Final Report for Grant Agreement WRCP-06169

A Comprehensive Ichthyofaunal Survey of Tenmile Creek Watershed
Phase 1

David G. Argent and William G. Kimmel
California University of PA
Department of Biological and Environmental Sciences
250 University Avenue
California, PA 15419
724-938-1529 (Argent)

March 2008

Abstract

We conducted electrofishing surveys at 15 representative stations during June and July 2007 over approximately 27 km of Tenmile Creek and its South Fork in Greene Co., PA. At each station, areal dimensions were recorded, selected water quality parameters analyzed, and the site was georeferenced. A total of 10,094 fishes representing seven families, 37 species, and four hybrids were collected over the entire survey. Percids and minnows dominated riffle areas while the runs and pools harbored catastomids, minnows, and centrarchids. We did not capture any state "Species of Special Concern". Voucher collections from all stations were preserved and stored in the fish museum at California University of Pennsylvania. All stations exhibited pH values in excess of 8.0 and elevated conductivity levels ranging from 440 to 4,500 μS/cm, a likely result of discharges from mine drainage and municipal wastewater treatment facilities scattered throughout the watershed.

Objective

Our objectives for this ichthyofaunal survey were to provide 1) a comprehensive inventory of fish biodiversity along 27 km of the mainstem of Tenmile Creek and its South Fork; 2) a baseline dataset against which temporal changes to the fish community can be monitored; and 3) a georeferenced species inventory that can be integrated into existing databases for conservation and management agencies.

Justification

Conservation of biodiversity requires systematic, temporal, and comprehensive surveys of biological communities. Population and habitat status of "Species of Special Concern" need to be fully documented. From such data, local conservation and management strategies can be formulated, updated, and integrated into regional plans. Recent requests for proposals by Pennsylvania State Agencies have listed surveys of "Species of Special Concern" and "Unassessed Watersheds" as high priorities. Tenmile Creek Watershed located in Washington/Greene Counties, the second largest tributary to the Monongahela River in Pennsylvania, emerges as an area that may harbor a diverse ichthyofauna, but whose aquatic biota remains largely unassessed.

The Tenmile Creek drainage encompasses 875 km^2, and receives 70 named and unnamed tributaries. The mainstem, comprising Tenmile Creek and the South Fork of Tenmile Creek traverses approximately 90 km. Land use patterns include mixed agriculture, coal extraction, light industry and small population centers. Tenmile Creek is a popular recreational boating and fishing venue, as is the Monongahela River whose improving water quality has provided similar recreational opportunities and a significant restoration of its ichthyofauna (Kimmel and Argent 2006a).

No such comprehensive fish inventory has ever been undertaken in the Tenmile Creek watershed (90% of the Basin remains unassessed). The limited number of collections by the Pennsylvania Fish and Boat Commission (PFBC; repeated sampling at

a select few locations) and others document the fish community composition at less than ten sites, along the main stem and major forks of Tenmile Creek. "Species of Special Concern" such as silver chub (*Macrhybopsis storeriana*), river redhorse (*Moxostoma carinatum*), longnose gar (*Lepisosteus osseus*), and smallmouth buffalo (*Ictiobus bubalus*) have been collected (Kimmel and Argent 2005), but the extent of their distribution within the watershed remains unknown.

With this project we addressed a major fish biodiversity gap that exists in the Tenmile Creek Watershed, whose water quality is currently threatened by mining and agricultural activities and whose fish resource may be unique to the region. The Washington and Greene County Conservation Districts are developing a Rivers Conservation Plan for the Tenmile Watershed, to protect all natural resource interests. In order to effectively implement this management plan, up-to-date information will be needed to identify areas of key aquatic biodiversity and potential threats to the biota of the watershed. In addition, documentation of the current diversity and distribution of fishes in the Tenmile Creek Watershed will assist the PFBC with their management of non-game fish resources and "Species of Special Concern".

Methods

We inventoried fish biodiversity on a 27 km reach of the mainstem and South Fork of Tenmile Creek in Greene Co., PA during the summer of 2007. We employed backpack and towboat electrofishers using a standard sampling protocol developed by the authors for wadeable streams (Kimmel and Argent 2006b; Kimmel and Argent 2006c) at 15, 200 m representative stations located at approximately at 1.6 km intervals. Stations were identified numerically increasing in the upstream direction (Fig. 1; Table 1).

