

**Cuyahoga River Downstream of Tinkers Creek**

**July 7, 2011**

**River Mile: 16.20**

**Collection Method: Boat Electroshocking**

**Drainage Area: 696 miles<sup>2</sup>**

**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	7	0.387	--	0	--
<i>Ictiobus cyprinellus</i> Bigmouth buffalo	1	1.000	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	33	10.110	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	3	1.730	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	48	5.107	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	5	0.664	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	13	23.500	Highly Tolerant	1	Lesions
<i>Notropis atherinoides</i> Common Emerald shiner	1	0.007	--	0	--
<i>Notropis cornutus</i> Common shiner	8	0.200	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	84	0.350	--	0	--
<i>Notropis stramineus</i> Sand shiner	9	0.026	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	7	0.023	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	5	0.094	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	3	5.892	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	1	0.364	Highly Tolerant	1	Lesions

**Cuyahoga River Downstream of Tinkers Creek**

**July 7, 2011**

**River Mile: 16.20**

<i>Noturus flavus</i> Stonecat Madtom	1	0.030	Intolerant	0	
<i>Morone americana</i> White perch	6	0.389	--	0	--
<i>Pomoxis annularis</i> White crappie	1	0.038	--	0	--
<i>Pomoxis nigromaculatus</i> Black crappie	2	0.188	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	4	0.527	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	20	3.870	Moderately Intolerant	2	Lesions
<i>Lepomis macrochirus</i> Northern bluegill sunfish	26	0.342	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	1	0.050	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	8	0.100	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	3	1.722	Moderately Tolerant	0	--
Totals	<u>300</u>	<u>56.710</u>		<u>4</u>	

\*DELT anomalies were observed on 1.333 % of the fish collected.

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

Modified Index of Well-Being (MIwb) 9.6 (Exceptional)

Shannon Diversity Index, no. 2.453

Shannon Diversity Index, wt. 1.933

N 536

B 63.54

**Cuyahoga River Downstream of Tinkers Creek**

**August 30, 2011**

**River Mile: 16.20**

**Collection Method: Boat Electroshocking**

**Drainage Area: 696 miles<sup>2</sup>**

**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	1.000	--	0	--
<i>Esox americanus</i> Redfin pickerel	1	0.020	Moderately Tolerant	0	--
<i>Esox lucius</i> Northern pike	1	0.220	--	0	--
<i>Ictiobus bubalus</i> Smallmouth buffalo	2	5.250	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	7	2.600	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	1	0.161	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	44	5.950	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	7	2.000	Highly Tolerant	0	--
<i>Minytrema melanops</i> Spotted Sucker	1	0.270	--	1	Lesion
<i>Cyprinus carpio</i> Common carp	5	6.000	Highly Tolerant	0	--
<i>Notropis cornutus</i> Common shiner	4	0.024	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	21	0.080	--	0	--
<i>Notropis stramineus</i> Sand shiner	12	0.042	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	2	0.020	Highly Tolerant	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	1.440	--	0	--

**Cuyahoga River Downstream of Tinkers Creek**

**August 30, 2011**

**River Mile: 16.20**

<i>Ictalurus natalis</i> Yellow bullhead	1	0.063	Highly Tolerant	0	--
<i>Pylodictis olivaris</i> Flathead Catfish	1	0.077	--	0	
<i>Morone americana</i> White perch	2	0.110	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.172	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	14	2.335	Moderately Intolerant	2	Erosion & lesion
<i>Micropterus salmoides</i> Largemouth bass	3	0.036	--	0	--
<i>Lepomis cyanellus</i> Green sunfish	6	0.054	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	12	0.122	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	1	0.020	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	4	0.053	Moderately Intolerant	0	--
<i>Etheostoma blenniodes</i> Greenside darter	1	0.018	Moderately Intolerant	0	--
<i>Etheostoma caeruleum</i> Rainbow darter	1	0.004	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	0.288	Moderately Tolerant	0	--
<b>Totals</b>	<u>163</u>	<u>28.429</u>		<u>3</u>	

\*DELT anomalies were observed on 1.84 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 48 (Exceptional)  
 Modified Index of Well-Being (MIwb) 9.5 (Very Good)  
 Shannon Diversity Index, no. 2.633  
 Shannon Diversity Index, wt. 2.196  
 N 280  
 B 40.36

