

# 2020 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.

## **2020 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 2020, 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 2020 IFTMP, the DNR collected 943 samples from 36 waterbodies. The 2020 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 2020 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 2020 Iowa Fish Tissue Monitoring Program Results

Location	Species	Samples Taken	Mercury			Length (cm)			Weight (g)		
			Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
Arrowhead Lake	Bluegill	10	0.076	0.053	0.150	20.4	18.7	22.7	224	142	300
	Channel Catfish	10	0.128	0.090	0.172	56.4	48.8	65.5	1877	1000	2806
	Crappie Spp.	10	0.102	0.036	0.307	24.1	17.8	31.4	237	80	465
Big Spirit Lake	Muskie	3	0.192	0.134	0.258	95.1	90.2	103.4	5944	4598	7945
	Walleye	13	0.250	0.134	0.486	49.1	42.7	53.7	1156	714	1496
	Yellow Perch	10	0.041	0.021	0.107	23.6	21.2	29.4	183	128	422
Blackhawk Lake	Yellow Perch	10	0.028	0.017	0.045	19.0	17.3	20.5	87	60	110
Blue Heron Lake	Channel Catfish	10	0.102	0.047	0.209	49.0	37.3	61.7	1148	410	2599
	Crappie Spp.	10	0.048	0.034	0.065	27.6	24.6	33.0	324	197	620
Cedar River (D)	Channel Catfish	15	0.086	0.060	0.125	46.1	43.7	51.1	897	694	1121
	Flathead Catfish	10	0.167	0.079	0.395	44.1	40.1	50.0	962	730	1435
	Shovelnose Sturgeon	16	0.142	0.101	0.197	59.8	51.9	65.8	938	563	1470
	Walleye	5	0.205	0.190	0.237	40.0	38.6	42.7	553	504	645
Cedar River (U)	Channel Catfish	10	0.192	0.117	0.300	53.8	48.3	61.0	1623	1089	2356
Coralville Reservoir	Crappie Spp.	10	0.087	0.053	0.128	27.9	24.9	32.7	302	214	486
	Flathead Catfish	4	0.093	0.084	0.114	50.3	46.0	53.6	1424	1026	1771
Crystal Lake	Northern Pike	2	0.156	0.116	0.195	66.4	54.3	78.5	1879	944	2814
	Walleye	1	0.223	0.223	0.223	51.1	51.1	51.1	1448	1448	1448
Des Moines River	Shovelnose Sturgeon	10	0.110	0.089	0.174	59.6	54.4	72.1	795	535	1685
East Nishnabotna River (D)	Channel Catfish	10	0.120	0.010	0.240	48.7	42.0	59.0	1048	520	2061
East Nishnabotna River (U)	Channel Catfish	10	0.093	0.040	0.218	49.4	43.2	61.0	1146	620	2055
East Okoboji Lake	Bluegill	10	0.086	0.037	0.144	18.7	17.7	21.3	137	92	247
	Crappie Spp.	3	0.101	0.089	0.117	21.6	19.8	22.8	134	100	178
	Muskie	3	0.568	0.154	0.789	93.1	88.9	99.1	5728	5266	6583
	Northern Pike	18	0.171	0.094	0.322	75.5	55.3	95.5	2950	1020	5004
	Walleye	15	0.396	0.138	0.892	47.3	43.4	53.1	1001	742	1552
	Yellow Perch	10	0.055	0.021	0.142	21.1	18.4	23.9	129	70	186
George Wyth Lake	Channel Catfish	10	0.083	0.021	0.263	41.6	28.2	59.4	861	184	2448
	Crappie Spp.	10	0.113	0.070	0.227	19.5	18.5	20.8	96	76	114
	Northern Pike	10	0.258	0.202	0.326	62.0	55.4	73.2	1583	904	2732
Grays Lake	Channel Catfish	10	0.123	0.062	0.177	51.2	43.7	58.3	1401	627	2277
Iowa River (U)	Channel Catfish	15	0.136	0.081	0.391	49.5	45.5	56.1	1068	722	1494
Lake Anita	Crappie Spp.	8	0.167	0.079	0.301	27.5	22.5	28.8	290	164	342
Lake Icaria	Channel Catfish	20	0.123	0.051	0.359	53.1	46.5	61.0	1356	781	2197
	Common Carp	20	0.099	0.026	0.202	54.8	40.9	66.7	2070	802	3983
	Walleye	5	0.153	0.139	0.164	49.2	47.8	53.1	1110	940	1439
Lake Manwa	Common Carp	20	0.015	0.010	0.031	54.6	29.6	70.2	2563	370	6908
	Hybrid Striped Bass	4	0.031	0.010	0.058	46.0	35.2	51.8	1130	515	1416
	Yellow Bass	10	0.021	0.016	0.027	17.1	15.0	20.2	64	41	91
Lake Macbride	Channel Catfish	4	0.084	0.071	0.093	55.7	50.5	57.7	1786	1424	2268
Lake Meyer	Bluegill	10	0.261	0.197	0.339	21.2	18.0	23.4	276	163	372

