

**Analysis of Polychlorinated Biphenyl (PCB) Residues
in Fish Collected March 26-28, 2003
from the Bayou Creek System**

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INTRODUCTION

As part of our biannual sampling series, fish were collected on March 26-28, 2003 from our series of sampling stations on Big and Little Bayou Creeks and the reference station on the west fork of Massac Creek (MC). Fillet samples were analyzed for Aroclors 1248, 1254, and 1260. A total of 80 fish were analyzed from Big and Little Bayou Creeks and Massac Creek. This included 3 fish from Massac Creek, 63 fish from Big Bayou Creek and 14 fish from Little Bayou Creek. The fish from Big Bayou Creek consisted of 22 longear sunfish (*Lepomis megalotis*) (LS), 19 green sunfish (*Lepomis cyanellus*) (GS), 2 bluegill sunfish (*Lepomis macrochirus*) (BG), 10 yellow bullhead catfish (*Ictalurus natalis*) (YBH), 2 brown bullhead catfish (*Ictalurus nebulosus*) (BBH), 1 creek chub (*Semotilus atroaculatus*) (CC), 3 creek chubsuckers (*Erimyzon oblongus*) (CChS), 2 spotted bass (*Micropterus punctulatus*) (SpB), 1 white sucker (*Catostomus commersoni*) (WS), and 1 spotted sucker (*Minytrema melanops*) (SpSu). Fish collected from Little Bayou Creek consisted of 7 longear sunfish and 7 green sunfish. Catfish were not found during this collection at the three stations in Little Bayou Creek. From Massac Creek, fish consisted of 1 longear sunfish and 2 green sunfish.

METHODS

Fish collection

Fish were collected by use of back-pack shocker and seining. In addition, runs and pools were collected using a more powerful shocking system mounted on a small barge. Collections were conducted by UK personnel. Fish that did not

meet our requirements were returned to the stream. Collected fish were wrapped in aluminum foil, tagged, bagged in plastic containers by collecting station, and placed on ice (4 °C) for transport to the laboratory. Fish species were identified and stored in the freezer (-15 °C) until extraction.

Tissue extraction

Fish were measured for length and whole body weight, and fillets were taken with solvent-cleaned surgical instruments. The fillets were then weighed and macerated as described below. Otoliths (sagittae) were removed from each specimen for age determinations (Boxrucker, 1986).

PCBs in fish tissues were extracted and analyzed as described by Birge and Price (2001), using standard U.S. EPA methods (Watts, 1980; U.S. EPA, 1997; Erickson, 1997).

Analysis by Gas Chromatography

Samples were analyzed for Aroclors 1248, 1254, and 1260 according to SW-846 Method 8082 (U.S. EPA, 1997) and previously described by Birge and Price (2001).

Quality Assurance

Permanent bench records were kept of all assays and annotated as required under Good Laboratory Practices (*Federal Register*, 40 CFR, Part 160, August 17, 1989). All printouts and graphic recordings were filed and are open for inspection. These bench records will be archived within two years after the

close of the project but retrievable upon request. Chain of Custody was maintained for all samples collected.

RESULTS

A total of 80 fish were analyzed during this survey, which included 1 LS and 2 GS from Massac Creek; 22 LS, 2 BG, 19 GS, 10 YBH, 2 BBH, 1 CC, 3 CChS, 2 SpB, 1 WS, and 1 SpSu from Big Bayou Creek; and 7 LS and 7 GS from Little Bayou Creek (Tables 1 and 2). Of the fish that could be aged, 57 % of the fish in Big Bayou Creek were <1 to 1+ years old and 41 % of fish were 2 to 2+ years old. Only one fish in Big Bayou Creek was 3 years old. The same trend was observed in Little Bayou Creek, where 47 % of fish were <1 to 1+ year old; 40 % were 2 to 2+ years old; and 2 fish were 3+ years old. The means \pm standard deviations for length, whole body weight, lipid, and Aroclor concentrations are given in Table 3. Mean lengths for sunfish from Big Bayou Creek were 109, 93, 91 mm for LS, BG, and GS, respectively. Mean whole body weights for sunfish from Big Bayou Creek were 30.5, 10.4, 14.8 g for LS, BG, and GS, respectively. Mean length and whole body weight for YBH in Big Bayou Creek were 136 mm and 52.6 g, respectively. In Little Bayou Creek, the mean sunfish lengths were 93 and 114 mm for LS and GS (Tables 1 and 3). Mean whole body weight were 17.2 and 33.4 g for LS and GS.

In Big Bayou Creek, Aroclor 1248 was quantifiable in 11 of 63 fish collected (17.5%), Aroclor 1254 was found in 36 out of 63 fish (57.1%), and Aroclor 1260 was quantifiable in 26 out of 63 fish (41.3%) (Table 1). Similar ratios were obtained during the June 2002 collection (Birge and Price, July

2003). A brown bullhead at station BB6 of Big Bayou Creek had the highest concentrations of Aroclor 1248 (0.63 µg/g). Highest Aroclor 1254 and 1260 (0.57 and 0.48 µg/g) were detected for a green sunfish from station BB1. Mean concentrations of Aroclor for selected species from Big Bayou Creek are represented graphically in Table 1 and Figures 1 through 5. PCBs were detected in fish fillet at all stations on Big Bayou Creek from and including BB1 through BB9. Higher frequencies of detections were observed at BB4 through BB8. All fish analyzed from BB7 were contaminated with PCBs (Table 1). In addition, values for fillet from all 7 fish contained total PCBs above the lower action level for the State of Kentucky (*i.e.* 0.051; personal communication from Alan Grant, Division of Special Services). The overall range of fillet values was 0.14 to 0.45 µg/g. The highest total PCBs (µg/g) found in fillet were 1.06 at BB1, 1.01 at BB3, and 1.16 at BB6. Of 51 fish analyzed from station BB1 through BB8, 27 contained fillet PCB values at or above the lowest action level in Kentucky and 16 fish contained total fillet values above the two highest action levels, which included the range of 0.31 to 1.9 µg/g, where meals were given as one per month to 6 per year. Values above this range preclude utilization of fish from freshwaters.

Stream sediments collected during this series contained Aroclor 1248 at stations BB4 and BB8, Aroclor 1254 at stations BB4, BB5, and BB8, and Aroclor 1260 at stations BB4 through BB8. Body burden in green sunfish for Aroclors 1254 and 1260 were strongly related to sediment values, with correlations of 0.98

and 0.73 for 1254 and 1260, respectively. However, longear sunfish did not correlate well with sediment values.

