

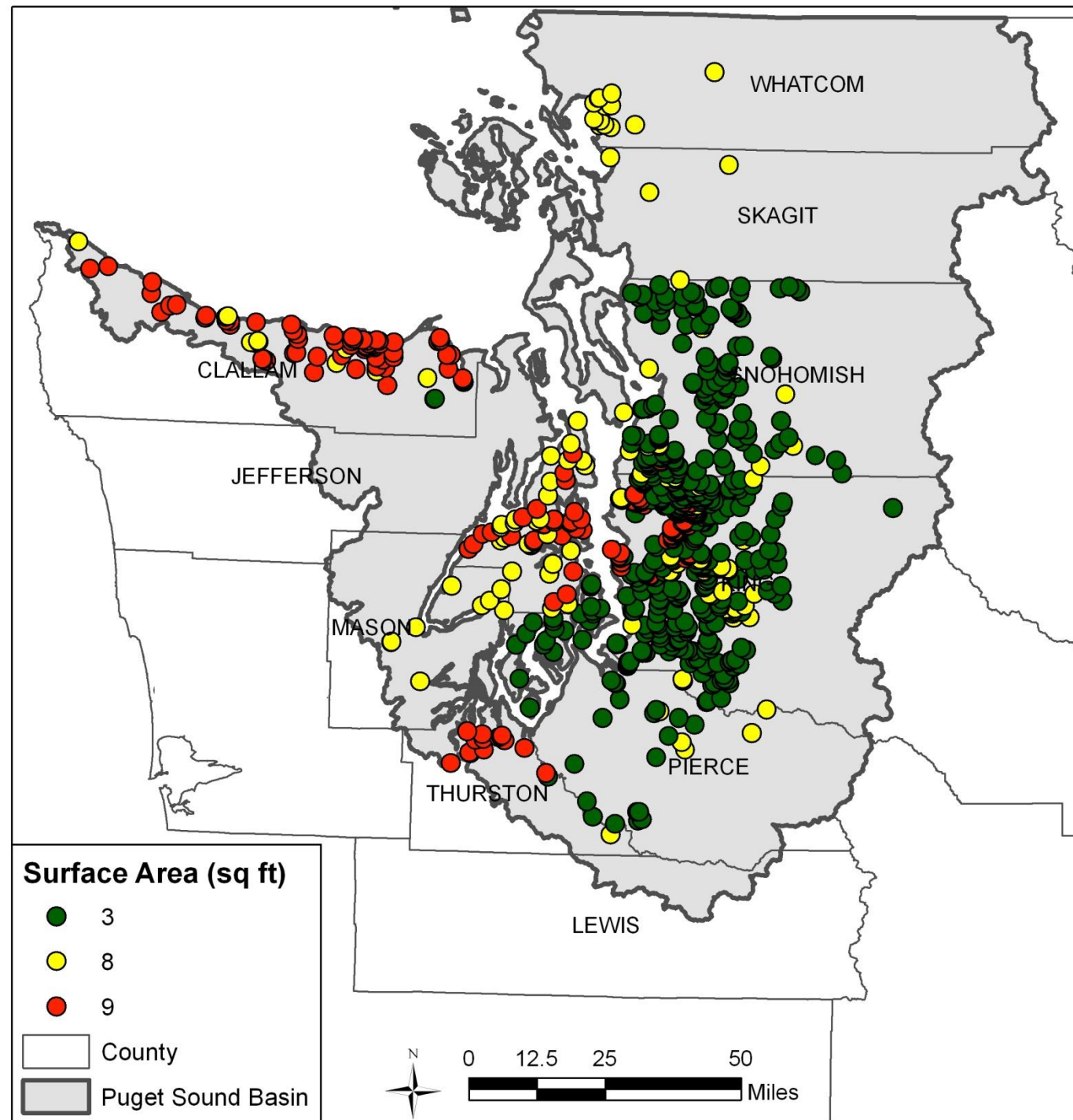
RESULTS OF 2011 SIDE BY SIDE SAMPLING EFFORTS: 3 VS. 8 SQ FT







Jo Wilhelm & Deb Lester, King County
Leska Fore, Statistical Design
Karen Adams, WA Department of Ecology
Gretchen Hayslip, EPA

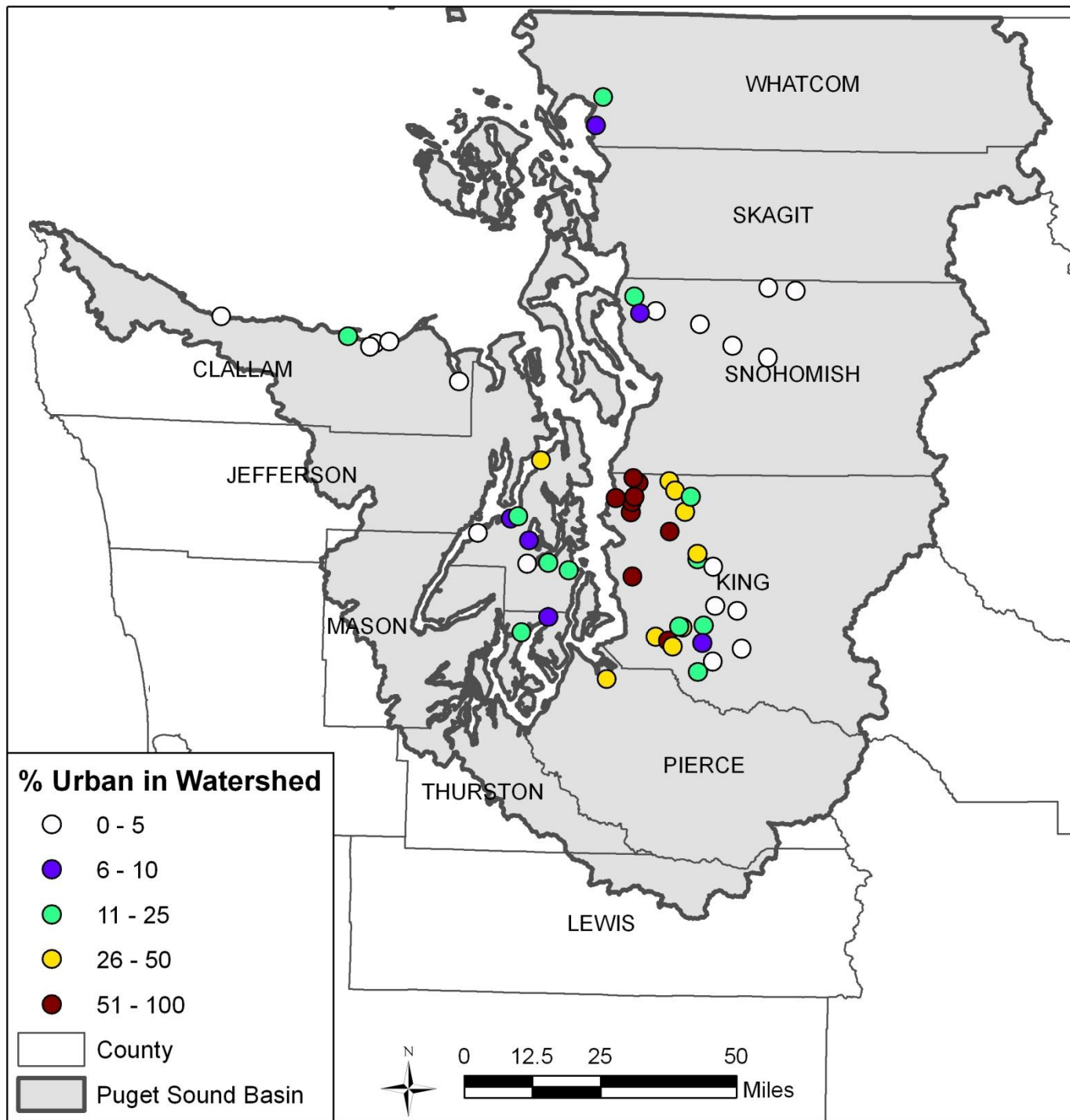
Surface Area

- 3, 8, and 9 sq ft total surface area frequently sampled



Sampling Locations

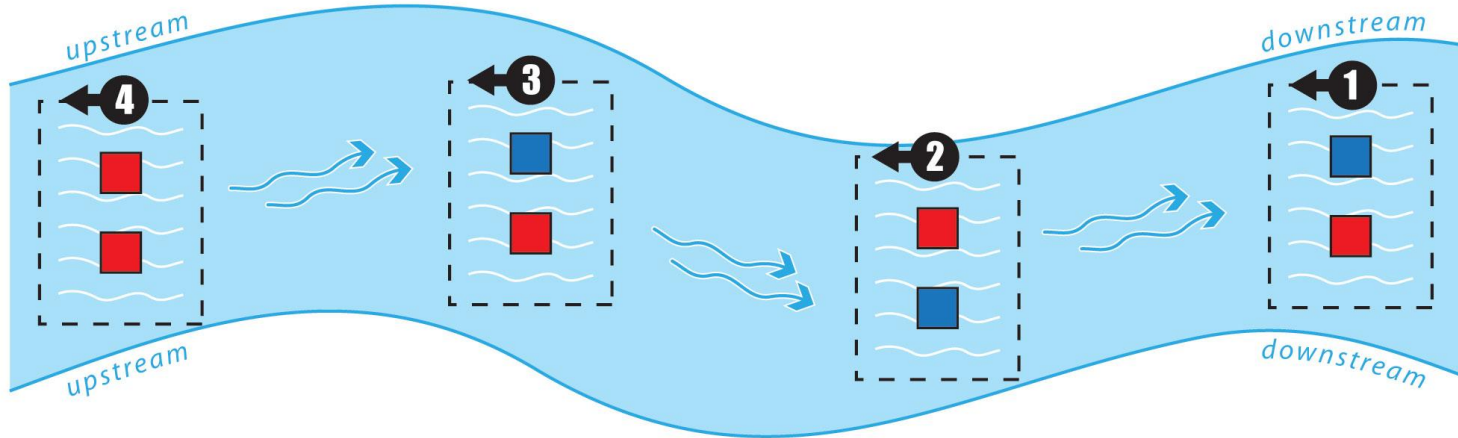
-  55 sites
-  9 partners
-  4-330 m elevation
-  0-93% urban



