

## LESSON PLAN DAY 1

<b>Subject:</b>	<b>ENTOMOLOGY CAMP ACTIVITIES</b>		
<b>Topic:</b>	<b>Communication Through Scent</b>		
<b>Lesson Title:</b>	<b>PEPPERMINT BEETLE</b>		
<b>Level:</b>	<b>Beginner</b>	<b>Lesson Duration:</b>	<b>60 minutes</b>

### Lesson Objectives:

- Students will demonstrate how insects use their sense of smell to interact with the environment around them.
- Students will compare how insects use scent to communicate to how humans use scent.

### Summary of Tasks:

1. Prepare the site by marking off the boundaries with flags to keep the students within a designated site.
2. Scent-mark the trees with a peppermint smell right before the activity begins by using a cotton ball moistened with peppermint oil.
3. Mark enough trees that there is at least one tree marked for each group of students. Give the students several lengths of yarn so that when they find a scent marked tree, they can tie their yarn around it to signify that it is marked.
4. Have students imagine a peppermint beetle, tell them it marks trees to create trails. Divide the class into groups and give them the yarn.
5. Send students to use their noses to find trees that the beetle has visited. Once all students in the group agree the tree was visited by the beetle, they can wrap their yarn around the tree.
6. Teams will continue checking trees and no longer need to check trees that are marked with yarn. Once all the trees have been found students should walk the scent trail left by the peppermint beetle.

### Materials/Equipment:

- Cotton balls
- Peppermint oil
- Safety flags
- Ball of yarn

### Variation of Tasks Due to Inclement Weather:

1. Set up several boxes to represent trees.
2. Mark these boxes on the inside with peppermint oil so that the students can still smell the oil but not see the mark on the outside of the box.
3. Ensure there are enough boxes so that there is at least one marked box per group.
4. Create a trail that leads to something the beetle may be interested in (such as a food source).

5. Perform the activity in the same way you would outside but with boxes inside. (Suggest using a large space such as a gym).

**Assessment Questions:**

- How is your sense of smell important to you? Have you ever lost your sense of smell? How did it affect you?
- Could your sense of smell save you from dangerous situations?
- How do animals rely on their sense of smell?
- How do insects rely on their sense of smell?
- Do insects and other animals rely on their sense of smell more than people do?
- Do insects and other animals use their sense of smell in the same way that people do? How?
- (After the activity) Why did the peppermint beetle mark these specific trees? To attract a mate? To define their territory?
- (After the activity) Where could the peppermint beetle's trail be leading to? A food source? A nest? Nowhere?

## LESSON PLAN DAY 2

<b>Subject:</b>	ENTOMOLOGY CAMP ACTIVITIES		
<b>Topic:</b>	Communication Through Sound		
<b>Lesson Title:</b>	SOUNDS OF THE FOREST		
<b>Level:</b>	Beginner	<b>Lesson Duration:</b>	60 minutes

### Lesson Objectives:

- Students will demonstrate how insects use their sense of hearing to interact with the environment around them.
- Students will compare how insects use sounds to communicate to how humans use their hearing.

### Summary of Tasks:

1. Give each student group a voice recording device and take them into the forest.
2. Allow the students to walk a specified path and record the sounds they hear.
3. Ask students to write down what sounds they hear and try to identify if it was an animal or an insect or something else.
4. Regroup at the start of the trail to play a soundtrack of insect noises.
5. Compile a list of all the sounds the students heard and try to identify if it was animal, insect, or something else.

### Materials/Equipment:

- Notepads and Pencils
- Voice recording devices
- Soundtrack of insects

### Variation of Tasks Due to Inclement Weather:

1. Turn off all the lights in the classroom. Play a track of insect and forest sounds.
2. Allow the students to individually identify the sounds and what they think made them.
3. Compile a list of the sounds and as a group decide what made each sound.

### Assessment Questions:

- How is your sense of sound important to you? How would things be different if you could not use your hearing?
- Could your sense of hearing save you from dangerous situations?
- How do animals rely on their sense of hearing?
- What kinds of insects make sounds?
- How do insects rely on their sense of hearing?

- Do insects and other animals rely on their sense of hearing more than people do?
- Do insects and other animals use their sense of hearing in the same way that people do?  
How?
- (After the activity) How do you think the insects made those sounds?
- (After the activity) Why do you think the insects were making those sounds? To attract a mate? To warn of danger? No reason?

