

Cuyahoga River Upstream of Mill Creek

August 1, 2013

River Mile: 11.95

Collection Method: Boat Electroshocking

Drainage Area: 710 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	#	DELT Anomalies Description
Dorosoma cepedianum Eastern gizzard shad	14	0.550	--	0	---
Esox lucius Northern pike	1	2.100	--	0	---
Moxostoma anisurum Silver Redhorse	1	1.200	Moderately Intolerant	0	---
Moxostoma erythrurum Golden redhorse	5	3.200	Moderately Intolerant	0	---
Moxostoma macrolepidotum Shorthead redhorse	3	0.250	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	7	1.450	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	1	0.400	Highly Tolerant	0	---
Cyprinus carpio Common carp	5	11.375	Highly Tolerant	0	---
Carassius auratus Goldfish	1	0.388	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	2	0.006	--	0	---
Notropis cornutus Common shiner	1	0.002	--	0	---
Cyprinella spiloptera Spotfin shiner	86	0.296	--	0	---
Notropis stramineus Sand shiner	2	0.006	Moderately Intolerant	0	---
Ictalurus punctatus Channel catfish	6	3.675	--	0	---
Pylodictis olivaris Flathead Catfish	4	3.100	--	0	---

**Cuyahoga River Upstream of Mill Creek
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Morone americana White perch	2	0.062	--	0	---
Pomoxis annularis White crappie	1	0.110	--	0	---
Pomoxis nigromaculatus Black crappie	3	0.750	--	0	---
Ambloplites rupestris Northern rockbass	1	0.150	--	0	---
Micropterus dolomieu Smallmouth bass	5	0.670	Moderately Intolerant	0	---
Lepomis macrochirus Northern bluegill sunfish	5	0.178	Moderately Tolerant	0	---
Totals	<u>156</u>	<u>29.918</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) =	8.6	(Marginally Good)
Shannon Diversity Index, no.	1.89	
Shannon Diversity Index, wt.	2.107	
N	294	
B	35.39	

Cuyahoga River Upstream of Mill Creek
September 10, 2013
River Mile: 11.95
Collection Method: Boat Electroshocking
Drainage Area: 710 miles²
Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	#	DELT Anomalies Description
Dorosoma cepedianum Eastern gizzard shad	3	0.415	--	0	---
Carpoides cyprinus Central quillback carpsucker	1	0.480	--	0	---
Moxostoma erythrurum Golden redhorse	7	4.060	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	4	0.760	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	8	1.800	Highly Tolerant	1	Lesion
Cyprinus carpio Common carp	8	18.760	Highly Tolerant	0	---
Carassius auratus Goldfish	3	1.230	Highly Tolerant	0	---
Notropis cornutus Common shiner	1	0.010	--	0	---
Cyprinella spiloptera Spotfin shiner	161	0.608	--	0	---
Notropis stramineus Sand shiner	5	0.046	Moderately Intolerant	0	---
Pimephales notatus Bluntnose minnow	3	0.042	Highly Tolerant	0	---
Ictalurus punctatus Channel catfish	2	1.340	--	0	---
Ictalurus natalis Yellow bullhead	1	0.140	Highly Tolerant	0	---
Morone americana White perch	1	0.130	--	0	---
Ambloplites rupestris Northern rockbass	4	0.435	--	0	---

**Cuyahoga River Upstream of Mill Creek
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Micropterus dolomieu Smallmouth bass	20	2.680	Moderately Intolerant	0	---
Micropterus salmoides Largemouth bass	4	0.659	--	0	---
Lepomis cyanellus Green sunfish	2	0.052	Highly Tolerant	0	---
Lepomis macrochirus Northern bluegill sunfish	7	0.550	Moderately Tolerant	0	---
Lepomis gibbosus Pumpkinseed sunfish	2	0.290	Moderately Tolerant	0	---
Etheostoma blenniodes Greenside darter	2	0.009	Moderately Intolerant	0	---
 Totals	 <u>249</u>	 <u>34.496</u>		 <u>1</u>	

