MACROPHYTE SURVEY OF BOGS AND LAKES AT UNDERC																			Christie Brown, UNDERC 1997						
CHART 6	MEAN CONDUCTIVITY (uS/	6.45	11.2	11.4	11.4	12.8	13.5	14.8	15.2	19.5	21.5	22.6	24.7	27.8	29.3	29.4	42.3	58	59.8	86.5	92.1	98.2	105	140
FAMILY	GENUS & SPECIES	FSB	BER	RAS	TUE	CRN	CRM	BAY	ED'S	HUM	BOG	RED	TE'B	N'GA	BOL	NAN	TE'L	KIC	MOR	TE'C	BR'C	MUL	BR'L	WAR
Lamiaceae	Clinopodium vulgare L.																X			X	X			
	Lycopus uniflorus Michx.			X	X	X	X	X		X		X						X				X		
	Prunella vulgaris L.																X						X	
	Scutellaria integrifolia L.											X							X				X	
Lemnaceae	Lemna minor L.											X			X				X		X		X	
	Spirodela polyrrhiza (L.) Scheid.																		X					
Lentibulariaceae	Utricularia macrorhiza Le Conte		X	X	X				X	X	X	X	X	X				X	X		X			
Liliaceae	Maianthemum canadense Desf.			X	X			X																
	Maianthemum trifolium (L.) Sloboda					X								X	X									
Lobeliaceae	Lobelia dortmanna L.						X	X											X					
Lycopodiaceae	Lycopodium annotinum L.							X																
	Lycopodium clavatum L.							X																
Menyanthaceae	Menyanthes trifoliata L.															X						X		
Myricaceae	Myrica gale L.		X					X	X							X	X			X				
Najadaceae	Najas flexilis (Willd.) Rostk. & Schmidt																					X		
Nymphaeaceae	Brasenia schreberi J.F. Gmel.		X		X			X				X			X	X	X							X
	Nuphar lutea ssp. variegata (Dur.) E	X	X		X		X	X		X	X	X			X	X	X	X	X		X	X	X	X
	Nymphaea odorata Ait.	X					X				X				X	X	X	X	X	X			X	X
Onagraceae	Epilobium ciliatum Raf.															X						X		
Orchidaceae	Arethusa bulbosa L.																							
	Calopogon tuberosus (L.) B.	X				X	X			X			X		X	X						X	X	
	Cypripedium acaule Ait.				X					X														
	Pogonia ophioglossoides (L.) Ker-Gawl				X	X			X						X	X						X		
	Spiranthes cernua (L.) L. C. Rich																							
Osmundaceae	Osmunda cinnamomea L.							X																
	Osmunda claytoniana L.			X				X												X				
	Osmunda regalis L.																							
Pinaceae	Abies balsamea (L.) P. Mill.			X																				

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CHART 6	MEAN CONDUCTIVITY (uS/	6.45	11.2	11.4	11.4	12.8	13.5	14.8	15.2	19.5	21.5	22.6	24.7	27.8	29.3	29.4	42.3	58	59.8	86.5	92.1	98.2	105	140
FAMILY	GENUS & SPECIES	FSB	BER	RAS	TUE	CRN	CRM	BAY	ED'S	HUM	BOG	RED	TE'B	N'GA	BOL	NAN	TE'L	KIC	MOR	TE'C	BR'C	MUL	BR'L	WAR
	Larix laricina (Du Roi) K. Koch															X								
Poaceae	Agrostis gigantea Roth																						X	
	Agrostis hyemalis (Walt.) B. S. P.										X									X				
	Calamagrostis canadensis (Michs.) Beauv.		X		X			X		X	X	X			X				X	X	X		X	X
	Dactylis glomerata L.																						X	
	Dichanthelium depauperatum (Muhl.) Gould											X												
	Gylceria canadensis (Michaux) Trin.		X																					
	Phleum pratense L.																				X			
Polygonaceae	Polygonum amphibium Waldst. & Kit.																X							
	Polygonum persicaria L.																						X	
	Rumex crispus L.											X												
	Rumex orbiculatus Gray																X	X		X				
Pontederiaceae	Heteranthera dubia (Jacq.) MacM.											X												
	Pontederia cordata L.				X		X	X		X							X	X	X			X	X	X
Potamogetonacea	Potamogeton amplifolius Tuckerman											X				X	X	X	X		X		X	X
	Potamogeton epihydrus Raf.										X	X									X			
	Potamogeton foliosus Raf.																						X	
	Potamogeton gramineus L.		X	X	X												x							
	Potamogeton illinoensis Morong																x							
	Potamogeton natans L.											X						X						
	Potamogeton obtusifolius Mert. & Koch																	X	X				X	
	Potamogeton praelongus Wulfen																X							
	Potamogeton pusillus L.											X							X	X	X			
	Potamogeton pusillus var. tenuissimus Mert. & Koch																				X			
	Potamogeton richardsonii (Benn.) Rydb.																X			X				
	Potamogeton robbinsii Oakes		X								X						X	X			X		X	
	Potamogeton zosteriformis Fern.																X		X					
Primulaceae	Lysimachia terrestris (L.) B. S. P.		X	X		X					X				X						X	X		X

MACROPHYTE SURVEY OF BOGS AND LAKES AT UNDERC																		Christie Brown, UNDERC 1997						
CHART 6	MEAN CONDUCTIVITY (uS/	6.45	11.2	11.4	11.4	12.8	13.5	14.8	15.2	19.5	21.5	22.6	24.7	27.8	29.3	29.4	42.3	58	59.8	86.5	92.1	98.2	105	140
FAMILY	GENUS & SPECIES	FSB	BER	RAS	TUE	CRN	CRM	BAY	ED'S	HUM	BOG	RED	TE'B	N'GA	BOL	NAN	TE'L	KIC	MOR	TE'C	BR'C	MUL	BR'L	WAR
	Lysimachia thyrsiflora L.			X				X		X							X	X	X		X			
	Trientalis borealis Raf.						X			X			X											
Ranunculaceae	Caltha palustris L.																	X	X					
	Coptis trifolia (L.) Salisb.										X													
	Ranunculus acris L.																X				X			
	Ranunculus longirostris Godr.																X	X						
	Thalictrum dioicum L.																X			X	X			
Rosaceae	Agrimonia gryposepala Wallr.																				X			
	Comarum palustre L.				X		X			X		X			X	X		X	X		X	X	X	X
	Fragaria virginiana Duchesne			X																				
	Geum rivale L.						X																	
	Potentilla arguta Pursh																				X			
	Potentilla norvegica L.											X								X	X			
	Prunus pensylvanica L. f.							X																
	Prunus pumila L.			X																				
	Prunus virginiana L.			X																				
	Rubus allegheniensis Porter			X																				
	Rubus canadensis L.		X																					
	Rubus hispidus L.			X	X												X							
	Rubus iadaeus ssp. strigosus (Michx.) Focke																X			X	X			X
	Waldsteinia fragarioides (Michx.) Tratt.									X			X											
Rubiaceae	Galium asprellum Michx.																			X	X			
	Galium labradoricum (Wieg.) Wieg.				X		X												X					
	Galium obtusum Bigelow		X														X							
	Galium palustre L.																X							
	Galium trifidum L.																	X						
Salicaceae	Salix discolor Muhl.		X																					
	Salix exigua Nutt.										X							X						

