Supporting Information. Resetarits Jr., W.J., M.R. Pintar, and J.R. Bohenek. 2021. Complex multi-predator effects on demographic habitat selection and community assembly in colonizing aquatic insects. Ecological Monographs.

Appendix S1

Table S1. Results of Dunnett's (one-tailed) procedure (with Dunnett-Hsu correction) testing whether fish treatments received fewer colonists than controls for square root ($\sqrt{X + 0.5}$) transformed abundance data (Figs. 2,3,4). Shading highlights all significant (bold) and marginally non-significant (italics) effects. Main effects of treatment shown in Table 2.

Dunnett's comparison	FC vs C	NC vs C	NP vs C	FC×NP vs C	NC×FC vs C	NC×NP vs C	X3 vs C
All insects	**0.0004**	**0.0089**	0.1979	**<.0001**	**0.0003**	**<.0001**	**<.0001**
Coleoptera							
Dytiscidae	**<.0001**	**<.0001**	**0.0144**	**<.0001**	**<.0001**	**<.0001**	**<.0001**
Copelatus glyphicus	**<.0001**	**<.0001**	**0.0012**	**<.0001**	**<.0001**	**<.0001**	**<.0001**
Hydroporus rufilabris	**0.0035**	**0.0001**	0.1180	**0.0003**	**<.0001**	**0.0001**	**0.0001**
Laccophilus fasciatus	**0.0085**	0.1725	0.9992	0.0843	**0.0043**	**0.0073**	**0.0247**
Laccophilus proximus	**<.0001**	**0.0090**	0.9816	**0.0002**	**0.0006**	**0.0289**	**0.0002**
Hydrophilidae	0.6264	0.9654	0.6742	**0.0292**	0.7491	0.1228	**0.0123**
Tropisternus lateralis	0.9262	0.998	0.8725	0.1846	0.9371	0.1165	**0.0448**
Berosus infuscatus	0.732	0.8114	0.8536	0.1379	0.8742	0.2521	**0.0273**
Tropisternus collaris	0.9954	0.9718	0.9523	0.3068	0.9809	0.6136	0.8987
Paracymus	**<.0001**	*0.0644*	**0.0225**	**0.0003**	**0.0141**	0.482	**0.0095**
Tropisternus blatchleyi	0.782	0.9974	0.9538	0.4411	0.9859	0.3999	0.7736
Hemiptera	*0.0684*	0.1625	0.7964	**0.0305**	*0.057*	0.1697	*0.0507*
Sigara	**0.0011**	0.5717	0.8522	**0.0019**	*0.0712*	0.1616	**0.0192**

Table S2. Results of one-tailed *a priori* contrasts testing whether multi-predator treatments received fewer colonists than single predator treatments for square root ($\sqrt{X + 0.5}$) transformed abundance data. Shading indicates contrasts that were significant (bold), or marginally non-significant (italics). See Figures 7,8,9.

Contrasts	**Single vs Multi**		**Single vs X2**		**Single vs X3**	
	t	**p**	**t**	**p**	**t**	**p**
Insects	3.46	**0.0008**	2.79	**0.0043**	3.22	**0.0014**
Coleoptera						
Dytiscidae	3.70	**0.0004**	3.30	**0.0012**	2.80	**0.0042**
Copelatus glyphicus	2.13	**0.0203**	2.08	**0.0225**	1.22	0.1159
Hydroporus rufilabris	2.21	**0.0171**	2.08	**0.0229**	1.44	*0.0791*
Laccophilus fasciatus	2.72	**0.0052**	2.62	**0.0066**	1.63	*0.0561*
Laccophilus proximus	2.33	**0.0130**	1.90	**0.0333**	2.14	**0.0199**
Hydrophilidae	2.69	**0.0055**	2.03	**0.0252**	2.82	**0.0040**
Tropisternus lateralis	3.03	**0.0024**	2.36	**0.0123**	3.01	**0.0025**
Berosus infuscatus	1.94	**0.0303**	1.26	0.1080	2.47	**0.0095**
Tropisternus collaris	1.55	*0.0652*	1.64	*0.0551*	0.62	0.2687
Paracymus	-0.66	0.7423	-0.73	0.7651	-0.19	0.5740
Tropisternus blatchleyi	1.36	*0.0912*	1.32	*0.0974*	0.80	0.2157
Hemiptera	1.30	0.1012	1.16	0.1269	0.98	0.1676
Corixidae						
Sigara	1.58	*0.0617*	1.39	*0.0866*	1.23	0.1137

