

Fishes of Small Tributaries to the Ohio River in Allegheny County, Pennsylvania

Koryak Environmental and Health Consultants

for:

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FISHES OF SMALL TRIBUTARIES TO THE OHIO RIVER IN ALLEGHENY COUNTY, PENNSYLVANIA

Abstract

The fish communities of fifty-three small urban/suburban streams with little or no available baseline fish data were sampled by backpack electrofishing in 2002 and 2003. All are tributaries of the Ohio, Allegheny and Monongahela Rivers in Allegheny County, Pennsylvania. A total of 3,026 fish of 37 species, weighing 95.3 pounds, were collected at stations located near the mouths of these 53 urban/suburban streams (electrofishing effort-547 minutes).

Fish were present in 12 of 18 Ohio River tributaries. Of the 18 streams sampled within the Allegheny River drainage, only four did not support some fish. Fish were present in 15 of 17 of the Monongahela River tributaries. A total of 28 species of fish were collected in the tributaries of the Ohio River, 29 species in the Allegheny River tributaries, and 16 species in the tributaries of the Monongahela River.

Blacknose dace were the numerically dominant species collected in these small streams, and showed the widest distribution of any fish. Blacknose dace were present in 34 of the study streams, creek chub in 30, and white suckers in 16. Generally sensitive sculpin and darter species were present in 18 of the streams, and a Pennsylvania Endangered species (river shiner) was found in Bailey Run. Trout were captured in five streams, Little Sewickley Creek, Little Bull Creek, Bailey Run, Mingo Creek, and Pigeon Creek, and brown trout might be reproducing successfully in Little Sewickley Creek. Plum Creek and lower Lowrie Run had good smallmouth bass communities, and Pine Creek had sauger and smallmouth, largemouth, and rock bass sport fish communities.

Index of Biotic Integrity scores were developed for 47 streams. Nine of these local streams had good scores, 7 had fair scores, 8 had poor scores, and 23 had very poor scores. While this information clearly indicates that numerous small streams in Allegheny County are still experiencing severe environmental stresses, nonetheless, the results generally exceeded expectations.

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I. INTRODUCTION

Purpose of Study

The purpose of this study is to support the Three Rivers Second Nature (3R2N) initiative by performing cursory fish population assessments of small streams in Allegheny County, Pennsylvania. The assessments will be used to characterize and rank the water quality and health of the ecosystems of these primarily urban and suburban streams. The general goals of the 3R2N initiative are to generate interest in protecting/restoring Allegheny County, Pennsylvania urban streams, including those that are buried and/or culverted, and their riparian corridors for multiple benefits.

Authority, Sponsors and Participants

The authority for U.S. Army Corps of Engineers participation in this study is Section 22 of the Water Resources Development Act of 1974 (Public Law 93-25, as amended). This statute authorizes the Corps of Engineers to assist states and local governments in the preparation of plans for the development, utilization, and conservation of water and related land resources, and for recovering cost shares of the program from non-federal entities.

The 3R2N initiative is a partnership between Carnegie Mellon University's STUDIO for Creative Inquiry and the Three Rivers Wet Weather Demonstration Project (TRWW). This initiative is supported by the Allegheny County Health Department (ACHD) and the Allegheny County Sanitary Authority (ALCOSAN). The Allegheny County Health Department is the Section 22 Study cost-sharing signatory. The TRWW project was established in 1997 to assist 51 communities in Allegheny County, Pennsylvania, currently under regulatory scrutiny to eliminate Combined Sewer Overflows (CSOs). The program has expanded to assist all 83 communities in the ALCOSAN service area by funding wet weather remediation projects.

Major members in the 3R2N Advisory Board and partnership include the Pittsburgh Water and Sewer Authority, Pittsburgh City Planning, the University of Pittsburgh, Chatham College, the Rocky Mountain Institute, and others. 3R2N has funding for five years from the Heinz Endowments and the Pittsburgh Foundation.

Tasks

This report was prepared by Michael Koryak, Robert H. Hoskin, and Linda J. Stafford for the U.S. Army Corps of Engineers Pittsburgh District, with the volunteer assistance of environmental consulting scientist Patrick Bonislowsky. The basic tasks to be performed by the U.S. Army Corps of Engineers, Pittsburgh District, in support of the 3R2N effort, are to conduct rapid biological assessments of stream locations within, or which drain into, waters of Allegheny County, Pennsylvania. This data will then be used to characterize the quality of the study streams.

Bioassessments may be used within a planning and management framework to prioritize water quality problems for more stringent assessments and to document “environmental recovery” following control actions. Some of the advantages of using biosurveys for this type of monitoring are:

1. Biological communities reflect overall ecological integrity (i.e., chemical, physical, and biological integrity). Therefore, biosurvey results directly assess the status of a waterbody relative to the primary goals of the Clean Water Act.
2. Biological communities integrate the effects of different pollutant stressors and thus provide a holistic measure of their aggregate impact. Communities also integrate the stresses over time and provide an ecological measure of fluctuating environmental conditions. Assessing the integrated variable pollutant inputs offers a particularly useful approach for monitoring non-point source impacts and the effectiveness of certain Best Management Practices.
3. Routine monitoring of biological communities can be relatively inexpensive, particularly when compared to the cost of assessing toxic pollutants, either chemically or with toxicity tests.
4. The status of biological communities is of direct interest to the public as a measure of a pollution free environment, while reductions in the chemical pollutant loadings are not as readily understood by the layman as positive environmental results.
5. Where criteria for specific ambient impacts do not exist, biological communities may be the only practical means of evaluation (Plafkin et al., 1989).

The 3R2N bioassessment effort is primarily macroinvertebrate based. In 2001, aquatic invertebrates were sampled from 35 stations on 33 streams. In 2002, aquatic invertebrates were sampled at an additional 23 streams, and invertebrates were sampled from 18 streams in 2003. Incidental observations during the spring 2001 aquatic invertebrate assessment field surveys of local urban/suburban streams demonstrated that many of the streams now support resident fish life. Also, even when resident fish communities of local degraded streams are depauperate, reaches with access can nonetheless be routinely used by transient species from the nearby navigation system (Koryak et al., 2001). Like invertebrates, fish can be used to assess stream quality. In addition, fish are familiar organisms, which are of great interest to the general public, and their status is more easily understood by layman as an index of quality. Therefore, it was recommended in the 2001 Phase 1 Interim Report that the 3R2N bioassessment be augmented with fish data. This report represents the implementation of that recommendation for 18 tributaries of the Ohio River sampled in 2003. Thirty-five tributaries of the Allegheny and Monongahela Rivers were also sampled in 2002. The results of the 2002 effort were published in both a separate 3R2N report and in a journal publication (Koryak et al., 2002; Hoskin et al., 2003), and will be referenced for the sake of comparison in this document.

The advantages of using fish for bioassessment are (Plafkin et al., 1989):

1. Because they are relatively long-lived and mobile, fish are good indicators of long-term (several year) effects and broad habitat conditions.
2. Fish communities generally include a range of species that represent a variety of trophic levels (omnivores, herbivores, insectivores, planktivores, piscivores). They tend to integrate

effects of lower trophic levels; thus, fish community structure is reflective of integrated environmental health.

3. Fish are the top of the aquatic food chain and are consumed by humans, making them important subjects in assessing contamination.
4. Fish are relatively easy to collect and identify to the species level. Most specimens can be sorted and identified in the field and released unharmed.
 - Environmental requirements of common fish are comparatively well known.
 - Life history information is extensive for most species.
 - Information on fish distribution is commonly available.
5. Aquatic life uses (water quality standards) are typically characterized in terms of fisheries (coldwater, coolwater, warmwater, sport, forage)
 - Monitoring fish communities provides direct evaluation of “fishability,” which emphasizes the importance of fish to anglers.
6. Fish account for nearly half of the endangered vertebrate species and subspecies in the United States.

Station Locations

Eighteen area streams were selected for examination in the 2003 study phase. The selected streams were tributaries of the Ohio River with little previously documented baseline fish data, and which were small enough for backpack electrofishing sampling techniques to be effective. The locations of the stream stations sampled by backpack electrofishing in 2003 are described in Table 1. The stations are essentially identical to the reaches of these streams which were sampled for aquatic invertebrates in the 3R2N program.

Station sampling reaches were located as near as possible to the mouths of the study streams, in areas upstream of backwater influences of the navigation dams, and with at least one stony riffle in each sampling reach. At a number of stations, finding suitable unculverted reaches upstream of backwater from the navigation pools forced us to locate stations at considerable distances upstream from the mouths of the study streams. Because of these criteria, the 3R2N bioassessment stations (both invertebrate and fish) were not located in precisely the same stream reaches as the 3R2N tributary bacteriological stations, which were sampled in a separate study effort.

Methods

The stations were sampled between June 16 and August 11 of 2003 by single-pass backpack electrofishing. An operator utilized a Coffett Model BP-2 backpack shocker equipped with two hand held electrodes and powered by a Honda EX350 generator to stun fish, which were collected by two netters. The netted fish were kept alive in five gallon buckets until they could be processed. Lengths to the nearest millimeter (mm) and weights to the nearest gram (g) were recorded for all sport fish, and all other large or unique fishes. Species of abundant smaller fish were length ranged, separated into size groups, and then group weighed. Except for some

shiners (*Notropis* spp.) taken back to the laboratory for more careful identification, all fish were released after processing with negligible apparent mortality. The electrofishing effort, along with pertinent information on stream lengths, widths, and areas sampled, is summarized in Table 1. Background water temperature, pH, dissolved oxygen, and conductivity conditions at each electrofishing station at the time of sampling can be found in Appendix A.

