



Amazing Antennae



Summary/Purpose:

This activity provides resources that foster a students understanding of insect antennae. The students will identify different antennae types and associate antennae with their functions in the survival of insects.

Grade Level: 5th -7th

Time: 1 hour

Standards:

Materials:

Provided in the Kit

- Insect box with corks and insects
- Copies of drawing sheet
- Overhead of antennae types (teacher use only)
- Antennae Types Matching Game

Provided by the Teacher

- Dissecting scopes

Objectives:

Students will use observational skills to be able to identify different antennae types

Students will be able to identify the functions of insect antennae

Procedure:

Introduction	<i>Prior Preparation:</i> Before leading the students through the activity, it will be necessary for you to prepare an “insect box” for each group. Each “insect box” consists of one box, and corks into which the insect pins will be inserted for easy handling. For this activity, each box will contain all the same insects. Mount one insect on one cork and place the cork in the box. Each box should have the following insects: house fly (aristate), cicada (stylate), click beetle (serrate), mosquito (plumose), scarab beetle (lamellate), grasshopper (filiform), ant (geniculate), male moth (bipectinate). There is a sample Insect Box for this activity in the wooden framed box labeled “Teacher’s Box.” Small boxes, corks, and all of these insects are
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	<p>included in this Insect Kit. Finally, make copies of the antennae drawing sheet and antennae types matching game (enough for each student), and have the overhead of antennae types ready for step #5.</p>
Body	<ol style="list-style-type: none"> 1. Divide students into groups of 3 or 4. Have each group sit together at a table or group of desks. 2. Distribute the following items to each group: a box of insects, dissecting scopes, the antennae drawing sheet, pencils, and blank paper. 3. Have the students look closely at the antennae of the insects in their box. 4. Have the students draw the different types of antennae that they see. 5. Bring the class back together for a discussion on the functions of antennae. Pose the following questions to the class: Why do insects need antennae? Only insects have antennae. What replaces antennae in other organisms (for example, mammals)? Which organism is more efficient at detecting odors and vibrations, insects or humans? Why? The answers to these questions are found in the background information. 6. (Optional) Show the overhead with the antennae types and the names of each type. 7. (Optional) Hand out the Antennae Matching Game, and have the students match the antennae type to the correct name, filling in the insect that has that antennae type. <ul style="list-style-type: none"> •
Closure	<ul style="list-style-type: none"> •



LESSON TITLE

Key Vocabulary:

Assessment possibilities:

Have each student write a paragraph explaining the functions of insect antennae. Ask that they use examples of different insects to illustrate various antennae uses.

Extensions:

Links to other lessons:

Background information:

The antennae of insects are highly variable. They may be very short or very long, thread-like, bent, feathery, or thinly layered. In some species, the two sexes have different antennae.

Summary of the main antennae types:

- **Aristate** – three short segments, the last one (distal) bearing a bristle-like structure known as the arista; house fly.
- **Bipectinate** – each segment is shaped like a T, so that both sides of the antennae look like combs; male moths.
- **Capitate (Clubbed)** – the last few segments (at the distal end) of the antennae are suddenly enlarged; skin beetle.
- **Clavate** – antennae segments gradually increase in diameter towards the tip (distal end); carrion beetle.
- **Filiform** – slender, thread-like, the segments more or less uniform in width; grasshopper, long-horned beetle.
- **Flabellate** – two narrow segments and then several wide segments at the distal end; cedar beetle.
- **Geniculate** – bent abruptly at an angle, resembling a bent knee; ant, honey bee.
- **Lamellate** – terminal segments are expanded laterally to form lobes that the insect can keep closely grouped together, or stretch them out; scarab beetle.
- **Moniliform** – segments globular or oval, resembling a string of beads; termites.

- **Pectinate** – each segment has one side enlarged into a tooth, resembling a comb; fire-colored beetles.
- **Plumose** – antennae has numerous fine hairs, resembling a feather; male mosquitoes.
- **Setaceous** – segments become more slender toward the tip; dragonfly.
- **Serrate** – segments are triangular and one side resembles a saw; click beetles.
- **Stylate** – last segment has a finger-like projection; cicada, horse fly.
- Antennae are sensitive to air currents, vibrations, and odors. Each antenna has thousands (60,000 – 150,000) of chemoreceptive organs that detect chemical cues (odors) and tactile stimuli (air currents, vibrations) from the environment. Insects need antennae to detect food, to find their home, to find a mate, to find a place to lay eggs, to escape predation and/or noxious stimuli that may pose a threat, and for tactile activities such as greeting one another (ants) and checking the size of cells that they build (wasps). In social organisms (ants, bees, termites), antennae are important in determining caste functions.
- Insects are the only organisms that have antennae. The corresponding organ in mammals is the nose. Olfactory abilities of honeybees and humans are similar in terms of detecting certain scents, but honeybees have a greater ability to discriminate among many different scents.