Supplementary Material (ESI) for Journal of Environmental Monitoring

Supplementary Data

Table S1. Collection sites and samples sizes for female (F) and male (M) bass and carp.

Table S2. Limits of detection (LODs) for organochlorine residues (ng g^{-1} wet weight), 2,3,7,8-tetrachlorodibenzo-*p*-dioxin equivalent dose (TCDD-EQ; pg g^{-1} wet weight), and elemental contaminants (µg g^{-1} wet weight)

Table S3. Cumulative frequency percentile concentrations of organochlorine chemical residues (ng g^{-1} wet weight), TCDD-EQ (pg g^{-1} wet weight), and elemental contaminants (µg g^{-1} wet weight) in whole-body fish composite samples.

Table S4. Cumulative frequency percentiles of biomarkers in individual fish.

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Table S1. Collection sites and samples sizes for female (F) and male (M) bass and carp.

Basin, study year, site number	River	Nearest city or feature	Latitude, longitude	Bass		Carp	
				F	M	F	M
Apalachicola River basin (ARB; 2004)							
330	Chattahoochee	Omaha, GA	32°13'19.80"N, 84°55'35.10"W	10	10	10	7
331	Flint	Albany, GA	31°34'34.86"N, 84°08'49.80"W	10	10	9	7
332	Apalachicola	Blountstown, FL	30°25'58.20"N, 85°01'17.10"W	10	10	10	10
Colorado River basin (CORB; 2003)							
311	Yampa	Lay, CO	40°25’38.00’’N, 107°51’24.00’’W	9	10	0	0
312	Green	Ouray NWR, UT	40°08’31.00’’N, 109°39’17.00’’W	6 [a]	8 [a]	11	9
313	Green	San Rafael, UT	38°45’56.00’’N, 110°05’16.00’’W	0	0	10	11
314	Gunnison	Delta, CO	38°45’59.58’’N, 108°02’30.30’’W	0	0	13	8
315	Colorado	Loma, CO	39°09’39.00’’N, 108°48’28.56’’W	5 [a]	7 [a]	10	10
316	Colorado	Gold Bar Canyon, UT	38°34’02.00’’N, 109°38’51.00’’W	0	0	10	10
317	San Juan	Hogback Diversion, NM	36°44’41.00’’N, 108°41’28.00’’W	0	0	7	13
319	Colorado	South Cove, AZ	36°05’23.70’’N, 114°06’12.30’’W	0	0	11	6
320	Colorado	Willow Beach, AZ	35°52’33.12’’N, 114°39’53.10’’W	0	0	9	11
321	Colorado	Needles, CA	34°43’44.64’’N, 114°20’12.96’’W	11	9	12	8
322	Colorado	Imperial Dam, AZ	32°54’05.94’’N, 114°28’09.48’’W	10	10	12	8
323	Gila	Hayden, AZ	33°01’22.14’’N, 110°44’16.32’’W	4	5	7	13
324	Gila	Phoenix, AZ	33°22’33.42’’N, 112°18’19.20’’W	0	2 [a]	8	10
325	Gila	Arlington, AZ	33°19’06.92’’N, 112°40’26.46’’W	11	9	13	7
Columbia River basin (CRB; 1997)							
41	Snake	Hagerman, ID	42°47’36.21”N, 114°56’18.10”W	9	7	10	10
42	Salmon	Riggins, ID	45°35’43.42”N, 116°16’55.00”W	5	7	5	12
44	Yakima	Granger, WA	46°20’49.31”N, 120°12’27.03”W	9	6	10	10
45	Willamette	Oregon City, OR	45°19’03.47”N, 122°39’57.50”W	15	6	4	10
96	Snake	Ice Harbor Dam, WA	46°41’51.68”N, 118°53’07.88”W	4	3	10	11
97	Columbia	Pasco, WA	46°31’49.22”N, 119°16’42.07”W	9	6	11	9
117	Flathead	Creston, MT	48°09’01.09”N, 114°11’29.71”W	11	10	0	0
501	Columbia	Beaver Army Terminal, [illegible]	46°10’57.86”N, 123°04’13.87”W	0	0	0	4
502	Columbia	Warrendale, OR	45°38’00.82”N, 121°58’42.57”W	1	3	10	10
503	Columbia	Vernita Bridge, WA	46°37’28.40”N, 119°51’31.45”W	3	2	10	11
505	Willamette	Portland, OR	45°33’04.51”N, 122°41’43.74”W	5	3	0	0
Mobile River basin (MORB; 2004)							
326	Tombigbee	Lavaca, AL	32°15'53.60"N, 88°00'44.21"W	11	8	10	9
327	Coosa	Childersburg, AL	33°19'57.76"N, 86°21'55.87"W	10	10	8	11
328	Alabama	Eureka Landing, AL	31°23'14.06"N, 87°42'42.19"W	10	10	10	10
329	Mobile	Bucks, AL	31°03'15.85"N, 87°59'48.07"W	12	8	9	11
Mississippi River basin (MRB; 1995)							
15	Mississippi	Luling, LA	29°59’53.2”N, 90°25’31.1”W	4	0	8	2
23	Kanawha	Winfield, WV	38°29’06.0”N, 81°48’57.6”W	4	1	0	1
24	Ohio	Marietta, OH	39°24’36.8”N, 81°26’26.3”W	6	4	2	3
25	Cumberland	Clarksville, OH	36°32’28.6”N, 87°22’04.7”W	9	8	2	2
26	Illinois	Beardstown, IL	40°07’50.6”N, 90°20’45.6”W	10	10	10	10
27	Mississippi	Guttenburg, IA	42°43’37.2”N, 91°01’30.0”W	10	10	10	10
28	Arkansas	Pine Bluff, AR	34°16’27.0”N, 94°57’12.0”W	10	10	9	10