Table 1. Summary of 2020 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
Lost Island Lake	Northern Pike	10	0.065	0.050	0.087	67.6	59.5	72.2	2291	1552	2840
Maquoketa River (D)	Walleye	13	0.230	0.125	0.377	48.9	39.6	56.4	1125	592	1676
Maquoketa River (U)	Northern Pike	7	0.213	0.148	0.256	69.0	58.9	74.2	2557	1140	3868
Mississippi River Pool 11	Largemouth Bass	20	0.244	0.135	0.382	32.7	28.8	37.8	479	341	783
	Northern Pike	20	0.190	0.075	0.706	60.0	42.8	83.3	1378	388	3238
	Sauger	35	0.142	0.066	0.278	31.1	26.0	36.8	260	129	424
	Shovelnose Sturgeon	10	0.056	0.032	0.096	49.3	37.3	73.4	544	144	1989
	Walleye	15	0.207	0.100	0.357	43.6	39.2	63.3	763	536	1684
	Yellow Perch	20	0.082	0.045	0.145	22.3	18.0	29.5	158	61	387
Mississippi River Pool 13	Bluegill	20	0.070	0.034	0.153	19.9	17.5	22.1	199	125	282
	Crappie Spp.	20	0.092	0.058	0.128	28.2	25.6	32.5	366	262	528
	Northern Pike	21	0.161	0.059	0.309	64.9	44.2	88.5	1700	502	3481
	Paddlefish	1	0.166	0.166	0.166	91.5	91.5	91.5	9460	9460	9460
	Sauger	35	0.126	0.059	0.556	31.8	23.8	38.3	285	110	493
	Shovelnose Sturgeon	10	0.066	0.049	0.090	59.2	49.6	70.5	1002	510	1736
	Walleye	15	0.246	0.129	0.438	49.7	44.1	53.3	1207	800	1562
	Yellow Perch	20	0.114	0.052	0.217	25.9	19.4	34.0	246	112	528
Mississippi River Pool 16	Bluegill	20	0.093	0.043	0.159	18.6	16.1	19.9	159	110	219
	Crappie Spp.	20	0.132	0.070	0.280	29.8	26.2	35.8	372	247	646
	Flathead Catfish	3	0.169	0.092	0.309	40.3	38.7	42.8	714	618	879
	Freshwater Drum	20	0.219	0.067	0.552	43.3	32.4	68.7	1170	403	3626
	Northern Pike	13	0.140	0.085	0.224	64.0	49.5	78.1	1703	751	2827
	Walleye	14	0.207	0.126	0.487	47.9	43.6	53.0	1118	765	1737
	White Bass	20	0.140	0.051	0.313	28.9	21.1	37.7	339	106	716
Missouri River	Paddlefish	10	0.114	0.081	0.159	85.8	77.5	98.7	7087	4676	13030
Plainfield Lake	Bluegill	10	0.167	0.105	0.331	17.4	16.5	20.1	126	92	208
	Crappie Spp.	10	0.132	0.056	0.361	19.6	15.5	29.2	126	52	375
Rathbun Reservoir	Flathead Catfish	6	0.242	0.157	0.337	49.0	38.6	62.3	1395	460	2770
Red Rock Reservoir	Flathead Catfish	2	0.084	0.083	0.084	46.8	42.5	51.0	1021	763	1278
Silver Lake (Dickinson)	Walleye	10	0.151	0.108	0.186	48.8	44.1	52.1	1180	790	1356
Twelve Mile Lake	Walleye	9	0.208	0.155	0.349	46.2	43.2	50.8	1049	867	1625
	Yellow Perch	10	0.063	0.037	0.099	26.0	22.9	31.2	229	141	372
Upper Iowa River (D)	Northern Pike	9	0.299	0.127	0.659	61.3	43.4	80.0	1490	499	2987
	Smallmouth Bass	4	0.384	0.169	0.695	30.8	25.1	37.6	406	200	735
	Walleye	10	0.872	0.212	1.690	53.4	43.4	64.5	1398	690	2615
Upper Iowa River (U)	Northern Pike	3	0.394	0.285	0.516	77.6	66.5	86.9	3862	2070	5212
	Smallmouth Bass	23	0.349	0.102	0.904	33.8	21.3	43.4	604	136	1194
Viking Lake	Crappie Spp.	10	0.210	0.093	0.386	27.5	24.2	34.5	297	190	573
Wapsipinicon River (U)	Northern Pike	10	0.294	0.171	0.461	69.0	53.8	88.4	2143	930	4605
	Walleye	1	0.4	0.4	0.4	49.8	49.8	49.8	1132	1132	1132