*DELT anomalies were observed on	0.402	% of the fish collected.
Index of Biotic Integrity (IBI) =	42	(Good)
Modified Index of Well-Being (MIwb) =	8.0	(Fair)
Shannon Diversity Index, no.	1.587	
Shannon Diversity Index, wt.	1.76	
N	446	
B	24.68	

Cuyahoga River Downstream of Mill Creek

August 1, 2013

River Mile: 11.30

Collection Method: Boat Electroshocking

Drainage Area: 730 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	DELT # Anomalies	Description
Dorosoma cepedianum Eastern gizzard shad	10	0.950	--	0	---
Esox lucius Northern pike	1	2.200	--	0	---
Carpionodes cyprinus Central quillback carpsucker	1	0.034	--	0	---
Moxostoma erythrurum Golden redhorse	2	1.050	Moderately Intolerant	0	---
Moxostoma macrolepidotum Shorthead redhorse	6	1.150	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	22	3.300	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	7	1.054	Highly Tolerant	0	---
Cyprinus carpio Common carp	2	7.200	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	1	0.008	--	0	---
Cyprinella spiloptera Spotfin shiner	43	0.180	--	0	---
Notropis stramineus Sand shiner	8	0.016	Moderately Intolerant	0	---
Pimephales notatus Bluntnose minnow	4	0.020	Highly Tolerant	0	---
Ictalurus punctatus Channel catfish	3	4.025	--	2	Erosion
Pylodictis olivaris Flathead Catfish	2	1.150	--	0	---
Morone americana White perch	9	0.382	--	0	---

Cuyahoga River Downstream of Mill Creek

August 1, 2013

River Mile: 11.30

Pomoxis annularis White crappie	1	0.020	--	0	---
Ambloplites rupestris Northern rockbass	1	0.164	--	0	---
Micropterus dolomieu Smallmouth bass	12	3.510	Moderately Intolerant	0	---
Micropterus salmoides Largemouth bass	1	0.008	--	0	---
Lepomis macrochirus Northern bluegill sunfish	4	0.072	Moderately Tolerant	1	Lesion
Lepomis humilis Orangespotted Sunfish	1	0.012	--	0	---
Percina caprodes Northern logperch darter	1	0.010	Moderately Intolerant	0	---
Etheostoma blenniodes Greenside darter	1	0.008	Moderately Intolerant	0	---
Aplodinotus grunniens Freshwater drum	1	0.950	Moderately Tolerant	0	---
Neogobius melanostomus Round goby	1	0.004	--	0	---
Totals	<u>145</u>	<u>27.477</u>		<u>3</u>	

*DELT anomalies were observed on	2.069	% of the fish collected.
Index of Biotic Integrity (IBI) =	44	(Very Good)
Modified Index of Well-Being (MIwb) =	9.3	(Very Good)
Shannon Diversity Index, no.	2.481	
Shannon Diversity Index, wt.	2.276	
N	244	
B	37.63	

Cuyahoga River Downstream of Mill Creek

September 10, 2013

River Mile: 11.30

Collection Method: Boat Electroshocking

Drainage Area: 730 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	#	DELT Anomalies Description
Dorosoma cepedianum Eastern gizzard shad	13	1.435	--	0	---
Carpoides cyprinus Central quillback carpsucker	2	0.170	--	0	---
Moxostoma macrolepidotum Shorthead redhorse	3	0.400	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	19	2.572	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	21	1.148	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	1	0.004	--	0	---
Notropis cornutus Common shiner	5	0.145	--	0	---
Cyprinella spiloptera Spotfin shiner	80	0.330	--	0	---
Notropis stramineus Sand shiner	19	0.075	Moderately Intolerant	0	---
Pimephales notatus Bluntnose minnow	2	0.020	Highly Tolerant	0	---
Ictalurus punctatus Channel catfish	5	2.995	--	1	Deformity
Labidesthes sicculus Brook silverside	1	0.002	Moderately Intolerant	0	---
Morone americana White perch	1	0.040	--	0	---
Ambloplites rupestris Northern rockbass	1	0.195	--	0	---
Micropterus dolomieu Smallmouth bass	28	4.690	Moderately Intolerant	0	---

