**Supporting Information**

Table SI 1. Fish species common name, scientific name, family, and associated abbreviation along with species-specific standard weight equation parameters for determining relative weights.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Common Name | Scientific Name | Family | Abbreviation | Intercept (*a*) | Slope (*b*) | Minimum TL (mm) |
| Largemouth Bass | *Micropterus salmoides* | Centrarchidae | LMB | –5.528 | 3.273 | 150 |
| Smallmouth Bass | *Micropterus dolomieu* | Centrarchidae | SMB | –5.329 | 3.2 | 150 |
| Spotted Bass | *Micropterus punctulatus* | Centrarchidae | SPB | –5.392 | 3.215 | 100 |
| Redear Sunfish | *Lepomis microlophus* | Centrarchidae | RES | –4.968 | 3.119 | 70 |
| Warmouth | *Lepomis gulosus* | Centrarchidae | WAR | –5.180 | 3.241 | 80 |
| Bluegill Sunfish | *Lepomis macrochirus* | Centrarchidae | BLG | –5.374 | 3.316 | 80 |
| Redbreast | *Lepomis auritus* | Centrarchidae | RBS | –4.755 | 2.997 | NA |
| Pumpkinseed | *Lepomis gibbosus* | Centrarchidae | PKS | –5.179 | 3.237 | 50 |
| Channel Catfish | *Ictalurus punctatus* | Ictaluridae | CHC | –5.800 | 3.294 | 70 |
| White Catfish | *Ameiurus catus* | Ictaluridae | WHC | –5.851 | 3.395 | 100 |
| Blue Catfish | *Ictalurus furcatus* | Ictaluridae | BLC | –6.067 | 3.4 | 160 |
| Flathead Catfish | *Pylodictis olivaris* | Ictaluridae | FHC | –5.542 | 3.23 | 130 |

Table SI 2. Full list of all contaminants analyzed. PAHs, OCPs, PCBs, CUPs, hormones, and industrial EACs were evaluated in water. PAHs, PCBs, OCPs, CUPs, and metals were analyzed in sediment. PCBs, OCPS, and metals were evaluated in fish muscle tissue. (\*) indicates water detection; (+) indicates fish muscle tissue detection; () indicates sediment detection.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| PAHs | OCPs | PCBs | CUPs | Hormones | Industrial EACs | Metals |
| Naphthalene \* | 2,4'-DDD | Cl2(08) | Acetochlor | 17\_-Estradiol (aE2) | BisphenolA \* | Aluminum (Al) + |
| Acenaphthylene  | 2,4'-DDE | Cl3(18) \* | alachlor | 17\_-Estradiol (bE2) | Nonylphenol \* | Antimony (Sb) |
| Acenaphthene \* | 2,4'-DDT | Cl3(28)\* | Atrazine\* | 17\_-Testosterone (bT) |  | Arsenic (As) |
| C1 – Naphthalenes \* | 4,4'-DDD \*+ | Cl4(52) \*+ | Atrazine-desethyl \* | Epitestosterone (aT) |  | Barium (Ba) + |
| C2 – Naphthalenes \* | 4,4'-DDE \*+ | Cl4(44) \*+ | Atrazine-desisopropyl \* | Estriol (E3) |  | Berylium (Be)  |
| C3 – Naphthalenes \* | 4,4'-DDT | Cl4(66) \*+  | Benfluralin | Estrone (E1) |  | Cadmium (Cd)  |
| C4 – Naphthalenes \* | Aldrin | Cl5(101) \*+ | Bifenthrin | Ethinylestradiol (EE2) \* |  | Cobalt (Co)  |
| Fluorene \* | alpha-BHC | Cl4(77) | Butylate |  |  | Chromium (Cr)  |
| C1 – Fluorenes \* |  betaBHC | Cl5(118) \*+  | Chlorothalonil |  |  | Copper (Cu) + |
| C2 – Fluorenes \* | Chlorothalonil | Cl6(153) \*+ | Chlorpyrifos |  |  | Iron (Fe) + |
| C3 – Fluorenes \* | Chlorpyrifos \* | Cl5(105) \*+  | Cyfluthrin |  |  | Mercury (Hg) + |
| Dibenzothiophene   | cis-Chlordane \*+ | Cl6(138) \*+ | Cypermethrin |  |  | Potassium (K) + |
| C1 – Dibenzothiophene \* | Delta-BHC | Cl5(126) | Dacthal |  |  | Magnesium (Mg) +  |
| C2 – Dibenzothiophene \* | Dieldrin | Cl7(187) + | Deltamethrin |  |  | Manganese (Mn) + |
| C3 – Dibenzothiophene \* | Endosulfan I | Cl6(128) +  | Diazinon |  |  | Molybdenum (Mo) |
| Phenanthrene \* | Endosulfan II | Cl8(201) | Dimethenamid \* |  |  | Nickel (Ni) + |
| Anthracene \* | Endosulfan Sulfate | Cl7(180) +  | Dimethoate |  |  | Lead (Pb) + |
| C1 - Phenanthrenes/Anthracenes \* | Endrin | Cl7(170) + | EPTC |  |  | Selenium (Se) + |
| C2 - Phenanthrenes/Anthracenes \* | Endrin Aldehyde | Cl8(195) | Esfenvalerate |  |  | Silicon (Si) +  |
| C3 - Phenanthrenes/Anthracenes \* | Endrin Ketone | Cl9(206) + | Ethalfluralin |  |  | Strontium (Sr) +  |
| C4 - Phenanthrenes/Anthracenes \* | gamma-BHC (Lindane) | Cl10(209) + | Ethopropyl |  |  | Vanadium (V)  |

