The following supplements accompany the article

Physical and biological factors affect the vertical distribution of larvae of benthic gastropods in a shallow embayment

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Marine Ecology Progress Series 464: 135–151 (2012)

Supplement 1. Autocorrelation of each gastropod taxon

Calculation of mean depth distribution (MDD)

The vertical distribution for each taxon (*Margarites* spp., *Crepidula* spp., *Astyris lunata*, *Diaphana minuta*, Littorinimorpha, *Arrhoges occidentalis*, *Ilyanassa* spp., *Bittiolum alternatum*, Nudibranchia) at each sampling time was characterized using mean depth distribution (MDD) calculated for each sampling time *j* as the weighted average:

$$MDD_j = \frac{1}{N_j} \sum_{i=1}^{n} z_i n_{ij}$$

where z_i = mean depth of interval *i*, n_{ij} = number of larvae collected at depth *i* at time *j*, and N_j = total number of larvae sampled at time *j* (Tapia et al. 2010). For each larval taxon, the MDD reflects the larval concentration at the mean depth of any given profile. The time series of MDD for each taxon (*Margarites* spp., *Crepidula* spp., *Astyris lunata*, *Diaphana minuta*, Littorinimorpha, *Arrhoges occidentalis*, *Ilyanassa* spp., *Bittiolum alternatum*, Nudibranchia) during each sampling period (full moon, quarter moon) was used for autocorrelation analysis.

Table S1. Autocorrelation explaining the similarity between the mean depth distribution (MDD) of each taxon (*Margarites* spp., *Crepidula* spp., *Astyris lunata*, *Diaphana minuta*, Littorinimorpha, *Arrhoges occidentalis*, *Ilyanassa* spp., *Bittiolum alternatum*, Nudibranchia) as a function of the time separation between them. Plankton were sampled at a 2-h temporal frequency, over a 36- and 26-h period, during a spring (full moon: 6-7 Aug 2009) and neap (quarter moon: 12-13 Aug 2009) tide, respectively. Bold values indicate significantly correlated variables ($p < 0.05$); r = correlation coefficient and p = p-value

Taxon		Cross-correlations							
		Full Moon					Quarter Moon		
	Time Lag	0-h	2-h	4-h	6-h	8-h	0-h	2-h	4-h
Margarites spp.	r	1.000	0.634	0.353	0.150	0.002	1.000	0.376	0.080
	p	**<0.001**	**0.006**	0.180	0.593	0.996	**<0.001**	0.228	0.815
Crepidula spp.	r	1.000	0.224	0.024	0.346	–0.073	1.000	0.452	–0.025
	p	**<0.001**	0.388	0.931	0.207	0.805	**<0.001**	0.140	0.941
Astyris lunata	r	1.000	0.266	0.375	0.255	0.387	1.000	0.591	0.104
	p	**<0.001**	0.302	0.153	0.359	0.172	**<0.001**	**0.043**	0.760
Diaphana minuta	r	1.000	0.290	–0.097	–0.139	–0.197	1.000	–0.064	–0.258
	p	**<0.001**	0.260	0.721	0.621	0.499	**<0.001**	0.844	0.444
Littorinimorpha	r	1.000	0.241	0.022	0.084	–0.290	1.000	–0.082	–0.027
	p	**<0.001**	0.351	0.936	0.766	0.314	**<0.001**	0.800	0.938
Arrhoges occidentalis	r	1.000	–0.157	–0.253	–0.103	–0.072	1.000	0.561	–0.221
	p	**<0.001**	0.547	0.344	0.714	0.806	**<0.001**	0.058	0.513
Ilyanassa spp.	r	1.000	0.226	–0.318	–0.108	–0.238	1.000	0.688	0.173
	p	**<0.001**	0.383	0.231	0.701	0.413	**<0.001**	**0.013**	0.612
Bittiolum alternatum	r	1.000	–0.083	–0.450	–0.158	0.111	1.000	0.417	–0.294
	p	**<0.001**	0.751	0.080	0.573	0.705	**<0.001**	0.178	0.381
Nudibranchia	r	1.000	0.712	0.582	0.390	0.172	1.000	0.188	–0.259
	p	**<0.001**	**0.001**	**0.018**	0.151	0.556	**<0.001**	0.558	0.442