Sample Collection


STREAM REACH SAMPLE COLLECTION

- Sample each riffle twice, 1 ft² per sample
- Move from downstream to upstream
- 3 ft²: collect one sample from three riffles
- 5 ft²: collect one sample from three riffles and two from a fourth riffle



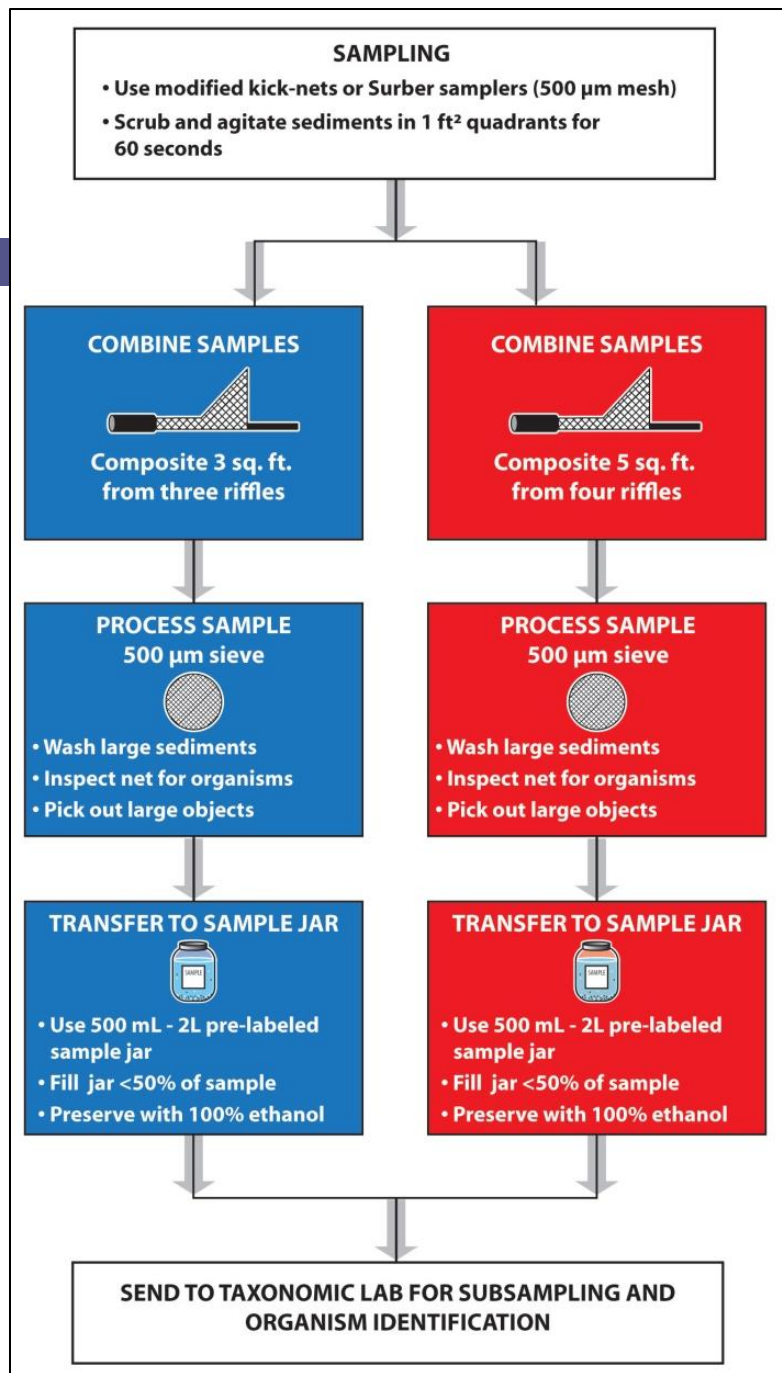
 Sample composited into total 3 ft² area

 Sample composited into total 5 ft² area

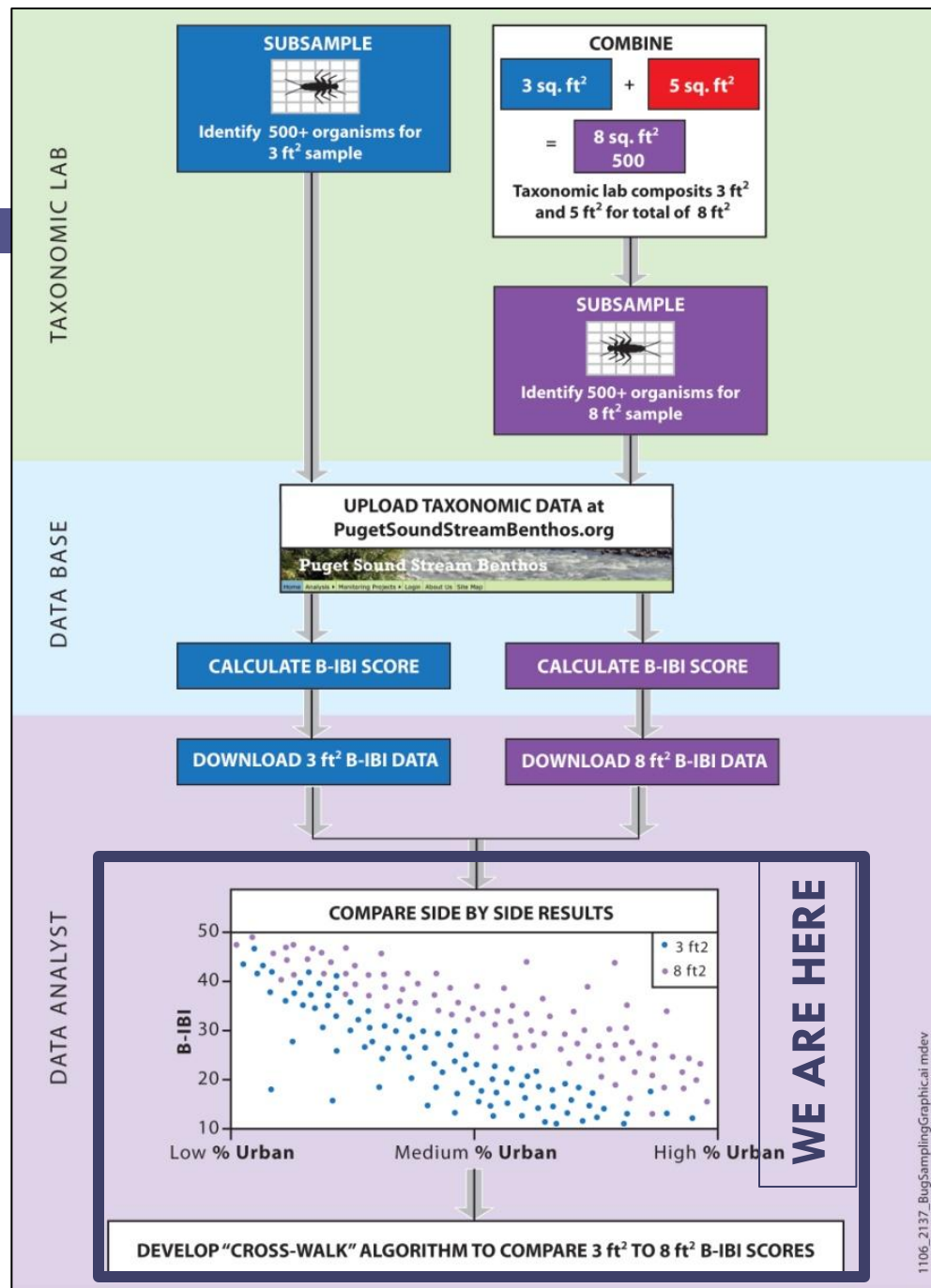
 Fast-moving habitat (riffle)