Table S3. Results of mixed model ANOVA Type 3 Tests of Fixed Effects for one-tailed *a priori* contrasts testing whether multi-predator treatments contained fewer species than single predator treatments for square root ($\sqrt{X + 0.5}$) transformed richness; contrasts for untransformed evenness were based on a two-tailed hypothesis. Results for species richness shown both with and without abundance as a covariate. Shading indicates contrasts that were significant (bold), or marginally non-significant (italics). See Fig. 10, Appendix S1: Fig. S3.

Contrasts	**Single vs Multi**		**Single vs X2**		**Single vs X3**	
	t	**p**	**t**	**p**	**t**	**p**
Species richness						
Insects	3.14	**0.0018**	2.63	**0.0065**	2.73	**0.0050**
w/cov	1.20	0.1201	1.10	0.1396	0.88	0.1936
Coleoptera						
Dytiscidae	3.12	**0.0019**	2.36	**0.0122**	3.26	**0.0013**
w/cov	0.74	0.2333	0.19	0.4265	1.63	*0.0569*
Hydrophilidae	1.23	0.1133	0.82	0.2096	1.52	*0.0684*
w/cov	0.37	0.3573	0.17	0.4331	0.62	0.2700
Hemiptera	1.43	*0.0809*	1.48	*0.0744*	0.65	0.2597
w/cov	0.92	0.1812	1.07	0.1473	0.19	0.4241
Species evenness	**F**	**p**	**F**	**p**	**F**	**p**
Insects	2.36	0.1341	0.52	0.4771	6.44	**0.0161**
Coleoptera						
Dytiscidae	1.93	0.1745	0.79	0.3799	3.18	*0.0837*
Hydrophilidae	9.72	**0.0038**	5.71	**0.0227**	10.10	**0.0032**
Hemiptera	2.61	0.1157	1.90	0.1778	1.92	0.1759

Figure S1. Photo of one block (5)(top) and a tank (bottom).