For Little Bayou Creek, Aroclor 1248 was quantifiable in 5 of 14 fish (35.7%); Aroclor 1254 was found in 7 of 14 fish (50%); and Aroclor 1260 was found in 10 of 14 fish (71.4%) (Table 2). During the June 2002 collection, the ratios were 50, 61 and 39 % for Aroclor 1248, 1254, and 1260, respectively (Birge and Price, July 2003). Highest Aroclor concentrations were found at LB2, with two LS having 0.64 $\mu\text{g/g}$ 1248 and 0.83 $\mu\text{g/g}$ 1260. Highest Aroclor 1254 was found in a GS at 0.65 $\mu\text{g/g}$. Eleven of 14 fish analyzed from stations LB2, LB3, and LB4 contained total PCBs in fillet that were at or above 0.2 $\mu\text{g/g}$, and half of the fish tested contained total PCBs above 0.5 $\mu\text{g/g}$. Mean Aroclor concentrations are presented in Figures 6 through 9. Fillet values above 1.0 $\mu\text{g/g}$ were found in 3 sunfish. The highest value was 1.47 μg total PCB/g found in a green sunfish from station LB2 (Table 2).

DISCUSSION

Fillet values in edible tissues that exceed State guidelines for human consumption were widespread within the Bayou system, while no detections were found at reference stations MC and BB1A (Table 1). Values also were higher than observed in earlier years. For example, yearly increase found in 2003 (March and June collections) occurred in fillet tissue from the green sunfish taken from 5 of 5 stations on Big Bayou Creek (BB4 – BB8) which generally have shown the highest PCB concentrations. This same result was observed for the

three monitoring stations on Little Bayou Creek (*i.e.* 3 stations out of 3). Concerning the longear sunfish, higher values were found in 2003 surveys in 6 out of 8 Bayou stations. Combining data for both species, higher fillet values were found in 2003, as compared with results for years 2001 and 2002, at 14 of 16 monitoring stations. These results have been plotted in Figures 10 through 13. In each case, linear regressions have been shown for these increases, as well as the year 2008 if the degree on increases remain linear. Of course the extensions over untested time are “strictly theoretical”. These results suggest the likelihood that PCB contamination has increased over the past year.

Table 1. PCB concentrations in fish from Massac Creek and Big Bayou Creek collected March 26-28, 2003.

Station	Date	Type	Length (mm)	Age (Years)	Whole Body Wt. (g)	Fillet Wt. (g)	mg fat /g tissue	Aroclor Conc. (µg/g)			
								1248	1254	1260	Total
MC	03/27/03	LS1	72	1+	7.92	1.240	11.21	<0.161	<0.161	<0.161	<0.161
MC	03/27/03	GS1	83	1+	12.50	1.714	6.24	<0.117	<0.117	<0.117	<0.117
MC	03/27/03	GS2	96	2	20.26	2.450	5.51	<0.082	<0.082	<0.082	<0.082
BB1A	03/26/03	LS1	90	2	15.77	2.082	5.28	<0.096	<0.096	<0.096	<0.096
BB1A	03/26/03	LS2	100	2	19.98	2.922	4.16	<0.068	<0.068	<0.068	<0.068
BB1A	03/26/03	LS3	94	2	14.67	1.992	4.17	<0.100	<0.100	<0.100	<0.100
BB1A	03/26/03	GS1	81	1	9.14	1.225	6.00	<0.163	<0.163	<0.163	<0.163
BB1A	03/26/03	YBH1	98	---	10.66	0.759	5.01	<0.264	<0.264	<0.264	<0.264
BB1	03/26/03	GS1	85	1	9.86	1.029	4.42	<0.194	0.574	0.481	1.055
BB1	03/26/03	GS2	90	1+	12.49	1.383	4.63	<0.145	0.161	0.109*	0.161
BB1	03/26/03	BG1L	96	2	12.61	1.600	4.19	<0.125	0.224	0.200	0.425
BB1	03/26/03	YBH1L	92	---	8.31	0.868	2.42	<0.230	<0.230	0.089*	<0.230
BB2	03/28/03	GS1	103	1+	18.55	2.505	4.09	<0.080	0.183	0.128	0.311
BB2	03/28/03	GS2	87	1+	12.11	1.438	4.69	<0.139	<0.139	<0.139	<0.139
BB2	03/28/03	GS3	83	2	10.49	1.245	3.09	<0.161	<0.161	<0.161	<0.161
BB2	03/28/03	LS1	110	1	24.37	3.730	3.31	0.095	0.067	0.044*	0.162
BB2	03/28/03	LS2	77	1	8.77	1.225	4.90	<0.163	<0.163	<0.163	<0.163

* PCBs detected, however the value was below Minimum Quantitation Limit (MQL).

Table 1, continued. PCB concentrations in fish from Massac Creek and Big Bayou Creek collected March 26-28, 2003.

Station	Date	Type	Length (mm)	Age (Years)	Whole Body Wt. (g)	Fillet Wt. (g)	mg fat /g tissue	Aroclor Conc. ($\mu\text{g/g}$)			
								1248	1254	1260	Total
BB3	03/26/03	GS1	81	1+	10.35	1.277	---	<0.157	0.139*	0.129*	<0.157
BB3	03/26/03	GS2	91	2+	13.82	1.672	3.35	<0.120	0.073*	0.093*	<0.120
BB3	03/26/03	GS3	93	1	13.02	1.868	5.33	<0.107	0.119	0.107	0.226
BB3	03/26/03	LS1	113	2+	27.11	3.594	3.84	<0.056	0.068	0.053*	0.068
BB3	03/26/03	LS2	97	2+	18.83	2.645	5.18	<0.076	0.081*	0.057*	<0.076
BB3	03/26/03	YBH1	110	---	19.53	1.383	3.98	<0.145	<0.145	0.095*	<0.145
BB3	03/26/03	YBH2	96	---	11.24	0.827	3.45	<0.242	<0.242	0.094*	<0.242
BB3	03/26/03	CC1	156	---	47.05	4.499	lost	0.560	0.243	0.205	1.008
BB3	03/26/03	CChS1	136	---	38.42	4.659	7.41	<0.043	0.082	0.047*	0.082
BB4	03/26/03	GS1	97	1	17.30	2.540	6.26	0.106	0.052	0.029*	0.158
BB4	03/26/03	GS2	102	1+	22.29	2.956	4.40	0.192	0.109	0.084	0.385
BB4	03/26/03	GS3	101	1+	18.32	2.060	4.61	<0.097	0.075*	0.073*	<0.097
BB4	03/26/03	LS1	105	1+	22.43	3.383	4.36	<0.059	0.055*	0.049*	<0.059
BB4	03/26/03	LS2	94	1+	14.86	1.901	4.63	<0.105	0.155	0.115	0.270
BB4	03/26/03	YBH1	141	---	43.92	3.467	5.13	<0.058	0.075	0.066	0.141
BB5	03/27/03	GS1	93	1	16.56	2.396	3.90	<0.083	0.243	0.269	0.512
BB5	03/27/03	GS2	80	1+	8.81	0.911	4.61	<0.220	<0.220	<0.220	<0.220
BB5	03/27/03	LS1	117	2+	35.43	4.872	3.60	0.098	0.055	0.042	0.195
BB5	03/27/03	LS2	114	3	33.50	4.540	3.98	0.100	0.055	0.053	0.209
BB5	03/27/03	LS3	86	<1	13.53	1.683	7.78	0.203	0.200	0.089*	0.403
BB5	03/27/03	SpSu1	197	---	74.22	8.080	2.95	<0.025	0.089	0.150	0.239

* PCBs detected, however the value was below Minimum Quantitation Limit (MQL).

