



Appendices to the Biological and Water Quality Study of the Ashtabula River and Select Tributaries, 2011

Ashtabula County



OHIO EPA Technical Report EAS/2014-01-01

Division of Surface Water
December 19, 2014

TABLE OF CONTENTS

- Appendix A: Biosurvey background information
- Appendix B: Macroinvertebrate taxa by location
- Appendix C: Macroinvertebrate ICI scores and metrics
- Appendix D: Fish species by location
- Appendix E: Fish IBI scores and metrics
- Appendix F: Surface water physical and chemical results
- Appendix G: Surface water organic chemistry results
- Appendix H: Datasonde© continuous recorder results
- Appendix I: Surface water bacteriological results

Appendix A: Biosurvey Background Information

NOTICE TO USERS

Ohio EPA incorporated biological criteria into the Ohio Water Quality Standards (WQS; Ohio Administrative Code 3745-1) regulations in February 1990 (effective May 1990). These criteria consist of numeric values for the Index of Biotic Integrity (IBI) and Modified Index of Well-Being (MIwb), both of which are based on fish assemblage data, and the Invertebrate Community Index (ICI), which is based on macroinvertebrate assemblage data. Criteria for each index are specified for each of Ohio's five ecoregions (as described by Omernik 1988), and are further organized by organism group, index, site type, and aquatic life use designation. These criteria, along with the existing chemical and whole effluent toxicity evaluation methods and criteria, figure prominently in the monitoring and assessment of Ohio's surface water resources.

The following documents support the use of biological criteria by outlining the rationale for using biological information, the methods by which the biocriteria were derived and calculated, the field methods by which sampling must be conducted, and the process for evaluating results:

Ohio Environmental Protection Agency. 1987a. Biological criteria for the protection of aquatic life: Volume I. The role of biological data in water quality assessment. Div. Water Qual. Monit. & Assess., Surface Water Section, Columbus, Ohio.

____ 1987b. Biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Div. Water Qual. Monit. & Assess., Surface Water Section, Columbus, Ohio.

____ 1989a. Addendum to Biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Div. Water Qual. Plan. & Assess., Ecological Assessment Section, Columbus, Ohio.

____ 1989b. Biological criteria for the protection of aquatic life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities. Div. Water Quality Plan. & Assess., Ecol. Assess. Sect., Columbus, Ohio.

____ 1990. The use of biological criteria in the Ohio EPA surface water monitoring and assessment program. Div. Water Qual. Plan. & Assess., Ecol. Assess. Sect., Columbus, Ohio.

____ 2006. Methods for assessing habitat in flowing waters: Using the Qualitative Habitat Evaluation Index (QHEI). Ohio EPA Tech. Bull. EAS/2006-06-1. Revised by the Midwest Biodiversity Institute for Div. of Surface Water, Ecol. Assess. Sect., Groveport, Ohio.

____ 2013a. 2013 Updates to Biological criteria for the protection of aquatic life: Volume II and Volume II Addendum. Users manual for biological field assessment of Ohio surface waters. Div. of Surface Water, Ecol. Assess. Sect., Groveport, Ohio.

____ 2013b. 2013 Updates to Biological criteria for the protection of aquatic life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities. Div. of Surface Water, Ecol. Assess. Sect., Groveport, Ohio.

Rankin, E.T. 1989. The qualitative habitat evaluation index (QHEI): rationale, methods, and application. Div. Water Qual. Plan. & Assess., Ecol. Assess. Sect., Columbus, Ohio.

Since the publication of the preceding guidance documents, the following new publications by the Ohio EPA have become available. These publications should also be consulted as they represent the latest information and analyses used by the Ohio EPA to implement the biological criteria.

DeShon, J.D. 1995. Development and application of the invertebrate community index (ICI), pp. 217-243. in W.S. Davis and T. Simon (eds.). *Biological Assessment and Criteria: Tools for Risk-based Planning and Decision Making*. Lewis Publishers, Boca Raton, FL.

Rankin, E. T. 1995. The use of habitat assessments in water resource management programs, pp. 181-208. in W. Davis and T. Simon (eds.). *Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making*. Lewis Publishers, Boca Raton, FL.

Yoder, C.O. and E.T. Rankin. 1995a. Biological criteria program development and implementation in Ohio, pp. 109-144. in W. Davis and T. Simon (eds.). *Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making*. Lewis Publishers, Boca Raton, FL.

Yoder, C.O. and E.T. Rankin. 1995b. Biological response signatures and the area of degradation value: new tools for interpreting multimetric data, pp. 263-286. in W. Davis and T. Simon (eds.). *Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making*. Lewis Publishers, Boca Raton, FL.

Yoder, C.O. 1995c. Policy issues and management applications for biological criteria, pp. 327-344. in W. Davis and T. Simon (eds.). *Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making*. Lewis Publishers, Boca Raton, FL.

Yoder, C.O. and E.T. Rankin. 1995d. The role of biological criteria in water quality monitoring, assessment, and regulation. *Environmental Regulation in Ohio: How to Cope With the Regulatory Jungle*. Inst. of Business Law, Santa Monica, CA. 54 pp.

Yoder, C.O. and M.A. Smith. 1999. Using fish assemblages in a State biological assessment and criteria program: essential concepts and considerations, pp. 17-63. in T. Simon (ed.). *Assessing the Sustainability and Biological Integrity of Water Resources Using Fish Communities*. CRC Press, Boca Raton, FL.

These documents and this report may be obtained by writing to:

Ohio EPA, Division of Surface Water
Ecological Assessment Section
4675 Homer Ohio Lane
Groveport, Ohio 43125
(614) 836-8777

FOREWORD

What is a Biological and Water Quality Survey?

A biological and water quality survey, or “biosurvey”, is an interdisciplinary monitoring effort coordinated on a waterbody specific or watershed scale. This effort may involve a relatively simple setting focusing on one or two small streams, one or two principal stressors, and a handful of sampling sites or a much more complex effort including entire drainage basins, multiple and overlapping stressors, and tens of sites. Each year the Ohio EPA conducts biosurveys in 4-5 watersheds study areas with an aggregate total of 250-300 sampling sites.

The Ohio EPA employs biological, chemical, and physical monitoring and assessment techniques in biosurveys in order to meet three major objectives: 1) determine the extent to which use designations assigned in the Ohio Water Quality Standards (WQS) are either attained or not attained; 2) determine if use designations assigned to a given water body are appropriate and attainable; and 3) determine if any changes in key ambient biological, chemical, or physical indicators have taken place over time, particularly before and after the implementation of point source pollution controls or best management practices. The data gathered by a biosurvey is processed, evaluated, and synthesized in a biological and water quality report. Each biological and water quality study contains a summary of major findings and recommendations for revisions to WQS, future monitoring needs, or other actions which may be needed to resolve existing impairment of designated uses. While the principal focus of a biosurvey is on the status of aquatic life uses, the status of other uses such as recreation and water supply, as well as human health concerns are also addressed.

The findings and conclusions of a biological and water quality study may factor into regulatory actions taken by the Ohio EPA (e.g., NPDES permits, Director’s Orders, the Ohio Water Quality Standards [OAC 3745-1], Water Quality Permit Support Documents [WQPSDs]), and are eventually incorporated into State Water Quality Management Plans, the Ohio Nonpoint Source Assessment, and the biennial Integrated Water Quality Monitoring and Assessment Report (305[b] and 303[d]).

Hierarchy of Indicators

A carefully conceived ambient monitoring approach, using cost-effective indicators consisting of ecological, chemical, and toxicological measures, can ensure that all relevant pollution sources are judged objectively on the basis of environmental results. Ohio EPA relies on a tiered approach in attempting to link the results of administrative activities with true environmental measures. This integrated approach includes a hierarchical continuum from administrative to true environmental indicators (Figure 1). The six “levels” of indicators include: 1) actions taken by regulatory agencies (permitting, enforcement, grants); 2) responses by the regulated community (treatment works, pollution prevention); 3) changes in discharged quantities (pollutant loadings); 4)

changes in ambient conditions (water quality, habitat); 5) changes in uptake and/or assimilation (tissue contamination, biomarkers, wasteload allocation); and, 6) changes in health, ecology, or other effects (ecological condition, pathogens). In this process the results of administrative activities (levels 1 and 2) can be linked to efforts to improve water quality (levels 3, 4, and 5) which should translate into the environmental “results” (level 6). Thus, the aggregate effect of billions of dollars spent on water pollution control since the early 1970s can now be determined with quantifiable measures of environmental condition.

Superimposed on this hierarchy is the concept of stressor, exposure, and response indicators. *Stressor* indicators generally include activities which have the potential to degrade the aquatic environment such as pollutant discharges (permitted and unpermitted), land use effects, and habitat modifications. *Exposure* indicators are those which measure the effects of stressors and can include whole effluent toxicity tests, tissue residues, and biomarkers, each of which provides evidence of biological exposure to a stressor or bioaccumulative agent. *Response* indicators are generally composite measures of the cumulative effects of stress and exposure and include the more direct measures of community and population response that are represented here by the biological indices which comprise Ohio's biological criteria. Other response indicators could include target assemblages, *i.e.*, rare, threatened, endangered, special status, and declining species or bacterial levels which serve as surrogates for the recreational uses. These indicators represent the essential technical elements for watershed-based management approaches. The key, however, is to use the different indicators *within* the roles which are most appropriate for each.

Describing the causes and sources associated with observed impairments revealed by the biological criteria and linking this with pollution sources involves an interpretation of multiple lines of evidence including water chemistry data, sediment data, habitat data, effluent data, biomonitoring results, land use data, and biological response signatures within the biological data itself. Thus the assignment of principal causes and sources of impairment represents the association of impairments (defined by response indicators) with stressor and exposure indicators. The principal reporting venue for this process on a watershed or subbasin scale is a biological and water quality report. These reports then provide the foundation for aggregated assessments such as the Integrated Report, the Ohio Nonpoint Source Assessment, and other technical bulletins.

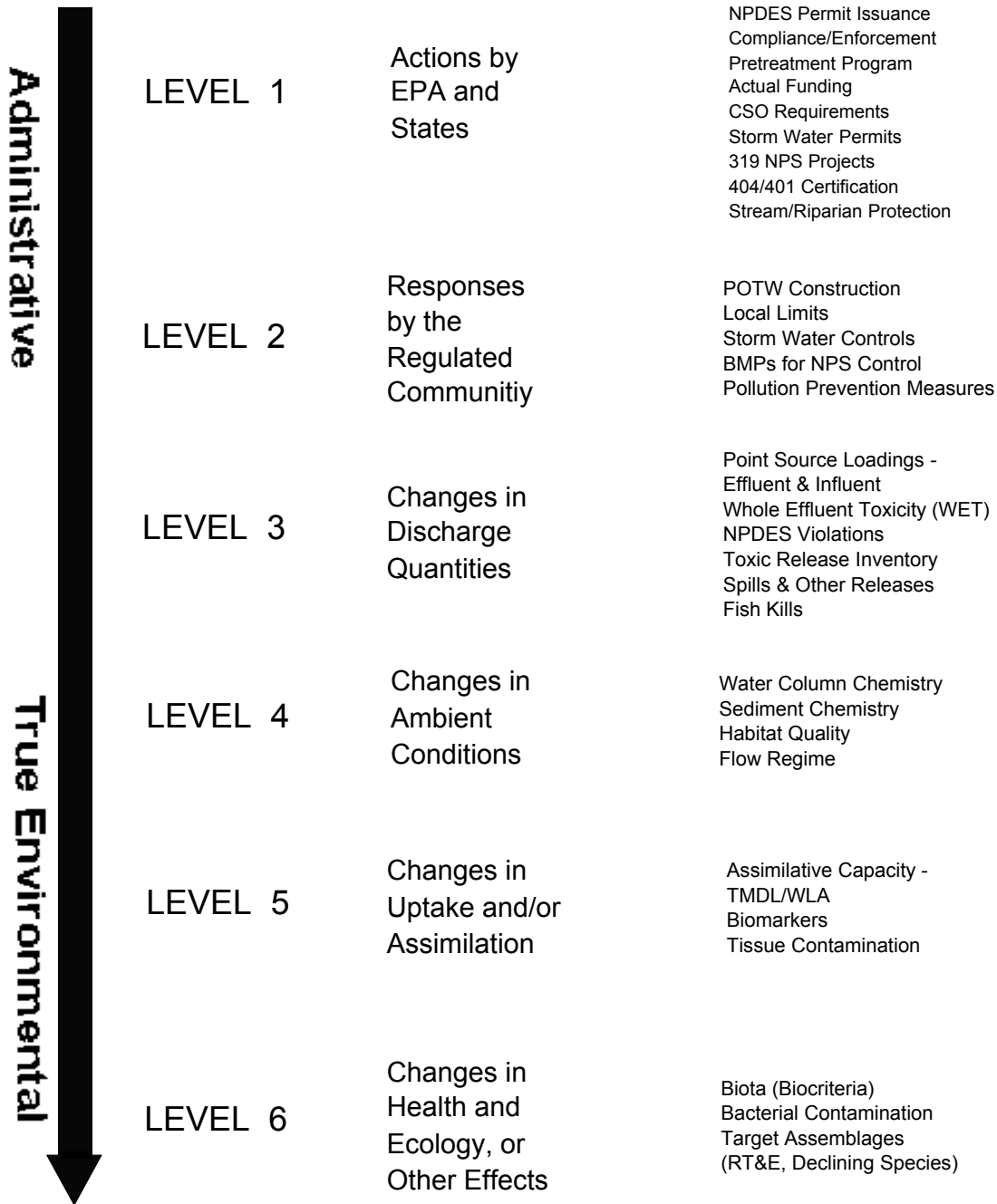


Figure 1. Hierarchy of administrative and environmental indicators which can be used for water quality management activities such as monitoring and assessment, reporting, and the evaluation of overall program effectiveness. This is patterned after a model developed by the U.S. EPA.

Ohio Water Quality Standards: Designated Aquatic Life Use

The Ohio Water Quality Standards (WQS; Ohio Administrative Code 3745-1) consist of designated uses and chemical, physical, and biological criteria designed to represent measurable properties of the environment that are consistent with the goals specified by each use designation. Use designations consist of two broad groups, aquatic life and non-aquatic life uses. In applications of the Ohio WQS to the management of water resource issues in Ohio's rivers and streams, the aquatic life use criteria frequently result in the most stringent protection and restoration requirements, hence their emphasis in biological and water quality reports. Also, an emphasis on protecting for aquatic life generally results in water quality suitable for all uses. The five different aquatic life uses currently defined in the Ohio WQS are described as follows:

- 1) *Warmwater Habitat (WWH)* - this use designation defines the "typical" warmwater assemblage of aquatic organisms for Ohio rivers and streams; *this use represents the principal restoration target for the majority of water resource management efforts in Ohio.*
- 2) *Exceptional Warmwater Habitat (EWH)* - this use designation is reserved for waters which support "unusual and exceptional" assemblages of aquatic organisms which are characterized by a high diversity of species, particularly those which are highly intolerant and/or rare, threatened, endangered, or special status (*i.e.*, declining species); *this designation represents a protection goal for water resource management efforts dealing with Ohio's best water resources.*
- 3) *Coldwater Habitat (CWH)* - this use is intended for waters which support assemblages of coldwater organisms and/or those which are stocked with salmonids with the intent of providing a put-and-take fishery on a year round basis which is further sanctioned by the Ohio DNR, Division of Wildlife; this use should not be confused with the Seasonal Salmonid Habitat (SSH) use which applies to the Lake Erie tributaries which support periodic "runs" of salmonids during the spring, summer, and/or fall.
- 4) *Modified Warmwater Habitat (MWH)* - this use applies to streams and rivers which have been subjected to extensive, maintained, and essentially permanent hydromodifications such that the biocriteria for the WWH use are not attainable *and where the activities have been sanctioned by state or federal law*; the representative aquatic assemblages are generally composed of species which are tolerant to low dissolved oxygen, silt, nutrient enrichment, and poor quality habitat.
- 5) *Limited Resource Water (LRW)* - this use applies to small streams (usually <3 mi² drainage area) and other water courses which have been irretrievably altered to the extent that no appreciable assemblage of aquatic life can be supported; such waterways generally include small streams in extensively urbanized areas, those which lie in watersheds with extensive drainage modifications, those which completely lack water on a recurring annual basis (*i.e.*, true ephemeral streams), or other irretrievably altered waterways.

Chemical, physical, and/or biological criteria are generally assigned to each use designation in accordance with the broad goals defined by each. As such the system of use designations employed in the Ohio WQS constitutes a "tiered" approach in that varying and graduated levels of protection are provided by each. This hierarchy is especially apparent for parameters such as dissolved oxygen, ammonia-nitrogen, temperature, and the biological criteria. For other parameters such as heavy metals, the technology to construct an equally graduated set of

criteria has been lacking, thus the same WQS criteria may apply to two or three different use designations.

Ohio Water Quality Standards: Non-Aquatic Life Uses

In addition to assessing the appropriateness and status of aquatic life uses, each biological and water quality survey also addresses non-aquatic life uses such as recreation, water supply, and human health concerns as appropriate. The recreation uses most applicable to rivers and streams are the Primary Contact Recreation (PCR) and Secondary Contact Recreation (SCR) uses. The criterion for designating the PCR use can be having a water depth of at least one meter over an area of at least 100 square feet or, lacking this, where frequent human contact is a reasonable expectation. If a water body does not meet either criterion, the SCR use applies. The attainment status of PCR and SCR is determined using bacterial indicators (*e.g.*, fecal coliform, *E. coli*) and the criteria for each are specified in the Ohio WQS.

Attainment of recreation uses are evaluated based on monitored bacteria levels. The Ohio Water Quality Standards state that all waters should be free from any public health nuisance associated with raw or poorly treated sewage (Administrative Code 3745-1-04, Part F). Additional criteria (Administrative Code 3745-1-07) apply to waters that are designated as suitable for full body contact such as swimming (PCR) or for partial body contact such as wading (SCR). These standards were developed to protect human health, because even though fecal coliform bacteria are relatively harmless in most cases, their presence indicates that the water has been contaminated with fecal matter.

Water supply uses include Public Water Supply (PWS), Agricultural Water Supply (AWS), and Industrial Water Supply (IWS). Public Water Supplies are simply defined as segments within 500 yards of a potable water supply or food processing industry intake. The Agricultural Water Supply (AWS) and Industrial Water Supply (IWS) use designations generally apply to all waters unless it can be clearly shown that they are not applicable. An example of this would be an urban area where livestock watering or pasturing does not take place, thus the AWS use would not apply. Chemical criteria are specified in the Ohio WQS for each use and attainment status is based primarily on chemical-specific indicators. Human health concerns are additionally addressed with fish tissue data, but any consumption advisories are issued by the Ohio Department of Health.

MECHANISMS FOR WATER QUALITY IMPAIRMENT

The following paragraphs are provided to present the varied causes of impairment that affect the resource quality of lotic systems in Ohio. While the various perturbations are presented under separate headings, it is important to remember that they are often interrelated and cumulative in terms of the detrimental impact that can result.

Habitat and Flow Alterations

Habitat alteration, such as channelization, negatively impacts biological communities directly by limiting the complexity of living spaces available to aquatic organisms. Consequently, fish and macroinvertebrate communities are not as diverse. Indirect impacts include the removal of riparian trees and field tiling to facilitate drainage. Following a rain event, most of the water is quickly removed from tiled fields rather than filtering through the soil, recharging ground water, and reaching the stream at a lower volume and more sustained rate. As a result, small streams more frequently go dry or become intermittent. Urbanization impacts include removal of riparian

trees, influx of stormwater runoff, straightening and piping of stream channels, and riparian vegetation removal.

Tree shade is important because it limits the energy input from the sun, moderates water temperature, and limits evaporation. Removal of the tree canopy further degrades conditions because it eliminates an important source of coarse organic matter essential for a balanced ecosystem. Riparian vegetation aids in nutrient uptake, may decrease runoff rate into streams, and helps keep soil in place. Erosion impacts channelized streams more severely due to the lack of a riparian buffer zone to slow runoff, trap sediment and stabilize banks. Additionally, deep trapezoidal channels lack a functioning flood plain and therefore cannot expel sediment as would occur during flood events along natural watercourses. The confinement of flow within an artificially deep channel accelerates the movement of water downstream, exacerbating flooding of neighboring properties.

The lack of water movement under low flow conditions can exacerbate impacts from organic loading and nutrient enrichment by limiting re-aeration of the stream. The amount of oxygen soluble in water decreases as temperature increases. This is one reason why tree shade is so important. The two main sources of oxygen in water are diffusion from the atmosphere and plant photosynthesis. Turbulence at the water surface is critical because it increases surface area and promotes diffusion, but channelization eliminates turbulence produced by riffles, meanders, and debris snags. Plant photosynthesis produces oxygen, but at night, respiration reverses the process and consumes oxygen. Conversely, oxygen concentrations can become supersaturated during the day, due to abnormally high amounts of photosynthesis, causing gas bubble stress to both fish and invertebrate communities. Oxygen is also used by bacteria that decay dead organic matter. Nutrient enrichment can promote the growth of nuisance algae that subsequently dies and serves as food for bacteria. Under these conditions, oxygen can be depleted unless it is replenished from the air.

Siltation and Sedimentation

Whenever the natural flow regime is altered to facilitate drainage, increased amounts of sediment are likely to enter streams either by overland transport or increased bank erosion. The removal of wooded riparian areas furthers the erosion process. Channelization keeps all but the highest flow events confined within the artificially high banks. As a result, areas that were formerly flood plains and allowed for the removal of sediment from the primary stream channel no longer serve this function. As water levels fall following a rain event, interstitial spaces between larger rocks fill with sand and silt and the diversity of available habitat to support fish and macroinvertebrates is reduced. Silt also can clog the gills of both fish and macroinvertebrates, reduce visibility thereby excluding site feeding fish species, and smother the nests of lithophilic fishes. Lithophilic spawning fish require clean substrates with interstitial voids in which to deposit eggs. Conversely, pioneering species benefit. They are generalists and best suited for exploiting disturbed and less heterogeneous habitats. The net result is a lower diversity of aquatic species compared with a typical warmwater stream with natural habitats.

Sediment also impacts water quality, recreation, and drinking water. Nutrients absorbed to soil particles remain trapped in the watercourse. Likewise, bacteria, pathogens, and pesticides which also attach to suspended or bedload sediments become concentrated in waterways where the channel is functionally isolated from the landscape. Community drinking water systems address these issues with more costly advanced treatment technologies.

Nutrient Enrichment

The element of greatest concern is phosphorus because it is critical for plant growth and is often the limiting nutrient. The form that can be readily used by plants and therefore can stimulate nuisance algae blooms is orthophosphate (PO_4^{-3}). The amount of phosphorus tied up in the nucleic acids of food and waste is actually quite low. This organic material is eventually converted to orthophosphate by bacteria. The amount of orthophosphate contained in synthetic detergents is a great concern however. It was for this reason that the General Assembly of the State of Ohio enacted a law in 1990 to limit phosphorus content in household laundry detergents sold in the Lake Erie drainage basin to 0.5% by weight. Inputs of phosphorus originate from both point and nonpoint sources. Most of the phosphorus discharged by point sources is soluble. Another characteristic of point sources is they have a continuous impact and are human in origin, for instance, effluents from municipal sewage treatment plants. The contribution from failed on-lot septic systems or failing home sewage treatment systems can also be significant, especially if they are concentrated in a small area. The phosphorus concentration in raw waste water is generally 8-10 mg/l and after secondary treatment is generally 4-6 mg/l. Further removal requires the added cost of chemical addition. The most common methods use the addition of lime or alum to form a precipitate, so most phosphorus (80%) ends up in the sludge.

A characteristic of phosphorus discharged by nonpoint sources is that the impact is intermittent and associated with storm water runoff. Most of this phosphorus is bound tightly to soil particles and enters streams from erosion, although some comes from tile drainage. Urban storm water is more of a concern if combined sewer overflows are involved. The impact from rural storm water varies depending on land use and management practices and includes contributions from livestock feedlots and pastures and row crop agriculture. Crop fertilizer includes granular inorganic types and organic types such as manure or sewage sludge. Pasture land is especially a concern if the livestock have access to the stream. Large feedlots with manure storage lagoons create the potential for overflows and accidental spills. Land management is an issue because erosion is worse on streams without any riparian buffer zone to trap runoff. The impact is worse in streams that are channelized because they no longer have a functioning flood plain and cannot expel sediment during flooding. Oxygen levels must also be considered, because phosphorus is released from sediment at higher rates under anoxic conditions.

There is no numerical phosphorus criterion established in the Ohio Water Quality Standards, but there is a narrative criterion that states phosphorus should be limited to the extent necessary to prevent nuisance growths of algae and weeds (Administrative Code, 3745-1-04, Part E). Phosphorus loadings from large volume point source dischargers in the Lake Erie drainage basin are regulated by NPDES permit limits. The permit limit is a concentration of 1.0 mg/l in final effluent. Research conducted by the Ohio EPA indicates that a significant correlation exists between phosphorus and the health of aquatic communities (Miltner and Rankin, 1998). It was concluded that biological community performance in headwater and wadeable streams was highest where phosphorus concentrations were lowest. It was also determined that the lowest phosphorus concentrations were associated with the highest quality habitats, supporting the notion that habitat is a critical component of stream function. The report recommends WWH biocriteria of 0.08 mg/l in headwater streams (<20 mi² watershed size), 0.10 mg/l in wadeable streams (>20-200 mi²) and 0.17 mg/l in small rivers (>200-1000 mi²).

Organic Enrichment and Low Dissolved Oxygen

The amount of oxygen soluble in water is low and it decreases as temperature increases. This is one reason why tree shade is so important. The two main sources of oxygen in water are diffusion from the atmosphere and plant photosynthesis. Turbulence at the water surface is

critical because it increases surface area and promotes diffusion. Drainage practices such as channelization eliminate turbulence produced by riffles, meanders, and debris snags. Although plant photosynthesis produces oxygen by day, it is consumed by the reverse process of respiration at night. Oxygen is also consumed by bacteria that decay organic matter, so it can be easily depleted unless it is replenished from the air. Sources of organic matter include poorly treated waste water, sewage bypasses, and dead plants and algae. Dissolved oxygen criteria are established in the Ohio Water Quality Standards to protect aquatic life. The minimum and average limits are tiered values and linked to use designations (Administrative Code 3745-1-07, Table 7-1).

Ammonia

Ammonia enters streams as a component of fertilizer and manure run-off and wastewater effluent. Ammonia gas (NH_3) readily dissolves in water to form the compound ammonium hydroxide (NH_4OH). In aquatic ecosystems an equilibrium is established as ammonia shifts from a gas to undissociated ammonium hydroxide to the dissociated ammonium ion (NH_4^{+1}). Under normal conditions (neutral pH 7 and 25°C) almost none of the total ammonia is present as gas, only 0.55% is present as ammonium hydroxide, and the rest is ammonium ion. Alkaline pH shifts the equation toward gaseous ammonia production, so the amount of ammonium hydroxide increases. This is important because while the ammonium ion is almost harmless to aquatic life, ammonium hydroxide is very toxic and can reduce growth and reproduction or cause mortality.

The concentration of ammonia in raw sewage is high, sometimes as much as 20-30 mg/l. Treatment to remove ammonia involves gaseous stripping to the atmosphere, biological nitrification and de-nitrification, and assimilation into plant and animal biomass. The nitrification process requires a long detention time and aerobic conditions like that provided in extended aeration treatment plants. Under these conditions, bacteria first convert ammonia to nitrite (*Nitrosomonas*) and then to nitrate (*Nitrobacter*). Nitrate can then be reduced by the de-nitrification process (*Pseudomonas*) and nitrogen gas and carbon dioxide are produced as by-products.

Ammonia criteria are established in the Ohio Water Quality Standards to protect aquatic life. The maximum and average limits are tiered values based on sample pH and temperature and linked to use designations (Administrative Code 3745-1-07, Tables 7-2 through 7-8).