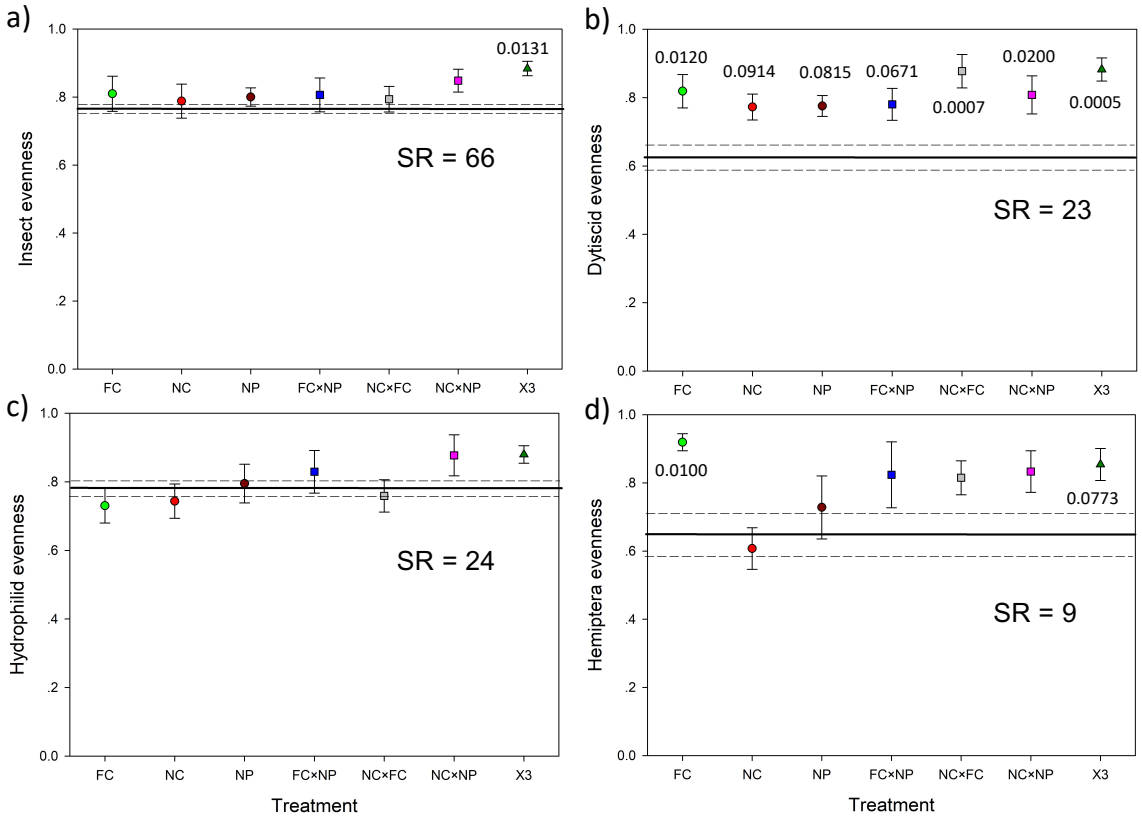

Figure S2. Results of Dunnett's procedure (two-tailed) comparing each treatment to the control for evenness for a) all insects, b) dytiscids, c) hydrophilids, d) hemipterans, showing means ± 1 SE, and p-values with Dunnett-Hsu correction. Solid and dashed lines represent the mean value for Control patches ± 1 SE, SR = total species richness. Treatment codes as in Figure 2.

