

# 2019 IOWA FISH TISSUE MONITORING PROGRAM SUMMARY OF ANALYSES

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## **Introduction:**

The state of Iowa conducts fish tissue monitoring to supplement other environmental monitoring programs and to protect the health of people consuming fish from waters within this state. Since 1980, the Iowa Department of Natural Resources (DNR) has conducted annual statewide collections of Iowa fish and sent tissue samples to accredited laboratories for the analyses of toxic contaminants. From 1983 to 2013, this monitoring effort was known as the Regional Ambient Fish Tissue Monitoring Program (RAFT). Beginning in 2014, after United States Environmental Protection Agency Region 7 changed their program support, the only statewide fish contaminant-monitoring program in Iowa was changed to the Iowa Fish Tissue Monitoring Program (IFTMP). Historically, the data generated from the IFTMP have enabled DNR to: 1) document temporal changes in contaminant levels; 2) identify Iowa lakes and rivers where high levels of contaminants in fish potentially threaten the health of fish-consuming Iowans and 3) assess the human health designated use (Class HH) for the Integrated Report.

## **2019 IFTMP Results:**

In 2019, DNR began a three year project collecting a variety of fish species from different types of waterbodies across the state. The goal of the project is to establish statewide length-based consumption advisories for each fish species in Iowa. The advisories will apply to the sensitive population as defined by IDPH: pregnant and nursing women, women of childbearing age, and children younger than 12 years old.

From April through November 2019, DNR staff collected processed and prepared fish tissue samples in accordance with IFTMP sampling procedures as part of status monitoring (DNR, 2018). Tissue plug samples were taken from thawed specimens using a biopsy punch. Two fish tissue plugs from each fish were placed in a sample vial and were sent on ice to laboratories for analysis.

For the 2019 IFTMP, the DNR collected 682 samples from 49 waterbodies. The 2019 IFTMP monitoring results are summarized in Table 1 and in Appendix A. All of the individual sample results can be found in the DNR's online water quality database AQuIA - <https://programs.iowadnr.gov/aquia/Facilities/10529659/Detail>.

The vast majority of contaminant levels in the 2019 IFTMP samples were low (Table 1). Any contaminant results over, or near, their respective evaluation criteria (Appendix B) have been or will be addressed by the DNR Fisheries Bureau with the assistance of the DNR Water Quality Monitoring and Assessment section and the Iowa Department of Public Health. A current list of consumption advisories in Iowa can be found here: <https://www.iowadnr.gov/Environmental-Protection/Water-Quality/Water-Monitoring/Fish-Tissue>

Table 1. Summary of 2019 Iowa Fish Tissue Monitoring Program Results

Location	Species	Samples Taken	Mercury			Length (cm)			Weight (g)		
			Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
Ada Hayden Heritage Park Lake	Largemouth Bass	15	0.139	0.092	0.183	35.5	29.5	37.6	641	456	778
Ankeny Lake (DMACC)	Largemouth Bass	10	0.555	0.367	0.698	32.6	28	38.2	460	288	692
Arrowhead Lake	Largemouth Bass	10	0.191	0.132	0.239	31.4	28.9	36.6	409	302	685
Banner Lake (North)	Largemouth Bass	10	0.357	0.265	0.561	33.7	29	39.6	496	287	846
Big Creek Lake	Largemouth Bass	10	0.063	0.028	0.147	34.2	31.5	38.1	596	404	884
	Walleye	20	0.057	0.038	0.082	47.9	43.2	53.4	983	748	1436
Big Mill Creek	Brown Trout	10	0.033	0.017	0.061	32.6	29	38.9	359	217	511
Big Spirit Lake	Northern Pike	20	0.113	0.067	0.167	65.6	57.6	76.5	2020	1421	2767
	Walleye	7	0.171	0.114	0.217	48.9	44.2	53.3	1158	871	1429
Blue Heron Lake	Bluegill	10	0.050	0.039	0.072	15.2	13.7	17.3	NA	NA	NA
	Largemouth Bass	15	0.091	0.047	0.179	33.6	28.2	40.4	548	327	889
Briggs Woods Lake	Largemouth Bass	11	0.093	0.052	0.192	35.3	30.5	38.1	617	408	798
Cedar River (U)	Walleye	7	0.261	0.160	0.430	46.1	41.9	52.6	889	599	1470
Clear Lake	Muskie	2	0.154	0.101	0.206	90.5	90.2	90.8	5761	5243	6278
	Walleye	20	0.152	0.069	0.315	47.2	43.4	52.8	974	726	1397
Cold Springs Lake	Largemouth Bass	10	0.244	0.104	0.368	32.2	28.7	36.1	428	300	597
Copper Creek Lake	Largemouth Bass	10	0.301	0.256	0.433	34.4	29.5	39.6	550	227	900
Coralville Reservoir	Walleye	2	0.081	0.075	0.087	50	49.7	50.2	1320	1290	1350
Crystal Lake	Northern Pike	8	0.165	0.152	0.182	61.9	52.3	77.7	1403	753	2744
	Walleye	1	0.192	0.192	0.192	44.2	44.2	44.2	907	907	907
East Okoboji Lake	Largemouth Bass	10	0.432	0.298	0.597	32.8	28.5	36.6	558	341	784
	Walleye	5	0.221	0.209	0.242	53.2	52.1	54.7	1518	1238	1792
Fountain Springs (Brown)	Brown Trout	10	0.091	0.042	0.181	30.2	26.2	38.4	276	179	523
Frog Hollow (Volga Lake)	Largemouth Bass	10	0.076	0.045	0.105	32	28.2	35.8	468	290	644
George Wyth Lake	Largemouth Bass	10	0.201	0.108	0.300	34.2	29.2	37.8	585	340	758
	Bluegill	10	0.037	0.024	0.068	15.7	15	16.2	282	212	327
Grays Lake	Crappie Spp.	10	0.067	0.027	0.145	22.7	16.3	27.5	485	214	898
	Largemouth Bass	10	0.108	0.065	0.184	34.7	29.7	39.6	612	315	1015
Lake Ahquabi	Largemouth Bass	10	0.218	0.117	0.355	34	28.2	37.5	535	302	706
Lake Anita	Crappie Spp.	2	0.067	0.063	0.072	18.9	18.2	19.5	NA	NA	NA
	Largemouth Bass	10	0.196	0.119	0.316	34.6	29.4	38.8	546	341	848

