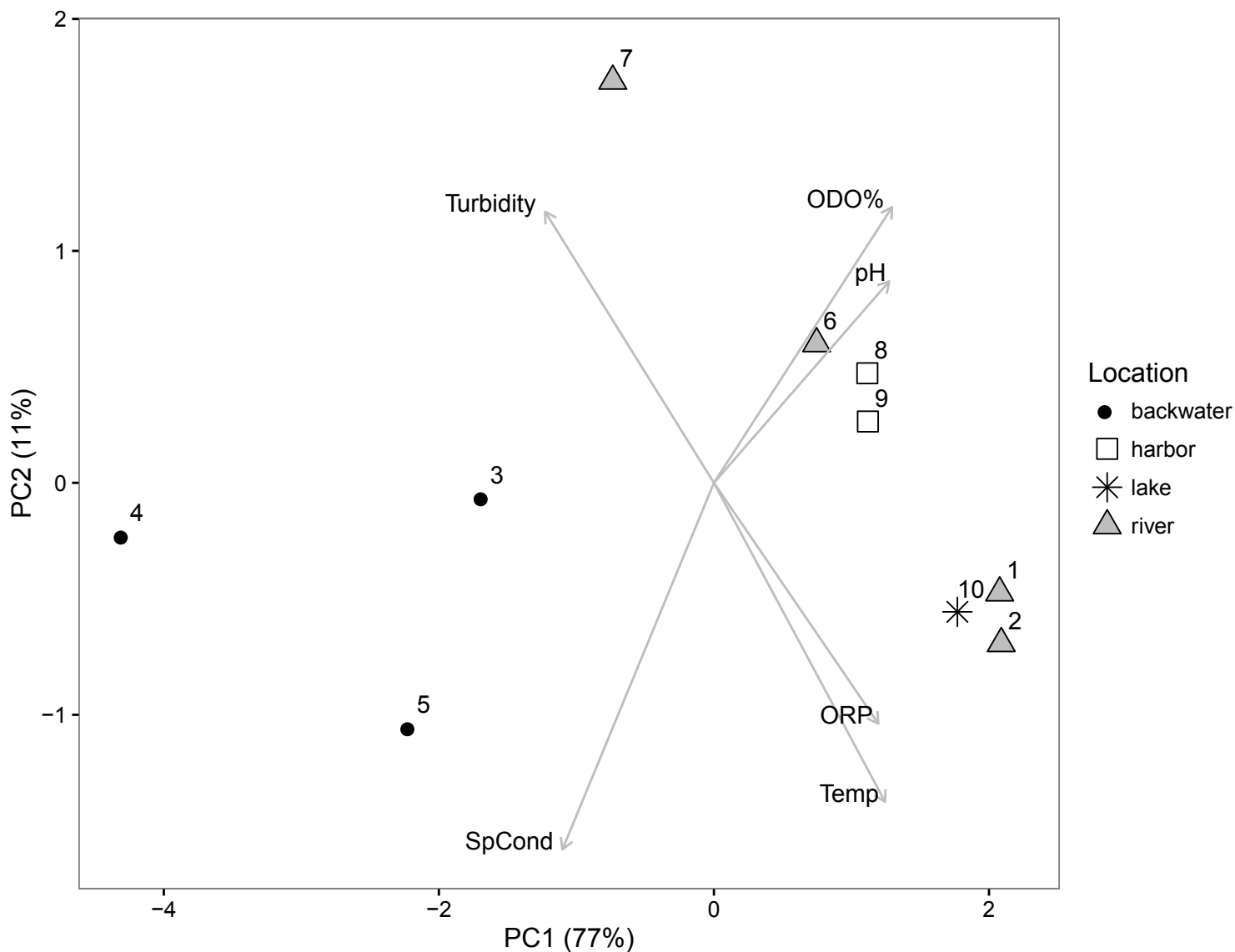*Figure S1*

Figure S1. Principal components analysis (PCA) of sites by water quality variables (excluding sodium concentration data, which was excluded due to missing data from site 8). Vectors indicate the direction and magnitude of variable correlations with the principle components. ODO, optical dissolved oxygen; ORP, negative oxidation-reduction potential; SpCond, specific conductivity.