II. RESULTS AND DISCUSSION

Historical Regional Fisheries Resources

Streams draining urban industrial portions of the upper Ohio River Valley can suffer from numerous insults including: a legacy of polluted drainage from past mining and industrial activities; leakage of sanitary wastes from old and poorly maintained sewer systems; combined storm/sanitary sewer overflows; shock loads of deicing chemicals from airports and highways following winter thaws; filling, channelization and culverting; dry weather desiccation from extensive drainage activities; and sudden and violent storm surges from impervious urban surfaces that tend to downcut channels and degrade habitat.

Previously, the waters of many of these smaller local urban streams, and also the Monongahela River and upper Ohio River to which they are tributary, were severely water quality limited (Shapiro et al., 1967) and did not support any substantial fisheries. The demise of fishes from rivers of the region during the late nineteenth and most of the twentieth centuries has been examined in detail by the Ohio River Valley Water Sanitation Commission (1962), Trautman (1981), Preston and White (1978), Pearson and Krumholz (1994), and others. Species of smaller rivers and stream habitats persisted in more remote, unurbanized and unpolluted refuge headwaters. However, those species associated with large river ecosystems such as sauger (*Stizostedion canadense*), spotted bass (*Micropterus punctulatus*), drum (*Aplodinotus grunniens*), mooneye (*Hiodon tergisus*), goldeye (*Hiodon alosoides*), river carpsucker (*Carpionodes carpio*), silver chub (*Hybopsis storeriana*), the buffalofishes (*Ictiobus spp.*), the sturgeons (*Acipenser fulvescens* and *Scaphirhynchus platyrhynchus*), paddlefish (*Polyodon spathula*), and other species became extinct locally due to the pollution. Historically, the water quality of five Corps of Engineers reservoirs and two large private utility hydropower reservoirs in the upper Ohio River drainage basin was so grossly degraded that these systems were completely devoid of fish life (Koryak et al., 2001).

The improvements in water quality that began in the 1970s allowed fish to invade and recolonize reclaimed waters. This restoration of local river fisheries has been discussed by Preston and White (1978), Pearson and Krumholz (1984), Koryak and Hoskin (1994), and others. The first species to appear were those that had persisted in upstream refuges. Recolonization by many of the large river species occurred later and apparently originated from distant downstream areas.

Holland et al. (1984) showed that, depending on their design and operation, navigation dams on larger rivers can be relatively pervious to fish passage. Our observations of recolonization rates along the mainstem Ohio River, lower Monongahela River and lower Allegheny River, which have very heavy commercial barge traffic and frequent year-round lockages, suggest that fishes can generally move upstream through the navigation locks. Along the five pools of the upper Allegheny River navigation system, however, where winter and spring lockages are very infrequent, extirpated fishes were not recolonizing the upstream navigation pools until a program of fish passage lockages was initiated.

Formerly extirpated species of fish are also returning to smaller tributaries of the Allegheny, Monongahela, and Ohio Rivers (Koryak and Hoskin, 1994). As water quality conditions continue to improve, this process of recolonization now appears to include, or has the potential to include, utilization of even small recovering local urban and suburban streams by resident and transient populations of fishes.

Results and Discussion of 2003 Fish Surveys

Photographs of each station reach, chemical water quality data, and the complete results of aquatic invertebrate bioassessments for each of the 18 electrofishing stations sampled in 2003 are available in a 3R2N companion report (Reference 15).

Fish species distribution in tributaries of the Ohio River is shown in Table 2. Catch per unit effort information is summarized in Table 3. Individual Ohio River tributary station fish collection data is contained in Appendix A.

A total of 1,140 fish of 28 species, weighing 18.5 kilograms (40.8 pounds), were collected at 18 urban/suburban small streams tributary to the Ohio River in the 2003 phase of the study. The total 2003 electrofishing effort was 234 minutes. A total of 1,103 fish weighing 16.45 kilograms (36.3 pounds) were captured from 18 tributaries of the Allegheny River with 168 minutes of effort in 2002. In 17 tributaries of the Monongahela River which were also sampled in 2002, 783 fish weighing 8.25 kilograms (18.2 pounds) were captured with 145 minutes of effort. The combined catch rate for tributaries of the Ohio River was 292 fish/hour and 6.16 kilogram/hour. The combined catch rate in the Allegheny River tributaries was 393 fish/hour and 5.86 kilograms/hour. Catch values for the tributaries of the Monongahela River were 324 fish/hour and 3.41 kilograms/hour. Fish were present in 12 of the 18 tributaries of the Ohio River. Of 18 streams surveyed within the Allegheny River drainage portion of Allegheny County, only four did not support some fish. Fish were present at 15 of the 17 stream stations sampled in the Monongahela River drainage portion of Allegheny County. A total of 29 species of fish were collected in the tributaries of the Allegheny River, and 16 species in the tributaries of the Monongahela River.

In addition to the 37 species of fish collected during the 2002 3R2N surveys which are listed in Appendix B, other species of fish recently reported from small Allegheny County streams include brook trout (*Salvelinus fontinalis*), gizzard shad (*Dorosoma cepedianum*), white bass (*Morone chrysops*), shorthead redhorse (*Moxostoma macrolepidotum*), and black redhorse (*Moxostoma duquesnei*) (Koryak et al., 2001). Therefore, because of the proximity of these streams to the navigation system, more than 40 different species of fish might be expected to at least occasionally utilize their lower reaches.

Blacknose dace were the most common fish in these streams, and showed the widest distribution of any species. Blacknose dace were present in 34 of the study streams, creek chubs in 30, and white suckers in 16. Rainbow darters were collected in 17, and stonerollers

in 15 of the streams. Bluntnose minnows occurred in 11, and fantail darters in 10. Generally sensitive sculpin and/or darter species were present in 8 of the Allegheny River tributaries, 7 of the Ohio River tributaries, and 3 of the Monongahela River tributaries. Numerically, blacknose dace were 62.6 % of all fish collected in tributaries of the Monongahela River, and blacknose dace, creek chubs and white suckers combined were 93.0 % of the total. In the Ohio River tributaries, blacknose dace were 42.0 % of the total, and blacknose dace, creek chubs, and white suckers combined accounted for 60.1 % of the basin total. In the tributaries of the Allegheny River, blacknose dace were 14 % of the total, and blacknose dace, creek chubs, and white suckers combined accounted for 30.7 % of the basin total. Regarding this trio of urban stream fishes, creek chub, white sucker, and blacknose dace in particular, they are also locally the characteristic fish fauna of very small non-degraded streams and headwater habitats. In addition to their tolerance of chemical pollutants, it would appear that their general adaptations to the hydrologic and hydraulic stresses of headwater streams permit them to also thrive in the modified channels and under the extreme hydrologic conditions found in urbanized drainages. In these urban situations, they were observed to maintain dominance in even relatively large impacted streams.

The streams with the greatest diversity of fishes were Sewickley Creek (17 species), Little Bull Creek (16 species), Bailey Run (15 species), Plum Creek (15 species), Little Sewickley Creek (13 species), Moon Run (12 species), Montour Run (11 species), Lowrie Run (11 species), Flaugherty Run (10 species), Pucketa Creek (10 species), Squaw Run (10 species), and Mingo Creek (10 species). With the exception of Mingo Creek, which drains into the Monongahela River, all 12 of these high diversity streams are tributaries of the Ohio and Allegheny Rivers. By all criteria, streams in the more intensely urbanized, industrialized, and mineral extraction influenced Monongahela River drainage portion of Allegheny County are more damaged than those of the Allegheny and Ohio River drainage parts of the county. Of the tributaries to the Ohio River, 33% had three or less species of fish. In the Allegheny River drainage, 44% of the tributaries had three or less species of fish, and 76% of the Monongahela River tributaries had three or less fish species. Guys Run, Quigley Creek, Falling Springs Run, and Blacks Run in the Allegheny River drainage had no fish at all. In the Monongahela River drainage, Homestead Run, and Tasseys Hollow did not support any fish life. In the Ohio River drainage, Shouse Run, Edgeworth Run, Blackburn Run, Osborne Run, Spruce Run, and Jacks Run did not support any fish life.

In terms of sport fish and recreational angling potential, trout were captured in Little Sewickley Creek, Little Bull Creek, Bailey Run, and Mingo Creek, and observed in Pigeon Creek (one dead rainbow trout). The smallmouth bass population found in Plum Creek was surprising and exceptional for a small local suburban stream. Smallmouth bass up to 342 mm long (13.5 inches) were captured. The smallmouth population in Plum Creek was estimated to be 93 fish/hectare (25.8 kilogram/hectare). There were also rock bass and sunfish in Plum Creek. In Pine Creek, smallmouth bass, largemouth bass, rock bass and sauger were collected, and other sport species likely are present. Also, for youth anglers and sometimes not so young fishermen, even creek chubs, which were found in 34 of the 53 streams sampled, can provide an angling experience in the urban/suburban environment.

Within Allegheny County, the Pennsylvania Fish and Boat Commission (PFBC) now manages Big Sewickley Creek, Bull Creek, Deer Creek including Deer Lakes, Flaugherty Run, Long Run, Pine Creek including North Park Lake, and upper Turtle Creek as “approved trout waters.” Mingo Creek, while in Westmoreland County, flows into the Monongahela River adjacent to the Allegheny County line and is also an “approved trout water” stream. Montour Run was added to this list in 2003. Upper Turtle Creek, upstream of Trafford, was previously managed for trout by the PFBC. It lost its status because of reoccurring incidents of severe acid mine drainage pollution, but was then returned to the list of managed coldwater fisheries of Allegheny County in 2002. In addition to officially “approved trout waters,” trout have been stocked by sportsmen’s clubs, watershed associations, and others in Little Sewickley Creek, upper Turtle Creek, Montour Run, and perhaps other locations within the county. The trout observed in Little Bull Creek, Bailey Run, and Pigeon Creek occurred in streams that are not stocked or managed for trout by the PFBC.