Table SI 2-continued.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| PAHs | OCPs | PCBs | CUPs | Hormones | Industrial EACs | Metals |
| Fluoranthene \* | Heptachlor \* |  | Fenpropathrin |  |  | Zinc (Zn) + |
| Pyrene \* | Heptachlor epoxide \* |  | Flumetralin |  |  |  |
| C1 - Fluoranthenes/Pyrene \* | Hexachlorobenzene \*+ |  | Fonofos |  |  |  |
| C2 - Fluroanthrene/Pyrene \* | Methoxychlor |  | lambda cyhalothrin |  |  |  |
| C3 - Fluoranthrene/Pyrene  | Mirex |  | Malathion |  |  |  |
| Retene \* | Trans-Chlordane \*+ |  | Methidathion |  |  |  |
| Benz[a]anthracene \* | Trans-Nonachlor \*+ |  | Methyl parathion |  |  |  |
| Chrysene \* |  |  | Metolachlor \* |  |  |  |
| C1 - Chrysenes \* |  |  | Metribuzin |  |  |  |
| C2 - Chrysenes \* |  |  | Napropamide |  |  |  |
| C3 – Chrysenes |  |  | Pebulate |  |  |  |
| C4 – Chrysenes  |  |  | Pendimethalin |  |  |  |
| Benzo[b]fluoranthene \* |  |  | Permethrin |  |  |  |
| Benzo[k]fluoranthene \* |  |  | Phorate |  |  |  |
| Benzo[e]pyrene \* |  |  | Phosmet |  |  |  |
| Benzo[a]pyrene |  |  | Prometon \* |  |  |  |
| Perylene \* |  |  | Propachlor |  |  |  |
| Indeno[1,2,3-cd]pyrene  |  |  | Propazine \* |  |  |  |
| Dibenz[a,h,]anthracene  |  |  | Propiconazole |  |  |  |
| Benzo[g,h,i]perylene \* |  |  | Simazine \* |  |  |  |
| Coronene  |  |  | Tebuthiuron |  |  |  |
|  |  |  | Terbufos |  |  |  |
|  |  |  | Triallate |  |  |  |
|  |  |  | Tribufos |  |  |  |
|  |  |  | Trichlorfon |  |  |  |
|  |  |  | Trifluralin |  |  |  |

Table SI 3. Water (ng/L) and sediment (ng/g DW) organic contaminant concentrations at each site. Values in with an asterisk (\*) exceed published thresholds for aquatic life (Caldwell et al., 2012; US EPA, 2005; Aschberger et al., 2010; MacDonald et al., 2000; US EPA, 2006; Wu et al., 2014; US EPA, 2016). NA: no known detection limit or threshold exists. DL: detection limit (i.e., practical quantitation limit). BDL: below detection limit.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | Site Concentration |
|  | Contaminant | DL | Threshold | Kerr Scott R. | Ronda | Route 801 | Badin Lake | Red Hill | Blewett Lake | 74 Bridge | Digg's Tract | Society Hill | Pee Dee | Bucksport |
| Water (ng/L) | PAHs | 0.2 | NA | 128.60 | 105.22 | 219.00 | 152.47 | 118.86 | 72.60 | 95.23 | 134.48 | 238.25 | 159.44 | 113.70 |
| OCPs | 0.2 | NA | 0.26 | 1.64 | 5.01 | 1.67 | 12.29 | 2.83 | 3.05 | 3.46 | 5.29 | 4.53 | 1.85 |
| PCBs | 0.2 | 14 | 0.03 | 0.04 | 0.35 | 0.04 | 1.36 | 0.63 | 0.92 | 4.92 | 6.67 | 7.31 | 1.47 |
| CUPs | 0.5 | NA | BDL | 3.16 | 39.36 | 24.04 | 153.99 | 20.18 | 315.55 | 74.07 | 205.05 | 190.66 | 29.38 |
| EE2 | 0.1 | 0.1 | BDL | BDL | BDL | BDL | 0.62\* | 1.35\* | 1.97\* | 0.84\* | 0.33\* | 1.62\* | 0.27\* |
| Nonylphenol | 0.1 | 6600 | 0.85 | 0.56 | 0.70 | 0.40 | 0.21 | 0.97 | 3.10 | 2.40 | 4.60 | 3.50 | 1.40 |
| BPA | 0.1 | 1500 | BDL | BDL | 0.62 | 0.40 | 0.89 | 0.65 | 1.40 | 1.90 | 2.51 | 1.05 | 2.27 |
| E2β-Eq. | NA | 0.73 | 0.269 | 0.507 | 0.895\* | 0.212 | 0.103 | 0.282 | 1.259\* | 0.118 | 0.351 | 0.533 | 0.320 |
| Sediment (ng/g DW) | PAHs | 1.0 | 1610 | 1.66 | 349.73 | 2960.20\* | 11068.05\* | 595.33 | 7.34 | 383.48 | 1343.62 | 237.26 | 210.94 | 336.66 |
| OCPs | 0.1 | NA | BDL | BDL | 2.28 | 101.49 | 1.06 | BDL | 0.99 | 2.81 | 0.74 | 0.49 | BDL |
| PCBs | 0.1 | 59.8 | BDL | BDL | BDL | 1.03 | 2.97 | BDL | 0.15 | 5.18 | 0.48 | BDL | BDL |
| Atrazine | 2.0 | 6.62 | BDL | BDL | BDL | BDL | 3.80 | 0.70 | 0.85 | BDL | BDL | BDL | 3.40 |

