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State of Ohio
Environmental Protection Agency

Ecological Assessment Section
Division of Surface Water

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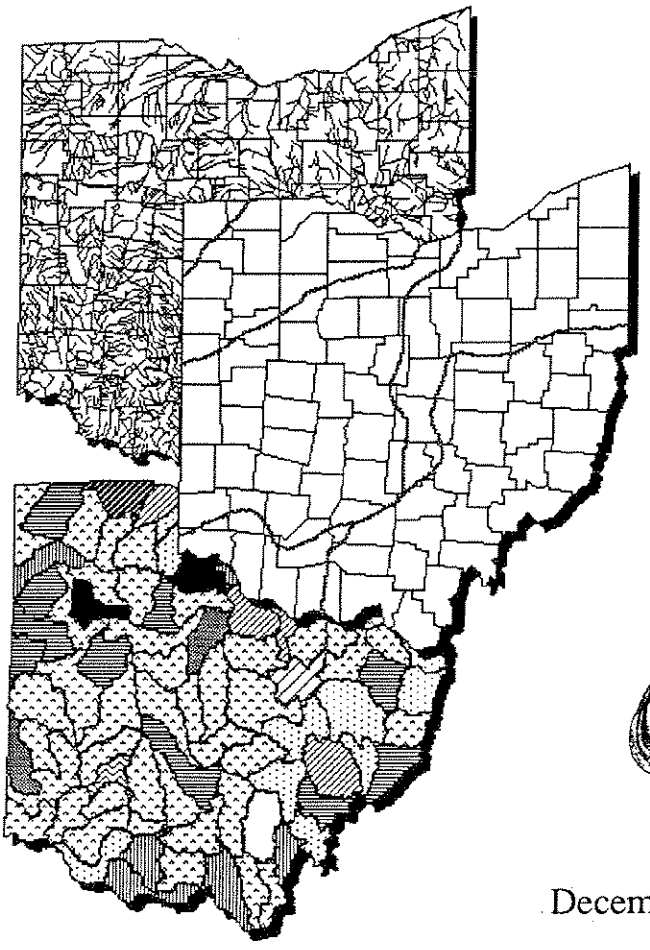
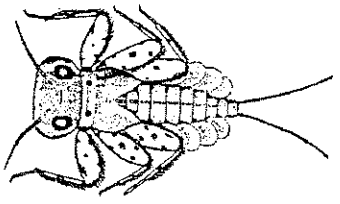
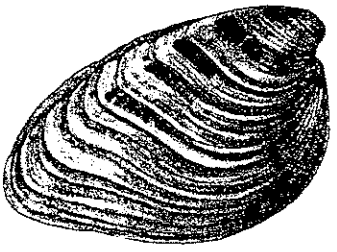
# Macroinvertebrate Community Assessment of Fish Creek: 1993-1998

## Steuben and Dekalb Counties (Indiana) and Williams County (Ohio)

## Project Summary - Sampling Year 1993







December 29, 1993

P.O. Box 1049, 1800 WaterMark Dr., Columbus, Ohio 43266-0149

# *Macroinvertebrate Community Assessment of Fish Creek: 1993-1998*

*Project Summary - Sampling Year 1993*

Macroinvertebrate communities were sampled during the summer of 1993 at six locations in Fish Creek from river mile (RM) 21.70 to the mouth (Table 1). Quantitative collections were made at each site using modified Hester-Dendy multiple-plate artificial substrate samplers colonized for a six-week period from August 17 - September 29. At the time of substrate retrieval, a qualitative sample of the macroinvertebrate community was collected from all available natural substrates in the near vicinity of the sampling site. Both the quantitatiave artificial substrate and qualitative natural substrate samples were collected, processed, and analyzed by Ohio EPA staff biologists; all field, laboratory, data processing, and data analysis methods and procedures adhered to those specified in Ohio EPA (1987, 1989a, 1989b). Macroinvertebrate data compiled for each location were evaluated using the Invertebrate Community Index (ICI), a multi-metric assessment tool which incorporates both the quantitative and qualitative information. ICI criteria for Ohio's ecoregions and tiered aquatic life uses are codified in Ohio Administrative Code (OAC) 3745-1-07, Table 7-17. Fish Creek is located in the Eastern Corn Belt Plains ecoregion and, for the Ohio reaches, is currently assigned the Warmwater Habitat (WWH) aquatic life use. Based on a 1992 St. Joseph watershed survey (Ohio EPA 1993), the recommendation will be made to designate lower Fish Creek as Exceptional Warmwater Habitat (EWH) in a 3 mile stretch from the Ohio-Indiana state line (RM 5.60) to the point where the St. Joseph River floodplain physically influences instream conditions (RM 2.40 near CR 3).

Table 1. Macroinvertebrate sampling locations in Fish Creek, 1993.

| Stream/ River Mile | Type of Sampling | Latitude/Longitude | Landmark | USGS 7.5 min. Quad. Map |
|---|---|---|---|---|
| ***Fish Creek*** | | | | |
| 21.70 | Quant./qual. | 41 44 11 / 84 49 33 | TR 850 E, Indiana | Edon |
| 17.10 | Quant./qual. | 41 32 07 / 84 51 14 | TR 700 E, Indiana | Edon |
| 13.80 | Quant./qual. | 41 30 59 / 84 51 51 | Adj. CR 4 A, Indiana | Edon |
| 9.90 | Quant./qual. | 41 29 19 / 84 50 14 | CR 12, Indiana | Butler East |
| 5.40 | Quant./qual. | 41 28 01 / 84 48 06 | CR 60, Ohio | Butler East |
| 0.30 | Quant./qual. | 41 27 45 / 84 44 49 | SR 49, Ohio | Edgerton |

Summarized results from the 1993 macroinvertebrate sampling are compiled in Table 2 and longitudinally depicted in Figure 1. ICI metrics and scores, raw data tables by river mile, and sampling station field sheets are attached as Appendix Tables 1-3, respectively. Also included in the data tables and figure are data collected in prior years by the Ohio EPA. This includes qualitative data from one site (RM 5.40) collected in 1991 and two quantitative sites (RMs 5.40 and 0.30) and one qualitative site (RM 30.50) collected in 1992. A detailed discussion of this historical information is provided in Ohio EPA (1993).

The 1993 results indicated the presence of high quality macroinvertebrate communities at all locations sampled upstream from the site of the September 15, 1993, diesel fuel spill. ICI scores ranged from 44 (very good) at CR 4 A (RM 13.80) to 56 (exceptional) at TR 850 E (RM 21.70). All scores were near or exceeding the EWH biocriterion (ICI=46). Diverse assemblages of pollution sensitive mayflies and caddisflies were well represented at all four sites; mayflies were numerically predominant and exceeded 40% of the total number of individuals collected at each site. These data showing exceptional macroinvertebrate communities strongly suggest the appropriateness of assigning Indiana reaches of Fish Creek with an aquatic life use comparable to the Ohio EWH use. The slight upstream to downstream declining trend in the ICI at these four Indiana sites was not considered particularly significant, although it may have been an indication of subtle nonpoint source influences in the watershed.

Of much more significance was the effect of the September 15, 1993, diesel fuel spill on macroinvertebrates at the two downstream sites. This spill occurred about four weeks into the artificial substrate colonization period and two weeks before their retrieval. The most acute effect was on the community at CR 60 (RM 5.40), about 2 miles below the spill site (RM 7.55). The ICI score of 20 (fair) at the site represented a 26 point decline from the next upstream site (RM 9.90) and a 30 point decline from the ICI scored at the RM 5.40 site in 1992. The mayfly and caddisfly populations collected from the artificial substrates were considerably degraded and the overall community was predominated by pollution tolerant aquatic worms (class Oligochaeta) and limpets (genus *Ferrissia* ). Total organism density on the artificial substrates was markedly reduced and was only about 50% of the total at the least populated upstream community. Similarly, the total number of qualitatively collected EPT taxa, a measure of the more pollution sensitive mayfly, stonefly, and caddisfly components of the community, declined substantially and was much less diverse than the upstream sites.

An improved macroinvertebrate community was observed at the most downstream site near SR 49 (RM 0.30). The ICI score increased to 36 which met the biocriterion for the currently designated WWH aquatic life use. Taxa richness improved dramatically and included 6 mayfly and 11 caddisfly taxa among the 53 total taxa collected from the artificial substrates. On the negative side, both total organism density on the artificial substrates and the qualitative EPT taxa richness remained much lower than those at the upstream unimpacted sites and the percentage of pollution tolerant organisms remained elevated. Though the community collected in 1993 was, in appearance, improved over the one collected at the same location in 1992, the data were not directly comparable due to weather related factors which negatively influenced the artificial substrate colonization in 1992. High stream flows and sand substrates resulted in the near burial of the artificial substrates and the concrete block anchor. Though the set was collected and analyzed, the results were not thought to be completely representative of the quality or diversity of the resident macroinvertebrate community. As such, an accurate baseline assessment of the community at RM 0.30, a location within the stream reach physically affected by the St. Joseph River floodplain, will have to remain undetermined until 1994 sampling results are analyzed.

In general, the four Indiana sites upstream from the fuel spill were noteworthy in that each was populated by diverse assemblages of macroinvertebrates including numerous mayfly, caddisfly, midge, and molluscan species; many of the taxa are those generally considered more pollution sensitive and which have been collected only from the better quality warmwater streams in Ohio. The species *Stenonema mediopunctatum* and *Stenonema exiguum*, collected in good numbers at all four sites, are relatively pollution sensitive heptageniid mayflies usually found exclusively at high quality sites in Ohio. At the two upstream sites, burrowing mayflies of the genus *Hexagenia* were

qualitatively collected; habitat requirements of these organisms include soft yet solid substrates of clay or mud that remain stable, well-oxygenated, and relatively free from unconsolidated materials. The psychomyiid caddisfly species *Lype diversa* and *Psychomyia flavida*, one or both collected at each site, prefer cool, swift small to medium size streams; collections in Ohio are fairly uncommon and restricted to better quality streams. Finally, the well-known and diverse unionid fauna is unique for the northwest part of Ohio and certainly demands special recognition and protection. Ohio EPA biologists, making only cursory inspections for live animals and collecting fresh shells during site visits, identified 13 species at the four Indiana and two Ohio sites. A total of 30 species have been reported from Fish Creek; this is comparable to totals from other Ohio streams of similar size with rich unionid faunas.