Six of the Phase 3 study streams sampled in 2003 supported more than 50 kg/hectare of fish. These productive streams were Little Sewickley Creek (80.5 kg/hectare), Kilbuck Run (63.0 kg/hectare), Sewickley Creek (55.2 kg/hectare), Lowrie Run (54.5 kg/hectare), and Moon Run (53.6 kg/hectare). In Kilbuck Run, 100 % of the fish biomass consisted of only minnows. In sharp contrast, 74.5 % of the fish biomass of Little Sewickley Creek consisted of large predatory species (23.1 kg/hectare smallmouth bass and 36.9 kg/hectare brown trout). The excellent Little Sewickley Creek brown trout sample was collected on August 11, 2003, clearly demonstrating summer season holdover potential, rather than just a spring season put-and-take trout fishery. Also, the brown trout collected in Little Sewickley Creek had a good size range distribution, ranging in length from 86 to 388 mm (3.4 to 15.3 inches) and representing 3-4 year classes. These brown trout were robust and beautifully colored, and the presence of small brown trout in this stream is suggestive that natural trout reproduction could be occurring in Little Sewickley Creek.

While there were no manmade and only moderate natural hydraulic obstacles to fish movement in lower Little Sewickley Creek, other than possibly nine smallmouth bass with a combined weight of 1.1 kg, we found only one apparent transient from the nearby Ohio River, a 0.41 kg drum. On the other hand, the high fish biomass sample collected in Lowrie Run was obviously and overwhelmingly dominated by fishes transient from the Emsworth Dam tailwaters reach of the Ohio River. About 300 feet upstream of the confluence of Lowrie Run with the Ohio River, an above grade sewerline forms a weir across the stream. The stream segment sampled included a 260 feet long reach below the sewerline crossing and a 125 feet long reach above the sewerline weir. While the vertical drop from the pool upstream of this structure to the surface of the downstream scour pool was only about 0.5 foot high, all carp (2), drum (3), channel catfish (one about 16 inches long observed but not captured), and all but one of 24 smallmouth bass sampled were collected downstream of this weir. These observations indicate that perhaps 95% or more of the biomass of fish collected from lower Lowrie Run were transient from the Ohio River. The lower Lowrie Run observations also serve as an example and reminder that, in addition to water quality, physical stream habitat features can very substantially influence the

fish communities of local urban streams. The impact of significant hydraulic obstacles such as relatively high above grade sewerline crossing on the distribution and abundance of fishes in small tributaries to the local navigation system was examined and demonstrated in Reference 10. The Lowrie Run data suggests that even relatively subtle hydraulic stream features might sometimes also have substantial impacts on these small stream fish communities.

In their review of the Phase 2 3R2N study results, the Pennsylvania Fish and Boat Commission pointed out the potential significance of extensive channel alterations along local urban/suburban streams, and specifically recommended that characterization of hydraulic habitat features be included as part of future studies of these streams. Culverting of long reaches, especially along their lower reaches, could make such characterizations challenging for many of the study streams.

Condition Score Ranking

To further characterize the fish communities of the 3R2N study streams, Index of Biotic Integrity (IBI) scores were computed from data collected by electrofishing. Table 4 is a list of the IBI metrics employed. The metrics and drainage area weighted scores were determined from criteria established by the Ohio Environmental Protection Agency (OEPA, 1988), with some modification for local conditions. The most significant modification was the introduction of a negatively weighted “Percent Blacknose Dace” metric (Hoskin et al, 2003). Blacknose dace are a clear indicator of stress in the local small urban stream environment. This species was therefore used as a negative indicator in the same manner that green sunfish were used by Karr et al. (1986) in Upper Midwestern stream IBI development.

The cumulative IBI scores for the 18, 3R2N Phase 3, Ohio River tributary study streams sampled in 2003 are shown in Table 5. The Phase 3 IBI scores are integrated with 2002 results in Table 6 to provide a larger countywide perspective. Cumulative score ratings of >50 are exceptional, 35-49 good, 25-34 fair, 15-24 poor, and <14 very poor. Nine local streams had good scores, Little Bull Creek (48), Little Sewickley Creek (46), Sewickley Creek (46), Plum Creek (46), Bailey Run (42), Montour Run (40), Little Pucketa Creek (40), Mingo Creek (38), and Guyasuta Run (38). Seven streams had fair scores, Crawford Run (34), Moon Run (34), Lowrie Run (34), Pucketa Creek (34), Flaugherly Run (30), Kelley Run (26), and Squaw Run (26). Nine streams had poor scores, Thorn Run (24), Perry Mill Run (22), Narrows Run (22), McCabe Run (22), Toms Run (20), Kilbuck Run (20), Sandy Creek (18), Tawney Run (17), and Pine Run (16). The scores of the remaining 23 streams were all very poor. Streams with no fish, or essentially no fish, should not be rated by the IBI technique. Homestead Run, Quigley Creek, Guys Run, Blackburn Run, Shouse Run, Edgeworth Run, Osborne Run, Spruce Run, and Jacks Run, which had no fish, were assigned values of 0. Thompson Run/Duquesne, which had only one white sucker, Hays Run with only one bluegill, and Peters Creek which had only two apparently transient individuals, were assigned IBI values of 10.

Comparing 2003 fish IBI values with their rapid biological assessment invertebrate condition scores (Reference 15), there appears to be inconsistencies. High invertebrate condition scores, for instance, are not always accompanied by similarly high fish IBI values. Most notable among apparent inconsistencies is the extreme discrepancy between the high invertebrate condition score for Toms Run and its low fish IBI performance. The condition score developed from the Toms Run invertebrate sample was 77.5%, closely approaching a non-impaired invertebrate condition score status of greater than 80%, and second in quality only to Riddle Run (95.6%) in the Allegheny River drainage, which was sampled in 2002. Since the 2.26 square mile Toms Run drainage is only lightly disturbed by development, good water quality and a high invertebrate condition score are not surprising. The depressed fish IBI value (20), however, was not expected. Only three species of fish were collected in Tom Run, and its fish community was dominated (98 %) by pollution tolerant blacknose dace and creek chubs. The investigators have no explanation for the relatively depressed fish community of Toms Run. However, we might speculate that perhaps some historical spill or other incident of degradation could have occurred in the basin, and that its invertebrate community has been able to recover faster than its fish community.

In contrast to the situation described for Toms Run, based on its low invertebrate condition score (34.0), Lowrie Run was “Severely Impaired”, but nonetheless had a “Fair” fish IBI value (34). As discussed previously, the Lowrie Run IBI value was very favorably influenced by a strong presence of transient fishes from the Ohio River, which elevated its IBI value. The fish IBI procedure could be modified to make index results more consistent with the water quality data and the aquatic invertebrate indices. For example, a negatively weighted percentage likely transient fish and/or number of species of likely transient fish IBI metric could be introduced. However, such an effort would also obscure insights into the impacts of channel structure and system connectivity now provided by the IBI metrics utilized.

Generally, there is a strong anecdotal consensus that local urban streams are now much healthier than they were in past decades. However, a paucity of baseline historical data makes it difficult to perform actual quantitative comparisons, which could define water quality trends and document the benefits of often expensive actions taken to improve these previously neglected small urban waterways. An exception is the station near the mouth of Montour Run. Since this station was examined in 1996 using essentially identical methods employed during the 2003 3R2N study effort, quantitative comparisons are possible, and the results are extremely encouraging. Between 1996 and 2003 the fish IBI value for lower Montour Run improved from a “Poor” score of 23 to a “Good” score of 40. Similarly, the invertebrate condition score at this station climbed from a “Severely Impaired” status of 14 % in 1996 to a much better score of 33.4 % in 2003. These substantial improvements in indices of quality, over only a relatively brief time period, are likely in large part a consequence of significant recent actions taken at Pittsburgh International Airport to moderate adverse impacts of both aircraft and airport runway deicing runoff on Montour Run. A valuable community benefit of these improvements was that, as of 2003, the Pennsylvania Fish and Boat Commission designated Montour Run as “Approved Trout Waters” of the Commonwealth, and initiated management of a sport fishery along the stream.

Incidental Observations

Incidental observations made during the Phase 3, 2003, invertebrate and/or fish sampling surveys include the presence of salamanders at six of the 18 Ohio River tributary stations. Northern dusky salamanders were observed at the stations near the mouths of Toms Run, McCabe Run, Blackburn Run, Osborne Run, Hays Run, and Jacks Run, all streams with either no fish or drainage area weighted depressed fish communities. Another species of salamander, which we were unable to positively identify, was also observed in Toms Run. An aquatic queen snake was observed in Flaugherty Run. Observed birds included rough-winged swallows, scarlet tanagers, yellow warblers, red-eyed and warbling vireos, cedar waxwings, wood thrushes, Acadian flycatchers, mallard ducks, Canada geese, and great blue heron. Baltimore orioles were conspicuous at nearly every Ohio River tributary station in 2003. There were Louisiana waterthrushes along Toms Run. The Louisiana waterthrush is generally associated with high quality streams. Beaver and muskrat sign was evident at several stations, and the huge cottonwood trees along Little Sewickley Creek and magnificent sycamores along Osborne Run are worth mention. Sewage odors were probably most noxious at the Flaugherty Run, Kilbuck Run, and Lowrie Run stations.