**Cuyahoga River Upstream of Mill Creek**  
**July 7, 2011**  
**River Mile: 11.95**  
**Collection Method: Boat Electroshocking**  
**Drainage Area: 710 miles<sup>2</sup>**  
**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	0.350	--	0	--
<i>Moxostoma anisurum</i> Silver Redhorse	2	1.294	Moderately Intolerant	0	
<i>Moxostoma erythrurum</i> Golden redhorse	16	4.675	Moderately Intolerant	2	Eroded fin & lesions
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	1	0.580	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	12	1.250	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	12	1.597	Highly Tolerant	1	Lesions
<i>Minytrema melanops</i> Spotted Sucker	1	0.110	--	0	
<i>Cyprinus carpio</i> Common carp	14	24.804	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	1	0.180	Highly Tolerant	1	Lesions
<i>Notropis atherinoides</i> Common Emerald shiner	5	0.027	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	48	0.196	--	0	--
<i>Notropis stramineus</i> Sand shiner	1	0.010	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	6	0.025	Highly Tolerant	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	1.250	--	1	Multiple
<i>Ictalurus natalis</i> Yellow bullhead	1	0.120	Highly Tolerant	0	--

**Cuyahoga River Upstream of Mill Creek**

**July 7, 2011**

**River Mile: 11.95**

<i>Morone americana</i> White perch	5	0.456	--	0	--
<i>Pomoxis nigromaculatus</i> Black crappie	2	0.170	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.188	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	9	5.450	Moderately Intolerant	2	Lesions
<i>Micropterus salmoides</i> Largemouth bass	1	0.024	--	0	--
<i>Lepomis gulosus</i> Warmouth sunfish	1	0.010	--	0	--
<i>Lepomis cyanellus</i> Green sunfish	1	0.008	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	10	0.097	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	3	0.050	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	1	0.030	Moderately Intolerant	0	--
<i>Neogobius melanostomus</i> Round goby	2	0.028	--	0	--
 	<hr/>	<hr/>			
Totals	<u>164</u>	<u>42.979</u>		<u>7</u>	

\*DELT anomalies were observed on 4.268 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 40 (Good)  
 Modified Index of Well-Being (MIwb) 8.6 (Marginally Good)  
 Shannon Diversity Index, no. 2.563  
 Shannon Diversity Index, wt. 1.574  
 N 244  
 B 31.52

**Cuyahoga River Upstream of Mill Creek**  
**August 30, 2011**  
**River Mile: 11.95**  
**Collection Method: Boat Electroshocking**  
**Drainage Area: 710 miles<sup>2</sup>**  
**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	2	0.280	--	0	--
<i>Esox lucius</i> Northern pike	2	0.310	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	8	2.820	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	2	0.146	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	3	0.210	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	10	1.475	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	2	1.250	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	2	0.352	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	1	0.010	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	31	0.112	--	0	--
<i>Notropis stramineus</i> Sand shiner	18	0.072	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	3	0.019	Highly Tolerant	0	--
<i>Ictalurus punctatus</i> Channel catfish	1	1.620	--	0	--
<i>Pylodictis olivaris</i> Flathead Catfish	1	0.040	--	0	--
<i>Morone americana</i> White perch	3	0.192	--	0	--

**Cuyahoga River Upstream of Mill Creek**

**August 30, 2011**

**River Mile: 11.95**

<i>Pomoxis annularis</i> White crappie	1	0.082	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	5	0.953	Moderately Intolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	24	0.160	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	4	0.074	Moderately Tolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	1.250	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	1	0.019	--	0	--
 	<hr/>	<hr/>			
Totals	<u>125</u>	<u>11.446</u>		<u>0</u>	

*DELT anomalies were observed on	0	% 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.	2.39	
Shannon Diversity Index, wt.	2.322	
N	208	
B	16.28	

**Cuyahoga River Downstream of Mill Creek**

**July 7, 2011**

**River Mile: 11.30**

**Collection Method: Boat Electroshocking**

**Drainage Area: 730 miles<sup>2</sup>**

**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	3	0.160	--	0	--
<i>Esox lucius</i> Northern pike	1	0.047	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	4	1.450	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	1	0.800	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	24	3.525	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	20	0.770	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	5	11.200	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	1	0.009	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	61	0.289	--	0	--
<i>Notropis stramineus</i> Sand shiner	9	0.038	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	15	0.040	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	5	0.010	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	3	2.812	--	2	eroded barbel & multipl
<i>Ictalurus natalis</i> Yellow bullhead	1	0.278	Highly Tolerant	0	--
<i>Morone americana</i> White perch	1	0.012	--	0	--

**Cuyahoga River Downstream of Mill Creek  
July 7, 2011  
River Mile: 11.30**

<i>Ambloplites rupestris</i> Northern rockbass	1	0.120	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	11	4.100	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	1	0.008	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	7	0.044	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	1	0.007	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	2	0.018	Moderately Intolerant	0	--
<i>Etheostoma blenniodes</i> Greenside darter	1	0.010	Moderately Intolerant	0	--
<i>Neogobius melanostomus</i> Round goby	2	0.020	--	0	--
Totals	<u>180</u>	<u>25.767</u>		<u>2</u>	