Only Station 1 was located on the Tenmile mainstem with the remainder on the South Fork. At each station, we recorded GPS coordinates, areal dimensions, and field measurements of pH, specific conductance (uS/cm), and temperature. A water sample was collected for determination of total alkalinity (mg/l as $CaCO_3$) in the laboratory at California University. Large fish were identified and released while small specimens were preserved for identification and enumeration in the laboratory.

Species richness and relative abundance were determined for each station and curated voucher collections were housed in the Fish Museum at California University. The fish data was converted into an ARC/GIS database for the mapping of species distributions.

Products Delivered

- A fish database that can be integrated into existing databases (refer to enclosed CD-ROM)
- A distribution summary of species of special concern (none were captured)
- Final report summarizing project activity

Results

Station areal dimensions ranged from 2,416 to 4,356 m^2 as a result of varying mean widths by station (Table 1). Values of total alkalinity ranged from 154 to 488 mg/l as $CaCO_3$ and pH values exceeded 8.0 at all stations (Table 2). Very high levels of specific conductance were observed ranging from 440 to 4,500 µS/cm (Table 1) generally increasing in an upstream direction. While no values exceeded established criteria, the overall chemistry is consistent with discharges from mine drainage and municipal wastewater treatment facilities scattered throughout the basin.

Overall, we collected 10,094 fishes representing seven families, 38 species and four hybrids (Table 3; Appendix A). While no "Species of Special Concern" were collected, all species historically recorded here (Cooper 1983) are extant. Our collections add nearly 30 species/hybrids to the ichthyofauna of Tenmile and its South Fork (Table 3).

No definitive relationship existed between spatial area surveyed and species richness (Fig. 2). Riffle areas were dominated by darters and minnows while the runs harbored suckers, minnows, and various sunfish species including abundant populations of smallmouth bass in some areas. Declines in species richness were associated with increasing conductivity levels in an upstream direction (Table 2 and Fig. 3).