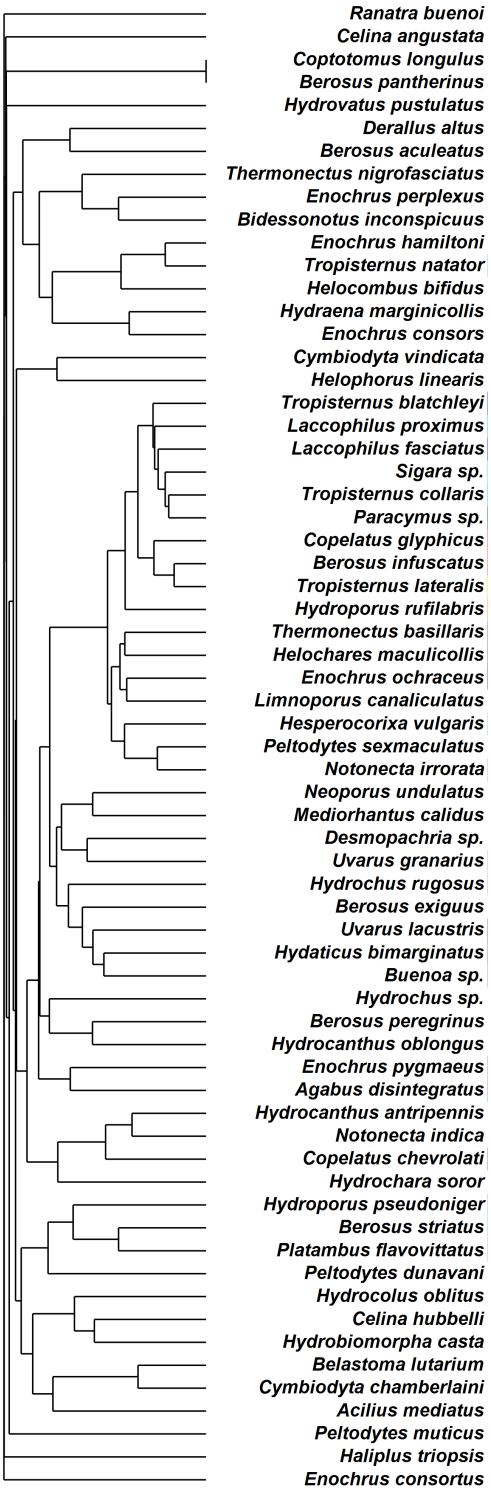

Figure S3. Similarity dendrogram (based on similarity of responses) with species identities for Figs. 6a and 11a (inverted in 11a).