\*DELT anomalies were observed on 1.111 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 34 (Fair)  
 Modified Index of Well-Being (MIwb) 8.5 (Marginally Good)  
 Shannon Diversity Index, no. 2.313  
 Shannon Diversity Index, wt. 1.769  
 N 272  
 B 26.89

**Cuyahoga River Downstream of Mill Creek**  
**August 30, 2011**  
**River Mile: 11.30**  
**Collection Method: Boat Electroshocking**  
**Drainage Area: 730 miles<sup>2</sup>**  
**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	2.540	--	3	Eroded mouths
<i>Moxostoma erythrurum</i> Golden redhorse	6	2.500	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	5	1.031	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	23	2.550	Moderately Intolerant	1	Erosion
<i>Catostomus commersonii</i> Common white sucker	3	0.570	Highly Tolerant	0	--
<i>Notemigonus crysoleucas</i> Golden shiner	1	0.003	Highly Tolerant	0	--
<i>Notropis cornutus</i> Common shiner	6	0.023	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	35	0.150	--	0	--
<i>Notropis stramineus</i> Sand shiner	55	0.138	Moderately Intolerant	0	--
<i>Ericymba buccata</i> Silverjaw minnow	1	0.004	--	0	--
<i>Pimephales promelas</i> Northern fathead minnow	1	0.002	Highly Tolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	24	0.030	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	3	0.010	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	0.700	--	0	--
<i>Pylodictis olivaris</i> Flathead Catfish	2	0.106	--	0	--

**Cuyahoga River Downstream of Mill Creek**  
**August 30, 2011**  
**River Mile: 11.30**

<i>Morone americana</i> White perch	4	0.333	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.165	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	9	2.561	Moderately Intolerant	0	--
<i>Lepomis cyanellus</i> Green sunfish	1	0.002	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	7	0.106	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	3	0.030	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	0.925	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	4	0.027	--	0	--
Totals	<u>210</u>	<u>14.506</u>		<u>4</u>	

\*DELT anomalies were observed on 1.905 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 36 (Marginally Good)  
 Modified Index of Well-Being (MIwb) 9.2 (Very Good)  
 Shannon Diversity Index, no. 2.427  
 Shannon Diversity Index, wt. 2.217  
 N 344  
 B 27.08

**Cuyahoga River Upstream of Southerly WWTC**

**July 15, 2011**

**River Mile: 10.75**

**Collection Method: Boat Electroshocking**

**Drainage Area: 743 miles<sup>2</sup>**

**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	0.062	--	0	--
<i>Esox lucius</i> Northern pike	2	0.630	--	0	--
<i>Ictiobus cyprinellus</i> Bigmouth buffalo	1	4.000	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	7	2.640	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	4	1.500	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	64	5.700	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	8	0.750	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	12	30.500	Highly Tolerant	1	Deformity
<i>Carassius auratus</i> Goldfish	2	0.398	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	5	0.040	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	79	0.462	--	0	--
<i>Notropis stramineus</i> Sand shiner	5	0.020	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	2	0.008	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	4	0.090	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	19	19.500	--	3	Eroded barbel & lesion

**Cuyahoga River Upstream of Southerly WWTC  
July 15, 2011  
River Mile: 10.75**

<i>Ictalurus natalis</i> Yellow bullhead	4	0.520	Highly Tolerant	1	Eroded barbel
<i>Morone americana</i> White perch	8	0.600	--	0	--
<i>Pomoxis nigromaculatus</i> Black crappie	2	0.150	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.120	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	20	3.525	Moderately Intolerant	3	Lesions
<i>Micropterus salmoides</i> Largemouth bass	1	0.254	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	12	0.100	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	1	0.010	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	23	0.240	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	0.240	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	2	0.030	--	0	--
Totals	<u>290</u>	<u>72.089</u>		<u>8</u>	

\*DELT anomalies were observed on 2.759 % of the fish collected.

