

ANALYSES 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 10 stream sites in the Lake Erie - Lake St. Clair Basin in 1996. 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 1996

STATION NUMBER	STATION NAME	DATE	REACH	Diversity	Distance	Density	Basal Area	Dominance
				Number of Tree Species Measured	Average Distance of Trees from Sampling Point (meters)	Average Number of Trees per 100 square meters	Average Basal Area per 100 square meters (cm ²)	Most Dominant Species
04159492	BLACK RIVER NEAR JEDDO, MI	09/12/96	A	18	4.08	6.0	3900	Cottonwood
04161820	CLINTON RIVER AT STERLING HEIGHTS, MI	09/13/96	A	10	4.26	5.5	5300	Willow
04175600	RIVER RAISIN NEAR MANCHESTER, MI	09/11/96	A	15	3.28	9.3	10200	Willow
04178000	ST JOSEPH RIVER NEAR NEWVILLE, IN	09/10/96	A	13	4.26	5.5	15900	Silver Maple
04183000	MAUMEE RIVER AT NEW HAVEN, IN	10/15/96	A	8	3.82	6.8	10800	Silver Maple
04186500	AUGLAIZE RIVER NEAR FORT JENNINGS, OH	09/09/96	A	11	2.66	14.1	11800	White Ash
04193500	MAUMEE RIVER AT WATERVILLE, OH	08/27/96	A	9	4.31	5.4	10600	Silver Maple
04208504	CUYAHOGA RIVER AT LTV AT CLEVELAND, OH	08/20/96	A	6	2.31	18.7	11900	Cottonwood
04211820	GRAND RIVER AT HARPERSFIELD, OH	08/21/96	A	13	4.29	5.4	6700	Sycamore
04213500	CATTARAUGUS CREEK AT GOWANDA, NY	08/22/96	A	13	2.98	11.2	3100	Cottonwood

ACERACEAE

STATION NUMBER	<i>Acer negundo</i> (boxelder)			<i>Acer rubrum</i> (red maple)			<i>Acer saccharinum</i> (silver maple)			<i>Acer saccharum</i> (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)
04159492	12	1.50	281	0	0	0	1	0.13	2959	1	0.13	232
04161820	15	1.72	305	6	0.69	2654	1	0.11	1499	0	0	0
04175600	0	0	0	7	1.36	913	0	0	0	1	0.19	33
04178000	3	0.34	530	0	0	0	22	2.52	4057	0	0	0
04183000	4	0.57	206	0	0	0	23	3.26	2570	0	0	0
04186500	14	4.11	618	0	0	0	1	0.29	1608	0	0	0
04193500	0	0	0	2	0.23	1131	17	1.91	3371	0	0	0
04208504	5	2.31	56	0	0	0	0	0	0	1	0.43	32
04211820	0	0	0	5	0.69	701	1	0.14	767	3	0.42	482
04213500	3	0.84	39	2	0.56	502	0	0	0	5	1.4	97

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STATION NUMBER	<u>ANACARDIACEAE</u>			<u>ANNONACEAE</u>			<u>BETULACEAE</u>					
	<i>Rhus typhina</i> (staghorn sumac)			<i>Asimina triloba</i> (pawpaw)			<i>Betula papyrifera</i> (white birch)			<i>Carpinus caroliniana</i> (blue-beech)		
	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)
04159492	0	0	0	0	0	0	1	0.13	80	1	0.13	18
04161820	0	0	0	1	0.11	125	0	0	0	0	0	0
04175600	0	0	0	0	0	0	0	0	0	4	0.78	71
04178000	0	0	0	0	0	0	0	0	0	1	0.11	17
04183000	0	0	0	0	0	0	0	0	0	0	0	0
04186500	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
04208504	1	0.43	13	0	0	0	0	0	0	0	0	0
04211820	1	0.14	15	0	0	0	0	0	0	0	0	0
04213500	1	0.28	35	0	0	0	0	0	0	0	0	0

STATION NUMBER	<u>BETULACEAE - Continued</u>			<u>BIGNONIACEAE</u>			<u>CORNACEAE</u>					
	<i>Ostrya virginiana</i> (hop-hornbeam)			<i>Catalpa sp.</i> (catalpa)			<i>Cornus alternifolia</i> (alternate-leaf dogwood)			<i>Cornus florida</i> (flowering dogwood)		
	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)
04159492	0	0	0	0	0	0	1	0.13	4	0	0	0
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04175600	0	0	0	0	0	0	1	0.19	2	1	0.19	53
04178000	3	0.34	809	0	0	0	0	0	0	0	0	0
04183000	0	0	0	0	0	0	0	0	0	0	0	0
04186500	0	0	0	0	0	0	0	0	0	0	0	0
04193500	0	0	0	0	0	0	1	0.11	35	0	0	0
04208504	0	0	0	0	0	0	0	0	0	0	0	0
04211820	0	0	0	0	0	0	2	0.28	148	0	0	0
04213500	0	0	0	1	0.28	1206	1	0.28	1	0	0	0

STATION NUMBER	<u>CUPRESSACEAE</u>			<u>ELAEOAGNACEAE</u>			<u>FABACEAE</u>					
	<i>Thuja occidentalis</i> (northern white-cedar)			<i>Elaeagnus umbellata</i> (autumn-olive)			<i>Gleditsia triacanthos</i> (honeylocust)			<i>Robinia pseudoacacia</i> (black locust)		
	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)
04159492	1	0.13	7	1	0.13	26	0	0	0	0	0	0
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04175600	0	0	0	0	0	0	0	0	0	2	0.39	11
04178000	0	0	0	0	0	0	1	0.11	629	0	0	0
04183000	0	0	0	0	0	0	0	0	0	0	0	0
04186500	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
04208504	0	0	0	0	0	0	0	0	0	0	0	0
04211820	0	0	0	0	0	0	2	0.28	5500	0	0	0
04213500	0	0	0	0	0	0	0	0	0	1	0.28	7

