CAN YOU HEAR ME NOW? ACTIVITY GUIDE

Overview:

Did you know sound is something we can see? In this activity, participants will explore how we can "see" sound by using a photophone, a DIY tool that converts sound into visual patterns. Check out our instructions to make one, or read about other ways to visualize sounds. Participants will then listen to whale calls and match what they hear to pictures of those same calls.

Target Age:

Ages 7 and up, Family Multigenerational

Prep Time:

25 minutes

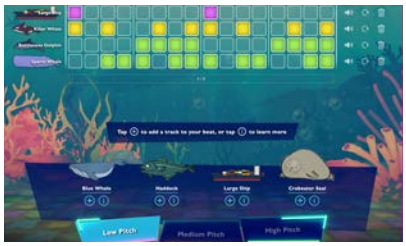
Activity Duration:

15-20 minutes

Perfect for:

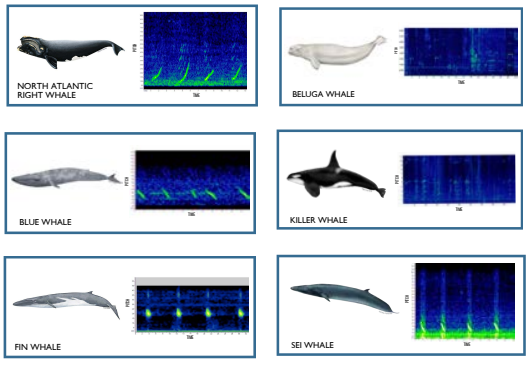
Home, classroom, libraries, small groups

Supporting Videos & Interactive at http://bluewhalesfilm.com/education



Materials & Set-Up:

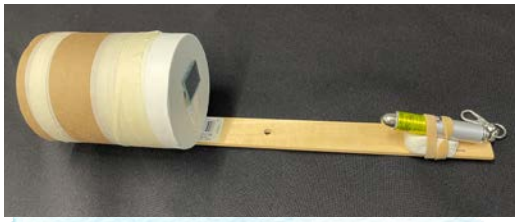
- Photophone - Follow the instructional video to make your own photophone in just 15 minutes! http://bluewhalesfilm.com/videos
- Speakers
- Whale & sound cards (printed and cut)
- Paper
- Markers
- Download audio clips for blue whale, fin whale, North Atlantic right whale, sei whale, killer whale, beluga whale at: https://www.fisheries.noaa.gov/national/science-data/sounds-ocean



Can You Hear Me Now? Instructions

Excite:

1. Ask participants: How do you communicate? What do sounds look like?
2. Show participants the photophone and explain that this device can show what sounds can look like. Turn on the laser pointer, point the photophone to a wall, ceiling, or flat surface. Speak into the open end. The vibrations of the voice will appear in the movement of the laser on the surface.
3. Change their voice to see what happens to the laser. Play around with low, high, loud, and soft sounds. Talk like a mouse, talk like a whale! What do you notice as you're changing your voice?
4. What are some animals that you can think of that communicate with sounds? Connect to whales and engage participants to play a game in matching whales sounds to pictures.



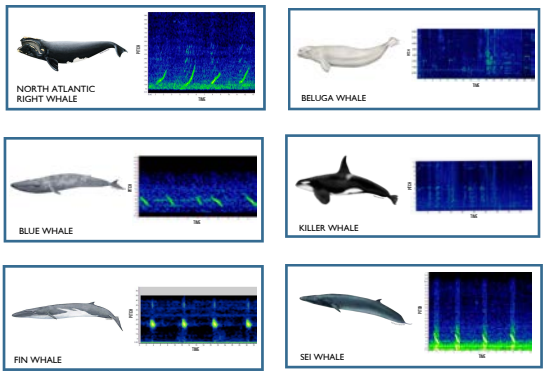
No photophone, no problem!

Use other ways to show sound.

- Draw! Make a sound and draw what you think it looks like.
- Strike a tuning fork and then touch water with it.
- Bang pots and pans near grains of rice and watch them dance!
- Create a visual display of sound digitally at this website: https://spectrogram.sciencemusic.org/

Explore:

1. Now that participants have had an experience of seeing how sound could look like with the photophone, it's their turn to draw a sound. Give each participant an index card and marker.
2. Show them a picture of the fin whale (covering the sound picture side). Tell them that you are going to play an audio clip of its sound, and they are going to draw the sound.
3. Have participants show and explain their visual representations of the sound to each other. Compare each other's drawings to look for patterns.
4. Show them the fin whale's sound picture they just heard and ask if they notice any correlating patterns. Play the sound back if needed to confirm some of their answers.
5. Show participants each whale picture and its corresponding sound picture.
6. Give participants some time to analyze the patterns.
7. Play a whale audio, and have participants guess which whale they just heard. Remember, the exploration of sounds and patterns is the focus and not the right answer. Play the sounds more than once if necessary.
8. Continue playing the audio clips until all matches have been made. Reveal answers as you go.



