ANALYSIS OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

Bank woody vegetation results from selected sites in the Lake Erie - Lake St. Clair Basin
(National Water-Quality Assessment Program)

Bank woody vegetation surveys were conducted at 3 stream sites (3 reaches per site) in the Lake Erie - Lake St. Clair Basin in 1997. The point-centered quarter method was used to evaluate species, distance, density, basal area, and dominance of stream-bank woody vegetation as described by Meador and others (1993) as part of the National Water-Quality Assessment program. Sampling points were established on both banks at the ends of six transects. Four quarters were established at each sampling point at the intersection of two perpendicular lines, one of which was the transect line. Only trees that were at least 2 meters high and had a diameter at breast height (dbh) of at least 3 cm were included. The sampled trees were identified to species, and the distance from the sampling point measured, along with its dbh. Individual tree transect data (including distance, dbh, right and left bank location) are available from the USGS, Lansing, Michigan. Addition biological, surface-water, and/or water-quality data for these sites can be found in the continuous-record sections of the Indiana, Michigan, New York, and Ohio Water Resources Data Reports.

Family names are in uppercase, scientific names in italics, and common names in parentheses (Barnes and Wagner, 1996). Basal area = the cross sectional area of tree trunks at breast height.

CALENDAR YEAR 1997

STATION NUMBER	STATION NAME	DATE	REACH	Diversity: Number of Tree Species Measured	Distance: Average Distance of Trees from Sampling Point (meters)	Density: Average Number of Trees per 100 square meters	Basal Area: Average Basal Area per 100 square meters (cm^2)	Dominance: Most Dominant Species
04161820	CLINTON RIVER AT STERLING HEIGHTS, MI	09/25/97	A	13	4.84	5.0	4800	Willow
04161820	CLINTON RIVER AT STERLING HEIGHTS, MI	09/09/97	B	12	3.35	8.9	11200	Willow
04161820	CLINTON RIVER AT STERLING HEIGHTS, MI	10/06/97	C	10	3.55	7.9	7300	Sycamore
04193500	MAUMEE RIVER AT WATERVILLE, OH	10/14/97	A	10	5.66	3.1	6600	Silver Maple
04193500	MAUMEE RIVER AT WATERVILLE, OH	10/15/97	B	21	7.06	2.0	2800	Eastern Cottonwood
04193500	MAUMEE RIVER AT WATERVILLE, OH	10/15/97	C	10	4.11	5.9	7500	Eastern Cottonwood
04211820	GRAND RIVER AT HARPERSFIELD, OH	09/12/97	A	15	2.80	12.8	19400	Red Oak
04211820	GRAND RIVER AT HARPERSFIELD, OH	09/11/97	B	14	5.12	3.8	8000	Willow
04211820	GRAND RIVER AT HARPERSFIELD, OH	09/11/97	C	10	4.61	4.7	3900	Sycamore

ACERACEAE

STATION NUMBER	*Acer negundo* (boxelder)			*Acer rubrum* (red maple)			*Acer saccharinum* (silver maple)			*Acer saccharum* (sugar maple)		
	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)
04161820	13	1.35	207	6	0.63	2137	1	0.10	2035	0	0	0
04161820	6	1.11	384	6	1.11	1043	1	0.19	725	1	0.19	131
04161820	9	1.48	441	7	1.15	1566	0	0	0	0	0	0
04193500	1	0.06	77	1	0.06	1134	17	1.10	3020	0	0	0
04193500	4	0.17	573	0	0	0	3	0.13	4109	0	0	0
04193500	0	0	0	1	0.12	50	17	2.09	886	0	0	0
04211820	0	0	0	9	2.62	1931	1	0.29	1293	6	1.75	525
04211820	0	0	0	2	0.16	1668	17	1.35	1194	1	0.08	240
04211820	0	0	0	5	0.57	1284	13	1.49	723	3	0.34	726

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Bank woody vegetation results from selected sites in the Lake Erie - Lake St. Clair Basin -- Continued

