The following supplement accompanies the article

Landscape pattern influences nekton diversity and abundance in seagrass meadows

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Supplement. Additional data on landscape metrics, abundance, and seagrass cover and patch forms

Table S1. Summary data for FRAGSTATS metrics computed for seagrass sampling plots in (1) small, isolated patches; (2) reticulated edge patches; and (3) continuous cover

		Summer				Fall			
Metric	Landscape Category	Average	Min	Max	StdDev	Average	Min	Max	StdDev
PLC_AREA_MN	1	46.50	25.00	88.00	22.85	81.67	31.00	181.00	51.19
	2	164.83	89.00	315.00	86.06	273.33	153.00	697.00	210.06
	3	3628.00	1736.00	4227.00	955.47	3626.50	1376.00	4235.00	1110.49
PLC_CIRCLE_MN	1	0.60	0.51	0.68	0.06	0.58	0.53	0.62	0.04
	2	0.65	0.59	0.79	0.07	0.61	0.55	0.64	0.04
	3	0.40	0.32	0.55	0.08	0.40	0.36	0.46	0.04
PLC_CLUMPY	1	0.98	0.97	0.98	0.00	0.98	0.98	0.99	0.00
	2	0.98	0.98	0.99	0.00	0.98	0.98	0.99	0.00
	3	0.99	0.96	1.00	0.02	0.92	0.61	1.00	0.15
PLC_COHESION	1	98.84	98.56	99.18	0.26	99.21	98.81	99.45	0.22
	2	99.57	99.50	99.64	0.06	99.71	99.58	99.81	0.08
	3	99.98	99.91	100.00	0.04	99.99	99.95	100.00	0.02
PLC_FRAC_MN	1	1.37	1.30	1.51	0.08	1.14	0.46	1.38	0.34
	2	1.40	1.18	1.91	0.26	1.27	1.10	1.38	0.09
	3	1.09	1.07	1.13	0.03	1.10	1.08	1.13	0.02
PLC_NLSI	1	0.02	0.02	0.02	0.00	0.01	0.01	0.02	0.00
	2	0.01	0.01	0.02	0.00	0.01	0.01	0.01	0.00
	3	0.18	0.00	1.00	0.40	0.06	0.00	0.28	0.11
PLC_NP	1	7.17	4.00	10.00	2.04	12.17	3.00	23.00	6.43
	2	9.17	4.00	15.00	3.76	8.83	4.00	12.00	3.06
	3	1.00	1.00	1.00	0.00	1.17	1.00	2.00	0.41
PLC_PLAND	1	7.06	4.69	9.53	1.89	17.35	12.85	21.11	2.91
	2	30.05	19.93	42.53	8.62	46.22	27.47	65.73	13.90
	3	85.04	39.23	100.00	23.22	89.62	61.97	99.84	14.28
PLC_PROX_MN	1	13.89	1.14	30.64	12.38	36.26	12.68	75.01	22.50
	2	519.32	63.38	1443.51	561.76	932.10	112.61	1736.60	660.42
	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLC_SHAPE_MN	1	1.71	1.52	1.93	0.17	1.61	1.53	1.76	0.09
	2	2.07	1.76	2.70	0.36	1.93	1.71	2.44	0.28
	3	1.47	1.33	1.71	0.16	1.48	1.38	1.72	0.14
PLC_TE	1	283.35	244.40	354.30	43.09	464.28	260.30	602.60	112.26
	2	740.20	478.30	1013.10	203.26	781.95	600.70	1023.50	157.20
	3	88.15	0.00	197.90	92.57	84.55	0.00	209.90	85.60
PLL_CONTAG	1	80.32	75.52	85.08	3.73	64.61	60.51	70.92	3.67
	2	53.48	46.51	61.19	5.62	48.90	45.53	54.67	3.33
	3	80.21	50.54	100.00	18.90	81.23	50.89	99.09	17.68

Table S2. Species accumulation data used to calculated species density in samples, summer 2009

