



Bee-Friending Our Native Pollinators

Discover the unique and specialized native insects that play a critical role in both ecosystems and agriculture. They may be small, but they are mighty, and they come in more patterns than stripes alone! Let's peruse the garden in search of the diverse array of invertebrates frequenting our native flowers and see how many we can "spot" while observing their behavior. An insect craft will conclude our program once we've ensured we've all become apprentice entomologists!

Lesson Duration: 45-60 minutes	
Lesson Objectives: Participants will develop a basic understanding of the diversity of pollinator species native to NH along with actions they can take to support them.	
Introduction: Welcome Nature Explorers! First Name & Favorite Bug	3 minutes
Topic: Pollinators	5 minutes
Engage: "Cricket in a Thicket" song	3 minutes
Activity: Garden Walk	5 minutes
Discuss: Alike and Different	10 minutes
Engage: "Head, Thorax, Abdomen" song	1 minute
Discuss: Pollinators	5 minutes
Activity: Who Are You? Game	5 minutes
Closing Activity: Butterfly and Moth Craft	10 minutes

Assessment: Upon completing this lesson students will be able to:

- Identify at least 3 characteristics of an insect.
- Recognize the role of a pollinator.
- Understand the relationship between pollinators and plants.

Materials:

- | | |
|---|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> Pollinator Printouts <input type="checkbox"/> 10 Questions Pollinator Cards <input type="checkbox"/> Puppets (cricket/grasshopper, butterfly, spider) <input type="checkbox"/> Insect Diagram <input type="checkbox"/> Pollinator: Plant Match-Up Cards <input type="checkbox"/> Coffee filters | <ul style="list-style-type: none"> <input type="checkbox"/> Washable Markers <input type="checkbox"/> Spray bottles <input type="checkbox"/> Clothespins <input type="checkbox"/> Google Eyes <input type="checkbox"/> Pipe cleaners <input type="checkbox"/> Crayons <input type="checkbox"/> Cardboard wing cutouts |
|---|--|



- | | |
|---|--|
| <input type="checkbox"/> Craft Glue | <input type="checkbox"/> White board markers |
| <input type="checkbox"/> Pinecones | <input type="checkbox"/> Insect books |
| <input type="checkbox"/> Fake helmet | <input type="checkbox"/> Antennae headband |
| <input type="checkbox"/> Who are You Game | <input type="checkbox"/> Kaleidoscope eyes |
| <input type="checkbox"/> White board | <input type="checkbox"/> Wings |

PROGRAM NOTES

Introduction: Warmly welcome attendees. Ask them to introduce themselves and ask them to share out what their favorite bug is?

Topic: Pollinators

Ask the audience the following questions to create conversation. Have props ready to share.

- What is a pollinator? A pollinator is any entity that transfers pollen from one plant to another. Technically, you could be a pollinator!
- Why are pollinators important? Most plants can't reproduce without pollinators. Plants can't move like many other living organisms and are reliant on outside forces to assist in the transfer of pollen. The world would be a lot less vibrant and significantly less diverse (habitat loss, food loss, shade, and shelter) if pollination suddenly stopped.
- Who is a pollinator? Wind, water, invertebrate species like insects and vertebrate species like birds and bats.
- Today we are going to focus on invertebrate pollinators as today's lesson is on entomophilous pollination. Entomon is the Greek word for insects, so entomophilous pollination means pollination occurring because of insects!
- Who knows what an insect is? Let's ask the butterfly!

Engage: "The Cricket in a Thicket" song with **puppets**

A cricket in a thicket
Said to a butterfly,
"They say we both are insects.
Oh can you tell me why?"

The butterfly looked puzzled,
And scratched its tiny head.
"Because we are six-legged?"
"That's right!" the cricket said.

The cricket in the thicket
Then asked the butterfly,
"What else makes you an insect?"

And it got this reply.
"For ladybugs and crickets,
For bees and butterflies,
For every adult insect,
This little rule applies."

"All insects have antennae
And special kinds of eyes.
Their bodies all have three parts
Regardless of their size."

