The following supplement accompanies the article

Field test of the behavioral regulation of larval transport

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Supplement. Statistical analyses and mean concentrations of eggs and larvae of invertebrates and fishes relative to environmental conditions at 2 sites in the Hudson River estuary, USA

Table S1. ANOVA of egg and larval abundances relative to the tidal cycle, diel cycle, and depth at the George Washington bridge (GW) and Verrazano Narrows (VZ) sites in the Hudson River estuary for 48 h from 29 to 31 July and 15 to 17 July 1992, respectively. Mud crab larvae at the GW site were *Rhithropanopeus harrisii* and those at the VZ site were *Dyspanopeus sayi.* The 4 larval stages of crabs are listed from 1 to 4. Nonsignificant interaction terms were removed and data were reanalyzed to increase statistical power

			GW			VZ		
Developmental stage	Factor	df	SS	*F*	p	SS	*F*	p
Fish eggs	Tide	5	3.80	18.40	<0.001	4.50	6.20	<0.001
	Diel	1	15.80	387.00	<0.001	0.50	3.30	0.073
	Depth	3	0.10	0.90	0.465	15.60	35.70	<0.001
	Tide × Diel	5	1.50	7.20	<0.001			
Littorina littorea eggs	Tide	5	5.90	6.80	<0.001	9.06	8.54	<0.001
	Diel	1	1.50	8.90	0.003	<0.01	0.01	0.931
	Depth	3	11.60	22.50	<0.001	36.97	58.06	<0.001
	Tide × Diel	5	2.00	2.30	0.045			

			GW			VZ		
Developmental stage	Factor	df	SS	*F*	p	SS	*F*	p
Crepidula fornicata	Tide	5	11.80	18.00	<0.001	7.70	5.70	<0.001
larvae (<335 µm)	Diel	1	0.80	6.00	0.015	2.30	8.30	0.005
	Depth	3	0.40	1.00	0.400	12.59	15.40	<0.001
	Tide × Diel	5				4.70	3.40	0.006
	Tide × Depth	15				8.80	2.20	0.012
	Diel × Depth	3				3.30	4.00	0.009
C. fornicata larvae	Tide	5	8.40	24.40	<0.001	8.00	6.00	<0.001
(>335 µm)	Diel	1	1.00	15.00	<0.001	0.40	1.70	0.200
	Depth	3	0.30	1.40	0.231	7.20	9.10	<0.001
	Tide x Diel	5	1.00	2.80	0.017			
Littorina littorea	Tide	5	2.00	3.10	0.010	6.00	5.40	<0.001
larvae	Diel	5	0.20	1.60	0.203	0.50	2.30	0.132
	Depth	1	2.80	7.50	<0.001	1.40	2.10	0.099
	Diel × Depth	3	1.40	3.70	0.012			
Anchoa mitchilli	Tide	3	0.25	3.93	0.009	0.46	8.88	<0.001
larvae	Diel	1	0.64	30.70	<0.001	0.29	16.90	<0.001
	Depth	3	0.12	1.99	0.117	0.13	2.56	0.058
	Tide × Diel	3	0.22	3.46	0.017	0.24	4.65	0.004
	Tide × Depth	9	0.53	2.83	0.004	0.39	0.39	0.011
	Tide × Diel × Depth	9				0.50	0.50	0.002
Gobiosoma bosc	Tide	3	0.02	4.18	0.007	0.07	1.41	0.243
larvae	Diel	1	<0.01	0.01	0.905	0.62	36.87	<0.001
	Depth	3	0.49	126.00	<0.001	0.31	6.23	<0.001
	Tide × Diel	3	0.02	4.38	0.005			
	Tide × Diel × Depth	9				0.48	3.19	0.002

			GW			VZ		
Developmental stage	Factor	df	SS	*F*	p	SS	*F*	p
Mud crab larvae 1	Tide	5	3.40	9.90	<0.001	2.90	1.60	0.160
	Diel	1	0.40	5.60	0.020	12.00	33.00	<0.001
	Depth	3	0.80	3.90	0.010	12.90	11.90	<0.001
	Tide × Depth	15	2.50	2.50	0.003			
	Tide × Diel × Depth	15	2.30	2.10	0.008			
Mud crab larvae 2	Tide	5	2.20	15.30	<0.001	3.70	2.10	0.063
	Diel	1	<0.01	1.10	0.298	22.00	63.30	<0.001
	Depth	3	0.60	6.70	<0.001	10.00	9.60	<0.001
	Tide × Diel	5	0.50	3.50	0.005			
	Tide × Depth	15	1.50	3.50	0.001			
Mud crab larvae 3	Tide	5	0.93	8.40	<0.001	2.80	2.40	0.037
	Diel	1	0.03	1.20	0.265	11.10	48.00	<0.001
	Depth	3	0.32	4.80	0.003	6.90	10.00	<0.001
	Tide × Diel	5	0.59	5.30	<0.001			
	Tide × Depth	15	0.83	2.50	0.002			
	Diel × Depth	3				2.70	3.90	0.010
Mud crab larvae 4	Tide	5	0.31	3.56	0.004	0.80	2.30	0.047
	Diel	1	0.27	15.77	<0.001	2.20	32.10	<0.001
	Depth	3	0.37	7.04	<0.001	1.80	8.50	<0.001
	Tide × Diel	5	0.17	2.02	0.077	1.10	3.30	0.007
	Diel × Depth	3	0.20	3.76	0.012	1.10	5.10	0.002