Table 2. Summary of macroinvertebrate data collected from artificial substrates (quantitative sampling) and natural substrates (qualitative sampling) in Fish Creek, 1991-1993. Fish Creek has a WWH aquatic life use designation in the Ohio Water Quality Standards.

**Quantitative Evaluation**

| *Stream* River Mile | Relative Density | Quant. Taxa | Qual. Taxa | Qual. EPT[a] | QCTV[b] | ICI | Evaluation |
|---|---|---|---|---|---|---|---|
| ***Fish Creek - 1993*** | | | | | | | |
| 21.70 | 3290 | 46 | 69 | 20 | 38.0 | 56 | Exceptional |
| 17.10 | 1450 | 43 | 44 | 14 | 38.8 | 52 | Exceptional |
| 13.80 | 2084 | 47 | 37 | 11 | 39.4 | 44 | Very Good |
| 9.90 | 3804 | 52 | 39 | 14 | 39.1 | 46 | Exceptional |
| 5.40 | 776 | 32 | 24 | 7 | 38.7 | 20* | Fair |
| 0.30 | 589 | 53 | 23 | 8 | 41.2 | 36 | Good |
| ***Fish Creek - 1992*** | | | | | | | |
| 5.40 | 3492 | 38 | 34 | 13 | 40.9 | 50 | Exceptional |
| 0.30 | 250 | 25 | 26 | 12 | 41.4 | 24* | Fair |

**Qualitative Evaluation**

| *Stream* River Mile | No. Qual. Taxa | QCTV[b] | Qual. EPT[a] | Relative Density | Predominant Organisms | Narrative[c] Evaluation |
|---|---|---|---|---|---|---|
| ***Fish Creek - 1992*** | | | | | | |
| 30.5 | 35 | 31.8 | 7 | Moderate | Fingernail clams, caddisflies, damselflies | Fair |
| ***Fish Creek - 1991*** | | | | | | |
| 5.4 | 44 | 37.5 | 15 | Low to moderate | Caddisflies, midges | Exceptional |

**Ecoregional Biocriteria:** Eastern Corn Belt Plains (ECBP)
(from OAC 3745-1-07, Table 7-17)

| INDEX | WWH | EWH | MWH[d] |
|---|---|---|---|
| ICI | **36** | 46 | 22 |

a EPT= total Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies) taxa richness.
b Qualitative Community Tolerance Value (QCTV) derived as the median of the tolerance values calculated for each qualitative taxon present.
c The qualitative narrative evaluation is based on best professional judgment utilizing sample attributes such as taxa richness, EPT richness, and QCTV score and is used when quantitative data is not available to calculate the Invertebrate Community Index (ICI) scores.
d Modified Warmwater Habitat for channel modified areas.
* Significant departure from ecoregional biocriterion (>4 ICI units); poor and very poor results are underlined.

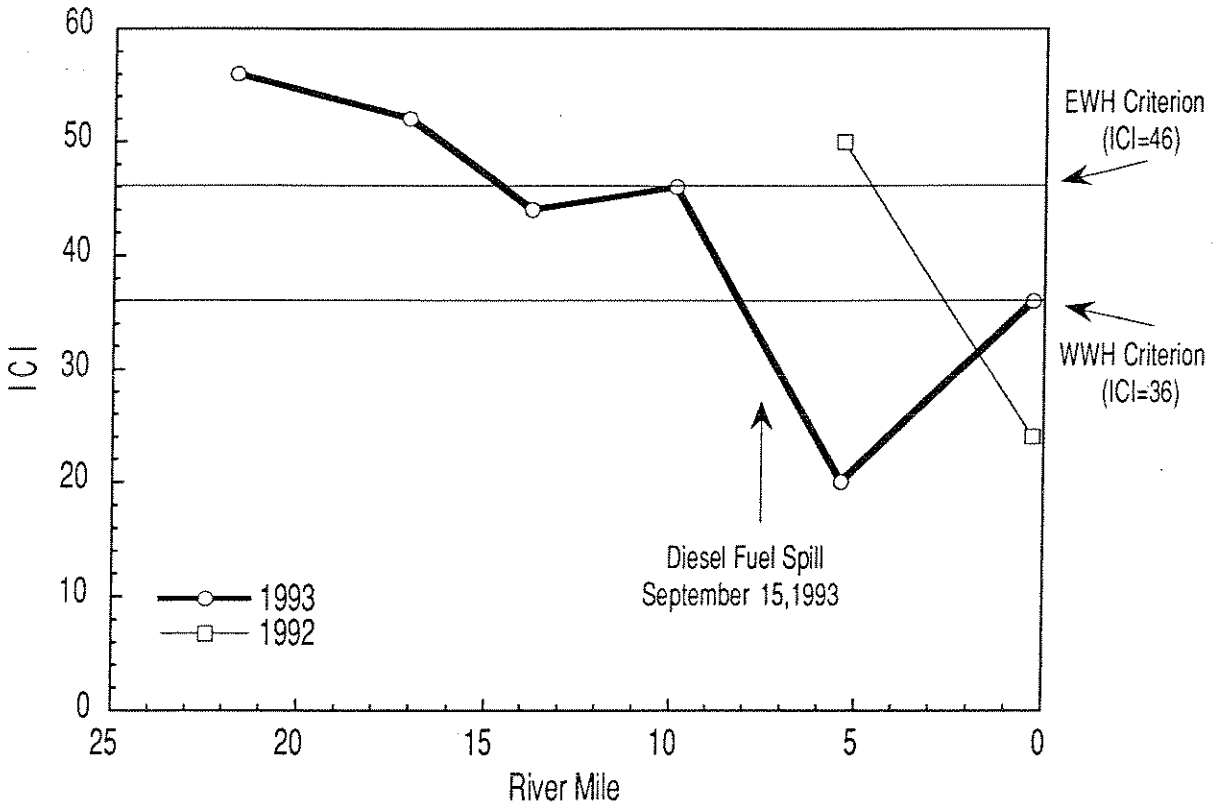



Figure 1. Longitudinal performance of the Invertebrate Community Index (ICI) in Fish Creek, 1992 and 1993.

## References

Ohio EPA. 1987. 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.

Ohio EPA. 1989a. 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.

Ohio EPA. 1989b. 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, Surface Water Section, Columbus, Ohio.

Ohio EPA. 1993. Biological and Water Quality Study of the St. Joseph River and Selected Tributaries. OEPA Rept. No. EAS/1993-12-7. Division of Surface Water, Ecological Assessment Section, Columbus, Ohio.

Appendix Table 1. ICI metrics and scores for Fish Creek, 1992-1993.

ICI metrics and scores for Fish Creek, 1992-1993.

| River Mile | Drainage Area (sq mi) | Number of Total Taxa | Number of Mayfly Taxa | Number of Caddisfly Taxa | Number of Dipteran Taxa | Percent: Mayflies | Percent: Caddis-flies | Percent: Tany-tarsini | Percent: Other Dipt/NI | Percent: Tolerant Taxa | Qual. EPT | Eco-region | ICI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FISH CREEK — 04-405 | | | | | | | | | | | | | |
| Year: 93 | | | | | | | | | | | | | |
| 21.70 | 71.0 | 46(6) | 11(6) | 4(6) | 20(6) | 63.6(6) | 21.9(6) | 1.6(2) | 11.4(6) | 1.4(6) | 20(6) | 5 | **56** |
| 17.10 | 76.0 | 43(6) | 9(6) | 4(6) | 21(6) | 57.9(6) | 12.1(4) | 10.1(2) | 18.5(6) | 7.1(4) | 14(6) | 5 | **52** |
| 13.80 | 84.0 | 47(6) | 8(4) | 5(6) | 25(6) | 41.0(6) | 5.6(2) | 8.0(2) | 42.3(4) | 7.7(4) | 11(4) | 5 | **44** |
| 9.90 | 95.0 | 52(6) | 8(4) | 8(6) | 27(6) | 47.0(6) | 7.1(2) | 12.8(2) | 31.6(4) | 4.9(6) | 14(4) | 5 | **46** |
| 5.40 | 105.0 | 32(4) | 4(2) | 1(2) | 13(4) | 5.9(2) | 0.5(2) | 0.4(2) | 87.1(0) | 56.1(0) | 7(2) | 5 | **20** |
| .30 | 109.0 | 53(6) | 6(4) | 11(6) | 23(6) | 29.5(4) | 4.9(2) | 5.4(2) | 49.8(2) | 14.4(2) | 8(2) | 5 | **36** |
| Year: 92 | | | | | | | | | | | | | |
| 5.40 | 105.0 | 38(6) | 9(6) | 6(6) | 16(4) | 40.9(6) | 23.9(6) | 14.0(2) | 18.3(6) | 5.6(4) | 13(4) | 5 | **50** |
| .30 | 109.0 | 25(4) | 4(2) | 3(4) | 14(4) | 3.6(2) | 7.2(2) | 1.6(2) | 83.2(0) | 46.4(0) | 12(4) | 5 | **24** |

Appendix Table 2. Raw macroinvertebrate data by river mile for Fish Creek, 1991-1993.

