

Cuyahoga River Downstream of Tinkers Creek

July 15, 2010

River Mile: 16.20

Collection Method: Boat Electroshocking

Drainage Area: 696 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	5	0.300	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	4	1.040	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	2	0.082	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	41	4.374	Moderately Intolerant	1	Lesion
<i>Catostomus commersonii</i> Common white sucker	20	4.028	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	6	12.927	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	2	0.242	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	1	0.008	--	0	--
<i>Notropis cornutus</i> Common shiner	17	0.100	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	51	0.150	--	0	--
<i>Notropis stramineus</i> Sand shiner	17	0.038	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	20	0.040	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	1	0.004	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	3	0.742	Highly Tolerant	1	Lesion

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<i>Pylodictis olivaris</i> Flathead Catfish	1	0.053	--	0	
<i>Morone americana</i> White perch	3	0.200	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	5	0.570	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	5	0.525	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	1	0.010	--	0	--
<i>Lepomis cyanellus</i> Green sunfish	2	0.010	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	12	0.348	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	4	0.100	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	7	0.106	Moderately Intolerant	0	--
<i>Etheostoma blenniodes</i> Greenside darter	6	0.027	Moderately Intolerant	0	--
Totals	<u>236</u>	<u>26.024</u>		<u>2</u>	

*DELT anomalies were observed on 0.847 % of the fish collected.
Index of Biotic Integrity (IBI) = 40 (Good)
Modified Index of Well-Being (MIwb) 8.6 (Marginally Good)
Shannon Diversity Index, wt. 2.583
Shannon Diversity Index, no. 1.681
N 360
B 15.67

Cuyahoga River Downstream of Tinkers Creek

August 20, 2010

River Mile: 16.20

Collection Method: Boat Electroshocking

Drainage Area: 696 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	33	1.850	--	0	--
<i>Carpionodes cyprinus</i> Central quillback carpsucker	1	0.340	--	0	--
<i>Moxostoma erythrurum</i> Golden redbreast	15	9.100	Moderately Intolerant	3	Eroded fin & lesions
<i>Moxostoma macrolepidotum</i> Shorthead redbreast	3	2.100	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	57	5.448	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	20	8.100	Highly Tolerant	1	Lesion
<i>Minytrema melanops</i> Spotted Sucker	3	0.300	--	0	
<i>Cyprinus carpio</i> Common carp	1	3.700	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	1	0.010	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	2	0.020	--	0	--
<i>Notropis cornutus</i> Common shiner	19	0.120	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	93	0.266	--	1	Deformed nose
<i>Notropis stramineus</i> Sand shiner	54	0.110	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	16	0.034	Highly Tolerant	0	--

Cuyahoga River Downstream of Tinkers Creek
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<i>Campostoma anomalum</i> Central stoneroller minnow	4	0.080	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	0.570	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	3	0.320	Highly Tolerant	0	--
<i>Morone americana</i> White perch	5	0.910	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	5	0.472	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	26	2.250	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	1	0.010	--	0	--
<i>Lepomis cyanellus</i> Green sunfish	3	0.048	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	7	0.250	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	7	0.160	Moderately Tolerant	0	--
<i>HYBRID</i> Green SF X Pumpkinseed	1	0.040	--	0	
<i>Percina caprodes</i> Northern logperch darter	5	0.092	Moderately Intolerant	0	--
<i>Etheostoma blenniodes</i> Greenside darter	2	0.010	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	2	1.840	Moderately Tolerant	0	--
<i>Lepomis humilis</i> Orangespotted Sunfish	1	0.030	--	0	
<i>HYBRID</i> Sauger X Walleye	1	0.270	--	0	

Cuyahoga River Downstream of Tinkers Creek
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Totals	<u>393</u>	<u>38.850</u>	<u>5</u>
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*DELT anomalies were observed on 1.272 % of the fish collected.

Index of Biotic Integrity (IBI) = 46 (Very Good)

Modified Index of Well-Being (MIwb) 10.1 (Exceptional)

Shannon Diversity Index, wt. 2.554

Shannon Diversity Index, no. 2.323

N 684

B 50.84

Cuyahoga River Downstream of Tinkers Creek

September 14, 2010

River Mile: 16.20

Collection Method: Boat Electroshocking

Drainage Area: 696 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	62	4.400	--	0	--
<i>Carpionodes cyprinus</i> Central quillback carpsucker	1	0.500	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	9	3.200	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	1	0.338	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	71	7.110	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	21	4.320	Highly Tolerant	0	--
<i>Minytrema melanops</i> Spotted Sucker	2	0.140	--	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	13	0.060	--	0	--
<i>Notropis cornutus</i> Common shiner	26	0.340	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	128	0.402	--	0	--
<i>Notropis stramineus</i> Sand shiner	13	0.054	Moderately Intolerant	0	--
<i>Pimephales promelas</i> Northern fathead minnow	1	0.005	Highly Tolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	22	0.072	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	5	0.100	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	1.160	--	0	--

Cuyahoga River Downstream of Tinkers Creek
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<i>Pylodictis olivaris</i> Flathead Catfish	1	1.200	--	0	
<i>Labidesthes sicculus</i> Brook silverside	1	0.020	Moderately Intolerant	0	--
<i>Morone americana</i> White perch	6	0.360	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	4	0.220	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	20	2.000	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	2	0.004	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	18	0.375	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	6	0.130	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	2	0.050	Moderately Intolerant	0	--
<i>Etheostoma blenniodes</i> Greenside darter	3	0.030	Moderately Intolerant	0	--
<i>Etheostoma caeruleum</i> Rainbow darter	1	0.006	Moderately Intolerant	0	--
<i>Etheostoma nigrum</i> Johnny darter	2	0.010	--	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	2	0.240	Moderately Tolerant	0	--
Totals	<u>445</u>	<u>26.846</u>		<u>0</u>	

*DELT anomalies were observed on	0	% of the fish collected.
Index of Biotic Integrity (IBI) =	44	(Very Good)
Modified Index of Well-Being (MIwb)	9.9	(Exceptional)
Shannon Diversity Index, no.	2.41	
Shannon Diversity Index, wt.	2.259	
N	790	
B	44.18	