Table SI 4. Sediment concentrations (ug/g DW) of metals detected at each site. Values with a (\*) indicate a TEC/LEL threshold has been exceeded. Values with a (⌃) indicate a PEC/SEL threshold has been exceeded. DL: detection limit (ug/g DW). TEC: threshold effect concentration (ug/g DW; MacDonald et al., 2000). LEL: lowest effect level (ug/g DW; Persaud and Jaagumagi, 1993). PEC: predicted effect concentration (ug/g DW; MacDonald et al., 2000). SEL: severe effect level (ug/g DW; Persaud and Jaagumagi, 1993). + indicates a LEL or SEL threshold. BDL: below detection limit.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | Site |
| Metal | DL | TEC/ LEL+ | PEC/ SEL+ | Kerr Scott R. | Ronda | Route 801 | Badin Lake | Red Hill | Blewett Lake | 74 Bridge | Digg's Tract | Society Hill | Pee Dee | Buck-sport |
| Aluminum (Al) | 0.5 | NA | NA | 1656.0 | 659.0 | 1505.8 | 1011.6 | 1192.8 | 393.7 | 687.3 | 1620.8 | 859.1 | 836.8 | 1086.3 |
| Barium (Ba) | 0.25 | NA | NA | 98.3 | 49.4 | 113.8 | 108.7 | 85.9 | 34.2 | 64.1 | 177.3 | 95.7 | 73.6 | 90.2 |
| Berylium (Be) | 0.25 | NA | NA | 0.4 | BDL | 0.7 | BDL | 0.5 | BDL | BDL | 0.9 | 0.5 | 0.5 | 0.6 |
| Cadmium (Cd) | 0.25 | 0.99 | 4.98 | 2.3\* | 1.1\* | 2.7\* | 4.2\* | 2.9\* | 1.2\* | 1.7\* | 3.6\* | 1.9\* | 1.8\* | 2.0\* |
| Cobalt (Co) | 0.25 | NA | NA | 8.7 | 4.8 | 10.3 | 15.7 | 8.5 | 4.2 | 6.2 | 15.9 | 8.4 | 7.4 | 6.9 |
| Chromium (Cr) | 0.25 | 43.4 | 111 | 6.8 | 10.6 | 24.5 | 14.4 | 19.5 | 8.2 | 12.3 | 26.1 | 15.5 | 15.6 | 19.1 |
| Copper (Cu) | 0.25 | 31.6 | 149 | 8.0 | 6.4 | 17.8 | 41.5 | 21.1 | 2.7 | 10.3 | 25.8 | 12.5 | 10.1 | 12.3 |
| Iron (Fe) | 0.5 | 20,000+ | NA | 2226.6 | 1032.9 | 2446.8 | 3591.5 | 2617.8 | 1109.4 | 1435.6 | 3155.8 | 1693.3 | 1597.8 | 1797.3 |
| Mercury (Hg) | 0.001 | 0.18 | 1.06 | 0.016 | 0.006 | 0.024 | 0.076 | 0.053 | 0.003 | 0.022 | 0.062 | 0.029 | 0.014 | 0.028 |
| Potassium (K) | 0.5 | NA | NA | 4424.6 | 1475.6 | 2183.5 | 274.3 | 554.0 | 1879.9 | 711.4 | 906.7 | 747.2 | 890.3 | 812.9 |
| Magnesium (Mg) | 0.5 | NA | NA | 3500.5 | 1829.9 | 3264.2 | 945.9 | 1908.6 | 1457.1 | 1218.1 | 2416.2 | 1549.5 | 1797.3 | 1929.6 |
| Manganese (Mn) | 0.25 | 460+ | 1100+ | 210.0 | 107.4 | 540.3\* | 759.1\* | 724.3\* | 100.0 | 424.3 | 2595.3⌃ | 920.5\* | 458.2 | 226.1 |
| Nickel (Ni) | 0.25 | 22.7 | 48.6 | BDL | BDL | 5.0 | 4.8 | 7.9 | BDL | 3.3 | 11.8 | 5.9 | 4.7 | 6.4 |
| Lead (Pb) | 0.25 | 35.8 | 128 | 6.4 | 4.4 | 13.3 | 13.2 | 9.8 | 3.7 | 6.9 | 15.2 | 8.1 | 8.7 | 9.0 |
| Silicon (Si) | 0.5 | NA | NA | 1041.5 | 638.2 | 1314.8 | 1573.2 | 544.0 | 478.7 | 809.1 | 1263.5 | 1116.7 | 916.2 | 858.8 |
| Strontium (Sr) | 0.25 | NA | NA | 9.9 | 4.0 | 16.3 | 40.3 | 12.2 | 2.3 | 7.9 | 21.1 | 10.1 | 8.1 | 8.5 |
| Vanadium (V) | 0.25 | NA | NA | 25.6 | 14.6 | 38.4 | 83.0 | 37.8 | 17.6 | 22.4 | 46.8 | 26.7 | 24.8 | 28.4 |
| Zinc (Zn) | 0.25 | 121 | 459 | 44.2 | 30.8 | 65.2 | 31.0 | 28.3 | 16.2 | 28.9 | 71.3 | 38.0 | 35.6 | 42.7 |

