How Do We Identify Sounds?

What We've Learned:

- Biologists use special tools to collect sound samples in the ocean.
- Healthy coral reefs sound different than impacted coral reefs.
- Sounds mix to create a soundscape and can be categorized by their source.
- The types of sounds present in a reef ecosystem provide clues about its overall health.

What is **FREQUENCY**?

- Frequency is the physical measurement of pitch.
- It is determined by the number of sound waves that occur in one second.
- The pitch of a sound is how high or low something is.
- Measured in Hertz (Hz)

through physics? Amplitude



How do we measure **LOUDNESS?**

- Amplitude is the physical measurement of sound intensity, pressure, or volume (loudness).
- Shown graphically by the change in the height of waves.
- As the amplitude increases, pressure and volume increase.
- Measured in units called decibels (Db)



Spectrograms and sound files obtained from: *Discovery Sound in the Sea*, University of Rhode Island (2021) https://dosits.org/galleries/audio-gallery/

Analyzing and Interpreting data

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- Sounds can be identified by frequency and loudness.

Investigating Further:

Collecting Data

Listen to each of the sounds provided.

As you complete the table, listen for defining characteristics of geophonic, biophonic, and anthrophonic sounds.



What evidence would help you characterize an unidentified sound?

Source	Category	Frequency	Loudness	Description
Follow Link to Hear Sound	Anthrophony (A) Biophony (B) Geophony (G)	kHz	1-5	Narrative or comparison
Rainfall				
Atlantic Right Whale				
Sonar				
Sea Urchin				
Common Dolphin				
Airgun				
Stoplight Parrotfish				
Earthquake				
Dredging				
Lightning				

Identifying Patterns in Graphic Sound Data

What evidence would help you characterize an unidentified sound?



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Analyzing and interpreting data Identifying patterns

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Organizing Evidence

Use the observed patterns, data, and observational evidence collected to identify specific characteristics to help distinguish between anthrophony, biophony, and geophony.

Can defining characteristics can be used to distinguish between biotic, abiotic, and anthropogenic sounds?

Describe the unique characteristics of biotic sounds (biophony).

Describe the unique characteristics of abiotic sounds (geophony).

Describe the unique characteristics of anthropogenic sounds (anthrophony).