 Stream flow

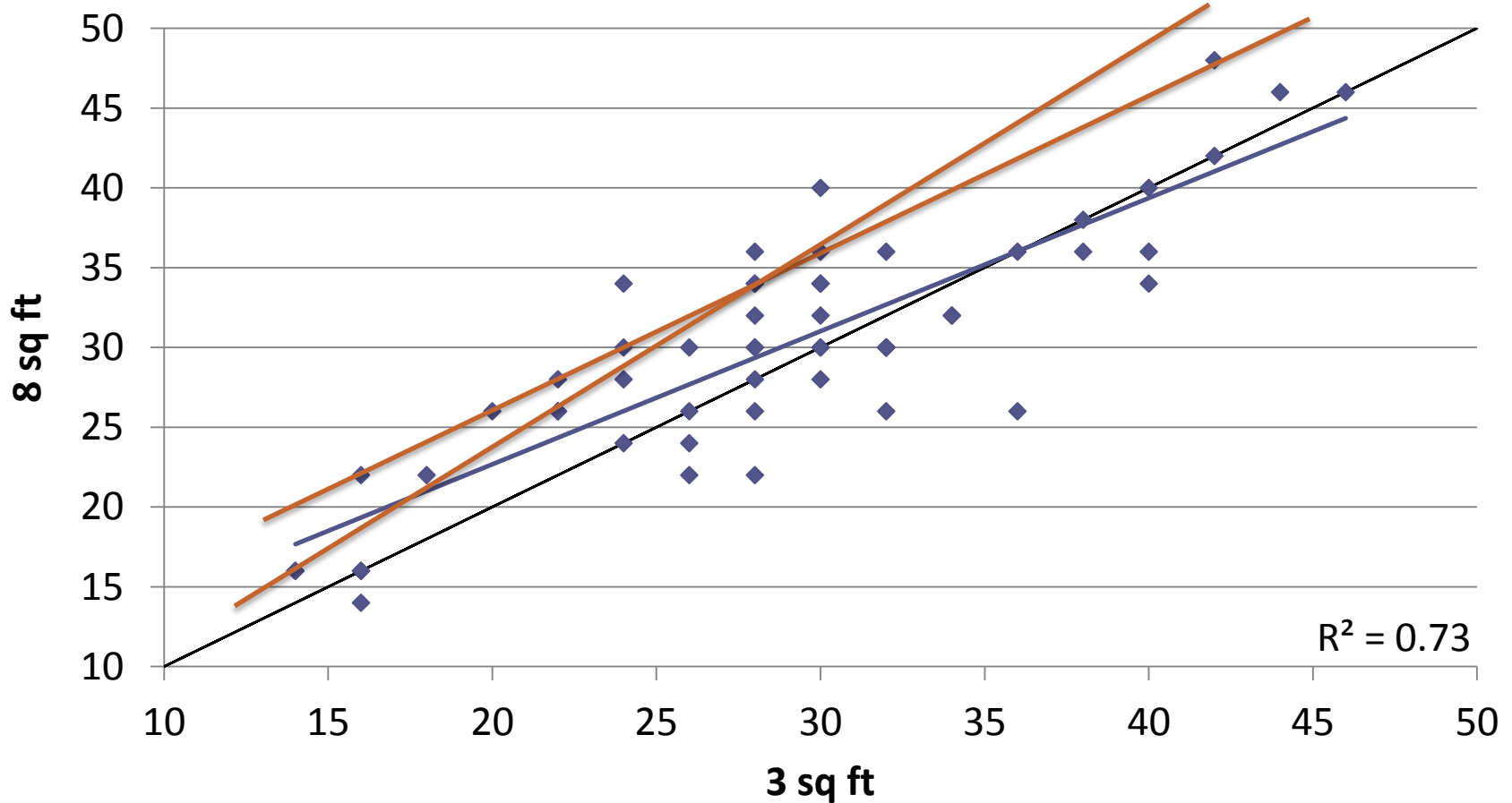
Sample Processing



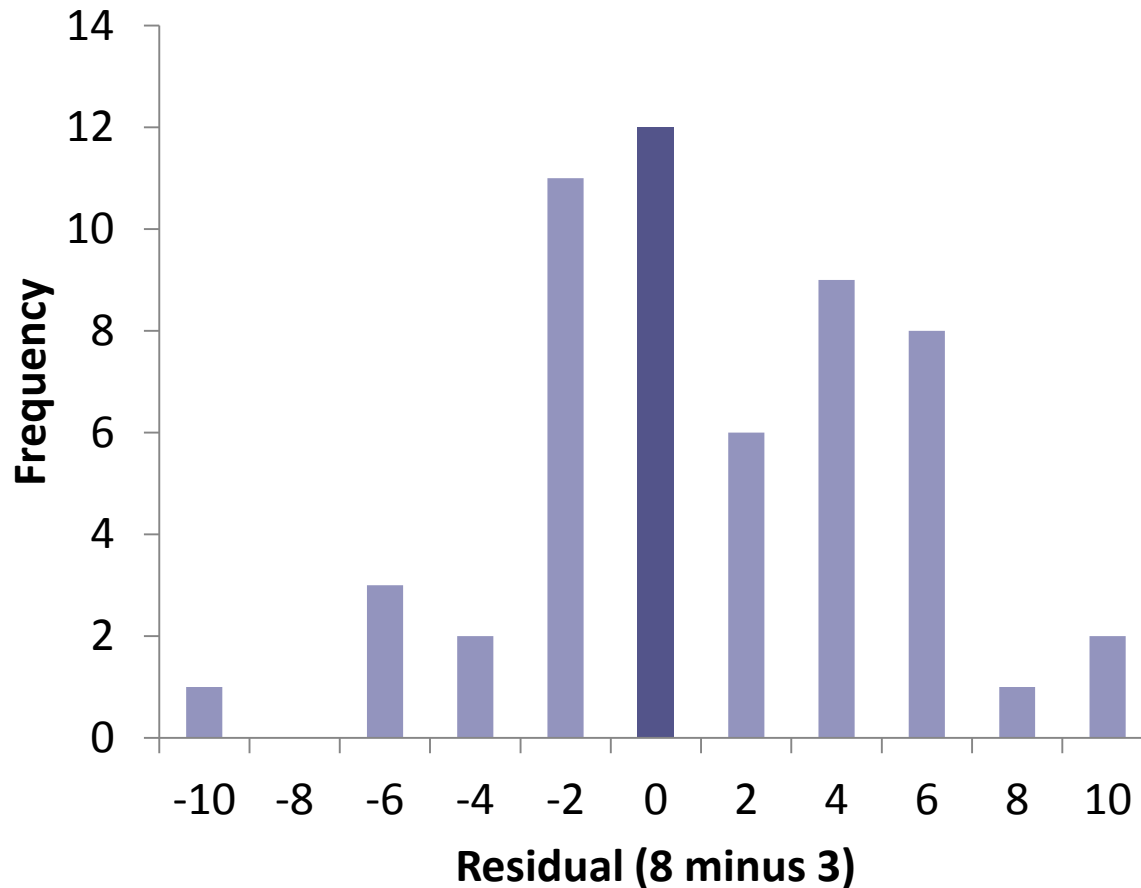
Laboratory Methods




Overall BIBI Score: 3 vs. 8 sq ft



Overall BIBI Score: Residuals

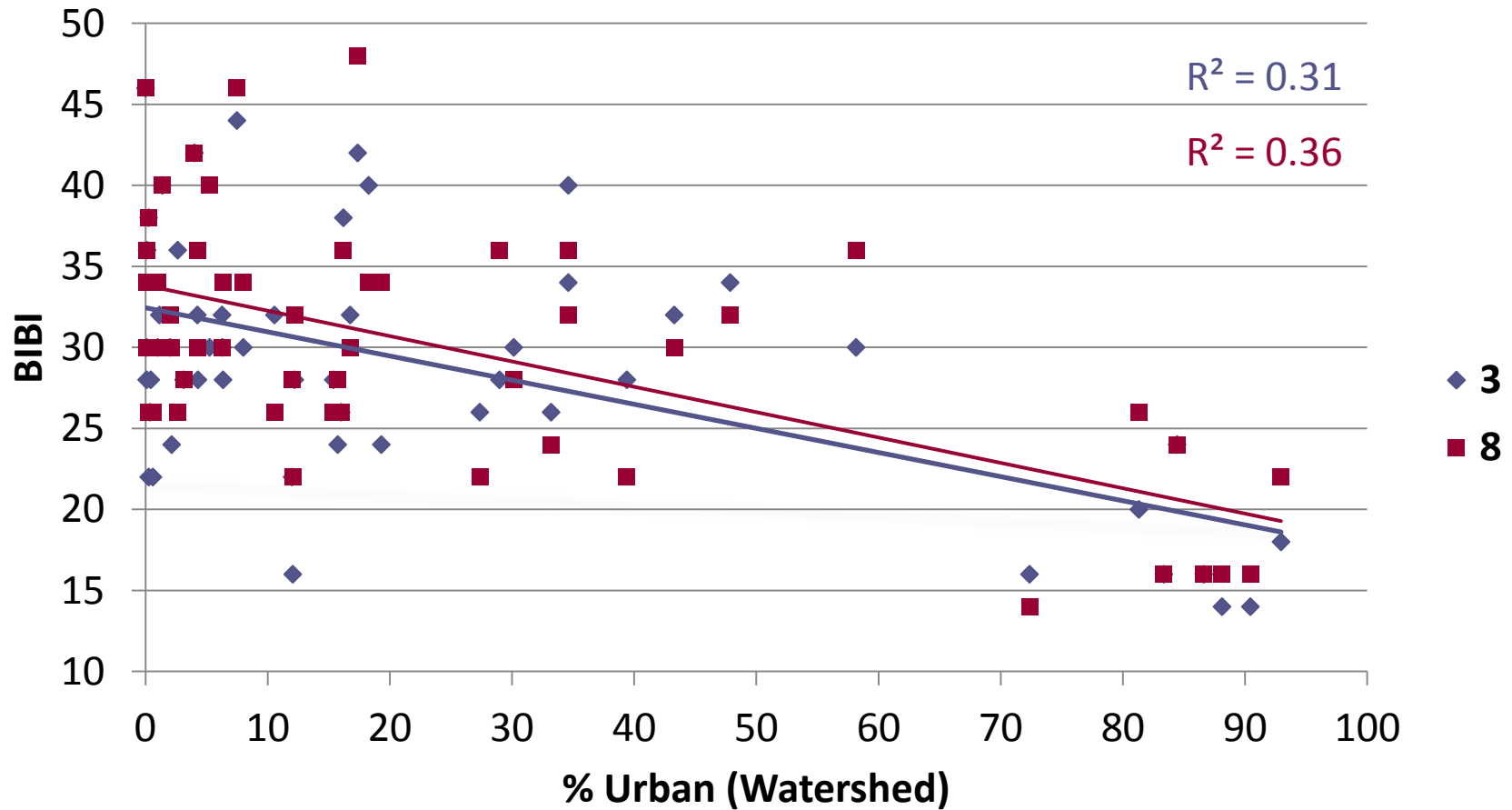


 Mean = 1.2

 $p < 0.05$

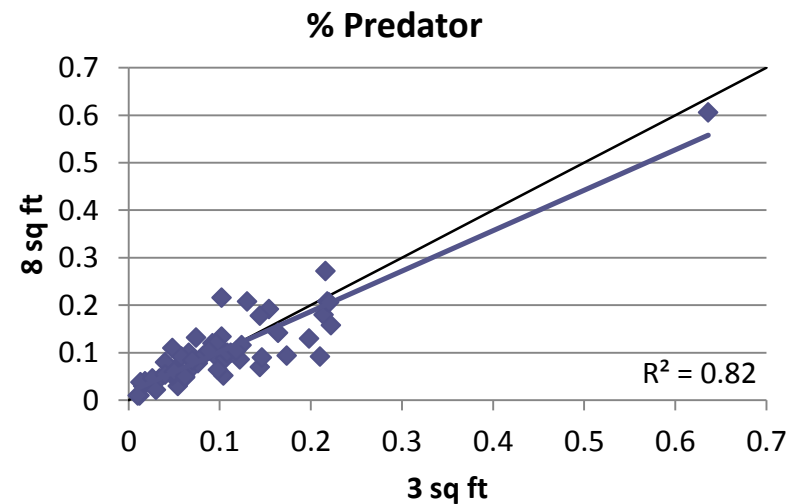
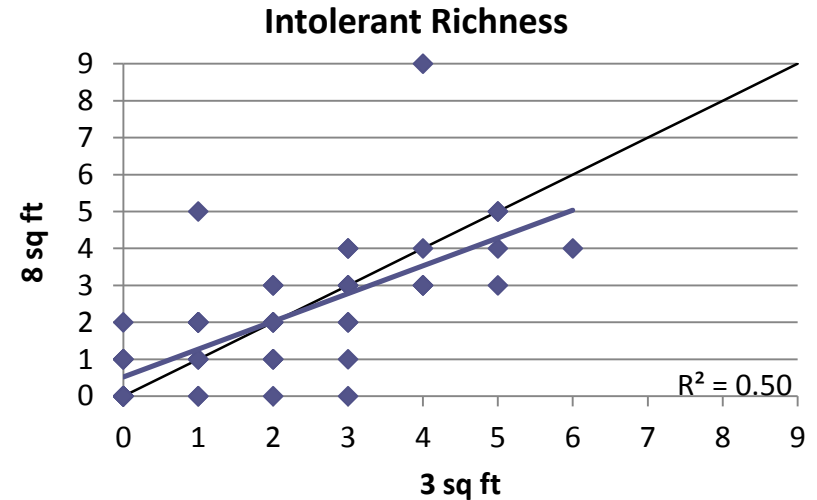
 Biologically meaningful?

Overall BIBI Score: Landcover



Individual BIBI Metrics

Metric	R ²	Mean Residual
Total Taxa	0.54	<u>2.33</u>