MACROPHYTE SURVEY OF BOGS AND LAKES AT UNDERC																		Christie Brown, UNDERC 1997							
CHART 6	MEAN CONDUCTIVITY (uS/	6.45	11.2	11.4	11.4	12.8	13.5	14.8	15.2	19.5	21.5	22.6	24.7	27.8	29.3	29.4	42.3	58	59.8	86.5	92.1	98.2	105	140
FAMILY	GENUS & SPECIES	FSB	BER	RAS	TUE	CRN	CRM	BAY	ED'S	HUM	BOG	RED	TE'B	N'GA	BOL	NAN	TE'L	KIC	MOR	TE'C	BR'C	MUL	BR'L	WAR
	Salix humilis Marsh															X								
	Salix sericea Marsh.																				X			
Sarraceniaceae	Sarracenia purpurea L.	X			X	X			X				X	X	X	X						X		
Saxifragaceae	Mitella nuda L.							X																
	Ribes cynosbati L.																			X				
Scrophulariaceae	Chelone glabra L.																				X			
	Scrophularia lanceolata Pursh																				X	X		
	Veronica officinalis L.		X																					
	Veronica serpyllifolia L.											X												
Solanaceae	Solanum dulcamara L.																			X	X			
Sparganiaceae	Sparganium angustifolium Michx.		X					X																
	Sparganium sp.						X	X			X	X					X	X	X	X	X	X	X	X
Sphagnaceae	Sphagnum cappillifolium var. tenellum Ehr			X	X																			
	Sphagnum cuspidatum Ehrh. ex Hoffm.					X																		
	Sphagnum fimbriatum Wils.		X	X																				
	Sphagnum girgensohnii						X																	
	Sphagnum magellanicum Bri	X		X	X	X			X	X	X	X	X	X	X	X								
	Sphagnum magellanica var. magellanica					X				X					X									
	Sphagnum recurvum P.-Beauv.															X						X		X
	Sphagnum recurvum var. br	X			X						X		X	X										
	Sphagnum recurvum var. tenue Klinggr. (a	X								X														
	Sphagnum teres (Schimp.) Angstr. ex C. Hartm.											X												
Thelyteridaceae	Thelypteris palustris Schott							X										X						
Thymelaeaceae	Dirca palustris L.							X																
Typhaceae	Typha latifolia L.				X		X	X		X	X	X			X	X	X	X	X			X	X	X
Urticaceae	Urtica dioica L.																			X	X			
	Urtica urens L.																						X	
Violaceae	Viola cucullata Ait.						X				X						X		X	X	X		X	

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CHART 6	MEAN CONDUCTIVITY (uS/	6.45	11.2	11.4	11.4	12.8	13.5	14.8	15.2	19.5	21.5	22.6	24.7	27.8	29.3	29.4	42.3	58	59.8	86.5	92.1	98.2	105	140
FAMILY	GENUS & SPECIES	FSB	BER	RAS	TUE	CRN	CRM	BAY	ED'S	HUM	BOG	RED	TE'B	N'GA	BOL	NAN	TE'L	KIC	MOR	TE'C	BR'C	MUL	BR'L	WAR
	Viola macloskeyi Lloyd						X				X	X			X				X					
	Viola pubescens Ait.																				X			
	Viola renifolia Gray		X				X				X		X			X					X			X
BRYOPHYTES																								
Aulacomniaceae	Aulacomnium palustre								X	X		X	X						X				X	
Ditrichaceae	Ceratodon purpureus						X																	
Mniceae	Mnium cuspidatum																	X						
	Rhizomnium sp.					X				X														
ALGAE																								
Chlorophyceae	Hydrodictyon sp.																						X	
Characeae	Chara vulgaris																							X
	Nitella flexilus			X															X				X	
	Nitella sp.																		X					
BRYOZOA						X	X																	
PTERIDOPHYTA																								
Dryopteridaceae	Athyrium filix-femina ssp. angustum (Willd.) Clausen																			X				
	Deparia acrostichoides (Sw.) M. Kato																				X			
	Dryopteris carthusiana (Vill.) H.P. Fuchs															X	X				X			
	Matteuccia struthiopteris (L.) Todaro																							X
	Onoclea sensibilis L.		X	X				X			X	X					X	X	X	X	X		X	X

MACROPHYTE SURVEY OF BOGS AND LAKES AT UNDERC																		Christie Brown, UNDERC 1997						
CHART 7	SECCHI DEPTH (M)	0.65	0.725	0.75	0.85	0.85	0.93	1.25	1.35	1.4	1.4	1.4	1.45	1.5	1.625	1.75	2.2	2.475	2.65	3.1	3.3	3.55	N/A	N/A
FAMILY	GENUS & SPECIES	RED	HUM	N'GA	MOR	BOG	BOL	CRN	BR'L	TE'B	ED'S	NAN	MUL	KIC	TUE	FSB	BER	WAR	RAS	TE'L	CRM	BAY	TE'C	BR'C
Aceraceae	Acer rubrum L.	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	X	X		NC	NC			X		NC	X		X
Alismataceae	Sagittaria latifolia Willd.	X			X				X					X						X	X		X	
	Sagittaria sp.																					X		
Apiaceae	Cicuta bulbifera L.													X				X					X	X
	Daucus carota L.	X			X	X	X		X					X							X			
Aquifoliaceae	Ilex verticillata (L.) Gray																					X		
Araceae	Calla palustris L.	X	X		X	X		X	X	X			X	X	X			X	X		X	X	X	X
Araliaceae	Aralia nudicaulis L.					X																		
Asclepiadaceae	Asclepias incarnata L.				X							X	X	X				X		X			X	X
Asteraceae	Achillea millefolium L.																			X				X
	Actaea rubra (Ait.) Willd.													X										
	Antennaria howellii Greene																							X
	Aster lateriflorus (L.) Britt.														X					X				
	Aster sp.																						X	
	Conyza canadensis (L.) Cronq.				X																			
	Erigeron annuus (L.) Pers.																		X					
	Eupatorium maculatum L.												X											
	Euthamia graminifolia (L.) Nutt.												X	X					X					
	Hieracium aurantiacum L.																	X					X	
	Hieracium caespitosum Dumort.																			X			X	
	Hieracium piloselloides Vill.																						X	
	Lactuca canadensis L.																			X				
	Leucanthemum vulgare Lam.																		X	X				X
	Solidago gigantea Ait.																							X
	Solidago juncea Ait.																		X					X
	Solidago ptarmicoides (Nees) Boivin																						X	
	Solidago uliginosa Nutt.																							X
	Tragopogon dubius Scop.																		X					