III. CONCLUSIONS

Most of the small streams in Allegheny County now contain fish, even in their lower reaches where they are most likely to have accumulated multiple insults from urbanization, industrialization, mineral extraction activities, and transportation corridor development and maintenance. IBI computations show that in spite of their locations and histories in a busy urban-industrial environment, more than a third of those small streams supported fair to good fish communities. Several have demonstrated recreational fishery value and others have recreational fishery potential. One stream, Bailey Run sampled in 2002, contained a state endangered fish species, the river shiner (*Notropis blennius*). Acknowledging that many local streams are seriously degraded, the results are still encouraging. While they were once generally viewed to be public nuisances, and flooding and public health liabilities, we believe that the results of this study demonstrate a great potential for these streams to become valued community assets.

IV. RECOMMENDATIONS

In their review of the Phase 2 study results, the Pennsylvania Fish and Boat Commission (PFBC) pointed out the potential significance of extensive channel alterations along local urban/suburban streams on their fishery resources, and recommended that characterization of physical/hydraulic habitat features be included as part of future studies of these streams. We concur with this recommendation and suggest that the 3R2N team consider its implementation. Slope, velocity, and the presence or absence of manmade and natural hydraulic obstacles to fish movement would be pertinent parameters. The lengths of stream reaches to be characterized would significantly affect the cost of such a study effort. A study plan should be developed in consultation with the PFBC.

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TABLES

TABLE 1. Stream Stations Sampled by Electrofishing in 2003

STREAM NAME		Jacks Run	Spruce Run	Lowrie Run	Toms Run	Kilbuck Run
TRIBUTARY TO *		Ohio River, Right Bank River Mile 3.8	Ohio River, Right Bank River Mile 5.7	Ohio River, Right Bank River Mile 6.3	Ohio River, Right Bank River Mile 7.9	Ohio River, Right Bank River Mile 8.55
TOTAL DRAINAGE AREA ^{**} (mi ²)		2.25	2.59	17	2.26	5.09
STATION LOCATION		at Jacks Run Road in Bellevue, 0.2 mile south of intersection with Balsam	at Spruce Run Road in Ben Avon	Lowrie Run in Emsworth	at Toms Run Road in Kilbuck Twp	in Glenfield
STATION LOCATION River Mile		1.0	0.15	0.15	0.4	0.35
STATION NUMBER (prefix 4TRS1)		0170	0168	0166	0164	0162
STREAM WIDTH ALONG STATION REACH (ft)	MAXIMUM	18.9	25.2	32.8	10.4	17.1
	MINIMUM	7.0	8.8	21.6	6.3	4.5
	MEAN	13.1	15.4	27.6	8.4	10.0
LENGTH OF STATION (ft), HABITAT, AND SAMPLING TIME	LENGTH	290	342	385	195	125
	RIFFLE/RUN (%)	80	70	60	85	75
	POOL (%)	20	30	40	15	25
	TIME (HR)	0.075	0.117	0.5	0.267	0.2
STATION COORDINATES	LATITUDE	40 29 44	40 30 12	40 31 09	40 31 09	40 31 15
	LONGITUDE	80 02 46	80 04 45	80 06 58	80 06 58	80 07 49

TABLE 1. Stream Stations Sampled by Electrofishing in 2003 (Cont.)

STREAM NAME		Moon Run	Montour Run	McCabe Run	Hays Run	Osborne (Mitchell) Run
TRIBUTARY TO *		Ohio River, Left Bank River Mile 8.6	Ohio River, Left Bank River Mile 9.4	Ohio River, Left Bank River Mile 9.7	Ohio River, Right Bank River Mile 10.2	Ohio River, Right Bank River Mile 10.8
TOTAL DRAINAGE AREA **(mi ²)		5.46	36.6	0.94		
STATION LOCATION		in Groveton, Robinson Twp	near Coraopolis in Robinson Twp	in Coraopolis	at Center St and River Rd in Haysville	at Osborne Elementary School in Osborne
STATION LOCATION River Mile		0.2	0.25	0.05	0.2	0.1
STATION NUMBER (prefix 4TRS1)		0130	0132	0136	0160	0158
STREAM WIDTH ALONG STATION REACH (ft)	MAXIMUM	27.4	44.3	10.3	9.6	7.7
	MINIMUM	12.8	39.2	1.2	4.2	3.8
	MEAN	19.4	41.6	6.6	6.2	5.8
LENGTH OF STATION (ft), HABITAT, AND SAMPLING TIME	LENGTH	171	310	151	152	262
	RIFFLE/RUN (%)	75	70	75	70	80
	POOL (%)	25	30	25	30	20
	TIME (HR)	0.167	0.45	0.083	0.133	0.108
STATION COORDINATES	LATITUDE	40 30 23	40 30 41	40 30 58	40 31 32	40 31 50
	LONGITUDE	80 08 19	80 08 59	80 29 21	80 09 35	80 10 12

TABLE 1. Stream Stations Sampled by Electrofishing in 2003 (Cont.)

STREAM NAME		Thorn Run	Blackburn Run	Narrows Run	Edgeworth Run
TRIBUTARY TO *		Ohio River, Left Bank River Mile 11.0	Ohio River, Right Bank River Mile 11.8	Ohio River, Left Bank River Mile 12.3	Ohio River, Right Bank River Mile 12.7
TOTAL DRAINAGE AREA **(mi^2)		1.92		2.34	<1.0
STATION LOCATION		in Moon Twp	at Park on Blackburn Rd in Sewickley	at Stoops Ferry in Moon Twp	at Way Hollow Road in Edgeworth
STATION LOCATION River Mile		0.2	1.1	0.15	0.8
STATION NUMBER (prefix 4TRS1)		0138	0156	0140	0154
STREAM WIDTH ALONG STATION REACH (ft)	MAXIMUM	9.3	6.0	14.3	6.6
	MINIMUM	3.6	3.1	2.8	2.9
	MEAN	7.6	4.3	8.4	4.4
LENGTH OF STATION (ft), HABITAT, AND SAMPLING TIME	LENGTH	260	248	198	191
	RIFFLE/RUN (%)	70	80	85	75
	POOL (%)	30	20	15	25
	TIME (HR)	0.2	0.1	0.167	0.133
STATION COORDINATES	LATITUDE	40 31 24	40 32 43	40 32 14	40 33 04
	LONGITUDE	80 10 29	80 10 36	80 11 52	80 11 02

TABLE 1. Stream Stations Sampled by Electrofishing in 2003 (Cont.)

STREAM NAME		Little Sewickley Creek	Flaugherty Run	Shouse Run	Sewickley Creek
TRIBUTARY TO *		Ohio River, Right Bank River Mile 13.6	Ohio River, Left Bank River Mile 14.1	Ohio River, Left Bank River Mile 14.8	Ohio River, Right Bank River Mile 15.4
TOTAL DRAINAGE AREA **(mi ²)		9.60	8.86	0.93	30.2
STATION LOCATION		in Leetsdale/Edgeworth	at Glenwillard Boat Club in Glenwillard	in Shousetown in Crescent Twp	Ambridge/Leetsdale
STATION LOCATION River Mile		0.4	0.1	0.15	0.6
STATION NUMBER (prefix 4TRS1)		0152	0142	0144	0146
STREAM WIDTH ALONG STATION REACH (ft)	MAXIMUM	21.2	17.8	7.6	37.5
	MINIMUM	11.6	12.2	1.4	33.6
	MEAN	15.2	15.7	3.6	35.1
LENGTH OF STATION (ft), HABITAT, AND SAMPLING TIME	LENGTH	336	215	110	220
	RIFFLE/RUN (%)	70	55	85	65
	POOL (%)	30	45	15	35
	TIME (HR)	0.4	0.217	0.083	0.5
STATION COORDINATES	LATITUDE	40 33 28	40 33 21	40 33 48	40 34 45
	LONGITUDE	80 12 10	80 13 06	80 13 37	80 13 07

TABLE 2
Three Rivers-Second Nature
Ohio River Tributaries Fish Species Distribution/Catch-per-Hour
Allegheny County, Pennsylvania
June - August 2003

	Jacks Run	Spruce Run	Lowrie Run	Toms Run	Kilbuck Creek	Moon Run	Montour Run	McCabe Run	Hays Run	Osborne (Mitchell) Run	Thorn Run	Blackburn Run	Narrows Run	Edgeworth Run	Little Sewickley Creek	Flaugherty Run	Shouse Run	Sewickley Creek	Total # Of Surveys
Rainbow trout															17.5				1
Smallmouth bass			48.0			6.0	6.7								22.5	4.6		8.0	6
Bluegill									7.5									2.0	1
Pumpkinseed sunfish																			1
Green sunfish						29.9													1
Yellow bullhead			6.0			6.0	2.2												2
Carp			4.0																1
Freshwater drum			6.0				4.4								2.5			6.0	4
White sucker			8.0			47.9										13.8		18.0	4
Hog sucker			4.0				2.2								2.5			6.0	4
Golden redbreast																		8.0	1
Bluntnose minnow						18.0												12.0	2
Fathead minnow								24.1								4.6			2
Creek chub			2.0	63.7	80.0	215.6	2.2				405.0				2.5	138.3			8
Blacknose dace			6.0	288.4	585.0	125.8		36.1			740.0		179.6		12.5	345.6		2.0	10
Longnose dace			2.0	7.5	45.0	12.0	2.2				5.0		12.0		2.5	9.2			9
Emerald shiner			2.0			137.7		12.1								18.4		4.0	5
Sand shiner															15.0			8.0	2
Mimic shiner						616.8										285.7			2
Spotfin shiner						29.9	2.2								2.5			2.0	4
Silverjaw minnow															2.5			1.0	2
Stoneroller					30.0						35.0				7.5	4.6		22.0	5
Mottled sculpin															92.5			4.0	2
Rainbow darter			6.0			24.0	15.6						18.0		50.0	9.2		18.0	7
Banded darter							2.2												1
Johnny darter																		2.0	1
Fantail darter							4.4											2.0	2
Greenside darter							8.9												1
TOTAL	0	0	10	3	4	12	11	3	1	0	4	0	3	0	13	10	0	17	28

TABLE 3. Three Rivers-Second Nature, Ohio River Tributaries Statistical Summary, Allegheny County, Pennsylvania, June-August 2003.