Mayfly Taxa	0.72	-0.16
Stonefly Taxa	0.66	<u>0.65</u>
Caddisfly Taxa	0.57	0.27
Long-lived Taxa	0.58	0.27
Intolerant Taxa	0.50	<u>0.05</u>
% Tolerant	0.62	-0.01
% Predator	0.82	0.00
Clinger Taxa	0.74	<u>1.13</u>
% Dominance	0.54	0.00



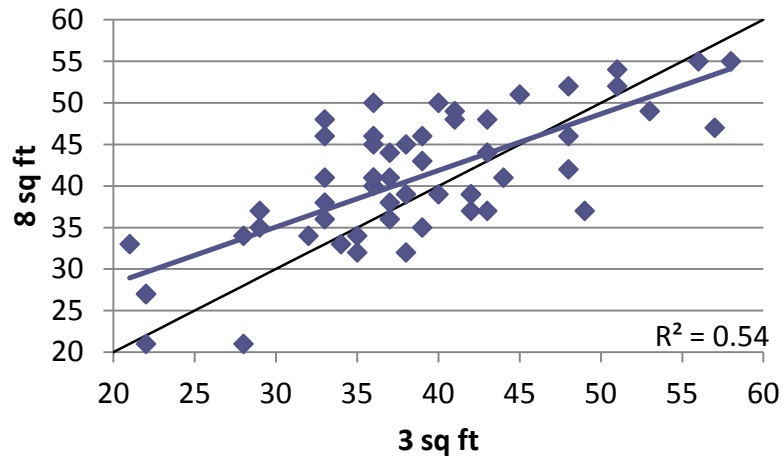
Side by Side Sampling

- 🪳 What did you hear?
- 🪳 What meaning do you make from these data?
- 🪳 What else do you need to know to feel confident about surface area comparability?
- 🪳 Would you switch collection methods?
- 🪳 Why or why not?