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 10/02/92 River Code: 04-405 River: Fish Creek RM: .30

| Taxa Code | Taxa | Quan/Qual |
|---|---|---|
| 01801 | *Turbellaria* | 0 + |
| 03600 | *Oligochaeta* | 112 |
| 04685 | *Placobdella ornata* | 1 |
| 08250 | *Orconectes (Procericambarus) rusticus* | 0 + |
| 08601 | *Hydracarina* | 1 |
| 11020 | *Acerpenna pygmaeus* | 1 |
| 11130 | *Baetis intercalaris* | 3 + |
| 12200 | *Isonychia sp* | 0 + |
| 13400 | *Stenacron sp* | 0 + |
| 13561 | *Stenonema pulchellum* | 4 + |
| 15000 | *Paraleptophlebia sp* | 0 + |
| 16700 | *Tricorythodes sp* | 1 |
| 21200 | *Calopteryx sp* | 0 + |
| 26700 | *Macromia sp* | 0 + |
| 30000 | *Plecoptera* | 11 |
| 44501 | *Corixidae* | 0 + |
| 47600 | *Sialis sp* | 0 + |
| 50315 | *Chimarra obscura* | 0 + |
| 50804 | *Lype diversa* | 1 + |
| 51400 | *Nyctiophylax sp* | 0 + |
| 52200 | *Cheumatopsyche sp* | 14 + |
| 52430 | *Hydropsyche (Ceratopsyche) morosa group* | 3 + |
| 52550 | *Hydropsyche (H.) frisoni* | 0 + |
| 52570 | *Hydropsyche (H.) simulans* | 0 + |
| 68708 | *Dubiraphia vittata group* | 0 + |
| 68901 | *Macronychus glabratus* | 0 + |
| 69400 | *Stenelmis sp* | 0 + |
| 71100 | *Hexatoma sp* | 1 + |
| 74100 | *Simulium sp* | 10 |
| 77800 | *Helopelopia sp* | 2 + |
| 80430 | *Cricotopus (C.) tremulus group* | 2 |
| 81632 | *Parakiefferiella n.sp 2* | 2 + |
| 81825 | *Rheocricotopus (Psilocricotopus) robacki* | 6 + |
| 82820 | *Cryptochironomus sp* | 2 |
| 83040 | *Dicrotendipes neomodestus* | 2 |
| 83820 | *Microtendipes "caelum" (sensu Simpson & Bode, 1980)* | 4 |
| 84460 | *Polypedilum (P.) fallax group* | 2 |
| 84470 | *Polypedilum (P.) illinoense* | 2 |
| 84540 | *Polypedilum (Tripodura) scalaenum group* | 49 |
| 84800 | *Tribelos jucundum* | 10 |
| 85625 | *Rheotanytarsus exiguus group* | 0 + |
| 85800 | *Tanytarsus sp* | 4 |

No. Quantitative Taxa: 25 Total Taxa: 42

No. Qualitative Taxa: 26 ICI: **24**

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 09/29/93 River Code: 04-405 River: Fish Creek RM: .30

| Taxa Code | Taxa | Quan/Qual |
|---|---|---|
| 01320 | *Hydra sp* | 2 |
| 01418 | *Craspedacusta sowerbyi* | 1 |
| 01801 | *Turbellaria* | 0 + |
| 03600 | *Oligochaeta* | 10 |
| 08601 | *Hydracarina* | 4 |
| 12200 | *Isonychia sp* | 3 + |
| 13400 | *Stenacron sp* | 24 |
| 13510 | *Stenonema exiguum* | 136 + |
| 13540 | *Stenonema mediopunctatum* | 2 |
| 15000 | *Paraleptophlebia sp* | 7 |
| 17200 | *Caenis sp* | 2 |
| 21200 | *Calopteryx sp* | 0 + |
| 22300 | *Argia sp* | 1 |
| 30000 | *Plecoptera* | 20 |
| 31800 | *Taeniopteryx sp* | 6 |
| 45400 | *Trichocorixa sp* | 0 + |
| 45900 | *Notonecta sp* | 0 + |
| 48410 | *Corydalus cornutus* | 1 |
| 50300 | *Chimarra sp* | 2 |
| 50804 | *Lype diversa* | 6 + |
| 51400 | *Nyctiophylax sp* | 2 |
| 51600 | *Polycentropus sp* | 4 |
| 52200 | *Cheumatopsyche sp* | 3 + |
| 52430 | *Hydropsyche (Ceratopsyche) morosa group* | 3 + |
| 52530 | *Hydropsyche (H.) depravata group* | 1 + |
| 52550 | *Hydropsyche (H.) frisoni* | 1 + |
| 52570 | *Hydropsyche (H.) simulans* | 3 + |
| 59415 | *Nectopsyche exquisita* | 2 |
| 59500 | *Oecetis sp* | 2 |
| 68601 | *Ancyronyx variegata* | 1 |
| 68708 | *Dubiraphia vittata group* | 2 + |
| 68901 | *Macronychus glabratus* | 25 + |
| 69400 | *Stenelmis sp* | 5 + |
| 71910 | *Tipula abdominalis* | 3 + |
| 74501 | *Ceratopogonidae* | 2 |
| 77750 | *Hayesomyia senata or Thienemannimyia norena* | 16 |
| 77800 | *Helopelopia sp* | 26 |
| 78350 | *Meropelopia sp* | 3 |
| 78450 | *Nilotanypus fimbriatus* | 6 |
| 81229 | *Nanocladius (N.) crassicornus* | 10 |
| 81240 | *Nanocladius (N.) distinctus* | 3 |
| 81825 | *Rheocricotopus (Psilocricotopus) robacki* | 58 + |
| 83840 | *Microtendipes pedellus group* | 29 |
| 84210 | *Paratendipes albimanus* | 3 |
| 84302 | *Phaenopsectra punctipes* | 3 |
| 84450 | *Polypedilum (P.) convictum* | 3 |
| 84460 | *Polypedilum (P.) fallax group* | 67 |
| 84470 | *Polypedilum (P.) illinoense* | 3 + |
| 84540 | *Polypedilum (Tripodura) scalaenum group* | 6 |
| 84790 | *Tribelos fuscicorne* | 13 |
| 84800 | *Tribelos jucundum* | 6 |
| 85500 | *Paratanytarsus sp* | 3 |
| 85625 | *Rheotanytarsus exiguus group* | 13 |
| 85814 | *Tanytarsus glabrescens group* | 16 |
| 86401 | *Atherix lantha* | 10 + |
| 87501 | *Empididae* | 4 |
| 95100 | *Physella sp* | 2 + |
| 98200 | *Pisidium sp* | 0 + |
| 99200 | *Alasmidonta marginata* | 0 + |
| 99280 | *Lasmigona costata* | 0 + |

| | | | |
|---|---|---|---|
| No. Quantitative Taxa: | 53 | Total Taxa: | 60 |
| No. Qualitative Taxa: | 23 | ICI: | **36** |

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 09/26/91 River Code: 04-405 River: Fish Creek RM: 5.40

| Taxa Code | Taxa | Quan/Qual |
|---|---|---|
| 03600 | *Oligochaeta* | 0 + |
| 08250 | *Orconectes (Procericambarus) rusticus* | 0 + |
| 08601 | *Hydracarina* | 0 + |
| 11100 | *Baetis sp* | 0 + |
| 12200 | *Isonychia sp* | 0 + |
| 13561 | *Stenonema pulchellum* | 0 + |
| 13570 | *Stenonema terminatum* | 0 + |
| 18750 | *Hexagenia limbata* | 0 + |
| 21200 | *Calopteryx sp* | 0 + |
| 22001 | *Coenagrionidae* | 0 + |
| 22300 | *Argia sp* | 0 + |
| 23909 | *Boyeria vinosa* | 0 + |
| 25600 | *Stylurus sp* | 0 + |
| 26700 | *Macromia sp* | 0 + |
| 47600 | *Sialis sp* | 0 + |
| 50315 | *Chimarra obscura* | 0 + |
| 51400 | *Nyctiophylax sp* | 0 + |
| 52200 | *Cheumatopsyche sp* | 0 + |
| 52430 | *Hydropsyche (Ceratopsyche) morosa group* | 0 + |
| 52570 | *Hydropsyche (H.) simulans* | 0 + |
| 52580 | *Hydropsyche (H.) valanis* | 0 + |
| 53400 | *Protoptila sp* | 0 + |
| 55300 | *Ptilostomis sp* | 0 + |
| 57400 | *Neophylax sp* | 0 + |
| 59700 | *Triaenodes sp* | 0 + |
| 68708 | *Dubiraphia vittata group* | 0 + |
| 68901 | *Macronychus glabratus* | 0 + |
| 69400 | *Stenelmis sp* | 0 + |
| 71900 | *Tipula sp* | 0 + |
| 71910 | *Tipula abdominalis* | 0 + |
| 74100 | *Simulium sp* | 0 + |
| 77500 | *Conchapelopia sp* | 0 + |
| 80420 | *Cricotopus (C.) bicinctus* | 0 + |
| 81825 | *Rheocricotopus (Psilocricotopus) robacki* | 0 + |
| 83300 | *Glyptotendipes (Phytotendipes) sp* | 0 + |
| 83410 | *Harnischia curtilamellata* | 0 + |
| 84450 | *Polypedilum (P.) convictum* | 0 + |
| 84460 | *Polypedilum (P.) fallax group* | 0 + |
| 85001 | *Tanytarsini* | 0 + |
| 86100 | *Chrysops sp* | 0 + |
| 93900 | *Elimia sp* | 0 + |
| 96900 | *Ferrissia sp* | 0 + |
| 98200 | *Pisidium sp* | 0 + |
| 98600 | *Sphaerium sp* | 0 + |

No. Quantitative Taxa: 0 Total Taxa: 44

No. Qualitative Taxa: 44 ICI:

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 10/02/92 River Code: 04-405 River: Fish Creek RM: 5.40

| Taxa Code | Taxa | Quan/Qual |
|---|---|---|
| 03600 | *Oligochaeta* | 40 |
| 08250 | *Orconectes (Procericambarus) rusticus* | 0 + |
| 08601 | *Hydracarina* | 8 + |
| 11020 | *Acerpenna pygmaeus* | 22 |
| 11130 | *Baetis intercalaris* | 88 + |
| 12200 | *Isonychia sp* | 129 |
| 13400 | *Stenacron sp* | 290 + |
| 13510 | *Stenonema exiguum* | 316 |
| 13540 | *Stenonema mediopunctatum* | 198 + |
| 13561 | *Stenonema pulchellum* | 356 + |
| 13570 | *Stenonema terminatum* | 26 |
| 15000 | *Paraleptophlebia sp* | 2 |
| 23909 | *Boyeria vinosa* | 0 + |
| 30000 | *Plecoptera* | 56 |
| 42700 | *Belostoma sp* | 0 + |
| 45300 | *Sigara sp* | 0 + |
| 45400 | *Trichocorixa sp* | 0 + |
| 50315 | *Chimarra obscura* | 0 + |
| 50804 | *Lype diversa* | 3 |
| 50906 | *Psychomyia flavida* | 0 + |
| 51400 | *Nyctiophylax sp* | 0 + |
| 52200 | *Cheumatopsyche sp* | 408 + |
| 52430 | *Hydropsyche (Ceratopsyche) morosa group* | 314 + |
| 52530 | *Hydropsyche (H.) depravata group* | 25 |
| 52550 | *Hydropsyche (H.) frisoni* | 68 + |
| 52570 | *Hydropsyche (H.) simulans* | 17 + |
| 59400 | *Nectopsyche sp* | 0 + |
| 59500 | *Oecetis sp* | 0 + |
| 68075 | *Psephenus herricki* | 0 + |
| 68708 | *Dubiraphia vittata group* | 1 + |
| 68901 | *Macronychus glabratus* | 43 + |
| 69400 | *Stenelmis sp* | 1 |
| 74100 | *Simulium sp* | 18 + |
| 77750 | *Hayesomyia senata or Thienemannimyia norena* | 9 + |
| 77800 | *Helopelopia sp* | 26 |
| 80430 | *Cricotopus (C.) tremulus group* | 44 |
| 81231 | *Nanocladius (N.) crassicornus or N. (N.) rectinervus* | 26 |
| 81270 | *Nanocladius (N.) spiniplenus* | 9 |
| 81632 | *Parakiefferiella n.sp 2* | 9 |
| 81825 | *Rheocricotopus (Psilocricotopus) robacki* | 105 |
| 83840 | *Microtendipes pedellus group* | 61 + |
| 84450 | *Polypedilum (P.) convictum* | 9 + |
| 84460 | *Polypedilum (P.) fallax group* | 122 |
| 84540 | *Polypedilum (Tripodura) scalaenum group* | 9 |
| 84800 | *Tribelos jucundum* | 0 + |
| 85500 | *Paratanytarsus sp* | 26 |
| 85615 | *Rheotanytarsus distinctissimus group* | 0 + |
| 85625 | *Rheotanytarsus exiguus group* | 427 + |
| 85814 | *Tanytarsus glabrescens group* | 35 |
| 86100 | *Chrysops sp* | 0 + |
| 87501 | *Empididae* | 112 + |
| 94400 | *Fossaria sp* | 0 + |
| 96900 | *Ferrissia sp* | 34 + |
| 98600 | *Sphaerium sp* | 0 + |

| | | | |
|---|---|---|---|
| No. Quantitative Taxa: | 38 | Total Taxa: | 54 |
| No. Qualitative Taxa: | 34 | ICI: | **50** |

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 09/29/93 River Code: 04-405 River: Fish Creek RM: 5.40

| Taxa Code | Taxa | Quan/Qual |
|---|---|---|
| 01320 | *Hydra sp* | 2 |
| 01801 | *Turbellaria* | 2 |
| 03600 | *Oligochaeta* | 102 + |
| 08250 | *Orconectes (Procericambarus) rusticus* | 0 + |
| 08601 | *Hydracarina* | 2 |
| 12200 | *Isonychia sp* | 0 + |
| 13400 | *Stenacron sp* | 5 |
| 13510 | *Stenonema exiguum* | 31 + |
| 13540 | *Stenonema mediopunctatum* | 2 + |
| 15000 | *Paraleptophlebia sp* | 8 |
| 21200 | *Calopteryx sp* | 0 + |
| 22300 | *Argia sp* | 1 + |
| 23909 | *Boyeria vinosa* | 0 + |
| 30000 | *Plecoptera* | 18 |
| 31800 | *Taeniopteryx sp* | 4 |
| 50804 | *Lype diversa* | 0 + |
| 51400 | *Nyctiophylax sp* | 0 + |
| 51600 | *Polycentropus sp* | 0 + |
| 52200 | *Cheumatopsyche sp* | 4 |
| 57400 | *Neophylax sp* | 0 + |
| 68075 | *Psephenus herricki* | 1 |
| 68601 | *Ancyronyx variegata* | 4 |
| 68708 | *Dubiraphia vittata group* | 18 |
| 68901 | *Macronychus glabratus* | 1 + |
| 69200 | *Optioservus sp* | 0 + |
| 69400 | *Stenelmis sp* | 0 + |
| 71100 | *Hexatoma sp* | 0 + |
| 74501 | *Ceratopogonidae* | 8 |
| 77750 | *Hayesomyia senata or Thienemannimyia norena* | 19 |
| 77800 | *Helopelopia sp* | 28 + |
| 81270 | *Nanocladius (N.) spiniplenus* | 3 |
| 83840 | *Microtendipes pedellus group* | 87 + |
| 84302 | *Phaenopsectra punctipes* | 6 |
| 84460 | *Polypedilum (P.) fallax group* | 37 |
| 84470 | *Polypedilum (P.) illinoense* | 3 |
| 84540 | *Polypedilum (Tripodura) scalaenum group* | 9 |
| 84790 | *Tribelos fuscicorne* | 3 |
| 84800 | *Tribelos jucundum* | 34 |
| 85625 | *Rheotanytarsus exiguus group* | 3 |
| 86100 | *Chrysops sp* | 0 + |
| 87501 | *Empididae* | 30 + |
| 93900 | *Elimia sp* | 2 + |
| 96900 | *Ferrissia sp* | 293 + |
| 98200 | *Pisidium sp* | 0 + |
| 98600 | *Sphaerium sp* | 6 + |

No. Quantitative Taxa: 32 Total Taxa: 45

No. Qualitative Taxa: 24 ICI: **20**

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 09/29/93 River Code: 04-405 River: Fish Creek RM: 9.90

| Taxa Code | Taxa | Quan/Qual |
|---|---|---|
| 01320 | *Hydra sp* | 8 |
| 03600 | *Oligochaeta* | 80 |
| 06201 | *Hyalella azteca* | 0 + |
| 08250 | *Orconectes (Procericambarus) rusticus* | 0 + |
| 11020 | *Acerpenna pygmaeus* | 41 |
| 11130 | *Baetis intercalaris* | 3 + |
| 12200 | *Isonychia sp* | 69 + |
| 13400 | *Stenacron sp* | 321 + |
| 13510 | *Stenonema exiguum* | 894 + |
| 13540 | *Stenonema mediopunctatum* | 35 |
| 14900 | *Leptophlebia sp* | 0 + |
| 15000 | *Paraleptophlebia sp* | 391 + |
| 17200 | *Caenis sp* | 33 |
| 21200 | *Calopteryx sp* | 0 + |
| 22300 | *Argia sp* | 8 |
| 23909 | *Boyeria vinosa* | 0 + |
| 30000 | *Plecoptera* | 8 |
| 31800 | *Taeniopteryx sp* | 20 |
| 45300 | *Sigara sp* | 0 + |
| 45400 | *Trichocorixa sp* | 0 + |
| 45900 | *Notonecta sp* | 0 + |
| 50315 | *Chimarra obscura* | 2 |
| 50804 | *Lype diversa* | 16 + |
| 51400 | *Nyctiophylax sp* | 1 + |
| 51600 | *Polycentropus sp* | 14 + |
| 52200 | *Cheumatopsyche sp* | 191 + |
| 52430 | *Hydropsyche (Ceratopsyche) morosa group* | 34 + |
| 52530 | *Hydropsyche (H.) depravata group* | 4 + |
| 52550 | *Hydropsyche (H.) frisoni* | 9 + |
| 52570 | *Hydropsyche (H.) simulans* | 0 + |
| 63700 | *Ilybius sp* | 0 + |
| 63900 | *Laccophilus sp* | 0 + |
| 68601 | *Ancyronyx variegata* | 0 + |
| 68708 | *Dubiraphia vittata group* | 9 + |
| 68901 | *Macronychus glabratus* | 12 + |
| 69400 | *Stenelmis sp* | 1 |
| 70600 | *Antocha sp* | 24 |
| 71910 | *Tipula abdominalis* | 3 |
| 74100 | *Simulium sp* | 8 + |
| 74501 | *Ceratopogonidae* | 16 |
| 77750 | *Hayesomyia senata or Thienemannimyia norena* | 14 + |
| 77800 | *Helopelopia sp* | 57 + |
| 80370 | *Corynoneura lobata* | 24 |
| 80420 | *Cricotopus (C.) bicinctus* | 43 |
| 81229 | *Nanocladius (N.) crassicornus* | 14 |
| 81631 | *Parakiefferiella n.sp 1* | 14 |
| 81632 | *Parakiefferiella n.sp 2* | 14 |
| 81825 | *Rheocricotopus (Psilocricotopus) robacki* | 72 |
| 82121 | *Thienemanniella n.sp 3* | 24 |
| 82141 | *Thienemanniella xena* | 8 |
| 82200 | *Tvetenia bavarica group* | 14 |
| 82300 | *Xylotopus par* | 0 + |
| 83840 | *Microtendipes pedellus group* | 544 |
| 84460 | *Polypedilum (P.) fallax group* | 57 + |
| 84470 | *Polypedilum (P.) illinoense* | 0 + |
| 84540 | *Polypedilum (Tripodura) scalaenum group* | 14 |
| 84700 | *Stenochironomus sp* | 14 + |
| 84800 | *Tribelos jucundum* | 0 + |
| 85500 | *Paratanytarsus sp* | 14 |
| 85625 | *Rheotanytarsus exiguus group* | 271 |
| 85720 | *Stempellinella n.sp nr. flavidula* | 29 |
| 85800 | *Tanytarsus sp* | 14 |
| 85802 | *Tanytarsus curticornis group* | 29 |
| 85814 | *Tanytarsus glabrescens group* | 115 + |
| 85840 | *Tanytarsus guerlus group* | 14 |
| 87501 | *Empididae* | 130 + |
| 96900 | *Ferrissia sp* | 6 |
| 97601 | *Corbicula fluminea* | 0 + |
| 99100 | *Anodonta grandis* | 0 + |
| 99860 | *Lampsilis radiata luteola* | 0 + |