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CHART 7	SECCHI DEPTH (M)	0.65	0.725	0.75	0.85	0.85	0.93	1.25	1.35	1.4	1.4	1.4	1.45	1.5	1.625	1.75	2.2	2.475	2.65	3.1	3.3	3.55	N/A	N/A
FAMILY	GENUS & SPECIES	RED	HUM	N'GA	MOR	BOG	BOL	CRN	BR'L	TE'B	ED'S	NAN	MUL	KIC	TUE	FSB	BER	WAR	RAS	TE'L	CRM	BAY	TE'C	BR'C
Balsaminaceae	Impatiens capensis Meerb.																X					X		
Betulaceae	Alnus incana ssp. rugosa (D	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	X	X		NC	NC		X	X	X	NC	X	X	X
	Betula papyrifera Marsh.																X				X			
Boraginaceae	Myosotis laxa Lehm.																						X	
	Myosotis scorpioides L.																					X		
Brassicaceae	Barbarea vulgaris Ait. f.																			X				
Callitrichaceae	Callitriche palustris L.				X																			X
Caprifoliaceae	Lonicera canadensis Batr. ex Marsh.																					X		
	Lonicera x-bella Zabel																		X	X			X	
	Viburnum opulus var. americanum Ait.																							X
Caryophyllaceae	Silene latifolia ssp. alba (P. Mill.) Greuter & Burdet																						X	X
	Stellaria graminea L.																			X			X	
	Stellaria longifolia Muhl. ex Willd.									X														
Ceratophyllaceae	Ceratophyllum demersum L.						X		X					X						X			X	X
Clusiaceae	Hypericum ascyron L.	X						X	X															
	Hypericum boreale (Britt.) Bickn.								X															
	Hypericum ellipticum Hook.				X																			
	Hypericum majus (Gray) Britt.																					X		
	Hypericum perforatum L.																X							
	Hypericum sp.	X			X			X													X			
	Triadenum fraseri (Spach) Gleason	X				X		X					X	X				X	X					
Cornaceae	Cornus alternifolia L. f.					X																		X
	Cornus canadensis L.																X							
	Cornus sericea L.												X					X					X	
Cyperaceae	Carex bebbii Olney ex Fern.	X				X			X		X				X									
	Carex canescens L.					X	X	X																
	Carex comosa Boott																	X		X				
	Carex crawfordii Fern.	X																						

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FAMILY	GENUS & SPECIES	RED	HUM	N'GA	MOR	BOG	BOL	CRN	BR'L	TE'B	ED'S	NAN	MUL	KIC	TUE	FSB	BER	WAR	RAS	TE'L	CRM	BAY	TE'C	BR'C
	Carex crinata Lam.		X																	X		X		
	Carex diandra Schrank												X	X				X			X			
	Carex gracillima Schwein	X								X											X			
	Carex interior Bailey		X	X			X	X				X			X		X		X					
	Carex lasiocarpa Ehrh.											X	X	X				X						
	Carex limosa L.			X				X		X	X													
	Carex pauciflora Lightf.	X								X						X								
	Carex paupercula Michaux.		X	X	X						X					X								
	Carex pseudocyperus L.				X																			
	Carex retrorsa Schwein								X															
	Carex rostrata Stokes										X	X					X		X	X	X	X	X	
	Carex stipata Muhl. ex Willd.								X															
	Carex stricta Lam.						X		X						X			X		X				X
	Carex tribuloides Mackenzie	X			X	X	X		X															
	Carex tribuloides Wahl.																			X				
	Carex trisperma Dewey						X	X	X	X														
	Carex tuckermanii Dewey																		X					
	Carex versicolor L.																							X
	Dulichium arundinaceum (L.)	X	X			X							X		X		X				X	X		
	Eleocharis obtusa (Willd.) J. A. Schultes											X					X	X						
	Eleocharis smallii Britt.				X										X									
	Eriophorum gracile W.D.J. Koch													X				X						
	Eriophorum vaginatum var. spissum (Fern.	X								X	X				X	X								
	Luzula acuminata Raf.					X																		
	Rhynchospora alba (L.) Vahl			X	X		X	X		X	X				X									
	Scirpus acutus Muhl. ex Bigelow					X			X		X				X									
	Scirpus americanus Pers.								X											X				
	Scirpus atrovirens Willd.																		X		X			

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FAMILY	GENUS & SPECIES	RED	HUM	N'GA	MOR	BOG	BOL	CRN	BR'L	TE'B	ED'S	NAN	MUL	KIC	TUE	FSB	BER	WAR	RAS	TE'L	CRM	BAY	TE'C	BR'C
	Scirpus cyperinus (L.) Kunth						X	X																
Dennstaedtiaceae	Pteridium aquilinum (L.) Kuhn																		X			X	X	
Droceraceae	Drosera rotundifolia L.	X	X	X		X		X		X	X		X		X	X	X		X		X			
Equisetaceae	Equisetum arvense L.	X			X		X							X		X		X	X	X	X	X		
	Equisetum fluviatile L.																					X		
	Equisetum sylvaticum L.																							X
Ericaceae	Andromeda glaucophylla Lin	X	X	X				X		X	X	X	X	X	X	X		X			X			
	Chamaedaphne calyculata (	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X		X	X		
	Gaultheria hispidula (L.) Muhl.ex Bi		X	X			X	X		X	X													
	Kalmia polifolia Wangenh	X	X	X			X	X		X	X	X			X	X		X	X		X			
	Ledum groenlandicum Oeder		X	X				X		X	X		X		X	X			X					
	Vaccinium macrocarpon Ait.											X	X				X		X					
	Vaccinium myrtilloides Michx	X		X				X			X				X									
	Vaccinium oxycoccus L.			X			X	X		X	X	X			X			X	X					
Eriocaulonaceae	Eriocaulon aquaticum (Hill) Druce																X					X		
Fabaceae	Melilotis officinalis (L.) Lam.					X														X				
	Trifolium repens L.				X																			
Gentianaceae	Menyanthes trifoliata L.			X			X								X									
Haloragaceae	Myriophyllum sibiricum Komarov											X		X			X			X		X		
Hydrocharitaceae	Elodea canadensis Michx.								X					X						X			X	X
	Vallisneria americana Michx.																			X				
Iridaceae	Iris versicolor L.	X	X			X	X					X	X	X	X			X			X	X		X
Isoetaceae	Isoetes echinospora Durieu																		X		X			
	Isoetes riparia Engelm. ex A. Braun																					X		
	Isoetes sp.																X							
Juncaceae	Juncus effusus L.	X	X	X			X							X	X		X				X	X		
	Juncus tenuis Willd.														X									
Juncaginaceae	Scheuchzeria palustris L.	X									X		X											