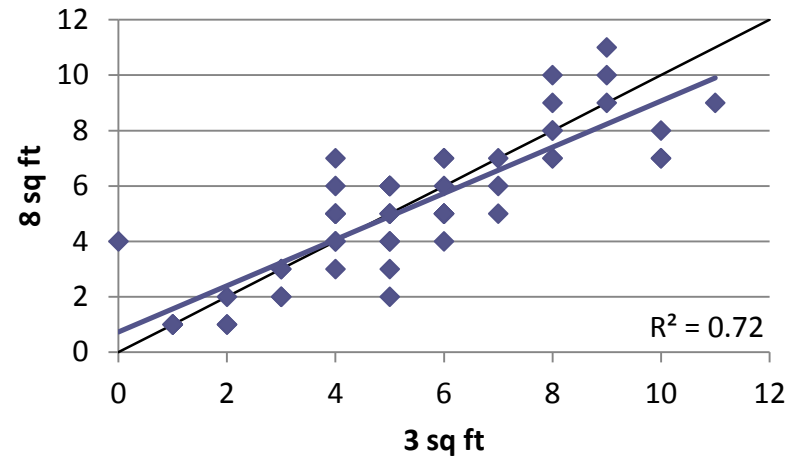


Individual BIBI Metrics

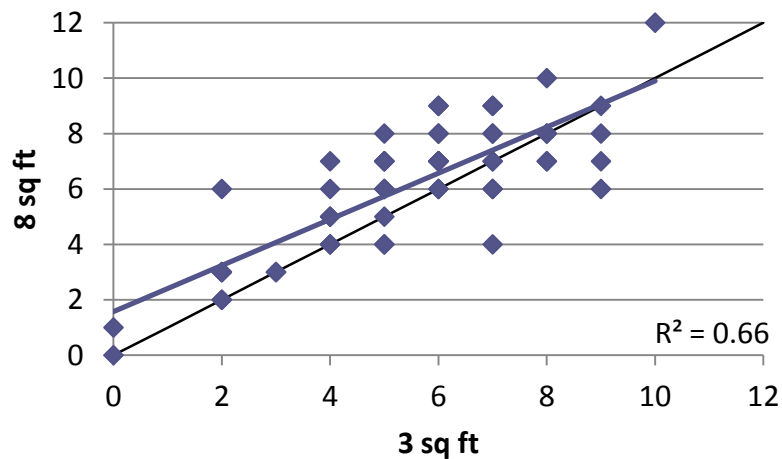
Taxa Richness



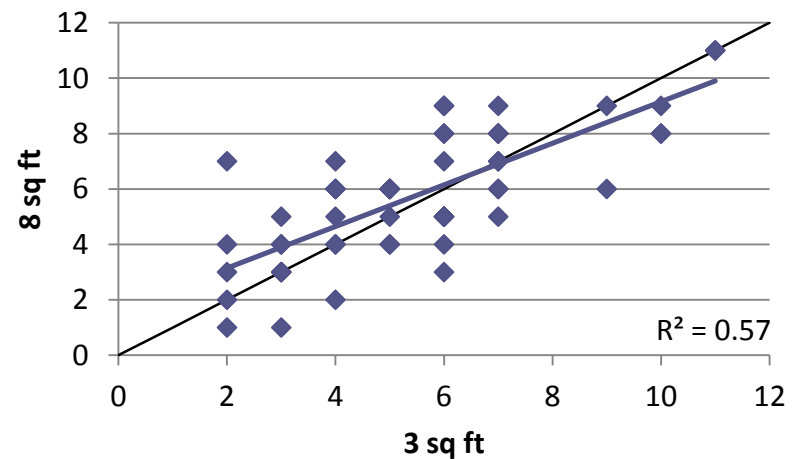
Ephemeroptera Richness



Plecoptera Richness

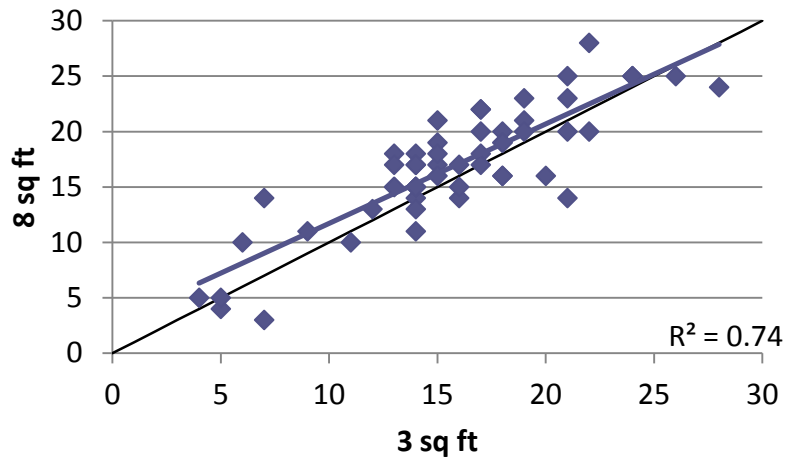


Trichoptera Richness

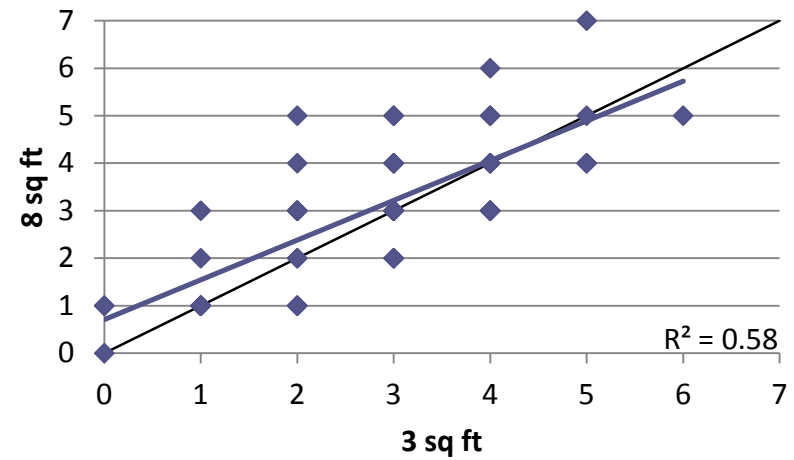


Individual BIBI Metrics

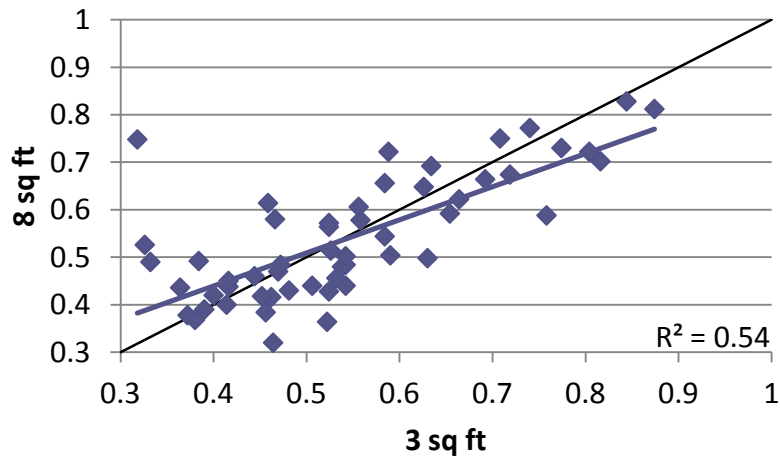
Clinger Richness



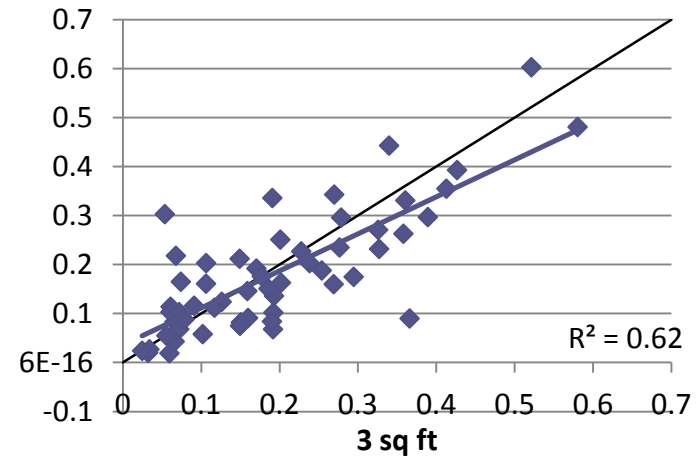
Long-Lived Richness



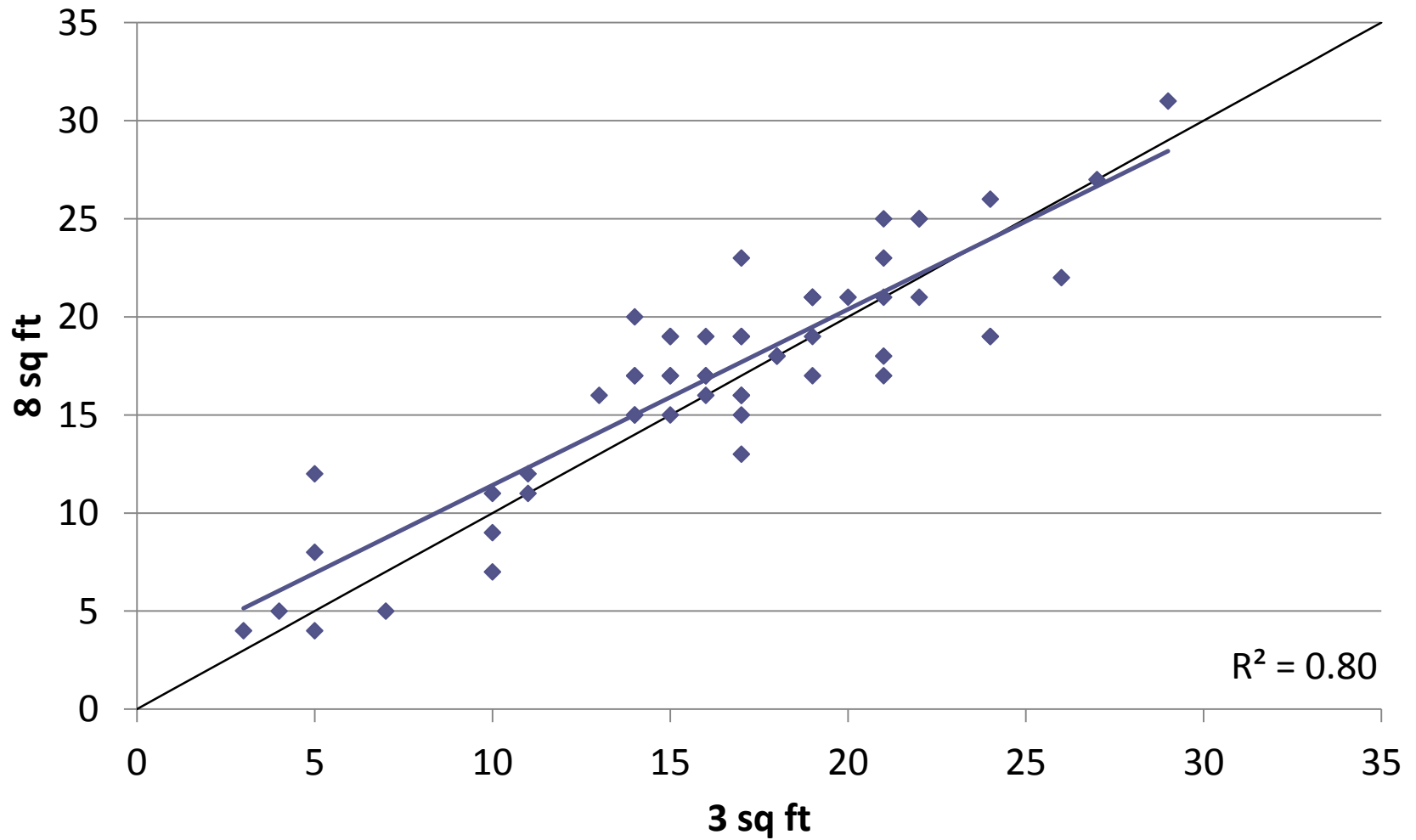
% Dominance