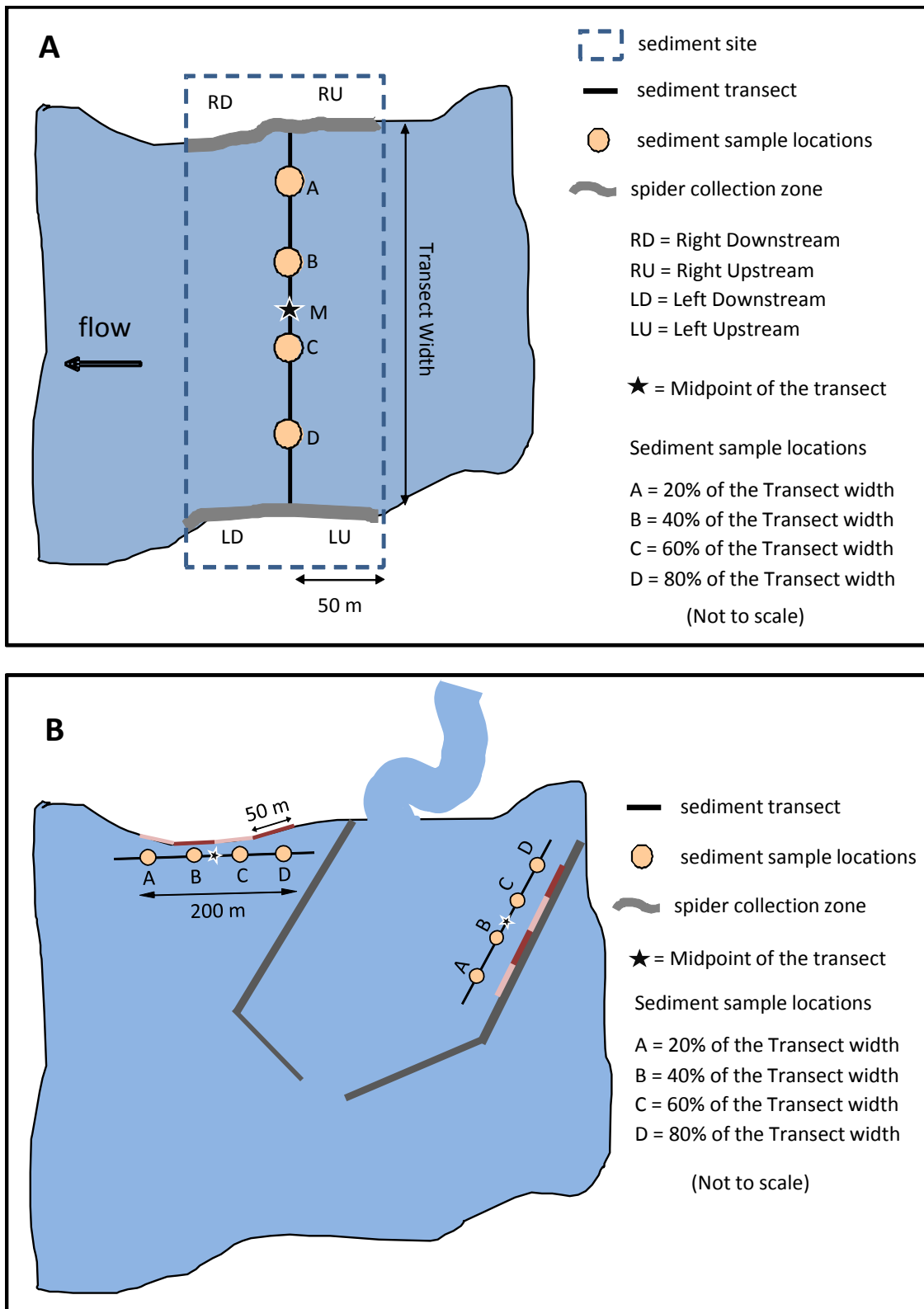
Figure S2

Figure S2. Sampling design for riverine and backwater sites (**A**) and harbor and beach sites (**B**).

Figure S3
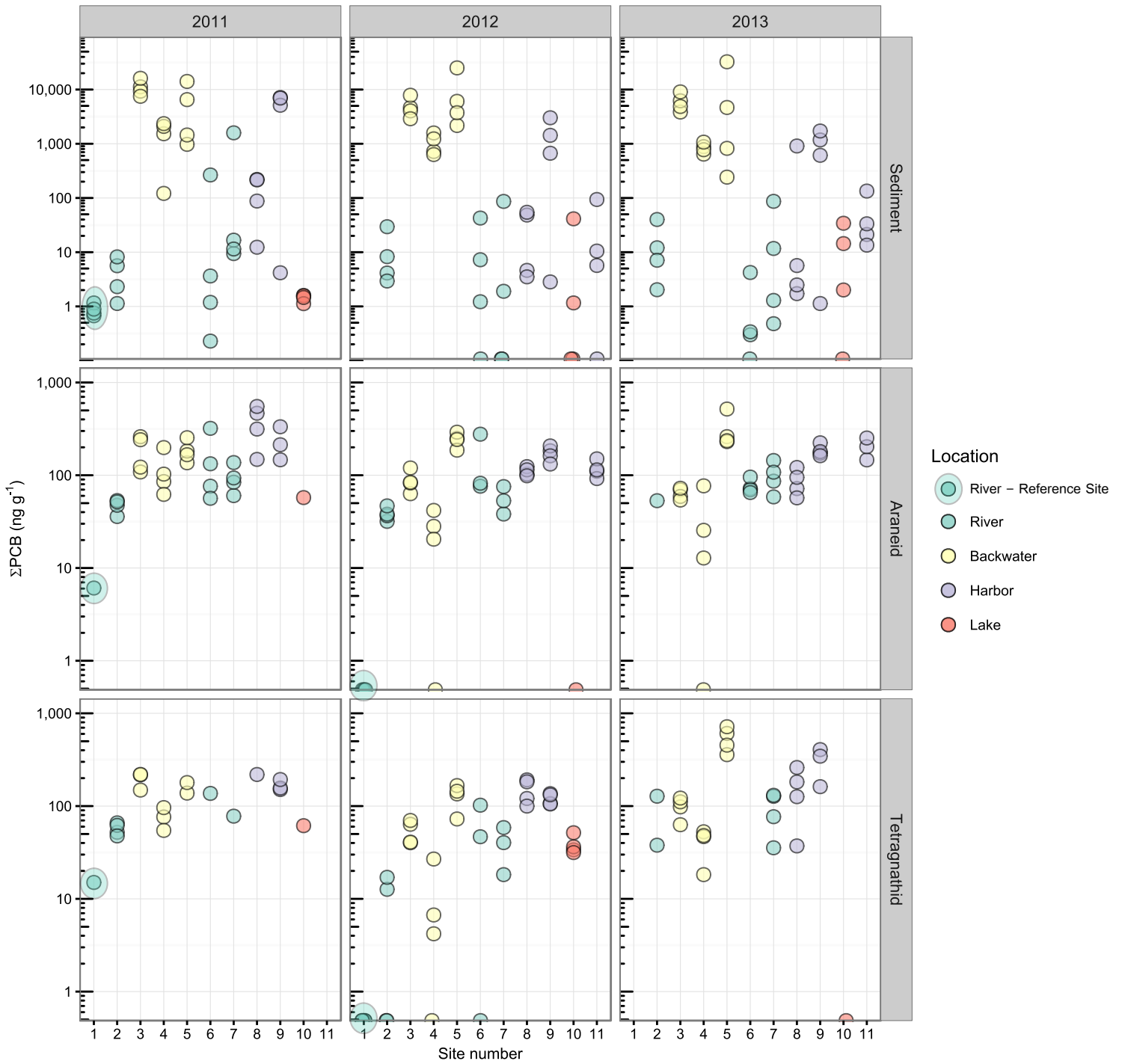

Figure S3. Total ΣPCB concentrations measured in sediment (top row) and spider (bottom two rows) samples across all sites at Manistique River AOC in 2011, 2012, and 2013. Each point shows the ΣPCB concentration of an individual sample; in most cases n = 4 samples per site within a panel, although for spiders this was not met at all sites in all years due to low spider biomass for some areas (Supplemental Data, Table S5). Concentrations of zero (i.e., samples