Index of Biotic Integrity (IBI) =	46	(Very Good)
Modified Index of Well-Being (MIwb)	9.5	(Very Good)
Shannon Diversity Index, no.	2.409	
Shannon Diversity Index, wt.	1.77	
N	504	
B	78.57	

**Cuyahoga River Upstream of Southerly WWTC**  
**August 29, 2011**  
**River Mile: 10.75**  
**Collection Method: Boat Electroshocking**  
**Drainage Area: 743 miles<sup>2</sup>**  
**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	0.690	--	0	--
<i>Ictiobus cyprinellus</i> Bigmouth buffalo	1	5.000	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	4	1.350	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	1	0.190	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	31	3.550	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	7	1.950	Highly Tolerant	1	Eroded fin
<i>Semotilus atromaculatus</i> Creek chub	1	0.006	Highly Tolerant	0	--
<i>Notropis cornutus</i> Common shiner	7	0.058	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	17	0.084	--	0	--
<i>Notropis stramineus</i> Sand shiner	29	0.058	Moderately Intolerant	0	--
<i>Notropis volucellus</i> Mimic Shiner	1	0.004	Common Intolerant	0	--
<i>Ericymba buccata</i> Silverjaw minnow	2	0.006	--	0	--
<i>Pimephales notatus</i> Bluntnose minnow	9	0.020	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	12	0.020	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	8	12.000	--	3	Eroded barbels

**Cuyahoga River Upstream of Southerly WWTC**  
**August 29, 2011**  
**River Mile: 10.75**

<i>Pylodictis olivaris</i> Flathead Catfish	2	6.135	--	0	
<i>Labidesthes sicculus</i> Brook silverside	1	0.002	Moderately Intolerant	0	--
<i>Morone americana</i> White perch	6	0.450	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	9	1.244	Moderately Intolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	4	0.044	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	1	0.010	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	2	0.020	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	3	1.430	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	3	0.012	--	0	--
Totals	<u>166</u>	<u>34.333</u>		<u>4</u>	

\*DELT anomalies were observed on 2.41 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 42 (Good)  
 Modified Index of Well-Being (MIwb) 9.5 (Very Good)  
 Shannon Diversity Index, no. 2.665  
 Shannon Diversity Index, wt. 1.965  
 N 280  
 B 63.79

**Cuyahoga River Downstream of Southerly WWTC**

**July 15, 2011**

**River Mile: 10.10**

**Collection Method: Boat Electroshocking**

**Drainage Area: 744 miles<sup>2</sup>**

**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	0.350	--	0	--
<i>Moxostoma anisurum</i> Silver Redhorse	1	0.510	Moderately Intolerant	0	
<i>Moxostoma erythrurum</i> Golden redhorse	8	3.200	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	6	1.890	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	38	4.500	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	12	2.100	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	10	28.250	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	1	0.006	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	3	0.010	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	3	0.008	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	16	0.078	--	0	--
<i>Notropis stramineus</i> Sand shiner	13	0.042	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	24	0.064	Highly Tolerant	0	--
<i>Ictalurus punctatus</i> Channel catfish	4	2.600	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	2	0.330	Highly Tolerant	1	Eroded barbel

**Cuyahoga River Downstream of Southerly WWTC**

**July 15, 2011**

**River Mile: 10.10**

<i>Morone americana</i> White perch	8	0.424	--	0	--
<i>Pomoxis annularis</i> White crappie	2	0.225	--	0	--
<i>Pomoxis nigromaculatus</i> Black crappie	1	0.100	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	2	0.330	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	23	4.810	Moderately Intolerant	3	Lesions
<i>Lepomis cyanellus</i> Green sunfish	2	0.016	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	15	0.148	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	2	0.050	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	15	0.130	Moderately Intolerant	0	--
<i>Neogobius melanostomus</i> Round goby	6	0.048	--	0	--
 Totals	<hr/> <u>221</u>	<hr/> <u>50.219</u>		<u>4</u>	

\*DELT anomalies were observed on 1.81 % of the fish collected.  
 Index of Biotic Integrity (IBI) = 42 (Good)  
 Modified Index of Well-Being (MIwb) 9.1 (Very Good)  
 Shannon Diversity Index, no. 2.784  
 Shannon Diversity Index, wt. 1.651  
 N 306  
 B 37.94

**Cuyahoga River Downstream of Southerly WWTC**

**August 29, 2011**

**River Mile: 10.10**

**Collection Method: Boat Electroshocking**

**Drainage Area: 744 miles<sup>2</sup>**

**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	2	0.340	--	0	--
<i>Ictiobus cyprinellus</i> Bigmouth buffalo	1	5.000	--	0	--
<i>Moxostoma anisurum</i> Silver Redhorse	1	0.455	Moderately Intolerant	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	1	0.545	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	2	0.306	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	18	1.500	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	9	3.366	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	5	13.250	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	1	0.200	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	6	0.029	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	1	0.003	--	0	--
<i>Notropis cornutus</i> Common shiner	1	0.004	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	9	0.036	--	0	--
<i>Notropis stramineus</i> Sand shiner	21	0.052	Moderately Intolerant	0	--
<i>Ericymba buccata</i> Silverjaw minnow	1	0.004	--	0	--