MACROPHYTE SURVEY OF BOGS AND LAKES AT UNDERC																			Christie Brown, UNDERC 1997						
CHART 7	SECCHI DEPTH (M)	0.65	0.725	0.75	0.85	0.85	0.93	1.25	1.35	1.4	1.4	1.4	1.45	1.5	1.625	1.75	2.2	2.475	2.65	3.1	3.3	3.55	N/A	N/A
FAMILY	GENUS & SPECIES	RED	HUM	N'GA	MOR	BOG	BOL	CRN	BR'L	TE'B	ED'S	NAN	MUL	KIC	TUE	FSB	BER	WAR	RAS	TE'L	CRM	BAY	TE'C	BR'C
Lamiaceae	Clinopodium vulgare L.																			X			X	X
	Lycopus uniflorus Michx.	X	X					X					X	X	X				X		X	X		
	Prunella vulgaris L.								X											X				
	Scutellaria integrifolia L.	X			X				X															
Lemnaceae	Lemna minor L.	X			X		X		X															X
	Spirodela polyrrhiza (L.) Scheid.				X																			
Lentibulariaceae	Utricularia macrorhiza Le Co	X	X	X	X	X				X	X			X	X		X		X					X
Liliaceae	Maianthemum canadense Desf.														X				X			X		
	Maianthemum trifolium (L.) Sloboda			X			X	X																
Lobeliaceae	Lobelia dortmanna L.				X																X	X		
Lycopodiaceae	Lycopodium annotinum L.																					X		
	Lycopodium clavatum L.																					X		
Menyanthaceae	Menyanthes trifoliata L.											X	X											
Myricaceae	Myrica gale L.										X	X					X			X		X	X	
Najadaceae	Najas flexilis (Willd.) Rostk. & Schmidt												X											
Nymphaeaceae	Brasenia schreberi J.F. Gme	X					X					X			X		X	X		X		X		
	Nuphar lutea ssp. variegata (	X	X		X	X	X		X			X	X	X	X		X	X	X	X	X	X		X	X
	Nymphaea odorata Ait.				X	X	X		X			X		X		X		X		X	X		X	
Onagraceae	Epilobium ciliatum Raf.																						X	
Orchidaceae	Arethusa bulbosa L.											X	X											
	Calopogon tuberosus (L.) B. S. P.		X				X	X	X	X		X	X			X					X			
	Cypripedium acaule Ait.		X												X									
	Pogonia ophioglossoides (L.) Ker-Gawl						X	X			X	X	X		X									
	Spiranthes cernua (L.) L. C. Rich												X											
Osmundaceae	Osmunda cinnamomea L.																					X		
	Osmunda claytoniana L.																		X			X		
	Osmunda regalis L.																						X	
Pinaceae	Abies balsamea (L.) P. Mill.																		X					

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FAMILY	GENUS & SPECIES	RED	HUM	N'GA	MOR	BOG	BOL	CRN	BR'L	TE'B	ED'S	NAN	MUL	KIC	TUE	FSB	BER	WAR	RAS	TE'L	CRM	BAY	TE'C	BR'C
	Larix laricina (Du Roi) K. Koch											X												
Poaceae	Agrostis gigantea Roth								X															
	Agrostis hyemalis (Walt.) B. S. P.					X																	X	
	Calamagrostis canadensis (	X	X		X	X	X		X						X			X	X			X	X	X
	Dactylis glomerata L.								X															
	Dichanthelium depauperatu	X																						
	Gylceria canadensis (Michaux) Trin.																X							
	Phleum pratense L.																							X
Polygonaceae	Polygonum amphibium Waldst. & Kit.													X										
	Polygonum persicaria L.								X															
	Rumex crispus L.	X																						
	Rumex orbiculatus Gray													X						X			X	
Pontederiaceae	Heteranthera dubia (Jacq.)	X																						
	Pontederia cordata L.		X		X				X				X	X	X			X		X	X	X		
Potamogetonacea	Potamogeton amplifolius Tuc	X			X				X			X		X				X		X				X
	Potamogeton epihydrus Raf.	X				X																		X
	Potamogeton foliosus Raf.								X															
	Potamogeton gramineus L.														X		X		X	x				
	Potamogeton illinoensis Morong																			x				
	Potamogeton natans L.	X												X										
	Potamogeton obtusifolius Mert. & Koch				X				X					X										
	Potamogeton praelongus Wulfen																			X				
	Potamogeton pusillus L.	X			X																		X	X
	Potamogeton pusillus var. tenuissimus Mert. & Koch																							X
	Potamogeton richardsonii (Benn.) Rydb.																			X			X	
	Potamogeton robbinsii Oakes					X			X					X			X			X				X
	Potamogeton zosteriformis Fern.				X															X				
Primulaceae	Lysimachia terrestris (L.) B. S. P.					X	X	X					X				X	X	X					X

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FAMILY	GENUS & SPECIES	RED	HUM	N'GA	MOR	BOG	BOL	CRN	BR'L	TE'B	ED'S	NAN	MUL	KIC	TUE	FSB	BER	WAR	RAS	TE'L	CRM	BAY	TE'C	BR'C
	Lysimachia thyrsiflora L.		X		X									X					X	X		X		X
	Trientalis borealis Raf.		X							X											X			
Ranunculaceae	Caltha palustris L.				X									X										
	Coptis trifolia (L.) Salisb.					X																		
	Ranunculus acris L.																			X				X
	Ranunculus longirostris Godr.													X						X				
	Thalictrum dioicum L.																			X			X	X
Rosaceae	Agrimonia gryposepala Wallr.																							X
	Comarum palustre L.	X	X		X		X		X			X	X	X	X			X			X			X
	Fragaria virginiana Duchesne																		X					
	Geum rivale L.																				X			
	Potentilla arguta Pursh																							X
	Potentilla norvegica L.	X																					X	X
	Prunus pensylvanica L. f.																					X		
	Prunus pumila L.																		X					
	Prunus virginiana L.																		X					
	Rubus allegheniensis Porter																		X					
	Rubus canadensis L.																X							
	Rubus hispidus L.														X				X	X				
	Rubus iadaeus ssp. strigosus (Michx.) Focke																	X		X			X	X
	Waldsteinia fragarioides (Michx.) Tr	X								X														
Rubiaceae	Galium asprellum Michx.																						X	X
	Galium labradoricum (Wieg.) Wieg.				X										X						X			
	Galium obtusum Bigelow																X			X				
	Galium palustre L.																			X				
	Galium trifidum L.													X										
Salicaceae	Salix discolor Muhl.																X							
	Salix exigua Nutt.					X								X										