Cuyahoga River Upstream of Mill Creek
 July 15, 2010
 River Mile: 11.95
 Collection Method: Boat Electroshocking
 Drainage Area: 710 miles²
 Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	5	0.148	--	0	--
<i>Moxostoma anisurum</i> Silver Redhorse	1	0.800	Moderately Intolerant	0	
<i>Moxostoma erythrurum</i> Golden redhorse	6	1.155	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	6	0.650	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	35	1.175	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	10	29.820	Highly Tolerant	1	Lesion
<i>Carassius auratus</i> Goldfish	1	0.330	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	9	0.022	--	0	--
<i>Notropis rubellus</i> Rosyface Shiner	1	0.008	Intolerant	0	
<i>Cyprinella spiloptera</i> Spotfin shiner	55	0.156	--	0	--
<i>Notropis stramineus</i> Sand shiner	46	0.120	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	16	0.052	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	46	0.124	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	1	1.000	--	0	--

Cuyahoga River Upstream of Mill Creek
July 15, 2010
River Mile: 11.95

<i>Morone americana</i> White perch	5	0.194	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	2	0.320	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	3	0.342	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	3	0.008	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	3	0.054	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	3	0.100	Moderately Tolerant	0	--
<i>HYBRID</i> Bluegill X Pumpkinseed	1	0.015	--	0	
<i>Etheostoma nigrum</i> Johnny darter	1	0.002	--	0	--
<i>Neogobius melanostomus</i> Round goby	2	0.018	--	0	--
Totals	<u>261</u>	<u>36.613</u>		<u>1</u>	

*DELT anomalies were observed on 0.383 % of the fish collected.

Index of Biotic Integrity (IBI) = 30 (Fair)

Modified Index of Well-Being (MIwb) 7.4 (Fair)

Shannon Diversity Index, wt. 2.355

Shannon Diversity Index, no. 0.93

N 382

B 10.02

Cuyahoga River Upstream of Mill Creek

August 20, 2010

River Mile: 11.95

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Tolerance</u>	<u>#</u>	<u>Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	53	3.100	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	14	2.750	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	1	0.080	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	52	4.280	Moderately Intolerant	1	Lesion
<i>Catostomus commersonii</i> Common white sucker	16	2.000	Highly Tolerant	0	--
<i>Minytrema melanops</i> Spotted Sucker	1	0.060	--	0	
<i>Cyprinus carpio</i> Common carp	6	6.760	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	2	0.474	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	10	0.044	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	75	0.184	--	0	--
<i>Notropis stramineus</i> Sand shiner	13	0.044	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	6	0.030	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	3	0.042	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	2	0.262	Highly Tolerant	0	--
<i>Morone americana</i> White perch	5	0.240	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	3	0.350	--	0	--

Cuyahoga River Upstream of Mill Creek
August 20, 2010
River Mile: 11.95

<i>Micropterus dolomieu</i> Smallmouth bass	21	1.672	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	4	0.052	--	0	--
<i>Lepomis cyanellus</i> Green sunfish	2	0.072	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	6	0.200	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	4	0.130	Moderately Tolerant	0	--
<i>Perca flavescens</i> Yellow perch	2	0.050	--	0	--
<i>Percina caprodes</i> Northern logperch darter	2	0.038	Moderately Intolerant	0	--
<i>Etheostoma nigrum</i> Johnny darter	1	0.008	--	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	2	5.700	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	7	0.070	--	0	--
Totals	<u>313</u>	<u>28.692</u>		<u>1</u>	

*DELT anomalies were observed on 0.319 % of the fish collected.

Index of Biotic Integrity (IBI) =	46	(Very Good)
Modified Index of Well-Being (MIwb)	9.6	(Exceptional)
Shannon Diversity Index, wt.	2.483	
Shannon Diversity Index, no.	2.187	
N	534	
B	37.57	

Cuyahoga River Upstream of Mill Creek
September 14, 2010
River Mile: 11.95
Collection Method: Boat Electroshocking
Drainage Area: 710 miles²
Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	19	2.000	--	0	--
<i>Moxostoma anisurum</i> Silver Redhorse	1	0.850	Moderately Intolerant	0	
<i>Moxostoma erythrurum</i> Golden redhorse	11	4.430	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	16	1.740	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	25	3.550	Highly Tolerant	0	--
<i>Minytrema melanops</i> Spotted Sucker	3	0.336	--	0	
<i>Cyprinus carpio</i> Common carp	4	6.920	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	2	1.200	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	16	0.040	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	51	0.122	--	0	--
<i>Notropis stramineus</i> Sand shiner	35	0.094	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	23	0.074	Highly Tolerant	0	--
<i>Camptostoma anomalum</i> Central stoneroller minnow	11	0.130	--	0	--
<i>HYBRID</i> Common Carp x Goldfish	1	0.900	Highly Tolerant	0	
<i>Ictalurus punctatus</i> Channel catfish	2	1.700	--	0	--

Cuyahoga River Upstream of Mill Creek

September 14, 2010

River Mile: 11.95

<i>Ictalurus natalis</i> Yellow bullhead	1	0.092	Highly Tolerant	0	--
<i>Morone chrysops</i> White bass	5	0.140	--	0	--
<i>Morone americana</i> White perch	1	0.190	--	0	--
<i>Pomoxis nigromaculatus</i> Black crappie	2	0.242	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	4	0.400	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	21	2.892	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	8	0.180	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	10	0.370	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	4	0.100	Moderately Tolerant	0	--
<i>Etheostoma nigrum</i> Johnny darter	1	0.004	--	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	3	1.900	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	7	0.058	--	0	--
Totals	<u>287</u>	<u>30.654</u>		<u>0</u>	

*DELT anomalies were observed on 0 % of the fish collected.
 Index of Biotic Integrity (IBI) = 40 (Good)
 Modified Index of Well-Being (MIwb) 10.1 (Exceptional)
 Shannon Diversity Index, no. 2.776
 Shannon Diversity Index, wt. 2.511
 N 446
 B 35.34

Cuyqahoga River Downstream of Mill Creek

July 15, 2010

River Mile: 11.30

Collection Method: Boat Electroshocking

Drainage Area: 730 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	11	0.442	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	7	1.930	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	4	1.146	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	80	7.912	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	29	3.430	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	5	9.150	Highly Tolerant	0	--
<i>Notemigonus crysoleucas</i> Golden shiner	1	0.010	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	2	0.002	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	18	0.058	--	0	--
<i>Notropis cornutus</i> Common shiner	4	0.045	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	60	0.200	--	0	--
<i>Notropis stramineus</i> Sand shiner	17	0.040	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	24	0.116	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	6	0.035	--	0	--

Cuyqahoga River Downstream of Mill Creek
July 15, 2010
River Mile: 11.30

<i>Ictalurus punctatus</i> Channel catfish	8	9.600	--	1	Eroded barbel
<i>Ictalurus natalis</i> Yellow bullhead	1	0.110	Highly Tolerant	0	--
<i>Morone americana</i> White perch	1	0.182	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.162	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	29	7.168	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	2	0.032	--	0	--
<i>Percina caprodes</i> Northern logperch darter	2	0.020	Moderately Intolerant	0	--
<i>Etheostoma blenniodes</i> Greenside darter	1	0.008	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	2	2.650	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	5	0.050	--	0	--
Totals	<u>320</u>	<u>44.498</u>		<u>1</u>	

*DELT anomalies were observed on 0.313 % of the fish collected.