No. Quantitative Taxa: 52 Total Taxa: 70

No. Qualitative Taxa: 39 ICI: **46**

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 09/28/93 River Code: 04-405 River: Fish Creek RM: 13.80

| Taxa Code | Taxa | Quan/Qual |
|---|---|---|
| 01320 | *Hydra sp* | 8 |
| 03600 | *Oligochaeta* | 56 + |
| 08250 | *Orconectes (Procericambarus) rusticus* | 0 + |
| 08601 | *Hydracarina* | 4 + |
| 11020 | *Acerpenna pygmaeus* | 70 |
| 11130 | *Baetis intercalaris* | 0 + |
| 12200 | *Isonychia sp* | 3 + |
| 13400 | *Stenacron sp* | 262 + |
| 13510 | *Stenonema exiguum* | 204 + |
| 13540 | *Stenonema mediopunctatum* | 68 |
| 13570 | *Stenonema terminatum* | 2 |
| 15000 | *Paraleptophlebia sp* | 242 + |
| 17200 | *Caenis sp* | 4 |
| 21200 | *Calopteryx sp* | 1 |
| 22300 | *Argia sp* | 10 |
| 45400 | *Trichocorixa sp* | 0 + |
| 45900 | *Notonecta sp* | 0 + |
| 47600 | *Sialis sp* | 0 + |
| 50804 | *Lype diversa* | 36 + |
| 51400 | *Nyctiophylax sp* | 0 + |
| 51600 | *Polycentropus sp* | 8 + |
| 52200 | *Cheumatopsyche sp* | 71 + |
| 52430 | *Hydropsyche (Ceratopsyche) morosa group* | 1 |
| 52530 | *Hydropsyche (H.) depravata group* | 1 + |
| 57400 | *Neophylax sp* | 0 + |
| 60900 | *Peltodytes sp* | 0 + |
| 68075 | *Psephenus herricki* | 0 + |
| 68700 | *Dubiraphia sp* | 35 |
| 68901 | *Macronychus glabratus* | 19 + |
| 69400 | *Stenelmis sp* | 0 + |
| 71500 | *Ormosia sp* | 0 + |
| 71910 | *Tipula abdominalis* | 1 |
| 74100 | *Simulium sp* | 0 + |
| 74501 | *Ceratopogonidae* | 20 |
| 77750 | *Hayesomyia senata or Thienemannimyia norena* | 24 |
| 77800 | *Helopelopia sp* | 8 |
| 80370 | *Corynoneura lobata* | 16 |
| 81229 | *Nanocladius (N.) crassicornus* | 8 |
| 81270 | *Nanocladius (N.) spiniplenus* | 8 |
| 81631 | *Parakiefferiella n.sp 1* | 16 + |
| 81632 | *Parakiefferiella n.sp 2* | 32 |
| 81825 | *Rheocricotopus (Psilocricotopus) robacki* | 24 |
| 82121 | *Thienemanniella n.sp 3* | 12 |
| 82300 | *Xylotopus par* | 0 + |
| 83300 | *Glyptotendipes (Phytotendipes) sp* | 0 + |
| 83820 | *Microtendipes "caelum" (sensu Simpson & Bode, 1980)* | 8 |
| 83840 | *Microtendipes pedellus group* | 308 + |
| 84460 | *Polypedilum (P.) fallax group* | 95 |
| 84540 | *Polypedilum (Tripodura) scalaenum group* | 32 |
| 84700 | *Stenochironomus sp* | 0 + |
| 84790 | *Tribelos fuscicorne* | 8 |
| 84800 | *Tribelos jucundum* | 87 |
| 85261 | *Cladotanytarsus vanderwulpi group Type 1* | 8 |
| 85500 | *Paratanytarsus sp* | 8 |
| 85625 | *Rheotanytarsus exiguus group* | 110 + |
| 85720 | *Stempellinella n.sp nr. flavidula* | 0 + |
| 85800 | *Tanytarsus sp* | 24 |
| 85802 | *Tanytarsus curticornis group* | 8 |
| 85814 | *Tanytarsus glabrescens group* | 8 |
| 85840 | *Tanytarsus guerlus group* | 0 + |
| 86100 | *Chrysops sp* | 1 |
| 87501 | *Empididae* | 81 |
| 96900 | *Ferrissia sp* | 9 |
| 97601 | *Corbicula fluminea* | 15 + |
| 99480 | *Cyclonaias tuberculata* | 0 + |
| 99560 | *Ptychobranchus fasciolaris* | 0 + |
| 99820 | *Villosa iris iris* | 0 + |
| 99860 | *Lampsilis radiata luteola* | 0 + |
| 99880 | *Lampsilis ventricosa* | 0 + |

No. Quantitative Taxa: 47 Total Taxa: 69

No. Qualitative Taxa: 37 ICI: **44**

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 09/28/93 River Code: 04-405 River: Fish Creek RM: 17.10

| Taxa Code | Taxa | Quan/Qual |
|---|---|---|
| 01320 | *Hydra sp* | 8 |
| 01801 | *Turbellaria* | 3 |
| 03600 | *Oligochaeta* | 4 + |
| 08250 | *Orconectes (Procericambarus) rusticus* | 0 + |
| 11020 | *Acerpenna pygmaeus* | 124 |
| 11120 | *Baetis flavistriga* | 1 + |
| 11130 | *Baetis intercalaris* | 4 + |
| 12200 | *Isonychia sp* | 99 + |
| 13400 | *Stenacron sp* | 115 + |
| 13510 | *Stenonema exiguum* | 254 + |
| 13540 | *Stenonema mediopunctatum* | 82 + |
| 15000 | *Paraleptophlebia sp* | 158 + |
| 17200 | *Caenis sp* | 2 + |
| 18700 | *Hexagenia sp* | 0 + |
| 21200 | *Calopteryx sp* | 0 + |
| 22300 | *Argia sp* | 1 |
| 23909 | *Boyeria vinosa* | 1 + |
| 45400 | *Trichocorixa sp* | 0 + |
| 45900 | *Notonecta sp* | 0 + |
| 47600 | *Sialis sp* | 1 + |
| 50804 | *Lype diversa* | 55 + |
| 51400 | *Nyctiophylax sp* | 0 + |
| 52200 | *Cheumatopsyche sp* | 112 + |
| 52430 | *Hydropsyche (Ceratopsyche) morosa group* | 5 + |
| 52530 | *Hydropsyche (H.) depravata group* | 3 + |
| 68201 | *Scirtidae* | 0 + |
| 68708 | *Dubiraphia vittata group* | 2 + |
| 68901 | *Macronychus glabratus* | 16 + |
| 69400 | *Stenelmis sp* | 0 + |
| 71910 | *Tipula abdominalis* | 0 + |
| 72340 | *Dixella sp* | 0 + |
| 77800 | *Helopelopia sp* | 17 |
| 80204 | *Brillia flavifrons group* | 0 + |
| 80370 | *Corynoneura lobata* | 23 |
| 80420 | *Cricotopus (C.) bicinctus* | 3 |
| 81231 | *Nanocladius (N.) crassicornus or N. (N.) rectinervus* | 10 |
| 81270 | *Nanocladius (N.) spiniplenus* | 10 |
| 81465 | *Orthocladius (O.) carlatus* | 3 |
| 81530 | *Orthocladius (Symposiocladius) lignicola* | 0 + |
| 81632 | *Parakiefferiella n.sp 2* | 3 |
| 81650 | *Parametriocnemus sp* | 3 + |
| 81825 | *Rheocricotopus (Psilocricotopus) robacki* | 23 |
| 82121 | *Thienemanniella n.sp 3* | 4 |
| 82141 | *Thienemanniella xena* | 10 |
| 82200 | *Tvetenia bavarica group* | 3 + |
| 82300 | *Xylotopus par* | 0 + |
| 82820 | *Cryptochironomus sp* | 3 |
| 83820 | *Microtendipes "caelum" (sensu Simpson & Bode, 1980)* | 3 |
| 83840 | *Microtendipes pedellus group* | 34 + |
| 84155 | *Paralauterborniella nigrohalteralis* | 0 + |
| 84460 | *Polypedilum (P.) fallax group* | 94 + |
| 84470 | *Polypedilum (P.) illinoense* | 0 + |
| 84700 | *Stenochironomus sp* | 0 + |
| 84750 | *Stictochironomus sp* | 0 + |
| 85500 | *Paratanytarsus sp* | 3 |
| 85625 | *Rheotanytarsus exiguus group* | 127 |
| 85802 | *Tanytarsus curticornis group* | 7 |
| 85814 | *Tanytarsus glabrescens group* | 10 |
| 87501 | *Empididae* | 5 |
| 95100 | *Physella sp* | 0 + |
| 96900 | *Ferrissia sp* | 2 + |
| 98600 | *Sphaerium sp* | 0 + |
| 99420 | *Amblema plicata plicata* | 0 + |
| 99540 | *Elliptio dilatata* | 0 + |
| 99820 | *Villosa iris iris* | 0 + |