**Cuyahoga River Downstream of Southerly WWTC**

**August 29, 2011**

**River Mile: 10.10**

<i>Pimephales promelas</i> Northern fathead minnow	1	0.002	Highly Tolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	16	0.041	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	7	0.021	--	0	--
<i>Ctenopharyngodon idella</i> Grass carp	1	9.000	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	3.500	--	1	Eroded barbel
<i>Labidesthes sicculus</i> Brook silverside	2	0.008	Moderately Intolerant	0	--
<i>Morone americana</i> White perch	5	0.492	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	6	1.820	Moderately Intolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	5	0.135	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	1	0.020	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	3	0.325	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	2	0.022	--	0	--
Totals	<u>130</u>	<u>40.476</u>		<u>1</u>	

\*DELT anomalies were observed on 0.769 % of the fish collected.

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

Modified Index of Well-Being (MIwb) 9.0 (Good)

Shannon Diversity Index, no. 2.795

Shannon Diversity Index, wt. 2.005

N 168

B 28.15

**Cuyahoga River Upstream of Big Creek**  
**July 15, 2011**  
**River Mile: 8.60**  
**Collection Method: Boat Electroshocking**  
**Drainage Area: 745 miles<sup>2</sup>**  
**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	0.500	--	0	--
<i>Moxostoma anisurum</i> Silver Redhorse	1	1.100	Moderately Intolerant	0	
<i>Moxostoma erythrurum</i> Golden redhorse	2	0.640	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	5	1.200	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	87	7.292	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	8	2.916	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	4	5.500	Highly Tolerant	0	--
<i>Semotilus atromaculatus</i> Creek chub	2	0.014	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	4	0.012	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	24	0.080	--	0	--
<i>Notropis stramineus</i> Sand shiner	33	0.090	Moderately Intolerant	1	Deformity
<i>Pimephales notatus</i> Bluntnose minnow	13	0.038	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	7	0.022	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	2	1.500	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	1	0.072	Highly Tolerant	0	--

**Cuyahoga River Upstream of Big Creek**

**July 15, 2011**

**River Mile: 8.60**

<i>Morone americana</i> White perch	2	0.220	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.150	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	4	0.460	Moderately Intolerant	1	Lesions
<i>Lepomis cyanellus</i> Green sunfish	1	0.016	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	3	0.064	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	11	0.100	Moderately Intolerant	0	--
<hr/>					
Totals	<u>220</u>	<u>21.986</u>		<u>2</u>	

\*DELT anomalies were observed on 0.909 % of the fish collected.

Index of Biotic Integrity (IBI) = 42 (Good)

Modified Index of Well-Being (MIwb) 8.7 (Good)

Shannon Diversity Index, no. 2.158

Shannon Diversity Index, wt. 1.958

N 378

B 26.42

**Cuyahoga River Upstream of Big Creek**  
**August 29, 2011**  
**River Mile: 8.60**  
**Collection Method: Boat Electroshocking**  
**Drainage Area: 745 miles<sup>2</sup>**  
**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	3	0.482	--	3	Eroded mouths
<i>Carpiodes cyprinus</i> Central quillback carpsucker	1	1.650	--	0	--
<i>Moxostoma anisurum</i> Silver Redhorse	1	2.000	Moderately Intolerant	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	2	0.790	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	6	1.950	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	55	3.474	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	1	0.524	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	4	14.000	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	5	0.026	--	0	--
<i>Notropis cornutus</i> Common shiner	2	0.006	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	16	0.074	--	0	--
<i>Notropis stramineus</i> Sand shiner	18	0.063	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	7	0.042	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	25	0.052	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	3	5.000	--	1	Eroded barbel

**Cuyahoga River Upstream of Big Creek**

**August 29, 2011**

**River Mile: 8.60**

<i>Morone americana</i> White perch	9	0.968	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	4	0.095	Moderately Intolerant	1	Lesion
<i>Lepomis macrochirus</i> Northern bluegill sunfish	1	0.010	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	3	0.068	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	0.312	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	3	0.014	--	0	--
 	<hr/>	<hr/>			
Totals	<u>170</u>	<u>31.600</u>		<u>5</u>	

\*DELT anomalies were observed on 2.941 % 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. 2.333  
 Shannon Diversity Index, wt. 1.862  
 N 292  
 B 32.1