Try this!

- Play the sounds three times and have participants focus on something different each time.
  1. How many sounds do you hear?
  2. What do they sound like?
  3. How would you draw that or show it visually?
- Allow participants to draw the sound first before matching it to the whale and spectrogram.
- Play the sounds a few times!

Can You Hear Me Now? Explanation

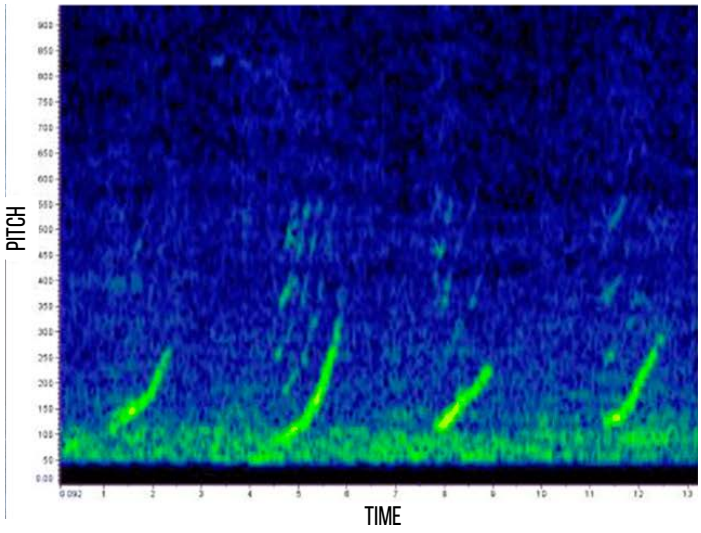
Explain:

1. Tell participants that what they are looking at are called audio spectrograms. An audio spectrogram is a picture of a sound. It's a visual way of showing how high or low, loud or soft a sound is over time. (Note: Although there are many kinds of spectrograms, this type specifically looks at sound and its features.)
2. Use one of the audio spectrograms as an example of how to use the patterns to distinguish the pitch, loudness and time of the audio. For example:

This audio spectrogram has a lot of marks reaching high up, so what pitch are we hearing - low or high?

The colors here are a darker yellow, so what does that tell us? It's louder because the color is more intense.

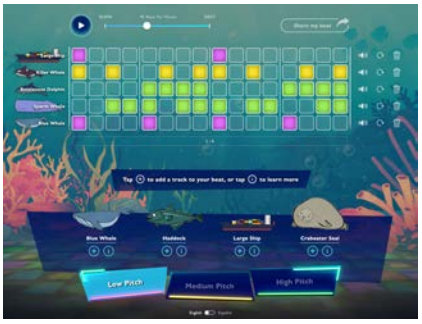
Can we tell if there are short or long breaks in between? Right, the sounds here are continuous and we have some breaks here when you don't see any patterns.



Active Research & Conservation:

1. Scientists use spectrograms to study blue whale behavior. Being able to visually identify a call allows scientists to ask why they are making it. Scientists are able to connect behaviors to calls, which allows them to infer what the sounds mean.
2. Have participants think about what non-living things exist in the ocean that makes sound. Consider noise pollution from boats and ships and ask how that might affect blue whales that are communicating. If participants are interested, play human made sounds from https://www.fisheries.noaa.gov/national/science-data/sounds-ocean
3. The good news is that humans are aware of the problems associated with noise pollution and are actively seeking ways to address them. Solutions include enforcing strict boating regulations, establishing sanctuary spaces, and engineering machineries that are quieter in the ocean.

Can You Hear Me Now? Extension Activities



Whale Beats!

The ocean is alive with sound! Discover common underwater sounds and use them to compose your own musical masterpiece at http://bluewhalefilms.com/interactives. What patterns can you create? Share your beats with friends and family.

Listen for sounds around you!

What local wildlife live in your environment? What sounds do they make? What audio spectrograms do you think the animals' sounds would display? Draw what you think those sounds might look like.

Discover underwater sounds at these websites:

- https://voicesinthesea.ucsd.edu
- https://www.mbari.org/project/soundscape-listening-room/
- https://dosits.org/galleries/audio-gallery/

Ready to make some music of your own?

Get creative with instructions or any objects available that can make noise. What kinds of patterns can you make using different pitch or loudness?