Basin, study year, site number	River	Nearest city or feature	Latitude, longitude	Bass		Carp	
				F	M	F	M
29	Arkansas	Keystone Res., OK	36°07’54.0”N, 96°20’47.0”W	7	8	11	9
30	White	Devall’s Bluff, AR	34°47’01.0”N, 91°26’28.0”W	10	9	7	10
31	Missouri	Nebraska City, NE	40°40’15.9”N, 95°49’44.6”W	0	0	12	11
32	Missouri	Garrison Dam, ND	47°28’27.3”N, 101°26’15.5”W	1	0	9	11
67	Allegheny	Natrona, PA	40°39’54.0”N, 79°41’24.0”W	9	4	6	5
68	Wabash	New Harmony, IN	38°11’58.4”N, 87°58’36.0”W	5	6	9	8
70	Ohio	Metropolis, IL	37°07’40.8”N, 88°39’25.2”W	9	14	5	6
71	Tennessee	Savannah, TN	35°12’52.0”N, 88°18’36.0”W	3	9	5	10
72	Wisconsin	Woodman, WI	43°05’42.0”N, 90°48’57.6”W	12	4	10	12
73	Des Moines	Keosauqua, IA	40°44’52.8”N, 91°59’38.4”W	0	0	10	10
74	Mississippi	Little Falls, MN	45°58’48.0”N, 94°22’00.0”W	10	7	0	0
75	Mississippi	Cape Girardeau, MO	37°18’36.0”N, 89°31’01.2”W	0	0	10	10
76	Mississippi	Memphis, TN	38°08’30.3”N, 90°03’36.6”W	10	8	9	8
77	Arkansas	John Martin Res., CO	38°03’55.0”N, 102°56’02.0”W	8	10	11	7
78	Verdigris	Oolagah, OK	36°31’16.0”N, 95°33’37.0”W	10	9	10	9
79	Canadian	Eufaula, OK	35°16’43.0”N, 95°34’39.0”W	12	10	10	10
80	Yazoo	Redwood, MS	32°24’36.0”N, 90°55’27.0”W	2	1	5	7
81	Red	Alexandria, LA	31°20’48.0”N, 92°27’37.0”W	17	7	8	4
82	Red	Lake Texoma, TX/OK	33°52’08.0”N, 96°47’04.0”W	13	13	13	11
83	Missouri	Hermann, MO	38°42’24.1”N, 91°26’17.5”W	8	9	6	9
84	Big Horn	Hardin, MT	45°52’12.2”N, 107°34’34.0”W	0	0	12	8
85	Yellowstone	Sidney, NE	47°34’46.8”N, 104°13’10.7”W	0	0	12	8
86	James	Olivet, SD	43°13’45.0”N, 97°41’05.0”W	0	0	10	10
89	Platte	Louisville, NE	40°59’33.1”N, 96°12’30.9”W	0	0	2	7
90	Kansas	Bonner Springs, KS	39°02’47.0”N, 94°47’05.0”W	0	0	10	10
111	Mississippi	Lake City, MN	44°22’49.8”N, 92°07’33.0”W	11	11	10	10
112	Mississippi	Dubuque, IA	42°26’27.6”N, 90°35’06.0”W	10	10	10	10
201	Big Sunflower	Anguilla, MS	32°58’18.0”N, 90°46’40.0”W	0	0	9	8
202	Bogue Phalia	Leland, MS	33°24’22.0”N, 90°50’26.0”W	0	0	10	10
203	Steele Bayou	Rolling Fork, MS	32°54’71.0”N, 90°57’10.0”W	0	0	8	10
204	Tensas	Tendal, LA	32°25’56.0”N, 91°21’57.0”W	0	0	5	10
205	S. Skunk	Oskaloosa, IA	41°21’19.0”N, 92°39’31.0”W	0	0	10	10
206	Iowa	Morengo, IA	41°50’23.0”N, 92°11’54.0”W	0	0	10	10
207	Cache	Cotton Plant, AR	35°02’32.0”N, 91°19’12.0”W	0	0	8	10
208	Cache	Egypt, AR	35°51’23.0”N, 90°56’15.0”W	0	0	10	10
209	S. Fork Iowa	New Providence, IA	42°19’26.0”N, 93°10’10.0”W	0	0	3	5
210	Iowa	Rowan, IA	42°45’36.0”N, 93°37’23.0”W	0	0	10	10
211	Cedar	St. Charles City, IA	43°03’45.0”N, 92°40’23.0”W	0	0	10	10
212	Little R. Ditch	Moorehouse, MO	36°50’03.0”N, 89°43’48.0”W	1	2	10	10
213	Wolf	LaGrange, TN	35°01’57.0”N, 89°14’48.0”W	4	7	0	0
400 [b]	Leetown Res.	Kearneysville, WV	39°21’2.15”N, 77°55’32.69”W	10	10	8	11
Pee Dee River basin (PRB; 2004)							
336	Pee Dee	Rockingham, NC	34°53'22.14"N, 79°51'24.89"W	3	3	1	0
337	Pee Dee	Pee Dee, SC	34°21'23.22"N, 79°41'35.19"W	11	11	7	10
338	Pee Dee	Bucksport, SC	33°42'18.09"N, 79°11'24.00"W	10	11	2	2

