State of Ohio
Environmental Protection Agency

Division of Surface Water

Biological Study of the Lower Ashtabula River and Conneaut Creek

Ashtabula County

November 7, 2006

Bob Taft, Governor
Joseph P. Koncelik, Director

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Ashtabula River NRDA Project
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Ashtabula County, Ohio

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INTRODUCTION

The Ashtabula River is located in northeast Ohio, flowing into Lake Erie at Ashtabula, Ohio. Tributaries include Fields Brook, Hubbard Run, Strong Brook, and Ashtabula Creek. The bottom sediments, bank soils and biota of Fields Brook have been severely contaminated by unregulated discharges of hazardous substances. Hazardous substances have migrated downstream from Fields Brook to the Ashtabula River and Harbor, contaminating bottom sediments, fish and wildlife. There are presently more than 1,000,000 cubic yards of contaminated sediment in the lower Ashtabula River and Harbor, and much of the contamination originated from Fields Brook (US FWS and Ohio EPA 2001). Contaminants include PCBs, chlorinated benzenes, chlorinated ethenes, hexachlorobutadiene, PAHs, other organic chemicals, heavy metals and low level radionuclides.

A Preassessment Screen (PAS), using existing data, was completed by the Ashtabula Natural Resource Trustees for the Ashtabula River and Harbor on May 18, 2001. Among the findings of the PAS was that the fish community in Ashtabula River contained approximately 45 percent fewer species and 52 percent fewer individuals than the Ohio EPA designated reference area, Conneaut Creek. The Ashtabula River and Conneaut Creek are similar in many respects, with the exception of the presence of contamination in the Ashtabula River (US FWS and Ohio EPA 2001). The biological and chemical data indicate that the differences in the fish communities are primarily the result of the hazardous substance contamination at Ashtabula. In order to investigate the impacts from hazardous substances further, the Trustees elected to conduct a study of the status and health of the aquatic biological communities of the Ashtabula River and Conneaut Creek in calendar year 2003. Additional fish community assessment work was completed in 2005. Results of the biological community assessment of the lower Ashtabula River and lower Conneaut Creek are presented in this report. Historical assessments are included in this report and were used to evaluate trends in biological integrity.

In 1993, Ohio EPA began a project designed to develop numerical biological criteria for shoreline waters of Lake Erie, including areas of tributary streams affected by lake levels, which were termed lacustuaries. A lacustuary is defined as a transition zone in a river that flows into a freshwater lake and is the portion of river affected by the water level of the lake (Thoma 1999). Lacustuaries begin where lotic conditions end in the river and end where the lake proper begins. Based on sampling data generated from this lacustuary/Lake Erie shoreline study, interim lacustuary biocriteria were developed (Ohio EPA 1997). Although lacustuary zones of rivers and streams to Lake Erie have aquatic life use designations and associated chemical water quality criteria, standard biological criteria do not apply (see Ohio Administrative Code 3745-1-07, Table 7-15). Therefore, the interim lacustuary biocriteria were used in this report as benchmark criteria for assessing biotic integrity.

SUMMARY

Fish and macroinvertebrate communities were sampled in the lacustuary areas of the Ashtabula River, Ashtabula 5 ½ boat slip, and Conneaut Creek during 2003 and 2005 by the Ohio EPA and U.S. Fish and Wildlife Service. Fish communities were assessed at one site in the Ashtabula River, one site in the 5 ½ boat slip, and one site in Conneaut Creek. Macroinvertebrate communities were evaluated at 13 Ashtabula River locations, one 5 ½ boat slip site, and eight Conneaut Creek sites. The lacustuary section of Conneaut Creek was used as a reference waterbody for comparison to the Ashtabula River lacustuary. Both lacustuaries have comparable lengths, depths, and habitat features. The Ashtabula 5 ½ boat slip area was used as an internal comparison location for the Ashtabula River mainstem. The slip, connected to the Ashtabula River approximately three-quarters of a mile downstream from Fields Brook, does not have contaminated sediments.

Conneaut Creek biological monitoring documented full attainment of the interim Lacustuary Invertebrate Community Index (LICI) biocriterion at all macroinvertebrate sampling locations during 2003. LICI scores were reflective of good to exceptional biological conditions. Impaired macroinvertebrate communities were observed in the Ashtabula River in the vicinity of the Fields Brook confluence, where several sites were in the poor range. Areas of the Ashtabula River upstream and further downstream from Fields Brook exhibited good to exceptional macroinvertebrate condition. The nature of the impact in the vicinity of Fields Brook appears to be toxicity based. This observation was based on the high number of toxic tolerant Chironomidae taxa (over 90% abundance) collected in the Ashtabula River near Fields Brook compared with unimpaired sections (less than 10%) and Conneaut Creek (less than 3%). Macroinvertebrate data from 1989, 1993 and 1995 indicated that impairment of the macroinvertebrate community was more widespread when compared to 2003 conditions. The impairment of the Ashtabula River macroinvertebrate community in the vicinity of Fields Brook in 2003 was similar to historical conditions, but recovery to attainment of the interim lacustuary biocriterion at river mile 0.58 in 2003 was not found in any of the previous data. Macroinvertebrate results from natural substrates collected by USFWS with Ekman samplers were highly variable in both the Ashtabula River and Conneaut Creek. Consequently, the variability limited the utility of the Ekman samples for impact assessment.

Physical habitat features between the lacustuary areas of the Ashtabula River and Conneaut Creek were comparable with regard to predominant bottom substrates, amount of instream cover, bank conditions, and sampling depth. Lower aquatic vegetation quality was noted in the Ashtabula compared to Conneaut Creek. These conditions resulted in slightly higher habitat scores in Conneaut Creek (QHEI=53) compared to the Ashtabula River (QHEI = 44).

Fish communities in the Ashtabula River and Conneaut Creek ranged from fair to good during 2003 and 2005. Partial and non-attainment of the interim lacustuary IBI and MIwb biocriteria for fish was noted in the Ashtabula River at RM 1.3 during 2005 and 2003, respectively. This area of the Ashtabula River is located immediately downstream from the Fields Brook confluence. Conneaut Creek fish results reflected full attainment of lacustuary biocriteria during 2005. Slight impairment of the Conneaut Creek fish community occurred during 2003. Fish species considered moderately to highly intolerant of pollution were collected in both the Ashtabula River and Conneaut Creek. Comparison between these two streams noted more pollution sensitive fish in Conneaut Creek (35/km) than the Ashtabula River (3.5 /km). This order of magnitude difference of pollution sensitive species indicates that Conneaut Creek has significantly better biological conditions.

Fish community trends in the Ashtabula River and Conneaut Creek over the last 17 years were evaluated. Conneaut Creek data indicated consistent results between sampling years before and after 2000. An improvement in biological performance for the Ashtabula River was noted after 2000, with substantial improvements in native species, fish abundance, and measures of biotic integrity. This appears to partly coincide with remediation activities that began in Fields Brook

during 2000. Some of these activities in the Fields Brook watershed included construction of a slurry wall and extraction wells to control movement of DNAPL, cleaning, grouting and replacement of contaminated sewers, and excavation of Fields Brook sediment and floodplain/wetland soil and sediment (USEPA 2005), with the goal of reducing contaminant sources to Fields Brook and the Ashtabula River.

Table1. Fish and macroinvertebrate sampling locations in the Ashtabula River, 5 ½ Boat Slip, and Conneaut Creek, 2003 and 2005. Fish sites were sampled in 2003 and 2005, and macroinvertebrate sites were sampled in 2003. M–HD = Ohio EPA macroinvertebrate Hester-Dendy artificial substrate sample, M-Ekman= USFWS macroinvertebrate Ekman dredge sample, F= Ohio EPA fish community sample. R = right side of stream, C = center channel, L = left side of stream.

Stream/ River Mile	Sample Type	Latitude	Longitude	Landmark
Ashtabula River – Main Channel				
2.34 R	M-HD	41 52 56.5	80 47 38.5	E. 24th Street bridge
2.33 R	M-Ekman	41 52 57.5	80 47 39.0	E. 24th Street bridge
2.20 R	M-Ekman	41 53 00.4	80 47 44.8	Adj. Brockway Marina
2.15 R	M-HD	41 53 02.1	80 47 45.2	Adj. Brockway Marina
1.95 R	M-HD	41 53 09.9	80 47 50.9	Adj. Laural Court
1.94 R	M-Ekman	41 53 10.2	80 47 50.6	Adj. Laural Court
1.86 R	M - HD & Ekman	41 53 15.1	80 47 51.0	Adj. Harbor Yacht Club
1.69 L	M-Ekman	41 53 23.9	80 47 54.5	Turning basin
1.68 C	M-Ekman	41 53 24.3	80 47 52.9	Turning basin
1.68 R	M-Ekman	41 53 24.4	80 47 51.9	Turning basin
1.66 R	M-HD	41 53 25.3	80 47 54.0	Turning basin
1.65 L	M-HD	41 53 26.6	80 47 56.7	Turning basin
1.58 R	M-HD	41 53 28.8	80 47 54.0	Dst. side of Fields Brook
1.50 R	M - HD & Ekman	41 53 32.4	80 47 52.8	Dst. Fields Brook
1.3	F	41 53 42.6	80 47 45.3	Dst. Fields Brook
1.30 R	M-Ekman	41 53 41.5	80 47 45.6	Dst. Fields Brook
1.28 R	M-HD	41 53 42.5	80 47 44.7	Dst. Fields Brook
1.19 R	M-Ekman	41 53 46.4	80 47 42.1	Near 5 ½ slip
1.07 R	M-Ekman	41 53 52.3	80 47 37.7	Near 5 ½ slip
0.58 R	M-HD	41 54 10.9	80 47 49.6	Adj. ODNR Watercraft
Ashtabula River – 5 ½ Boat Slip				
1.1	F	41 53 47.8	80 47 36.9	5 ½ slip
1.04, 0.13 R	M - HD & Ekman	41 53 46.6	80 47 37.8	5 ½ slip
Conneaut Creek				
2.03 R	M-HD	41 57 03.7	80 32 48.0	Upst. Penn C. RR , **HD lost**
1.71 L	M-HD	41 57 12.0	80 32 36.6	Upstream ODNR ramp
1.50 L	M-Ekman	41 57 20.2	80 32 29.9	Dst. ODNR ramp
1.47 L	M-HD	41 57 21.5	80 32 30.2	Dst. ODNR ramp
1.13 L	M-HD	41 57 38.7	80 32 32.8	Bend upst. RR bridge
1.0	F	41 57 48.7	80 32 27.8	Bend upst. RR bridge
0.97 R	M-Ekman	41 57 46.7	80 32 30.6	Bend upst. RR bridge
0.96 R	M - HD & Ekman	41 57 47.8	80 32 30.3	Bend upst. RR bridge
0.90 R	M-HD	41 57 49.5	80 32 25.8	Bend of creek, **HD lost**
0.79 R	M-HD	41 57 53.6	80 32 30.4	Between bend and RR bridge
0.78 C	M-HD	41 57 53.2	80 32 30.9	Between bend and RR bridge
0.77 L	M-HD	41 57 52.7	80 32 31.6	Between bend and RR bridge
0.65 C	M-Ekman	41 57 54.6	80 32 40.4	Near RR bridge
0.65 L	M-Ekman	41 57 54.0	80 32 40.3	Near RR bridge

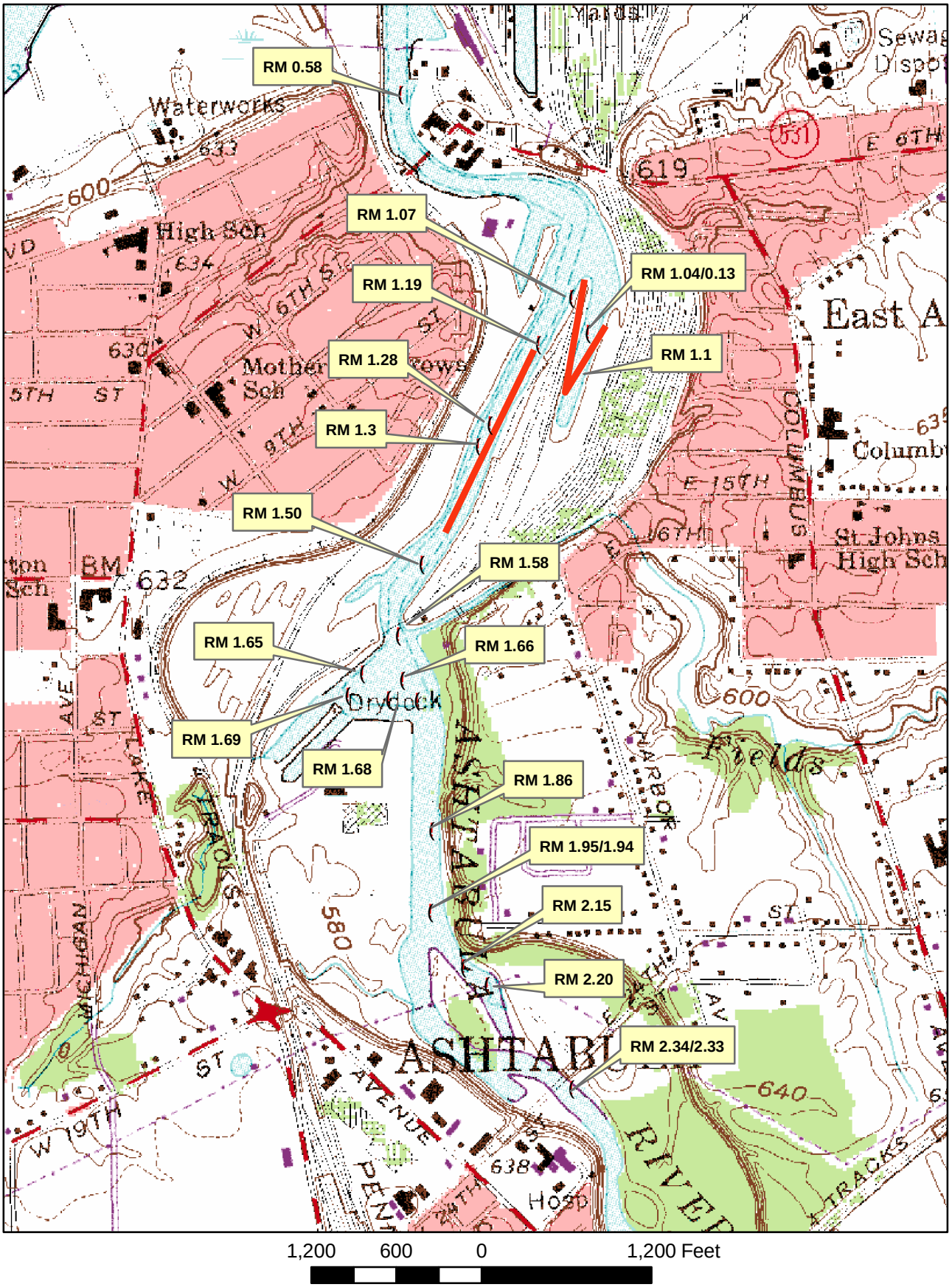


Figure 1 Biological sampling locations in the Ashtabula River, 2003 and 2005. Macroinvertebrate sites are identified by red dots; fish sites are located by red lines.

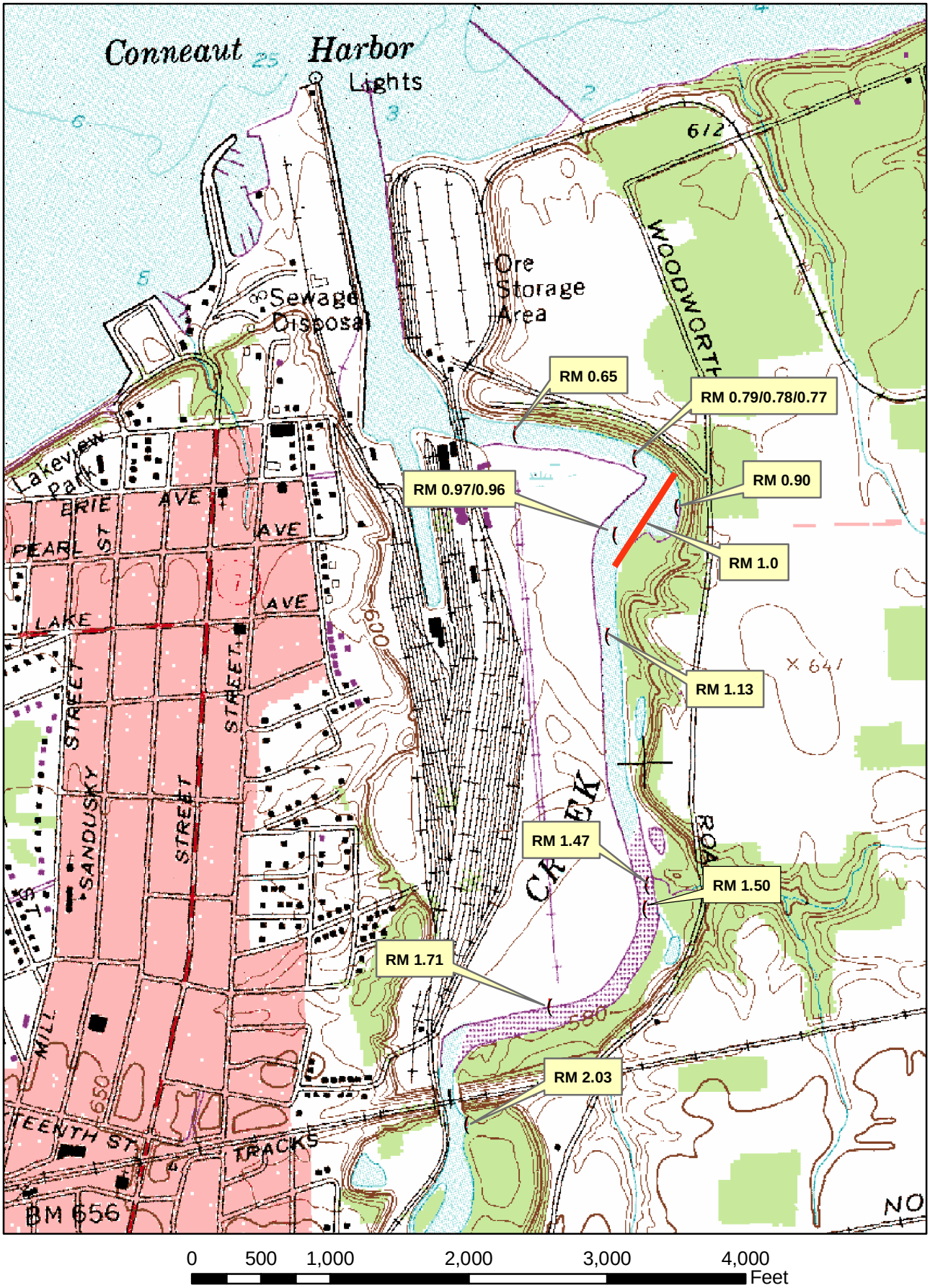


Figure 2. Biological sampling locations in the lower Conneaut Creek, 2003 and 2005. Macroinvertebrate sites are identified by red dots; fish sites are located by red lines.

Table 2. Aquatic life use attainment status for stations sampled in the Ashtabula River and Conneaut Creek, 2003 and 2005. The Lacustuary Index of Biotic Integrity (LIBI), Modified Index of Well-being (MIwb), and Lacustuary Invertebrate Community Index (LICI) scores are based on the performance of the biological community. The Qualitative Habitat Evaluation Index (QHEI) is a measure of the ability of the physical habitat to support a biological community.

River Mile Sample Site Fish/Macroinvertebrate	Attainment Status[a]	LIBI	MIwb	LICI	QHEI	Comments
Ashtabula River Mainstem - 2005						
1.3 / -	(PARTIAL)	35*	8.7	-	44.0	Downstream far-field Fields Brook
Ashtabula River - 2003						
- / 2.34	(FULL)	-	-	50	-	@ 24th Street Bridge
- / 2.15	(FULL)	-	-	56	-	Adjacent Brockway Marina
- / 1.95	(FULL)	-	-	48	-	Adjacent Laural Court
- / 1.86	(FULL)	-	-	42	-	Adjacent Harbor Yacht Club
- / 1.66	(NON)	-	-	22*	-	Turning Basin
- / 1.65	(NON)	-	-	16*	-	Turning Basin
- / 1.58	(NON)	-	-	22*	-	Downstream near-field of Fields Brook
- / 1.50	(NON)	-	-	28*	-	Downstream far-field Fields Brook
1.3 / 1.28	NON	36*	8.2*	30*	44.5	Downstream far-field Fields Brook
- / 0.58	(FULL)	-	-	44	-	Adjacent ODNR Watercraft Facility
Ashtabula River 5 ½ Boat Slip- 2005						
1.1 / -	(PARTIAL)	38*	8.9	-	41.0	5 ½ Boat Slip
Ashtabula River 5 ½ Boat Slip- 2003						
1.1 / 1.04	PARTIAL	47	8.5*	32*	44.0	5 ½ Boat Slip
Conneaut Creek - 2005						
1.0 / -	(FULL)	43	8.6	-	52.0	Bend upst. RR bridge
Conneaut Creek - 2003						
- / 1.71	(FULL)	-	-	52	-	Upstream ODNR boat ramp
- / 1.47	(FULL)	-	-	48	-	Downstream ODNR boat ramp
- / 1.13	(FULL)	-	-	50	-	Bend upst. RR bridge
1.0 / 0.96	PARTIAL	36*	8.9	54	53.5	Bend upst. RR bridge
- / 0.79	(FULL)	-	-	54	-	Between bend and RR bridge
- / 0.78	(FULL)	-	-	52	-	Between bend and RR bridge
- / 0.77	(FULL)	-	-	44	-	Between bend and RR bridge

Ecoregion: Erie-Ontario Lake Plain (EOLP)

Interim Lacustuary Biocriteria	
INDEX	**Score**
LIBI	42
MIwb	8.6
LICI	42

* Below the lacustuary interim biocriterion; poor and very poor results are underlined.
a Use attainment status based on one organism group is parenthetically expressed.

METHODS

Fish Assessment

All fish collected were identified to species, enumerated, weighed, examined for external anomalies, and either returned to the waterbody or preserved as voucher specimens and stored at the Ohio State University Museum of Biodiversity. Weights were taken on a representative sub-sample if more than 15 individuals of a species are captured; for small fish a sub-sample of 50 individuals was weighed. Electrofishing consistently catches more species and individuals in less time and effort than other sampling methods used (Thoma 1999). Fish sampling was conducted using Ohio EPA standard protocols, as noted below.

A 5.8-meter modified V-hull johnboat is used for electrofishing in lacustuary waters. A 7,000-watt generator connected to a Smith-Root pulsator provided electrical current. Controls were set on DC current, 60 pulses per second, 240-340 volts, and run at 5 to 6 amps. Anodes were two separately charged 1-m circumference electrospheres. Two articulated booms supported by distal floats were positioned about 2.1 m in front of the boat on articulated booms (3-m total length), one to the port and one to the starboard side at angles of approximately 20 degrees from the centerline. This resulted in the two electrospheres being 4.3 m apart when deployed. The articulation of the booms allowed movement horizontally and vertically. Horizontal movement allowed the booms to flex if an obstacle (especially a submerged one) was encountered and vertical movement allowed the electrosphere to ride with any type of wave action. The placement of a flotation device at the distal end of the boom kept the electrosphere under the water's surface at the proper depth of a few centimeters as the mechanism rides up and down. Cathodes, 1.8 m long, were deployed from the sides of the boat at mid-ship, four on each side. Additionally, a 14 foot boat, outfitted as a standard river electrofishing boat, was used to collect fish during the second sampling pass in 2005. Specific details of this electrofishing set-up are found in Volume III of the Ohio EPA biocriteria manual (Ohio EPA 1989b).

Each sampling site was 500 meters long and within 1-4 meters of the shore. A set sampling time was not used and time sampled may vary between 2,000 and 3,000 seconds. The greater the number of fish to be captured in a zone and the greater the complexity of the shoreline, the longer it takes to complete the sample. Time spent electrofishing was recorded on the fish field sheet. A crew of two to three individuals was used in all electrofishing efforts. During sampling one individual was positioned on the bow of the boat with a dip net and served as the principal collector of fish captured in the electrical field. A second person was at mid-ship and served as an assistant that collected any fish missed by the principal netter, while the third person operated the outboard motor, pulsator controls, and collected any fish that surfaced at the back of the boat. All fish were placed in livewells supplied with fresh water from a pump. Common carp were placed in their own livewell to avoid excess oxygen consumption and the death of small fish that otherwise would frequently be trapped in common carp mouths and crushed.