Metals

Metals can be toxic to aquatic life and hazardous to human health. Although they are naturally occurring elements many are extensively used in manufacturing and are byproducts of human activity. Certain metals like copper and zinc are essential in the human diet, but excessive levels are usually detrimental. Lead and mercury are of particular concern because they often trigger fish consumption advisories. Mercury is used in the production of chlorine gas and caustic soda and in the manufacture of batteries and fluorescent light bulbs. In the environment it forms inorganic salts, but bacteria convert these to methyl-mercury and this organic form builds up in the tissues of fish. Extended exposure can damage the brain, kidneys, and developing fetus. The Ohio Department of Health (ODH) issued a statewide fish consumption advisory in 1997 advising women of child bearing age and children six and under not to eat more than one meal per week of any species of fish from waters of the state because of mercury. Lead is used in batteries, pipes, and paints and is emitted from burning fossil fuels. It affects the central nervous system and damages the kidneys and reproductive system. Copper is mined extensively and used to manufacture wire, sheet metal, and pipes. Ingesting large amounts can cause liver and kidney damage. Zinc is a by-product of mining, steel production, and coal burning and used in

alloys such as brass and bronze. Ingesting large amounts can cause stomach cramps, nausea, and vomiting.

Metals criteria are established in the Ohio Water Quality Standards to protect human health, wildlife, and aquatic life. Three levels of aquatic life standards are established (Administrative Code 3745-1-07, Table 7-1) and limits for some elements are based on water hardness (Administrative Code 3745-1-07, Table 7-9). Human health and wildlife standards are linked to either the Lake Erie (Administrative Code 3745-1-33, Table 33- 2) or Ohio River (Administrative Code 3745-1-34, Table 34-1) drainage basins. The drainage basins also have limits for additional elements not established elsewhere that are identified as Tier I and Tier II values.

Bacteria

High concentrations of either fecal coliform bacteria or *Escherichia coli* (*E. coli*) in a lake or stream may indicate contamination with human pathogens. People can be exposed to contaminated water while wading, swimming, and fishing. Fecal coliform bacteria are relatively harmless in most cases, but their presence indicates that the water has been contaminated with feces from a warm-blooded animal. Although intestinal organisms eventually die off outside the body, some will remain virulent for a period of time and may be dangerous sources of infection. This is especially a problem if the feces contained pathogens or disease producing bacteria and viruses. Reactions to exposure can range from an isolated illness such as skin rash, sore throat, or ear infection to a more serious wide spread epidemic. Some types of bacteria that are a concern include *Escherichia*, which cause diarrhea and urinary tract infections, *Salmonella*, which cause typhoid fever and gastroenteritis (food poisoning), and *Shigella*, which cause severe gastroenteritis or bacterial dysentery. Some types of viruses that are a concern include polio, hepatitis A, and encephalitis. Disease causing microorganisms such as cryptosporidium and giardia are also a concern.

Since fecal coliform bacteria are associated with warm-blooded animals, there are both human and animal sources. Human sources, including effluent from sewage treatment plants or discharges by on-lot septic systems, are a more continuous problem. Bacterial contamination from combined sewer overflows are associated with wet weather events. Animal sources are usually more intermittent and are also associated with rainfall, except when domestic livestock have access to the water. Large livestock farms store manure in holding lagoons and this creates the potential for an accidental spill. Liquid manure applied as fertilizer is a runoff problem if not managed properly and it sometimes seeps into field tiles.

Bacteria criteria for the recreational use are established in the Ohio Water Quality Standards to protect human health. The maximum and average limits are tiered values and linked to use designation, but only apply during the May 1-October 31 recreation season (Administrative Code 3745-1-41). The standards also state that streams must be free of any public health nuisance associated with raw or poorly treated sewage during dry weather conditions (Administrative Code 3745-1-04, Part F).

E. coli is the only indicator organism used to evaluate recreation. Geometric mean content is computed on a seasonal basis and is the sole basis of use attainment status when 2 or more samples are taken. The Primary Contact Recreation (PCR) use is divided into three separate categories each with specific numerical criteria: Class A – high use paddling streams, Class B – most typical streams and Class C – historically channelized streams that drain < 3.1 mi².

Sediment Contamination

Chemical quality of sediment is a concern because many pollutants bind strongly to soil particles and are persistent in the environment. Some of these compounds accumulate in the aquatic food chain and trigger fish consumption advisories, but others are simply a contact hazard because they cause skin cancer and tumors. The physical and chemical nature of sediment is determined by local geology, land use, and contribution from manmade sources. As some materials enter the water column they are attracted to the surface electrical charges associated with suspended silt and clay particles. Others simply sink to the bottom due to their high specific gravity. Sediment layers form as suspended particles settle, accumulate, and combine with other organic and inorganic materials. Sediment is the most physically, chemically, and biologically reactive at the water interface because this is where it is affected by sunlight, current, wave action, and benthic organisms. Assessment of the chemical nature of this layer can be used to predict ecological impact.

The Ohio EPA evaluation of sediment chemistry results are evaluated using a dual approach, first by ranking relative concentrations based on a system developed by Ohio EPA (2005) and then by determining the potential for toxicity based on guidelines developed by MacDonald et al (2000). The Ohio EPA system was derived from samples collected at ecoregional reference sites. Specific Reference Values are site specific ecoregional based metals concentrations and are used to identify contaminated stream reaches. The MacDonald guidelines are consensus based using previously developed values. The system predicts that sediments below the threshold effect concentration (TEC) are absent of toxicity and those greater than the probable effect concentration (PEC) are toxic.

Sediment samples collected by the Ohio EPA are measured for a number of physical and chemical properties. Physical attributes included % particle size distribution (sand $\geq 60 \mu$, silt 5-59 μ , clay $\leq 4 \mu$), % solids, and % organic carbon. Most locations sampled had an abundance of sediment, and no difficulties were experienced in locating ample volumes of sediment for analysis. Fine grained sediments are deposited in flood plains of natural streams during periods of high flow. This scenario changes if the stream is impounded by a dam or channelized. Chemical attributes included metals, volatile and semi-volatile organic compounds, pesticides, and poly-chlorinated biphenyls (PCBs).

MATERIALS and METHODS

All physical, chemical, and biological field, laboratory, data processing, and data analysis methodologies and procedures adhere to those specified in the Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices (Ohio Environmental Protection Agency 2009) and Biological Criteria for the Protection of Aquatic Life, Volumes I-III (Ohio Environmental Protection Agency 1987a, 1987b, 1989b, 1989c, 2006, 2013a, 2013b), The Qualitative Habitat Evaluation Index (QHEI): Rationale, Methods, and Application (Rankin 1989 and 1995) for aquatic habitat assessment, and the Ohio EPA Sediment Sampling Guide and Methodologies (Ohio EPA 2001).

Determining Use Attainment Status

Use attainment status is a term describing the degree to which environmental indicators are either above or below criteria specified by the Ohio Water Quality Standards (WQS; Ohio Administrative Code 3745-1). Assessing aquatic use attainment status involves a primary reliance on the Ohio EPA biological criteria (OAC 3745-1-07; Table 7-15). These are confined to ambient assessments and apply to rivers and streams outside of mixing zones. Numerical

biological criteria are based on multimetric biological indices including the IBI and MIwb, indices measuring the response of the fish community, and the ICI, which indicates the response of the macroinvertebrate community. Three attainment status results are possible at each sampling location - full, partial, or non-attainment. Full attainment means that all of the applicable indices meet the biocriteria. Partial attainment means that one or more of the applicable indices fails to meet the biocriteria. Non-attainment means that none of the applicable indices meet the biocriteria or one of the organism groups reflects poor or very poor performance. An aquatic life use attainment table is constructed based on the sampling results and is arranged from upstream to downstream and includes the sampling locations indicated by river mile, the applicable biological indices, the use attainment status (*i.e.*, full, partial, or non), the Qualitative Habitat Evaluation Index (QHEI), and a sampling location description.

Habitat Assessment

Physical habitat was evaluated using the QHEI developed by the Ohio EPA for streams and rivers in Ohio (Rankin 1989 and 1995). Various attributes of the habitat are scored based on the overall importance of each to the maintenance of viable, diverse, and functional aquatic faunas. The type(s) and quality of substrates, amount and quality of instream cover, channel morphology, extent and quality of riparian vegetation, pool, run, and riffle development and quality, and gradient are some of the habitat characteristics used to determine the QHEI score which generally ranges from 20 to less than 100. The QHEI is used to evaluate the characteristics of a stream segment, as opposed to the characteristics of a single sampling site. As such, individual sites may have 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. QHEI scores from hundreds of segments around the state have indicated that values greater than 60 are *generally* conducive to the existence of warmwater faunas whereas scores less than 45 generally cannot support a warmwater assemblage consistent with the WWH biological criteria. Scores greater than 75 frequently reflect habitat conditions which have the ability to support exceptional warmwater faunas.

Sediment and Surface Water Assessment

Fine grain sediment samples were collected in the upper 4 inches of bottom material at each location using decontaminated stainless steel scoops and excavated using nitrile gloves. Decontamination of sediment sampling equipment followed the procedures outlined in the Ohio EPA sediment sampling guidance manual (Ohio EPA 2001). Sediment grab samples were homogenized in stainless steel pans (material for VOC analysis was not homogenized), transferred into glass jars with teflon® lined lids, placed on ice (to maintain 4°C) in a cooler, and shipped to Ohio EPA Division of Environmental Services. Sediment data is reported on a dry weight basis. Surface water samples were collected, preserved and delivered in appropriate containers to Ohio EPA Division of Environmental Services. Surface water samples were evaluated using comparisons to Ohio Water Quality Standards criteria, reference conditions, or published literature. Sediment evaluations were conducted using guidelines established in MacDonald et al. (2000) and Ohio Specific Reference Values (2003).

Recreation Use Assessment

Bacteria criteria for the recreational use are established in the Ohio Water Quality Standards to protect human health. The maximum and average limits are tiered values and linked to use designation, but only apply during the May 1-October 31 recreation season (Administrative Code 3745-1-41). The standards also state that streams must be free of any public health nuisance associated with raw or poorly treated sewage during dry weather conditions (Administrative Code 3745-1-04, Part F).

Macroinvertebrate Community Assessment

Macroinvertebrates were collected from artificial substrates and from the natural habitats. The artificial substrate collection provided quantitative data and consisted of a composite sample of five modified Hester-Dendy multiple-plate samplers colonized for six weeks. At the time of the artificial substrate collection, a qualitative multihabitat composite sample was also collected. 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 macrohabitat types (e.g., riffle, run, pool, 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, 2013b).

Fish Community Assessment

Fish were sampled using pulsed DC electrofishing methods. Fish were processed in the field, and included identifying each individual to species, counting, weighing, and recording any external abnormalities. Discussion of the fish community assessment methodology used in this report 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, 2013b).

Causal Associations

Using the results, conclusions, and recommendations of this report requires an understanding of the methodology used to determine the use attainment status and assigning probable causes and sources of impairment. The identification of impairment in rivers and streams is straightforward - the numerical biological criteria are used to judge aquatic life use attainment and impairment (partial and non-attainment). The rationale for using the biological criteria, within a weight of evidence framework, has been extensively discussed elsewhere (Karr *et al.* 1986; Karr 1991; Ohio EPA 1987a,b; Yoder 1989; Miner and Borton 1991; Yoder 1991; Yoder 1995). Describing the causes and sources associated with observed impairments relies on an interpretation of multiple lines of evidence including water chemistry data, sediment data, habitat data, effluent data, land use data, and biological results (Yoder and Rankin 1995a, 1995b, and 1995c). Thus the assignment of principal causes and sources of impairment in this report represent the association of impairments (based on response indicators) with stressor and exposure indicators. The reliability of the identification of probable causes and sources is increased where many such prior associations have been identified, or have been experimentally or statistically linked together. The ultimate measure of success in water resource management is the restoration of lost or damaged ecosystem attributes including aquatic community structure and function. While there have been criticisms of misapplying the metaphor of ecosystem "health" compared to human patient "health" (Suter 1993), in this document we are referring to the process for evaluating biological integrity and causes or sources associated with observed impairments, not whether human health and ecosystem health are analogous concepts.

References

Karr, J. R. 1991. Biological integrity: A long-neglected aspect of water resource management. *Ecological Applications* 1(1): 66-84.

- Karr, J.R., K.D. Fausch, P.L. Angermier, P.R. Yant, and I.J. Schlosser. 1986. Assessing biological integrity in running waters: a method and its rationale. III. Nat. Hist. Surv. Spec. Publ. 5. 28 pp.
- MacDonald, D., C. Ingersoll, T. Berger. 2000. Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems. Arch. Environ. Contam. Toxicol.: Vol.39, 20-31.
- Miltner, R.J. and E.T. Rankin. 1998. Primary nutrients and the biotic integrity of rivers and streams. Freshwater Biology 40:145-158.
- Miner R. and D. Borton. 1991. Considerations in the development and implementation of biocriteria, Water Quality Standards for the 21st Century, U.S. EPA, Offc. Science and Technology, Washington, D.C., 115.
- Ohio Environmental Protection Agency. 2009. Updated edition. Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices. Division of Water Quality Planning and Assessment, Surface Water Section, Columbus, Ohio.
- _____. 1989b. Addendum to biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Division of Water Quality Planning and Assessment, Surface Water Section, Columbus, Ohio.
- _____. 1989c. Biological criteria for the protection of aquatic life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities. Division of Water Quality Planning and Assessment, Columbus, Ohio.
- _____. 1987a. Biological criteria for the protection of aquatic life: Volume I. The role of biological data in water quality assessment. Division of Water Quality Monitoring and Assessment, Surface Water Section, Columbus, Ohio.
- _____. 1987b. Biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Division of Water Quality Monitoring and Assessment, Surface Water Section, Columbus, Ohio.
- _____. 2006. Methods for assessing habitat in flowing waters: Using the Qualitative Habitat Evaluation Index (QHEI). Ohio Technical Bulletin, EAS/2006-06-1. Ecological Assessment Section, Division of Surface Water, Columbus, Ohio.
- _____. 2013a. 2013 Updates to Biological Criteria for the Protection of Aquatic Life: Volume I and Volume II Addendum. Users manual for biological field assessment of Ohio surface waters. Ecological Assessment Section, Division of Surface Water, Columbus, Ohio.
- _____. 2013b. 2013 updates to Biological Criteria for the Protection of Aquatic Life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities. Ecological Assessment Section, Division of Surface Water, Columbus, Ohio.
- Omernik, J.M. and A.L. Gallant. 1988. Ecoregions of the upper midwest states. EPA/600/3-88/037. U. S. Environmental Protection Agency, Environmental Research Laboratory, Corvallis, Oregon. 56 pp.

- Rankin, E.T. 1989. The qualitative habitat evaluation index (QHEI): rationale, methods, and application. Div. Water Qual. Plan. & Assess., Ecol. Assess. Sect., Columbus, Ohio.
- Rankin, E.T. 1995. Habitat Indices in Water Resource Quality Assessments, in W.S. Davis and T. Simon (eds.). Biological assessment and criteria: tools for risk-based planning and decision making. CRC Press/Lewis Publisher, Ann Arbor.
- Suter, GW II. 1993. A Critique of Ecosystem Health Concepts and Indexes. Environmental Toxicology and Chemistry, 12: 1533-1539.
- Yoder, C.O. 1989. The development and use of biological criteria for Ohio surface waters. U.S. EPA, Criteria and Standards Div., Water Quality Stds. 21st Century, 1989: 139-146.
- Yoder, C.O. 1991. Answering some concerns about biological criteria based on experiences in Ohio, *in* G. H Flock (ed.) Water quality standards for the 21st century. Proceedings of a National Conference, U. S. EPA, Office of Water, Washington, D.C.
- Yoder, C.O. 1995. Policy issues and management applications of biological criteria, *in* W.S. Davis and T. Simon (eds.). Biological Assessment and Criteria: Tools for Risk-based Planning and Decision Making. CRC Press/Lewis Publishers, Ann Arbor.
- Yoder, C.O. and E.T. Rankin. 1995. Biological criteria program development and implementation in Ohio, pp. 109-144. *in* W. Davis and T. Simon (eds.). Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making. Lewis Publishers, Boca Raton, FL.
- Yoder, C.O. and E.T. Rankin. 1995b. Biological response signatures and the area of degradation value: new tools for interpreting multimetric data, pp. 263-286. *in* W. Davis and T. Simon (eds.). Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making. Lewis Publishers, Boca Raton, FL.
- Yoder, C.O. and E.T. Rankin. 1995c. The role of biological criteria in water quality monitoring, assessment and regulation. Environmental Regulation in Ohio: How to Cope With the Regulatory Jungle. Inst. of Business Law, Santa Monica, CA. 54 pp.

Appendix B: Macroinvertebrate Taxa by Location

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: Ashtabula River

Collection Date: 08/24/2011 River Code: 07-001 RM: 27.00

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	8 +	57900	<i>Pycnopsyche sp</i>	+
01418	<i>Craspedacusta sowerbyi</i>	8	58505	<i>Helicopsyche borealis</i>	+
01801	<i>Turbellaria</i>	8	59110	<i>Ceraclea ancylus</i>	+
03360	<i>Plumatella sp</i>	1	59300	<i>Mystacides sp</i>	+
03600	<i>Oligochaeta</i>	552 +	59970	<i>Petrophila sp</i>	+
04687	<i>Placobdella parasitica</i>	+	60300	<i>Dineutus sp</i>	+
06201	<i>Hyaella azteca</i>	+	60900	<i>Peltodytes sp</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	68025	<i>Ectopria sp</i>	+
11014	<i>Acentrella turbida</i>	+	68075	<i>Psephenus herricki</i>	+
11020	<i>Acerpenna pygmaea</i>	16 +	68130	<i>Helichus sp</i>	+
11120	<i>Baetis flavistriga</i>	15 +	68601	<i>Ancyronyx variegata</i>	+
11125	<i>Labiobaetis frondalis</i>	+	68901	<i>Macronychus glabratus</i>	9
11130	<i>Baetis intercalaris</i>	19 +	69000	<i>Microcylloepus pusillus</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	69210	<i>Optioservus ampliatus</i>	+
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	69400	<i>Stenelmis sp</i>	42 +
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	72340	<i>Dixella sp</i>	+
11670	<i>Procloeon viridoculare</i>	+	72700	<i>Anopheles sp</i>	+
12200	<i>Isonychia sp</i>	1 +	74100	<i>Simulium sp</i>	+
13000	<i>Leucrocuta sp</i>	+	74501	<i>Ceratopogonidae</i>	+
13400	<i>Stenacron sp</i>	+	77120	<i>Ablabesmyia mallochi</i>	+
13521	<i>Stenonema femoratum</i>	+	77500	<i>Conchapelopia sp</i>	+
13561	<i>Maccaffertium pulchellum</i>	32 +	77800	<i>Helopelopia sp</i>	180 +
13590	<i>Maccaffertium vicarium</i>	2	78450	<i>Nilotanypus fimbriatus</i>	16 +
16324	<i>Teloganopsis deficiens</i>	10 +	78680	<i>Procladius (Psilotanypus) bellus</i>	+
17200	<i>Caenis sp</i>	16 +	80351	<i>Corynoneura caudicula</i>	24
18600	<i>Ephemera sp</i>	+	80362	<i>Corynoneura sp nr. lacustris (sensu Fu and Saether, 2012)</i>	8
18700	<i>Hexagenia sp</i>	+	80370	<i>Corynoneura lobata</i>	24 +
21200	<i>Calopteryx sp</i>	+	80420	<i>Cricotopus (C.) bicinctus</i>	30 +
22001	<i>Coenagrionidae</i>	+	81250	<i>Nanocladius (N.) minimus</i>	16
22300	<i>Argia sp</i>	8 +	81270	<i>Nanocladius (N.) spiniplenus</i>	60
23909	<i>Boyeria vinosa</i>	1	81280	<i>Nanocladius (Plecopteracoluthus) downesi</i>	2 +
25510	<i>Stylogomphus albistylus</i>	+	81465	<i>Orthocladius (O.) carlatus</i>	90
34130	<i>Acroneuria frisoni</i>	11 +	82121	<i>Thienemanniella lobapodema</i>	48
43300	<i>Ranatra sp</i>	+	82820	<i>Cryptochironomus sp</i>	+
47600	<i>Sialis sp</i>	+	83040	<i>Dicrotendipes neomodestus</i>	30 +
48620	<i>Nigronia serricornis</i>	5 +	83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	+
50315	<i>Chimarra obscura</i>	50 +	83840	<i>Microtendipes pedellus group</i>	+
51400	<i>Nyctiophylax sp</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	90 +
51600	<i>Polycentropus sp</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
52200	<i>Cheumatopsyche sp</i>	+	84700	<i>Stenochironomus sp</i>	30
52530	<i>Hydropsyche depravata group</i>	+	85201	<i>Cladotanytarsus species group A</i>	30 +
52540	<i>Hydropsyche dicantha</i>	1 +	85264	<i>Cladotanytarsus vanderwulpi group sp 4</i>	+
55300	<i>Ptilostomis sp</i>	+	85500	<i>Paratanytarsus sp</i>	16 +
57400	<i>Neophylax sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 08/24/2011 River Code: 07-001 RM: 27.00

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
85625	<i>Rheotanytarsus sp</i>	511 +			
85720	<i>Stempellinella fimbriata</i>	80 +			
85800	<i>Tanytarsus sp</i>	+			
85802	<i>Tanytarsus n. sp nr. curticornis</i>	301			
85821	<i>Tanytarsus glabrescens group sp 7</i>	1713 +			
85840	<i>Tanytarsus sepp</i>	30 +			
86100	<i>Chrysops sp</i>	+			
86401	<i>Atherix lantha</i>	1 +			
87540	<i>Hemerodromia sp</i>	32			
95100	<i>Physella sp</i>	1			
96900	<i>Ferrissia sp</i>	1 +			
98600	<i>Sphaerium sp</i>	+			
99820	<i>Villosa iris iris</i>	+			
99880	<i>Lampsilis cardium</i>	+			

No. Quantitative Taxa: 46 Total Taxa: 101
 No. Qualitative Taxa: 85 ICI: 42
 Number of Organisms: 4179 Qual EPT: 31

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River
upst. Kelloggsville Rd.

Collection Date: 08/23/2011 River Code: 07-001 RM: 23.80

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00700	<i>Radiospongilla crateriformis</i>	+	63300	<i>Hydroporini</i>	+
01320	<i>Hydra sp</i>	16	63900	<i>Laccophilus sp</i>	+
01801	<i>Turbellaria</i>	217 +	67800	<i>Tropisternus sp</i>	+
03360	<i>Plumatella sp</i>	5 +	68025	<i>Ectopria sp</i>	+
03600	<i>Oligochaeta</i>	960 +	68075	<i>Psephenus herricki</i>	+
04685	<i>Placobdella ornata</i>	+	68708	<i>Dubiraphia vittata group</i>	+
06201	<i>Hyaella azteca</i>	+	68901	<i>Macronychus glabratus</i>	1 +
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	69210	<i>Optioservus ampliatus</i>	+
08601	<i>Hydrachnidia</i>	48 +	69400	<i>Stenelmis sp</i>	73 +
11014	<i>Acentrella turbida</i>	+	72700	<i>Anopheles sp</i>	+
11020	<i>Acerpenna pygmaea</i>	22	77120	<i>Ablabesmyia mallochi</i>	+
11130	<i>Baetis intercalaris</i>	28 +	77740	<i>Hayesomyia senata</i>	172
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	77800	<i>Helopelopia sp</i>	57 +
11651	<i>Procloeon sp (w/o hindwing pads)</i>	21 +	78680	<i>Procladius (Psilotanytus) bellus</i>	+
13400	<i>Stenacron sp</i>	+	80370	<i>Corynoneura lobata</i>	56
13521	<i>Stenonema femoratum</i>	3 +	80410	<i>Cricotopus (C.) sp</i>	29
13561	<i>Maccaffertium pulchellum</i>	6 +	80420	<i>Cricotopus (C.) bicinctus</i>	29
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	8 +	80430	<i>Cricotopus (C.) tremulus group</i>	+
16324	<i>Teloganopsis deficiens</i>	6 +	81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	57
16700	<i>Tricorythodes sp</i>	75 +	81465	<i>Orthocladius (O.) carlatus</i>	86 +
17200	<i>Caenis sp</i>	+	82101	<i>Thienemanniella taurocapita</i>	8
18600	<i>Ephemera sp</i>	2 +	82121	<i>Thienemanniella lobapodema</i>	8
22001	<i>Coenagrionidae</i>	+	82820	<i>Cryptochironomus sp</i>	+
22300	<i>Argia sp</i>	+	83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	29
24107	<i>Nasiaeschna pentacantha</i>	+	83840	<i>Microtendipes pedellus group</i>	+
34130	<i>Acroneuria frisoni</i>	2 +	84450	<i>Polypedilum (Uresipedilum) flavum</i>	601 +
47600	<i>Sialis sp</i>	+	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	57
49400	<i>Sisyra sp</i>	+	84888	<i>Xenochironomus xenolabis</i>	+
50315	<i>Chimarra obscura</i>	720 +	84960	<i>Pseudochironomus sp</i>	+
51400	<i>Nyctiophylax sp</i>	+	85625	<i>Rheotanytarsus sp</i>	200 +
51600	<i>Polycentropus sp</i>	+	85800	<i>Tanytarsus sp</i>	+
52200	<i>Cheumatopsyche sp</i>	67 +	85802	<i>Tanytarsus n. sp nr. curticornis</i>	200 +
52530	<i>Hydropsyche depravata group</i>	+	85815	<i>Tanytarsus glabrescens group sp 1</i>	+
52540	<i>Hydropsyche dicantha</i>	26 +	85821	<i>Tanytarsus glabrescens group sp 7</i>	715 +
52620	<i>Macrostemum zebratum</i>	+	87540	<i>Hemerodromia sp</i>	17 +
53800	<i>Hydroptila sp</i>	40 +	95100	<i>Physella sp</i>	+
55300	<i>Ptilostomis sp</i>	+	96900	<i>Ferrissia sp</i>	16 +
57400	<i>Neophylax sp</i>	+	96930	<i>Laevapex fuscus</i>	+
57900	<i>Pycnopsyche sp</i>	+	98600	<i>Sphaerium sp</i>	+
58505	<i>Helicopsyche borealis</i>	8 +	99280	<i>Lasmigona costata</i>	+
59110	<i>Ceraclea ancylus</i>	+	99820	<i>Villosa iris iris</i>	+
59500	<i>Oecetis sp</i>	+	99860	<i>Lampsilis radiata luteola</i>	+
59510	<i>Oecetis avara</i>	32	99880	<i>Lampsilis cardium</i>	+
59970	<i>Petrophila sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River
upst. Kelloggsville Rd.

Collection Date: 08/23/2011 River Code: 07-001 RM: 23.80

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
-----------	------	------------	-----------	------	------------

No. Quantitative Taxa: 40 Total Taxa: 87

No. Qualitative Taxa: 75 ICI: **42**

Number of Organisms: 4723 Qual EPT: 27

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 08/23/2011 River Code: 07-001 RM: 19.03

Benetka Rd.