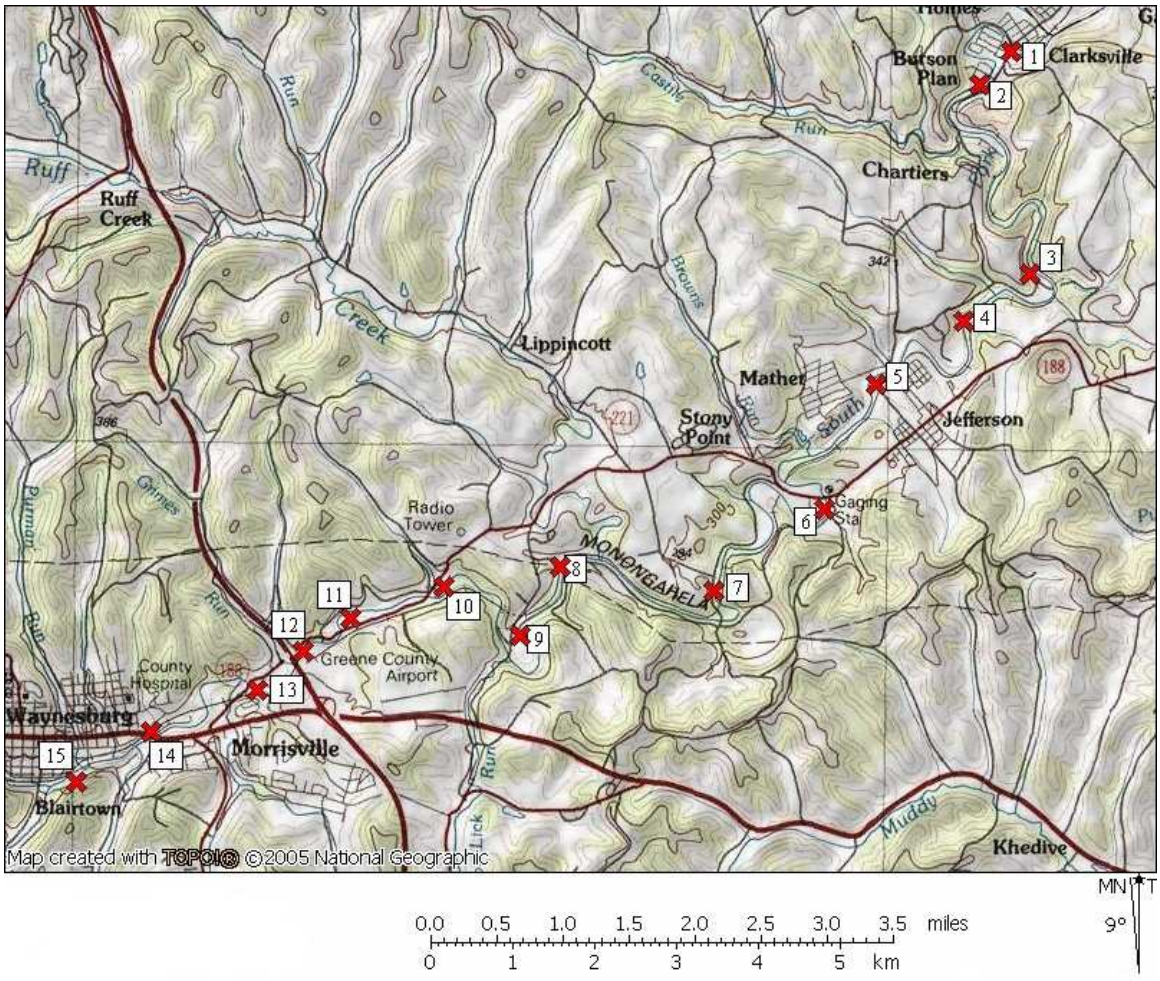

Figure 1 – Map showing sampling locations on Tenmile Creek and its South Fork.

Table 1 – Summary of sampling dates and station locations expressed in decimal degrees.

Station	Sample date	Mean stream width (m)	Mean area sampled (m^2)	Latitude	Longitude
1	6/12/2007	16.48	3296	3958.333	-8002.683
2	6/13/2007	21.78	4356	3958.117	-8002.967
3	6/18/2007	12.08	2416	3956.854	-8002.550
4	6/19/2007	22.10	4420	3956.571	-8003.127
5	6/25/2007	13.86	2772	3956.142	-8003.907
6	6/26/2007	16.16	3232	3955.464	-8004.390
7	6/27/2007	15.76	3152	3954.666	-8005.264
8	7/2/2007	13.90	2780	3954.945	-8006.599
9	7/2/2007	18.76	3752	3954.482	-8006.965
10	7/3/2007	14.14	2828	3954.795	-8007.613
11	7/3/2007	19.08	3816	3954.611	-8008.409
12	7/9/2007	18.26	3652	3954.385	-8008.829
13	7/9/2007	17.46	3492	3954.115	-8009.290
14	7/10/2007	18.56	3712	3953.836	-8010.152
15	7/10/2007	18.44	3688	3953.543	-8010.838

Table 2 – Summary of water quality parameters from stations on Tenmile Creek and its South Fork.

Station	Distance to mouth (Km)	pH	Temperature (^{o}C)	Conductivity (µS/cm)	Alkalinity (mg/l)
1	8.0	8.0	13	440	170
2	10.6	8.5	22	2000	196
3	13.1	8.2	22	1550	172
4	15.7	8.4	24	1800	184
5	18.2	8.0	20	1200	154
6	20.8	8.1	21	1550	182
7	23.4	8.3	22	1750	186
8	25.9	8.4	17	1900	218
9	28.5	8.3	16	2010	266
10	31.0	8.2	18	1750	194
11	33.6	8.2	20	1925	194
12	36.2	8.2	21	2500	264
13	38.7	8.2	22	3000	310
14	41.3	8.2	22	3500	362
15	43.8	8.4	22.5	4500	488

Table 3 – Ichthyofauna of Tenmile Creek and its South Fork. Fishes denoted by an asterisk comprise the total faunal complement documented by Cooper (1983).