	Jacks Run	Spruce Run	Lourie Run	Toms Run	Kilbuck Creek	Moon Run	Montour Run	McCabe Run	Hays Run	Osborne (Mitchell) Run	Thorn Run	Blackburn Run	Narrows Run	Edgeworth Run	Little Sawickley Creek	Flaugherty Run	Shouse Run	Sawickley Creek	Maximum	Minimum	Mean
Number / hour	0	0	88	360	740	1,269	53	72	8	0	1,185	0	210	0	233	834	0	128	1,269	8	432
Kilograms / hour	0	0	10.76	0.75	3.66	9.90	2.14	0.16	0.05	0	3.72	0	0.43	0	9.55	4.56	0	7.97	10.76	0.05	4.47
Number / hectare	0	0	446	6,308	12,744	6,678	200	648	114	0	12,910	0	2,265	0	1,960	5,772	0	882	12,910	114	4,261
Kilograms / hectare	0	0	54.48	13.08	63.03	53.63	8.04	1.40	0.80	0	40.47	0	4.60	0.00	80.51	31.57	0	55.53	80.51	0.80	33.93
Number of species	0	0	10	3	4	12	11	3	1	0	4	0	3	0	13	10	0	17	17	1	7.58
% Tot Wt Sport fish			37.90%			16.52%	32.09%		100%						74.53%	21.72%		24.82%	74.53%	16.52%	
% Tot Wt Carp/Sucker/Drum			61.88%			42.53%	62.72%								16.75%	45.25%		72.24%	72.24%	16.75%	
% Tot Wt Minnows			0.17%	100%	100%	40.35%	1.14%	100%			100%		88.73%		1.39%	32.73%		2.61%	100%	0.17%	
% Tot Wt Darters			0.06%			0.60%	4.05%						11.27%		1.05%	0.30%		0.28%	11.27%	0.06%	
% Tot Wt Sculpin															6.28%			0.05%	6.28%	0.05%	

TABLE 4: Index of Biotic Integrity (IBI) metrics

Total Number of Species	Percent Blacknose Dace
Number of Darter/Sculpin Species	Percent Tolerant Species
Number of Sunfish Species	Percent Omnivores/Generalists
Number of Sucker Species	Percent Insectivorous Species
Number of Minnow Species	Percent Top Carnivores/Piscivores
Number of Intolerant Species	Number of Individuals/300 meter (Including Tolerants)

TABLE 5: Fish Community Index of Biotic Integrity (IBI)* Values for Tributaries of the Ohio River in Allegheny County, Pennsylvania, 2003

Stream	Score	Narrative Rating
Little Sewickley Creek	46	“Good”
Sewickley Creek	46	
Montour Run	40	
Moon Run	34	“Fair”
Lowrie Run	34	
Flaugherty Run	30	
Thorn Run	24	“Poor”
Narrows Run	22	
McCabe Run	22	
Toms Run	20	
Kilbuck Run	20	
Hays Run	10	“Very Poor”
Blackburn Run	0	
Shouse Run	0	
Edgeworth Run	0	
Osborne Run	0	
Spruce Run	0	
Jacks Run	0	

* IBI determined from criteria established by the Ohio Environmental Protection Agency, with each station drainage area weighted for each metric (Ohio Environmental Protection Agency 1988). Cumulative score ratings are as follows: > 50 exceptional, 35-49 good, 25-34 fair, 15-24 poor, and < 14 very poor.

TABLE 6: Comparison of Fishery Index of Biotic Integrity (IBI)* Values for Tributaries of the Ohio, Monongahela and Allegheny Rivers in Allegheny County, Pennsylvania

Stream	IBI Score	Narrative Rating	Drainage Basin
Little Bull Creek	48	“Good”	Allegheny River
Little Sewickley Creek	46		Ohio River
Sewickley Creek	46		Ohio River
Plum Creek	46		Allegheny River
Bailey Run	42		Allegheny River
Montour Run	40		Ohio River
Little Pucketa Creek	40		Allegheny River
Mingo Creek	38		Monongahela River
Guyasuta Run	38		Allegheny River
Crawford Run	34	“Fair”	Allegheny River
Moon Run	34		Ohio River
Lowrie Run	34		Ohio River
Pucketa Creek	34		Allegheny River
Flaugherty Run	30		Ohio River
Kelley Run	26		Allegheny River
Squaw Run	26		Allegheny River
Thorn Run	24	“Poor”	Ohio River
Narrows Run	22		Ohio River
McCabe Run	22		Ohio River
Perry Mill Run	22		Monongahela River
Toms Run	20		Ohio River
Kilbuck Run	20		Ohio River
Sandy Creek	18		Allegheny River
Tawney Run	17		Allegheny River
Pine Run	16		Monongahela River
Dry Run	14	“Very Poor”	Monongahela River
Lobbs Run	14		Monongahela River
Becks Run	12		Monongahela River
Streets Run	12		Monongahela River
West Run	12		Monongahela River
Sandy Creek (Curry Hollow)	12		Monongahela River
Thompson Run/Turtle Creek	12		Monongahela River
Crooked Run	12		Monongahela River
Sipes Run	12		Allegheny River
Girtys Run	12		Allegheny River
Riddle Run	12		Allegheny River
Peters Creek	10		Monongahela River
Thompson Run (Duquesne)	10		Monongahela River
Hays Run	10		Ohio River
Homestead Run	0		Monongahela River
Quigley Creek	0		Allegheny River
Guys Run	0		Allegheny River
Blackburn Run	0		Ohio River
Shouse Run	0		Ohio River
Edgeworth Run	0		Ohio River
Osborne Run	0		Ohio River
Spruce Run	0		Ohio River
Jacks Run	0		Ohio River

*IBI determined from criteria established by the Ohio Environmental Protection Agency, with each station drainage area weighted for each metric (Ohio Environmental Protection Agency 1988). Cumulative score ratings are as follows: >50 exceptional, 35-49 good, 25-34 fair, 15-24 poor, and < 14 very poor.

APPENDIX A

Individual Fish Sampling Station Collection Data
Summaries for Tributaries to the Ohio River in
Allegheny County, Pennsylvania, 2003

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

**Lowrie Run
August 11, 2003**

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
SPORT FISH									
Smallmouth bass	24	48.00	54.55%	116-304	2,038	37.90%	4.08	243	20.644
Sucker/Drum/Carp									
White sucker	4	8.00	9.09%	168-195	274	5.09%	0.55	41	2.775
Freshwater drum	3	6.00	6.82%	302-326	837	15.56%	1.67	30	8.478
Carp	2	4.00	4.55%	455-488	2,162	40.20%	4.32	20	21.900
N. hog sucker	2	4.00	4.55%	130-140	55	1.02%	0.11	20	0.557
Minnows									
Blacknose dace	3	6.00	6.82%	22-29	1	0.02%	0.00	30	0.010
Longnose dace	1	2.00	2.27%	78	6	0.11%	0.01	10	0.061
Emerald shiner	1	2.00	2.27%	35	1	0.02%	0.00	10	0.010
Creek chub	1	2.00	2.27%	34	1	0.02%	0.00	10	0.010
Darters									
Rainbow darter	3	6.00	6.82%	42-46	3	0.06%	0.01	30	0.030
Sculpin									
	0								
TOTALS	44	88			5,378		10.76	446	54.476
SPORT FISH	24	48.00	54.55%		2,038	37.90%	4.08	243	20.644
SUCKERS/DRUM/CARP	11	22.00	25.00%		3,328	61.88%	6.66	111	33.711
MINNOWS	6	12.00	13.64%		9	0.17%	0.02	61	0.091
DARTERS	3	6.00	6.82%		3	0.06%	0.01	30	0.030
SCULPIN	0								
SURVEY PARAMETERS									
Date 11 August 2003		Effort - hours		0.5	Time: 1300-1330				
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 100 Volts 1.2 Amps									
Survey Participants: Koryak (Mike and Ben), Stafford, Bonislawsky, Hoskin									
Stream length sampled (feet)		Average stream width (feet)		27.6	Area sampled (hectares)		0.09872	Watershed Ohio River	
Flow: low and clear		pH: 8.07		Stream temp: 19.61 C		W.Q. Time 1250			
Dissolved Oxygen: 9.52 mg/l		Conductivity: 800 umhos/cm				Air temp: 80's F			
NOTES: Ten fish species collected									
Observed one large channel catfish in first pool upstream from the mouth of stream.									
A little over 300 feet upstream of the mouth of Lowrie Run is a raised (~6") sewerline crossing.									
All carp and drum, and all but one small bass were collected below weir. Survey consisted of 260' below the weir and 125' above.									
Both carp exhibited skin lesions and the larger one also had eroded fins.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