Macroinvertebrate Assessment

Ohio EPA personnel collected macroinvertebrates from artificial substrates and from the natural habitats at all sampling locations in the Ashtabula River and Conneaut Creek indicated in Table 1. The artificial substrate collection provided quantitative data and consisted of a composite sample of five modified Hester-Dendy (HD) multiple-plate samplers colonized for six weeks. The Hester-Dendy samplers are a repeatable, standardized sampling method useful for quantitatively assessing stream macroinvertebrate communities independent of habitat differences between sites. At the time of artificial substrate collection, a qualitative multihabitat composite sample was collected in the area. This sampling effort consisted of an inventory of all observed macroinvertebrate taxa from the natural habitats at each site with no attempt to quantify populations other than notations on the predominance of specific taxa or taxa groups within major habitat types (e.g., riffle, run, pool, and margin). Detailed discussion of macroinvertebrate field and laboratory procedures is contained in Biological Criteria for the Protection of Aquatic Life: Volume III, Standardized Biological Field Sampling and Laboratory Methods for Assessing Fish and Macroinvertebrate Communities (Ohio EPA 1989b).

At the sediment sampling locations, USFWS personnel collected macroinvertebrate samples from the stream bottom using Ekman samplers (Table 1). The contents of one to two Ekman samples were field

filtered through a 60 mesh sieve and the retained macroinvertebrates and sediment were preserved with 10% buffered formalin. Ohio EPA personnel counted and identified the sample contents per established Ohio EPA laboratory procedures.

Use Attainment

Attainment/non-attainment of aquatic life uses were determined by using interim lacustuary biological criteria. Numerical biological criteria are based on multimetric biological indices including the Index of Biotic Integrity (IBI) and modified Index of Well-Being (MIwb), indices measuring the response of the fish community, and the Invertebrate Community Index (ICI), which indicates the response of the macroinvertebrate community.

Performance expectations for the basic aquatic life uses (Warmwater Habitat [WWH], Exceptional Warmwater Habitat [EWH], and Modified Warmwater Habitat [MWH] were developed using the regional reference site approach (Hughes et al. 1986; Omernik 1987). This fits the practical definition of biological integrity as the biological performance of the natural habitats within a region (Karr and Dudley 1981). Attainment of an aquatic life use is FULL if all three indices (or those available) meet the applicable criteria, PARTIAL if at least one of the indices did not attain and performance did not fall below the fair category, and NON if all indices either fail to attain or any index indicates poor or very poor performance. Biological results were compared to interim lacustuary biocriteria. Lacustuary biocriteria were developed to assess those segments of rivers and streams located in the boundary area between Lake Erie and free-flowing rivers.

Instream Habitat Evaluation

Physical habitat was evaluated using the Qualitative Habitat Evaluation Index (QHEI) developed by the Ohio EPA for streams and rivers in Ohio (Rankin 1989). Various attributes of the available habitat are scored based on their overall importance to the establishment of viable, diverse aquatic faunas. Evaluations of type and quality of substrate, amount of instream cover, channel morphology, extent of riparian canopy, pool and riffle development and quality, and stream gradient are among the metrics used to evaluate the characteristics of a stream segment, not just the characteristics of a single sampling site. As such, individual sites may have much poorer physical habitat due to a localized disturbance yet still support aquatic communities closely resembling those sampled at adjacent sites with better habitat, provided water quality conditions are similar.

Ohio EPA Manuals

Biological river assessment, including biological field sampling, Ohio EPA laboratory, data processing, and data analysis methods and procedures adhere to those specified in the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (Ohio Environmental Protection Agency 2003), Biological Criteria for the Protection of Aquatic Life, Volumes II - III (Ohio Environmental Protection Agency 1987a, 1987b, 1989a, 1989b), Biological Criteria for the Protection of Aquatic Life, Volumes IV: Fish and Macroinvertebrate Indicies for Ohio's Lake Erie Nearshore Waters, Harbors, and Lacustuaries (Ohio EPA 1997, Draft), The Qualitative Habitat Evaluation Index (QHEI); Rationale, Methods, and Application (Rankin 1989) for habitat assessment, and above noted modifications used in lacustuary sampling areas.

RESULTS

Physical Habitat Assessment

Qualitative Habitat Evaluation Index (QHEI) scores were determined at each fish sampling location during 2003 and 2005. Results are reported in Table 3 and Figure 3. Additionally, QHEI scores were completed in 2002, 1995, and 1989.

Ashtabula River physical habitat conditions were very comparable between RM 1.3 and the 5 ½ boat slip area at RM 1.1. For the time period 2003 and 2005, QHEI scores at RM 1.3 and RM 1.1 averaged 44.3 and 42.5, respectively. Predominant bottom substrates included sand, muck, and silt, with lesser amounts of hardpan, boulders, and detritus. The sampling locations on the Ashtabula River have been modified in the past, with some recovery to natural channel conditions. Modifications to the sampled shoreline of the Ashtabula River consisted of old dredging, bank shaping, ship channel, wood pilings and rip rap. Aquatic vegetation quality included common amounts of waterweed, wild celery, Eurasian milfoil, and cattail at both RMs 1.3 and 1.1. As would be expected in lacustuary areas, water flows were strongly influenced by lake conditions.

Conneaut Creek was evaluated in the lacustuary zone at RM 1.0. For the time period 2003 and 2005, QHEI scores at RM 1.0 averaged 52.8. Predominant bottom substrates included sand, muck, hardpan, and cobble, with lesser amounts of boulder, gravel, bedrock, and silt. Part of the sampling site (east side of the creek, where fish sampling occurred) in Conneaut Creek exhibited natural channel conditions. Some bank shaping and rip rap was noted along part of the sampling zone. Extensive sheet piling was noted on the opposite bank from where fish sampling and the habitat assessment was conducted. Aquatic vegetation quality included common amounts of pond lilies, wild celery, waterweed, cattail, Eurasian milfoil, and algae mats. It should be noted that most of the banks of Conneaut Creek in the lower two miles have been extensively modified with rip rap and sheet piling.

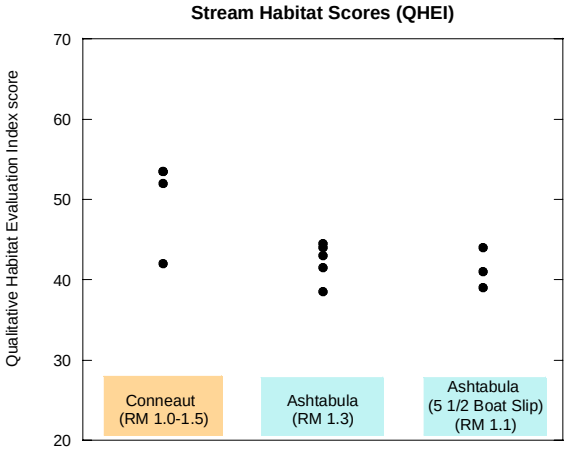


Figure 3. Scatter plot of Qualitative Habitat Evaluation Index (QHEI) scores for the Ashtabula River, 5 1/2 boat slip, and Conneaut Creek, 2005 - 1989. Results are reported by river mile location.

Physical habitat features between the lacustuary areas of the Ashtabula River and Conneaut Creek were comparable with regard to predominant bottom substrates, amount of instream cover, bank conditions, and sampling depth. Lower aquatic vegetation quality was noted in the Ashtabula compared to Conneaut Creek. These conditions resulted in slightly higher habitat scores in Conneaut Creek (QHEI=53) compared to the Ashtabula River (QHEI = 44).

Table 3. Qualitative Habitat Evaluation Index scores and attributes for the Ashtabula River (RM 1.3), Ashtabula 5 1/2 boat slip (RM 1.1), and Conneaut Creek, 1989 - 2005.

River Mile	QHEI	Gradient (ft/mile)	WWH Attributes: No Channelization or Recovered	Boulder/Cobble/Gravel Substrates	Silt Free Substrates	Good/Excellent Substrates	Moderate/High Sinuosity	Extensive/Moderate Cover	Fast Current/Eddies	Low-Normal Overall Embeddedness	Max Depth > 40 cm	Low-Normal Riffle Embeddedness	Total WWH Attributes	MWH Attributes: *High Influence*: Channelized or No Recovery	Silt/Muck Substrates	No Sinuosity	Sparse/No Cover	Max Depth < 40 cm (WD, HW)	Total HL MWH Attributes	*Moderate Influence*: Recovering Channel	Heavy/Moderate Silt Cover	Sand Substrates (Boat)	Hardpan Substrate Origin	Fair/Poor Development	Low Sinuosity	Only 1-2 Cover Types	Intermittent and Poor Pools	No Fast Current	High/Mod. Overall Embeddedness	High/Mod. Riffle Embeddedness	No Riffle	Total ML MWH Attributes	(MWH HL+1)/(WWH+1) Ratio	(MWH ML+1)/(WWH+1) Ratio
(07-001) Ashtabula River																																	
Year: 2005																																	
1.3	**44.0**	0.10					■				■		2		♦				1	•	•			•	•		•	•		•	7	0.67	3.00
1.1	**41.0**	0.10					■				■		2		♦				1	•	•			•	•	•	•	•		•	8	0.67	3.33
Year: 2003																																	
1.3	**44.5**	0.10	■		■		■				■		4		♦				1		•		•		•		•	•		•	6	0.40	1.60
1.1	**44.0**	0.10	■		■	■	■				■		5		♦				1		•		•				•	•		•	5	0.33	1.17
Year: 2002																																	
1.3	**38.5**	0.10					■			■	■		3		♦				1	•	•			•	•		•			•	6	0.50	2.00
1.1	**39.0**	0.10					■				■		2	♦	♦				2				•	•	•		•	•		•	6	1.00	3.00
Year: 1995																																	
1.3	**43.0**	0.10	■				■				■		3		♦				1	•		•		•	•		•	•		•	7	0.50	2.25
Year: 1989																																	
1.3	**41.5**	0.10	■				■				■		3						0	•		•		•	•		•	•		•	6	0.25	1.75
(07-100) Conneaut Creek																																	
Year: 2005																																	
1.0	**52.0**	0.10	■				■				■		3		♦				1	•		•		•	•		•	•		•	6	0.50	2.00
Year: 2003																																	
1.0	**53.5**	0.10	■	■		■	■	■			■		6						0	•		•					•	•		•	5	0.14	0.86
Year: 2002																																	
1.0	**53.5**	0.10		■		■	■	■			■		5						0	•							•	•		•	4	0.17	0.83
Year: 1995																																	
1.5	**42.0**	0.10					■				■		2	♦	♦				2	•		•		•	•		•	•		•	6	1.00	3.00

Fish Assessment

As part of the this NRDA study, fish communities from the lower Ashtabula River and lower Conneaut Creek were assessed by the Ohio EPA in 2003 and 2005. Additional fish assessments were conducted by Ohio EPA in 1989, 1995, 1998, and 2002. One site was sampled in the Ashtabula River (RM 1.3), one site in the 5 ½ boat slip (RM 1.1), which is connected to the Ashtabula River, and one site was sampled in Conneaut Creek (RM 1.0). Collection results are reported in Table 5, and Appendix Tables 1 and 2.

Conneaut Creek serves as a reference site for the lower Ashtabula River (US FWS and Ohio EPA 2001). Both waterbodies have lacustuary sections of comparable length. Within these lacustuary areas, a number of habitat features are comparable, although Conneaut Creek QHEIs scored higher due to better aquatic vegetation quality. Conneaut Creek lacks the presence of hazardous substances (US FWS and Ohio EPA 2001).

Fish communities ranged from fair to good in the Ashtabula River during the 2003 and 2005 summer/fall sampling period. Interim lacustuary IBI scores were in the fair to good range, with values of 35 and 36 in the mainstem and 38 and 47 in the 5 ½ boat slip. Modified Index of well-being results from all samples collected in the Ashtabula River were reflective of fair to good conditions. Sampling results from 2003 were not attaining the interim lacustuary MIwb, while results from 2005 fully attained the MIwb criterion. Sampling results in the Ashtabula River from RM 1.3 indicated slight impairment as reflected in IBI values within the fair range during 2005 and 2003. Fish species considered moderately to highly intolerant of pollution and collected in the Ashtabula River included silver redhorse, black redhorse, golden redhorse, smallmouth bass, brook silverside, and logperch. Relative numbers (2003 and 2005 combined) of these more sensitive species were 3.5/km at RM 1.3 and 6.5/km at RM 1.1. Fish community conditions in the Ashtabula River during 2002 were fully attaining both biological criteria. Fish community results from 1998 revealed fair biological integrity in the Ashtabula River mainstem and the 5 ½ boat slip. Sampling in the Ashtabula River mainstem during 1995 and 1989 indicated poor to fair fish community conditions.

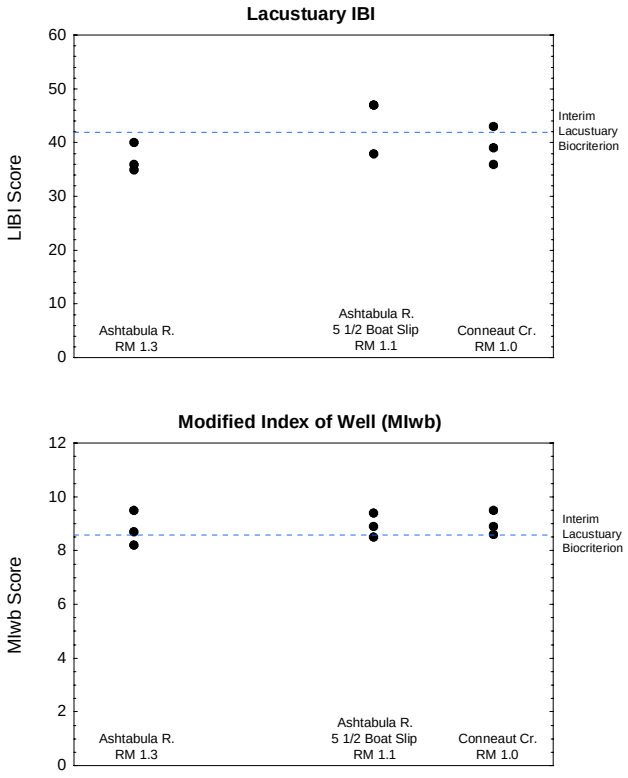


Figure 4. Modiified Index of Well-Being (MIwb) and lacustuary Index of Biotic Integrity (LIBI) scores for the Ashtabula River and Conneaut Creek, 2005, 2003, and 2002. Results are plotted by river mile (RM) locations.

Conneaut Creek fish communities were in the fair to good range during 2003 and 2005. Modified Index of Well-being scores were fully attaining the interim biocriterion during 2003 and 2005. Interim lacustuary IBI results revealed attainment of the biocriteria during 2005, but impaired conditions during 2003. Index of Biotic Integrity fish results from 2003 were in the fair range. Only one sample pass was conducted in Conneaut Creek during 2003 and could have been a factor in the lower score. Typically, each fish site is sampled twice during the sampling season, and the index results averaged. A second fish pass was not conducted on Conneaut Creek during 2003 due to inclement weather during the scheduled sampling event (there was not enough time to collect fish within the Ohio EPA sampling period ending on October 15). Fish species considered moderately to highly intolerant of pollution and collected in Conneaut Creek included silver redhorse, black redhorse, golden redhorse, shorthead redhorse, northern hog sucker, rosyface shiner, and smallmouth bass. Relative numbers (2003 and 2005 combined) of these more sensitive species were 35/km at RM 1.0. Fish community results in Conneaut Creek during 2002 and 1995 were comparable, with the stream fully attaining the interim lacustuary MIwb criterion, but failing to

attain the interim lacustuary IBI criterion. Conneaut Creek results from 1998 documented a good fish community, fully meeting the interim lacustuary biocriteria.

Fish community trends in the Ashtabula River and Conneaut Creek from 1989, 1995, 1998, 2002, 2003, and 2005 were evaluated (Table 4). Conneaut Creek data indicated consistent results between sampling years before (1995, 1998) and after (2002, 2003, 2005) year 2000. An improvement in biological performance for the Ashtabula River was noted after 2000, with substantial improvements in native species, fish abundance, and measures of biotic integrity. This appears to partly coincide with remediation activities that began in Fields Brook during 2000. Some of these activities in the Fields Brook watershed included construction of a slurry wall and extraction wells to control movement of DNAPL, cleaning, grouting and replacement of contaminated sewers, and excavation of Fields Brook sediment and floodplain/wetland soil and sediment (USEPA 2005), with the goal of reducing contaminant sources to the Ashtabula River and Fields Brook.

Table 4. Comparison of fish conditions in the Ashtabula River and Conneaut Creek before and after 2000. Relative number (includes all fish species) is per one kilometer.

	Native Species	Relative Number	LIBI	MIwb
Ashtabula River (RM 1.3)				
Before 2000 (n=7)	10.4	338	31	6.5
After 2000 (n=5)	15.4	612	36	8.6
Ashtabula River (RM 1.1 – 5 ½ slip)				
Before 2000 (n=2)	16.0	554	37	8.2
After 2000 (n=6)	16.0	715	44	9.0
Conneaut Creek (RM 1.0-1.5)				
Before 2000 (n=4)	23	653	42	9.0
After 2000 (n=5)	20.6	665	40	9.0

Table 5. Fish community summaries based on pulsed DC electrofishing sampling conducted by Ohio EPA in the Ashtabula River, 5 ½ boat slip, and Conneaut Creek from 2005, 2003, 2002, 1998, 1995, and 1989. Relative numbers and weight are per 1.0 km, and are based on all fish species collected.

Stream/ Year	River Mile	Mean Number of Species	Total Number Species	Relative Number	Relative Weight (kg)	QHEI	Modified Index of Well-Being	Lacustuary Index of Biotic Integrity	Narrative Evaluation
Ashtabula River – Main Channel									
2005	1.3	17.5	21	429	150.14	44.0	8.7	35*	Fair/Good
2003	1.3	17.5	23	735	281.13	44.5	8.2*	36*	Fair
2002	1.3	-	21	734	301.31	38.5	9.5	40 *	Fair/ Good
1998	1.3	15.5	20	833	362.76	-	7.5 *	36 *	Fair
1995	1.3	12.0	15	254	110.31	43.0	6.6*	25*	Poor
1989	1.3	9.7	15	64	21.90	41.5	5.8*	32*	Poor/Fair
Ashtabula River – 5 ½ Boat Slip									
2005	1.1	17.5	21	526	69.35	41.0	8.9	38*	Fair/Good
2003	1.1	18.5	25	887	131.02	44.0	8.5*	47	Fair/ Good
2002	1.1	16	25	733	130.75	39.0	9.4	47	Good
1998	1.1	18.0	22	554	203.50	-	8.2*	37*	Fair
Conneaut Creek									
2005	1.0	24	29	588	34.41	52.0	8.6	43	Good
2003	1.0	-	23	508	93.05	53.5	8.9	36*	Fair/ Good
2002	1.0	23	31	821	130.97	53.5	9.6	39 *	Fair/ Good
1998	1.0	28.5	38	611	121.63	-	9.5	47	Good
1995	1.5	23.0	30	695	136.09	42.0	8.6	37*	Fair/Good

Interim Lacustuary Biocriteria	
INDEX	**Score**
LIBI	42
MIwb	8.6
LICI	42

* Below the interim lacustuary biocriterion; poor and very poor results are underlined.

Macroinvertebrate Assessment

The condition of the macroinvertebrate community, sampled by Hester Dendy artificial substrate samplers, in the Ashtabula River and Conneaut Creek was evaluated using the Lacustuary Invertebrate Community Index (LICI) . The LICI results are summarized in Table 6. The LICI component metric scores for each site are located in Appendix Table 3. Raw data for the HD sampler from each site is in Appendix Table 4.

A plot of LICI scores by river mile for the two rivers is shown in Figure 5. The macroinvertebrate community in Conneaut Creek was evaluated as exceptional to good at all sites. In the Ashtabula River, the macroinvertebrate community was exceptional to good at the upstream sites, but in the vicinity of Fields Brook the macroinvertebrate community was poor to very poor. The macroinvertebrate community improves downstream and returns to good condition at the most downstream sampling location. The macroinvertebrate community appears to be impacted within an area where Fields Brook flow mixes with the Ashtabula River.

Figure 5. Plot of macroinvertebrate LICI scores for the Ashtabula River and Conneaut Creek by river mile, 2003. Results are based on artificial substrate samples collected by Ohio EPA.

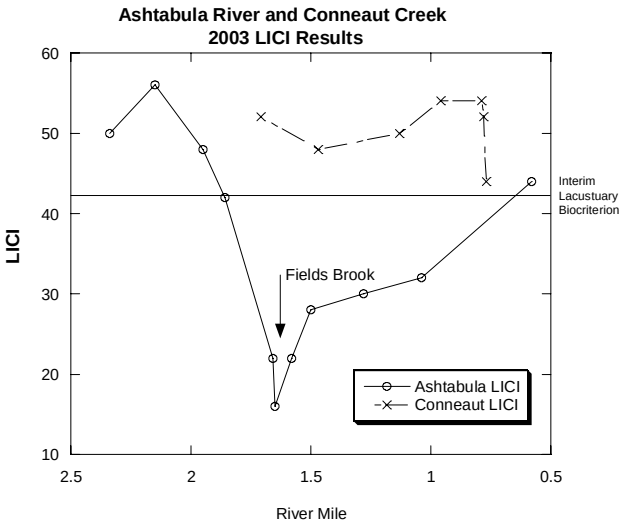
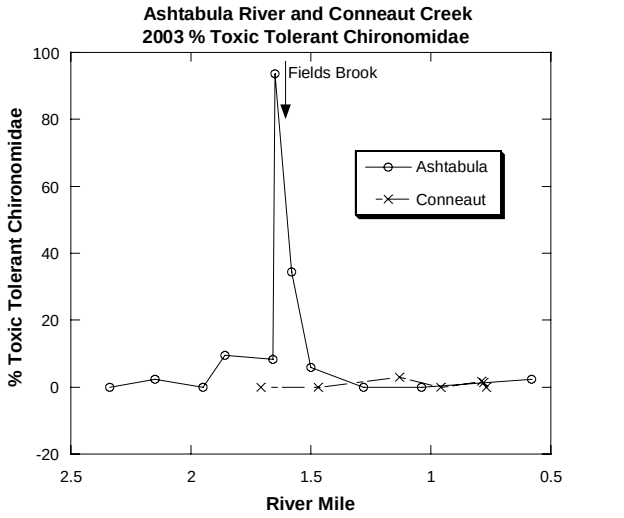


Figure 6. Percentage of the insect family Chironomidae (midges) that are toxic tolerant collected from artificial substrate samples collected by the Ohio EPA from the Ashtabula River and Conneaut Creek, 2003.

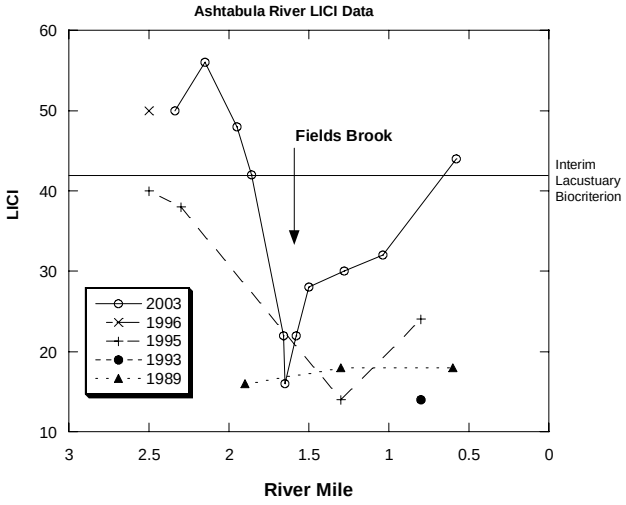


The nature of the impact in the vicinity of Fields Brook appears to be toxicity based. The Ohio EPA has developed a list of 13 macroinvertebrate taxa that we have found are tolerant of toxic instream conditions (Appendix Table 5). Toxic tolerant macroinvertebrates become abundant in a sample when instream conditions prevent the growth of less tolerant organisms. All but two of the toxic tolerant macroinvertebrates are in the family Chironomidae. Chironomidae are a diverse group with tolerances ranging from very sensitive to very tolerant. The relative abundance of toxic tolerant Chironomidae as a percentage of the total number of Chironomidae within each sample was calculated. A plot of the percentage of toxic tolerant Chironomidae in each sample is shown in Figure 6 for both the Ashtabula River and Conneaut Creek. In Conneaut Creek the percentage of toxic tolerant Chironomidae is less than 3% for all samples. The low percentage of toxic tolerant Chironomidae in the Ashtabula River, both upstream and downstream from Fields Brook, is similar to the low background percentage found in Conneaut Creek. In the vicinity of the Fields Brook confluence, toxic tolerant Chironomidae increase in abundance to over 90% of the Chironomidae in the sample closest to Fields Brook. Much of this increase was due to Dicrotendipes simpsoni, which is tolerant of toxic conditions and often becomes the predominant organism under toxic conditions (Simpson and Bode 1979). It

was not possible to determine if the observed toxicity was water, sediment chemistry-based or a combination of both.