Summer 2009			Species Accumulation Analysis													STDized	
			Sample #													Sample	
Bay		Plot	1	2	3	4	5	6	7	8	9	10	11	12	13	(61.2m2)	Metrics
Corpus Christi	Small, Isolated Patches	1	10.9	21.7	32.6	43.4	54.3	65.1	76.0	86.9	97.7	108.6	119.4	130.3			m2 Seagrass
			9.6	12.4	14.2	15.6	16.7	17.6	18.3	19.0	19.6	20.1	20.6	21.0		17.4	# Species
		2	11.2	22.4	33.6	44.8	56.0	67.2	78.4	89.6							
			11.5	13.9	15.5	16.7	17.5	18.1	18.6	19.0						17.7	
		3	6.8	13.6	20.4	27.2	34.0	40.8	47.6	54.4	61.2	68.0	74.8	81.6	88.4		
			9.8	12.7	14.2	15.4	16.3	17.0	17.6	18.2	18.6	19.0	19.3	19.7	20.0	18.6	
	Reticulated Edge Patches	1	13.1	26.1	39.2	52.3	65.3	78.4									m2 Seagrass
			12.3	14.7	16.1	17.2	18.2	19.0								17.9	# Species
		2	10.7	21.3	32.0	42.7	53.4	64.0	74.7	85.4							
			11.2	13.6	15.0	16.1	16.9	17.7	18.4	19.0						17.6	
		3	13.7	27.5	41.2	54.9	68.7	82.4									
			12.0	14.3	15.8	16.9	18.0	19.0								17.6	
	Continuous Cover	1	12.7	25.5	38.2	51.0	63.7	76.5									m2 Seagrass
			9.5	12.5	14.4	15.7	16.5	17.0								16.3	# Species
		2	13.4	26.7	40.1	53.4	66.8	80.1									
			9.7	12.2	14.1	15.5	16.8	18.0								16.4	
		3	12.8	25.6	38.4	51.1	63.9	76.7									
			12.5	15.6	17.4	18.8	20.0	21.0								19.8	
Aransas	Small, Isolated Patches	1	10.6	21.1	31.7	42.2	52.8	63.4	73.9	84.5	95.0						m2 Seagrass
			11.3	13.9	15.5	16.7	17.6	18.4	19.0	19.6	20.0					18.2	# Species
		2	9.0	18.1	27.1	36.1	45.2	54.2	63.3	72.3	81.3	90.4					
			13.5	16.9	18.6	19.8	20.7	21.5	22.2	22.8	23.4	24.0				22.2	
		3	10.8	21.6	32.4	43.3	54.1	64.9	75.7	86.5							
			14.6	18.5	20.8	22.5	24.0	25.1	26.1	27.0						24.8	
	Reticulated Edge Patches	1	12.6	25.2	37.9	50.5	63.1	75.7									m2 Seagrass
			14.0	17.1	18.8	20.0	21.0	22.0								21.0	# Species
		2	12.7	25.4	38.1	50.8	63.5	76.2									
			9.3	12.2	14.4	16.1	17.7	19.0								17.4	
		3	12.8	25.7	38.5	51.3	64.2	77.0									
			13.5	17.1	19.1	20.4	21.3	22.0								21.1	
	Continuous Cover	1	13.0	26.0	39.1	52.1	65.1	78.1									m2 Seagrass
			13.2	16.8	18.8	20.1	21.2	22.0								20.9	# Species
		2	12.0	24.0	36.0	48.0	60.0	72.0									
			10.5	12.9	14.7	16.3	17.7	19.0								17.7	
		3	12.7	25.5	38.2	50.9	63.6	76.4									
			12.8	15.3	17.2	18.6	19.8	21.0								19.6	

Table S3. Species accumulation data used to calculated species density in samples, fall 2009

Fall 2009			Species Accumulation Analysis														STDized Sample	
			Sample #															
Bay		Plot	1	2	3	4	5	6	7	8	9	10	11	12	13	14	(61.2m2)	Metrics
Corpus Christi	Small, Isolated Patches	1	11.9	23.7	35.6	47.5	59.4	71.2	83.1	95.0								m2 Seagrass
			8.4	11.1	12.8	14.0	14.9	15.7	16.3	17.0							15.1	# Species
		2	8.5	17.0	25.5	34.0	42.5	51.0	59.4	67.9	76.4	84.9	93.4	101.9				
			7.3	10.0	11.8	13.1	14.0	14.8	15.4	15.9	16.2	16.5	16.8	17.0			15.3	
		3	6.2	12.5	18.7	25.0	31.2	37.5	43.7	50.0	56.2	62.5	68.7	75.0	81.2	87.5		
			6.2	8.4	10.0	11.2	12.3	13.1	13.8	14.4	15.0	15.4	15.9	16.3	16.6	17.0	15.3	
	Reticulated Edge Patches	1	12.1	24.2	36.3	48.4	60.5	72.6										m2 Seagrass
			9.0	11.7	13.5	14.7	15.5	16.0									15.5	# Species
		2	12.7	25.5	38.2	50.9	63.7	76.4										
			10.7	13.1	14.5	15.5	16.3	17.0									16.2	
		3	12.2	24.4	36.6	48.8	61.1	73.3										
			9.2	11.5	12.8	13.6	14.3	15.0									14.4	
	Continuous Cover	1	12.1	24.2	36.3	48.4	60.4	72.5										m2 Seagrass
			11.0	12.9	14.4	15.5	16.3	17.0									16.3	# Species
		2	12.1	24.3	36.4	48.6	60.7	72.9										
			11.3	12.7	13.8	14.6	15.3	16.0									15.3	
		3	12.2	24.4	36.7	48.9	61.1	73.3										
			11.0	13.2	14.3	14.9	15.5	16.0									15.6	
Aransas	Small, Isolated Patches	1	8.8	17.6	26.4	35.1	43.9	52.7	61.5	70.3								m2 Seagrass
			5.3	7.8	9.6	10.9	11.9	12.5	12.9	13.0							12.9	# Species
		2	8.1	16.2	24.3	32.4	40.5	48.6	56.7	64.8	72.9	81.0						
			6.1	8.7	10.3	11.3	12.0	12.5	13.0	13.4	13.7	14.0					13.2	
		3	11.3	22.7	34.0	45.4	56.7	68.0	79.4	90.7								
			7.4	9.9	11.5	12.7	13.7	14.5	15.3	16.0							14.1	
	Reticulated Edge Patches	1	12.5	25.0	37.6	50.1	62.6	75.1										m2 Seagrass
			6.7	8.5	9.8	10.9	12.0	13.0									11.9	# Species
		2	13.5	27.0	40.4	53.9	67.4	80.9										
			8.2	10.7	12.3	13.5	14.3	15.0									13.9	
		3	11.8	23.7	35.5	47.3	59.1	71.0	82.8	94.6								
			6.8	9.3	10.8	11.9	12.6	13.2	13.6	14.0							12.6	
	Continuous Cover	1	13.0	26.0	38.9	51.9	64.9	77.9										m2 Seagrass
			8.5	11.1	12.7	13.7	14.5	15.0									14.3	# Species
		2	13.0	26.0	39.0	52.0	65.1	78.1										
			9.0	10.9	12.3	13.3	14.2	15.0									14.0	
		3	13.1	26.2	39.2	52.3	65.4	78.5										
			11.0	13.5	15.2	16.4	17.3	18.0									17.0	