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FAMILY	GENUS & SPECIES	RED	HUM	N'GA	MOR	BOG	BOL	CRN	BR'L	TE'B	ED'S	NAN	MUL	KIC	TUE	FSB	BER	WAR	RAS	TE'L	CRM	BAY	TE'C	BR'C
	Salix humilis Marsh											X												
	Salix sericea Marsh.																							X
Sarraceniaceae	Sarracenia purpurea L.			X			X	X		X	X	X	X		X	X						X		
Saxifragaceae	Mitella nuda L.																						X	
	Ribes cynosbati L.																							X
Scrophulariaceae	Chelone glabra L.												X											X
	Scrophularia lanceolata Pursh																X							
	Veronica officinalis L.																						X	X
	Veronica serpyllifolia L.	X															X					X		
Solanaceae	Solanum dulcamara L.																							
Sparganiaceae	Sparganium angustifolium Michx.																X							
	Sparganium sp.	X			X	X			X				X	X				X		X	X	X	X	X
Sphagnaceae	Sphagnum cappillifolium var. tenellum Ehrh.														X				X					
	Sphagnum cuspidatum Ehrh. ex Hoffm.							X																
	Sphagnum fimbriatum Wils.																X		X					
	Sphagnum girgensohnii																				X			
	Sphagnum magellanicum Bri	X	X	X		X	X	X		X	X	X			X	X			X					
	Sphagnum magellanica var. magell	X					X	X																
	Sphagnum recurvum P.-Beauv.											X	X					X						
	Sphagnum recurvum var. brevifolium			X		X				X					X	X								
	Sphagnum recurvum var. tenue Kli	X																	X					
	Sphagnum teres (Schimp.) A	X																						
Thelyteridaceae	Thelypteris palustris Schott													X								X		
Thymelaeaceae	Dirca palustris L.																					X		
Typhaceae	Typha latifolia L.	X	X		X	X	X		X			X	X	X	X			X		X	X	X		
Urticaceae	Urtica dioica L.																						X	X
	Urtica urens L.								X															
Violaceae	Viola cucullata Ait.				X	X			X											X	X		X	X

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FAMILY	GENUS & SPECIES	RED	HUM	N'GA	MOR	BOG	BOL	CRN	BR'L	TE'B	ED'S	NAN	MUL	KIC	TUE	FSB	BER	WAR	RAS	TE'L	CRM	BAY	TE'C	BR'C
	Viola macloskeyi Lloyd	X			X	X	X														X			
	Viola pubescens Ait.																							X
	Viola renifolia Gray					X				X		X					X	X			X			X
BRYOPHYTES																								
Aulacomniaceae	Aulacomnium palustre	X	X		X				X	X	X													
Ditrichaceae	Ceratodon purpureus																				X			
Mniceae	Mnium cuspidatum													X										
	Rhizomnium sp.		X					X																
ALGAE																								
Chlorophyceae	Hydrodictyon sp.								X															
Characeae	Chara vulgaris																	X						
	Nitella flexilus				X				X										X					
	Nitella sp.				X																			
BRYOZOA								X													X			
PTERIDOPHYTA																								
Dryopteridaceae	Athyrium filix-femina ssp. angustum (Willd.) Clausen																						X	
	Deparia acrostichoides (Sw.) M. Kato																							X
	Dryopteris carthusiana (Vill.) H.P. Fuchs											X								X				X
	Matteuccia struthiopteris (L.) Todaro																	X						
	Onoclea sensibilis L.	X			X	X			X					X			X	X	X	X		X	X	X

MACROPHYTE SURVEY OF BOGS AND LAKES AT UNDERC																			Christie Brown, UNDERC 1997						
CHART 8	COLOR (PtCo)	14.8	36.1	40	41	43.5	57.25	60.5	62.4	70.25	78	79	79.8	90.3	96.5	127	135	145	155	164	196	245.5	272	321
FAMILY	GENUS & SPECIES	BAY	RAS	TE'L	CRM	FSB	WAR	TUE	BER	TE'C	KIC	BR'L	MUL	BR'C	CRN	ED'S	NAN	BOL	BOG	TE'B	MOR	HUM	RED	N'GA
Aceraceae	Acer rubrum L.	X	X		NC	NC		NC				NC	X	X	NC	NC	X	NC	NC	NC	NC	NC	NC	NC
Alismataceae	Sagittaria latifolia Willd.			X	X					X	X	X									X		X	
	Sagittaria sp.	X																						
Apiaceae	Cicuta bulbifera L.						X			X	X			X										
	Daucus carota L.				X						X	X						X	X		X		X	
Aquifoliaceae	Ilex verticillata (L.) Gray	X																						
Araceae	Calla palustris L.	X	X		X		X	X		X	X	X	X	X	X				X	X	X	X	X	
Araliaceae	Aralia nudicaulis L.																		X					
Asclepiadaceae	Asclepias incarnata L.			X			X			X	X		X	X			X				X			
Asteraceae	Achillea millefolium L.			X										X										
	Actaea rubra (Ait.) Willd.										X													
	Antennaria howellii Greene													X										
	Aster lateriflorus (L.) Britt.			X				X																
	Aster sp.									X														
	Conyza canadensis (L.) Cronq.																				X			
	Erigeron annuus (L.) Pers.		X																					
	Eupatorium maculatum L.												X											
	Euthamia graminifolia (L.) Nutt.		X								X		X											
	Hieracium aurantiacum L.						X			X														
	Hieracium caespitosum Dumort.			X						X														
	Hieracium piloselloides Vill.									X														
	Lactuca canadensis L.			X																				
	Leucanthemum vulgare Lam.		X	X										X										
	Solidago gigantea Ait.													X										
	Solidago juncea Ait.		X											X										
	Solidago ptarmicoides (Nees) Boivin									X														
	Solidago uliginosa Nutt.													X										
	Tragopogon dubius Scop.		X																					

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FAMILY	GENUS & SPECIES	BAY	RAS	TE'L	CRM	FSB	WAR	TUE	BER	TE'C	KIC	BR'L	MUL	BR'C	CRN	ED'S	NAN	BOL	BOG	TE'B	MOR	HUM	RED	N'GA
Balsaminaceae	Impatiens capensis Meerb.	X							X															
Betulaceae	Alnus incana ssp. rugosa (D	X	X	X	NC	NC	X	NC		X		NC	X	X	NC	NC	X	NC	NC	NC	NC	NC	NC	NC
	Betula papyrifera Marsh.				X				X															
Boraginaceae	Myosotis laxa Lehm.									X														
	Myosotis scorpioides L.	X																						
Brassicaceae	Barbarea vulgaris Ait. f.			X																				
Callitrichaceae	Callitriche palustris L.													X							X			
Caprifoliaceae	Lonicera canadensis Batr. ex	X																						
	Lonicera x-bella Zabel		X	X						X														
	Viburnum opulus var. americanum Ait.													X										
Caryophyllaceae	Silene latifolia ssp. alba (P. Mill.) Greuter & Burdet									X				X										
	Stellaria graminea L.			X						X														
	Stellaria longifolia Muhl. ex Willd.																			X				
Ceratophyllaceae	Ceratophyllum demersum L.			X						X	X	X		X				X						
Clusiaceae	Hypericum ascyron L.											X			X								X	
	Hypericum boreale (Britt.) Bickn.											X												
	Hypericum ellipticum Hook.																				X			
	Hypericum majus (Gray) Britt	X																						
	Hypericum perforatum L.								X															
	Hypericum sp.				X										X						X		X	
	Triadenum fraseri (Spach) Gleason	X					X				X		X		X				X			X		
Cornaceae	Cornus alternifolia L. f.													X					X					
	Cornus canadensis L.								X															
	Cornus sericea L.						X			X			X											
Cyperaceae	Carex bebbii Olney ex Fern.							X				X				X			X				X	
	Carex canescens L.														X			X	X					
	Carex comosa Boott			X			X																	
	Carex crawfordii Fern.																						X	