**Cuyahoga River Downstream of Mill Creek
September 10, 2013**

River Mile: 11.30

Micropterus salmoides Largemouth bass	1	0.010	--	0	---
Lepomis macrochirus Northern bluegill sunfish	6	0.237	Moderately Tolerant	0	---
Percina caprodes Northern logperch darter	3	0.050	Moderately Intolerant	0	---
Etheostoma blenniodes Greenside darter	3	0.005	Moderately Intolerant	0	---
Aplodinotus grunniens Freshwater drum	3	2.585	Moderately Tolerant	0	---
Neogobius melanostomus Round goby	1	0.010	--	0	---
Totals	<u><u>218</u></u>	<u><u>17.118</u></u>		<u><u>1</u></u>	

*DELT anomalies were observed on	0.459	% of the fish collected.
Index of Biotic Integrity (IBI) =	40	(Good)
Modified Index of Well-Being (MIwb) =	9.0	(Good)
Shannon Diversity Index, no.	2.193	
Shannon Diversity Index, wt.	2.056	
N	386	
B	31.8	

Cuyahoga River Upstream of Southerly WWTC

August 2, 2013

River Mile: 10.75

Collection Method: Boat Electroshocking

Drainage Area: 743 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	DELTA # Anomalies	Description
Dorosoma cepedianum Eastern gizzard shad	3	0.600	--	0	---
Carpoides cyprinus Central quillback carpsucker	1	0.038	--	0	---
Moxostoma erythrurum Golden redhorse	3	1.575	Moderately Intolerant	0	---
Moxostoma macrolepidotum Shorthead redhorse	6	0.386	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	31	6.555	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	35	2.406	Highly Tolerant	0	---
Cyprinus carpio Common carp	2	1.600	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	10	0.028	--	0	---
Notropis cornutus Common shiner	17	0.450	--	0	---
Cyprinella spiloptera Spotfin shiner	136	0.618	--	0	---
Notropis stramineus Sand shiner	3	0.014	Moderately Intolerant	0	---
Pimephales notatus Bluntnose minnow	7	0.022	Highly Tolerant	0	---
Campostoma anomalum Central stoneroller minnow	2	0.050	--	0	---
Ictalurus punctatus Channel catfish	13	13.172	--	1	Erosion
Ictalurus natalis Yellow bullhead	1	0.130	Highly Tolerant	0	---

Cuyahoga River Upstream of Southerly WWTC

August 2, 2013

River Mile: 10.75

Ictalurus nebulosus Brown bullhead	1	0.342	Highly Tolerant	1	Lesion
Morone chrysops White bass	1	0.084	--	0	---
Morone americana White perch	3	0.132	--	0	---
Micropterus dolomieu Smallmouth bass	14	3.535	Moderately Intolerant	0	---
Lepomis cyanellus Green sunfish	2	0.058	Highly Tolerant	0	---
Lepomis macrochirus Northern bluegill sunfish	1	0.020	Moderately Tolerant	0	---
Percina caprodes Northern logperch darter	9	0.102	Moderately Intolerant	0	---
Etheostoma blenniodes Greenside darter	1	0.006	Moderately Intolerant	0	---
Aplodinotus grunniens Freshwater drum	1	0.560	Moderately Tolerant	0	---
Neogobius melanostomus Round goby	1	0.006	--	0	---
Totals	<u>304</u>	<u>32.489</u>		<u>2</u>	

*DELT anomalies were observed on	0.658	% of the fish collected.
Index of Biotic Integrity (IBI) =	38	(Marginally Good)
Modified Index of Well-Being (MIwb) =	9.1	(Very Good)
Shannon Diversity Index, no.	2.092	
Shannon Diversity Index, wt.	1.926	
N	504	
B	55.59	