Family	Common Name	Scientific Name
Cyprinidae	Central stoneroller*	*Campostoma anomalum*
	Spotfin shiner	*Cyprinella spiloptera*
	Common carp	*Cyprinus carpio*
	Common shiner	*Luxilus cornutus*
	River chub*	*Nocomis micropogon*
	Emerald shiner	*Notropis atherinoides*
	Sand shiner	*Notropis ludibundus*
	Rosyface shiner	*Notropis rubellus*
	Mimic shiner	*Notropis volucellus*
	Channel shiner	*Notropis wickliffi*
	Bluntnose minnow*	*Pimephales notatus*
	Blacknose dace*	*Rhinichthys atratulus*
	Creek chub	*Semotilus atromaculatus*
Catastomidae	Quillback	*Carpiodes cyprinus*
	White sucker*	*Catostomus commersoni*
	Northern hogsucker*	*Hypentelium nigricans*
	Silver Redhorse	*Moxostoma anisurum*
	Black redhorse	*Moxostoma duquesnei*
	Golden redhorse	*Moxostoma erythrurum*
	Shorthead redhorse	*Moxostoma macrolepidotum*
Ictaluridae	Yellow bullhead	*Ictalurus natalis*
	Channel catfish	*Ictalurus punctatus*
	Stonecat*	*Noturus flavus*
	Flathead catfish*	*Pylodictus olivarus*

Table 3 – Continued.

Family	Common Name	Scientific Name
Percichthyidae	Hybrid striped bass	*Morone* hybrid
Centrarchidae	Rock bass*	*Ambloplites rupestris*
	Green sunfish	*Lepomis cyanellus*
	Pumpkinseed	*Lepomis gibbosus*
	Bluegill	*Lepomis macrochirus*
	Sunfish hybrid*	*L. macrochirus x L. cyanellus*
	Sunfish hybrid	*L. macrochirus x L. gibbosus*
	Sunfish hybrid	*L. cyanellus x L. gibbosus*
	Smallmouth bass	*Micropterus dolomieui*
	Largemouth bass	*Micropterus salmoides*
Percidae	Greenside darter*	*Etheostoma blennioides*
	Rainbow darter*	*Etheostoma caeruleum*
	Fantail darter*	*Etheostoma flabellare*
	Logperch	*Percina caprodes*
	Sauger	*Sander canadensis*
	Saugeye	*Sander* hybrid
	Walleye	*Sander vitreum*
Scianidae	Freshwater drum	*Aplodinotus grunniens*

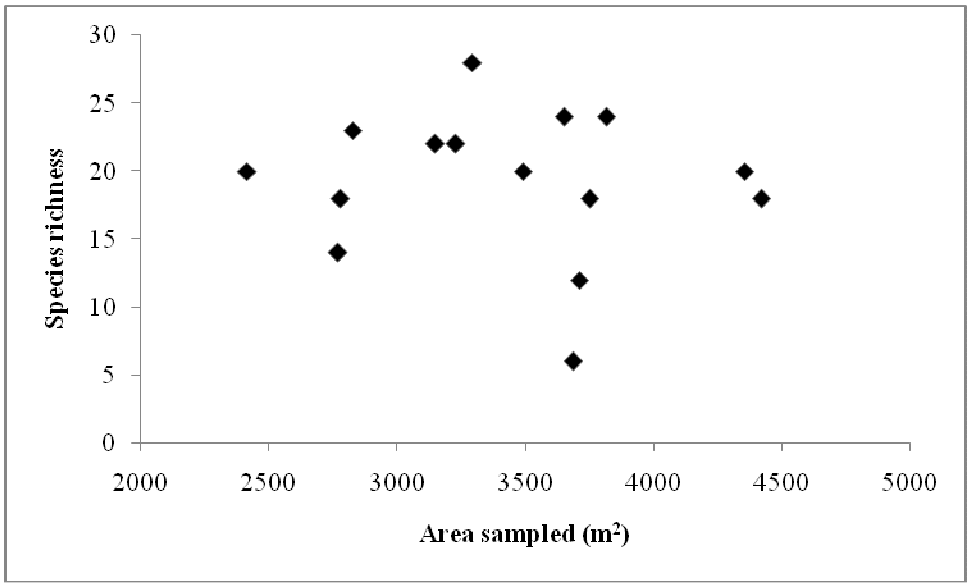

Figure 2 – Relationship between sampled area and species richness.