Index of Biotic Integrity (IBI) = 40 (Good)

Modified Index of Well-Being (MIwb) 9.7 (Exceptional)

Shannon Diversity Index, wt. 2.43

Shannon Diversity Index, no. 2.044

N 504

B 62.9

Cuyahoga River Downstream of Mill Creek

August 20, 2010

River Mile: 11.30

Collection Method: Boat Electroshocking

Drainage Area: 730 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	22	1.920	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	18	5.700	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	6	0.868	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	55	6.940	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	17	3.950	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	1	5.300	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	7	0.020	--	0	--
<i>Notropis cornutus</i> Common shiner	4	0.072	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	67	0.190	--	0	--
<i>Notropis stramineus</i> Sand shiner	2	0.008	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	3	0.016	Highly Tolerant	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	0.724	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	3	0.472	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	20	6.558	Moderately Intolerant	0	--

Cuyahoga River Downstream of Mill Creek

August 20, 2010

River Mile: 11.30

<i>Lepomis macrochirus</i> Northern bluegill sunfish	5	0.138	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	9	0.108	Moderately Intolerant	0	--
<i>Etheostoma blenniodes</i> Greenside darter	2	0.030	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	0.050	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	4	0.061	--	0	--
Totals	<u>248</u>	<u>33.125</u>		<u>0</u>	

*DELT anomalies were observed on 0 % of the fish collected.
 Index of Biotic Integrity (IBI) = 42 (Good)
 Modified Index of Well-Being (MIwb) 9.3 (Very Good)
 Shannon Diversity Index, no. 2.27
 Shannon Diversity Index, wt. 2.025
 N 446
 B 47.6

Cuyahoga River Downstream of Mill Creek
September 14, 2010
River Mile: 11.30
Collection Method: Boat Electroshocking
Drainage Area: 730 miles²
Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	44	3.600	--	0	--
<i>Oncorhynchus mykiss</i> Rainbow trout	1	0.960	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	10	3.350	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	10	1.520	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	40	3.900	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	33	3.710	Highly Tolerant	1	Lesion
<i>Cyprinus carpio</i> Common carp	1	2.180	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	2	0.025	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	69	0.166	--	0	--
<i>Notropis cornutus</i> Common shiner	22	0.190	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	36	0.150	--	0	--
<i>Notropis stramineus</i> Sand shiner	15	0.068	Moderately Intolerant	0	--
<i>Pimephales promelas</i> Northern fathead minnow	1	0.005	Highly Tolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	48	0.140	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	32	0.395	--	0	--

Cuyahoga River Downstream of Mill Creek
September 14, 2010
River Mile: 11.30

<i>Ictalurus punctatus</i> Channel catfish	3	1.800	--	0	--
<i>Labidesthes sicculus</i> Brook silverside	1	0.010	Moderately Intolerant	0	--
<i>Morone chrysops</i> White bass	2	0.050	--	0	--
<i>Morone americana</i> White perch	1	0.120	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	23	6.360	Moderately Intolerant	1	Lesion
<i>Micropterus salmoides</i> Largemouth bass	2	0.050	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	5	0.170	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	1	0.072	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	1	0.020	Moderately Intolerant	0	--
<i>Etheostoma blenniodes</i> Greenside darter	2	0.018	Moderately Intolerant	0	--
<i>Neogobius melanostomus</i> Round goby	6	0.050	--	0	--
Totals	<u>411</u>	<u>29.079</u>		<u>2</u>	

*DELT anomalies were observed on 0.487 % of the fish collected.
Index of Biotic Integrity (IBI) = 36 (Marginally Good)
Modified Index of Well-Being (MIwb) 10.0 (Exceptional)
Shannon Diversity Index, no. 2.608
Shannon Diversity Index, wt. 2.314
N 636
B 43.78

Cuyahoga River Upstream of Southerly WWTC

July 16, 2010

River Mile: 10.75

Collection Method: Boat Electroshocking

Drainage Area: 743 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	6	0.420	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	12	2.500	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	3	0.800	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	96	7.392	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	104	5.102	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	17	44.480	Highly Tolerant	1	Eroded barbel
<i>Semotilus atromaculatus</i> Creek chub	2	0.020	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	21	0.071	--	0	--
<i>Notropis cornutus</i> Common shiner	6	0.094	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	65	0.272	--	0	--
<i>Notropis stramineus</i> Sand shiner	5	0.022	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	16	0.060	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	13	0.130	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	10	11.650	--	2	Eroded barbels

Cuyahoga River Upstream of Southerly WWTC
July 16, 2010
River Mile: 10.75

<i>Ictalurus natalis</i> Yellow bullhead	1	0.112	Highly Tolerant	0	--
<i>Morone americana</i> White perch	6	0.400	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	2	0.136	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	13	2.868	Moderately Intolerant	0	--
<i>Lepomis cyanellus</i> Green sunfish	1	0.010	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	2	0.020	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	15	0.180	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	0.864	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	5	0.064	--	0	--
Totals	<u>422</u>	<u>77.667</u>		<u>3</u>	

*DELT anomalies were observed on 0.711 % of the fish collected.