No. Quantitative Taxa: 43 Total Taxa: 65

No. Qualitative Taxa: 44 ICI: **52**

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 09/28/93 River Code: 04-405 River: Fish Creek RM: 21.70

| Taxa Code | Taxa | Quan/Qual |
|---|---|---|
| 01320 | *Hydra sp* | 56 |
| 01801 | *Turbellaria* | 2 + |
| 03600 | *Oligochaeta* | 8 + |
| 04686 | *Placobdella papillifera* | 0 + |
| 05900 | *Lirceus sp* | 0 + |
| 06201 | *Hyalella azteca* | 0 + |
| 08250 | *Orconectes (Procericambarus) rusticus* | 1 + |
| 08601 | *Hydracarina* | 2 |
| 11020 | *Acerpenna pygmaeus* | 454 |
| 11120 | *Baetis flavistriga* | 20 + |
| 11130 | *Baetis intercalaris* | 71 + |
| 12200 | *Isonychia sp* | 596 + |
| 13000 | *Leucrocuta sp* | 21 |
| 13400 | *Stenacron sp* | 28 + |
| 13510 | *Stenonema exiguum* | 396 + |
| 13540 | *Stenonema mediopunctatum* | 360 + |
| 13590 | *Stenonema vicarium* | 28 + |
| 15000 | *Paraleptophlebia sp* | 112 + |
| 17200 | *Caenis sp* | 8 |
| 18700 | *Hexagenia sp* | 0 + |
| 21200 | *Calopteryx sp* | 2 + |
| 23909 | *Boyeria vinosa* | 0 + |
| 42700 | *Belostoma sp* | 0 + |
| 43300 | *Ranatra sp* | 0 + |
| 45300 | *Sigara sp* | 0 + |
| 45900 | *Notonecta sp* | 0 + |
| 47600 | *Sialis sp* | 0 + |
| 50804 | *Lype diversa* | 6 + |
| 50906 | *Psychomyia flavida* | 0 + |
| 51600 | *Polycentropus sp* | 0 + |
| 52200 | *Cheumatopsyche sp* | 566 + |
| 52430 | *Hydropsyche (Ceratopsyche) morosa group* | 88 + |
| 52530 | *Hydropsyche (H.) depravata group* | 61 + |
| 52550 | *Hydropsyche (H.) frisoni* | 0 + |
| 53501 | *Hydroptilidae* | 0 + |
| 56001 | *Limnephilidae* | 0 + |
| 57400 | *Neophylax sp* | 0 + |
| 58505 | *Helicopsyche borealis* | 0 + |
| 59970 | *Petrophila sp* | 0 + |
| 60900 | *Peltodytes sp* | 0 + |
| 63900 | *Laccophilus sp* | 0 + |
| 64050 | *Liodessus sp* | 0 + |
| 68075 | *Psephenus herricki* | 0 + |
| 68708 | *Dubiraphia vittata group* | 2 + |
| 68901 | *Macronychus glabratus* | 29 + |
| 69275 | *Optioservus trivittatus* | 0 + |
| 69400 | *Stenelmis sp* | 13 + |
| 70600 | *Antocha sp* | 7 |
| 71910 | *Tipula abdominalis* | 0 + |
| 74100 | *Simulium sp* | 5 |
| 77750 | *Hayesomyia senata or Thienemannimyia norena* | 10 |
| 77800 | *Helopelopia sp* | 13 + |
| 78401 | *Natarsia species A (sensu Roback, 1978)* | 0 + |
| 80370 | *Corynoneura lobata* | 111 |
| 80410 | *Cricotopus (C.) sp* | 3 + |
| 80430 | *Cricotopus (C.) tremulus group* | 15 + |
| 80570 | *Doncricotopus prob. bicaudatus* | 0 + |
| 81229 | *Nanocladius (N.) crassicornus* | 5 |
| 81270 | *Nanocladius (N.) spiniplenus* | 5 |
| 81465 | *Orthocladius (O.) carlatus* | 5 |
| 81632 | *Parakiefferiella n.sp 2* | 0 + |
| 81690 | *Paratrichocladius sp* | 0 + |
| 81825 | *Rheocricotopus (Psilocricotopus) robacki* | 3 |
| 82121 | *Thienemanniella n.sp 3* | 8 |
| 82141 | *Thienemanniella xena* | 14 |
| 82300 | *Xylotopus par* | 0 + |
| 83840 | *Microtendipes pedellus group* | 25 + |
| 84450 | *Polypedilum (P.) convictum* | 5 |
| 84460 | *Polypedilum (P.) fallax group* | 33 |
| 84470 | *Polypedilum (P.) illinoense* | 0 + |
| 84540 | *Polypedilum (Tripodura) scalaenum group* | 0 + |
| 84700 | *Stenochironomus sp* | 3 + |
| 85500 | *Paratanytarsus sp* | 0 + |
| 85625 | *Rheotanytarsus exiguus group* | 50 + |
| 85814 | *Tanytarsus glabrescens group* | 3 + |
| 85840 | *Tanytarsus guerlus group* | 0 + |
| 86100 | *Chrysops sp* | 0 + |
| 86200 | *Tabanus sp* | 0 + |
| 87501 | *Empididae* | 26 |
| 93900 | *Elimia sp* | 0 + |

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 09/28/93 River Code: 04-405 River: Fish Creek RM: 21.70

| Taxa Code | Taxa | Quan/Qual | Taxa Code | Taxa | Quan/Qual |
|---|---|---|---|---|---|
| 95100 | *Physella sp* | 0 + | | | |
| 96900 | *Ferrissia sp* | 4 + | | | |
| 98200 | *Pisidium sp* | 0 + | | | |
| 98600 | *Sphaerium sp* | 7 + | | | |
| 99820 | *Villosa iris iris* | 0 + | | | |
| 99830 | *Lampsilis fasciola* | 0 + | | | |
| 99860 | *Lampsilis radiata luteola* | 0 + | | | |

| | | | |
|---|---|---|---|
| No. Quantitative Taxa: | 46 | Total Taxa: | 87 |
| No. Qualitative Taxa: | 69 | ICI: | **56** |

# Ohio EPA Ecological Assessment Section
## Macroinvertebrate Collection

Collection Date: 10/02/92 River Code: 04-405 River: Fish Creek RM: 30.50

| Taxa Code | Taxa | Quan/Qual | Taxa Code | Taxa | Quan/Qual |
|---|---|---|---|---|---|
| 01801 | *Turbellaria* | 0 + | | | |
| 03600 | *Oligochaeta* | 0 + | | | |
| 04664 | *Helobdella stagnalis* | 0 + | | | |
| 08250 | *Orconectes (Procericambarus) rusticus* | 0 + | | | |
| 11200 | *Callibaetis sp* | 0 + | | | |
| 13400 | *Stenacron sp* | 0 + | | | |
| 15000 | *Paraleptophlebia sp* | 0 + | | | |
| 17200 | *Caenis sp* | 0 + | | | |
| 21200 | *Calopteryx sp* | 0 + | | | |
| 22001 | *Coenagrionidae* | 0 + | | | |
| 28955 | *Plathemis lydia* | 0 + | | | |
| 42700 | *Belostoma sp* | 0 + | | | |
| 43300 | *Ranatra sp* | 0 + | | | |
| 44300 | *Pelocoris sp* | 0 + | | | |
| 47600 | *Sialis sp* | 0 + | | | |
| 52200 | *Cheumatopsyche sp* | 0 + | | | |
| 52430 | *Hydropsyche (Ceratopsyche) morosa group* | 0 + | | | |
| 52530 | *Hydropsyche (H.) depravata group* | 0 + | | | |
| 68700 | *Dubiraphia sp* | 0 + | | | |
| 69400 | *Stenelmis sp* | 0 + | | | |
| 72340 | *Dixella sp* | 0 + | | | |
| 77355 | *Clinotanypus pinquis* | 0 + | | | |
| 77500 | *Conchapelopia sp* | 0 + | | | |
| 80410 | *Cricotopus (C.) sp* | 0 + | | | |
| 81632 | *Parakiefferiella n.sp 2* | 0 + | | | |
| 82820 | *Cryptochironomus sp* | 0 + | | | |
| 83840 | *Microtendipes pedellus group* | 0 + | | | |
| 84450 | *Polypedilum (P.) convictum* | 0 + | | | |
| 84470 | *Polypedilum (P.) illinoense* | 0 + | | | |
| 85500 | *Paratanytarsus sp* | 0 + | | | |
| 85625 | *Rheotanytarsus exiguus group* | 0 + | | | |
| 86100 | *Chrysops sp* | 0 + | | | |
| 95100 | *Physella sp* | 0 + | | | |
| 96264 | *Planorbella (Pierosoma) pilsbryi* | 0 + | | | |
| 96900 | *Ferrissia sp* | 0 + | | | |
| 98600 | *Sphaerium sp* | 0 + | | | |

No. Quantitative Taxa: 0 Total Taxa: 36

No. Qualitative Taxa: 36 ICI:

**Appendix Table 3. Macroinvertebrate sampling station field sheets for Fish Creek, 1993.**

Ohio EPA Surface Water Section
Macroinvertebrate Field Sheet

Stream Fish Creek Stream Code 04-405 RM 21.7 Date Collected 9/28/9[illegible]

Location Site 1, ust. TR 850 E., Ind. Date Set _____

Collected By MJB, MJ[illegible]

Sampling Method: HD(No. 5) - DN/HP - Surber - Grab (Type _____) - Other _____

HD Sampler Site: Depth set: 0.6', ret. 0.8' Canopy 25% open Current (Set) 1.1 Current (Ret) 0.8 [illegible]

HD Condition: Disturbed Yes/No Comment: _____
Debris Yes/No Comment: few leaves
Silt/Solids None - Slight - Moderate - Heavy

DN/HP Sampling: Total Time 2 hr Habitats: Pool - Riffle - Run - Margin - Backwater

## Physical Characteristics

Flow Condition: High - Moderate - Low - Interstitial - Intermittent - Dry
Current Velocity: Fast - Moderate - Slow - ND
Channel Morphology: Natural - Channelized - Channelized (Recovered) - Impounded
Bank Erosion: Extensive - Moderate - Slight - None
Riffle Development: Extensive - Moderate - Sparse - Absent
Riffle Quality: Good - Fair - Poor Embedded: Yes/No
Clarity: Clear - Murky - Turbid — recent rains
Color: None - Green - Brown - Grey - Other( )
Canopy: Open - 75% - 50% - 25% - Closed