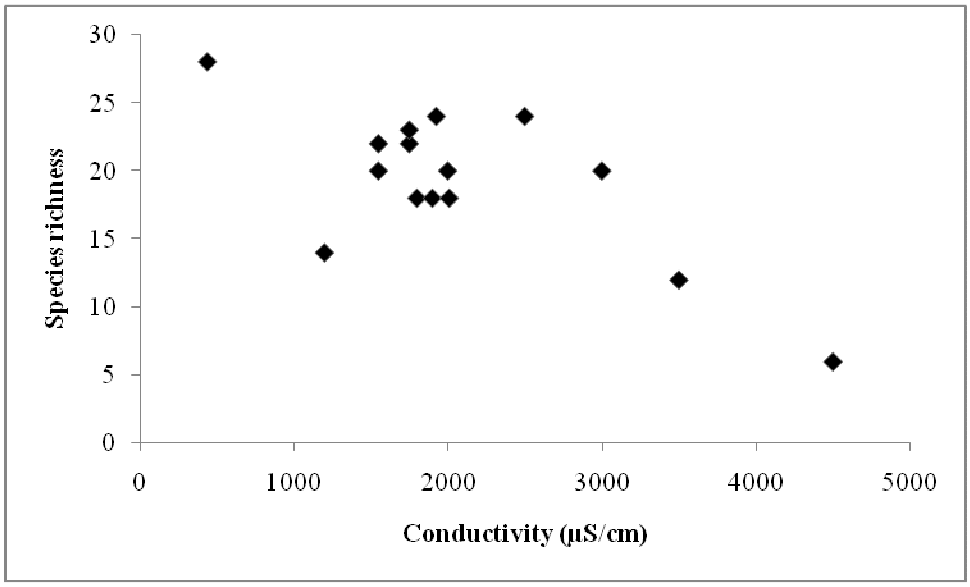

Figure 3 – Relationship between conductivity (µS/cm) and species richness.

Discussion and Management Recommendations

The reaches surveyed on Tenmile Creek and its South Fork are designated a "High QualityWarmWater Fishery" (HQ-WWF) by the Pennsylvania Department of Environmental Protection (Pennsylvania Code 2001) and its faunal assemblage is typical of large alkaline warmwater streams in southwestern Pennsylvania. The ichthyofauna documented in this study nearly triples the historical species richness recognized by Cooper (1983) (Table 3). While excellent smallmouth bass populations exist in many places, most fishing pressure is concentrated in areas near the mouth which are accessible by boat. Little convenient public access is available at most of the upstream stations Better access and perhaps publicity would likely enhance angling opportunities.

Aesthetically, much of the watershed is marred by scattered trash dumps and unregrulated development along the riparian zones. Also, the very high conductivity levels are probably due to the effluents of municipal wastewater treatment and coal processing facilities scattered throughout the drainage. Declines in fish species richness are associated with the increasing conductivity levels resulting from these discharges.

The future of this HQ-WWF will largely depend on strict regulation of point and non-point source discharges into the basin.

Literature Cited

Cooper, E.L. 1983. The Fishes of Pennsylvania. Pennsylvania State University Press, State College, PA.

Kimmel, W.G. and D.G. Argent. 2005. Fish biodiversity of selected tributaries of the Monongahela River. Final Report. Contract #WM-6-02G-0062.

Kimmel, W.G. and D.G. Argent. 2006a. Biodiversity of large riverine fish assemblages of the Monongahela River. Final Report for Grant Agreement WRCP-04019, Harrisburg, PA.

Kimmel, W.G. and D.G. Argent. 2006b. Development and application of an Index of Biotic Integrity (IBI) for fish communities of wadeable Monongahela River tributaries. Journal of Freshwater Ecology 21: 183-190.

Kimmel, W.G., and D.G. Argent. 2006c. Efficacy of two-pass electrofishing employing multiple units to assess stream fish species richness. Fisheries Research 82:14-18.

Pennsylvania Code. 2001. Title 25. Environmental Protection. Department of Environmental Protection, Bureau of Water Supply and Wastewater Management, Harrisburg, PA.

Appendix A – Ichthyofauna of selected stations on Tenmile Creek and its South Fork.