Index of Biotic Integrity (IBI) =	32	(Fair)
Modified Index of Well-Being (MIwb)	9.0	(Good)
Shannon Diversity Index, wt.	2.337	
Shannon Diversity Index, no.	1.49	
N	540	
B	54.84	

Cuyahoga River Upstream of Southerly WWTC

August 11, 2010

River Mile: 10.75

Collection Method: Boat Electroshocking

Drainage Area: 743 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	9	0.740	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	8	2.810	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	7	0.793	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	58	5.280	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	38	3.118	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	5	18.940	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	1	0.410	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	1	0.015	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	3	0.018	--	0	--
<i>Notropis cornutus</i> Common shiner	2	0.050	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	35	0.135	--	0	--
<i>Notropis stramineus</i> Sand shiner	10	0.029	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	19	0.088	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	17	0.080	--	0	--

Cuyahoga River Upstream of Southerly WWTC

August 11, 2010

River Mile: 10.75

<i>Ictalurus punctatus</i> Channel catfish	9	8.230	--	2	Eroded barbels
<i>Ictalurus natalis</i> Yellow bullhead	4	0.645	Highly Tolerant	1	Lesion
<i>Morone americana</i> White perch	1	0.078	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	5	0.635	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	9	2.192	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	3	0.038	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	3	0.052	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	7	0.115	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	4	2.900	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	8	0.100	--	0	--
Totals	<u>266</u>	<u>47.491</u>		<u>3</u>	

*DELT anomalies were observed on 1.128 % of the fish collected.

Index of Biotic Integrity (IBI) =	34	(Fair)
Modified Index of Well-Being (MIwb)	9.5	(Very Good)
Shannon Diversity Index, wt.	2.638	
Shannon Diversity Index, no.	1.971	
N	378	
B	48.19	

Cuyahoga River Upstream of Southerly
September 15, 2010
River Mile: 10.75
Collection Method: Boat Electroshocking
Drainage Area: 743 miles²
Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	147	8.300	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	14	4.840	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	14	3.290	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	75	7.140	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	109	7.720	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	3	12.120	Highly Tolerant	0	--
<i>Rhinichthys atratulus</i> Western blacknose dace	13	0.042	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	20	0.090	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	64	0.156	--	0	--
<i>Notropis cornutus</i> Common shiner	29	0.108	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	82	0.248	--	0	--
<i>Notropis stramineus</i> Sand shiner	42	0.094	Moderately Intolerant	0	--
<i>Ericymba buccata</i> Silverjaw minnow	2	0.006	--	0	--
<i>Pimephales promelas</i> Northern fathead minnow	2	0.016	Highly Tolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	96	0.242	Highly Tolerant	0	--

**Cuyahoga River Upstream of Southerly
September 15, 2010
River Mile: 10.75**

<i>Campostoma anomalum</i> Central stoneroller minnow	202	1.156	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	8	5.400	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	4	0.600	Highly Tolerant	0	--
<i>Pylodictis olivaris</i> Flathead Catfish	1	0.010	--	0	
<i>Morone chrysops</i> White bass	1	0.012	--	0	--
<i>Morone americana</i> White perch	9	0.820	--	1	Deformity
<i>Ambloplites rupestris</i> Northern rockbass	2	0.286	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	11	1.820	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	1	0.034	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	3	0.020	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	1	0.080	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	2	0.040	Moderately Intolerant	0	--
<i>Etheostoma nigrum</i> Johnny darter	1	0.002	--	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	1.380	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	12	0.090	--	0	--
Totals	<u>971</u>	<u>56.162</u>		<u>1</u>	

*DELT anomalies were observed on 0.103 % of the fish collected.
Index of Biotic Integrity (IBI) = 34 (Fair)
Modified Index of Well-Being (MIwb) 10.6 (Exceptional)

Cuyahoga River Upstream of Southerly
September 15, 2010
River Mile: 10.75

Shannon Diversity Index, no.	2.513
Shannon Diversity Index, wt.	2.312
N	1406
B	68.84

Cuyahoga River Downstream of Southerly WWTC

July 16, 2010

River Mile: 10.10

Collection Method: Boat Electroshocking

Drainage Area: 744 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	4	0.152	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	8	2.800	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	4	0.360	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	45	3.100	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	30	4.352	Highly Tolerant	1	Deformity
<i>Cyprinus carpio</i> Common carp	8	22.080	Highly Tolerant	0	--
<i>Rhinichthys atratulus</i> Western blacknose dace	1	0.002	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	1	0.002	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	4	0.018	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	29	0.125	--	0	--
<i>Notropis stramineus</i> Sand shiner	9	0.030	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	9	0.040	Highly Tolerant	0	--
<i>Ictalurus punctatus</i> Channel catfish	7	7.100	--	1	Eroded barbel
<i>Ictalurus natalis</i> Yellow bullhead	5	0.860	Highly Tolerant	1	Eroded gills
<i>Morone americana</i> White perch	2	0.232	--	0	--

Cuyahoga River Downstream of Southerly WWTC

July 16, 2010

River Mile: 10.10

<i>Ambloplites rupestris</i> Northern rockbass	1	0.150	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	7	1.450	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	3	0.010	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	2	0.040	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	2	0.010	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	14	0.132	Moderately Intolerant	0	--
<i>Neogobius melanostomus</i> Round goby	11	0.088	--	0	--
<i>HYBRID</i> Sauger X Walleye	1	0.190	--	0	
Totals	<u>207</u>	<u>43.323</u>		<u>3</u>	

*DELT anomalies were observed on 1.449 % of the fish collected.
 Index of Biotic Integrity (IBI) = 38 (Marginally Good)
 Modified Index of Well-Being (MIwb) 8.8 (Good)
 Shannon Diversity Index, no. 2.596
 Shannon Diversity Index, wt. 1.632
 N 278
 B 30.95

Cuyahoga River Downstream of Southerly WWTC

August 11, 2010

River Mile: 10.10

Collection Method: Boat Electroshocking

Drainage Area: 744 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	13	1.500	--	0	--
<i>Esox lucius</i> Northern pike	1	0.532	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	2	0.688	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	6	1.250	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	42	2.910	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	29	6.834	Highly Tolerant	2	Deformity & erosion
<i>Cyprinus carpio</i> Common carp	1	4.280	Highly Tolerant	0	--
<i>Rhinichthys atratulus</i> Western blacknose dace	1	0.003	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	1	0.009	--	0	--
<i>Notropis cornutus</i> Common shiner	3	0.014	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	19	0.075	--	0	--
<i>Pimephales notatus</i> Bluntnose minnow	9	0.042	Highly Tolerant	0	--
<i>Ictalurus punctatus</i> Channel catfish	6	5.715	--	1	Eroded barbel
<i>Ictalurus natalis</i> Yellow bullhead	2	0.324	Highly Tolerant	0	--