Basin, study year, site number	River	Nearest city or feature	Latitude, longitude	Bass		Carp	
				F	M	F	M
Rio Grande basin (RGB; 1997)							
16	**Rio Grande**	**Mission, TX**	**26°09'28.74"N, 98°20'02.82"W**	**11**	**10**	**10**	**10**
63	**Rio Grande**	**Elephant Butte Res., NM**	**33°12'48.55"N, 107°13'27.26"W**	**6**	**0**	**15**	**10**
64	**Rio Grande**	**Alamosa, CO**	**37°25'06.42"N, 37°23'38.57"W**	**0**	**0**	**23**	**16**
65	**Pecos**	**Red Bluff Lake, TX**	**32°00'00.00"N, 104°58'30.00"W**	**0**	**0**	**10**	**10**
511	**Arroyo**	**Harlingen, TX**	**26°11'44.28"N, 97°36'20.52"W**	**0**	**0**	**13**	**7**
512	**Rio Grande**	**Brownsville, TX**	**25°52'12.96"N, 97°27'06.30"W**	**7**	**8**	**6**	**8**
513	**Rio Grande**	**Below Falcon Dam, TX**	**20°08'06.66"N, 99°08'06.42"W**	**13**	**9**	**11**	**9**
514	**Rio Grande**	**Below Amistad Res., TX**	**29°26'49.06"N, 101°03'10.58"W**	**5**	**3**	**10**	**10**
515	**Rio Grande**	**Foster Ranch, Langtry,**	**29°46'40.91"N, 101°45'13.22"W**	**0**	**0**	**6**	**4**
516	**Rio Grande**	**El Paso, TX**	**31°47'55.00"N, 31°48'15.00"W**	**0**	**0**	**10**	**8**
Savannah River basin (SRB; 2004)							
333	**Savannah**	**Augusta, GA**	**33°22'00.18"N, 81°56'46.44"W**	**3**	**7**	**10**	**10**
334	**Savannah**	**Sylvania, GA**	**33°01'16.86"N, 81°31'04.50"W**	**5**	**4**	**7**	**9**
335	**Savannah**	**Port Wentworth, GA**	**32°13'26.34"N, 81°08'47.04"W**	**10**	**10**	**10**	**10**

