SCIENCE 3D

# CANOPY CRITTERS

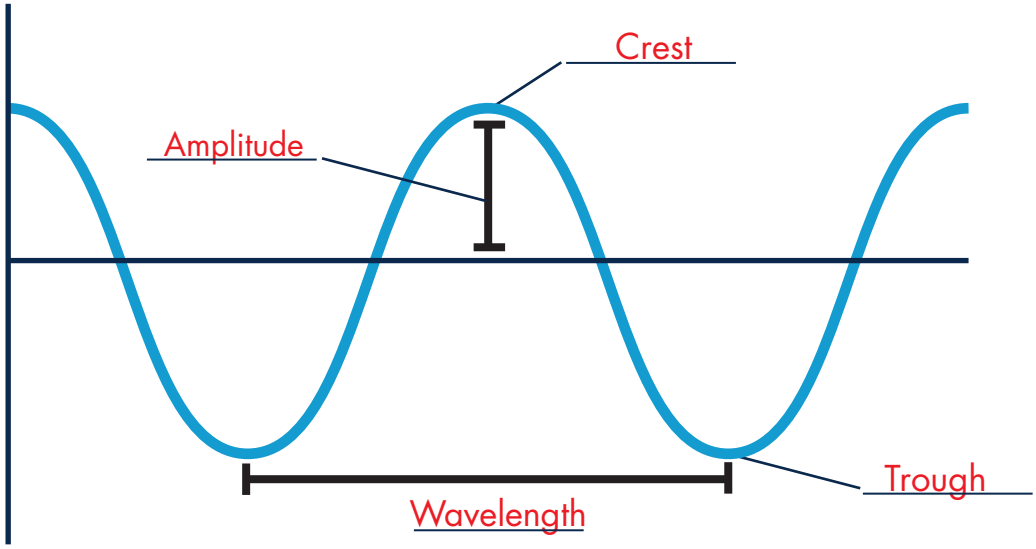
In this packet, sample student answers are provided in red and notes to teachers are in blue.

This **Explore Your Backyard** activity has students explore sound and light waves in their local area and make connections between waves and their everyday lives. There is an additional activity comparing pollination and dispersal in the rainforest to that in their local ecosystem. Note: At the end of this activity, consider the additional **Explore Your Backyard** activity comparing pollination and dispersal in the rainforest to that in their local ecosystem.

Waves are all around us. Light waves. Sound waves. Waves in water. Earthquakes are waves moving through the ground! A wave is a disturbance that transfers energy. Some waves, like sound waves, move through matter. Others, like light waves, don't have to.

Let's review some parts of the wave.

1. Label the diagram below using the following terms: **Wavelength, Amplitude, Crest, Trough**.

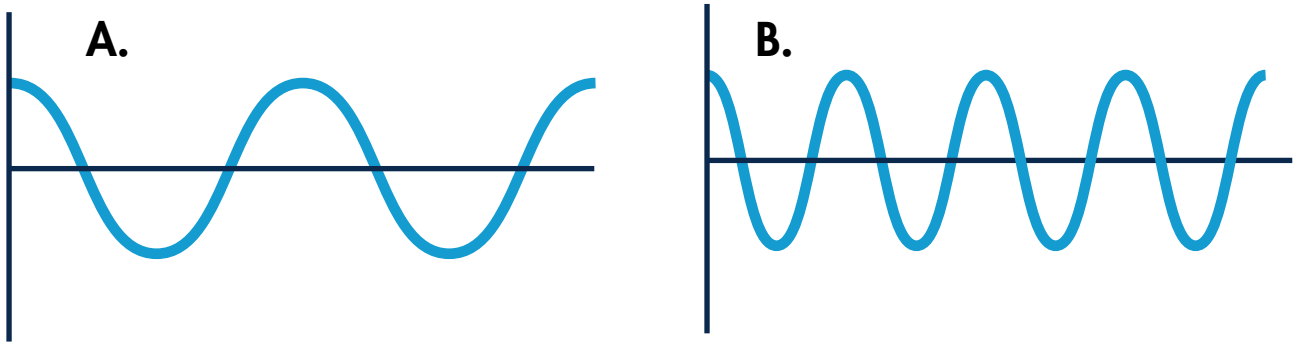



2. Use the following terms to complete the sentences below: **wavelength, amplitude, crest, trough, more, less, louder, quieter.** Some terms will be used more than once and other terms won't be used at all.

Waves that have a greater amplitude have more energy. In a sound wave, waves with a greater amplitude are louder.

Wavelength can affect how we hear a sound. The longer the wavelength, the lower the pitch.

3. **Describe** which of the sounds waves below will have a lower pitch. **Support** your argument.




Sound A will have a lower pitch, because the wavelength is longer than the wave in sound B.

Now you are ready to explore. Your teacher will tell you how and where to explore. Take notes about the types of waves you encounter.

My notes:

Accept reasonable answers. Students should identify sounds waves they hear, light waves, and possibly even waves on water.

4. Fill out the table below. List the waves you identified in your exploration. Work with other students to make a list of at least five waves in the rainforest. For the type of wave, record if it is a **sound wave**, **light wave**, or **physical wave**.

Answers will vary but may include different types of light (natural or from human sources like headlights of cars) or sounds. They may include waves in water or earthquakes.

| Rainforest | | My Backyard | |
|---|---|---|---|
| **Wave** | **Type of Wave** | **Wave** | **Type of Wave** |
| Howler monkey call | Sound wave | Ocean wave | Physical wave |
| Moonlight | Light wave | Airplane engine | Sound wave |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

5. Rank the sound waves you observed in your backyard and those in the rainforest based on their *amplitude*. Remember, the amplitude is related to the volume of the sounds.

Sounds should be ranked based on how loud students think they are.

6. **Describe** why you ranked them in the order you did.

I ranked them based on volume. The louder the volume, the greater the amplitude.

7. Rank the sound waves you observed in your backyard and those in the rainforest based on their *wavelength*.

Sounds should be ranked based on their pitch.

8. **Describe** why you ranked them in the order you did.

I ranked them based on pitch. The lower the pitch, the greater the wavelength.

9. **Create** a poster or presentation that shows how people use waves in their everyday lives.

Good posters or presentations will show different uses of sound waves and light waves. They may also include radio waves if they conduct online research.

**Extend the Lesson:** Have students explore waves in water. Have them fill a container with water. Make sure the container is large enough to watch the waves form and move. Have them drop different objects into the water and observe the waves that are created. Have them make observations about patterns they see in the water. You could have them create a data table with descriptive information for each trial like "speed of the waves (frequency)," "wave pattern," "wave height (amplitude)," and "space between waves (wavelength)." Have them rank the waves that are produced based on amount of energy.

**Alternative Activity:** Kinkajous appear to be important for some plants in the rainforest. They help spread pollen between flowers. They eat fruits and may disperse seeds. Have students go outside the school or to a natural area where there are flowers and/or fruits. Have students observe the animals that visit plants. Have them write down what the animals were doing (visiting a flower, eating seed, eating a leaf, etc.). Have them draw the animals and the plant being visited. Encourage them to label the structures of the plants they draw. Have them make notes about whether the animals are helping or hurting the plant. Then, have them make posters that describe the interactions between plants and animals. Make sure they use the terms dispersal and pollination. You can also have them describe reproduction in the plants they observed.