Cuyahoga River Upstream of Southerly WWTC

October 14, 2013

River Mile: 10.75

Collection Method: Boat Electroshocking

Drainage Area: 743 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	DELT Anomalies #	Description
Dorosoma cepedianum Eastern gizzard shad	12	1.000	--	0	---
Oncorhynchus mykiss Rainbow trout	1	2.100	--	0	---
Moxostoma erythrurum Golden redhorse	6	3.229	Moderately Intolerant	0	---
Moxostoma macrolepidotum Shorthead redhorse	2	0.725	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	21	1.785	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	13	2.891	Highly Tolerant	0	---
Cyprinus carpio Common carp	13	63.700	Highly Tolerant	0	---
Notemigonus crysoleucas Golden shiner	1	0.005	Highly Tolerant	0	---
Semotilus atromaculatus Creek chub	5	0.052	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	11	0.042	--	0	---
Notropis cornutus Common shiner	7	0.083	--	0	---
Cyprinella spiloptera Spotfin shiner	33	0.140	--	0	---
Notropis stramineus Sand shiner	79	0.244	Moderately Intolerant	0	---
Ericymba buccata Silverjaw minnow	2	0.010	--	0	---
Pimephales notatus Bluntnose minnow	13	0.052	Highly Tolerant	0	---

Cuyahoga River Upstream of Southerly WWTC

October 14, 2013

River Mile: 10.75

Campostoma anomalum Central stoneroller minnow	54	0.204	--	0	---
Ictalurus punctatus Channel catfish	11	28.425	--	2	Deformity & Eroded Barbel
Ictalurus natalis Yellow bullhead	2	0.210	Highly Tolerant	0	---
Morone americana White perch	3	0.265	--	0	---
Micropterus dolomieu Smallmouth bass	13	2.675	Moderately Intolerant	1	Lesion
Lepomis cyanellus Green sunfish	1	0.018	Highly Tolerant	0	---
Percina caprodes Northern logperch darter	3	0.055	Moderately Intolerant	0	---
Etheostoma blenniodes Greenside darter	7	0.012	Moderately Intolerant	0	---
Etheostoma nigrum Johnny darter	1	0.002	--	0	---
Aplodinotus grunniens Freshwater drum	1	0.900	Moderately Tolerant	0	---
Neogobius melanostomus Round goby	4	0.028	--	0	---
Totals	<u><u>319</u></u>	<u><u>108.852</u></u>		<u><u>3</u></u>	

*DELT anomalies were observed on	0.94	% of the fish collected.
Index of Biotic Integrity (IBI) =	34	(Fair)
Modified Index of Well-Being (MIwb) =	9.2	(Very Good)
Shannon Diversity Index, no.	2.573	
Shannon Diversity Index, wt.	1.302	
N	526	
B	79.06	

Cuyahoga River Downstream of Southerly WWTC

August 2, 2013

River Mile: 10.10

Collection Method: Boat Electroshocking

Drainage Area: 744 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	DELTA # Anomalies	Description
Dorosoma cepedianum Eastern gizzard shad	7	1.000	--	0	---
Esox lucius Northern pike	1	0.030	--	0	---
Carpionodes cyprinus Central quillback carpsucker	1	0.100	--	0	---
Moxostoma erythrurum Golden redhorse	2	1.095	Moderately Intolerant	0	---
Moxostoma macrolepidotum Shorthead redhorse	6	0.340	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	18	2.730	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	17	3.025	Highly Tolerant	0	---
Cyprinus carpio Common carp	3	13.250	Highly Tolerant	1	Lesion
Semotilus atromaculatus Creek chub	1	0.002	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	16	0.046	--	0	---
Cyprinella spiloptera Spotfin shiner	70	0.250	--	0	---
Pimephales notatus Bluntnose minnow	2	0.012	Highly Tolerant	0	---
Ictalurus punctatus Channel catfish	5	3.360	--	1	Lesion
Ictalurus natalis Yellow bullhead	6	0.355	Highly Tolerant	0	---
Pylodictis olivaris Flathead Catfish	2	0.190	--	0	---

**Cuyahoga River Downstream of Southerly WWTC
August 2, 2013**

River Mile: 10.10

Morone americana White perch	4	0.160	--	0	---
Micropterus dolomieu Smallmouth bass	22	2.360	Moderately Intolerant	0	---
Lepomis macrochirus Northern bluegill sunfish	3	0.912	Moderately Tolerant	0	---
Percina caprodes Northern logperch darter	5	0.045	Moderately Intolerant	0	---
 Totals	 <u>191</u>	 <u>29.262</u>		 <u>2</u>	