See http://www.cerc.usgs.gov/data/best/search/ for individual fish included in each composite sample. [a] Chemical contaminant data not available. [b] Reference site in original study. [15]

Table S2. Limits of detection for organochlorine residues (ng g^{-1} wet weight), 2,3,7,8-tetrachlorodibenzo-*p*-dioxin equivalent dose (TCDD-EQ; pg g^{-1} wet weight), and elemental contaminants (μg g^{-1} wet weight)

Contaminant	Mississippi River basin (1995)	Rio Grande and Columbia River basins (1997)	Colorado River basin (2003)	Mobile, Apalachicola, Savannah, and Pee Dee River basins (2004)
Organochlorine residue and TCDD-EQ				
Pentachlorobenzene	NM	NM	0.07	0.07
Hexachlorobenzene	10.0	10.0	0.26	0.14
Pentachloroanisole	NM	NM	0.13	0.10
α-HCH	10.0	10.0	0.08	0.10
β-HCH	10.0	10.0	0.19	0.30
γ-HCH	10.0	10.0	0.51	0.10
δ-HCH	10.0	10.0	0.05	0.10
Aldrin	NM	NM	0.27	0.09
Dieldrin	10.0	10.0	0.15	0.08
Endrin	10.0	10.0	0.10	0.25
Dacthal	NM	NM	0.50	0.13
Heptachlor	NM	NM	0.19	0.10
Heptachlor epoxide	10.0	10.0	0.01	0.10
Oxychlordane	10.0	10.0	0.08	0.10
cis-Chlordane	10.0	10.0	0.04	0.28
trans-Chlordane	10.0	10.0	0.23	0.15
cis-Nonachlor	10.0	10.0	0.10	0.10
trans-Nonachlor	10.0	10.0	0.03	0.09
o,p'-DDE	10.0	10.0	0.08	0.81
o,p'-DDD	10.0	10.0	0.55	0.10
o,p'-DDT	10.0	10.0	0.53	0.10
p,p'-DDE	10.0	10.0	0.86	2.4
p,p'-DDD	10.0	10.0	0.67	0.18
p,p'-DDT	10.0	10.0	1.4	0.47
Endosulfan I	NM	NM	0.21	0.10
Endosulfan II	NM	NM	0.17	0.10
Endosulfan sulfate	NM	NM	0.05	0.14
Methoxychlor	NM	NM	0.35	0.10
Mirex	10.0	10.0	0.05	0.10
Polychlorinated biphenyls	50	30	48	61
Toxaphene	50	30	24	10
TCDD-EQ	0.2–1.0	0.4–1.3	0.1–0.5	1.0–2.6
Elemental contaminant				
Arsenic	0.11–0.27	0.03–0.32	NA	0.01

Barium	0.16–0.21	0.27–0.31	0.29–0.33	NA
Cadmium	0.02–0.05	0.02–0.06	0.02–0.03	0.01
Chromium	0.16	NA	0.24–0.35	NA
Copper	NA	NA	NA	NA
Mercury	0.04–0.05	0.02–0.06	NA	NA
Magnesium	NA	NA	NA	NA
Manganese	NA	NA	NA	NA
Molybdenum	0.11–0.27	0.10–0.34	0.24–0.35	0.01
Nickel	0.16–0.26	0.22–0.33	0.24–0.35	0.01
Lead	0.01–0.04	0.03–0.14	0.24–0.35	0.01
Selenium	0.12–0.18	0.22–0.27	NA	NA
Strontium	NA	NA	NA	NA
Vanadium	0.11–0.27	0.10–0.31	NA	NA
Zinc	NA	NA	NA	NA

Study year is shown in parentheses. HCH, hexachlorocyclohexane; NM, analyte not measured; NA, all concentrations were >LOD.

Table S3. Cumulative frequency percentile concentrations of organochlorine chemical residues (ng g^{-1} wet weight), TCDD-EQ (pg g^{-1} wet weight), and elemental contaminants (μg g^{-1} wet weight) in whole-body fish composite samples.

