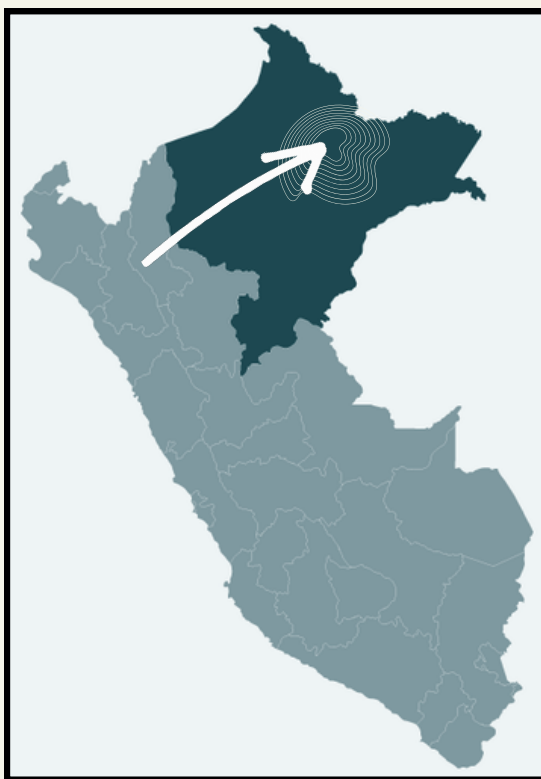


Trends in a tropical soundscape

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The study system, the Tacsha Curaray in Northern Peru ©Moira Matheson



Background

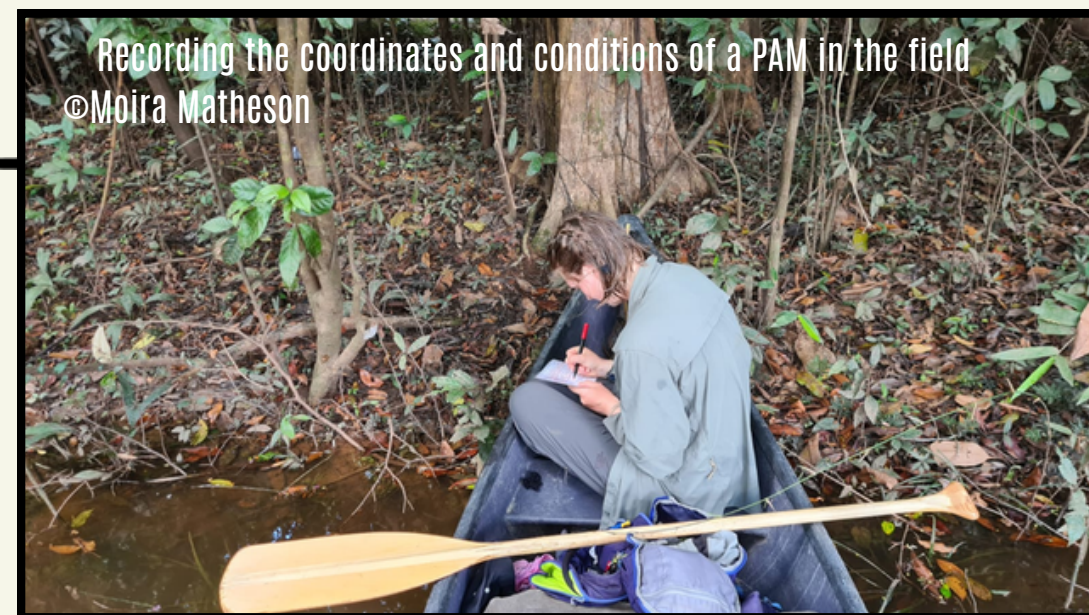
The **Amazon** is a biodiversity hotspot, teeming with life and sound. While the sounds of an ecosystem can relay important information regarding the communities present, their sheer quantity in tropical rainforests can be overwhelming to interpret. **Passive acoustic monitoring** is a growing field that aims to exploit the information of sounds, and automatic assessment and a range of **acoustic indices** have been created to facilitate surveying efforts and analysis.

Identifying **patterns in the soundscape** can help us determine patterns of otherwise cryptic biota and inform management and conservation efforts regarding problems of noise pollution.