in which no PCBs were detected) are shown resting on the x-axis. Point color indicates the habitat type of each site. Data from the reference site (Site 1; located upstream and outside of the AOC boundary) are highlighted with a green outline.
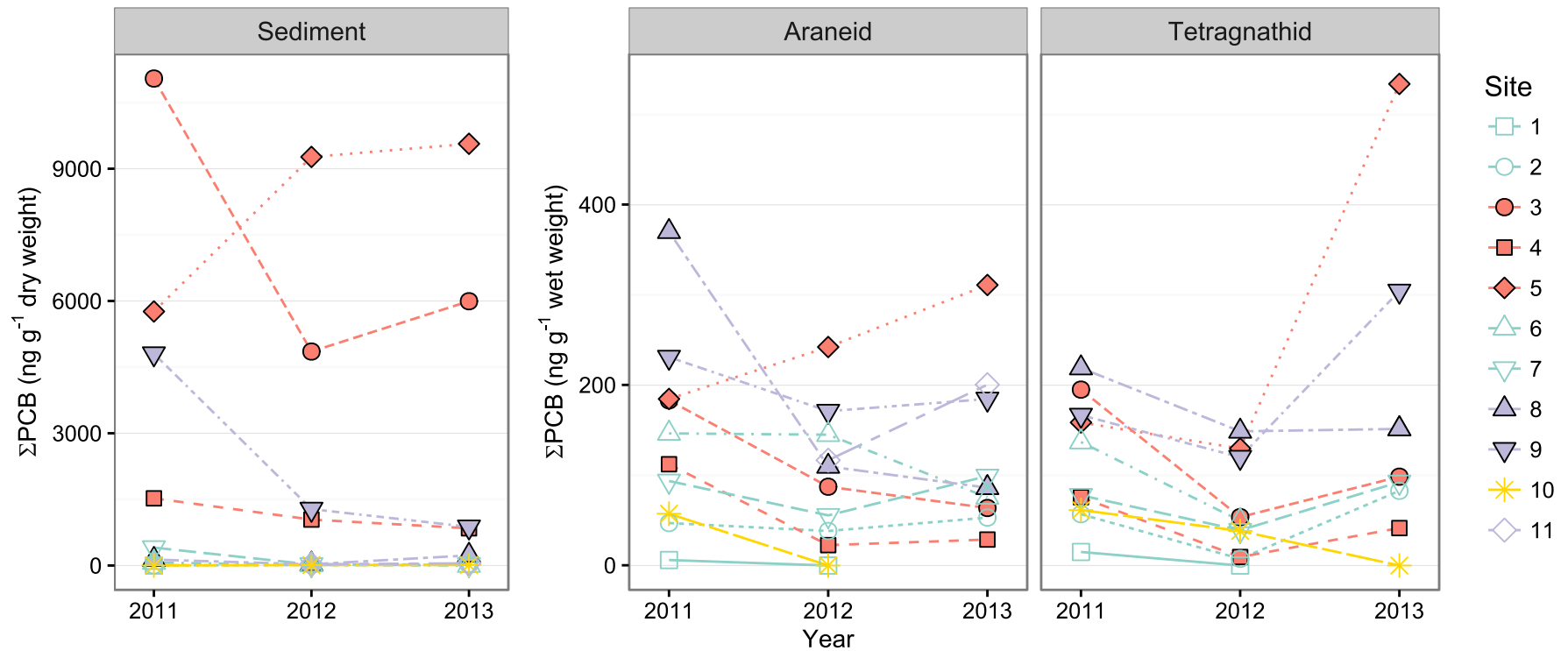
Figure S4

Figure S4. Changes in annual site mean ΣPCB concentrations over three years of sampling at each site in sediments (left panel), araneid spiders (middle panel), and tetragnathid spiders (right panel). Color of points indicates the location type of the sampling site: river sites in green, backwater sites in red, harbor sites in purple, and the lake site in yellow.