Cuyahoga River Downstream of Southerly WWTC
August 11, 2010
River Mile: 10.10

<i>Morone americana</i> White perch	4	0.230	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.150	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	8	1.895	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	3	0.043	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	7	0.290	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	1	0.047	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	8	0.098	Moderately Intolerant	0	--
<i>Etheostoma blenniodes</i> Greenside darter	2	0.010	Moderately Intolerant	0	--
<i>Neogobius melanostomus</i> Round goby	9	0.060	--	0	--
Totals	<u>178</u>	<u>26.999</u>		<u>3</u>	

*DELT anomalies were observed on 1.685 % of the fish collected.
Index of Biotic Integrity (IBI) = 34 (Fair)
Modified Index of Well-Being (MIwb) 9.1 (Very Good)

Cuyahoga River Downstream of Southerly WWTC

September 15, 2010

River Mile: 10.10

Collection Method: Boat Electroshocking

Drainage Area: 744 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	29	3.050	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	10	2.750	Moderately Intolerant	1	Eroded tail
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	10	4.700	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	38	4.000	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	29	6.782	Highly Tolerant	0	--
<i>Minytrema melanops</i> Spotted Sucker	1	0.360	--	0	--
<i>Cyprinus carpio</i> Common carp	3	9.680	Highly Tolerant	0	--
<i>Rhinichthys atratulus</i> Western blacknose dace	4	0.020	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	2	0.020	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	38	0.054	--	0	--
<i>Notropis cornutus</i> Common shiner	6	0.012	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	30	0.070	--	0	--
<i>Notropis stramineus</i> Sand shiner	13	0.022	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	32	0.084	Highly Tolerant	0	--
<i>Camptostoma anomalum</i> Central stoneroller minnow	1	0.010	--	0	--

Cuyahoga River Downstream of Southerly WWTC

September 15, 2010

River Mile: 10.10

<i>Ictalurus punctatus</i> Channel catfish	5	8.350	--	2	roded barbels & Multip
<i>Ictalurus natalis</i> Yellow bullhead	3	0.500	Highly Tolerant	0	--
<i>Morone chrysops</i> White bass	15	0.300	--	0	--
<i>Morone americana</i> White perch	9	0.682	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	24	7.284	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	8	0.122	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	9	0.350	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	3	0.050	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	8	0.100	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	2	1.550	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	35	0.224	--	0	--
<i>Sander vitreus</i> Walleye	1	1.940	--	0	
Totals	<u>368</u>	<u>53.066</u>		<u>3</u>	

*DELT anomalies were observed on 0.815 % of the fish collected.
 Index of Biotic Integrity (IBI) = 38 (Marginally Good)
 Modified Index of Well-Being (MIwb) 10.5 (Exceptional)
 Shannon Diversity Index, no. 2.878
 Shannon Diversity Index, wt. 2.378
 N 502
 B 70.15

Cuyahoga River Upstream of Big Creek
7/16/210
River Mile: 8.60
Collection Method: Boat Electroshocking
Drainage Area: 745 miles²
Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	5	0.535	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	3	0.346	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	9	2.220	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	123	5.850	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	15	2.684	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	2	4.900	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	20	0.055	--	0	--
<i>Notropis cornutus</i> Common shiner	3	0.044	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	27	0.108	--	0	--
<i>Notropis stramineus</i> Sand shiner	3	0.012	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	3	0.018	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	3	0.030	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	3	3.650	--	0	--
<i>Morone americana</i> White perch	1	0.084	--	0	--

Cuyahoga River Upstream of Big Creek

7/16/210

River Mile: 8.60

<i>Micropterus dolomieu</i> Smallmouth bass	2	1.320	Moderately Intolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	14	0.140	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	1.900	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	1	0.005	--	0	--
Totals	<u>238</u>	<u>23.901</u>		<u>0</u>	

*DELT anomalies were observed on 0 % of the fish collected.
 Index of Biotic Integrity (IBI) = 42 (Good)
 Modified Index of Well-Being (MIwb) 8.6 (Marginally Good)
 Shannon Diversity Index, wt. 1.822
 Shannon Diversity Index, no. 2.05
 N 432
 B 32.42

Cuyahoga River Upstream of Big Creek
August 11, 2010
River Mile: 8.60
Collection Method: Boat Electroshocking
Drainage Area: 745 miles²
Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	1	0.068	--	0	--
<i>Moxostoma anisurum</i> Silver Redhorse	1	1.450	Moderately Intolerant	0	
<i>Moxostoma erythrurum</i> Golden redhorse	3	1.100	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	17	3.230	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	101	7.345	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	8	0.273	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	2	4.330	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	10	0.050	--	0	--
<i>Notropis cornutus</i> Common shiner	1	0.006	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	38	0.140	--	0	--
<i>Notropis stramineus</i> Sand shiner	4	0.020	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	3	0.101	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	4	0.060	--	0	--
<i>Morone americana</i> White perch	7	0.370	--	0	--

Cuyahoga River Upstream of Big Creek

August 11, 2010

River Mile: 8.60

<i>Ambloplites rupestris</i> Northern rockbass	1	0.118	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	2	0.412	Moderately Intolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	1	0.022	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	7	0.090	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	3	5.000	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	6	0.020	--	0	--
Totals	<u>220</u>	<u>24.205</u>		<u>0</u>	

*DELT anomalies were observed on 0 % of the fish collected.
 Index of Biotic Integrity (IBI) = 44 (Very Good)
 Modified Index of Well-Being (MIwb) 8.7 (Marginally Good)
 Shannon Diversity Index, wt. 1.967
 Shannon Diversity Index, no. 1.921
 N 388
 B 38.22

Cuyahoga River Upstream of Big Creek
September 15, 2010
River Mile: 8.60
Collection Method: Boat Electroshocking
Drainage Area: 745 miles²
Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	38	3.600	--	0	--
<i>Oncorhynchus mykiss</i> Rainbow trout	4	5.500	--	0	--
<i>Carpoides cyprinus</i> Central quillback carpsucker	2	0.022	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	2	0.880	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	9	1.920	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	66	5.300	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	24	2.220	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	1	3.010	Highly Tolerant	0	--
<i>Rhinichthys atratulus</i> Western blacknose dace	1	0.008	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	3	0.024	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	78	0.108	--	0	--
<i>Notropis cornutus</i> Common shiner	9	0.082	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	20	0.062	--	0	--
<i>Notropis stramineus</i> Sand shiner	28	0.086	Moderately Intolerant	0	--
<i>Ericymba buccata</i> Silverjaw minnow	1	0.004	--	0	--