*DELT anomalies were observed on	1.047	% of the fish collected.
Index of Biotic Integrity (IBI) =	36	(Marginally Good)
Modified Index of Well-Being (MIwb) =	8.6	(Marginally Good)
Shannon Diversity Index, no.	2.229	
Shannon Diversity Index, wt.	1.87	
N	316	
B	24.92	

Cuyahoga River Downstream of Southerly WWTC

October 14, 2013

River Mile: 10.10

Collection Method: Boat Electroshocking

Drainage Area: 744 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	#	DELT Anomalies Description
Dorosoma cepedianum Eastern gizzard shad	30	3.700	--	0	---
Moxostoma anisurum Silver Redhorse	1	0.325	Moderately Intolerant	0	---
Moxostoma erythrurum Golden redhorse	6	2.825	Moderately Intolerant	0	---
Moxostoma macrolepidotum Shorthead redhorse	4	2.225	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	20	1.662	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	19	3.945	Highly Tolerant	0	---
Minytrema melanops Spotted Sucker	1	0.635	--	0	---
Cyprinus carpio Common carp	14	37.200	Highly Tolerant	1	Deformity
Semotilus atromaculatus Creek chub	3	0.012	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	30	0.058	--	0	---
Notropis cornutus Common shiner	2	0.010	--	0	---
Cyprinella spiloptera Spotfin shiner	27	0.112	--	0	---
Notropis stramineus Sand shiner	27	0.069	Moderately Intolerant	0	---
Pimephales notatus Bluntnose minnow	10	0.033	Highly Tolerant	0	---
Campostoma anomalum Central stoneroller minnow	9	0.065	--	0	---

**Cuyahoga River Downstream of Southerly WWTC
October 14, 2013**

River Mile: 10.10

Ictalurus punctatus Channel catfish	10	8.425	--	0	---
Ictalurus natalis Yellow bullhead	2	0.200	Highly Tolerant	0	---
Pylodictis olivaris Flathead Catfish	1	1.050	--	0	---
Labidesthes sicculus Brook silverside	1	0.002	Moderately Intolerant	0	---
Morone americana White perch	5	0.250	--	0	---
Pomoxis annularis White crappie	1	0.175	--	0	---
Micropterus dolomieu Smallmouth bass	12	2.520	Moderately Intolerant	1	Lesion
HYBRID Green SF X Pumpkinseed	1	0.042	--	0	---
Percina caprodes Northern logperch darter	1	0.012	Moderately Intolerant	0	---
Aplodinotus grunniens Freshwater drum	3	3.500	Moderately Tolerant	0	---
Neogobius melanostomus Round goby	4	0.030	--	0	---
Totals	<u>244</u>	<u>69.082</u>		<u>2</u>	

*DELT anomalies were observed on	0.82	% of the fish collected.
Index of Biotic Integrity (IBI) =	30	(Fair)
Modified Index of Well-Being (MIwb) =	9.5	(Very Good)
Shannon Diversity Index, no.	2.752	
Shannon Diversity Index, wt.	1.743	
N	372	
B	54.74	

Cuyahoga River Upstream of Big Creek
August 2, 2013
River Mile: 8.60
Collection Method: Boat Electroshocking
Drainage Area: 745 miles²
Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	#	DELT Anomalies Description
Dorosoma cepedianum Eastern gizzard shad	15	0.925	--	0	---
Moxostoma anisurum Silver Redhorse	1	1.650	Moderately Intolerant	0	---
Moxostoma erythrurum Golden redhorse	1	0.550	Moderately Intolerant	0	---
Moxostoma macrolepidotum Shorthead redhorse	16	1.350	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	39	6.810	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	8	0.525	Highly Tolerant	0	---
Semotilus atromaculatus Creek chub	1	0.004	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	24	0.090	--	0	---
Notropis cornutus Common shiner	1	0.035	--	0	---
Cyprinella spiloptera Spotfin shiner	75	0.268	--	0	---
Notropis stramineus Sand shiner	40	0.014	Moderately Intolerant	0	---
Pimephales notatus Bluntnose minnow	5	0.028	Highly Tolerant	0	---
Campostoma anomalum Central stoneroller minnow	1	0.003	--	0	---
Ictalurus punctatus Channel catfish	2	5.550	--	0	---
Ictalurus natalis Yellow bullhead	1	0.050	Highly Tolerant	0	---