**Cuyahoga River Downstream of Big Creek**

**July 15, 2011**

**River Mile: 7.00**

**Collection Method: Boat Electroshocking**

**Drainage Area: 786 miles<sup>2</sup>**

**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	15	2.200	--	0	--
<i>Esox lucius</i> Northern pike	1	0.100	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	5	1.600	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	4	0.660	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	19	2.100	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	6	2.350	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	2	4.000	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	7	0.062	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	6	0.050	--	0	--
<i>Notropis stramineus</i> Sand shiner	4	0.020	Moderately Intolerant	0	--
<i>Pimephales notatus</i> Bluntnose minnow	4	0.040	Highly Tolerant	0	--
<i>Campostoma anomalum</i> Central stoneroller minnow	2	0.010	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	3	3.850	--	1	Eroded barbel
<i>Ictalurus natalis</i> Yellow bullhead	1	0.150	Highly Tolerant	0	--
<i>Morone americana</i> White perch	4	0.240	--	0	--

**Cuyahoga River Downstream of Big Creek**

**July 15, 2011**

**River Mile: 7.00**

<i>Ambloplites rupestris</i> Northern rockbass	2	0.382	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	11	5.800	Moderately Intolerant	3	Lesions
<i>Micropterus salmoides</i> Largemouth bass	3	0.550	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	5	0.090	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	5	0.060	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	0.550	Moderately Tolerant	1	Eroded tail
 Totals	<hr/> <u>110</u>	<hr/> <u>24.864</u>		<hr/> <u>5</u>	

\*DELT anomalies were observed on 4.545 % of the fish collected.

Index of Biotic Integrity (IBI) = 34 (Fair)

Modified Index of Well-Being (MIwb) 9.4 (Very Good)

Shannon Diversity Index, no. 2.745

Shannon Diversity Index, wt. 2.254

N 186

B 36.17

**Cuyahoga River Downstream of Big Creek**  
**August 29, 2011**  
**River Mile: 7.00**  
**Collection Method: Boat Electroshocking**  
**Drainage Area: 786 miles<sup>2</sup>**  
**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	15	1.562	--	1	Eroded mouth
<i>Moxostoma erythrurum</i> Golden redhorse	1	0.390	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	5	0.557	Moderately Intolerant	0	--
<i>Hypentelium nigricans</i> Northern hog sucker	8	1.100	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	7	3.040	Highly Tolerant	0	--
<i>Notemigonus crysoleucas</i> Golden shiner	1	0.004	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	2	0.010	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	1	0.050	Highly Tolerant	1	Lesion
<i>Labidesthes sicculus</i> Brook silverside	1	0.003	Moderately Intolerant	0	--
<i>Morone americana</i> White perch	2	0.150	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	3	2.500	Moderately Intolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	8	0.120	Moderately Intolerant	0	--
<i>Neogobius melanostomus</i> Round goby	2	0.024	--	0	--
Totals	<u>56</u>	<u>9.510</u>		<u>2</u>	

\*DELT anomalies were observed on 3.571 % of the fish collected.  
Index of Biotic Integrity (IBI) = 30 (Fair)

**Cuyahoga River Downstream of Big Creek**

**August 29, 2011**

**River Mile: 7.00**

Modified Index of Well-Being (Mlwb)	7.4	(Fair)
Shannon Diversity Index, no.	2.186	
Shannon Diversity Index, wt.	1.736	
N	86	
B	12.48	

**Cuyahoga River Upstream of Newburgh Southshore Railroad Bridge**

**July 6, 2011**

**River Mile: 5.90**

**Collection Method: Boat Electroshocking**

**Drainage Area: 787 miles<sup>2</sup>**

**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	3.798	--	0	--
<i>Esox lucius</i> Northern pike	1	0.090	--	0	--
<i>Ictiobus cyprinellus</i> Bigmouth buffalo	1	4.250	--	0	--
<i>Ictiobus bubalus</i> Smallmouth buffalo	1	5.000	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	2	0.730	Moderately Intolerant	0	--
<i>Moxostoma macrolepidotum</i> Shorthead redhorse	1	0.140	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	1	0.002	Highly Tolerant	0	--
<i>Minytrema melanops</i> Spotted Sucker	1	1.100	--	0	--
<i>Cyprinus carpio</i> Common carp	8	22.650	Highly Tolerant	0	--
<i>Notemigonus crysoleucas</i> Golden shiner	3	0.109	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	4	0.042	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	1	0.012	--	0	--
<i>Ctenopharyngodon idella</i> Grass carp	1	14.500	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	1	0.260	Highly Tolerant	0	--
<i>Ictalurus nebulosus</i> Brown bullhead	1	1.100	Highly Tolerant	0	--

**Cuyahoga River Upstream of Newburgh Southshore Railroad Bridge**

**July 6, 2011**

**River Mile: 5.90**

<i>Morone chrysops</i> White bass	7	0.230	--	0	--
<i>Morone americana</i> White perch	2	0.150	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	2	0.070	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	5	0.212	--	0	--
<i>Lepomis cyanellus</i> Green sunfish	2	0.050	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	20	0.244	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	5	0.150	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	1	0.001	--	0	--
Totals	<u>131</u>	<u>54.890</u>		<u>0</u>	

