

Summer Smorgasbord of Environmental Learning: The Insect Orchestra

Warm summer days and nights in New Jersey come with the gentle chirping of the insect orchestra. Summer weather brings out a variety of insects that you have probably heard before. You just have to know what to listen for to detect them by sound, so let's start listening and learning!

Let's Meet the Musicians

Grasshoppers, crickets, and katydid all belong to the same taxonomy order called *Orthoptera*. Insects in this order share a few common characteristics including modified and long hind legs meant for jumping, chewing mouth parts, and the ability to create a unique song by rubbing specific body parts together. The reason for these insects' songs is an attempt to attract a mate.



Grasshopper: The mid-day pick-me-up



Cricket: The evening vocalist



Katydid: The late-night star

Grasshoppers are a daytime insect with short antennae. They eat mainly vegetations including grasses, and leaves, but they will also eat flowers, stems, and seeds. On occasion they will scavenge for dead insects as well. As their name suggests, if you are ever walking through grasslands or a meadow keep your eye out for the hopping creatures as they prefer to be tucked away in tall grasses. You may hear them before you see them. If you hear a noise that sounds like a gentle flickering it might be a grasshopper. They "sing" or make noise by rubbing their long legs against their wings. They can detect sound by their little ears that are located on the base of their abdomen. Male and female grasshoppers can sing, but males are the most likely to do so.

[Listen to a grasshopper singing here.](#)

Crickets tend to come out in the evenings and sing into the nighttime. They have long antennae and are omnivores meaning that they will eat plant and animal matter, including scavenging for dead insects to eat. Unlike the grasshopper, only the male crickets have the ability to sing, and they do this by rubbing their wings together. Crickets make a higher pitched chirping sound. These insects have little ears on the front of their legs to hear with.

[Listen to a cricket singing here.](#)

Katydids are a nighttime insect with long antennae. They are also omnivores and will feast on plant and animal matter, but they will also eat their fellow Orthoptera members including grasshoppers and crickets! Katydids sing by rubbing their wings together, and both the male and female can be heard singing regularly. The males sing to the females and the females will respond back to potential mates. They have little ears on the front of their legs to listen for mates singing.

[Listen to a katydid singing here.](#)

