

# Build Your Own Insect!

## Essential Questions:

*What are the body parts of an insect?*

*How do adaptations help insects as predators or pests?*

## At a Glance:

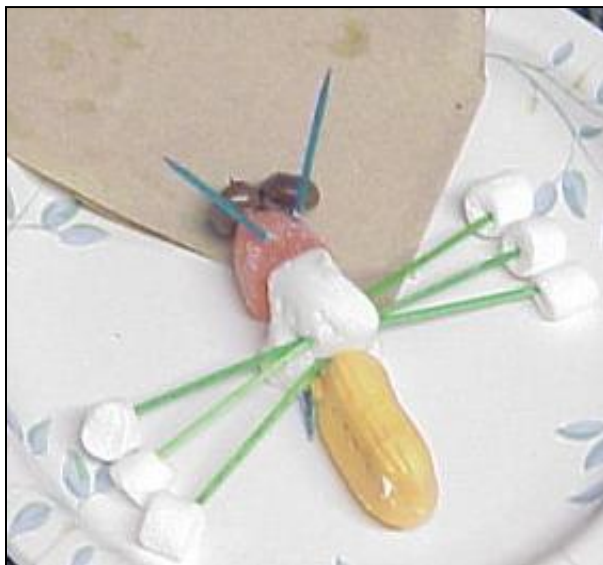
In this activity, learners will ‘build’ an anatomically correct insect using candy and other snack foods. The activity also focuses on adaptations insects use as predators and prey. The ‘Build an Insect...’ scenario cards guide learners in making an insect with a specific adaptation. After completing their insects, learners can try matching their constructed insects to the real insect with this adaptation using the GEN Eco-Service Cards.

## Background Information:

See *Background Information for Garden Earth –Pest and Disease Control*, “*Who is an Insect?*”, and “*Who Wants to be Eaten? Invertebrate Defenses*” *Background Information*. An adaptation is something about an organism that helps it survive in its environment. Examples include:

- Compound eyes help to detect motion and avoid danger.
- Camouflage—ways of hiding from predators (Viceroy butterfly larvae look like bird droppings)
- Specialized bodies, mouthparts, or legs for catching or eating their prey.
- Exoskeleton –protects the insect from moisture loss and damage.

## Procedure:



1. Review with learners the different parts of an insect.
  - What are the three main body parts? (*head, thorax, and abdomen*)
  - What are the major features of the head? (*antennae, compound eyes*).
  - How many legs does an insect have? (*6*)
  - To what part of the body are the legs attached? (*thorax*)
2. Tell learners that insects have adapted to, and can be found in, almost every habitat in the world. The adaptations of insects help them find food and survive. You can often tell where an insect might live or what or how it might eat by looking at its head and legs. What and how an insect eats depends on what type of mouth it has. Some insects, like grasshoppers, use their mouths for chewing, cutting

**Location:** Indoors

**Objectives:** *Learners will*

- 1) identify the parts of an insect.
- 2) build an edible insect with correct body parts.
- 3) describe several adaptations that help insects survive.

**Skills:** communication, observation, listening, analysis

**Supplies:**

- large and small marshmallows, jellies, candy corn, chocolate raisins, red licorice, peanuts, dried fruit, pretzels, and other assorted snack foods
- toothpicks
- paper plates
- ‘Build an insect...’ scenario cards
- GEN Eco-Service Cards

**Subjects:** science

**Time:** 25 minutes

or tearing food. Show the Pest and Disease Eco-service Cards as picture references for your discussion.