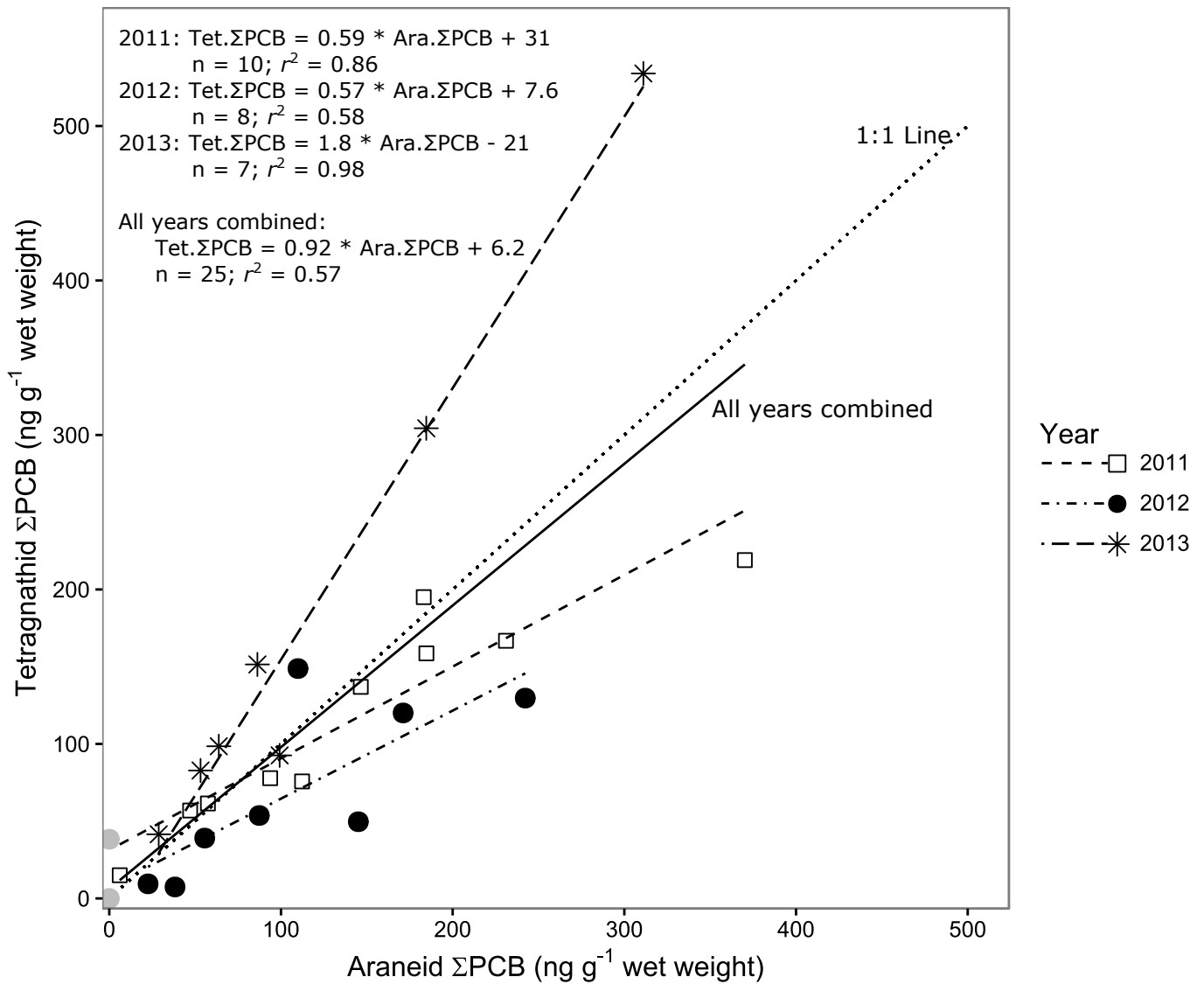
Figure S5

Figure S5. Relationships between annual site mean ΣPCB concentrations in two major riparian spider taxa across sites at Manistique River AOC in 2011 – 2013: this figure is equivalent to Fig. 3, except that the axes are not log-scaled. Annual site mean concentrations of zero – which were excluded from the regressions presented in Fig. 3 – are shown here as greyed-out circles resting on the axes.