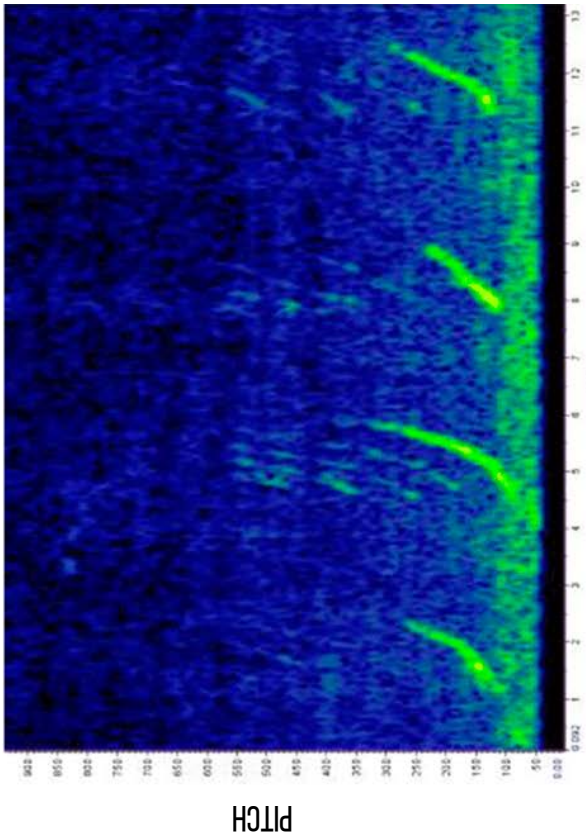
Speak Whale!

If whales could speak like humans, how would their voices sound? Can you think of any cartoon characters that might be able to "speak whale"? Have a "whale" conversation with someone!

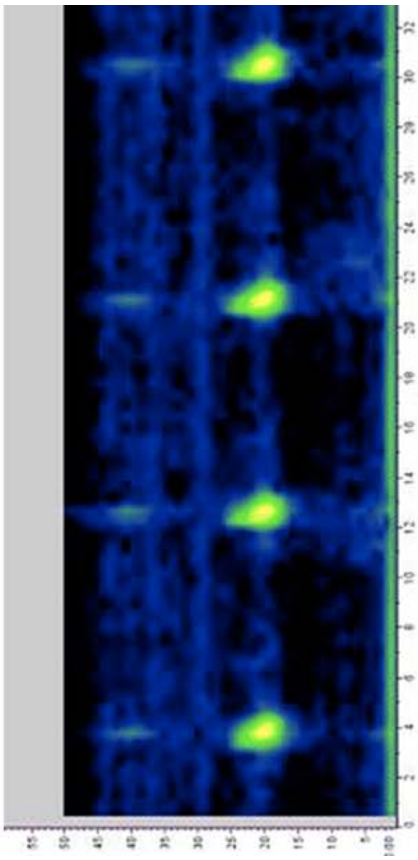
Can you guess a mystery object or sound with your sense of hearing?

Have a partner make noises with objects or play audio clips while you close your eyes and listen hard. Can you figure out what objects your partner is using to make sounds? What's the mystery sound that they are playing for you?

