

***Dedicated
to Reducing
Pesticides***

Unit 3 Lesson 3: Nibble, Sip, and Grind

Focus Areas: Animal Lifestyles; Science, Math

Focus Skills: comparing and contrasting, observing, forming a hypothesis, drawing conclusions

Objective

To understand that the variety in insect mouthparts are adaptations to their diet

Essential Questions

- What do insects eat?
- How do insects eat?

Essential Understanding

Insects' mouths are adapted to eat food within their environment.

Background

Insects have a variety of ways to obtain nourishment. Mosquitoes, adult fleas, lice, and some flies puncture tissue with a slender beak, a **PROBOSCIS**, and suck the fluids within. Butterflies, moths, and bees also dine on fluids, but their **PROBOSCIS** lacks the piercing adaptation and is extended only when their feet touch and “taste” a sweet solution. A spongy tip, **LABELLUM**, on the tip of the **PROBOSCIS** allows most flies to sop up liquids or easily soluble food. Other insects like ants, grasshoppers, beetles, and caterpillars nibble and grind their food with jaws, **MANDIBLES**, which move horizontally.

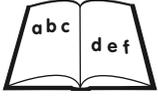


University of
Connecticut
College of Agriculture
and Natural Resources
Cooperative Extension System



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Vocabulary



labellum	the spongy tip of some insects' proboscis
mandibles	the chewing mouth parts of some insects
proboscis	the slender feeding tube of some insects



Logistics

Time: 30 minutes

Group Size: 5 to 30

Space: an area large enough for children to move about comfortably



Materials

straws
sponges
juice box with straw
pliers
files
assorted food stuffs: cereal, juice, Jell-O®, ice cream, pudding cups, popcorn, apple sauce, oranges, pretzels, bread, lettuce
a stuffed animal or two
a soft bodied doll
a display board for group work
insect pictures from Insect Babies and Adults
Picture Card Set *
Handout 1 "Individual Tally Sheet" with answer key*

* single copy provided



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Preparation



1. Gather food to be used in the lesson.
2. Based on the sample food you have chosen to use, complete Handout 1 and make enough copies for each child.

Activity

Introduction



1. Display the tools that represent insect mouth parts, and ask:
 - Would a bee need a nail file? (No)
 - Do cockroaches clean kitchen counters with sponges? (No)
2. Tell the children that these tools are very much like some part of an insect! Ask the children what part of an insect might be similar to these tools. To help them decide, hold up the straw. (mouths)
3. Show the group the juice box with straw, puncture the juice box, and ask if they know any insect that might have this kind of mouth. (mosquito, aphid) Display and secure the insect's picture on chart paper or blackboard. **Note:** If some say a bee, remind them that bees sting when they are frightened or angry. Review what bees eat (nectar and honey), and ask a volunteer to choose the tool that is more like a bee's mouth. (straw) Display and secure the insect's picture on chart paper or blackboard.
4. If bees did not come up when the juice box was discussed, display the straw and ask the children to name an insect that sips nectar from flowers. (bee, butterfly) Display and secure the insect's picture on chart paper or blackboard.
5. Display the pliers and ask the children to speculate on an insect that might pinch off a piece of a leaf and grind it up (show file) to eat. (caterpillar, ant, grasshopper, cockroach) Display and secure the insect's picture on chart paper or blackboard.



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6. Display the sponge. Tell the children that this is a hard one! Ask if anyone knows an insect that wets his food with a sloppy sponge mouth so he can soak up lunch. (fly) Display and secure the insect's picture on chart paper or blackboard. **Note:** If children need help with this concept, give them hints that lead them to the correct response; i.e., this insect is a pest! These insects often hang out by garbage and dead animals.

Involvement

1. Put out the food samples. Allow for enough space between samples for more than one child to look at the sample at the same time.
2. Distribute Handout 1, "Individual Tally Sheet."
3. Display the piercing straw from the juice box and ask which foods an insect with this type of mouthpart would lunch on. Take suggestions and using the straw, test the hypothesis. Complete Handout 1 together.
4. Call on individuals to test each "mouth" on sample foods, one at a time, and complete Handout 1. **Note:** If time allows, each child should be allowed to test only one sample. This method actively involves the most children. Otherwise, have one child test the sponge, a second the pliers or file, and so forth.
5. As children complete their tally sheets, circulate to check for accuracy and complete the group tally on the display board.



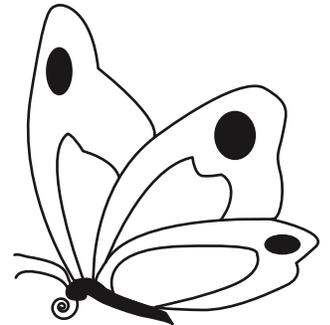
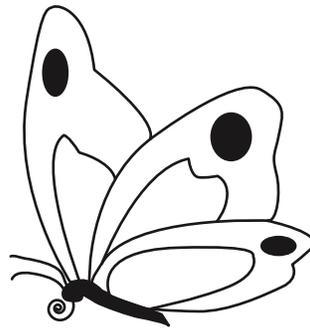
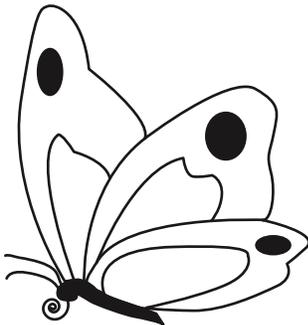


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Follow Up

Using Handout 1, determine:

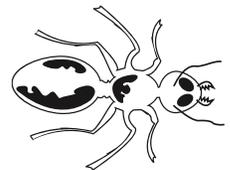
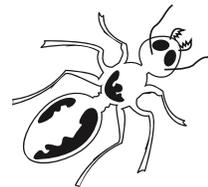
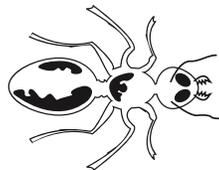
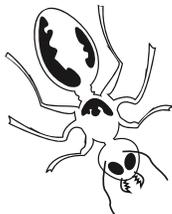
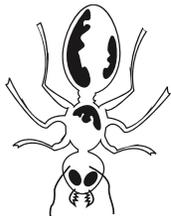
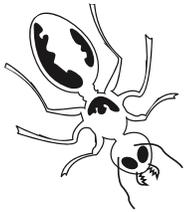
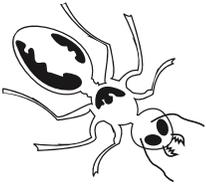
1. Which insects had the most choices for lunch? (chewers and sponges/grasshoppers, flies, etc.)
2. Which insect had the fewest choices for lunch? (straw/bee)
3. Which insects could be considered pests? (Discuss what makes an insect a pest; i.e., when it feeds on us or our pets, eats enough to threaten our own food supply of plants, contaminates our food by eating our food and leaving germs, as in the case of flies.)
4. Lead the children to the conclusion that piercing insects and flies are always unwelcome, chewing insects can become a problem if their numbers are too large, and that butterflies and bees are more helpful than harmful.





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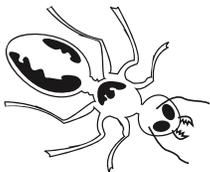
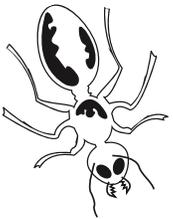
Notes





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