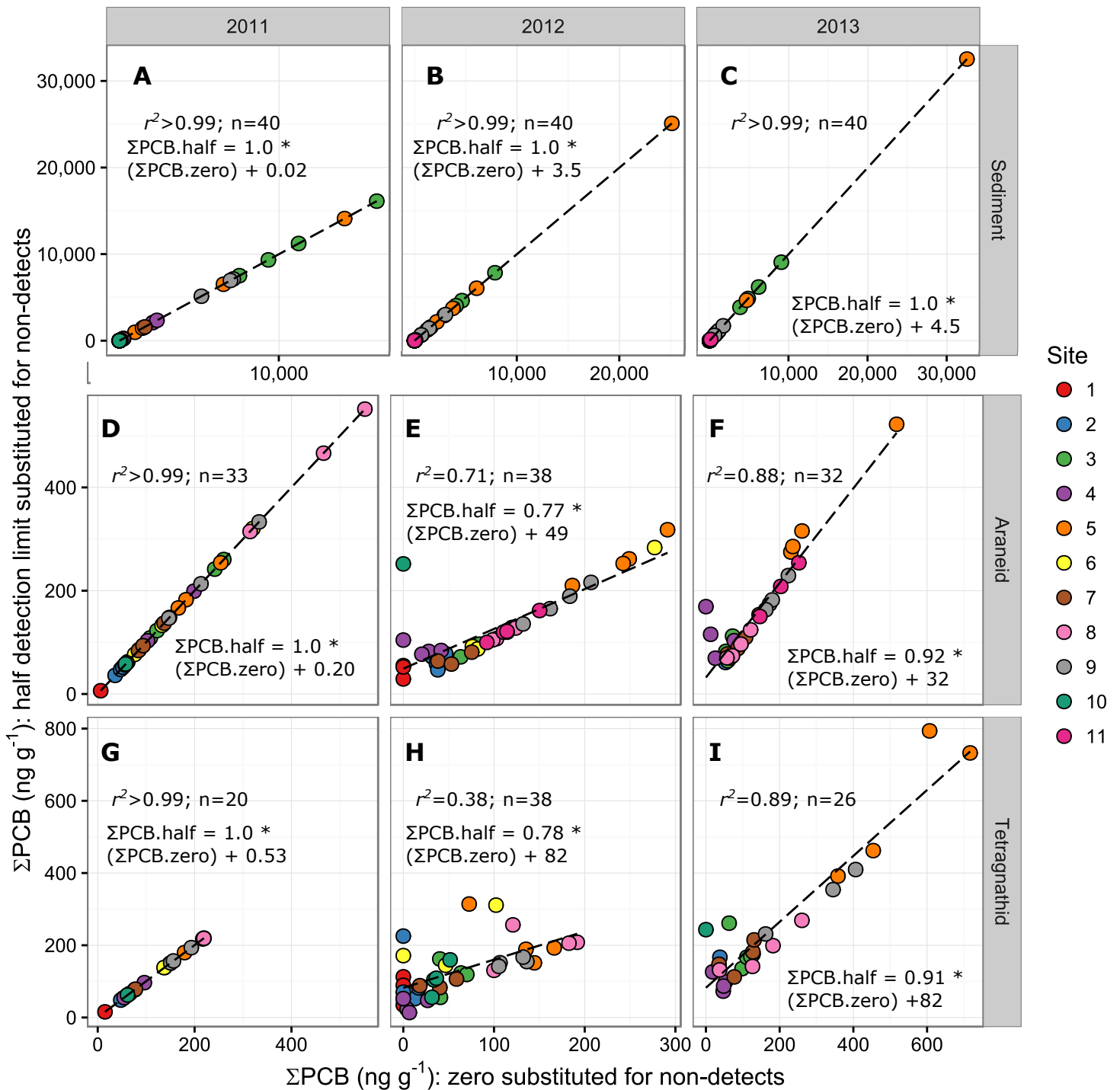
Figure S6

Figure S6. Comparison of ΣPCB concentrations obtained for each sample when substituting a concentration of zero for each undetected congener (i.e., sums including only results above the detection limit; x-axis) vs. when substituting a concentration of one-half the detection limit for each undetected congener (y-axis), separated by sample year (columns) and by sample type (rows). Color of points indicates the site from which the sample was taken. Sediment values represent dry weight concentrations; spider values represent wet weight concentrations. Regression lines and correlation coefficients for the relationships are shown on each panel; all correlations are significant at $p < 0.01$. Note the different units among panels.
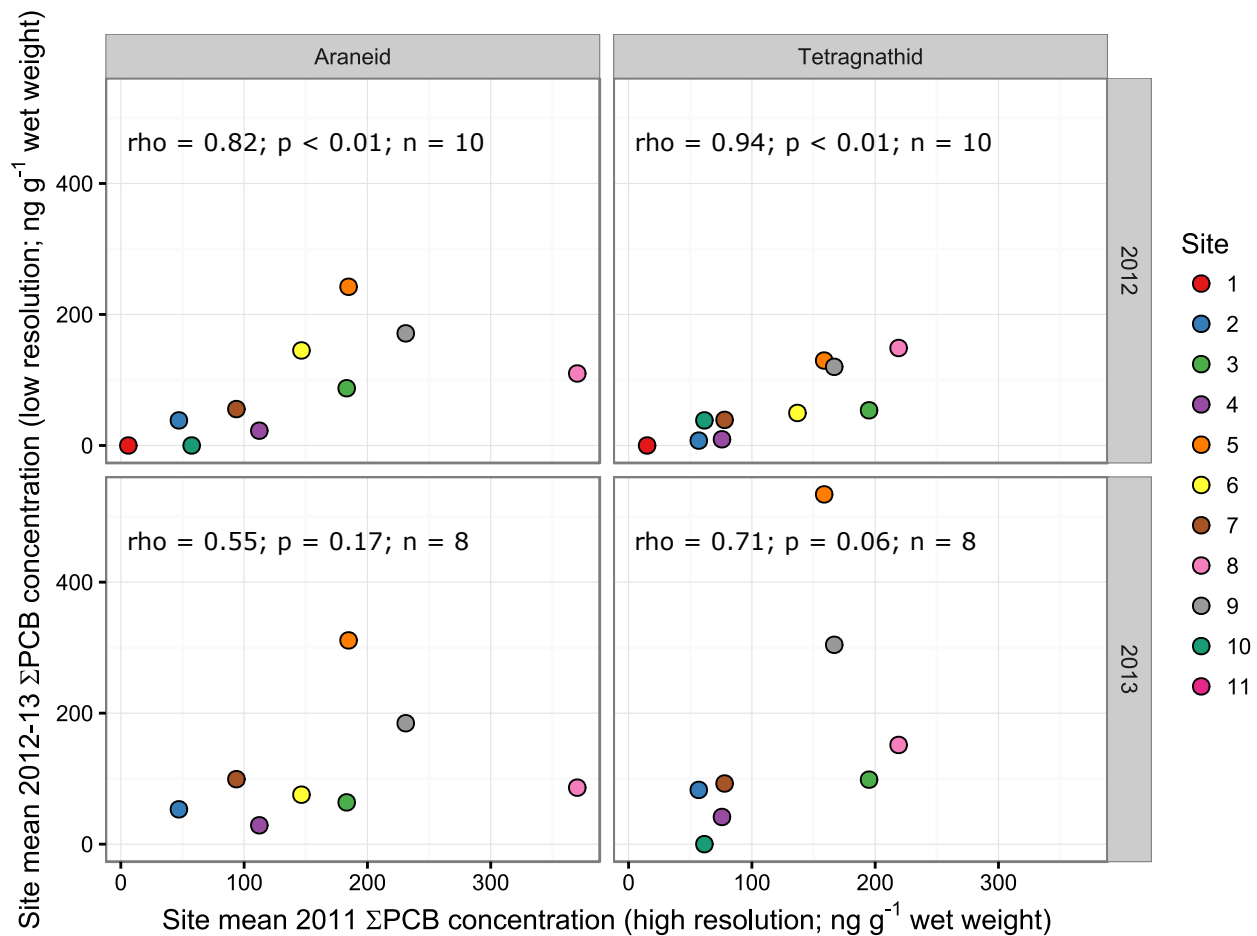
Figure S7