## Substrate Characteristics

| Percent of: | Pool | Riffle | Run |
|---|---|---|---|
| Bedrock( ) | | | |
| Boulder( ) | | X | |
| Rubble( ) | | XX | X |
| Coarse Gravel | | XX | XX |
| Fine Gravel | X | X | XX |
| Sand | XX | | XX |
| Silt | XX | | X |
| Clay/Hardpan | | | |
| Detritus | | | |
| Peat | | | |
| Muck | | | |
| Other( ) | | | |
| Macrophytes( ) | | | |
| Algae( ) | | | |
| Artifacts( ) | | | |
| Compaction(F,M,S) | F-M | F | F |
| Depth (Average) | 20" | 4" | 10" |
| Width (Average) | 60' | 40' | 50' |

## Predominant Land Use (L,R,B)

Forest, Shrub, Old Field, Rowcrop, Industrial, Open Pasture, Closed Pasture, Urban, Residential/Park, Mining/Construction, Wetland, Other ( )

## Riparian Vegetation

| Left | Width | Right | Width | Type |
|---|---|---|---|---|
| X | 40' | X | 100' | Large trees |
| | | | | Small trees |
| | | | | Shrubs |
| | | | | Grass/Weeds |
| | | | | None |

## Margin Habitat

Undercut Banks, Grass, Shallows, Rip Rap, Other( ), Root Mats, Water Willow, Clay/Hardpan, Bulkhead

Margin Quality: Good - Fair - Poor

Biological Characteristics

Riffle

Predominant Organisms: Hydropsychids (Isonychia, Baetis, Heptagenids), Mayflies

Other Common Organisms: riffle beetles, Midges

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Run

Predominant Organisms: Heptagenids, ~~corbi~~ fingernail clams

Other Common Organisms: Petrophila, various caddisflies, Midges

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Pool

Predominant Organisms: —

Other Common Organisms:

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Margin

Predominant Organisms: Corixids, damselflies

Other Common Organisms: fingernail clams

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Other Notable Collections: a few dead bivalve shells

Potential Pollution Sources:

Evidence of Pollution:

Photo Numbers:

Comments: good habitat substrates with marl covering & soft silt in slow water areas.

Ohio EPA Surface Water Section
Macroinvertebrate Field Sheet

Stream Fish Creek Stream Code 04-405 RM 17.1 Date Collected 9/28/93

Location Site 2, ust TR 700E, Ind. Date Set _____

Collected By MJB, MJK

Sampling Method: HD(No. 5) - DN/HP - Surber - Grab (Type _____) - Other _____

HD Sampler Site: Depth set: 0.5' ret. 1.2' Canopy 25% open Current (Set) 0.9 Current (Ret) 0.7 ft

HD Condition: Disturbed Yes/No Comment: _____
Debris Yes/No Comment: _____
Silt/Solids None - Slight - Moderate - Heavy

DN/HP Sampling: Total Time 2 hr Habitats: Pool - Riffle - Run - Margin - Backwater

## Physical Characteristics

recent rains

Flow Condition: High - Moderate - Low - Interstitial - Intermittent - Dry
Current Velocity: Fast - Moderate - Slow - ND
Channel Morphology: Natural - Channelized - Channelized (Recovered) - Impounded
Bank Erosion: Extensive - Moderate - Slight - None
Riffle Development: Extensive - Moderate - Sparse - Absent
Riffle Quality: Good - Fair - Poor Embedded: Yes/No Woody below only
Clarity: Clear - Murky - Turbid
Color: None - Green - Brown - Grey - Other( )
Canopy: Open - 75% - 50% - 25% - Closed

## Substrate Characteristics

| Percent of: | Pool | Riffle | Run |
|---|---|---|---|
| Bedrock( ) | | | |
| Boulder( ) | | | |
| Rubble( ) | | | |
| Coarse Gravel | | | |
| Fine Gravel | | | X |
| Sand | X | | XX |
| Silt | XX | | XX |
| Clay/Hardpan | X | | |
| Detritus | X | XX | XX |
| Peat | | | |
| Muck | | | |
| Other( ) | | | |
| Macrophytes( ) | | | |
| Algae( ) | | | |
| Artifacts( ) | | | |
| Compaction(F,M,S) | M-S | F | F-M |
| Depth (Average) | 24" | 4" | 12" |
| Width (Average) | 35' | 25' | 30' |

## Predominant Land Use (L,R,B)

Forest, Shrub, Old Field, B Rowcrop, Industrial, Open Pasture, Closed Pasture, Urban, Residential/Park, Mining/Construction, Wetland, Other ( )

## Riparian Vegetation

| Left | Width | Right | Width | Type |
|---|---|---|---|---|
| | | X | 50' | Large trees |
| X | 30' | | | Small trees |
| | | | | Shrubs |
| | | | | Grass/Weeds |
| | | | | None |

## Margin Habitat

Undercut Banks, Grass, Shallows, Rip Rap, Other( ), Root Mats, Water Willow, Clay/Hardpan, Bulkhead

Margin Quality: Good - Fair - Poor

Biological Characteristics

Riffle

Predominant Organisms: Hydropsychids, Mayflies (Isonychia, Heptageniids, Baetis)

Other Common Organisms:

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Run

Predominant Organisms: Heptagoniids, Hydropsychids

Other Common Organisms: Polycentropodids, Lypse, Midges

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Pool

Predominant Organisms: —

Other Common Organisms:

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Margin

Predominant Organisms: Corixids, Odonates

Other Common Organisms:

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Other Notable Collections:

Potential Pollution Sources:

Evidence of Pollution:

Photo Numbers:

Comments: Same type of organisms predominant but due to type of habitat, ie and sand + woody debree, many organisms collected upst were absent at this site.

Ohio EPA Surface Water Section
Macroinvertebrate Field Sheet

Stream Fish Creek Stream Code 04-405 RM 13.8 Date Collected 9/25/93

Location adj. CR 4A, Ind., site 3 Date Set _____

Collected By MJB, MK

Sampling Method: HD(No. 5) - DN/HP - Surber - Grab (Type _____) - Other _____

HD Sampler Site: Depth sit: 0.6', dt: 1.8 Canopy closed Current (Set) 0.5 Current (Ret) 0.7 fp

HD Condition: Disturbed Yes/No Comment: _____
Debris Yes/No Comment: _____
Silt/Solids None - Slight - Moderate - Heavy

DN/HP Sampling: Total Time 2 hr Habitats: Pool - Riffle - Run - Margin - Backwater

## Physical Characteristics

recent rains

Flow Condition: High - Moderate - Low - Interstitial - Intermittent - Dry
Current Velocity: Fast - Moderate - Slow - ND
Channel Morphology: Natural - Channelized - Channelized (Recovered) - Impounded
Bank Erosion: Extensive - Moderate - Slight - None
Riffle Development: Extensive - Moderate - Sparse - Absent
Riffle Quality: Good - Fair - Poor Embedded: Yes/No
Clarity: Clear - Murky - Turbid
Color: None - Green - Brown - Grey - Other( )
Canopy: Open - 75% - 50% - 25% - Closed

## Substrate Characteristics

| Percent of: | Pool | Riffle | Run |
|---|---|---|---|
| Bedrock( ) | | | |
| Boulder( ) | | | X |
| Rubble( ) | | | X |
| Coarse Gravel | | | X |
| Fine Gravel | | | X |
| Sand | X | | |
| Silt | X | | |
| Clay/Hardpan | X | | |
| Detritus | | | X |
| Peat | | | |
| Muck | X | | |
| Other( ) | | | |
| Macrophytes( ) | | | |
| Algae( ) | | | |
| Artifacts( ) | | | |
| Compaction(F,M,S) | S | | F-M |
| Depth (Average) | 24" | | 20" |
| Width (Average) | 50' | | 40' |

## Predominant Land Use (L,R,B)

Forest, Shrub, Old Field, Rowcrop, Industrial, Open Pasture, Closed Pasture, Urban, Residential/Park, Mining/Construction, Wetland, Other ( )

## Riparian Vegetation

| Left | Width | Right | Width | Type |
|---|---|---|---|---|
| X | 20' | X | 20' | Large trees |
| | | | | Small trees |
| | | | | Shrubs |
| | | | | Grass/Weeds |
| | | | | None |

## Margin Habitat

- hard to find margins due to high water

Undercut Banks, Grass, Shallows, Rip Rap, Other( ), Root Mats, Water Willow, Clay/Hardpan, Bulkhead

Margin Quality: Good - Fair - Poor

Biological Characteristics

Riffle

Predominant Organisms: _____

Other Common Organisms: _____

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Run

Predominant Organisms: Hydropsychids, Mayflies

Other Common Organisms: Midges

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Pool

Predominant Organisms: _____

Other Common Organisms: _____

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Margin – mainly on woody debree

Predominant Organisms: Polycentropids, Lype, Midges

Other Common Organisms: Heptageniids

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Other Notable Collections: _____

Potential Pollution Sources: _____

Evidence of Pollution: _____

Photo Numbers: _____

Comments: Natural substrates difficult to sample due to high water. Mostly the same organisms collected at site 2.