Table 1. Summary of 2019 Iowa Fish Tissue Monitoring Program Results – continued.

Location	Species	Samples Taken	Mercury			Length (cm)			Weight (g)		
			Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
Lake Hendricks	Largemouth Bass	10	0.168	0.088	0.335	33.2	28.4	39.4	501	290	871
Lake Icaria	Largemouth Bass	10	0.083	0.042	0.265	32.1	28.7	36.1	471	340	599
	Walleye	5	0.136	0.070	0.179	50.5	45.7	55.6	1165	807	1565
Lake Meyer	Largemouth Bass	10	0.319	0.199	0.461	35.4	28.7	39.9	621	299	943
Lake of Three Fires	Largemouth Bass	10	0.196	0.092	0.316	32.6	29.2	34.8	543	363	658
Lake Petocka	Largemouth Bass	10	0.289	0.226	0.353	32.3	28.7	38.3	444	292	814
Lake Sugema	Largemouth Bass	10	0.145	0.081	0.248	31.2	27.9	35.3	408	285	605
	Walleye	20	0.169	0.134	0.207	50.6	46.7	52.8	1395	1114	1820
Little River Lake	Largemouth Bass	10	0.357	0.177	0.557	35.8	32.8	38.1	647	449	862
Maquoketa River (D)	Walleye	3	0.158	0.146	0.175	43.7	43.2	44.2	830	740	913
Maquoketa River (U)	Walleye	15	0.222	0.110	0.396	46.4	42.2	51.3	986	678	1295
Marina Cove	Largemouth Bass	10	0.475	0.313	0.684	33.3	28.4	40.4	492	296	864
Mississippi River Pool 13	Largemouth Bass	20	0.184	0.096	0.423	34.6	28.8	38.3	656	355	912
Mississippi River Pool 16	Largemouth Bass	20	0.176	0.101	0.260	32.6	28.7	38.1	515	300	896
	Walleye	2	0.179	0.139	0.218	50.3	49	51.5	1241	1090	1392
North Cedar	Brook Trout	10	0.032	0.024	0.043	25.7	22.6	29.2	155	100	249
North Twin Lake	Walleye	10	0.041	0.012	0.101	48.3	43.5	52.8	1135	733	1552
Pine Creek	Brook Trout	10	0.062	0.036	0.106	25	22.4	27.4	147	91	177
Plainfield Lake	Largemouth Bass	10	0.276	0.171	0.398	33.2	29.7	36.6	528	354	778
Prairie Lakes North	Bluegill	10	0.174	0.065	0.288	18.1	16.6	19.3	NA	NA	NA
	Largemouth Bass	10	0.449	0.247	0.691	33.7	27.9	38.9	513	301	765
Prairie Rose Lake	Bluegill	10	0.060	0.039	0.097	22.9	21.5	24	369	352	385
	Largemouth Bass	10	0.206	0.131	0.277	31.6	27.9	34	430	239	582
Rathbun Reservoir	Flathead Catfish	8	0.174	0.082	0.392	45	38.4	53.7	1000	546	1734
	Largemouth Bass	10	0.102	0.033	0.217	38.8	28.7	43.7	866	266	1214
	Walleye	20	0.062	0.043	0.076	47.3	43.7	52.3	1075	860	1495
Red Rock Reservoir	Flathead Catfish	13	0.090	0.064	0.119	45.6	35.6	55.2	1029	453	1802
Silver Lake (Dickinson)	Northern Pike	10	0.116	0.087	0.225	66	55.8	89	1767	926	4018
Storm Lake	Walleye	20	0.082	0.050	0.123	49.5	45.2	53.8	1234	940	1780
Twelve Mile Lake	Largemouth Bass	10	0.191	0.117	0.252	33.5	31	35.6	543	417	753
	Walleye	2	0.188	0.184	0.191	42.7	38.9	46.5	768	531	1004
Upper Iowa River (U)	Walleye	10	0.466	0.202	0.817	50.2	44.5	56.1	1228	789	1887
Viking Lake	Largemouth Bass	10	0.269	0.143	0.420	32.5	28.2	36.6	448	291	640
Wapsipinicon River (U)	Walleye	9	0.384	0.188	0.668	48.5	42.2	52.8	1045	613	1479
Yellow Smoke Park Lake	Largemouth Bass	10	0.339	0.228	0.646	33.8	31	37.7	483	292	635

