

Name: _____

Date: _____

How do insects make sounds?

We live in a noisy world. One of the noisiest inhabitants on Earth are insects. No matter where you go, you can't escape them. It is estimated that 75% of the over 8 million different species of life on Earth are insects. No wonder it's impossible to escape their constant, noisy chatter.

But how do insects make sounds? As you read, think about what is similar between how sound is produced in all these insects and what you have figured out in your investigations in class about how instruments produce sound.

Crickets. Among the noisiest of insects are crickets. Only the male crickets make sounds, and surprisingly, not all species of crickets produce sound. Crickets make sounds for many reasons, but one of the main reasons is for male crickets to attract female mates.



When a male cricket wants to attract a mate, he lifts up his wings and rubs them together. Each wing has "teeth," much like a comb does. The chirping sound is created by running the top of one wing along the teeth at the bottom of the other wing. When the cricket does this, the teeth strike each other, and thin portions of the wing deform, change shape, and vibrate to make the sound.

Grasshoppers. Grasshoppers are another group of insects that use sound in their everyday life. One way they make sounds is by rubbing one of their hind legs, which has rows of pegs on the inside, against the stiff outer edge of their wing. These sounds are produced in order to find a mate and protect their territory.



<http://www.birdphotos.com>

Grasshoppers can also make loud snapping or cracking sounds with their wings as they fly. They "pop" their wings by causing the membranes between the veins to stiffen, leading them to change shape and vibrate. This is another way to get attention when they are trying to court another grasshopper for mating.

Cicadas. Another noisy insect is the cicada. Cicadas make the loudest mating song of any insect or animal. Some species can produce songs as loud as the sound from a car's speakers at maximum volume.

The male cicada makes sounds by changing the shape of two membranes in his ribs called tymbals. By contracting a muscle, the cicada bends the membrane inward, producing a loud click. As the membrane snaps back, it clicks again. This produces vibrations that move through his abdomen to make the sound louder. Cicadas also make sounds to attract mates and protect territories.



Armchair Ace

Questions

Q1: What are some similarities in the way these insects produce sounds and the way instruments produce sounds?

Q2: Think about the sound that a bee, mosquito, or fly makes as it flies near your ear. Each produces a buzzing sound as they fly. Then, go to the links provided and analyze one of the slow motion videos below of one insect flying to figure out what might be producing these sounds as they are doing this. Both videos are posted on youtube. The web addresses listed here are shortcuts to the original videos:

- Mosquitos: <https://youtu.be/4lVymwoklpA>
- Bees: <https://youtu.be/LXmsFQV6q5s>

After watching the videos, draw and annotate a “comic strip” view that shows the way that the wings are moving and changing shape over time. If you don’t have access to the videos, then create a comic strip that is a prediction of what you think you would see.

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Q3: How does the way the wings of these insects make sounds compare to the way that instruments make sounds?