Figure S7. The mean ΣPCB concentration for each site in 2011 (x-axis) is compared with the annual site means measured in 2012 (y-axis; top row) and in 2013 (y-axis; bottom row) for araneids (left column) and tetragnathids (right column); in 2011 samples were analyzed with high-resolution mass spectrometry, while in 2012-13 the samples were analyzed with low-resolution mass spectrometry. General correspondence between 2011 and subsequent years in the pattern of relative ΣPCB concentrations among sites is assessed with Spearman's rank order correlation.

Figure S8

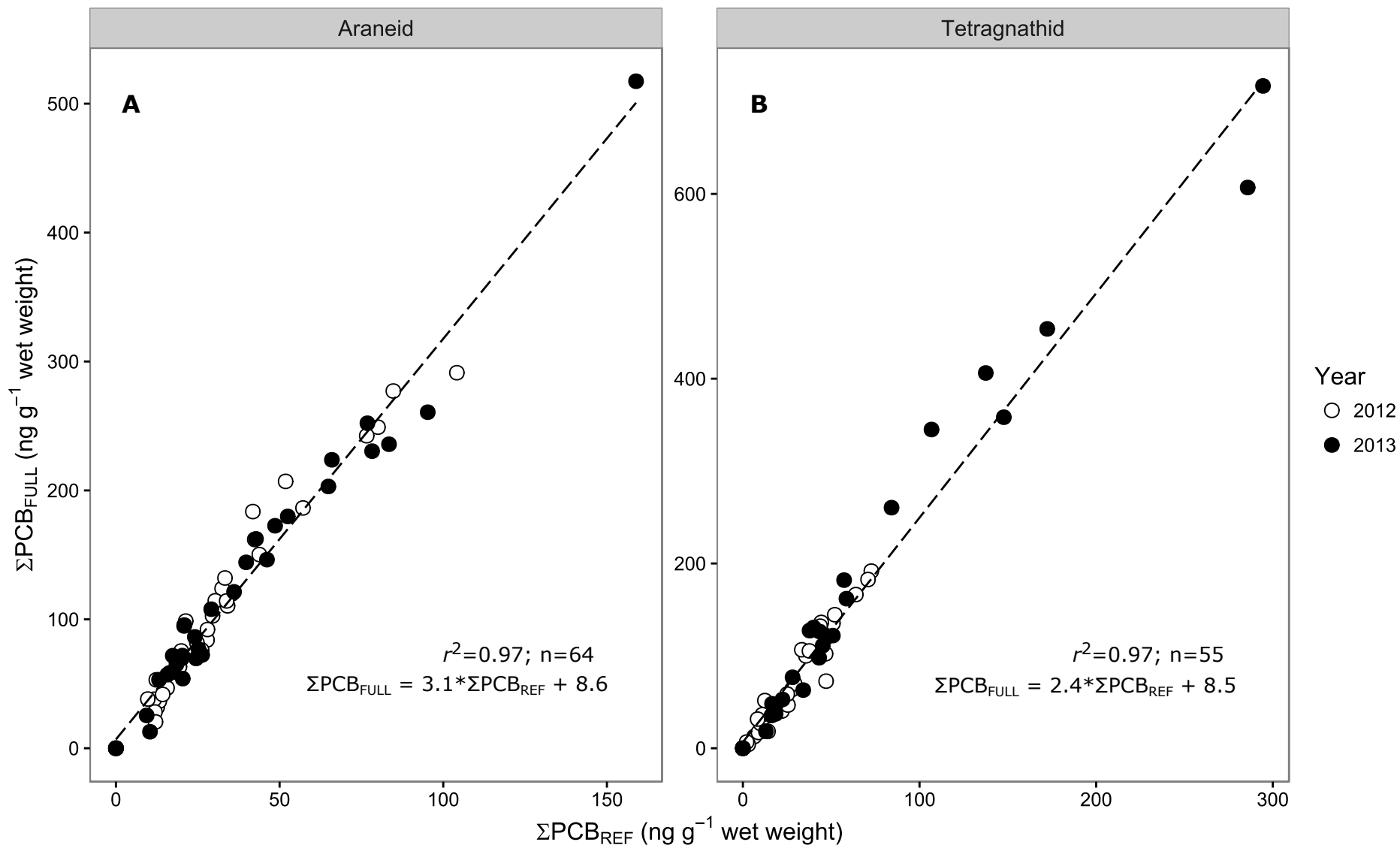Figure S8. Comparison of two different ΣPCB sums for each spider sample from 2012-13. 'Reference' sums (ΣPCB_{REF}; x-axis) are not influenced by nondetects: these values sum the concentrations of only the six most common congeners (PCB 47, 49, 52, 66, 70, 74), which were detected in all or all but one of the 2012-13 spider samples (excluding the fifteen samples in which no congeners were detected). 