Cuyahoga River Upstream of Big Creek

September 15, 2010

River Mile: 8.60

<i>Pimephales promelas</i> Northern fathead minnow	1	0.016	Highly Tolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	37	0.126	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	106	0.572	--	2	Lesions
<i>Ictalurus punctatus</i> Channel catfish	3	3.750	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	2	0.168	Highly Tolerant	0	--
<i>Morone chrysops</i> White bass	1	0.020	--	0	--
<i>Morone americana</i> White perch	3	0.392	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	2	0.242	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	11	4.376	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	10	0.730	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	6	0.132	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	3	0.014	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	1.350	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	26	0.160	--	0	--
Totals	<u>498</u>	<u>34.874</u>		<u>2</u>	

*DELT anomalies were observed on 0.402 % of the fish collected.
 Index of Biotic Integrity (IBI) = 36 (Marginally Good)
 Modified Index of Well-Being (MIwb) 10.3 (Exceptional)
 Shannon Diversity Index, no. 2.555
 Shannon Diversity Index, wt. 2.484
 N 792

Cuyahoga River Upstream of Big Creek
September 15, 2010
River Mile: 8.60

B

46.5

Cuyahoga River Downstream of Big Creek

July 16, 2010

River Mile: 7.00

Collection Method: Boat Electroshocking

Drainage Area: 786 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	64	4.400	--	0	--
<i>Moxostoma anisurum</i> Silver Redhorse	2	3.450	Moderately Intolerant	0	
<i>Moxostoma erythrurum</i> Golden redhorse	5	1.265	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	11	2.160	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	7	0.825	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	6	2.000	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	9	34.640	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	1	0.010	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	29	0.082	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	10	0.070	--	0	--
<i>Pimephales notatus</i> Bluntnose minnow	1	0.005	Highly Tolerant	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	1.600	--	0	--
<i>Morone chrysops</i> White bass	1	0.048	--	0	--
<i>Morone americana</i> White perch	1	0.228	--	0	--

Cuyahoga River Downstream of Big Creek

July 16, 2010

River Mile: 7.00

<i>Micropterus dolomieu</i> Smallmouth bass	6	3.260	Moderately Intolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	1	0.040	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	8	0.088	Moderately Intolerant	0	--
<i>Neogobius melanostomus</i> Round goby	1	0.010	--	0	--
Totals	<u>165</u>	<u>54.181</u>		<u>0</u>	

*DELT anomalies were observed on 0 % of the fish collected.
 Index of Biotic Integrity (IBI) = 30 (Fair)
 Modified Index of Well-Being (MIwb) 8.1 (Fair)
 Shannon Diversity Index, wt. 2.102
 Shannon Diversity Index, no. 1.408
 N 292
 B 34.58

Cuyahoga River Downstream of Big Creek

August 11, 2010

River Mile: 7.00

Collection Method: Boat Electroshocking

Drainage Area: 786 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	30	2.900	--	2	Deformities
<i>Moxostoma erythrurum</i> Golden redhorse	3	0.846	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	5	1.020	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	16	1.855	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	5	1.470	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	2	8.210	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	1	0.002	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	29	0.130	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	6	0.050	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	2.200	--	1	Eroded barbel
<i>Morone chrysops</i> White bass	1	0.212	--	0	--
<i>Morone americana</i> White perch	2	0.202	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	3	1.320	Moderately Intolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	4	0.120	Moderately Tolerant	0	--

Cuyahoga River Downstream of Big Creek

August 11, 2010

River Mile: 7.00

<i>Percina caprodes</i> Northern logperch darter	9	0.102	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	1.600	Moderately Tolerant	0	--
Totals	<u>119</u>	<u>22.239</u>		<u>3</u>	

*DELT anomalies were observed on 2.521 % of the fish collected.

Index of Biotic Integrity (IBI) = 32 (Fair)

Modified Index of Well-Being (MIwb) 8.6 (Marginally Good)

Shannon Diversity Index, wt. 2.2

Shannon Diversity Index, no. 2.056

N 218

B 24.71

Cuyahoga River Downstream of Big Creek
September 15, 2010
River Mile: 7.00
Collection Method: Boat Electroshocking
Drainage Area: 786 miles²
Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	91	13.700	--	0	--
<i>Oncorhynchus mykiss</i> Rainbow trout	2	3.030	--	0	--
<i>Moxostoma erythrum</i> Golden redhorse	2	0.532	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	10	1.740	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	20	2.300	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	14	4.600	Highly Tolerant	0	--
<i>Minytrema melanops</i> Spotted Sucker	2	2.800	--	0	--
<i>Cyprinus carpio</i> Common carp	4	13.370	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	85	0.180	--	0	--
<i>Notropis cornutus</i> Common shiner	2	0.068	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	5	0.012	--	0	--
<i>Pimephales notatus</i> Bluntnose minnow	10	0.025	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	1	0.024	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	2.400	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	1	0.072	Highly Tolerant	0	--

Cuyahoga River Downstream of Big Creek
September 15, 2010
River Mile: 7.00

<i>Morone chrysops</i> White bass	2	0.018	--	0	--
<i>Morone americana</i> White perch	1	0.060	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	12	5.700	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	5	0.260	--	0	--
<i>Percina caprodes</i> Northern logperch darter	5	0.050	Moderately Intolerant	0	--
<i>Neogobius melanostomus</i> Round goby	19	0.105	--	0	--
Totals	<u>295</u>	<u>51.046</u>		<u>0</u>	

*DELT anomalies were observed on	0	% of the fish collected.
Index of Biotic Integrity (IBI) =	32	(Fair)
Modified Index of Well-Being (MIwb)	9.3	(Very Good)
Shannon Diversity Index, no.	2.111	
Shannon Diversity Index, wt.	2.043	
N	488	
B	59.57	

