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Supplementary material

Diversity and abundance of epibiota on invasive and native estuarine gastropods depend on substratum and salinity

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Table S1. Effective fetch at the 13 different sites

Location	Area	Exposure
Gilbert Fraser	Outer	0.40
Leeuwin	Outer	0.16
Chidley Point	Outer	0.35
Freshwater Bay	Outer	3.49
Mills Point	Inner	4.97
Matilda Bay	Inner	2.60
Como	Inner	4.88
Point Resolution	Central	1.15
J.H Abrahams	Central	2.04
Point Walter	Central	2.63
Charles Court	Central	4.06
Heathcote	Central	3.89
Jeff Joseph	Central	3.32

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Table S2. Factorial ANOVA results of shell-size difference between *habitats*, *water depth* and different *salinity* regions with *wave exposure* as co-variate

Shell dimension ~Habitat + Salinity + Depth + Wave exposure

	d.f.	SS	*F* value	*P*
Shell type: Bat–Gra+				
Habitat	1	0.3	0.378	0.539
Salinity	2	1.4	0.868	0.42
Depth	1	0	0.059	0.809
Wave exposure	1	0.1	0.074	0.785
Residuals	559	450.1		
Shell type: Bat–Gra–				
Habitat	1	1.4	0.453	0.501
Salinity	2	8.3	1.347	0.261
Depth	1	0.4	0.134	0.714
Wave exposure	1	0.5	0.149	0.7
Residuals	654	2002.7		
Shell type: Bat–Small				
Habitat	1	1	0.444	0.5064
Salinity	1	5.4	2.331	0.1291
Depth	1	11.1	4.817	0.0798
Wave exposure	1	0.7	0.309	0.5794
Residuals	141	325.6		
Shell type: Bat–Hermit				
Habitat	1	3.4	1.077	0.2998
Salinity	2	14.6	2.349	0.0965
Depth	1	3.2	1.026	0.3116
Wave exposure	1	1.6	0.521	0.4708
Residuals	484	1507		
Shell type: Bat–Empty				
Habitat	1	0.4	0.138	0.711
Salinity	2	4.1	0.628	0.534
Depth	1	0.5	0.157	0.692
Wave exposure	1	3.2	1.003	0.317
Residuals	485	1569.4		
Shell type: Bed				
Habitat	1	0.3	0.378	0.539
Salinity	2	1.4	0.868	0.42
Depth	1	0	0.059	0.809
Wave exposure	1	0.1	0.074	0.785
Residuals	559	450.1		
Shell type: Nas				
Habitat	1	0.3	0.378	0.539
Salinity	2	1.4	0.868	0.42
Depth	1	0	0.059	0.809
Wave exposure	1	0.1	0.074	0.785
Residuals	559	450.1		

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Table S3. Mean length (mm), width (mm), shell surface (cm^2) and shell dimension (mm) of the three dominant gastropods living in the Swan River Estuary

Shell surface calculated after Thomsen *et al*. (2010). *B. australis* was found to be significantly larger than *B. paiva* and *N. pauperatus*. All values presented are ±standard error

Snail species	Length (mm)	Width (mm)	Shell dimension (mm^2)	*P* (shell dimension)	Shell area (cm^2)
B. australis (*n* = 50)	29.5 ± 7.76	13.23 ± 2.13	1.63 ± 0.17	Bat – Nas <0.001	7.25
B. paiva (*n* = 50)	21.8 ± 3.03	11.54 ± 1.93	1.41 ± 0.15	Bed – Bat <0.001	5.04
N. pauperatus (*n* = 50)	9.8 ± 1.13	5.03 ± 0.76	0.66 ± 0.10	Bed – Nas <0.001	1.06

Table S4. Final model: *Ralfsia* sp. abundance ~Shell type + Salinity + Wave exposure

	d.f.	Deviance	AIC	LRT	Pr (>Chi)
<none>		1960.8	12392		
Shell type	6	2012.3	12431	51.503	2.348^{-9}
Salinity	2	2006.3	12433	45.586	1.262^{-10}
Wave exposure	1	967	12396	6.222	0.01262

Deviance residuals:

Min	1Q	Median	3Q	Max
–1.0044	–0.8754	–0.8269	–0.0329	1.9347

Coefficients:

	Estimate	s.e.	z value	Pr (>|z|)
(Intercept)	0.8652	0.1846	4.688	2.76^{-06}
Shell type (Bat–Gra+)	0.6309	0.2133	2.957	0.0031
Shell type (Bat–Gra–)	0.4349	0.1993	2.183	0.02906
Shell type (Bat–Hermit)	0.3702	0.2119	1.746	0.08073
Shell type (Bat–Small)	–1.1482	0.323	–3.555	0.00038
Shell type (Bed)	–0.7531	0.2263	–3.328	0.00087
Shell type (Nas)	0.2379	0.205	1.16	0.246
Salinity (Mid)	0.4472	0.1606	2.784	0.00537
Salinity (West)	1.2275	0.1895	6.476	9.41^{-11}
Wave exposure (Protected)	0.3471	0.1321	2.628	0.00858

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Table S5. Final model: *Membranipora* sp. abundance ~Shell type + Salinity + Wave exposure

	d.f.	Deviance	AIC	LRT	Pr (>Chi)
<none>	555.15	3809.9			
Shell type	6	596.12	3838.9	40.974	2.93^{-7}
Salinity	2	581.89	3832.7	26.74	1.56^{-6}
Wave exposure	1	568.77	3821.5	13.621	0.00022

Deviance residuals:

Min	1Q	Median	3Q	Max
–0.5046	–0.4405	–0.3918	–0.3215	2.1751

Coefficients:

	Estimate	s.e.	z value	Pr (>|z|)
(Intercept)	–0.2539	0.3969	–0.64	0.5224
Shell type (Bat–Gra+)	0.261	0.4592	0.568	0.5698
Shell type (Bat–Gra–)	0.1302	0.4286	0.304	0.7612
Shell type (Bat–Hermit)	1.1478	0.4543	2.527	0.0115
Shell type (Bat–Small)	–1.3429	0.7151	–1.878	0.0604
Shell type (Bed)	0.7068	0.4823	1.465	0.1428
Shell type (Nas)	–1.7873	0.4553	–3.926	8.65^{-5}
Salinity (Mid)	1.5086	0.3463	4.356	1.32^{-5}
Salinity (West)	0.1771	0.4127	0.429	0.6678
Wave exposure (Protected)	–1.3459	0.2866	–4.696	2.65^{-6}

Reference

Thomsen, M. S., Wernberg, T., Tuya, F., and Silliman, B. R. (2010). Ecological performance and possible origin of a ubiquitous but under-studied gastropod. *Estuarine, Coastal and Shelf Science* **87**(4), 501–509. doi:10.1016/j.ecss.2010.02.014