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STATION NUMBER	FAGACEAE						JUGLANDACEAE					
	<i>Quercus alba</i> (white oak)			<i>Quercus prinus</i> (chestnut oak)			<i>Quercus rubra</i> (red oak)			<i>Carya cordiformis</i> (bitternut hickory)		
	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)
04159492	1	0.13	6717	1	0.13	60	1	0.13	184	0	0	0
04161820	0	0	0	0	0	0	0	0	0	0	0	0
04175600	1	0.19	5577	0	0	0	0	0	0	0	0	0
04178000	1	0.11	660	0	0	0	0	0	0	0	0	0
04183000	0	0	0	0	0	0	0	0	0	1	0.14	54
04186500	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
04208504	0	0	0	0	0	0	0	0	0	0	0	0
04211820	6	0.83	1358	0	0	0	0	0	0	1	0.14	1206
04213500	5	1.40	139	0	0	0	0	0	0	0	0	0

STATION NUMBER	JUGLANDACEAE - Continued						MORACEAE					
	<i>Carya ovata</i> (shagbark hickory)			<i>Juglans cinerea</i> (butternut)			<i>Juglans nigra</i> (black walnut)			<i>Morus rubra</i> (red mulberry)		
	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)
04159492	1	0.13	47	0	0	0	0	0	0	0	0	0
04161820	0	0	0	0	0	0	0	0	0	5	0.57	323
04175600	1	0.19	30	7	1.36	163	2	0.39	72	0	0	0
04178000	0	0	0	0	0	0	0	0	0	0	0	0
04183000	0	0	0	0	0	0	0	0	0	1	0.14	50
04186500	2	0.59	543	0	0	0	0	0	0	4	1.18	95
04193500	0	0	0	0	0	0	0	0	0	0	0	0
04208504	0	0	0	0	0	0	0	0	0	0	0	0
04211820	2	0.28	14	0	0	0	2	0.28	1896	0	0	0
04213500	0	0	0	0	0	0	0	0	0	0	0	0

STATION NUMBER	OLEACEAE			PLATANACEAE			ROSACEAE					
	<i>Fraxinus americana</i> (white ash)			<i>Fraxinus pennsylvanica</i> (red ash)			<i>Platanus occidentalis</i> (sycamore)			<i>Crataegus sp.</i> (hawthorn)		
	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)
04159492	3	0.38	338	1	0.13	12	2	0.25	891	0	0	0
04161820	1	0.11	8	0	0	0	1	0.11	1320	0	0	0
04175600	15	2.91	1156	1	0.19	464	0	0	0	0	0	0
04178000	3	0.34	350	3	0.34	1886	2	0.23	5562	0	0	0
04183000	2	0.28	1870	0	0	0	0	0	0	0	0	0
04186500	8	2.35	1723	1	0.29	3368	4	1.18	1606	1	0.29	47
04193500	17	1.91	326	0	0	0	0	0	0	1	0.11	57
04208504	0	0	0	0	0	0	0	0	0	0	0	0
04211820	3	0.42	755	0	0	0	9	1.25	1707	0	0	0
04213500	2	0.56	630	0	0	0	3	0.84	397	0	0	0

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STATION NUMBER	SALICACEAE			TILIACEAE			ULMACEAE					
	<i>Populus deltoides</i> (eastern cottonwood)			Salix sp. (willow)			<i>Tilia americana</i> (basswood)			<i>Celtis occidentalis</i> (northern hackberry)		
	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)
04159492	5	0.63	2362	0	0	0	3	0.38	131	0	0	0
04161820	1	0.11	2164	6	0.69	2654	0	0	0	0	0	0
04175600	1	0.19	314	2	0.39	10301	0	0	0	0	0	0
04178000	3	0.34	7934	0	0	0	1	0.11	147	3	0.34	62
04183000	2	0.28	4349	0	0	0	0	0	0	9	1.28	369
04186500	0	0	0	2	0.59	532	0	0	0	8	2.35	396
04193500	4	0.45	6891	1	0.11	628	0	0	0	3	0.34	183
04208504	16	6.80	1370	0	0	0	0	0	0	0	0	0
04211820	0	0	0	0	0	0	2	0.28	108	0	0	0
04213500	7	1.96	308	1	0.28	1923	0	0	0	0	0	0

ULMACEAE -- Continued

STATION NUMBER	<i>Ulmus americana</i> (american elm)			<i>Ulmus pumila</i> (siberian 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)
04159492	11	1.38	242	0	0	0
04161820	11	1.26	124	0	0	0
04175600	2	0.39	84	0	0	0
04178000	2	0.23	1140	0	0	0
04183000	6	0.85	123	0	0	0
04186500	3	0.88	164	0	0	0
04193500	2	0.23	10	0	0	0
04208504	15	6.38	309	6	2.55	176
04211820	0	0	0	0	0	0
04213500	8	2.24	133	0	0	0

REFERENCES CITED:

Barnes, B.V., Wagner, W.H., JR., 1996, *Michigan Trees: A guide to the trees of Michigan and the Great Lakes Region*: The University of Michigan Press, 383 p.

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