Table S4. Mean nekton densities in 3 landscape patterns over 2 seasons and p-values for significant tests and Tukey's pairwise comparisons. FDR: false discovery rate

	Mean Density [Log(x + 1)] in Landscape Categories			P-Values for ANOVAs and Tukey's Pairwise Comparisons between Landscape Categories						
	(1) Small, Isolated Patches	(2) Reticulated Edge Patches	(3) Continuous Cover	Landscape Category	Landscape Category × Season	Landscape Category within Season	FDR Adjusted P-value	1:2	1:3	2:3
*Alpheus heterochaelis**	0.00	0.01	0.04	**0.012**	0.084		**0.015**	0.973	**0.020**	**0.033**
*Ctenogobius boleosoma**	0.91	0.75	3.23	0.051	0.106					
*Gobiosoma robustum**	0.44	0.58	1.14	**0.001**	0.063		**0.002**	0.609	**0.001**	**0.014**
*Palaemonetes vulgaris**	14.45	16.75	38.43	**0.001**	0.313		**0.002**	0.617	**0.001**	**0.013**
Summer										
Tozeuma carolinense	295.67	264.45	24.80		**0.001**	**0.000**	**0.000**	0.911	**0.000**	**0.001**
Hippolyte pleuracantha	47.65	42.73	56.84		**0.000**	0.640				
Farfantepenaeus sp.	3.46	4.02	6.33		**0.001**	0.360				
Syngnathus scovelli	0.53	0.44	0.37		**0.041**	0.301				
Syngnathus floridae	0.36	0.55	0.06		**0.014**	**0.049**	**0.049**	0.695	0.167	**0.041**
Symphurus plagiusa	0.09	0.02	0.02		**0.007**	**0.000**	**0.000**	**0.002**	**0.001**	0.877
Fall										
Tozeuma carolinense	73.83	69.67	65.88			0.643				
Hippolyte pleuracantha	9.11	12.68	65.03			**0.000**	**0.000**	0.198	**0.000**	**0.000**
Farfantepenaeus sp.	0.40	0.60	2.92			**0.000**	**0.000**	0.396	**0.000**	**0.000**
Syngnathus scovelli	0.21	0.25	0.55			**0.030**	**0.034**	0.933	**0.039**	0.075
Syngnathus floridae	0.11	0.21	0.18			0.649				
Symphurus plagiusa	0.02	0.02	0.01			0.295				

*Landscape Category × Season interaction was not observed; results for pairwise comparisons of landscape categories from overall ANOVA are reported here.

Table S5. Minimum, maximum and mean sizes (mm) of common decapods and shrimp

	Small, isolated patches			Reticulated edge patches			Continuous cover		
Decapoda	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
Tozeuma carolinense	2.20	40.70	15.94	2.40	56.30	17.02	3.00	37.40	16.64
Hippolyte pleuracantha	4.20	43.60	15.46	5.00	51.00	18.80	3.50	55.30	19.29
Palaemonetes vulgaris	3.40	62.60	22.05	2.50	70.00	27.56	5.30	63.30	22.95
Farfantepenaeus sp.	3.90	13.40	7.33	4.00	10.50	7.44	4.10	10.70	6.43
Litopenaeus setiferus	4.00	13.90	6.65	5.80	9.90	7.85	4.70	12.00	8.46
Callinectes sapidus	7.50	10.30	8.90	6.00	19.00	12.50	4.20	25.90	11.84
Perciformes									
Ctenogobius boleosoma	4.50	35.00	19.50	4.70	38.30	19.68	2.60	33.10	13.70
Gobiosoma robustum	5.20	26.90	13.31	5.40	26.50	13.64	1.00	30.10	13.53
Syngnathus scovelli	7.00	112.70	43.80	6.40	102.40	46.25	7.10	106.60	45.73
Syngnathus floridae	12.60	140.40	60.51	11.50	149.90	70.71	8.10	153.00	71.58
Bairdiella chrysoura	3.10	53.30	13.74	3.30	68.00	12.45	3.60	35.70	19.69
Cynoscion nebulosus	2.30	48.00	8.71	2.50	35.30	10.01	3.20	57.30	9.38
Sciaenops occelatus	1.30	12.50	5.98	3.00	12.20	5.99	4.10	14.40	7.89
Eucinostomus argenteus	7.20	50.60	9.56	5.90	24.70	9.26	6.70	21.80	8.94
Lagodon rhomboides	14.50	53.00	37.11	28.70	52.20	39.60	26.90	77.00	38.74
Orthopristis chrysoptera	40.80	60.70	49.82	29.90	46.70	39.80	50.80	59.50	55.15