Contaminant	Bass						Carp					
	10th	25th	50th	75th	90th	100th	10th	25th	50th	75th	90th	100th
Pentachlorobenzene [a]												
Female	0.04	0.04	0.04	0.14	0.45	0.60	0.04	0.04	0.09	0.18	0.41	1.19
Male	0.04	0.04	0.04	0.09	0.32	0.35	0.04	0.04	0.13	0.21	0.55	0.89
Hexachlorobenzene												
Female	0.31	0.76	5.00	5.00	5.00	5.00	0.46	2.40	5.00	5.00	5.00	20.0
Male	0.32	0.55	5.00	5.00	5.00	32.0	0.57	0.25	5.00	5.00	5.00	68.0
Pentachloroanisole [a]												
Female	0.05	0.05	0.23	0.34	0.57	1.90	0.48	0.82	1.40	2.60	3.14	5.60
Male	0.05	0.14	0.22	0.43	0.62	1.00	0.46	0.90	1.72	3.45	9.41	21.0
Aldrin [a]												
Female	0.05	0.05	0.05	0.14	0.14	0.14	0.05	0.05	0.14	0.14	0.14	0.18
Male	0.05	0.05	0.05	0.14	0.18	0.20	0.05	0.05	0.14	0.14	0.14	0.19
Dieldrin												
Female	1.10	4.36	5.00	5.00	18.0	76.0	1.03	5.00	5.00	12.0	41.5	250
Male	0.95	3.17	5.00	5.00	17.0	67.0	0.95	5.00	5.00	16.6	50.5	130
Endrin												
Female	0.13	0.32	5.00	5.00	5.00	220	0.13	2.67	5.00	5.00	5.00	710
Male	0.13	0.54	5.00	5.00	5.00	220	0.13	4.70	5.00	5.00	5.00	400
α-HCH												
Female	0.05	0.08	5.00	5.00	5.00	5.00	0.05	0.27	5.00	5.00	5.00	5.00
Male	0.05	0.29	5.00	5.00	5.00	5.00	0.05	0.05	5.00	5.00	5.00	5.00
β-HCH												
Female	0.15	0.38	5.00	5.00	5.00	5.00	0.15	1.76	5.00	5.00	5.00	5.00
Male	0.15	0.36	5.00	5.00	5.00	5.00	0.15	2.19	5.00	5.00	5.00	5.00
γ-HCH												
Female	0.05	0.26	5.00	5.00	5.00	5.00	0.05	0.91	5.00	5.00	5.00	5.00
Male	0.05	0.26	5.00	5.00	5.00	5.00	0.05	1.33	5.00	5.00	5.00	5.00
δ-HCH												
Female	0.05	0.07	5.00	5.00	5.00	5.00	0.05	0.18	5.00	5.00	5.00	5.00
Male	0.05	0.05	5.00	5.00	5.00	5.00	0.05	0.15	5.00	5.00	5.00	5.00
Dacthal [a]												
Female	0.07	0.07	0.15	0.25	0.65	2.58	0.07	0.07	0.25	0.63	1.06	5.45
Male	0.07	0.07	0.15	0.25	0.70	2.62	0.07	0.07	0.25	0.73	1.20	9.28
Heptachlor [a]												