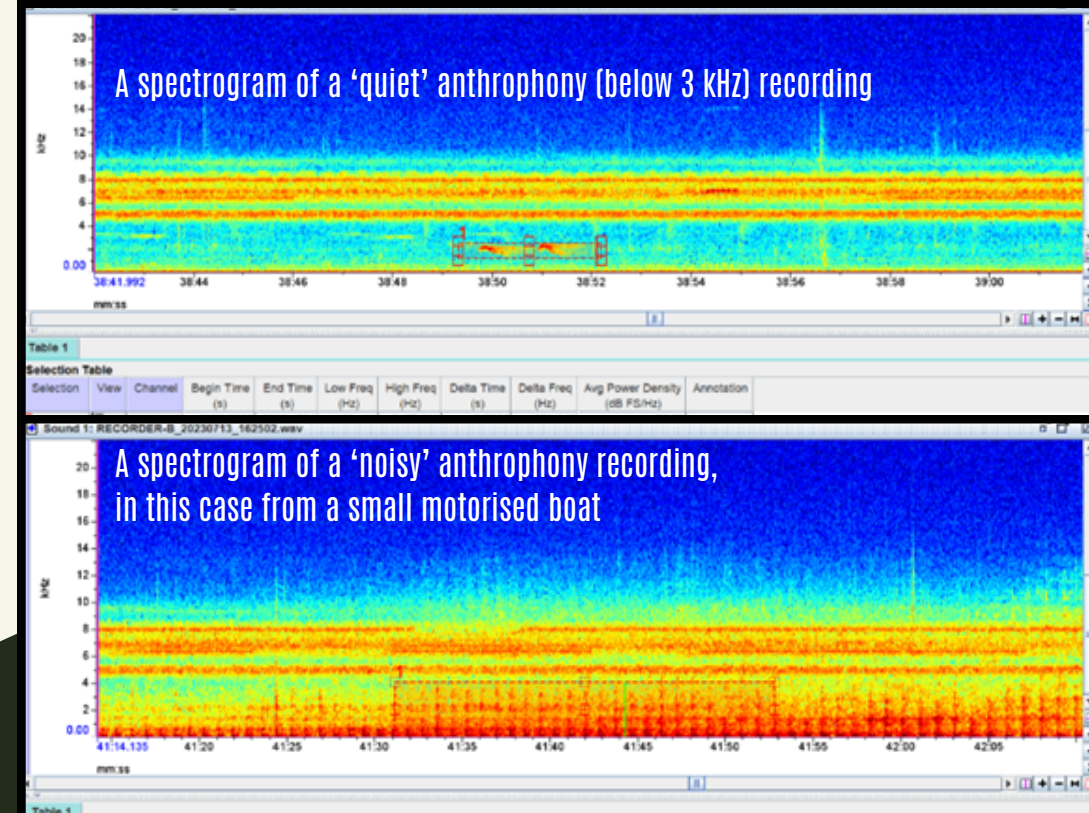
Aims and Methods

To **inform acoustic studies and conservation efforts in remote areas**, this study aimed to investigate the use of passive acoustic monitoring and acoustic indices to detect temporal and spatial patterns in the soundscape.

As a team, we undertook a week-long acoustic survey of the Tacsha Curaray in July 2023, placing passive acoustic monitors for 22-hour periods on either side of the river. I then used R to automatically calculate three acoustic indices: diversity (ADI), evenness (AEI), and the Normalised Difference Soundscape Index (NDSI).



Recording the coordinates and conditions of a PAM in the field ©Moira Matheson

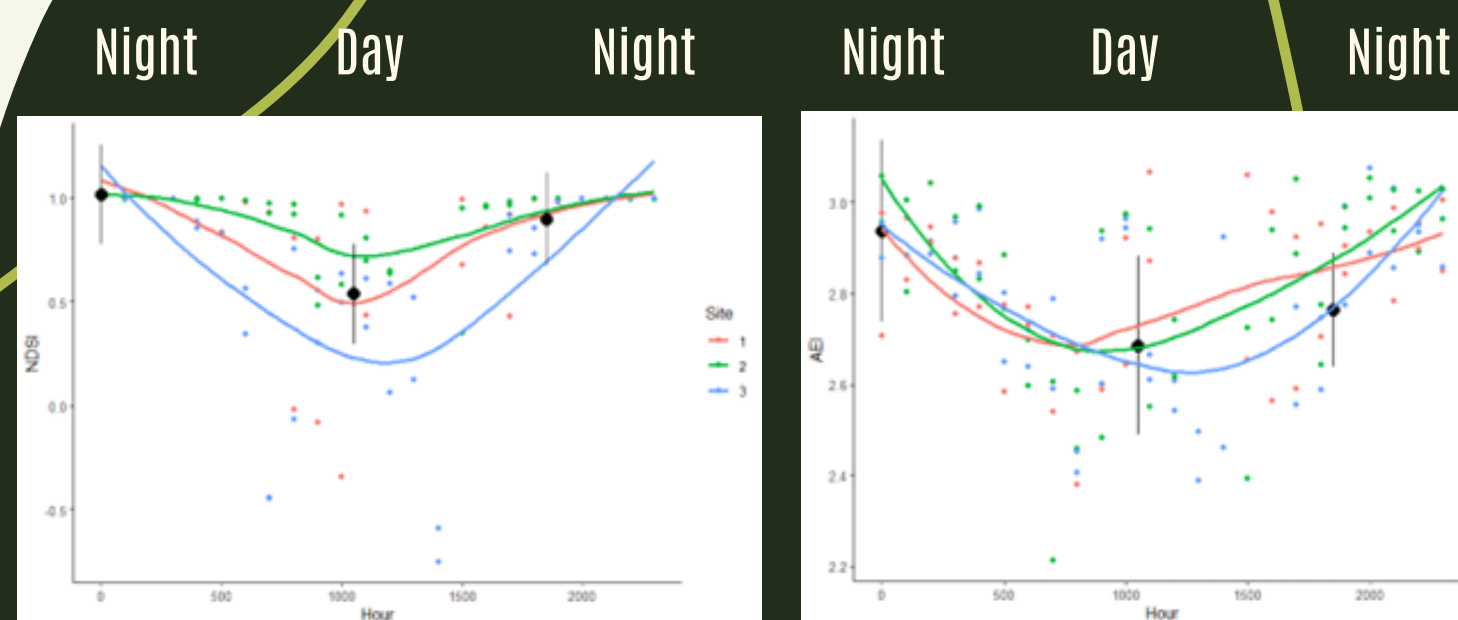


A PAM placed in the field ©Moira Matheson

Results

We detected **strong diel cycles** in **evenness** and prevalence of **anthrophony** the soundscape of the study area. There was a clear differentiation between the diurnal and nocturnal soundscapes, with a more even nocturnal soundscape. The prevalence of anthrophony was greater in the diurnal soundscape, and this pattern may increase with proximity to human settlements.

Complications in the field limited our sample size and conclusions with respect to spatial patterns in the area, but it may be that gradients along and across rivers in the Amazon should be considered for surveyed regions.



NDSI

Evenness

The NDSI and evenness throughout a 24-hour cycle at three sites in the N. Peruvian Amazon