

Insects

Insects > Investigation 1: *Mealworms* >

Part 2: *Larva, Pupa, Adult*, page 16

Beetle, Insect, or Bug Hunt

When to Go Out

Following Part 2, students go outside to look for insects at different stages of their life cycles. You could combine this lesson and the next lesson if you do not have time for both.

Outdoor Objective

Students will utilize their prior knowledge to search for insects in the schoolyard habitat, and discover insects at different stages of their lives.

Materials

For Each Pair 2 Hand lenses
 3 Jars or vials

If you are going to keep the insects in the classroom, make sure that you poke holes in the lids.

Student sheet no. 27 *Home/School Connection* could be used during this investigation.

Getting Ready

Time: 15–30 min. Flexible—depending on how much time you want to devote to it.

Conservation: You will need to teach students how to carefully look for insects without destroying their habitats. If students are too excited and acting recklessly, stop the investigation, return to the classroom, and review how to tread gently. Try again another day.

Seasonal Tips: To search for insects in the winter, ask, *Where would I go if I were an insect trying to stay warm?* Because of the cold, insects will take shelter inside rotting logs, deeper in the soil, under leaves, and other ground debris. Collect soil and debris on the ground and put it in a terrarium indoors. Within a very short time, life will spontaneously erupt, including plants, spiders, and insects. Look for acorns and galls and open them indoors.

Caution: Have students use a leaf or stick to carefully lift insects into the containers.

Safety Note: Be careful to collect insects that don't bite or sting.

Outdoor Activities At a Glance

Investigation 1

Beetle, Insect, or Bug Hunt

Bring Insects to Class
(FOSS® Extension)

Investigation 2

Look for Moths (FOSS® Extension)

Investigation 3

Look for Milkweed Bugs in the Wild (FOSS® Extension)

Investigation 4

Look for Evidence of Insects

Investigation 5

Raise Local Larvae
(FOSS® Extension)

Pollination (OBIS Activity)

Investigation 6

Take a Field Trip to a Natural Area, Vacant Lot, or Pond
(FOSS® Extension)

Priority activities appear in **green**.



What You Might Find:

Some students will have no trouble with this activity. You may want to pair these students with more apprehensive ones.

Many students will not know how to look for insects without guidance from you. Model how to do it and show excitement when you see something.

“If you were there, you would have heard things like, ‘Look what I have!’ and then a sudden rush of students around that person. At one point, students turned over a rock and found an entire ant colony. Even I jumped!”

Eric Meuse
Science Specialist



If some students are apprehensive, they can have you look at an insect before they collect it. Once they know an insect won't bite, they will be less fearful.

Guiding the Investigation

1. Outdoors (or indoors) ask students what makes something an insect. Do not tell them the answer. Use this as a preassessment for the module.
2. Discuss what living things need to survive.
3. Ask students where they think they might find insects or bugs and set the boundaries for the search.
4. Walk to one of the places students suggested and model how to gently turn over a rock to look underneath, how to look on the underside of a few leaves, and how to look under dead plant matter or logs. Tell students that you want to leave everything exactly as you found it to respect the animals that live there.
5. With their partners, students search until they find an insect or bug to place in their container along with a piece of the leaf or wood on which they found the insect.
6. Students can continue searching for another insect or sit together in your meeting spot and observe the insect while they wait for the rest of the class.
7. Once inside, students display their insect on their desks and walk around the room looking at their classmates' found treasures.
8. Have a classroom discussion about observations and discoveries.
9. Within 24 hours, return the insects to approximately the same location in which they were found.

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Part 2: *Larva, Pupa, Adult*, page 16

Bring Insects to Class

FOSS® Extension, page 27

When to Go Out

At any point during this module, you may encourage students to bring insects in to create a classroom “Rotating Insect Zoo.” After a day or two, students return the insects to their natural habitats.

Outdoor Objective

Students will collect insects on their own and observe their characteristics and behaviors.

Materials

You may want to send home student sheet no. 27 *Home/School Connection* to help parents and students with the collection process.

Guiding the Investigation

1. Remind students how to carefully look for insects without hurting them or their homes.
2. Review the characteristics of an insect.
3. Allow time for the whole class to look for additional insects, or assign different groups each day to bring in new insects for a “Rotating Insect Zoo.”
4. Create a display area (or “zoo”) in which students can place their insects. Have students visit the “zoo” in small groups to observe and compare the different insects found.
5. If there is time, students may record their observations about one or more of the insects in their notebooks, paying close attention to the body parts.
6. At the end of the day, students who brought insects to class should return them to their outdoor habitat to be replaced with new insects the next day brought in by different students.

“The observing never stopped. Every day students brought in creatures they were finding outside. Next time I would create a ‘sightings calendar’ so students could record their findings over time.”

Teresa Strong
Science Specialist



Insects > Investigation 2: *Waxworms*

Look for Moths

FOSS® Extension, page 27

When to Go Out

Assign as homework anytime during Investigation 2.

Outdoor Objective

Students will identify one way to attract moths in order to study them better.

Materials

For Each Student Science notebook
 1 Clipboard
 1 Pencil

Getting Ready

Seasonal Tip: In warmer weather, you'll see more insects.

Guiding the Investigation

1. Students will look for moths near their outdoor lights at home at night. There will be fewer moths in the city than in the country, but it is still worth a look. If students have a screen on their door, instruct them to turn on the porch light, wait awhile, and look for moths from indoors.
2. Discuss students' findings in class. Why might some students have seen moths and not others? Ask them to look again in a week or more. Do they see the same kinds of moths, in the same numbers?