**Little Sewickley Creek
August 11, 2003**

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
SPORT FISH									
Smallmouth Bass	9	22.50	9.68%	158-263	1,097	28.72%	2.74	190	23.119
Brown Trout	7	17.50	7.53%	86-388	1,750	45.81%	4.38	148	36.882
Suckers/Drum									
Freshwater drum	1	2.50	1.08%	348	410	10.73%	1.03	21	8.641
N. hog sucker	1	2.50	1.08%	265	230	6.02%	0.58	21	4.847
Minnows									
Sand shiner	6	15.00	6.45%	43-51	6	0.16%	0.02	126	0.126
Blacknose dace	5	12.50	5.38%	27-34	1	0.03%	0.00	105	0.021
Stoneroller	3	7.50	3.23%	98-110	40	1.05%	0.10	63	0.843
Creek chub	1	2.50	1.08%	33	1	0.03%	0.00	21	0.021
Longnose dace	1	2.50	1.08%	70	3	0.08%	0.01	21	0.063
Spotfin shiner	1	2.50	1.08%	47	1	0.03%	0.00	21	0.021
Silverjaw minnow	1	2.50	1.08%	28	1	0.03%	0.00	21	0.021
Darters									
Rainbow darter	20	50.00	21.51%	47-60	40	1.05%	0.10	422	0.843
Sculpin									
Mottled sculpin	37	92.50	39.78%	40-101	240	6.28%	0.60	780	5.058
TOTALS	93	233			3,820		9.55	1,960	80.507
SPORT FISH	16	40.00	17.20%		2,847	74.53%	7.12	337	60.001
SUCKERS/DRUM	2	5.00	2.15%		640	16.75%	1.60	42	13.488
MINNOWS	18	45.00	19.35%		53	1.39%	0.13	379	1.117
DARTERS	20	50.00	21.51%		40	1.05%	0.10	422	0.843
SCULPINS	37	92.50	39.78%		240	6.28%	0.60	780	5.058
SURVEY PARAMETERS									
Date 11 August 2003	Effort - hours	0.4	Time: 1100-1124						
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 200 Volts 1.6 Amps									
Survey Participants: Koryak (Mike & Ben), Stafford, Bonislowsky, Hoskin									
Stream length sampled (feet)	336	Average stream width (feet)	15.2	Area sampled (hectares)	0.04745	Watershed Ohio River			
Flow: low and clear	pH: 7.72		Stream temp: 18.64 C			W.Q. Time 1055			
Dissolved Oxygen: 9.35 mg/l	Conductivity: 484 umhos/cm			Air temp: 70's F					
NOTES: Thirteen fish species collected.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

**Little Sewickley Creek
August 11, 2003**

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
Sport Fish									
Smallmouth bass	4	8.00	6.35%	120-360	963	24.30%	1.93	56	13.423
Pumpkinseed	1	2.00	1.59%	58	5	0.13%	0.01	14	0.070
Suckers/Drum									
White sucker	9	18.00	14.29%	53-231	520	13.12%	1.04	125	7.248
Golden redbhorse	4	8.00	6.35%	239-262	679	17.13%	1.36	56	9.464
Freshwater Drum	3	6.00	4.76%	308-345	1,106	27.91%	2.21	42	15.416
N. hog sucker	3	6.00	4.76%	169-315	573	14.46%	1.15	42	7.987
Minnows									
Stoneroller	11	22.00	17.46%	42-110	77	1.94%	0.15	153	1.073
Bluntnose minnow	6	12.00	9.52%	53-66	12	0.30%	0.02	84	0.167
Sand shiner	4	8.00	6.35%	45-47	4	0.10%	0.01	56	0.056
Emerald shiner	2	4.00	3.17%	52-69	3	0.08%	0.01	28	0.042
Spotfin shiner	1	2.00	1.59%	88	6	0.15%	0.01	14	0.084
Silverjaw minnow	1	2.00	1.59%	33	1	0.03%	0.00	14	0.014
Blacknose dace	1	2.00	1.59%	35	1	0.03%	0.00	14	0.014
Darters									
Rainbow darter	9	18.00	14.29%	30-53	9	0.23%	0.02	125	0.125
Johnny darter	1	2.00	1.59%	50	1	0.03%	0.00	14	0.014
Fantail darter	1	2.00	1.59%	50	1	0.03%	0.00	14	0.014
Sculpin									
Mottled sculpin	2	4.00	3.17%	42-44	2	0.05%	0.00	28	0.028
TOTALS	63	126			3,963		7.93	878	55.239
SPORT FISH	6	12.00	9.52%		989	24.96%	1.98	84	13.785
SUCKERS/DRUM	19	38.00	30.16%		2,878	72.62%	5.76	265	40.116
MINNOWS	26	52.00	41.27%		104	2.62%	0.21	362	1.450
DARTERS	11	22.00	17.46%		11	0.28%	0.02	153	0.153
SCULPIN	2	4.00	3.17%		2	0.05%	0.00	28	0.028
SURVEY PARAMETERS									
Date 11 August 2003		Effort - hours 0.5		Time: 0935-1005					
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 125 Volts 1.2 Amps									
Survey Participants: Koryak (Mike & Ben), Stafford, Bonislawsky, Hoskin									
Stream length sampled (feet)	220	Average stream width (feet)	35.1	Area sampled (hectares)	0.07174	Watershed Ohio River			
Flow: low but slightly turbid	pH: 7.74			Stream temp: 19.73 C		W.Q. Time 0930			
Dissolved Oxygen: 8.5 mg/l	Conductivity: 590 umhos/cm			Air temp: 70's F					
NOTES: Seventeen fish species collected.									
Two white suckers with skin lesions (149 & 231 mm).									
Bottom substrate very silt laden.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

**Montour Run
August 11, 2003**

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
<u>Sport Fish</u>									
Smallmouth bass	3	6.67	12.50%	95-222	288	29.91%	0.64	25	2.404
Yellow bullhead	1	2.22	4.17%	113	21	2.18%	0.05	8	0.175
<u>Suckers/Drum</u>									
Freshwater drum	2	4.44	8.33%	273-333	580	60.23%	1.29	17	4.841
N. hog sucker	1	2.22	4.17%	134	24	2.49%	0.05	8	0.200
<u>Minnows</u>									
Creek chub	1	2.22	4.17%	87	8	0.83%	0.02	8	0.067
Spotfin shiner	1	2.22	4.17%	66	2	0.21%	0.00	8	0.017
Longnose dace	1	2.22	4.17%	43	1	0.10%	0.00	8	0.008
<u>Darters</u>									
Rainbow darter	7	15.56	29.17%	48-53	13	1.35%	0.03	58	0.109
Greenside darter	4	8.89	16.67%	69-88	20	2.08%	0.04	33	0.167
Fantail darter	2	4.44	8.33%	59-73	5	0.52%	0.01	17	0.042
Banded darter	1	2.22	4.17%	45	1	0.10%	0.00	8	0.008
<u>Sculpin</u>									
	0								
TOTALS	24	53			963		2.14	200	8.038
SPORT FISH	4	8.89	16.67%		309	32.09%	0.69	33	2.579
SUCKERS/DRUM	3	6.67	12.50%		604	62.72%	1.34	25	5.041
MINNOWS	3	6.67	12.50%		11	1.14%	0.02	25	0.092
DARTERS	14	31.11	58.33%		39	4.05%	0.09	117	0.326
SCULPIN	0								
SURVEY PARAMETERS									
Date 11 August 2003		Effort - hours		0.45	Time: 0800-0827				
Method: Backpack EF Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 75 Volts 1.7 Amps									
Survey Participants: Koryak (Mike & Ben), Stafford, Bonislawsky, Hoskin									
Stream length sampled (feet)	310	Average stream width (feet)	41.6	Area sampled (hectares)	0.11981	Watershed Ohio River			
Flow: 8 cfs and clear		pH: 7.67		Stream temp: 20.3 C		W.Q. Time 0755			
Dissolved Oxygen: 8.33 mg/l		Conductivity: 1,244 umhos/cm		Air temp: 70's F					
NOTES: Eleven fish species collected.									
Yellow bullhead with skin lesions near tail and around barbals.									
Observed ~14" hog sucker and 15" drum. Lost 8" smallmouth bass with mouth deformity.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

Jacks Run
June 17, 2003

Species	Total Number	Number Per Hour	% By Number	RANGE (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
Sport Fish	0								
Sucker	0								
Minnows	0								
Darters	0								
Sculpin	0								
TOTALS	0	0			0		0.00	0	0.000
SPORT FISH	0								
SUCKERS	0								
MINNOWS	0								
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
Date 17 June 2003		Effort - hours		0.075	Time: 0905-0909.5				
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 125 Volts 1.35 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Katie Aerni, Hoskin									
Stream length sampled (feet)		290	Average stream width (feet)		13.1	Area sampled (hectares)		0.03530	Watershed Ohio River
Flow: Normal and clear		pH: 7.91			Stream temp: 15.97 C		W.Q. Time 0900		
Dissolved Oxygen: 9.75 mg/l		Conductivity: 1,253 umhos/cm					Air temp: 70's F		
NOTES: No fish collected.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

Kilbuck Run
June 17, 2003

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
<u>Sport Fish</u>	0								
<u>Suckers</u>	0								
<u>Minnows</u>									
Blacknose dace	117	585.00	79.05%	36-79	328	44.81%	1.64	10,075	28.243
Creek chub	16	80.00	10.81%	81-140	277	37.84%	1.39	1,378	23.852
Longnose dace	9	45.00	6.08%	63-92	40	5.46%	0.20	775	3.444
Stoneroller	6	30.00	4.05%	96-113	87	11.89%	0.44	517	7.491
<u>Darters</u>	0								
TOTALS	148	740			732		3.66	12,744	63.031
SPORT FISH	0								
SUCKERS	0								
MINNOWS	148	740.00	100.00%		732	100.00%	3.66	12,744	63.031
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
Date 17 June 2003	Effort - hours		0.2	Time: 0805-0817					
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 125 Volts 1.3 Amps									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)	125	Average stream width (feet)		10	Area sampled (hectares)		0.01161	Watershed Ohio River	
Flow: Normal and clear		pH: 7.85			Stream temp: 14.89 C		W.Q. Time 0800		
Dissolved Oxygen: 9.97 mg/l		Conductivity: 688 umhos/cm			Air temp: 70's F				
NOTES: Four fish species collected.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

