Supplementary Material:

Methods

Videotapes were digitized using iMovie HD 6 (Apple Inc., 2006) and saved as a mov files. The files were saved at sampling rate 44.1 kHz and 16-bit depth. The videos were analyzed and 20-second clips that had no anthropogenic noise were selected from each recording. The mov files were then imported into Raven Pro 1.4 (Bioacoustics Research Program, The Cornell Lab of Ornithology, Ithaca, NY) as a paged sound file in 20-second sections with 10%-step increment and 90%-page increment (DFT size: 512 samples; Hamming window: 512 samples) in order to visualize waveforms and spectrograms (figure 1,2) and to calculate acoustic measurements (table 3). Each 20-second clip was generated into consecutive 1-second selections (n = 20). Average and peak power spectral density (PSD), average and aggregate entropy (H), root-mean-square (RMS) amplitude, peak amplitude, peak frequency (Hz), and energy (dB) were calculated in Raven for each selection. PSD and RMS were chosen because they are the most commonly used acoustic measurements in the soundscape ecology literature and provide information about the strength of the variations in energy as a function of frequency. The H indices are also relatively common throughout the literature and can provide interesting information about species richness and habitat health. Peak frequency was calculated for the dominate frequency plots. Dominant frequency plots (Figure 3), to compare power spectral density and frequency, were created by selecting create spectrogram slice view in Raven. The vertical line representing the spectrogram slice view's time position was moved slightly to the right until the data first appeared. This graph shows the power values at each frequency over time frame of the recording currently displayed in the spectrogram. All measurements calculated in Raven were imported into Microsoft Excel to create a summary table with all measurements from each 1-second selection for both sites. These data were then imported into JMP Pro 13.2.0 (SAS Institute Inc., Cary, NC, USA, 2016) to perform two-way ANOVA followed by a t-test and to calculate the mean and standard deviation for each parameter for Table 4.

The acoustic data are from two study sites in Belize, Central America. The first is a coral reef at Tunicate Cove, Pelican Islands. This habitat and the recording methods are described in Lindseth, [55]. The second study site was a sand habitat at Glovers Atoll and is described in Randall et al., [89]. In this video, the camera's operation noise can be heard the very quiet recording and it is seen in the spectrogram as a dark band at about 1.1 kHz to 1.2 kHz. For description and discussion of camera noise issues in underwater acoustic recordings see Kovitvongsa and Lobel, [90].

Video Clips:

Tunicate Cove: 20-second clip (QT movie. Recorded in 1996 in the Pelican Cays, Tunicate Cove, Belize, (about 16^0 39.59'N, 88^0 11.07'W), inshore reef, 1–5 m depth. Video © by Phillip Lobel

Glovers Atoll: 20-second clip (QT movie. Recorded in July 1999 in the lagoon of the Manta Resort on Southwest Cay (approximately
16^0 43'N, 87^0 50.6'W), Belize. Video © by Phillip Lobel

> Note: in this video clip the ambient sounds are very quiet and the noise of the camera can be heard. No corrections for this added noise was performed in this example analysis. The camera noise can be seen in the spectrograph as a band at between the 1100 to 1200 Hz level