2018 IOWA FISH TISSUE MONITORING PROGRAM SUMMARY OF ANALYSES

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Introduction:

To supplement other environmental monitoring programs and to protect the health of people consuming fish from waters within this state, the state of Iowa conducts fish tissue monitoring. Since 1980, the Iowa Department of Natural Resources (DNR) has conducted annual statewide collections of Iowa fish and sent tissue samples to either the United States Environmental Protection Agency Region 7 (EPA R7) or the Iowa State Hygienic Laboratory (SHL) 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 EPA R7 changed their program support, the only statewide fish contaminant-monitoring program in Iowa was changed to the Iowa Fish Tissue Monitoring Program (IFTMP). The IFTMP is administered by DNR and the tissue analyses are completed at the SHL. Historically, the data generated from the IFTMP have enabled DNR to document temporal changes in contaminant levels and to identify Iowa lakes and rivers where high levels of contaminants in fish potentially threaten the health of fish-consuming Iowans (see DNR 2006). The IFTMP has historically incorporated five different types of monitoring sites: 1) status, 2) follow-up, 3) trend, 4) turtle, and 5) random.

In 2018, DNR conducted an inter-laboratory bottom feeding fish tissue analysis project. The two goals of the 2018 IFTMP were 1) analyze the laboratory variability of fish tissue chlordane, dieldrin, DDT (+metabolites) and total PCBs and 2) conduct follow-up bottom feeding fish tissue sampling on the Mississippi River.

2018 IFTMP Results:

For the 2018 IFTMP, DNR conducted an inter-laboratory project that involved collecting three large common carp (>20” in length), three common carp (<20” in length) and three channel catfish from four sites/pools of the Mississippi River. Sampling conditions allowed only 31 out of the 36 samples to be collected. One skinless fillet was sent to one laboratory for analysis and the other skinless fillet was sent to a different laboratory for analysis. The laboratories analyzed the samples for DDT (+metabolites), chlordane, dieldrin and PCBs.

The 2018 IFTMP monitoring results are summarized in Table 1 and in Appendix C. The vast majority of contaminant levels in the 2018 IFTMP samples were low or not detected (Tables 1). Any contaminant results over, or near, their respective evaluation criteria (Appendix A) will be addressed by the DNR Fisheries Bureau with the assistance of the IDNR Water Quality Monitoring and Assessment section and the Iowa Department of Public Health.

Table 1. Summary of 2018 IFTMP sampling results from the Mississippi River. All samples were fillets and results are in mg/kg (ppm). Bold values indicate detects.

Site Name	Fish	Lab A DDD mg/kg	Lab B DDD mg/kg	Lab A DDE mg/kg	Lab B DDE mg/kg	Lab A DDT mg/kg	Lab B DDT mg/kg	Lab A chlordane mg/kg	Lab B chlordane mg/kg	Lab A dieldrin mg/kg	Lab B dieldrin mg/kg	Lab A sum PCBs mg/kg	Lab B sum PCBs mg/kg
Miss. R. above Princeton	big carp1	<0.033	<0.005	<0.033	**0.005**	<0.033	<0.005	<0.033	**0.02**	<0.033	<0.005	<0.13	<0.06
Miss. R. above Princeton	big carp2	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	**0.03**	<0.033	<0.005	<0.13	<0.06
Miss. R. above Princeton	big carp3	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	**0.02**	<0.033	<0.005	<0.13	<0.06
Miss. R. above Princeton	carp1	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. above Princeton	carp2	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. above Princeton	carp3	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.03	<0.033	<0.005	<0.13	<0.06
Miss. R. above Princeton	ccat1	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. above Princeton	ccat2	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. above Princeton	ccat3	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. at Davenport	big carp1	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	**0.02**	<0.033	<0.005	<0.13	**0.13**
Miss. R. at Davenport	big carp2	<0.033	<0.005	<0.033	**0.005**	<0.033	**0.006**	<0.033	<0.03	<0.033	<0.005	<0.13	<0.06
Miss. R. at Davenport	big carp3	<0.033	<0.005	<0.033	**0.006**	<0.033	<0.005	<0.033	**0.02**	<0.033	<0.005	<0.13	**0.18**
Miss. R. at Davenport	carp1	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. at Davenport	carp2	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. at Davenport	carp3	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. at Davenport	ccat1	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. at Davenport	ccat2	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	**0.03**	<0.033	<0.005	<0.13	<0.08
Miss. R. at Davenport	ccat3	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. at Linwood	big carp1	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	**0.13**
Miss. R. at Linwood	big carp2	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. at Linwood	big carp3	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. at Linwood	ccat1	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. at Linwood	ccat2	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. at Linwood	ccat3	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	**0.05**	<0.033	<0.005	<0.13	<0.06
Miss. R. ds Muscatine	big carp1	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	**0.09**
Miss. R. ds Muscatine	big carp2	<0.033	<0.005	**0.019**	**0.011**	<0.033	**0.006**	<0.033	**0.03**	<0.033	**0.008**	<0.13	**0.06**
Miss. R. ds Muscatine	big carp3	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. ds Muscatine	carp1	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	**0.15**
Miss. R. ds Muscatine	ccat1	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06
Miss. R. ds Muscatine	ccat2	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	**0.1**
Miss. R. ds Muscatine	ccat3	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.13	<0.06

References:

DNR. 2006. Fish tissue monitoring in Iowa. Water Fact Sheet 2006-5. Geological and Water Survey, Iowa Department of Natural Resources. 4 pgs (https://www.iihr.uiowa.edu/igs/publications/uploads/wfs-2006-05.pdf).