Contaminant	Bass						Carp					
	10th	25th	50th	75th	90th	100th	10th	25th	50th	75th	90th	100th
Female	0.05	0.05	0.05	0.10	0.58	0.83	0.05	0.05	0.07	0.10	0.10	0.10
Male	0.05	0.05	0.05	0.10	0.10	0.98	0.05	0.05	0.10	0.10	0.21	0.28
Heptachlor epoxide												
Female	0.27	1.09	5.00	5.00	5.00	5.00	0.30	1.68	5.00	5.00	5.00	34.0
Male	0.22	0.93	5.00	5.00	5.00	10.0	0.28	3.61	5.00	5.00	5.00	75.0
Oxychlordane												
Female	0.55	2.80	5.00	5.00	5.00	6.00	0.29	2.26	5.00	5.00	5.00	15.0
Male	0.49	1.85	5.00	5.00	5.00	5.00	0.20	3.25	5.00	5.00	5.00	28.0
cis-Chlordane												
Female	0.97	5.00	5.00	5.00	13.0	57.0	1.70	5.00	5.00	10.0	21.5	120
Male	0.54	5.00	5.00	5.00	12.0	35.0	2.03	5.00	5.00	11.0	28.0	91.0
trans-Chlordane												
Female	0.27	1.68	5.00	5.00	5.00	69.0	0.99	5.00	5.00	5.00	14.0	350
Male	0.35	1.36	5.00	5.00	5.00	47.0	0.91	5.00	5.00	5.00	17.0	190
cis-Nonachlor												
Female	1.09	5.00	5.00	5.00	5.64	33.0	1.15	3.89	5.00	5.00	5.47	35.0
Male	1.11	5.00	5.00	5.00	12.0	25.0	0.98	5.00	5.00	5.00	13.0	31.0
trans-Nonachlor												
Female	1.42	5.00	5.00	12.0	22.0	77.0	1.79	5.00	5.00	13.0	26.0	91.0
Male	2.34	5.00	5.00	12.0	29.0	310	1.92	5.00	6.69	17.0	43.1	100
o,p'-DDE												
Female	0.41	1.42	5.00	5.00	5.00	13.0	0.41	3.22	5.00	5.00	5.00	22.0
Male	0.41	2.00	5.00	5.00	5.00	17.0	1.01	5.00	5.00	5.00	5.00	14.3
o,p'-DDD												
Female	0.28	1.19	5.00	5.00	5.00	320	0.28	3.77	5.00	5.00	15.0	340
Male	0.28	0.87	5.00	5.00	5.00	15.0	0.42	4.10	5.00	5.00	7.39	250
o,p'-DDT												
Female	0.05	0.46	5.00	5.00	5.00	240	0.05	1.10	5.00	5.00	5.00	110
Male	0.05	0.27	5.00	5.00	5.00	13.0	0.05	1.55	5.00	5.00	5.00	51.0
p,p'-DDE												
Female	6.90	15.6	41.0	170	360	1600	10.0	21.0	52.7	210	560	4200
Male	8.66	17.0	42.0	130	280	2700	11.8	23.0	68.0	280	680	8300
p,p'-DDD												
Female	1.90	5.00	5.00	19.0	40.0	280	3.10	5.00	10.2	28.0	79.0	1200
Male	2.70	5.00	5.00	15.0	32.0	160	3.45	5.00	14.0	32.0	89.5	2800
p,p'-DDT												
Female	0.70	5.00	5.00	5.00	17.0	140	0.70	3.10	5.00	5.00	5.00	18.0

Contaminant	Bass						Carp					
	10th	25th	50th	75th	90th	100th	10th	25th	50th	75th	90th	100th
Male	0.79	3.27	5.00	5.00	12.0	120	0.70	5.00	5.00	5.00	5.00	38.0
Endosulfan I [a]												
Female	0.05	0.05	0.05	0.11	0.11	0.45	0.05	0.05	0.08	0.11	0.64	3.90
Male	0.05	0.05	0.05	0.11	0.11	0.11	0.05	0.05	0.11	0.11	0.74	2.40
Endosulfan II [a]												
Female	0.05	0.05	0.05	0.15	0.79	44.0	0.05	0.05	0.09	0.34	0.60	51.0
Male	0.05	0.05	0.09	0.22	0.59	25.0	0.05	0.05	0.25	0.45	5.20	54.0
Endosulfan sulfate [a]												
Female	0.07	0.07	0.07	0.52	1.13	32.0	0.18	0.35	0.86	2.36	5.27	21.0
Male	0.07	0.07	0.07	0.46	0.72	76.0	0.20	0.34	0.95	3.70	6.20	79.0
Methoxychlor [a]												
Female	0.05	0.05	0.05	0.18	0.18	1.80	0.05	0.05	0.11	0.18	0.18	3.10
Male	0.05	0.05	0.05	0.18	0.18	9.60	0.05	0.05	0.10	0.18	0.52	1.90
Mirex												
Female	0.12	5.00	5.00	5.00	6.49	21.0	0.24	5.00	5.00	5.00	5.00	42.0
Male	0.46	5.00	5.00	5.00	6.35	21.0	0.34	5.00	5.00	5.00	5.00	75.0
Toxaphene												
Female	12	15	25	25	30	740	12	20	25	25	61	2700
Male	12	15	25	25	30	870	12	20	25	25	65	8300
Total PCB												
Female	24	25	110	330	550	1900	25	25	64	200	470	2300
Male	24	25	110	380	770	2700	23	25	97	390	735	3300
TCDD-EQ												
Female	0.2	0.5	1.2	5.0	8.0	49.0	0.1	0.5	1.0	6.0	25.0	68.0
Male	0.2	0.5	1.0	6.0	14.0	33.6	0.2	0.5	2.0	6.0	12.5	46.0
Arsenic												
Female	0.04	0.08	0.11	0.23	0.29	0.53	0.06	0.09	0.12	0.14	0.20	0.48
Male	0.04	0.08	0.13	0.24	0.29	0.57	0.07	0.09	0.11	0.13	0.23	0.56
Barium												
Female	0.20	0.39	0.65	1.31	2.17	3.28	0.98	1.39	2.16	2.90	3.70	5.88
Male	0.25	0.37	0.61	1.19	2.10	7.96	1.06	1.50	2.35	3.27	4.62	7.13
Cadmium												
Female	0.01	0.01	0.02	0.02	0.03	0.06	0.01	0.03	0.06	0.10	0.15	0.51
Male	0.01	0.01	0.02	0.02	0.03	0.22	0.01	0.02	0.06	0.11	0.20	0.51
Chromium												
Female	0.27	0.33	0.56	0.92	2.38	70.2	0.30	0.45	0.75	2.19	5.35	21.8
Male	0.32	0.43	0.59	0.81	2.13	41.6	0.26	0.40	0.62	1.40	5.22	71.8