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00700	<i>Radiospongilla crateriformis</i>	+	59110	<i>Ceraclea ancylus</i>	+
01320	<i>Hydra sp</i>	4 +	59700	<i>Triaenodes sp</i>	+
01801	<i>Turbellaria</i>	+	59970	<i>Petrophila sp</i>	+
03360	<i>Plumatella sp</i>	1 +	60900	<i>Peltodytes sp</i>	+
03600	<i>Oligochaeta</i>	40 +	68025	<i>Ectopria sp</i>	+
04685	<i>Placobdella ornata</i>	+	68075	<i>Psephenus herricki</i>	+
06201	<i>Hyaella azteca</i>	+	68601	<i>Ancyronyx variegata</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	68708	<i>Dubiraphia vittata group</i>	+
08601	<i>Hydrachnidia</i>	5	68901	<i>Macronychus glabratus</i>	6
11020	<i>Acerpenna pygmaea</i>	34 +	69210	<i>Optioservus ampliatus</i>	+
11110	<i>Acentrella parvula</i>	2 +	69400	<i>Stenelmis sp</i>	25 +
11120	<i>Baetis flavistriga</i>	2 +	71100	<i>Hexatoma sp</i>	+
11130	<i>Baetis intercalaris</i>	126 +	71900	<i>Tipula sp</i>	+
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	72340	<i>Dixella sp</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	74501	<i>Ceratopogonidae</i>	+
11670	<i>Procloeon viridoculare</i>	+	77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	20 +
13000	<i>Leucrocota sp</i>	+			
13400	<i>Stenacron sp</i>	2 +	77800	<i>Helopelopia sp</i>	60 +
13521	<i>Stenonema femoratum</i>	5 +	78680	<i>Procladius (Psilotanypus) bellus</i>	+
13540	<i>Maccaffertium mediopunctatum</i>	1	80370	<i>Corynoneura lobata</i>	32 +
13561	<i>Maccaffertium pulchellum</i>	6 +	81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	20
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	32			
16700	<i>Tricorythodes sp</i>	24	82885	<i>Cryptotendipes pseudotener</i>	+
17200	<i>Caenis sp</i>	9 +	83040	<i>Dicrotendipes neomodestus</i>	20
18600	<i>Ephemera sp</i>	+	83840	<i>Microtendipes pedellus group</i>	20 +
22001	<i>Coenagrionidae</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	181 +
22300	<i>Argia sp</i>	10 +	84470	<i>Polypedilum (P.) illinoense</i>	+
23804	<i>Basiaeschna janata</i>	+	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	40
23909	<i>Boyeria vinosa</i>	2	84750	<i>Stictochironomus sp</i>	+
24600	<i>Arigomphus sp</i>	+	84888	<i>Xenochironomus xenolabis</i>	+
34130	<i>Acroneuria frisoni</i>	9 +	85625	<i>Rheotanytarsus sp</i>	121 +
34715	<i>Agnatina flavescens</i>	1	85720	<i>Stempellinella fimbriata</i>	24
43300	<i>Ranatra sp</i>	+	85800	<i>Tanytarsus sp</i>	20
47600	<i>Sialis sp</i>	+	85802	<i>Tanytarsus n. sp nr. curticornis</i>	442
50315	<i>Chimarra obscura</i>	213 +	85821	<i>Tanytarsus glabrescens group sp 7</i>	543 +
51400	<i>Nyctiophylax sp</i>	+	85840	<i>Tanytarsus sepp</i>	40 +
52200	<i>Cheumatopsyche sp</i>	9 +	86200	<i>Tabanus sp</i>	+
52540	<i>Hydropsyche dicantha</i>	+	93900	<i>Elimia sp</i>	40 +
52620	<i>Macrostemum zebratum</i>	+	95100	<i>Physella sp</i>	+
53800	<i>Hydroptila sp</i>	8	96900	<i>Ferrissia sp</i>	2 +
57400	<i>Neophylax sp</i>	+	98600	<i>Sphaerium sp</i>	8 +
57900	<i>Pycnopsyche sp</i>	+	99180	<i>Strophitus undulatus undulatus</i>	+
58505	<i>Helicopsyche borealis</i>	+	99280	<i>Lasmigona costata</i>	+
59100	<i>Ceraclea sp</i>	+	99540	<i>Elliptio dilatata</i>	+
			99820	<i>Villosa iris iris</i>	+

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River
Benetka Rd.

Collection Date: 08/23/2011 River Code: 07-001 RM: 19.03

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
99860	<i>Lampsilis radiata luteola</i>	+			
99880	<i>Lampsilis cardium</i>	+			

No. Quantitative Taxa: 41 Total Taxa: 89
No. Qualitative Taxa: 75 ICI: **50**
Number of Organisms: 2209 Qual EPT: 25

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River
upst. Green Hill Rd.

Collection Date: 08/23/2011 River Code: 07-001 RM: 13.90

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00653	<i>Eunapius fragilis</i>	+	58505	<i>Helicopsyche borealis</i>	+
01320	<i>Hydra sp</i>	96	59110	<i>Ceraclea ancylus</i>	+
01801	<i>Turbellaria</i>	16	59150	<i>Ceraclea resurgens group</i>	+
03360	<i>Plumatella sp</i>	1	59310	<i>Mystacides sepulchralis</i>	+
03600	<i>Oligochaeta</i>	+	59970	<i>Petrophila sp</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	60300	<i>Dineutus sp</i>	+
08601	<i>Hydrachnidia</i>	32 +	60900	<i>Peltodytes sp</i>	+
11014	<i>Acentrella turbida</i>	+	63300	<i>Hydroporini</i>	+
11020	<i>Acerpenna pygmaea</i>	26 +	67800	<i>Tropisternus sp</i>	+
11110	<i>Acentrella parvula</i>	6 +	68075	<i>Psephenus herricki</i>	1 +
11119	<i>Plauditus dubius or P. virilis</i>	2	68130	<i>Helichus sp</i>	+
11120	<i>Baetis flavistriga</i>	28	68901	<i>Macronychus glabratus</i>	6
11130	<i>Baetis intercalaris</i>	+	69210	<i>Optioservus ampliatus</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	69400	<i>Stenelmis sp</i>	10 +
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	72340	<i>Dixella sp</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	72700	<i>Anopheles sp</i>	+
11670	<i>Procloeon viridoculare</i>	+	74100	<i>Simulium sp</i>	32 +
12200	<i>Isonychia sp</i>	2	77500	<i>Conchapelopia sp</i>	96 +
13000	<i>Leucrocuta sp</i>	+	78400	<i>Natarsia sp</i>	+
13400	<i>Stenacron sp</i>	+	80370	<i>Corynoneura lobata</i>	16
13521	<i>Stenonema femoratum</i>	+	80410	<i>Cricotopus (C.) sp</i>	96
13540	<i>Maccaffertium mediopunctatum</i>	1	81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	48
13561	<i>Maccaffertium pulchellum</i>	184 +	81280	<i>Nanocladius (Plecopteracoluthus) downesi</i>	+
13590	<i>Maccaffertium vicarium</i>	3 +	81465	<i>Orthocladius (O.) carlatus</i>	96
16324	<i>Teloganopsis deficiens</i>	8 +	82121	<i>Thienemanniella lobapodema</i>	16
16700	<i>Tricorythodes sp</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	287 +
17200	<i>Caenis sp</i>	48 +	84470	<i>Polypedilum (P.) illinoense</i>	+
18600	<i>Ephemera sp</i>	+	84750	<i>Stictochironomus sp</i>	+
21200	<i>Calopteryx sp</i>	+	85201	<i>Cladotanytarsus species group A</i>	+
22001	<i>Coenagrionidae</i>	+	85615	<i>Rheotanytarsus pellucidus</i>	48
22300	<i>Argia sp</i>	1 +	85625	<i>Rheotanytarsus sp</i>	3400 +
23909	<i>Boyeria vinosa</i>	+	85800	<i>Tanytarsus sp</i>	+
34130	<i>Acroneuria frisoni</i>	7 +	85802	<i>Tanytarsus n. sp nr. curticornis</i>	96
34715	<i>Agnatina flavescens</i>	1	85821	<i>Tanytarsus glabrescens group sp 7</i>	479 +
43205	<i>Nepa apiculata</i>	+	86401	<i>Atherix lantha</i>	8 +
47600	<i>Sialis sp</i>	+	93900	<i>Elimia sp</i>	+
50315	<i>Chimarra obscura</i>	409 +	95100	<i>Physella sp</i>	1 +
51400	<i>Nyctiophylax sp</i>	+	96002	<i>Helisoma anceps anceps</i>	+
52200	<i>Cheumatopsyche sp</i>	2	96900	<i>Ferrissia sp</i>	34 +
52430	<i>Ceratopsyche morosa group</i>	26	98600	<i>Sphaerium sp</i>	+
52540	<i>Hydropsyche dicantha</i>	144 +			
55300	<i>Ptilostomis sp</i>	+			
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Collection Date: 08/23/2011 River Code: 07-001 RM: 13.90

Site: Ashtabula River
upst. Green Hill Rd.

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
-----------	------	------------	-----------	------	------------

No. Quantitative Taxa: 39	Total Taxa: 84
No. Qualitative Taxa: 66	ICI: 50
Number of Organisms: 5813	Qual EPT: 28

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River
dst. Hadlock Rd.

Collection Date: 08/23/2011 River Code: 07-001 RM: 9.90

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+	81280	<i>Nanocladius (Plecopteracoluthus) downesi</i>	+
03360	<i>Plumatella sp</i>	+	82820	<i>Cryptochironomus sp</i>	+
03600	<i>Oligochaeta</i>	+	83840	<i>Microtendipes pedellus group</i>	+
04935	<i>Erpobdella punctata punctata</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
11014	<i>Acentrella turbida</i>	+	85625	<i>Rheotanytarsus sp</i>	+
11020	<i>Acerpenna pygmaea</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	+
11110	<i>Acentrella parvula</i>	+	86401	<i>Atherix lantha</i>	+
11119	<i>Plauditus dubius or P. virilis</i>	+	93900	<i>Elimia sp</i>	+
11120	<i>Baetis flavistriga</i>	+	95100	<i>Physella sp</i>	+
11130	<i>Baetis intercalaris</i>	+	96200	<i>Planorbella sp</i>	+
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	96900	<i>Ferrissia sp</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+			
13000	<i>Leucrocuta sp</i>	+	No. Quantitative Taxa: 0		Total Taxa: 56
13400	<i>Stenacron sp</i>	+	No. Qualitative Taxa: 56		ICI:
13521	<i>Stenonema femoratum</i>	+	Number of Organisms: 0		Qual EPT: 21
13561	<i>Maccaffertium pulchellum</i>	+			
13590	<i>Maccaffertium vicarium</i>	+			
17200	<i>Caenis sp</i>	+			
18600	<i>Ephemera sp</i>	+			
22300	<i>Argia sp</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
43300	<i>Ranatra sp</i>	+			
47600	<i>Sialis sp</i>	+			
48620	<i>Nigronia serricornis</i>	+			
50315	<i>Chimarra obscura</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52540	<i>Hydropsyche dicantha</i>	+			
59110	<i>Ceraclaea ancylus</i>	+			
60900	<i>Peltodytes sp</i>	+			
63300	<i>Hydroporini</i>	+			
63900	<i>Laccophilus sp</i>	+			
65800	<i>Berosus sp</i>	+			
66500	<i>Enochrus sp</i>	+			
67800	<i>Tropisternus sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68601	<i>Ancyronyx variegata</i>	+			
69400	<i>Stenelmis sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77500	<i>Conchapelopia sp</i>	+			
77800	<i>Helopelopia sp</i>	+			
78140	<i>Labrundinia pilosella</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: Ashtabula River
 State Rd.

Collection Date: 08/22/2011 River Code: 07-001 RM: 6.24

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01900	<i>Nemertea</i>	+	77120	<i>Ablabesmyia mallochi</i>	+
03600	<i>Oligochaeta</i>	+	77800	<i>Helopelopia sp</i>	+
04935	<i>Erpobdella punctata punctata</i>	+	81630	<i>Parakiefferiella sp</i>	+
06201	<i>Hyalella azteca</i>	+	82820	<i>Cryptochironomus sp</i>	+
11014	<i>Acentrella turbida</i>	+	83900	<i>Nilothauma sp</i>	+
11020	<i>Acerpenna pygmaea</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	+
11119	<i>Plauditus dubius or P. virilis</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
11130	<i>Baetis intercalaris</i>	+	84490	<i>Polypedilum (Cerobregma) ontario</i>	+
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	85201	<i>Cladotanytarsus species group A</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	85625	<i>Rheotanytarsus sp</i>	+
12200	<i>Isonychia sp</i>	+	85840	<i>Tanytarsus sepp</i>	+
13000	<i>Leucrocuta sp</i>	+	86401	<i>Atherix lantha</i>	+
13400	<i>Stenacron sp</i>	+	87540	<i>Hemerodromia sp</i>	+
13521	<i>Stenonema femoratum</i>	+	93900	<i>Elimia sp</i>	+
13561	<i>Maccaffertium pulchellum</i>	+	95100	<i>Physella sp</i>	+
13590	<i>Maccaffertium vicarium</i>	+	96900	<i>Ferrissia sp</i>	+
16324	<i>Teloganopsis deficiens</i>	+			
16700	<i>Tricorythodes sp</i>	+	No. Quantitative Taxa: 0		Total Taxa: 60
17200	<i>Caenis sp</i>	+	No. Qualitative Taxa: 60		ICI:
18600	<i>Ephemera sp</i>	+	Number of Organisms: 0		Qual EPT: 27
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
43300	<i>Ranatra sp</i>	+			
47600	<i>Sialis sp</i>	+			
50315	<i>Chimarra obscura</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52540	<i>Hydropsyche dicantha</i>	+			
52620	<i>Macrostemum zebratum</i>	+			
53800	<i>Hydroptila sp</i>	+			
55300	<i>Ptilostomis sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59110	<i>Ceraclaea ancylus</i>	+			
59570	<i>Oecetis nocturna</i>	+			
60900	<i>Peltodytes sp</i>	+			
63300	<i>Hydroporini</i>	+			
63900	<i>Laccophilus sp</i>	+			
65800	<i>Berosus sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
69400	<i>Stenelmis sp</i>	+			
74100	<i>Simulium sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River
upst. Tannery Hill Rd.

Collection Date: 08/22/2011 River Code: 07-001 RM: 3.60

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	34 +	59310	<i>Mystacides sepulchralis</i>	+
03360	<i>Plumatella sp</i>	1	59570	<i>Oecetis nocturna</i>	+
03600	<i>Oligochaeta</i>	24 +	63300	<i>Hydroporini</i>	+
04935	<i>Erpobdella punctata punctata</i>	+	66500	<i>Enochrus sp</i>	+
06810	<i>Gammarus fasciatus</i>	+	68075	<i>Psephenus herricki</i>	+
08601	<i>Hydrachnidia</i>	24	68708	<i>Dubiraphia vittata group</i>	+
11014	<i>Acentrella turbida</i>	2 +	69400	<i>Stenelmis sp</i>	3 +
11020	<i>Acerpenna pygmaea</i>	2 +	72700	<i>Anopheles sp</i>	+
11115	<i>Baetis tricaudatus</i>	+	74100	<i>Simulium sp</i>	38 +
11119	<i>Plauditus dubius or P. virilis</i>	2 +	77120	<i>Ablabesmyia mallochi</i>	+
11120	<i>Baetis flavistriga</i>	15 +	77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	97
11130	<i>Baetis intercalaris</i>	331 +	77800	<i>Helopelopia sp</i>	48
11170	<i>Plauditus gloveri</i>	+	78450	<i>Nilotanytus fimbriatus</i>	40 +
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	80420	<i>Cricotopus (C.) bicinctus</i>	+
13000	<i>Leucrocuta sp</i>	+	80430	<i>Cricotopus (C.) tremulus group</i>	48
13400	<i>Stenacron sp</i>	17 +	81650	<i>Parametriocnemus sp</i>	48
13521	<i>Stenonema femoratum</i>	+	82101	<i>Thienemanniella taurocapita</i>	8
13561	<i>Maccaffertium pulchellum</i>	53 +	82200	<i>Tvetenia bavarica group</i>	48
13590	<i>Maccaffertium vicarium</i>	24 +	84450	<i>Polypedilum (Uresipedilum) flavum</i>	290
14600	<i>Choroterpes sp</i>	+	84490	<i>Polypedilum (Cerobregma) ontario</i>	48
16324	<i>Teloganopsis deficiens</i>	3 +	84520	<i>Polypedilum (Tripodura) halterale group</i>	+
16700	<i>Tricorythodes sp</i>	54 +	84750	<i>Stictochironomus sp</i>	+
17200	<i>Caenis sp</i>	56 +	85201	<i>Cladotanytarsus species group A</i>	+
21200	<i>Calopteryx sp</i>	+	85625	<i>Rheotanytarsus sp</i>	3187 +
22001	<i>Coenagrionidae</i>	+	85800	<i>Tanytarsus sp</i>	+
22300	<i>Argia sp</i>	3 +	85802	<i>Tanytarsus n. sp nr. curticornis</i>	48
34130	<i>Acroneuria frisoni</i>	10 +	85821	<i>Tanytarsus glabrescens group sp 7</i>	193
43300	<i>Ranatra sp</i>	+	85840	<i>Tanytarsus sepp</i>	+
44501	<i>Corixidae</i>	+	86401	<i>Atherix lantha</i>	1
47600	<i>Sialis sp</i>	+	87540	<i>Hemerodromia sp</i>	40
48620	<i>Nigronia serricornis</i>	+	93900	<i>Elimia sp</i>	+
50301	<i>Chimarra aterrima</i>	2	94400	<i>Fossaria sp</i>	+
50315	<i>Chimarra obscura</i>	33 +	95100	<i>Physella sp</i>	9 +
51400	<i>Nyctiophylax sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	203 +	No. Quantitative Taxa: 41		Total Taxa: 77
52430	<i>Ceratopsyche morosa group</i>	3 +	No. Qualitative Taxa: 61		ICI: 50
52530	<i>Hydropsyche depravata group</i>	2	Number of Organisms: 5302		Qual EPT: 31
52540	<i>Hydropsyche dicantha</i>	191 +			
53800	<i>Hydroptila sp</i>	19 +			
57400	<i>Neophylax sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59110	<i>Ceraclea ancylus</i>	+			
59120	<i>Ceraclea flava complex</i>	+			

Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection

Site: Ashtabula River

Collection Date: 09/13/2011 River Code: 07-001 RM: 2.40 A 24th St.

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	28 +	84155	<i>Paralauterborniella nigrohalteralis</i>	+
03360	<i>Plumatella sp</i>	1	84210	<i>Paratendipes albimanus</i> or <i>P. duplicatus</i>	5
03451	<i>Urnatella gracilis</i>	1	84300	<i>Phaenopsectra obediens</i> group	14 +
03600	<i>Oligochaeta</i>	572 +	84302	<i>Phaenopsectra punctipes</i>	5
04664	<i>Helobdella stagnalis</i>	+	84315	<i>Phaenopsectra flavipes</i>	+
04960	<i>Erpobdella sp</i> (= <i>Mooreobdella</i>)	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	5
06001	<i>Amphipoda</i>	2	84460	<i>Polypedilum (P.) fallax</i> group	+
08601	<i>Hydrachnidia</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
11130	<i>Baetis intercalaris</i>	1	84520	<i>Polypedilum (Tripodura) halterale</i> group	+
11650	<i>Proclaeon sp</i> (w/ hindwing pads)	+	84540	<i>Polypedilum (Tripodura) scalaenum</i> group	9 +
13400	<i>Stenacron sp</i>	+	84700	<i>Stenochironomus sp</i>	+
13521	<i>Stenonema femoratum</i>	10 +	84800	<i>Tribelos jucundum</i>	+
16700	<i>Tricorythodes sp</i>	5	85201	<i>Cladotanytarsus species</i> group A	5
17200	<i>Caenis sp</i>	127 +	85800	<i>Tanytarsus sp</i>	66 +
22001	<i>Coenagrionidae</i>	+	85818	<i>Tanytarsus glabrescens</i> group sp 4	5
22300	<i>Argia sp</i>	1	85821	<i>Tanytarsus glabrescens</i> group sp 7	128 +
34130	<i>Acroneuria frisoni</i>	1	94400	<i>Fossaria sp</i>	+
43300	<i>Ranatra sp</i>	+	95100	<i>Physella sp</i>	+
45100	<i>Palmacorixa sp</i>	+	95900	<i>Gyraulus sp</i>	+
47600	<i>Sialis sp</i>	1			
51206	<i>Cyrnellus fraternus</i>	1	No. Quantitative Taxa: 39		Total Taxa: 63
51600	<i>Polycentropus sp</i>	13 +	No. Qualitative Taxa: 38		ICI: 44
53501	<i>Hydroptilidae</i>	+	Number of Organisms: 1180		Qual EPT: 6
60900	<i>Peltodytes sp</i>	+			
63900	<i>Laccophilus sp</i>	+			
64800	<i>Uvarus sp</i>	+			
65800	<i>Berosus sp</i>	2			
68700	<i>Dubiraphia sp</i>	1			
68901	<i>Macronychus glabratus</i>	1			
74501	<i>Ceratopogonidae</i>	2			
77115	<i>Ablabesmyia janta</i>	19 +			
77120	<i>Ablabesmyia mallochi</i>	19 +			
78655	<i>Procladius (Holotanypus) sp</i>	+			
80358	<i>Corynoneura macula</i>	4			
80410	<i>Cricotopus (C.) sp</i>	5			
80420	<i>Cricotopus (C.) bicinctus</i>	+			
81231	<i>Nanocladius (N.) crassicornus</i> or <i>N. (N.) "rectinervis"</i>	5			
82121	<i>Thienemanniella lobapodema</i>	2			
82730	<i>Chironomus (C.) decorus</i> group	5			
82820	<i>Cryptochironomus sp</i>	9 +			
83040	<i>Dicrotendipes neomodestus</i>	24 +			
83050	<i>Dicrotendipes lucifer</i>	38			
83300	<i>Glyptotendipes (G.) sp</i>	14 +			
83840	<i>Microtendipes pedellus</i> group	24			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 09/13/2011 River Code: 07-001 RM: 1.80 A upst. Fields Brook

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	340 +			
01900	<i>Nemertea</i>	16			
03073	<i>Lophopodella carteri</i>	1 +			
03600	<i>Oligochaeta</i>	2378 +			
04664	<i>Helobdella stagnalis</i>	2			
05800	<i>Caecidotea sp</i>	105			
06810	<i>Gammarus fasciatus</i>	7			
08601	<i>Hydrachnidia</i>	+			
17200	<i>Caenis sp</i>	48			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	1			
28001	<i>Libellulidae</i>	+			
47600	<i>Sialis sp</i>	5			
51206	<i>Cyrnellus fraternus</i>	204			
59500	<i>Oecetis sp</i>	18			
65800	<i>Berosus sp</i>	1			
68901	<i>Macronychus glabratus</i>	5			
69400	<i>Stenelmis sp</i>	1			
74501	<i>Ceratopogonidae</i>	52 +			
77115	<i>Ablabesmyia janta</i>	42 +			
77130	<i>Ablabesmyia rhamphe group</i>	42			
77800	<i>Helopelopia sp</i>	21			
82820	<i>Cryptochironomus sp</i>	21			
83050	<i>Dicrotendipes lucifer</i>	127			
83158	<i>Endochironomus nigricans</i>	+			
83300	<i>Glyptotendipes (G.) sp</i>	1692 +			
84000	<i>Parachironomus sp</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
85800	<i>Tanytarsus sp</i>	21			
95100	<i>Physella sp</i>	9 +			
95900	<i>Gyraulus sp</i>	+			
96930	<i>Laevapex fuscus</i>	5			
98600	<i>Sphaerium sp</i>	1			

No. Quantitative Taxa: 26 Total Taxa: 33

No. Qualitative Taxa: 14 ICI: **20**

Number of Organisms: 5165 Qual EPT: 0

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 09/12/2011 River Code: 07-001 RM: 1.60 A just upst. Fields Brook

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	4			
01801	<i>Turbellaria</i>	64			
03221	<i>Pectinatella magnifica</i>	1			
03360	<i>Plumatella sp</i>	1			
03600	<i>Oligochaeta</i>	2440 +			
04664	<i>Helobdella stagnalis</i>	1			
05800	<i>Caecidotea sp</i>	17			
06201	<i>Hyalella azteca</i>	+			
06700	<i>Crangonyx sp</i>	1			
06810	<i>Gammarus fasciatus</i>	13			
17200	<i>Caenis sp</i>	8			
22001	<i>Coenagrionidae</i>	+			
51206	<i>Cyrnellus fraternus</i>	11			
55300	<i>Ptilostomis sp</i>	1			
68700	<i>Dubiraphia sp</i>	3			
69400	<i>Stenelmis sp</i>	3			
74501	<i>Ceratopogonidae</i>	+			
77115	<i>Ablabesmyia janta</i>	69			
77130	<i>Ablabesmyia rhamphe group</i>	9 +			
80510	<i>Cricotopus (Isocladius) sylvestris group</i>	+			
83051	<i>Dicrotendipes simpsoni</i>	42			
83158	<i>Endochironomus nigricans</i>	6 +			
83300	<i>Glyptotendipes (G.) sp</i>	158			
84010	<i>Parachironomus "abortivus" (sensu Simpson & Bode, 1980)</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
96002	<i>Helisoma anceps anceps</i>	+			
98600	<i>Sphaerium sp</i>	3			

No. Quantitative Taxa: 20 Total Taxa: 27
 No. Qualitative Taxa: 10 ICI: 12
 Number of Organisms: 2855 Qual EPT: 0

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 09/12/2011 River Code: 07-001 RM: 1.60 B just upst. Fields Brook

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	90			
01801	<i>Turbellaria</i>	84			
03073	<i>Lophopodella carteri</i>	1			
03360	<i>Plumatella sp</i>	1			
03600	<i>Oligochaeta</i>	1194			
04661	<i>Helobdella elongata</i>	2			
05800	<i>Caecidotea sp</i>	1			
06810	<i>Gammarus fasciatus</i>	2			
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	10			
17200	<i>Caenis sp</i>	18			
22300	<i>Argia sp</i>	24			
27500	<i>Somatochlora sp</i>	2			
51206	<i>Cyrnellus fraternus</i>	47			
51600	<i>Polycentropus sp</i>	2			
74501	<i>Ceratopogonidae</i>	41			
77130	<i>Ablabesmyia rhamphe group</i>	13			
78655	<i>Procladius (Holotanypus) sp</i>	13			
82820	<i>Cryptochironomus sp</i>	26			
83002	<i>Dicrotendipes modestus</i>	13			
83051	<i>Dicrotendipes simpsoni</i>	244			
83300	<i>Glyptotendipes (G.) sp</i>	785			
84800	<i>Tribelos jucundum</i>	13			
85800	<i>Tanytarsus sp</i>	13			
95100	<i>Physella sp</i>	237			
96100	<i>Menetus (Micromenetus) sp</i>	596			
99998	NO QUALITATIVE SAMPLE COLLECTED	+			

No. Quantitative Taxa: 25 Total Taxa: 26

No. Qualitative Taxa: 1 ICI: 26

Number of Organisms: 3472 Qual EPT:

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 09/12/2011 River Code: 07-001 RM: 1.10 A at 5 1/2 slip

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	30			
01801	<i>Turbellaria</i>	86 +			
03360	<i>Plumatella sp</i>	1			
03600	<i>Oligochaeta</i>	333 +			
04666	<i>Helobdella papillata</i>	3 +			
05800	<i>Caecidotea sp</i>	2 +			
06201	<i>Hyaella azteca</i>	4 +			
06810	<i>Gammarus fasciatus</i>	10 +			
08601	<i>Hydrachnidia</i>	2 +			
13500	<i>Maccaffertium sp</i>	1			
17200	<i>Caenis sp</i>	17 +			
22001	<i>Coenagrionidae</i>	+			
27610	<i>Epiteca (Tetragoneuria) cynosura</i>	4			
28001	<i>Libellulidae</i>	+			
53800	<i>Hydroptila sp</i>	2			
59520	<i>Oecetis cinerascens</i>	+			
59555	<i>Oecetis inconspicua complex sp F (sensu Floyd, 1995)</i>	+			
74501	<i>Ceratopogonidae</i>	1 +			
77130	<i>Ablabesmyia rhamphe group</i>	2 +			
78655	<i>Procladius (Holotanypus) sp</i>	5 +			
80510	<i>Cricotopus (Isocladius) sylvestris group</i>	+			
82121	<i>Thienemanniella lobapodema</i>	1			
82730	<i>Chironomus (C.) decorus group</i>	26			
83002	<i>Dicrotendipes modestus</i>	7 +			
83051	<i>Dicrotendipes simpsoni</i>	2			
83158	<i>Endochironomus nigricans</i>	7 +			
83300	<i>Glyptotendipes (G.) sp</i>	116 +			
83840	<i>Microtendipes pedellus group</i>	5			
84315	<i>Phaenopsectra flavipes</i>	3			
84520	<i>Polypedilum (Tripodura) halterale group</i>	2			
85800	<i>Tanytarsus sp</i>	9			
93025	<i>Bithynia tentaculata</i>	3			
93200	<i>Hydrobiidae</i>	42			
95100	<i>Physella sp</i>	10 +			
95900	<i>Gyraulus sp</i>	52 +			
96100	<i>Menetus (Micromenetus) sp</i>	27			
96264	<i>Planorbella (Pierosoma) pilsbryi</i>	+			
96930	<i>Laevapex fuscus</i>	32			
97710	<i>Dreissena polymorpha</i>	28			

No. Quantitative Taxa: 33 Total Taxa: 39
 No. Qualitative Taxa: 22 ICI: **34**
 Number of Organisms: 875 Qual EPT: 3

