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# The Flora of Lake Vermillion Minnesota.

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Lake Vermillion is situated in the Northern portion of St. Louis county, north and a little east of Duluth and may be reached via the Duluth and Iron Range Railway. The lake is only 35 miles long, but it has 800 miles of shore line. In many places the shore line is rocky, in others, however, there are sandy beaches. The lake is noted for its many islands. Those who profess to know, state that there are 355. Some islands are only 100 feet square, while one of the large islands contains several thousand acres, including several small lakes. The depth of the lake varies from a few feet to 150 feet. At one time there was considerable timber in the region, mostly white pine (*Pinus strobus*), red pine (*Pinus resinosa*) and some Jack pine (*Pinus divaricata*). Paper birch (*Betula papyrifera*), balsam fir (*Abies balsamea*), Arbor vitae (*Thuja occidentalis*), tamarack (*Larix laricina*), white spruce (*Picea canadensis*), black spruce (*P. mariana*), black ash (*Fraxinus nigra*), and Balm of Gilead (*Populus balsamifera*) occur in swamps and along the streams. There is also *Populus grandidentata* on a few islands. Other species of trees occur but they are scarcely merchantable. These trees are as follows: Bass wood (*Tilia americana*), hard maple (*Acer saccharum*), red ash (*Fraxinus Pennsylvanica*), and green ash (*F. Pennsylvanica* var *lanceolata*). The pin cherry (*Prunus pennsylvanica*) is common everywhere, especially in burnt-over areas. The choke cherries (*P. virginiana*) is also common, but never attains the dimensions of a tree. The quaking aspen (*Populus tremuloides*) is one of the common trees, never, however, of large size. Mountain ash (*Pyrus Americana*) is always a shrub or a very small tree. The oak (*Quercus ellipsoidalis*) is a rare tree occurring on Pine Island. The blue beach or iron wood (*Carpinus caroliniana*) was only found once at the lower end of the lake, near the Vermillion dam. It was shrub-like and only leaves were observed. This locality makes apparently the most northern limit in Minnesota for the species. The speckled Alder (*Alnus incana*) is common in the swamps and on the shores of the lake. American elm (*Ulmus americana*) is confined to the streams and beaches of the lake.

The shrubs and herbaceous plants are important because of their relation to the growth of forest trees. The importance of the associated plants has been considered by many botanists. Woodsmen have often observed that when the associated plants are removed the forest trees are short lived. In conversation with Gus. Fabin, who owns a cottage at the head of Fabin's Bay, when the dying of balsam fir in front of his cottage was mentioned he said, "I have often noticed that when you remove the associated trees the balsam fir is a short lived tree."

The more important shrubs of the region are the following: (*Salix amygdaloides*), on the beaches, not common. Cordate willow (*Salix cordata*), Sandbar willow (*S. longifolia*), bog willow (*S. pedicellaris*), gaucoous willow (*S. discolor*), beaked willow (*S. rostrata*), Sweet gale (*Myrica gale*), beaked hazel (*Corylus rostrata*), swamp birch (*Betula pumila*), June berry or service berry (*Amelanchier spicata*), Red raspberry (*Rubus idaeus* var *aculeatissimus*), dwarf raspberry (*R. triflorus*),



Birch and balsam in the Lake Vermillion region.



Beach in front of Fabin's cottage.

dew berry (*R. canadensis*), rose (*Rosa blanda*), sumach (*Rhus glabra*), poison ivy (*R. toxicodendron*), bitter sweet (*Celastrus scandens*), Mountain maple (*Acer spicatum*), and Buckthorn (*Rhamnus alnifolia*) along the river courses. Virginia Creeper (*Pseuderis quinquefolia*), Dwarf cornel (*Cornus canadensis*), round leaved cornel (*C. circinata*), and red osier (*Cornus stolonifera*). The following occur in the Muskeg or on the borders of the same; Labrador Tea (*Ledum groenlandicum*), pale laurel (*Kalmia polifolia*), Bog Rosemary (*Andromeda polifolia*), Leather leaf (*Chamaedaphne calyculata*), and Cranberry (*Vaccinium macrocarpum*). The following in pine forests; Wintergreen (*Gaultheria procumbens*), Bearberry (*Arctostaphylos uva-ursi*), Creeping snowberry (*Chiogenes hispidula*), usually in swamps, Blueberry (*Vaccinium pennsylvanicum*), Bush honeysuckle (*Diervilla lonicera*), American fly honeysuckle (*Lonicera canadensis*), Swamp fly honeysuckle (*L. oblongifolia*), and Twin-flower (*Linnaea borealis*).