	ANACARDIACEAE			BETULACEAE			BIGNONIACEAE			CORNACEAE		
	Rhus typhina (staghorn sumac)			*Carpinus caroliniana* (blue-beech)			*Catalpa sp.* (catalpa)			*Cornus florida* (flowering dogwood)		
STATION NUMBER	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04161820	3	0.56	25	0	0	0	0	0	0	0	0	0
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04193500	0	0	0	0	0	0	0	0	0	0	0	0
04193500	0	0	0	0	0	0	1	0.04	20	2	0.08	26
04193500	0	0	0	0	0	0	0	0	0	0	0	0
04211820	1	0.29	17	1	0.29	34	0	0	0	1	0.29	306
04211820	0	0	0	0	0	0	0	0	0	0	0	0
04211820	0	0	0	0	0	0	0	0	0	0	0	0

	CUPRESSACEAE			FABACEAE								
	Juniperus virginiana (eastern redcedar)			*Cercis canadensis* (redbud)			*Gleditsia triacanthos* (honeylocust)			*Robinia pseudoacacia* (black locust)		
STATION NUMBER	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04193500	0	0	0	0	0	0	1	0.06	7	0	0	0
04193500	1	0.04	123	1	0.04	24	1	0.04	5728	0	0	0
04193500	0	0	0	0	0	0	1	0.12	2836	0	0	0
04211820	0	0	0	0	0	0	0	0	0	2	0.58	653
04211820	0	0	0	0	0	0	0	0	0	0	0	0
04211820	0	0	0	0	0	0	0	0	0	1	0.11	383

	FAGACEAE											
	Fagus grandifolia (american beech)			*Quercus alba* (white oak)			*Quercus palustris* (pin oak)			*Quercus rubra* (red oak)		
STATION NUMBER	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04161820	0	0	0	0	0	0	0	0	0	2	0.37	1150
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04193500	0	0	0	0	0	0	0	0	0	0	0	0
04193500	0	0	0	1	0.04	232	0	0	0	1	0.04	754
04193500	0	0	0	0	0	0	0	0	0	0	0	0
04211820	0	0	0	0	0	0	1	0.29	2289	5	1.45	3957
04211820	1	0.08	471	0	0	0	0	0	0	4	0.32	1825
04211820	0	0	0	0	0	0	0	0	0	0	0	0

ANALYSIS OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

Bank woody vegetation results from selected sites in the Lake Erie - Lake St. Clair Basin -- Continued

	JUGLANDACEAE									LAURACEAE		
	Carya cordiformis (bitternut hickory)			*Juglans cinerea* (butternut)			*Juglans nigra* (black walnut)			*Lindera benzoin* (spicebush)		
STATION NUMBER	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)
04161820	1	0.10	131	0	0	0	0	0	0	0	0	0
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04193500	0	0	0	0	0	0	0	0	0	0	0	0
04193500	0	0	0	0	0	0	1	0.04	907	0	0	0
04193500	0	0	0	0	0	0	0	0	0	0	0	0
04211820	3	0.87	145	0	0	0	1	0.29	1534	0	0	0
04211820	2	0.16	286	3	0.24	385	0	0	0	2	0.16	34
04211820	0	0	0	1	0.11	191	0	0	0	0	0	0

	LAURACEAE - Continued			MAGNOLIACEAE			MORACEAE			OLEACEAE		
	Sassafras albidum (sassafras)			*Liriodendron tulipifera* (yellow-poplar)			*Moros rubra* (red mulberry)			*Fraxinus americana* (white ash)		
STATION NUMBER	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square 2meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)
04161820	0	0	0	0	0	0	0	0	0	1	0.10	2247
04161820	0	0	0	0	0	0	0	0	0	3	0.56	559
04161820	0	0	0	0	0	0	3	0.49	336	3	0.49	167
04193500	0	0	0	0	0	0	0	0	0	12	0.78	136
04193500	0	0	0	0	0	0	2	0.08	3380	2	0.08	569
04193500	0	0	0	0	0	0	1	0.12	18	15	1.84	944
04211820	0	0	0	0	0	0	0	0	0	4	1.16	1382
04211820	2	0.16	283	1	0.08	366	0	0	0	0	0	0
04211820	1	0.11	572	0	0	0	0	0	0	0	0	0