Table 1, continued. PCB concentrations in fish from Massac Creek and Big Bayou Creek collected March 26-28, 2003.

Station	Date	Type	Length (mm)	Age (Years)	Whole Body Wt. (g)	Fillet Wt. (g)	mg fat /g tissue	Aroclor Conc. (µg/g)			
								1248	1254	1260	Total
BB6	03/27/03	LS1	113	2	31.79	4.450	3.98	<0.045	0.082	0.084	0.166
BB6	03/27/03	LS2	115	1+	30.82	4.657	3.56	0.115	0.112	0.079	0.305
BB6	03/27/03	GS1	95	2	16.80	2.275	3.93	<0.088	0.288	0.221	0.509
BB6	03/27/03	BG1	90	1+	8.10	1.071	4.95	<0.187	0.087*	0.081*	<0.187
BB6	03/27/03	WS1	136	---	40.00	4.804	7.71	<0.042	0.060	0.037*	0.060
BB6	03/27/03	BBH1	78	---	6.18	0.360	14.31	0.630	0.299	0.229	1.158
BB7	03/27/03	LS1	113	2	31.12	4.138	5.33	0.118	0.068	0.057	0.243
BB7	03/27/03	LS2	100	1+	24.38	3.213	7.21	0.200	0.138	0.110	0.448
BB7	03/27/03	GS1	92	2+	15.10	2.321	6.12	<0.086	0.256	0.219	0.475
BB7	03/27/03	GS2	93	2+	16.47	2.319	3.88	<0.086	0.099	0.086	0.184
BB7	03/27/03	YBH1	233	---	161.96	8.134	2.70	<0.025	0.148	0.283	0.431
BB7	03/27/03	YBH2	143	---	45.03	3.084	2.93	<0.065	0.088	0.089	0.178
BB7	03/27/03	CChS1	135	---	37.64	4.082	8.00	<0.049	0.065	0.074	0.139
BB8	03/28/03	LS1	132	2+	64.29	7.707	2.87	<0.026	0.024*	0.020*	<0.026
BB8	03/28/03	LS2	133	2+	64.69	8.327	3.36	<0.024	0.031	0.023*	0.031
BB8	03/28/03	LS3	120	2+	46.20	6.869	6.30	<0.029	0.051	0.037*	0.051
BB8	03/28/03	GS1	106	1+	30.33	4.277	4.64	<0.047	0.032*	0.036*	<0.047
BB8	03/28/03	YBH1	206	---	178.80	10.438	2.74	<0.019	0.031	0.021	0.052
BB8	03/28/03	SpB1	76	<1	6.10	0.835	4.55	<0.240	<0.240	0.071*	<0.240
BB8	03/28/03	SpB2	85	<1	8.38	1.283	4.25	<0.156	0.119*	0.066*	<0.156
BB8	03/28/03	CChS1	178	---	84.21	7.149	7.12	<0.028	0.058	0.060	0.117

* PCBs detected, however the value was below Minimum Quantitation Limit (MQL).

Table 1, continued. PCB concentrations in fish from Massac Creek and Big Bayou Creek collected March 26-28, 2003.

Station	Date	Type	Length (mm)	Age (Years)	Whole Body Wt. (g)	Fillet Wt. (g)	mg fat /g tissue	Aroclor Conc. ($\mu\text{g/g}$)			
								1248	1254	1260	Total
BB9	03/28/03	LS1	140	3+	58.16	5.755	3.15	<0.035	0.098	0.084	0.183
BB9	03/28/03	LS2	125	2+	44.65	5.340	3.43	<0.037	0.039	0.023*	0.039
BB9	03/28/03	LS3	107	1+	25.16	2.511	4.28	<0.080	0.067*	0.047*	<0.080
BB9	03/28/03	GS1	80	1+	8.99	0.957	4.44	<0.209	<0.209	0.057*	<0.209
BB9	03/28/03	YBH1	135	---	31.50	1.970	2.89	<0.102	0.083*	0.063*	<0.102
BB9	03/28/03	YBH2	105	---	14.75	0.794	2.52	<0.252	<0.252	0.143*	<0.252
BB9	03/28/03	BBH1	125	---	23.17	1.485	2.59	<0.135	<0.135	<0.135	<0.135

* PCBs detected, however the value was below Minimum Quantitation Limit (MQL).

Table 2. PCB concentrations in fish from Little Bayou Creek collected March 26-28, 2003.

Station	Date	Type	Length (mm)	Age (Years)	Whole Body Wt. (g)	Fillet Wt. (g)	mg fat /g tissue	Aroclor Conc. ($\mu\text{g/g}$)			
								1248	1254	1260	Total
LB2	03/27/03	LS1	106	1+	23.71	2.961	3.71	<0.675	0.622*	0.828	0.828
LB2	03/27/03	LS2	93	1+	16.41	2.053	4.04	<0.974	0.333*	0.334*	<0.974
LB2	03/27/03	LS3	94	1+	15.19	1.743	3.50	0.637	0.483*	0.450*	0.637
LB2	03/27/03	GS1	153	2+	60.20	5.880	2.20	<0.340	0.653	0.817	1.470
LB2	03/27/03	GS2	99	2+	23.32	2.071	3.14	<0.966	0.330	0.260	0.591
LB3	03/27/03	LS1	97	2+	19.18	2.282	4.32	<0.175	0.300	0.208	0.508
LB3	03/27/03	LS2	72	<1	9.51	1.184	4.65	0.615	0.353	0.268	1.236
LB3	03/27/03	GS1	155	3+	71.43	9.101	3.13	0.204	<0.044	0.096	0.299
LB3	03/27/03	GS2	140	3+	49.10	5.996	4.29	0.279	<0.067	0.109	0.387
LB3	03/27/03	GS3	91	1+	15.50	1.844	3.99	0.616	0.371	0.215	1.202
LB3	03/27/03	GS4	82	1+	12.73	1.193	5.28	<0.335	0.222*	0.241*	<0.335
LB4	03/28/03	LS1	109	2+	25.29	2.405	4.51	<0.083	0.106	0.091	0.197
LB4	03/28/03	LS2	82	1+	11.17	0.955	3.40	<0.209	0.208*	0.161*	<0.209
LB4	03/28/03	GS2	94	2+	15.73	1.794	3.65	<0.111	0.219	0.199	0.418

* PCBs detected, however the value was below Minimum Quantitation Limit (MQL).

Table 3. Means \pm standard deviations for measured parameters of fish from the Bayou Creek system, collected March 26-28, 2003.