Table S2. Multiple regressions of egg and larval abundances relative to temperature, salinity, and current velocity, and *t*-tests of these abundances relative to mixing and stratification as measured by Richardson number. Studies were conducted at the George Washington (GW) and Verrazano Narrows (VZ) sites in the Hudson River estuary for 48 h from 29 to 31 July and 15 to 17 July 1992, respectively. Mud crab larvae at the GW site were *Rhithropanopeus harrisii* and those at the VZ site were *Dyspanopeus sayi.* The 4 larval stages of crabs are listed from 1 to 4. df = 1 for each factor tested

		GW			VZ		
Developmental stage	Factor	SS	*F*	p	SS	*F*	p
Fish eggs	Temperature	0.813	7.249	0.008	6.245	38.564	<0.001
	Salinity	0.007	0.065	0.800	0.223	1.380	0.242
	Velocity	0.009	0.084	0.773	0.007	0.043	0.837
Littorina littorea eggs	Temperature	0.221	0.748	0.388	6.440	32.566	<0.001
	Salinity	0.139	0.470	0.494	3.819	19.310	<0.001
	Velocity	0.764	2.584	0.110	0.274	1.387	0.241
Crepidula fornicata	Temperature	0.018	0.156	0.694	1.460	3.086	0.081
larvae (<335 μm)	Salinity	1.211	10.512	<0.001	0.445	0.940	0.334
	Velocity	0.018	0.158	0.692	2.369	5.008	0.027
C. fornicata larvae	Temperature	<0.001	0.001	0.989	0.015	0.043	0.835
(>335 μm)	Salinity	1.179	17.549	<0.001	0.052	0.431	0.512
	Velocity	0.032	0.476	0.491	0.088	0.249	0.619
Littorina littorea	Temperature	0.025	0.175	0.676	0.064	0.250	0.618
larvae	Salinity	0.070	0.480	0.489	0.095	0.373	0.543
	Velocity	0.268	1.851	0.175	0.529	2.073	0.152
Anchoa mitchilli	Temperature	0.021	0.741	0.390	0.036	1.410	0.237
larvae	Salinity	0.012	0.445	0.505	0.030	1.186	0.278
	Velocity	0.020	0.710	0.400	0.126	4.965	0.027
Gobiosoma bosc	Temperature	0.048	14.388	<0.001	0.007	0.296	0.587
larvae	Salinity	0.058	17.238	<0.001	0.016	0.644	0.423
	Velocity	0.006	1.740	0.189	0.003	0.014	0.905
Mud crab larvae 1	Temperature	0.172	1.979	0.161	2.784	5.644	0.019
	Salinity	0.842	9.665	0.002	0.047	0.095	0.758
	Velocity	0.201	2.310	0.130	0.197	0.399	0.528
Mud crab larvae 2	Temperature	0.235	6.455	0.012	2.359	4.168	0.043
	Salinity	0.836	22.939	<0.001	0.647	1.143	0.287

		GW			VZ		
Developmental stage	Factor	SS	*F*	p	SS	*F*	p
	Velocity	0.319	8.762	0.003	0.071	0.125	0.724
Mud crab larvae 3	Temperature	0.308	11.835	<0.001	2.351	6.557	0.011
	Salinity	0.684	26.264	<0.001	1.567	4.371	0.038
	Velocity	0.326	12.517	<0.001	0.137	0.383	0.537
Mud crab larvae 4	Temperature	0.110	5.392	0.021	0.897	8.561	0.004
	Salinity	0.244	11.993	<0.001	0.260	2.480	0.117
	Velocity	0.391	19.249	<0.001	0.008	0.073	0.788

Table S3. Mean egg and larval abundances (m^{-3}) at the George Washington bridge (GW) and Verrazano Narrows (VZ) sites in the Hudson River estuary for 48 h from 29 to 31 July and 15 to 17 July 1992, respectively. The 4 larval stages of crabs are listed from 1 to 4. All abundances were highly significantly different (*t*-test; df = 1, 373; $p < 0.001$) between sites

Developmental stage	GW		VZ	
	Mean	SE	Mean	SE
Fish eggs	25.41	1.39	67.64	6.58
Littorina littorea eggs	398.40	24.74	448.81	46.63
Crepidula fornicata larvae (<335 μm)	3.74	0.45	307.44	27.69
C. fornicata larvae (>335 μm)	2.06	0.30	27.36	3.17
Littorina littorea larvae	8.27	0.93	6.23	0.96
Anchoa mitchilli larvae	0.74	0.05	0.53	0.07
Gobiosoma bosc larvae	0.23	0.01	0.52	0.01
Rhithropanopeus harrisii larvae 1	3.83	0.36	< 0.01	<0.01
R. harrisii larvae 2	0.75	0.10	< 0.01	<0.01
R. harrisii larvae 3	0.53	0.06	0	0
R. harrisii larvae 4	0.35	0.05	0	0
Dyspanopeus sayi larvae 1	0.40	0.04	65.88	7.57
D. sayi larvae 2	< 0.01	<0.01	31.79	4.79
D. sayi larvae 3	0	0	10.13	1.64
D. sayi larvae 4	0	0	1.27	0.28