Cuyahoga River Upstream of Newburgh Southside Railroad Bridge

July 21, 2010

River Mile: 5.90

Collection Method: Boat Electroshocking

Drainage Area: 787 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	60	3.980	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	1	0.028	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	6	0.066	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	4	15.140	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	14	0.041	--	0	--
<i>Pimephales notatus</i> Bluntnose minnow	3	0.016	Highly Tolerant	0	--
<i>Ctenopharyngodon idella</i> Grass carp	2	23.000	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	1	0.520	Highly Tolerant	1	Eroded barbel
<i>Morone chrysops</i> White bass	2	0.095	--	0	--
<i>Morone americana</i> White perch	2	0.080	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	2	1.600	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	2	0.008	--	0	--
<i>Neogobius melanostomus</i> Round goby	1	0.008	--	0	--
Totals	<u>100</u>	<u>44.582</u>		<u>1</u>	

Cuyahoga River Upstream of Newburgh Southside Railroad Bridge
July 21, 2010
River Mile: 5.90

*DELT anomalies were observed on	1	% of the fish collected.
Index of Biotic Integrity (IBI) =	22	(Poor)
Modified Index of Well-Being (MIwb)	6.4	(Fair)
Shannon Diversity Index, wt.	1.514	
Shannon Diversity Index, no.	1.146	
N	162	
B	11.5	

Cuyahoga River Upstream of Newburgh Southshore Railroad Bridge

August 19, 2010

River Mile: 5.90

Collection Method: Boat Electroshocking

Drainage Area: 787 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	24	1.402	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	1	0.320	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	1	0.084	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	1	0.020	Highly Tolerant	0	--
<i>Minytrema melanops</i> Spotted Sucker	3	2.610	--	0	
<i>Cyprinus carpio</i> Common carp	15	89.780	Highly Tolerant	2	Deformities
<i>Notropis atherinoides</i> Common Emerald shiner	1	0.012	--	0	--
<i>Morone americana</i> White perch	1	0.018	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	1	0.020	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	4	0.252	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	1	0.002	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	10	0.086	--	0	--
<i>Amia calva</i> Bowfin	1	2.450	--	1	Lesion
Totals	<u>64</u>	<u>97.056</u>		<u>3</u>	

Cuyahoga River Upstream of Newburgh Southshore Railroad Bridge
August 19, 2010
River Mile: 5.90

*DELT anomalies were observed on 4.688 % of the fish collected.

Index of Biotic Integrity (IBI) = 20 (Poor)

Modified Index of Well-Being (MIwb) 5.7 (Poor)

Shannon Diversity Index, wt. 1.834

Shannon Diversity Index, no. 0.376

N 74

B 14.3

Cuyahoga River Upstream of Newburgh and South Shore Railroad Bridge

September 23, 2010

River Mile: 5.90

Collection Method: Boat Electroshocking

Drainage Area: 806 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	76	5.440	--	0	--
<i>Ictiobus cyprinellus</i> Bigmouth buffalo	1	3.420	--	0	--
<i>Catostomus commersonii</i> Common white sucker	1	0.450	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	24	127.470	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	1	0.580	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	1	0.010	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	54	0.092	--	0	--
<i>Pimephales notatus</i> Bluntnose minnow	4	0.050	Highly Tolerant	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	2.980	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	1	0.010	Highly Tolerant	0	--
<i>Labidesthes sicculus</i> Brook silverside	1	0.006	Moderately Intolerant	0	--
<i>Morone americana</i> White perch	1	0.002	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	2	0.260	--	0	--
<i>Micropterus salmoides</i> Largemouth bass	12	0.210	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	1	0.004	Moderately Tolerant	0	--

**Cuyahoga River Upstream of Newburgh and South Shore Railroad Bridge
September 23, 2010**

River Mile: 5.90

<i>Perca flavescens</i>	1	0.010	--	0	--
Yellow perch					

Totals	<u>183</u>	<u>140.994</u>		<u>0</u>	
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*DELT anomalies were observed on	0	% of the fish collected.
Index of Biotic Integrity (IBI) =	28	(Fair)
Modified Index of Well-Being (MIwb)	6.5	(Fair)
Shannon Diversity Index, no.	1.609	
Shannon Diversity Index, wt.	0.461	
N	300	
B	24.84	

Cuyahoga River at Scaravelli's Marina
July 21, 2010
River Mile: 2.75
Collection Method: Boat Electroshocking
Drainage Area: 806 miles²
Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	22	0.980	--	0	--
<i>Catostomus commersonii</i> Common white sucker	8	0.500	Highly Tolerant	0	--
<i>Minytrema melanops</i> Spotted Sucker	4	0.215	--	0	
<i>Cyprinus carpio</i> Common carp	11	22.822	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	3	1.550	Highly Tolerant	0	--
<i>Notemigonus crysoleucas</i> Golden shiner	25	0.670	Highly Tolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	1	0.010	Highly Tolerant	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	1.880	--	1	Deformed body
<i>Ictalurus natalis</i> Yellow bullhead	1	0.500	Highly Tolerant	0	--
<i>Ictalurus nebulosus</i> Brown bullhead	6	4.600	Highly Tolerant	5	roded barbels & lesior
<i>Morone chrysops</i> White bass	1	0.110	--	0	--
<i>Morone americana</i> White perch	7	0.140	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.160	--	0	--
<i>Micropterus salmoides</i> Largemouth bass	11	1.295	--	0	--

Cuyahoga River at Scaravelli's Marina

July 21, 2010

River Mile: 2.75

<i>Lepomis cyanellus</i> Green sunfish	2	0.050	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	12	0.815	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	32	1.200	Moderately Tolerant	0	--
<i>HYBRID</i> Bluegill X Pumpkinseed	4	0.105	--	0	
<i>Perca flavescens</i> Yellow perch	1	0.008	--	0	--
Totals	<u>154</u>	<u>37.610</u>		<u>6</u>	

*DELT anomalies were observed on 3.896 % of the fish collected.