The table on the next page gives the percentage population of trees in the vicinity of Fabin's cottage and Birch Point, as well as the plant population in the vicinity of Tower and Sudan.

The associated shrubs and trees in the above areas are given in percentages. The mountain maple and dogwood are not always mentioned. A study of the table will show the different types of associated plants and the abundance of the same. The Muskeg swamp contains *Picea mariana*, *Larix laricina*, *Betula pumila*, and *Alnus incana*, the latter on the border. The following shrubby plants occur; *Chamaedaphne*, *Andromeda polifolia*, *Vaccinium macrocarpon*. Such plants as *Sarracenia purpurea*, *Carex filiforme* and *Spiranthes*. Sphagnum occurs scattered over the Muskeg.

The more important plants growing with the balsam fir, white pine, paper birch and quaking aspen are the following: Bush honeysuckle (*Diervilla lonicera*) with pale yellow flowers, the dwarf cornel (*Cornus canadensis*) with its bright red fruit, and the mountain maple (*Acer spicatum*) characteristic of all of the upland woods. The Clintonia (*C. borealis*) with its blue fruit early in August was conspicuous. In all of the recent clearings great quantities of *Aster corymbosus* were present. The trailing twin flower (*Linnaea borealis*), *Smilacina bifolia*, *Rubus idaeus* var *aculeatissimus*, *Lycopodium lucidulum* and *Pyrola secunda* were common everywhere in the woods. The dogwood (*Cornus circinata*) on the shores of the lake and the red dogwood (*C. stolonifera*) in tamarack and spruce swamps. In a stage beyond the Muskeg one finds pools of water standing. These swamps contain the black ash, alder, balsam fir, *Alisma plantago* var *americana*, *Cicuta maculata*, *Glyceria canadensis*, *Calamagrostis canadensis*, wild calla (*Calla palustris*), and the swamp fly honeysuckle (*Lonicera oblongifolia*). In the upland woods the following species are common: the Currant (*Ribes triste*), Black currant (*R. prostratum*), Bishop's cap (*Mitella nuda*), Marsh marigold (*Caltha palustris*), Beech fern (*Phegopteris dryopteris*), Sensitive fern (*Onoclea sensibilis*), Willow (*Salix rostrata*), Alder (*Alnus incana*), *Hydrocotyle americana*, *Geranium robertianum*, *Campanula aparinoides*, *Lycopus americanus*, *Mentha canadensis*, *Pteris aquilina*, *Arctostaphylos uva-ursi*, *Lathyrus ochroleucus*, Rattlesnake plantain (*Epipactis pubescens*), Bottle grass (*Asprella hystrix*), *Uvularia grandiflora*, *Smilacina racemosa*, Poison ivy (*Rhus toxicodendron*), Bitter Sweet (*Celastrus scandens*) and Virginia creeper (*Pseuderis quinquefolia*). On the beaches the following plants are common: Sumach (*Rhus glabra*), Hair grass (*Agrostis scabra*), Strawberry (*Fragaria virginiana*), Rose (*Rosa blanda*), Columbine (*Aquilegia canadensis*), Red ash (*Fraxinus pennsylvanica*), occasionally Dogwood (*Cornus stolonifera*), and (*Aspidium spinulosum*) in woods back from beach.