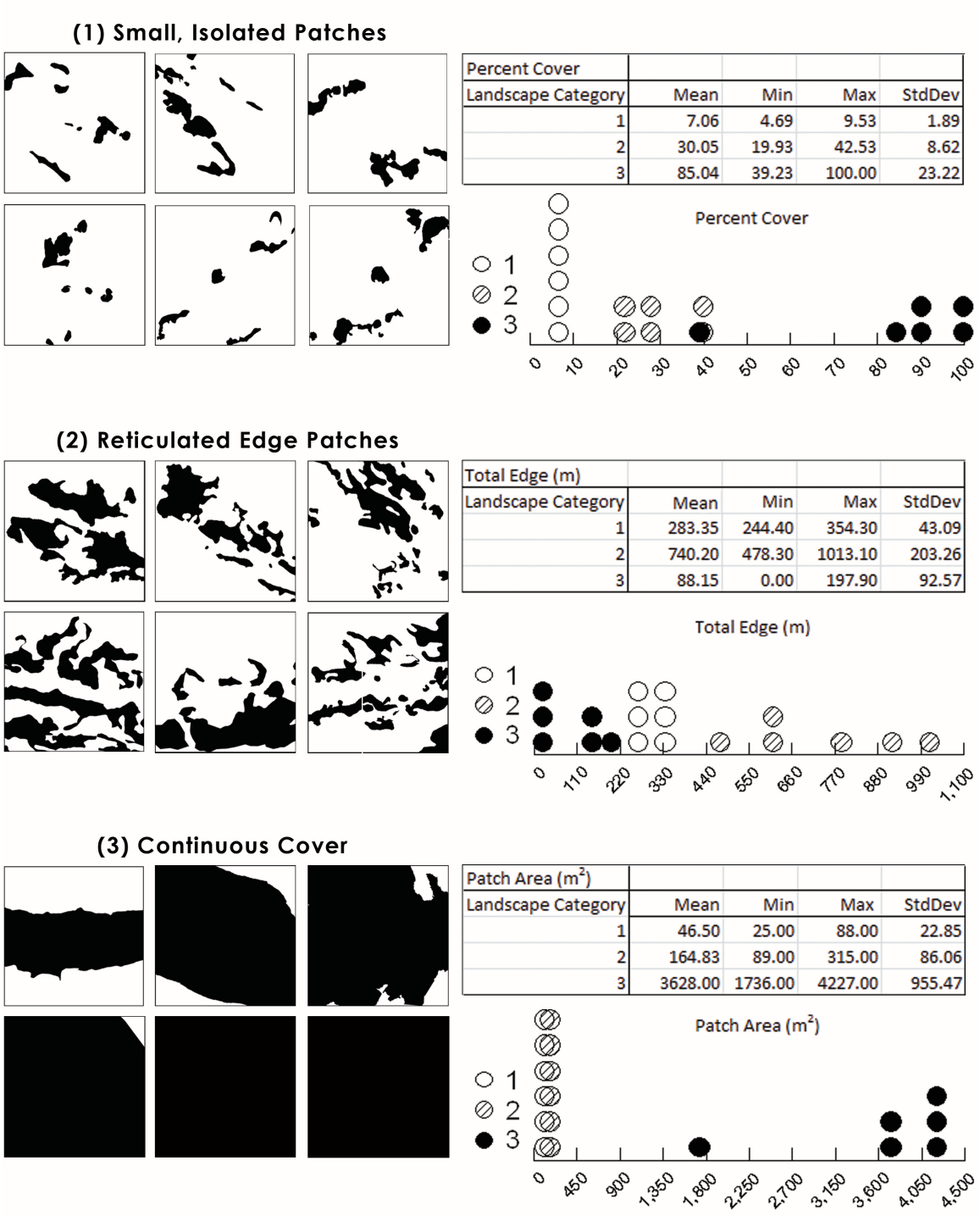

Fig. S1. GIS maps, summary statistics and frequency data for percent cover, total edge and patch size in sampling areas in Aransas and Corpus Christi Bay, summer 2009. Landscape categories are (1) small, isolated patches; (2) reticulated edge patches; and (3) continuous cover