Contaminant	Bass						Carp					
	10th	25th	50th	75th	90th	100th	10th	25th	50th	75th	90th	100th
Copper												
Female	0.27	0.42	0.51	0.64	0.80	1.01	0.87	0.95	1.07	1.30	1.55	3.32
Male	0.29	0.41	0.50	0.58	0.67	1.20	0.82	0.90	1.08	1.25	1.48	3.92
Lead												
Female	0.01	0.02	0.04	0.06	0.13	0.83	0.03	0.06	0.10	0.14	0.19	0.45
Male	0.01	0.02	0.03	0.06	0.13	0.49	0.02	0.05	0.09	0.15	0.26	0.69
Magnesium												
Female	293	329	382	487	537	634	260	290	322	366	410	530
Male	301	339	417	500	573	673	265	287	329	380	443	513
Manganese												
Female	0.78	1.01	1.52	2.18	3.60	9.56	2.67	3.28	4.24	5.98	8.36	14.1
Male	0.67	1.10	1.44	2.28	3.69	6.98	2.17	2.86	4.40	6.07	9.41	20.1
Mercury												
Female	0.10	0.12	0.21	0.35	0.47	0.69	0.03	0.07	0.10	0.14	0.16	0.31
Male	0.07	0.10	0.21	0.26	0.46	0.78	0.04	0.07	0.11	0.14	0.17	0.34
Molybdenum												
Female	0.01	0.07	0.09	0.11	0.14	0.63	0.03	0.07	0.10	0.13	0.15	0.26
Male	0.01	0.05	0.09	0.10	0.15	0.35	0.02	0.07	0.10	0.13	0.17	0.81
Nickel												
Female	0.13	0.15	0.29	0.57	0.93	3.29	0.13	0.16	0.29	0.50	1.03	2.98
Male	0.13	0.16	0.30	0.68	0.90	2.48	0.12	0.15	0.28	0.52	0.95	5.59
Selenium												
Female	0.28	0.34	0.46	0.54	1.03	4.46	0.43	0.53	0.67	0.90	1.68	3.77
Male	0.27	0.37	0.47	0.52	1.10	4.11	0.41	0.46	0.59	0.89	1.74	4.66
Strontium												
Female	3.85	7.67	14.7	23.3	29.5	64.1	4.99	7.81	15.6	26.1	40.3	78.4
Male	3.96	6.50	13.8	25.9	40.0	87.7	5.36	8.97	15.7	27.0	42.2	74.8
Vanadium												
Female	0.03	0.06	0.09	0.11	0.14	0.39	0.09	0.10	0.13	0.20	0.28	0.54
Male	0.03	0.06	0.09	0.10	0.14	0.23	0.09	0.10	0.13	0.21	0.33	0.50
Zinc												
Female	11.5	13.5	15.5	18.3	22.5	29.1	55.6	65.0	76.6	89.0	100	135
Male	11.5	13.4	16.2	18.9	21.6	37.3	48.3	56.7	63.2	72.4	79.3	150

Censored values were represented by one half the limit of detection. [a] not measured in samples from the Mississippi, Rio Grande, and Columbia River basins.

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Table S4. Cumulative frequency percentiles of biomarkers in individual fish.