Table SI 5. Average contaminant concentrations and average percent moisture in fish muscle tissue for each species at each site. PCBs, 4'4-DDE, and OCPs measured in ng/g WW. Hg in ug/g WW. NA=not applicable. SD=standard deviation. *n*=sample size.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   |   |   | % Moisture |  | PCBs |  | OCPs |  | 4'4-DDE |  | Hg |
| Site | Species | *n* | Mean | SD |  | Mean | SD |  | Mean | SD |  | Mean | SD |  | Mean | SD |
| Kerr Scott R. | *Micropterus salmoides* | 3 | 75.706 | 6.385 |  | 1.420 | 1.490 |  | 1.679 | 1.864 |  | 0.661 | 0.919 |  | 0.344 | 0.209 |
| *Lepomis microlophus* | 1 | 80.024 | NA |  | 1.123 | NA |  | 0.476 | NA |  | 0.285 | NA |  | 0.049 | NA |
| *Lepomis macrochirus* | 2 | 81.515 | 0.530 |  | 0.621 | 0.249 |  | 1.308 | 0.613 |  | 0.78 | 0.452 |  | 0.048 | 0.004 |
| *Ictalurus catus* | 3 | 83.212 | 1.047 |  | 4.018 | 1.643 |  | 4.159 | 1.749 |  | 2.125 | 0.783 |  | 0.218 | 0.111 |
| Ronda | *Micropterus punctulatus* | 3 | 79.931 | 0.483 |  | 1.407 | 0.310 |  | 1.441 | 0.366 |  | 0.944 | 0.275 |  | 0.176 | 0.028 |
| *Lepomis auritus* | 2 | 81.709 | 1.603 |  | 0.368 | 0.203 |  | 0.443 | 0.124 |  | ND | NA |  | 0.062 | 0.01 |
| *Ictalurus punctatus* | 1 | 82.272 | NA |  | 2.163 | NA |  | 2.720 | NA |  | 1.623 | NA |  | 0.386 | NA |
| Route 801 | *Ictalurus punctatus* | 1 | 78.421 | NA |  | 14.566 | NA |  | 25.675 | NA |  | 15.542 | NA |  | 0.174 | NA |
| *Ictalurus furcatus* | 1 | 79.715 | NA |  | 9.258 | NA |  | 15.795 | NA |  | 9.615 | NA |  | 0.21 | NA |
| Badin Lake | *Micropterus salmoides* | 3 | 73.942 | 10.652 |  | 6.688 | 0.856 |  | 12.035 | 1.606 |  | 9.241 | 1.067 |  | 0.326 | 0.041 |
| *Lepomis macrochirus* | 3 | 81.045 | 0.116 |  | 3.188 | 0.834 |  | 3.262 | 1.135 |  | 2.823 | 1.054 |  | 0.039 | 0.003 |
| *Ictalurus catus* | 2 | 85.260 | 4.945 |  | 1.763 | 1.561 |  | 2.646 | 2.375 |  | 1.93 | 1.688 |  | 0.034 | 0.008 |
| Red Hill | *Micropterus salmoides* | 1 | 79.180 | NA |  | 4.174 | NA |  | 3.265 | NA |  | 2.713 | NA |  | 0.209 | NA |
| *Lepomis macrochirus* | 2 | 80.007 | 0.232 |  | 1.070 | 0.277 |  | 1.313 | 0.308 |  | 1.011 | 0.155 |  | 0.04 | 0.003 |
| *Ictalurus furcatus* | 3 | 78.980 | 5.505 |  | 6.421 | 5.042 |  | 3.422 | 3.910 |  | 2.526 | 2.503 |  | 0.129 | 0.044 |
| Blewett Lake | *Micropterus salmoides* | 5 | 76.472 | 2.463 |  | 8.022 | 1.674 |  | 5.664 | 1.963 |  | 4.559 | 1.440 |  | 0.198 | 0.064 |
| *Lepomis macrochirus* | 3 | 81.111 | 0.959 |  | 2.243 | 0.282 |  | 1.712 | 0.102 |  | 1.364 | 0.083 |  | 0.051 | 0.007 |
| *Ictalurus punctatus* | 2 | 78.120 | 4.291 |  | 7.137 | 3.039 |  | 4.475 | 1.476 |  | 3.955 | 1.565 |  | 0.178 | 0.103 |