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FAMILY	GENUS & SPECIES	BAY	RAS	TE'L	CRM	FSB	WAR	TUE	BER	TE'C	KIC	BR'L	MUL	BR'C	CRN	ED'S	NAN	BOL	BOG	TE'B	MOR	HUM	RED	N'GA
	Carex crinata Lam.	X		X																		X		
	Carex diandra Schrank				X		X				X		X											
	Carex gracillima Schwein				X															X			X	
	Carex interior Bailey		X					X	X						X		X	X				X		X
	Carex lasiocarpa Ehrh.						X				X		X				X							
	Carex limosa L.														X	X				X				X
	Carex pauciflora Lightf.					X														X			X	
	Carex paupercula Michaux.					X										X					X	X		X
	Carex pseudocyperus L.																				X			
	Carex retrorsa Schwein											X												
	Carex rostrata Stokes	X	X	X	X				X	X						X	X							
	Carex stipata Muhl. ex Willd.											X												
	Carex stricta Lam.			X			X	X				X		X				X						
	Carex tribuloides Mackenzie											X						X	X		X		X	
	Carex tribuloides Wahl.			X																				
	Carex trisperma Dewey											X			X			X		X				
	Carex tuckermanii Dewey		X																					
	Carex versicolor L.													X										
	Dulichium arundinaceum (L.)	X			X			X	X				X						X			X	X	
	Eleocharis obtusa (Willd.) J. A. Schultes						X		X								X							
	Eleocharis smallii Britt.							X													X			
	Eriophorum gracile W.D.J. Koch						X				X													
	Eriophorum vaginatum var. spissum (Fern.) Boivin					X		X								X				X				X
	Luzula acuminata Raf.																		X					
	Rhynchospora alba (L.) Vahl							X							X	X		X		X	X			X
	Scirpus acutus Muhl. ex Bigelow							X				X				X			X					
	Scirpus americanus Pers.			X								X												
	Scirpus atrovirens Willd.		X		X																			

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FAMILY	GENUS & SPECIES	BAY	RAS	TE'L	CRM	FSB	WAR	TUE	BER	TE'C	KIC	BR'L	MUL	BR'C	CRN	ED'S	NAN	BOL	BOG	TE'B	MOR	HUM	RED	N'GA
	Scirpus cyperinus (L.) Kunth														X			X						
Dennstaedtiaceae	Pteridium aquilinum (L.) Kuh	X	X							X														
Droceraceae	Drosera rotundifolia L.		X		X	X		X	X				X		X	X			X	X		X	X	X
Equisetaceae	Equisetum arvense L.	X	X	X	X	X	X				X							X			X		X	
	Equisetum fluviatile L.	X																						
	Equisetum sylvaticum L.													X										
Ericaceae	Andromeda glaucophylla Link				X	X	X	X			X		X		X	X	X			X		X	X	X
	Chamaedaphne calyculata (	X	X		X	X	X	X	X		X		X		X	X	X	X	X	X	X	X	X	X
	Gaultheria hispidula (L.) Muhl.ex Bigelow														X	X		X		X		X		X
	Kalmia polifolia Wangenh		X		X	X	X	X							X	X	X	X		X		X	X	X
	Ledum groenlandicum Oeder		X			X		X					X		X	X				X		X		X
	Vaccinium macrocarpon Ait.		X						X				X				X							
	Vaccinium myrtilloides Michx.							X							X	X							X	X
	Vaccinium oxycoccus L.		X				X	X							X	X	X	X		X				X
Eriocaulonaceae	Eriocaulon aquaticum (Hill)	X							X															
Fabaceae	Melilotis officinalis (L.) Lam.			X															X					
	Trifolium repens L.																				X			
Gentianaceae	Menyanthes trifoliata L.							X										X						X
Haloragaceae	Myriophyllum sibiricum Kom	X		X					X		X						X							
Hydrocharitaceae	Elodea canadensis Michx.			X						X	X	X		X										
	Vallisneria americana Michx.			X																				
Iridaceae	Iris versicolor L.	X			X		X	X			X		X	X			X	X	X			X	X	
Isoetaceae	Isoetes echinospora Durieu		X		X																			
	Isoetes riparia Engelm. ex A.	X																						
	Isoetes sp.								X															
Juncaceae	Juncus effusus L.	X			X			X	X		X							X				X	X	X
	Juncus tenuis Willd.							X																
Juncaginaceae	Scheuchzeria palustris L.												X			X							X	

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CHART 8	COLOR (PtCo)	14.8	36.1	40	41	43.5	57.25	60.5	62.4	70.25	78	79	79.8	90.3	96.5	127	135	145	155	164	196	245.5	272	321
FAMILY	GENUS & SPECIES	BAY	RAS	TE'L	CRM	FSB	WAR	TUE	BER	TE'C	KIC	BR'L	MUL	BR'C	CRN	ED'S	NAN	BOL	BOG	TE'B	MOR	HUM	RED	N'GA
Lamiaceae	Clinopodium vulgare L.			X						X				X										
	Lycopus uniflorus Michx.	X	X		X			X			X		X		X							X	X	
	Prunella vulgaris L.			X								X												
	Scutellaria integrifolia L.											X									X		X	
Lemnaceae	Lemna minor L.											X		X				X			X		X	
	Spirodela polyrrhiza (L.) Scheid.																				X			
Lentibulariaceae	Utricularia macrorhiza Le Conte		X					X	X		X			X		X			X	X	X	X	X	X
Liliaceae	Maianthemum canadense D	X	X					X																
	Maianthemum trifolium (L.) Sloboda														X			X						X
Lobeliaceae	Lobelia dortmanna L.	X			X																X			
Lycopodiaceae	Lycopodium annotinum L.	X																						
	Lycopodium clavatum L.	X																						
Menyanthaceae	Menyanthes trifoliata L.												X				X							
Myricaceae	Myrica gale L.	X		X					X	X						X	X							
Najadaceae	Najas flexilis (Willd.) Rostk. & Schmidt												X											
Nymphaeaceae	Brasenia schreberi J.F. Gme	X		X			X	X	X								X	X					X	
	Nuphar lutea ssp. variegata (	X	X	X	X		X	X	X		X	X	X	X			X	X	X		X	X	X	
	Nymphaea odorata Ait.			X	X	X	X			X	X	X					X	X	X		X			
Onagraceae	Epilobium ciliatum Raf.									X														
Orchidaceae	Arethusa bulbosa L.												X				X							
	Calopogon tuberosus (L.) B. S. P.				X	X						X	X		X		X	X		X		X		
	Cypripedium acaule Ait.							X														X		
	Pogonia ophioglossoides (L.) Ker-Gawl							X					X		X	X	X	X						
	Spiranthes cernua (L.) L. C. Rich												X											
Osmundaceae	Osmunda cinnamomea L.	X																						
	Osmunda claytoniana L.	X	X																					
	Osmunda regalis L.									X														
Pinaceae	Abies balsamea (L.) P. Mill.		X																					