	OLEACEAE -continued			PINACEAE			PLATANACEAE			ROSACEAE		
	Fraxinus pennsylvanica (red ash)			*Tsuga canadensis* (eastern hemlock)			*Platanus occidentalis* (sycamore)			*Crataegus sp.* (hawthorn)		
STATION NUMBER	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)
04161820	1	0.10	9	0	0	0	2	0.21	490	1	0.10	33
04161820	2	0.37	683	0	0	0	0	0	0	7	1.30	244
04161820	0	0	0	0	0	0	4	0.66	2906	10	1.65	216
04193500	0	0	0	0	0	0	1	0.06	2289	0	0	0
04193500	0	0	0	0	0	0	0	0	0	0	0	0
04193500	0	0	0	0	0	0	1	0.12	4183	0	0	0
04211820	0	0	0	0	0	0	5	1.45	2632	0	0	0
04211820	0	0	0	0	0	0	6	0.48	4612	0	0	0
04211820	0	0	0	1	0.11	135	14	1.60	1020	0	0	0

Bank woody vegetation results from selected sites in the Lake Erie - Lake St. Clair Basin -- Continued

ROSACEAE - Continued | SALICACEAE

STATION NUMBER	*Prunus serotina* (black cherry)			*Prunus virginiana* (choke cherry)			*Pyrus communis* (common pear)			*Populus deltoides* (eastern cottonwood)		
	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)
04161820	0	0	0	0	0	0	0	0	0	1	0.10	2375
04161820	0	0	0	0	0	0	0	0	0	1	0.19	4427
04161820	1	0.16	161	0	0	0	0	0	0	3	0.49	2065
04193500	0	0	0	0	0	0	0	0	0	7	0.45	6470
04193500	1	0.04	855	1	0.04	20	4	0.17	24	4	0.17	4943
04193500	0	0	0	0	0	0	0	0	0	3	0.37	5669
04211820	0	0	0	0	0	0	0	0	0	0	0	0
04211820	0	0	0	0	0	0	0	0	0	0	0	0
04211820	0	0	0	0	0	0	0	0	0	0	0	0

SALICACEAE - Continued | SIMAROUBACEAE | TILIACEAE

STATION NUMBER	*Populus tremuloides* (quaking aspen)			*Salix sp.* (willow)			*Ailanthus altissima* (tree-of-heaven)			*Tilia americana* (basswood)		
	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)
04161820	0	0	0	6	0.63	2742	0	0	0	1	0.10	257
04161820	0	0	0	5	0.93	7040	0	0	0	0	0	0
04161820	0	0	0	1	0.16	2595	0	0	0	0	0	0
04193500	0	0	0	2	0.13	170	0	0	0	0	0	0
04193500	2	0.08	2473	0	0	0	1	0.04	2205	1	0.04	1323
04193500	0	0	0	3	0.37	824	0	0	0	0	0	0
04211820	0	0	0	0	0	0	0	0	0	3	0.87	100
04211820	0	0	0	2	0.16	18555	0	0	0	1	0.08	628
04211820	0	0	0	1	0.11	123	0	0	0	0	0	0

ULMACEAE

STATION NUMBER	*Celtis occidentalis* (northern hackberry)			*Ulmus americana* (american elm)		
	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)	Number of Trees Measured	Average Number of Trees per 100 square meters	Average Basal Area (cm^2)
04161820	4	0.42	300	10	1.04	482
04161820	0	0	0	11	2.04	396
04161820	0	0	0	7	1.15	720
04193500	1	0.06	189	5	0.32	92
04193500	2	0.08	1561	12	0.50	317
04193500	3	0.37	1410	3	0.37	306
04211820	0	0	0	1	0.29	18
04211820	0	0	0	4	0.32	282
04211820	0	0	0	1	0.11	19

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