

Supplementary Table 1 Parameters used to extract acoustic variables from sound files. Acoustic indices calculated from recordings at patch reefs from Lizard Island, summarised with the settings use for their computation. The system default settings of Fast Fourier Transform (FFT) analysis for the Window type “Hamming”, with an FFT size of 2048 Hz, and an overlap of 50% was used for all applicable indices.

Indices	Described soundscape attribute	Envelope	Minimum frequency	Maximum frequency	Frequency step	Frequency bins	Cluster Size	Threshold	Window Length	Reference
Acoustic Complexity Index (ACI)	Examines the amount of signal power variability within the time series	-	0.1 kHz	1 kHz	-	-	1	-	-	(Pieretti et al., 2011)
		-	2 kHz	10 kHz	-	-	1	-	-	
		-	0.1 kHz	10 kHz	-	-	1	-	-	
Entropy Index (H)	Compares evenness of signal power across frequencies	Hilbert	0.1 kHz	-	-	-	-	-	512	(Sueur et al., 2008)
		-	0.1 kHz	-	-	-	-	-	2048	
Acoustic Diversity Index (ADI)	Examines the signal power variability for frequency bands based on the Shannon Diversity Index	-	0.1 kHz	10 kHz	1000	10	-	50 dB	-	(Villanueva-Rivera et al., 2011)
		-	0.1 kHz	10 kHz	2000	5	-	50 dB	-	
Acoustic Evenness Index (AEI)	Examines the signal power variability for frequency bands, but instead is based upon the Gini index	-	0.1 kHz	10 kHz	1000	10	-	50 dB	-	(Villanueva-Rivera et al., 2011)
		-	0.1 kHz	10 kHz	2000	5	-	50 dB	-	
Bioacoustic Index (BI)	Examines signal power and occupancy of the 2 to 11 kHz frequency band	-	0.1 kHz	1 kHz	-	-	5	-	-	(Boelman et al., 2007)
		-	2 kHz	10 kHz	-	-	5	-	-	
		-	0.1 kHz	10 kHz	-	-	5	-	-	
Normalized Difference Soundscape Index (NDSI)	Compares the amount of signal power in a frequency band associated with anthropogenic against one associated with biological sounds	-	Anthropogenic sound range:		-	-	-	-	512	(Kasten et al., 2012)
		-	0.1 – 2 kHz		-	-	-	-	1024	
		-	Biological sound range: 2 – 10 kHz		-	-	-	-	2048	

Supplementary Table 2 Permutational Multivariate Analysis of Variance results comparing soundscapes of Lizard Island patch reefs at separate Time of Day (Dawn, Day, Dusk, and Night) to explore the effect of selected potential drivers of variation. The result for each time of day is listed in order

Time of Day	Effect	Degrees of Freedom	Sum of squares	R ²	F	p-value
Dawn	<i>L. dimidiatus</i> treatment	1	79.32	0.07	23.16	<0.001
	<i>L. dimidiatus</i> treatment (Patch reef)	6	776.41	0.67	37.78	<0.001
	Residual	90	308.27	0.27	-	-
	Total	97	1164	1	-	-
Day	<i>L. dimidiatus</i> treatment	1	727	0.04	118.5	<0.001
	<i>L. dimidiatus</i> treatment (Patch reef)	6	8019.62	0.45	217.87	<0.001
	Residual	1477	9061.38	0.51	-	-
	Total	1484	17808	1	-	-
Dusk	<i>L. dimidiatus</i> treatment	1	91.01	0.06	23.83	<0.001
	<i>L. dimidiatus</i> treatment (Patch reef)	6	974.65	0.64	42.53	<0.001
	Residual	120	458.35	0.3	-	-
	Total	127	1524	1	-	-
Night	<i>L. dimidiatus</i> treatment	1	819	0.06	201.16	<0.001
	<i>L. dimidiatus</i> treatment (Patch reef)	6	8573.18	0.61	350.95	<0.001
	Residual	1174	4779.83	0.34	-	-
	Total	1181	14172	1	-	-

Supplementary Table 3 Permutational pairwise comparison of the Permutational Multivariate Analysis of Variance results comparing soundscapes of Lizard Island patch reefs to examine the differences between Period of the Day (Dawn, Day, Dusk, and Night) groups. Comparisons are listed in order. No p-value correction was used, and 999 permutations were performed

Time of Day	Statistic	Df	SumOfSqs	R2	F	Pr(>F)
Day vs Dusk	Model	1	358	0.01995	32.789	<0.0001
	Residual	1611	17583	0.98	-	-
	Total	1612	17941	1	-	-
Day vs Night	Model	1	1932	0.05994	169.94	<0.0001
	Residual	2665	30300	0.94	-	-
	Total	2666	32233	1	-	-
Day vs Dawn	Model	1	73.7	0.00429	6.81	<0.0001
	Residual	1581	17116.2	0.99571	-	-
	Total	1582	17189.9	1	-	-
Dusk_vs_Night	Model	1	10.4	0.00067	0.8789	0.4868
	Residual	1308	15453	0.99933	-	-
	Total	1309	15463.5	1	-	-
Dusk_vs_Dawn	Model	1	135.02	0.05617	13.33	<0.0001
	Residual	224	2268.92	0.94383	-	-
	Total	225	2403.94	1	-	-
Night_vs_Dawn	Model	1	222.1	0.015	18.937	<0.0001
	Residual	1278	14986.3	0.99	-	-
	Total	1279	15208.4	1	-	-

Supplementary Fig 2 Non-metric Multi-Dimensional Scaling plot of the patches' soundscape based on separate ordinal plots. The respective distribution of points for each time of day (dawn, day, dusk, and night) are taken from separate ordination plots for each Time of day with the distribution of vectors. Solid points in red indicated patch reefs that did not have any *Labroides dimidiatus*. Whereas outlined points in blue indicate patch reefs with *Labroides dimidiatus*. Each individual point represents a 5 min recording

