

Table S1. The sampling dates and number of sites surveyed at each location per time frame for both the transects to record abundance and diversity of all mobile invertebrates, as well as the free roaming searches for *Lunella torquatus* size frequency distributions.

Location	Abundance and diversity			Size frequency			
	Year	Date	Site	Period	Date	Site	Counts
Jurien Bay	1995–1997	24/11/2000	1	pre-MHW	24/10/2006	1	23
		25/11/2000	2		3/12/2006	1	30
	2016–2019	23/11/2016	2	MHW	4/12/2006	1	7
		24/11/2016	1		1/11/2014	1	8
		9/02/2019	3		post-MHW	23/11/2017	2
Marmion	1999–2001	28/01/1999	2	pre-MHW	10/10/2006	1	26
		1/02/1999	1		16/10/2006	1	27
		10/02/1999	1		22/11/2006	1	36
		17/02/1999	1		28/11/2010	1	20
		29/06/1999	3		MHW	2013	3
	2016–2019	18/10/1999	2	post-MHW	28/11/2014	3	11
		28/10/1999	1		5/06/2015	1	4
		25/01/2000	3		3/07/2015	1	7
		12/11/2000	3		30/07/2015	2	68
		13/02/2001	3		23/11/2015	3	67
		2/12/2016	3		22/12/2015	3	63
		3/03/2017	3		8/03/2016	3	108
		7/11/2017	3		11/05/2016	1	29
		8/11/2017	2		14/09/2016	2	110
		14/12/2018	3		30/11/2016	2	31
3/05/2019	3	3/03/2017	3	43			
Hamelin Bay	1995–1997	26/02/1999	1	pre-MHW	13/11/2006	3	57
		27/02/1999	2		24/11/2010	3	39
		22/12/1999	2		MHW	2013	9
	2016–2019	6/02/2001	2	post-MHW	6/12/2014	3	25
		5/12/2016	3		24/02/2015	3	32
					26/04/2017	3	18

Table S2. SIMPER analysis showing the contribution of each species of the Bray-Curtis dissimilarity of the species density (log transformed) between 1999–2001 and 2016–2019.

Species	Dissimilarity			Mean	Mean	Cumulative contrib. (%)
	Mean	SD	Ratio	1999–2001	2016–2019	
<i>Lunella torquatus</i>	0.168	0.204	0.823	0.341	0.293	19.5
<i>Helicoidaris erythrogramma</i>	0.145	0.184	0.787	0.415	0.148	36.3
<i>Phyllacanthus irregularis</i>	0.124	0.169	0.736	0.330	0.168	50.7
<i>Centrostephanus tenuispinus</i>	0.091	0.179	0.511	0.027	0.288	61.3
<i>Muricidae</i>	0.070	0.133	0.531	0.101	0.131	69.5
<i>Fromia polypora</i>	0.066	0.123	0.537	0.124	0.106	77.1
<i>Astraliium spp.</i>	0.057	0.136	0.421	0.115	0.076	83.8
<i>Chromodoris westrauliensis</i>	0.051	0.116	0.439	0.066	0.108	89.7
<i>Pseudonepanthia trouhntoni</i>	0.025	0.090	0.283	0.058	0.007	92.6
<i>Pentanogaster dubeni</i>	0.022	0.074	0.299	0.048	0.027	95.2
<i>Turbo intercostalis</i>	0.015	0.066	0.230	0.033	0.013	97.0
<i>Cypraeidae</i>	0.009	0.048	0.180	0.010	0.017	98.0
<i>plectaster decanus</i>	0.008	0.052	0.151	0.005	0.013	98.9
<i>Nectria saoria</i>	0.005	0.040	0.120	0.005	0.007	99.5
<i>Phyllidiella pustulosa</i>	0.005	0.035	0.130	0.007	0.007	100.0

Table S3. PERMANOVA analysis of the Bray-Curtis dissimilarities of the presence/absence of mobile invertebrates on transects between 1999-2001 and 2016-2019 at Jurien Bay, Marmion, and Hamelin Bay.

Model	Df	Sum Sq	R ²	F value	Pr(>F)
Jurien Bay					
Year	1	2.915	0.106	8.1025	0.001
Residual	68	24.464	0.894		
Total	69	27.379	1.000		
Marmion					
Year	1	2.516	0.020	7.2265	0.001
Residual	348	121.171	0.980		
Total	349	123.688	1.000		
Hamelin Bay					
Year	1	0.530	0.020	1.3851	0.218
Residual	68	26.029	0.980		
Total	69	26.560	1.000		