System	Fish Type	Length (mm)	Whole Body Wt. (g)	Lipid (mg/g)	Mean Aroclor Conc. ($\mu\text{g/g}$)			
					1248	1254	1260	Total
MC	LS	72	7.92	11.21	N.D.	N.D.	N.D.	N.D.
	GS	90 \pm 9	16.38 \pm 5.49	5.88 \pm 0.52	N.D.	N.D.	N.D.	N.D.
BB1A	LS	95 \pm 5	16.80 \pm 2.80	4.54 \pm 0.65	N.D.	N.D.	N.D.	N.D.
	GS	81	9.14	6.00	N.D.	N.D.	N.D.	N.D.
	YBH	98	10.66	5.01	N.D.	N.D.	N.D.	N.D.
BB1	GS	88 \pm 4	11.18 \pm 1.86	4.52 \pm 0.15	N.D.	0.37 \pm 0.29	0.48	0.61 \pm 0.63
	BG	96	12.61	4.19	N.D.	0.22	0.20	0.43
	YBH	92	8.31	2.42	N.D.	N.D.	N.D.	N.D.
BB2	GS	91 \pm 11	13.72 \pm 4.26	3.96 \pm 0.81	N.D.	0.18	0.13	0.31
	LS	94 \pm 23	16.57 \pm 11.03	4.10 \pm 1.12	0.10	0.07	N.D.	0.16
BB3	GS	88 \pm 6	12.39 \pm 1.82	4.34 \pm 1.40	N.D.	0.12	N.D.	0.12
	LS	105 \pm 11	22.97 \pm 5.86	4.51 \pm 0.95	N.D.	0.08 \pm 0.01	N.D.	0.08 \pm 0.01
	YBH	103 \pm 10	15.39 \pm 5.86	3.71 \pm 0.38	N.D.	N.D.	N.D.	N.D.
	CC1	156	47.05	Sample lost	0.56	0.24	0.21	1.01
	CChS	136	38.42	7.41	N.D.	0.08	N.D.	0.08
BB4	GS	100 \pm 3	19.30 \pm 2.63	5.09 \pm 1.02	0.15 \pm 0.06	0.11	0.08	0.25 \pm 0.20
	LS	100 \pm 8	18.65 \pm 5.35	4.49 \pm 0.19	N.D.	0.16	0.12	0.27
	YBH	141	43.92	5.13	N.D.	0.08	0.07	0.14

Table 3, continued. Means \pm standard deviations for measured parameters of fish from the Bayou Creek system, collected March 26-28, 2003.

System	Fish Type	Length (mm)	Whole Body Wt. (g)	Lipid (mg/g)	Mean Aroclor Conc. ($\mu\text{g/g}$)			
					1248	1254	1260	Total
BB5	GS	87 \pm 9	12.68 \pm 5.48	4.26 \pm 0.50	N.D.	0.24	0.27	0.512
	LS	106 \pm 17	27.49 \pm 12.13	5.12 \pm 2.31	0.13 \pm 0.06	0.10 \pm 0.08	0.05 \pm 0.01	0.27 \pm 0.12
	SpSu	197	74.22	2.95	N.D.	0.09	0.150	0.24
BB6	LS	114 \pm 1	31.31 \pm 0.69	3.77 \pm 0.29	0.12	0.10 \pm 0.02	0.08 \pm 0.003	0.24 \pm 0.10
	GS	95	16.80	3.93	N.D.	0.29	0.221	0.51
	BG	90	8.10	4.95	N.D.	N.D.	N.D.	N.D.
	WS1	136	40.00	7.71	N.D.	0.06	N.D.	0.06
	BBH	78	6.18	14.31	0.63	0.30	0.23	1.16
BB7	LS	107 \pm 9	27.75 \pm 4.77	6.27 \pm 1.33	0.16 \pm 0.06	0.10 \pm 0.05	0.08 \pm 0.04	0.35 \pm 0.15
	GS	93 \pm 1	15.78 \pm 0.97	5.00 \pm 1.58	N.D.	0.18 \pm 0.11	0.15 \pm 0.09	0.33 \pm 0.21
	YBH	188 \pm 64	103.49 \pm 82.68	2.82 \pm 0.16	N.D.	0.12 \pm 0.04	0.19 \pm 0.14	0.30 \pm 0.18
	CChS	135	37.64	8.00	N.D.	0.07	0.07	0.14
BB8	LS	128 \pm 7	58.39 \pm 10.56	4.18 \pm 1.86	N.D.	0.04 \pm 0.01	0.04	0.06 \pm 0.04
	GS1	106	30.33	4.64	N.D.	N.D.	N.D.	N.D.
	YBH	206	178.80	2.74	N.D.	N.D.	N.D.	N.D.
	SpB	81 \pm 6	7.24 \pm 1.61	4.40 \pm 0.21	N.D.	N.D.	0.071	0.071
	CChS	178	84.21	7.12	N.D.	0.06	0.06	0.12
BB9	LS	124 \pm 17	42.66 \pm 16.59	3.62 \pm 0.59	N.D.	0.07 \pm 0.04	0.05 \pm 0.04	0.12 \pm 0.09
	GS1	80	8.99	4.44	N.D.	N.D.	N.D.	N.D.
	YBH	120 \pm 21	23.12 \pm 11.84	2.71 \pm 0.26	N.D.	N.D.	0.14	0.14
	BBH	125	23.17	2.59	N.D.	N.D.	N.D.	N.D.

Table 3, continued. Means \pm standard deviations for measured parameters of fish from the Bayou Creek system, collected March 26-28, 2003.

System	Fish Type	Length (mm)	Whole Body Wt. (g)	Lipid (mg/g)	Mean Aroclor Conc. ($\mu\text{g/g}$)			
					1248	1254	1260	Total
LB2	LS	98 \pm 7	18.44 \pm 4.61	3.75 \pm 0.27	N.D.	N.D.	0.83	0.83
	GS	126 \pm 38	41.76 \pm 26.08	2.67 \pm 0.66	N.D.	0.49 \pm 0.23	0.54 \pm 0.394	1.03 \pm 0.62
LB3	LS	85 \pm 18	14.34 \pm 6.84	4.48 \pm 0.23	0.62	0.33 \pm 0.04	0.24 \pm 0.042	0.87 \pm 0.52
	GS	117 \pm 36	37.19 \pm 28.18	4.17 \pm 0.89	0.37 \pm 0.22	0.37	0.14 \pm 0.065	0.63 \pm 0.50
LB4	LS	96 \pm 19	18.23 \pm 9.99	3.96 \pm 0.78	N.D.	0.11	0.09	0.20
	GS	94	15.73	3.65	N.D.	0.22	0.20	0.42

Figure 1. Mean PCB concentrations in longear sunfish from Big Bayou Creek, collected March 26-28, 2003.