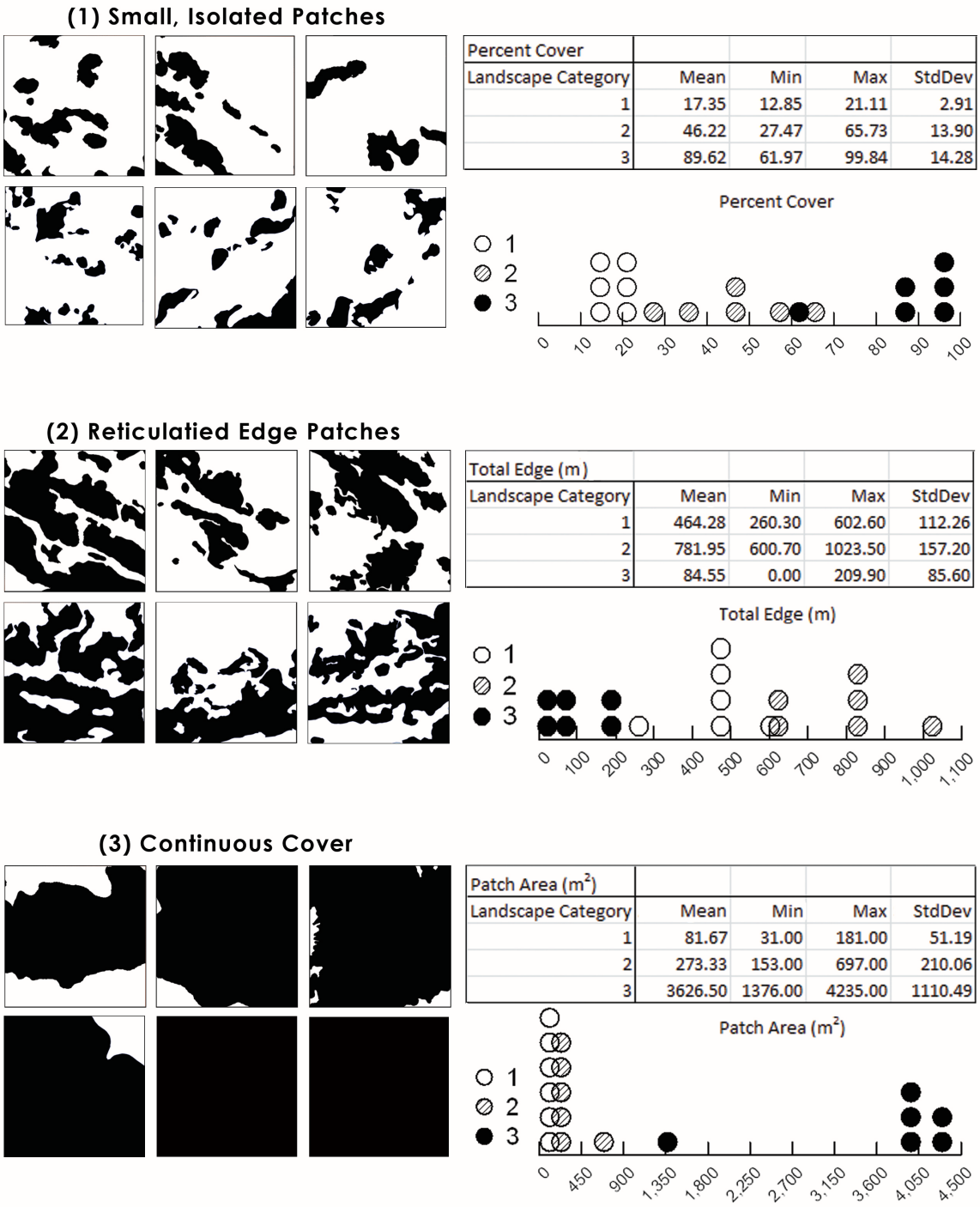

Fig. S2. GIS maps, summary statistics and frequency data for percent cover, total edge and patch size in sampling areas in Aransas and Corpus Christi Bay, fall 2009. Landscape categories are (1) small, isolated patches; (2) reticulated edge patches; and (3) continuous cover

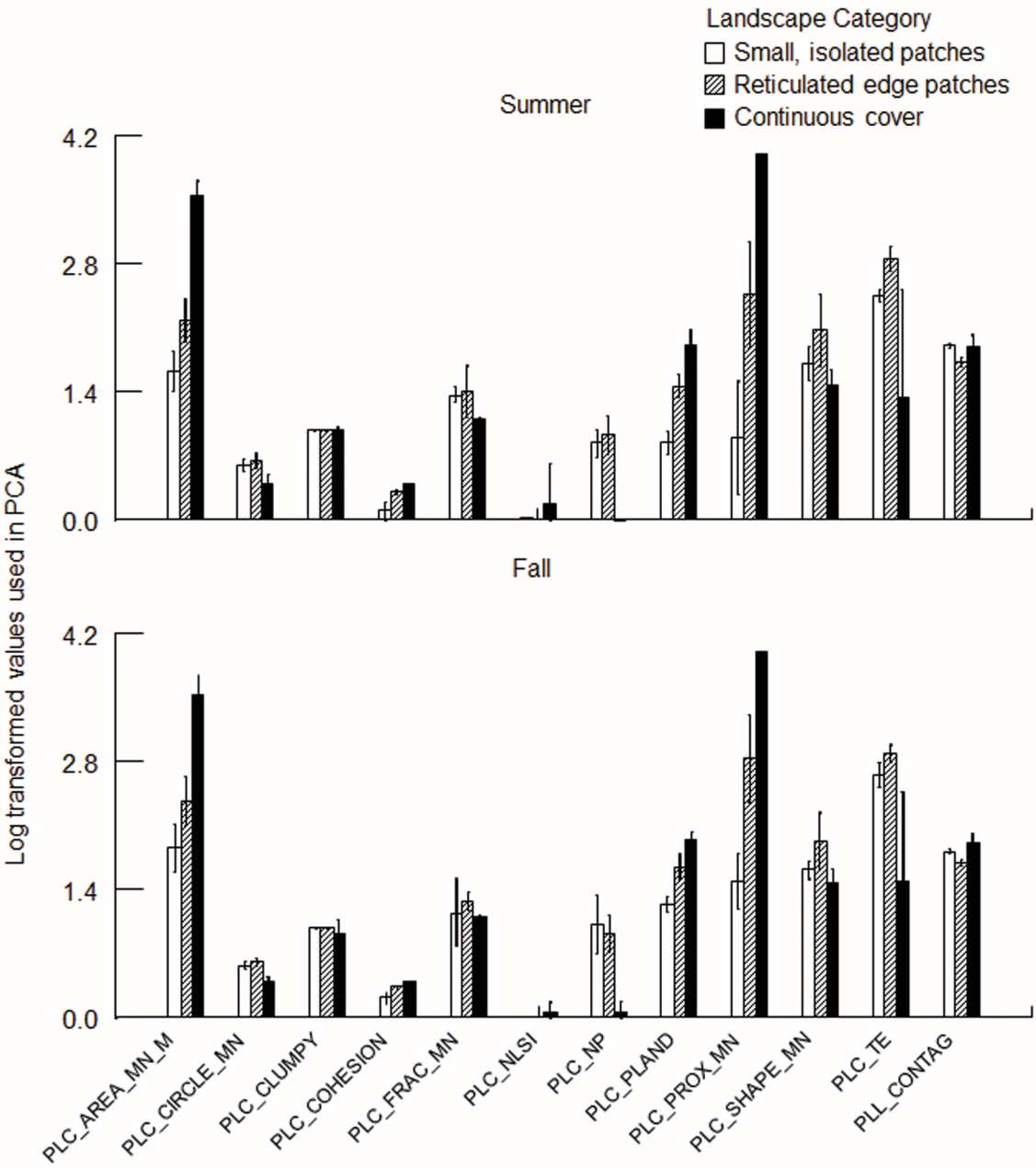

Figure S3. Log-transformed landscape pattern metrics used in the principal components analysis (PCA)