**Toms Run
June 16, 2003**

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
<u>SPORT FISH</u>	0								
<u>Sucker</u>	0								
<u>Minnows</u>									
Blacknose dace	77	288.39	80.21%	45-80	130	65.33%	0.49	5,060	8.542
Creek chub	17	63.67	17.71%	51-120	60	30.15%	0.22	1,117	3.943
Longnose dace	2	7.49	2.08%	76-83	9	4.52%	0.03	131	0.591
<u>Darters</u>	0								
<u>Sculpin</u>	0								
TOTALS	96	360			199		0.75	6,308	13.077
SPORT FISH	0								
SUCKERS	0								
MINNOWS	96	359.55	100.00%		199	100.00%	0.75	6,308	13.077
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003		Effort - hours		0.267	Time: 1824-1840				
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 125 Volts 1.1 Amps.									
Survey Participants: Koryak (Mike and Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)		Average stream width (feet)		8.4	Area sampled (hectares)		0.01522	Watershed Ohio River	
Flow: Above normal and clear		pH: 8.05		Stream temp: 15.02 C			W.Q. Time 1820		
Dissolved Oxygen: 9.92 mg/l		Conductivity: 487 umhos/cm					Air temp: 80's F		
NOTES: Three fish species collected.									
Higher flow may have reduced quantity and possibly diversity of fish species collected.									
Northern dusky and unidentified species of salamander observed.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

Osborne (Mitchell) Run
June 16, 2003

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
<u>SPORT FISH</u>	0								
<u>Suckers</u>	0								
<u>Minnows</u>	0								
<u>Darters</u>	0								
<u>Sculpin</u>	0								
TOTALS	0	0			0		0.00	0	0.000
SPORT FISH	0								
SUCKERS	0								
MINNOWS	0								
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003		Effort - hours		0.108	Time: 1800-1806.5				
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 125 Volts 1.2 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)		Average stream width (feet)		5.8	Area sampled (hectares)		0.01412	Watershed Ohio River	
Flow: Normal and clear		pH: 7.84		Stream temp: 15.05 C			W:Q Time 1752		
Dissolved Oxygen: 9.76 mg/l		Conductivity: 833 umhos/cm			Air temp: 80's F				
NOTES: No fish collected.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

Hays Run
June 16, 2003

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
<u>Sport Fish</u>									
Bluegill	1	7.52	100.00%	76	7	100.00%	0.05	114	0.799
<u>Suckers</u>	0								
<u>Minnows</u>	0								
<u>Darters</u>	0								
<u>Sculpin</u>	0								
TOTALS	1	8			7		0.05	114	0.799
SPORT FISH	1	7.52	100.00%		7	100.00%	0.05	114	0.799
SUCKERS	0								
MINNOWS	0								
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003		Effort - hours		0.133	Time: 1730-1738				
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 100 Volts 1.0 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)		152	Average stream width (feet)		6.2	Area sampled (hectares)		0.00876	Watershed Ohio River
Flow: Normal and clear		pH: 7.70			Stream temp: 15.52 C		W.Q. Time 1725		
Dissolved Oxygen: 9.60 mg/l		Conductivity: 620 umhos/cm			Air temp: 80's F				
NOTES: One fish species collected.									
Sample initiated just upstream of mouth, where the stream is full of woody debris and overhanging vegetation.									
Sampling technique fairly ineffective initially.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

Blackburn Run
June 16, 2003

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
Sport Fish	0								
Suckers	0								
Minnows	0								
Darters	0								
Sculpin	0								
TOTALS	0	0			0		0.00	0	0.000
SPORT FISH	0								
SUCKERS	0								
MINNOWS	0								
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003		Effort - hours		0.1	Time: 1657-1703				
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 125 Volts 1.0 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)		Average stream width (feet)		4.3	Area sampled (hectares)		0.00991	Watershed Ohio River	
Flow: Normal and clear		pH: 7.79		Stream temp: 15.39 C			W,Q. Time 1655		
Dissolved Oxygen: 9.83 mg/l		Conductivity: 551 umhos/cm			Air temp: 80's F				
NOTES: No fish collected. One northern dusky salamander observed.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

Edgeworth Run
June 16, 2003

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
Sport Fish	0								
Suckers	0								
Minnows	0								
Darters	0								
Sculpin	0								
TOTALS	0	0			0		0.00	0	0.000
SPORT FISH	0								
SUCKERS	0								
MINNOWS	0								
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003	Effort - hours		0.133	Time: 1622-1630					
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX 350 Generator; AC 150 Volts 1.5 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)	191	Average stream width (feet)	4.4	Area sampled (hectares)	0.00781	Watershed Ohio River			
Flow: Normal and clear	pH: 7.61		Stream temp: 15.73 C			W.Q. Time 1620			
Dissolved Oxygen: 9.38 mg/l	Conductivity: 518 umhos/cm			Air temp: 80's F					
NOTES: No fish collected.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

Shouse Run
June 16, 2003

Species	Total Number	Number Per Hour	%By Number	Range (mm)	Total Weight (grams)	%Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
Sport Fish	0								
Suckers	0								
Minnows	0								
Darters	0								
Sculpin	0								
TOTALS	0	0			0		0.00	0	0.000
SPORT FISH	0								
SUCKERS	0								
MINNOWS	0								
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003		Effort - hours		0.083	Time: 1528-1533				
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 100 Volts 1.5 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)	110	Average stream width (feet)	3.6	Area sampled (hectares)	0.00368	Watershed Ohio River			
Flow: Normal and clear	pH 7.61		Stream temp: 15.37 C		W.Q. Time 1520				
Dissolved Oxygen: 9.81 mg/l		Conductivity: 1,490 umhos/cm			Air temp: 80's F				
NOTES: No fish collected.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

Narrows Run
June 16, 2003

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
Sport Fish	0								
Suckers	0								
Minnows									
Blacknose dace	30	179.64	85.71%	42-82	57	80.28%	0.34	1,941	3.689
Longnose dace	2	11.98	5.71%	66-71	6	8.45%	0.04	129	0.388
Darters									
Rainbow darter	3	17.96	8.57%	51-67	8	11.27%	0.05	194	0.518
TOTALS	35	210			71		0.43	2,265	4.595
SPORT FISH	0								
SUCKERS	0								
MINNOWS	32	191.62	91.43%		63	88.73%	0.38	2,071	4.077
DARTERS	3	17.96	8.57%		8	11.27%	0.05	194	0.518
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003	Effort - hours		0.167	Time: 1358-1408					
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 125 Volts 1.7 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)	198	Average stream width (feet)	8.4	Area sampled (hectares)	0.01545	Watershed Ohio River			
Flow: Normal and clear	pH: 7.31		Stream temp: 16.39 C		W.Q. Time 1355				
Dissolved Oxygen: 9.34 mg/l	Conductivity: 1,035 umhos/cm		Air temp: 70's F						
NOTES: Three fish species collected.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

**Flaugherty Run
June 16, 2003**

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
Sport Fish									
Smallmouth bass	1	4.61	0.55%	262	215	21.72%	0.99	32	6.856
Suckers									
White sucker	3	13.82	1.66%	156-302	448	45.25%	2.06	96	14.285
Minnows									
Blacknose dace	75	345.62	41.44%	36-68	121	12.22%	0.56	2,392	3.858
Mimic shiner	62	285.71	34.25%	30-75	50	5.05%	0.23	1,977	1.594
Creek chub	30	138.25	16.57%	42-84	118	11.92%	0.54	957	3.763
Emerald shiner	4	18.43	2.21%	50-73	10	1.01%	0.05	128	0.319
Longnose dace	2	9.22	1.10%	79-93	12	1.21%	0.06	64	0.383
Stoneroller	1	4.61	0.55%	88	8	0.81%	0.04	32	0.255
Fathead minnow	1	4.61	0.55%	82	5	0.51%	0.02	32	0.159
Darters									
Rainbow darter	2	9.22	1.10%	44-46	3	0.30%	0.01	64	0.096
Sculpin									
	0								
TOTALS	181	834			990		4.56	5,772	31.568
SPORT FISH	1	4.61	0.55%		215	21.72%	0.99	32	6.856
SUCKERS	3	13.82	1.66%		448	45.25%	2.06	96	14.285
MINNOWS	175	806.45	96.69%		324	32.73%	1.49	5,580	10.331
DARTERS	2	9.22	1.10%		3	0.30%	0.01	64	0.096
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003	Effort - hours		0.217	Time: 1438-1451					
Method: Backpack EF; Coffelt Model BP equipped with Honda EX350 Generator AC 125 Volts 1.4 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)	215	Average stream width (feet)		15.7	Area sampled (hectares)		0.03136	Watershed Ohio River	
Flow: Above normal and clear	pH: 7.94			Stream temp: 17.99 C			W.Q. Time 1435		
Dissolved Oxygen: 10.16 mg/l	Conductivity: 643 umhos/cm				Air temp: 80's F				
NOTES: Ten fish species collected.									
Higher flow, due to relatively large watershed, reduced quantity and possibly diversity of fish species collected.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