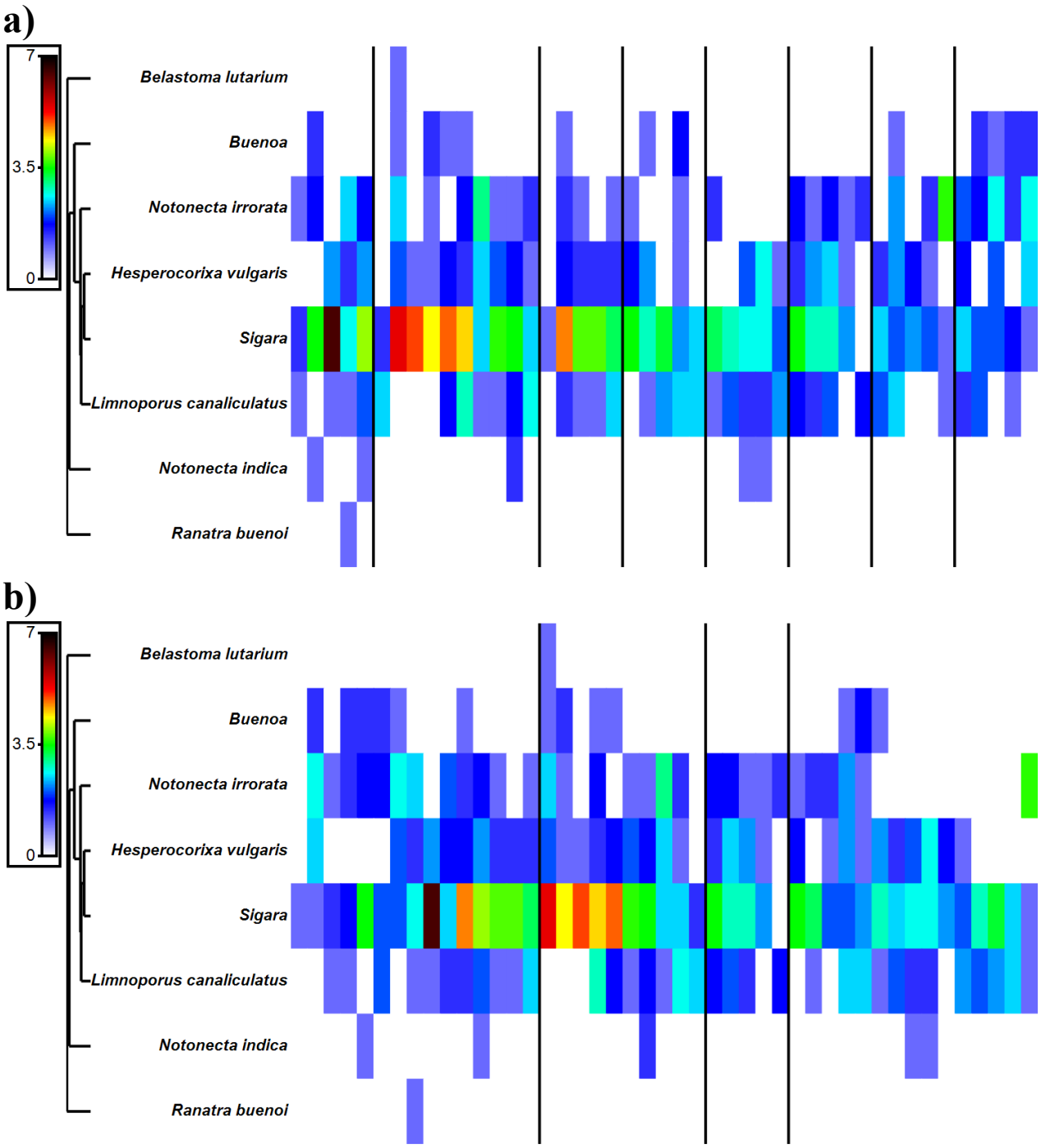

Figure S4. Shade plot of square-root transformed abundance by a) treatment, b) Contrast group (Controls shown for reference) for hemipterans. Treatments and contrast groups displayed in order of similarity: Treatment order: NP, C, NC, NCxNP, NCxFC, X3, FCxNP, FC. Contrast group order: Single predator, Controls, X3, paired predators. Species order based on similarity of distribution.