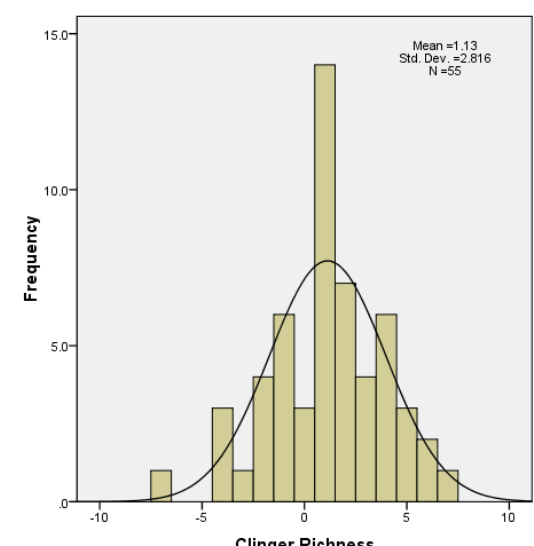
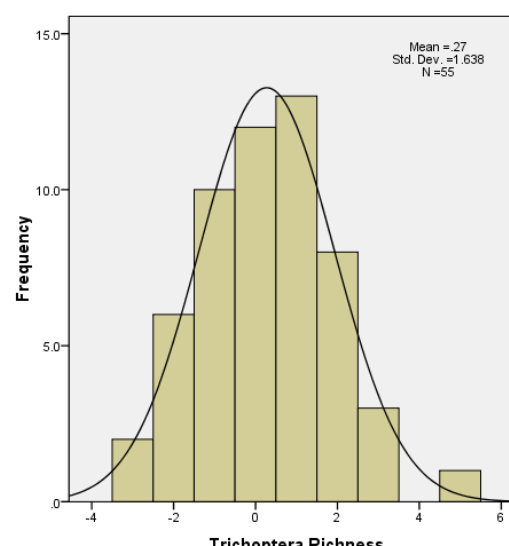
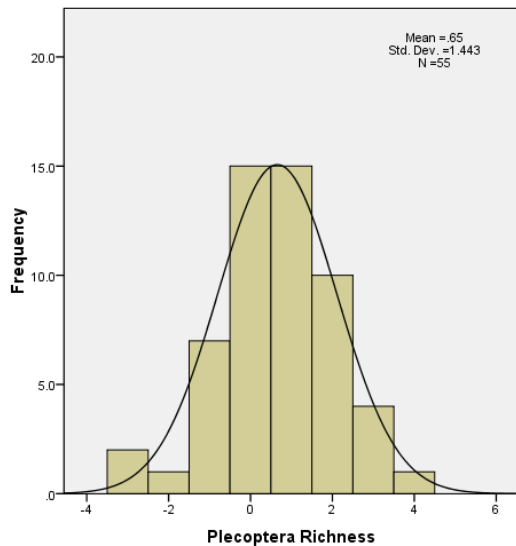
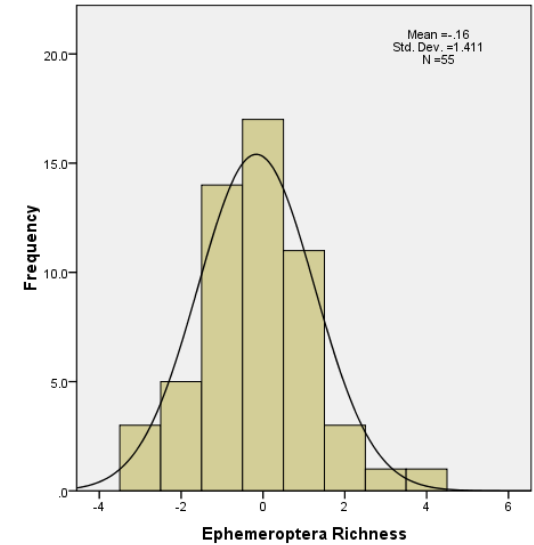
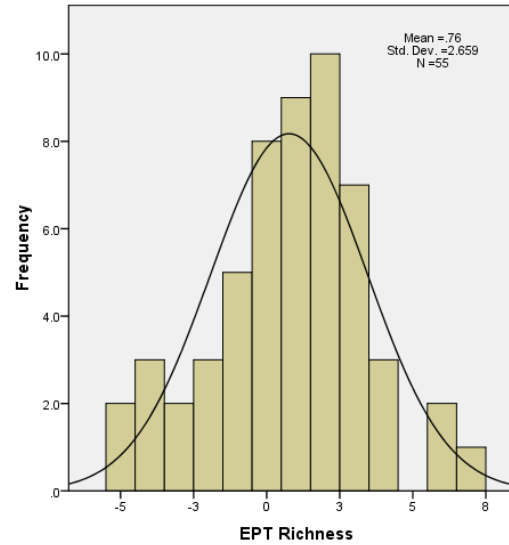
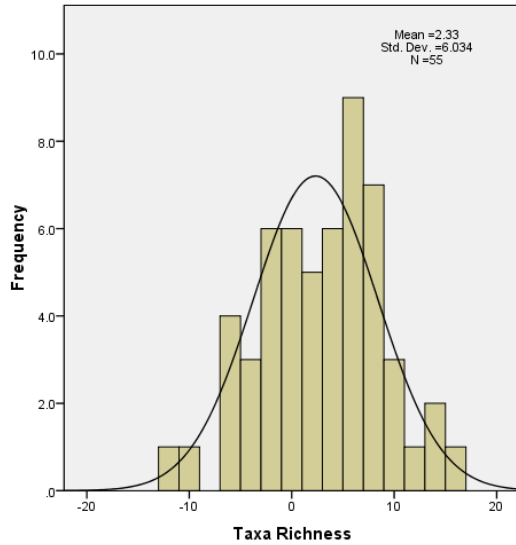
% Tolerant



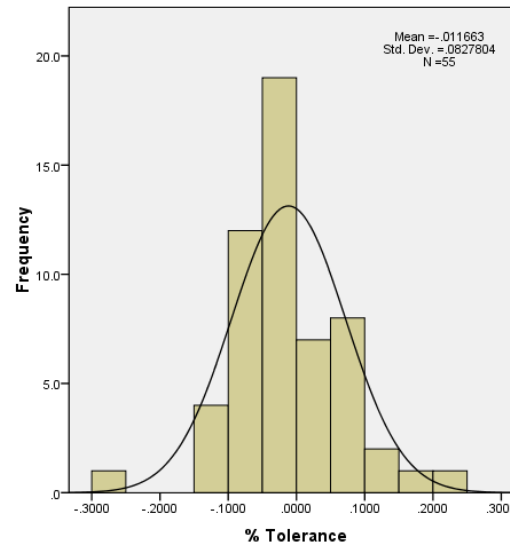
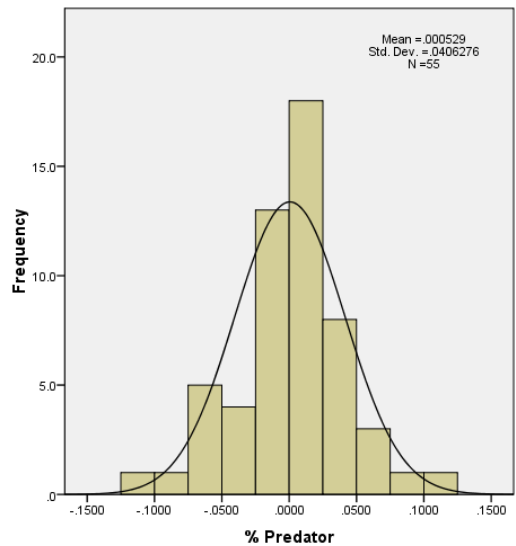
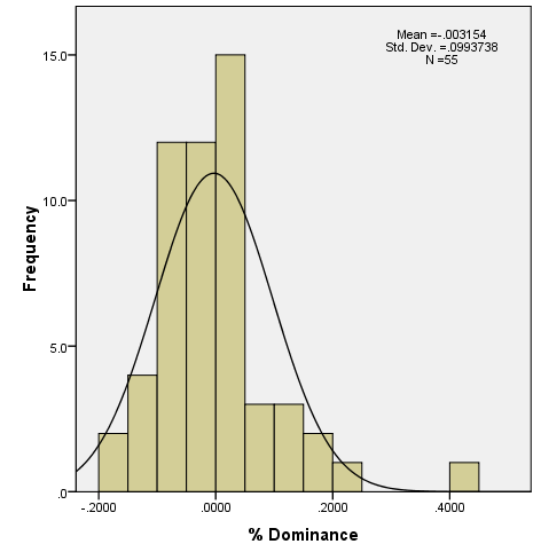
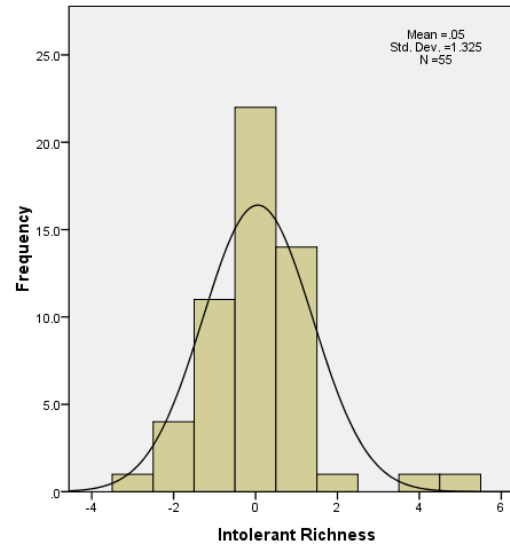
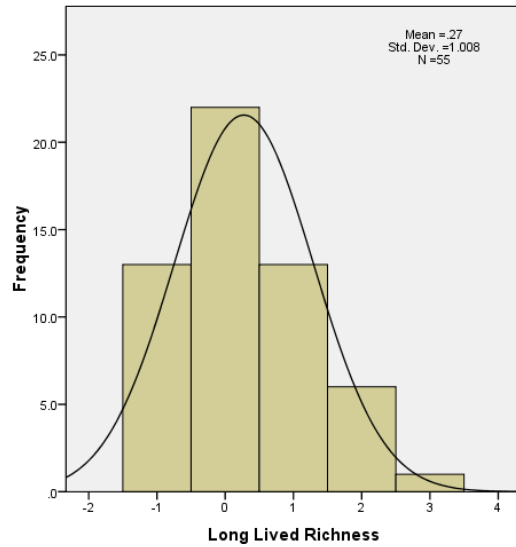
EPT Richness



Individual BIBI Metrics (Residuals)