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 09/12/2011 River Code: 07-001 RM: 1.10 B at 5 1/2 slip

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	64			
01801	<i>Turbellaria</i>	206			
03600	<i>Oligochaeta</i>	322			
04666	<i>Helobdella papillata</i>	19			
06201	<i>Hyaella azteca</i>	335			
06810	<i>Gammarus fasciatus</i>	13			
08601	<i>Hydrachnidia</i>	134			
17200	<i>Caenis sp</i>	362			
22001	<i>Coenagrionidae</i>	30			
22300	<i>Argia sp</i>	1			
27610	<i>Epitheca (Tetragoneuria) cynosura</i>	3			
51206	<i>Cyrnellus fraternus</i>	8			
53800	<i>Hydroptila sp</i>	2			
54200	<i>Orthotrichia sp</i>	145			
59500	<i>Oecetis sp</i>	11			
60900	<i>Peltodytes sp</i>	1			
74501	<i>Ceratopogonidae</i>	22			
80427	<i>Cricotopus (C.) politus</i>	76			
81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	17			
82121	<i>Thienemanniella lobapodema</i>	6			
83002	<i>Dicrotendipes modestus</i>	17			
83051	<i>Dicrotendipes simpsoni</i>	8			
83158	<i>Endochironomus nigricans</i>	76			
83300	<i>Glyptotendipes (G.) sp</i>	101			
84960	<i>Pseudochironomus sp</i>	38			
85800	<i>Tanytarsus sp</i>	4			
93200	<i>Hydrobiidae</i>	9			
95100	<i>Physella sp</i>	14			
95900	<i>Gyraulus sp</i>	7			
96930	<i>Laevapex fuscus</i>	17			
99998	<i>NO QUALITATIVE SAMPLE COLLECTED</i>	+			

No. Quantitative Taxa: 30 Total Taxa: 31

No. Qualitative Taxa: 1 ICI: **46**

Number of Organisms: 2068 Qual EPT:

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 09/12/2011 River Code: 07-001 RM: 0.90 A dst. 5 1/2 slip

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	263			
01801	<i>Turbellaria</i>	79 +			
03073	<i>Lophopodella carteri</i>	1			
03600	<i>Oligochaeta</i>	1042 +			
04661	<i>Helobdella elongata</i>	10			
04666	<i>Helobdella papillata</i>	1 +			
05800	<i>Caecidotea sp</i>	11 +			
06201	<i>Hyalella azteca</i>	+			
06700	<i>Crangonyx sp</i>	11			
06810	<i>Gammarus fasciatus</i>	10 +			
08601	<i>Hydrachnidia</i>	+			
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	9			
17200	<i>Caenis sp</i>	10 +			
22001	<i>Coenagrionidae</i>	+			
43300	<i>Ranatra sp</i>	+			
51206	<i>Cyrmellus fraternus</i>	27			
54200	<i>Orthotrichia sp</i>	+			
54300	<i>Oxyethira sp</i>	+			
59500	<i>Oecetis sp</i>	+			
69400	<i>Stenelmis sp</i>	1			
74501	<i>Ceratopogonidae</i>	+			
77115	<i>Ablabesmyia janta</i>	29			
77130	<i>Ablabesmyia rhamphe group</i>	29 +			
78655	<i>Procladius (Holotanypus) sp</i>	10			
82700	<i>Chironomus sp</i>	9			
82820	<i>Cryptochironomus sp</i>	+			
83002	<i>Dicrotendipes modestus</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
83050	<i>Dicrotendipes lucifer</i>	4			
83051	<i>Dicrotendipes simpsoni</i>	10			
83158	<i>Endochironomus nigricans</i>	+			
83300	<i>Glyptotendipes (G.) sp</i>	616			
83840	<i>Microtendipes pedellus group</i>	10			
84435	<i>Polypedilum (P.) bergi</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+			
84790	<i>Tribelos fuscicorne</i>	10			
85500	<i>Paratanytarsus sp</i>	+			
93200	<i>Hydrobiidae</i>	12 +			
95100	<i>Physella sp</i>	19 +			
95900	<i>Gyraulus sp</i>	18			
96264	<i>Planorbella (Pierosoma) pilsbryi</i>	+			
97710	<i>Dreissena polymorpha</i>	6			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 09/12/2011 River Code: 07-001 RM: 0.90 B dst. 5 1/2 slip

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	54			
01801	<i>Turbellaria</i>	309			
03360	<i>Plumatella sp</i>	1			
03600	<i>Oligochaeta</i>	2718			
05800	<i>Caecidotea sp</i>	4			
06201	<i>Hyalella azteca</i>	1			
06810	<i>Gammarus fasciatus</i>	140			
08601	<i>Hydrachnidia</i>	2			
11200	<i>Callibaetis sp</i>	1			
17200	<i>Caenis sp</i>	108			
22001	<i>Coenagrionidae</i>	26			
22300	<i>Argia sp</i>	42			
54200	<i>Orthotrichia sp</i>	5			
54300	<i>Oxyethira sp</i>	1			
59500	<i>Oecetis sp</i>	28			
82100	<i>Thienemanniella sp</i>	7			
83158	<i>Endochironomus nigricans</i>	59			
83300	<i>Glyptotendipes (G.) sp</i>	623			
85500	<i>Paratanytarsus sp</i>	7			
93200	<i>Hydrobiidae</i>	2			
95100	<i>Physella sp</i>	27			
95900	<i>Gyraulus sp</i>	71			
96930	<i>Laevapex fuscus</i>	26			
97710	<i>Dreissena polymorpha</i>	2			
99998	NO QUALITATIVE SAMPLE COLLECTED	+			

No. Quantitative Taxa: 24 Total Taxa: 25
 No. Qualitative Taxa: 1 ICI: 22
 Number of Organisms: 4264 Qual EPT:

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 09/13/2011 River Code: 07-001 RM: 0.60 A dst. 5th St.

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	9	98600	<i>Sphaerium sp</i>	15
01801	<i>Turbellaria</i>	174 +			
03221	<i>Pectinatella magnifica</i>	1	No. Quantitative Taxa: 32		Total Taxa: 45
03360	<i>Plumatella sp</i>	1	No. Qualitative Taxa: 26		ICI: 24
03600	<i>Oligochaeta</i>	480 +	Number of Organisms: 1556		Qual EPT: 2
04637	<i>Placobdella phalera</i>	2			
04664	<i>Helobdella stagnalis</i>	+			
04666	<i>Helobdella papillata</i>	1			
05800	<i>Caecidotea sp</i>	3 +			
06201	<i>Hyalella azteca</i>	+			
06700	<i>Crangonyx sp</i>	2			
06810	<i>Gammarus fasciatus</i>	+			
08601	<i>Hydrachnidia</i>	2 +			
17200	<i>Caenis sp</i>	16 +			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	11			
28001	<i>Libellulidae</i>	+			
43570	<i>Neolea sp</i>	+			
51206	<i>Cyrnellus fraternus</i>	7			
51600	<i>Polycentropus sp</i>	2			
54200	<i>Orthotrichia sp</i>	2 +			
65700	<i>Anacaena sp</i>	+			
74501	<i>Ceratopogonidae</i>	2 +			
77115	<i>Ablabesmyia janta</i>	36			
77130	<i>Ablabesmyia rhamphe group</i>	9 +			
78130	<i>Labrundinia neopilosella</i>	+			
80510	<i>Cricotopus (Isocladius) sylvestris group</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	18 +			
83002	<i>Dicrotendipes modestus</i>	9			
83051	<i>Dicrotendipes simpsoni</i>	72			
83300	<i>Glyptotendipes (G.) sp</i>	594			
84460	<i>Polypedilum (P.) fallax group</i>	9			
84470	<i>Polypedilum (P.) illinoense</i>	+			
84520	<i>Polypedilum (Tripodura) halterale group</i>	9			
84790	<i>Tribelos fuscicorne</i>	18			
85500	<i>Paratanytarsus sp</i>	+			
93025	<i>Bithynia tentaculata</i>	31 +			
93200	<i>Hydrobiidae</i>	+			
95100	<i>Physella sp</i>	2 +			
95900	<i>Gyraulus sp</i>	6 +			
96100	<i>Menetus (Micromenetus) sp</i>	5			
96264	<i>Planorbella (Pierosoma) pilsbryi</i>	+			
96930	<i>Laevapex fuscus</i>	6 +			
97710	<i>Dreissena polymorpha</i>	2			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 09/13/2011 River Code: 07-001 RM: 0.60 B dst. 5th St.

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	34			
01801	<i>Turbellaria</i>	616			
03221	<i>Pectinatella magnifica</i>	1			
03360	<i>Plumatella sp</i>	1			
03451	<i>Urnatella gracilis</i>	4			
03600	<i>Oligochaeta</i>	957			
04637	<i>Placobdella phalera</i>	3			
04661	<i>Helobdella elongata</i>	10			
04666	<i>Helobdella papillata</i>	3			
05800	<i>Caecidotea sp</i>	5			
06201	<i>Hyaella azteca</i>	90			
06810	<i>Gammarus fasciatus</i>	23			
17200	<i>Caenis sp</i>	55			
22001	<i>Coenagrionidae</i>	4			
22300	<i>Argia sp</i>	3			
27610	<i>Epitheca (Tetragoneuria) cynosura</i>	1			
28705	<i>Pachydiplax longipennis</i>	2			
53800	<i>Hydroptila sp</i>	2			
54200	<i>Orthotrichia sp</i>	20			
59500	<i>Oecetis sp</i>	2			
77130	<i>Ablabesmyia rhamphe group</i>	16			
78655	<i>Procladius (Holotanypus) sp</i>	5			
81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	11			
82121	<i>Thienemanniella lobapodema</i>	2			
83002	<i>Dicrotendipes modestus</i>	11			
83040	<i>Dicrotendipes neomodestus</i>	5			
83051	<i>Dicrotendipes simpsoni</i>	32			
83158	<i>Endochironomus nigricans</i>	53			
83300	<i>Glyptotendipes (G.) sp</i>	334			
84790	<i>Tribelos fuscicorne</i>	5			
85800	<i>Tanytarsus sp</i>	16			
93025	<i>Bithynia tentaculata</i>	13			
95100	<i>Physella sp</i>	15			
95900	<i>Gyraulus sp</i>	34			
96100	<i>Menetus (Micromenetus) sp</i>	10			
96930	<i>Laevapex fuscus</i>	27			
97710	<i>Dreissena polymorpha</i>	23			
99998	NO QUALITATIVE SAMPLE COLLECTED	+			

No. Quantitative Taxa: 37 Total Taxa: 38

No. Qualitative Taxa: 1 ICI: 28

Number of Organisms: 2448 Qual EPT:

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula River

Collection Date: 09/13/2011 River Code: 07-001 RM: 0.30 A near mouth

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	294			
01801	<i>Turbellaria</i>	290 +			
03221	<i>Pectinatella magnifica</i>	1			
03600	<i>Oligochaeta</i>	1203 +			
04664	<i>Helobdella stagnalis</i>	1			
04666	<i>Helobdella papillata</i>	1			
05800	<i>Caecidotea sp</i>	85			
06810	<i>Gammarus fasciatus</i>	197 +			
13521	<i>Stenonema femoratum</i>	1			
17200	<i>Caenis sp</i>	4			
51206	<i>Cyrnellus fraternus</i>	29			
69400	<i>Stenelmis sp</i>	6			
77120	<i>Ablabesmyia mallochi</i>	3			
77130	<i>Ablabesmyia rhamphe group</i>	3			
77500	<i>Conchapelopia sp</i>	1			
82820	<i>Cryptochironomus sp</i>	1			
83002	<i>Dicrotendipes modestus</i>	5			
83040	<i>Dicrotendipes neomodestus</i>	1			
83051	<i>Dicrotendipes simpsoni</i>	15			
83158	<i>Endochironomus nigricans</i>	+			
83300	<i>Glyptotendipes (G.) sp</i>	58			
84315	<i>Phaenopsectra flavipes</i>	2			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	1			
84470	<i>Polypedilum (P.) illinoense</i>	+			
84540	<i>Polypedilum (Tripodura) scalaenum group</i>	1			
85230	<i>Cladotanytarsus mancus group</i>	1			
85800	<i>Tanytarsus sp</i>	2			
95100	<i>Physella sp</i>	5 +			
95900	<i>Gyraulus sp</i>	1			
96930	<i>Laevapex fuscus</i>	8			
97710	<i>Dreissena polymorpha</i>	13 +			

No. Quantitative Taxa: 29 Total Taxa: 31
 No. Qualitative Taxa: 7 ICI: **26**
 Number of Organisms: 2233 Qual EPT: 0

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: Hubbard Run
 Plymouth Ridge Rd.

Collection Date: 07/13/2011 River Code: 07-002 RM: 0.21

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+	82820	<i>Cryptochironomus sp</i>	+
06700	<i>Crangonyx sp</i>	+	82900	<i>Demicrochironomus sp</i>	+
07810	<i>Cambarus (Cambarus) carinirostris</i>	+	83840	<i>Microtendipes pedellus group</i>	+
08601	<i>Hydrachnidia</i>	+	84210	<i>Paratendipes albimanus or P. duplicatus</i>	+
11115	<i>Baetis tricaudatus</i>	+	84300	<i>Phaenopsectra obediens group</i>	+
11120	<i>Baetis flavistriga</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	84601	<i>Saetheria species 1 (sensu Jackson, 1977)</i>	+
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	84750	<i>Stictochironomus sp</i>	+
13000	<i>Leucrocota sp</i>	+	85500	<i>Paratanytarsus sp</i>	+
13500	<i>Maccaffertium sp</i>	+	85625	<i>Rheotanytarsus sp</i>	+
13521	<i>Stenonema femoratum</i>	+	85800	<i>Tanytarsus sp</i>	+
25510	<i>Stylogomphus albistylus</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	+
33100	<i>Leuctra sp</i>	+	95100	<i>Physella sp</i>	+
34500	<i>Perlesta placida complex</i>	+			
44501	<i>Corixidae</i>	+	No. Quantitative Taxa: 0		Total Taxa: 57
50301	<i>Chimarra aterrima</i>	+	No. Qualitative Taxa: 57		ICI:
50552	<i>Wormaldia moesta</i>	+	Number of Organisms: 0		Qual EPT: 19
51500	<i>Phylocentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
53300	<i>Glossosoma sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
61100	<i>Acilius sp</i>	+			
66200	<i>Cymbiodyta sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
71100	<i>Hexatoma sp</i>	+			
71900	<i>Tipula sp</i>	+			
72340	<i>Dixella sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74100	<i>Simulium sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77500	<i>Conchapelopia sp</i>	+			
79300	<i>Trissopelopia ogemawi</i>	+			
79400	<i>Zavreliomyia sp</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			
80740	<i>Eukiefferiella claripennis group</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82200	<i>Tvetenia bavarica group</i>	+			
82300	<i>Xylotopus par</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: Ashtabula Creek

Collection Date: 08/01/2011 River Code: 07-003 RM: 5.24

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00401	<i>Spongillidae</i>	+	71100	<i>Hexatoma sp</i>	+
01801	<i>Turbellaria</i>	+	71900	<i>Tipula sp</i>	+
03360	<i>Plumatella sp</i>	+	72340	<i>Dixella sp</i>	+
03600	<i>Oligochaeta</i>	+	72700	<i>Anopheles sp</i>	+
04686	<i>Placobdella papillifera</i>	+	77120	<i>Ablabesmyia mallochi</i>	+
06201	<i>Hyalella azteca</i>	+	77500	<i>Conchapelopia sp</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	77800	<i>Helopelopia sp</i>	+
11018	<i>Acerpenna macdunnoughi</i>	+	78400	<i>Natarsia sp</i>	+
11020	<i>Acerpenna pygmaea</i>	+	78655	<i>Procladius (Holotanypus) sp</i>	+
11130	<i>Baetis intercalaris</i>	+	80204	<i>Brillia flavifrons group</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	82730	<i>Chironomus (C.) decorus group</i>	+
11651	<i>Proclaeon sp (w/o hindwing pads)</i>	+	82820	<i>Cryptochironomus sp</i>	+
12200	<i>Isonychia sp</i>	+	83040	<i>Dicrotendipes neomodestus</i>	+
13400	<i>Stenacron sp</i>	+	83300	<i>Glyptotendipes (G.) sp</i>	+
13521	<i>Stenonema femoratum</i>	+	83900	<i>Nilothauma sp</i>	+
13540	<i>Maccaffertium mediopunctatum</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	+
14600	<i>Choroterpes sp</i>	+	84460	<i>Polypedilum (P.) fallax group</i>	+
17200	<i>Caenis sp</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
18700	<i>Hexagenia sp</i>	+	84480	<i>Polypedilum (P.) laetum group</i>	+
21200	<i>Calopteryx sp</i>	+	84700	<i>Stenochironomus sp</i>	+
22001	<i>Coenagrionidae</i>	+	84750	<i>Stictochironomus sp</i>	+
23909	<i>Boyeria vinosa</i>	+	85625	<i>Rheotanytarsus sp</i>	+
34130	<i>Acroneuria frisoni</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	+
45300	<i>Sigara sp</i>	+	86100	<i>Chrysops sp</i>	+
50315	<i>Chimarra obscura</i>	+	87540	<i>Hemerodromia sp</i>	+
50804	<i>Lype diversa</i>	+	92505	<i>Campeloma sp</i>	+
51400	<i>Nyctiophylax sp</i>	+	95100	<i>Physella sp</i>	+
51600	<i>Polycentropus sp</i>	+	96002	<i>Helisoma anceps anceps</i>	+
52200	<i>Cheumatopsyche sp</i>	+	96264	<i>Planorbella (Pierosoma) pilsbryi</i>	+
52430	<i>Ceratopsyche morosa group</i>	+	96900	<i>Ferrissia sp</i>	+
52530	<i>Hydropsyche depravata group</i>	+	98600	<i>Sphaerium sp</i>	+
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+	No. Quantitative Taxa: 0		Total Taxa: 75
59100	<i>Ceraclaea sp</i>	+	No. Qualitative Taxa: 75		ICI:
59300	<i>Mystacides sp</i>	+	Number of Organisms: 0		Qual EPT: 24
60400	<i>Gyrinus sp</i>	+			
63300	<i>Hydroporini</i>	+			
63900	<i>Laccophilus sp</i>	+			
66200	<i>Cymbiodyta sp</i>	+			
67000	<i>Helophorus sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula Creek
Roger Rd.

Collection Date: 08/24/2011 River Code: 07-003 RM: 0.28

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00401	<i>Spongillidae</i>	+	59110	<i>Ceraclea ancylus</i>	+
01320	<i>Hydra sp</i>	40	59580	<i>Oecetis persimilis</i>	57 +
01801	<i>Turbellaria</i>	32 +	59970	<i>Petrophila sp</i>	+
03360	<i>Plumatella sp</i>	+	65800	<i>Berosus sp</i>	+
03600	<i>Oligochaeta</i>	114 +	68025	<i>Ectopria sp</i>	+
04685	<i>Placobdella ornata</i>	+	68075	<i>Psephenus herricki</i>	+
06201	<i>Hyaella azteca</i>	+	68130	<i>Helichus sp</i>	1
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	68601	<i>Ancyronyx variegata</i>	+
08601	<i>Hydrachnidia</i>	+	68700	<i>Dubiraphia sp</i>	8 +
11020	<i>Acerpenna pygmaea</i>	12 +	69400	<i>Stenelmis sp</i>	121 +
11120	<i>Baetis flavistriga</i>	+	72340	<i>Dixella sp</i>	+
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	72700	<i>Anopheles sp</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	12 +	74501	<i>Ceratopogonidae</i>	24 +
11670	<i>Procloeon viridoculare</i>	+	77120	<i>Ablabesmyia mallochi</i>	+
12200	<i>Isonychia sp</i>	+	77500	<i>Conchapelopia sp</i>	48
13000	<i>Leucrocuta sp</i>	+	77800	<i>Helopelopia sp</i>	208
13400	<i>Stenacron sp</i>	+	78140	<i>Labrundinia pilosella</i>	+
13521	<i>Stenonema femoratum</i>	1 +	78400	<i>Natarsia sp</i>	+
13561	<i>Maccaffertium pulchellum</i>	+	78450	<i>Nilotanypus fimbriatus</i>	32
13590	<i>Maccaffertium vicarium</i>	+	78680	<i>Procladius (Psilotanypus) bellus</i>	+
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	32 +	79400	<i>Zavreliomyia sp</i>	32
17200	<i>Caenis sp</i>	25 +	80427	<i>Cricotopus (C.) politus</i>	32
18600	<i>Ephemera sp</i>	1 +	81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	16
21200	<i>Calopteryx sp</i>	+	81280	<i>Nanocladius (Plecopteracoluthus) downesi</i>	1 +
22001	<i>Coenagrionidae</i>	+	81465	<i>Orthocladius (O.) carlatus</i>	96
22300	<i>Argia sp</i>	4 +	82730	<i>Chironomus (C.) decorus group</i>	+
23804	<i>Basiaeschna janata</i>	+	82820	<i>Cryptochironomus sp</i>	32
23909	<i>Boyeria vinosa</i>	+	83040	<i>Dicrotendipes neomodestus</i>	48 +
25510	<i>Stylogomphus albistylus</i>	+	83840	<i>Microtendipes pedellus group</i>	32 +
34130	<i>Acroneuria frisoni</i>	3 +	84210	<i>Paratendipes albimanus or P. duplicatus</i>	112
43300	<i>Ranatra sp</i>	+	84300	<i>Phaenopsectra obediens group</i>	16
47600	<i>Sialis sp</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	16
48620	<i>Nigronia serricornis</i>	1	84460	<i>Polypedilum (P.) fallax group</i>	32
50315	<i>Chimarra obscura</i>	2 +	84470	<i>Polypedilum (P.) illinoense</i>	16
51400	<i>Nyctiophylax sp</i>	+	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	144
51600	<i>Polycentropus sp</i>	+	84750	<i>Stictochironomus sp</i>	+
52200	<i>Cheumatopsyche sp</i>	1 +	85201	<i>Cladotanytarsus species group A</i>	32
52530	<i>Hydropsyche depravata group</i>	+	85625	<i>Rheotanytarsus sp</i>	+
53800	<i>Hydroptila sp</i>	+	85720	<i>Stempellinella fimbriata</i>	80 +
55300	<i>Ptilostomis sp</i>	+	85800	<i>Tanytarsus sp</i>	+
57400	<i>Neophylax sp</i>	+	85802	<i>Tanytarsus n. sp nr. curticornis</i>	224
57900	<i>Pycnopsyche sp</i>	+	85819	<i>Tanytarsus glabrescens group sp 5</i>	16
58505	<i>Helicopsyche borealis</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	288 +
59100	<i>Ceraclea sp</i>	+	85840	<i>Tanytarsus sepp</i>	96 +

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Ashtabula Creek
Roger Rd.

Collection Date: 08/24/2011 River Code: 07-003 RM: 0.28

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
86100	<i>Chrysops sp</i>	+			
86200	<i>Tabanus sp</i>	+			
86401	<i>Atherix lantha</i>	+			
87540	<i>Hemerodromia sp</i>	8			
95100	<i>Physella sp</i>	1 +			
96002	<i>Helisoma anceps anceps</i>	+			
96264	<i>Planorbella (Pierosoma) pilsbryi</i>	+			
96900	<i>Ferrissia sp</i>	+			
96930	<i>Laevapex fuscus</i>	+			
98200	<i>Pisidium sp</i>	1			
98600	<i>Sphaerium sp</i>	8 +			
99820	<i>Villosa iris iris</i>	+			

No. Quantitative Taxa: 46 Total Taxa: 100
 No. Qualitative Taxa: 78 ICI: **48**
 Number of Organisms: 2158 Qual EPT: 28

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: West Branch Ashtabula River
 Hall Rd.

Collection Date: 08/02/2011 River Code: 07-004 RM: 11.28

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00401	<i>Spongillidae</i>	+	68708	<i>Dubiraphia vittata group</i>	+
01320	<i>Hydra sp</i>	+	69400	<i>Stenelmis sp</i>	+
01801	<i>Turbellaria</i>	+	74501	<i>Ceratopogonidae</i>	+
03600	<i>Oligochaeta</i>	+	77120	<i>Ablabesmyia mallochi</i>	+
04685	<i>Placobdella ornata</i>	+	77130	<i>Ablabesmyia rhamphe group</i>	+
05800	<i>Caecidotea sp</i>	+	77355	<i>Clinotanypus pinguis</i>	+
06201	<i>Hyaella azteca</i>	+	77800	<i>Helopelopia sp</i>	+
06700	<i>Crangonyx sp</i>	+	78655	<i>Procladius (Holotanypus) sp</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	83002	<i>Dicrotendipes modestus</i>	+
08601	<i>Hydrachnidia</i>	+	83051	<i>Dicrotendipes simpsoni</i>	+
11200	<i>Callibaetis sp</i>	+	83158	<i>Endochironomus nigricans</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	83300	<i>Glyptotendipes (G.) sp</i>	+
11295	<i>Cloeon dipterum</i>	+	83900	<i>Nilothauma sp</i>	+
11650	<i>Procloeon sp (w/ hindwing pads)</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
13521	<i>Stenonema femoratum</i>	+	84750	<i>Stictochironomus sp</i>	+
17200	<i>Caenis sp</i>	+	87400	<i>Stratiomys sp</i>	+
18700	<i>Hexagenia sp</i>	+	95100	<i>Physella sp</i>	+
21200	<i>Calopteryx sp</i>	+	96002	<i>Helisoma anceps anceps</i>	+
21700	<i>Lestes sp</i>	+	99100	<i>Pyganodon grandis</i>	+
22001	<i>Coenagrionidae</i>	+	99160	<i>Anodontoides ferussacianus</i>	+
23700	<i>Anax sp</i>	+			
23804	<i>Basiaeschna janata</i>	+	No. Quantitative Taxa: 0		Total Taxa: 64
24107	<i>Nasiaeschna pentacantha</i>	+	No. Qualitative Taxa: 64		ICI:
27001	<i>Corduliidae</i>	+	Number of Organisms: 0		Qual EPT: 11
42700	<i>Belostoma sp</i>	+			
43570	<i>Neoplea sp</i>	+			
44300	<i>Pelocoris sp</i>	+			
44501	<i>Corixidae</i>	+			
45900	<i>Notonecta sp</i>	+			
47600	<i>Sialis sp</i>	+			
49400	<i>Sisyra sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
53800	<i>Hydroptila sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
59310	<i>Mystacides sepulchralis</i>	+			
60400	<i>Gyrinus sp</i>	+			
60900	<i>Peltodytes sp</i>	+			
63300	<i>Hydroporini</i>	+			
64050	<i>Liodessus sp</i>	+			
65800	<i>Berosus sp</i>	+			
66500	<i>Enochrus sp</i>	+			
67000	<i>Helophorus sp</i>	+			
67800	<i>Tropisternus sp</i>	+			
68601	<i>Ancyronyx variegata</i>	+			

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: West Branch Ashtabula River

Collection Date: 08/02/2011 River Code: 07-004 RM: 9.04

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00401	<i>Spongillidae</i>	+	77120	<i>Ablabesmyia mallochi</i>	+
01801	<i>Turbellaria</i>	+	77800	<i>Helopelopia sp</i>	+
03600	<i>Oligochaeta</i>	+	82820	<i>Cryptochironomus sp</i>	+
04653	<i>Glossiphonia complanata</i>	+	83840	<i>Microtendipes pedellus group</i>	+
06201	<i>Hyaella azteca</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	+
06700	<i>Crangonyx sp</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+
08601	<i>Hydrachnidia</i>	+	84888	<i>Xenochironomus xenolabis</i>	+
11020	<i>Acerpenna pygmaea</i>	+	85625	<i>Rheotanytarsus sp</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	85800	<i>Tanytarsus sp</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	85801	<i>Tanytarsus sp 1</i>	+
13400	<i>Stenacron sp</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	+
13521	<i>Stenonema femoratum</i>	+	96120	<i>Menetus (Micromenetus) dilatatus</i>	+
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	+	96930	<i>Laevapex fuscus</i>	+
17200	<i>Caenis sp</i>	+	98600	<i>Sphaerium sp</i>	+
18708	<i>Hexagenia bilineata</i>	+	99100	<i>Pyganodon grandis</i>	+
21200	<i>Calopteryx sp</i>	+			
22001	<i>Coenagrionidae</i>	+	No. Quantitative Taxa: 0		Total Taxa: 60
23804	<i>Basiaeschna janata</i>	+	No. Qualitative Taxa: 60		ICI:
23909	<i>Boyeria vinosa</i>	+	Number of Organisms: 0		Qual EPT: 21
28410	<i>Leucorrhinia sp</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
43300	<i>Ranatra sp</i>	+			
43570	<i>Neoplea sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
53800	<i>Hydroptila sp</i>	+			
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59100	<i>Ceraclea sp</i>	+			
59700	<i>Triaenodes sp</i>	+			
68025	<i>Ectopria sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68601	<i>Ancyronyx variegata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69400	<i>Stenelmis sp</i>	+			
72340	<i>Dixella sp</i>	+			
74100	<i>Simulium sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: West Branch Ashtabula River
Schrambling Rd.