**LESSON PLAN DAY 3**

<b>Subject:</b>	<b>ENTOMOLOGY CAMP ACTIVITIES</b>		
<b>Topic:</b>	<b>Communication Through Touch</b>		
<b>Lesson Title:</b>	<b>COCKROACH COMMUNICATION</b>		
<b>Level:</b>	<b>Beginner</b>	<b>Lesson Duration:</b>	<b>60 minutes</b>

**Lesson Objectives:**

- Students will demonstrate how insects use their sense of touch to interact with the environment around them.
- Students will compare how insects use touch to communicate to how humans use touch.

**Summary of Tasks:**

1. Each student can hold the hissing cockroaches.
2. Students will observe the cockroaches interacting with one another and take notes on how they behave.
3. The notes will be compiled and discussed while answering the questions for the assessment.

**Materials/Equipment:**

- Hissing Cockroaches
- Dubia Cockroaches
- Notepad/Pencils

**Variation of Tasks Due to Inclement Weather:**

(This is an indoor activity; nothing will need to be changed.)

**Assessment Questions:**

- How is your sense of touch important to you?
- How do animals rely on their sense of touch?
- How do insects rely on their sense of touch?
- Do insects and other animals rely on their sense of touch more than people do?
- Do insects and other animals use their sense of touch in the same way that people do? How?
- Cockroaches are shown to develop better if they receive tactile communication as nymphs, is that the same for people with babies?

**LESSON PLAN DAY 4**

<b>Subject:</b>	<b>ENTOMOLOGY CAMP ACTIVITIES</b>		
<b>Topic:</b>	<b>Communication Through Sight</b>		
<b>Lesson Title:</b>	<b>UV VISION IN BUTTERFLIES</b>		
<b>Level:</b>	<b>Beginner</b>	<b>Lesson Duration:</b>	<b>60 minutes</b>

**Lesson Objectives:**

- Students will demonstrate how butterflies use their UV vision to interact with the environment around them.
- Students will compare how insects use sight signals to communicate to how humans use sight.

**Summary of Tasks:**

1. Show the powerpoint to students and discuss how butterflies see differently.
2. Give each student drawing supplies and ask them to draw a flower and a butterfly as if they were a butterfly.
3. Have each student who wants to talk about their drawing and why it looks the way it does.

**Materials/Equipment:**

- Powerpoint with butterfly UV visuals
- Colored pencils/crayons/markers
- Drawing pads

**Variation of Tasks Due to Inclement Weather:**

(This is an indoor activity; nothing will need to be changed.)

**Assessment Questions:**

- How is your sense of sight important to you? How would things be different if you lost your sense of sight?
- Could your sense of sight save you from dangerous situations?
- How do animals rely on their sense of sight?
- How do insects rely on their sense of sight?
- Do insects and other animals rely on their sense of sight more than people do?
- Do insects and other animals use their sense of sight in the same way that people do? How?
- Do butterflies see differently than people do? How is it different? How do these differences help butterflies? Does it help them find food? Mates? Protect territories?
- (After the activity) Is the butterfly you drew a member of your species of butterfly or another species? Is the flower you drew for food or something else?

**LESSON PLAN DAY 5**

<b>Subject:</b>	<b>ENTOMOLOGY CAMP ACTIVITIES</b>		
<b>Topic:</b>	<b>Communication Through Vibrations</b>		
<b>Lesson Title:</b>	<b>WATER VIBRATIONS</b>		
<b>Level:</b>	<b>Beginner</b>	<b>Lesson Duration:</b>	<b>60 minutes</b>

**Lesson Objectives:**

- Students will demonstrate how insects use vibrations to interact with the environment around them.

**Summary of Tasks:**

1. Set up basins of water and add water striders to them before the students arrive.
2. Allow the students to use magnifying glasses to view the insects in the water.
3. Give the students drawing pads and have them draw water striders and ripples in the water for communication signals.

**Materials/Equipment:**

- Tubs of water
- Water Striders
- Drawing pads and pencils
- Magnifying glasses

**Variation of Tasks Due to Inclement Weather:**

This activity can be done the same way inside but with small tubs of water.

**Assessment Questions:**

- Why do water striders use vibrations to communicate?
- What are the insects trying to communicate? Finding a mate? Defining a territory? Something else?
- Do people use vibrations to communicate? How? Is it similar to the insects?
- Do other animals use vibrations to communicate?
- Do insects and other animals use vibrations to communicate more than people do?
- (After the activity) What is your water strider trying to communicate?