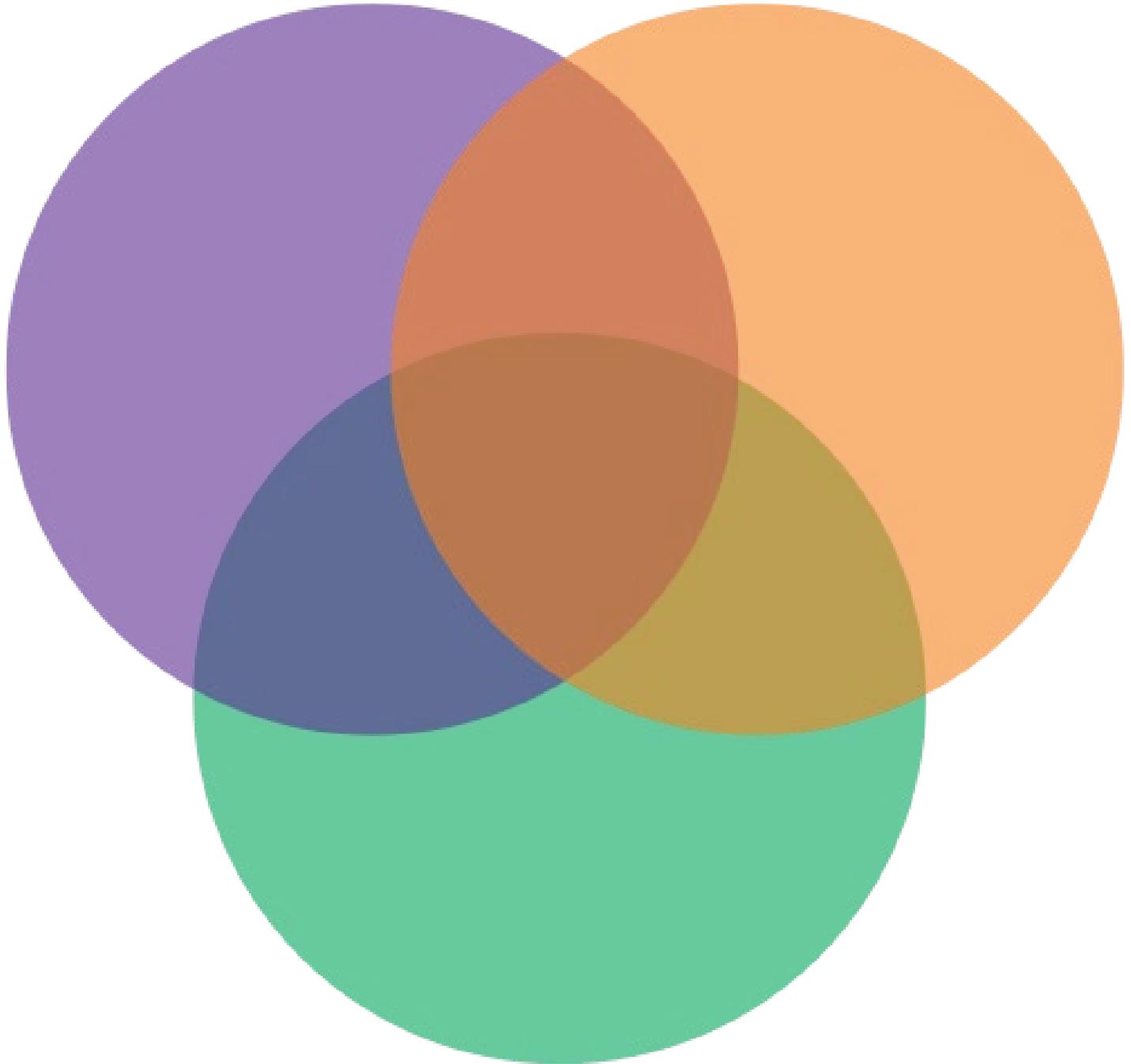


Activity: Compare and contrast grasshoppers, crickets, and katydids

Fill in the Venn diagram below with the three insects that you learned about above. Use this space to compare and contrast the insects. Add in your own research that you may find!

Grasshoppers

Crickets



Katydid

Below are some species that you may find hopping around New Jersey!

Grasshoppers

- Differential grasshopper
- Short-winged green grasshopper
- Two-striped grasshopper

Crickets

- Eastern striped cricket
- Northern mole cricket
- Broad-winged tree cricket

Katydid

- Short-winged meadow katydid
- Woodland meadow katydid
- Agile meadow katydid

If you are interested in learning more or becoming more familiar with grasshoppers, crickets, and katydids out in the field or right in your backyard check out [Songs of Insects](#) for more information.



MS-LS1-4.

Disciplinary Core Ideas

LS1.B: Growth and Development of Organisms

Animals engage in characteristic behaviors that increase the odds of reproduction.

Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors ...

LS1.B: Growth and Development of Organisms

- Animals engage in characteristic behaviors that increase the odds of reproduction.
- Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction.

Creative Connection in Performing Arts

Environmental content can be used to generate creative connections to content areas such as visual and performing arts. For an interesting project, consider how insect and other wildlife sounds can be used to develop selections of music.

New Jersey Student Learning Standards - Visual and Performing Arts: 1.3E Music Technology Standards

Anchor Standard 10: Synthesizing and relating knowledge and personal experiences to create products. Enduring Understanding: Musicians connect their personal interests, experiences, ideas, and knowledge to creating, performing, and responding. Essential Question: How do musicians make meaningful connections to creating, performing, and responding? Practice: Interconnection Performance Expectations: 1.3A.2.Cn10a: Demonstrate how interests, knowledge and skills relate to personal choices and intent when creating, performing and responding to music. This Performance Expectation is embedded in the following Artistic Processes: 1.3A.2.Cr2a, 1.3A.2.Cr3b, 1.3A.2.Pr5e 1.3A.2.Re7a

Anchor Standard 2: Organizing and developing ideas. Enduring Understanding: Musicians' creative choices are influenced by their expertise, context and expressive intent. Essential Question: How do musicians make creative decisions? Practices: Plan, Make Performance Expectations: Proficient 1.3E.12prof.Cr 2a: Select melodic, rhythmic and harmonic ideas to develop into a larger work using digital tools and resources.

If you are interested in aligning the Insect Orchestra to any of the NJ Student Learning Standards or to other Next Generation Science Standards, contact Kate Reilly, Manager of Education, Duke Farms. kreilly@dukefarms.org