Cuyahoga River Upstream of Big Creek

August 2, 2013

River Mile: 8.60

Micropterus dolomieu Smallmouth bass	16	2.500	Moderately Intolerant	0	---
Lepomis macrochirus Northern bluegill sunfish	1	0.072	Moderately Tolerant	0	---
Percina caprodes Northern logperch darter	7	0.090	Moderately Intolerant	0	---
Aplodinotus grunniens Freshwater drum	1	0.670	Moderately Tolerant	0	---
 Totals	 <u>255</u>	 <u>21.184</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) =	9.1	(Good)
Shannon Diversity Index, no.	2.17	
Shannon Diversity Index, wt.	1.937	
N	480	
B	41.15	

Cuyahoga River Upstream of Big Creek
October 15, 2013
River Mile: 8.60
Collection Method: Boat Electroshocking
Drainage Area: 745 miles²
Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	#	DELT Anomalies Description
Dorosoma cepedianum Eastern gizzard shad	20	1.700	--	0	---
Moxostoma erythrurum Golden redhorse	1	0.004	Moderately Intolerant	0	---
Moxostoma macrolepidotum Shorthead redhorse	4	1.250	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	64	5.617	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	5	0.243	Highly Tolerant	0	---
Semotilus atromaculatus Creek chub	1	0.006	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	66	0.197	--	0	---
Notropis cornutus Common shiner	4	0.038	--	0	---
Cyprinella spiloptera Spotfin shiner	10	0.040	--	0	---
Notropis stramineus Sand shiner	68	0.204	Moderately Intolerant	0	---
Pimephales notatus Bluntnose minnow	2	0.010	Highly Tolerant	0	---
Campostoma anomalum Central stoneroller minnow	9	0.041	--	0	---
Ictalurus punctatus Channel catfish	9	8.457	--	3	Lesions & eroded barbel
Ambloplites rupestris Northern rockbass	1	0.045	--	1	Lesion
Micropterus dolomieu Smallmouth bass	7	1.320	Moderately Intolerant	0	---

Cuyahoga River Upstream of Big Creek

October 15, 2013

River Mile: 8.60

Lepomis macrochirus Northern bluegill sunfish	1	0.010	Moderately Tolerant	0	---
Percina caprodes Northern logperch darter	2	0.028	Moderately Intolerant	0	---
Etheostoma blenniodes Greenside darter	1	0.010	Moderately Intolerant	0	---
Neogobius melanostomus Round goby	1	0.010	--	0	---
 Totals	 <u>276</u>	 <u>19.230</u>		 <u>4</u>	

*DELT anomalies were observed on	1.449	% of the fish collected.
Index of Biotic Integrity (IBI) =	40	(Good)
Modified Index of Well-Being (MIwb) =	8.5	(Marginally Good)
Shannon Diversity Index, no.	2.042	
Shannon Diversity Index, wt.	1.529	
N	534	
B	37.92	

Cuyahoga River Downstream of Big Creek

August 1, 2013

River Mile: 7.00

Collection Method: Boat Electroshocking

Drainage Area: 786 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	DELT # Anomalies	Description
Dorosoma cepedianum Eastern gizzard shad	69	16.775	--	0	---
Carpoides cyprinus Central quillback carpsucker	4	2.625	--	0	---
Moxostoma anisurum Silver Redhorse	1	1.100	Moderately Intolerant	0	---
Moxostoma erythrurum Golden redhorse	1	0.500	Moderately Intolerant	0	---
Moxostoma macrolepidotum Shorthead redhorse	7	2.150	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	4	0.875	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	5	1.675	Highly Tolerant	0	---
Cyprinus carpio Common carp	1	7.750	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	16	0.055	--	0	---
Cyprinella spiloptera Spotfin shiner	4	0.018	--	0	---
Ictalurus punctatus Channel catfish	1	1.050	--	1	Lesion
Ictalurus natalis Yellow bullhead	1	0.150	Highly Tolerant	0	---
Morone americana White perch	2	0.108	--	0	---
Ambloplites rupestris Northern rockbass	1	0.165	--	0	---
Micropterus dolomieu Smallmouth bass	13	5.165	Moderately Intolerant	1	Lesion