Supplement 2. Correlations of physical variables

Table S2. Pearson correlation coefficients for all pairs of physical variables: z = depth (m) T = temperature (°C), S = salinity, σ_t = density (kg m^{-3}), Fl = fluorescence, w = vertical velocity (cm s^{-1}), v = North-south velocity (cm s^{-1}), u = East-West velocity (cm s^{-1}), and Ri = Richardson number (stable: $Ri > 0.25$ or unstable: $Ri < 0.25$). Bold values indicate significantly correlated variables; n = sample size

		z	T	S	σ_t	Fl	w	v	u	Ri
z	r	1	–0.927	0.797	0.926	0.137	–0.141	–0.011	0.107	0.396
	p		**<0.001**	**<0.001**	**<0.001**	0.172	0.079	0.896	0.185	**<0.001**
	n	186	163	116	116	101	155	155	155	186
T	r		1	–0.884	–0.992	0.124	0.132	0.017	–0.167	–0.360
	p	–		**<0.001**	**<0.001**	0.218	0.123	0.848	0.051	**<0.001**
	n		163	116	116	101	137	137	137	163
S	r			1	0.931	–0.335	0.004	0.104	0.082	0.275
	p	–	–		**<0.001**	**0.002**	0.965	0.307	0.424	**0.003**
	n			116	116	83	98	98	98	116
D	r				1	–0.230	–0.079	–0.051	0.087	0.353
	p	–	–	–		0.037	0.438	0.619	0.395	**<0.001**
	n				116	83	98	98	98	116
F	r					1	–0.092	–0.032	0.077	0.211
	p	–	–	–	–		0.402	0.770	0.482	0.034
	n					101	85	85	85	101
w	r						1	0.326	–0.350	–0.148
	p	–	–	–	–	–		**<0.001**	**<0.001**	0.067
	n						155	155	155	155
v	r							1	–0.068	–0.061
	p	–	–	–	–	–	–		0.398	0.450
	n							155	155	155
u	r								1	0.046
	p	–	–	–	–	–	–	–		0.566
	n								155	155
	r									1
	p	–	–	–	–	–	–	–	–	
	n									186

Supplement 3. Water column instabilities

Richard number calculation and statistical analysis

The Richardson number for each sampling time was calculated as

$$Ri = \frac{N^2}{\left(\frac{\partial U}{\partial z}\right)^2}$$

where

$$\frac{\partial U}{\partial z} = \left(\frac{\partial u}{\partial z}\right)^2 + \left(\frac{\partial v}{\partial z}\right)^2$$

[N^2 = buoyancy frequency, z = depth, u = North-South velocity, v = East-West velocity, U = scale for horizontal velocity]. To calculate density, the 'polyfit' function in Matlab 7.1 (The Mathworks Co.) was used to determine the relationship between temperature and salinity from the CTD casts; density was extrapolated from the thermistor data. Student's t-test was used to examine the effect of Richardson number (stable: $Ri > 0.25$ or unstable: $Ri < 0.25$) on the normalized abundance of each gastropod taxon.

Table S3. Student's t-test examining the effect of Richardson number (unstable: $Ri < 0.25$, stable: $Ri > 0.25$) on the normalized abundance for all gastropod taxa ($p < 0.01$, indicated in bold)

Taxon	Unstable		Stable		t-test			Conclusions
	Mean	SD	Mean	SD	t	df	p	
Margarites spp.	–0.526	0.253	0.131	1.072	–6.755	183.8	**<0.001**	Unstable < Stable
Crepidula spp.	–0.224	0.456	0.056	1.088	–2.401	141.2	0.018	Unstable = Stable
Astyris lunata	0.088	0.880	–0.022	1.029	0.654	62.82	0.516	Unstable = Stable
Diaphana minuta	–0.175	0.510	0.043	1.085	–1.787	124.2	0.076	Unstable = Stable
Littorinimorpha	–0.540	0.136	0.134	1.074	–7.427	164.9	**<0.001**	Unstable < Stable
Arrhoges occidentalis	0.028	0.818	–0.007	1.043	0.220	68.24	0.827	Unstable = Stable
Ilyanassa spp.	0.274	1.059	–0.068	0.977	1.783	52.25	0.080	Unstable = Stable
Bittiolum alternatum	0.308	1.142	–0.077	0.950	1.893	49.08	0.064	Unstable = Stable
Nudibranchia	–0.178	0.014	0.044	1.114	–2.438	148.2	0.016	Unstable = Stable