Collection Date: 08/02/2011 River Code: 07-004 RM: 6.30

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00401	<i>Spongillidae</i>	+	72700	<i>Anopheles sp</i>	+
01900	<i>Nemertea</i>	+	77355	<i>Clinotanypus pinguis</i>	+
04687	<i>Placobdella parasitica</i>	+	77500	<i>Conchapelopia sp</i>	+
06201	<i>Hyalella azteca</i>	+	77800	<i>Helopelopia sp</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	79400	<i>Zavrelinyia sp</i>	+
08601	<i>Hydrachnidia</i>	+	81650	<i>Parametriocnemus sp</i>	+
11120	<i>Baetis flavistriga</i>	+	81825	<i>Rheocricotopus (Psilocricotopus) robacki</i>	+
11130	<i>Baetis intercalaris</i>	+	82141	<i>Thienemanniella xena</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	82300	<i>Xylotopus par</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	84210	<i>Paratendipes albimanus or P. duplicatus</i>	+
11670	<i>Procloeon viridoculare</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	+
12200	<i>Isonychia sp</i>	+	84700	<i>Stenochironomus sp</i>	+
13000	<i>Leucrocota sp</i>	+	84750	<i>Stictochironomus sp</i>	+
13400	<i>Stenacron sp</i>	+	84888	<i>Xenochironomus xenolabis</i>	+
13521	<i>Stenonema femoratum</i>	+	85625	<i>Rheotanytarsus sp</i>	+
13530	<i>Maccaffertium ithaca</i>	+	85840	<i>Tanytarsus sepp</i>	+
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	+	86200	<i>Tabanus sp</i>	+
17200	<i>Caenis sp</i>	+	95100	<i>Physella sp</i>	+
18708	<i>Hexagenia bilineata</i>	+	96264	<i>Planorbella (Pierosoma) pilsbryi</i>	+
22001	<i>Coenagrionidae</i>	+	96900	<i>Ferrissia sp</i>	+
23909	<i>Boyeria vinosa</i>	+			
25510	<i>Stylogomphus albistylus</i>	+	No. Quantitative Taxa: 0		Total Taxa: 64
34130	<i>Acroneuria frisoni</i>	+	No. Qualitative Taxa: 64		ICI:
47600	<i>Sialis sp</i>	+	Number of Organisms: 0		Qual EPT: 23
48620	<i>Nigronia serricornis</i>	+			
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
64050	<i>Liodessus sp</i>	+			
68025	<i>Ectopria sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68201	<i>Scirtidae</i>	+			
68601	<i>Ancyronyx variegata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69210	<i>Optioservus ampliatus</i>	+			
69400	<i>Stenelmis sp</i>	+			
72340	<i>Dixella sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: West Branch Ashtabula River
Graham Rd.

Collection Date: 08/24/2011 River Code: 07-004 RM: 2.70

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	16 +	68901	<i>Macronychus glabratus</i>	30 +
03600	<i>Oligochaeta</i>	153 +	69210	<i>Optioservus ampliatus</i>	+
04687	<i>Placobdella parasitica</i>	+	69400	<i>Stenelmis sp</i>	30 +
04935	<i>Erpobdella punctata punctata</i>	+	72340	<i>Dixella sp</i>	+
06201	<i>Hyaella azteca</i>	+	74501	<i>Ceratopogonidae</i>	8 +
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	77120	<i>Ablabesmyia mallochi</i>	+
11020	<i>Acerpenna pygmaea</i>	76 +	77500	<i>Conchapelopia sp</i>	46 +
11120	<i>Baetis flavistriga</i>	+	77800	<i>Helopelopia sp</i>	46 +
11130	<i>Baetis intercalaris</i>	+	78200	<i>Larsia sp</i>	23
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	78680	<i>Procladius (Psilotanypus) bellus</i>	+
11650	<i>Proclaeon sp (w/ hindwing pads)</i>	+	80362	<i>Corynoneura sp nr. lacustris (sensu Fu and Saether, 2012)</i>	8
12200	<i>Isonychia sp</i>	+	80370	<i>Corynoneura lobata</i>	16
13400	<i>Stenacron sp</i>	+	81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	23
13521	<i>Stenonema femoratum</i>	+	81250	<i>Nanocladius (N.) minimus</i>	23
13561	<i>Maccaffertium pulchellum</i>	2 +	81465	<i>Orthocladius (O.) carlatus</i>	205
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	+	81650	<i>Parametrioctenus sp</i>	23
17200	<i>Caenis sp</i>	36 +	83040	<i>Dicrotendipes neomodestus</i>	68
21200	<i>Calopteryx sp</i>	2 +	83840	<i>Microtendipes pedellus group</i>	+
22001	<i>Coenagrionidae</i>	+	84315	<i>Phaenopsectra flavipes</i>	+
22300	<i>Argia sp</i>	17 +	84450	<i>Polypedilum (Uresipedilum) flavum</i>	182 +
23909	<i>Boyeria vinosa</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
34130	<i>Acroneuria frisoni</i>	10 +	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	23 +
43300	<i>Ranatra sp</i>	+	85201	<i>Cladotanytarsus species group A</i>	+
47600	<i>Sialis sp</i>	+	85625	<i>Rheotanytarsus sp</i>	68 +
48620	<i>Nigronia serricornis</i>	+	85720	<i>Stempellinella fimbriata</i>	32 +
50315	<i>Chimarra obscura</i>	29 +	85800	<i>Tanytarsus sp</i>	23 +
51400	<i>Nyctiophylax sp</i>	+	85801	<i>Tanytarsus sp 1</i>	+
51600	<i>Polycentropus sp</i>	+	85802	<i>Tanytarsus n. sp nr. curticornis</i>	23 +
52200	<i>Cheumatopsyche sp</i>	3 +	85821	<i>Tanytarsus glabrescens group sp 7</i>	980 +
53800	<i>Hydroptila sp</i>	+	85840	<i>Tanytarsus sepp</i>	46 +
57400	<i>Neophylax sp</i>	+	86100	<i>Chrysops sp</i>	+
57900	<i>Pycnopsyche sp</i>	+	87540	<i>Hemerodromia sp</i>	16
58505	<i>Helicopsyche borealis</i>	+	94400	<i>Fossaria sp</i>	+
59110	<i>Ceraclea ancylus</i>	+	95100	<i>Physella sp</i>	8 +
59580	<i>Oecetis persimilis</i>	+	96900	<i>Ferrissia sp</i>	+
59730	<i>Triaenodes melaca</i>	+	98600	<i>Sphaerium sp</i>	+
59970	<i>Petrophila sp</i>	+	99100	<i>Pyganodon grandis</i>	+
63300	<i>Hydroporini</i>	+	99160	<i>Anodontoides ferussacianus</i>	+
64050	<i>Liodessus sp</i>	+			
65800	<i>Berosus sp</i>	18 +			
67800	<i>Tropisternus sp</i>	+			
68075	<i>Psephenus herricki</i>	+	No. Quantitative Taxa: 34		Total Taxa: 82
68601	<i>Ancyronyx variegata</i>	+	No. Qualitative Taxa: 73		ICI: 42
68708	<i>Dubiraphia vittata group</i>	+	Number of Organisms: 2312		Qual EPT: 23

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: East Branch Ashtabula River
 Turner Rd.

Collection Date: 08/02/2011 River Code: 07-005 RM: 7.97

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03600	<i>Oligochaeta</i>	+	83051	<i>Dicrotendipes simpsoni</i>	+
04664	<i>Helobdella stagnalis</i>	+	83840	<i>Microtendipes pedellus group</i>	+
04686	<i>Placobdella papillifera</i>	+	84410	<i>Polypedilum (Pentapedilum) tritum</i>	+
06201	<i>Hyaella azteca</i>	+	84470	<i>Polypedilum (P.) illinoense</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	84480	<i>Polypedilum (P.) laetum group</i>	+
08601	<i>Hydrachnidia</i>	+	84700	<i>Stenochironomus sp</i>	+
11120	<i>Baetis flavistriga</i>	+	84790	<i>Tribelos fuscicorne</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	85800	<i>Tanytarsus sp</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	+
13400	<i>Stenacron sp</i>	+	85840	<i>Tanytarsus sepp</i>	+
13521	<i>Stenonema femoratum</i>	+	95100	<i>Physella sp</i>	+
13590	<i>Maccaffertium vicarium</i>	+	96280	<i>Planorbella (Pierosoma) trivolvis</i>	+
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	+	96900	<i>Ferrissia sp</i>	+
17200	<i>Caenis sp</i>	+	98600	<i>Sphaerium sp</i>	+
21200	<i>Calopteryx sp</i>	+			
22001	<i>Coenagrionidae</i>	+	No. Quantitative Taxa: 0		Total Taxa: 58
23804	<i>Basiaeschna janata</i>	+	No. Qualitative Taxa: 58		ICI:
43300	<i>Ranatra sp</i>	+	Number of Organisms: 0		Qual EPT: 15
45000	<i>Hesperocorixa sp</i>	+			
47600	<i>Sialis sp</i>	+			
48620	<i>Nigronia serricornis</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59300	<i>Mystacides sp</i>	+			
59555	<i>Oecetis inconspicua complex sp F (sensu Floyd, 1995)</i>	+			
60400	<i>Gyrinus sp</i>	+			
68025	<i>Ectopria sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68601	<i>Ancyronyx variegata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69400	<i>Stenelmis sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77800	<i>Helopelopia sp</i>	+			
78140	<i>Labrundinia pilosella</i>	+			
78401	<i>Natarsia species A (sensu Roback, 1978)</i>	+			
79400	<i>Zavreliomyia sp</i>	+			
81633	<i>Parakiefferiella n.sp 5</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: East Branch Ashtabula River
Caine Rd.

Collection Date: 08/02/2011 River Code: 07-005 RM: 5.47

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00401	<i>Spongillidae</i>	+	77500	<i>Conchapelopia sp</i>	+
01900	<i>Nemertea</i>	+	77800	<i>Helopelopia sp</i>	+
03360	<i>Plumatella sp</i>	+	78655	<i>Procladius (Holotanypus) sp</i>	+
03600	<i>Oligochaeta</i>	+	79400	<i>Zavreliomyia sp</i>	+
04685	<i>Placobdella ornata</i>	+	81280	<i>Nanocladius (Plecopteracoluthus) downesi</i>	+
06201	<i>Hyalella azteca</i>	+	83840	<i>Microtendipes pedellus group</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	84210	<i>Paratendipes albimanus or P. duplicatus</i>	+
08601	<i>Hydrachnidia</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	+
11020	<i>Acerpenna pygmaea</i>	+	84460	<i>Polypedilum (P.) fallax group</i>	+
11120	<i>Baetis flavistriga</i>	+	84480	<i>Polypedilum (P.) laetum group</i>	+
11650	<i>Proclaeon sp (w/ hindwing pads)</i>	+	85400	<i>Micropsectra sp</i>	+
11651	<i>Proclaeon sp (w/o hindwing pads)</i>	+	85615	<i>Rheotanytarsus pellucidus</i>	+
12200	<i>Isonychia sp</i>	+	85625	<i>Rheotanytarsus sp</i>	+
13000	<i>Leucrocuta sp</i>	+	85840	<i>Tanytarsus sepp</i>	+
13400	<i>Stenacron sp</i>	+	86200	<i>Tabanus sp</i>	+
13521	<i>Stenonema femoratum</i>	+	86401	<i>Atherix lantha</i>	+
13530	<i>Maccaffertium ithaca</i>	+	87540	<i>Hemerodromia sp</i>	+
14600	<i>Choroterpes sp</i>	+	95100	<i>Physella sp</i>	+
17200	<i>Caenis sp</i>	+	96900	<i>Ferrissia sp</i>	+
25510	<i>Stylogomphus albistylus</i>	+			
34130	<i>Acroneuria frisoni</i>	+	No. Quantitative Taxa: 0		Total Taxa: 63
47600	<i>Sialis sp</i>	+	No. Qualitative Taxa: 63		ICI:
48620	<i>Nigronia serricornis</i>	+	Number of Organisms: 0		Qual EPT: 24
50301	<i>Chimarra aterrima</i>	+			
50315	<i>Chimarra obscura</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59110	<i>Ceraclaea ancylus</i>	+			
59300	<i>Mystacides sp</i>	+			
59970	<i>Petrophila sp</i>	+			
68025	<i>Ectopria sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68700	<i>Dubiraphia sp</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69210	<i>Optioservus ampliatus</i>	+			
69400	<i>Stenelmis sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
72700	<i>Anopheles sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: East Branch Ashtabula River

Collection Date: 08/24/2011 River Code: 07-005 RM: 2.40

Adams Rd. (upper crossing)

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01320	<i>Hydra sp</i>	16	66200	<i>Cymbiodyta sp</i>	+
01801	<i>Turbellaria</i>	241 +	66500	<i>Enochrus sp</i>	+
03360	<i>Plumatella sp</i>	1	68025	<i>Ectopria sp</i>	1 +
03600	<i>Oligochaeta</i>	1408 +	68075	<i>Psephenus herricki</i>	+
04685	<i>Placobdella ornata</i>	+	68708	<i>Dubiraphia vittata group</i>	+
06201	<i>Hyalella azteca</i>	+	68901	<i>Macronychus glabratus</i>	2 +
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	69400	<i>Stenelmis sp</i>	110 +
08601	<i>Hydrachnidia</i>	24 +	70600	<i>Antocha sp</i>	16
11020	<i>Acerpenna pygmaea</i>	2 +	71900	<i>Tipula sp</i>	+
11120	<i>Baetis flavistriga</i>	202 +	72700	<i>Anopheles sp</i>	+
11130	<i>Baetis intercalaris</i>	24 +	74501	<i>Ceratopogonidae</i>	24
11150	<i>Labiobaetis propinquus</i>	+	77500	<i>Conchapelopia sp</i>	157
11200	<i>Callibaetis sp</i>	+	77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	77800	<i>Helopelopia sp</i>	210 +
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	78200	<i>Larsia sp</i>	+
11670	<i>Procloeon viridoculare</i>	+	78450	<i>Nilotanypus fimbriatus</i>	32
12200	<i>Isonychia sp</i>	2 +	78655	<i>Procladius (Holotanypus) sp</i>	+
13000	<i>Leucrocuta sp</i>	+	80351	<i>Corynoneura caudicula</i>	32
13400	<i>Stenacron sp</i>	+	80420	<i>Cricotopus (C.) bicinctus</i>	52 +
13521	<i>Stenonema femoratum</i>	+	81280	<i>Nanocladius (Plecopteracoluthus) downesi</i>	+
13561	<i>Maccaffertium pulchellum</i>	1 +	81465	<i>Orthocladius (O.) carlatus</i>	314
13590	<i>Maccaffertium vicarium</i>	+	82101	<i>Thienemanniella taurocapita</i>	80
17200	<i>Caenis sp</i>	8 +	82820	<i>Cryptochironomus sp</i>	+
21200	<i>Calopteryx sp</i>	+	83040	<i>Dicrotendipes neomodestus</i>	105 +
22001	<i>Coenagrionidae</i>	+	83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	210
22300	<i>Argia sp</i>	8 +	83840	<i>Microtendipes pedellus group</i>	+
23909	<i>Boyeria vinosa</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	314 +
34130	<i>Acroneuria frisoni</i>	6 +	84470	<i>Polypedilum (P.) illinoense</i>	+
47600	<i>Sialis sp</i>	1 +	84800	<i>Tribelos jucundum</i>	+
48620	<i>Nigronia serricornis</i>	+	85500	<i>Paratanytarsus sp</i>	52
50315	<i>Chimarra obscura</i>	92 +	85625	<i>Rheotanytarsus sp</i>	210 +
51400	<i>Nyctiophylax sp</i>	+	85720	<i>Stempellinella fimbriata</i>	16
52200	<i>Cheumatopsyche sp</i>	63 +	85800	<i>Tanytarsus sp</i>	52
52430	<i>Ceratopsyche morosa group</i>	19	85802	<i>Tanytarsus n. sp nr. curticornis</i>	210
52530	<i>Hydropsyche depravata group</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	2777 +
53800	<i>Hydroptila sp</i>	49	85840	<i>Tanytarsus sepp</i>	105 +
57400	<i>Neophylax sp</i>	+	86100	<i>Chrysops sp</i>	+
57900	<i>Pycnopsyche sp</i>	+	87540	<i>Hemerodromia sp</i>	33
58505	<i>Helicopsyche borealis</i>	6 +	95100	<i>Physella sp</i>	+
59110	<i>Ceraclea ancylus</i>	+	98600	<i>Sphaerium sp</i>	+
59310	<i>Mystacides sepulchralis</i>	+	99160	<i>Anodontoides ferussacianus</i>	+
59970	<i>Petrophila sp</i>	+	99180	<i>Strophitus undulatus undulatus</i>	+
60900	<i>Peltodytes sp</i>	+			
65800	<i>Berosus sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: East Branch Ashtabula River
Adams Rd. (upper crossing)

Collection Date: 08/24/2011 River Code: 07-005 RM: 2.40

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
-----------	------	------------	-----------	------	------------

No. Quantitative Taxa: 42 Total Taxa: 86

No. Qualitative Taxa: 69 ICI: **46**

Number of Organisms: 7287 Qual EPT: 25

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Fields Brook
State Rd.

Collection Date: 07/12/2011 River Code: 07-010 RM: 1.84

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	+
01900	<i>Nemertea</i>	+	87400	<i>Stratiomys sp</i>	+
03000	<i>Ectoprocta</i>	+	87540	<i>Hemerodromia sp</i>	+
03600	<i>Oligochaeta</i>	+	95100	<i>Physella sp</i>	+
04685	<i>Placobdella ornata</i>	+	96280	<i>Planorbella (Pierosoma) trivolvis</i>	+
04687	<i>Placobdella parasitica</i>	+	97710	<i>Dreissena polymorpha</i>	+
04964	<i>Erpobdella microstoma</i>	+			
06810	<i>Gammarus fasciatus</i>	+	No. Quantitative Taxa: 0		Total Taxa: 50
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	No. Qualitative Taxa: 50		ICI:
08601	<i>Hydrachnidia</i>	+	Number of Organisms: 0		Qual EPT: 9
11200	<i>Callibaetis sp</i>	+			
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+			
13400	<i>Stenacron sp</i>	+			
17200	<i>Caenis sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	+			
23600	<i>Aeshna sp</i>	+			
42700	<i>Belostoma sp</i>	+			
43300	<i>Ranatra sp</i>	+			
50315	<i>Chimarra obscura</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
53800	<i>Hydroptila sp</i>	+			
59310	<i>Mystacides sepulchralis</i>	+			
65800	<i>Berosus sp</i>	+			
67800	<i>Tropisternus sp</i>	+			
68707	<i>Dubiraphia quadrinotata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
74100	<i>Simulium sp</i>	+			
77120	<i>Ablabesmyia mallochii</i>	+			
77500	<i>Conchapelopia sp</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			
80430	<i>Cricotopus (C.) tremulus group</i>	+			
80440	<i>Cricotopus (C.) trifascia</i>	+			
80510	<i>Cricotopus (Isocladius) sylvestris group</i>	+			
82141	<i>Thienemanniella xena</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84750	<i>Stictochironomus sp</i>	+			
85500	<i>Paratanytarsus sp</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
85800	<i>Tanytarsus sp</i>	+			

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: Fields Brook
 Columbus Ave.

Collection Date: 07/12/2011 River Code: 07-010 RM: 0.90

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+	95907	<i>Gyraulus (Torquis) parvus</i>	+
03360	<i>Plumatella sp</i>	+	96002	<i>Helisoma anceps anceps</i>	+
03600	<i>Oligochaeta</i>	+	98600	<i>Sphaerium sp</i>	+
04964	<i>Erpobdella microstoma</i>	+			
06201	<i>Hyaella azteca</i>	+	No. Quantitative Taxa: 0		Total Taxa: 47
06810	<i>Gammarus fasciatus</i>	+	No. Qualitative Taxa: 47		ICI:
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	Number of Organisms: 0		Qual EPT: 13
11120	<i>Baetis flavistriga</i>	+			
11130	<i>Baetis intercalaris</i>	+			
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+			
17200	<i>Caenis sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
22300	<i>Argia sp</i>	+			
27001	<i>Corduliidae</i>	+			
43570	<i>Neoplea sp</i>	+			
50315	<i>Chimarra obscura</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
53800	<i>Hydroptila sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59310	<i>Mystacides sepulchralis</i>	+			
59520	<i>Oecetis cinerascens</i>	+			
59570	<i>Oecetis nocturna</i>	+			
59728	<i>Triaenodes marginatus</i>	+			
65800	<i>Berosus sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
81270	<i>Nanocladius (N.) spinipennis</i>	+			
82141	<i>Thienemanniella xena</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
82885	<i>Cryptotendipes pseudotener</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
85500	<i>Paratanytarsus sp</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
85800	<i>Tanytarsus sp</i>	+			
85815	<i>Tanytarsus glabrescens group sp 1</i>	+			
87540	<i>Hemerodromia sp</i>	+			
95100	<i>Physella sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Strong Brook
upst. Lake Ave.

Collection Date: 08/22/2011 River Code: 07-013 RM: 0.60

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+			
03360	<i>Plumatella sp</i>	+			
03600	<i>Oligochaeta</i>	+			
04664	<i>Helobdella stagnalis</i>	+			
04935	<i>Erpobdella punctata punctata</i>	+			
06700	<i>Crangonyx sp</i>	+			
07800	<i>Cambarus sp</i>	+			
11120	<i>Baetis flavistriga</i>	+			
22001	<i>Coenagrionidae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
53501	<i>Hydroptilidae</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77500	<i>Conchapelopia sp</i>	+			
80420	<i>Cricotopus (C.) bicinctus</i>	+			
80430	<i>Cricotopus (C.) tremulus group</i>	+			
87400	<i>Stratiomys sp</i>	+			
94400	<i>Fossaria sp</i>	+			
95100	<i>Physella sp</i>	+			

No. Quantitative Taxa: 0	Total Taxa: 18
No. Qualitative Taxa: 18	ICI:
Number of Organisms: 0	Qual EPT: 3

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Trib. to Hubbard Run (RM 0.20)
Plymouth Ridge Rd.

Collection Date: 07/13/2011 River Code: 07-016 RM: 0.10

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
01801	<i>Turbellaria</i>	+	<hr/> No. Quantitative Taxa: 0 Total Taxa: 42 No. Qualitative Taxa: 42 ICI: Number of Organisms: 0 Qual EPT: 17		
11115	<i>Baetis tricaudatus</i>	+			
11120	<i>Baetis flavistriga</i>	+			
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+			
11430	<i>Dipheter hageni</i>	+			
13400	<i>Stenacron sp</i>	+			
13521	<i>Stenonema femoratum</i>	+			
23909	<i>Boyeria vinosa</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
33100	<i>Leuctra sp</i>	+			
47600	<i>Sialis sp</i>	+			
50301	<i>Chimarra aterrima</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52440	<i>Ceratopsyche slossonae</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
53300	<i>Glossosoma sp</i>	+			
53501	<i>Hydroptilidae</i>	+			
57400	<i>Neophylax sp</i>	+			
59310	<i>Mystacides sepulchralis</i>	+			
68075	<i>Psephenus herricki</i>	+			
69400	<i>Stenelmis sp</i>	+			
70700	<i>Dicranota sp</i>	+			
71100	<i>Hexatoma sp</i>	+			
71900	<i>Tipula sp</i>	+			
74100	<i>Simulium sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77500	<i>Conchapelopia sp</i>	+			
79400	<i>Zavreliomyia sp</i>	+			
81650	<i>Parametriocnemus sp</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
82900	<i>Demicryptochironomus sp</i>	+			
83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84460	<i>Polypedilum (P.) fallax group</i>	+			
84601	<i>Saetheria species 1 (sensu Jackson, 1977)</i>	+			
84750	<i>Stictochironomus sp</i>	+			
85625	<i>Rheotanytarsus sp</i>	+			
85800	<i>Tanytarsus sp</i>	+			
94400	<i>Fossaria sp</i>	+			
95100	<i>Physella sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Trib. to Ashtabula R. (RM 16.98)
Gageville Rd.

Collection Date: 07/13/2011 River Code: 07-025 RM: 0.43

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
03360	<i>Plumatella sp</i>	+	84210	<i>Paratendipes albimanus or P. duplicatus</i>	+
04686	<i>Placobdella papillifera</i>	+	84540	<i>Polypedilum (Tripodura) scalaenum group</i>	+
06700	<i>Crangonyx sp</i>	+	85625	<i>Rheotanytarsus sp</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	85800	<i>Tanytarsus sp</i>	+
11130	<i>Baetis intercalaris</i>	+	86401	<i>Atherix lantha</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	95100	<i>Physella sp</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	96002	<i>Helisoma anceps anceps</i>	+
11670	<i>Procloeon viridoculare</i>	+	96900	<i>Ferrissia sp</i>	+
13000	<i>Leucrocota sp</i>	+			
13400	<i>Stenacron sp</i>	+	No. Quantitative Taxa: 0		Total Taxa: 52
13521	<i>Stenonema femoratum</i>	+	No. Qualitative Taxa: 52		ICI:
17200	<i>Caenis sp</i>	+	Number of Organisms: 0		Qual EPT: 17
23600	<i>Aeshna sp</i>	+			
23909	<i>Boyeria vinosa</i>	+			
25510	<i>Stylogomphus albistylus</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
43300	<i>Ranatra sp</i>	+			
45300	<i>Sigara sp</i>	+			
47600	<i>Sialis sp</i>	+			
50315	<i>Chimarra obscura</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52430	<i>Ceratopsyche morosa group</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
60900	<i>Peltodytes sp</i>	+			
63300	<i>Hydroporini</i>	+			
68075	<i>Psephenus herricki</i>	+			
68707	<i>Dubiraphia quadrinotata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
69400	<i>Stenelmis sp</i>	+			
72700	<i>Anopheles sp</i>	+			
74501	<i>Ceratopogonidae</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
77355	<i>Clinotanypus pinguis</i>	+			
77500	<i>Conchapelopia sp</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
82300	<i>Xylotopus par</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
83300	<i>Glyptotendipes (G.) sp</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Trib. to W. Br. Ashtabula R. (RM 3.50)

Collection Date: 08/03/2011 River Code: 07-026 RM: 0.92

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00401	<i>Spongillidae</i>	+	84888	<i>Xenochironomus xenolabis</i>	+
04685	<i>Placobdella ornata</i>	+	85818	<i>Tanytarsus glabrescens group sp 4</i>	+
04686	<i>Placobdella papillifera</i>	+	92505	<i>Campeloma sp</i>	+
06201	<i>Hyalella azteca</i>	+	95100	<i>Physella sp</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	96280	<i>Planorbella (Pierosoma) trivolvis</i>	+
08601	<i>Hydrachnidia</i>	+	96900	<i>Ferrissia sp</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	98600	<i>Sphaerium sp</i>	+
11295	<i>Cloeon dipterum</i>	+	99160	<i>Anodontoides ferussacianus</i>	+
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+	99860	<i>Lampsilis radiata luteola</i>	+
13400	<i>Stenacron sp</i>	+			
13521	<i>Stenonema femoratum</i>	+	No. Quantitative Taxa: 0		Total Taxa: 53
14600	<i>Choroterpes sp</i>	+	No. Qualitative Taxa: 53		ICI:
17200	<i>Caenis sp</i>	+	Number of Organisms: 0		Qual EPT: 15
18700	<i>Hexagenia sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
23804	<i>Basiaeschna janata</i>	+			
24900	<i>Gomphus sp</i>	+			
34130	<i>Acroneuria frisoni</i>	+			
43300	<i>Ranatra sp</i>	+			
43570	<i>Neoplea sp</i>	+			
45300	<i>Sigara sp</i>	+			
47600	<i>Sialis sp</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59570	<i>Oecetis nocturna</i>	+			
63300	<i>Hydroporini</i>	+			
66200	<i>Cymbiodyta sp</i>	+			
67700	<i>Paracymus sp</i>	+			
67800	<i>Tropisternus sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68201	<i>Scirtidae</i>	+			
72420	<i>Chaoborus sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
79400	<i>Zavrelimyia sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
84470	<i>Polypedilum (P.) illinoense</i>	+			
84750	<i>Stictochironomus sp</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: E. Br. of East Branch Ashtabula R.
St. Rt. 7

Collection Date: 08/03/2011 River Code: 07-027 RM: 0.39

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
06201	<i>Hyalella azteca</i>	+			
07860	<i>Cambarus (Puncticambarus) robustus</i>	+			
08240	<i>Orconectes (Crockerinus) propinquus</i>	+			
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+			
11651	<i>Procloeon sp (w/o hindwing pads)</i>	+			
11670	<i>Procloeon viridoculare</i>	+			
13521	<i>Stenonema femoratum</i>	+			
14950	<i>Leptophlebia sp or Paraleptophlebia sp</i>	+			
47600	<i>Sialis sp</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
72340	<i>Dixella sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77120	<i>Ablabesmyia mallochii</i>	+			
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	+			
78680	<i>Procladius (Psilotanytus) bellus</i>	+			
79400	<i>Zavreliomyia sp</i>	+			
82300	<i>Xylotopus par</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
82820	<i>Cryptochironomus sp</i>	+			
83040	<i>Dicrotendipes neomodestus</i>	+			
83300	<i>Glyptotendipes (G.) sp</i>	+			
83840	<i>Microtendipes pedellus group</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84700	<i>Stenochironomus sp</i>	+			
84750	<i>Stictochironomus sp</i>	+			
86100	<i>Chrysops sp</i>	+			
95100	<i>Physella sp</i>	+			
96900	<i>Ferrissia sp</i>	+			

No. Quantitative Taxa: 0	Total Taxa: 28
No. Qualitative Taxa: 28	ICI:
Number of Organisms: 0	Qual EPT: 6

Ohio EPA/DSW Ecological Assessment Section
 Macroinvertebrate Collection

Site: Trib to E. Br. Ashtabula R. (RM 1.35)
 Scribner Rd.