Cuyahoga River Downstream of Big Creek

August 1, 2013

River Mile: 7.00

Lepomis macrochirus Northern bluegill sunfish	1	0.042	Moderately Tolerant	0	---
Percina caprodes Northern logperch darter	1	0.020	Moderately Intolerant	0	---
Neogobius melanostomus Round goby	1	0.010	--	0	---
 Totals	 <u>133</u>	 <u>40.233</u>		 <u>2</u>	

*DELT anomalies were observed on	1.504	% of the fish collected.
Index of Biotic Integrity (IBI) =	34	(Fair)
Modified Index of Well-Being (MIwb) =	8.4	(Marginally Good)
Shannon Diversity Index, no.	1.811	
Shannon Diversity Index, wt.	1.829	
N	246	
B	61.08	

Cuyahoga River Downstream of Big Creek

October 15, 2013

River Mile: 7.00

Collection Method: Boat Electroshocking

Drainage Area: 786 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	#	DELT Anomalies Description
Dorosoma cepedianum Eastern gizzard shad	43	5.300	--	0	---
Oncorhynchus mykiss Rainbow trout	1	3.500	--	0	---
Moxostoma anisurum Silver Redhorse	1	3.000	Moderately Intolerant	0	---
Moxostoma erythrurum Golden redhorse	3	1.850	Moderately Intolerant	0	---
Moxostoma macrolepidotum Shorthead redhorse	2	0.360	Moderately Intolerant	0	---
Hypentelium nigricans Northern hog sucker	4	0.750	Moderately Intolerant	0	---
Catostomus commersonii Common white sucker	4	1.700	Highly Tolerant	0	---
Notemigonus crysoleucas Golden shiner	1	0.020	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	97	0.168	--	0	---
Ictalurus natalis Yellow bullhead	2	0.230	Highly Tolerant	0	---
Labidesthes sicculus Brook silverside	1	0.002	Moderately Intolerant	0	---
Micropterus dolomieu Smallmouth bass	11	3.195	Moderately Intolerant	1	Lesion
Lepomis macrochirus Northern bluegill sunfish	1	0.030	Moderately Tolerant	0	---
Percina caprodes Northern logperch darter	2	0.050	Moderately Intolerant	0	---
Aplodinotus grunniens Freshwater drum	1	0.750	Moderately Tolerant	0	---

Cuyahoga River Downstream of Big Creek

October 15, 2013

River Mile: 7.00

Totals	<u>174</u>	<u>20.905</u>	<u>1</u>
*DELT anomalies were observed on	0.575	% of the fish collected.	
Index of Biotic Integrity (IBI) =	34	(Fair)	
Modified Index of Well-Being (MIwb) =	8.1	(Fair)	
Shannon Diversity Index, no.	1.421		
Shannon Diversity Index, wt.	2.06		
N	332		
B	30.91		

Cuyahoga River at Head of Navigation Channel

July 31, 2013

River Mile: 5.90

Collection Method: Boat Electroshocking

Drainage Area: 787 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	DELT Anomalies #	Description
Dorosoma cepedianum Eastern gizzard shad	299	17.555	--	0	---
Esox lucius Northern pike	1	0.058	--	0	---
Moxostoma erythrurum Golden redhorse	3	2.400	Moderately Intolerant	0	---
Cyprinus carpio Common carp	7	40.650	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	12	0.016	--	0	---
Ictalurus natalis Yellow bullhead	2	0.465	Highly Tolerant	1	Erosion
Micropterus dolomieu Smallmouth bass	10	0.675	Moderately Intolerant	1	Lesion
Micropterus salmoides Largemouth bass	3	0.014	--	0	---
Totals	<u>337</u>	<u>61.833</u>		<u>2</u>	

*DELT anomalies were observed on 0.053 % of the fish collected.