Table SI 5-continued.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   |   |   | % Moisture |  | PCBs |  | OCPs |  | 4'4-DDE |  | Hg |
| Site | Species | *n* | Mean | SD |  | Mean | SD |  | Mean | SD |  | Mean | SD |  | Mean | SD |
|  74 Bridge | *Micropterus salmoides* | 3 | 80.238 | 2.017 |  | 7.25 | 4.988 |  | 7.262 | 6.416 |  | 5.67 | 4.501 |  | 0.167 | 0.03 |
| *Lepomis auritus* | 3 | 81.034 | 0.0652 |  | 7.389 | 0.931 |  | 4.201 | 0.83 |  | 3.427 | 0.745 |  | 0.047 | 0.005 |
| *Lepomis microlophus* | 1 | 81.456 | NA |  | 7.376 | NA |  | 0.351 | NA |  | 0.351 | NA |  | 0.158 | NA |
| *Ictalurus punctatus* | 3 | 72.437 | 5.639 |  | 28.879 | 32.2 |  | 17.817 | 18.558 |  | 11.129 | 12.085 |  | 0.084 | 0.004 |
| Digg's Tract | *Micropterus salmoides* | 3 | 79.033 | 0.508 |  | 10.834 | 9.996 |  | 8.799 | 8.46 |  | 6.536 | 5.918 |  | 0.22 | 0.071 |
| *Lepomis microlophus* | 3 | 75.290 | 8.791 |  | 6.882 | 5.122 |  | 1.369 | 0.378 |  | 0.888 | 0.775 |  | 0.091 | 0.07 |
| *Ictalurus furcatus* | 3 | 70.641 | 8.403 |  | 54.452 | 36.258 |  | 6.896 | 4.711 |  | 4.547 | 3.179 |  | 0.171 | 0.083 |
| *Ictalurus punctatus* | 1 | 71.773 | NA |  | 71.773 | NA |  | 3.825 | NA |  | 2.578 | NA |  | 0.085 | NA |
| Society Hill | *Micropterus salmoides* | 3 | 78.985 | 0.134 |  | 18.396 | 20.874 |  | 3.726 | 0.677 |  | 3.171 | 0.348 |  | 0.209 | 0.053 |
| *Lepomis macrochirus* | 3 | 80.580 | 0.129 |  | 1.065 | 0.703 |  | 0.877 | 0.1 |  | 0.745 | 0.095 |  | 0.058 | 0.026 |
| *Ictalurus furcatus* | 3 | 78.141 | 6.769 |  | 3.377 | 2.465 |  | 1.665 | 0.6 |  | 1.357 | 0.419 |  | 0.121 | 0.017 |
| Pee Dee | *Micropterus salmoides* | 3 | 77.938 | 1.291 |  | 4.187 | 0.461 |  | 3.069 | 1.472 |  | 2.494 | 1.06 |  | 0.526 | 0.159 |
| *Lepomis macrochirus* | 3 | 79.882 | 2.204 |  | 1.898 | 2.333 |  | 1.525 | 1.781 |  | 1.022 | 1.209 |  | 0.074 | 0.009 |
| *Ictalurus furcatus* | 3 | 79.921 | 0.709 |  | 4.933 | 0.766 |  | 0.987 | 0.876 |  | 0.641 | 1.11 |  | 0.362 | 0.209 |
| Bucksport | *Micropterus salmoides* | 3 | 72.487 | 4.391 |  | 1.638 | 1.184 |  | 2.123 | 1.457 |  | 1.777 | 1.142 |  | 0.666 | 0.16 |
| *Lepomis macrochirus* | 3 | 78.665 | 0.422 |  | 0.376 | 0.458 |  | 0.446 | 0.666 |  | 0.348 | 0.602 |  | 0.27 | 0.092 |
| *Ictalurus furcatus* | 3 | 80.627 | 1.498 |  | 10.898 | 13.634 |  | 3.343 | 4.483 |  | 2.787 | 3.539 |  | 0.406 | 0.184 |

Table SI 6. PAH ESBTU calculations for water at each site.