Collection Date: 08/01/2011 River Code: 07-028 RM: 1.10

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00401	<i>Spongillidae</i>	+	83040	<i>Dicrotendipes neomodestus</i>	+
01801	<i>Turbellaria</i>	+	83300	<i>Glyptotendipes (G.) sp</i>	+
03360	<i>Plumatella sp</i>	+	83840	<i>Microtendipes pedellus group</i>	+
06201	<i>Hyalella azteca</i>	+	84300	<i>Phaenopsectra obediens group</i>	+
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	84450	<i>Polypedilum (Uresipedilum) flavum</i>	+
08601	<i>Hydrachnidia</i>	+	84480	<i>Polypedilum (P.) laetum group</i>	+
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	84700	<i>Stenochironomus sp</i>	+
13400	<i>Stenacron sp</i>	+	85625	<i>Rheotanytarsus sp</i>	+
13521	<i>Stenonema femoratum</i>	+	85821	<i>Tanytarsus glabrescens group sp 7</i>	+
14600	<i>Choroterpes sp</i>	+	95100	<i>Physella sp</i>	+
17200	<i>Caenis sp</i>	+	96002	<i>Helisoma anceps anceps</i>	+
22001	<i>Coenagrionidae</i>	+	96900	<i>Ferrissia sp</i>	+
23909	<i>Boyeria vinosa</i>	+	98600	<i>Sphaerium sp</i>	+
25510	<i>Stylogomphus albistylus</i>	+	99001	<i>Unionidae</i>	+
27500	<i>Somatochlora sp</i>	+			
28410	<i>Leucorrhinia sp</i>	+	No. Quantitative Taxa: 0		Total Taxa: 58
34130	<i>Acroneuria frisoni</i>	+	No. Qualitative Taxa: 58		ICI:
47600	<i>Sialis sp</i>	+	Number of Organisms: 0		Qual EPT: 16
50315	<i>Chimarra obscura</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
51600	<i>Polycentropus sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
52530	<i>Hydropsyche depravata group</i>	+			
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
59100	<i>Ceraclea sp</i>	+			
59310	<i>Mystacides sepulchralis</i>	+			
60900	<i>Peltodytes sp</i>	+			
63300	<i>Hydroporini</i>	+			
63900	<i>Laccophilus sp</i>	+			
67800	<i>Tropisternus sp</i>	+			
68025	<i>Ectopria sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68130	<i>Helichus sp</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
68901	<i>Macronychus glabratus</i>	+			
69200	<i>Optioservus sp</i>	+			
69400	<i>Stenelmis sp</i>	+			
71900	<i>Tipula sp</i>	+			
72340	<i>Dixella sp</i>	+			
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	+			
77800	<i>Helopelopia sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			

**Ohio EPA/DSW Ecological Assessment Section
Macroinvertebrate Collection**

Site: Trib to E. Br. Ashtabula R (1.35/0.8)
Hilldom Rd.

Collection Date: 08/01/2011 River Code: 07-029 RM: 0.30

Taxa Code	Taxa	Quant/Qual	Taxa Code	Taxa	Quant/Qual
00401	<i>Spongillidae</i>	+	96900	<i>Ferrissia sp</i>	+
01801	<i>Turbellaria</i>	+	98200	<i>Pisidium sp</i>	+
03600	<i>Oligochaeta</i>	+	98600	<i>Sphaerium sp</i>	+
04664	<i>Helobdella stagnalis</i>	+	99001	<i>Unionidae</i>	+
04686	<i>Placobdella papillifera</i>	+			
06201	<i>Hyalella azteca</i>	+	No. Quantitative Taxa: 0		Total Taxa: 48
08240	<i>Orconectes (Crockerinus) propinquus</i>	+	No. Qualitative Taxa: 48		ICI:
11250	<i>Centroptilum sp (w/o hindwing pads)</i>	+	Number of Organisms: 0		Qual EPT: 12
11295	<i>Cloeon dipterum</i>	+			
11651	<i>Proclaeon sp (w/o hindwing pads)</i>	+			
13400	<i>Stenacron sp</i>	+			
13521	<i>Stenonema femoratum</i>	+			
17200	<i>Caenis sp</i>	+			
22001	<i>Coenagrionidae</i>	+			
34100	<i>Acroneuria sp</i>	+			
43205	<i>Nepa apiculata</i>	+			
47600	<i>Sialis sp</i>	+			
49200	<i>Climacia sp</i>	+			
49400	<i>Sisyra sp</i>	+			
51400	<i>Nyctiophylax sp</i>	+			
52200	<i>Cheumatopsyche sp</i>	+			
57400	<i>Neophylax sp</i>	+			
57900	<i>Pycnopsyche sp</i>	+			
58505	<i>Helicopsyche borealis</i>	+			
68025	<i>Ectopria sp</i>	+			
68075	<i>Psephenus herricki</i>	+			
68707	<i>Dubiraphia quadrinotata</i>	+			
68708	<i>Dubiraphia vittata group</i>	+			
72340	<i>Dixella sp</i>	+			
72700	<i>Anopheles sp</i>	+			
77120	<i>Ablabesmyia mallochi</i>	+			
78140	<i>Labrundinia pilosella</i>	+			
78655	<i>Procladius (Holotanypus) sp</i>	+			
78680	<i>Procladius (Psilotanypus) bellus</i>	+			
79400	<i>Zavrelimyia sp</i>	+			
82730	<i>Chironomus (C.) decorus group</i>	+			
83158	<i>Endochironomus nigricans</i>	+			
83300	<i>Glyptotendipes (G.) sp</i>	+			
84210	<i>Paratendipes albimanus or P. duplicatus</i>	+			
84450	<i>Polypedilum (Uresipedilum) flavum</i>	+			
84888	<i>Xenochironomus xenolabis</i>	+			
85821	<i>Tanytarsus glabrescens group sp 7</i>	+			
95100	<i>Physella sp</i>	+			
96002	<i>Helisoma anceps anceps</i>	+			

Appendix C: Macroinvertebrate ICI Scores and Metrics

Ashtabula River basin macroinvertebrate ICI scores and metrics.

River Mile	Drainage Area (sq mi)	Number of				Percent:					Qual. EPT	Eco-region	ICI
		Total Taxa	Mayfly Taxa	Caddisfly Taxa	Dipteran Taxa	Mayflies	Caddisflies	Tanytarsini	Other Dipt/NI	Tolerant Organisms			
Ashtabula River (07-001)													
Year: 2011													
27.00	65.2	46(6)	8(4)	2(4)	23(6)	2.7(2)	1.2(2)	64.2(6)	30.2(4)	14.0(2)	31(6)	3	42
23.80	88.4	40(6)	9(6)	6(6)	16(4)	3.6(2)	18.9(6)	23.6(4)	52.3(2)	21.3(0)	27(6)	3	42
19.03	94.0	41(6)	11(6)	3(4)	14(4)	11.0(2)	10.4(4)	53.9(6)	22.3(6)	1.9(6)	25(6)	3	50
13.90	113.0	39(6)	10(6)	4(4)	13(4)	5.3(2)	10.0(4)	69.2(6)	15.1(6)	0.6(6)	28(6)	3	50
3.60	127.0	41(6)	11(6)	7(6)	15(4)	10.5(2)	8.5(2)	64.7(6)	16.0(6)	0.6(6)	31(6)	3	50
Ashtabula Creek (07-003)													
Year: 2011													
0.28	17.3	46(6)	6(4)	3(6)	25(6)	3.8(2)	2.8(4)	34.1(6)	52.9(2)	7.6(6)	28(6)	3	48
West Branch Ashtabula River (07-004)													
Year: 2011													
2.70	31.0	34(4)	3(2)	2(4)	20(6)	4.9(2)	1.4(2)	50.7(6)	38.4(4)	7.0(6)	23(6)	3	42
East Branch Ashtabula River (07-005)													
Year: 2011													
2.40	21.0	42(6)	6(4)	5(6)	20(6)	3.3(2)	3.1(4)	47.0(6)	44.9(4)	20.0(2)	25(6)	3	46

River Mile	Percent Lacustrary	Number of			Percent:					Diptera/ ² ft	Qual. EPT	Eco-region	LICI
		Total Taxa	Sensitive Taxa	Dipteran Taxa	Mayflies & Caddisflies	Gatherers ^a	Sensitive Organisms	Other Diptera ^b	Predom Taxon				
Ashtabula River (07-001)													
Year: 2011													
2.40 A	96.0	39(6)	10(4)	22(6)	13.3(4)	92.6(0)	33.3(6)	68.8(4)	48.5(4)	82.4(6)	6(4)	3	44
1.80 A	72.0	26(4)	5(2)	8(2)	5.2(2)	89.4(0)	1.4(2)	94.1(0)	46.0(4)	404(4)	0(0)	3	20
1.60 A	64.0	20(2)	2(0)	5(0)	0.7(2)	95.8(0)	0.4(2)	99.1(0)	85.5(0)	56.8(6)	0(0)	3	12
1.60 B	64.0	25(4)	4(0)	9(2)	2.2(2)	68.4(4)	1.3(2)	96.7(0)	34.4(6)	232(4)	0(0)	3	24
1.10 A	44.0	33(4)	5(2)	13(4)	2.3(2)	74.1(4)	4.2(2)	96.2(0)	38.1(6)	37.2(6)	3(2)	3	32
1.10 B	44.0	30(4)	7(2)	10(2)	25.5(6)	72.8(4)	36.6(6)	72.6(6)	17.5(6)	73.0(6)	3(2)	3	44
0.90 A	36.0	26(4)	4(2)	9(2)	2.0(2)	80.9(2)	1.4(2)	97.9(0)	46.2(4)	145(6)	4(4)	3	28
0.90 B	36.0	24(4)	5(2)	4(0)	3.4(2)	93.2(0)	3.5(2)	94.9(0)	63.7(2)	139(6)	4(4)	3	22
0.60 A	24.0	32(4)	4(2)	10(2)	1.7(2)	90.2(0)	1.4(2)	97.6(0)	38.2(4)	155(6)	2(2)	3	24
0.60 B	24.0	37(6)	5(2)	11(2)	3.2(2)	91.1(0)	4.4(2)	95.7(0)	39.1(4)	98.0(6)	2(2)	3	26
0.30 A	12.0	29(4)	4(2)	13(4)	1.5(2)	80.2(2)	0.7(2)	98.1(0)	53.9(2)	18.8(6)	0(0)	3	24

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

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

Appendix D: Fish Species by Location

Species List

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 27.20	Location: upst. Hilldom Rd.	Date Range: 07/12/2011
Time Fished: 6300 sec	Drainage: 65.2 sq mi	Thru: 08/17/2011
Dist Fished: 0.40 km	Basin: Ashtabula River	No of Passes: 2
		Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Black Redhorse	R	I	S I	59	44.25	1.86	2.53	13.87	57.12
Golden Redhorse	R	I	S M	8	6.00	0.25	0.41	2.24	68.13
Northern Hog Sucker	R	I	S M	151	113.25	4.77	2.14	11.74	18.90
White Sucker	W	O	S T	94	70.50	2.97	0.77	4.20	10.85
Golden Shiner	N	I	M T	1	0.75	0.03	0.02	0.08	20.00
Bigeye Chub	N	I	S I	65	48.75	2.05	0.11	0.58	2.15
Creek Chub	N	G	N T	47	35.25	1.48	0.35	1.89	9.79
Redfin Shiner	N	I	N	17	12.75	0.54	0.03	0.15	2.18
Striped Shiner	N	I	S	359	269.25	11.34	1.69	9.28	6.28
Sand Shiner	N	I	M M	142	106.50	4.49	0.14	0.74	1.27
Mimic Shiner	N	I	M I	42	31.50	1.33	0.05	0.27	1.55
Silverjaw Minnow	N	I	M	46	34.50	1.45	0.09	0.49	2.56
Bluntnose Minnow	N	O	C T	1,150	862.50	36.33	2.01	11.01	2.33
Central Stoneroller	N	H	N	342	256.50	10.81	1.18	6.46	4.59
Yellow Bullhead		I	C T	4	3.00	0.13	0.41	2.26	137.50
Stonecat Madtom		I	C I	13	9.75	0.41	0.25	1.36	25.38
Rock Bass	S	C	C	89	66.75	2.81	2.15	11.81	32.25
Smallmouth Bass	F	C	C M	33	24.75	1.04	2.92	16.02	117.99
Largemouth Bass	F	C	C	2	1.50	0.06	0.11	0.58	70.00
Green Sunfish	S	I	C T	16	12.00	0.51	0.19	1.05	15.94
Bluegill Sunfish	S	I	C P	3	2.25	0.09	0.04	0.23	18.33
Pumpkinseed Sunfish	S	I	C P	3	2.25	0.09	0.08	0.41	33.33
Green Sf X Bluegill Sf				2	1.50	0.06	0.02	0.12	15.00
Green Sf X Pumpkinseed				3	2.25	0.09	0.05	0.25	20.00
Yellow Perch			M	2	1.50	0.06	0.03	0.15	17.50
Blackside Darter	D	I	S	19	14.25	0.60	0.05	0.29	3.68
Johnny Darter	D	I	C	35	26.25	1.11	0.04	0.19	1.32
Greenside Darter	D	I	S M	200	150.00	6.32	0.21	1.13	1.37
Rainbow Darter	D	I	S M	117	87.75	3.70	0.12	0.68	1.41
Fantail Darter	D	I	C	101	75.75	3.19	0.09	0.48	1.15
<i>Mile Total</i>				3,165	2,373.75		18.22		
<i>Number of Species</i>				28					
<i>Number of Hybrids</i>				2					

Species List

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 23.70	Location: Kelloggsville Rd.	Date Range: 07/12/2011
Time Fished: 5400 sec	Drainage: 88.0 sq mi	Thru: 08/17/2011
Dist Fished: 0.35 km	Basin: Ashtabula River	No of Passes: 2
		Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
North Brook Lamprey [E]		F	N R	4	4.00	0.28	0.02	0.10	5.00
Central Mudminnow		I	C T	1	1.00	0.07	0.01	0.02	5.00
Redfin Pickerel		P	M P	11	9.75	0.68	0.13	0.65	14.55
Black Redhorse	R	I	S I	48	41.00	2.84	3.78	18.53	91.77
Golden Redhorse	R	I	S M	34	26.50	1.84	3.56	17.47	130.88
Northern Hog Sucker	R	I	S M	174	158.75	11.01	2.49	12.19	16.13
White Sucker	W	O	S T	77	76.25	5.29	0.38	1.86	6.17
Common Carp	G	O	M T	1	0.75	0.05	0.98	4.78	1,300.00
Bigeye Chub	N	I	S I	9	8.75	0.61	0.02	0.08	1.89
Creek Chub	N	G	N T	5	5.00	0.35	0.01	0.05	2.00
Redfin Shiner	N	I	N	34	26.75	1.86	0.05	0.26	1.97
Striped Shiner	N	I	S	125	104.50	7.25	0.92	4.53	8.87
Mimic Shiner	N	I	M I	112	106.00	7.35	0.15	0.74	1.43
Silverjaw Minnow	N	I	M	38	36.00	2.50	0.08	0.41	2.26
Bluntnose Minnow	N	O	C T	426	395.25	27.42	0.80	3.93	2.00
Central Stoneroller	N	H	N	64	62.50	4.34	0.20	0.98	3.20
Stonecat Madtom		I	C I	5	4.50	0.31	0.08	0.38	16.00
Rock Bass	S	C	C	45	38.75	2.69	1.13	5.55	28.89
Smallmouth Bass	F	C	C M	30	24.25	1.68	2.06	10.12	81.15
Largemouth Bass	F	C	C	23	17.50	1.21	1.89	9.24	105.65
Green Sunfish	S	I	C T	31	27.00	1.87	0.36	1.78	13.55
Bluegill Sunfish	S	I	C P	35	30.00	2.08	0.71	3.48	23.29
Pumpkinseed Sunfish	S	I	C P	4	3.25	0.23	0.06	0.31	18.75
Green Sf X Bluegill Sf				2	1.75	0.12	0.03	0.13	15.00
Green Sf X Pumpkinseed				3	2.25	0.16	0.14	0.68	61.67
Yellow Perch			M	5	4.25	0.29	0.07	0.33	16.00
Blackside Darter	D	I	S	37	31.00	2.15	0.07	0.33	2.23
Johnny Darter	D	I	C	27	24.50	1.70	0.03	0.17	1.37
Greenside Darter	D	I	S M	75	68.25	4.73	0.08	0.38	1.13
Rainbow Darter	D	I	S M	68	62.50	4.34	0.07	0.34	1.12
Fantail Darter	D	I	C	45	39.00	2.71	0.05	0.23	1.13
<i>Mile Total</i>				1,598	1,441.50		20.40		
<i>Number of Species</i>				29					
<i>Number of Hybrids</i>				2					

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 19.00	Location: Benetka Rd.	Date Range: 07/18/2011
Time Fished: 6000 sec	Drainage: 94.0 sq mi	Thru: 08/17/2011
Dist Fished: 0.40 km	Basin: Ashtabula River	No of Passes: 2
		Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
North Brook Lamprey [E]		F	N R	10	7.50	0.72	0.05	0.31	6.00
Redfin Pickerel		P	M P	4	3.00	0.29	0.07	0.47	22.50
Black Redhorse	R	I	S I	25	18.75	1.81	1.95	13.54	103.87
Golden Redhorse	R	I	S M	16	12.00	1.16	3.05	21.18	253.88
Northern Hog Sucker	R	I	S M	104	78.00	7.53	1.04	7.22	13.32
White Sucker	W	O	S T	2	1.50	0.14	0.01	0.07	7.00
Bigeye Chub	N	I	S I	46	34.50	3.33	0.08	0.52	2.17
Creek Chub	N	G	N T	26	19.50	1.88	0.04	0.25	1.86
Redfin Shiner	N	I	N	22	16.50	1.59	0.02	0.15	1.28
Striped Shiner	N	I	S	291	218.25	21.06	1.35	9.39	6.19
Sand Shiner	N	I	M M	6	4.50	0.43	0.01	0.09	3.00
Mimic Shiner	N	I	M I	165	123.75	11.94	0.19	1.33	1.55
Silverjaw Minnow	N	I	M	1	0.75	0.07	0.00	0.01	2.00
Bluntnose Minnow	N	O	C T	96	72.00	6.95	0.11	0.79	1.58
Central Stoneroller	N	H	N	66	49.50	4.78	0.10	0.66	1.93
Rock Bass	S	C	C	110	82.50	7.96	2.56	17.80	31.03
Smallmouth Bass	F	C	C M	40	30.00	2.89	3.18	22.09	105.90
Largemouth Bass	F	C	C	1	0.75	0.07	0.02	0.10	20.00
Green Sunfish	S	I	C T	13	9.75	0.94	0.15	1.04	15.38
Bluegill Sunfish	S	I	C P	7	5.25	0.51	0.06	0.44	12.14
Pumpkinseed Sunfish	S	I	C P	1	0.75	0.07	0.02	0.16	30.00
Green Sf X Bluegill Sf				2	1.50	0.14	0.04	0.26	25.00
Blackside Darter	D	I	S	36	27.00	2.60	0.06	0.40	2.14
Johnny Darter	D	I	C	8	6.00	0.58	0.01	0.08	1.88
Greenside Darter	D	I	S M	126	94.50	9.12	0.13	0.89	1.36
Rainbow Darter	D	I	S M	112	84.00	8.10	0.08	0.54	0.93
Fantail Darter	D	I	C	46	34.50	3.33	0.03	0.21	0.87
<i>Mile Total</i>				1,382	1,036.50		14.38		
<i>Number of Species</i>				26					
<i>Number of Hybrids</i>				1					

Species List

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 14.00	Location: upst. Green Hill Rd.	Date Range: 07/19/2011
Time Fished: 5400 sec	Drainage: 113.0 sq mi	Thru: 08/17/2011
Dist Fished: 0.40 km	Basin: Ashtabula River	No of Passes: 2
		Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
North Brook Lamprey [E]		F	N R	15	11.25	0.98	0.05	0.64	4.67
Central Mudminnow		I	C T	2	1.50	0.13	0.00	0.05	2.50
Redfin Pickerel		P	M P	2	1.50	0.13	0.05	0.55	30.00
Black Redhorse	R	I	S I	20	15.00	1.31	0.03	0.36	2.00
Golden Redhorse	R	I	S M	32	24.00	2.09	0.50	6.01	20.63
Northern Hog Sucker	R	I	S M	234	175.50	15.28	1.70	20.60	9.66
White Sucker	W	O	S T	45	33.75	2.94	0.46	5.57	13.58
Bigeye Chub	N	I	S I	123	92.25	8.03	0.24	2.92	2.60
Western Blacknose Dace	N	G	S T	1	0.75	0.07	0.00	0.03	3.00
Creek Chub	N	G	N T	88	66.00	5.75	0.18	2.22	2.77
Striped Shiner	N	I	S	186	139.50	12.15	1.12	13.60	8.02
Sand Shiner	N	I	M M	48	36.00	3.14	0.05	0.66	1.50
Silverjaw Minnow	N	I	M	8	6.00	0.52	0.02	0.18	2.50
Bluntnose Minnow	N	O	C T	86	64.50	5.62	0.16	1.96	2.50
Central Stoneroller	N	H	N	238	178.50	15.55	1.37	16.68	7.69
Yellow Bullhead		I	C T	13	9.75	0.85	0.38	4.56	38.46
Stonecat Madtom		I	C I	9	6.75	0.59	0.06	0.77	9.33
Black Crappie	S	I	C	1	0.75	0.07	0.02	0.23	25.00
Rock Bass	S	C	C	15	11.25	0.98	0.55	6.69	48.93
Smallmouth Bass	F	C	C M	41	30.75	2.68	0.70	8.52	22.79
Largemouth Bass	F	C	C	19	14.25	1.24	0.11	1.37	7.89
Bluegill Sunfish	S	I	C P	18	13.50	1.18	0.15	1.87	11.39
Pumpkinseed Sunfish	S	I	C P	1	0.75	0.07	0.02	0.18	20.00
Blackside Darter	D	I	S	12	9.00	0.78	0.02	0.27	2.50
Johnny Darter	D	I	C	23	17.25	1.50	0.02	0.23	1.09
Greenside Darter	D	I	S M	81	60.75	5.29	0.10	1.23	1.67
Rainbow Darter	D	I	S M	111	83.25	7.25	0.12	1.43	1.41
Fantail Darter	D	I	C	59	44.25	3.85	0.05	0.66	1.22
<i>Mile Total</i>				1,531	1,148.25		8.23		
<i>Number of Species</i>				28					
<i>Number of Hybrids</i>				0					

Species List

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 10.10	Location: Hadlock Rd.	Date Range: 07/13/2011
Time Fished: 4800 sec	Drainage: 118.0 sq mi	Thru: 08/23/2011
Dist Fished: 0.40 km	Basin: Ashtabula River	No of Passes: 2
		Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
North Brook Lamprey [E]		F	N R	1	0.75	0.09	0.01	0.06	10.00
Black Redhorse	R	I	S I	2	1.50	0.19	0.15	1.23	97.50
Golden Redhorse	R	I	S M	21	15.75	1.95	0.36	3.07	23.10
Northern Hog Sucker	R	I	S M	133	99.75	12.35	2.78	23.42	27.89
White Sucker	W	O	S T	3	2.25	0.28	0.01	0.10	5.00
Bigeye Chub	N	I	S I	22	16.50	2.04	0.03	0.22	1.59
Creek Chub	N	G	N T	5	3.75	0.46	0.04	0.32	10.00
Striped Shiner	N	I	S	248	186.00	23.03	0.97	8.15	5.20
Sand Shiner	N	I	M M	1	0.75	0.09	0.00	0.01	2.00
Silverjaw Minnow	N	I	M	1	0.75	0.09	0.00	0.03	5.00
Bluntnose Minnow	N	O	C T	71	53.25	6.59	0.12	1.02	2.28
Central Stoneroller	N	H	N	324	243.00	30.08	2.36	19.89	9.72
Yellow Bullhead		I	C T	3	2.25	0.28	0.53	4.50	237.33
Stonecat Madtom		I	C I	2	1.50	0.19	0.02	0.15	12.00
Black Crappie	S	I	C	1	0.75	0.09	0.03	0.25	40.00
Rock Bass	S	C	C	14	10.50	1.30	0.79	6.63	75.00
Smallmouth Bass	F	C	C M	12	9.00	1.11	0.33	2.78	36.67
Largemouth Bass	F	C	C	20	15.00	1.86	1.57	13.20	104.50
Green Sunfish	S	I	C T	3	2.25	0.28	0.03	0.22	11.67
Bluegill Sunfish	S	I	C P	116	87.00	10.77	1.63	13.70	18.70
Pumpkinseed Sunfish	S	I	C P	5	3.75	0.46	0.04	0.32	10.00
Green Sf X Bluegill Sf				1	0.75	0.09	0.02	0.13	20.00
Blackside Darter	D	I	S	6	4.50	0.56	0.01	0.10	2.50
Johnny Darter	D	I	C	8	6.00	0.74	0.01	0.06	1.25
Greenside Darter	D	I	S M	9	6.75	0.84	0.01	0.10	1.78
Rainbow Darter	D	I	S M	28	21.00	2.60	0.03	0.21	1.21
Fantail Darter	D	I	C	17	12.75	1.58	0.02	0.13	1.18
<i>Mile Total</i>				1,077	807.75		11.88		
<i>Number of Species</i>				26					
<i>Number of Hybrids</i>				1					

Species List

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 5.80	Location: St. Rt. 11	Date Range: 07/19/2011
Time Fished: 6000 sec	Drainage: 120.0 sq mi	Thru: 08/23/2011
Dist Fished: 0.40 km	Basin: Ashtabula River	No of Passes: 2
		Sampler Type: D