Family	Common Name	Scientific Name	Station			
			1	2	3	4
Cyprinidae	Central stoneroller	*Campostoma anomalum*	170	0	156	90
	Spotfin shiner	*Cyprinella spiloptera*	17	2	2	5
	Common carp	*Cyprinus carpio*	0	1	2	0
	Common shiner	*Luxilus cornutus*	27	2	8	1
	River chub	*Nocomis micropogon*	159	4	19	3
	Emerald shiner	*Notropis atherinoides*	12	0	12	3
	Sand shiner	*Notropis ludibundus*	5	0	6	10
	Rosyface shiner	*Notropis rubellus*	76	0	23	3
	Mimic shiner	*Notropis volucellus*	14	1	5	4
	Channel shiner	*Notropis wickliffi*	11	0	0	0
	Bluntnose minnow	*Pimephales notatus*	495	2	41	44
	Blacknose dace	*Rhinichthys atratulus*	1	0	0	0
	Creek chub	*Semotilus atromaculatus*	2	0	4	3
Catastomidae	Quillback	*Carpiodes cyprinus*	0	0	0	0
	White sucker	*Catostomus commersoni*	25	0	0	0
	Northern hogsucker	*Hypentelium nigricans*	187	81	97	18
	Silver Redhorse	*Moxostoma anisurum*	1	10	0	0
	Black redhorse	*Moxostoma duquesnei*	1	1	0	0
	Golden redhorse	*Moxostoma erythrurum*	2	42	0	0
	Shorthead redhorse	*Moxostoma macrolepidotum*	0	0	0	0
Ictaluridae	Yellow bullhead	*Ictalurus natalis*	1	7	0	0
	Channel catfish	*Ictalurus punctatus*	0	2	0	0
	Stonecat	*Noturus flavus*	31	0	9	1
Percichthyidae	Hybrid striped bass	*Morone* hybrid	0	1	0	0
Centrarchidae	Rock bass	*Ambloplites rupestris*	12	38	30	18
	Green sunfish	*Lepomis cyanellus*	1	1	1	0
	Pumpkinseed	*Lepomis gibbosus*	1	0	0	3
	Bluegill	*Lepomis macrochirus*	0	0	1	0
	Sunfish hybrid	*L. macrochirus x L. cyanellus*	0	0	0	0
	Sunfish hybrid	*L. macrochirus x L. gibbosus*	0	0	0	3

Appendix A – Continued.

Family	Common Name	Scientific Name	Station			
			1	2	3	4
Centrarchidae	Sunfish hybrid	*L. cyanellus x L. gibbosus*	0	0	0	0
	Smallmouth bass	*Micropterus dolomieui*	56	20	66	10
	Largemouth bass	*Micropterus salmoides*	16	19	0	5
Percidae	Greenside darter	*Etheostoma blennioides*	236	3	122	90
	Rainbow darter	*Etheostoma caeruleum*	733	6	88	119
	Fantail darter	*Etheostoma flabellare*	87	0	0	0
	Logperch	*Percina caprodes*	10	0	0	0
	Sauger	*Sander canadensis*	0	1	1	0
	Saugeye	*Sander* hybrid	0	3	0	0
	Walleye	*Sander vitreum*	0	1	0	0
Scianidae	Freshwater drum	*Aplodinotus grunniens*	0	0	0	0
Total			2391	252	699	441

Appendix A – Continued.

Family	Common Name	Scientific Name	Station			
			5	6	7	8
Cyprinidae	Central stoneroller	*Campostoma anomalum*	43	371	105	0
	Spotfin shiner	*Cyprinella spiloptera*	5	17	12	2
	Common carp	*Cyprinus carpio*	0	1	1	0
	Common shiner	*Luxilus cornutus*	0	4	0	0
	River chub	*Nocomis micropogon*	0	9	0	0
	Emerald shiner	*Notropis atherinoides*	0	10	0	0
	Sand shiner	*Notropis ludibundus*	1	57	3	0
	Rosyface shiner	*Notropis rubellus*	0	88	28	0
	Mimic shiner	*Notropis volucellus*	0	48	13	0
	Channel shiner	*Notropis wickliffi*	0	22	2	0
	Bluntnose minnow	*Pimephales notatus*	8	252	54	3
	Blacknose dace	*Rhinichthys atratulus*	0	0	0	0
	Creek chub	*Semotilus atromaculatus*	2	3	1	0
Catastomidae	Quillback	*Carpiodes cyprinus*	0	0	0	0
	White sucker	*Catostomus commersoni*	3	10	6	1
	Northern hogsucker	*Hypentelium nigricans*	1	69	36	66
	Silver Redhorse	*Moxostoma anisurum*	0	0	0	1
	Black redhorse	*Moxostoma duquesnei*	0	0	0	1
	Golden redhorse	*Moxostoma erythrurum*	0	0	6	28
	Shorthead redhorse	*Moxostoma macrolepidotum*	0	0	0	1
Ictaluridae	Yellow bullhead	*Ictalurus natalis*	0	5	11	1
	Channel catfish	*Ictalurus punctatus*	0	0	0	0
	Stonecat	*Noturus flavus*	9	19	8	0
Percichthyidae	Hybrid striped bass	*Morone* hybrid	0	0	0	0
Centrarchidae	Rock bass	*Ambloplites rupestris*	1	11	12	21
	Green sunfish	*Lepomis cyanellus*	0	4	0	3
	Pumpkinseed	*Lepomis gibbosus*	0	0	2	0
	Bluegill	*Lepomis macrochirus*	0	0	0	1
	Sunfish hybrid	*L. macrochirus x L. cyanellus*	0	0	0	0
	Sunfish hybrid	*L. macrochirus x L. gibbosus*	0	0	0	0