|  |  |
| --- | --- |
|  | Site |
| PAH | Kerr S. R. | Ronda | Rt. 801 | Badin Lake | Red Hill | Blewett Lake | 74 Bridge | Digg's Tract | Society Hill | Pee Dee | Bucksport |
| Naphthalene | 0.0 | 0.6 | 0.4 | 0.5 | 1.1 | 0.4 | 0.4 | 0.3 | 1.0 | 1.6 | 0.9 |
| Acenaphthylene | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Acenaphthene | 0.0 | 1.0 | 1.2 | 0.0 | 0.5 | 0.1 | 0.1 | 0.7 | 0.7 | 0.3 | 0.1 |
| C1 - Naphthalenes | 1.0 | 0.7 | 0.8 | 1.1 | 1.0 | 0.4 | 0.4 | 0.6 | 1.0 | 1.7 | 0.7 |
| C2 - Naphthalenes | 5.4 | 3.1 | 3.5 | 5.2 | 2.6 | 1.1 | 1.4 | 2.2 | 2.9 | 1.9 | 1.6 |
| C3 - Naphthalenes | 25.0 | 8.3 | 8.2 | 17.4 | 6.0 | 3.2 | 4.2 | 5.2 | 7.8 | 3.5 | 3.9 |
| C4 - Naphthalenes | 22.1 | 7.9 | 8.7 | 21.4 | 12.1 | 4.7 | 6.4 | 6.5 | 14.8 | 7.3 | 7.0 |
| Fluorene | 0.3 | 1.1 | 1.3 | 0.4 | 0.4 | 0.1 | 0.3 | 0.9 | 0.7 | 0.3 | 0.2 |
| C1 - Fluorenes | 7.9 | 2.8 | 3.1 | 5.1 | 3.0 | 1.7 | 1.7 | 2.5 | 3.5 | 1.6 | 1.4 |
| C2 - Fluorenes | 15.6 | 5.8 | 8.4 | 14.2 | 7.7 | 3.9 | 4.8 | 5.1 | 16.6 | 6.6 | 5.0 |
| C3 - Fluorenes | 12.0 | 5.2 | 8.3 | 10.1 | 5.4 | 2.8 | 4.1 | 5.4 | 25.8 | 12.4 | 5.3 |
| Dibenzothiophene | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C1 - Dibenzothiophene | 0.4 | 0.8 | 2.8 | 0.0 | 0.9 | 0.4 | 0.6 | 0.9 | 1.4 | 0.0 | 0.0 |
| C2 - Dibenzothiophene | 0.0 | 1.5 | 2.5 | 0.0 | 2.4 | 1.1 | 1.6 | 2.3 | 7.8 | 2.5 | 1.1 |
| C3 - Dibenzothiophene | 0.0 | 1.7 | 2.5 | 0.0 | 2.0 | 1.3 | 1.4 | 2.1 | 8.7 | 4.2 | 1.7 |
| Phenanthrene | 1.0 | 6.8 | 9.9 | 1.0 | 3.8 | 1.0 | 1.3 | 5.8 | 3.8 | 1.3 | 0.7 |
| Anthracene | 0.2 | 0.5 | 0.8 | 0.5 | 0.5 | 0.3 | 0.3 | 0.6 | 0.6 | 0.4 | 0.2 |
| C1 - P/A | 8.5 | 5.3 | 15.2 | 7.7 | 6.3 | 2.7 | 3.6 | 7.5 | 8.8 | 4.4 | 3.4 |
| C2 - P/A | 11.5 | 6.5 | 14.2 | 12.5 | 6.9 | 3.3 | 5.1 | 7.8 | 18.9 | 11.0 | 5.9 |
| C3 - P/A | 5.2 | 0.0 | 11.6 | 7.7 | 6.1 | 3.7 | 5.2 | 5.9 | 18.1 | 12.0 | 7.6 |
| C4 - P/A | 0.0 | 0.0 | 0.0 | 2.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Fluoranthene | 5.0 | 15.3 | 30.2 | 9.9 | 16.0 | 8.9 | 10.9 | 21.1 | 20.0 | 13.0 | 6.6 |
| Pyrene | 2.7 | 11.6 | 19.8 | 12.3 | 9.7 | 5.5 | 8.0 | 15.2 | 15.2 | 10.7 | 5.7 |
| C1 - F/P | 1.9 | 2.8 | 5.9 | 5.2 | 3.8 | 2.4 | 3.0 | 4.9 | 8.8 | 6.4 | 3.3 |
| C2 - F/P | 0.0 | 2.0 | 3.3 | 3.5 | 2.5 | 1.6 | 2.2 | 3.1 | 4.4 | 4.1 | 2.4 |
| C3 - F/P | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Retene | 1.6 | 7.9 | 41.9 | 1.7 | 8.2 | 4.7 | 6.5 | 8.4 | 23.0 | 26.4 | 28.2 |
| Benz[a]anthracene | 0.0 | 1.1 | 1.5 | 1.4 | 0.0 | 0.0 | 0.8 | 1.5 | 1.8 | 1.2 | 0.8 |

Table SI 6-continued.

|  |  |
| --- | --- |
|  | Site |
| PAH | Kerr S. R. | Ronda | Route 801 | Badin Lake | Red Hill | Blewett Lake | 74 Bridge | Digg's Tract | Society Hill | Pee Dee | Bucksport |
| Chrysene | 0.3 | 1.6 | 3.9 | 1.5 | 0.0 | 0.0 | 2.8 | 4.1 | 5.1 | 4.7 | 1.7 |
| C1 - Chrysenes | 0.3 | 0.6 | 1.3 | 1.1 | 0.0 | 0.0 | 0.9 | 1.1 | 1.6 | 1.2 | 0.0 |
| C2 - Chrysenes | 0.0 | 0.0 | 0.7 | 0.6 | 0.0 | 0.0 | 0.0 | 0.6 | 0.8 | 0.7 | 0.0 |
| C3 - Chrysenes | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C4 - Chrysenes | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Benzo[b]fluoranthene | 0.0 | 0.0 | 2.6 | 2.7 | 1.9 | 1.1 | 1.4 | 1.7 | 2.0 | 2.1 | 0.9 |
| Benzo[k]fluoranthene | 0.0 | 0.0 | 0.6 | 0.6 | 0.3 | 0.2 | 0.3 | 0.4 | 0.4 | 0.3 | 0.1 |
| Benzo[e]pyrene | 0.3 | 0.8 | 1.6 | 1.9 | 1.2 | 0.0 | 0.0 | 1.1 | 1.5 | 1.9 | 0.0 |
| Benzo[a]pyrene | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Perylene | 0.3 | 1.8 | 2.3 | 1.6 | 6.4 | 15.8 | 15.5 | 8.7 | 10.8 | 13.9 | 17.1 |
| Indeno[1,2,3-cd]pyrene | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Dibenz[a,h,]anthracene | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Benzo[g,h,i]perylene | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Coronene | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sum of PAH 42 | 128.60 | 105.22 | 219 | 152.47 | 118.86 | 72.60 | 95.23 | 134.48 | 238.25 | 159.44 | 113.70 |
| Sum of PAH 34 | 126.58 | 91.27 | 165.96 | 147.21 | 102.84 | 63.47 | 83.00 | 117.64 | 192.98 | 122.24 | 80.23 |
|  Sum of ESBTUs |  |  |  |  |  |  |  |  |  |  |  |
| Acute  | 0.014 | 0.009 | 0.023 | 0.024 | 0.015 | 0.014 | 0.018 | 0.019 | 0.035 | 0.026 | 0.018 |
| Chronic | 0.026 | 0.017 | 0.046 | 0.047 | 0.030 | 0.029 | 0.036 | 0.038 | 0.071 | 0.054 | 0.037 |