Endpoint	Bass						Carp					
	10th	25th	50th	75th	90th	100th	10th	25th	50th	75th	90th	100th
Length (mm)												
Female	269	305	351	414	470	614	387	444	505	576	657	1614
Male	258	293	330	375	411	785	381	433	491	555	604	1489
Weight (g)												
Female	255	379	630	1035	1555	4700	795	1132	1698	2507	3900	9000
Male	224	329	500	785	1030	2200	709	1038	1500	2125	2900	7545
Condition factor												
Female	1.15	1.26	1.41	1.58	1.75	2.37	1.13	1.24	1.33	1.45	1.58	2.63
Male	1.12	1.24	1.39	1.57	1.74	3.53	1.09	1.19	1.28	1.39	1.51	3.28
Age (y)												
Female	2	2	3	4	6	12	2	3	5	8	23	62
Male	1	2	3	4	5	12	2	3	4	7	22	62
Splenosomatic index (%)												
Female	0.06	0.07	0.10	0.15	0.22	1.03	0.14	0.18	0.23	0.30	0.40	3.94
Male	0.05	0.07	0.10	0.15	0.22	0.90	0.17	0.22	0.30	0.38	0.51	1.84
Hepatosomatic index (%)												
Female	0.56	0.69	0.99	1.32	1.72	3.00	NA	NA	NA	NA	NA	NA
Male	0.54	0.70	0.93	1.26	1.55	3.17	NA	NA	NA	NA	NA	NA
MA-A (μm^2)												
Female	1150	1868	2891	4177	6019	19762	1424	2116	3271	4840	7027	36300
Male	1138	1787	2907	4459	6268	18829	1308	1921	2860	4075	6253	25324
MA-# (MA sq. mm^{-1})												
Female	1.18	2.35	4.71	7.65	10.00	26.47	1.20	4.12	7.65	11.76	15.29	28.92
Male	0.63	2.40	4.71	7.65	10.00	18.24	1.76	5.29	8.82	13.53	17.65	32.35
MA-% (%)												
Female	0.17	0.55	1.41	2.82	4.33	11.24	0.30	1.21	2.54	4.45	6.57	23.94
Male	0.16	0.49	1.48	2.89	4.62	13.05	0.34	1.22	2.80	4.58	6.52	19.10
Health assessment index												
Female	0	30	60	90	120	200	0	0	30	40	70	160
Male	0	30	60	90	110	190	0	0	30	40	70	130
EROD (pmol min^{-1} mg^{-1})												
Female	4.32	7.87	16.80	37.72	62.90	232.8	0.15	0.62	1.56	3.78	10.73	203.2
Male	5.19	10.88	21.69	43.38	74.68	277.4	0.22	1.07	3.62	8.65	22.12	211.5
Gonadosomatic index (%)												
Female	0.42	0.57	0.85	1.38	1.85	7.20	2.19	5.98	10.57	14.41	17.97	36.41

Endpoint	Bass						Carp					
	10th	25th	50th	75th	90th	100th	10th	25th	50th	75th	90th	100th
Male	0.09	0.17	0.27	0.38	0.55	1.65	2.99	4.66	6.42	7.99	10.06	27.40
Vitellogenin (mg mL^{-1})												
Female	0.0005	0.0005	0.047	0.905	3.347	77.92	0.097	0.997	2.149	3.244	4.993	17.32
Male	0.0005	0.0005	0.0005	0.001	0.008	3.147	0.0005	0.0005	0.002	0.003	0.016	2.645
17β-estradiol (pg mL^{-1}) [a]												
Female	249	385	587	899	1313	6330	351	569	991	1380	2117	5126
Male	158	229	343	498	669	1886	101	189	356	578	908	2918
11-ketotestosterone (pg mL^{-1}) [a]												
Female	105	165	277	507	806	2203	117	183	314	568	923	2008
Male	295	515	811	1257	1635	6040	220	424	921	1415	2298	8492
E/KT ratio [a]												
Female	0.79	1.38	2.17	3.50	5.95	27.76	1.06	1.78	2.93	4.63	6.89	32.52
Male	0.16	0.25	0.42	0.70	1.29	16.37	0.13	0.22	0.40	0.69	1.32	19.33
Oocyte atresia												
Female	0	0	2	4	9	80	0	2	6	12	19	65

Censored EROD and vitellogenin values were represented by one half the limit of detection. NA, not applicable. [a] not measured in samples from the Rio Grande and Columbia River basins.