Index of Biotic Integrity (IBI) = 22 (Poor)

Modified Index of Well-Being (MIwb) 7.9 (Fair)

Shannon Diversity Index, wt. 2.439

Shannon Diversity Index, no. 1.552

N 172

B 13.33

Cuyahoga River at Scaravelli's Marina
August 19, 2010
River Mile: 2.75
Collection Method: Boat Electroshocking
Drainage Area: 806 miles²
Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	58	2.290	--	2	Eroded mouths
<i>Esox lucius</i> Northern pike	1	0.084	--	0	--
<i>Catostomus commersonii</i> Common white sucker	2	0.200	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	10	25.190	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	1	0.630	Highly Tolerant	0	--
<i>Notemigonus crysoleucas</i> Golden shiner	13	0.406	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	4	0.024	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	1	1.350	--	0	--
<i>Morone chrysops</i> White bass	1	0.012	--	0	--
<i>Morone americana</i> White perch	49	1.124	--	0	--
<i>Micropterus salmoides</i> Largemouth bass	10	2.190	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	6	0.394	Moderately Tolerant	1	Deformed nose
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	15	0.490	Moderately Tolerant	0	--
Totals	<u>171</u>	<u>34.384</u>		<u>3</u>	

Cuyahoga River at Scaravelli's Marina
August 19, 2010
River Mile: 2.75

*DELT anomalies were observed on 1.754 % of the fish collected.

Index of Biotic Integrity (IBI) = 24 (Poor)

Modified Index of Well-Being (MIwb) 6.9 (Fair)

Shannon Diversity Index, wt. 1.844

Shannon Diversity Index, no. 1.113

N 192

B 13.67

Cuyahoga River at Scaravelli's Marina
September 23, 2010
River Mile: 2.75
Collection Method: Boat Electroshocking
Drainage Area: 787 miles²
Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	25	0.700	--	0	--
<i>Cyprinus carpio</i> Common carp	5	15.720	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	1	1.100	Highly Tolerant	0	--
<i>Notemigonus crysoleucas</i> Golden shiner	1	0.010	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	1	0.058	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	12	0.050	--	0	--
<i>Notropis cornutus</i> Common shiner	1	0.020	--	0	--
<i>Pimephales notatus</i> Bluntnose minnow	2	0.010	Highly Tolerant	0	--
<i>HYBRID</i> Common Carp x Goldfish	1	3.020	Highly Tolerant	0	
<i>Ictalurus punctatus</i> Channel catfish	8	0.174	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	2	0.900	Highly Tolerant	0	--
<i>Labidesthes sicculus</i> Brook silverside	8	0.022	Moderately Intolerant	0	--
<i>Morone americana</i> White perch	1	0.062	--	0	--
<i>Micropterus salmoides</i> Largemouth bass	18	2.312	--	0	--
<i>Lepomis cyanellus</i> Green sunfish	1	0.010	Highly Tolerant	0	--

Cuyahoga River at Scaravelli's Marina

September 23, 2010

River Mile: 2.75

<i>Lepomis macrochirus</i> Northern bluegill sunfish	1	0.004	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	1	0.126	Moderately Tolerant	0	--
Totals	<u>89</u>	<u>24.298</u>		<u>0</u>	

*DELT anomalies were observed on 0 % of the fish collected.
 Index of Biotic Integrity (IBI) = 28 (Fair)
 Modified Index of Well-Being (MIwb) 6.9 (Fair)
 Shannon Diversity Index, no. 2.169
 Shannon Diversity Index, wt. 1.257
 N 148
 B 6.816

Cuyahoga River Upstream of Confluence with Lake Erie

July 21, 2010

River Mile: 0.20

Collection Method: Boat Electroshocking

Drainage Area: 809 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	11	0.720	--	0	--
<i>Cyprinus carpio</i> Common carp	1	2.580	Highly Tolerant	1	Lesion
<i>Carassius auratus</i> Goldfish	1	0.300	Highly Tolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	13	3.130	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	5	0.370	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	5	0.412	Moderately Tolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	1.440	Moderately Tolerant	0	--
Totals	<u>37</u>	<u>8.952</u>		<u>1</u>	

*DELT anomalies were observed on 2.703 % of the fish collected.

Index of Biotic Integrity (IBI) = 28 (Fair)

Modified Index of Well-Being (MIwb) 6.5 (Fair)

Shannon Diversity Index, wt. 1.562

Shannon Diversity Index, no. 1.61

N 70

B 12.14

Cuyahoga River Upstream of Confluence with Lake Erie

August 19, 2010

River Mile: 0.20

Collection Method: Boat Electroshocking

Drainage Area: 809 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	43	2.280	--	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	3	0.012	--	0	--
<i>Morone chrysops</i> White bass	3	0.032	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.192	--	0	--
<i>Micropterus salmoides</i> Largemouth bass	16	2.372	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	3	0.214	Moderately Tolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	2.400	Moderately Tolerant	0	--
Totals	<u>70</u>	<u>7.502</u>		<u>0</u>	

*DELT anomalies were observed on	0	% of the fish collected.
Index of Biotic Integrity (IBI) =	26	(Fair)
Modified Index of Well-Being (MIwb)	6.3	(Poor)
Shannon Diversity Index, wt.	1.163	
Shannon Diversity Index, no.	1.319	
N	140	
B	15	

Cuyahoga River Upstream of Confluence with Lake Erie

September 23, 2010

River Mile: 0.20

Collection Method: Boat Electroshocking

Drainage Area: 809 miles²

Collection Distance: 0.5 km

<u>Species</u>	<u>Number</u>	<u>Weight (kg)</u>	<u>Pollution Tolerance</u>	<u>#</u>	<u>DELT Anomalies Description</u>
<i>Dorosoma cepedianum</i> Eastern gizzard shad	17	0.422	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	1	0.680	Moderately Intolerant	0	--
<i>Cyprinus carpio</i> Common carp	12	35.800	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	1	0.724	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	52	0.084	--	0	--
<i>Pimephales notatus</i> Bluntnose minnow	1	0.008	Highly Tolerant	0	--
<i>HYBRID</i> Common Carp x Goldfish	1	1.000	Highly Tolerant	0	
<i>Ictalurus natalis</i> Yellow bullhead	1	0.024	Highly Tolerant	0	--
<i>Morone americana</i> White perch	1	0.072	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	3	0.162	--	0	--
<i>Micropterus salmoides</i> Largemouth bass	11	1.484	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	3	0.064	Moderately Tolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	2	2.620	Moderately Tolerant	0	--
Totals	<u>106</u>	<u>43.144</u>		<u>0</u>	

*DELT anomalies were observed on 0 % of the fish collected.
Index of Biotic Integrity (IBI) = 26 (Fair)

Cuyahoga River Upstream of Confluence with Lake Erie
September 23, 2010

River Mile: 0.20

Modified Index of Well-Being (Mlwb)	6.2	(Poor)
Shannon Diversity Index, no.	1.665	
Shannon Diversity Index, wt.	0.767	
N	178	
B	11.03	