

Table S1. Deployment and recovery schedule for the Environmental Acoustic Recorders during this study

EAR Deployment and Recovery Dates		Sample rate (kHz)	Service Interval (h)*	Acoustic Data (days)
<b>Puako Reef</b>	23 May – 6 June 2008	64	-	14.1
	6 June – 20 June 2008	64	3	13.8
	20 June – 1 August 2008	64	2	41.9
	2 August – 15 November 2008	16	4	105.0
	15 November 2008 – 5 June 2009	16	31	201.8
	6 June 2009 – 29 March 8 2010	16	42	295.8
	31 March 2010 – 17 May 2011	16		412**
Total			82 h	1084.2 days
<b>Pawai Bay</b>	8 May – 23 May 2008	64	3	14.8
	23 May – 30 July 2008	64	5	67.8
	30 July – 17 November 2008	16	5	109.7
	17 November 2008 – 5 June 2009	16	45	200.1
	7 June 2009 – 29 March 2010	16	49	294.8
	31 March 2010 – 16 May 2011	16		405.9**
Total			107 h	1093.0 days

\*Duration the recorder was out of the water after the previous deployment. \*\* Some hours didn't record because of low battery voltage.

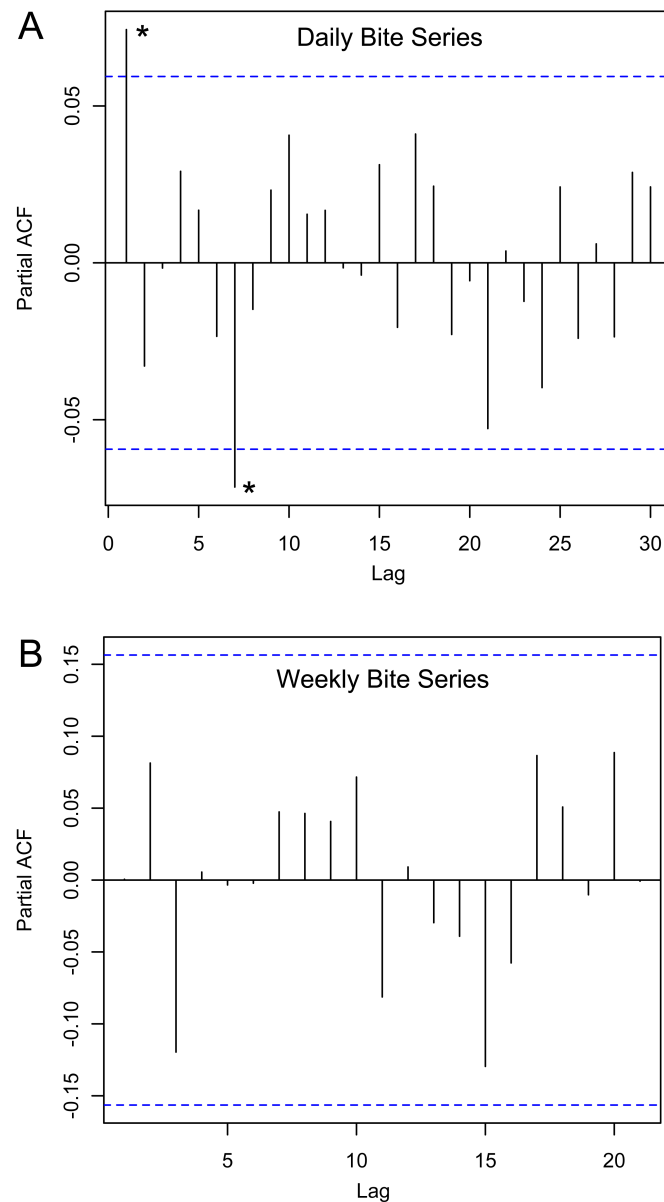


Figure S1. Autocorrelation function (ACF) tests on series residuals for parrotfish bite data obtained with the acoustic recorder at Puako Reef, Hawaii. A) Partial ACF for the daily bite regression shows statistically significant lags at days 1 and 7 (asterisks) that indicate possible weak autocorrelation of the daily bite data. B) Partial ACF for weekly bite counts shows no statistically significant lag weeks. Subsequent Durbin-Watson tests indicate no autocorrelation structures for either model (see text). The GLM regression of daily bites, which incorporates the ARMA estimated autocorrelation  $\hat{\rho}$ , did not change day length as a significant statistical factors for the daily feeding model but added sea surface temperature to day length as factors for the weekly feeding model (see text and Table 4). Blue dotted lines show  $p = 0.05$  rejection level for individual lags.

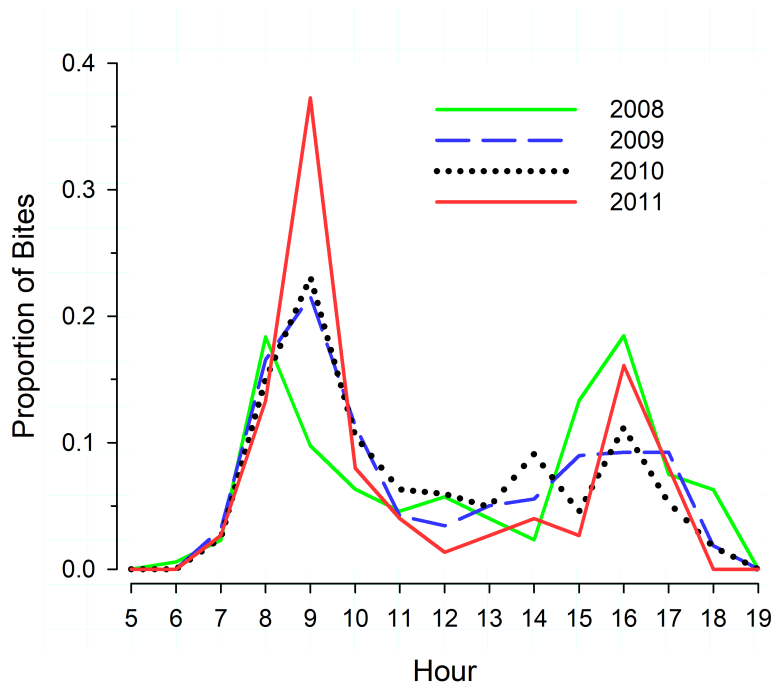


Figure S2. The proportion of hourly parrotfish bite sounds recorded at Puako Reef, Hawai'i across calendar years of 2008 – 2011. In all years maximum bite sounds were observed at 0800–0900 h and also in late afternoon hours near 1600 h. This figure illustrates similar hourly variations in feeding among years, and that hourly averages (see Fig. 10A) are unlikely to be weighted by data from a single year.