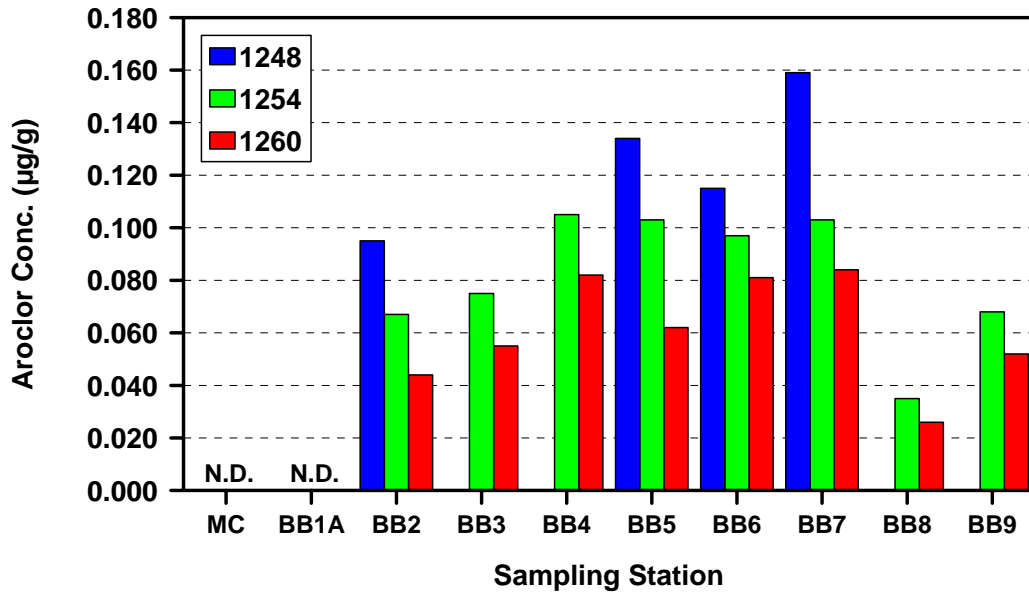


Figure 2. Mean total PCB concentrations in longear sunfish from Big Bayou Creek, collected March 26-28, 2003.

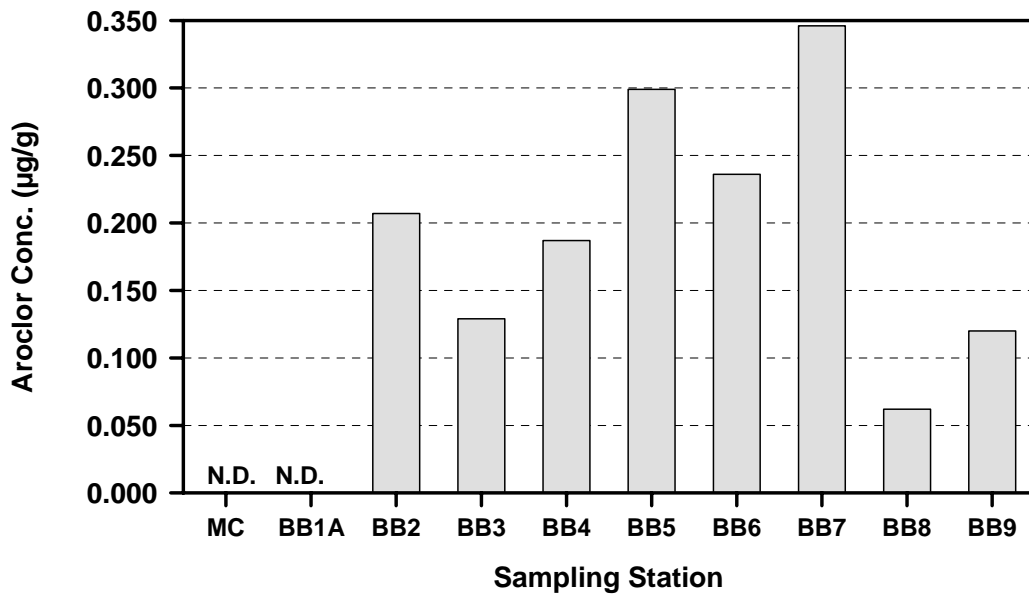


Figure 3. PCB concentrations in green sunfish from Big Bayou Creek, collected March 26-28, 2003.

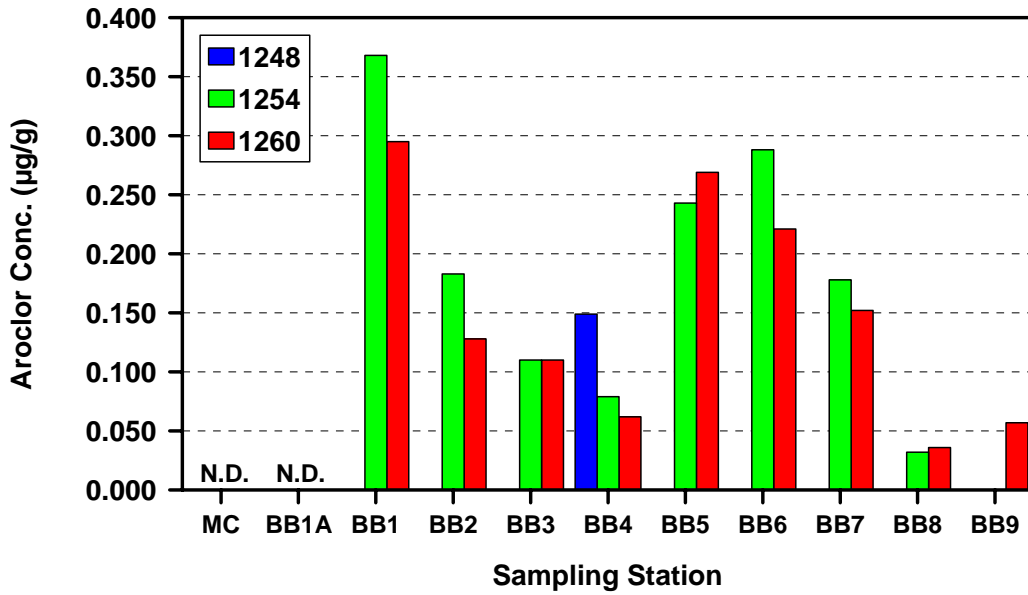


Figure 4. Mean total PCB concentrations in green sunfish from Big Bayou Creek, collected March 26-28, 2003.

