.02
<i>Galeopsis tetrahit</i>					0.6	0.02
<i>Abies grandis</i>					0.6	0.02
<i>Hypnum circinale</i>					0.6	0.02

²¹ Includes plot lines N 5 through N 405 that Rumely completed in 1955

²² Includes plot lines N 5 through N 285 that Bursik completed in 1992

²³ Includes plot lines N 5 through N 285 that we completed in 2012

Table 5. Relative frequency and percent cover for species found in the ditched and cleared portion of the fen along the north transect on the north side of Hager Lake.

Name	1955 ²⁴		1992 ²⁵		2012 ²⁶	
	Rel. Freq.	% Cover	Rel. Freq.	% Cover	Rel. Freq.	% Cover
<i>Carex arcta</i>			88.3	51.6		
<i>Polytrichum commune</i>			61.7	19.6		
<i>Pinus contorta</i>			16.7	14.2		
<i>Phleum pratense</i>			55.0	11.0		
<i>Spiraea douglasii</i>			65.0	10.1		
<i>Aulacomnium palustre</i>			45.0	7.3		
<i>Agrostis scabra</i>			48.3	4.9		
<i>Carex vesicaria</i>			33.3	3.9		
<i>Calliergon stramineum</i>			21.7	2.0		
<i>Carex lasiocarpa</i>			11.7	0.7		
<i>Calamagrostis canadensis</i>			3.3	0.7		
<i>Hypericum majus</i>			13.3	0.5		
<i>Potentilla norvegica</i>			15.0	0.4		
<i>Veronica scutellata</i>			10.0	0.3		
<i>Agrostis stolonifera</i>			8.3	0.2		
<i>Cirsium vulgare</i>			6.7	0.2		
<i>Lycopus uniflorus</i>			3.3	0.1		
<i>Epilobium ciliatum</i>			3.3	0.1		
<i>Alnus incana</i>			1.7	0.04		
<i>Mentha arvensis</i>			1.7	0.04		
<i>Carex bebbii</i>			1.7	0.04		
<i>Chamerion angustifolium</i>			1.7	0.04		

²⁴ The northern portion of the fen was re-ditched and cleared in 1988. Rumely encountered significant presence of *Spiraea* through out this area in 1955. He data is included in the previous table

²⁵ Includes plot lines N 315 through N 465 that Bursik completed in 1992

²⁶ We discontinued our transect line when we reached the property boundary just north of plot line N 285 in 2012. We did not have permission to enter the property to the north. The area was completely cleared of *Spiraea* and converted to a hay field