**References:**

DNR. 2018. Sampling Procedures for the Iowa DNR Fish Tissue Monitoring Program (IFTMP). Water Quality Bureau, Environmental Services Division, Iowa Department of Natural Resources. 3 pp.

IDPH. 2007. Fish consumption advisory protocol in Iowa. Iowa Department of Public Health. 8 pp.

Appendix A

Complete list of the 2019 IFTMP sampling sites.

Site #	IFTMP Site Name	County	Mississippi River Pool #	Waterbody Type
380	Ada Hayden Heritage Park Lake	Story		Lake
255	Ankeny Lake (DMACC)	Polk		Lake
280	Arrowhead Lake	Pottawattamie		Lake
208	Banner Lake (North)	Warren		Lake
52	Big Creek Lake	Polk		Lake
364	Big Mill Creek	Jackson		River
155	Big Spirit Lake	Dickinson		Lake
381	Blue Heron Lake	Polk		Lake
77	Briggs Woods Lake	Hamilton		Lake
372	Cedar River (U)	Black Hawk		River
122	Clear Lake	Cerro Gordo		Lake
289	Cold Springs Lake	Cass		Lake
259	Copper Creek Lake	Polk		Lake
290	Coralville Reservoir	Johnson		Reservoir
292	Crystal Lake	Hancock		Lake
84	East Okoboji Lake	Dickinson		Lake
365	Fountain Springs (Brown)	Delaware		River
271	Frog Hollow (aka Volga Lake)	Fayette		Lake
88	George Wyth Lake	Black Hawk		Lake
256	Grays Lake	Polk		Lake
71	Lake Ahquabi	Warren		Lake
100	Lake Anita	Cass		Lake
79	Lake Hendricks	Howard		Lake
59	Lake Icaria	Adams		Lake
78	Lake Meyer	Winneshiek		Lake
158	Lake of Three Fires	Taylor		Lake
260	Lake Petocka	Polk		Lake
311	Lake Sugema	Van Buren		Lake
75	Little River Lake	Decatur		Lake
360	Maquoketa River (D)	Jackson		River
361	Maquoketa River (U)	Delaware		River
378	Marina Cove	Polk		Lake
363	Mississippi River Pool 13	Jackson	13	River
362	Mississippi River Pool 16	Scott	16	River
370	North Cedar	Clayton		River
149	North Twin Lake	Calhoun		Lake
367	Pine Creek	Allamakee		River
353	Plainfield Lake	Bremer		Lake
379	Prairie Lakes North	Polk		Lake
108	Prairie Rose Lake	Shelby		Lake
53	Rathbun Reservoir	Appanoose		Reservoir
324	Red Rock Reservoir	Marion		Reservoir
200	Silver Lake (Dickinson)	Dickinson		Lake
130	Storm Lake	Buena Vista		Lake
97	Twelve Mile Lake	Union		Lake
230	Upper Iowa River (U)	Howard		River
339	Viking Lake	Montgomery		Lake
369	Wapsipinicon River (U)	Buchanan		River
162	Yellow Smoke Park Lake	Crawford		Lake

## Appendix B

Mercury advisory levels from the 2007 IDPH Fish consumption advisory protocol document.

Contaminant	DNR/IDPH advisory trigger level mg/kg (ppm)	DNR/IDPH advisory meal allowance
Mercury	0 to 0.3	unrestricted
	>0.3 to <1.0	one meal per week
	$\geq 1.0$	do not eat