	Upland Near Fabin's Cottage.	Swamp Near Fabin's Cottage.	North Slope Birch Point.	East End Birch Point.	Near End Birch Point.	Near Birch Point	At the Very End of the Point.	Schive- ly Lower End of Lake.	Tower and Sudan Marsh and Up- land.	Muskeg Swamp Border.	Muskeg Swamp Inter- ior.	Swamp at East End of Fabin's, Bay.	Pine Island.	Pine Island Shore.	Isle of Pines.	Straw- berry Island.	East End of Fabin's Bay.
<i>Picea mariana</i> .....		5.97			16.65			.99	3.64	20.00	33.76	4.29					
<i>Picea canadensis</i> .....	5.59			15.12				1.98	3.64				1.66	1.90	10.14	.45	
<i>Abies balsamea</i> .....	20.86	16.07	14.54		16.65			8.91	1.63			2.70	3.94	14.04	6.21	8.55	
<i>Thuja occidentalis</i> .....	4.58	24.46					1.69		4.36			10.68			8.28	16.20	
<i>Pinus resinosa</i> .....	3.56		2.72	22.03		1.00			12.18				14.84	31.93	13.93		
<i>Pinus strobus</i> .....	2.03		1.81	2.01		1.50		9.97	10.39				4.17	3.70	10.55	.90	
<i>Pinus divaricata</i> .....			1.81	3.45											4.23		
<i>Larix laricina</i> .....			3.43		25.33				.728	16.00	36.32	3.53					*
<i>Taxus canadensis</i> .....												4.08	3.48	5.51	5.17	16.20	
<i>Populus tremuloides</i> .....	24.45	5.09	6.36	8.20		5.52	5.08	24.73	4.36								
<i>Populus grandidentata</i> .....													.696				
<i>Populus balsamifera</i> .....									5.55			1.90					3.54
<i>Betula papyrifera</i> .....	15.77	1.39	36.63	19.80		12.04	4.33	15.84	8.74			1.08	15.18	13.22	15.79	25.20	
<i>Betula pumila</i> .....									10.00	19.92							
<i>Acer saccharum</i> .....				4.32		33.13											
<i>Acer rubrum</i> .....	3.05		5.45	4.32				11.01	10.55			5.06	1.39	6.96	3.31		
<i>Acer spicatum</i> .....						7.53							11.60	4.20	2.89	1.45	
<i>Tilia americana</i> .....			12.72			15.50	1.69							8.56		.90	
<i>Ulmus americana</i> .....							1.69	1.05	2.91			8.79		.428			2.12
<i>Rhamnus alnifolia</i> .....									2.00								
<i>Cornus circinata</i> .....				6.48		7.53	8.47		2.72				5.80		7.14		
<i>Cornus stolonifera</i> .....					11.10		8.47		2.72			3.00	5.80		3.72		
<i>Amelanchier spicata</i> .....			2.72	4.32		6.02	3.38						1.39	2.04	2.48	1.25	
<i>Prunus pennsylvanica</i> .....	11.70		2.72	3.47		2.00	7.62	3.96	1.09				1.524	1.50		13.95	
<i>Prunus virginiana</i> .....			9.09			8.23	35.57						1.39	2.25		2.25	
<i>Pyrus americana</i> .....							.847	2.72					.232	.952		5.00	
<i>Fraxinus nigra</i> .....	2.03	26.55						4.95	6.18			20.66		.958			9.54
<i>Fraxinus pennsylvanica</i> var <i>lanceolata</i> .....	2.03	3.49						2.54						1.90		.45	
<i>Fraxinus pennsylvanica</i> .....						*20.30		5.92				15.97					1.06
<i>Alnus incana</i> .....	3.051	11.10						15.84	10.28	34.00			7.55	20.57		5.00	72.60*
<i>Corylus rostrata</i> .....				4.32				8.47									
<i>Myrica Gale</i> .....						60.65											11.14*
<i>Salix rostrata</i> .....		5.88		2.16		*3.32			2.72								
<i>Salix discolor</i> .....	1.29							4.233	5.05	3.64							
<i>Salix amygdaloides</i> .....													6.338		6.16	2.25	
<i>Salix pedicularis</i> .....																	
<i>Ledum groenlandicum</i> .....										10.00	10.00						

NOTE—\*Peat Bog.

Pine Island, one of the large islands still has considerable standing white and Norway pine. Interspread with these species are the following trees: red maple, basswood, paper birch, balsam fir and arbor vitae. The undergrowth consists mainly of *Cornus circinata*, *Corylus rostrata*, *Acer spicatum*, and *Diervilla lonicera*. Near to the shore lines, *Cornus stolonifera* and *Myrica gale*. The herbaceous plants are much the same as on the mainland. Of the conspicuous plants mention may be made of *Clintonia borealis*, *Arctostaphylos uva-ursi*, *Linnaea borealis*, *Pyrola secunda*, *Equisetum sylvaticum*, *Vaccinium pennsylvanicum*, *Rhus toxicodendron*.

