

ANCHORAGE MUSEUM

ART AND SOUND

BACKGROUND INFORMATION

Since 2018, the Anchorage Museum has partnered with schools and organizations around the state to record and collect the dynamic soundscapes of Alaska. This lesson combines the scientific field of soundscape ecology with visual arts as students examine visual representations of the dynamic soundscapes of Alaska.

STUDENTS WILL

- Discover how to utilize hearing to make observations
- Translate natural sounds into visual representations
- Practice close listening
- Examine scientific tools for sound visualization
- Think critically and support answers with evidence

MATERIALS

- Computer or tablet with internet connection and ability to listen to audio files
- Paper and color pencils or colored markers
- You can print the Appendix Activity Sheets found at the end of this lesson or write down the Appendix questions on another sheet of paper

RECOMMENDED GRADE LEVEL

Eighth through twelfth

Adapt for K-12 and adult learners

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KEY TERMS

Soundscape: all the sounds in a particular place

Soundscape ecology: the science of studying soundscapes to better understand a place and the relationships between organisms and that place

Soundscape ecologists: scientists who study soundscape ecology

Biophony: sounds made by living things, but not people

Geophony: sounds made by the earth

Anthropony: sounds made by people and machines

Spectrogram: a tool used to visualize sounds by looking at the frequency and amplitude of sounds over time

Hypothesis: an idea or explanation tested through study and experimentation

STEPS

The three steps of the lesson plan are explained in detail on the following pages. Complete the steps in order to complete the full lesson plan.

1. **Step 1:** Introduction to Alaska Soundscapes
2. **Step 2:** Soundscape Art
3. **Step 3:** Visualizing Sounds

Extension Activity: Introduction to Sound and Soundscape Ecology

This lesson plan was created with support from:



STEP 1

Introduction to Alaska Soundscapes [10 minutes]

In this step, students will learn about the places where the Anchorage Museum has recorded sound. Students will make hypotheses about what types of sounds they might hear in those places. **Complete Appendix A** to guide students learning.

STEP 2

Soundscape Art [20 minutes]

In this step, students will listen to a sound clip from each sound site and draw their own representations of the sounds heard from each site. Drawing prompts appear in **Appendix B**.

STEP 3

Visualizing Sound [20 minutes]

In this step, students will learn about how soundscape ecologist visualize sound and compare those images with drawings made for each site. Complete **Appendix C** to guide students learning.

EXTENSION ACTIVITY

Intro to Sound and Soundscape Ecology [1 hour]

In this activity, students will be introduced to the scientific field of soundscape ecology and how to utilize their sense of hearing to understand their environments.

ADDITIONAL SOUNDSCAPE ACTIVITIES

To continue to learn about soundscapes, engage with these other Anchorage Museum lessons:

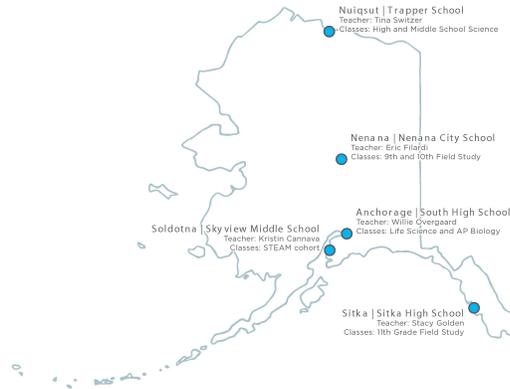
- [Sounds of Place](#)
- [Sense of Place](#)
- [Sound Analysis](#)

All Anchorage Museum lessons can be found on the [Educator Resource webpage](#), including more soundscape ecology activities.



INTRODUCTION TO ALASKA SOUNDSCAPES

In 2018, the Anchorage Museum partnered with five schools throughout Alaska to record and study local soundscapes. A soundscape is all the sounds in a particular place. Soundscapes are unique to a specific place and time. Here is a map showing the locations of the five school partners.



1. Make a hypothesis about what sounds you might expect to hear at each of the sites:

- Nuiqsut:
- Nenana:
- Anchorage:
- Soldotna:
- Sitka:

Soundscapes may contain many different sounds. Scientists who study soundscapes divide sounds into three categories:

Biophony: sounds made by living things (but not people); examples include birds and mosquitoes

Geophony: sounds made by the earth; examples include rain, waves, and landslides

Anthrophony: sounds made by people and human-made things; examples include laughter, footsteps, and cars

2. Take the list of sounds you made in question 1 and categorize these sounds into sound categories:

Biophony	Geophony	Anthrophony



SOUNDSCAPE ART

You will need five sheets of blank paper, either a full sheet or a half sheet of printer paper will work. You will also need colored markers or pencils.

1. Go to the provided audio files and select one of the sites for your first listen. Listen to the clip, and as you listen draw what you hear on the first sheet of blank paper. This is meant to be a drawing of your own personal representation of what you hear. Use your creativity to draw the sounds as you see them in your mind's eye. Repeat this process with a new sheet of paper for each site.

Check off sites as you listen:

- Nuiqsut _____
- Nenana _____
- Anchorage _____
- Soldotna _____
- Sitka _____

2. Look at the hypothesis you made in step one for each site. Which site most aligned with your hypothesis?

3. What sounds from the five sites did you enjoy the most and why?

4. What sounds from the five sites did you enjoy least and why?

5. Reflect on the experience of turning sounds into a visual. What did you like or not like about the process ?



VISUALIZING SOUNDS

Soundscape ecologists are people who study soundscapes. They use the sense of hearing as a way to understand a particular environment, and they observe how its unique soundscape may change over time. Studying soundscapes allows scientists to gain greater insight into an environment by providing information that they may not otherwise see.

Soundscape ecologists use tools called spectrograms to help them understand the soundscapes they study. A spectrogram is a graph that provides an image of sounds by looking at the frequency and amplitude of sounds over time. Amplitude determines the volume of the sound. Sounds with high amplitude will be louder and those with low amplitude will be quieter. Amplitude is measured in decibels (dB). Frequency determines the pitch of the sound and is measured in Hertz (Hz).

When reading a spectrogram, the time of the sound clips appears on the bottom or the x axis and the frequency is located along the Y axis, with higher frequencies sounds at the top and lower frequency sounds at the bottom. Amplitude is represented by color, with louder sounds being yellow with volume fading to purple as sounds become quieter.

1. Look at the provided images that are labeled A through E. Each of these images is a spectrogram representing the sound clips to which you have listened. Without listening to the clips again, try to guess which spectrogram belongs to which site.

- A: _____
- B: _____
- C: _____
- D: _____
- E: _____

2. Listen to the clips again while looking at the spectrograms. Would you change any of your guesses from above?

- A: _____
- B: _____
- C: _____
- D: _____
- E: _____

3. If you were to design a tool to visualize sound, what would you want it to show you?