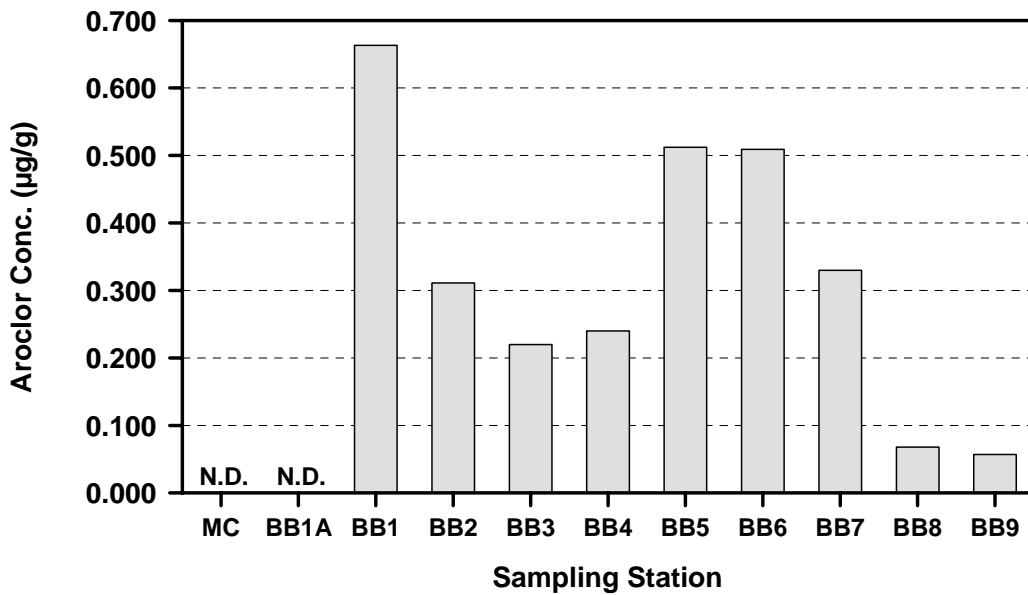


Figure 5. PCB concentrations in yellow bullhead catfish from Big Bayou Creek, collected March 26-28, 2003.

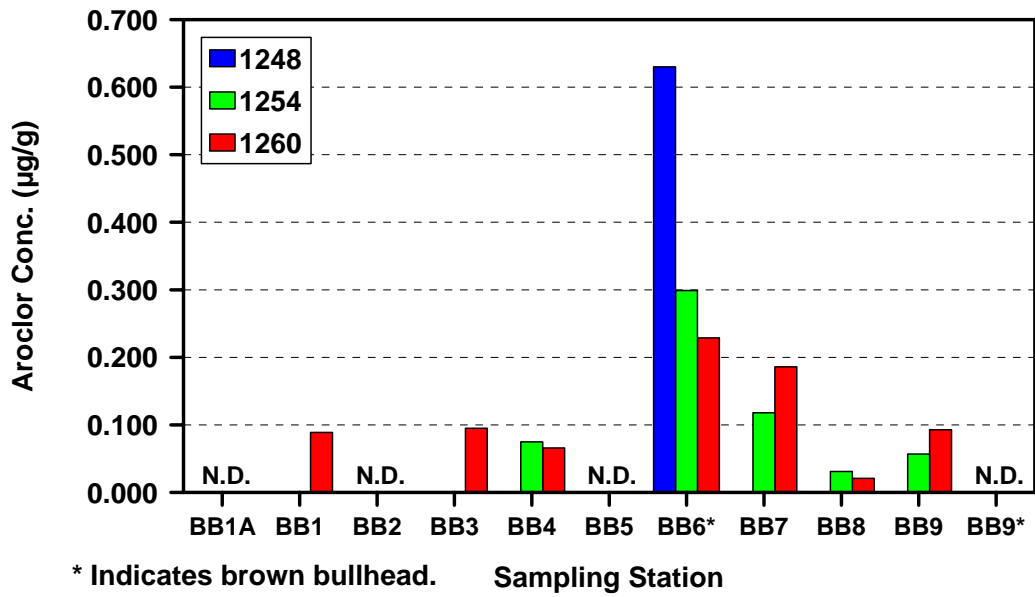


Figure 6. Mean PCB concentrations in longear sunfish from Little Bayou Creek, collected March 26-28, 2003.

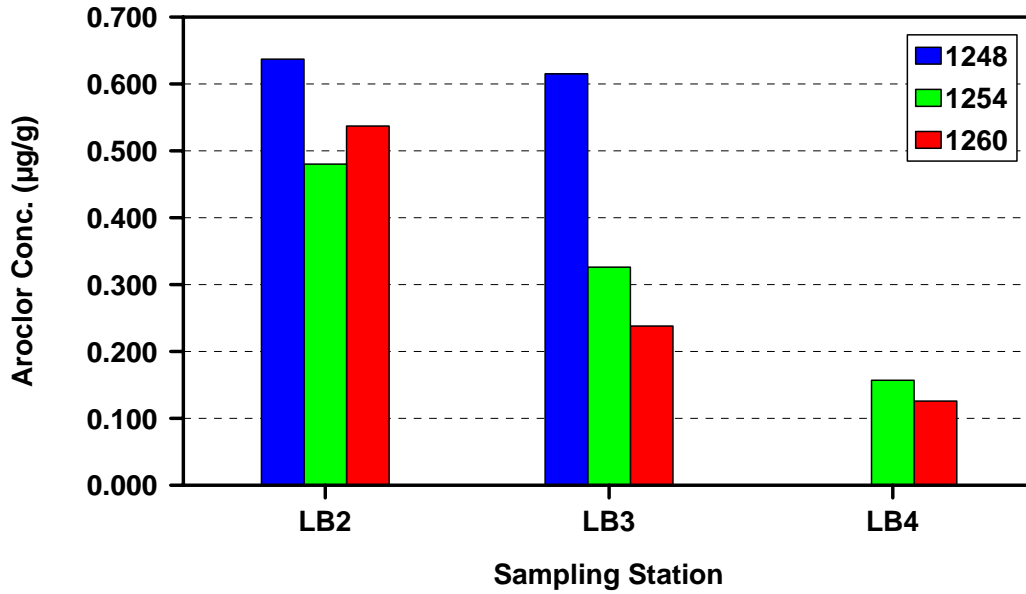


Figure 7. Mean total PCB concentrations in longear sunfish from Little Bayou Creek, collected March 26-28, 2003.

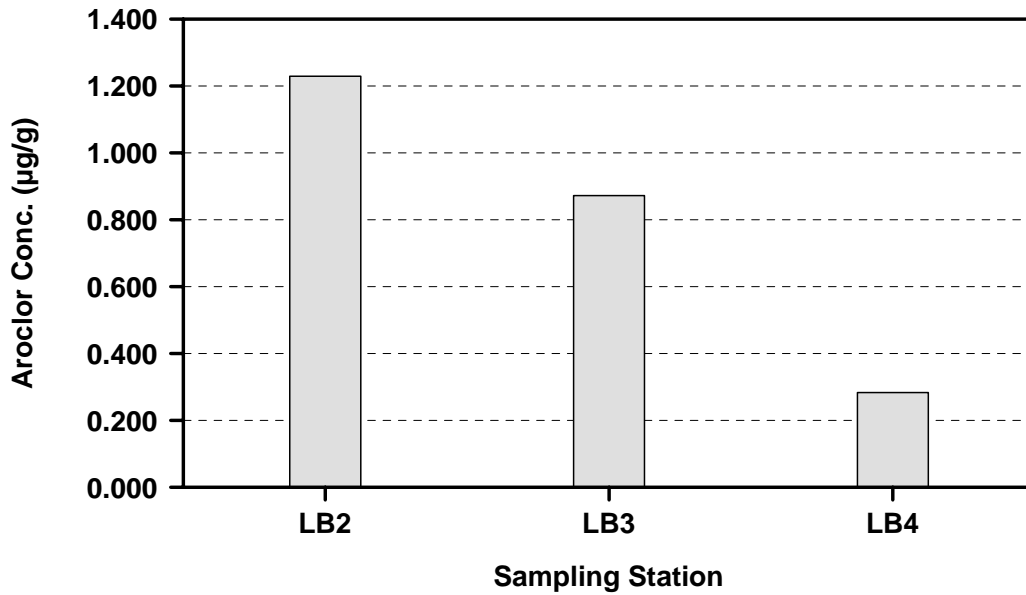


Figure 8. PCB concentrations in green sunfish from Little Bayou Creek, collected March 26-28, 2003.