Table SI 7. PAH ESBTU calculations for sediment at each site.

|  |  |
| --- | --- |
|  | Site |
| PAH | Kerr S. R. | Ronda | Route 801 | Badin Lake | Red Hill | Blewett Lake | 74 Bridge | Digg's Tract | Society Hill | Pee Dee | Bucksport |
| Naphthalene | 0.4 | 1.2 | 3.4 | 15.1 | 2.1 | 0.2 | 1.1 | 5.9 | 1.2 | 0.9 | 1.0 |
| Acenaphthylene | 0.0 | 0.0 | 5.4 | 13.7 | 5.7 | 0.0 | 2.6 | 5.7 | 1.1 | 0.0 | 0.8 |
| Acenaphthene | 0.0 | 0.0 | 12.3 | 22.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C1 - Naphthalenes | 0.0 | 0.0 | 4.6 | 14.7 | 4.2 | 0.0 | 0.0 | 5.2 | 1.4 | 0.0 | 1.3 |
| C2 - Naphthalenes | 0.0 | 0.0 | 0.0 | 67.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C3 - Naphthalenes | 0.0 | 0.0 | 0.0 | 43.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C4 - Naphthalenes | 0.0 | 0.0 | 0.0 | 29.3 | 0.0 | 0.0 | 0.0 | 3.7 | 0.0 | 0.0 | 0.0 |
| Fluorene | 0.0 | 0.6 | 17.6 | 29.9 | 1.7 | 0.0 | 1.2 | 3.3 | 0.7 | 0.6 | 0.8 |
| C1 - Fluorenes | 0.0 | 0.0 | 10.7 | 22.8 | 9.7 | 0.0 | 0.0 | 12.1 | 0.0 | 0.0 | 0.0 |
| C2 - Fluorenes | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C3 - Fluorenes | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Dibenzothiophene | 0.0 | 0.0 | 11.5 | 17.6 | 1.9 | 0.0 | 0.0 | 2.1 | 0.0 | 0.0 | 0.0 |
| C1 - Dibenzothiophene | 0.0 | 0.0 | 9.0 | 10.2 | 3.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C2 - Dibenzothiophene | 0.0 | 0.0 | 10.5 | 15.2 | 4.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C3 - Dibenzothiophene | 0.0 | 0.0 | 9.8 | 0.0 | 4.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Phenanthrene | 0.5 | 10.1 | 237.7 | 281.7 | 19.5 | 0.4 | 12.8 | 35.7 | 6.5 | 5.0 | 5.5 |
| Anthracene | 0.0 | 2.1 | 27.3 | 94.1 | 5.7 | 0.0 | 3.9 | 10.0 | 1.8 | 1.1 | 1.6 |
| C1 - P/A | 0.0 | 5.3 | 88.9 | 124.5 | 21.2 | 0.0 | 12.9 | 29.1 | 6.7 | 5.3 | 6.2 |
| C2 - P/A | 0.0 | 0.0 | 73.1 | 128.5 | 29.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C3 - P/A | 0.0 | 0.0 | 44.1 | 87.6 | 23.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| C4 - P/A | 0.0 | 0.0 | 26.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Fluoranthene | 0.4 | 43.0 | 399.8 | 710.3 | 50.3 | 0.5 | 30.3 | 107.6 | 16.7 | 13.2 | 12.5 |
| Pyrene | 0.3 | 35.5 | 313.5 | 611.6 | 45.0 | 0.5 | 28.2 | 91.2 | 14.1 | 10.8 | 10.7 |
| C1 - F/P | 0.0 | 9.5 | 142.2 | 270.0 | 24.8 | 0.9 | 14.1 | 41.9 | 8.1 | 6.0 | 7.9 |
| C2 - F/P | 0.0 | 10.7 | 80.9 | 372.4 | 17.9 | 0.0 | 12.7 | 36.9 | 8.2 | 6.1 | 0.0 |
| C3 - F/P | 0.0 | 2.9 | 26.3 | 94.6 | 6.7 | 0.0 | 4.3 | 12.4 | 3.2 | 0.0 | 0.0 |
| Retene | 0.0 | 20.9 | 21.7 | 119.7 | 38.5 | 2.4 | 9.8 | 233.3 | 30.8 | 15.3 | 48.4 |
| Benz[a]anthracene | 0.0 | 14.1 | 132.7 | 551.8 | 21.9 | 0.0 | 15.2 | 37.1 | 6.2 | 4.2 | 6.5 |

Table SI 7-continued.

