Insect Choruses

Cicadas, Katydids, and Crickets in your Backyard!

By Mariah Slone

What is communication?

Communication is the exchange of information from a sender to a receiver. Human communication is dominated by sight and sound; we talk to one another and send visual signals through our style and expressions. Other animals rely on other senses, such as smell, touch, and taste to communicate with one another. Sometimes signals can be hijacked by an unintended receiver. For example, the messages of male insects calling to females on warm summer days and nights is easily intercepted by human ears. Throughout history, humans have been fascinated by these insect songs, and imparted them with mythical meanings and symbolism.

Acoustic messages and songs of Insects

Insects make noise for a number of reasons, from scaring competitors to confusing predators to attracting mates. Generally, the sounds made by insects are quiet and high pitched, because their small body size reduces the range of noises that they can produce. This is usually a good thing, because staying quiet helps insects remain hidden in their environment. However, some insects want to attract mates from long distances, so they need to make themselves as loud and apparent as possible. Certain species of male cicadas can reach volumes as high as 100 decibels, which is about as loud as a motorcycle engine heard from 20 meters away! However, most singing insects are not able to produce that much volume when they work alone.

All about the choruses

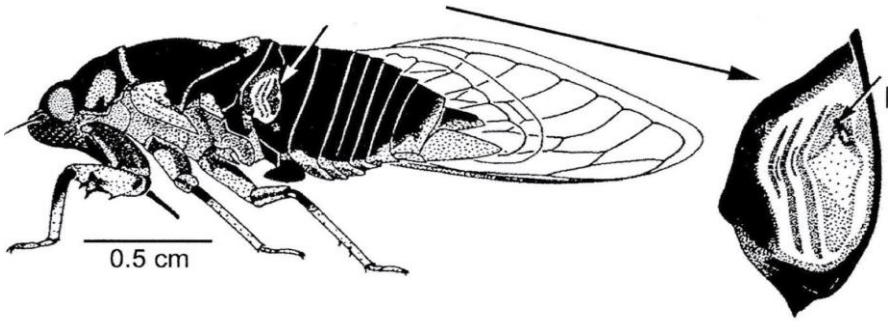
A chorus is a group of animals who gather together and make synchronized noise in order to attract more members of their species to a given area. Chorusing insects can be found all over the world! Chirping crickets, croaky katydids, and buzzy, clicky cicadas chorus on every continent except Antarctica. There are roughly 160 different species of cicada, 200 species of katydid, and 18 species of tree cricket found in the United States. In Upstate New York, we are lucky to have multiple species of cicadas, katydids and crickets living among us!

Depending on the species, cicadas spend anywhere from 2 to 17 years developing underground, where they feed on root sap. When they emerge as adults during the hottest days of summer, they have only a short window of time to find a mate and lay eggs in a new tree branch. Although cicadas look big and scary for a bug, they only feed on tree sap, and some adults do not feed at all. Sometimes you can find cicada skins clinging to the trunks of trees during an emergence, these are the last skins the cicadas wore before they became winged adults! Male cicadas sing during the daytime, and their songs tend to sound very buzzy, like a lawnmower. These songs are meant to attract females from far and wide. Once females get up close, male cicadas have a special, more personal song to court them with. Dog-day cicadas can be heard every year in Upstate New York, during the “dog-days of summer” from late July until early August. There are also periodical cicadas, or *Magicicadas*, which emerge from the ground in massive quantities once every 17 years. The next *Magicicada* emergence in this area is due in summer 2018!

One way to tell the songs of cicadas apart from the songs of katydids and tree crickets is the time of day. Whereas cicadas usually sing during the day, katydids and tree crickets don’t begin their choruses until sunset. The first male cricket to sing is usually triggered by the setting sun, and he is joined by his peers one by one, until the whole group is singing in synch with one another. Most people have heard the musical “treeaaat-treeaaat-treeeeaat” of a tree cricket chorus, or the “katy-did, katy-didn’t” back-and-forth calls of neighboring katydid choruses. However, not as many people have actually seen a tree cricket or a katydid. This is because these insects are great at camouflage. Katydids and crickets blend in with the leaves they call from, and tend to cease calling if a different animal, like a human, gets too close. Tree cricket calls have different pitch and frequency depending on the size of the male calling and the weather. Larger males make lower-pitched calls, and smaller males make higher-pitched ones. Singing takes a great deal of energy, so when it is very cold out, males will chirp more slowly in order to save some warmth. You can use this information like a thermometer - if you count the number of times a tree cricket chorus chirps in 15 seconds, then add 37, you’re answer will be a pretty good estimate of the outside temperature on the Fahrenheit scale!

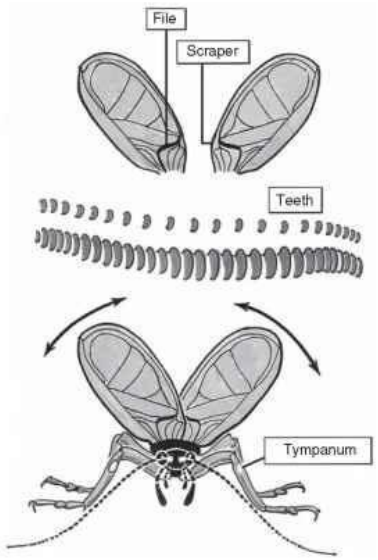
Cicadas, katydids and tree crickets sing in different ways

Cicadas sing using a tymbal, which is an organ that they click in and out extremely quickly. A tymbal is on the cicada's abdomen, and the cicada uses its large cavernous body to amplify the noise, much like a large concert hall amplifies the sounds of an individual musician.



Cicada songs sound buzzy and raspy to human ears.

Male tree crickets and katydids sing by rubbing their wings together. They have a file, which is like a comb, and a scraper, which is like a hardened stick, on each wing. When they rub this file and scraper together, it creates a noise called stridulation. Stridulation can happen when any two body parts are rubbed together, and lots of insects use this strategy to make noise. Female katydids also stridulate.



Female cicadas and crickets cannot sing the way that males do. Instead, they use an extra sensitive hearing organ to distinguish the different kinds of songs in their habitat and move towards the male choruses of their own species. This organ is called a tympanum. Crickets and katydids have a tympanum on each front leg, whereas cicadas have a tympanum on both sides of the abdomen.

Cricket choruses sound musical to human ears, but katydids are more buzzy.

Why are choruses important?

Listening to the chorusing insects around you in the summertime is not only enjoyable and relaxing, but it can also tell you important information about your local habitat. The sound of a buzzing cicada chorus means that thousands of individuals have been able to survive underground feeding on tree root sap for many years. However, many more cicadas do not survive to adulthood. Habitat loss is a major problem for chorusing insects, who need large areas of resource to gather and sing on.

When tree crickets and katydids chorus, they space themselves equally, and each defend an area of suitable habitat for their females to lay eggs in. When humans encroach on these insect's habitats, we limit the space that these males can call and defend from, and we begin to hear less and less of our favorite singers as the years go by.

Listening to the chorusing insects in your area and taking note of when and where you hear them can be a fun and interesting way to get to know the animals that live around you.

For more info on chorusing insects, visit:

The Singing Insects of North America
http://entnemdept.ifas.ufl.edu/walker/buzz/index.htm

CicadaMania
http://www.cicadamania.com/cicadas/

The Songs of Insects
http://www.musicofnature.org/songsofinsects/index.html