Data from previous Ohio EPA stream surveys from the Ashtabula River are presented in Figure 7. LICI scores for data from artificial substrate samplers collected in 1989, 1993, 1995, 1996 as well as 2003 are presented in relation to the interim lacustuary biocriterion. Survey data prior to 2003 had fewer sampling locations which prevent identification of impairment sources with the resolution of the 2003 data. Data from 1989, 1993 and 1995 indicated that impairment of the macroinvertebrate community was more widespread when compared to 2003 conditions. The impairment of the Ashtabula River macroinvertebrate community in the vicinity of Fields Brook in 2003 was similar to historical conditions, but recovery to attainment of the interim lacustuary biocriterion at river mile 0.58 in 2003 was not found in any of the previous data.

Figure 7. Plot of macroinvertebrate LICI scores for Ashtabula River by river mile. Results are based on artificial substrate samples collected by Ohio EPA for different sampling years.



Results from the natural substrate samples collected USFWS with Ekman samplers were highly variable (raw data Appendix Table 6). Macroinvertebrate sample results appear to reflect the underlying habitat variability between Ekman samples. Samples contained widely variable amounts of leaf litter, aquatic macrophytes and sand. Samples from primarily sand substrates had few macroinvertebrates. The number of organisms collected per Ekman sample ranged from 44-1244 in the Ashtabula River and 41-719 in Conneaut Creek. The number of macroinvertebrate taxa collected varied from 4-25 in the Ashtabula River and 4-24 in Conneaut Creek. Oligochaeta were the predominant taxa in the Ekman samples ranging from 70-99 percent of the organisms collected in samples from the Ashtabula River and 74-95 percent in Conneaut Creek. The oligochaeta were not identified below the class level which with their relative abundance in the Ekman samples and the impact of substrate variability limited the utility of the natural substrate samples in impact assessment.

Table 6. Summary of macroinvertebrate data collected by Ohio EPA from artificial substrates (quantitative sampling) and associated qualitative sampling of natural habitats in the lacustuary areas of the Ashtabula River and Conneaut Creek, 2003.

River Mile	Density Number/ft^2	Total Taxa	Quantitative Taxa	Qualitative Taxa	Qualitative EPT[a]	LICI	Narrative Evaluation
Ashtabula River - Mainstem 2003							
2.34	458	73	54	39	2	50	Good
2.15	313	61	45	31	4	56	Exceptional
1.95	295	48	41	19	1	48	Good
1.86	767	51	40	25	4	42	Good
1.66	1338	34	33	6	1	22*	Poor
1.65	1021	29	25	6	0	16*	Poor
1.58	645	46	33	23	0	22*	Poor
1.50	662	40	32	19	1	28*	Fair
1.28	703	55	41	32	2	30*	Fair
0.58	470	49	44	22	3	44	Good
Ashtabula River – 5 ½ Boat Slip 2003							
1.04	684	45	34	24	3	32*	Fair
Conneaut Creek 2003							
2.03	---	---	---	23	2	---	---
1.71	194	46	30	26	5	52	Exceptional
1.47	256	52	40	22	1	48	Good
1.13	296	41	37	20	3	50	Good
0.96	355	66	45	37	3	54	Exceptional
0.90	---	---	---	22	2	---	---
0.79	286	46	39	22	4	54	Exceptional
0.78	480	---	37	---	---	52	Exceptional
0.77	381	49	33	24	1	44	Good

Interim Lacustuary Biocriterion	
INDEX	**Score**
LICI	42

[a] EPT= total Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies) taxa richness, a measure of pollution sensitive organisms.

* Significant departure from interim lacustuary biocriterion; poor and very poor results are underlined.

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APPENDICES

Appendix Table 1. Fish collections conducted by Ohio EPA in the Ashtabula River and Conneaut Creek, 2005, 2003, 2002, 1998, 1995, and 1989.

River Code: **07-001**	Stream: **Ashtabula River**	Sample Date: **1989**
River Mile: **1.30**	Location:	Date Range: 08/02/1989
Time Fished: 11889 sec	Drainage: 10000.0 sq mi	Thru: 09/26/1989
Dist Fished: 2.50 km	Basin: Ashtabula River No of Passes: 5	Sampler Type: A M

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Longnose Gar		P	M		2	0.80	0.86	0.02	0.08	20.00
Bowfin		P	C		4	1.60	1.72	1.88	9.67	1,176.50
Gizzard Shad		O	M		18	7.20	7.73	0.37	1.90	51.39
Black Redhorse	R	I	S	I	3	1.20	1.29	0.32	1.67	270.67
Golden Redhorse	R	I	S	M	1	0.40	0.43	0.03	0.13	64.00
Common Carp	G	O	M	T	10	4.00	4.29	9.80	50.35	2,450.50
Goldfish	G	O	M	T	2	0.80	0.86	0.19	0.98	237.50
Golden Shiner	N	I	M	T	18	7.20	7.73	0.17	0.87	23.44
Emerald Shiner	N	I	S		1	0.40	0.43	0.00	0.02	10.00
Striped Shiner	N	I	S		1	0.40	0.43	0.00	0.01	3.00
Bluntnose Minnow	N	O	C	T	1	0.40	0.43	0.00	0.00	1.00
Common Carp X Goldfish	G	O		T	4	1.60	1.72	2.33	11.97	1,456.25
Yellow Bullhead		I	C	T	5	2.00	2.15	0.30	1.53	149.20
Brown Bullhead		I	C	T	4	1.60	1.72	0.41	2.12	257.50
Brook Silverside		I	M	M	55	22.00	23.61	0.03	0.16	1.41
Rock Bass	S	C	C		4	1.60	1.72	0.07	0.36	43.50
Smallmouth Bass	F	C	C	M	3	1.20	1.29	0.06	0.30	48.00
Largemouth Bass	F	C	C		19	7.60	8.15	2.36	12.12	310.32
Green Sunfish	S	I	C	T	1	0.40	0.43	0.00	0.02	10.00
Bluegill Sunfish	S	I	C	P	25	10.00	10.73	0.37	1.92	37.32
Pumpkinseed Sunfish	S	I	C	P	50	20.00	21.46	0.71	3.63	35.37
Yellow Perch			M		1	0.40	0.43	0.01	0.04	20.00
Freshwater Drum			M	P	1	0.40	0.43	0.03	0.16	80.00
	Mile Total				233	93.20		19.47		
	Number of Species				22					
	Number of Hybrids				1					

River Code: **07-001**	Stream: **Ashtabula River**	Sample Date: **1995**
River Mile: **1.30**	Location:	Date Range: 06/28/1995
Time Fished: 5070 sec	Drainage: 10000.0 sq mi	Thru: 08/23/1995
Dist Fished: 0.95 km	Basin: Ashtabula River No of Passes: 2	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Gizzard Shad		O	M		5	5.44	2.14	0.21	0.19	39.80
Northern Pike	F	P	M		1	1.11	0.44	0.43	0.39	390.00
Common Carp	G	O	M	T	34	35.56	13.99	80.00	72.52	2,204.41
Goldfish	G	O	M	T	3	3.00	1.18	1.07	0.97	355.33
Golden Shiner	N	I	M	T	10	10.44	4.11	0.21	0.19	19.60
Bluntnose Minnow	N	O	C	T	2	2.00	0.79	0.00	0.00	1.00
Common Carp X Goldfish	G	O		T	3	3.33	1.31	8.00	7.25	2,400.00
Channel Catfish	F		C		4	4.44	1.75	12.06	10.93	2,712.50
Yellow Bullhead		I	C	T	1	1.00	0.39	0.10	0.09	99.00
Brown Bullhead		I	C	T	9	9.78	3.85	0.71	0.64	75.56
Rock Bass	S	C	C		13	13.56	5.33	0.92	0.83	64.46
Largemouth Bass	F	C	C		9	9.33	3.67	1.92	1.74	204.11
Bluegill Sunfish	S	I	C	P	70	70.78	27.85	1.59	1.45	22.14
Pumpkinseed Sunfish	S	I	C	P	78	80.11	31.53	2.77	2.51	33.97
Green Sf X Pumpkinseed					1	1.00	0.39	0.04	0.03	36.00
Yellow Perch			M		2	2.11	0.83	0.06	0.05	26.50
Freshwater Drum			M	P	1	1.11	0.44	0.23	0.21	210.00
	Mile Total				246	254.11		110.31		
	Number of Species				15					
	Number of Hybrids				2					

River Code: **07-001**	Stream: **Ashtabula River**	Sample Date: **1998**
River Mile: **1.30**	Location:	Date Range: 07/30/1998
Time Fished: 7342 sec	Drainage: 10000.0 sq mi	Thru: 09/14/1998
Dist Fished: 1.00 km	Basin: Ashtabula River No of Passes: 2	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Bowfin		P	C		2	2.00	0.24	4.90	1.35	2,450.00
Gizzard Shad		O	M		14	14.00	1.68	0.15	0.04	10.71
White Sucker	W	O	S	T	2	2.00	0.24	0.50	0.14	250.00
Common Carp	G	O	M	T	120	120.00	14.41	326.53	90.02	2,721.12
Goldfish	G	O	M	T	3	3.00	0.36	0.48	0.13	161.33
Golden Shiner	N	I	M	T	52	52.00	6.24	0.44	0.12	8.55
Bluntnose Minnow	N	O	C	T	11	11.00	1.32	0.06	0.02	5.27
Central Stoneroller	N	H	N		1	1.00	0.12	0.01	0.00	10.00
Yellow Bullhead		I	C	T	7	7.00	0.84	1.61	0.44	230.00
Brown Bullhead		I	C	T	25	25.00	3.00	4.25	1.17	170.00
Eastern Banded Killifish	E	I	M	T	12	12.00	1.44	0.02	0.01	1.83
Rock Bass	S	C	C		41	41.00	4.92	0.86	0.24	20.98
Smallmouth Bass	F	C	C	M	6	6.00	0.72	0.05	0.01	8.50
Largemouth Bass	F	C	C		78	78.00	9.36	7.70	2.12	98.69
Bluegill Sunfish	S	I	C	P	219	219.00	26.29	5.81	1.60	26.53
Pumpkinseed Sunfish	S	I	C	P	194	194.00	23.29	6.80	1.87	35.05
Green Sf X Hybrid					1	1.00	0.12	0.04	0.01	44.00
Walleye	F	P	S		1	1.00	0.12	0.27	0.08	274.00
Yellow Perch			M		42	42.00	5.04	0.74	0.21	17.71
Logperch	D	I	S	M	1	1.00	0.12	0.01	0.00	10.00
Freshwater Drum			M	P	1	1.00	0.12	1.50	0.41	1,500.00
	Mile Total				833	833.00		362.75		
	Number of Species				20					
	Number of Hybrids				1					

River Code: **07-001**	Stream: **Ashtabula River**	Sample Date: **2002**
River Mile: **1.30**	Location:	Date Range: 10/09/2002
Time Fished: 3298 sec	Drainage: 10000.0 sq mi	
Dist Fished: 0.50 km	Basin: Ashtabula River No of Passes: 1	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Gizzard Shad		O	M		7	14.00	1.91	1.30	0.43	92.86
Bigmouth Buffalo	C	I	M		6	12.00	1.63	44.30	14.70	3,691.67
Smallmouth Buffalo	C	I	M		6	12.00	1.63	25.90	8.60	2,158.33
Silver Redhorse	R	I	S	M	2	4.00	0.54	4.80	1.59	1,200.00
Common Carp	G	O	M	T	34	68.00	9.26	171.24	56.83	2,518.18
Goldfish	G	O	M	T	3	6.00	0.82	0.52	0.17	86.67
Golden Shiner	N	I	M	T	27	54.00	7.36	0.51	0.17	9.41
Bluntnose Minnow	N	O	C	T	4	8.00	1.09	0.02	0.01	2.50
Channel Catfish	F		C		1	2.00	0.27	4.60	1.53	2,300.00
Yellow Bullhead		I	C	T	10	20.00	2.72	3.90	1.29	195.00
Brown Bullhead		I	C	T	19	38.00	5.18	5.00	1.66	131.58
Eastern Banded Killifish	E	I	M	T	7	14.00	1.91	0.12	0.04	8.57
White Crappie	S	I	C		1	2.00	0.27	0.60	0.20	300.00
Black Crappie	S	I	C		1	2.00	0.27	0.12	0.04	60.00
Rock Bass	S	C	C		37	74.00	10.08	2.57	0.85	34.72
Largemouth Bass	F	C	C		69	138.00	18.80	24.56	8.15	177.94
Bluegill Sunfish	S	I	C	P	38	76.00	10.35	2.70	0.90	35.53
Pumpkinseed Sunfish	S	I	C	P	74	148.00	20.16	3.70	1.23	25.00
Bluegill X Pumpkinseed					1	2.00	0.27	0.22	0.07	110.00
Yellow Perch			M		18	36.00	4.90	1.84	0.61	51.11
Johnny Darter	D	I	C		1	2.00	0.27	0.00	0.00	2.00
Freshwater Drum			M	P	1	2.00	0.27	2.80	0.93	1,400.00
Mile Total					367	734.00		301.31		
Number of Species					21					
Number of Hybrids					1					

River Code: **07-001**	Stream: **Ashtabula River**	Sample Date: **2003**
River Mile: **1.30**	Location:	Date Range: 07/28/2003
Time Fished: 8311 sec	Drainage: 10000.0 sq mi	Thru: 10/14/2003
Dist Fished: 1.00 km	Basin: Ashtabula River No of Passes: 2	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Gizzard Shad		O	M		2	2.00	0.27	0.32	0.11	160.00
Bigmouth Buffalo	C	I	M		12	12.00	1.63	26.80	9.53	2,233.33
Smallmouth Buffalo	C	I	M		3	3.00	0.41	6.90	2.45	2,300.00
Black Redhorse	R	I	S	I	1	1.00	0.14	0.56	0.20	560.00
White Sucker	W	O	S	T	29	29.00	3.95	1.37	0.49	47.28
Common Carp	G	O	M	T	76	76.00	10.34	204.00	72.56	2,684.24
Goldfish	G	O	M	T	3	3.00	0.41	0.69	0.24	228.67
Golden Shiner	N	I	M	T	71	71.00	9.66	0.45	0.16	6.34
Emerald Shiner	N	I	S		13	13.00	1.77	0.03	0.01	2.15
Fathead Minnow	N	O	C	T	1	1.00	0.14	0.00	0.00	3.00
Bluntnose Minnow	N	O	C	T	3	3.00	0.41	0.00	0.00	1.33
Yellow Bullhead		I	C	T	5	5.00	0.68	0.90	0.32	180.00
Brown Bullhead		I	C	T	48	48.00	6.53	8.21	2.92	171.04
Eastern Banded Killifish	E	I	M	T	2	2.00	0.27	0.02	0.01	9.00
Brook Silverside		I	M	M	1	1.00	0.14	0.00	0.00	1.00
White Bass	F	P	M		1	1.00	0.14	0.36	0.13	360.00
White Crappie	S	I	C		1	1.00	0.14	0.36	0.13	358.00
Rock Bass	S	C	C		15	15.00	2.04	0.98	0.35	65.33
Smallmouth Bass	F	C	C	M	2	2.00	0.27	0.00	0.00	1.00
Largemouth Bass	F	C	C		85	85.00	11.56	17.01	6.05	200.06
Bluegill Sunfish	S	I	C	P	121	121.00	16.46	3.46	1.23	28.60
Pumpkinseed Sunfish	S	I	C	P	171	171.00	23.27	7.15	2.54	41.84
Bluegill X Pumpkinseed					8	8.00	1.09	0.67	0.24	83.75
Yellow Perch			M		61	61.00	8.30	0.89	0.32	14.57
	Mile Total				735	735.00		281.13		
	Number of Species				23					
	Number of Hybrids				1					

River Code: **07-001**	Stream: **Ashtabula River**	Sample Date: **2005**
River Mile: **1.30**	Location:	Date Range: 08/11/2005
Time Fished: 6009 sec	Drainage: 10000.0 sq mi	Thru: 09/22/2005
Dist Fished: 1.00 km	Basin: Ashtabula River No of Passes: 2	Sampler Type: A

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Bowfin		P	C		3	3.00	0.70	2.75	1.83	916.67
Gizzard Shad		O	M		54	54.00	12.59	0.77	0.52	14.34
Bigmouth Buffalo	C	I	M		9	9.00	2.10	29.50	19.65	3,277.78
Silver Redhorse	R	I	S	M	1	1.00	0.23	2.25	1.50	2,250.00
Black Redhorse	R	I	S	I	1	1.00	0.23	0.29	0.19	291.00
White Sucker	W	O	S	T	1	1.00	0.23	0.01	0.01	8.00
Common Carp	G	O	M	T	27	27.00	6.29	82.25	54.78	3,046.11
Goldfish	G	O	M	T	6	6.00	1.40	2.42	1.61	403.33
Golden Shiner	N	I	M	T	39	39.00	9.09	0.50	0.33	12.70
Emerald Shiner	N	I	S		8	8.00	1.86	0.04	0.03	5.00
Bluntnose Minnow	N	O	C	T	19	19.00	4.43	0.04	0.03	2.11
Yellow Bullhead		I	C	T	7	7.00	1.63	1.86	1.24	265.71
Brown Bullhead		I	C	T	20	20.00	4.66	5.95	3.96	297.50
Eastern Banded Killifish	E	I	M	T	6	6.00	1.40	0.02	0.01	3.17
Rock Bass	S	C	C		5	5.00	1.17	0.20	0.13	39.80
Largemouth Bass	F	C	C		58	58.00	13.52	13.25	8.83	228.48
Bluegill Sunfish	S	I	C	P	13	13.00	3.03	0.85	0.57	65.38
Pumpkinseed Sunfish	S	I	C	P	107	107.00	24.94	3.72	2.48	34.78
Yellow Perch			M		43	43.00	10.02	1.98	1.32	45.93
Logperch	D	I	S	M	1	1.00	0.23	0.01	0.00	5.00
Freshwater Drum			M	P	1	1.00	0.23	1.50	1.00	1,500.00
	Mile Total				429	429.00		150.14		
	Number of Species				21					
	Number of Hybrids				0					

River Code: **07-001**	Stream: **Ashtabula River**	Sample Date: **1998**
River Mile: **1.10**	Location:	Date Range: 08/03/1998
Time Fished: 7959 sec	Drainage: 10000.0 sq mi	Thru: 09/15/1998
Dist Fished: 1.00 km	Basin: Ashtabula River No of Passes: 2	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Bowfin		P	C		5	5.00	0.90	9.20	4.52	1,840.00
Gizzard Shad		O	M		4	4.00	0.72	0.03	0.02	8.50
Bigmouth Buffalo	C	I	M		3	3.00	0.54	11.75	5.77	3,916.67
White Sucker	W	O	S	T	1	1.00	0.18	0.07	0.04	72.00
Spotted Sucker	R	I	S		3	3.00	0.54	3.29	1.62	1,096.67
Common Carp	G	O	M	T	57	57.00	10.29	149.81	73.62	2,628.19
Goldfish	G	O	M	T	4	4.00	0.72	2.81	1.38	702.50
Golden Shiner	N	I	M	T	39	39.00	7.04	1.06	0.52	27.27
Striped Shiner	N	I	S		1	1.00	0.18	0.04	0.02	35.00
Bluntnose Minnow	N	O	C	T	32	32.00	5.78	0.06	0.03	1.85
Common Carp X Goldfish	G	O		T	1	1.00	0.18	0.90	0.44	900.00
Yellow Bullhead		I	C	T	2	2.00	0.36	0.68	0.33	340.00
Brown Bullhead		I	C	T	37	37.00	6.68	10.40	5.11	281.08
White Crappie	S	I	C		8	8.00	1.44	0.03	0.02	4.00
Black Crappie	S	I	C		9	9.00	1.62	0.04	0.02	4.44
Rock Bass	S	C	C		26	26.00	4.69	0.52	0.26	19.96
Smallmouth Bass	F	C	C	M	3	3.00	0.54	0.02	0.01	5.67
Largemouth Bass	F	C	C		79	79.00	14.26	3.60	1.77	45.58
Warmouth Sunfish	S	C	C		1	1.00	0.18	0.01	0.01	14.00
Bluegill Sunfish	S	I	C	P	126	126.00	22.74	3.89	1.91	30.86
Pumpkinseed Sunfish	S	I	C	P	86	86.00	15.52	3.40	1.67	39.53
Bluegill X Pumpkinseed					1	1.00	0.18	0.09	0.04	90.00
Yellow Perch			M		25	25.00	4.51	0.30	0.15	11.95
Freshwater Drum			M	P	1	1.00	0.18	1.50	0.74	1,500.00
	Mile Total				554	554.00		203.50		
	Number of Species				22					
	Number of Hybrids				2					

River Code: **07-001**	Stream: **Ashtabula River**	Sample Date: **2002**
River Mile: **1.10**	Location:	Date Range: 06/13/2002
Time Fished: 6274 sec	Drainage: 10000.0 sq mi	Thru: 10/01/2002
Dist Fished: 1.00 km	Basin: Ashtabula River No of Passes: 2	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Bowfin		P	C		1	1.00	0.14	1.90	1.45	1,900.00
Gizzard Shad		O	M		27	27.00	3.68	1.99	1.52	73.56
Rainbow Trout	E		N		1	1.00	0.14	2.00	1.53	2,000.00
Northern Pike	F	P	M		1	1.00	0.14	2.00	1.53	2,000.00
Bigmouth Buffalo	C	I	M		1	1.00	0.14	3.85	2.94	3,850.00
Silver Redhorse	R	I	S	M	2	2.00	0.27	3.60	2.75	1,800.00
Black Redhorse	R	I	S	I	7	7.00	0.95	2.69	2.05	383.71
Golden Redhorse	R	I	S	M	1	1.00	0.14	0.49	0.37	490.00
Spotted Sucker	R	I	S		2	2.00	0.27	1.55	1.19	775.00
Common Carp	G	O	M	T	7	7.00	0.95	14.65	11.20	2,092.86
Goldfish	G	O	M	T	1	1.00	0.14	0.10	0.07	96.00
Golden Shiner	N	I	M	T	28	28.00	3.82	0.57	0.43	20.30
Striped Shiner	N	I	S		1	1.00	0.14	0.00	0.00	4.00
Bluntnose Minnow	N	O	C	T	11	11.00	1.50	0.05	0.04	4.91
Channel Catfish	F		C		2	2.00	0.27	3.40	2.60	1,700.00
Yellow Bullhead		I	C	T	1	1.00	0.14	0.50	0.38	500.00
Brown Bullhead		I	C	T	66	66.00	9.00	25.30	19.35	383.33
Black Crappie	S	I	C		2	2.00	0.27	0.55	0.42	275.00
Rock Bass	S	C	C		83	83.00	11.32	11.28	8.63	135.96
Smallmouth Bass	F	C	C	M	9	9.00	1.23	9.80	7.50	1,088.89
Largemouth Bass	F	C	C		84	84.00	11.46	22.86	17.49	272.19
Warmouth Sunfish	S	C	C		4	4.00	0.55	0.54	0.41	133.75
Bluegill Sunfish	S	I	C	P	123	123.00	16.78	4.84	3.70	39.35
Pumpkinseed Sunfish	S	I	C	P	252	252.00	34.38	14.89	11.39	59.08
Bluegill X Pumpkinseed					7	7.00	0.95	1.00	0.76	142.86
Green Sf X Hybrid					2	2.00	0.27	0.12	0.09	59.00
Yellow Perch			M		7	7.00	0.95	0.24	0.18	34.00
	Mile Total				733	733.00		130.75		
	Number of Species				25					
	Number of Hybrids				2					