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FAMILY	GENUS & SPECIES	BAY	RAS	TE'L	CRM	FSB	WAR	TUE	BER	TE'C	KIC	BR'L	MUL	BR'C	CRN	ED'S	NAN	BOL	BOG	TE'B	MOR	HUM	RED	N'GA
	Larix laricina (Du Roi) K. Koch																X							
Poaceae	Agrostis gigantea Roth											X												
	Agrostis hyemalis (Walt.) B. S. P.									X									X					
	Calamagrostis canadensis (	X	X				X	X		X		X		X				X	X		X	X	X	
	Dactylis glomerata L.											X												
	Dichanthelium depauperatum (Muhl.) Gould																						X	
	Gylceria canadensis (Michaux) Trin.								X															
	Phleum pratense L.													X										
Polygonaceae	Polygonum amphibium Waldst. & Kit.										X													
	Polygonum persicaria L.											X												
	Rumex crispus L.																						X	
	Rumex orbiculatus Gray			X						X	X													
Pontederiaceae	Heteranthera dubia (Jacq.) MacM.																						X	
	Pontederia cordata L.	X		X	X		X	X			X	X	X								X	X		
Potamogetonacea	Potamogeton amplifolius Tuckerman			X			X				X	X		X			X				X		X	
	Potamogeton epihydrus Raf.													X					X				X	
	Potamogeton foliosus Raf.											X												
	Potamogeton gramineus L.		X	x				X	X															
	Potamogeton illinoensis Morong			x																				
	Potamogeton natans L.										X												X	
	Potamogeton obtusifolius Mert. & Koch										X	X									X			
	Potamogeton praelongus Wulfen			X																				
	Potamogeton pusillus L.									X				X							X		X	
	Potamogeton pusillus var. tenuissimus Mert. & Koch													X										
	Potamogeton richardsonii (Benn.) Rydb.			X						X														
	Potamogeton robbinsii Oakes			X					X		X	X		X					X					
	Potamogeton zosteriformis Fern.			X																	X			
Primulaceae	Lysimachia terrestris (L.) B. S. P.		X				X		X				X	X	X			X	X					

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	Lysimachia thyrsiflora L.	X	X	X							X			X							X	X		
	Trientalis borealis Raf.				X															X		X		
Ranunculaceae	Caltha palustris L.										X										X			
	Coptis trifolia (L.) Salisb.																		X					
	Ranunculus acris L.			X										X										
	Ranunculus longirostris Godr.			X							X													
	Thalictrum dioicum L.			X						X				X										
Rosaceae	Agrimonia gryposepala Wallr.													X										
	Comarum palustre L.				X		X	X			X	X	X	X			X	X			X	X	X	
	Fragaria virginiana Duchesne		X																					
	Geum rivale L.				X																			
	Potentilla arguta Pursh													X										
	Potentilla norvegica L.									X				X									X	
	Prunus pensylvanica L. f.	X																						
	Prunus pumila L.		X																					
	Prunus virginiana L.		X																					
	Rubus allegheniensis Porter		X																					
	Rubus canadensis L.								X															
	Rubus hispidus L.		X	X				X																
	Rubus iadaeus ssp. strigosus (Michx.) Fo	X					X			X				X										
	Waldsteinia fragarioides (Michx.) Tratt.																			X		X		
Rubiaceae	Galium asprellum Michx.									X				X										
	Galium labradoricum (Wieg.) Wieg.				X			X													X			
	Galium obtusum Bigelow			X					X															
	Galium palustre L.			X																				
	Galium trifidum L.										X													
Salicaceae	Salix discolor Muhl.								X															
	Salix exigua Nutt.										X								X					

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	Salix humilis Marsh																X							
	Salix sericea Marsh.													X										
Sarraceniaceae	Sarracenia purpurea L.					X		X					X		X	X	X	X		X				X
Saxifragaceae	Mitella nuda L.	X																						
	Ribes cynosbati L.									X														
Scrophulariaceae	Chelone glabra L.													X										
	Scrophularia lanceolata Pursh												X	X										
	Veronica officinalis L.								X															
	Veronica serpyllifolia L.																						X	
Solanaceae	Solanum dulcamara L.									X				X										
Sparganiaceae	Sparganium angustifolium Mi	X							X															
	Sparganium sp.	X		X	X		X			X	X	X	X	X					X		X		X	
Sphagnaceae	Sphagnum cappillifolium var. tenell		X					X																
	Sphagnum cuspidatum Ehrh. ex Hoffm.														X									
	Sphagnum fimbriatum Wils.		X						X															
	Sphagnum girgensohnii				X																			
	Sphagnum magellanicum Brid.		X			X		X							X	X	X	X	X	X		X	X	X
	Sphagnum magellanica var. magellanica														X			X				X		
	Sphagnum recurvum P.-Beauv.						X						X				X							
	Sphagnum recurvum var. brevifolium					X		X											X	X				X
	Sphagnum recurvum var. tenue Kli		X																			X		
	Sphagnum teres (Schimp.) Angstr. ex C. Hartm.																						X	
Thelyteridaceae	Thelypteris palustris Schott	X									X													
Thymelaeaceae	Dirca palustris L.	X																						
Typhaceae	Typha latifolia L.	X		X	X		X	X			X	X	X				X	X	X		X	X	X	
Urticaceae	Urtica dioica L.									X				X										
	Urtica urens L.											X												
Violaceae	Viola cucullata Ait.			X	X					X		X		X					X		X			