3. Ask: What type of mouthparts do butterflies and moths have? *(They have mouthparts shaped like a long tube that they use to suck up nectar from flowers.)*
4. Ask: What type of mouthpart do you think a fly has? *(They have mouthparts that end in a broad sponge-like tip that they use for soaking up liquids.)*
5. Ask: Has a mosquito ever bitten you? What type of mouthpart do you think they have? *(They have mouthparts like a hypodermic needle, piercing the skin and sucking out the liquid inside—blood.)*
6. Also, an insect's legs, like its mouthparts, are adapted to suit the life it lives. For instance, many swimming insects have long, flat, oar-like hind legs. What do grasshoppers do a lot of with their legs? *(Jump)* What type of legs do grasshoppers need to have for jumping? *(long, muscular hind legs)*
7. Some other insect leg adaptations are those of the honeybee, whose hind legs have a pollen-carrying basket.
8. Tell learners they are going to use candy and other snack foods to make their own insect with a special adaptation.
9. Show an example of an insect made from snack foods highlighting the insect's special adaptation. For example, the insects could have padded feet (marshmallows) to walk on top of the water. Another insect may have a long mouthpart for getting food from long flowers, stingers, etc.
10. Provide learners with the 'Build an insect...' scenario cards and explain that they will be making an insect that addresses the specific adaptation mentioned on the card.
11. Display associated GEN Eco-Service cards as examples of insects with these various adaptations. Learners will later use the Eco-service cards to match the insect they built with the real insect.
12. Allow learners time to assemble their insect. Tell the learners that the insect must have the correct body parts, legs coming from the thorax, and it must show its special adaptation.
13. Learners have to point out the body parts and explain their adaptation to the instructor or to their classmates. Ask the learners if they know what type of insect they made (use the GEN Eco-Service cards as reference).



### **Discussion/Assessment:**

What are some traits of an insect?

How do insects differ?

What are some special adaptations insects have?

What are the three main body parts? *(head, thorax, and abdomen)*

What are the major features of the head? *(antennae, compound eyes)*

To what part of the body are the legs attached? *(thorax)*

If you were an insect that had chewing mouthparts, what would you eat?

If you had sponge-like mouthparts, what would you eat?

If you had a needle-like mouthpart, what would you eat?

What would be the advantage of having sticky pads on your feet?

What would be the advantage of having jumping legs?