River Code: **07-001**	Stream: **Ashtabula River**	Sample Date: **2003**
River Mile: **1.10**	Location:	Date Range: 07/28/2003
Time Fished: 7136 sec	Drainage: 10000.0 sq mi	Thru: 10/15/2003
Dist Fished: 1.00 km	Basin: Ashtabula River No of Passes: 2	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Bowfin		P	C		1	1.00	0.11	1.90	1.45	1,900.00
Gizzard Shad		O	M		6	6.00	0.68	0.06	0.04	9.33
Grass Pickerel		P	M	P	1	1.00	0.11	0.01	0.01	13.00
Black Redhorse	R	I	S	I	1	1.00	0.11	0.36	0.27	360.00
Golden Redhorse	R	I	S	M	1	1.00	0.11	0.04	0.03	38.00
White Sucker	W	O	S	T	3	3.00	0.34	1.01	0.77	335.33
Spotted Sucker	R	I	S		2	2.00	0.23	1.80	1.37	900.00
Common Carp	G	O	M	T	29	29.00	3.27	80.38	61.35	2,771.72
Goldfish	G	O	M	T	3	3.00	0.34	0.69	0.53	229.33
Golden Shiner	N	I	M	T	55	55.00	6.20	0.37	0.28	6.69
Creek Chub	N	G	N	T	2	2.00	0.23	0.00	0.00	2.00
Emerald Shiner	N	I	S		3	3.00	0.34	0.01	0.00	2.00
Bluntnose Minnow	N	O	C	T	20	20.00	2.25	0.02	0.02	1.00
Channel Catfish	F		C		1	1.00	0.11	1.30	0.99	1,300.00
Yellow Bullhead		I	C	T	6	6.00	0.68	1.39	1.06	231.67
Brown Bullhead		I	C	T	31	31.00	3.49	6.95	5.30	224.19
Black Crappie	S	I	C		10	10.00	1.13	1.60	1.22	160.00
Rock Bass	S	C	C		43	43.00	4.85	1.49	1.14	34.61
Smallmouth Bass	F	C	C	M	4	4.00	0.45	0.01	0.00	1.50
Largemouth Bass	F	C	C		116	116.00	13.08	14.32	10.93	123.44
Warmouth Sunfish	S	C	C		2	2.00	0.23	0.19	0.14	93.50
Green Sunfish	S	I	C	T	2	2.00	0.23	0.09	0.07	43.00
Bluegill Sunfish	S	I	C	P	241	241.00	27.17	9.14	6.98	37.94
Pumpkinseed Sunfish	S	I	C	P	248	248.00	27.96	6.58	5.02	26.52
Green Sf X Pumpkinseed					1	1.00	0.11	0.02	0.02	24.00
Green Sf X Hybrid					3	3.00	0.34	0.15	0.11	48.67
Hybrid X Sunfish					9	9.00	1.01	0.66	0.50	73.22
Yellow Perch			M		43	43.00	4.85	0.51	0.39	11.86
	Mile Total				887	887.00		131.02		
	Number of Species				25					
	Number of Hybrids				3					

River Code: **07-001**	Stream: **Ashtabula River**	Sample Date: **2005**
River Mile: **1.10**	Location:	Date Range: 08/11/2005
Time Fished: 5305 sec	Drainage: 10000.0 sq mi	Thru: 09/22/2005
Dist Fished: 1.00 km	Basin: Ashtabula River No of Passes: 2	Sampler Type: A

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Bowfin		P	C		1	1.00	0.19	0.26	0.37	260.00
Gizzard Shad		O	M		70	70.00	13.31	0.85	1.22	12.10
Silver Redhorse	R	I	S	M	1	1.00	0.19	2.25	3.24	2,250.00
Golden Redhorse	R	I	S	M	2	2.00	0.38	1.60	2.31	800.00
White Sucker	W	O	S	T	4	4.00	0.76	1.33	1.92	333.00
Spotted Sucker	R	I	S		7	7.00	1.33	5.89	8.49	841.57
Common Carp	G	O	M	T	9	9.00	1.71	15.18	21.89	1,686.67
Goldfish	G	O	M	T	6	6.00	1.14	2.15	3.10	358.67
Golden Shiner	N	I	M	T	48	48.00	9.13	1.50	2.17	31.30
Striped Shiner	N	I	S		1	1.00	0.19	0.01	0.01	10.00
Bluntnose Minnow	N	O	C	T	71	71.00	13.50	0.15	0.21	2.10
Common Carp X Goldfish	G	O		T	5	5.00	0.95	3.64	5.25	728.40
Brown Bullhead		I	C	T	50	50.00	9.51	16.08	23.18	321.53
Brook Silverside		I	M	M	3	3.00	0.57	0.01	0.02	4.67
White Crappie	S	I	C		2	2.00	0.38	0.05	0.07	25.00
Rock Bass	S	C	C		11	11.00	2.09	0.35	0.50	31.82
Largemouth Bass	F	C	C		49	49.00	9.32	9.72	14.02	198.41
Green Sunfish	S	I	C	T	2	2.00	0.38	0.07	0.10	34.00
Bluegill Sunfish	S	I	C	P	59	59.00	11.22	2.70	3.89	45.77
Pumpkinseed Sunfish	S	I	C	P	73	73.00	13.88	3.03	4.36	41.46
Bluegill X Pumpkinseed					1	1.00	0.19	0.15	0.22	150.00
Green Sf X Pumpkinseed					2	2.00	0.38	0.19	0.27	92.50
Yellow Perch			M		48	48.00	9.13	2.19	3.15	45.55
Logperch	D	I	S	M	1	1.00	0.19	0.01	0.01	6.00
	Mile Total				526	526.00		69.35		
	Number of Species				21					
	Number of Hybrids				3					

River Code: **07-100**	Stream: **Conneaut Creek**	Sample Date: **1995**
River Mile: **1.50**	Location:	Date Range: 07/06/1995
Time Fished: 5683 sec	Drainage: 10000.0 sq mi	Thru: 08/22/1995
Dist Fished: 1.00 km	Basin: Conneaut Creek No of Passes: 2	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Bowfin		P	C		1	1.00	0.14	0.90	0.66	900.00
Alewife	E		M		1	1.00	0.14	0.00	0.00	1.00
Gizzard Shad		O	M		2	2.00	0.29	0.11	0.08	57.00
Bigmouth Buffalo	C	I	M		1	1.00	0.14	1.40	1.03	1,400.00
Smallmouth Buffalo	C	I	M		1	1.00	0.14	3.35	2.46	3,350.00
Silver Redhorse	R	I	S	M	8	8.00	1.15	6.70	4.92	837.50
Black Redhorse	R	I	S	I	7	7.00	1.01	2.86	2.10	408.57
Shorthead Redhorse	R	I	S	M	12	12.00	1.73	2.65	1.95	220.58
White Sucker	W	O	S	T	3	3.00	0.43	0.09	0.06	29.33
Common Carp	G	O	M	T	27	27.00	3.88	69.99	51.43	2,592.40
Goldfish	G	O	M	T	24	24.00	3.45	2.63	1.93	109.38
Golden Shiner	N	I	M	T	150	150.00	21.58	0.81	0.59	5.39
Bigeye Chub	N	I	S	I	6	6.00	0.86	0.01	0.01	1.33
Striped Shiner	N	I	S		8	8.00	1.15	0.03	0.02	3.13
Spotfin Shiner	N	I	M		2	2.00	0.29	0.02	0.01	9.00
Bluntnose Minnow	N	O	C	T	148	148.00	21.29	0.32	0.24	2.19
Channel Catfish	F		C		10	10.00	1.44	24.80	18.22	2,480.10
Yellow Bullhead		I	C	T	1	1.00	0.14	0.12	0.09	120.00
Brown Bullhead		I	C	T	24	24.00	3.45	6.80	5.00	283.33
Eastern Banded Killifish	E	I	M	T	2	2.00	0.29	0.01	0.01	5.00
White Bass	F	P	M		2	2.00	0.29	0.12	0.09	59.00
Black Crappie	S	I	C		4	4.00	0.58	0.14	0.10	35.25
Rock Bass	S	C	C		69	69.00	9.93	1.67	1.23	24.26
Smallmouth Bass	F	C	C	M	2	2.00	0.29	0.14	0.10	68.50
Largemouth Bass	F	C	C		29	29.00	4.17	3.94	2.90	135.90
Bluegill Sunfish	S	I	C	P	41	41.00	5.90	0.23	0.17	5.71
Pumpkinseed Sunfish	S	I	C	P	43	43.00	6.19	3.27	2.40	76.09
Walleye	F	P	S		3	3.00	0.43	0.71	0.52	235.33
Yellow Perch			M		62	62.00	8.92	1.06	0.78	17.16
Freshwater Drum			M	P	2	2.00	0.29	1.21	0.89	605.00
	Mile Total				695	695.00		136.09		
	Number of Species				30					
	Number of Hybrids				0					

River Code: **07-100**	Stream: **Conneaut Creek**	Sample Date: **1998**
River Mile: **1.20**	Location:	Date Range: 09/28/1998
Time Fished:	Drainage: 10000.0 sq mi	
Dist Fished: 0.50 km	Basin: Conneaut Creek No of Passes: 1	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Bowfin		P	C		2	4.00	0.75	1.16	1.29	289.00
Gizzard Shad		O	M		24	48.00	8.96	0.48	0.53	9.92
Rainbow Trout	E		N		1	2.00	0.37	2.85	3.19	1,425.00
Northern Pike	F	P	M		2	4.00	0.75	2.30	2.57	575.00
Silver Redhorse	R	I	S	M	3	6.00	1.12	8.60	9.61	1,433.33
Black Redhorse	R	I	S	I	20	40.00	7.46	10.62	11.87	265.50
Golden Redhorse	R	I	S	M	10	20.00	3.73	3.20	3.58	160.00
White Sucker	W	O	S	T	2	4.00	0.75	0.20	0.22	50.00
Common Carp	G	O	M	T	4	8.00	1.49	29.00	32.41	3,625.00
Goldfish	G	O	M	T	6	12.00	2.24	6.96	7.78	580.17
Golden Shiner	N	I	M	T	32	64.00	11.94	0.62	0.69	9.67
Emerald Shiner	N	I	S		2	4.00	0.75	0.01	0.01	2.00
Rosyface Shiner	N	I	S	I	6	12.00	2.24	0.02	0.02	1.67
Striped Shiner	N	I	S		7	14.00	2.61	0.04	0.04	2.57
Bluntnose Minnow	N	O	C	T	40	80.00	14.93	0.13	0.15	1.64
Yellow Bullhead		I	C	T	1	2.00	0.37	0.83	0.93	416.00
Brown Bullhead		I	C	T	14	28.00	5.22	7.50	8.38	267.86
Black Bullhead		I	C	P	1	2.00	0.37	0.02	0.02	8.00
Brook Silverside		I	M	M	1	2.00	0.37	0.01	0.01	4.00
White Bass	F	P	M		1	2.00	0.37	0.07	0.08	36.00
Black Crappie	S	I	C		3	6.00	1.12	1.27	1.42	212.00
Rock Bass	S	C	C		5	10.00	1.87	0.04	0.04	3.80
Smallmouth Bass	F	C	C	M	1	2.00	0.37	0.01	0.01	6.00
Largemouth Bass	F	C	C		22	44.00	8.21	6.26	6.99	142.18
Bluegill Sunfish	S	I	C	P	17	34.00	6.34	1.42	1.58	41.65
Pumpkinseed Sunfish	S	I	C	P	26	52.00	9.70	1.90	2.12	36.54
Walleye	F	P	S		2	4.00	0.75	3.80	4.25	950.00
Yellow Perch			M		13	26.00	4.85	0.18	0.20	6.77
	Mile Total				268	536.00		89.48		
	Number of Species				28					
	Number of Hybrids				0					

River Code: **07-100**	Stream: **Conneaut Creek**	Sample Date: **1998**
River Mile: **1.00**	Location:	Date Range: 08/19/1998
Time Fished: 3768 sec	Drainage: 10000.0 sq mi	
Dist Fished: 0.50 km	Basin: Conneaut Creek No of Passes: 1	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Longnose Gar		P	M		1	2.00	0.29	0.05	0.03	25.00
Bowfin		P	C		1	2.00	0.29	0.55	0.36	275.00
Gizzard Shad		O	M		7	14.00	2.04	0.01	0.01	0.57
Grass Pickerel		P	M	P	2	4.00	0.58	0.06	0.04	15.00
Smallmouth Buffalo	C	I	M		3	6.00	0.87	3.90	2.54	650.00
Silver Redhorse	R	I	S	M	3	6.00	0.87	8.53	5.55	1,421.67
Black Redhorse	R	I	S	I	15	30.00	4.37	5.47	3.56	182.27
Golden Redhorse	R	I	S	M	10	20.00	2.92	4.43	2.88	221.50
Northern Hog Sucker	R	I	S	M	1	2.00	0.29	0.01	0.01	4.00
Common Carp	G	O	M	T	15	30.00	4.37	97.82	63.61	3,260.80
Goldfish	G	O	M	T	4	8.00	1.17	4.20	2.73	525.00
Golden Shiner	N	I	M	T	52	104.00	15.16	0.24	0.16	2.31
Emerald Shiner	N	I	S		1	2.00	0.29	0.00	0.00	2.00
Silver Shiner	N	I	S	I	7	14.00	2.04	0.02	0.01	1.43
Striped Shiner	N	I	S		34	68.00	9.91	0.11	0.07	1.65
Spotfin Shiner	N	I	M		1	2.00	0.29	0.01	0.00	3.00
Bluntnose Minnow	N	O	C	T	48	96.00	13.99	0.10	0.06	1.02
Common Carp X Goldfish	G	O		T	1	2.00	0.29	2.10	1.37	1,050.00
Yellow Bullhead		I	C	T	1	2.00	0.29	0.36	0.23	180.00
Brown Bullhead		I	C	T	10	20.00	2.92	7.80	5.07	390.00
White Crappie	S	I	C		2	4.00	0.58	1.20	0.78	300.00
Rock Bass	S	C	C		10	20.00	2.92	1.28	0.83	63.80
Smallmouth Bass	F	C	C	M	1	2.00	0.29	0.02	0.01	11.00
Largemouth Bass	F	C	C		24	48.00	7.00	5.61	3.65	116.83
Bluegill Sunfish	S	I	C	P	23	46.00	6.71	1.00	0.65	21.74
Pumpkinseed Sunfish	S	I	C	P	45	90.00	13.12	2.80	1.82	31.11
Yellow Perch			M		18	36.00	5.25	0.30	0.20	8.33
Logperch	D	I	S	M	1	2.00	0.29	0.00	0.00	2.00
Johnny Darter	D	I	C		1	2.00	0.29	0.01	0.00	3.00
Freshwater Drum			M	P	1	2.00	0.29	5.80	3.77	2,900.00
	Mile Total				343	686.00		153.79		
	Number of Species				29					
	Number of Hybrids				1					

River Code: **07-100**	Stream: **Conneaut Creek**	Sample Date: **2002**
River Mile: **1.00**	Location:	Date Range: 06/10/2002
Time Fished: 5672 sec	Drainage: 10000.0 sq mi	Thru: 09/09/2002
Dist Fished: 1.00 km	Basin: Conneaut Creek No of Passes: 2	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Bowfin		P	C		1	1.00	0.12	1.80	1.37	1,800.00
Gizzard Shad		O	M		89	89.00	10.84	6.02	4.59	67.60
Quillback Carpsucker	C	O	M		2	2.00	0.24	0.10	0.07	47.50
Silver Redhorse	R	I	S	M	13	13.00	1.58	5.75	4.39	442.31
Black Redhorse	R	I	S	I	38	38.00	4.63	10.35	7.90	272.25
Golden Redhorse	R	I	S	M	69	69.00	8.40	15.88	12.13	230.18
Northern Hog Sucker	R	I	S	M	4	4.00	0.49	0.83	0.63	207.75
White Sucker	W	O	S	T	141	141.00	17.17	1.93	1.48	13.71
Common Carp	G	O	M	T	16	16.00	1.95	49.75	37.98	3,109.08
Goldfish	G	O	M	T	41	41.00	4.99	5.19	3.96	126.54
Golden Shiner	N	I	M	T	69	69.00	8.40	1.37	1.05	19.86
Bigeye Chub	N	I	S	I	6	6.00	0.73	0.00	0.00	0.67
Emerald Shiner	N	I	S		3	3.00	0.37	0.02	0.02	6.67
Striped Shiner	N	I	S		9	9.00	1.10	0.01	0.01	1.33
Spottail Shiner	N	I	M	P	31	31.00	3.78	0.11	0.08	3.55
Sand Shiner	N	I	M	M	1	1.00	0.12	0.02	0.01	15.00
Bluntnose Minnow	N	O	C	T	43	43.00	5.24	0.14	0.11	3.24
Common Carp X Goldfish	G	O		T	1	1.00	0.12	0.12	0.09	115.00
Yellow Bullhead		I	C	T	1	1.00	0.12	0.40	0.31	400.00
Brown Bullhead		I	C	T	43	43.00	5.24	12.22	9.33	284.10
Black Bullhead		I	C	P	1	1.00	0.12	0.07	0.05	70.00
White Bass	F	P	M		7	7.00	0.85	0.22	0.17	31.43
White Perch	E		M		11	11.00	1.34	1.80	1.37	163.64
Black Crappie	S	I	C		2	2.00	0.24	0.24	0.18	120.00
Rock Bass	S	C	C		39	39.00	4.75	4.35	3.32	111.51
Smallmouth Bass	F	C	C	M	2	2.00	0.24	0.78	0.60	391.00
Largemouth Bass	F	C	C		27	27.00	3.29	5.19	3.96	192.07
Bluegill Sunfish	S	I	C	P	17	17.00	2.07	0.76	0.58	44.71
Pumpkinseed Sunfish	S	I	C	P	28	28.00	3.41	2.09	1.59	74.46
Yellow Perch			M		53	53.00	6.46	2.86	2.18	53.87
Johnny Darter	D	I	C		1	1.00	0.12	0.00	0.00	2.00
Freshwater Drum			M	P	12	12.00	1.46	0.64	0.49	53.33
	Mile Total				821	821.00		130.98		
	Number of Species				31					
	Number of Hybrids				1					

River Code: **07-100**	Stream: **Conneaut Creek**	Sample Date: **2003**
River Mile: **1.00**	Location:	Date Range: 07/30/2003
Time Fished: 2803 sec	Drainage: 10000.0 sq mi	
Dist Fished: 0.50 km	Basin: Conneaut Creek No of Passes: 1	Sampler Type: O

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Longnose Gar		P	M		1	2.00	0.39	0.00	0.00	2.00
Quillback Carpsucker	C	O	M		2	4.00	0.79	0.19	0.20	47.00
Silver Redhorse	R	I	S	M	2	4.00	0.79	3.44	3.70	860.00
Black Redhorse	R	I	S	I	19	38.00	7.48	8.87	9.53	233.33
Northern Hog Sucker	R	I	S	M	2	4.00	0.79	0.34	0.36	84.00
White Sucker	W	O	S	T	6	12.00	2.36	0.04	0.05	3.67
Common Carp	G	O	M	T	6	12.00	2.36	46.40	49.87	3,866.67
Goldfish	G	O	M	T	34	68.00	13.39	10.05	10.80	147.73
Golden Shiner	N	I	M	T	15	30.00	5.91	0.38	0.40	12.53
Bluntnose Minnow	N	O	C	T	38	76.00	14.96	0.19	0.20	2.47
Channel Catfish	F		C		1	2.00	0.39	0.89	0.96	446.00
Yellow Bullhead		I	C	T	4	8.00	1.57	2.50	2.69	312.50
Brown Bullhead		I	C	T	3	6.00	1.18	1.55	1.66	257.67
White Bass	F	P	M		2	4.00	0.79	0.55	0.59	137.00
White Perch	E		M		1	2.00	0.39	0.14	0.15	72.00
Black Crappie	S	I	C		1	2.00	0.39	0.12	0.13	62.00
Rock Bass	S	C	C		11	22.00	4.33	1.01	1.08	45.82
Largemouth Bass	F	C	C		24	48.00	9.45	9.76	10.49	203.42
Warmouth Sunfish	S	C	C		1	2.00	0.39	0.37	0.40	184.00
Bluegill Sunfish	S	I	C	P	43	86.00	16.93	3.00	3.22	34.88
Pumpkinseed Sunfish	S	I	C	P	33	66.00	12.99	3.09	3.33	46.88
Yellow Perch			M		3	6.00	1.18	0.17	0.18	28.33
Johnny Darter	D	I	C		2	4.00	0.79	0.00	0.00	1.00
Mile Total					254	508.00		93.05		
Number of Species					23					
Number of Hybrids					0					

River Code: **07-100**	Stream: **Conneaut Creek**	Sample Date: **2005**
River Mile: **1.00**	Location:	Date Range: 08/11/2005
Time Fished: 4925 sec	Drainage: 10000.0 sq mi	Thru: 09/22/2005
Dist Fished: 1.00 km	Basin: Conneaut Creek No of Passes: 2	Sampler Type: A

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Bowfin		P	C		2	2.00	0.34	2.08	6.03	1,037.50
Gizzard Shad		O	M		34	34.00	5.78	1.16	3.37	34.15
Rainbow Trout	E		N		1	1.00	0.17	0.24	0.70	240.00
Silver Redhorse	R	I	S	M	1	1.00	0.17	1.50	4.36	1,500.00
Black Redhorse	R	I	S	I	12	12.00	2.04	3.27	9.50	272.50
Golden Redhorse	R	I	S	M	3	3.00	0.51	0.75	2.18	250.00
Shorthead Redhorse	R	I	S	M	2	2.00	0.34	0.08	0.22	37.50
Common Carp	G	O	M	T	12	12.00	2.04	16.45	47.81	1,370.83
Goldfish	G	O	M	T	4	4.00	0.68	1.26	3.67	315.75
Golden Shiner	N	I	M	T	27	27.00	4.59	0.52	1.51	19.22
Emerald Shiner	N	I	S		22	22.00	3.74	0.04	0.12	1.91
Rosyface Shiner	N	I	S	I	3	3.00	0.51	0.01	0.03	3.00
Striped Shiner	N	I	S		231	231.00	39.29	0.37	1.08	1.62
Spottail Shiner	N	I	M	P	29	29.00	4.93	0.05	0.14	1.70
Fathead Minnow	N	O	C	T	1	1.00	0.17	0.00	0.01	3.00
Bluntnose Minnow	N	O	C	T	93	93.00	15.82	0.14	0.41	1.52
Central Stoneroller	N	H	N		10	10.00	1.70	0.03	0.09	3.00
Common Carp X Goldfish	G	O		T	1	1.00	0.17	0.65	1.89	650.00
Yellow Bullhead		I	C	T	2	2.00	0.34	0.20	0.57	97.50
Brown Bullhead		I	C	T	5	5.00	0.85	1.14	3.31	228.00
Eastern Banded Killifish	E	I	M	T	1	1.00	0.17	0.01	0.03	10.00
Brook Silverside		I	M	M	1	1.00	0.17	0.00	0.01	3.00
Rock Bass	S	C	C		12	12.00	2.04	0.58	1.68	48.17
Smallmouth Bass	F	C	C	M	8	8.00	1.36	0.38	1.10	47.50
Largemouth Bass	F	C	C		33	33.00	5.61	1.38	4.01	41.78
Bluegill Sunfish	S	I	C	P	1	1.00	0.17	0.05	0.14	48.00
Pumpkinseed Sunfish	S	I	C	P	11	11.00	1.87	0.75	2.18	68.18
Walleye	F	P	S		1	1.00	0.17	0.31	0.90	310.00
Yellow Perch			M		15	15.00	2.55	0.99	2.88	66.00
Johnny Darter	D	I	C		10	10.00	1.70	0.02	0.06	2.20
	Mile Total				588	588.00		34.41		
	Number of Species				29					
	Number of Hybrids				1					

Appendix Table 2. Lacustuary IBI scores and metrics, along with MIwb scores, for the Ashabula River and Conneaut Creek, 2005, 2003, 2002, 1998, 1995, 1989.