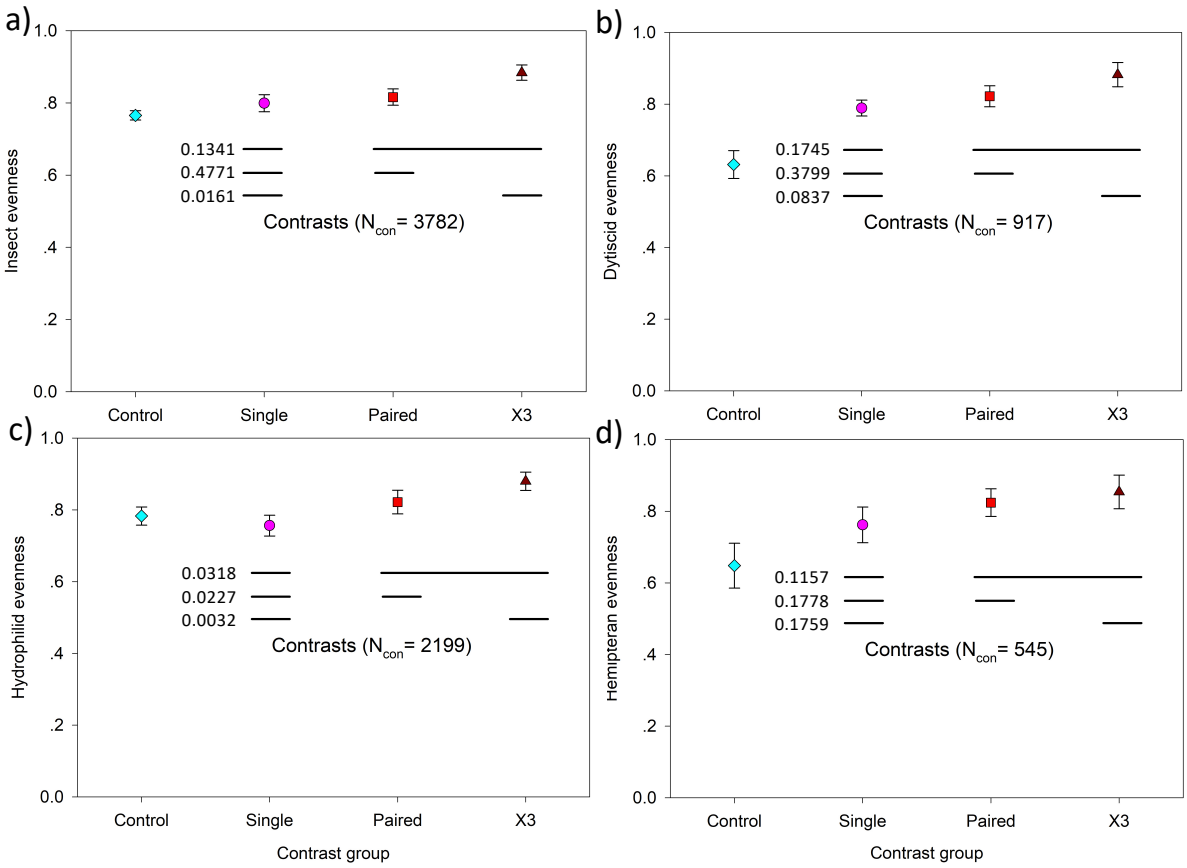

Figure S5. Means and p-values for two-tailed *a priori* contrasts for untransformed evenness (means ± 1 SE) (controls [open circles] shown for reference) for a) all insects, b) Dytiscidae, and c) Hydrophilidae, and c) Hemiptera. N_{con} = total number of individuals in the contrast treatments; bars indicate which treatment groups contribute to each contrast. Contrasts are (from top) single predator vs multi- predator, single predator vs paired predators, and single predator species vs all three predators.

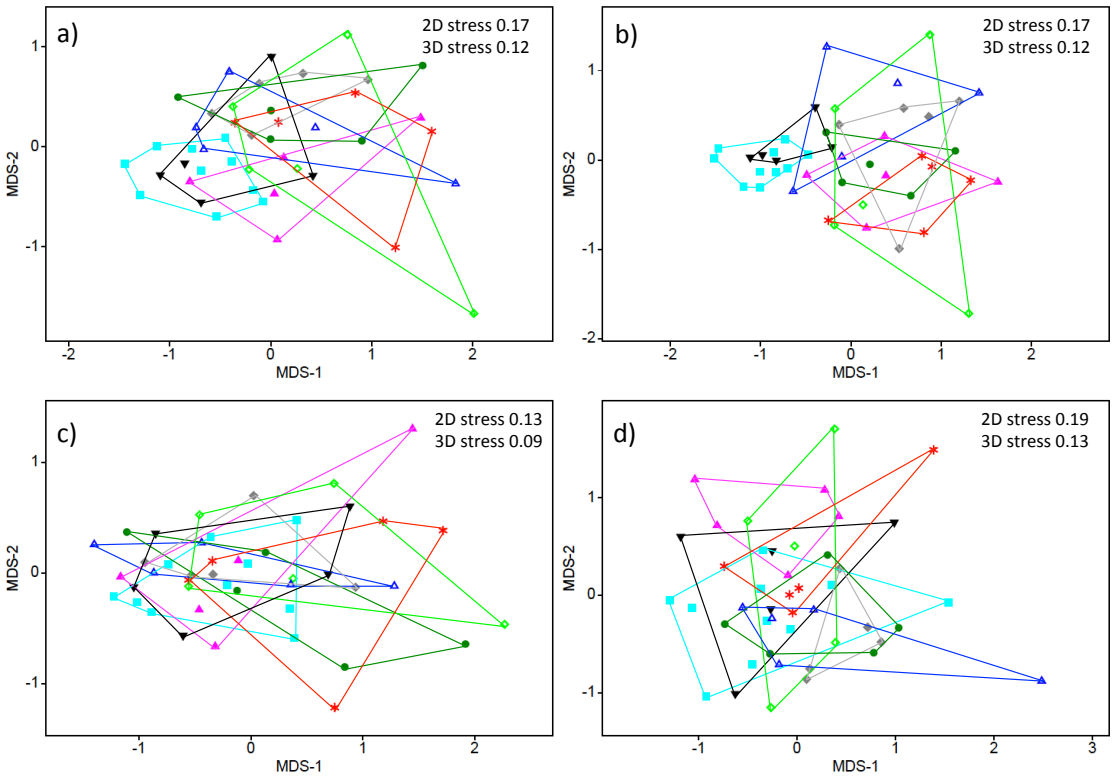

Figure S6. Non-metric multidimensional scaling plots of assemblages by treatment for: a) All insects, b) Dytiscidae, c) Hydrophilidae, d) Hemiptera. Cyan squares = Control, magenta solid upward triangles = *Fundulus chrysotus* (FC), blue upward open triangles = *Notemigonus crysoleucus* (NC), black solid downward triangles = *Noturus phaeus* (NP), open green diamonds = FCxNP, solid gray diamonds = NCxFC, dark green circles = NCxNP, red asterisk = X3 (all three species). See Table 4 for PERMANOVA and PERMDISP results.