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 pgs.

Appendix A

Summary of contaminants of concern and respective evaluation criteria for IFTMP tissue samples. Advisory levels from the 2007 IDPH Fish consumption advisory protocol document.

#	contaminant	SHL current lowest detection levels (ppm)	DNR/IDPH advisory trigger level (ppm)	DNR/IDPH advisory meal allowance
1	chlordane, technical	0.02	0 to 0.6	unrestricted
			>0.6 to <5.0	one meal per week
			≥5.0	do not eat
2	mercury	0.05	0 to 0.3	unrestricted
			>0.3 to <1.0	one meal per week
			≥1.0	do not eat
3	PCB, Aroclor 1248	0.02	sum = 0 to 0.2	unrestricted
4	PCB, Aroclor 1254	0.02	sum >0.2 to <2.0	one meal per week
5	PCB, Aroclor 1260	0.02	sum 2.0 and over	do not eat
6	dieldrin	0.005		
7	DDE, 4,4'-	0.005		

Appendix B

Complete list of the 2018 IFTMP sampling sites.

Site #	IFTMP Site Name	County	Mississippi River Pool #	Waterbody Type
152	Mississippi River above Princeton	Scott	14	River
47	Mississippi River at Davenport	Scott	15	River
170	Mississippi River at Linwood	Scott	16	River
131	Mississippi River downstream Muscatine	Muscatine	17	River

Appendix C

Complete listing of the 2018 IFTMP bottom feeding fish sampling results. See Appendix B for a list of 2018 IFTMP site information.

Site #	Fish	length (mm)	weight (g)	Lab A DDD mg/kg	Lab B DDD mg/kg	Lab A DDE mg/kg	Lab B DDE mg/kg	Lab A DDT mg/kg	Lab B DDT mg/kg	Lab A chlordane mg/kg	Lab B chlordane mg/kg	Lab A dieldrin mg/kg	Lab B dieldrin mg/kg	Lab B Aroclor 1248	Lab B Aroclor 1254	Lab B Aroclor 1260	Lab B sum PCBs	LabA sum PCBs
152	big carp1	712	5828	<0.033	<0.005	<0.033	0.005	<0.033	<0.005	<0.033	0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
152	big carp2	663	3750	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	0.03	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
152	big carp3	606	2940	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
152	carp1	503	1964	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
152	carp2	502	1831	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
152	carp3	508	1974	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.03	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
152	ccat1	478	996	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
152	ccat2	482	1030	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
152	ccat3	447	728	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
47	big carp1	773	5612	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	0.02	<0.033	<0.005	0.09	<0.02	<0.02	0.13	<0.13
47	big carp2	634	3603	<0.033	<0.005	<0.033	0.005	<0.033	0.006	<0.033	<0.03	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
47	big carp3	613	3450	<0.033	<0.005	<0.033	0.006	<0.033	<0.005	<0.033	0.02	<0.033	<0.005	0.14	<0.02	<0.02	0.18	<0.13
47	carp1	496	1778	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
47	carp2	472	1536	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
47	carp3	496	1562	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
47	ccat1	455	758	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
47	ccat2	455	850	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	0.03	<0.033	<0.005	<0.02	<0.02	<0.04	<0.08	<0.13
47	ccat3	432	598	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
170	big carp1	583	2961	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	0.09	<0.02	<0.02	0.13	<0.13
170	big carp2	570	2763	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
170	big carp3	563	2356	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
170	ccat1	474	996	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
170	ccat2	411	633	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
170	ccat3	397	651	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	0.05	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
131	big carp1	678	3991	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	0.05	<0.02	<0.02	0.09	<0.13
131	big carp2	641	4537	<0.033	<0.005	0.019	0.011	<0.033	0.006	<0.033	0.03	<0.033	0.008	<0.02	<0.02	0.02	0.06	<0.13
131	big carp3	629	3578	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
131	carp1	504	2190	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	0.11	<0.02	<0.02	0.15	<0.13
131	ccat1	439	734	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13
131	ccat2	488	1017	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	0.06	<0.02	<0.02	0.1	<0.13
131	ccat3	395	588	<0.033	<0.005	<0.033	<0.005	<0.033	<0.005	<0.033	<0.02	<0.033	<0.005	<0.02	<0.02	<0.02	<0.06	<0.13