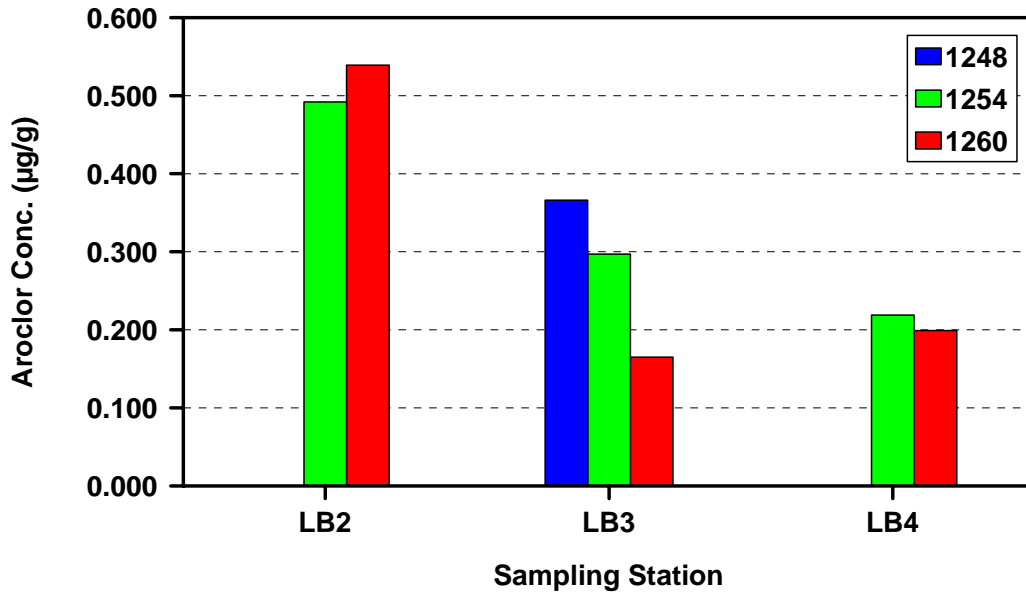


Figure 9. Mean total PCB concentrations in green sunfish from Little Bayou Creek, collected March 26-28, 2003.

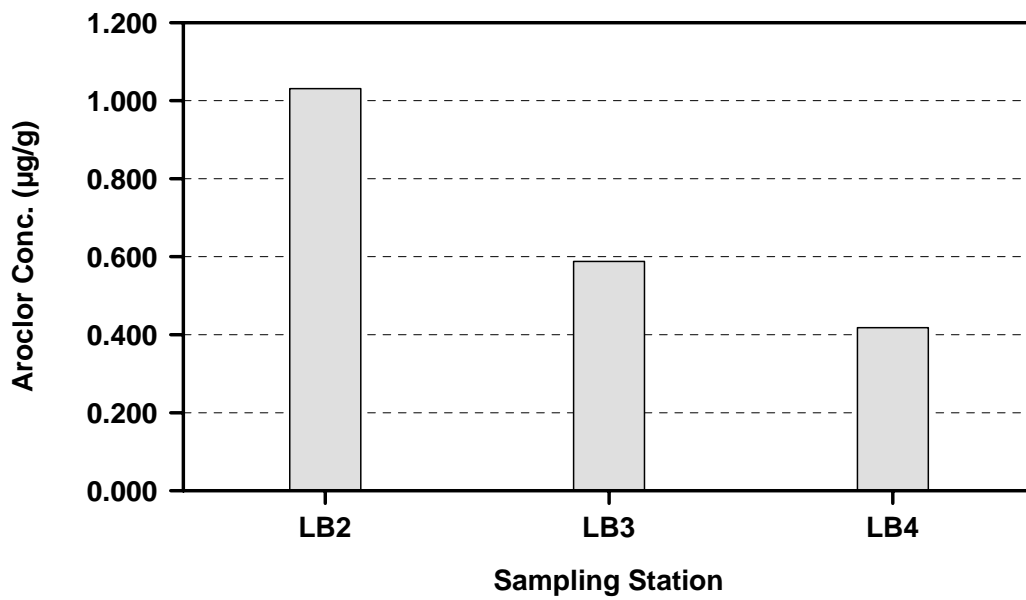


Figure 10. Total PCBs in green sunfish from Big Bayou Creek.

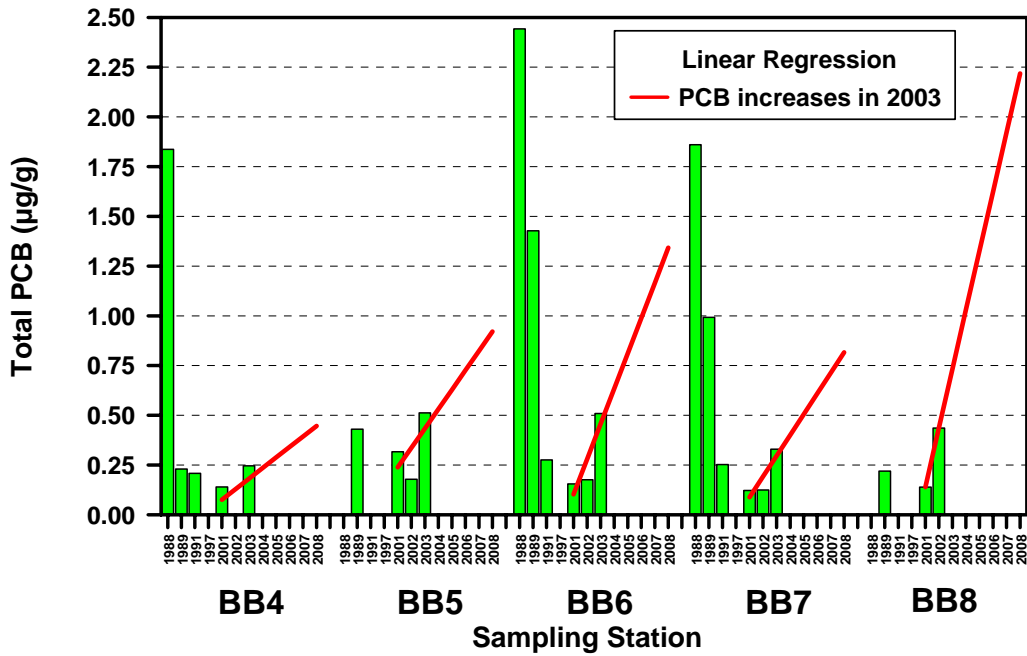


Figure 11. Total PCBs in green sunfish from Little Bayou Creek.