River Mile	Type	Date	Drainage area (sq mi)	Number of: Total species	Centrarch. species	Sensitive species	Benthic species	Cyprinid species	Percent of Individuals: Exotics	Tolerant fishes	Omni-vores	Top carnivores	Phyto-phils	DELT anomalies	Rel.No. minus tolerants /(1.0 km)	IBI	Modified Iwb
Ashtabula River - (07-001)																	
Year: 2005																	
1.30	A	08/11/2005	10000	14(3)	4(3)	1(1)	4(3)	3(3)	8(5)	34(1)	14(5)	14(3)	66.7(5)	0.5(5)	400(1)	38	8.5
1.30	A	09/22/2005	10000	15(3)	4(3)	2(1)	6(3)	2(1)	10(3)	33(1)	15(3)	22(3)	53.5(5)	0.0(5)	350(1)	32	8.8
1.10	A	08/11/2005	10000	18(5)	8(5)	3(3)	7(5)	3(3)	4(5)	40(1)	16(3)	11(3)	48.9(5)	0.5(5)	416(1)	44	9.2
1.10	A	09/22/2005	10000	13(3)	5(3)	1(1)	4(3)	2(1)	2(5)	45(1)	25(3)	15(3)	38.3(5)	4.7(1)	496(3)	32	8.7
Year: 2003																	
1.30	O	07/28/2003	10000	14(3)	7(5)	2(1)	5(3)	3(3)	10(3)	30(1)	20(3)	21(5)	38.4(5)	5.7(0)	354(1)	33	7.4
1.30	O	10/14/2003	10000	16(5)	5(3)	1(1)	3(1)	4(3)	11(3)	33(1)	14(5)	12(3)	57.7(5)	1.0(3)	1112(5)	38	8.9
1.10	O	07/28/2003	10000	18(5)	7(5)	2(1)	7(5)	3(3)	4(5)	32(1)	13(5)	27(5)	61.9(5)	0.4(5)	488(3)	48	8.3
1.10	O	10/15/2003	10000	15(3)	9(5)	1(1)	5(3)	2(1)	3(5)	11(5)	4(5)	16(3)	50.5(5)	0.3(5)	1274(5)	46	8.7
Year: 2002																	
1.30	O	10/09/2002	10000	18(5)	7(5)	1(1)	6(3)	2(1)	12(3)	29(1)	11(5)	29(5)	53.4(5)	2.5(3)	720(3)	40	9.5
1.10	O	06/13/2002	10000	16(5)	8(5)	4(3)	7(5)	2(1)	1(5)	10(5)	1(5)	27(5)	51.2(5)	1.6(3)	980(5)	52	9.9
1.10	O	10/01/2002	10000	16(5)	7(5)	1(1)	4(3)	3(3)	2(5)	30(1)	6(5)	24(5)	52.1(5)	1.9(3)	432(1)	42	8.9
Year: 1998																	
1.30	O	07/30/1998	10000	14(3)	6(3)	2(1)	5(3)	3(3)	9(5)	18(3)	8(5)	19(3)	51.8(5)	1.2(3)	980(5)	42	8.2
1.30	O	09/14/1998	10000	12(3)	4(3)	0(0)	4(3)	2(1)	26(1)	44(1)	29(3)	11(3)	36.7(5)	2.1(3)	658(3)	29	6.7
1.10	O	08/03/1998	10000	16(5)	8(5)	1(1)	3(1)	3(3)	12(3)	23(1)	14(5)	27(5)	44.8(5)	1.9(3)	558(3)	40	8.1
1.10	O	09/15/1998	10000	16(5)	6(3)	0(0)	5(3)	2(1)	10(3)	40(1)	21(3)	15(3)	44.0(5)	0.7(3)	542(3)	33	8.3
Year: 1995																	
1.30	O	06/28/1995	10000	11(3)	4(3)	0(0)	3(1)	1(1)	19(1)	41(1)	25(3)	13(3)	38.4(5)	13.0(0)	153(1) *	22	7.0
1.30	O	08/23/1995	10000	10(3)	5(3)	0(0)	3(1)	2(1)	13(3)	20(3)	15(5)	8(1)	41.6(5)	3.5(1)	344(1)	27	6.2
Year: 1989																	
1.30	A	08/02/1989	10000	9(3)	3(1)	1(1)	4(3)	1(1)	15(3)	46(1)	29(1)	11(1)	32.4(5)	14.3(0)	56(1) *	21	6.0
1.30	M	08/04/1989	10000	13(3)	4(3)	0(0)	3(1)	2(1)	6(5)	33(1)	7(5)	20(3)	52.9(5)	3.3(1)	60(1) *	29	6.6
1.30	A	09/06/1989	10000	9(3)	5(3)	1(1)	2(1)	1(1)	3(5)	16(3)	10(5)	23(5)	58.8(5)	9.7(0)	62(1) *	33	6.0
1.30	M	09/07/1989	10000	9(3)	3(1)	2(1)	2(1)	2(1)	3(5)	14(3)	3(5)	3(1)	23.3(5)	5.3(0)	196(1)	27	6.6

♦ - IBI is low end adjusted.

Appendix Table 2. Lacustuary IBI scores and metrics, along with MIwb scores, for the Ashabula River and Conneaut Creek, 2005, 2003, 2002, 1998, 1995, 1989.

River Mile	Type	Date	Drainage area (sq mi)	Number of					Percent of Individuals						Rel.No. minus tolerants /(1.0 km)	IBI	Modified Iwb
				Total species	Centrarch. species	Sensitive species	Benthic species	Cyprinid species	Exotics	Tolerant fishes	Omni-vores	Top carnivores	Phyto-phils	DELT anomalies			
1.30	A	09/26/1989	10000	8(3)	5(3)	3(3)	3(1)	1(1)	4(5)	11(5)	4(5)	46(5)	75.0(5)	0.0(5)	56(1) *	42	5.5
Conneaut Creek - (07-100)																	
Year: 2005																	
1.00	A	08/11/2005	10000	21(5)	5(3)	4(3)	7(5)	8(5)	1(5)	25(1)	18(5)	6(1)	12.2(3)	0.0(5)	802(3)	44	8.7
1.00	A	09/22/2005	10000	21(5)	5(3)	5(3)	8(5)	6(5)	7(5)	30(1)	25(1)	21(3)	21.5(5)	0.0(5)	306(1)	42	8.4
Year: 2003																	
1.00	O	07/30/2003	10000	20(5)	6(3)	3(3)	10(5)	2(1)	16(3)	42(1)	34(3)	15(3)	30.3(5)	4.8(1)	508(3)	36	8.9
Year: 2002																	
1.00	O	06/10/2002	10000	24(5)	6(3)	6(5)	10(5)	5(5)	4(5)	47(1)	36(1)	9(1)	15.0(3)	2.7(3)	1044(5)	42	10.3
1.00	O	09/09/2002	10000	17(5)	4(3)	5(3)	8(5)	4(3)	22(1)	52(0)	26(3)	14(3)	41.8(5)	1.0(3)	420(1)	35	8.9
Year: 1998																	
1.20	O	09/28/1998	10000	25(5)	7(5)	6(5)	8(5)	5(5)	4(5)	41(1)	21(3)	14(3)	37.3(5)	2.1(3)	488(3)	48	9.9
1.00	O	08/19/1998	10000	27(5)	6(3)	7(5)	9(5)	6(5)	6(5)	39(1)	20(3)	12(3)	41.7(5)	0.6(3)	672(3)	46	9.1
Year: 1995																	
1.50	O	07/06/1995	10000	22(5)	6(3)	4(3)	8(5)	3(3)	9(3)	46(0)	31(3)	31(5)	18.9(3)	3.7(1)	486(3)	37	9.5
1.50	O	08/22/1995	10000	18(5)	5(3)	3(3)	6(3)	4(3)	7(5)	59(0)	28(3)	7(1)	54.3(5)	2.7(3)	900(3)	37	7.6

♦ - IBI is low end adjusted.

Appendix Table 3. Lacustuary ICI scores and metrics for the Ashabula River and Conneaut Creek, 2003, 1996, 1995, 1989.

River Mile	Percent Lacus-tuary	Number of: Total Taxa	Sensitive Taxa	Dipteran Taxa	Percent: Mayflies & Caddisflies	Gath-erers[a]	Sensitive Organisms	Other Diptera[b]	Predom Taxon	Diptera/ ft^2	Qual. EPT	Eco-region	LICI
Ashtabula River (07-001)													
Year: 2003													
2.34 R	93.6	54(6)	23(6)	25(6)	18.5(4)	73.0(4)	24.1(6)	72.6(4)	28.4(6)	181(6)	2(2)	3	50
2.15 R	86.0	45(6)	15(6)	20(6)	43.8(6)	70.8(4)	49.8(6)	50.9(6)	20.2(6)	87.4(6)	4(4)	3	56
1.95 R	78.0	41(6)	11(4)	20(6)	28.5(6)	80.1(2)	27.9(6)	68.8(4)	22.1(6)	114(6)	1(2)	3	48
1.86 R	74.4	40(6)	10(4)	19(6)	9.9(4)	85.4(2)	10.7(4)	90.1(2)	27.1(6)	474(4)	4(4)	3	42
1.66 R	66.4	33(4)	7(0)	14(4)	3.0(2)	93.5(0)	2.1(2)	96.4(0)	62.6(2)	119(6)	1(2)	3	22
1.65 L	66.0	25(4)	5(0)	7(2)	0.7(2)	96.2(0)	0.5(2)	98.9(0)	69.2(2)	249(4)	0(0)	3	16
1.58 R	63.2	33(4)	5(0)	15(4)	5.9(2)	86.9(2)	1.3(2)	92.9(0)	44.0(4)	243(4)	0(0)	3	22
1.50 R	60.0	32(4)	7(0)	10(2)	1.2(2)	61.8(6)	1.0(2)	96.0(0)	31.5(6)	209(4)	1(2)	3	28
1.28 R	51.2	41(6)	9(4)	20(6)	1.5(2)	89.7(0)	1.6(2)	96.8(0)	65.2(2)	80.4(6)	2(2)	3	30
1.04 R	41.6	34(4)	9(4)	13(4)	5.1(2)	80.5(2)	5.4(2)	88.6(2)	21.1(6)	294(4)	3(2)	3	32
0.58 R	23.2	44(6)	11(6)	24(6)	3.8(2)	77.5(4)	5.0(2)	92.4(2)	32.7(6)	53.8(6)	3(4)	3	44
Year: 1995													
2.30	92.0	39(6)	11(4)	16(4)	11.8(4)	93.8(0)	12.2(4)	85.1(2)	37.4(6)	365(4)	6(4)	3	38
1.30	52.0	23(2)	5(0)	8(2)	0.3(2)	91.5(0)	0.5(2)	97.1(0)	68.0(2)	1056(2)	3(2)	3	14
0.80	32.0	27(4)	6(0)	15(4)	0.3(2)	95.7(0)	0.5(2)	99.6(0)	66.7(2)	143(6)	3(4)	3	24
Year: 1989													
1.90	76.0	18(2)	2(0)	10(2)	0.0(2)	96.2(0)	1.0(2)	98.2(0)	34.6(6)	976(2)	0(0)	3	16
1.30	52.0	23(2)	4(0)	11(2)	1.8(2)	82.8(2)	1.1(2)	96.9(0)	31.2(6)	1076(2)	0(0)	3	18
0.60	24.0	23(2)	5(0)	15(4)	1.3(2)	84.3(2)	0.4(2)	98.3(0)	75.9(0)	240(4)	1(2)	3	18
Conneaut Creek (07-100)													
Year: 2003													
1.71 L	77.7	30(4)	9(4)	17(4)	24.8(6)	60.8(6)	29.0(6)	49.1(6)	17.9(6)	128(6)	5(4)	3	52
1.47 L	66.8	40(6)	16(6)	17(4)	7.7(2)	66.7(6)	17.2(6)	80.1(4)	32.9(6)	73.6(6)	1(2)	3	48
1.13 L	51.4	37(6)	14(6)	16(4)	10.4(4)	69.4(4)	21.0(6)	73.8(6)	22.6(6)	51.6(6)	3(2)	3	50
0.96 R	43.6	45(6)	15(6)	24(6)	17.4(6)	72.1(4)	22.5(6)	72.7(6)	30.6(6)	79.4(6)	3(2)	3	54
0.79 R	35.9	39(6)	16(6)	16(4)	6.5(4)	66.5(6)	18.3(6)	80.4(6)	19.4(6)	91.6(6)	4(4)	3	54
0.78	35.5	37(6)	12(6)	19(6)	16.7(6)	57.7(6)	7.3(4)	79.8(6)	31.1(6)	182(6)	0(0)	3	52
0.77 L	35.0	33(4)	16(6)	12(2)	8.9(4)	78.4(2)	26.1(6)	76.6(6)	20.0(6)	125(6)	1(2)	3	44
Year: 1996													
1.00	45.5	45(6)	12(6)	21(6)	13.9(4)	73.3(4)	12.5(6)	77.8(6)	32.9(6)	92.0(6)	1(2)	3	52
Year: 1995													
1.10	50.0	42(6)	10(4)	18(4)	24.1(6)	44.0(6)	6.8(4)	72.5(6)	19.1(6)	49.4(6)	2(2)	3	50
Year: 1989													
1.30	59.1	36(6)	11(4)	20(6)	1.5(2)	86.0(2)	6.0(2)	88.0(2)	43.3(4)	324(4)	3(2)	3	34

[a] Percent of total gatherers as individuals excluding zebra mussels *(Dreissena polymorpha).*

[b] Percent of dipterans as individuals excluding the midge tribe Tanytarsini.

Appendix Table 4. Ohio EPA macroinvertebrate results from the Ashtabula River and Conneaut Creek, 2003 - 1989.

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/22/2003 River Code: 07-001 RM: 2.34 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual	
01320	*Hydra sp*	107	
01801	*Turbellaria*	155	+
03600	*Oligochaeta*	649	+
04686	*Placobdella papillifera*		+
05800	*Caecidotea sp*		+
06201	*Hyalella azteca*		+
06810	*Gammarus fasciatus*		+
11020	*Acerpenna pygmaea*	1	
11130	*Baetis intercalaris*	4	
11250	*Centroptilum sp (w/o hindwing pads)*		+
11650	*Procloeon sp (w/ hindwing pads)*	4	
13400	*Stenacron sp*	110	
13521	*Stenonema femoratum*	108	
13561	*Maccaffertium pulchellum*	4	
14950	*Leptophlebia sp or Paraleptophlebia sp*	1	
15501	*Ephemerellidae*	22	
17200	*Caenis sp*	60	+
18600	*Ephemera sp*	1	
21200	*Calopteryx sp*	1	
22001	*Coenagrionidae*	4	+
22300	*Argia sp*	3	+
24900	*Gomphus sp*		+
27307	*Epitheca (Epicordulia) princeps*	1	+
27500	*Somatochlora sp*		+
44501	*Corixidae*		+
47600	*Sialis sp*		+
51206	*Cyrnellus fraternus*	83	
53800	*Hydroptila sp*	16	
54200	*Orthotrichia sp*	9	
59500	*Oecetis sp*	1	
60800	*Haliplus sp*		+
60900	*Peltodytes sp*		+
65800	*Berosus sp*	1	+
68702	*Dubiraphia bivittata*		+
69400	*Stenelmis sp*	1	+
74501	*Ceratopogonidae*		+
77115	*Ablabesmyia janta*	43	+
77120	*Ablabesmyia mallochi*	22	+
77355	*Clinotanypus pinguis*		+
77500	*Conchapelopia sp*	79	
77750	*Hayesomyia senata or Thienemannimyia norena*	7	
78655	*Procladius (Holotanypus) sp*	29	+
80360	*Corynoneura "celeripes" (sensu Simpson & Bode, 1980)*	28	
80370	*Corynoneura lobata*	16	
80490	*Cricotopus (Isocladius) intersectus group*	7	
81231	*Nanocladius (N.) crassicornus or N. (N.) "rectinervis"*	29	
81631	*Parakiefferiella n.sp 1*	14	
82070	*Synorthocladius semivirens*	7	
82121	*Thienemanniella lobapodema*	16	
82730	*Chironomus (C.) decorus group*		+
82800	*Cladopelma sp*		+
82820	*Cryptochironomus sp*	7	
83002	*Dicrotendipes modestus*	93	+
83040	*Dicrotendipes neomodestus*	137	+
83158	*Endochironomus nigricans*	36	+
83840	*Microtendipes pedellus group*	7	
83900	*Nilothauma sp*	29	
84300	*Phaenopsectra obediens group*	7	
84400	*Polypedilum sp*		+
84520	*Polypedilum (Tripodura) halterale group*	65	+
84800	*Tribelos jucundum*	36	+
85230	*Cladotanytarsus mancus group*		+
85500	*Paratanytarsus sp*		+
85501	*Paratanytarsus n.sp 1*	7	
85720	*Stempellinella n.sp nr. flavidula*	14	
85800	*Tanytarsus sp*	93	+
85821	*Tanytarsus glabrescens group sp 7*	79	
93900	*Elimia sp*	2	+
94400	*Fossaria sp*	1	
95100	*Physella sp*	4	+
95900	*Gyraulus sp*	1	+
96120	*Menetus (Micromenetus) dilatatus*	19	
96900	*Ferrissia sp*	8	

No. Quantitative Taxa: 54 Total Taxa: 73
No. Qualitative Taxa: 39 ICI: **50**
Number of Organisms: 2288 Qual EPT: 2

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/22/2003 River Code: 07-001 RM: 2.15 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
01320	*Hydra sp*	15
01801	*Turbellaria*	91 +
03073	*Lophopodella carteri*	+
03360	*Plumatella sp*	2
03600	*Oligochaeta*	270 +
04637	*Batracobdella phalera*	+
05800	*Caecidotea sp*	8
06810	*Gammarus fasciatus*	2 +
08601	*Hydrachnidia*	+
11650	*Procloeon sp (w/ hindwing pads)*	+
11651	*Procloeon sp (w/o hindwing pads)*	5
13400	*Stenacron sp*	319
13521	*Stenonema femoratum*	213
14950	*Leptophlebia sp or Paraleptophlebia sp*	9
15501	*Ephemerellidae*	64
17200	*Caenis sp*	53 +
22001	*Coenagrionidae*	3 +
22300	*Argia sp*	26
23704	*Anax junius*	+
27307	*Epitheca (Epicordulia) princeps*	+
30000	*Plecoptera*	1
34130	*Acroneuria frisoni*	1
51206	*Cyrnellus fraternus*	23
51600	*Polycentropus sp*	3
53800	*Hydroptila sp*	1
54200	*Orthotrichia sp*	1
54300	*Oxyethira sp*	2
59405	*Nectopsyche albida*	+
59500	*Oecetis sp*	+
60900	*Peltodytes sp*	+
63900	*Laccophilus sp*	+
65800	*Berosus sp*	1
74501	*Ceratopogonidae*	18
77100	*Ablabesmyia sp*	+
77355	*Clinotanypus pinguis*	+
77500	*Conchapelopia sp*	23
77750	*Hayesomyia senata or Thienemannimyia norena*	7
78655	*Procladius (Holotanypus) sp*	7 +
80370	*Corynoneura lobata*	1
80410	*Cricotopus (C.) sp*	+
80420	*Cricotopus (C.) bicinctus*	7 +
80510	*Cricotopus (Isocladius) sylvestris group*	3 +
82070	*Synorthocladius semivirens*	30
82121	*Thienemanniella lobapodema*	55
82730	*Chironomus (C.) decorus group*	+
82800	*Cladopelma sp*	+
82820	*Cryptochironomus sp*	+
83002	*Dicrotendipes modestus*	3 +
83040	*Dicrotendipes neomodestus*	33
83158	*Endochironomus nigricans*	60
83300	*Glyptotendipes (G.) sp*	30
83840	*Microtendipes pedellus group*	10
84000	*Parachironomus sp*	7
84520	*Polypedilum (Tripodura) halterale group*	10 +
84800	*Tribelos jucundum*	80
85500	*Paratanytarsus sp*	3 +
85800	*Tanytarsus sp*	17 +
85821	*Tanytarsus glabrescens group sp 7*	33 +
95100	*Physella sp*	9 +
95900	*Gyraulus sp*	19 +
96930	*Laevapex fuscus*	5

No. Quantitative Taxa: 45 Total Taxa: 61
No. Qualitative Taxa: 31 ICI: **56**
Number of Organisms: 1583 Qual EPT: 4

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/22/2003 River Code: 07-001 RM: 1.95 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
01320	*Hydra sp*	13
01801	*Turbellaria*	64 +
03337	*Hyalinella punctata*	1
03360	*Plumatella sp*	6
03600	*Oligochaeta*	326 +
04637	*Batracobdella phalera*	1
04666	*Helobdella triserialis*	+
05800	*Caecidotea sp*	1
06201	*Hyalella azteca*	+
06810	*Gammarus fasciatus*	3 +
08240	*Orconectes (Crokerinus) propinquus*	+
08601	*Hydrachnidia*	4 +
13400	*Stenacron sp*	191
13521	*Stenonema femoratum*	68
13561	*Maccaffertium pulchellum*	4
14950	*Leptophlebia sp or Paraleptophlebia sp*	3
15501	*Ephemerellidae*	10
17200	*Caenis sp*	118 +
22001	*Coenagrionidae*	2 +
22300	*Argia sp*	7
27307	*Epitheca (Epicordulia) princeps*	+
43570	*Neoplea sp*	+
51206	*Cyrnellus fraternus*	26
51600	*Polycentropus sp*	1
72700	*Anopheles sp*	+
74501	*Ceratopogonidae*	34
77115	*Ablabesmyia janta*	36
77120	*Ablabesmyia mallochi*	6
77750	*Hayesomyia senata or Thienemannimyia norena*	6
78655	*Procladius (Holotanypus) sp*	12 +
81231	*Nanocladius (N.) crassicornus or N. (N.) "rectinervis"*	18
81631	*Parakiefferiella n.sp 1*	6
82700	*Chironomus sp*	6
83002	*Dicrotendipes modestus*	18 +
83040	*Dicrotendipes neomodestus*	24
83158	*Endochironomus nigricans*	65
83300	*Glyptotendipes (G.) sp*	208
84000	*Parachironomus sp*	6 +
84010	*Parachironomus "abortivus" (sensu Simpson & Bode, 1980)*	+
84060	*Parachironomus pectinatellae*	6
84300	*Phaenopsectra obediens group*	18
84520	*Polypedilum (Tripodura) halterale group*	12
84800	*Tribelos jucundum*	59
85500	*Paratanytarsus sp*	12 +
85800	*Tanytarsus sp*	12
85821	*Tanytarsus glabrescens group sp 7*	6
95100	*Physella sp*	1 +
95900	*Gyraulus sp*	55 +

No. Quantitative Taxa: 41 Total Taxa: 48
No. Qualitative Taxa: 19 ICI: **48**
Number of Organisms: 1475 Qual EPT: 1

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/22/2003 River Code: 07-001 RM: 1.86 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
01200	*Cordylophora lacustris*	1
01320	*Hydra sp*	102
01801	*Turbellaria*	178 +
03073	*Lophopodella carteri*	4 +
03337	*Hyalinella punctata*	1
03360	*Plumatella sp*	1 +
03600	*Oligochaeta*	700 +
04666	*Helobdella triserialis*	+
05800	*Caecidotea sp*	+
06201	*Hyalella azteca*	+
06810	*Gammarus fasciatus*	17 +
13400	*Stenacron sp*	84 +
13521	*Stenonema femoratum*	93 +
14950	*Leptophlebia sp or Paraleptophlebia sp*	3
15501	*Ephemerellidae*	2
17200	*Caenis sp*	171 +
22001	*Coenagrionidae*	2 +
27307	*Epitheca (Epicordulia) princeps*	+
51206	*Cyrnellus fraternus*	24
51600	*Polycentropus sp*	1
59200	*Leptocerus americanus*	+
60900	*Peltodytes sp*	+
69400	*Stenelmis sp*	1
74501	*Ceratopogonidae*	49 +
77115	*Ablabesmyia janta*	25
77120	*Ablabesmyia mallochi*	25
77130	*Ablabesmyia rhamphe group*	+
77355	*Clinotanypus pinguis*	+
77500	*Conchapelopia sp*	123
77750	*Hayesomyia senata or Thienemannimyia norena*	25
78655	*Procladius (Holotanypus) sp*	+
80350	*Corynoneura sp*	24
81200	*Nanocladius sp*	25
81631	*Parakiefferiella n.sp 1*	49
83002	*Dicrotendipes modestus*	197
83040	*Dicrotendipes neomodestus*	197
83051	*Dicrotendipes simpsoni*	222
83158	*Endochironomus nigricans*	173
83300	*Glyptotendipes (G.) sp*	1037
83840	*Microtendipes pedellus group*	49
84000	*Parachironomus sp*	49
84520	*Polypedilum (Tripodura) halterale group*	25 +
84790	*Tribelos fuscicorne*	25
84800	*Tribelos jucundum*	25 +
84960	*Pseudochironomus sp*	25
93900	*Elimia sp*	1
95100	*Physella sp*	9 +
95900	*Gyraulus sp*	48 +
96120	*Menetus (Micromenetus) dilatatus*	21
97710	*Dreissena polymorpha*	+
99100	*Pyganodon grandis*	+

No. Quantitative Taxa: 40 Total Taxa: 51
No. Qualitative Taxa: 25 ICI: **42**
Number of Organisms: 3833 Qual EPT: 4