|  |  |
| --- | --- |
|  | Site |
| PAH | Kerr S. R. | Ronda | Route 801 | Badin Lake | Red Hill | Blewett Lake | 74 Bridge | Digg's Tract | Society Hill | Pee Dee | Bucksport |
| Chrysene | 0.0 | 25.8 | 204.0 | 956.2 | 32.7 | 0.6 | 18.5 | 67.5 | 10.3 | 7.5 | 9.1 |
| C1 - Chrysenes | 0.0 | 7.7 | 59.8 | 237.1 | 15.5 | 0.0 | 11.5 | 27.5 | 5.0 | 3.5 | 0.0 |
| C2 - Chrysenes | 0.0 | 0.0 | 23.7 | 77.2 | 7.0 | 0.0 | 0.0 | 14.9 | 0.0 | 0.0 | 0.0 |
| C3 - Chrysenes | 0.0 | 0.0 | 12.3 | 112.9 | 3.7 | 0.0 | 0.0 | 8.8 | 0.0 | 0.0 | 0.0 |
| C4 - Chrysenes | 0.0 | 0.0 | 0.0 | 56.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Benzo[b]fluoranthene | 0.0 | 36.0 | 237.2 | 1812.1 | 42.8 | 0.8 | 23.5 | 99.0 | 15.3 | 10.7 | 14.5 |
| Benzo[k]fluoranthene | 0.0 | 13.1 | 80.0 | 472.0 | 14.6 | 0.0 | 8.5 | 32.9 | 5.0 | 3.2 | 4.7 |
| Benzo[e]pyrene | 0.0 | 20.7 | 127.2 | 1068.1 | 23.5 | 0.0 | 12.8 | 54.6 | 8.3 | 5.2 | 7.2 |
| Benzo[a]pyrene | 0.0 | 20.5 | 143.0 | 612.5 | 22.8 | 0.0 | 14.7 | 51.7 | 7.5 | 0.0 | 0.0 |
| Perylene | 0.0 | 15.2 | 65.4 | 193.9 | 35.7 | 1.1 | 115.7 | 186.6 | 59.2 | 98.9 | 187.0 |
| Indeno[1,2,3-cd]pyrene | 0.0 | 20.4 | 117.3 | 769.1 | 21.7 | 0.0 | 11.9 | 53.5 | 8.0 | 5.2 | 7.7 |
| Dibenz[a,h,]anthracene | 0.0 | 4.2 | 28.1 | 237.3 | 5.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Benzo[g,h,i]perylene | 0.0 | 21.0 | 120.0 | 584.3 | 20.6 | 0.0 | 13.6 | 57.8 | 9.5 | 6.3 | 0.0 |
| Coronene | 0.0 | 9.2 | 32.2 | 130.3 | 7.3 | 0.0 | 3.6 | 15.6 | 2.4 | 1.9 | 3.3 |
| Sum of PAH 42 | 1.66 | 349.73 | 2960.20 | 11068.05 | 595.33 | 7.34 | 383.48 | 1343.62 | 237.26 | 210.94 | 336.66 |
| Sum of PAH 34 | 1.66 | 306.08 | 2758.21 | 10308.10 | 511.15 | 4.98 | 353.11 | 1043.34 | 192.66 | 187.65 | 285.01 |
|  Sum of ESBTUs |  |  |  |  |  |  |  |  |  |  |  |
| Acute  | 0.0002 | 0.022 | 0.069 | 0.024 | 0.017 | 0.001 | 0.013 | 0.008 | 0.005 | 0.008 | 0.004 |
| Chronic  | 0.001 | 0.088 | 0.281 | 0.095 | 0.068 | 0.003 | 0.052 | 0.032 | 0.020 | 0.032 | 0.015 |

Table SI 8. Principal component analysis loading coefficients and variance explained for black bass and sunfish.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Black Bass |  | Sunfish |
|  | Loading Coefficients | PC1 | PC2 |  | PC1 | PC2 |
| Intersex | Occurrence (%) | 0.49 | 0.81 |  | -0.17 | 0.80 |
| Severity Ranking (1-4) | 0.29 | 0.29 |  | -0.50 | 0.77 |
| Water (ng/L) | E2β-Eq. | 0.49 | -0.40 |  | 0.66 | 0.10 |
| EE2 | 0.61 | -0.39 |  | 0.81 | 0.02 |
| Industrial EACs | 0.97 | 0.07 |  | 0.74 | 0.59 |
| CUPs | 0.97 | 0.06 |  | 0.74 | 0.57 |
| PCBs | 0.84 | 0.13 |  | 0.32 | 0.67 |
| OCPs | 0.73 | 0.15 |  | 0.34 | 0.20 |
| PAHs | 0.55 | 0.58 |  | -0.17 | 0.82 |
| Sediment(ug/g DW) | Hg | -0.13 | 0.91 |  | -0.63 | 0.45 |
| PAHs | -0.35 | 0.85 |  | -0.75 | 0.20 |
| OCPs | -0.35 | 0.83 |  | -0.74 | 0.17 |
|  | Variance Explained | 38.30 | 30.60 |  | 35.20 | 28.00 |

  

Figure SI 1. Total length (A), weight (B), gonadosomatic index (C), hepatosomatic index (D), and relative weight (E) by species (mean ± standard error). Largemouth bass (LMB, *n*=66), Smallmouth Bass (SMB, *n*=2), Spotted Bass (SPB, *n*=12), Redear Sunfish (RES, *n*=24), Warmouth (WAR, *n*=3), Bluegill (BLG, *n*=65), Redbreast Sunfish (RBS, *n*=19), Pumpkinseed (PKS, *n*=1), Channel Catfish (CHC, *n*=21), White Catfish (WHC, *n*=8), Blue Catfish (BLC, *n*=37), and Flathead Catfish (FHC, *n*=10).