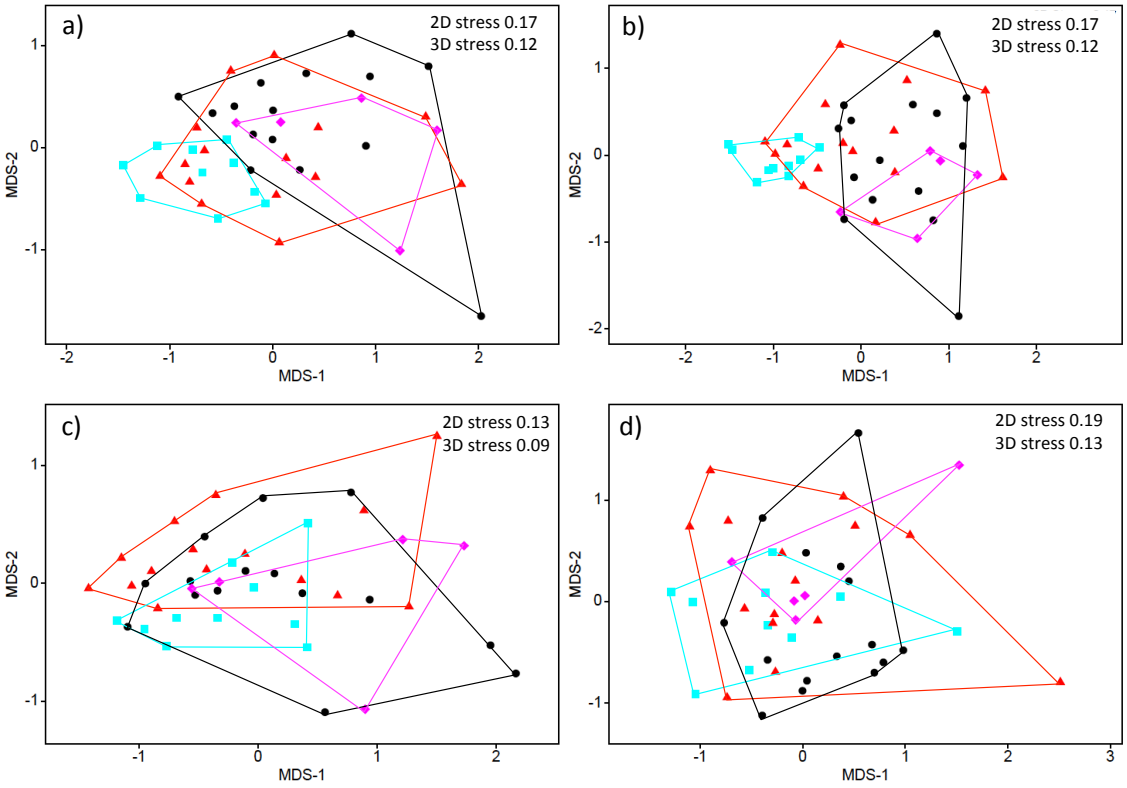

Figure S7. Non-metric multidimensional scaling plots of assemblages by Contrast, showing Controls for comparison: a) all insects, b) Dytiscidae, c) Hydrophilidae, d) Hemiptera. Cyan squares = Control, red triangles = single species, black circles = paired species, magenta diamonds = X3 (all three species). See Table 5 for PERMANOVA and PERMDISP results.