**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 2020 IFTMP sampling sites.

Site #	IFTMP Site Name	County	Mississippi River Pool #	Waterbody Type
280	Arrowhead Lake	Pottawattamie		Lake
155	Big Spirit Lake	Dickinson		Lake
138	Blackhawk Lake	Sac		Lake
381	Blue Heron Lake	Polk		Lake
371	Cedar River (D)	Cedar		River
372	Cedar River (U)	Black Hawk		River
290	Coralville Reservoir	Johnson		Reservoir
292	Crystal Lake	Hancock		Lake
376	Des Moines River	Van Buren		River
83	East Nishnabotna River (D)	Fremont		River
385	East Nishnabotna River (U)	Montgomery		River
84	East Okoboji Lake	Dickinson		Lake
88	George Wyth Lake	Black Hawk		Lake
256	Grays Lake	Polk		Lake
374	Iowa River (U)	Marshall		River
100	Lake Anita	Cass		Lake
59	Lake Icaria	Adams		Lake
66	Lake Manawa	Pottawattamie		Lake
81	Lake McBride	Johnson		Lake
78	Lake Meyer	Winneshiek		Lake
72	Lost Island lake	Palo Alto		Lake
360	Maquoketa River (D)	Jackson		River
361	Maquoketa River (U)	Delaware		River
384	Mississippi River Pool 11	Clayton	11	River
363	Mississippi River Pool 13	Jackson	13	River
362	Mississippi River Pool 16	Scott	16	River
377	Missouri River	Harrison		River
353	Plainfield Lake	Bremer		Lake
53	Rathbun Reservoir	Appanoose		Reservoir
324	Red Rock Reservoir	Marion		Reservoir
200	Silver Lake (Dickinson)	Dickinson		Lake
97	Twelve Mile Lake	Union		Lake
366	Upper Iowa River (D)	Allamakee		River
230	Upper Iowa River (U)	Howard		River
339	Viking Lake	Montgomery		Lake
369	Wapsipinicon River (U)	Buchanan		River

## 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