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/22/2003 River Code: 07-001 RM: 1.66 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual		Taxa Code	Taxa	Quant/Qual
01801	*Turbellaria*	1484				
01900	*Nemertea*	4				
03073	*Lophopodella carteri*	80				
03360	*Plumatella sp*	1				
03600	*Oligochaeta*	4191	+			
04666	*Helobdella triserialis*	2				
05800	*Caecidotea sp*	3				
06201	*Hyalella azteca*	68				
06810	*Gammarus fasciatus*	20				
08601	*Hydrachnidia*	8				
17200	*Caenis sp*	16	+			
22001	*Coenagrionidae*	6	+			
22300	*Argia sp*	5				
51206	*Cyrnellus fraternus*	176				
59500	*Oecetis sp*	8				
69400	*Stenelmis sp*	1				
74501	*Ceratopogonidae*	16				
77120	*Ablabesmyia mallochi*	48				
77500	*Conchapelopia sp*	41				
77750	*Hayesomyia senata or Thienemannimyia norena*	7				
78655	*Procladius (Holotanypus) sp*	7	+			
81231	*Nanocladius (N.) crassicornus or N. (N.) "rectinervis"*	14				
82770	*Chironomus (C.) riparius group*		+			
83002	*Dicrotendipes modestus*	62	+			
83003	*Dicrotendipes fumidus*	90				
83040	*Dicrotendipes neomodestus*	104				
83051	*Dicrotendipes simpsoni*	41				
83158	*Endochironomus nigricans*	21				
83300	*Glyptotendipes (G.) sp*	110				
84790	*Tribelos fuscicorne*	7				
85821	*Tanytarsus glabrescens group sp 7*	28				
95900	*Gyraulus sp*	12				
96900	*Ferrissia sp*	8				
97710	*Dreissena polymorpha*	3				

No. Quantitative Taxa: 33 Total Taxa: 34
No. Qualitative Taxa: 6 ICI: **22**
Number of Organisms: 6692 Qual EPT: 1

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/22/2003 River Code: 07-001 RM: 1.65 L Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual		Taxa Code	Taxa	Quant/Qual
01200	*Cordylophora lacustris*	3				
01801	*Turbellaria*	160				
03073	*Lophopodella carteri*	1				
03600	*Oligochaeta*	3536	+			
04637	*Batracobdella phalera*	1				
06810	*Gammarus fasciatus*	22	+			
13521	*Stenonema femoratum*	4				
15501	*Ephemerellidae*	8				
22001	*Coenagrionidae*	1				
22300	*Argia sp*	2				
27307	*Epitheca (Epicordulia) princeps*	1				
27610	*Epitheca (Tetragoneuria) cynosura*	3				
51206	*Cyrnellus fraternus*	25				
54200	*Orthotrichia sp*	1				
74501	*Ceratopogonidae*		+			
77100	*Ablabesmyia sp*	13				
77500	*Conchapelopia sp*	26				
78655	*Procladius (Holotanypus) sp*		+			
79020	*Tanypus neopunctipennis*		+			
81240	*Nanocladius (N.) distinctus*	26				
83051	*Dicrotendipes simpsoni*	1143				
83300	*Glyptotendipes (G.) sp*	13				
84300	*Phaenopsectra obediens group*	13				
85625	*Rheotanytarsus sp*	13				
93025	*Bithynia tentaculata*	1				
95100	*Physella sp*	73				
95900	*Gyraulus sp*	16				
96120	*Menetus (Micromenetus) dilatatus*	2				
98200	*Pisidium sp*		+			

No. Quantitative Taxa: 25 Total Taxa: 29
No. Qualitative Taxa: 6 ICI: **16**
Number of Organisms: 5107 Qual EPT: 0

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/22/2003 River Code: 07-001 RM: 1.58 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
00401	*Spongillidae*	+
01200	*Cordylophora lacustris*	8
01801	*Turbellaria*	165 +
01900	*Nemertea*	1
03073	*Lophopodella carteri*	1 +
03600	*Oligochaeta*	1419 +
04666	*Helobdella triserialis*	+
05800	*Caecidotea sp*	1 +
06201	*Hyalella azteca*	+
06810	*Gammarus fasciatus*	98 +
17200	*Caenis sp*	17
22001	*Coenagrionidae*	1 +
22300	*Argia sp*	1 +
23600	*Aeshna sp*	+
43570	*Neoplea sp*	+
44300	*Pelocoris sp*	+
51206	*Cyrnellus fraternus*	173
51600	*Polycentropus sp*	1
66500	*Enochrus sp*	+
72700	*Anopheles sp*	+
74501	*Ceratopogonidae*	8
77100	*Ablabesmyia sp*	12
77500	*Conchapelopia sp*	73
77750	*Hayesomyia senata or Thienemannimyia norena*	12
78655	*Procladius (Holotanypus) sp*	+
80420	*Cricotopus (C.) bicinctus*	12
80510	*Cricotopus (Isocladius) sylvestris group*	+
81200	*Nanocladius sp*	24
83002	*Dicrotendipes modestus*	366 +
83040	*Dicrotendipes neomodestus*	122
83051	*Dicrotendipes simpsoni*	403
83158	*Endochironomus nigricans*	12
83300	*Glyptotendipes (G.) sp*	86
84300	*Phaenopsectra obediens group*	+
84470	*Polypedilum (P.) illinoense*	+
84790	*Tribelos fuscicorne*	12
84800	*Tribelos jucundum*	37
85500	*Paratanytarsus sp*	+
85800	*Tanytarsus sp*	12
85821	*Tanytarsus glabrescens group sp 7*	24
93200	*Hydrobiidae*	1
94400	*Fossaria sp*	1
95100	*Physella sp*	2
95900	*Gyraulus sp*	18 +
96930	*Laevapex fuscus*	97
97710	*Dreissena polymorpha*	4 +

No. Quantitative Taxa: 33 Total Taxa: 46
No. Qualitative Taxa: 23 ICI: **22**
Number of Organisms: 3224 Qual EPT: 0

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/23/2003 River Code: 07-001 RM: 1.50 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual		Taxa Code	Taxa	Quant/Qual
01320	*Hydra sp*	59				
01801	*Turbellaria*	310	+			
03073	*Lophopodella carteri*	1				
03600	*Oligochaeta*	426	+			
04664	*Helobdella stagnalis*	1				
04666	*Helobdella triserialis*	3				
05800	*Caecidotea sp*	9				
06201	*Hyalella azteca*		+			
06810	*Gammarus fasciatus*	285	+			
13400	*Stenacron sp*	1				
13521	*Stenonema femoratum*	9				
15501	*Ephemerellidae*	2				
17200	*Caenis sp*	15	+			
22001	*Coenagrionidae*	27	+			
22300	*Argia sp*	2				
27307	*Epitheca (Epicordulia) princeps*		+			
51206	*Cyrnellus fraternus*	4				
53600	*Agraylea sp*	2				
54300	*Oxyethira sp*	1				
59500	*Oecetis sp*	6				
74501	*Ceratopogonidae*	4	+			
77115	*Ablabesmyia janta*	31				
77355	*Clinotanypus pinguis*		+			
77500	*Conchapelopia sp*	10				
78655	*Procladius (Holotanypus) sp*		+			
82820	*Cryptochironomus sp*		+			
83002	*Dicrotendipes modestus*	62				
83051	*Dicrotendipes simpsoni*	62				
83158	*Endochironomus nigricans*	723				
83300	*Glyptotendipes (G.) sp*	73				
84520	*Polypedilum (Tripodura) halterale group*	10	+			
84960	*Pseudochironomus sp*	10				
85500	*Paratanytarsus sp*	62	+			
85800	*Tanytarsus sp*		+			
93200	*Hydrobiidae*		+			
95100	*Physella sp*	1	+			
95900	*Gyraulus sp*	43	+			
96120	*Menetus (Micromenetus) dilatatus*	1043				
97710	*Dreissena polymorpha*	12	+			
98600	*Sphaerium sp*		+			

No. Quantitative Taxa: 32 Total Taxa: 40

No. Qualitative Taxa: 19 ICI: **28**

Number of Organisms: 3309 Qual EPT: 1

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/23/2003 River Code: 07-001 RM: 1.28 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
01320	*Hydra sp*	42 +
01801	*Turbellaria*	117 +
03073	*Lophopodella carteri*	5
03600	*Oligochaeta*	2294 +
04637	*Batracobdella phalera*	+
04664	*Helobdella stagnalis*	1
04666	*Helobdella triserialis*	+
04960	*Mooreobdella sp*	+
05800	*Caecidotea sp*	+
06201	*Hyalella azteca*	24 +
06810	*Gammarus fasciatus*	287 +
11001	*Baetidae*	1
13400	*Stenacron sp*	+
15501	*Ephemerellidae*	8
17200	*Caenis sp*	19
22001	*Coenagrionidae*	44 +
27307	*Epitheca (Epicordulia) princeps*	1 +
43570	*Neoplea sp*	+
45400	*Trichocorixa sp*	+
51206	*Cyrnellus fraternus*	7
54200	*Orthotrichia sp*	15
59500	*Oecetis sp*	1 +
60800	*Haliplus sp*	+
60900	*Peltodytes sp*	+
65800	*Berosus sp*	3
74501	*Ceratopogonidae*	24
77100	*Ablabesmyia sp*	3 +
78200	*Larsia sp*	4
78655	*Procladius (Holotanypus) sp*	7 +
81200	*Nanocladius sp*	4
81631	*Parakiefferiella n.sp 1*	3
82220	*Tvetenia discoloripes group*	3
82800	*Cladopelma sp*	+
82820	*Cryptochironomus sp*	7
83000	*Dicrotendipes sp*	4
83002	*Dicrotendipes modestus*	37 +
83158	*Endochironomus nigricans*	75 +
83300	*Glyptotendipes (G.) sp*	113
84300	*Phaenopsectra obediens group*	3
84450	*Polypedilum (Uresipedilum) flavum*	+
84520	*Polypedilum (Tripodura) halterale group*	27 +
84790	*Tribelos fuscicorne*	58
84800	*Tribelos jucundum*	7 +
84960	*Pseudochironomus sp*	10

Taxa Code	Taxa	Quant/Qual
85500	*Paratanytarsus sp*	3 +
85752	*Sublettea coffmani*	3
85800	*Tanytarsus sp*	7
86100	*Chrysops sp*	+
93025	*Bithynia tentaculata*	+
95100	*Physella sp*	5 +
95900	*Gyraulus sp*	147 +
96120	*Menetus (Micromenetus) dilatatus*	18
96930	*Laevapex fuscus*	13
97710	*Dreissena polymorpha*	63 +
98001	*Sphaeriidae*	+

No. Quantitative Taxa: 41 Total Taxa: 55
No. Qualitative Taxa: 32 ICI: **30**
Number of Organisms: 3517 Qual EPT: 2

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/23/2003 River Code: 07-001 RM: 1.04 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
01320	*Hydra sp*	2
01801	*Turbellaria*	330 +
03600	*Oligochaeta*	722 +
04637	*Batracobdella phalera*	2
04666	*Helobdella triserialis*	+
05800	*Caecidotea sp*	+
06201	*Hyalella azteca*	17 +
06810	*Gammarus fasciatus*	181 +
13400	*Stenacron sp*	3
13521	*Stenonema femoratum*	4
15501	*Ephemerellidae*	8
17200	*Caenis sp*	79 +
22001	*Coenagrionidae*	21 +
53800	*Hydroptila sp*	18
54200	*Orthotrichia sp*	56
54300	*Oxyethira sp*	3
55200	*Phryganea sp*	+
59520	*Oecetis cinerascens*	2 +
60800	*Haliplus sp*	+
60900	*Peltodytes sp*	+
74501	*Ceratopogonidae*	24
77100	*Ablabesmyia sp*	16
77355	*Clinotanypus pinguis*	+
78655	*Procladius (Holotanypus) sp*	16 +
82121	*Thienemanniella lobapodema*	+
83002	*Dicrotendipes modestus*	179
83040	*Dicrotendipes neomodestus*	277
83158	*Endochironomus nigricans*	163
83300	*Glyptotendipes (G.) sp*	407
84520	*Polypedilum (Tripodura) halterale group*	+
84790	*Tribelos fuscicorne*	49
84800	*Tribelos jucundum*	16
84960	*Pseudochironomus sp*	130
85500	*Paratanytarsus sp*	163 +
85800	*Tanytarsus sp*	16
85821	*Tanytarsus glabrescens group sp 7*	16
93200	*Hydrobiidae*	20 +
94400	*Fossaria sp*	+
95100	*Physella sp*	1 +
95900	*Gyraulus sp*	124 +
96120	*Menetus (Micromenetus) dilatatus*	9
96930	*Laevapex fuscus*	338
97710	*Dreissena polymorpha*	10 +
98200	*Pisidium sp*	+
98600	*Sphaerium sp*	+

No. Quantitative Taxa: 34 Total Taxa: 45
No. Qualitative Taxa: 24 ICI: **32**
Number of Organisms: 3422 Qual EPT: 3

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/23/2003 River Code: 07-001 RM: 0.58 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
00401	*Spongillidae*	+
01320	*Hydra sp*	35
01801	*Turbellaria*	371 +
03600	*Oligochaeta*	769 +
04666	*Helobdella triserialis*	2 +
05800	*Caecidotea sp*	+
06201	*Hyalella azteca*	9 +
06810	*Gammarus fasciatus*	236 +
08601	*Hydrachnidia*	8
13521	*Stenonema femoratum*	1
15501	*Ephemerellidae*	+
17200	*Caenis sp*	62 +
22001	*Coenagrionidae*	30 +
27610	*Epitheca (Tetragoneuria) cynosura*	1
51206	*Cyrnellus fraternus*	4
53600	*Agraylea sp*	1
54200	*Orthotrichia sp*	20 +
54300	*Oxyethira sp*	2
74501	*Ceratopogonidae*	2
77355	*Clinotanypus pinguis*	+
77500	*Conchapelopia sp*	14
78655	*Procladius (Holotanypus) sp*	3
80354	*Corynoneura n.sp 4*	1
80358	*Corynoneura n.sp 8*	19
80370	*Corynoneura lobata*	4
80400	*Cricotopus sp*	3
80510	*Cricotopus (Isocladius) sylvestris group*	+
81210	*Nanocladius (N.) alternantherae*	3
81259	*Nanocladius (N.) "rectinervis" (sensu Simpson and Bode, 1980)*	8
81631	*Parakiefferiella n.sp 1*	3
82121	*Thienemanniella lobapodema*	8
82820	*Cryptochironomus sp*	3
83002	*Dicrotendipes modestus*	11 +
83040	*Dicrotendipes neomodestus*	8
83051	*Dicrotendipes simpsoni*	6
83158	*Endochironomus nigricans*	61 +
83300	*Glyptotendipes (G.) sp*	33
84000	*Parachironomus sp*	17 +
84520	*Polypedilum (Tripodura) halterale group*	3 +
85500	*Paratanytarsus sp*	45 +
85625	*Rheotanytarsus sp*	6
85800	*Tanytarsus sp*	3
85821	*Tanytarsus glabrescens group sp 7*	3
87540	*Hemerodromia sp*	2
93200	*Hydrobiidae*	94 +
95100	*Physella sp*	11 +
95900	*Gyraulus sp*	205 +
96930	*Laevapex fuscus*	42
97710	*Dreissena polymorpha*	178 +

No. Quantitative Taxa: 44 Total Taxa: 49
No. Qualitative Taxa: 22 ICI: **44**
Number of Organisms: 2350 Qual EPT: 3

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 08/30/1995 River Code: 07-001 RM: 2.30 Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
00401	*Spongillidae*	+
01200	*Cordylophora lacustris*	1
01320	*Hydra sp*	32
01801	*Turbellaria*	250 +
03073	*Lophopodella carteri*	+
03337	*Hyalinella punctata*	8 +
03360	*Plumatella sp*	+
03600	*Oligochaeta*	1672 +
04664	*Helobdella stagnalis*	+
04687	*Placobdella parasitica*	+
05800	*Caecidotea sp*	+
06810	*Gammarus fasciatus*	70 +
13400	*Stenacron sp*	3 +
13521	*Stenonema femoratum*	5 +
16200	*Eurylophella sp*	16
17200	*Caenis sp*	400 +
22001	*Coenagrionidae*	21 +
22300	*Argia sp*	6 +
23909	*Boyeria vinosa*	+
27610	*Epitheca (Tetragoneuria) cynosura*	1
28908	*Perithemis tenera*	+
45400	*Trichocorixa sp*	+
51206	*Cyrnellus fraternus*	62
51600	*Polycentropus sp*	9 +
53800	*Hydroptila sp*	16
54200	*Orthotrichia sp*	8
54300	*Oxyethira sp*	8
59520	*Oecetis cinerascens*	+
59570	*Oecetis nocturna*	+
60900	*Peltodytes sp*	+
65800	*Berosus sp*	2 +
69400	*Stenelmis sp*	26
74501	*Ceratopogonidae*	40
77115	*Ablabesmyia janta*	+
77120	*Ablabesmyia mallochi*	+
77130	*Ablabesmyia rhamphe group*	21 +
77355	*Clinotanypus pinguis*	+
78655	*Procladius (Holotanypus) sp*	+
81250	*Nanocladius (N.) minimus*	21 +
82730	*Chironomus (C.) decorus group*	21 +
82820	*Cryptochironomus sp*	+
83002	*Dicrotendipes modestus*	21
83040	*Dicrotendipes neomodestus*	210
83050	*Dicrotendipes lucifer*	294
83051	*Dicrotendipes simpsoni*	483 +
83158	*Endochironomus nigricans*	231 +
83300	*Glyptotendipes (G.) sp*	294 +
83310	*Glyptotendipes (Trichotendipes) amplus*	21
84030	*Parachironomus directus*	21 +
84040	*Parachironomus frequens*	21 +
84470	*Polypedilum (P.) illinoense*	+
84520	*Polypedilum (Tripodura) halterale group*	42 +
84888	*Xenochironomus xenolabis*	+
85800	*Tanytarsus sp*	42 +
85814	*Tanytarsus glabrescens group*	42
94400	*Fossaria sp*	+
95100	*Physella sp*	1 +
95907	*Gyraulus (Torquis) parvus*	+
96120	*Menetus (Micromenetus) dilatatus*	9 +
96900	*Ferrissia sp*	+
97710	*Dreissena polymorpha*	16 +

No. Quantitative Taxa: 39 Total Taxa: 61
No. Qualitative Taxa: 46 ICI: **38**
Number of Organisms: 4467 Qual EPT: 6

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 08/30/1995 River Code: 07-001 RM: 1.30 Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual		Taxa Code	Taxa	Quant/Qual
00401	*Spongillidae*		+			
01200	*Cordylophora lacustris*	1				
01801	*Turbellaria*	498				
03360	*Plumatella sp*		+			
03600	*Oligochaeta*		+			
05800	*Caecidotea sp*	1	+			
06810	*Gammarus fasciatus*	52	+			
08601	*Hydrachnidia*	8				
17200	*Caenis sp*	8	+			
22001	*Coenagrionidae*	76	+			
22300	*Argia sp*	83	+			
23704	*Anax junius*	1				
27307	*Epitheca (Epicordulia) princeps*		+			
27610	*Epitheca (Tetragoneuria) cynosura*		+			
49200	*Climacia sp*		+			
53600	*Agraylea sp*		+			
59520	*Oecetis cinerascens*	9	+			
69400	*Stenelmis sp*	8				
77130	*Ablabesmyia rhamphe group*	178	+			
81231	*Nanocladius (N.) crassicornus or N. (N.) "rectinervis"*	59				
81240	*Nanocladius (N.) distinctus*	59				
83000	*Dicrotendipes sp*	59				
83051	*Dicrotendipes simpsoni*	475				
83158	*Endochironomus nigricans*	119	+			
83300	*Glyptotendipes (G.) sp*	4271	+			
84030	*Parachironomus directus*		+			
84050	*Parachironomus "hirtalatus" (sensu Simpson & Bode, 1980)*	59				
84450	*Polypedilum (Uresipedilum) flavum*		+			
84888	*Xenochironomus xenolabis*		+			
93025	*Bithynia tentaculata*		+			
95100	*Physella sp*	72	+			
96120	*Menetus (Micromenetus) dilatatus*	34	+			
96900	*Ferrissia sp*	58				
97710	*Dreissena polymorpha*	95	+			

No. Quantitative Taxa: 23 Total Taxa: 34
No. Qualitative Taxa: 23 ICI: **14**
Number of Organisms: 6283 Qual EPT: 3

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 08/31/1995 River Code: 07-001 RM: 0.80 Site: Ashtabula River upst. 5th St.

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00653	*Eunapius fragilis*	+			
01320	*Hydra sp*	24			
01801	*Turbellaria*	394 +			
03600	*Oligochaeta*	2033 +			
04935	*Erpobdella punctata punctata*	+			
05800	*Caecidotea sp*	79 +			
06810	*Gammarus fasciatus*	560 +			
08601	*Hydrachnidia*	8			
17200	*Caenis sp*	16			
22001	*Coenagrionidae*	4 +			
52410	*Ceratopsyche alternans*	2			
53600	*Agraylea sp*	+			
53800	*Hydroptila sp*	12 +			
59300	*Mystacides sp*	+			
68901	*Macronychus glabratus*	1 +			
77130	*Ablabesmyia rhamphe group*	15			
80500	*Cricotopus (Isocladius) reversus group*	22			
80510	*Cricotopus (Isocladius) sylvestris group*	+			
82121	*Thienemanniella lobapodema*	15			
83002	*Dicrotendipes modestus*	29			
83040	*Dicrotendipes neomodestus*	7			
83050	*Dicrotendipes lucifer*	7			
83051	*Dicrotendipes simpsoni*	196			
83158	*Endochironomus nigricans*	269 +			
83300	*Glyptotendipes (G.) sp*	44			
83840	*Microtendipes pedellus group*	15			
84050	*Parachironomus "hirtalatus" (sensu Simpson & Bode, 1980)*	7 +			
84470	*Polypedilum (P.) illinoense*	29 +			
84520	*Polypedilum (Tripodura) halterale group*	29			
84960	*Pseudochironomus sp*	15			
85500	*Paratanytarsus sp*	15			
95100	*Physella sp*	+			
96264	*Planorbella (Pierosoma) pilsbryi*	+			
97710	*Dreissena polymorpha*	7712 +			

No. Quantitative Taxa: 27 Total Taxa: 34
No. Qualitative Taxa: 18 ICI: **24**
Number of Organisms: 11559 Qual EPT: 3

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/06/1989 River Code: 07-001 RM: 1.90 Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual		Taxa Code	Taxa	Quant/Qual
01801	*Turbellaria*		+			
03600	*Oligochaeta*	442	+			
04664	*Helobdella stagnalis*		+			
05800	*Caecidotea sp*		+			
06201	*Hyalella azteca*	1				
06810	*Gammarus fasciatus*		+			
11400	*Centroptilum sp or Procloeon sp (formerly in Cloeon)*	1				
22001	*Coenagrionidae*	3	+			
22300	*Argia sp*	40	+			
27307	*Epitheca (Epicordulia) princeps*		+			
47600	*Sialis sp*	1	+			
51206	*Cyrnellus fraternus*	1				
63300	*Hydroporus sp*		+			
63900	*Laccophilus sp*		+			
65800	*Berosus sp*		+			
69400	*Stenelmis sp*		+			
78650	*Procladius sp*	53	+			
80490	*Cricotopus (Isocladius) intersectus group*	53				
80500	*Cricotopus (Isocladius) reversus group*	53	+			
81240	*Nanocladius (N.) distinctus*	53				
82730	*Chironomus (C.) decorus group*		+			
82820	*Cryptochironomus sp*		+			
83002	*Dicrotendipes modestus*	53	+			
83050	*Dicrotendipes lucifer*	637				
83051	*Dicrotendipes simpsoni*	1857	+			
83158	*Endochironomus nigricans*	1326	+			
83300	*Glyptotendipes (G.) sp*	743	+			
84470	*Polypedilum (P.) illinoense*		+			
84520	*Polypedilum (Tripodura) halterale group*		+			
85814	*Tanytarsus glabrescens group*	53				
95100	*Physella sp*		+			
95501	*Planorbidae*		+			
97710	*Dreissena polymorpha*	1				
98200	*Pisidium sp*		+			
98600	*Sphaerium sp*		+			

No. Quantitative Taxa: 18 Total Taxa: 35
No. Qualitative Taxa: 27 ICI: **16**
Number of Organisms: 5371 Qual EPT: 0

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/06/1989 River Code: 07-001 RM: 1.30 Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual		Taxa Code	Taxa	Quant/Qual
00401	*Spongillidae*		+			
01801	*Turbellaria*	51	+			
03600	*Oligochaeta*	152				
04666	*Helobdella triserialis*		+			
04686	*Placobdella papillifera*		+			
05800	*Caecidotea sp*		+			
06201	*Hyalella azteca*	2	+			
06700	*Crangonyx sp*	2				
13400	*Stenacron sp*	1				
17200	*Caenis sp*	32				
22001	*Coenagrionidae*		+			
22300	*Argia sp*	39	+			
27307	*Epitheca (Epicordulia) princeps*		+			
51001	*Polycentropodidae*	57				
54300	*Oxyethira sp*	32				
65800	*Berosus sp*		+			
77120	*Ablabesmyia mallochi*	84	+			
77130	*Ablabesmyia rhamphe group*	168				
78600	*Pentaneura inconspicua*	42				
81240	*Nanocladius (N.) distinctus*	210				
83002	*Dicrotendipes modestus*	1312	+			
83050	*Dicrotendipes lucifer*	328				
83051	*Dicrotendipes simpsoni*	925				
83158	*Endochironomus nigricans*	2061	+			
83300	*Glyptotendipes (G.) sp*	84				
84470	*Polypedilum (P.) illinoense*	126				
85814	*Tanytarsus glabrescens group*	42				
93025	*Bithynia tentaculata*		+			
95100	*Physella sp*	627	+			
95501	*Planorbidae*	56				
96264	*Planorbella (Pierosoma) pilsbryi*		+			
97710	*Dreissena polymorpha*	178	+			

No. Quantitative Taxa: 23 Total Taxa: 32
No. Qualitative Taxa: 17 ICI: **18**
Number of Organisms: 6611 Qual EPT: 0

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/06/1989 River Code: 07-001 RM: 0.60 Site: Ashtabula River dst. 5th St.