# INSECT ADAPTATION / FOOD CHOICE CHART

Adaptation	Advantage	Insect Example	Food Suggestions
<ul style="list-style-type: none"> <li>• Mandibles</li> </ul>	<ul style="list-style-type: none"> <li>• Cut through leaves and grab prey</li> </ul>	<ul style="list-style-type: none"> <li>• Leaf-cutter ants and other ants, stage beetle</li> </ul>	<ul style="list-style-type: none"> <li>• Broken corn chip</li> </ul>
<ul style="list-style-type: none"> <li>• Venom/toxic chemicals</li> </ul>	<ul style="list-style-type: none"> <li>• Deter predators and attack prey</li> </ul>	<ul style="list-style-type: none"> <li>• Stink bugs, formicine ants, bombardier beetles</li> </ul>	<ul style="list-style-type: none"> <li>• Gusher fruit snacks or juicy berry</li> </ul>
<ul style="list-style-type: none"> <li>• Long legs</li> </ul>	<ul style="list-style-type: none"> <li>• Move through tall grass easily and quickly</li> </ul>	<ul style="list-style-type: none"> <li>• Grasshopper</li> </ul>	<ul style="list-style-type: none"> <li>• Pretzel, licorice strips</li> </ul>
<ul style="list-style-type: none"> <li>• Wings</li> </ul>	<ul style="list-style-type: none"> <li>• Cover larger distances in finding food and habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Flies, bees, many insects</li> </ul>	<ul style="list-style-type: none"> <li>• Cut fruit leather, corn chips (Frito scoops), dried banana chips</li> </ul>
<ul style="list-style-type: none"> <li>• Compound eyes</li> </ul>	<ul style="list-style-type: none"> <li>• Detect motion and avoid danger</li> </ul>	<ul style="list-style-type: none"> <li>• Flies and many other insects</li> </ul>	<ul style="list-style-type: none"> <li>• Gum drop (jellies)</li> </ul>
<ul style="list-style-type: none"> <li>• Hard exoskeleton</li> </ul>	<ul style="list-style-type: none"> <li>• Protect from moisture loss and damage from predators</li> </ul>	<ul style="list-style-type: none"> <li>• Beetles</li> </ul>	<ul style="list-style-type: none"> <li>• Corn chip, Pringle chip, dried fruit</li> </ul>
<ul style="list-style-type: none"> <li>• Make its own camouflage covering</li> </ul>	<ul style="list-style-type: none"> <li>• Hide from predators in camouflaged tubes, webs, or other coverings</li> </ul>	<ul style="list-style-type: none"> <li>• Bagworm caterpillar, Tent caterpillar</li> </ul>	<ul style="list-style-type: none"> <li>• Fruit leather wrapped around insect</li> </ul>
<ul style="list-style-type: none"> <li>• Armor or spikes – formidable, rhino-like horns</li> </ul>	<ul style="list-style-type: none"> <li>• Scare and defend against predators</li> </ul>	<ul style="list-style-type: none"> <li>• Scarab beetles</li> </ul>	<ul style="list-style-type: none"> <li>• Broken pretzels or corn chips, candy corn</li> </ul>
<ul style="list-style-type: none"> <li>• Piercing-sucking mouthparts</li> </ul>	<ul style="list-style-type: none"> <li>• Either suck blood or inject venom</li> </ul>	<ul style="list-style-type: none"> <li>• Mosquito, Assassin bugs</li> </ul>	<ul style="list-style-type: none"> <li>• Bugle corn snacks</li> </ul>
<ul style="list-style-type: none"> <li>• Sponge-like mouthpart</li> </ul>	<ul style="list-style-type: none"> <li>• Used for soaking up liquid</li> </ul>	<ul style="list-style-type: none"> <li>• Fly</li> </ul>	<ul style="list-style-type: none"> <li>• Small cake square</li> </ul>
<ul style="list-style-type: none"> <li>• Padded feet</li> </ul>	<ul style="list-style-type: none"> <li>• Help to walk or glide across water</li> </ul>	<ul style="list-style-type: none"> <li>• Water glider</li> </ul>	<ul style="list-style-type: none"> <li>• Small marshmallows</li> </ul>
<ul style="list-style-type: none"> <li>• Probiscus</li> </ul>	<ul style="list-style-type: none"> <li>• Long, spiral tube-like mouthpart used to suck nectar</li> </ul>	<ul style="list-style-type: none"> <li>• Butterfly</li> </ul>	<ul style="list-style-type: none"> <li>• licorice</li> </ul>
<ul style="list-style-type: none"> <li>• Pollen baskets on legs</li> </ul>	<ul style="list-style-type: none"> <li>• To collect and carry pollen back to hive</li> </ul>	<ul style="list-style-type: none"> <li>• Honeybees</li> </ul>	<ul style="list-style-type: none"> <li>• Formed fruit leather, hollowed gum drop (jelly)</li> </ul>
<ul style="list-style-type: none"> <li>• Spined legs</li> </ul>	<ul style="list-style-type: none"> <li>• Grab prey with spined forelegs or kick predators with spined hind legs</li> </ul>	<ul style="list-style-type: none"> <li>• Mantids, grasshoppers</li> </ul>	<ul style="list-style-type: none"> <li>• Broken pretzels or corn chips</li> </ul>

# **“Build an insect...” Scenario Cards**

**Garden Earth Naturalist**

**Build an insect that is able to use its mandibles to cut through leaves for food and building material, as well as to capture prey.**

**Build an insect that can make its own camouflage house or cover to hide in.**

**Build an insect that can use its long legs to hop and move through tall grass easily.**

**Build an insect that has a hard exoskeleton to protect it from predators.**

**Build an insect that produces toxic chemicals to ward off predators and attack prey.**

**Build an insect that has formidable, rhino-like horns that are able to scare predators away.**

**Build an insect that is able to capture other insects by grabbing them with their spined forelegs or defend itself by kicking with spined hind legs.**

**Build an insect that has a piercing-sucking mouthpart to either suck blood and/or inject venom.**

**Build an insect that has a long, spiral proboscis (tube) used to suck nectar from a flower.**

**Build an insect that has wings used to cover a large distance in search of food and habitat, AND to get away from predators.**

**Build an insect that has compound eyes which help to detect motion and avoid danger.**

**Build an insect that has padded feet that help it walk or glide across water.**

**Build an insect that has little 'baskets' on its legs to carry pollen.**

**Build an insect that has a sponge-like mouth used for soaking up liquid.**