Spring into STEM: Insect Detectives

Intended Audience:
• Grades K-2

Ohio Standards:
• 3.LS.2: Individuals of the same kind of organism differ in their inherited traits. These differences give some individuals an advantage in surviving and/or reproducing.

N.G.S.S.:
• 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

Lesson Objectives:
Participants will:
• Discover that insects differ from other animal life.
• Identify the parts of an insect.
• Recognize the diversity of insects in different habitats.

Time: 60 minutes

Equipment and Supplies (not all items are needed):
• Lesson Pages: “Is It An Insect?”, “Insect Scavenger Hunt” and pencils.
• Craft Insect – markers, construction paper, googly eyes, tissue paper, buttons, chenille stems (pipe cleaners), glue/glue sticks, scissors, small containers, coffee filters
• Food Insect – apples, raisins, celery sticks, pretzels, almond butter, baby carrots, plastic knife, paper saucers

BACKGROUND
Insects are the most diverse group of animals in the world. There are approximately 925,000 different identified insect species – representing about 75% of all known animal species (Source: Journal of Plankton Research). The true number of all living insects can only be estimated, but some experts believe there are as many as 10 quintillion individual insects (10,000,000,000,000,000,000) (Source: Smithsonian). These amazing creatures can be found almost everywhere on the planet and have been on the earth for at least 300 million years.

WHAT TO DO

ACTIVITY: Is it an insect? Introduce the topic of insects by asking the following questions:

• What are an insect’s feelers called, and how many do they have? two antennae
• How many legs and body parts does an insect have? six legs and three body parts
• Do insects have eyes? Most insects have two compound eyes (which are made up of many units).
• Do insects have wings? Many adult insects have wings.
• Do insects have a skeleton like people? No. They are invertebrates. The have a hard outer covering called an exoskeleton.
• What are the names of an insect’s body parts? The first part is the head. That is where you will find the eyes, mouth parts, antennae, and brain. The wings and legs are attached to the thorax which is in the middle of an insect’s three body parts. We find the heart and digestive organs in the third part - the abdomen.
  o Using the “Is It An Insect?” PDF ask children to stand up if they believe the animal pictured is an insect and sit down if they believe it is not. Talk about why they believe certain animals pictured are not insects.

ACTIVITY: Let’s Sing

All insects have three body parts, six legs, two antennae and an exoskeleton. Below is a variation of a popular insect song to the tune of “Head, Shoulders, Knees, and Toes”.

Head, thorax, abdomen, abdomen.
Head, thorax, abdomen, abdomen.
Two antennae, an exoskeleton and six legs.
Head, thorax, abdomen, abdomen.

Work together to create an insect song and add movements.
Do Ahead:
- Review lesson.
- Gather supplies.
- Print “Is It an Insect?” pictures for leader.
- Print “Insect Scavenger Hunt” sheet(s) for leader.
- Craft Insect: Place small items, such as googly eyes and buttons in small containers.
- Food Insect: Wash, core, and slice the apples.

Supplemental Resources:
- https://ohio4h.org/insects
- Inspect An Insect

Sources:
- The Big Book of 4-H Cloverbud Activities
- Insect Investigations
- Invent an Insect
- Unsure how to help insect declines? Scientists suggest some ways
- Opinion: Eight simple actions that individuals can take to save insects from global declines
- Be a Citizen Scientist

ACTIVITY: Insect Scavenger Hunt

Where do insects live? Insects live in deserts, ponds, woodland areas, rainforests, and even homes. They are abundant everywhere except for oceans and polar regions. Each diverse insect species is uniquely suited for the environment in which they live. The place or environment where plants and animals live and grow is called their habitat. It must have enough food, shelter, water, and space for the organism to thrive.

Look for insects using the “Insect Scavenger Hunt” page. Place a check mark beside their pictures. Draw a picture of an insect you discovered that was not on the list. **Do not pick up the insects.**

ACTIVITY: Build A Craft Insect or Build A Food Insect

Using the listed supplies, build an insect. If building a food insect, have children wash their hands before beginning. Encourage them to be creative, but make sure their insect has all the characteristics of a real insect. Remember: All insects have three body parts, six legs, and two antennae. Many have two eyes (some have more), and some adults have wings. Think about the insect’s habit. Where will it live? What will it eat? What is the name of the insect? Ask all children to tell the group about their insects.

TALK IT OVER

Reflect:
- Ask them to share what they learned about insects?
- Encourage them to look up real insects in the habitat they chose and what they eat.

Apply:
- Have them Imagine if they were an insect and had to leave their natural home. What would happen to them?
- Ask them to list ways they can help their insects survive changes to their environment.

EARTH TAKE ACTION TIPS

- Don’t squash that bug! According to entomologist Akito Kawahara, a curator at the Florida Museum of Natural History, "In the U.S. alone, wild insects contribute an estimated $70 billion to the economy every year through free services such as pollination and waste disposal" (Source: The National Science Foundation). However, many scientists have noted a dramatic decline in the number and diversity of insect species worldwide. How can you help?
Encourage children to develop an appreciation of insects and nature by providing insect-themed educational outdoor activities.

Use storytelling and group walks to engage adults in discussions on insect conservation.

Raise awareness and appreciation by telling others of the innumerable ways insects benefit the world.

Become an advocate for “insect-friendly environmental policies” (Source: PNAS).

**CITIZEN SCIENCE CHALLENGE**

- Become a Buckeye Lady Beetle Blitz volunteer. Help scientists learn what types of habitats and food these beneficial insects prefer by observing and identifying the lady beetles in your backyard. This information will aid scientists in discovering what we can do to help lady beetles grow. (Source: Be a Citizen Scientist)
Is it an insect?

1

2
Is it an insect?
Is it an insect?

This Photo by Unknown Author is licensed under CC BY
Is it an insect?

This Photo by Unknown Author is licensed under CC BY-SA

This Photo by Unknown Author is licensed under CC BY-SA
Is it an insect?

This Photo by Unknown Author is licensed under CC BY-SA-NC

This Photo by Unknown Author is licensed under CC BY-SA
Is it an insect?

**ANSWER KEY**

1. Butterfly – insect
2. Bee – insect
3. Spider – not an insect (*They have two body parts and eight legs. They are arachnids.*)
4. Dragonfly – insect
5. Lady Beetle – insect
6. Centipede – not an insect (*They have one pair of legs per body segment. They belong to the chilopoda class.*)
7. Praying Mantis – insect
8. Pill Bug – not an insect (*They have seven pairs of legs. They are isopods.*)
9. Stag Beetle – insect
10. Slug – not an insect (*They are mollusks.*)
# INSECT SCAVENGER HUNT

<table>
<thead>
<tr>
<th>BUTTERFLY</th>
<th>DRAGONFLY</th>
<th>MOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Butterfly" /></td>
<td><img src="image2" alt="Dragonfly" /></td>
<td><img src="image3" alt="Moth" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FLY</th>
<th>BEE</th>
<th>LADYBUG</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4" alt="Fly" /></td>
<td><img src="image5" alt="Bee" /></td>
<td><img src="image6" alt="Ladybug" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ANT</th>
<th>GRASSHOPPER</th>
<th>YOUR CHOICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image7" alt="Ant" /></td>
<td><img src="image8" alt="Grasshopper" /></td>
<td></td>
</tr>
</tbody>
</table>