*DELT anomalies were observed on	0	% of the fish collected.
Index of Biotic Integrity (IBI) =	36	(Marginally Good)
Modified Index of Well-Being (MIwb)	8.2	(Marginally Good)
Shannon Diversity Index, no.	2.079	
Shannon Diversity Index, wt.	1.719	
N	222	
B	32.14	

**Cuyahoga River Upstream of Newburgh Southshore Railroad Bridge**

**August 22, 2011**

**River Mile: 5.90**

**Collection Method: Boat Electroshocking**

**Drainage Area: 787 miles<sup>2</sup>**

**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	86	7.630	--	0	--
<i>Carpiodes cyprinus</i> Central quillback carpsucker	1	0.010	--	0	--
<i>Moxostoma erythrurum</i> Golden redhorse	3	1.139	Moderately Intolerant	0	--
<i>Catostomus commersonii</i> Common white sucker	1	0.010	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	3	10.250	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	3	0.010	--	0	--
<i>Cyprinella spiloptera</i> Spotfin shiner	2	0.004	--	0	--
<i>Morone americana</i> White perch	1	0.088	--	0	--
<i>Micropterus dolomieu</i> Smallmouth bass	4	2.646	Moderately Intolerant	0	--
<i>Micropterus salmoides</i> Largemouth bass	2	0.045	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	1	0.002	Moderately Tolerant	0	--
<b>Totals</b>	<u>107</u>	<u>21.834</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, no. 0.923  
 Shannon Diversity Index, wt. 1.18  
 N 204  
 B 22.97

**Cuyahoga River at Scaravelli's Marina**  
**July 6, 2011**  
**River Mile: 2.75**  
**Collection Method: Boat Electroshocking**  
**Drainage Area: 806 miles<sup>2</sup>**  
**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	32	2.138	--	0	--
<i>Cyprinus carpio</i> Common carp	16	35.070	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	2	1.177	Highly Tolerant	0	--
<i>Notemigonus crysoleucas</i> Golden shiner	6	0.208	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	19	0.046	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	3	6.464	--	1	Eroded barbel
<i>Ictalurus nebulosus</i> Brown bullhead	3	1.270	Highly Tolerant	2	Lesions
<i>Labidesthes sicculus</i> Brook silverside	1	0.005	Moderately Intolerant	0	--
<i>Morone chrysops</i> White bass	5	0.166	--	0	--
<i>Morone americana</i> White perch	18	0.485	--	0	--
<i>Micropterus salmoides</i> Largemouth bass	13	1.675	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	31	1.314	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	11	0.675	Moderately Tolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	1.050	Moderately Tolerant	0	--
<i>Neogobius melanostomus</i> Round goby	1	0.023	--	0	--

**Cuyahoga River at Scaravelli's Marina**

**July 6, 2011**

**River Mile: 2.75**

Totals	<u>162</u>	<u>51.766</u>	<u>3</u>
--------	------------	---------------	----------

\*DELT anomalies were observed on 1.852 % of the fish collected.

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

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

Shannon Diversity Index, no. 2.272

Shannon Diversity Index, wt. 1.267

N 232

B 27.07

**Cuyahoga River at Scaravelli's Marina**  
**August 22, 2011**  
**River Mile: 2.75**  
**Collection Method: Boat Electroshocking**  
**Drainage Area: 806 miles<sup>2</sup>**  
**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	0.560	--	0	--
<i>Catostomus commersonii</i> Common white sucker	1	0.090	Highly Tolerant	0	--
<i>Cyprinus carpio</i> Common carp	6	6.190	Highly Tolerant	0	--
<i>Carassius auratus</i> Goldfish	1	0.150	Highly Tolerant	0	--
<i>Notemigonus crysoleucas</i> Golden shiner	11	0.400	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	13	0.055	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	12	10.750	--	2	Eroded barbels
<i>Labidesthes sicculus</i> Brook silverside	1	0.006	Moderately Intolerant	0	--
<i>Morone americana</i> White perch	14	0.490	--	0	--
<i>Pomoxis nigromaculatus</i> Black crappie	1	0.105	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.140	--	0	--
<i>Micropterus salmoides</i> Largemouth bass	8	1.600	--	1	Lesions
<i>Lepomis gulosus</i> Warmouth sunfish	1	0.090	--	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	9	0.352	Moderately Tolerant	0	--
<i>Lepomis gibbosus</i> Pumpkinseed sunfish	27	1.600	Moderately Tolerant	0	--

**Cuyahoga River at Scaravelli's Marina**

**August 22, 2011**

**River Mile: 2.75**

<i>HYBRID</i> Green SF X Pumpkinseed	2	0.150	--	0	
<i>Aplodinotus grunniens</i> Freshwater drum	1	0.045	Moderately Tolerant	0	--
	<hr/>	<hr/>			
Totals	<u>126</u>	<u>22.773</u>		<u>3</u>	

\*DELT anomalies were observed on 2.381 % of the fish collected.