Appendix A – Continued.

Family	Common Name	Scientific Name	Station			
			5	6	7	8
Centrarchidae	Sunfish hybrid	*L. cyanellus x L. gibbosus*	2	0	0	1
	Smallmouth bass	*Micropterus dolomieui*	4	33	35	32
	Largemouth bass	*Micropterus salmoides*	0	0	0	0
Percidae	Greenside darter	*Etheostoma blennioides*	41	546	259	4
	Rainbow darter	*Etheostoma caeruleum*	81	296	103	2
	Fantail darter	*Etheostoma flabellare*	0	1	1	0
	Logperch	*Percina caprodes*	1	1	3	2
	Sauger	*Sander canadensis*	0	0	0	0
	Saugeye	*Sander* hybrid	0	0	0	2
	Walleye	*Sander vitreum*	0	0	0	0
Scianidae	Freshwater drum	*Aplodinotus grunniens*	1	0	3	2
Total			212	1889	715	188

Appendix A – Continued.

Family	Common Name	Scientific Name	Station			
			9	10	11	12
Cyprinidae	Central stoneroller	*Campostoma anomalum*	32	347	38	213
	Spotfin shiner	*Cyprinella spiloptera*	6	3	1	76
	Common carp	*Cyprinus carpio*	0	0	0	3
	Common shiner	*Luxilus cornutus*	0	0	0	15
	River chub	*Nocomis micropogon*	0	0	0	0
	Emerald shiner	*Notropis atherinoides*	0	1	0	20
	Sand shiner	*Notropis ludibundus*	9	12	21	37
	Rosyface shiner	*Notropis rubellus*	3	4	2	29
	Mimic shiner	*Notropis volucellus*	10	14	11	16
	Channel shiner	*Notropis wickliffi*	0	4	0	11
	Bluntnose minnow	*Pimephales notatus*	63	61	6	212
	Blacknose dace	*Rhinichthys atratulus*	0	0	0	4
	Creek chub	*Semotilus atromaculatus*	0	8	0	0
Catastomidae	Quillback	*Carpiodes cyprinus*	0	4	1	0
	White sucker	*Catostomus commersoni*	8	38	17	28
	Northern hogsucker	*Hypentelium nigricans*	85	125	86	129
	Silver Redhorse	*Moxostoma anisurum*	0	2	2	0
	Black redhorse	*Moxostoma duquesnei*	0	0	0	0
	Golden redhorse	*Moxostoma erythrurum*	1	27	29	15
	Shorthead redhorse	*Moxostoma macrolepidotum*	0	0	0	0
Ictaluridae	Yellow bullhead	*Ictalurus natalis*	5	3	6	7
	Channel catfish	*Ictalurus punctatus*	0	0	0	0
	Stonecat	*Noturus flavus*	1	2	0	3
Percichthyidae	Hybrid striped bass	*Morone* hybrid	0	0	0	0
Centrarchidae	Rock bass	*Ambloplites rupestris*	8	10	9	16
	Green sunfish	*Lepomis cyanellus*	3	8	19	5
	Pumpkinseed	*Lepomis gibbosus*	0	0	1	0
	Bluegill	*Lepomis macrochirus*	0	13	16	4
	Sunfish hybrid	*L. macrochirus x L. cyanellus*	0	1	0	0
	Sunfish hybrid	*L. macrochirus x L. gibbosus*	0	0	0	0

Appendix A – Continued.