Taxa Code	Taxa	Quant/Qual		Taxa Code	Taxa	Quant/Qual
01200	*Cordylophora lacustris*	1	+			
01801	*Turbellaria*	390	+			
03600	*Oligochaeta*	770	+			
06810	*Gammarus fasciatus*	203	+			
51206	*Cyrnellus fraternus*	142				
53800	*Hydroptila sp*	2	+			
60300	*Dineutus sp*		+			
77500	*Conchapelopia sp*	15				
78650	*Procladius sp*		+			
80410	*Cricotopus (C.) sp*	104	+			
80430	*Cricotopus (C.) tremulus group*	59				
80500	*Cricotopus (Isocladius) reversus group*	44	+			
81240	*Nanocladius (N.) distinctus*	104				
82730	*Chironomus (C.) decorus group*		+			
82820	*Cryptochironomus sp*	30	+			
83002	*Dicrotendipes modestus*	15				
83040	*Dicrotendipes neomodestus*	30				
83050	*Dicrotendipes lucifer*	44	+			
83051	*Dicrotendipes simpsoni*	400	+			
83158	*Endochironomus nigricans*	119	+			
83300	*Glyptotendipes (G.) sp*	193				
84470	*Polypedilum (P.) illinoense*		+			
84520	*Polypedilum (Tripodura) halterale group*		+			
85625	*Rheotanytarsus sp*	15				
85814	*Tanytarsus glabrescens group*	15				
85840	*Tanytarsus sepp*	15				
93025	*Bithynia tentaculata*		+			
93200	*Hydrobiidae*		+			
95100	*Physella sp*	17	+			
97710	*Dreissena polymorpha*	8592	+			

No. Quantitative Taxa: 23 Total Taxa: 30
No. Qualitative Taxa: 20 ICI: **18**
Number of Organisms: 11319 Qual EPT: 1

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/23/2003 River Code: 07-100 RM: 1.71 L Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
01320	*Hydra sp*	23
01801	*Turbellaria*	+
03600	*Oligochaeta*	20 +
04685	*Placobdella ornata*	+
06201	*Hyalella azteca*	+
06810	*Gammarus fasciatus*	+
08200	*Orconectes sp*	+
11200	*Callibaetis sp*	+
13400	*Stenacron sp*	74 +
13521	*Stenonema femoratum*	8 +
14950	*Leptophlebia sp or Paraleptophlebia sp*	1
15501	*Ephemerellidae*	5
16700	*Tricorythodes sp*	+
17200	*Caenis sp*	19 +
22001	*Coenagrionidae*	+
22300	*Argia sp*	26 +
27307	*Epitheca (Epicordulia) princeps*	+
51206	*Cyrnellus fraternus*	28
51600	*Polycentropus sp*	106
60900	*Peltodytes sp*	+
65800	*Berosus sp*	+
68700	*Dubiraphia sp*	1
69400	*Stenelmis sp*	+
74501	*Ceratopogonidae*	4
77115	*Ablabesmyia janta*	71 +
77120	*Ablabesmyia mallochi*	13 +
77500	*Conchapelopia sp*	45
77750	*Hayesomyia senata or Thienemannimyia norena*	13
77800	*Helopelopia sp*	19
80360	*Corynoneura "celeripes" (sensu Simpson & Bode, 1980)*	4
81631	*Parakiefferiella n.sp 1*	19
83002	*Dicrotendipes modestus*	97
83040	*Dicrotendipes neomodestus*	13
83158	*Endochironomus nigricans*	+
83840	*Microtendipes pedellus group*	6
84000	*Parachironomus sp*	7
84300	*Phaenopsectra obediens group*	19
84470	*Polypedilum (P.) illinoense*	+
84790	*Tribelos fuscicorne*	84
85500	*Paratanytarsus sp*	7 +
85800	*Tanytarsus sp*	174
85821	*Tanytarsus glabrescens group sp 7*	45
94400	*Fossaria sp*	+
95100	*Physella sp*	9 +
96264	*Planorbella (Pierosoma) pilsbryi*	+
96930	*Laevapex fuscus*	10 +

No. Quantitative Taxa: 30 Total Taxa: 46
No. Qualitative Taxa: 26 ICI: **52**
Number of Organisms: 970 Qual EPT: 5

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/23/2003 River Code: 07-100 RM: 1.47 L Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
01320	*Hydra sp*	78
01801	*Turbellaria*	27
03600	*Oligochaeta*	420 +
06810	*Gammarus fasciatus*	77 +
11651	*Procloeon sp (w/o hindwing pads)*	2
13400	*Stenacron sp*	16
13521	*Stenonema femoratum*	2
14950	*Leptophlebia sp or Paraleptophlebia sp*	2
15501	*Ephemerellidae*	4
17200	*Caenis sp*	23 +
22001	*Coenagrionidae*	8 +
22300	*Argia sp*	2
34140	*Acroneuria internata*	1
44501	*Corixidae*	+
51600	*Polycentropus sp*	1
54200	*Orthotrichia sp*	29
54300	*Oxyethira sp*	15
59500	*Oecetis sp*	5
60400	*Gyrinus sp*	+
60900	*Peltodytes sp*	+
65800	*Berosus sp*	5 +
67800	*Tropisternus sp*	+
68501	*Elmidae*	2
68601	*Ancyronyx variegata*	+
69400	*Stenelmis sp*	1
74501	*Ceratopogonidae*	62
77120	*Ablabesmyia mallochi*	11
77500	*Conchapelopia sp*	8
78655	*Procladius (Holotanypus) sp*	+
80350	*Corynoneura sp*	2
80360	*Corynoneura "celeripes" (sensu Simpson & Bode, 1980)*	2
80370	*Corynoneura lobata*	4
80490	*Cricotopus (Isocladius) intersectus group*	4
81231	*Nanocladius (N.) crassicornus or N. (N.) "rectinervis"*	11
81631	*Parakiefferiella n.sp 1*	11
82121	*Thienemanniella lobapodema*	4
82820	*Cryptochironomus sp*	+
83002	*Dicrotendipes modestus*	79 +
83040	*Dicrotendipes neomodestus*	19
83840	*Microtendipes pedellus group*	7
84300	*Phaenopsectra obediens group*	+
84470	*Polypedilum (P.) illinoense*	+
84790	*Tribelos fuscicorne*	4
84800	*Tribelos jucundum*	4
85500	*Paratanytarsus sp*	+
85800	*Tanytarsus sp*	23 +
85821	*Tanytarsus glabrescens group sp 7*	113
94400	*Fossaria sp*	+
95100	*Physella sp*	140 +
95900	*Gyraulus sp*	27 +
96930	*Laevapex fuscus*	23 +
97710	*Dreissena polymorpha*	+

No. Quantitative Taxa: 40 Total Taxa: 52
No. Qualitative Taxa: 22 ICI: **48**
Number of Organisms: 1278 Qual EPT: 1

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/23/2003 River Code: 07-100 RM: 1.13 L Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual	
01320	*Hydra sp*	31	
01801	*Turbellaria*	98	+
03073	*Lophopodella carteri*	8	
03600	*Oligochaeta*	334	+
06201	*Hyalella azteca*		+
06810	*Gammarus fasciatus*	235	+
08601	*Hydrachnidia*	4	
11250	*Centroptilum sp (w/o hindwing pads)*		+
13400	*Stenacron sp*	93	
13521	*Stenonema femoratum*	5	
14950	*Leptophlebia sp or Paraleptophlebia sp*	1	
17200	*Caenis sp*	32	+
22001	*Coenagrionidae*	74	+
22300	*Argia sp*		+
51206	*Cyrnellus fraternus*	2	
51600	*Polycentropus sp*	11	
53800	*Hydroptila sp*	1	+
54200	*Orthotrichia sp*	6	
59500	*Oecetis sp*	3	
74501	*Ceratopogonidae*	13	
77130	*Ablabesmyia rhamphe group*	11	
77500	*Conchapelopia sp*	20	
80360	*Corynoneura "celeripes" (sensu Simpson & Bode, 1980)*	4	
80410	*Cricotopus (C.) sp*	2	
80510	*Cricotopus (Isocladius) sylvestris group*	5	+
81231	*Nanocladius (N.) crassicornus or N. (N.) "rectinervis"*	2	
82121	*Thienemanniella lobapodema*	7	+
83002	*Dicrotendipes modestus*	11	+
83040	*Dicrotendipes neomodestus*	18	+
83158	*Endochironomus nigricans*	2	
83840	*Microtendipes pedellus group*	2	
84470	*Polypedilum (P.) illinoense*	2	
85500	*Paratanytarsus sp*	2	+
85800	*Tanytarsus sp*	22	
85821	*Tanytarsus glabrescens group sp 7*	135	+
94400	*Fossaria sp*		+
95100	*Physella sp*	107	+
95900	*Gyraulus sp*	131	+
96120	*Menetus (Micromenetus) dilatatus*	1	
96930	*Laevapex fuscus*	5	+
97710	*Dreissena polymorpha*	39	+

Taxa Code	Taxa	Quant/Qual

No. Quantitative Taxa: 37 Total Taxa: 41
No. Qualitative Taxa: 20 ICI: **50**
Number of Organisms: 1479 Qual EPT: 3

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/24/2003 River Code: 07-100 RM: 0.96 R Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual	
01320	*Hydra sp*	19	
01801	*Turbellaria*	41	+
03073	*Lophopodella carteri*	2	+
03600	*Oligochaeta*	543	+
04637	*Batracobdella phalera*	1	
04666	*Helobdella triserialis*		+
06201	*Hyalella azteca*		+
06810	*Gammarus fasciatus*	8	+
13400	*Stenacron sp*	197	
13521	*Stenonema femoratum*	8	
15501	*Ephemerellidae*	4	
17200	*Caenis sp*	40	+
22001	*Coenagrionidae*	9	+
22300	*Argia sp*	8	
23700	*Anax sp*		+
27307	*Epitheca (Epicordulia) princeps*		+
27605	*Epitheca (Tetragoneuria) canis*		+
28500	*Libellula sp*		+
28955	*Plathemis lydia*		+
43570	*Neoplea sp*		+
45400	*Trichocorixa sp*		+
51206	*Cyrnellus fraternus*	32	
51600	*Polycentropus sp*	13	
54200	*Orthotrichia sp*	12	+
59500	*Oecetis sp*	3	+
60800	*Haliplus sp*		+
60900	*Peltodytes sp*		+
63300	*Hydroporus sp*		+
63900	*Laccophilus sp*		+
65800	*Berosus sp*		+
67800	*Tropisternus sp*		+
68700	*Dubiraphia sp*		+
69400	*Stenelmis sp*	1	
74501	*Ceratopogonidae*	8	+
77115	*Ablabesmyia janta*	34	+
77120	*Ablabesmyia mallochi*	4	
77355	*Clinotanypus pinguis*		+
77750	*Hayesomyia senata or Thienemannimyia norena*	13	
78655	*Procladius (Holotanypus) sp*	4	+
80360	*Corynoneura "celeripes" (sensu Simpson & Bode, 1980)*	10	
80410	*Cricotopus (C.) sp*	4	
80430	*Cricotopus (C.) tremulus group*	4	
81200	*Nanocladius sp*	4	

Taxa Code	Taxa	Quant/Qual	
81631	*Parakiefferiella n.sp 1*	9	
82121	*Thienemanniella lobapodema*	15	
82700	*Chironomus sp*	17	
83002	*Dicrotendipes modestus*	17	+
83040	*Dicrotendipes neomodestus*	38	
83158	*Endochironomus nigricans*	25	
83300	*Glyptotendipes (G.) sp*	4	
83840	*Microtendipes pedellus group*	4	+
84000	*Parachironomus sp*	4	
84040	*Parachironomus frequens*	9	
84300	*Phaenopsectra obediens group*	4	
84520	*Polypedilum (Tripodura) halterale group*		+
84790	*Tribelos fuscicorne*	9	
85500	*Paratanytarsus sp*		+
85501	*Paratanytarsus n.sp 1*		+
85720	*Stempellinella n.sp nr. flavidula*	4	
85800	*Tanytarsus sp*	72	
85821	*Tanytarsus glabrescens group sp 7*	81	
95100	*Physella sp*	69	+
95900	*Gyraulus sp*	191	+
96264	*Planorbella (Pierosoma) pilsbryi*		+
96900	*Ferrissia sp*	5	
97710	*Dreissena polymorpha*	173	+

No. Quantitative Taxa: 45 Total Taxa: 66
No. Qualitative Taxa: 37 ICI: **54**
Number of Organisms: 1776 Qual EPT: 3

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/24/2003 River Code: 07-100 RM: 0.90 R Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	+
04666	*Helobdella triserialis*	+
05800	*Caecidotea sp*	+
06810	*Gammarus fasciatus*	+
11200	*Callibaetis sp*	+
17200	*Caenis sp*	+
22001	*Coenagrionidae*	+
27610	*Epitheca (Tetragoneuria) cynosura*	+
28705	*Pachydiplax longipennis*	+
43570	*Neoplea sp*	+
45400	*Trichocorixa sp*	+
60800	*Haliplus sp*	+
77355	*Clinotanypus pinguis*	+
83002	*Dicrotendipes modestus*	+
83430	*Hyporhygma quadripunctatum*	+
84520	*Polypedilum (Tripodura) halterale group*	+
85500	*Paratanytarsus sp*	+
95100	*Physella sp*	+
95900	*Gyraulus sp*	+
96264	*Planorbella (Pierosoma) pilsbryi*	+
96930	*Laevapex fuscus*	+
97710	*Dreissena polymorpha*	+

Taxa Code	Taxa	Quant/Qual

No. Quantitative Taxa: 0 Total Taxa: 22
No. Qualitative Taxa: 22 ICI:
Number of Organisms: 0 Qual EPT: 2

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/24/2003 River Code: 07-100 RM: 0.79 R Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
01320	*Hydra sp*	13
01801	*Turbellaria*	40 +
03360	*Plumatella sp*	1
03600	*Oligochaeta*	278 +
06810	*Gammarus fasciatus*	30 +
11651	*Procloeon sp (w/o hindwing pads)*	3 +
13400	*Stenacron sp*	32 +
13521	*Stenonema femoratum*	4 +
15501	*Ephemerellidae*	1
17200	*Caenis sp*	24
22001	*Coenagrionidae*	23 +
22300	*Argia sp*	2
24900	*Gomphus sp*	+
43570	*Neoplea sp*	+
51206	*Cyrnellus fraternus*	5
51600	*Polycentropus sp*	1
53800	*Hydroptila sp*	7
54200	*Orthotrichia sp*	13
54300	*Oxyethira sp*	1
59500	*Oecetis sp*	2 +
60800	*Haliplus sp*	+
60900	*Peltodytes sp*	+
65800	*Berosus sp*	+
68601	*Ancyronyx variegata*	4
69400	*Stenelmis sp*	+
74501	*Ceratopogonidae*	16
77115	*Ablabesmyia janta*	20
77120	*Ablabesmyia mallochi*	8
80360	*Corynoneura "celeripes" (sensu Simpson & Bode, 1980)*	8
80410	*Cricotopus (C.) sp*	45
80490	*Cricotopus (Isocladius) intersectus group*	12 +
81631	*Parakiefferiella n.sp 1*	24
81690	*Paratrichocladius sp*	16
82121	*Thienemanniella lobapodema*	8
82730	*Chironomus (C.) decorus group*	+
83002	*Dicrotendipes modestus*	12
83040	*Dicrotendipes neomodestus*	122
83051	*Dicrotendipes simpsoni*	8
85500	*Paratanytarsus sp*	20 +
85800	*Tanytarsus sp*	20 +
85821	*Tanytarsus glabrescens group sp 7*	118
87540	*Hemerodromia sp*	1
95100	*Physella sp*	55 +
95900	*Gyraulus sp*	58 +
96930	*Laevapex fuscus*	98 +
97710	*Dreissena polymorpha*	278 +

No. Quantitative Taxa: 39 Total Taxa: 46
No. Qualitative Taxa: 22 ICI: **54**
Number of Organisms: 1431 Qual EPT: 4

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/24/2003 River Code: 07-100 RM: 0.78 Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
01320	*Hydra sp*	40
01801	*Turbellaria*	3
03073	*Lophopodella carteri*	1
03360	*Plumatella sp*	1
03600	*Oligochaeta*	80
04637	*Batracobdella phalera*	1
13400	*Stenacron sp*	101
13521	*Stenonema femoratum*	1
14950	*Leptophlebia sp or Paraleptophlebia sp*	4
17200	*Caenis sp*	9
22300	*Argia sp*	4
51100	*poss. Cernotina sp or Polycentropus sp*	27
51206	*Cyrnellus fraternus*	257
52430	*Ceratopsyche morosa group*	1
59500	*Oecetis sp*	1
74501	*Ceratopogonidae*	4
77100	*Ablabesmyia sp*	105
77500	*Conchapelopia sp*	11
78655	*Procladius (Holotanypus) sp*	12
80360	*Corynoneura "celeripes" (sensu Simpson & Bode, 1980)*	4
80370	*Corynoneura lobata*	8
80400	*Cricotopus sp*	12
82730	*Chironomus (C.) decorus group*	23
83040	*Dicrotendipes neomodestus*	12
83050	*Dicrotendipes lucifer*	337
83840	*Microtendipes pedellus group*	12
84300	*Phaenopsectra obediens group*	23
84460	*Polypedilum (P.) fallax group*	12
84790	*Tribelos fuscicorne*	244
84960	*Pseudochironomus sp*	12
85500	*Paratanytarsus sp*	12
85625	*Rheotanytarsus sp*	11
85800	*Tanytarsus sp*	23
85821	*Tanytarsus glabrescens group sp 7*	35
95100	*Physella sp*	88
95900	*Gyraulus sp*	123
97710	*Dreissena polymorpha*	746
99998	*NO QUALITATIVE SAMPLE COLLECTED*	+

Taxa Code	Taxa	Quant/Qual

No. Quantitative Taxa: 37 Total Taxa: 38
No. Qualitative Taxa: 1 ICI: **52**
Number of Organisms: 2400 Qual EPT:

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/24/2003 River Code: 07-100 RM: 0.77 L Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
01200	*Cordylophora lacustris*	4
01320	*Hydra sp*	62
01801	*Turbellaria*	141 +
03073	*Lophopodella carteri*	1
03600	*Oligochaeta*	382 +
04682	*Placobdella montifera*	+
04935	*Erpobdella punctata punctata*	+
06201	*Hyalella azteca*	+
06810	*Gammarus fasciatus*	73 +
11651	*Procloeon sp (w/o hindwing pads)*	4
13400	*Stenacron sp*	74
13521	*Stenonema femoratum*	4
13561	*Maccaffertium pulchellum*	1
14950	*Leptophlebia sp or Paraleptophlebia sp*	1
17200	*Caenis sp*	+
22001	*Coenagrionidae*	10 +
23700	*Anax sp*	+
24501	*Gomphidae*	+
42700	*Belostoma sp*	+
43570	*Neoplea sp*	+
51206	*Cyrnellus fraternus*	5
51600	*Polycentropus sp*	22
54200	*Orthotrichia sp*	46
54300	*Oxyethira sp*	2
59500	*Oecetis sp*	10
60800	*Haliplus sp*	+
60900	*Peltodytes sp*	+
65800	*Berosus sp*	+
69400	*Stenelmis sp*	1
72700	*Anopheles sp*	+
77500	*Conchapelopia sp*	25
78655	*Procladius (Holotanypus) sp*	8
80370	*Corynoneura lobata*	8
80410	*Cricotopus (C.) sp*	17
80510	*Cricotopus (Isocladius) sylvestris group*	+
81200	*Nanocladius sp*	8
81631	*Parakiefferiella n.sp 1*	41
82070	*Synorthocladius semivirens*	16
82121	*Thienemanniella lobapodema*	60
83002	*Dicrotendipes modestus*	50
83040	*Dicrotendipes neomodestus*	125
84470	*Polypedilum (P.) illinoense*	+
84520	*Polypedilum (Tripodura) halterale group*	+
85500	*Paratanytarsus sp*	58 +
85821	*Tanytarsus glabrescens group sp 7*	208
95100	*Physella sp*	69 +
95900	*Gyraulus sp*	57 +
96264	*Planorbella (Pierosoma) pilsbryi*	+
97710	*Dreissena polymorpha*	313 +

No. Quantitative Taxa: 33 Total Taxa: 49
No. Qualitative Taxa: 24 ICI: **44**
Number of Organisms: 1906 Qual EPT: 1

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/20/1996 River Code: 07-100 RM: 1.00 Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
00401	*Spongillidae*	+
01801	*Turbellaria*	40 +
03337	*Hyalinella punctata*	+
03600	*Oligochaeta*	504 +
05800	*Caecidotea sp*	1 +
06810	*Gammarus fasciatus*	18
08601	*Hydrachnidia*	1
13400	*Stenacron sp*	7
13521	*Stenonema femoratum*	1
14950	*Leptophlebia sp or Paraleptophlebia sp*	2
17200	*Caenis sp*	131
22001	*Coenagrionidae*	11
22300	*Argia sp*	13 +
28705	*Pachydiplax longipennis*	2
51206	*Cyrnellus fraternus*	+
51600	*Polycentropus sp*	2
52200	*Cheumatopsyche sp*	2
53800	*Hydroptila sp*	5
54200	*Orthotrichia sp*	59
54300	*Oxyethira sp*	1
59520	*Oecetis cinerascens*	3
65800	*Berosus sp*	2 +
77120	*Ablabesmyia mallochi*	5
77750	*Hayesomyia senata or Thienemannimyia norena*	5
77800	*Helopelopia sp*	5
78130	*Labrundinia neopilosella*	9
78650	*Procladius sp*	9
80354	*Corynoneura n.sp 4*	+
80510	*Cricotopus (Isocladius) sylvestris group*	5 +
81231	*Nanocladius (N.) crassicornus or N. (N.) "rectinervis"*	9
82121	*Thienemanniella lobapodema*	5
82710	*Chironomus (C.) sp*	5
83002	*Dicrotendipes modestus*	186 +
83040	*Dicrotendipes neomodestus*	9
83051	*Dicrotendipes simpsoni*	5
83158	*Endochironomus nigricans*	33 +
83300	*Glyptotendipes (G.) sp*	47
83310	*Glyptotendipes (Trichotendipes) amplus*	+
83840	*Microtendipes pedellus group*	14
84030	*Parachironomus directus*	5
84315	*Phaenopsectra flavipes*	+
84420	*Polypedilum (P.) n.sp 1*	+
84470	*Polypedilum (P.) illinoense*	+
84520	*Polypedilum (Tripodura) halterale group*	5 +
85500	*Paratanytarsus sp*	61
85800	*Tanytarsus sp*	5
85814	*Tanytarsus glabrescens group*	5
85840	*Tanytarsus sepp*	28
94400	*Fossaria sp*	1
95100	*Physella sp*	193 +
95907	*Gyraulus (Torquis) parvus*	47
96120	*Menetus (Micromenetus) dilatatus*	26
96264	*Planorbella (Pierosoma) pilsbryi*	2
96930	*Laevapex fuscus*	+
97710	*Dreissena polymorpha*	+

No. Quantitative Taxa: 45 Total Taxa: 55
No. Qualitative Taxa: 20 ICI: **52**
Number of Organisms: 1534 Qual EPT: 1