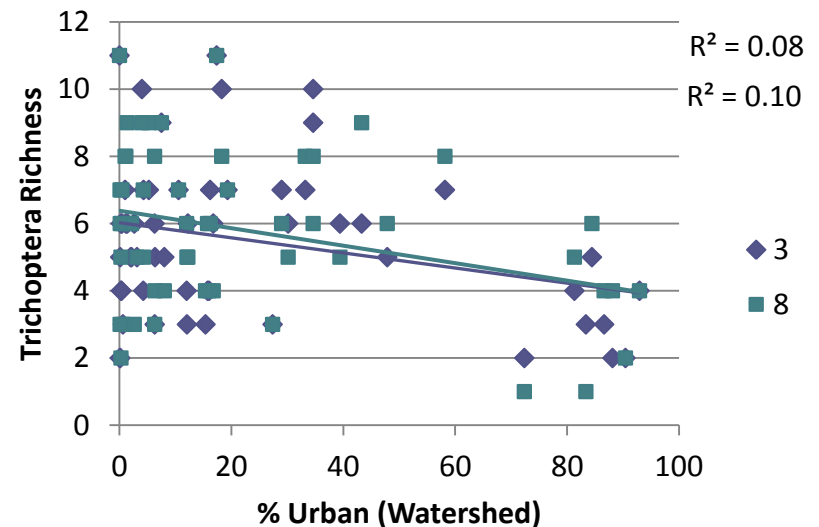
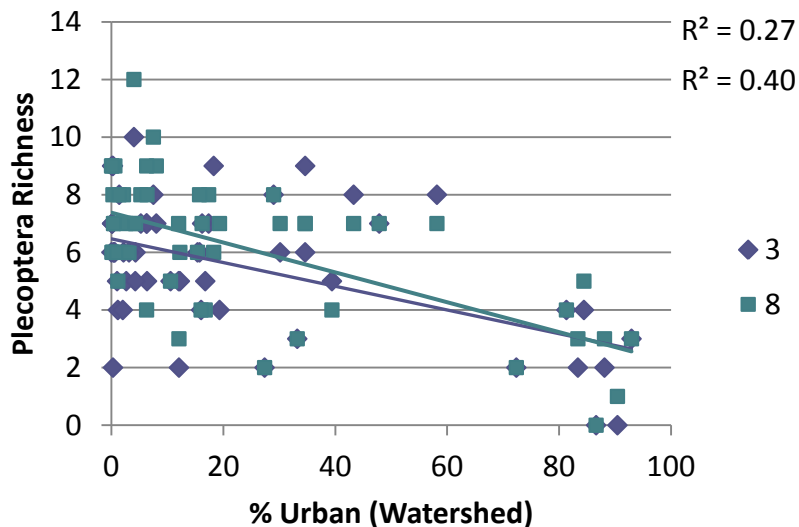
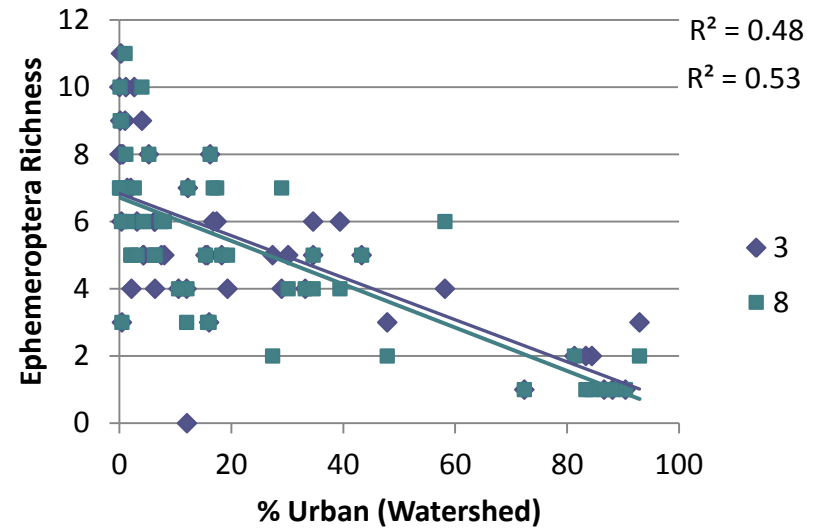
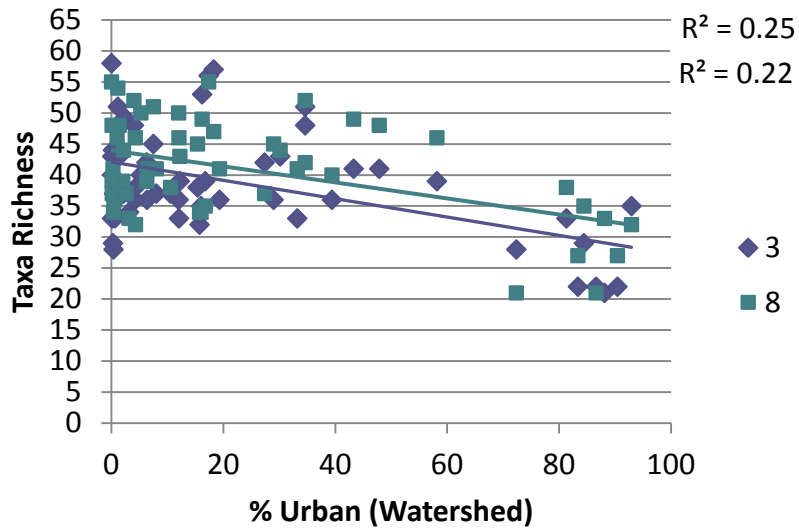
Individual BIBI Metrics (Residuals)



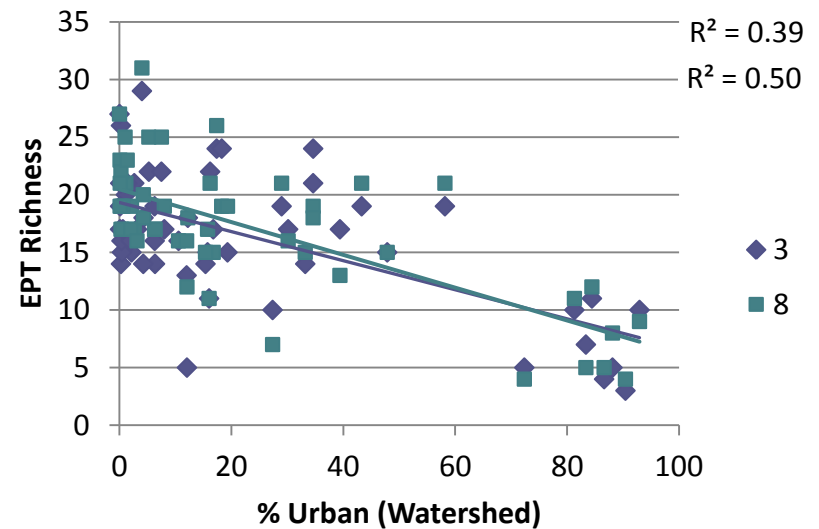
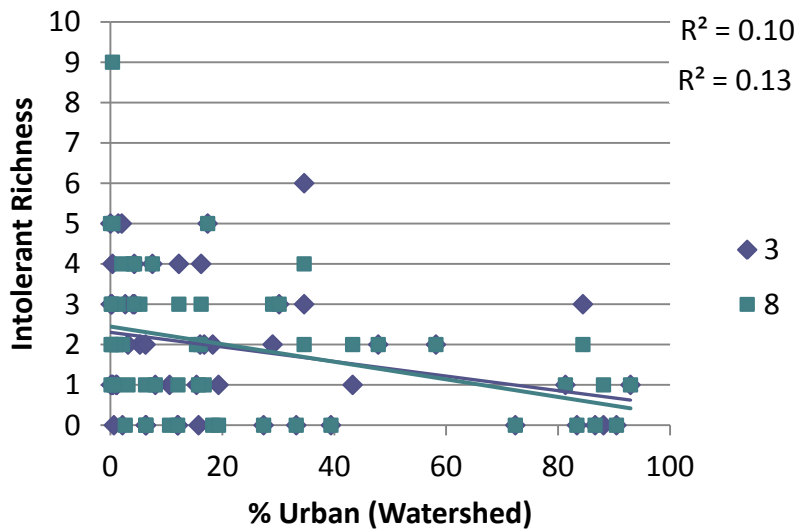
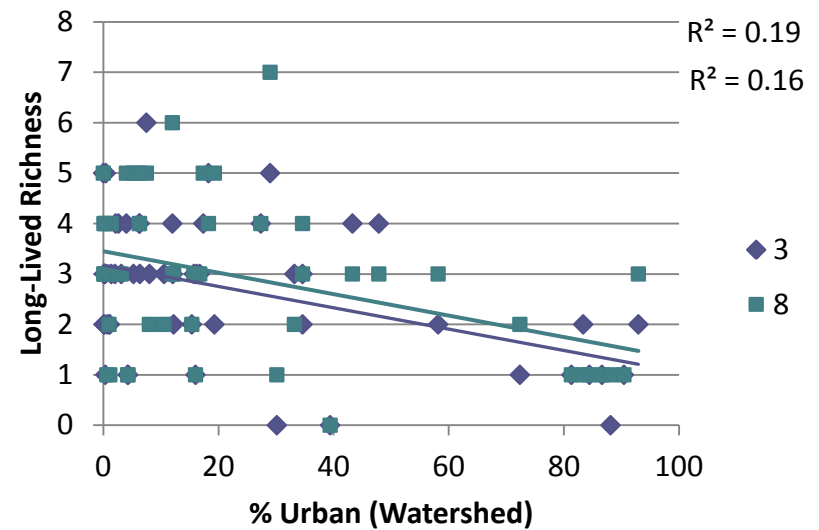
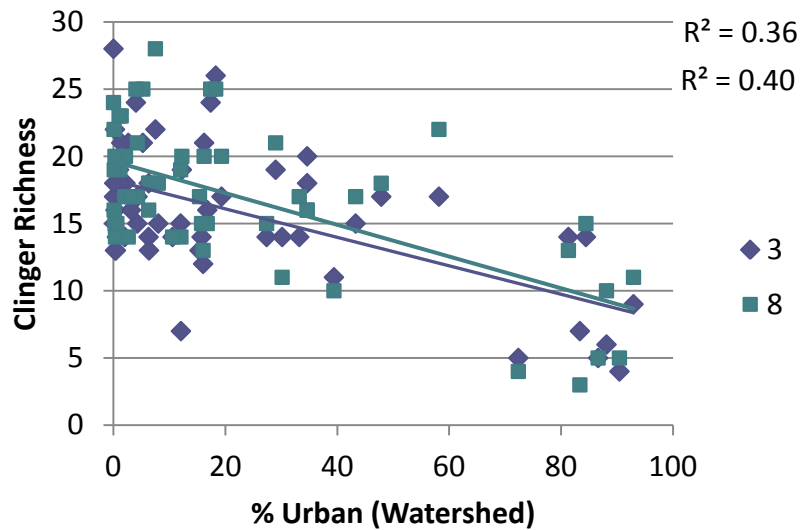
Residual Statistics – by Metric