'Full' ΣPCB sums (ΣPCB_{FULL}; y-axis) are the standard sample ΣPCB concentrations used throughout the paper: sums of all concentrations above the detection limit for all 119 measured congeners. Regression lines and correlation coefficients are shown for araneid samples (A) and tetragnathid samples (B); both correlations were significant at $p << 0.01$.
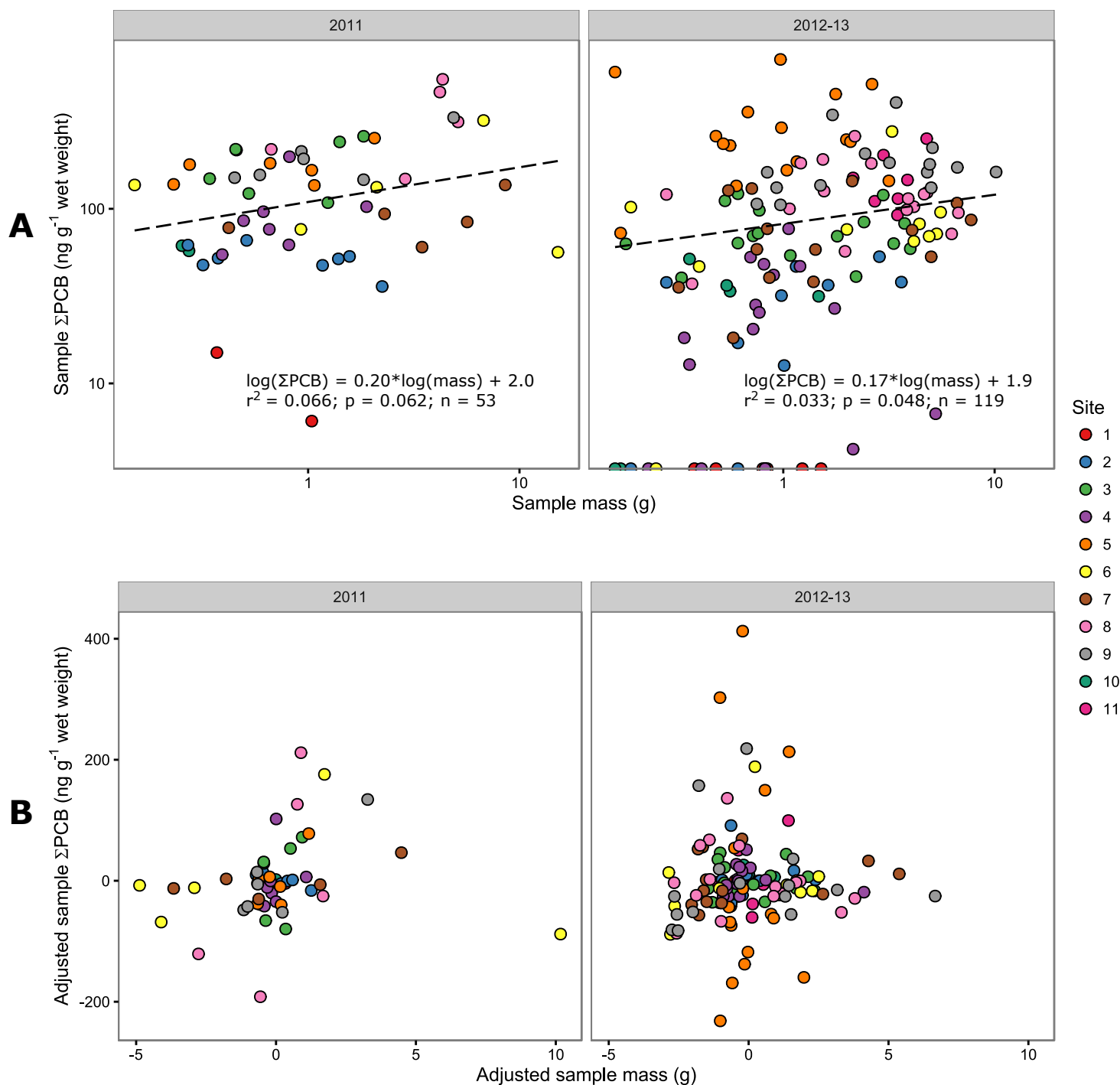
Figure S9

Figure S9. Relationship between the biomass of a sample and its reported ΣPCB concentration, for spider samples from 2011 (high-resolution mass spectrometry; left column) and from 2012-13 (low-resolution mass spectrometry; right column). Each point represents an individual sample. Panel A shows raw data points (log-scaled axes), while the points in panel B indicate the mass and ΣPCB concentration for each sample relative to the mean mass and the mean concentration for the site from which the sample was taken (i.e., data are adjusted for site means; see Fig. S10).