Index of Biotic Integrity (IBI) = 21 (Poor)

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

Shannon Diversity Index, no. 0.542

Shannon Diversity Index, wt. 0.856

N 656

B 41.44

Cuyahoga River at Head of Navigation Channel

September 5, 2013

River Mile: 5.90

Collection Method: Boat Electroshocking

Drainage Area: 787 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	DELT Anomalies #	Description
Dorosoma cepedianum Eastern gizzard shad	77	6.231	--	0	---
Catostomus commersonii Common white sucker	1	0.030	Highly Tolerant	0	---
Cyprinus carpio Common carp	2	9.500	Highly Tolerant	1	Deformity
Semotilus atromaculatus Creek chub	3	0.022	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	38	0.073	--	0	---
Pimephales notatus Bluntnose minnow	1	0.004	Highly Tolerant	0	---
Campostoma anomalum Central stoneroller minnow	1	0.004	--	0	---
Morone americana White perch	1	0.020	--	0	---
Micropterus dolomieu Smallmouth bass	4	0.432	Moderately Intolerant	3	Lesion
Micropterus salmoides Largemouth bass	2	0.060	--	0	---
Lepomis cyanellus Green sunfish	1	0.004	Highly Tolerant	0	---
Lepomis macrochirus Northern bluegill sunfish	1	0.002	Moderately Tolerant	0	---
Totals	<u>132</u>	<u>16.382</u>		<u>4</u>	

*DELT anomalies were observed on 0.073 % of the fish collected.
 Index of Biotic Integrity (IBI) = 29 (Poor)
 Modified Index of Well-Being (MIwb) = 6.1 (Poor)
 Shannon Diversity Index, no. = 1.214
 Shannon Diversity Index, wt. = 0.86

N
B

246
13.6

Cuyahoga River Near Confluence with Lake Erie

August 7, 2013

River Mile: 0.20

Collection Method: Boat Electroshocking

Drainage Area: 813 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	# DELT Anomalies	Description
Dorosoma cepedianum Eastern gizzard shad	25	1.419	--	0	---
Cyprinus carpio Common carp	8	15.750	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	182	0.362	--	0	---
Morone chrysops White bass	1	0.068	--	0	---
Micropterus dolomieu Smallmouth bass	4	0.348	Moderately Intolerant	0	---
Micropterus salmoides Largemouth bass	4	2.245	--	0	---
Lepomis macrochirus Northern bluegill sunfish	2	0.232	Moderately Tolerant	0	---
Percina caprodes Northern logperch darter	3	0.040	Moderately Intolerant	0	---
Totals	<u><u>229</u></u>	<u><u>20.464</u></u>		<u><u>0</u></u>	

*DELTA anomalies were observed on	0	% of the fish collected.
Index of Biotic Integrity (IBI) =	27	(Poor)
Modified Index of Well-Being (MIwb) =	5.8	(Poor)
Shannon Diversity Index, no.	0.805	
Shannon Diversity Index, wt.	0.852	
N	442	
B	9.428	

**Cuyahoga River Near Confluence with Lake Erie
September 5, 2013**

River Mile: 0.20

Collection Method: Boat Electroshocking

Drainage Area: 813 miles²

Collection Distance: 0.5 km

Species	Number	Weight (kg)	Pollution Tolerance	DELT Anomalies #	Description
Dorosoma cepedianum Eastern gizzard shad	157	1.450	--	0	---
Cyprinus carpio Common carp	2	2.550	Highly Tolerant	0	---
Notropis atherinoides Common Emerald shiner	222	0.482	--	0	---
Cyprinella spiloptera Spotfin shiner	1	0.002	--	0	---
Ictalurus natalis Yellow bullhead	1	0.172	Highly Tolerant	0	---
Micropterus salmoides Largemouth bass	2	0.200	--	0	---
Totals	<u>385</u>	<u>4.856</u>		<u>0</u>	

*DELT anomalies were observed on	0	% of the fish collected.
Index of Biotic Integrity (IBI) =	26	(Poor)
Modified Index of Well-Being (MIwb) =	6.0	(Poor)
Shannon Diversity Index, no.	0.769	
Shannon Diversity Index, wt.	1.181	
N	764	
B	4.268	