Metric	R ²	Mean (residuals)	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	Lower 95% CI	Upper 95% CI
Total Taxa	0.54	2.33	6.03	0.81	2.86	54	0.01	2.33	0.70	3.96
Mayfly Taxa	0.72	-0.16	1.41	0.19	-0.86	54	0.39	-0.16	-0.55	0.22
Stonefly Taxa	0.66	0.65	1.44	0.19	3.36	54	0.00	0.65	0.26	1.04
Caddisfly Taxa	0.57	0.27	1.64	0.22	1.23	54	0.22	0.27	-0.17	0.72
Long-lived Taxa	0.58	0.27	1.01	0.14	2.01	54	0.05	0.27	0.00	0.55
Intolerant Taxa	0.50	0.05	1.33	0.18	0.31	54	0.76	0.05	-0.30	0.41
% Tolerant	0.62	-0.01	0.08	0.01	-1.04	54	0.30	-0.01	-0.03	0.01
% Predator	0.82	0.00	0.04	0.01	0.10	54	0.92	0.00	-0.01	0.01
Clinger Taxa	0.74	1.13	2.82	0.38	2.97	54	0.00	1.13	0.37	1.89
% Dominance	0.54	0.00	0.10	0.01	-0.24	54	0.81	0.00	-0.03	0.02
EPT	0.80	0.76	2.66	0.36	2.13	54	0.04	0.76	0.04	1.48
Overall	0.73	1.20	4.14	0.56	2.15	54	0.04	1.20	0.08	2.32

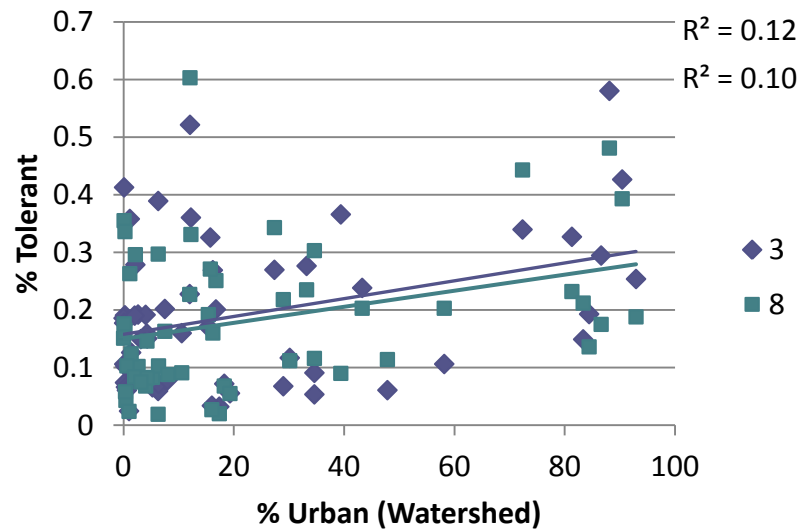
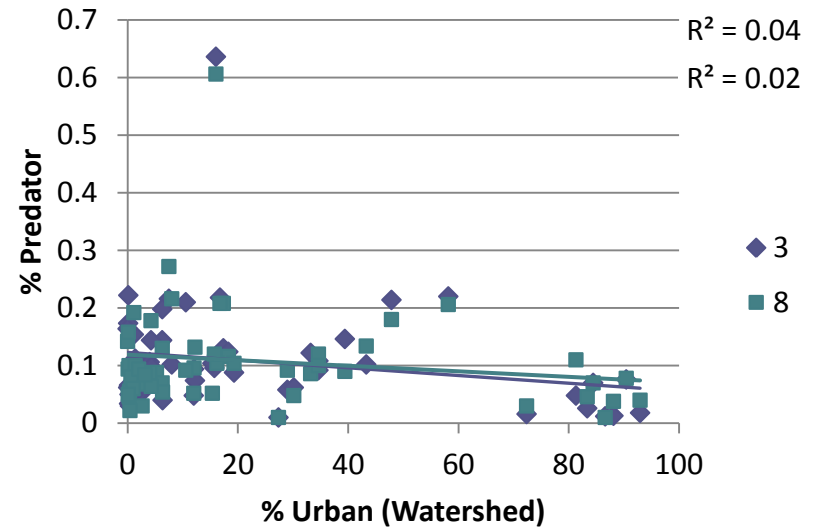
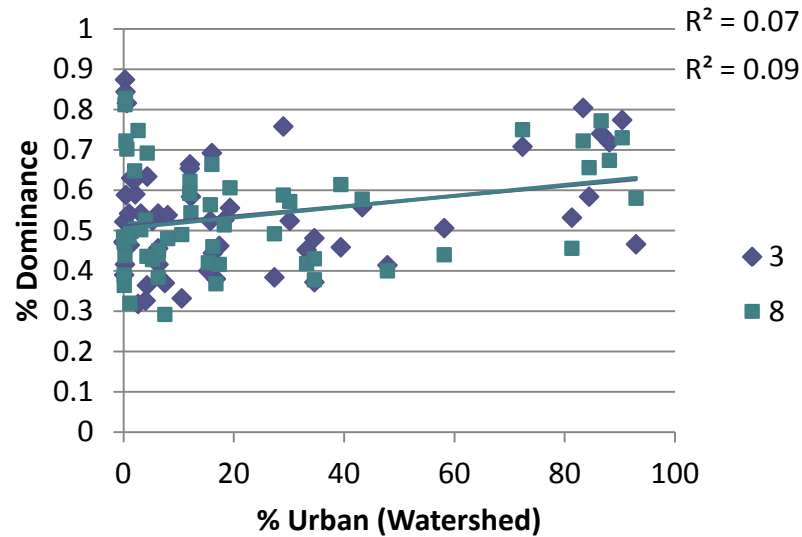
3 vs. 8, metrics & % urban



3 vs. 8, metrics & % urban

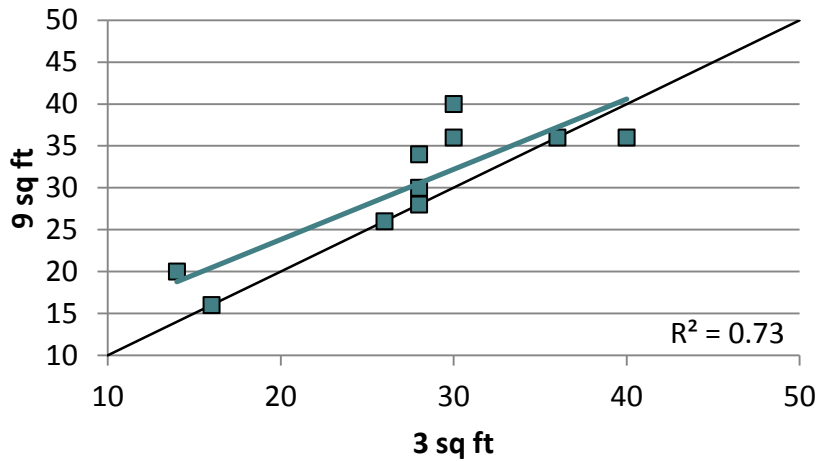


3 vs. 8, metrics & % urban

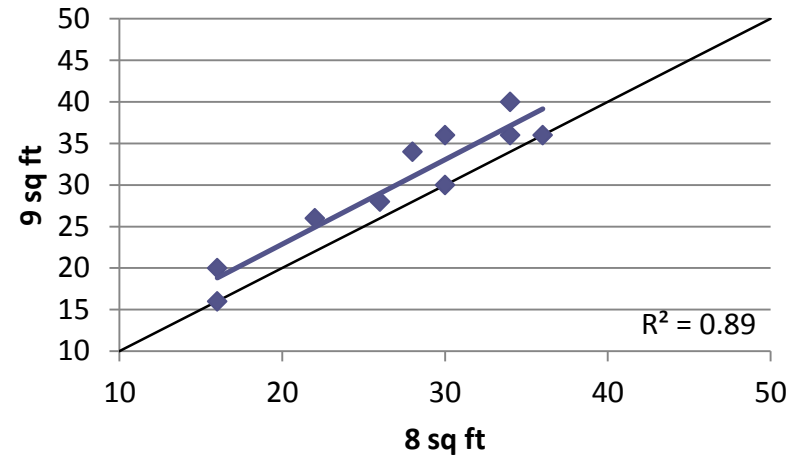


3 vs. 8 vs. 9 sq ft

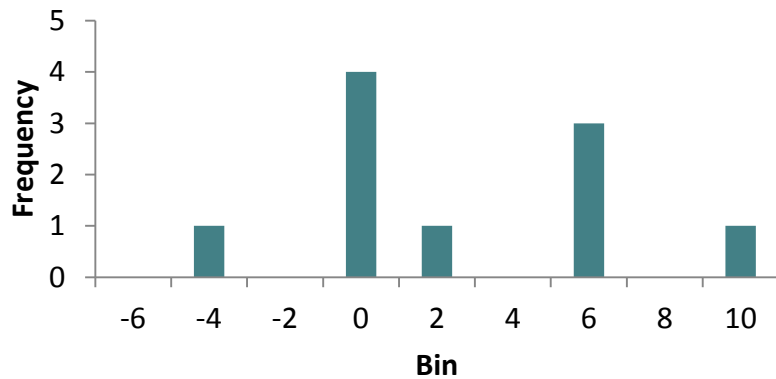
Overall BIBI: 3 v 9



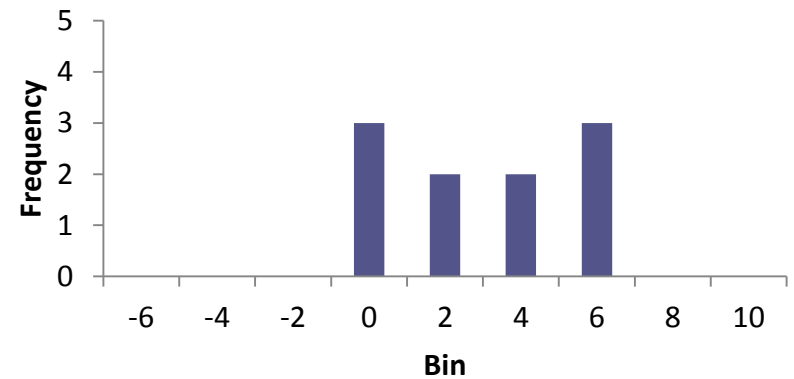
Overall BIBI: 8 vs 9



Residuals (9-3)



Residuals (9-8)



9 sq ft added with % Urban