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	Viola macloskeyi Lloyd				X													X	X		X		X	
	Viola pubescens Ait.													X										
	Viola renifolia Gray				X		X		X					X			X		X	X				
BRYOPHYTES																								
Aulacomniaceae	Aulacomnium palustre											X				X				X	X	X	X	
Ditrichaceae	Ceratodon purpureus				X																			
Mniceae	Mnium cuspidatum										X													
	Rhizomnium sp.														X							X		
ALGAE																								
Chlorophyceae	Hydrodictyon sp.											X												
Characeae	Chara vulgaris						X																	
	Nitella flexilus		X									X									X			
	Nitella sp.																				X			
BRYOZOA					X										X									
PTERIDOPHYTA																								
Dryopteridaceae	Athyrium filix-femina ssp. angustum (Willd.) Clausen									X														
	Deparia acrostichoides (Sw.) M. Kato													X										
	Dryopteris carthusiana (Vill.) H.P. Fuchs			X										X			X							
	Matteuccia struthiopteris (L.) Todaro						X																	
	Onoclea sensibilis L.	X	X	X			X		X	X	X	X		X					X		X		X	

Macrophyte and Water Chemistry Trends

CONDUCTIVITY

Conductivity may be a determining factor in the presence of Cicuta bulbifera L. (Apiaceae) as no specimens were found in habitats with less than 58 (uS/cm). Asclepias incarnata L. (Asclepiadaceae) also appears to favor habitats with greater than 29 (uS/cm). The majority of species in Asteraceae were also found in habitats with greater than 40 (uS/cm) with the major exceptions occurring in Raspberry. Ceratophyllum demersum L. (Ceratophyllaceae) also showed a tendency towards higher conductivity levels as it was only collected in habitats above 29 (uS/cm). Many of the species in Ericaceae were found in great abundance in sites with less than 30 (uS/cm). Elodea canadensis Michx. and Vallisneria americana Michx. in the family, Hydrocharitaceae, also tended to be present only in habitats with greater than 40 (uS/cm). All specimens in the family isoetaceae were found in habitats with less than15 (uS/cm). Most species of Potamogetonaceae inhabited waters with a conductivity over 20 (uS/cm). Potamogeton gramineus L and Potamogeton robbinsii Oakes were the two exceptions as they were found in sites with conductivities less than 12 (uS/cm). The species of Ranunculaceae was only found in waters with a conductivity over 20 (uS/cm). All species in Sphagnaceae showed trends. The majority were found in habitats with conductivities of less than 29.4 (uS/cm), while only one species, Sphagnum recurvum P.-Beauv. was found in sites with conductivies above 29.4 (uS/cm). Species in Urticaceae also appeared to favor waters with conductivities over 40 (uS/cm).

SECCHI DEPTH

The transparency of water to light seems to be a significant factor for the presence of Myriophyllum sibiricum Komarov (Haloragaceae) as the secchi depth had to be at least 1.4 m before it was found. Isoetaceae is also greatly effected by the transparency of the water as its presence was only in waters with secchi depth 2.475 m or greater. Species of Osmundaceae also appear to prefer clearer water with its presence only in habitats having secchi depths 2.65 m or greater. Most species of Potamogetonaceae were not influenced by the particulate matter in the water except for Potamogeton gramineus L. was only present in site having a secchi depth of 1.625 or greater. While species in the Asteraceae and Rosaceae families were not completely absent from sites with lesser secchi depths, most species appeared to favor habitats with secchi depths of greater than 2 m.

COLOR

As with secchi depth, color measured by a Hach kit in (PtCo) is also an indicator of particulate matter in water and thus the transparency to light. In accordance with the secchi depth results, Elodea canadensis Michx. and Vallisneria americana Michx. both from the family Hydrocharitaceae were found only in sites with color values less than 92 (PtCo). Isoetaceae also showed trends with its presence only in habitats of less than 71 (PtCo). Scheuchzeria palustris L. (Juncaginaceae) was only found in waters with higher particulate matter and values of greater than 79 (PtCo). On the other hand, Osmundaceae was only found in waters with color less than 79 (PtCo) which follow the trends observed for secchi depth.

Discussion

Most of the water chemistry tests prove to be useful for predicting certain species of plants or the probability that a certain family may be found in an area; however, from this study one would not be able to predict the relative abundance of a macrophyte. Many of the tests appear to be interrelated, but may show trends in some families and not others which suggests that one would be able to get a better idea of what macrophytes were present in a habitat if looking at several different tests. Looking at several different tests to predict the macrophytes would provide a more holistic view of the habitat and would also be beneficial in that some tests are somewhat variable in the readings. It should also be noted that many of the macrophytes collected were found on the immediate shore and were not actually standing in the water which may explain why some families and species did not show significant trends. From this study, certain macrophytes present in a habitat could also be used to predict characteristics of the water. The study also suggest that streams have the most diverse macrophytes with lakes following and bog-type habitats being the least diverse.

While water chemistry proved to be beneficial to correlating macrophyte presence, maximum depth, maximum length and relative size did not show significant trends. The percent of littoral zone may offer more insight than maximum depth as most macrophytes do not grow in the deepest parts and tend to be found closer to the shores. Many plants live only partially in the water and are not truly aquatic (Morgan 1930). In addition with increasing depth, species of plants change along with their structures (Curtis 1959). While maximum length and relative size did not proved to be useful in this experiment, they may be useful if correlating relative abundance of a macrophyte which was not looked at in this experiment.

It should be noted that I did not discuss hard woody plants because Karen Francl did not seem to have collected them. I also do not mention much about members in the families of Cyperaceae and Poaceae although a few species such as Carex Lasiocarpa Ehrh could prove to be interesting topics. I do not discuss these families as Karen appeared to have concentrated more of her collecting on these two families than I had. Thus, any strong conclusions may be faulty until it is proven that these species favor bog-like habitats.

This experiment could be used as a stepping stone to provide families and species that appear to show trends and which may prove to be useful if further study is continued. The families of Asteraceae and Ericaceae appear to be promising topics of further study as they showed general trends towards more lake-type and bog-like habitats respectively (Curtis 1959). One may also want to consider further study of Raspberry as it was often the only exception to many of the major trends in these two families. Members in the families: Hydrocharitaceae, Isoetaceae, Osmundaceae and Sphagnaceae show the most significant trends and look to be the most promising. The first three families thrive in more neutral conditions. Sphagnaceae, in particular, looks favorable because within the family there are differences in the types of habitats certain species prefer. Most species of Sphagnum were collected in habitats that are more bog-like and stereotypical of Sphagnum. Sphagnum is usually thought to grow in habitats too poor in nutrients to support larger vascular plants (McQueen). However, Sphagnum recurvum P.-Beauv. appeared to go against the typical bog-type habitats that Sphagnum is known to inhabit and help create with continued growth (Crum 1922). This variety was found in more lake like habitats while, members of the same species but different variety were collected in the bog-like habitats and appear to have very specific cut-off points. More information is still needed to make any solid conclusion. This study may provide a basis for choosing water chemistry experiments and species that might be of interest.

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Francl, Karen. Relationship Between Macrophyte Presence and Chemical Composition of Ten Bog-like Habitats and Three Streams. UNDERC 1996.