Whale & Sound Cards - 1 of 3

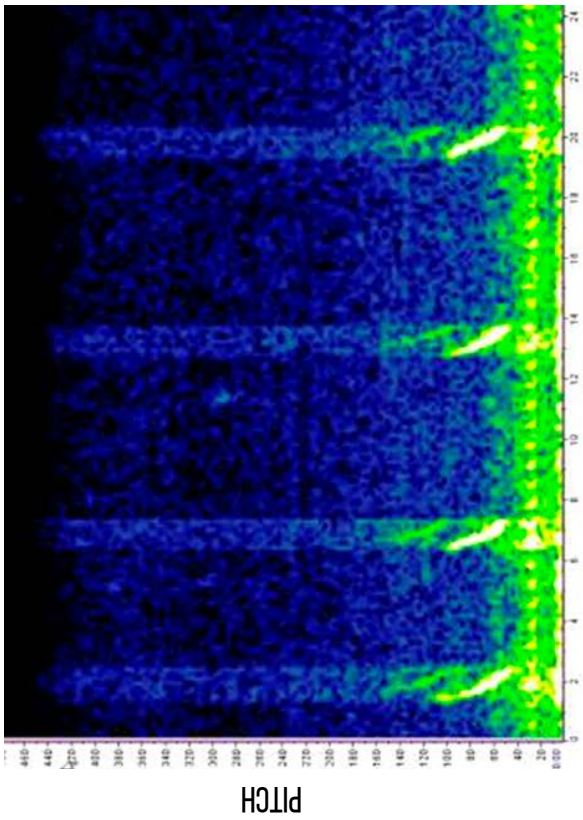


NORTH ATLANTIC
RIGHT WHALE

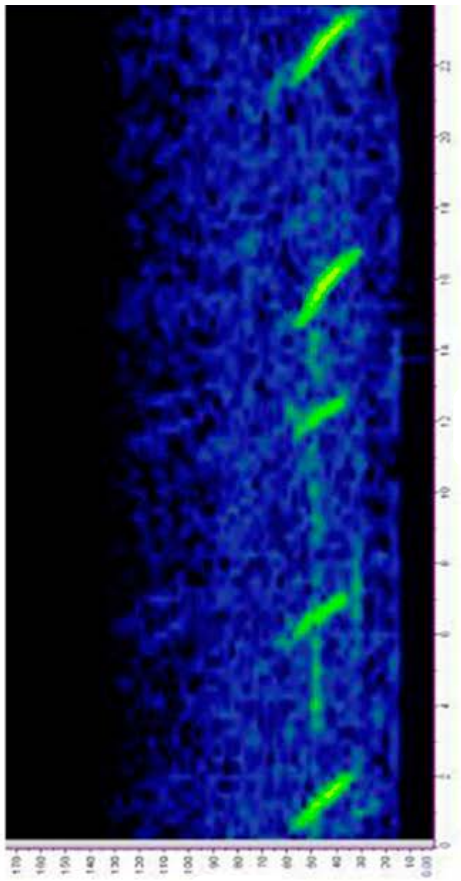


FIN WHALE

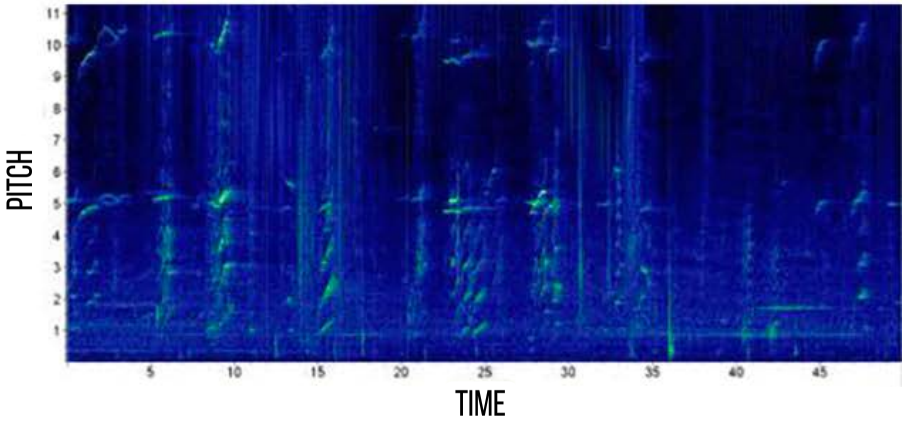
Whale & Sound Cards - 2 of 3



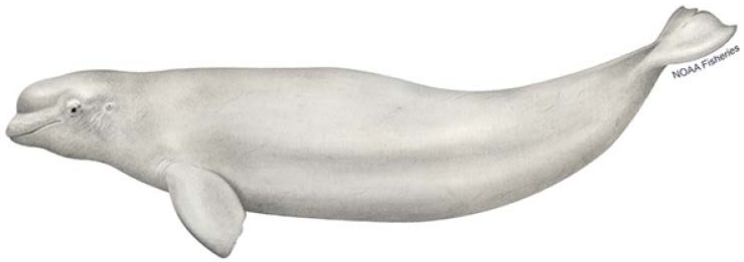
SEI WHALE

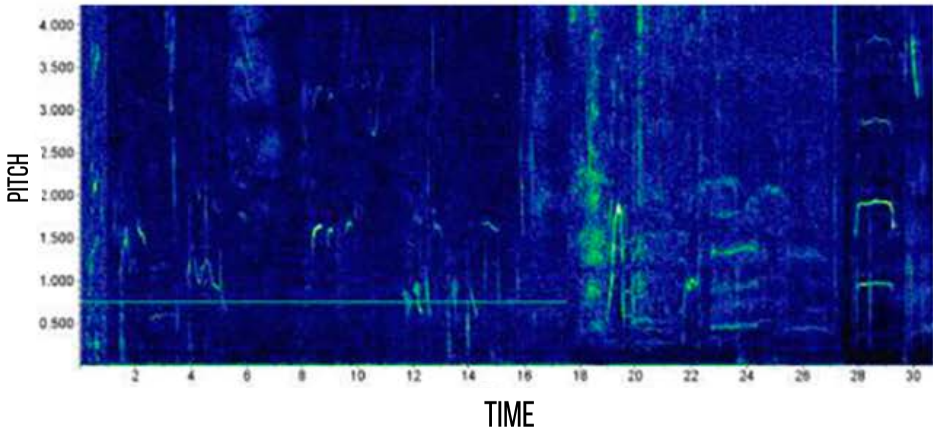


BLUE WHALE



KILLER WHALE





BELUGA WHALE

Whale & Sound Cards - 3 of 3

Acknowledgements

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