Thorn Run
June 16, 2003

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
Sport Fish	0								
Suckers	0								
Minnows									
Blacknose dace	148	740.00	62.45%	35-78	262	35.26%	1.31	8,062	14.271
Creek chub	81	405.00	34.18%	55-150	418	56.26%	2.09	4,412	22.769
Stoneroller	7	35.00	2.95%	80-103	60	8.08%	0.30	381	3.268
Longnose dace	1	5.00	0.42%	71	3	0.40%	0.02	54	0.163
Darters	0								
Sculpin	0								
TOTALS	237	1,185			743		3.72	12,910	40.472
SPORT FISH	0								
SUCKERS	0								
MINNOWS	237	1,185.00	100.00%		743	100.00%	3.72	12,910	40.472
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003		Effort - hours		0.2	Time: 1215-1227				
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 150 Volts 1.2 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)		Average stream width (feet)		7.6	Area sampled (hectares)		0.01836	Watershed Ohio River	
Flow: Normal and clear		pH: 7.87		Stream temp: 16.47 C			W.Q. Time 1210		
Dissolved Oxygen: 10.14 mg/l		Conductivity: 611 umhos/cm			Air temp: 70's F				
NOTES: Four fish species collected.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

**Moon Run
June 16, 2003**

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
Sport Fish									
Green sunfish	5	29.94	2.36%	68-120	67	4.05%	0.40	162	2.174
Smallmouth bass	1	5.99	0.47%	242	197	11.92%	1.18	32	6.392
Yellow bullhead	1	5.99	0.47%	78	9	0.54%	0.05	32	0.292
Suckers									
White sucker	8	47.90	3.77%	96-333	703	42.53%	4.21	260	22.809
Minnows									
Mimic shiner	103	616.77	48.58%	40-62	100	6.05%	0.60%	3,342	3.245
Creek chub	36	215.57	16.98%	55-161	436	26.38%	2.61	1,168	14.146
Emerald shiner	23	137.72	10.85%	30-75	30	1.81%	0.18	746	0.973
Blacknose dace	21	125.75	9.91%	50-72	72	4.36%	0.43	681	2.336
Spotfin shiner	5	29.94	2.36%	50-62	10	0.60%	0.06	162	0.324
Bluntnose minnow	3	17.96	1.42%	55-76	10	0.60%	0.06	97	0.324
Longnose dace	2	11.98	0.94%	78-80	9	0.54%	0.05	65	0.292
Darters									
Rainbow darter	4	23.95	1.89%	56-58	10	0.60%	0.06	130	0.324
Sculpin									
	0								
TOTALS	212	1,269			1,653		9.90	6,878	53.633
SPORT FISH	7	41.92	3.30%		273	16.52%	1.63	227	8.858
SUCKERS	8	47.90	3.77%		703	42.53%	4.21	260	22.809
MINNOWS	193	1,155.69	91.04%		667	40.35%	3.99	6,262	21.641
DARTERS	4	23.95	1.89%		10	0.60%	0.06	130	0.324
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003		Effort - hours		0.167	Time: 1030-1040				
Method: Backpack EF; Coffelt Model BP2 equipped with Honda EX350 Generator; AC 75 Volts 1.5 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)		Average stream width (feet)		19.4	Area sampled (hectares)		0.03082	Watershed Ohio River	
Flow: Normal and clear		pH: 7.18		Stream temp: 16.67 C			W.Q. Time 1025		
Dissolved Oxygen: 9.33 mg/l		Conductivity: 1,277 umhos/cm		Air temp: 70's F					
NOTES: Twelve fish species collected.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

**McCabe Run
June 16, 2003**

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
<u>Sport Fish</u>	0								
<u>Carp/Suckers</u>	0								
<u>Minnows</u>									
Blacknose dace	3	36.14	50.00%	32-76	6	46.15%	0.07	324	0.648
Fathead minnow	2	24.10	33.33%	64-67	5	38.46%	0.06	216	0.540
Emerald shiner	1	12.05	16.67%	56	2	15.38%	0.02	108	0.216
<u>Darters</u>	0								
<u>Sculpin</u>	0								
TOTALS	6	72			13		0.16	648	1.404
SPORT FISH	0								
CARP/SUCKERS	0								
MINNOWS	6	72.29	100.00%		13	100.00%	0.16	648	1.404
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
Date 16 June 2003		Effort - hours 0.083		Time: 1150-1155					
Method: Backpack EF Coffelt Model BP2 equipped with Honda EX350 Generator AC 125 Volts 1.5 Amps.									
Survey Participants: Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet) 151		Average stream width (feet) 6.6		Area sampled (hectares) 0.00926		Watershed Ohio River			
Flow: Normal and clear		pH: 7.36		Stream temp: 16.10 C		W.Q. Time 1145			
Dissolved Oxygen: 8.95 mg/l		Conductivity: 797 umhos/cm		Air temp: 70's F					
NOTES: Three fish species collected.									
All fish collected in culvert pool in addition to a N. Dusky salamander.									
Survey initiated at head of embayment, 18" dead carp and large bass observed in embayment pool.									

APPENDIX A. Individual Fish Sampling Station Collection Data Summaries for Tributaries to the Ohio River in Allegheny County, Pennsylvania, 2003.

Spruce Run
June17, 2003

Species	Total Number	Number Per Hour	% By Number	Range (mm)	Total Weight (grams)	% Of Total Weight	Kilograms Per Hour	Number Per Hectare	Kilograms Per Hectare
<u>Sport Fish</u>	0								
<u>Suckers</u>	0								
<u>Minnows</u>	0								
<u>Darters</u>	0								
<u>Sculpin</u>	0								
TOTALS	0	0			0		0.00	0	0.000
SPORT FISH	0								
SUCKERS	0								
MINNOWS	0								
DARTERS	0								
SCULPIN	0								
SURVEY PARAMETERS									
17-June-2003		Effort - hours		0.117	Time: 0945-0952				
Method: Backpack EF; Coffelt Model BP 2 equipped with Honda EX350 Generator; AC 100 Volts 1.5 Amps.									
Survey Participant Koryak (Mike & Ben), Stafford, Aerni, Hoskin									
Stream length sampled (feet)		Average stream width (feet)		15.4	Area sampled (hectares)		0.04893	Watershed Ohio River	
Flow: Normal and clear		pH: 7.90		Stream temp: 16.01 C			W.Q. Time 0945		
Dissolved Oxygen: 8.91		Conductivity: 1,271 umhos/cm			Air temp: 70's F				
NOTES: No fish collected.									

APPENDIX B

Common and Scientific Names of Fishes Collected from Small
Urban/Suburban Streams of Allegheny County, Pennsylvania in
2002 and 2003.

APPENDIX B. Common and Scientific Names of Fishes Collected from Small Urban/Suburban Streams of Allegheny County, Pennsylvania in 2002 and 2003

		2002	2003
Ictaluridae			
Yellow bullhead	<i>Ictalurus natalis</i>		x
Channel catfish	<i>Ictalurus punctatus</i>		x
Salmonidae			
Rainbow trout	<i>Oncorhynchus mykiss</i>	x	
Brown trout	<i>Salmo trutta</i>	x	x
Cyprinidae			
Central stoneroller	<i>Campostoma anomalum</i>	x	x
Common carp	<i>Cyprinus carpio</i>	x	x
Emerald shiner	<i>Notropis atherinoides</i>	x	x
River shiner	<i>Notropis blennius</i>	x	
Common shiner	<i>Notropis cornutus</i>	x	
Rosyface shiner	<i>Notropis rubellus</i>	x	
Spotfin shiner	<i>Notropis spilopterus</i>	x	x
Sand Shiner	<i>Notropis stramineus</i>	x	x
Mimic shiner	<i>Notropis volucellus</i>	x	x
Bluntnose minnow	<i>Pimephales notatus</i>	x	x
Fathead minnow	<i>Pimephales promelas</i>	x	x
Blacknose dace	<i>Rhinichthys atratulus</i>	x	x
Longnose dace	<i>Rhinichthys cataractae</i>	x	x
Creek chub	<i>Semotilus atromaculatus</i>	x	x
Silverjaw minnow	<i>Ericymba buccata</i>	x	x
Castostomidae			
Quillback	<i>Carpiodes cypinus</i>	x	
White sucker	<i>Catostomus commersoni</i>	x	x
Northern hogsucker	<i>Hypentelium nigricans</i>	x	x
Golden redhorse	<i>Moxostoma erythrurum</i>	x	x

APPENDIX B. Common and Scientific Names of Fishes Collected from Small Urban/Suburban
Streams of Allegheny County, Pennsylvania in 2002 and 2003 (Cont.)

Centrarchidae			
Rock Bass	<i>Ambloplites rupestris</i>	x	
Bluegill	<i>Lepomis macrochirus</i>	x	x
Green sunfish	<i>Lepomis cyanellus</i>		x
Pumpkinseed sunfish	<i>Lepomis gibbosus</i>		x
Smallmouth bass	<i>Micropterus dolomieu</i>	x	x
Largemouth bass	<i>Micropterus salmoides</i>	x	
Sciaenidae			
Freshwater drum	<i>Aplodinotus grunniens</i>	x	x
Cottidae			
Mottled sculpin	<i>Cottus bairdi</i>	x	x
Percidae			
Greenside darter	<i>Etheostoma blennioides</i>	x	x
Rainbow darter	<i>Etheostoma caeruleum</i>	x	x
Fantail darter	<i>Etheostoma flabellare</i>	x	x
Johnny darter	<i>Etheostoma nigrum</i>		x
Banded darter	<i>Etheostoma zonale</i>		x
Sauger	<i>Stizostedion canadense</i>	x	