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	0.75	0.08	0.03	0.19	40.00
Black Redhorse	R	I	S I	34	25.50	2.62	2.29	14.77	89.73
Golden Redhorse	R	I	S M	8	6.00	0.62	0.02	0.10	2.50
Northern Hog Sucker	R	I	S M	87	65.25	6.71	2.61	16.85	39.99
White Sucker	W	O	S T	111	83.25	8.56	0.12	0.80	1.49
Bigeye Chub	N	I	S I	186	139.50	14.34	0.16	1.04	1.15
Creek Chub	N	G	N T	3	2.25	0.23	0.01	0.04	2.33
Rosyface Shiner	N	I	S I	1	0.75	0.08	0.00	0.02	3.00
Striped Shiner	N	I	S	115	86.25	8.87	0.71	4.58	8.22
Spotfin Shiner	N	I	M	13	9.75	1.00	0.03	0.22	3.46
Sand Shiner	N	I	M M	15	11.25	1.16	0.02	0.15	2.00
Mimic Shiner	N	I	M I	16	12.00	1.23	0.02	0.15	1.88
Silverjaw Minnow	N	I	M	6	4.50	0.46	0.02	0.10	3.33
Bluntnose Minnow	N	O	C T	64	48.00	4.93	0.14	0.90	2.89
Central Stoneroller	N	H	N	122	91.50	9.41	0.33	2.16	3.65
Channel Catfish	F		C	3	2.25	0.23	3.30	21.31	1,466.67
Yellow Bullhead		I	C T	2	1.50	0.15	0.01	0.07	7.00
Stonecat Madtom		I	C I	2	1.50	0.15	0.02	0.10	10.00
Black Crappie	S	I	C	2	1.50	0.15	0.15	0.95	97.50
Rock Bass	S	C	C	66	49.50	5.09	2.17	14.00	43.80
Smallmouth Bass	F	C	C M	58	43.50	4.47	1.34	8.67	30.87
Largemouth Bass	F	C	C	8	6.00	0.62	0.11	0.73	18.75
Green Sunfish	S	I	C T	4	3.00	0.31	0.03	0.16	8.33
Bluegill Sunfish	S	I	C P	169	126.75	13.03	1.45	9.35	11.42
Longear Sunfish	S	I	C M	1	0.75	0.08	0.05	0.29	60.00
Pumpkinseed Sunfish	S	I	C P	4	3.00	0.31	0.06	0.41	21.25
Green Sf X Bluegill Sf				1	0.75	0.08	0.02	0.15	30.00
Yellow Perch			M	1	0.75	0.08	0.03	0.19	40.00
Blackside Darter	D	I	S	2	1.50	0.15	0.00	0.03	2.50
Logperch	D	I	S M	7	5.25	0.54	0.05	0.29	8.57
Johnny Darter	D	I	C	10	7.50	0.77	0.01	0.06	1.20
Greenside Darter	D	I	S M	35	26.25	2.70	0.06	0.41	2.43
Rainbow Darter	D	I	S M	120	90.00	9.25	0.11	0.71	1.23
Fantail Darter	D	I	C	20	15.00	1.54	0.02	0.11	1.15
<i>Mile Total</i>				1,297	972.75		15.49		
<i>Number of Species</i>				33					
<i>Number of Hybrids</i>				1					

Species List

Page 7

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 3.60	Location: upst. Tannery Hill Rd.	Date Range: 07/19/2011
Time Fished: 6300 sec	Drainage: 128.0 sq mi	Thru: 08/24/2011
Dist Fished: 0.40 km	Basin: Ashtabula River	No of Passes: 2
		Sampler Type: D

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	0.75	0.05	0.04	0.26	50.00
Black Redhorse	R	I	S I	10	7.50	0.49	0.71	4.92	94.00
Golden Redhorse	R	I	S M	1	0.75	0.05	0.02	0.10	20.00
Northern Hog Sucker	R	I	S M	53	39.75	2.59	1.62	11.31	40.73
White Sucker	W	O	S T	125	93.75	6.10	0.51	3.53	5.39
Common Carp	G	O	M T	1	0.75	0.05	0.00	0.02	4.00
Bigeye Chub	N	I	S I	64	48.00	3.12	0.14	0.97	2.89
Western Blacknose Dace	N	G	S T	1	0.75	0.05	0.00	0.02	4.00
Creek Chub	N	G	N T	9	6.75	0.44	0.01	0.06	1.33
Emerald Shiner	N	I	M	1	0.75	0.05	0.00	0.02	3.00
Rosyface Shiner	N	I	S I	26	19.50	1.27	0.06	0.39	2.88
Striped Shiner	N	I	S	169	126.75	8.25	0.74	5.18	5.84
Spotfin Shiner	N	I	M	3	2.25	0.15	0.01	0.05	3.33
Sand Shiner	N	I	M M	32	24.00	1.56	0.05	0.36	2.16
Mimic Shiner	N	I	M I	66	49.50	3.22	0.09	0.61	1.76
Silverjaw Minnow	N	I	M	6	4.50	0.29	0.02	0.16	5.00
Bluntnose Minnow	N	O	C T	185	138.75	9.03	0.48	3.38	3.49
Central Stoneroller	N	H	N	761	570.75	37.14	3.10	21.67	5.44
Channel Catfish	F		C	2	1.50	0.10	1.43	9.95	950.00
Yellow Bullhead		I	C T	7	5.25	0.34	0.37	2.60	70.71
Stonecat Madtom		I	C I	11	8.25	0.54	0.08	0.55	9.55
Rock Bass	S	C	C	42	31.50	2.05	0.84	5.90	26.79
Smallmouth Bass	F	C	C M	26	19.50	1.27	2.69	18.80	137.99
Largemouth Bass	F	C	C	3	2.25	0.15	0.19	1.32	83.67
Green Sunfish	S	I	C T	6	4.50	0.29	0.09	0.60	19.17
Bluegill Sunfish	S	I	C P	51	38.25	2.49	0.35	2.41	9.02
Green Sf X Longear Sf				1	0.75	0.05	0.05	0.37	70.00
Logperch	D	I	S M	14	10.50	0.68	0.11	0.79	10.71
Greenside Darter	D	I	S M	66	49.50	3.22	0.16	1.09	3.15
Rainbow Darter	D	I	S M	285	213.75	13.91	0.33	2.33	1.56
Fantail Darter	D	I	C	21	15.75	1.02	0.04	0.29	2.62
<i>Mile Total</i>				2,049	1,536.75		14.32		
<i>Number of Species</i>				30					
<i>Number of Hybrids</i>				1					

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 2.30	Location:	Date Range: 06/28/2011
Time Fished: 4776 sec	Drainage: 132.0 sq mi	Thru: 09/13/2011
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
Longnose Gar		P	M	2	2.00	0.34	1.30	0.71	650.00
Gizzard Shad		O	M	11	11.00	1.88	1.21	0.66	110.00
Rainbow Trout	E		N	7	7.00	1.20	19.05	10.34	2,721.43
Quillback	C	O	M	5	5.00	0.86	0.68	0.37	135.00
Silver Redhorse	R	I	S M	3	3.00	0.51	4.15	2.25	1,383.33
Black Redhorse	R	I	S I	286	286.00	48.97	113.76	61.76	397.75
Golden Redhorse	R	I	S M	10	10.00	1.71	1.18	0.64	117.50
Shorthead Redhorse	R	I	S M	1	1.00	0.17	0.08	0.04	75.00
River Redhorse [S]	R	I	S I	1	1.00	0.17	0.61	0.33	605.00
Northern Hog Sucker	R	I	S M	44	44.00	7.53	7.50	4.07	170.37
Common Carp	G	O	M T	5	5.00	0.86	13.35	7.25	2,670.00
Emerald Shiner	N	I	M	14	14.00	2.40	0.05	0.02	3.21
Bluntnose Minnow	N	O	C T	2	2.00	0.34	0.01	0.01	5.00
Channel Catfish	F		C	3	3.00	0.51	5.68	3.08	1,891.67
Brown Bullhead		I	C T	1	1.00	0.17	0.41	0.22	410.00
Brook Silverside		I	M M	8	8.00	1.37	0.03	0.01	3.38
White Crappie	S	I	C	1	1.00	0.17	0.11	0.06	110.00
Rock Bass	S	C	C	21	21.00	3.60	2.26	1.23	107.57
Smallmouth Bass	F	C	C M	6	6.00	1.03	1.30	0.71	216.50
Largemouth Bass	F	C	C	28	28.00	4.79	6.80	3.69	242.94
Bluegill Sunfish	S	I	C P	71	71.00	12.16	2.91	1.58	41.04
Pumpkinseed Sunfish	S	I	C P	28	28.00	4.79	1.40	0.76	49.82
Bluegill X Pumpkinseed				1	1.00	0.17	0.13	0.07	130.00
Logperch	D	I	S M	17	17.00	2.91	0.16	0.09	9.41
Freshwater Drum			M P	6	6.00	1.03	0.11	0.06	18.33
Round Goby	E			2	2.00	0.34	0.01	0.00	3.00
				<i>Mile Total</i>	584	584.00	184.20		
				<i>Number of Species</i>	25				
				<i>Number of Hybrids</i>	1				

Species List

Page 9

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 1.80	Location: upst. Fields Brook	Date Range: 06/29/2011
Time Fished: 5387 sec	Drainage: 132.0 sq mi	Thru: 09/13/2011
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
Longnose Gar		P	M	1	1.00	0.13	0.09	0.07	88.00
Gizzard Shad		O	M	73	73.00	9.58	2.58	2.11	35.36
Bigmouth Buffalo	C	I	M	3	3.00	0.39	15.51	12.66	5,171.33
Quillback	C	O	M	1	1.00	0.13	0.68	0.55	675.00
Silver Redhorse	R	I	S M	5	5.00	0.66	2.53	2.06	505.00
Black Redhorse	R	I	S I	4	4.00	0.52	0.76	0.62	191.00
Golden Redhorse	R	I	S M	2	2.00	0.26	0.74	0.60	367.50
Northern Hog Sucker	R	I	S M	2	2.00	0.26	0.44	0.36	221.50
White Sucker	W	O	S T	5	5.00	0.66	2.45	2.00	490.60
Spotted Sucker	R	I	S	7	7.00	0.92	3.13	2.55	446.43
Common Carp	G	O	M T	25	25.00	3.28	58.54	47.79	2,341.69
Goldfish	G	O	M T	1	1.00	0.13	0.40	0.32	396.00
Golden Shiner	N	I	M T	8	8.00	1.05	0.12	0.09	14.38
Emerald Shiner	N	I	M	118	118.00	15.49	0.35	0.28	2.93
Sand Shiner	N	I	M M	2	2.00	0.26	0.00	0.00	2.00
Bluntnose Minnow	N	O	C T	36	36.00	4.72	0.06	0.05	1.72
Yellow Bullhead		I	C T	1	1.00	0.13	0.40	0.32	398.00
Brown Bullhead		I	C T	5	5.00	0.66	1.79	1.46	357.00
Brook Silverside		I	M M	75	75.00	9.84	0.11	0.09	1.51
Black Crappie	S	I	C	1	1.00	0.13	0.32	0.26	324.00
Rock Bass	S	C	C	17	17.00	2.23	0.97	0.79	56.76
Largemouth Bass	F	C	C	71	71.00	9.32	11.42	9.32	160.90
Green Sunfish	S	I	C T	3	3.00	0.39	0.07	0.05	22.00
Bluegill Sunfish	S	I	C P	169	169.00	22.18	11.88	9.69	70.28
Pumpkinseed Sunfish	S	I	C P	119	119.00	15.62	6.70	5.47	56.30
Bluegill X Pumpkinseed				2	2.00	0.26	0.29	0.24	145.00
Green Sf X Bluegill Sf				1	1.00	0.13	0.10	0.08	102.00
Yellow Perch			M	1	1.00	0.13	0.06	0.04	55.00
Logperch	D	I	S M	4	4.00	0.52	0.04	0.04	10.75
<i>Mile Total</i>				762	762.00		122.51		
<i>Number of Species</i>				27					
<i>Number of Hybrids</i>				2					

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 1.30	Location: upst. 5 1/2 slip	Date Range: 06/29/2011
Time Fished: 4260 sec	Drainage: 137.0 sq mi	Thru: 09/12/2011
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	0.22	2.93	1.78	2,925.00
Gizzard Shad		O	M	3	3.00	0.67	0.13	0.08	42.00
Bigmouth Buffalo	C	I	M	3	3.00	0.67	14.95	9.08	4,983.33
Silver Redhorse	R	I	S M	2	2.00	0.45	1.19	0.72	593.50
Black Redhorse	R	I	S I	2	2.00	0.45	1.01	0.61	505.00
Golden Redhorse	R	I	S M	8	8.00	1.79	1.27	0.77	158.25
Northern Hog Sucker	R	I	S M	1	1.00	0.22	0.17	0.10	165.00
Spotted Sucker	R	I	S	4	4.00	0.90	1.21	0.74	303.25
Common Carp	G	O	M T	40	40.00	8.97	96.45	58.59	2,411.33
Golden Shiner	N	I	M T	1	1.00	0.22	0.01	0.00	5.00
Emerald Shiner	N	I	M	18	18.00	4.04	0.07	0.04	4.11
Bluntnose Minnow	N	O	C T	3	3.00	0.67	0.01	0.00	2.00
Channel Catfish	F		C	1	1.00	0.22	2.88	1.75	2,875.00
Yellow Bullhead		I	C T	3	3.00	0.67	0.65	0.39	215.00
Brown Bullhead		I	C T	3	3.00	0.67	1.25	0.76	416.67
Eastern Banded Killifish	E	I	M T	1	1.00	0.22	0.00	0.00	4.00
Brook Silverside		I	M M	1	1.00	0.22	0.01	0.00	5.00
Rock Bass	S	C	C	17	17.00	3.81	1.13	0.69	66.35
Smallmouth Bass	F	C	C M	3	3.00	0.67	0.06	0.04	19.33
Largemouth Bass	F	C	C	89	89.00	19.96	10.41	6.32	116.97
Green Sunfish	S	I	C T	1	1.00	0.22	0.05	0.03	54.00
Bluegill Sunfish	S	I	C P	149	149.00	33.41	4.27	2.59	28.66
Pumpkinseed Sunfish	S	I	C P	66	66.00	14.80	3.10	1.88	46.92
Walleye	F	P	S	1	1.00	0.22	1.40	0.85	1,400.00
Yellow Perch			M	9	9.00	2.02	1.50	0.91	167.00
Logperch	D	I	S M	8	8.00	1.79	0.09	0.06	11.75
Freshwater Drum			M P	8	8.00	1.79	18.44	11.20	2,304.75
<i>Mile Total</i>				446	446.00		164.61		
<i>Number of Species</i>				27					
<i>Number of Hybrids</i>				0					

Species List

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 1.20	Location: in 5 1/2 slip	Date Range: 06/29/2011
Time Fished: 3373 sec	Drainage: 137.0 sq mi	Thru: 09/12/2011
Dist Fished: 0.50 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	9	18.00	1.94	3.77	1.54	209.17
Bigmouth Buffalo	C	I	M	2	4.00	0.43	7.15	2.92	1,787.50
Smallmouth Buffalo	C	I	M	1	2.00	0.22	4.70	1.92	2,350.00
Silver Redhorse	R	I	S M	2	4.00	0.43	6.72	2.74	1,681.00
Black Redhorse	R	I	S I	11	22.00	2.38	8.60	3.51	391.09
Golden Redhorse	R	I	S M	30	60.00	6.48	7.30	2.98	121.73
Shorthead Redhorse	R	I	S M	2	4.00	0.43	0.18	0.07	45.50
Spotted Sucker	R	I	S	6	12.00	1.30	4.44	1.81	370.00
Common Carp	G	O	M T	21	42.00	4.54	102.98	42.03	2,451.98
Goldfish	G	O	M T	7	14.00	1.51	5.71	2.33	407.57
Golden Shiner	N	I	M T	3	6.00	0.65	0.19	0.08	32.00
Emerald Shiner	N	I	M	1	2.00	0.22	0.00	0.00	1.00
Bluntnose Minnow	N	O	C T	24	48.00	5.18	0.16	0.06	3.29
Yellow Bullhead		I	C T	1	2.00	0.22	0.26	0.10	128.00
Brown Bullhead		I	C T	33	66.00	7.13	35.20	14.37	533.41
Brook Silverside		I	M M	2	4.00	0.43	0.02	0.01	5.00
White Crappie	S	I	C	2	4.00	0.43	0.43	0.17	107.00
Rock Bass	S	C	C	11	22.00	2.38	2.39	0.98	108.82
Smallmouth Bass	F	C	C M	1	2.00	0.22	1.75	0.71	875.00
Largemouth Bass	F	C	C	64	128.00	13.82	21.07	8.60	164.57
Warmouth Sunfish	S	C	C	9	18.00	1.94	1.70	0.69	94.33
Green Sunfish	S	I	C T	1	2.00	0.22	0.03	0.01	17.00
Bluegill Sunfish	S	I	C P	117	234.00	25.27	11.58	4.73	49.49
Pumpkinseed Sunfish	S	I	C P	65	130.00	14.04	6.08	2.48	46.80
Walleye	F	P	S	2	4.00	0.43	0.52	0.21	131.00
Yellow Perch			M	15	30.00	3.24	2.84	1.16	94.53
Logperch	D	I	S M	14	28.00	3.02	0.27	0.11	9.71
Freshwater Drum			M P	7	14.00	1.51	8.95	3.65	639.29
	<i>Mile Total</i>			463	926.00		245.01		
	<i>Number of Species</i>			28					
	<i>Number of Hybrids</i>			0					

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 1.10	Location: at 5 1/2 slip	Date Range: 06/28/2011
Time Fished: 4400 sec	Drainage: 137.0 sq mi	Thru: 09/12/2011
Dist Fished: 0.96 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	1.04	0.29	2.71	2.60	2,600.00
Gizzard Shad		O	M	4	4.17	1.16	0.78	0.75	187.75
Northern Pike	F	P	M	1	1.04	0.29	1.17	1.12	1,125.00
Bigmouth Buffalo	C	I	M	6	6.25	1.73	24.61	23.62	3,937.50
Black Redhorse	R	I	S I	2	2.08	0.58	1.51	1.45	725.00
Spotted Sucker	R	I	S	6	6.25	1.73	4.61	4.42	737.50
Common Carp	G	O	M T	5	5.21	1.45	9.18	8.81	1,762.40
Goldfish	G	O	M T	13	13.54	3.76	4.25	4.07	313.46
Golden Shiner	N	I	M T	13	13.54	3.76	0.71	0.68	52.08
Striped Shiner	N	I	S	5	5.21	1.45	0.03	0.03	6.40
Bluntnose Minnow	N	O	C T	6	6.25	1.73	0.02	0.02	3.67
Yellow Bullhead		I	C T	1	1.04	0.29	0.28	0.26	264.00
Brown Bullhead		I	C T	32	33.33	9.25	17.98	17.26	539.29
Rock Bass	S	C	C	8	8.33	2.31	1.64	1.57	196.88
Largemouth Bass	F	C	C	67	69.79	19.36	22.32	21.42	319.80
Warmouth Sunfish	S	C	C	5	5.21	1.45	0.33	0.31	63.00
Green Sunfish	S	I	C T	1	1.04	0.29	0.05	0.05	45.00
Bluegill Sunfish	S	I	C P	107	111.46	30.92	5.87	5.63	52.63
Pumpkinseed Sunfish	S	I	C P	59	61.46	17.05	4.39	4.22	71.47
Yellow Perch			M	4	4.17	1.16	1.76	1.69	422.00
<i>Mile Total</i>				346	360.42		104.18		
<i>Number of Species</i>				20					
<i>Number of Hybrids</i>				0					

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 0.90	Location: dst. 5 1/2 slip	Date Range: 06/28/2011
Time Fished: 4436 sec	Drainage: 137.0 sq mi	Thru: 09/13/2011
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
Longnose Gar		P	M	1	1.00	0.29	0.07	0.05	73.00
Bowfin		P	C	1	1.00	0.29	1.20	0.81	1,200.00
Gizzard Shad		O	M	26	26.00	7.45	1.39	0.94	53.38
Northern Pike	F	P	M	1	1.00	0.29	0.70	0.47	700.00
Bigmouth Buffalo	C	I	M	7	7.00	2.01	24.05	16.25	3,435.71
Smallmouth Buffalo	C	I	M	1	1.00	0.29	2.55	1.72	2,550.00
Silver Redhorse	R	I	S M	1	1.00	0.29	0.40	0.27	398.00
Black Redhorse	R	I	S I	8	8.00	2.29	1.05	0.71	131.00
White Sucker	W	O	S T	3	3.00	0.86	0.30	0.20	99.33
Spotted Sucker	R	I	S	13	13.00	3.72	7.20	4.87	553.85
Common Carp	G	O	M T	15	15.00	4.30	50.82	34.34	3,388.09
Goldfish	G	O	M T	12	12.00	3.44	3.41	2.30	284.17
Golden Shiner	N	I	M T	9	9.00	2.58	0.49	0.33	54.83
Emerald Shiner	N	I	M	2	2.00	0.57	0.01	0.01	4.00
Spottail Shiner	N	I	M P	1	1.00	0.29	0.00	0.00	2.00
Bluntnose Minnow	N	O	C T	5	5.00	1.43	0.02	0.01	3.60
Yellow Bullhead		I	C T	1	1.00	0.29	0.20	0.13	196.00
Brown Bullhead		I	C T	20	20.00	5.73	11.18	7.55	558.75
Brook Silverside		I	M M	13	13.00	3.72	0.04	0.03	2.94
Rock Bass	S	C	C	13	13.00	3.72	2.19	1.48	168.69
Smallmouth Bass	F	C	C M	3	3.00	0.86	1.77	1.20	590.33
Largemouth Bass	F	C	C	55	55.00	15.76	8.28	5.60	150.56
Bluegill Sunfish	S	I	C P	88	88.00	25.21	4.78	3.23	54.32
Pumpkinseed Sunfish	S	I	C P	36	36.00	10.32	1.68	1.13	46.61
Yellow Perch			M	3	3.00	0.86	0.28	0.19	93.67
Freshwater Drum			M P	11	11.00	3.15	23.93	16.17	2,175.00
				<i>Mile Total</i>	349	349.00	147.98		
				<i>Number of Species</i>	26				
				<i>Number of Hybrids</i>	0				

River Code: 07-001	Stream: Ashtabula River	Sample Date: 2011
River Mile: 0.60	Location: dst. 5th St.	Date Range: 06/29/2011
Time Fished: 5338 sec	Drainage: 137.0 sq mi	Thru: 09/13/2011
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	0.30	1.75	1.76	1,750.00
Gizzard Shad		O	M	9	9.00	2.70	0.63	0.63	70.00
Northern Pike	F	P	M	2	2.00	0.60	2.40	2.42	1,200.00
Bigmouth Buffalo	C	I	M	1	1.00	0.30	7.03	7.08	7,025.00
Silver Redhorse	R	I	S M	1	1.00	0.30	0.42	0.42	418.00
Golden Redhorse	R	I	S M	7	7.00	2.10	0.93	0.94	132.86
Spotted Sucker	R	I	S	6	6.00	1.80	3.78	3.80	629.17
Common Carp	G	O	M T	9	9.00	2.70	26.95	27.15	2,994.44
Goldfish	G	O	M T	9	9.00	2.70	3.03	3.05	336.11
Golden Shiner	N	I	M T	10	10.00	3.00	0.75	0.76	75.20
Emerald Shiner	N	I	M	17	17.00	5.11	0.08	0.08	4.82
Bluntnose Minnow	N	O	C T	1	1.00	0.30	0.01	0.01	10.00
Brown Bullhead		I	C T	36	36.00	10.81	15.59	15.71	433.18
Brook Silverside		I	M M	6	6.00	1.80	0.01	0.01	1.50
White Crappie	S	I	C	11	11.00	3.30	1.27	1.28	115.09
Rock Bass	S	C	C	34	34.00	10.21	5.17	5.21	152.00
Smallmouth Bass	F	C	C M	13	13.00	3.90	7.54	7.60	580.23
Largemouth Bass	F	C	C	54	54.00	16.22	8.08	8.14	149.54
Green Sunfish	S	I	C T	1	1.00	0.30	0.04	0.04	38.00
Bluegill Sunfish	S	I	C P	54	54.00	16.22	2.52	2.54	46.60
Pumpkinseed Sunfish	S	I	C P	33	33.00	9.91	2.40	2.42	72.73
Yellow Perch			M	11	11.00	3.30	0.63	0.64	57.45
Logperch	D	I	S M	1	1.00	0.30	0.02	0.02	15.00
Freshwater Drum			M P	6	6.00	1.80	8.25	8.31	1,375.00
<i>Mile Total</i>				333	333.00		99.25		
<i>Number of Species</i>				24					
<i>Number of Hybrids</i>				0					

Species List

River Code: 07-002 River Mile: 0.25 Time Fished: 3442 sec Dist Fished: 0.16 km	Stream: Hubbard Run Location: Plymouth Ridge Rd. Drainage: 2.7 sq mi Basin: Ashtabula River	Sample Date: 2011 Date Range: 07/07/2011 No of Passes: 1 Sampler Type: E
---	---	--

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Rainbow Trout	E		N		10	18.75	2.07			
White Sucker	W	O	S	T	6	11.25	1.24			
Western Blacknose Dace	N	G	S	T	111	208.13	22.98			
Creek Chub	N	G	N	T	208	390.00	43.06			
Silverjaw Minnow	N	I	M		25	46.88	5.18			
Central Stoneroller	N	H	N		37	69.38	7.66			
Green Sunfish	S	I	C	T	3	5.63	0.62			
Bluegill Sunfish	S	I	C	P	4	7.50	0.83			
Rainbow Darter	D	I	S	M	77	144.38	15.94			
Fantail Darter	D	I	C		2	3.75	0.41			
<i>Mile Total</i>					483	905.63				
<i>Number of Species</i>					10					
<i>Number of Hybrids</i>					0					

Species List

River Code: 07-003	Stream: Ashtabula Creek	Sample Date: 2011
River Mile: 5.30	Location: Middle Rd.	Date Range: 08/16/2011
Time Fished: 1800 sec	Drainage: 10.0 sq mi	
Dist Fished: 0.15 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Central Mudminnow		I	C	T	1	2.00	0.39			
Redfin Pickerel		P	M	P	13	26.00	5.12			
Northern Hog Sucker	R	I	S	M	1	2.00	0.39			
White Sucker	W	O	S	T	24	48.00	9.45			
Creek Chub	N	G	N	T	115	230.00	45.28			
Striped Shiner	N	I	S		30	60.00	11.81			
Silverjaw Minnow	N	I	M		1	2.00	0.39			
Bluntnose Minnow	N	O	C	T	9	18.00	3.54			
Central Stoneroller	N	H	N		22	44.00	8.66			
Yellow Bullhead		I	C	T	2	4.00	0.79			
Rock Bass	S	C	C		2	4.00	0.79			
Green Sunfish	S	I	C	T	1	2.00	0.39			
Pumpkinseed Sunfish	S	I	C	P	1	2.00	0.39			
Blackside Darter	D	I	S		6	12.00	2.36			
Johnny Darter	D	I	C		4	8.00	1.57			
Rainbow Darter	D	I	S	M	14	28.00	5.51			
Fantail Darter	D	I	C		8	16.00	3.15			
<i>Mile Total</i>					254	508.00				
<i>Number of Species</i>					17					
<i>Number of Hybrids</i>					0					

River Code: 07-003	Stream: Ashtabula Creek	Sample Date: 2011
River Mile: 0.30	Location: Reger Rd.	Date Range: 08/16/2011
Time Fished: 2100 sec	Drainage: 17.3 sq mi	
Dist Fished: 0.20 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Golden Redhorse	R	I	S	M	14	21.00	2.11			
Northern Hog Sucker	R	I	S	M	30	45.00	4.52			
White Sucker	W	O	S	T	54	81.00	8.14			
Creek Chub	N	G	N	T	65	97.50	9.80			
Striped Shiner	N	I	S		212	318.00	31.98			
Bluntnose Minnow	N	O	C	T	132	198.00	19.91			
Central Stoneroller	N	H	N		18	27.00	2.71			
Yellow Bullhead		I	C	T	4	6.00	0.60			
Stonecat Madtom		I	C	I	2	3.00	0.30			
Rock Bass	S	C	C		34	51.00	5.13			
Smallmouth Bass	F	C	C	M	4	6.00	0.60			
Green Sunfish	S	I	C	T	13	19.50	1.96			
Bluegill Sunfish	S	I	C	P	5	7.50	0.75			
Pumpkinseed Sunfish	S	I	C	P	2	3.00	0.30			
Blackside Darter	D	I	S		18	27.00	2.71			
Johnny Darter	D	I	C		19	28.50	2.87			
Greenside Darter	D	I	S	M	15	22.50	2.26			
Rainbow Darter	D	I	S	M	14	21.00	2.11			
Fantail Darter	D	I	C		8	12.00	1.21			
<i>Mile Total</i>					663	994.50				
<i>Number of Species</i>					19					
<i>Number of Hybrids</i>					0					