Ohio EPA Surface Water Section
Macroinvertebrate Field Sheet

Stream Fish Creek Stream Code 04-405 RM 9.9 Date Collected 9/29/93

Location Site 4, ust. CR 12, Ind. Date Set _____

Collected By MJB, MJK

Sampling Method: HD(No. 5) - DN/HP - Surber - Grab (Type _____) - Other _____

HD Sampler Site: Depth set: 1.0' ret: 1.5' Canopy 25% open Current (Set) 0.5 Current (Ret) 0.8 fps

HD Condition: Disturbed Yes/No Comment: _____
Debris Yes/No Comment: _____
Silt/Solids None - Slight - Moderate - Heavy

DN/HP Sampling: Total Time 1 hr. 40 min Habitats: Pool - Riffle - Run - Margin - Backwater

## Physical Characteristics

the 3 recent rains

Flow Condition: High - Moderate - Low - Interstitial - Intermittent - Dry
Current Velocity: Fast - Moderate - Slow - ND
Channel Morphology: Natural - Channelized - Channelized (Recovered) - Impounded
Bank Erosion: Extensive - Moderate - Slight - None
Riffle Development: Extensive - Moderate - Sparse - Absent
Riffle Quality: Good - Fair - Poor Embedded: Yes/No
Clarity: Clear - Murky - Turbid
Color: None - Green - Brown - Grey - Other( )
Canopy: Open - 75% - 50% - 25% - Closed

## Substrate Characteristics

| Percent of: | Pool | Riffle | Run |
|---|---|---|---|
| Bedrock( ) | | | |
| Boulder( ) | | | |
| Rubble( ) | | | |
| Coarse Gravel | | | |
| Fine Gravel | | | |
| Sand | X | | X |
| Silt | X | | X |
| Clay/Hardpan | X | | |
| Detritus | | XX | XX |
| Peat | | | |
| Muck | | | |
| Other( ) | | | |
| Macrophytes( ) | | | |
| Algae( ) | | | |
| Artifacts( ) | | | |
| Compaction(F,M,S) | M-S | F-M | M |
| Depth (Average) | 24" | 10" | 20" |
| Width (Average) | 60' | 40' | 30' |

## Predominant Land Use (L,R,B)

Forest, Shrub, Old Field, Rowcrop, Industrial, Open Pasture, Closed Pasture, Urban, Residential/Park, Mining/Construction, Wetland, Other ( )

## Riparian Vegetation

| Left | Width | Right | Width | Type |
|---|---|---|---|---|
| X | 100' | X | 100' | Large trees |
| | | | | Small trees |
| | | | | Shrubs |
| | | | | Grass/Weeds |
| | | | | None |

## Margin Habitat

Undercut Banks, Grass, Shallows, Rip Rap, Other( ), Root Mats, Water Willow, Clay/Hardpan, Bulkhead

Margin Quality: Good - Fair - Poor

Biological Characteristics

Riffle

Predominant Organisms: Hydropsychids, mayflies

Other Common Organisms: Midges

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Run

Predominant Organisms: about same as riffle on weedy debris

Other Common Organisms:

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Pool

Predominant Organisms: —

Other Common Organisms:

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Margin

Predominant Organisms: Corixids, damselflies, Polycentropids, Lype

Other Common Organisms: Midges

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Other Notable Collections:

Potential Pollution Sources:

Evidence of Pollution:

Photo Numbers:

Comments: Habitat and community about same as sites 2 + 3.

Ohio EPA Surface Water Section
Macroinvertebrate Field Sheet

Stream Fish Creek Stream Code 04-405 RM 5.4 Date Collected 9/29/93

Location site 5, Ust CR60 Date Set _____

Collected By MJB, MJ1

Sampling Method: HD(No. 5) - DN/HP - Surber - Grab (Type _____) - Other _____

HD Sampler Site: Depth set: 0.8' ret: 1.8' Canopy 25% open Current (Set) 0.6 fps Current (Ret) 0.9 fps

HD Condition: Disturbed Yes/No Comment: _____
Debris Yes/No Comment: _____
Silt/Solids None - Slight - Moderate - Heavy

DN/HP Sampling: Total Time 2 hr. Habitats: Pool - Riffle - Run - Margin - Backwater

## Physical Characteristics

due to recent rains

Flow Condition: High - Moderate - Low - Interstitial - Intermittent - Dry
Current Velocity: Fast - Moderate - Slow - ND
Channel Morphology: Natural - Channelized - Channelized (Recovered) - Impounded
Bank Erosion: Extensive - Moderate - Slight - None
Riffle Development: Extensive - Moderate - Sparse - Absent
Riffle Quality: Good - Fair - Poor - underwater Embedded: Yes/No
Clarity: Clear - Murky - Turbid
Color: None - Green - Brown - Grey - Other( )
Canopy: Open - 75% - 50% - 25% - Closed

## Substrate Characteristics

| Percent of: | Pool | Riffle | Run |
|---|---|---|---|
| Bedrock( ) | | | |
| Boulder( ) | | | |
| Rubble( ) | | X | X |
| Coarse Gravel | | X | X |
| Fine Gravel | X | X | X |
| Sand | X | | X |
| Silt | X | | |
| Clay/Hardpan | X | | |
| Detritus | X | | |
| Peat | | | |
| Muck | | | |
| Other( ) | | | |
| Macrophytes( ) | | | |
| Algae( ) | | | |
| Artifacts( ) | | | |
| Compaction(F,M,S) | M-S | F | F |
| Depth (Average) | 24" | 12" | 24" |
| Width (Average) | 50' | 30' | 40' |

## Predominant Land Use (L,R,B)

Forest
Shrub
Old Field
Rowcrop
Industrial
Open Pasture
Closed Pasture
Urban
Residential/Park
Mining/Construction
Wetland
Other
( )

## Riparian Vegetation

| Left | Width | Right | Width | Type |
|---|---|---|---|---|
| X | 40' | X | 70' | Large trees |
| | | | | Small trees |
| | | | | Shrubs |
| | | | | Grass/Weeds |
| | | | | None |

## Margin Habitat

Undercut Banks
Grass
Shallows
Rip Rap
Other( )
Root Mats
Water Willow
Clay/Hardpan
Bulkhead

Margin Quality: Good - Fair - Poor

Biological Characteristics

Riffle

Predominant Organisms: fingernail clams, riffle beetle larvae

Other Common Organisms: Isonychia, Heptageniids

Density: High - Moderate - (Low)

Diversity: High - Moderate - (Low)

Run

Predominant Organisms: about same as riffle

Other Common Organisms:

Density: High - Moderate - (Low)

Diversity: High - Moderate - (Low)

Pool

Predominant Organisms:

Other Common Organisms:

Density: High - Moderate - (Low)

Diversity: High - Moderate - (Low)

Margin

Predominant Organisms: Polycentropidsf Lype, + midges on woody debris

Other Common Organisms: few odonates

Density: High - Moderate - (Low)

Diversity: High - Moderate - (Low)

Other Notable Collections:

Potential Pollution Sources: oil spill

Evidence of Pollution: substrates completely covered by oil, oil sheen on surface + strong foul smell

Photo Numbers:

Comments: The oil spill was greatly impacting the macroinvertebrate community at this site. Covering the substrates, many organisms that should have been abundant in riffle, ie hydropsychids, Baetis, Pteronarcyla, etc., were absent.

Ohio EPA Surface Water Section
Macroinvertebrate Field Sheet

Stream Fish Creek Stream Code 04-405 RM 0.3 Date Collected 9/29/93

Location Site 6, dst. SR 49 Date Set _____

Collected By MJB, MK

Sampling Method: HD(No. 5) - DN/HP - Surber - Grab (Type _____) - Other _____

HD Sampler Site: Depth set: 0.8', ret: 1.6' Canopy 25% open Current (Set) 1.1 fps Current (Ret) 1.3 fps

HD Condition: Disturbed Yes/No Comment: _____
Debris Yes/No Comment: _____
Silt/Solids None - Slight - Moderate - Heavy

DN/HP Sampling: Total Time 2 hr. Habitats: Pool - Riffle - Run - Margin - Backwater

due to recent rains

## Physical Characteristics

Flow Condition: High - Moderate - Low - Interstitial - Intermittent - Dry
Current Velocity: Fast - Moderate - Slow - ND
Channel Morphology: Natural - Channelized - Channelized (Recovered) ? - Impounded
Bank Erosion: Extensive - Moderate - Slight - None
Riffle Development: Extensive - Moderate - Sparse - Absent
Riffle Quality: Good - Fair - Poor — woody debree only Embedded: Yes/No
Clarity: Clear - Murky - Turbid
Color: None - Green - Brown - Grey - Other( )
Canopy: Open - 75% - 50% - 25% - Closed

## Substrate Characteristics

| Percent of: | Pool | Riffle | Run |
|---|---|---|---|
| Bedrock( ) | | | |
| Boulder( ) | | | |
| Rubble( ) | | | |
| Coarse Gravel | | | |
| Fine Gravel | | | |
| Sand | X | | X |
| Silt | X | | X |
| Clay/Hardpan | X | | |
| Detritus | X | X | X |
| Peat | | | |
| Muck | | | |
| Other( ) | | | |
| Macrophytes( ) | | | |
| Algae( ) | | | |
| Artifacts( ) | | | |
| Compaction(F,M,S) | M-S | F | M |
| Depth (Average) | 24" | 12" | 20" |
| Width (Average) | 40' | 25' | 35' |

## Predominant Land Use (L,R,B)

Forest
Shrub
Old Field
Rowcrop
Industrial
Open Pasture
Closed Pasture
Urban
Residential/Park
Mining/Construction
Wetland
Other ( )

## Riparian Vegetation

| Left | Width | Right | Width | Type |
|---|---|---|---|---|
| X | 100' | X | 100' | Large trees |
| | | | | Small trees |
| | | | | Shrubs |
| | | | | Grass/Weeds |
| | | | | None |

## Margin Habitat

Undercut Banks
Grass
Shallows
Rip Rap
Other( )
Root Mats
Water Willow
Clay/Hardpan
Bulkhead

Margin Quality: Good - Fair - Poor

Biological Characteristics

Riffle

Predominant Organisms: Hydropsychids

Other Common Organisms: Heptageniidae, riffle beetles

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Run

Predominant Organisms: Hydropsychids

Other Common Organisms: Lype, riffle beetles, Midges

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Pool

Predominant Organisms: —

Other Common Organisms:

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Margin

Predominant Organisms: —

Other Common Organisms: few Notonecta + damselflies

Density: High - Moderate - Low

Diversity: High - Moderate - Low

Other Notable Collections: couple Isonychia

Potential Pollution Sources: oil spill

Evidence of Pollution: slight oil smell

Photo Numbers:

Comments: There was no obvious sign of oil at this site, with only a slight oil smell. Some taxa common upst. of the oil spill, i.e. Baetis, were not collected at this site.