Insects > Investigation 3: *Milkweed Bugs* >

Part 2: *Habitats*, page 12

Look for Milkweed Bugs in the Wild

FOSS® Extension, page 28

When to Go Out

Following Part 2, go outside to look for milkweed plants if you have them in your schoolyard or in a nearby vacant lot.



Outdoor Objective

Students will identify milkweed plants so they understand that they grow in the city and see milkweed bugs in their natural habitat.

Getting Ready

Seasonal Tip: Milkweed bugs are most likely to be found in late summer.

Guiding the Investigation

As suggested in the FOSS® Extension on page 28:

1. Look at the milkweed plants in your schoolyard. Look at them at different times of the year. Does their appearance change?
2. Encourage students to look for milkweed plants, and for milkweed bugs at home, in the schoolyard, and around the city.

Insects > Investigation 4: *Silkworms* > Home/School Connection, page 32

Look for Evidence of Insects

When to Go Out

Following Part 5, take students outside to look for evidence of insects in the schoolyard.

Outdoor Objective

Students will use their knowledge of insects studied during the module to help them search for evidence of insect life in the natural world.

Materials

For Each Student

- 1 Hand lens
- Science notebook or student sheet
no. 28 *Home/School Connection*
- 1 Clipboard
- 1 Pencil

“At first, students were really unsure of what to look for. Once one student found a leaf with holes in it, other students followed. Soon they were able to find evidence of insects all over the schoolyard, including an anthill without the insects and the silk of caterpillar larvae.”

Eric Meuse
Science Specialist



“We had the good fortune of finding ladybug pupae and larvae in our schoolyard. Students have been bringing in mosquito larvae and grubs now that they know what to look for. Now they really understand that insects take different forms.”

Teresa Strong
Science Specialist



Getting Ready

Time: 15–45 min. (Spend as much time as you can.)

Site: Check the area for anything from excessive mud to unsightly items before doing this activity.

Conservation: Students should be developing stewardship of their schoolyard and tread gently upon the natural areas. If not, it is time to model again what you expect.

Guiding the Investigation

1. Explain to students that today you will be going on a walk to look for evidence of insect activity. Gather some ideas of where you should look and what you might see.
2. Before going outside, have students set up their science notebooks. Questions for the Investigation: What evidence of insects do I see? What evidence of other living things do I see?
3. Walk to the area of the schoolyard with the most vegetation and let the investigating begin.
4. Look under leaves on bushes, look between the leaves, look at leaf litter on the ground, look on the sides of trees, etc.
5. Allow time for students to write in their notebooks while outside.

Insects > Investigation 5: *Butterflies*

Raise Local Larvae

FOSS® Extension, page 27

When to Go Out

Take students on a larvae-collecting/observation walk anytime during Investigation 5.

Outdoor Objective

Students will utilize their prior knowledge of butterflies to search for eggs, larvae, and chrysalises in the schoolyard habitat.

Guiding the Investigation

Look on host plants such as alfalfa, cabbages, oak trees, poplar trees, tomatoes, or many others for larvae, eggs, and chrysalises. Remember that if you take insects inside you need to bring in several of the surrounding leaves as well.

Insects > Investigation 5: *Butterflies*

Pollination

OBIS Activity

When to Go Out

This activity can be done anytime during Investigation 5.

Outdoor Objective

Students will use artificial bees to explore how insects transfer pollen from one flower to another.

Materials

For Each Student

- 1 Piece of black construction paper
- 1 Cotton swab
- Black and yellow markers
- 1 Hand lens

If you are going to keep the insects in the classroom, make sure that you poke holes in the lids.

Student sheet no. 27 *Home/School Connection* could be used during this investigation.

Getting Ready

Time: 25–45 min.

Site: Do not do this after a heavy rain; the pollen will not come off of the plants very easily when they are wet. Select a site with several types of flowering plants that have pollen on them.

Seasonal: This activity works best in the spring when flowers are in abundance. In the fall or winter, you could bring in flowers that you purchase, but bring the flowers and “bees” outside to do the activity.

Safety Note: If you have students who are allergic to bees make sure they work on plants with flowers that do not have bees on them.

Guiding the Investigation

1. Have each student make a bee out of their cotton swab by striping it with yellow and black markers.
2. Distribute the black paper and hand lenses.



3. Gather your students around your selected site with their bees. Ask what bees do to get food. If no one knows, tell them the bees travel from flower to flower to collect pollen and nectar. Ask how they gather the pollen. Accept all answers and then tell students that their bees are going to visit a real flower.
4. Demonstrate how to gently brush the bee on top of the flower and then tap it on the black paper. Tiny pieces of pollen will fall onto the paper. Ask them to look at both the bee and the paper carefully with a hand lens.
5. Have them try this a few times.
6. Gather students together to discuss what they saw on the bees and the black paper. If nobody knows what it is, tell them this is pollen. Tell your students that bees and other insects pollinate flowers by taking the pollen from one flower to another of the same kind, which enables the flower to make seeds or fruit.
7. Back in the classroom, read a book that explains pollination.

Insects > Investigation 6: Other Insects

Take a Field Trip to a Natural Area, Vacant Lot, or Pond

FOSS® Extension, page 24

When to Go Out

If students have gone outside several times already, this activity will be extremely exciting and a great way to end the module.

Outdoor Objective

Students will discover the diversity of plant and insect life found in a vacant lot or an overgrown hillside. They will discover “urban wilds” they may have never noticed before.

Guiding the Investigation

Take a field trip to a “natural area, an overgrown vacant lot within easy walking distance, or a pond. Bring vials, cups, plastic bags, and hand lenses.” Bring sweep nets (if you have them) and encourage students to “look for insects on the ground, on plants, and in the air.”