Family	Common Name	Scientific Name	9	10	11	12
Centrarchidae	Sunfish hybrid	*L. cyanellus x L. gibbosus*	1	0	0	3
	Smallmouth bass	*Micropterus dolomieui*	29	34	25	59
	Largemouth bass	*Micropterus salmoides*	0	0	3	0
Percidae	Greenside darter	*Etheostoma blennioides*	98	134	52	103
	Rainbow darter	*Etheostoma caeruleum*	12	132	9	32
	Fantail darter	*Etheostoma flabellare*	0	0	1	0
	Logperch	*Percina caprodes*	1	21	13	10
	Sauger	*Sander canadensis*	0	0	0	0
	Saugeye	*Sander* hybrid	0	1	1	0
	Walleye	*Sander vitreum*	0	0	0	0
Scianidae	Freshwater drum	*Aplodinotus grunniens*	0	0	1	1
Total			393	1029	391	1074

Appendix A – Continued.

Family	Common Name	Scientific Name	Station			
			13	14	15	TOTAL
Cyprinidae	Central stoneroller	*Campostoma anomalum*	131	1	0	1697
	Spotfin shiner	*Cyprinella spiloptera*	0	2	0	150
	Common carp	*Cyprinus carpio*	2	2	0	12
	Common shiner	*Luxilus cornutus*	1	2	0	60
	River chub	*Nocomis micropogon*	0	0	0	194
	Emerald shiner	*Notropis atherinoides*	0	0	0	58
	Sand shiner	*Notropis ludibundus*	7	0	0	168
	Rosyface shiner	*Notropis rubellus*	3	0	0	259
	Mimic shiner	*Notropis volucellus*	7	0	1	144
	Channel shiner	*Notropis wickliffi*	3	0	0	53
	Bluntnose minnow	*Pimephales notatus*	84	0	0	1325
	Blacknose dace	*Rhinichthys atratulus*	0	0	0	5
	Creek chub	*Semotilus atromaculatus*	1	0	0	24
Catastomidae	Quillback	*Carpiodes cyprinus*	0	0	0	5
	White sucker	*Catostomus commersoni*	13	1	0	150
	Northern hogsucker	*Hypentelium nigricans*	60	23	6	1069
	Silver Redhorse	*Moxostoma anisurum*	0	0	1	17
	Black redhorse	*Moxostoma duquesnei*	0	0	0	3
	Golden redhorse	*Moxostoma erythrurum*	22	7	3	182
	Shorthead redhorse	*Moxostoma macrolepidotum*	0	0	0	1
Ictaluridae	Yellow bullhead	*Ictalurus natalis*	6	0	0	52
	Channel catfish	*Ictalurus punctatus*	0	0	0	2
	Stonecat	*Noturus flavus*	2	0	0	85
Percichthyidae	Hybrid striped bass	*Morone* hybrid	0	0	0	1
Centrarchidae	Rock bass	*Ambloplites rupestris*	14	9	0	209
	Green sunfish	*Lepomis cyanellus*	0	2	2	49
	Pumpkinseed	*Lepomis gibbosus*	0	0	0	7
	Bluegill	*Lepomis macrochirus*	0	0	0	35
	Sunfish hybrid	*L. macrochirus x L. cyanellus*	0	0	0	1
	Sunfish hybrid	*L. macrochirus x L. gibbosus*	0	0	0	3

Appendix A – Continued.

Family	Common Name	Scientific Name	Station			
			13	14	15	TOTAL
Centrarchidae	Sunfish hybrid	*L. cyanellus x L. gibbosus*	4	1	1	13
	Smallmouth bass	*Micropterus dolomieui*	7	4	4	418
	Largemouth bass	*Micropterus salmoides*	3	0	0	46
Percidae	Greenside darter	*Etheostoma blennioides*	70	0	0	1758
	Rainbow darter	*Etheostoma caeruleum*	47	0	0	1660
	Fantail darter	*Etheostoma flabellare*	0	0	0	90
	Logperch	*Percina caprodes*	0	1	0	63
	Sauger	*Sander canadensis*	0	0	0	2
	Saugeye	*Sander* hybrid	2	0	0	9
	Walleye	*Sander vitreum*	0	0	0	1
Scianidae	Freshwater drum	*Aplodinotus grunniens*	2	4	0	14
Total			515	83	48	10094