Just then they spied a spider
Beside the butterfly.



“That spider’s not an insect!”
They heard the cricket cry.

“The spider’s not six-legged,
As anyone can see.
And it has no antennae.

It’s not like you and me!”

“Farewell my little cricket,”
“So long, sweet butterfly.”
“We’ve had a lovely meeting.
Farewell, so long, goodbye.”

Activity: Garden Walk How are you the same as an insect? How are you different? Think about these questions as we explore the garden looking for insects.

Discuss: Did you discover insects in the garden? **Who did you discover?** Write the name of the insects on the white board.

How are you alike? How are you different?

Use the **Insect Diagram, Puppets, or a Participant** to point out some of the following features.

- Insects need food for energy. We saw many insects. What were they eating?
- Some insects are social and live in colonies (like families living in the same home) and can communicate with one another.
- Insects breath oxygen but they don’t have lungs! Instead, they breathe through various openings found along their bodies, usually on the abdomen. Speaking of abdomen...
- Insects have three-segments that make up their body: sing the song below to the tune of “Head, Shoulders, Knees & Toes.”

“Head, Thorax, Abdomen, Abdomen
Head, Thorax, Abdomen, Abdomen,
Antennae, Compound eyes, and sometimes Wings,
Head, Thorax, Abdomen, Abdomen!”

- Some insects crawl, some hop, some swim, many fly. **Can you do any of these actions?**
- All insects have 6 jointed legs. You have jointed legs too. Point to knees and elbows to highlight similar joints.
- Exoskeletons (like wearing armor to protect the soft stuff on the inside **helmet**)
- Compound eyes **kaleidoscope:** numerous lenses allow an insect to see things from hundreds of angles and with a wider range. Ever tried to swat a fly? They see you coming from every angle!
- **Wings** (can be clear, striped, veined, or covered in scales as is the case with butterflies and moths)
- Ectothermic (cold-blooded): explain how they rely on the environment for warmth and can’t produce their own heat.



Discuss: The insects we were seeing in the garden are most likely pollinators! Who are the Pollinators? Present images. Mention how many pollinators prefer particular types of flowers and some flowers have grown specifically to attract the pollinators that best suit their needs. Explain how this type of relationship, where both species (plant and the pollinator) benefit from one another is referred to as a symbiotic relationship. In this case, the pollinator gets a nectar reward and the plant's pollen gets dispersed.

Activity: Guess Who Pollinator Challenge. Participants get an insect ID card with clues to ask the audience. Whomever guesses correctly, gets to read out the next clue card.

Activity: Create your own **butterfly craft!** Note that while we are using water to create colorful wings, butterflies and water don't mix well in real life because of those tiny scales that comprise their delicate wings.

Butterfly Craft Directions:

- 1.) Divvy out round coffee filters – 2/participant
- 2.) Instruct the participants to create patterns on their coffee filters with the washable markers. Encourage them to use vibrant colors and not to actually color it in. Have a sample if need be.
- 3.) Instruct them to gently spray their finished filters with water using the spray bottles. Encourage a fine mist as a wet filter is susceptible to tearing and torn wings won't fly!
- 4.) While the filters are set to dry nearby, have the participants make the body of their butterfly by coloring their clothespins.
- 5.) Attach the pipe cleaner antennae.
- 6.) Fold the filters and press between the clothespins.
- 7.) Add googly eyes if applicable.
- 8.) Inform the participants that their butterflies are hungry and since butterflies eat nectar and are very important pollinators, they should return to the garden for lunch!





Pinecone Moth Craft Instructions:

- 1.) Pick a set of cardboard wings and trace it onto cardstock.
- 2.) Cut out your wings.
- 3.) Use the moth book for inspiration of create your own design.
- 4.) Glue a pinecone in the center of your wings for the body.
- 5.) Attach antennae
- 6.) Flutter away but avoid artificial light!

Closing: Thank everyone for joining. Take questions. Encourage further participation and ways to get involved with NHA.