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

Modified Index of Well-Being (MIwb) 8.3 (Marginally Good)

Shannon Diversity Index, no. 2.359

Shannon Diversity Index, wt. 1.586

N 182

B 30.61

**Cuyahoga River Upstream of Confluence with Lake Erie**

**July 8, 2011**

**River Mile: 0.20**

**Collection Method: Boat Electroshocking**

**Drainage Area: 809 miles<sup>2</sup>**

**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	61	4.751	--	0	--
<i>Cyprinus carpio</i> Common carp	5	19.300	Highly Tolerant	1	Eroded barbel
<i>Notropis atherinoides</i> Common Emerald shiner	242	0.430	--	0	--
<i>Labidesthes sicculus</i> Brook silverside	3	0.012	Moderately Intolerant	0	--
<i>Morone chrysops</i> White bass	2	0.074	--	0	--
<i>Pomoxis nigromaculatus</i> Black crappie	1	0.114	--	0	--
<i>Micropterus salmoides</i> Largemouth bass	10	1.195	--	0	--
<i>Lepomis cyanellus</i> Green sunfish	1	0.009	Highly Tolerant	0	--
<i>Lepomis macrochirus</i> Northern bluegill sunfish	12	0.575	Moderately Tolerant	0	--
<i>HYBRID</i> Green SF X Pumpkinseed	1	0.016	--	0	--
<i>Percina caprodes</i> Northern logperch darter	5	0.040	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	3	0.313	Moderately Tolerant	0	--
Totals	<u>346</u>	<u>26.829</u>		<u>1</u>	

\*DELT anomalies were observed on 0.289 % of the fish collected.

Index of Biotic Integrity (IBI) = 34 (Fair)

Modified Index of Well-Being (MIwb) 6.6 (Fair)

Shannon Diversity Index, no. 1.06

Shannon Diversity Index, wt. 0.942

**Cuyahoga River Upstream of Confluence with Lake Erie**  
**July 8, 2011**  
**River Mile: 0.20**

N  
B

678  
15.01

**Cuyahoga River Upstream of Confluence with Lake Erie**

**August 24, 2011**

**River Mile: 0.20**

**Collection Method: Boat Electroshocking**

**Drainage Area: 809 miles<sup>2</sup>**

**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	87	0.753	--	0	--
<i>Cyprinus carpio</i> Common carp	1	2.500	Highly Tolerant	0	--
<i>Notemigonus crysoleucas</i> Golden shiner	1	0.007	Highly Tolerant	0	--
<i>Notropis atherinoides</i> Common Emerald shiner	85	0.104	--	0	--
<i>Ictalurus punctatus</i> Channel catfish	1	0.092	--	0	--
<i>Ictalurus natalis</i> Yellow bullhead	1	0.274	Highly Tolerant	1	Eroded barbels
<i>Labidesthes sicculus</i> Brook silverside	4	0.014	Moderately Intolerant	0	--
<i>Morone americana</i> White perch	1	0.022	--	0	--
<i>Pomoxis nigromaculatus</i> Black crappie	1	0.110	--	0	--
<i>Ambloplites rupestris</i> Northern rockbass	1	0.063	--	0	--
<i>Micropterus salmoides</i> Largemouth bass	6	1.240	--	1	Tumors
<i>Lepomis macrochirus</i> Northern bluegill sunfish	3	0.053	Moderately Tolerant	0	--
<i>Percina caprodes</i> Northern logperch darter	1	0.006	Moderately Intolerant	0	--
<i>Aplodinotus grunniens</i> Freshwater drum	1	2.100	Moderately Tolerant	0	--
Totals	<u>194</u>	<u>7.338</u>		<u>2</u>	

**Cuyahoga River Upstream of Confluence with Lake Erie**  
**August 24, 2011**  
**River Mile: 0.20**

\*DELT anomalies were observed on 1.031 % of the fish collected.

Index of Biotic Integrity (IBI) = 26 (Fair)

Modified Index of Well-Being (MIwb) 7.0 (Fair)

Shannon Diversity Index, no. 1.218

Shannon Diversity Index, wt. 1.678

N 380

B 9.07