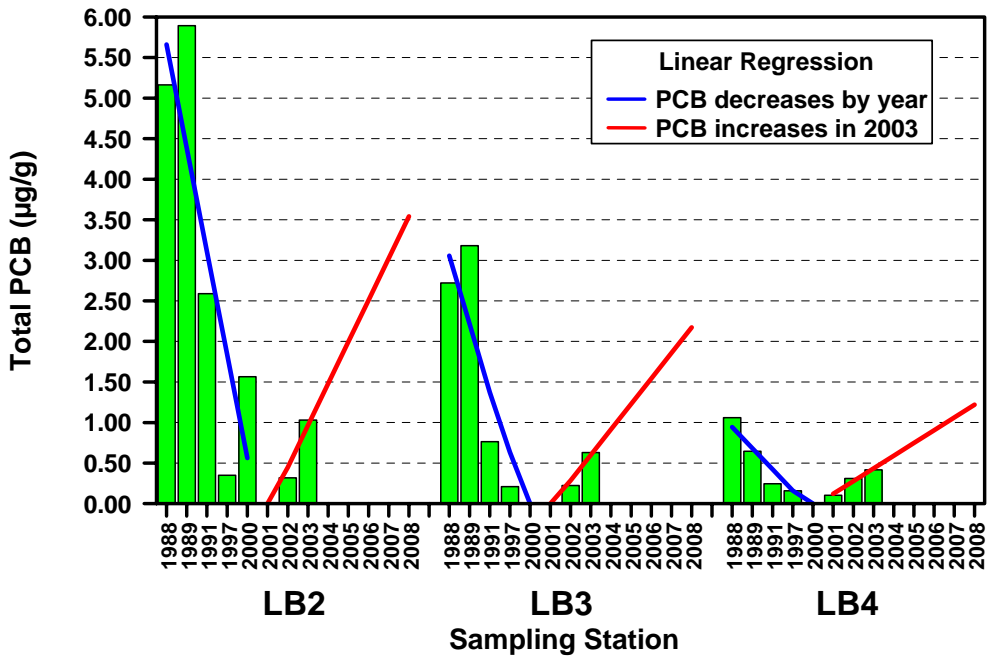


Figure 12. Total PCBs in longear sunfish from Big Bayou Creek.

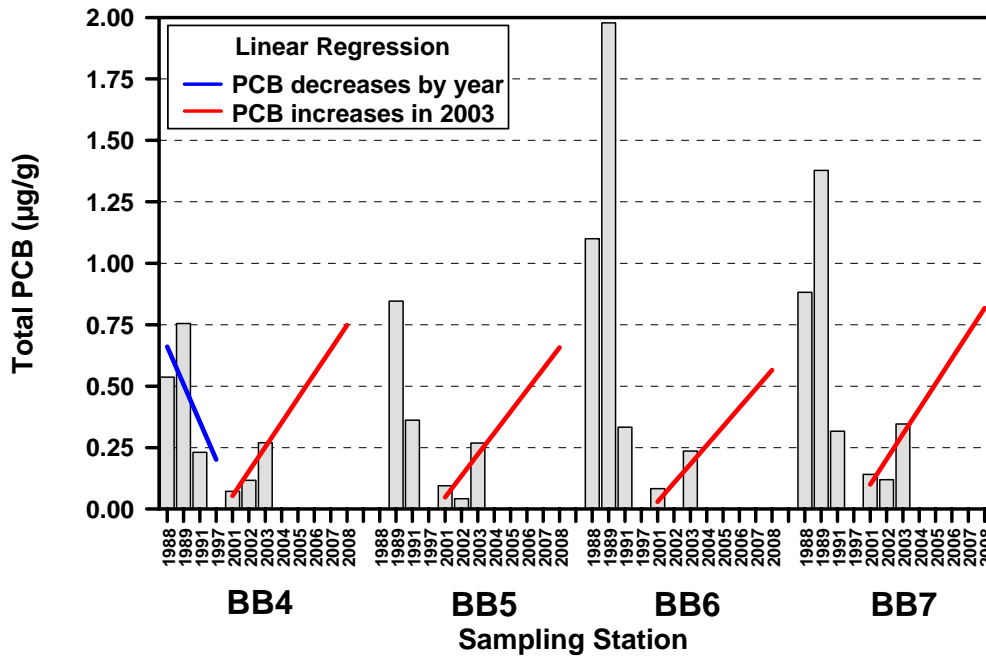
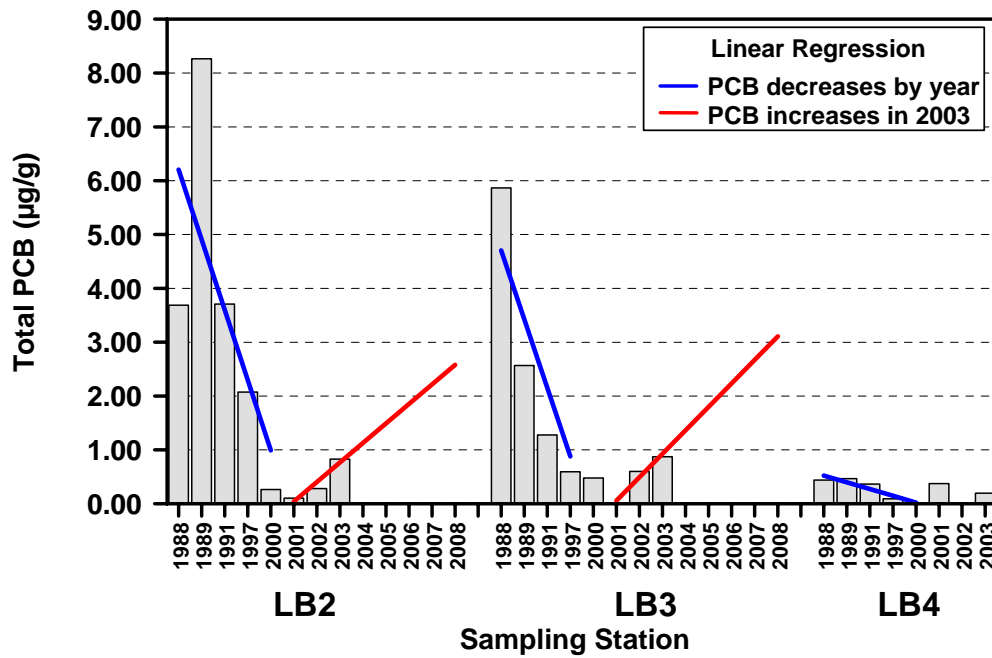


Figure 13. Total PCB in longear sunfish from Little Bayou Creek.



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