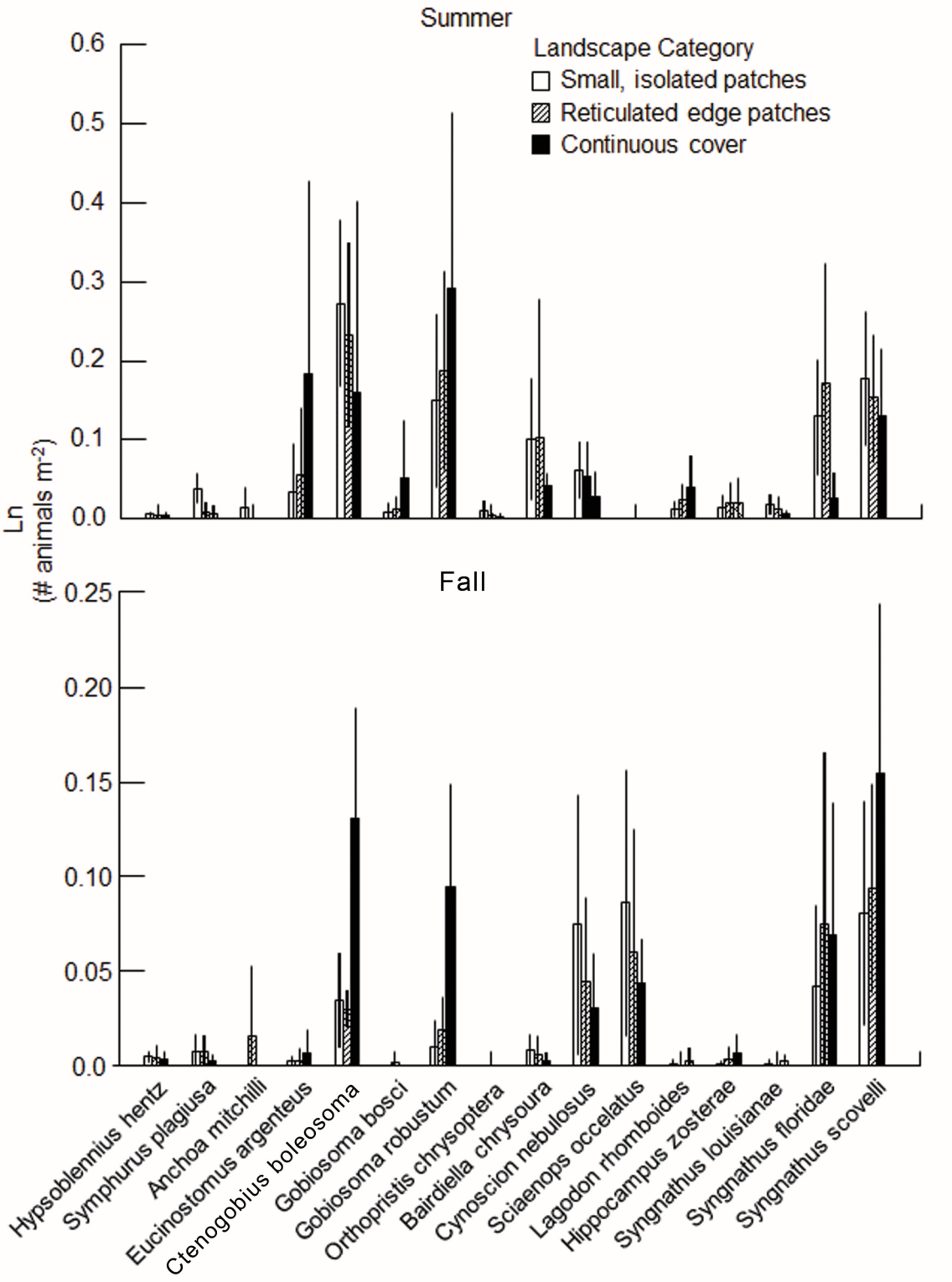

Figure S4. Log-transformed fish densities as a function of landscape category

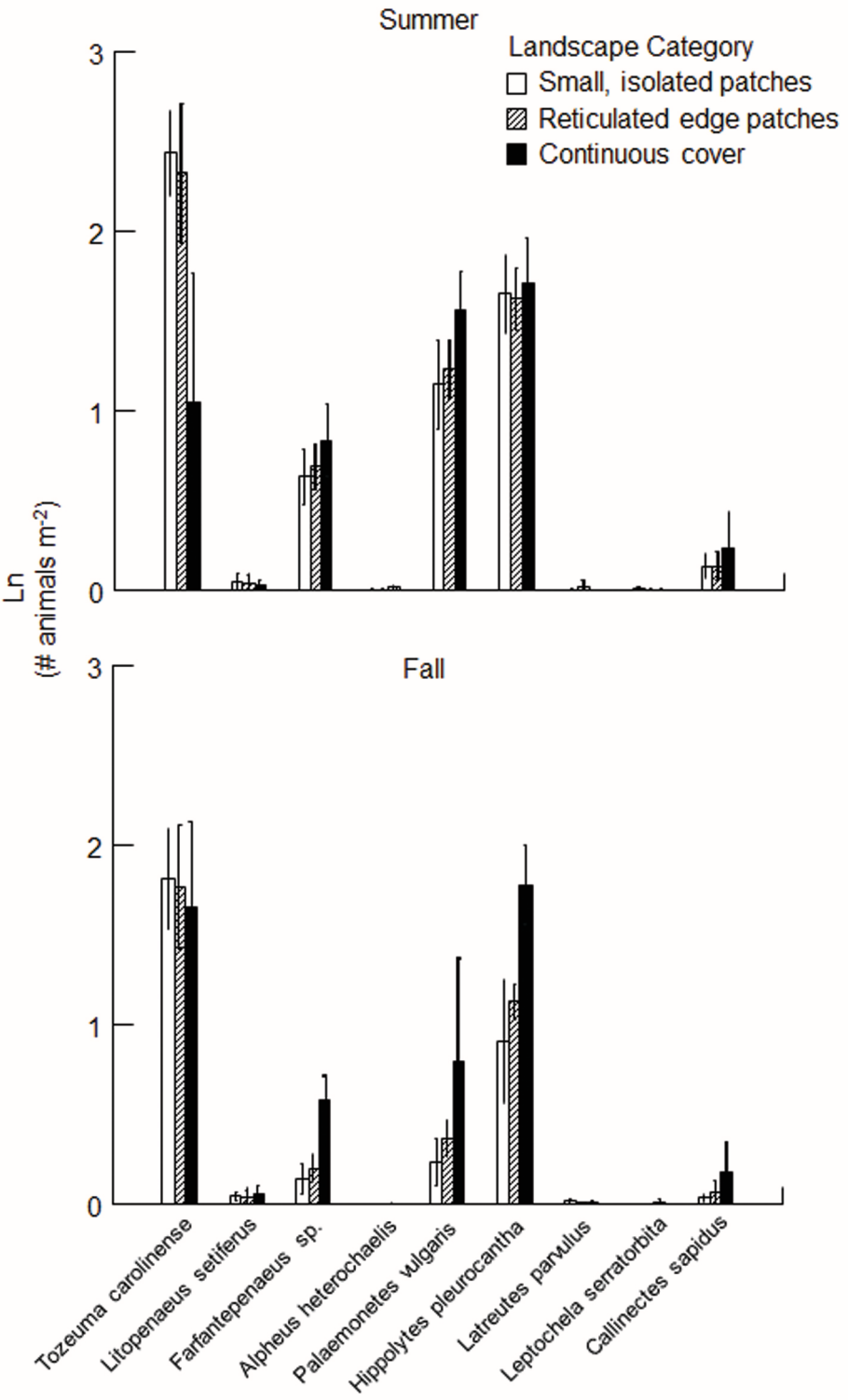

Figure S5. Log-transformed decapod densities as a function of landscape category

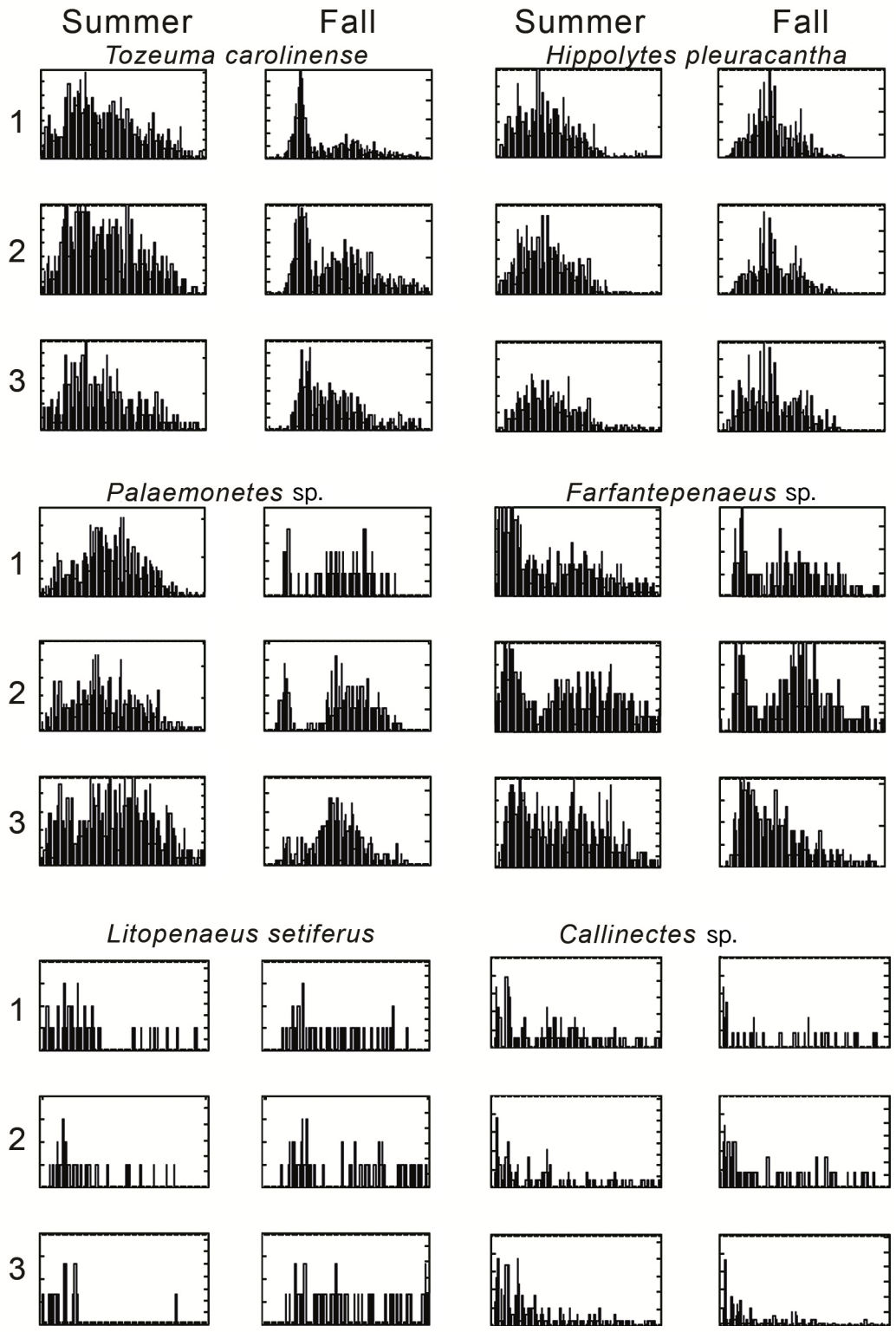