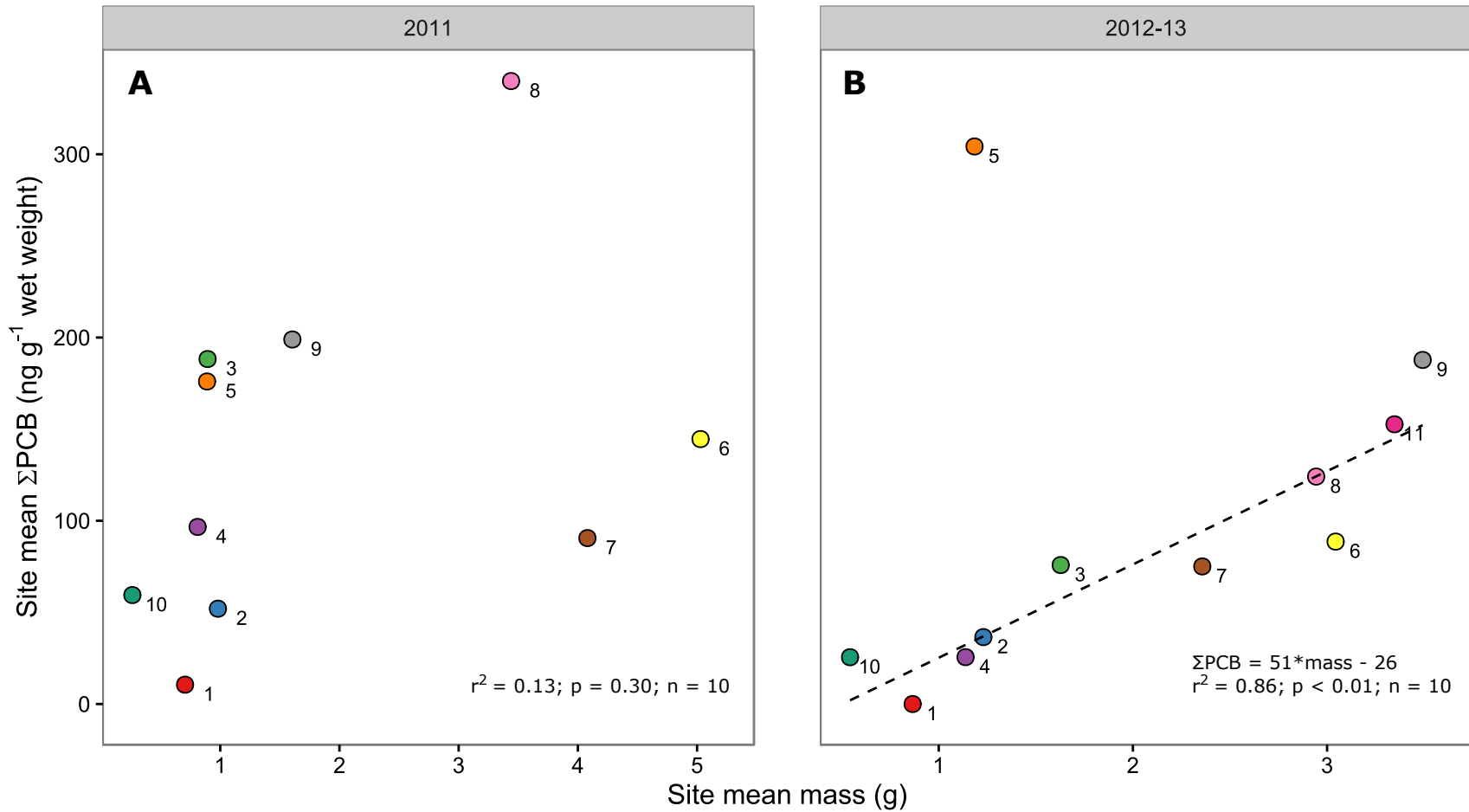
Figure S10

Figure S10. Relationship between the mean ΣPCB concentration and the mean biomass of all spider samples collected at each site in 2011 (analysis by high-resolution MS; panel A) and 2012-13 (analysis by low-resolution MS; panel B). The regression line and regression statistics shown in panel B do not include data from site 5 (site 5 studentized residual = 10.3; for all other sites, |studentized residual| < 1). Note the different x-axis scales between panels.