Several small lakes occur on the island. In Bass Lake *Nuphar advena* was observed in abundance. On the shores there was an abundance of *Iris versicolor*, *Stium cicutae-folium*, *Calla palustris* and *Calamagrostis canadensis*. A small island lying a short distance from Birch Point, the Isle of Pines, contains some virgin white and Norway pines. The rock is near the surface. Of the plants observed mention may be made of the following: an abundance of *Polytrichum junifer-nica*, *Diervilla lonicera*, *Aspidium spinulosum*, *Pteris aquilina*, and *Poa nica*, *Diervilla lonicera*, *Aspidium spinulosum*, *Pteris aquilina*, and *Poa serotina*. Strawberry Island near Fabin's Bay and Birch Point has a much smaller area than the other islands. All of the virgin pine has been removed, young white spruce, white pine, arbor vitae are growing up thickly. The rock lies close to the surface. *Poa serotina* covered all of the vacant places. In dry places near the shore *Rhus glabra*, *Gnaphalium*, and *Cladonia rangerferina*. The *Lycopodium dendrodeum*. *Aster corymbosus*, *Rosa blanda*, *Cornus circinata*, *Diervilla lonicera*, *Hieracium canadense*, *Fragaria virginiana*, *Rubus idaeus* var *acule-atissimus*, *Epilobium spicatum*, *Chimaphila umbellata*, *Epipactis pubescens*, *Solidago ulmifolia*, *Ribes triste*, *Polypodium vulgare*, *Aspidium spinulosum*, *Pyrola secunda*, *Prunus virginiana*, and *Prunus pennsylvanica*. All of these islands soon become covered with vegetation after a fire.

The lower end of the lake at the dam contains an interesting lot of plants; *Clintonia borealis*, *Eupatorium purpureum*, *Polygonatum biflorum*, *Smilacina racemosa*, *Asplenium Filix-femina*, *Aspidium noveboracense*, *Impatiens fulva*, *Aspidium spinulosum*, *Castalia odorata*, *Nuphar advena*, *Scirpus lacustris*, *Scirpus atrovirens*, *Lemna trisculca*, *Aster umbellatus*, *Solidago serotina*, and *Viburnum opulifolium*.

Some of the introduced plants found in the vicinity of Birch Point, Schively and Tower are as follows: *Cirsium arvense*, *Iva xanthifolia*, *Helianthus annuus*, Russian thistle (*Salsola Kali* var *tenuifolia*), *Nepeta Cataria*, *Tanacetum vulgare*, *Artemisia biennis*, *Xanthium canadense*, *Erigeron canadensis*, *Phleum pratense*, *Trifolium repens*, *T. pratense*, *T. hybridum*, and *Rumex crispus*.

No attempt is made to give any of the literature bearing on the plants of the region. It will only be necessary to refer to two papers, the most important of which is by J. C. Arthur, which includes the botanical work of Holway, Arthur, Bailey and Upham who did work in the region in the eighties. Their camp was located in 48° north latitude near Lake Vermillion. The trees and shrubs of the region are given by F. C. Clements, C. Otto, Rosendahl and F. K. Butters in their Minnesota Trees and Shrubs."

L. H. Bailey in the above contribution lists the white ash (*Fraxinus*

\*Rep. Botanical work of Minn. for 1886. Bull Geol. and Nat. Hist. Survey of Minnesota 3.

\*\*Report of the Botanical Survey IX.

*americana*) and the burr oak (*Quercus macrocarpa*). If these species occur, the writer did not observe them. The author is quite sure that the white ash (*Frazinus americana*) does not occur in the region. I am quite certain that the species barely extends into Minnesota. Arthur, Holway and Bailey do not report this ash in the list of plants between Lake Superior and the International Boundary.

C. R. Van Hise and C. K. Leith who discuss the geology of the Lake Superior region state that the lakes of the region are generally parallel to the trend of the ridges and generally longer than broad.

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\*\*\*U. S. Geol. Survey LII 1911:92