Figure S6. Size distribution of common shrimp collected during the summer and fall in seagrass meadows representing 3 landscape categories: (1) small, isolated patches; (2) reticulated edge patches; and (3) continuous cover. Size ranges for relevant species are provided in Table S5

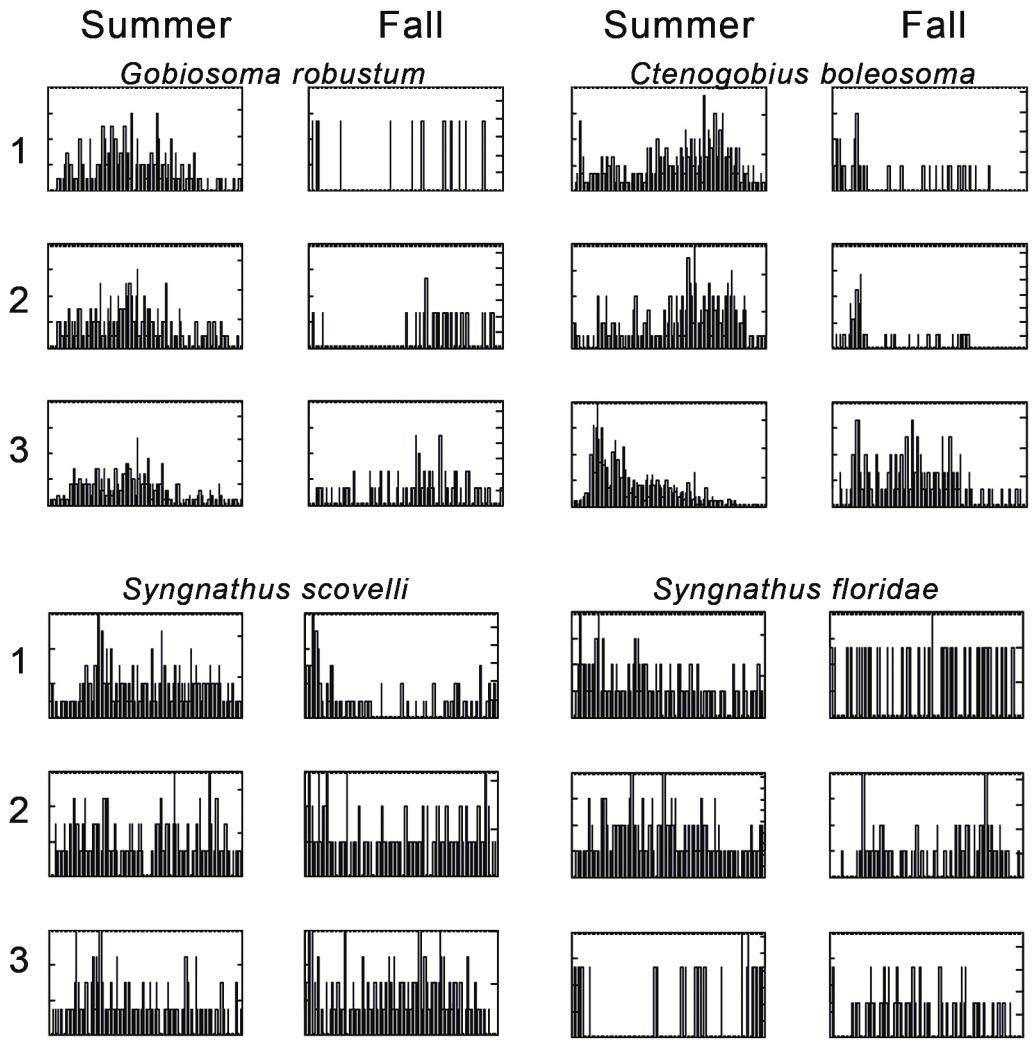

Figure S7. Size distribution of common fishes collected during the summer and fall in seagrass meadows representing 3 landscape categories: (1) small, isolated patches; (2) reticulated edge patches; and (3) continuous cover. Size ranges for relevant species are provided in Table S5