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/15/1995 River Code: 07-100 RM: 1.10 Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
00700	*Radiospongilla crateriformis*	+
01801	*Turbellaria*	93
03121	*Paludicella articulata*	+
03221	*Pectinatella magnifica*	3 +
03600	*Oligochaeta*	104 +
04637	*Batracobdella phalera*	1
04664	*Helobdella stagnalis*	+
04666	*Helobdella triserialis*	12 +
05800	*Caecidotea sp*	+
06201	*Hyalella azteca*	28
06700	*Crangonyx sp*	4 +
06810	*Gammarus fasciatus*	4
08240	*Orconectes (Crokerinus) propinquus*	+
08601	*Hydrachnidia*	4
13400	*Stenacron sp*	+
13521	*Stenonema femoratum*	+
17200	*Caenis sp*	32
22001	*Coenagrionidae*	17 +
22300	*Argia sp*	19 +
51206	*Cyrnellus fraternus*	1
51600	*Polycentropus sp*	8
53600	*Agraylea sp*	25
54160	*Ochrotrichia sp*	10
54200	*Orthotrichia sp*	189
54300	*Oxyethira sp*	4
59500	*Oecetis sp*	14
63300	*Hydroporus sp*	+
68708	*Dubiraphia vittata group*	+
77115	*Ablabesmyia janta*	3
77130	*Ablabesmyia rhamphe group*	13
80370	*Corynoneura lobata*	3
82121	*Thienemanniella lobapodema*	3
83002	*Dicrotendipes modestus*	19
83040	*Dicrotendipes neomodestus*	19
83050	*Dicrotendipes lucifer*	16
83051	*Dicrotendipes simpsoni*	3
83158	*Endochironomus nigricans*	49
83300	*Glyptotendipes (G.) sp*	3
83310	*Glyptotendipes (Trichotendipes) amplus*	3
84030	*Parachironomus directus*	3
84040	*Parachironomus frequens*	10 +
84050	*Parachironomus "hirtalatus" (sensu Simpson & Bode, 1980)*	26
84060	*Parachironomus pectinatellae*	36
84470	*Polypedilum (P.) illinoense*	29
84960	*Pseudochironomus sp*	6
85840	*Tanytarsus sepp*	3
95100	*Physella sp*	28 +
95907	*Gyraulus (Torquis) parvus*	41
96120	*Menetus (Micromenetus) dilatatus*	224 +
96930	*Laevapex fuscus*	38 +
97710	*Dreissena polymorpha*	23 +
98600	*Sphaerium sp*	+

No. Quantitative Taxa: 42 Total Taxa: 52
No. Qualitative Taxa: 21 ICI: **50**
Number of Organisms: 1173 Qual EPT: 2

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Collection Date: 09/07/1989 River Code: 07-100 RM: 1.30 Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
00401	*Spongillidae*	+
01200	*Cordylophora lacustris*	1
01320	*Hydra sp*	312
01801	*Turbellaria*	56 +
03600	*Oligochaeta*	2035 +
04962	*Mooreobdella fervida*	+
06201	*Hyalella azteca*	+
06810	*Gammarus fasciatus*	1 +
08601	*Hydrachnidia*	+
11400	*Centroptilum sp or Procloeon sp (formerly in Cloeon)*	2
13400	*Stenacron sp*	+
13570	*Maccaffertium terminatum*	1
13580	*Stenonema tripunctatum (old)*	1
17200	*Caenis sp*	33
22001	*Coenagrionidae*	5 +
22300	*Argia sp*	153 +
23704	*Anax junius*	+
27307	*Epitheca (Epicordulia) princeps*	1 +
43300	*Ranatra sp*	+
51206	*Cyrnellus fraternus*	3
52200	*Cheumatopsyche sp*	+
53501	*Hydroptilidae*	32 +
60900	*Peltodytes sp*	+
63900	*Laccophilus sp*	+
65800	*Berosus sp*	+
67100	*Hydrobius sp*	+
68601	*Ancyronyx variegata*	1
68901	*Macronychus glabratus*	+
69400	*Stenelmis sp*	+
74501	*Ceratopogonidae*	+
77130	*Ablabesmyia rhamphe group*	43 +
78650	*Procladius sp*	+
80370	*Corynoneura lobata*	16
80410	*Cricotopus (C.) sp*	14
80510	*Cricotopus (Isocladius) sylvestris group*	14 +
81650	*Parametriocnemus sp*	43
82121	*Thienemanniella lobapodema*	14
82730	*Chironomus (C.) decorus group*	+
82820	*Cryptochironomus sp*	+
83050	*Dicrotendipes lucifer*	507
83051	*Dicrotendipes simpsoni*	72
83158	*Endochironomus nigricans*	174 +
83300	*Glyptotendipes (G.) sp*	275 +
84315	*Phaenopsectra flavipes*	14
84450	*Polypedilum (Uresipedilum) flavum*	14
84470	*Polypedilum (P.) illinoense*	58 +
84790	*Tribelos fuscicorne*	14
85261	*Cladotanytarsus vanderwulpi group Type 1*	14
85500	*Paratanytarsus sp*	159 +
85800	*Tanytarsus sp*	+
85802	*Tanytarsus curticornis*	14
85814	*Tanytarsus glabrescens group*	130
85840	*Tanytarsus sepp*	14
87501	*Empididae*	17
95100	*Physella sp*	+
95501	*Planorbidae*	+
97710	*Dreissena polymorpha*	438 +
98600	*Sphaerium sp*	+

No. Quantitative Taxa: 36 Total Taxa: 58
No. Qualitative Taxa: 36 ICI: **34**
Number of Organisms: 4695 Qual EPT: 3

Appendix Table 5. Tolerant macroinvertebrate taxa that normally inhabit Ohio's streams and rivers. Tolerant taxa are defined as belonging to the Tolerance Categories moderately tolerant (MT), tolerant (T), or very tolerant (VT). Taxa are followed by the impact type they are adapted to: O = organic, T = toxic, or AMD = acid mine drainage.

Annelida
- Oligochaeta, O
- *Batracobdella phalera*, O
- *Helobdella sp.*: O
- *Helobdella fusca* (very tolerant), O
- *Helobdella papillata*, O
- *Helobdella stagnalis*, O
- *Helobdella triserialis*, O
- *Haemopis sp.*: O
- *Haemopis marmorata* (very tolerant), O
- *Erpobdella punctata*, O
- *Mooreobdella sp.*: O
- *Mooreobdella fervida* (very tolerant), O
- *Mooreobdella microstoma*, O

Crustacia
- *Caecidotea sp.*
- *Crangonyx sp.*
- *Cambarus diogenes*
- *Cambarus thomai*: AMD
- *Orconectes immunis*
- *Procambarus acutus*

Ephemeroptera
- *Callibaetis sp.*: O
- *Cloeon cognatum*

Odonata
- *Archilestes grandis*
- Coenagrionidae
- *Aeshna umbrosa*
- *Anax sp.*
- *Anax junius*: O
- *Anax longipes*
- *Epitheca (Epicordulia) princeps*: O
- *Epitheca (Tetragoneuria) sp.*
- *Epitheca (Tetragoneuria) cynosura*
- *Somatochlora sp.*
- *Erythemis simplicicollis*
- *Libellula sp.*
- *Libellula luctuosa* (very tolerant): O
- *Libellula pulchella*
- *Pachydiplax longipennis*: O
- *Pentala sp.*

Appendix Table 5. Continued.

Pentala hymenaea
Pentala flavescens
Perithemis tenera: O
Plathemis lydia: O
Sympetrum sp.
Sympetrum vicinum

Hemiptera
Buenoa sp.
Notonecta sp.

Coleoptera
Haliplus sp.
Peltodytes sp.
Peltodytes edentulus
Acilius sp.
Acilius fraternus
Acilius semisulcatus
Agabetes acuductus
Agabus sp.
Copelatus sp.
Copelatus glyphicus
Hydrovatus sp.
Ilybius sp.
Laccophilus sp.
Liodessus sp.
Berosus sp.
Helochares maculicollis
Hydrochara sp.
Tropisternus sp.

Diptera
Erioptera sp.
Pericoma sp.: O
Psychoda sp.: O
Telmatoscopus sp.: O
Telmatoscopus albipunctatus (very tolerant): O
Chaoborus sp.
Aedes sp.
Culex sp. (Very tolerant): O
Ablabesmyia rhamphe group
Alotanypus venustus (very tolerant): O
Clinotanypus pinguis: O
Labrundinia maculata: T
Natarsia sp.: O
Natarsia species A: O
Procladius sp.: O
Procladius (Holotanypus) sp.: O

Appendix Table 5. Continued.

Psectrotanypus dyari (very tolerant): O
Tanypus sp. (very tolerant): O
Tanypus neopunctipennis (very tolerant): O
Tanypus "punctipennis"
Corynoneura sp. 9 (very tolerant): AMD
Cricotopus (C.) bicinctus: T
Cricotopus (I.) intersectus group
Cricotopus (I.) reversus group
Cricotopus (I.) sylvestris group (very tolerant): T
Eukiefferiella claripennis group
Hydrobaenus sp.
Lymnophyes sp.
Nanocladius (N.) distinctus: T
Psectrocladius (P.) psilopterus group: AMD
Chironomus (C.) sp.: O
Chironomus (C.) sp. 1 (very tolerant): O
Chironomus (C.) decorus group: O, AMD
Chironomus (C.) riparius group (very tolerant): O
Dicrotendipes lucifer: O
Dicrotendipes simpsoni: T
Glyptotendipes (G.) sp.: O
Glyptotendipes (G.) barbipes (very tolerant): T
Goeldichironomus holoprasinus (very tolerant): O
Parachironomus "abortivus": O, T
Parachironomus directus: O, T
Parachironomus "hirtalatus" (very tolerant): T
Polypedilum (Pent.) tritum var. I (very tolerant): AMD
Polypedilum (P.) sp. 2 (very tolerant): AMD
Polypedilum (P.) illinoense: T, AMD
Eristalis sp. (very tolerant): O
Sciomyzidae: O
Ephydra sp.: T
Ephydra (E.) sp.: T

Mollusca
Cladopelma sp.: O
Cladopelma decisum: O
Cimpangopaludina sp.: O
Cimpangopaludina chinensis malleata: O
Cimpanopaludina japonica: O
Stagnicola sp.: O
Physella sp.: O
Menetus dilatatus: O
Gyraulus sp.: O
Gyraulus parvus: O
Helisoma anceps: O

Appendix Table 5. Continued.

Menetus dilatatus: O
Planorbella sp.: O
Planorbella pilsbryi: O
Planorbella trivolvis: O

Taxa that may be predominant under highly polluted conditions and should be included in the tolerant taxa list:

Diptera
Polypedilum (P.) fallax group: T
Mollusca
Ferrissia sp.: T

Macroinvertebrate taxa that are indicators of acid mine drainage (AMD) streams:

Crustacia
Cambarus thomai
Odonata
Coenagrionidae
Hemiptera
*Sigara sp.**
Notonecta sp.
Megaloptera
*Sialis sp.**
*Nigronia serricornis**
Trichoptera
*Ptilostomis sp.**
Coleoptera
*Hydroporus sp.**
Laccophilus sp.
Diptera
Ceratopogonidae*
Corynoneura sp. 9
Psectrocladius (P.) psilopterus group
Chironomus (C.) decorus group
Polypedilum (Pent.) tritum var. I
Polypedilum (P.) sp. 2
Polypedilum (P.) illinoense

* Taxa that are regularly found in AMD streams but are not included on the tolerant taxa list.

Highly degraded AMD streams, i.e. those that may be candidates for LRW-AMD designations, should generally meet the following criteria:

Number of qualitative sample taxa $\leq$ 11
Qualitative EPT $\leq$ 1
Percent of total number of taxa that are AMD indicators $\geq$ 33%

Appendix Table 6. Macroinvertebrate results from Ekman samples collected in bottom sediments of the Ashtabula River and Conneaut Creek, 2003. Samples were collected by the US Fish and Wildlife Service and identified by Ohio EPA.

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 1.07 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	353
06810	*Gammarus fasciatus*	4
74501	*Ceratopogonidae*	1
76001	*Chironomidae*	1
77001	*Tanypodinae*	1
82820	*Cryptochironomus sp*	1
82880	*Cryptotendipes sp*	1
83040	*Dicrotendipes neomodestus*	1
84520	*Polypedilum (Tripodura) halterale group*	1
84750	*Stictochironomus sp*	1
85800	*Tanytarsus sp*	1

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 11
Number of Organisms: 366
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 1.19 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	665
05800	*Caecidotea sp*	3
06810	*Gammarus fasciatus*	3
08601	*Hydrachnidia*	1
17200	*Caenis sp*	2
30000	*Plecoptera*	7
74501	*Ceratopogonidae*	1
76001	*Chironomidae*	5
78655	*Procladius (Holotanypus) sp*	6
80420	*Cricotopus (C.) bicinctus*	3
82141	*Thienemanniella xena*	3
82730	*Chironomus (C.) decorus group*	2
82800	*Cladopelma sp*	1
82820	*Cryptochironomus sp*	1
82880	*Cryptotendipes sp*	1
83002	*Dicrotendipes modestus*	3
83040	*Dicrotendipes neomodestus*	1
83320	*Glyptotendipes (Caulochironomus) sp*	1
84155	*Paralauterborniella nigrohalteralis*	3
84210	*Paratendipes albimanus or P. duplicatus*	1
84300	*Phaenopsectra obediens group*	1
84520	*Polypedilum (Tripodura) halterale group*	14
85625	*Rheotanytarsus sp*	3
85800	*Tanytarsus sp*	9
85815	*Tanytarsus glabrescens group sp 1*	1
98001	*Sphaeriidae*	1

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 26
Number of Organisms: 742
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 1.30 R1 Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	317
79085	*Telopelopia okoboji*	1
85720	*Stempellinella n.sp nr. flavidula*	1
85800	*Tanytarsus sp*	1

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 4
Number of Organisms: 320
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 1.30 R2 Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	270
82800	*Cladopelma sp*	1
82820	*Cryptochironomus sp*	2
85800	*Tanytarsus sp*	1

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 4
Number of Organisms: 274
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 1.50 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03451	*Urnatella gracilis*	1
03600	*Oligochaeta*	572
08601	*Hydrachnidia*	3
11001	*Baetidae*	1
18501	*Ephemeridae*	1
30000	*Plecoptera*	17
76001	*Chironomidae*	2
81100	*Mesosmittia sp*	1
82730	*Chironomus (C.) decorus group*	5
82800	*Cladopelma sp*	1
84210	*Paratendipes albimanus or P. duplicatus*	1
84300	*Phaenopsectra obediens group*	1
84520	*Polypedilum (Tripodura) halterale group*	3
84540	*Polypedilum (Tripodura) scalaenum group*	2
84750	*Stictochironomus sp*	2
85800	*Tanytarsus sp*	6

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 16
Number of Organisms: 619
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 1.68 C Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	236
30000	*Plecoptera*	4
70000	*Diptera*	2
77500	*Conchapelopia sp*	1
81890	*Smittia sp*	1
82820	*Cryptochironomus sp*	1
83040	*Dicrotendipes neomodestus*	7
84210	*Paratendipes albimanus or P. duplicatus*	1
84300	*Phaenopsectra obediens group*	5
84540	*Polypedilum (Tripodura) scalaenum group*	1
85500	*Paratanytarsus sp*	1
85800	*Tanytarsus sp*	12
95100	*Physella sp*	1

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 13
Number of Organisms: 273
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 1.68 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	34
30000	*Plecoptera*	1
80001	*Orthocladiinae*	1
85260	*Cladotanytarsus vanderwulpi group*	1
85800	*Tanytarsus sp*	7

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 5
Number of Organisms: 44
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 1.69 L Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	591
05800	*Caecidotea sp*	2
06800	*Gammarus sp*	1
30000	*Plecoptera*	10
69400	*Stenelmis sp*	4
70000	*Diptera*	1
74501	*Ceratopogonidae*	1
78650	*Procladius sp*	7
81890	*Smittia sp*	1
82730	*Chironomus (C.) decorus group*	18
83002	*Dicrotendipes modestus*	3
84155	*Paralauterborniella nigrohalteralis*	1
84300	*Phaenopsectra obediens group*	1
84520	*Polypedilum (Tripodura) halterale group*	2
85500	*Paratanytarsus sp*	1
85800	*Tanytarsus sp*	1

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 16
Number of Organisms: 645
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 1.86 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03451	*Urnatella gracilis*	5
03600	*Oligochaeta*	1147
18700	*Hexagenia sp*	4
30000	*Plecoptera*	35
68700	*Dubiraphia sp*	1
74501	*Ceratopogonidae*	4
78655	*Procladius (Holotanypus) sp*	6
82710	*Chironomus (C.) sp*	4
84155	*Paralauterborniella nigrohalteralis*	12
84210	*Paratendipes albimanus or P. duplicatus*	4
84520	*Polypedilum (Tripodura) halterale group*	17
85800	*Tanytarsus sp*	5

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 12
Number of Organisms: 1244
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 1.94 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	320
17200	*Caenis sp*	2
30000	*Plecoptera*	67
70000	*Diptera*	3
74501	*Ceratopogonidae*	11
78650	*Procladius sp*	1
80410	*Cricotopus (C.) sp*	1
81890	*Smittia sp*	5
82720	*Chironomus (C.) anthracinus group*	1
82730	*Chironomus (C.) decorus group*	4
82882	*Cryptotendipes sp 2*	2
84155	*Paralauterborniella nigrohalteralis*	5
84210	*Paratendipes albimanus or P. duplicatus*	4
84520	*Polypedilum (Tripodura) halterale group*	1
84540	*Polypedilum (Tripodura) scalaenum group*	5
85800	*Tanytarsus sp*	28

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 16
Number of Organisms: 460
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 2.20 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	1077
30000	*Plecoptera*	66
74501	*Ceratopogonidae*	2
78402	*Natarsia baltimoreus*	1
78655	*Procladius (Holotanypus) sp*	2
80420	*Cricotopus (C.) bicinctus*	1
81890	*Smittia sp*	1
82730	*Chironomus (C.) decorus group*	32
82820	*Cryptochironomus sp*	1
84155	*Paralauterborniella nigrohalteralis*	6
84520	*Polypedilum (Tripodura) halterale group*	25
84750	*Stictochironomus sp*	2
85201	*Cladotanytarsus species group A*	2
85230	*Cladotanytarsus mancus group*	1
85800	*Tanytarsus sp*	31

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 15
Number of Organisms: 1250
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-001 RM: 2.33 R Site: Ashtabula River

Taxa Code	Taxa	Quant/Qual
03451	*Urnatella gracilis*	1
03600	*Oligochaeta*	372
30000	*Plecoptera*	8
74501	*Ceratopogonidae*	1
76001	*Chironomidae*	1
77120	*Ablabesmyia mallochi*	1
80420	*Cricotopus (C.) bicinctus*	1
82730	*Chironomus (C.) decorus group*	2
82820	*Cryptochironomus sp*	6
84300	*Phaenopsectra obediens group*	2
84520	*Polypedilum (Tripodura) halterale group*	4
84540	*Polypedilum (Tripodura) scalaenum group*	7
84750	*Stictochironomus sp*	3
85201	*Cladotanytarsus species group A*	2
85230	*Cladotanytarsus mancus group*	1
85711	*Stempellinella poss. leptocelloides*	1
85800	*Tanytarsus sp*	42
85815	*Tanytarsus glabrescens group sp 1*	1
85821	*Tanytarsus glabrescens group sp 7*	1
89501	*Ephydridae*	1
95900	*Gyraulus sp*	1
98001	*Sphaeriidae*	2

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 22
Number of Organisms: 461
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/17/2003 River Code: 07-100 RM: 0.65 C Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	35
17200	*Caenis sp*	1
83840	*Microtendipes pedellus group*	1
85625	*Rheotanytarsus sp*	4

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 4
Number of Organisms: 41
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/17/2003 River Code: 07-100 RM: 0.65 L Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	542
17200	*Caenis sp*	1
18501	*Ephemeridae*	1
30000	*Plecoptera*	1
74501	*Ceratopogonidae*	6
76001	*Chironomidae*	1
80410	*Cricotopus (C.) sp*	3
82100	*Thienemanniella sp*	2
82730	*Chironomus (C.) decorus group*	2
83002	*Dicrotendipes modestus*	1
83040	*Dicrotendipes neomodestus*	1
83320	*Glyptotendipes (Caulochironomus) sp*	2
84155	*Paralauterborniella nigrohalteralis*	1
84450	*Polypedilum (Uresipedilum) flavum*	2
85260	*Cladotanytarsus vanderwulpi group*	1
85625	*Rheotanytarsus sp*	1
85821	*Tanytarsus glabrescens group sp 7*	1

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 17
Number of Organisms: 569
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/17/2003 River Code: 07-100 RM: 0.96 R Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
03451	*Urnatella gracilis*	1
03600	*Oligochaeta*	81
80410	*Cricotopus (C.) sp*	2
85200	*Cladotanytarsus sp*	3

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 4
Number of Organisms: 87
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/17/2003 River Code: 07-100 RM: 0.97 R1 Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	301
06800	*Gammarus sp*	1
11651	*Procloeon sp (w/o hindwing pads)*	1
11670	*Procloeon viridoculare*	1
74501	*Ceratopogonidae*	8
78655	*Procladius (Holotanypus) sp*	2
80410	*Cricotopus (C.) sp*	2
82100	*Thienemanniella sp*	2
82730	*Chironomus (C.) decorus group*	61
82800	*Cladopelma sp*	1
82820	*Cryptochironomus sp*	1
83320	*Glyptotendipes (Caulochironomus) sp*	2
84000	*Parachironomus sp*	1
84155	*Paralauterborniella nigrohalteralis*	1
84470	*Polypedilum (P.) illinoense*	3
84520	*Polypedilum (Tripodura) halterale group*	1
85200	*Cladotanytarsus sp*	1
85625	*Rheotanytarsus sp*	2
85800	*Tanytarsus sp*	5

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 19
Number of Organisms: 397
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/17/2003 River Code: 07-100 RM: 0.97 R2 Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	388
17200	*Caenis sp*	2
18700	*Hexagenia sp*	2
74501	*Ceratopogonidae*	12
76001	*Chironomidae*	2
79030	*Tanypus "punctipennis" (sensu Roback, 1977)*	1
80420	*Cricotopus (C.) bicinctus*	7
81200	*Nanocladius sp*	1
81231	*Nanocladius (N.) crassicornus or N. (N.) "rectinervis"*	3
82141	*Thienemanniella xena*	1
82730	*Chironomus (C.) decorus group*	57
82800	*Cladopelma sp*	1
82820	*Cryptochironomus sp*	2
82882	*Cryptotendipes sp 2*	3
83320	*Glyptotendipes (Caulochironomus) sp*	15
84155	*Paralauterborniella nigrohalteralis*	2
84460	*Polypedilum (P.) fallax group*	1
84470	*Polypedilum (P.) illinoense*	1
84520	*Polypedilum (Tripodura) halterale group*	6
84540	*Polypedilum (Tripodura) scalaenum group*	2
85625	*Rheotanytarsus sp*	13
85800	*Tanytarsus sp*	3
85821	*Tanytarsus glabrescens group sp 7*	1

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 23
Number of Organisms: 526
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/17/2003 River Code: 07-100 RM: 1.50 L Site: Conneaut Creek

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	627
06810	*Gammarus fasciatus*	2
08601	*Hydrachnidia*	1
11670	*Procloeon viridoculare*	2
17200	*Caenis sp*	7
30000	*Plecoptera*	33
54300	*Oxyethira sp*	1
68075	*Psephenus herricki*	1
69400	*Stenelmis sp*	3
74501	*Ceratopogonidae*	7
76001	*Chironomidae*	1
80330	*Chaetocladius piger*	1
80350	*Corynoneura sp*	1
80430	*Cricotopus (C.) tremulus group*	1
81770	*Pseudosmittia sp*	1
82730	*Chironomus (C.) decorus group*	15
82880	*Cryptotendipes sp*	1
84155	*Paralauterborniella nigrohalteralis*	2
84520	*Polypedilum (Tripodura) halterale group*	1
84540	*Polypedilum (Tripodura) scalaenum group*	1
84960	*Pseudochironomus sp*	1
85625	*Rheotanytarsus sp*	2
85800	*Tanytarsus sp*	5
98001	*Sphaeriidae*	2

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 24
Number of Organisms: 719
Sample Type: Eckman Grab (1)

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection from U.S. FWS Natural Substrate Samples

Collection Date: 06/18/2003 River Code: 07-999 RM: 0.13 Site: Ashtabula River (side channel)

Taxa Code	Taxa	Quant/Qual
03600	*Oligochaeta*	94
78655	*Procladius (Holotanypus) sp*	2
78680	*Procladius (Psilotanypus) bellus*	14
84520	*Polypedilum (Tripodura) halterale group*	1
85260	*Cladotanytarsus vanderwulpi group*	4
93200	*Hydrobiidae*	3

Taxa Code	Taxa	Quant/Qual

Number of Taxa: 6
Number of Organisms: 118
Sample Type: Eckman Grab (1)