Species List

River Code: 07-004 River Mile: 11.20 Time Fished: 1972 sec Dist Fished: 0.15 km	Stream: West Branch Ashtabula River Location: Hall Rd. Drainage: 9.0 sq mi Basin: Ashtabula River	Sample Date: 2011 Date Range: 08/04/2011 No of Passes: 1 Sampler Type: E
--	---	--

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Redfin Pickerel		P	M	P	8	16.00	5.67			
Northern Hog Sucker	R	I	S	M	4	8.00	2.84			
White Sucker	W	O	S	T	26	52.00	18.44			
Creek Chub	N	G	N	T	13	26.00	9.22			
Redfin Shiner	N	I	N		2	4.00	1.42			
Striped Shiner	N	I	S		1	2.00	0.71			
Bluntnose Minnow	N	O	C	T	13	26.00	9.22			
Yellow Bullhead		I	C	T	7	14.00	4.96			
Smallmouth Bass	F	C	C	M	1	2.00	0.71			
Largemouth Bass	F	C	C		10	20.00	7.09			
Green Sunfish	S	I	C	T	16	32.00	11.35			
Bluegill Sunfish	S	I	C	P	19	38.00	13.48			
Pumpkinseed Sunfish	S	I	C	P	9	18.00	6.38			
Blackside Darter	D	I	S		8	16.00	5.67			
Johnny Darter	D	I	C		3	6.00	2.13			
Fantail Darter	D	I	C		1	2.00	0.71			
<i>Mile Total</i>					141	282.00				
<i>Number of Species</i>					16					
<i>Number of Hybrids</i>					0					

Species List

River Code: 07-004	Stream: West Branch Ashtabula River	Sample Date: 2011
River Mile: 8.80	Location: dst. North Richmond Rd.	Date Range: 07/20/2011
Time Fished: 1800 sec	Drainage: 12.9 sq mi	
Dist Fished: 0.15 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Central Mudminnow		I	C T	1	2.00	0.38			
Redfin Pickerel		P	M P	10	20.00	3.80			
Black Redhorse	R	I	S I	1	2.00	0.38			
Northern Hog Sucker	R	I	S M	13	26.00	4.94			
White Sucker	W	O	S T	32	64.00	12.17			
Golden Shiner	N	I	M T	4	8.00	1.52			
Creek Chub	N	G	N T	56	112.00	21.29			
Redfin Shiner	N	I	N	2	4.00	0.76			
Striped Shiner	N	I	S	1	2.00	0.38			
Bluntnose Minnow	N	O	C T	22	44.00	8.37			
Yellow Bullhead		I	C T	11	22.00	4.18			
Black Bullhead		I	C P	1	2.00	0.38			
Largemouth Bass	F	C	C	7	14.00	2.66			
Green Sunfish	S	I	C T	19	38.00	7.22			
Bluegill Sunfish	S	I	C P	25	50.00	9.51			
Pumpkinseed Sunfish	S	I	C P	5	10.00	1.90			
Green Sf X Bluegill Sf				1	2.00	0.38			
Blackside Darter	D	I	S	6	12.00	2.28			
Johnny Darter	D	I	C	12	24.00	4.56			
Greenside Darter	D	I	S M	4	8.00	1.52			
Rainbow Darter	D	I	S M	11	22.00	4.18			
Fantail Darter	D	I	C	19	38.00	7.22			
<i>Mile Total</i>				263	526.00				
<i>Number of Species</i>				21					
<i>Number of Hybrids</i>				1					

Species List

River Code: 07-004	Stream: West Branch Ashtabula River	Sample Date: 2011
River Mile: 6.30	Location: Schrambling Rd.	Date Range: 07/20/2011
Time Fished: 2100 sec	Drainage: 15.1 sq mi	
Dist Fished: 0.15 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Central Mudminnow		I	C	T	1	2.00	0.09			
Redfin Pickerel		P	M	P	1	2.00	0.09			
Northern Hog Sucker	R	I	S	M	44	88.00	3.94			
White Sucker	W	O	S	T	52	104.00	4.66			
Creek Chub	N	G	N	T	180	360.00	16.13			
Redfin Shiner	N	I	N		2	4.00	0.18			
Striped Shiner	N	I	S		26	52.00	2.33			
Silverjaw Minnow	N	I	M		6	12.00	0.54			
Fathead Minnow	N	O	C	T	1	2.00	0.09			
Bluntnose Minnow	N	O	C	T	331	662.00	29.66			
Central Stoneroller	N	H	N		267	534.00	23.92			
Stonecat Madtom		I	C	I	1	2.00	0.09			
Rock Bass	S	C	C		4	8.00	0.36			
Largemouth Bass	F	C	C		6	12.00	0.54			
Green Sunfish	S	I	C	T	18	36.00	1.61			
Bluegill Sunfish	S	I	C	P	8	16.00	0.72			
Longear Sunfish	S	I	C	M	1	2.00	0.09			
Pumpkinseed Sunfish	S	I	C	P	1	2.00	0.09			
Green Sf X Bluegill Sf					1	2.00	0.09			
Blackside Darter	D	I	S		1	2.00	0.09			
Johnny Darter	D	I	C		53	106.00	4.75			
Greenside Darter	D	I	S	M	6	12.00	0.54			
Rainbow Darter	D	I	S	M	44	88.00	3.94			
Fantail Darter	D	I	C		61	122.00	5.47			
<i>Mile Total</i>					1,116	2,232.00				
<i>Number of Species</i>					23					
<i>Number of Hybrids</i>					1					

Species List

River Code: 07-004	Stream: West Branch Ashtabula River	Sample Date: 2011
River Mile: 2.70	Location: Graham Rd.	Date Range: 07/11/2011
Time Fished: 2700 sec	Drainage: 31.0 sq mi	
Dist Fished: 0.20 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: D

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Central Mudminnow		I	C T	1	1.50	0.09	0.02	0.25	15.00
Black Redhorse	R	I	S I	2	3.00	0.17	0.14	1.46	45.00
Golden Redhorse	R	I	S M	1	1.50	0.09	0.06	0.65	40.00
Northern Hog Sucker	R	I	S M	35	52.50	2.98	1.59	17.22	30.30
White Sucker	W	O	S T	76	114.00	6.48	1.37	14.81	12.00
Creek Chub	N	G	N T	73	109.50	6.22	1.58	17.05	14.38
Redfin Shiner	N	I	N	23	34.50	1.96	0.06	0.65	1.74
Striped Shiner	N	I	S	36	54.00	3.07	0.60	6.49	11.11
Sand Shiner	N	I	M M	7	10.50	0.60	0.03	0.32	2.86
Silverjaw Minnow	N	I	M	8	12.00	0.68	0.04	0.41	3.13
Bluntnose Minnow	N	O	C T	604	906.00	51.49	1.28	13.80	1.41
Central Stoneroller	N	H	N	53	79.50	4.52	0.53	5.68	6.60
Stonecat Madtom		I	C I	10	15.00	0.85	0.41	4.38	27.00
Rock Bass	S	C	C	19	28.50	1.62	0.47	5.03	16.32
Largemouth Bass	F	C	C	3	4.50	0.26	0.09	0.97	20.00
Green Sunfish	S	I	C T	16	24.00	1.36	0.38	4.06	15.63
Bluegill Sunfish	S	I	C P	2	3.00	0.17	0.03	0.32	10.00
Pumpkinseed Sunfish	S	I	C P	5	7.50	0.43	0.12	1.32	16.25
Blackside Darter	D	I	S	15	22.50	1.28	0.08	0.81	3.33
Johnny Darter	D	I	C	43	64.50	3.67	0.06	0.65	0.93
Greenside Darter	D	I	S M	39	58.50	3.32	0.12	1.30	2.05
Rainbow Darter	D	I	S M	40	60.00	3.41	0.11	1.14	1.75
Fantail Darter	D	I	C	62	93.00	5.29	0.11	1.23	1.23
<i>Mile Total</i>				1,173	1,759.50		9.24		
<i>Number of Species</i>				23					
<i>Number of Hybrids</i>				0					

Species List

Page 22

River Code: 07-005	Stream: East Branch Ashtabula River	Sample Date: 2011
River Mile: 8.00	Location: Turner Rd.	Date Range: 07/20/2011
Time Fished: 2100 sec	Drainage: 9.3 sq mi	
Dist Fished: 0.12 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Central Mudminnow		I	C	T	8	20.00	2.76			
Redfin Pickerel		P	M	P	6	15.00	2.07			
Golden Redhorse	R	I	S	M	1	2.50	0.34			
Northern Hog Sucker	R	I	S	M	5	12.50	1.72			
White Sucker	W	O	S	T	18	45.00	6.21			
Western Blacknose Dace	N	G	S	T	1	2.50	0.34			
Creek Chub	N	G	N	T	44	110.00	15.17			
Redfin Shiner	N	I	N		15	37.50	5.17			
Striped Shiner	N	I	S		35	87.50	12.07			
Mimic Shiner	N	I	M	I	2	5.00	0.69			
Silverjaw Minnow	N	I	M		5	12.50	1.72			
Bluntnose Minnow	N	O	C	T	54	135.00	18.62			
Central Stoneroller	N	H	N		4	10.00	1.38			
Yellow Bullhead		I	C	T	10	25.00	3.45			
Rock Bass	S	C	C		4	10.00	1.38			
Green Sunfish	S	I	C	T	27	67.50	9.31			
Pumpkinseed Sunfish	S	I	C	P	3	7.50	1.03			
Bluegill X Pumpkinseed					1	2.50	0.34			
Blackside Darter	D	I	S		5	12.50	1.72			
Johnny Darter	D	I	C		6	15.00	2.07			
Greenside Darter	D	I	S	M	2	5.00	0.69			
Rainbow Darter	D	I	S	M	27	67.50	9.31			
Fantail Darter	D	I	C		7	17.50	2.41			
<i>Mile Total</i>					290	725.00				
<i>Number of Species</i>					22					
<i>Number of Hybrids</i>					1					

Species List

River Code: 07-005 River Mile: 5.50 Time Fished: 2100 sec Dist Fished: 0.15 km	Stream: East Branch Ashtabula River Location: Caine Rd. Drainage: 13.0 sq mi Basin: Ashtabula River	Sample Date: 2011 Date Range: 07/20/2011 No of Passes: 1 Sampler Type: E
---	---	--

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Redfin Pickerel		P	M	P	1	2.00	0.16			
Golden Redhorse	R	I	S	M	2	4.00	0.31			
Northern Hog Sucker	R	I	S	M	25	50.00	3.94			
White Sucker	W	O	S	T	26	52.00	4.09			
Bigeye Chub	N	I	S	I	10	20.00	1.57			
Western Blacknose Dace	N	G	S	T	52	104.00	8.19			
Creek Chub	N	G	N	T	133	266.00	20.94			
Striped Shiner	N	I	S		48	96.00	7.56			
Mimic Shiner	N	I	M	I	3	6.00	0.47			
Silverjaw Minnow	N	I	M		10	20.00	1.57			
Bluntnose Minnow	N	O	C	T	111	222.00	17.48			
Central Stoneroller	N	H	N		38	76.00	5.98			
Stonecat Madtom		I	C	I	3	6.00	0.47			
Rock Bass	S	C	C		11	22.00	1.73			
Green Sunfish	S	I	C	T	4	8.00	0.63			
Bluegill Sunfish	S	I	C	P	3	6.00	0.47			
Pumpkinseed Sunfish	S	I	C	P	3	6.00	0.47			
Blackside Darter	D	I	S		1	2.00	0.16			
Johnny Darter	D	I	C		14	28.00	2.20			
Greenside Darter	D	I	S	M	14	28.00	2.20			
Rainbow Darter	D	I	S	M	55	110.00	8.66			
Fantail Darter	D	I	C		68	136.00	10.71			
<i>Mile Total</i>					635	1,270.00				
<i>Number of Species</i>					22					
<i>Number of Hybrids</i>					0					

Species List

River Code: 07-005	Stream: East Branch Ashtabula River	Sample Date: 2011
River Mile: 2.40	Location: Adams Rd. (upper crossing)	Date Range: 08/16/2011
Time Fished: 2100 sec	Drainage: 21.0 sq mi	
Dist Fished: 0.15 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Black Redhorse	R	I	S	I	3	6.00	0.38	0.32	2.69	53.33
Northern Hog Sucker	R	I	S	M	26	52.00	3.30	1.22	10.27	23.46
White Sucker	W	O	S	T	9	18.00	1.14	0.68	5.73	37.78
Bigeye Chub	N	I	S	I	2	4.00	0.25	0.01	0.08	2.50
Creek Chub	N	G	N	T	41	82.00	5.21	0.93	7.80	11.29
Redfin Shiner	N	I	N		1	2.00	0.13	0.00	0.03	2.00
Striped Shiner	N	I	S		107	214.00	13.60	1.90	16.00	8.88
Mimic Shiner	N	I	M	I	1	2.00	0.13	0.00	0.03	2.00
Silverjaw Minnow	N	I	M		12	24.00	1.52	0.06	0.51	2.50
Bluntnose Minnow	N	O	C	T	273	546.00	34.69	0.78	6.57	1.43
Central Stoneroller	N	H	N		150	300.00	19.06	3.39	28.54	11.30
Stonecat Madtom		I	C	I	8	16.00	1.02	0.40	3.37	25.00
Rock Bass	S	C	C		11	22.00	1.40	0.95	7.97	43.00
Smallmouth Bass	F	C	C	M	3	6.00	0.38	0.35	2.95	58.33
Green Sunfish	S	I	C	T	10	20.00	1.27	0.31	2.61	15.50
Pumpkinseed Sunfish	S	I	C	P	1	2.00	0.13	0.04	0.34	20.00
Green Sf X Bluegill Sf					1	2.00	0.13	0.12	1.01	60.00
Johnny Darter	D	I	C		11	22.00	1.40	0.02	0.17	0.91
Greenside Darter	D	I	S	M	36	72.00	4.57	0.18	1.52	2.50
Rainbow Darter	D	I	S	M	40	80.00	5.08	0.13	1.06	1.58
Fantail Darter	D	I	C		41	82.00	5.21	0.09	0.76	1.10
<i>Mile Total</i>					787	1,574.00		11.88		
<i>Number of Species</i>					20					
<i>Number of Hybrids</i>					1					

Species List

River Code: 07-010	Stream: Fields Brook	Sample Date: 2011
River Mile: 1.80	Location: State Rd.	Date Range: 07/13/2011
Time Fished: 3780 sec	Drainage: 1.5 sq mi	
Dist Fished: 0.13 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Central Mudminnow		I	C	T	10	23.08	2.07			
White Sucker	W	O	S	T	3	6.92	0.62			
Creek Chub	N	G	N	T	197	454.62	40.70			
Yellow Bullhead		I	C	T	23	53.08	4.75			
Eastern Banded Killifish	E	I	M	T	1	2.31	0.21			
Largemouth Bass	F	C	C		2	4.62	0.41			
Green Sunfish	S	I	C	T	171	394.62	35.33			
Bluegill Sunfish	S	I	C	P	60	138.46	12.40			
Pumpkinseed Sunfish	S	I	C	P	14	32.31	2.89			
Bluegill X Pumpkinseed					3	6.92	0.62			
<i>Mile Total</i>					484	1,116.92				
<i>Number of Species</i>					9					
<i>Number of Hybrids</i>					1					

River Code: 07-010	Stream: Fields Brook	Sample Date: 2011
River Mile: 0.50	Location: upst. 16th St.	Date Range: 07/13/2011
Time Fished: 3314 sec	Drainage: 3.7 sq mi	
Dist Fished: 0.20 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
White Sucker	W	O	S	T	1	1.50	0.13			
Creek Chub	N	G	N	T	44	66.00	5.63			
Striped Shiner	N	I	S		19	28.50	2.43			
Common Shiner	N	I	S		67	100.50	8.58			
Sand Shiner	N	I	M	M	2	3.00	0.26			
Silverjaw Minnow	N	I	M		51	76.50	6.53			
Fathead Minnow	N	O	C	T	2	3.00	0.26			
Bluntnose Minnow	N	O	C	T	211	316.50	27.02			
Central Stoneroller	N	H	N		134	201.00	17.16			
Yellow Bullhead		I	C	T	20	30.00	2.56			
Stonecat Madtom		I	C	I	2	3.00	0.26			
Eastern Banded Killifish	E	I	M	T	45	67.50	5.76			
Rock Bass	S	C	C		2	3.00	0.26			
Largemouth Bass	F	C	C		10	15.00	1.28			
Green Sunfish	S	I	C	T	46	69.00	5.89			
Bluegill Sunfish	S	I	C	P	52	78.00	6.66			
Pumpkinseed Sunfish	S	I	C	P	13	19.50	1.66			
Bluegill X Pumpkinseed					1	1.50	0.13			
Johnny Darter	D	I	C		5	7.50	0.64			
Greenside Darter	D	I	S	M	11	16.50	1.41			
Rainbow Darter	D	I	S	M	42	63.00	5.38			
Round Goby	E				1	1.50	0.13			
	<i>Mile Total</i>				781	1,171.50				
	<i>Number of Species</i>				21					
	<i>Number of Hybrids</i>				1					

Species List

River Code: 07-013 River Mile: 0.60 Time Fished: 1525 sec Dist Fished: 0.18 km	Stream: Strong Brook Location: upst. Lake Ave. Drainage: 2.7 sq mi Basin: Ashtabula River	Sample Date: 2011 Date Range: 07/13/2011 No of Passes: 1 Sampler Type: E
---	---	--

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Central Mudminnow		I	C	T	8	13.33	61.54		
Yellow Bullhead		I	C	T	3	5.00	23.08		
Brown Bullhead		I	C	T	2	3.33	15.38		
<i>Mile Total</i>				13	21.67				
<i>Number of Species</i>				3					
<i>Number of Hybrids</i>				0					

Species List

River Code: 07-016	Stream: Trib. to Hubbard Run (RM 0.20)	Sample Date: 2011
River Mile: 0.10	Location: Plymouth Ridge Rd.	Date Range: 07/07/2011
Time Fished: 2151 sec	Drainage: 2.1 sq mi	
Dist Fished: 0.19 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Rainbow Trout	E		N		67	105.79	14.16			
White Sucker	W	O	S	T	4	6.32	0.85			
Western Blacknose Dace	N	G	S	T	273	431.05	57.72			
Creek Chub	N	G	N	T	79	124.74	16.70			
Central Stoneroller	N	H	N		20	31.58	4.23			
Green Sunfish	S	I	C	T	1	1.58	0.21			
Bluegill Sunfish	S	I	C	P	3	4.74	0.63			
Pumpkinseed Sunfish	S	I	C	P	1	1.58	0.21			
Johnny Darter	D	I	C		1	1.58	0.21			
Rainbow Darter	D	I	S	M	22	34.74	4.65			
Fantail Darter	D	I	C		2	3.16	0.42			
<i>Mile Total</i>					473	746.84				
<i>Number of Species</i>					11					
<i>Number of Hybrids</i>					0					

Species List

River Code: 07-025	Stream: Trib. to Ashtabula R. (RM 16.98)	Sample Date: 2011
River Mile: 0.40	Location: Gageville Rd.	Date Range: 08/16/2011
Time Fished: 1500 sec	Drainage: 17.3 sq mi	
Dist Fished: 0.15 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Black Redhorse	R	I	S	I	17	34.00	6.30			
Golden Redhorse	R	I	S	M	6	12.00	2.22			
Northern Hog Sucker	R	I	S	M	36	72.00	13.33			
White Sucker	W	O	S	T	21	42.00	7.78			
Bigeye Chub	N	I	S	I	1	2.00	0.37			
Western Blacknose Dace	N	G	S	T	1	2.00	0.37			
Creek Chub	N	G	N	T	25	50.00	9.26			
Striped Shiner	N	I	S		22	44.00	8.15			
Sand Shiner	N	I	M	M	2	4.00	0.74			
Silverjaw Minnow	N	I	M		6	12.00	2.22			
Bluntnose Minnow	N	O	C	T	61	122.00	22.59			
Central Stoneroller	N	H	N		21	42.00	7.78			
Yellow Bullhead		I	C	T	4	8.00	1.48			
Smallmouth Bass	F	C	C	M	4	8.00	1.48			
Largemouth Bass	F	C	C		6	12.00	2.22			
Green Sunfish	S	I	C	T	3	6.00	1.11			
Bluegill Sunfish	S	I	C	P	7	14.00	2.59			
Blackside Darter	D	I	S		3	6.00	1.11			
Johnny Darter	D	I	C		9	18.00	3.33			
Greenside Darter	D	I	S	M	2	4.00	0.74			
Rainbow Darter	D	I	S	M	8	16.00	2.96			
Fantail Darter	D	I	C		5	10.00	1.85			
<i>Mile Total</i>					270	540.00				
<i>Number of Species</i>					22					
<i>Number of Hybrids</i>					0					

Species List

River Code: 07-026	Stream: Trib. to W. Br. Ashtabula R. (RM 3.50)	Sample Date: 2011
River Mile: 1.00	Location: Caine Rd.	Date Range: 08/04/2011
Time Fished: 1725 sec	Drainage: 6.8 sq mi	
Dist Fished: 0.13 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Central Mudminnow		I	C	T	1	2.31	0.32			
White Sucker	W	O	S	T	7	16.15	2.23			
Creek Chub	N	G	N	T	79	182.31	25.16			
Redfin Shiner	N	I	N		5	11.54	1.59			
Sand Shiner	N	I	M	M	2	4.62	0.64			
Silverjaw Minnow	N	I	M		32	73.85	10.19			
Fathead Minnow	N	O	C	T	1	2.31	0.32			
Bluntnose Minnow	N	O	C	T	80	184.62	25.48			
Central Stoneroller	N	H	N		15	34.62	4.78			
Green Sunfish	S	I	C	T	19	43.85	6.05			
Bluegill Sunfish	S	I	C	P	7	16.15	2.23			
Blackside Darter	D	I	S		5	11.54	1.59			
Johnny Darter	D	I	C		28	64.62	8.92			
Greenside Darter	D	I	S	M	5	11.54	1.59			
Rainbow Darter	D	I	S	M	9	20.77	2.87			
Fantail Darter	D	I	C		19	43.85	6.05			
<i>Mile Total</i>					314	724.62				
<i>Number of Species</i>					16					
<i>Number of Hybrids</i>					0					

Species List

River Code: 07-027	Stream: E. Br. of East Branch Ashtabula R.	Sample Date: 2011
River Mile: 0.40	Location: St. Rt. 7	Date Range: 09/07/2011
Time Fished: 2627 sec	Drainage: 2.5 sq mi	
Dist Fished: 0.13 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	4	9.23	1.45			
White Sucker	W	O	S	T	23	53.08	8.33			
Golden Shiner	N	I	M	T	1	2.31	0.36			
Western Blacknose Dace	N	G	S	T	7	16.15	2.54			
Creek Chub	N	G	N	T	104	240.00	37.68			
Redfin Shiner	N	I	N		5	11.54	1.81			
Striped Shiner	N	I	S		13	30.00	4.71			
Silverjaw Minnow	N	I	M		7	16.15	2.54			
Bluntnose Minnow	N	O	C	T	68	156.92	24.64			
Central Stoneroller	N	H	N		4	9.23	1.45			
Yellow Bullhead		I	C	T	1	2.31	0.36			
Green Sunfish	S	I	C	T	15	34.62	5.43			
Bluegill Sunfish	S	I	C	P	10	23.08	3.62			
Blackside Darter	D	I	S		1	2.31	0.36			
Johnny Darter	D	I	C		6	13.85	2.17			
Fantail Darter	D	I	C		7	16.15	2.54			
<i>Mile Total</i>					276	636.92				
<i>Number of Species</i>					16					
<i>Number of Hybrids</i>					0					

River Code: 07-028	Stream: Trib to E. Br. Ashtabula R. (RM 1.35)	Sample Date: 2011
River Mile: 1.10	Location: Scribner Rd.	Date Range: 09/07/2011
Time Fished: 2280 sec	Drainage: 4.9 sq mi	
Dist Fished: 0.11 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Northern Hog Sucker	R	I	S	M	9	24.55	6.34			
White Sucker	W	O	S	T	8	21.82	5.63			
Creek Chub	N	G	N	T	22	60.00	15.49			
Bluntnose Minnow	N	O	C	T	19	51.82	13.38			
Central Stoneroller	N	H	N		36	98.18	25.35			
Smallmouth Bass	F	C	C	M	1	2.73	0.70			
Largemouth Bass	F	C	C		8	21.82	5.63			
Green Sunfish	S	I	C	T	5	13.64	3.52			
Bluegill Sunfish	S	I	C	P	3	8.18	2.11			
Pumpkinseed Sunfish	S	I	C	P	9	24.55	6.34			
Bluegill X Pumpkinseed					1	2.73	0.70			
Blackside Darter	D	I	S		7	19.09	4.93			
Johnny Darter	D	I	C		6	16.36	4.23			
Rainbow Darter	D	I	S	M	3	8.18	2.11			
Fantail Darter	D	I	C		5	13.64	3.52			
<i>Mile Total</i>					142	387.27				
<i>Number of Species</i>					14					
<i>Number of Hybrids</i>					1					

Species List

River Code: 07-029	Stream: Trib to E. Br. Ashtabula R (1.35/0.8)	Sample Date: 2011
River Mile: 0.30	Location: Hilldom Rd.	Date Range: 09/07/2011
Time Fished: 3807 sec	Drainage: 8.9 sq mi	
Dist Fished: 0.13 km	Basin: Ashtabula River	No of Passes: 1
		Sampler Type: E

Species Name / ODNR status	IBI Grp	Feed Guild	Breed Guild	Tol	# of Fish	Relative Number	% by Number	Relative Weight	% by Weight	Ave(gm) Weight
Redfin Pickerel		P	M	P	2	4.62	0.99			
Golden Redhorse	R	I	S	M	12	27.69	5.91			
Northern Hog Sucker	R	I	S	M	7	16.15	3.45			
White Sucker	W	O	S	T	55	126.92	27.09			
Creek Chub	N	G	N	T	9	20.77	4.43			
Redfin Shiner	N	I	N		2	4.62	0.99			
Striped Shiner	N	I	S		2	4.62	0.99			
Bluntnose Minnow	N	O	C	T	23	53.08	11.33			
Central Stoneroller	N	H	N		6	13.85	2.96			
Yellow Bullhead		I	C	T	4	9.23	1.97			
Brown Bullhead		I	C	T	3	6.92	1.48			
Rock Bass	S	C	C		6	13.85	2.96			
Largemouth Bass	F	C	C		2	4.62	0.99			
Green Sunfish	S	I	C	T	18	41.54	8.87			
Bluegill Sunfish	S	I	C	P	18	41.54	8.87			
Pumpkinseed Sunfish	S	I	C	P	8	18.46	3.94			
Green Sf X Bluegill Sf					3	6.92	1.48			
Yellow Perch			M		1	2.31	0.49			
Blackside Darter	D	I	S		8	18.46	3.94			
Johnny Darter	D	I	C		2	4.62	0.99			
Greenside Darter	D	I	S	M	1	2.31	0.49			
Rainbow Darter	D	I	S	M	4	9.23	1.97			
Fantail Darter	D	I	C		7	16.15	3.45			
<i>Mile Total</i>					203	468.46				
<i>Number of Species</i>					22					
<i>Number of Hybrids</i>					1					

Appendix E: Fish IBI Scores and Metrics

Appendix F: Surface Water Physical and Chemical Results

Appendix G: Surface Water Organic Chemistry Results

Appendix H: Datasonde© Continuous Recorder Results

Appendix I: Surface Water Bacteriological Results